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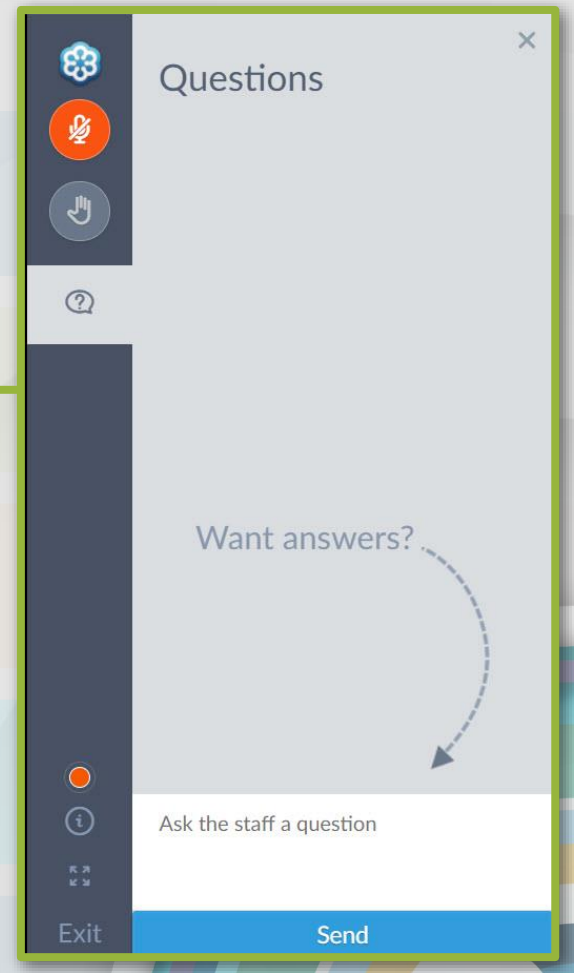

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SAFE SYSTEM APPROACH

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TODAY'S PANELISTS

DeWayne Carver
FDOT State Roadway Design Office

Cheryl Stacks
City of St. Petersburg

Lori Trebitz
FDOT District 5
Roadway Design

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DEWAYNE CARVER

FDOT STATE ROADWAY DESIGN OFFICE

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RDB 21-08 Target Speed for Design Speed Selection

DeWayne Carver, AICP, FDOT Central Office

FDOT

VITAL FEW

Bike/Ped Safety
Intersection Safety
Lane Departure

presented to

presented by

2/5/2021

VFS PED/BIKE TEAM'S TOP PRIORITIES

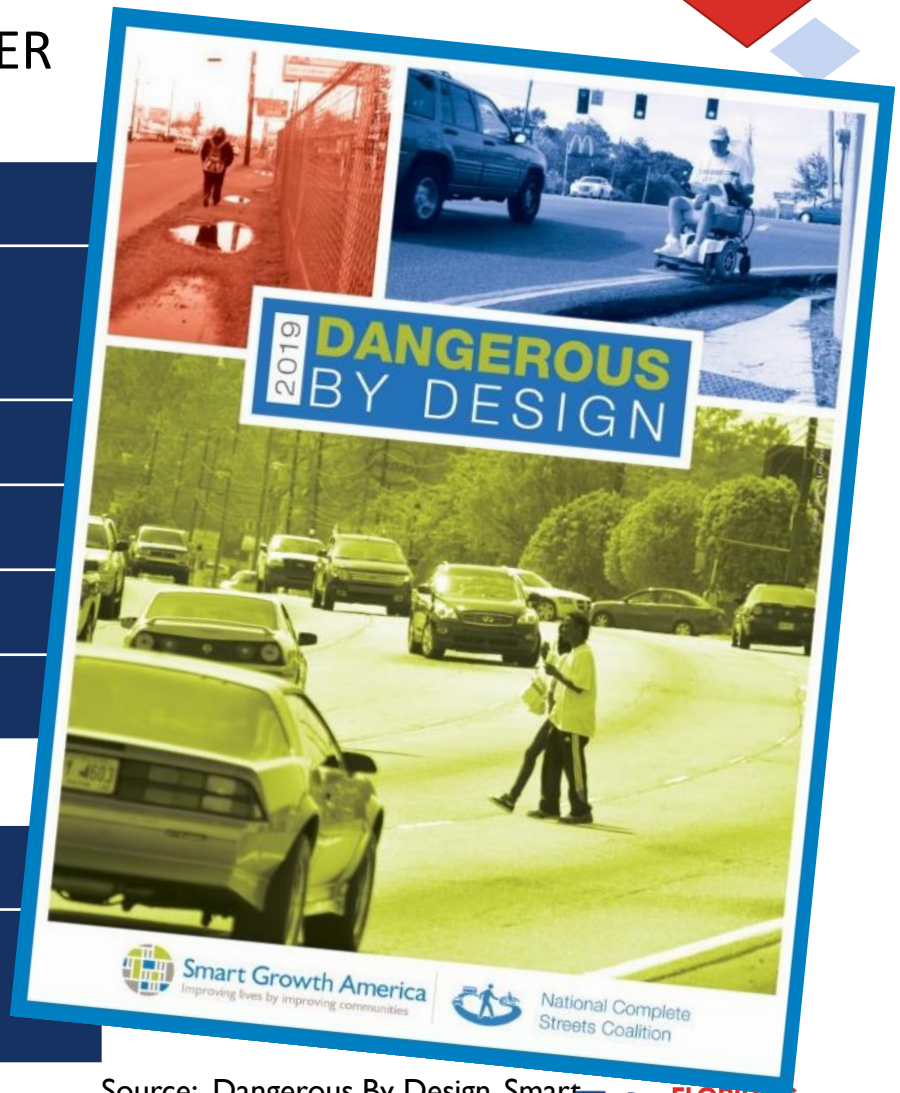
Methods for Reducing Ped/Bike Fatalities and Serious Injuries	Champions	Draft Action Plans Completed	Action Plans To Be Completed
Enhance crossings (midblock and intersections, LPI, PHB, RRFB, turning restrictions, no right turn on red, yield to pedestrian signage)*	John, David, Michael L, Peter, Kris, Misleadys	RRFB, LPI, RTOR	Ped Signal
Design modifications (curb extensions/bulbouts, pedestrian refuge island)	Zabrina, DeWayne	Bulbouts, Ped Refuge Islands	
Work zone safety for ped/bike (Design and Construction)	James, Lavenia, Nicole	✓	
Separated bicycle facilities & District Bike/Ped Master Plans*	Mary O, Michael S, Michael L		✓
Set Target Speeds for all projects*	DeWayne, John		✓
Statewide metrics for ped/bike safety	Safety Office (Brenda and Trenda)		✓

*Single Best Ideas presented at Oct. 15 Executive Meeting

FDOT FLORIDA'S COMPLETE STREETS A 360° APPROACH

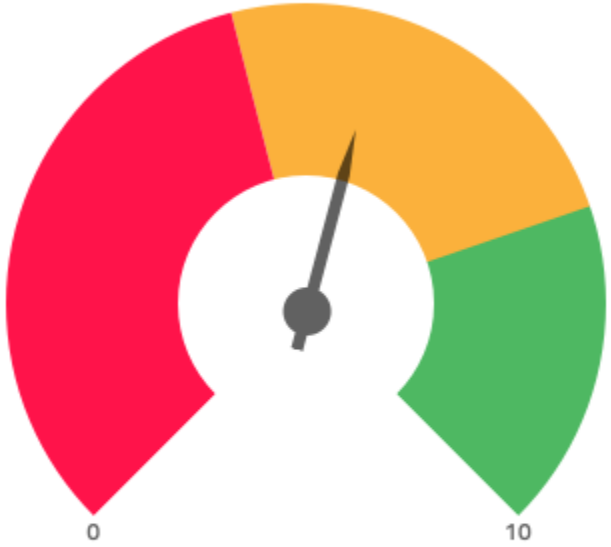
CRITICAL SAFETY NEEDS

	US METRO AREA (2019)	PEDESTRIAN DANGER INDEX (PDI)
1	Orlando-Kissimmee-Sanford, FL	313.3
2	Deltona-Daytona Beach-Ormond Beach, FL	265.4
3	Palm Bay-Melbourne-Titusville, FL	245.0
4	North Port-Sarasota-Bradenton, FL	234.6
5	Lakeland-Winter Haven, FL	230.9
6	Jacksonville, FL	226.2
7	Bakersfield, CA	217.7
8	Cape Coral-Fort Myers, FL	217.0
9	Tampa-St. Petersburg-Clearwater, FL	204.7
10	Jackson, MS	192.0



Source: Dangerous By Design, Smart Growth America, National Complete Streets Coalition

VITAL FEW SAFETY



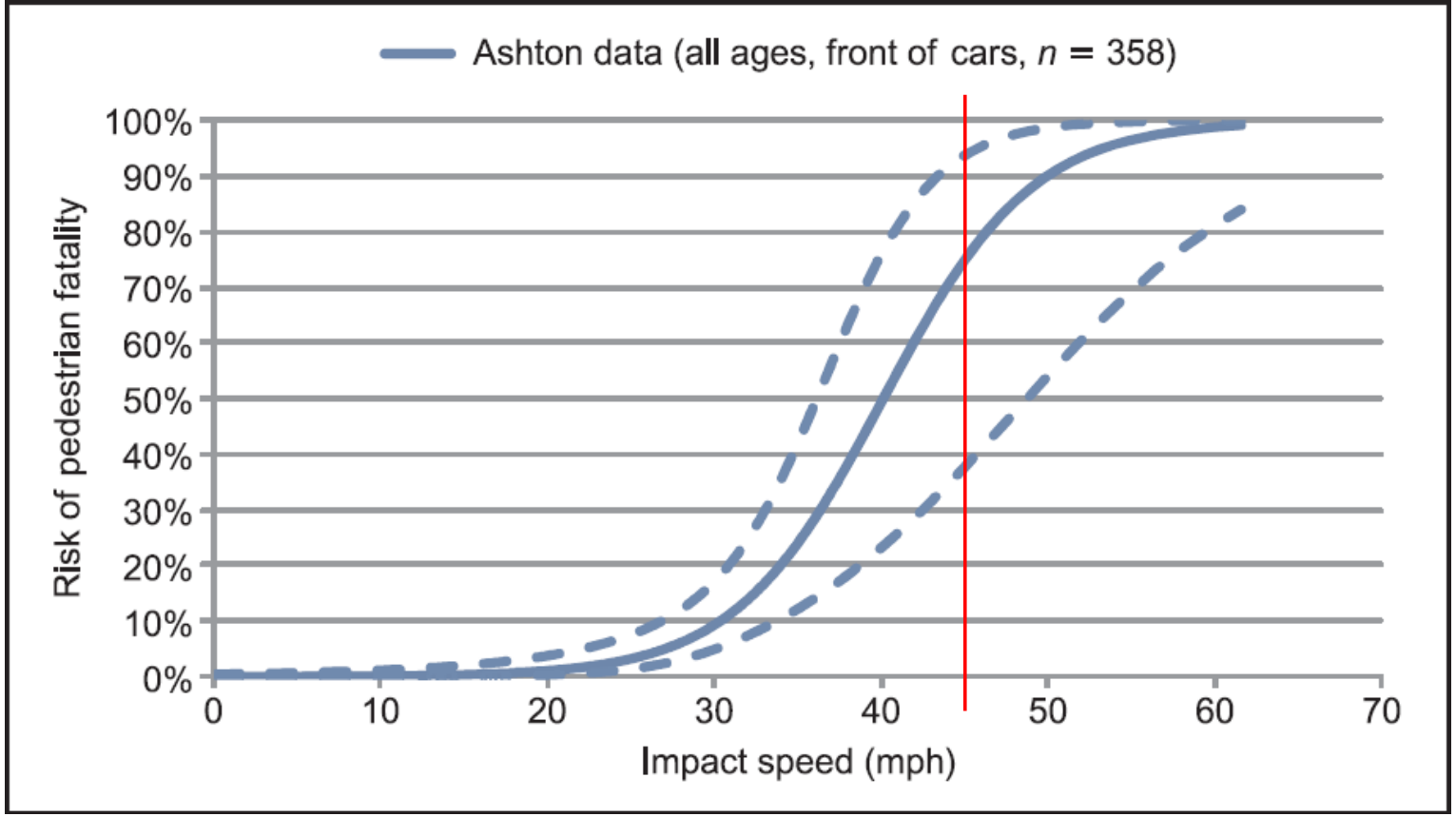
Move the needle!

FDOT FLORIDA'S COMPLETE STREETS A 360° APPROACH

SPEED MANAGEMENT STRATEGIES

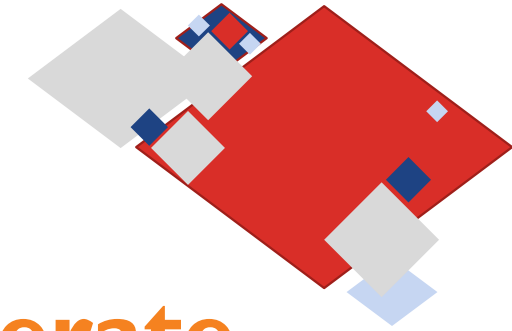
Reducing Speeds Reduces Pedestrian Fatalities

Figure 2.1: Risk of pedestrian fatality calculated using logistic regression from Ashton and Mackay data



FLORIDA'S COMPLETE STREETS
A 360° APPROACH

TARGET SPEED



The highest speed at which **vehicles should operate** on a thoroughfare in a specific context, **consistent with the level of multi-modal activity** generated by adjacent land uses, to provide both mobility for motor vehicles and a supportive environment for pedestrians, bicyclists, and public transit users.

