

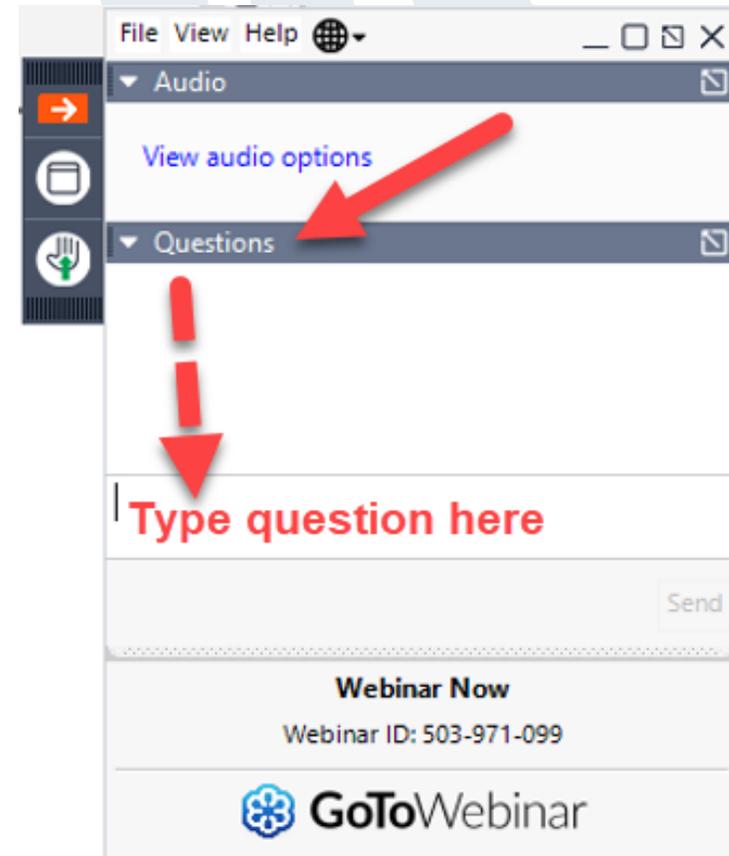


WELCOME D5 QUALITY FORUM

SEPTEMBER 2022

We will begin at 9 a.m.

HOW TO PARTICIPATE



Questions will be addressed at the end of each presentation



WELCOME REMARKS

Jeffrey Cicerello, P.E.

District Five Design Engineer



DISTRICT FIVE LEADERSHIP UPDATE



John Tyler, District Five Secretary



Charles Heffinger, Director of Transportation Operations



Nick Campanile, District Surveyor and Mapper



Jim Wood, Interim Traffic Operations Engineer

WE WANT YOUR HELP!

- Fresh ideas and innovation to move the needle on safety and mobility
- What's working elsewhere?
- What lessons have you learned?
- Ideas to help make the most of available resources and funding





TODAY'S TOPICS



ACEC UPDATE

Eddy Gonzalez, P.E.
ACEC-FL D5 Liaison Chair

Nick Bendico, P.E.
3D Task Team Update



WOMEN IN TRANSPORTATION SEMINAR

Hannah Hart
Snehal Ambare



PROCUREMENT SERVICES UPDATE

Michelle Sloan
Procurement Services
Manager



CPM UPDATE

Ed Kestory, P.E.
District DCPME

TODAY'S TOPICS



DESIGN SPEED VS. TARGET SPEED

Naziru Isaac, P.E.
Roadway Design Engineer



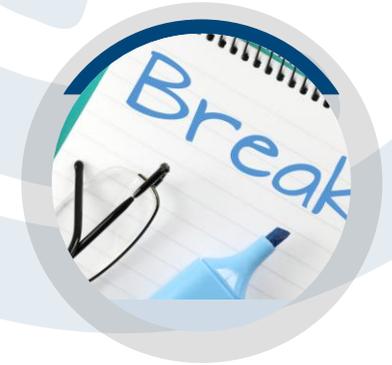
SPEED MANAGEMENT COUNTERMEASURES

Naziru Isaac, P.E.
Roadway Design Engineer



SMART SCOPES

Mark Trebitz, P.E.
Project Development Manager



BREAK

TODAY'S TOPICS



OPPORTUNITIES FOR EXCELLENCE - LEADING PEDESTRIAN INTERVALS

Tricia Ballard, P.E.
TSM&O Engineer - Arterials



LESSONS LEARNED – DIVERGING DIAMOND INTERCHANGES

Ryan Flipse, P.E.
Orlando Operations –
Construction Engineer



TECHNICAL ISSUES – DESIGN BULLETINS

Gabor Chiorean, P.E.
QA & Design Services Manager



QUESTIONS & ANSWERS



ACEC

AMERICAN COUNCIL OF ENGINEERING COMPANIES
of Florida

Eddy Gonzalez, P.E.
ACEC-FL D5 Liaison Chair



YOUR TURN



3D TASK TEAM UPDATE

**Nick Benedico, P.E.,
PMP, AICP, ENV SP
TetraTech**

ACEC-FL Transportation Committee
3D Task Team Chair



TASK TEAM INITIATIVES

- FDM Chapter 900
- Scope of Services revisions
- Staff-hour estimation changes
- Training/seminars



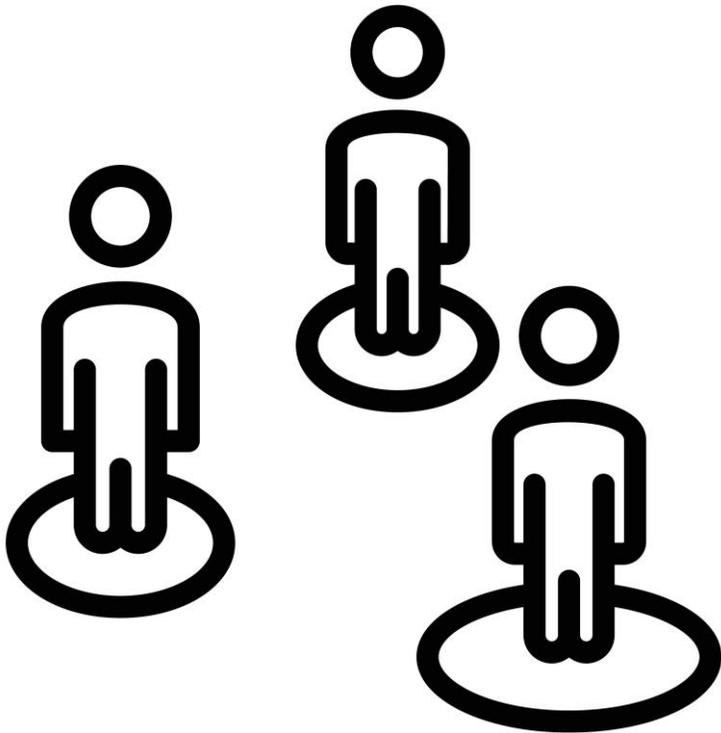
FDM PART 9 – NEXGEN PLANS PRODUCTION

- FDM Part 3 is being deleted and all references to FDM 300 series will be removed
- Turnpike Design Handbook (TDH) incorporated into FDM
- Revised to include 24"x36" sheets
- Chapters 922, 923, 924, and 926 to be released soon.
- Chapters 904, 919, 920, 921, 925, 941, 942, 945, 946, 947, and 948 to be released in November 2022

Roadway Plans Set			
910	Training	Errata	Key Sheet and Signature Sheet
911			Model Management
912	Training	Errata	Project Control
913	Training		Typical Sections
914	Training	Errata	General Notes
915			Roadway Plan-Profile
916			Drainage Structures
917			Stormwater Facilities
918			Drainage Map
919	Training		Lateral Ditches
920			TBD
921			Soil Survey - <i>May 2022</i>
922			Temporary Traffic Control Plan - <i>May 2022</i>
923			Utility Adjustments - <i>May 2022</i>
924			Selective Clearing and Grubbing - <i>May 2022</i>
925			Miscellaneous Structures - <i>May 2022</i>
926			Stormwater Pollution Prevention Plan (SWPPP) - <i>May 2022</i>
Component Plans Set			
940			Signing and Pavement Marking Plans - <i>Target Release: November 2022</i>
941			Signalization Plans - <i>November 2022</i>
942			Intelligent Transportation Systems (ITS) Plans - <i>November 2022</i>
943			Lighting Plans - <i>November 2022</i>
944			Landscape Plans - <i>November 2022</i>
945			Architectural Plans - <i>November 2022</i>
946			Structure Plans - <i>November 2022</i>
947			Toll Facilities Plans - <i>November 2022</i>
948			Utility Work by Highway Contractor Agreement (UWCA) Plans - <i>November 2022</i>



