



CR 510 Project Development and Environment (PD&E) Study

From 58th Avenue to East of SR 5/US-1, Indian River County, Florida

Florida Department of Transportation

Financial Project ID: 441692-1-22-02

Efficient Transportation Decision Making (ETDM) Number: 14492

Indian River County MPO Presentations

January 23, 2024 – Bicycle Pedestrian Advisory Committee (BPAC)

January 26, 2024 – Technical Advisory Committee (TAC)

February 6, 2024 – Citizens Advisory Committee (CAC)

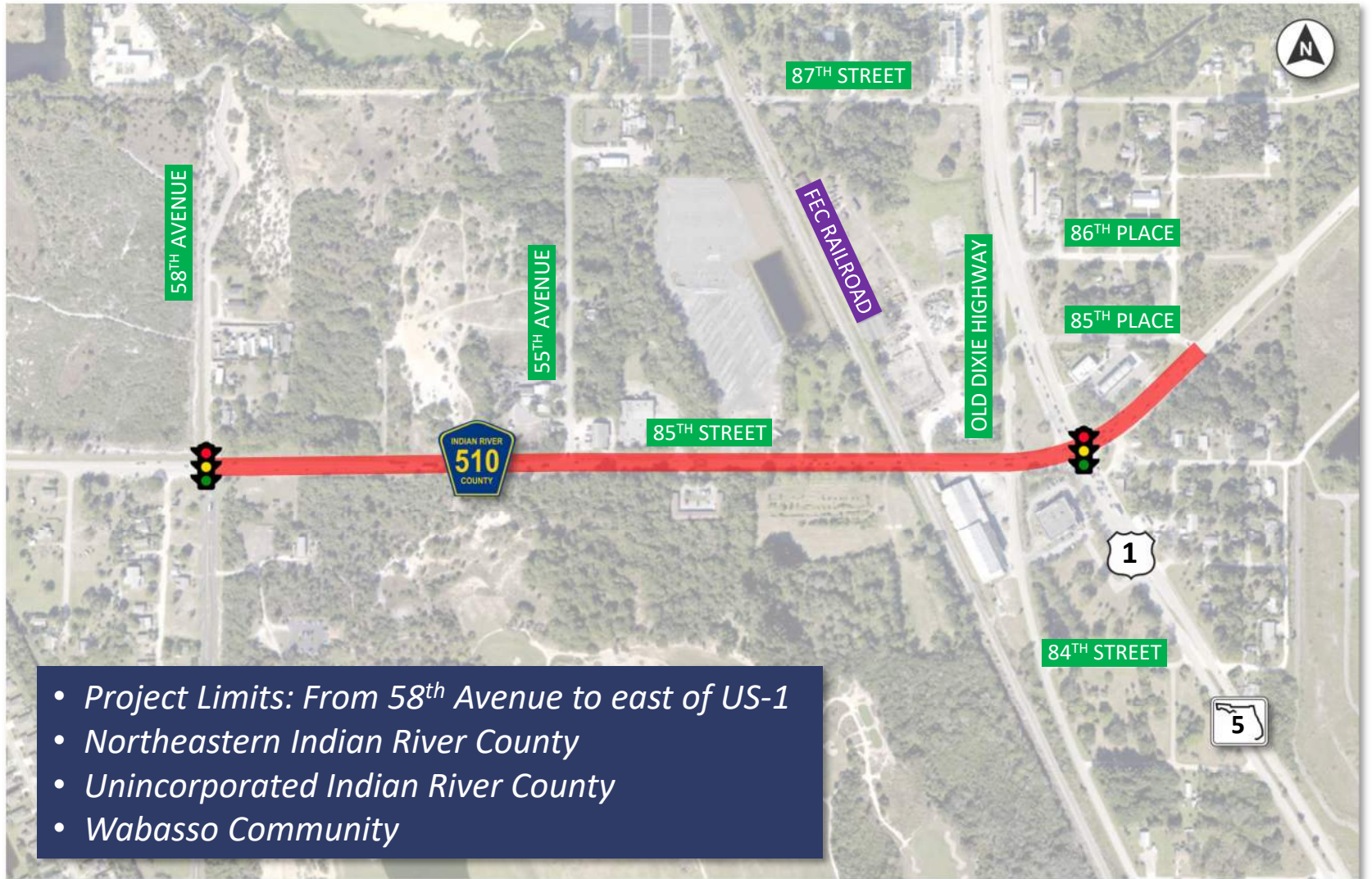
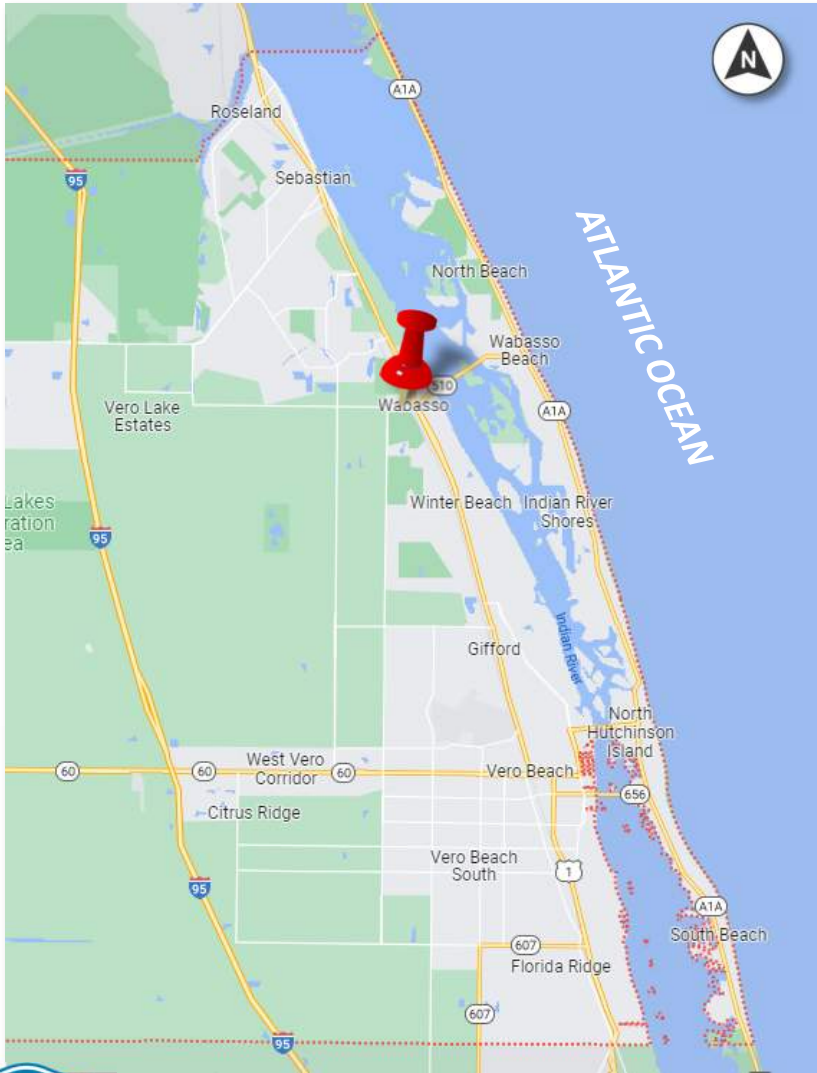
February 14, 2024 – Metropolitan Planning Organization (MPO)