- FDM 202.2.1 and FDOT Speed Zoning Manual

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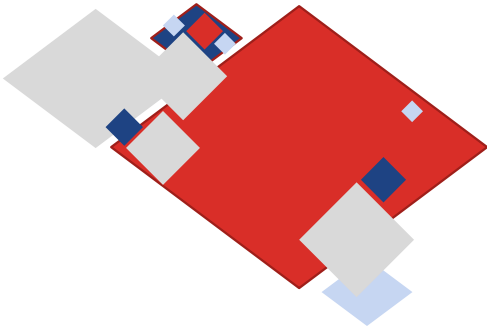
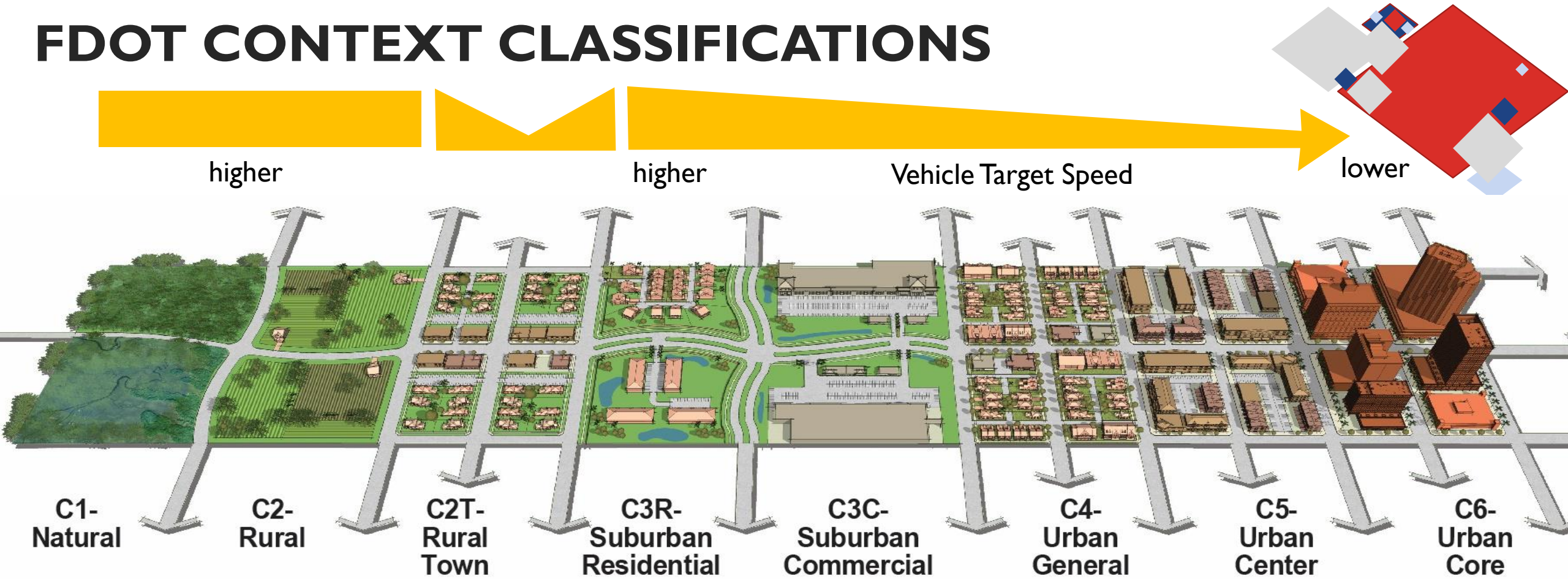
TARGET SPEED



- **Target Speed = Speed Limit = Design Speed**
- Useful in context classifications with a wide range of acceptable design speeds
- Design = Target Speed may have to occur **incrementally over a series of roadway interventions and projects**

FDOT CONTEXT CLASSIFICATIONS



- Context classification
- Transportation characteristics

- Roadway users
- Regional and local travel demand
- Challenges and opportunities of each roadway user

FDOT FLORIDA'S COMPLETE STREETS A 360° APPROACH

WHAT RDB 21-08 DOES

- Recognizes and requires interdisciplinary effort in the selection of a target speed
- Requires establishment of a target speed for any project where a design speed is also required
- Provides some limited guidance on how target speed should be selected
- Recognizes the district as the final decision maker on design speed for any project

Table 201.5.1 Design Speed

Limited Access Facilities (Interstates, Freeways, and Expressways)		
Area	**Allowable Range (mph)**	**SIS Minimum (mph)**
Rural and Urban	70	70
Urbanized	50-70	60
Arterials and Collectors		
Context Classification	**Allowable Range (mph)**	**SIS Minimum (mph)**
C1 Natural	55-70	65
C2 Rural	55-70	65
C2T Rural Town	25-45	40
C3 Suburban	35-55	50
C4 Urban General	30-45	45
C5 Urban Center	25-35	35
C6 Urban Core	25-30	30

Notes:

(1) SIS Minimum Design Speed may be reduced to 35 mph for C2T Context Classification when appropriate design elements are included to support the 35 mph speed, such as on-street parking.

(2) SIS Minimum Design Speed may be reduced to 45 mph for curbed roadways within C3 Context Classification.

(3) For SIS facilities on the State Highway System, a selected design speed less than the SIS Minimum Design Speed requires a Design Variation as outlined in ***SIS Procedure (Topic No. 525-030-260)***.

(4) For SIS facilities not on the State Highway System, a selected design speed less than the SIS Minimum Design Speed may be approved by the District Design Engineer following a review by the District Planning (Intermodal Systems Development) Manager.

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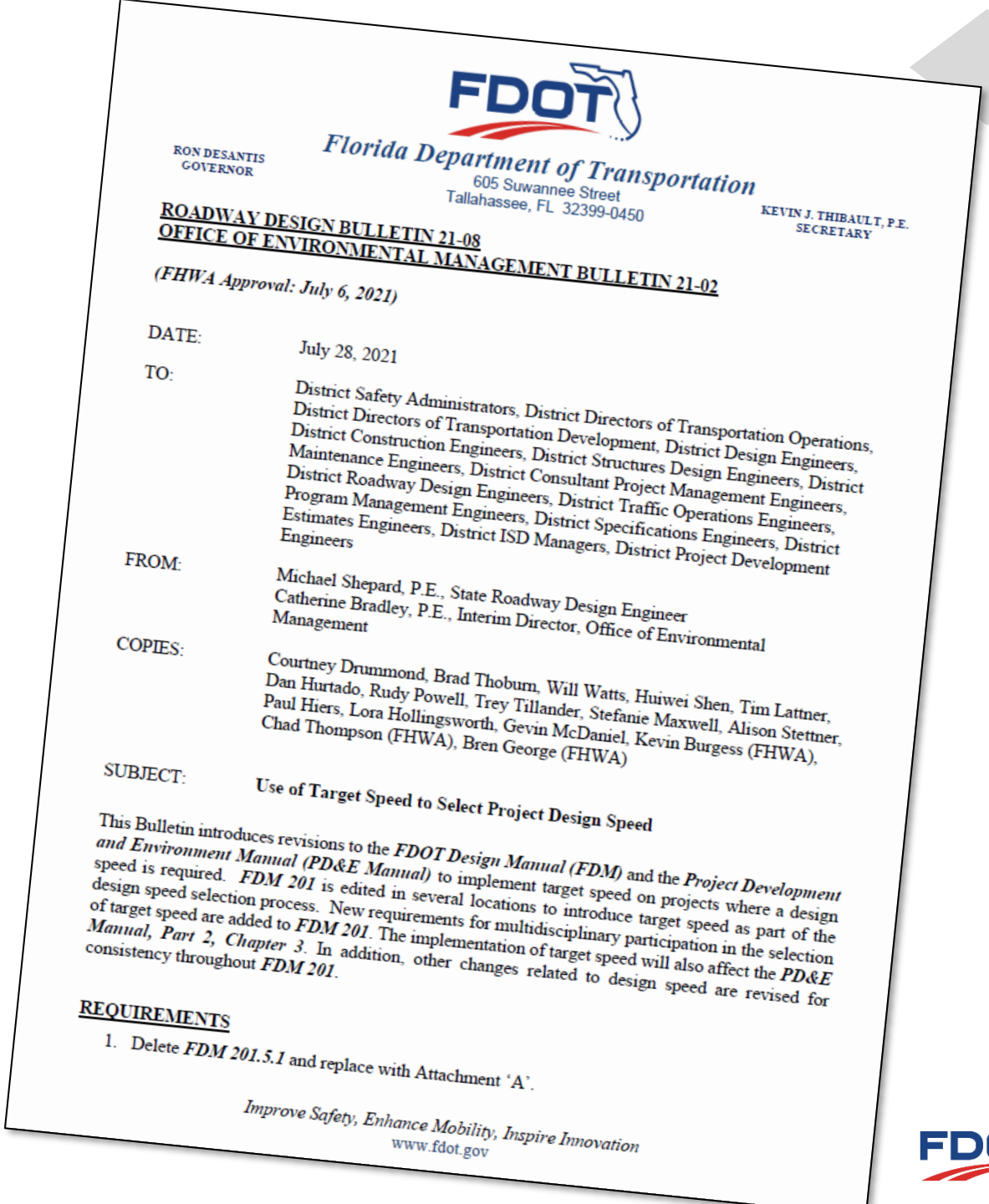
RDB 21-08 REQUIRES SETTING A TARGET SPEED



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Florida Department of Transportation

RON DESANTIS
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

KEVIN J. THIBAULT, P.E.
SECRETARY

ROADWAY DESIGN BULLETIN 21-08
OFFICE OF ENVIRONMENTAL MANAGEMENT BULLETIN 21-02

(FHWA Approval: July 6, 2021)

DATE: July 28, 2021

TO: District Safety Administrators, District Directors of Transportation Operations, District Directors of Transportation Development, District Design Engineers, District Construction Engineers, District Structures Design Engineers, District Maintenance Engineers, District Consultant Project Management Engineers, District Roadway Design Engineers, District Traffic Operations Engineers, Program Management Engineers, District Specifications Engineers, District Estimates Engineers, District ISD Managers, District Project Development Engineers

FROM: Michael Shepard, P.E., State Roadway Design Engineer
Catherine Bradley, P.E., Interim Director, Office of Environmental Management

COPIES: Courtney Drummond, Brad Thoburn, Will Watts, Huiwei Shen, Tim Lattner, Dan Hurtado, Rudy Powell, Trey Tillander, Stefanie Maxwell, Alison Stettner, Paul Hiers, Lora Hollingsworth, Gevin McDaniel, Kevin Burgess (FHWA), Chad Thompson (FHWA), Bren George (FHWA)

SUBJECT: **Use of Target Speed to Select Project Design Speed**

This Bulletin introduces revisions to the ***FDOT Design Manual (FDM)*** and the ***Project Development and Environment Manual (PD&E Manual)*** to implement target speed on projects where a design speed is required. ***FDM 201*** is edited in several locations to introduce target speed as part of the design speed selection process. New requirements for multidisciplinary participation in the selection of target speed are added to ***FDM 201***. The implementation of target speed will also affect the ***PD&E Manual, Part 2, Chapter 3***. In addition, other changes related to design speed are revised for consistency throughout ***FDM 201***.

REQUIREMENTS

1. Delete ***FDM 201.5.1*** and replace with Attachment 'A'.

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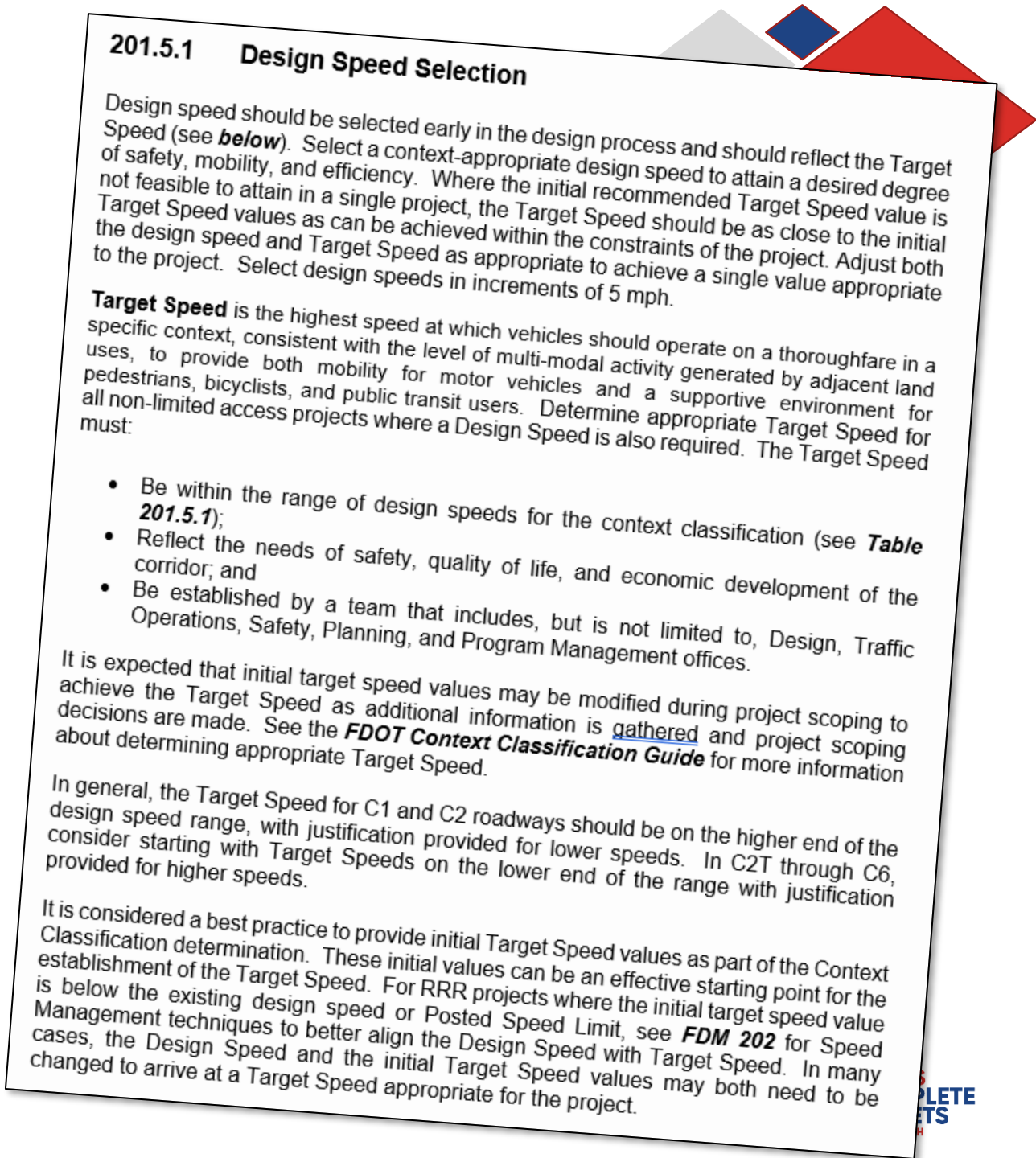
FDM 2022 will include the Target Speed Requirement

Setting Target Speed

- Multidisciplinary exercise
- Must also consider cost constraints as well as engineering challenges
- Will be done project-by-project
- Not a "one speed fits all" situation



201.5.1 Design Speed Selection

Design speed should be selected early in the design process and should reflect the Target Speed (see ***below***). Select a context-appropriate design speed to attain a desired degree of safety, mobility, and efficiency. Where the initial recommended Target Speed value is not feasible to attain in a single project, the Target Speed should be as close to the initial Target Speed values as can be achieved within the constraints of the project. Adjust both the design speed and Target Speed as appropriate to achieve a single value appropriate to the project. Select design speeds in increments of 5 mph.