STAFF-HOUR ESTIMATION UPDATES



- Staff-hour Estimation Guidelines being overhauled
 - Will not be sheet-centric
 - Ranges may not be based on complexity or context classification
 - Ranges will be starting point for negotiations
- Individual task teams set up for each element
 - Led by Central Office
 - Representation from ACEC-FL and FDOT Districts
- Updated in June 2022
 - Tabs 6a and 6b: Drainage Analysis and Plans
 - Tabs 25 and 26: Landscape Analysis and Plans
 - Tab 28: Photogrammetry deleted
- Next update in December 2022
- NExUS release planned in early 2023

TRAINING RESOURCES

- FDOT Design Symposium
 - <https://transportationsymposium.fdot.gov>
 - Building Custom Drainage Features in ORD (8/18/22)
 - Automated Bridge Quantities (10/27/22)
 - FDOT Connect – Plan Set Manager (11/8/22)
- FDOT CADD Training
 - <https://www.fdot.gov/cadd/main/fdotcaddtraining.shtm>
 - OpenRoads Designer (ORD) and FDOTConnect
 - OpenBridge Modeler
- ACEC-FL/FDOT Training Labs
 - https://www.fleng.org/page/FDOTConnet_Training
 - 2-Day Hands-on Training by CERTIFIED Consultant Experts
 - ACEC-FL/FDOT Virtual Training Labs
- Florida Local Users Group (FLUG)
 - <https://flugsite.com/>
 - October 11-14 in Cocoa Beach

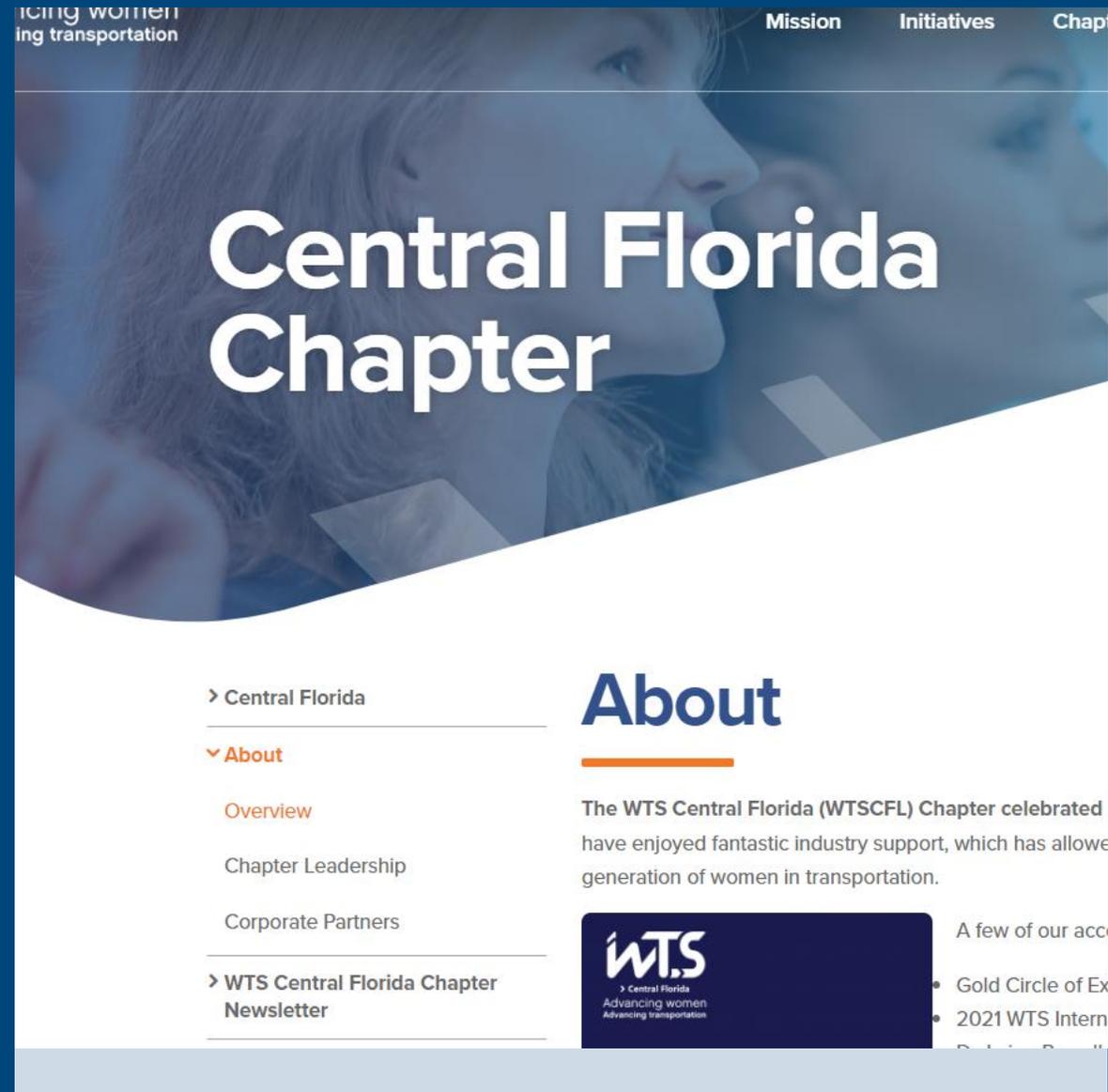


A screenshot of the FDOT website's training resources page. At the top right, there is a navigation menu with "OFFICES", "MAPS & DATA", and "CONTACT". Below the navigation is a section titled "FDOT Automated Quantities" with a yellow background and the text "OpenRoads Designer and Connect Edition Applications". A disclaimer follows: "Disclaimer: This training is based on OpenRoads Designer 10.08.01.33 which is certified for use with the current FDOTConnect workspace. If you have updated OpenRoads Designer to version 10.09, you may experience some performance issues with some of the tools in the exercises contained herein." Below this is a list of training topics: "FDOTConnect CADD Essentials", "FDOTConnect Design Survey Workflow", "FDOTConnect Existing Modeling", "FDOTConnect Roadway Design 2D Basics", "FDOTConnect Roadway Design 3D Modeling", "FDOTConnect Plan Development Workflows", "FDOTConnect Pond Design for Drainage", "FDOTConnect Drainage for Design", "FDOTConnect Traffic Plans", and "FDOTConnect Automated Quantities". To the right of the list is a graphic for the "TRANSPORTATION SYMPOSIUM" featuring a hexagonal grid of icons representing various transportation and design elements, including a bridge, a traffic light, a palm tree, a drone, and a surveying instrument. At the bottom of the screenshot is a large illustration of a desk with a laptop displaying the ACEC FDOT logo, a clock, a car, and other office-related icons.

YOUR TURN



Learn More About Women in Transportation



The screenshot shows a website for the Central Florida Chapter of the Women in Transportation Society (WTS). The page features a navigation menu with 'Mission', 'Initiatives', and 'Chapters'. The main heading is 'Central Florida Chapter'. A sidebar menu includes 'Central Florida', 'About', 'Overview', 'Chapter Leadership', and 'Corporate Partners'. The 'About' section is expanded, showing a paragraph about industry support and a list of achievements including 'Gold Circle of Excellence' and '2021 WTS International'. The WTS logo is also visible.

Advancing women in transportation

Mission Initiatives Chapters

Central Florida Chapter

- > Central Florida
- > **About**
 - Overview
 - Chapter Leadership
 - Corporate Partners
- > WTS Central Florida Chapter Newsletter

About

The WTS Central Florida (WTSCFL) Chapter celebrated have enjoyed fantastic industry support, which has allowed generation of women in transportation.

A few of our acc

- Gold Circle of Ex
- 2021 WTS Intern



YOUR TURN





PROCUREMENT SERVICES UPDATE

Michelle Sloan
Procurement Services Manager

YOUR TURN





CONSULTANT PROJECT MANAGEMENT UPDATE

Ed Kestory, P.E.