Target Speed is the highest speed at which vehicles should operate on a thoroughfare in a specific context, consistent with the level of multi-modal activity generated by adjacent land uses, to provide both mobility for motor vehicles and a supportive environment for pedestrians, bicyclists, and public transit users. Determine appropriate Target Speed for all non-limited access projects where a Design Speed is also required. The Target Speed must:

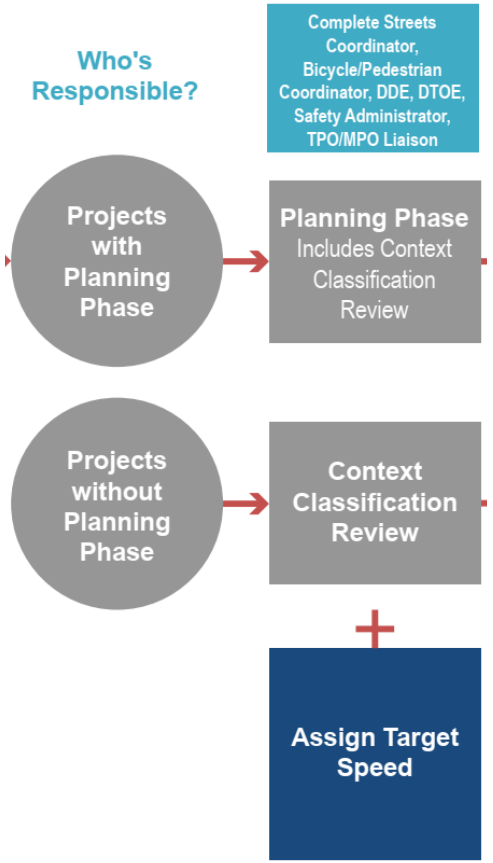
- Be within the range of design speeds for the context classification (see ***Table 201.5.1***);
- Reflect the needs of safety, quality of life, and economic development of the corridor; and
- Be established by a team that includes, but is not limited to, Design, Traffic Operations, Safety, Planning, and Program Management offices.

It is expected that initial target speed values may be modified during project scoping to achieve the Target Speed as additional information is gathered and project scoping decisions are made. See the ***FDOT Context Classification Guide*** for more information about determining appropriate Target Speed.

In general, the Target Speed for C1 and C2 roadways should be on the higher end of the design speed range, with justification provided for lower speeds. In C2T through C6, consider starting with Target Speeds on the lower end of the range with justification provided for higher speeds.

It is considered a best practice to provide initial Target Speed values as part of the Context Classification determination. These initial values can be an effective starting point for the establishment of the Target Speed. For RRR projects where the initial target speed value is below the existing design speed or Posted Speed Limit, see ***FDM 202*** for Speed Management techniques to better align the Design Speed with Target Speed. In many cases, the Design Speed and the initial Target Speed values may both need to be changed to arrive at a Target Speed appropriate for the project.

TARGET SPEED PROCESS



DISCUSSION DRAFT

FDOT FLORIDA'S COMPLETE STREETS A 360° APPROACH

QUESTIONS TO INFORM TARGET SPEED

1 What is the Context Classification (existing and/or future)?

2 What is the allowable design speed range (or minimum for SIS facilities) for that Context Classification? (FDM Table 201.5.1)

Arterials and Collectors			
Context Classification		Allowable Range (mph)	SIS Minimum (mph
C1	Natural	55-70	65
C2	Rural	55-70	65
C2T	Rural Town	25-45	40
C3	Suburban	35-55	50
C4	Urban General	30-45	45
C5	Urban Center	25-35	35
C6	Urban Core	25-30	30

3 What is the current posted speed limit and, if available, current operating speed?

4 What is the current design speed? What is the source/basis for the current design speed? (i.e., Where is this documented?)

5 Where do I begin in the allowable design speed range based on the Context Classification?

- C1/C2 → Begin at the high end of the design speed range (Step 2) and use the following questions (Step 6) to determine/justify a lower target speed.
- C2T, C3R, C3C, C4, C5, C6 → Begin at the low end of the design speed range (Step 2) and use the following questions (Step 6) to determine/justify a higher target speed.

6 Answer the following questions to further inform the Target Speed.

DISCUSSION DRAFT

QUESTIONS TO INFORM TARGET SPEED FOR C2T, C3C, C3R, C4, C5 AND C6

6

Answer the following questions to further inform the Target Speed:

Is transit operating along the corridor?

Yes

Target speed should be *lower* allowable design speed for context classification.

No

Are safety needs identified for this corridor on the Safety Needs List Dashboard

Yes

Review these needs to determine the potential influence on target speed.

No

Are there schools, parks, community facilities, facilities that serve disabled, aging, zero car households, school age or low-income persons or other pedestrian/bicycle generators located along (or within 1/2 mile of) the corridor?

Yes

Target speed should be at the *lower* end of the allowable design speed for context classification.

No

Consider these questions to inform the target speed:

- What is the density of driveways and side streets along the corridor?
- What is the signal density along the corridor?
- What is the curbside demand (e.g., on-street parking, TNC pickup/drop-off, deliveries, etc.) along the corridor?
- Have members of the community requested lower speeds?
- Are other intermodal connections present (trail crossings, etc.)?

If the answers do not indicate a lower design speed, consider a target speed at the *upper or mid* range of the allowable design speed for the Context Classification.

Note: For SIS facilities, if the appropriate target speed is lower than the SIS minimum (FDM Table 201.5.1), a design speed variation should be considered.

QUESTIONS TO INFORM TARGET SPEED FOR C1/C2

6

Answer the following questions to further inform the Target Speed:

Is transit operating along the corridor?

Yes

Target speed should be *lowest* allowable design speed for context classification.

No

Are safety needs identified for this corridor on the Safety Needs List Dashboard?

Yes

Review these needs to determine the potential influence on target speed.

No

Are there schools, parks, community facilities, facilities that serve disabled, aging, zero car households, school age or low-income persons or other pedestrian/bicycle generators located along (or within 1/2 mile of) the corridor?

Yes

Target speed should be at the *lower* end of the allowable design speed for context classification.

No

Consider these questions to inform the target speed:

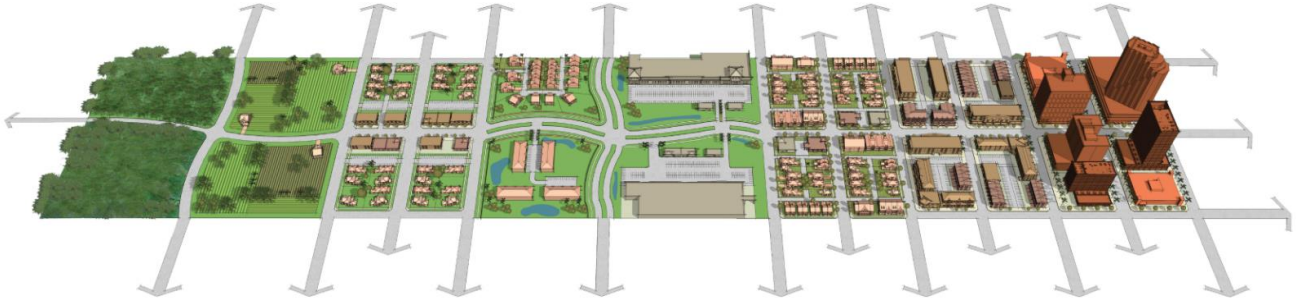
- Are intermodal connections present (trail crossings, etc.) along the corridor?
- Is there bicycle or pedestrian activity along the corridor? If so, are there bicycle and/or pedestrian facilities (sidewalks/trails, etc.)?
- Have members of the community requested lower speeds?
- Is the corridor expected to change/develop in the future?

If the answers do not indicate a lower design speed, consider a target speed at the *upper or mid* range of the allowable design speed for the Context Classification.

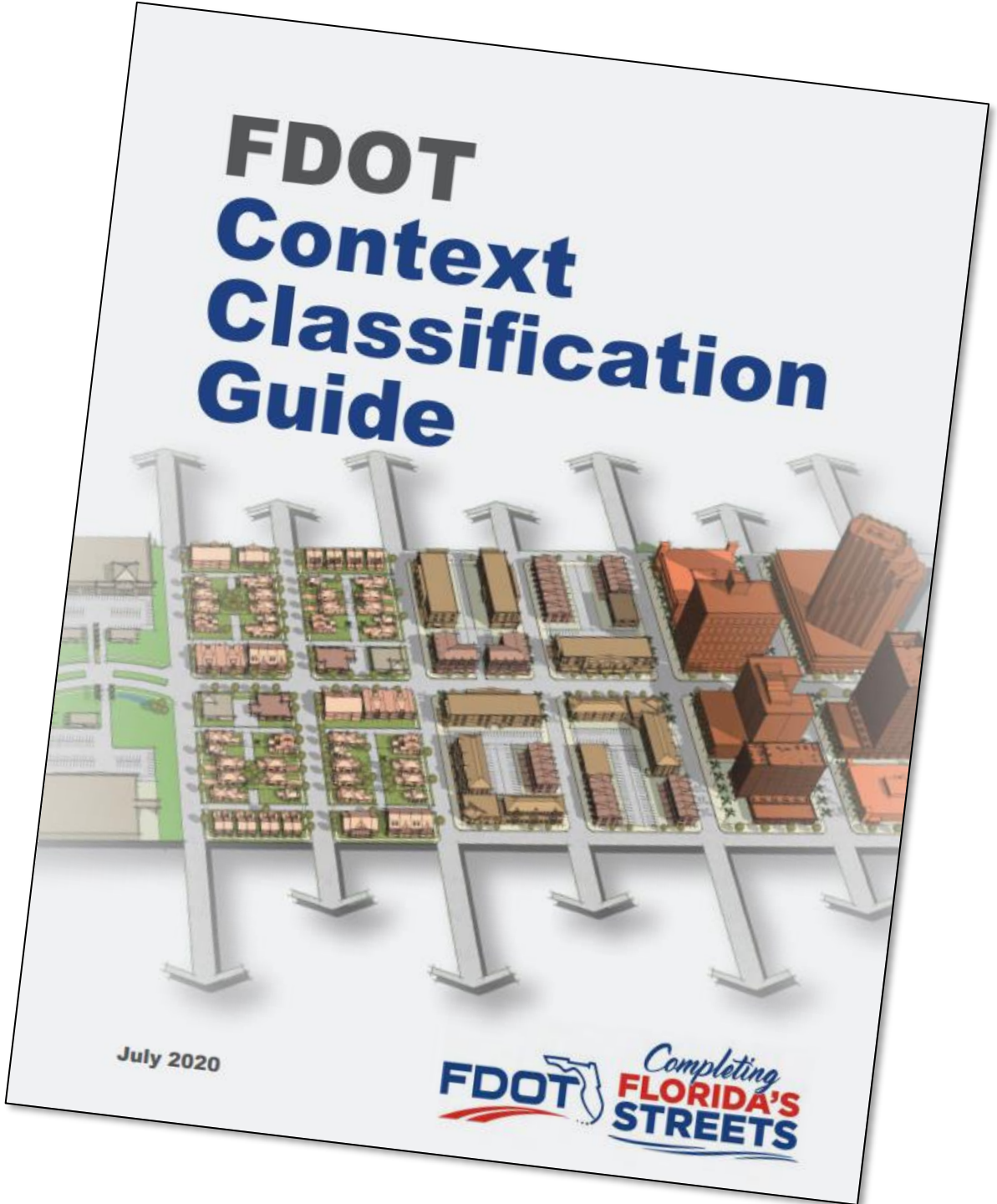
Note: For SIS facilities, if the appropriate target speed is lower than the SIS minimum (FDM Table 201.5.1), a design speed variation should be considered.

EXAMPLE PROCESS SLIDE

- Context Classification determines range of allowable design speeds
- Target Speed determines appropriate design speed **for project**
- FDM 202 provides tools to achieve target speed (but does not provide $$!)
- Final target speed and design speed based on balance of context, project needs, and available resources
- District must make final decision, and locals play critical role
  - Help set the current and future context classification
  - Vision and needs for the project area
  - In some cases, may also assist with funding



FDOT FLORIDA'S COMPLETE STREETS A 360° APPROACH



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A 360° APPROACH

DESIGN SPEED AND TARGET SPEED

Vehicle speed concepts can be classified into four types:

- **Design speed** - the selected speed used to determine various geometric elements of the roadway.[7]
- **Operating speed** - the speed at which drivers are observed traveling during free flow conditions.[8]
- **Posted speed limit** - established by methods described in the ***Speed Zoning for Highways, Roads, and Streets in Florida Manual***. This manual is adopted by Rule 14-15.012, F.A.C.
- **Target speed** - the highest speed at which vehicles should operate in a specific context, consistent with the level of multimodal activity generated by adjacent land uses, to provide both mobility for motor vehicles and a supportive environment for pedestrians, bicyclists, and public transit users.[9]

The concept of target speed is to identify a desired operating speed and develop design strategies and elements that reinforce operating speeds consistent with the posted or proposed speed limit. When identified early in the development process, the consideration of target speed can influence the selection and establishment of the design speed. When considering a target speed, the design team should be aware that the current posted speed limit may not reflect the current operating speed.

The target speed is influenced by context classification and should be selected to provide for both the mobility and safety needs of all anticipated users.

The ***FDM*** provides a range of design speeds for each context classification. Within the range of design speeds shown in **Table 7**, some corridors may benefit from a target speed different from the existing design or posted speeds. For instance, a project in a C4 context classification might benefit from a target speed of 30 mph to support pedestrian movement, even if the existing design speed and/or posted speed of the road is 40 mph, if the area around the roadway has experienced increased development and thus more multimodal activity since the road was designed and constructed.

TABLE 7 FDOT DESIGN SPEEDS AND CONTEXT CLASSIFICATIONS

ARTERIALS AND COLLECTORS		
Context Classification	**Allowable Design Speed Range (mph)**	**SIS Minimum (mph)**
C1 Natural	55-70	65
C2 Rural	55-70	65
C2T Rural Town	25-45	40
C3 Suburban	35-55	50
C4 Urban General	30-45	45
C5 Urban Center	25-35	35
C6 Urban Core	25-30	30

7 American Association of State Highways and Transportation Officials, *A Policy on Geometric Design of Highways and Streets*, 6th Edition, 2011
8 American Association of State Highways and Transportation Officials, *A Policy on Geometric Design of Highways and Streets*, 6th Edition, 2011
9 FDOT Design Manual, 2020.

During initial project planning and discussion, the following questions can help inform target speed selection.

1. What is the context classification (existing and/or future)?
2. What is the allowable design speed based on the context classification?
3. What is the current posted speed limit and, if available, current operating speed? A wide variation between these speeds and the chosen target speed may require more extensive design interventions and may require multiple projects to achieve.
4. What is the Access Management Classification and how does it affect intersection and driveway spacing and modal priority, based on the **Access Management Guidebook**?
5. What is the transportation role of the roadway within the rest of the transportation network? Is it generally being used to access businesses and land uses along the roadway? Is this anticipated to happen in the future?
6. Are there transit stops/transit service along the roadway? What is the relative transit service level along the corridor?
7. Are there special population groups (lower income, 0-car households, transit dependent, aging population, school age children) walking/biking along/across the roadway)?
8. Are there land uses that typically serve or require walking or bicycling trips in or near the corridor? Are there schools, parks, assisted living facilities, or community facilities within ½-mile of the corridor?
9. Does the safety data identify bicycle or pedestrian crashes along the corridor? What is the frequency and severity of auto crashes?
10. What target speed is appropriate based on the needs of our users and the role of the roadway?

Table 8 provides specific examples of how these characteristics can be used to select a target speed within the design speed range.

TABLE 8 TRANSPORTATION CHARACTERISTICS SUPPORTING TARGET SPEEDS

Target Speed	**25 MPH**	**30 MPH**	**35 MPH**	**40-45 MPH**	**50-55 MPH**	**60-70 MPH**
Context Classification	C2T, C5, and C6	C2T, C4, C5, and C6	C2T, C3R, C3C, C4, and C5	C2T (rarely) C3R, C3C, C4 (rarely)	C1 and C2 C3R, C3C (rarely)	C1 and C2
Fronting Uses	Most parcels fronting street	Most parcels fronting street	Some parcels fronting street	N/A	N/A	N/A
Population Density	High	High	Medium to High	Medium	Low	Low
Vulnerable Users	High	High	Medium to High	Medium	Low	Low
Cross Section Elements	On-street parking; sharrows	On-street parking; sharrows	Separated bicycle lanes; buffered bike lanes	Shared use path	Shared use path	Shared use path
Access Classification	6 and 7	6 and 7	5, 6, and 7	3, 4, 5, and 6	2 and 3	2 and 3
Transit Service	Highest frequency and local serving	Highest frequency and local serving	High frequency and local serving	Moderate frequency and local + regional serving	Lower frequency and regional serving	Low to None
Transit Ridership	High	High	Medium to High	Medium to High	Low	Low to None
Pedestrian and Bicycle Generators	High	High	Medium	Sporadic	Low	Low to None
Vehicular Trip Type	>75% Local	>75% Local	>50% Local	>50% Regional	>75% Regional	>90% Regional
Average Trip Length	<3 miles	3 to 5 miles	3 to 5 miles	5 to 10 miles	>10 miles	>10 miles

DESIGNING TO A TARGET SPEED

Ideally, the target speed, design speed, and posted speed would all be the same. On existing facilities, these speeds may be different from each other, which can result in inconsistent driver expectation about the preferred operating speed. A roadway may have been designed at 45 mph, have a posted speed of 40 mph, but now have a target speed of 30 mph. When the current design speed does not match the target speed, roadway design and operation changes are needed to move the design speed and posted speed toward the target speed and help the road "read" more consistently for road users.

Multiple design modifications may be necessary to achieve the target speed (see **FDM 202**.) In some cases, additional projects may be needed to reconfigure the roadway design such that the target speed is achieved over time. Traffic operations interventions, as also described in **FDM 202**, may also be required in order to achieve the target speed.

When the current posted speed is higher than the target speed, the design team may use this feedback-loop process:

1. Set the target speed
2. Using the target speed as the new design speed, make design and operations interventions to achieve target speed. Post the speed limit equal to the target speed. The Project Manager should apply as many strategies as are necessary and can be achieved under the project constraints recognizing that significant speed changes may require more than one project over time.
3. Conduct a speed study in accordance with the Speed Zoning Manual to measure the resulting operating speed and determine if the target speed has been achieved:
   a. If not achieved, go back to step 2
   b. If achieved, proceed to step 4
4. Continue to monitor the speed over time and return to step 1 if the conditions change or to step 2 if the operating speeds exceed the target speed.

If, after all feasible roadway design and operational modifications have been tried and the target speed has not been achieved, the speed limit should be posted per the **FDOT Speed Zoning Manual**. The design team should document the target speed and the roadway should be prioritized for future projects to continue to work toward the target speed. Other resources and project types may be needed to finally achieve the target speed.

SPEED ZONING MANUAL

FDOT Speed Zoning Manual provides guidelines and recommended procedures for establishing uniform speed zones on state, municipal, and county roadways throughout the Florida. The manual encourages the consideration and implementation of facilities that are designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities. Paramount to this effort includes careful evaluation (or re-evaluation) of speed zone locations and proper selection of target speeds and appropriate posted speed limits.

This manual includes guidelines and procedures for performing traffic engineering investigations related to speed zoning in addition to information on the philosophy of speed zoning and the identification of some of the factors to be considered in establishing realistic, safe, and effective speed zones to which meaningful enforcement can be applied.

202 Speed Management

202.1 General

This chapter describes strategies that may be used to achieve desired operating speeds across all context classifications. The strategies described in this chapter are national best practices for low speed facilities and are allowable on arterials and collectors when consistent with the context classification of the roadway.

The ***FDM*** recognizes a range of design speeds for each context classification. For very low speed conditions (35 mph or less) the context classification design speed range indicates the upper end of desirable operating speeds. For instance, the design speed range for C4 is 30-45 mph, but in conditions where on-street parking is present, a 35 mph or lower design speed should be used. Additionally, when the current design speed of a roadway exceeds the allowable range for the context classification, or exceeds the target speed for conditions within the roadway, the strategies described in this chapter can be used to achieve a lower operating speed.

202.1.1 Lane Elimination Projects

Lane elimination projects (a.k.a., "road diets") are intended to reconfigure the existing cross section to allow other uses. This type of project typically does not move existing curbs, but with the removal of a travel lane(s) may provide space to implement the speed management strategies discussed in this chapter. Lane elimination alone is not a speed management strategy but is included here to facilitate the use of other strategies.

See ***FDM 126*** for information on lane elimination projects.

202.2 Speed Management Concepts

Low speed areas will typically have characteristics where conventional controls, such as centerline horizontal curvature, have limited applicability, such as:

- C6, C5 and C2T segments, which may be only a few blocks long and may already be built out, with limited possibility for roadway realignment
- C4 and C3 segments which are only a few blocks long and where reconstruction is not planned (such as a RRR project)
- Any project where interventions are part of a RRR project rather than a reconstruction or realignment, so curb lines are assumed to be fixed.

Table 202.3.1 Strategies to Achieve Desired Operating Speed

Context Classification	Target Speed (mph)	Strategies
C1	55-70	Project-specific; see ***FDM 202.4***.
C2	55-70	Project-specific; see ***FDM 202.4***.
C2T	40-45	Roundabout, Lane Narrowing, Horizontal Deflection, Speed Feedback Signs, RRFBs and PHBs
	35	Techniques for 40-45 mph, plus On-street Parking, Street Trees, Short Blocks, Islands at Crossings, Road Diet, Bulb-outs, Terminated Vista
	30	Techniques for 35-45 mph, plus Chicanes, Islands in curved sections, Textured Surface
	≤ 25	Techniques for 30-45 mph, plus Vertical Deflection
C3R, C3C	50-55	Project-specific; see ***FDM 202.4***.
	40-45	Roundabout, Lane Narrowing, Horizontal Deflection, Speed Feedback Signs, RRFB and PHB
	35	Roundabout, Lane Narrowing, Horizontal Deflection, Speed Feedback Signs, Islands in crossings, Road Diet, RRFB and PHB, Terminated Vista
C4	40-45	Roundabout, Lane Narrowing, Horizontal Deflection, Speed Feedback Signs, RRFB and PHB
	35	Techniques for 40-45mph plus On-Street Parking, Street Trees, Short Blocks, Islands at Crossings, Bulb-outs, Terminated Vista, Road Diet
	30	Techniques for 35-45 mph plus Chicanes, Islands in Curve Sections, Textured Surface
C5	35	Roundabout, On-street Parking, Street Trees, Short Blocks, Speed Feedback Signs, Islands in Crossings, Road Diet, Bulb-outs, RRFB and HAWK, Terminated Vista
	30	Techniques for 35 mph plus Chicanes, Island in Curve Sections, Textured Surface
	25	Techniques for 30-35 mph plus Vertical Deflection
C6	30	Roundabout, On-Street Parking, Horizontal Deflection, Street Trees, Islands in Curve Sections, Road Diet, Bulb-outs, Terminated Vista, Textured Surface
	25	Techniques for 30 mph plus vertical deflection

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October 22, 2021

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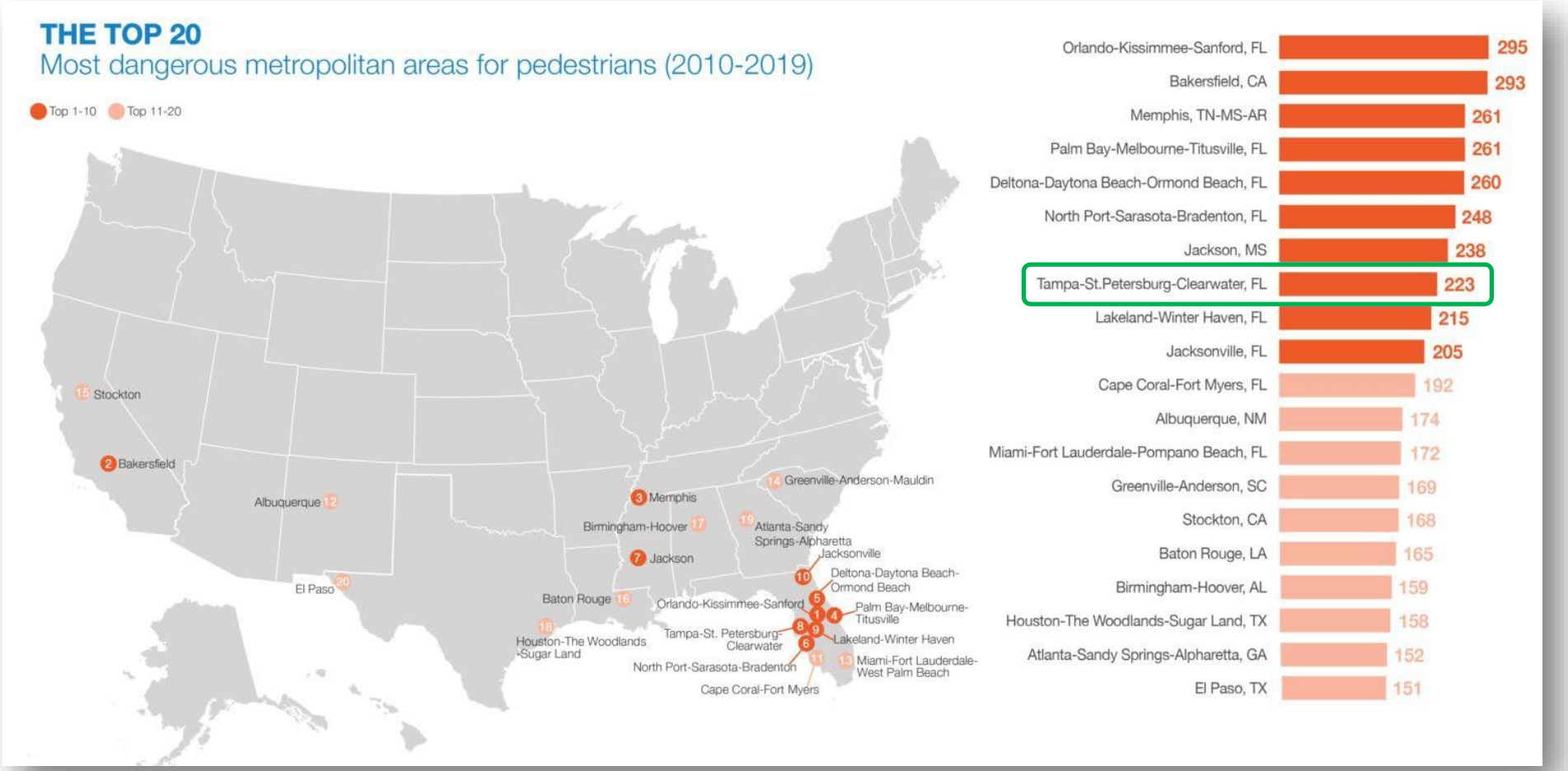
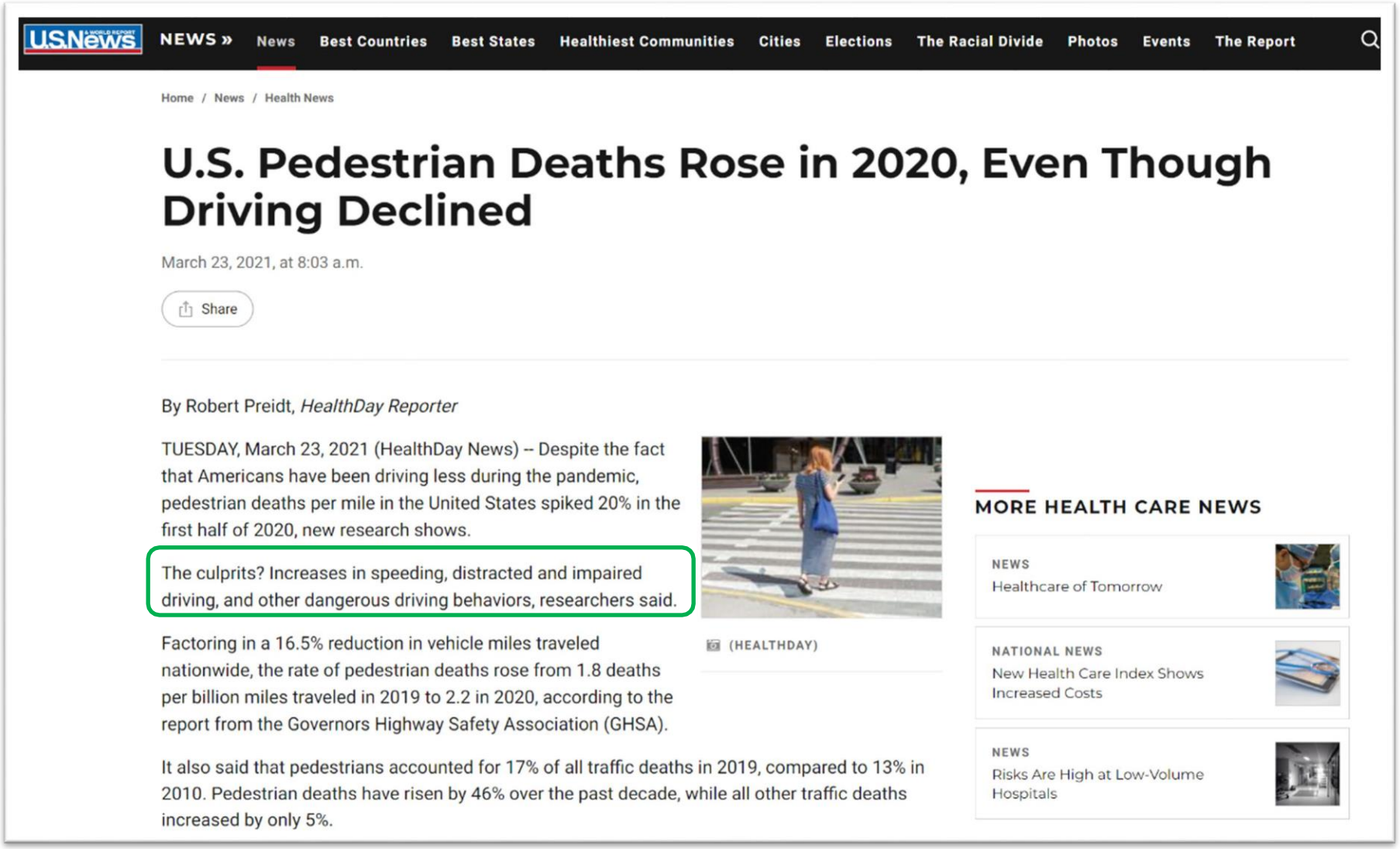
Why Complete Streets? Safety



Source: Smart Growth America - Dangerous by Design 2021

Why Complete Streets? Safety



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U.S. Pedestrian Deaths Rose in 2020, Even Though Driving Declined

March 23, 2021, at 8:03 a.m.