District Consultant Project Management Engineer



THE NEW PROJECT MANAGERS IN CPM



Elizabeth
"Liz"
Bartell



Tyler
Burgett



Bitia
Hooman



Stefan
Levine



Randall
"Randy"
Turner



YOUR TURN





IT'S ALL ABOUT SPEED

In this section Roadway Design Engineer Naziru Isaac will discuss the difference between design speed and target speed, and which one should be used. He will also provide information on lessons learned regarding potential speed management techniques.



DESIGN SPEED OR TARGET SPEED?



Design Speed – the speed used to set project standards and roadway design criteria. For RRR projects, this speed is set by the original construction as-built plans



Target Speed – the highest speed at which vehicles should operate within the corridor based on context. The target speed should be consistent with multi-modal activity to provide mobility and safety for all users.



Posted Speed – maximum speed allowed as designated by signage. This is the legally enforceable speed.

As a rule, use DESIGN SPEED for criteria, standards and documentation

DESIGN SPEED OR TARGET SPEED?

Use DESIGN SPEED to:

- Evaluate existing corridor features and context
- Complete design documentation
 - Justification for exceptions and/or variations of existing deficient elements (e.g., existing conditions that don't meet current criteria for original design speed but are not being changed in the current project)



Use TARGET SPEED to:

- Evaluate and design potential countermeasures to achieve target speed
- Design documentation
 - Justification for variations from the original design speed criteria



WHAT ABOUT POSTED SPEED?

Existing vs. Proposed POSTED SPEED:

- In general, if there are enough geometric changes being incorporated into the project with the Target Speed, PROPOSED POSTED SPEED may be the same as TARGET SPEED
 - Need to bring this topic up during Collaboration Meeting
- In general, if the project is not implementing enough geometric changes, PROPOSED POSTED SPEED should remain as is



TYPICAL SECTION DOCUMENTATION – WHAT NOT TO DO

TRAFFIC DATA

CURRENT YEAR = 2020 AADT = 12,400

ESTIMATED OPENING YEAR = 2023 AADT = 12,700

ESTIMATED DESIGN YEAR = 2043 AADT = 15,200

K = 1% D = 50.96% T = 13.92% (24 HOUR)

DESIGN HOUR T = 13.92%

EXISTING DESIGN SPEED = 55 MPH

PROPOSED DESIGN SPEED = 45 MPH

EXISTING POSTED SPEED = 55 MPH

PROPOSED POSTED SPEED = 45 MPH

TARGET SPEED = 45MPH

YOUR TURN



SPEED MANAGEMENT COUNTERMEASURES

What's working and what
lessons have we learned?



COLLABORATION PROCESS REMINDERS

Target Speed Determined

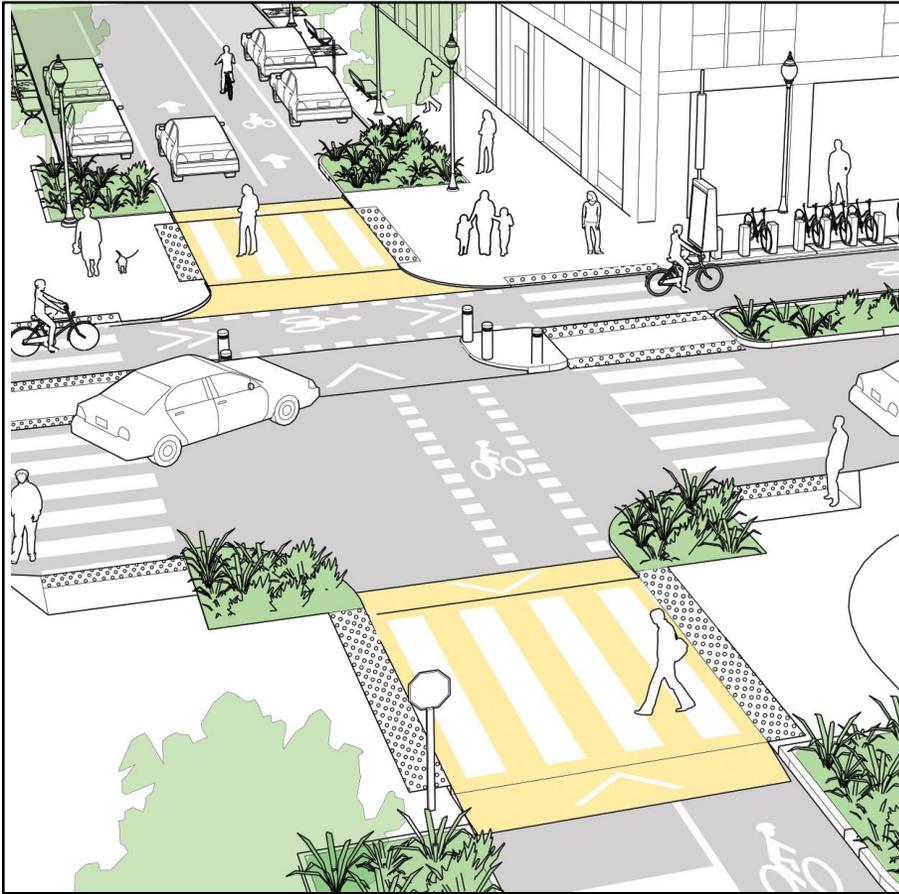
Safety Analysis

Collaboration Mtg with FDOT

Local Coordination

Finalize Scope with FDOT

POTENTIAL COUNTERMEASURES



- Raised crosswalks and raised intersections
- Chicanes – horizontal deflections
- Lane narrowing
- Landscape for speed management
- Roundabouts
- Speed tables

RAISED CROSSWALKS AND RAISED INTERSECTIONS

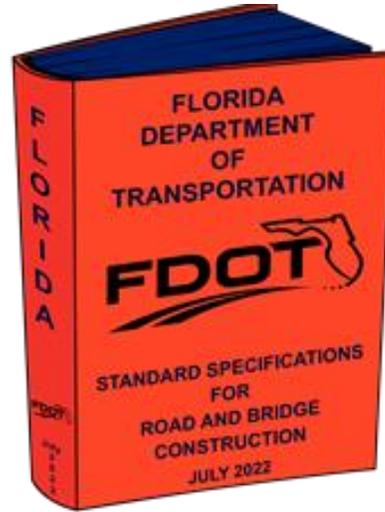


CHICANES AND HORIZONTAL DEFLECTIONS



MSP'S/TSP'S AND DEVELOPMENTAL SPECS

Remember to begin work on any new specification needs early in the project to maintain schedules



YOUR TURN





Mark Trebitz, P.E.
Project Development Manager

SMART SCOPES

PILOT PROJECTS

EVOLUTION OF SCOPING

The *NEED* for Smart Scopes is to alleviate the pitfalls of 4P scopes
(4P - Priority Projects Programming Process)

- Too Prescriptive:

- Limit EOR innovation or major changes to the scope
- EORs had to strictly follow or defer to the scope
- Deviations or changes to the original scope resulted in Multiple SAs

- Not Dynamic / Flexible Enough:

- Scope changes needed to account for changing:
 - FDM criteria & Department priorities
 - Community vision/priorities ----- Community leaders/elected officials
- Scope changes resulted in Multiple SAs or schedule impacts

EVOLUTION OF SCOPING

The **PURPOSE** of Smart Scopes is to create a less prescriptive scope that is more adaptable to the current criteria and Department needs while providing a framework for the EOR to creatively solve issues and design within.