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By Robert Preidt, *HealthDay Reporter*

TUESDAY, March 23, 2021 (HealthDay News) -- Despite the fact that Americans have been driving less during the pandemic, pedestrian deaths per mile in the United States spiked 20% in the first half of 2020, new research shows.

The culprits? Increases in speeding, distracted and impaired driving, and other dangerous driving behaviors, researchers said.

(HEALTHDAY)

Factoring in a 16.5% reduction in vehicle miles traveled nationwide, the rate of pedestrian deaths rose from 1.8 deaths per billion miles traveled in 2019 to 2.2 in 2020, according to the report from the Governors Highway Safety Association (GHSA).

It also said that pedestrians accounted for 17% of all traffic deaths in 2019, compared to 13% in 2010. Pedestrian deaths have risen by 46% over the past decade, while all other traffic deaths increased by only 5%.

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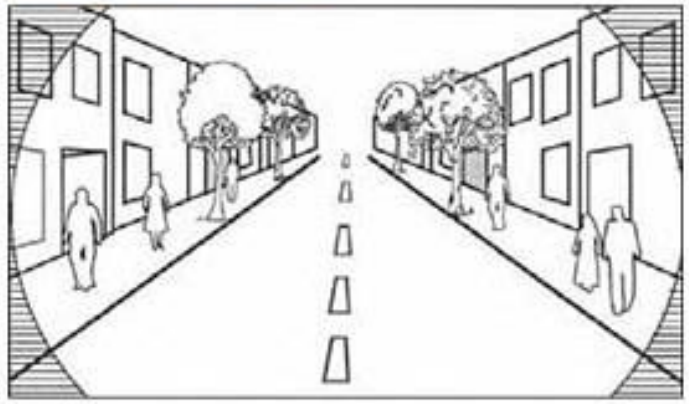
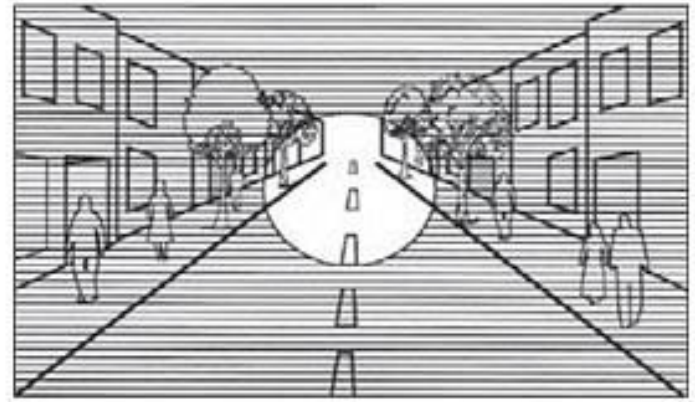
WHY SPEED MATTERS



Field of vision at 15 MPH



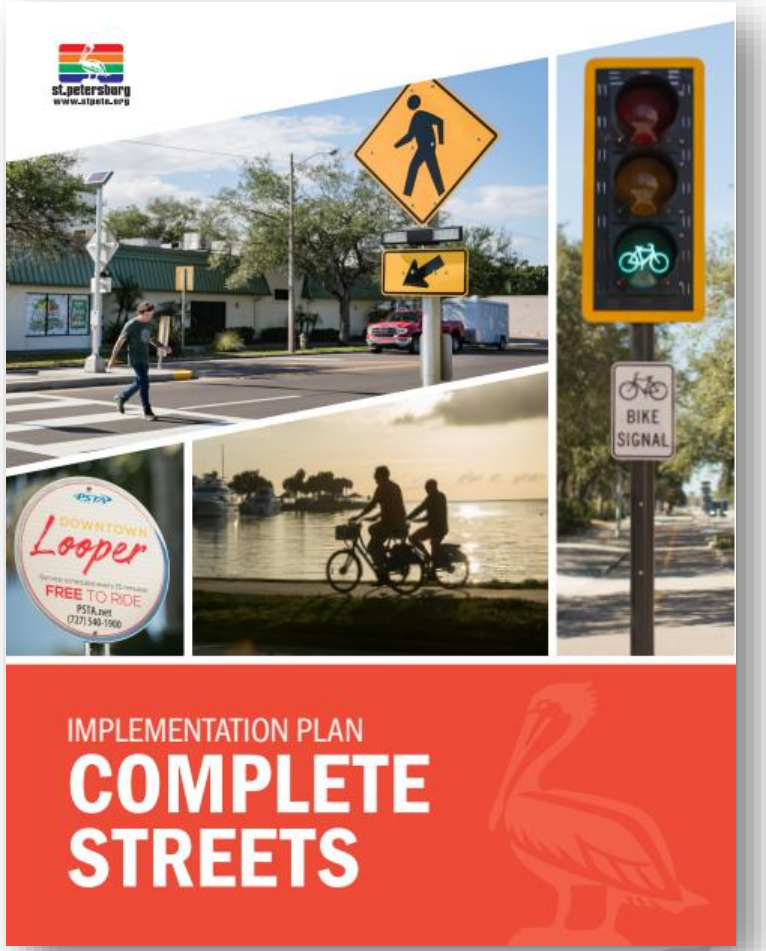
Field of vision at 30 to 40 MPH

A driver's field of vision increases as speed decreases. At lower speeds, drivers can see more of their surroundings and have more time to see and react to potential hazards.

Speed is especially lethal for vulnerable users like pedestrians and people biking. The risk of injury and death increases as speed increases.

Complete Streets Implementation Plan Strategic Approaches

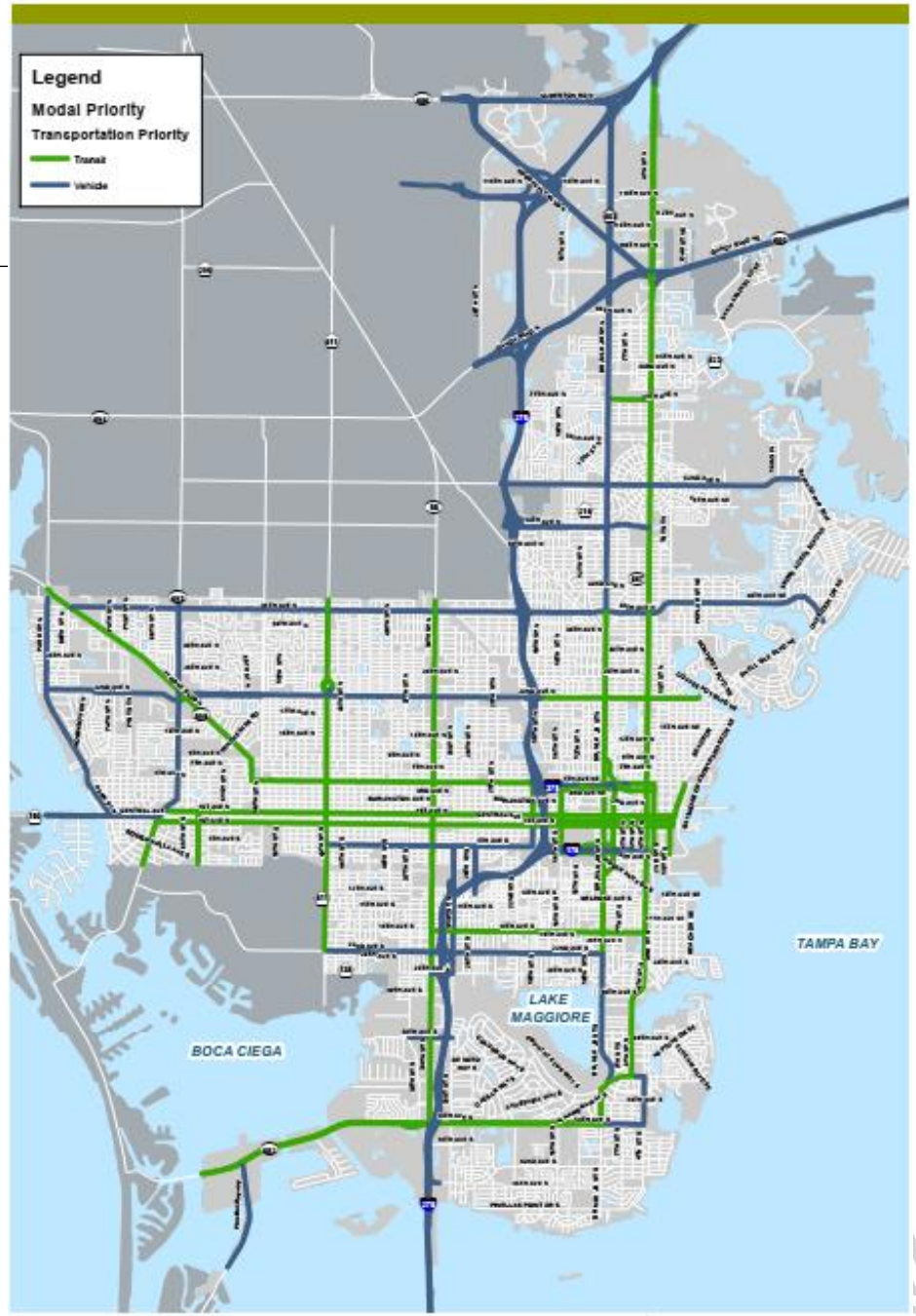
- Safety and Maximum Desired Operating Speeds
- Connected Networks of Infrastructure for Each Mode
- Neighborhood Greenways
- Placemaking
- Transit Oriented Development (TOD) & Smart Growth
- Sustainability
- Health In All Policies



Complete Streets Modal Priorities

Established Transit Prioritized Streets and Vehicle Prioritized Streets

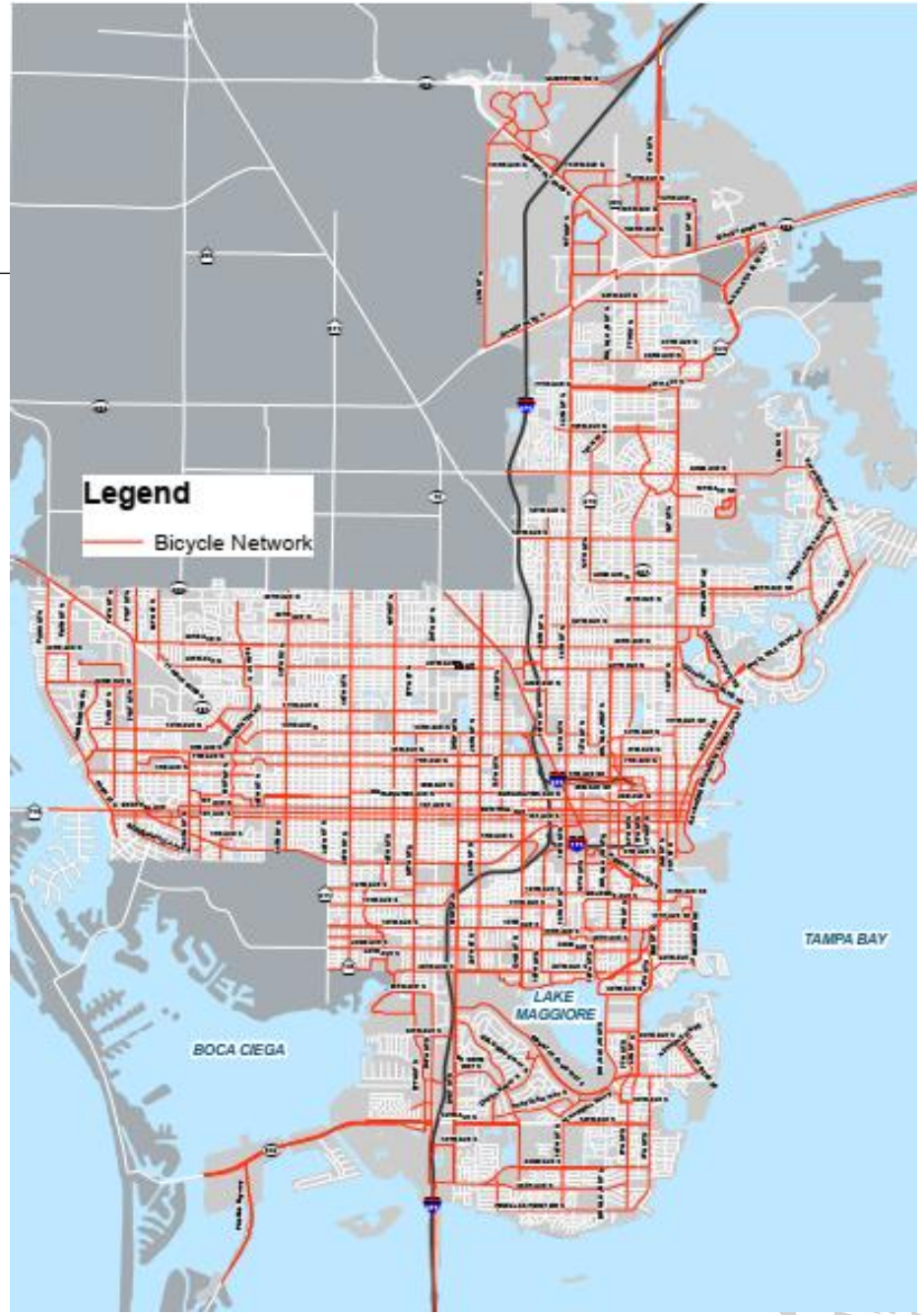
- Transit priorities align with PSTA core routes
- Corridors distributed across the City at roughly 1mi-1.5-mi spacing between prioritized streets; contextually appropriate for vehicle type
- Emphasis is on providing reliable travel times at reasonable speeds for the surrounding context



Complete Streets Modal Priorities

Established Bicycle and Pedestrian Network

- Emphasis on connected network of low stress infrastructure across City
- Infrastructure type varies based on context, available right-of-way, and other factors
- Full network comprises 20% of street network with corridors identified every 4-5 blocks with enhanced crossings for bicyclists and pedestrians, and utilizes parallel routes where feasible



Complete Streets Implementation Plan
Maximum Desired Operating Speeds

For design purposes, the Plan identifies Maximum Desired Operating Speeds as a Strategic Approach for improved Public Safety

- **Departs from traditional approach** in which streets are generally designed to highway standards regardless of land use context which allows for variable speeds and high speeds