- Encourage **consultant EOR innovation** no longer limited by the detailed prescriptive scope
- Encourage creative problem solving to **meet current needs** of the Department with the **latest safety solutions**
- Allow **more adaptability** to account for changing community vision, FDM criteria, & Department priorities



END GAME

- Allows for the latest in safety
- Diversification of ideas & innovation
- Increased collaboration
- Increased stakeholder communication

SMART SCOPE EXAMPLE

S.R. 500 Mills to College – FY23 Smart Scope Pilot

448735-1 Candidate RRR with Safety Improvements Technical Scope

General Project Information:

State Road Number:	SR 500/44 (US 441)
Section Numbers:	11010-047 & 11010-000
County:	Lake
Project Limits:	Mills St to College Dr https://goo.gl/maps/6eHqW5MWS0jPDh19
Begin MP / End MP:	11010-047: 1.974 to 2.463 (Length 0.489 MI) 11010-000: 6.313 to 10.004 (Length 3.691 MI) Equation 11010-047 MP 2.463 = 11010-000 MP 6.313 Total Project Length 4.180 MI
FM:	448735-1

Existing R/W:	Varies, 50-ft LT & RT (min)			
	Milepost Range	Design Speed	Posted Speed	Target Speed
	1.974 to 2.463	45 mph	45 mph	45 mph
Design/Posted/Target Speed:	6.313 to 7.044	45 mph	45 mph	45 mph
	7.044 to 8.603	50 mph	50 mph	45 mph

Traffic	<ul style="list-style-type: none"> Review and provide recommendations to improve pedestrian and bicycle mid-block crossings between signalized intersections if warranted. <ul style="list-style-type: none"> Evaluate existing unsignalized SR 500 pedestrian crossing at Mills Street and provide improvement recommendations.
Context	
Notes:	Corridor is identified as a safe strides 2 zero corridor on the safety needs list dashboard.

Project limits overlap with a portion of the 238394-3 widening project from Perkins St to SR 44 (Newell Hill Rd/Dixie Ave) which will provide a 6-lane typical section with bicycle lanes and sidewalk. Design and Right of Way acquisition has been completed. The project has been shelved due to lack of UWHC funding. Improvements under this resurfacing project are to be compatible with the ultimate widening design and is to minimize throwaway work.

Roadway:

- Evaluate and recommend appropriate proposed target speed countermeasures and speed management improvements.
- Review abandoned or obsolete driveways for removal.

Drainage:

- Primary goal for improvements along this corridor is utilizing the existing drainage system where feasible.

Multimodal:

- Review existing sidewalk gaps and provide connectivity to improve pedestrian mobility.
 - Realign side street and driveway (where appropriate) pedestrian crossings to be in front of the stop bars.
- Review and provide recommendations to improve pedestrian and bicycle mid-block crossings between signalized intersections if warranted.
 - Evaluate existing unsignalized SR 500 pedestrian crossing at Mills Street and provide improvement recommendations.
- LakeXpress route 1 services the corridor. Analyze and coordinate the location/disposition of bus stops with existing and proposed roadway crossing opportunities. Provide sidewalk connections from existing or proposed sidewalks and ensure stops meet minimum requirements. County states high ridership in the area.

448735-1 Candidate RRR with Safety Improvements Technical Scope

- The existing 4-ft bike lanes and 5-ft paved shoulders serve as the bicycle facility. Evaluate corridor and provide recommendations for enhanced bicycle accommodations.
- Per signage, golf carts are permitted on some local roads, but does not include use of SR 500.

S&PM/Signals:

- There are three existing signalized intersections within the influence of the project limits.
- Lake County has requested video detection.
- Evaluate advanced intersection warning signage or other mitigation strategies at the CR 44 intersection approaches in response to a high number a rear-end collisions as requested by the District Traffic Operations Office.
- Evaluate and include corrective measures at T-intersections with significant crash history.

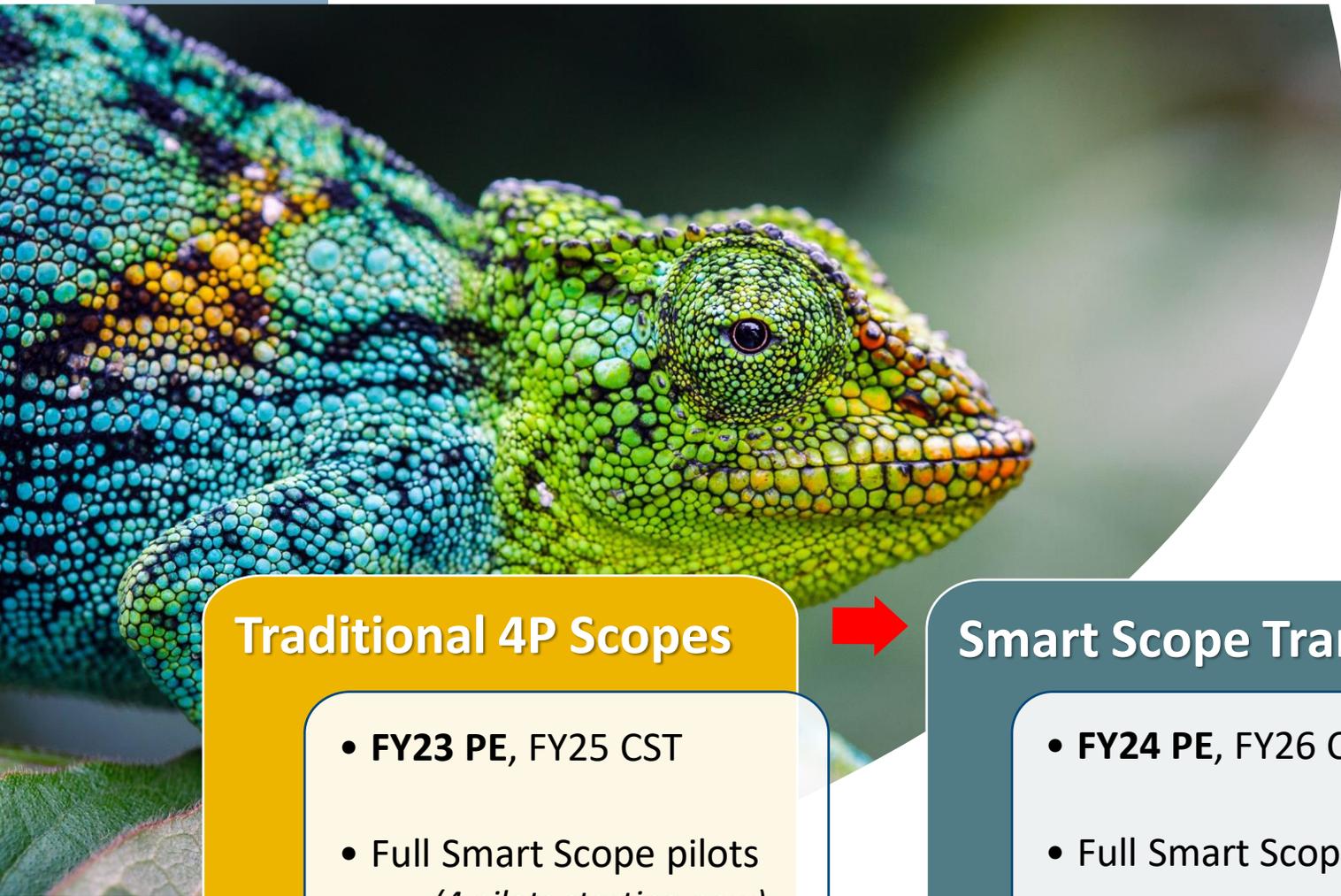
Lighting:

- Existing decorative lighting. Analyze for conformance to lighting criteria, including modifications that may be required for intersection retrofits.

Landscaping:

- Median landscaping is present, incorporate landscaping that promotes traffic calming and appropriate target speed while maintaining or enhancing pedestrian safety.

- Lake County has requested video detection.
- Evaluate advanced intersection warning signage or other mitigation strategies at the CR 44 intersection approaches in response to a high number a rear-end collisions as requested by the District Traffic Operations Office.



IMPLEMENTATION TIMELINE

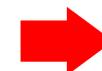
Traditional 4P Scopes

- **FY23 PE, FY25 CST**
- Full Smart Scope pilots
(4 pilots starting now)
- Traditional 4P Scopes



Smart Scope Transition

- **FY24 PE, FY26 CST**
- Full Smart Scope pilots (5)
- Transitional Smart Scope



Smart Scopes

- **FY25 PE, FY27 CST**
- Full Smart Scopes Implementation

FY23 SMART SCOPE PILOTS

448735-1 SR 500 from Mills Street to College Dr

Lake County; PM: Jude Jean-Francios; Ad 8/15/22

448977-1/2 I-95 from SR 514 (Malabar Rd) to Concrete Joint N of SR 519 (Fiske Blvd)

Brevard County; PM: Gene Varano; Ad 8/22/22

448796-1 SR 15/500 from CR 532 to Arthur J Gallagher

Osceola County; PM Kevin Powell; Ad 12/5/22

443814-1 SR 5/US 1 from North of Malabar Rd to North of Myers Rd

Brevard County; PM: Sam Jumber; CSC



TRANSITIONAL SMART SCOPE EXAMPLE

450577-1 Candidate RRR with Safety Improvements Technical Scope

General Project Information:

State Road Number:	SR 527 (N Orange Ave)		
Section Number:	75040102		
County:	Orange		
Project Limits:	(SB only) from N Magnolia Ave to SR 50 (US 17-92/ Colonial Dr) https://geo.pl/mans/U9b28zOzJHgaSKoO6		
Begin MP / End MP:	0.017 – 0.511 (Length 0.494 MI)		
FM:	450577-1		
Existing R/W (min):	30-ft LT & RT		
Design/Posted/Target Speed:	Design 35 mph	Posted 30 mph	Target 25 mph
Traffic Data:	MP 0.017 to MP 0.175: 6,700 AADT with 7.7% trucks MP 0.175 to MP 0.511: 10,000 AADT with 4.4% trucks		
Context Classification:	C6 "Urban Core"		
Notes:	There are no elements included on the Safety Needs List Dashboard for this roadway.		