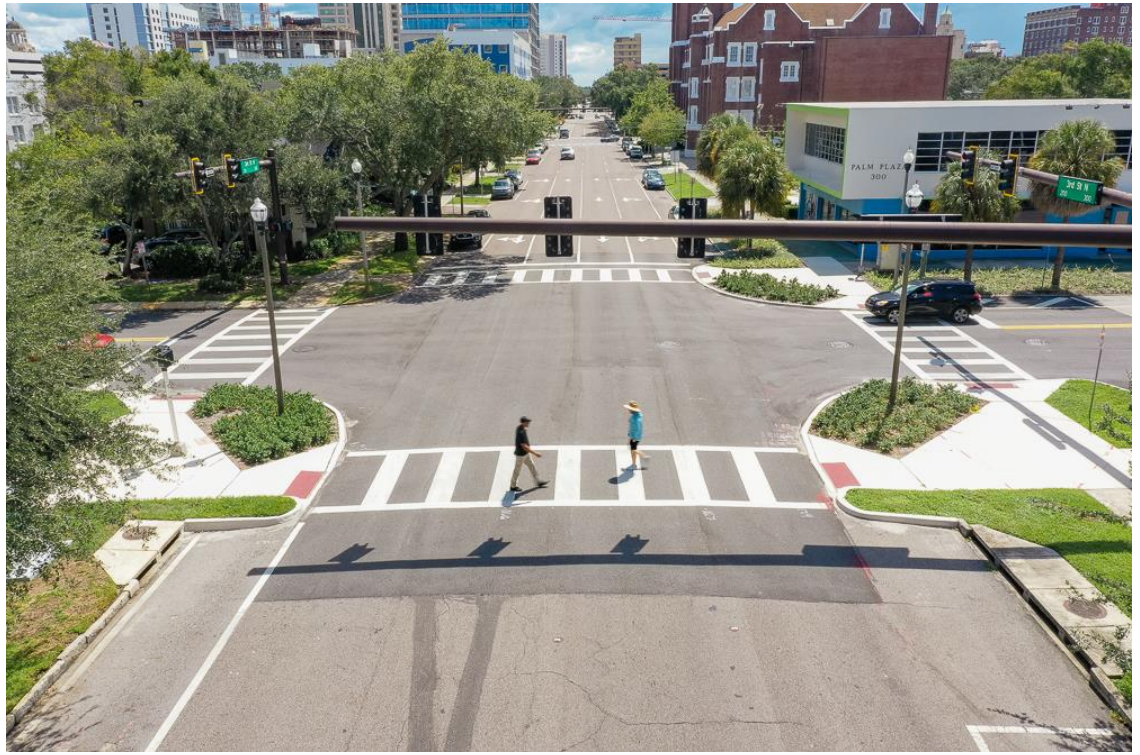
- **Determined based on consideration for land use, street type, and modal priority, and guided by the City's Complete Streets Committee**

- **Allows the built environment to be constructed for desired operating speeds that encourage motorists to drive accordingly**

- **Essential part of placemaking and safety** such that corridors prioritized for people and storefronts do not have traffic operating at excessive speeds

St. Pete Implementation
Third Street Improvements

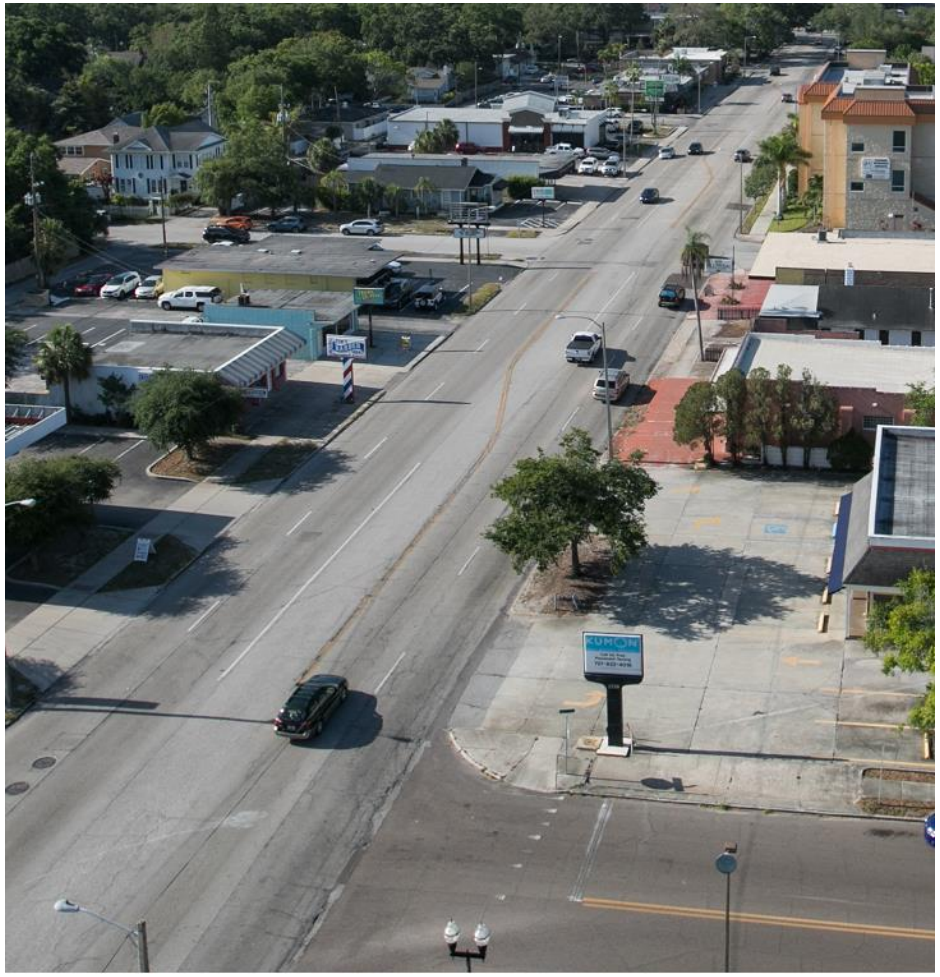
- Partnership with FDOT with HSIP funding for curb extensions and signal modifications on 3rd Street and 4th Street (5th Ave S to 5th Ave N)
- Third Street curb extensions completed Fall 2020
- Fourth Street curb extensions to be constructed in FY23
- Traffic signal modifications following construction
  - Leading Pedestrian Intervals of 3 seconds at most intersections
  - Timing optimized at posted speed limit of 30mph, moving toward Maximum Desired Operating Speed referenced in Complete Streets Implementation Plan



St. Pete Implementation
Dr. MLK Street Lane Reconfiguration

- Reduce the frequency and severity of traffic crashes across all modes
- Reduce excessive speeds by motorists
- Add high-quality crosswalks to connect neighborhood residents and businesses across MLK Street and increase the number of people crossing the street at marked crosswalks
- Add high-quality bike lanes where feasible toprovide access to businesses via mode other than auto and walking such that the number of people choosing to bicycle along MLK Street N increases
- Connect high-quality bike lanes with established bicycle infrastructure to increase the bicycle network and increase the number of people living within a half-mile of a high-quality bike lane
- Minimize negative impacts by protecting and improving intersection function where possible through lane assignments and signal timing
- Balance the needs of different modes by maintaining two lanes of through auto travel based on highest directional demand
- Improve travel time reliability for all modes

St. Pete Implementation
Dr. MLK Street Lane Reconfiguration



Dr. MLK Street Lane Reconfiguration Post – Construction Analysis

Motor Vehicle Volumes Within Southbound Lane Removal (Typical Weekday)		
November 2017 (pre)	November 2018 (post)	November 2019 (post)
18,661	19,067	19,077

Motor Vehicle Speeds – Southbound direction	
Pre-conversion	Post-conversion
41 mph – 24hr average	35 mph – 24hr average
44 mph – 10pm-11pm	38 mph – 10pm-11pm

- No conclusive improvement in Northbound speeding
- Southbound excessive speeding reduced 41% (10+MPH over) and severe speeding reduced by 63% (15+MPH over)

Dr. MLK Street Lane Reconfiguration Post – Construction Analysis

People Accessing the Corridor

- Pedestrians (daylight hours only via video recording)
  - 302 pedestrians walking along the corridor on a weekday in April 2019
  - 249 pedestrians using new crosswalks in April 2019 (3 of the 5)
- Bicycle users (daylight hours only via video recording)
  - 202 on a weekend day in January
  - 352 on a weekday in April
  - Approximately 2/3 of cyclists in bike lane, 1/3 on sidewalks
- Transit users – 9% increase with fewer stops as stops were consolidated to locate near x-walks
- Motor vehicles volumes within the southbound lane elimination continues an increasing trend line

St. Pete Implementation
Central Avenue Interim Bike Lanes

- Need to provide bicycle infrastructure on Central Avenue as bike lanes on parallel route removed to accommodate a Bus Rapid Transit project

- Completed Speed Zoning Study as part of capital improvements project

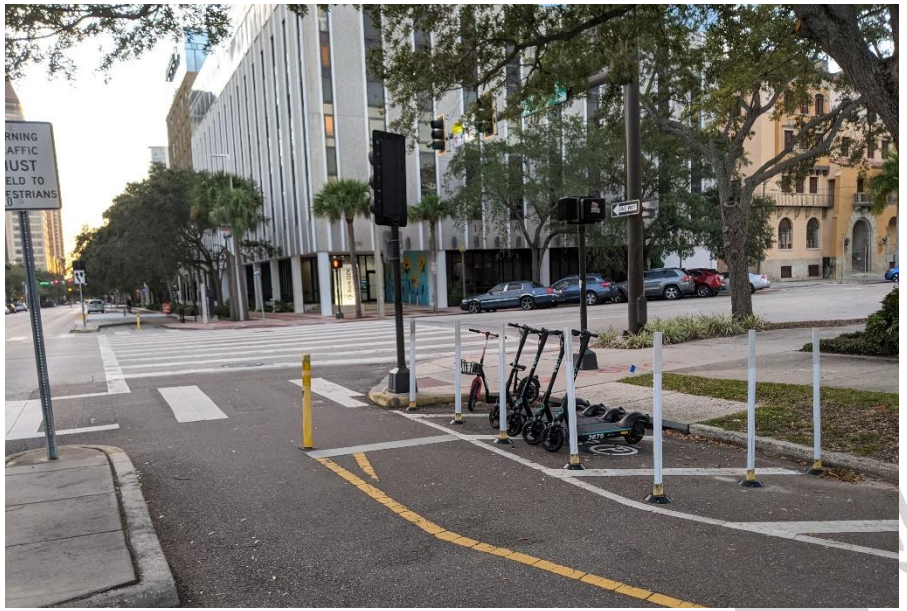
- Considerations:
  - Existing conditions
  - Applicable planning efforts, including Complete Streets Implementation Plan
  - Scale of the planned roadway modifications

St. Pete Implementation
Micromobility – Scooter Parking Corrals

- 2019 City Micromobility Ordinance
  - Prohibited use of motorized scooters on sidewalks and permitted use on low-speed streets (<30mph) and within bike lanes
  - Required shared scooters to be parked exclusively in designated corrals

- City designed and installed scooter parking corrals

- Located within generally, previously unused asphalt space; with access directed to permissible infrastructure (bike lanes and low speed streets); largely avoided placement on sidewalks



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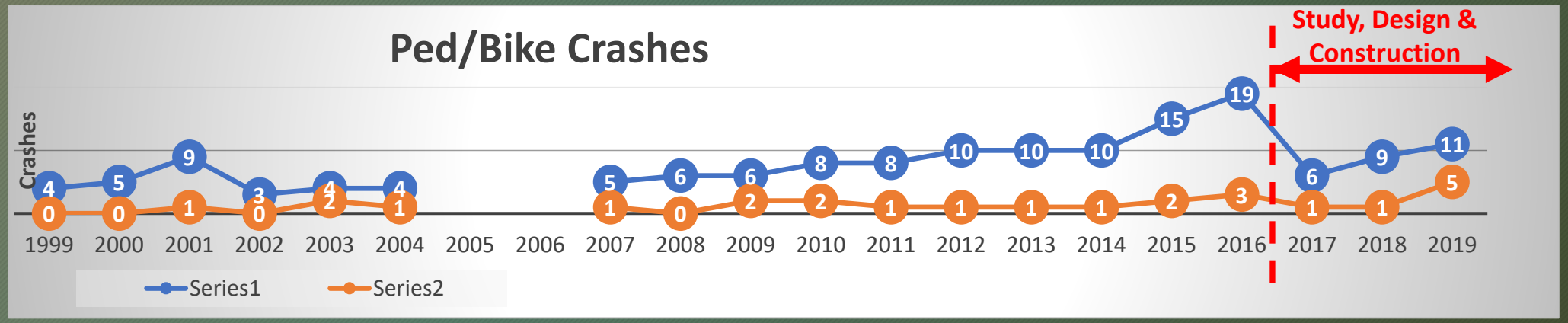
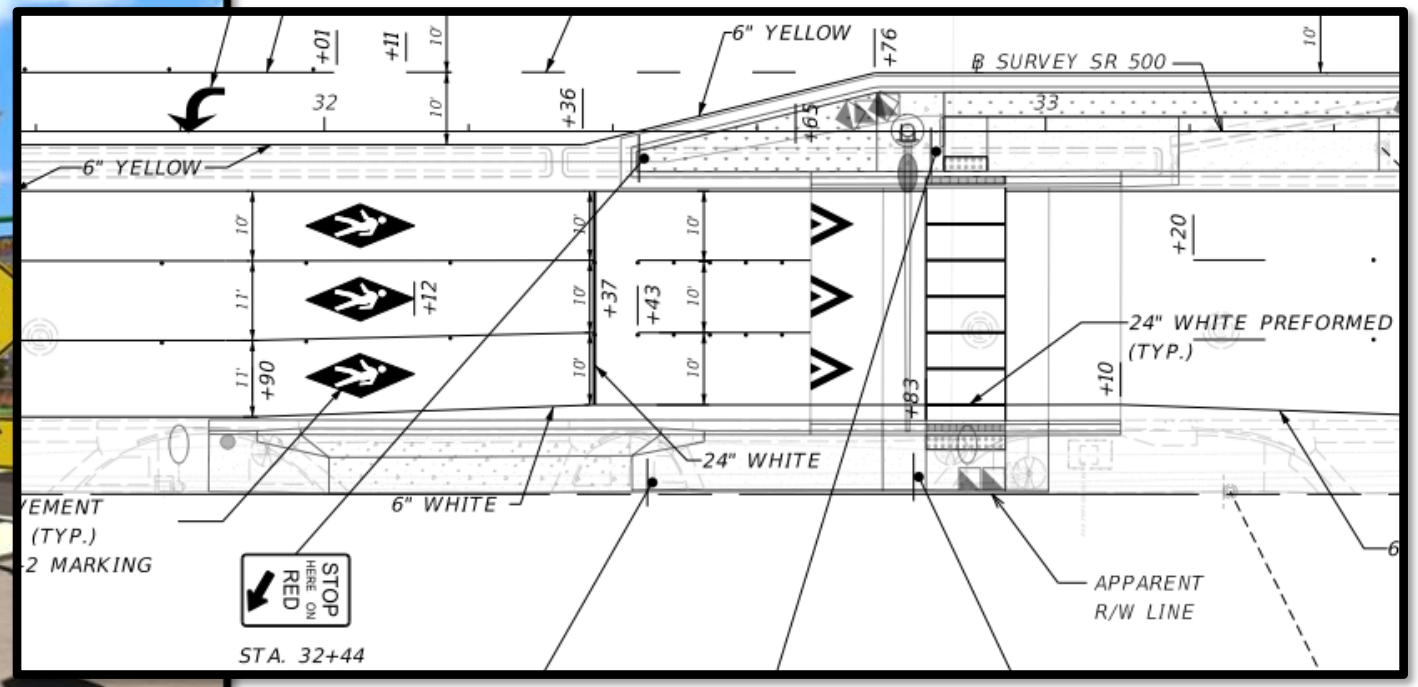
Project Metrics