439066-1 is the Orlando Urban Trail Gap project, which overlaps a portion of the project. It is currently under construction, anticipated completion Summer 2022. Typical section change, special markings, etc. are to be retained by this candidate RRR project.

445220-1 is a RRR project on SR 527 NB (N Magnolia Avenue) currently in design which will include the intersection at MP 0.000. Proposed production date is September 2023.

Roadway:

- Evaluate and recommend proposed target speed countermeasures and speed management improvements. Opportunity to reshape the corridor aligned with the City of Orlando's vision.
 - Refer to City of Orlando's North Quarter Phase 2 Concept.
 - Proposed target speed reduction to 25 mph due to pedestrian crashes.
 - Review the typical section between N Magnolia Ave and Legion Pl for potential alternatives i.e., bike lanes, lane widths, paved shoulder elimination, curb line adjustment, etc. There is approximately 8-ft of underutilized pavement.
- Where possible, reduce radial returns, provide bulb-outs, etc. to accommodate current design and control vehicles while providing enhanced pedestrian crossing opportunities.

Drainage:

- Primary goal for improvements along this corridor is utilizing the existing drainage system where feasible.

Multimodal:

- There is complete sidewalk coverage.
 - Pavers, brick, patterned concrete, etc. of differing styles adjoin curb ramps. Additional coordination may be necessary the maintaining agency.
- Review and provide recommendations to improve pedestrian and bicycle mid-block crossings between signalized intersections if warranted.
- Bus stops are present in both directions, with connections from the sidewalk to the back of curb.
 - Analyze and coordinate with LYNX on the locations of bus stops with existing and proposed roadway crossing opportunities.
- Coordinate with the Orlando Urban Trail Gap Project, part of the Downtown Trail Loop; loop of off-street bikeways that circle the downtown area. The PM is Jenn Rhodes.

450577-1 Candidate RRR with Safety Improvements Technical Scope

S&PM/Signals:

- There are 4 signalized intersections, including those at each end of the project limits:
 - Legion Pl/Garland Ave: pole in the NW quadrant of the intersection shows damage.
- Rail crossing 622179-Y with dynamic envelope markings. Coordinate signals.

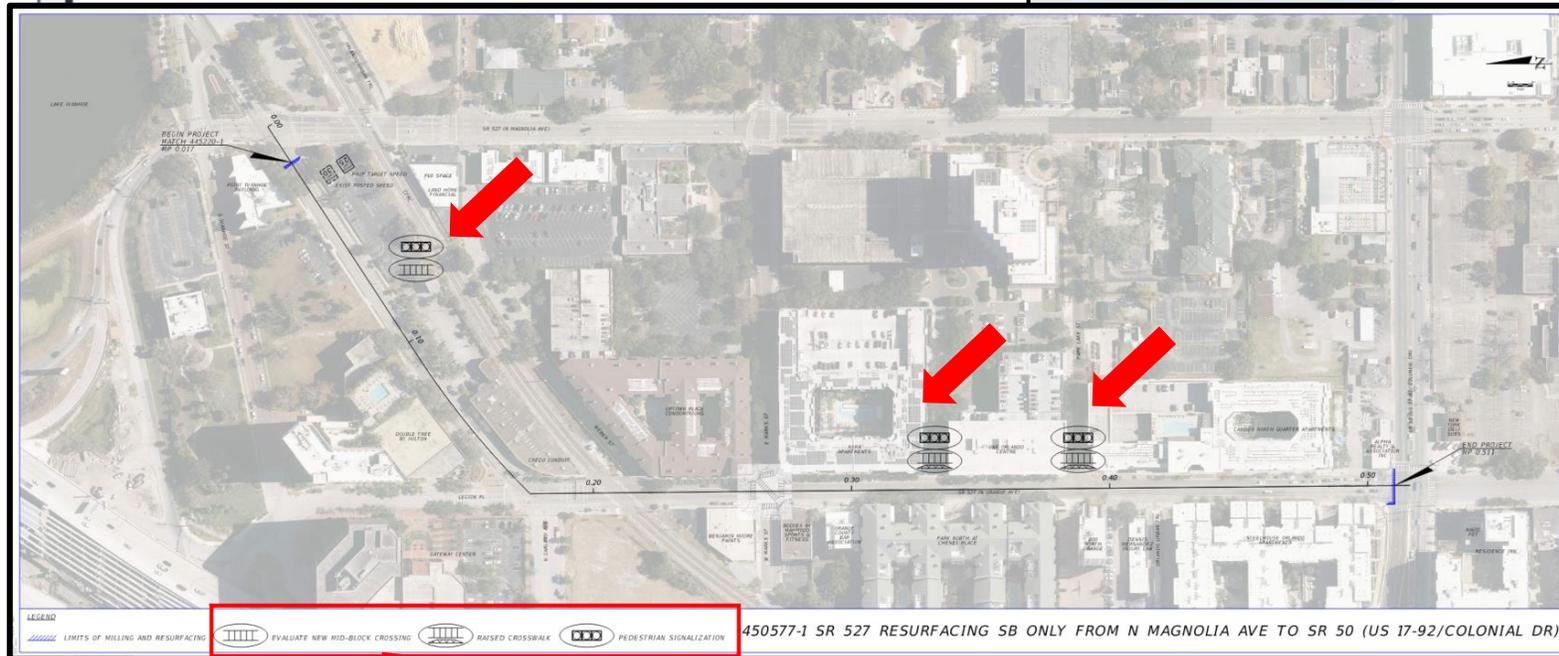
Lighting:

- Decorative and standard roadway lighting is present. Analyze for conformance to lighting criteria, including modifications that may be required for intersection retrofits.

Landscaping:

- Landscaping is present, incorporate landscape that promotes traffic calming and reduces speeds while maintain or enhancing pedestrian safety.

S.R. 527 Magnolia to Colonial (S.R. 50)
-- FY 24 Design CA



SMART SCOPING PROCESS

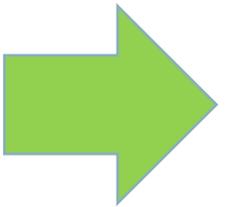
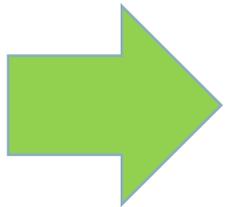
1. Identification of project
2. Confirm and identify funding
3. Corridor and safety analysis

4. Internal Collaboration Meeting #1
5. Community vision outreach

6. Create Smart Scope

7. Community vision outreach
8. Internal Collaboration Meeting #2

9. Evaluate path forward



Target Speed
Concurrence/Input

Scope/Countermeasure
Concurrence

PROCESS CONTINUED

DESIGN:

1. Initial Consultant Acquisition Activities
(TRC Identified, Marketing Meeting, Ad)
2. Consultant Acquisition
(LOIs / Shortlist / Q&A Meeting / TRC Recommendation / Selection)
3. DESIGN (PE Begin) *(Two options based on project complexity / risk)*

OPTION 1: One Phase of Design Only

- Phase 1 → *when more straightforward, lower risk*
 - *Limiting Amount Contract*
 - *Analysis and Preliminary Work*
 - *Collaboration Mtg #3 PowerPoint*
 - *Analysis, Design & Plans*

OPTION 2: Two Phases of Design

- Phase 1 →
 - *Limiting Amount Contract*
 - *Analysis & Preliminary Work*
 - *Collaboration Mtg #3 PowerPoint*
- Phase 2 →
 - *Plans Production*

SMART SCOPES – PHASE 1



PHASE 1

- **Analysis & Preliminary Work**
 - *Field Review - Safety Analysis - Data Gathering*
- **Local Stakeholder Coordination**
- **Alternatives analysis**
 - *Countermeasures for Target Speed*
 - *Innovation - Creativity*
 - *Feasibility of Solutions*
- **Design Analysis Recommendation PowerPoint**
- **Collaboration Meeting**

SMART SCOPES – PHASE 2



- **Now Have a Selected Alternative from Phase I**
- **Develop units/staff hours based on the approved alternative**
- **Negotiate**
- **Design & Plans Production**

WE WANT TO HEAR FROM YOU

CELINE BOUNDS

Scoping Manager

386-943-5399 or Celine.Bounds@dot.state.fl.us

MARK TREBITZ, P.E.