- 6 lane curb and gutter divided facility
- 1 mile segment from Holden Ave to 34th St
- 40 MPH Posted Speed
- Context Classification C4
- 3 Mid-Block Crosswalks with PHBs
- 12 existing LYNX transit stops

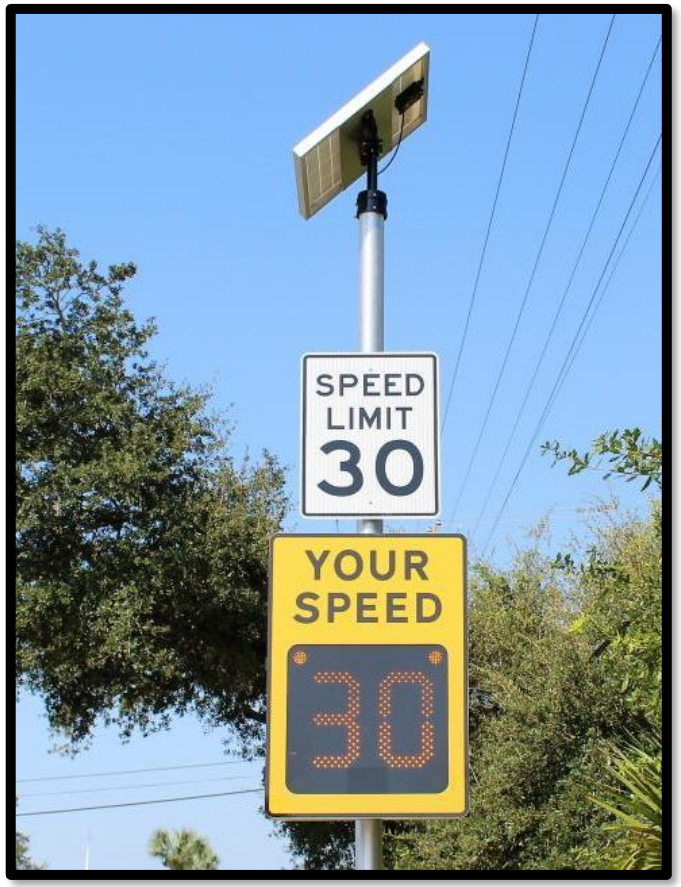


Speed Management Techniques

- Deflection
- Engagement
- Enclosure


6" YELLOW
℄ SURVEY SR 500
6" YELLOW
24" WHITE PREFORMED
(TYP.)
24" WHITE
6" WHITE
(TYP.)
STOP HERE ON RED
STA. 32+44
APPARENT
R/W LINE