Project Development Manager

386-943-5157 or Mark.Trebitz@dot.state.fl.us

ERIC BRULE, P.E.

HNTB – In-House Consultant

386-943-5567 or Eric.Brule@dot.state.fl.us



YOUR TURN



Break





OPPORTUNITIES FOR EXCELLENCE

Leading Pedestrian Intervals
Tricia Ballard, P.E.
TSM&O Engineer - Arterials

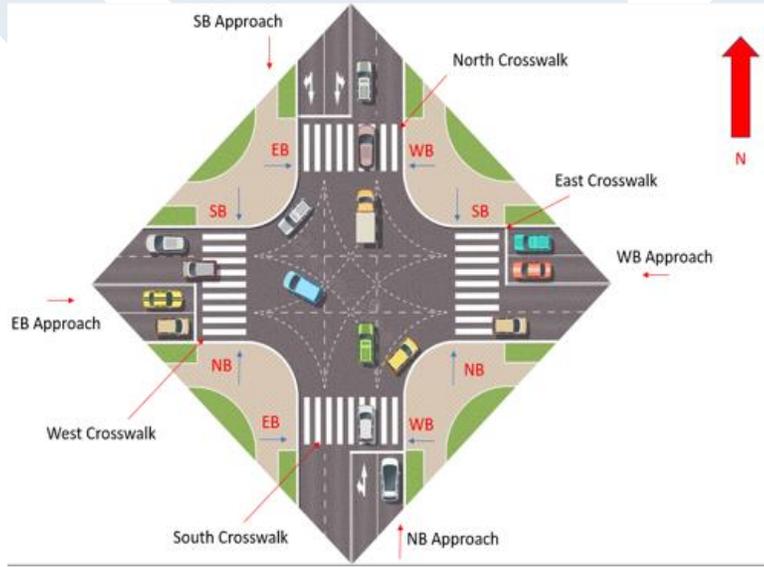
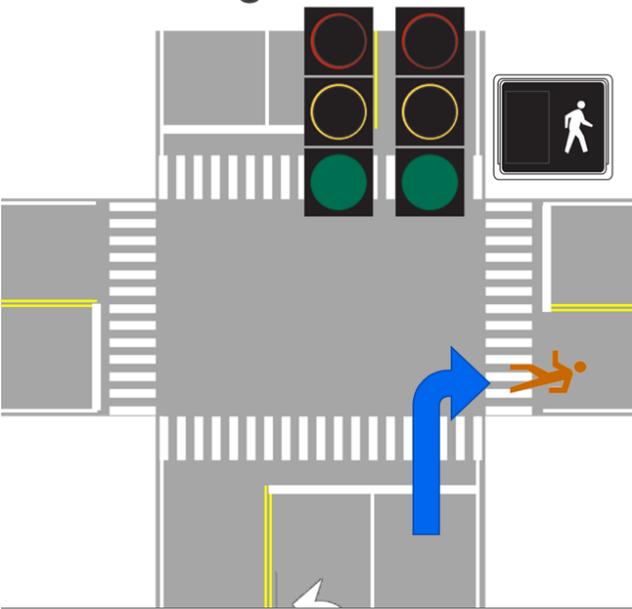
LPI EVALUATION PROCESS

1. Traffic Operations has created an evaluation spreadsheet for calculating LPIs
2. Evaluation sheet based on criteria in the Traffic Engineering Manual (TEM) Section 3.11

Leading Pedestrian Interval (LPI) Engineering Evaluation																																																													
Location:																																																													
System:	MP: County: City:																																																												
Summary of Existing Conditions																																																													
Main Street																																																													
Minor Street																																																													
Maintaining Agency																																																													
Adjacent Land Use																																																													
Intersection Control																																																													
Lighting																																																													
Main Street	Cross Section																																																												
	Contact Classification																																																												
	Posted Speed																																																												
	Roadway Alignment																																																												
	Left Turn Signal Phasing																																																												
Minor Street	Blank-Out Signage on the																																																												
	Pedestrian Crossing																																																												
	Concurrent Pedestrian																																																												
	Cross Section																																																												
	Contact Classification																																																												
LPI's may be implemented at the discretion of the DTOE in Contact Classification C21, C4, C5, and C6. In Contact Classification C1, C2, C3R, and C3C, the engineer must conduct additional analysis to determine if an LPI is appropriate.																																																													
<p>Page 1</p> <p>Request for LPI: crosswalk, rear mirror, or other risk analysis indicating conflict between turning vehicle and pedestrian.</p> <p>Multiple intersections where pedestrians may benefit from additional crossing time ahead of turning vehicle.</p> <p>Visibility issue blocking driver's view of pedestrian due to obstructions or poor sight distance.</p> <p>Citizen complaint about turning vehicles not yielding to pedestrian or observation of this type of violation.</p> <p>Intersection Geometry:</p> <p>Where there is a transportation demand and/or there is high pedestrian movement.</p> <p>Would the LPI increase vehicle or pedestrian delay?</p>																																																													
<table border="1"> <thead> <tr> <th>Crosswalk Location</th> <th>LPI Recommended</th> <th>Phase</th> <th>Movement</th> <th>Distance (ML)</th> <th>Calculated LPI</th> <th>Rounded LPI</th> <th>Recommended LPI</th> </tr> </thead> <tbody> <tr> <td rowspan="2">North</td> <td rowspan="2"></td> <td rowspan="2"></td> <td>EB</td> <td>0.00</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> </tr> <tr> <td>WB</td> <td>0.00</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> </tr> <tr> <td rowspan="2">South</td> <td rowspan="2"></td> <td rowspan="2"></td> <td>EB</td> <td>0.00</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> </tr> <tr> <td>WB</td> <td>0.00</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> </tr> <tr> <td rowspan="2">East</td> <td rowspan="2"></td> <td rowspan="2"></td> <td>NE</td> <td>0.00</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> </tr> <tr> <td>SE</td> <td>0.00</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> </tr> <tr> <td rowspan="2">West</td> <td rowspan="2"></td> <td rowspan="2"></td> <td>WE</td> <td>0.00</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> </tr> <tr> <td>SE</td> <td>0.00</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> </tr> </tbody> </table>		Crosswalk Location	LPI Recommended	Phase	Movement	Distance (ML)	Calculated LPI	Rounded LPI	Recommended LPI	North			EB	0.00	0.0	0.0	0.0	WB	0.00	0.0	0.0	0.0	South			EB	0.00	0.0	0.0	0.0	WB	0.00	0.0	0.0	0.0	East			NE	0.00	0.0	0.0	0.0	SE	0.00	0.0	0.0	0.0	West			WE	0.00	0.0	0.0	0.0	SE	0.00	0.0	0.0	0.0
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Formula 3.11.3-1

$$LPI = ML/W$$



Crosswalk Location	LPI Recommended	Phase	Movement	Distance (ML) (ft)	Calculated LPI (sec)	Rounded LPI (sec)	Recommended LPI (sec)
North			EB		0.00	0.0	0.0
			WB		0.00	0.0	0.0
South			EB		0.00	0.0	0.0
			WB		0.00	0.0	0.0
East			NB		0.00	0.0	0.0
			SB		0.00	0.0	0.0
West			NB		0.00	0.0	0.0
			SB		0.00	0.0	0.0

Recommendations

Notes and Final Recommendation: Based on a review of the existing conditions, intersection geometry, traffic volumes, and operations, LPIs should be implemented as noted in the section above.

GUIDELINES FOR LPI IMPLEMENTATION

1. LPIs are not a blanket approach and there are some factors to consider

- Phasing and existing signal heads at the intersection
- It is prudent to hold on implementing an LPI until a 4-section signal head and/or blank out signage is installed
 - Increases the compliance of drivers

2. Phasing

- Permissive lefts
- Protected/permissive lefts with five-section signal heads
- Protected/permissive lefts on one or more approach, with four-section (FYA) signal heads
- Protected-only lefts on both approaches

LEFT TURN PHASING WITH LPIs

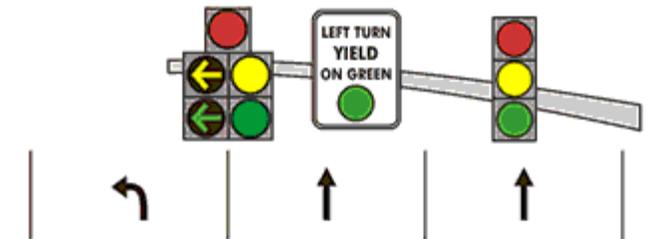
1. Permissive lefts on both approaches
 - If there are two ped crossings (e.g., P4 and P8), then a call on one crossing should be tied to the other (for example, P4 calls P4 and P8; P8 calls P8 and P4)



LEFT TURN PHASING WITH LPIS

2. Protected/permissive lefts, with five-section signal heads

- Discourage considering LPI for crosswalks crossing the side streets (typically for P2 and P6)
- If left turn volumes are unbalanced for side street movements, LPI should not be considered
 - Implementing an LPI for this type of scenario leads to the potential for pedestrians to be left vulnerable in the crosswalk since the left turn phases could terminate at different times
 - Dependent on detection performance



LEFT TURN PHASING WITH LPIs (CONT.)

3. Protected/permissive lefts on one or more approach, with four-section (FYA) signal heads

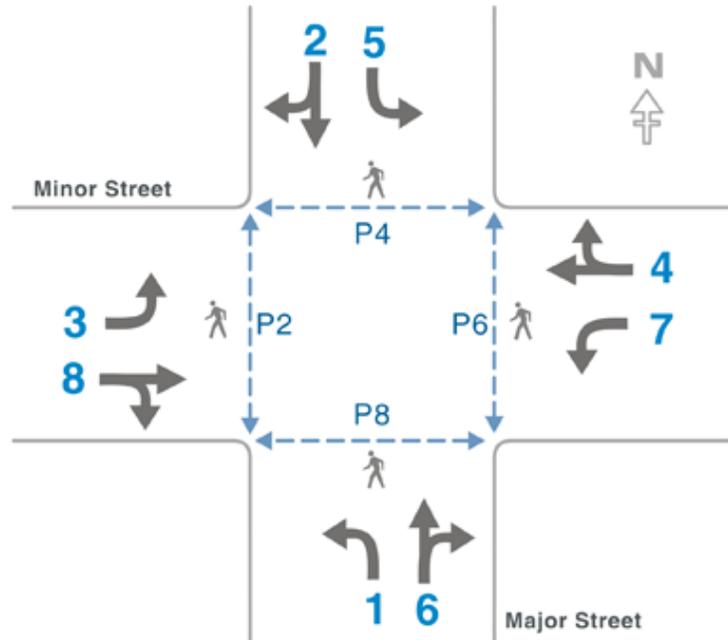
- Consideration should be given to running the left-turns in protected-only mode (i.e. by omitting the FYA), whenever the opposing ped phase is active instead

4. Protected-only lefts on both approaches

- LPI can be used after the opposing left turn phases have terminated and display a red arrow



LPI NOTES ON SIGNAL PLANS



1. Include a note on the signal plan with the proposed LPI timings
 - Keep in mind that the LPI is a delay of green programmed in the controller; it is **NOT** an extended all-red period and should not be covered in the clearance intervals
2. As part of the note, indicate that the TSM&O Signal team be contacted to implement the LPI
 - Contact 321-257-7244 or 321-257-7243

YOUR TURN





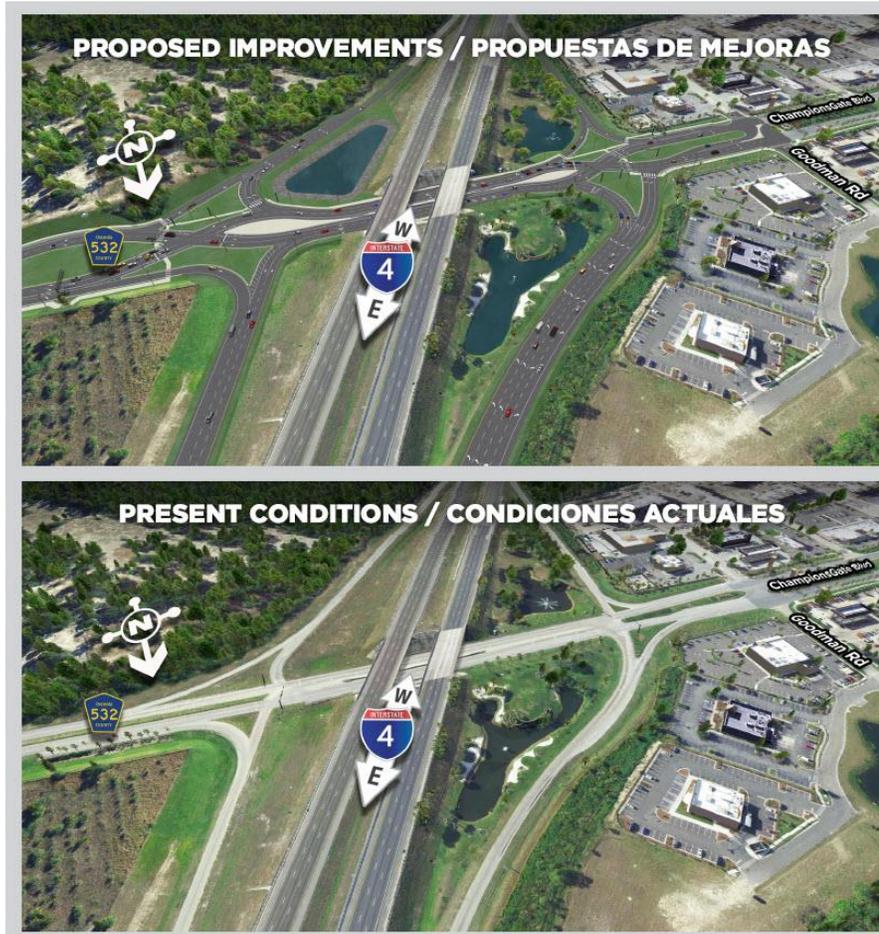
LESSONS LEARNED

Diverging Diamond Interchange

Ryan Flipse, P.E.