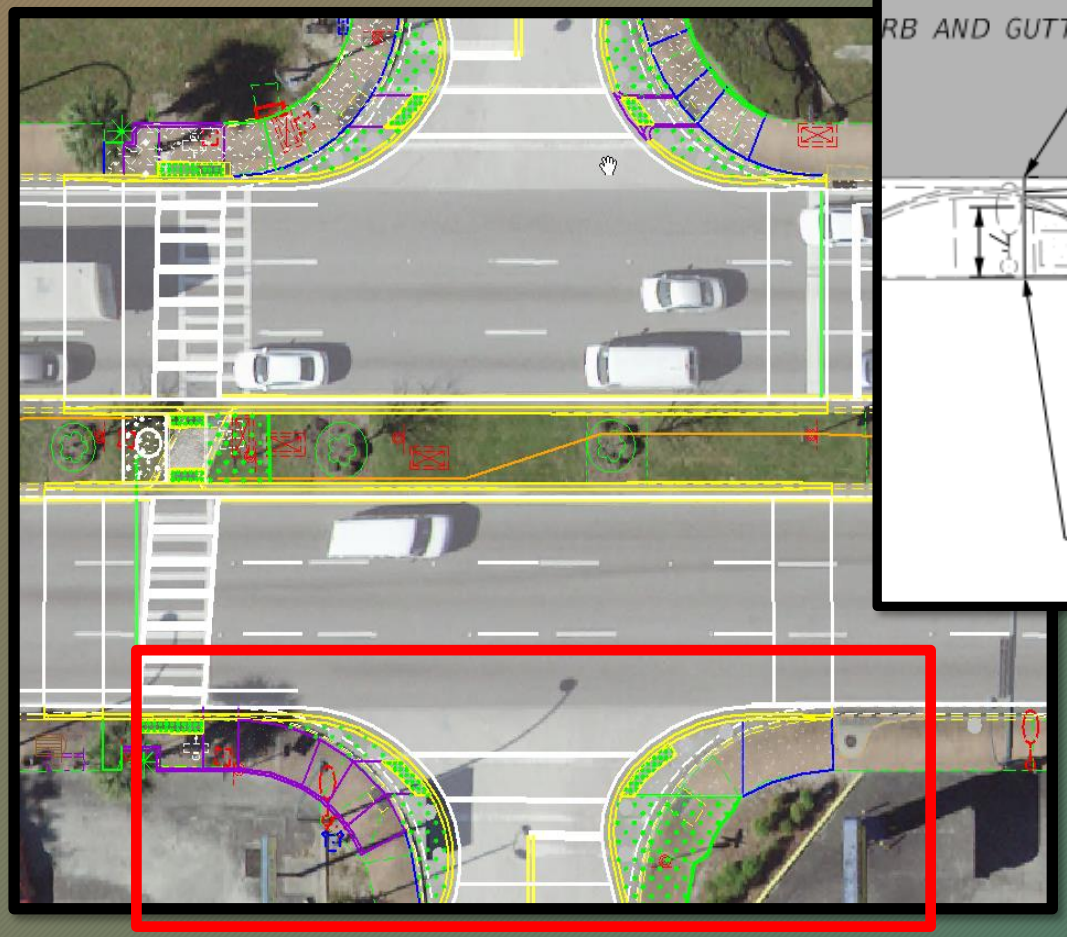
Deflection

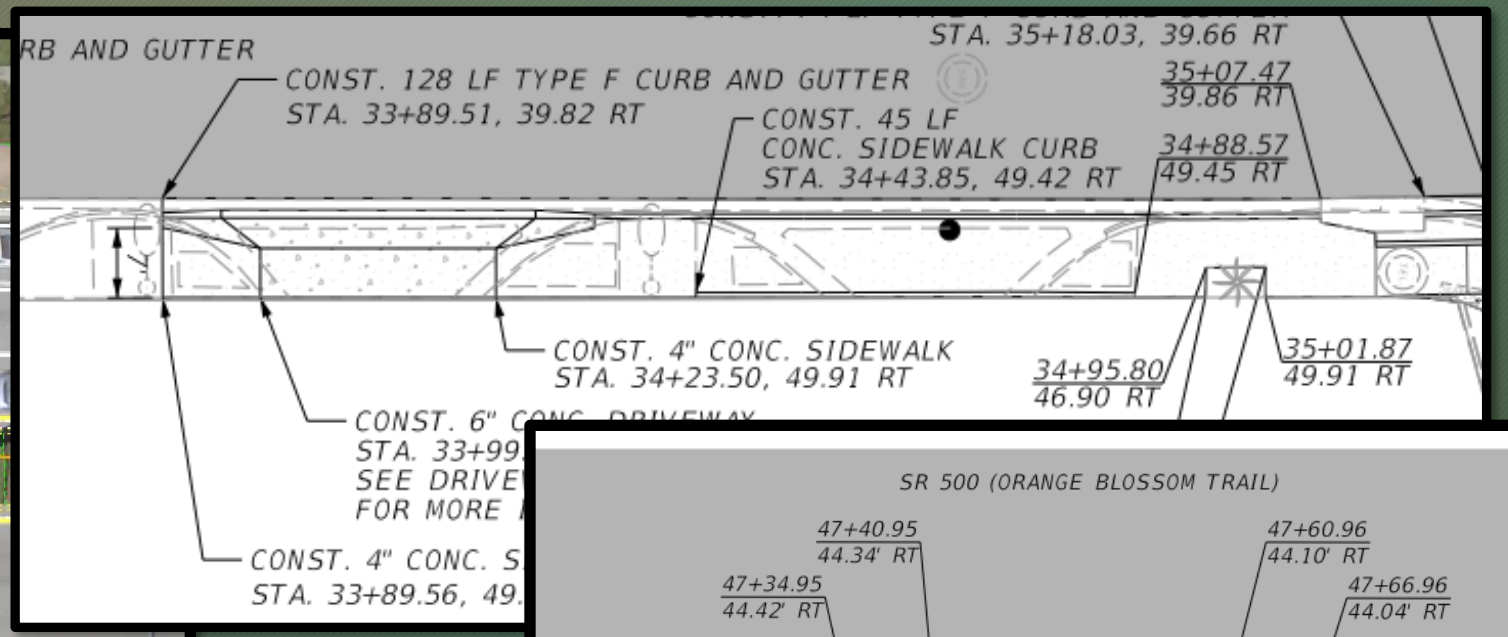


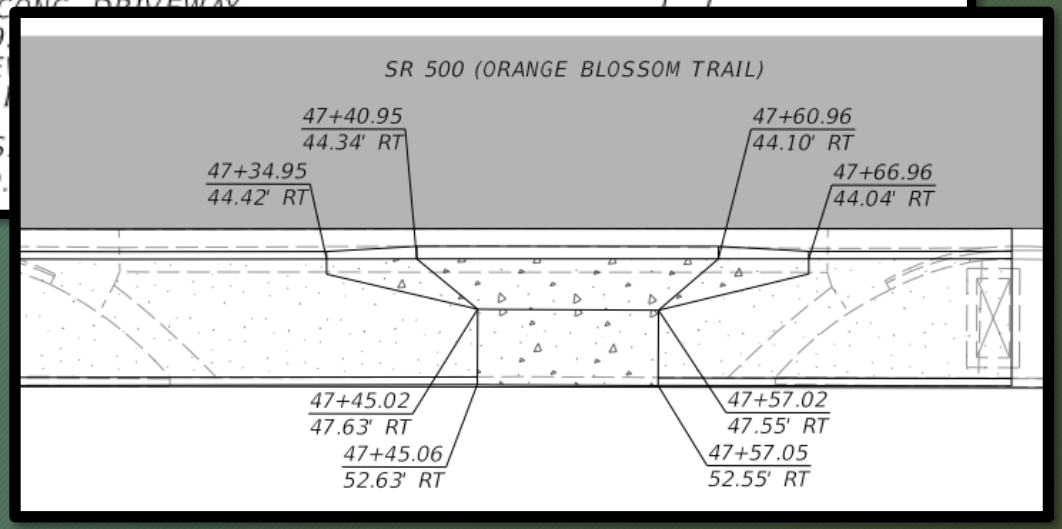
Engagement


MAXWELL
GARDEN

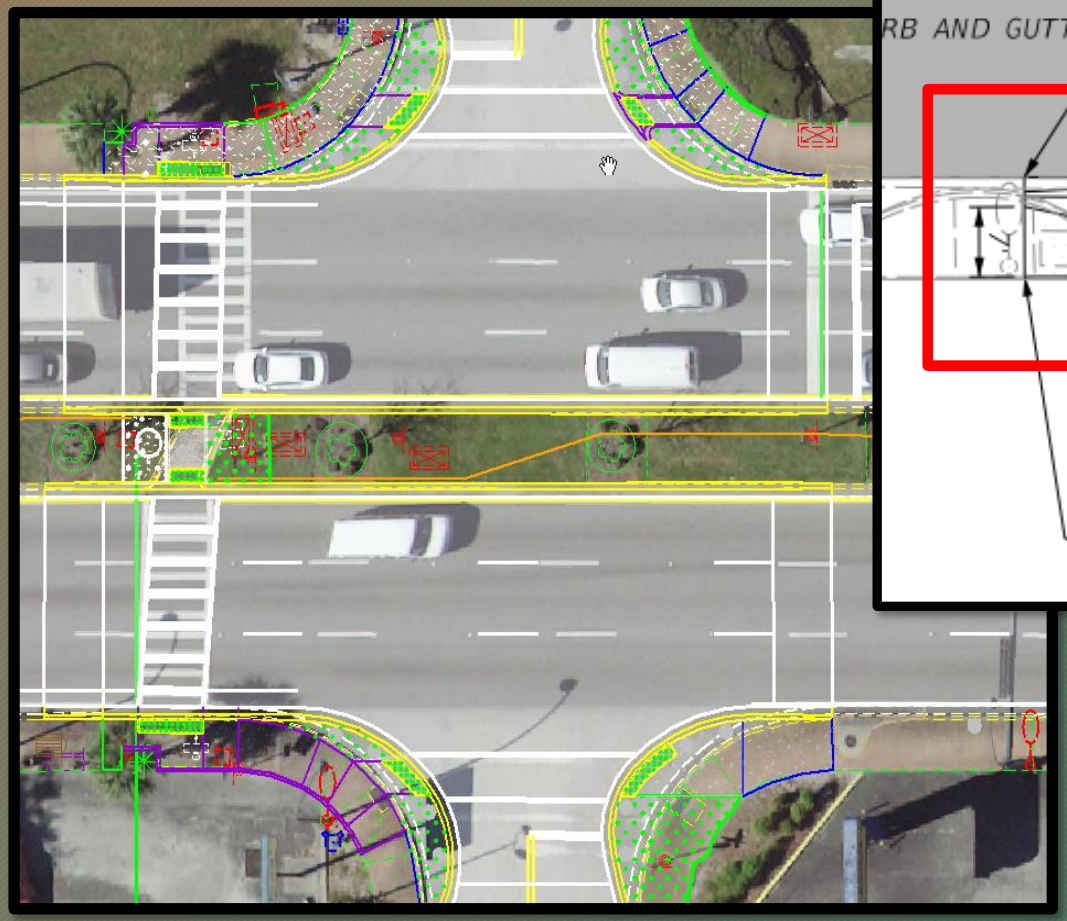
Enclosure

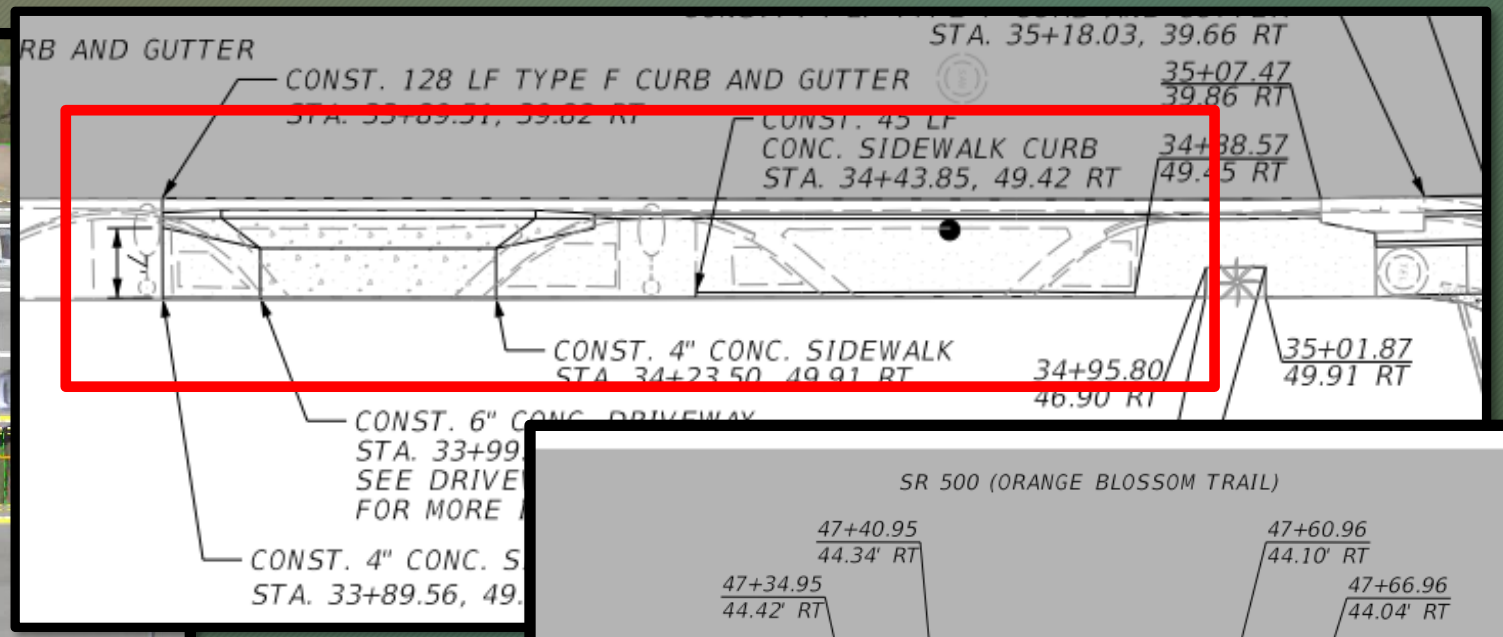


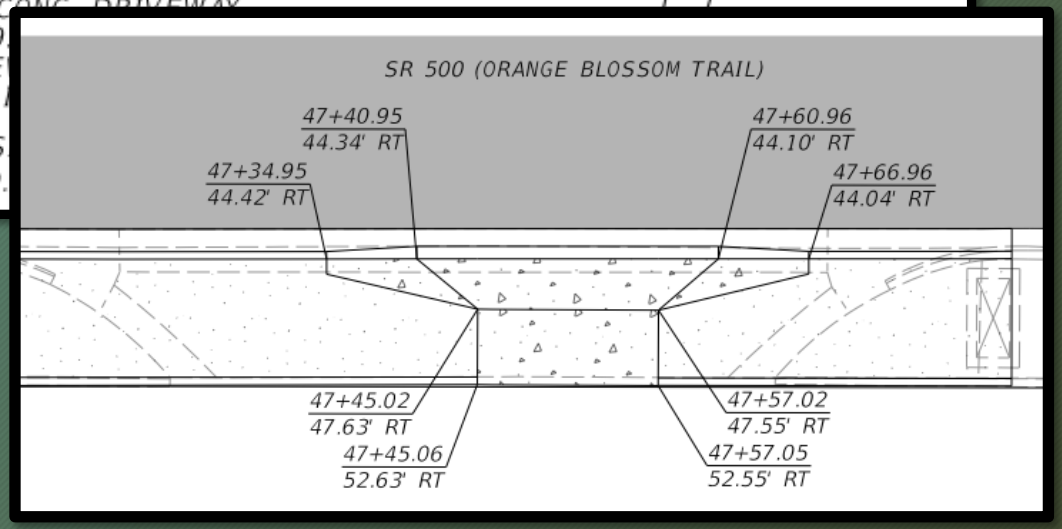




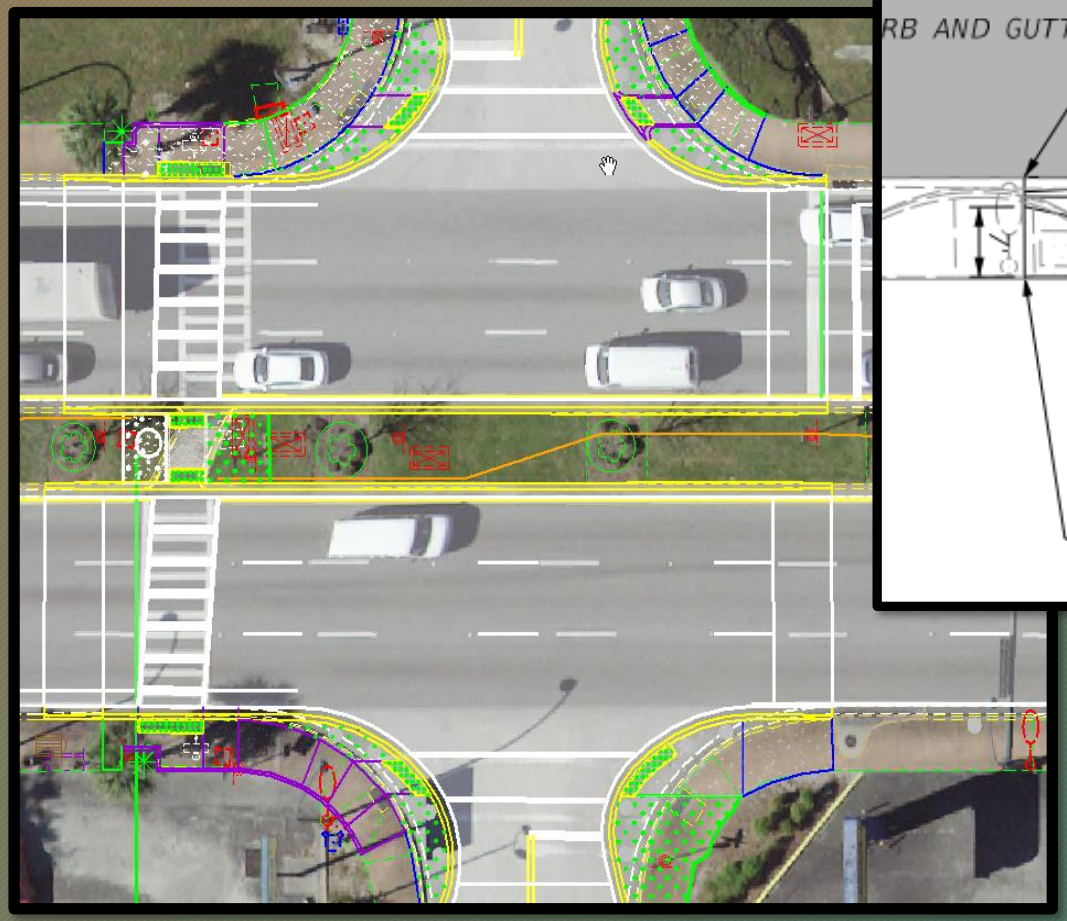
Reduction of Conflict Points

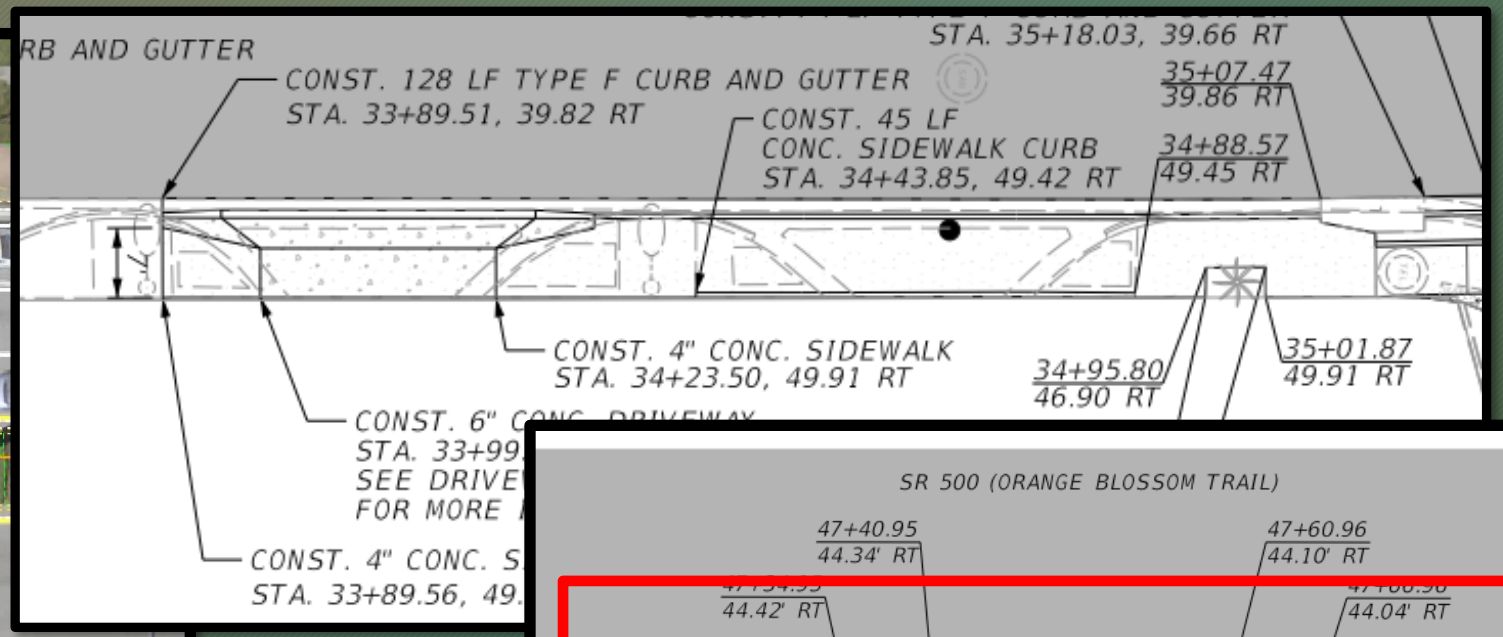


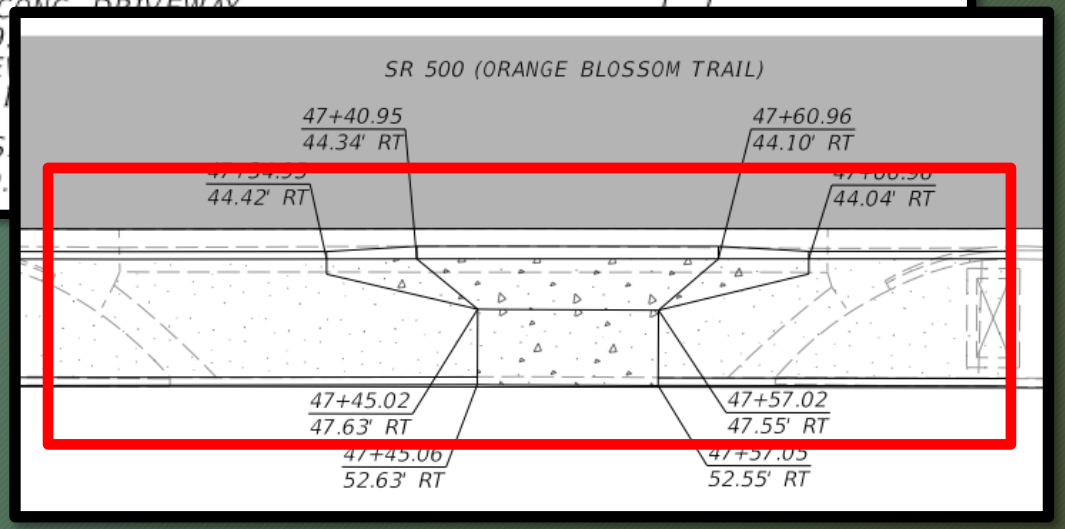




Reduction of Conflict Points







Reduction of Conflict Points

Summary of Safety Improvements

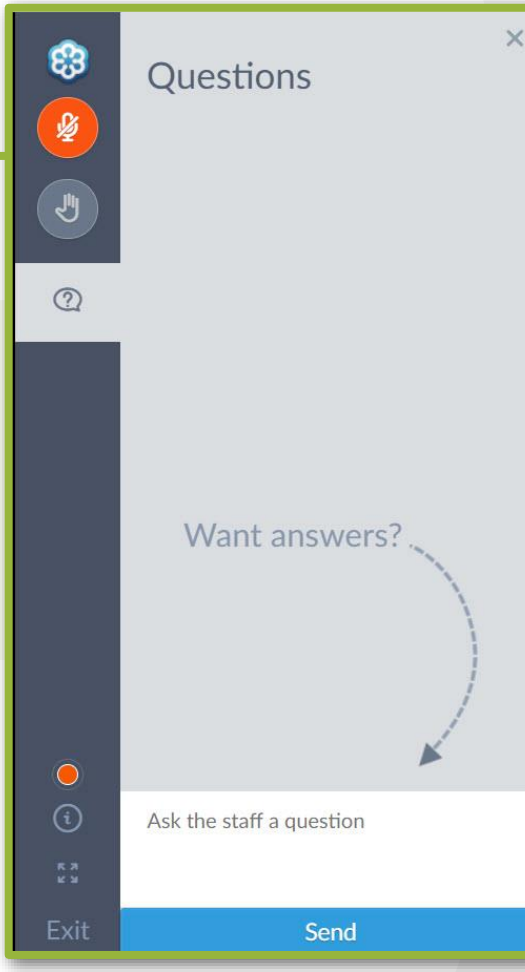
- Pedestrian Fencing
- LED Lighting
- Pedestrian Hybrid Beacons (PHBs)
- 3 Mid-block crosswalks
- In-Road Lighting
- Reduced Radial Returns
- Driveway Consolidation
- LPI
- Hardened Centerline
- Speed Feedback Signs
- 10 MPH Speed Reduction
- Relocation/Consolidation of Transit Stops
- Pedestrian Crossing Pavement Markings
- Education Campaign
- Enforcement Campaign
- Landscaping for Speed Management

Final Project Metrics

- $4.5 Million
- P.E. Begin = 4/13/2020
- Letting = 12/2021
- Construction Begin = 2/2022

PANEL DISCUSSION

Click the ? to open the panel box and submit a question to the panelists



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PANELIST CONTACT INFORMATION

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Cheryl Stacks *City of St. Petersburg*	Cheryl.Stacks@stpete.org
Lori Trebitz *Florida Department of Transportation*	Lori.Trebitz@dot.state.fl.us
Whit Blanton – Moderator *Forward Pinellas*	wblanton@co.pinellas.fl.us

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*Sourced from the Florida Department of Transportation

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