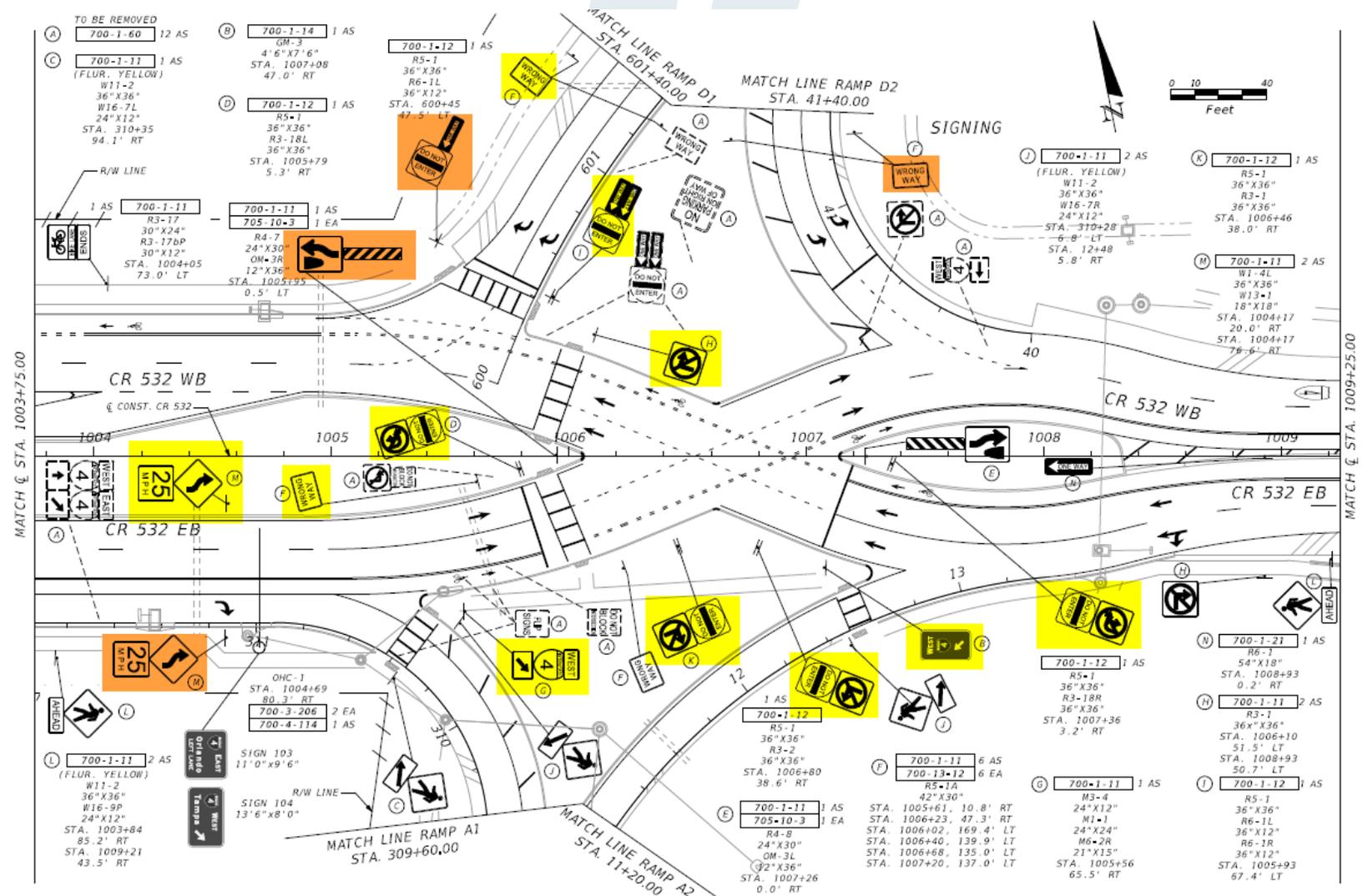
Orlando Operations, Construction Engineer

PROJECT INFORMATION



- Project Location: I-4 at C.R. 532
- Original Cost: \$8,989,132.71
- Designed by Osceola County; let by FDOT
- Construction Start: July 12, 2021
- Anticipated Completion: December 2022

TTCP SIGNS AND STRIPING VS. FINAL CONFIGURATION



REVISIONS			ENGINEER OF RECORD: MICHAEL L. CORNEJO P.E. P.E. LICENSE NUMBER 47734 HNTR CORPORATION 600 CRESCENT EXECUTIVE COURT SUITE 400, LAKE MARY, FL 32746 (407) 805-0355 VENDOR NO. F431623092009	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		SHEET NO. 5-8
NO.	DESCRIPTION	DATE		ROAD NO.	COUNTY	
			CR 532	OSCEOLA	FINANCIAL PROJECT ID 4441874-52-01	

SIGNING AND PAVEMENT MARKING PLAN SHEET (2)



PAVEMENT MARKINGS AND SIGNALIZATION

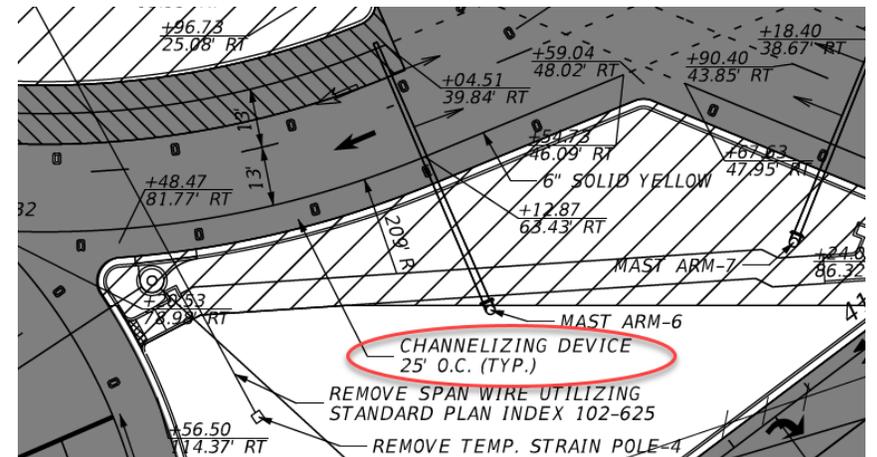


CHANNELIZING DEVICES AND SPACES FOR DELINEATION



TABLE 1
CHANNELIZING DEVICE SPACING

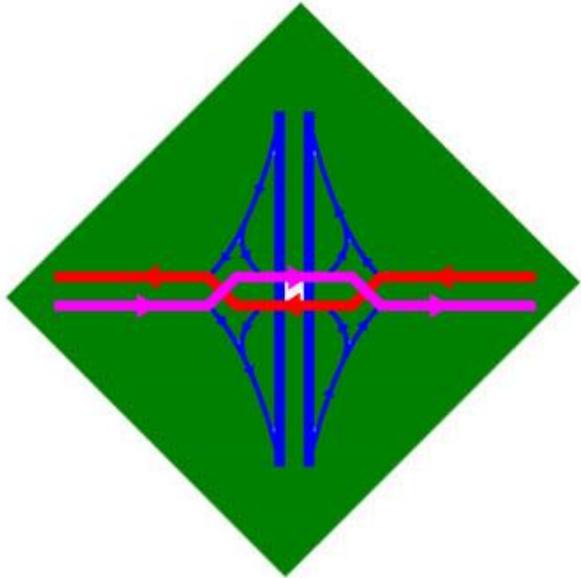
Work Zone Speed (mph)	Max. Spacing (feet)			
	Cones or Temporary Tubular Markers		Type I Barricades, Type II Barricades, Vertical Panels, or Drums	
	Taper	Tangent	Taper	Tangent
≤ 45	25	50	25	50
≥ 50	25	50	50	100



TRAFFIC OPERATIONS AND ITS INFRASTRUCTURE



RAMP SIGNING AND CONSISTENCY AT RAMPS AND APPROACHES



SACRIFICIAL ASPHALT OVERLAY



ADDITIONAL CONSIDERATIONS

- TTCP geometry of the DDI should allow for fewer opportunities for WWD to occur
- Wrong way arrows should also be considered during TTCP
- Temporary lighting needs to be considered in all phases
- Illuminated “No right turns” on mast arms to discourage WWD
- RPMs installed on edge lines
- Off-duty LEO hours



The intersection of ChampionsGate Boulevard and Goodman Road will be reconfigured. This intersection will restrict movements from northbound Goodman Road to right turn only onto eastbound ChampionsGate Boulevard.

The interchange will be converted to a diverging interchange (DDI), which is safer and more efficient. Left turns from C.R. 532 onto I-4 will be moved to the front of oncoming traffic. This change will allow for more signal phases, allowing more time for the interchange per cycle.

3 The westbound I-4 exit ramp will be expanded to four lanes to provide dual right and left turn lanes onto C.R. 532.

4 The eastbound I-4 entrance ramp will be expanded to three lanes to accommodate dual left turns and a single right turn from C.R. 532.

5 The eastbound I-4 exit ramp will be expanded to three lanes to provide dual left turn lanes onto westbound C.R. 532 and a single right turn lane onto eastbound C.R. 532.

6 The westbound I-4 entrance ramp will have two lanes to accommodate single right and left turn lanes from

YOUR TURN





DESIGN BULLETINS & MEMOS UPDATE

Gabor Chiorean, P.E.

QA & Design Services Manager

- RDB22-01 – Roadway Design Bulletin 22-01
- PSM22-01 – Production Support Memorandum 22-01
- RD22-02 – Lighting (see FDM 230)

YOUR TURN





SAVE THE DATE!

The next District Five Quality Forum is scheduled for January 19, 2023.

Hope to see you there!



THANK YOU!

Catalina.Chacon@dot.state.fl.us

www.fdot.gov