AGENDA

- Project Location
- Adjacent Projects
- Transportation Development Process
- Purpose and Need
- Existing Conditions
- Alternatives Evaluation
- Environmental Analysis
- Public Involvement
- Project Schedule
- Questions and Answers







PROJECT LOCATION



- *Project Limits: From 58th Avenue to east of US-1*
- *Northeastern Indian River County*
- *Unincorporated Indian River County*
- *Wabasso Community*



ADJACENT PROJECTS

- 405606-2 – CR 510 PD&E Study 
From CR 512 to 58th Avenue
(Completed in April 2019)
- 405606-5 – Segment 5 
From West of 82nd Avenue to Powerline Road
(Under Design – Awaiting Construction Funds)
- 405606-6 – Segment 6 
From Powerline Road to 58th Avenue
(Under Design – Awaiting Construction Funds)
- 405606-7 – Segment 7 
From CR 512 to 87th Street
(Under Design – Scheduled for construction FY 24/25)
- 405606-8 – Segment 8 
From 87th Street to West of 82nd Avenue
(Under Design – Awaiting Construction Funds)
- 431724-3 – SR 5/US-1 
From 69th Street to CR 510
(Under Design – Awaiting Construction Funds)



TRANSPORTATION DEVELOPMENT PROCESS

1 PLANNING

2 PROJECT DEVELOPMENT AND ENVIRONMENT (PD&E) STUDY

3 DESIGN

4 RIGHT OF WAY ACQUISITION (IF NEEDED)

5 CONSTRUCTION

6 MAINTENANCE

Why it's done:

- Evaluate project feasibility and potential environmental impacts (natural, physical, social, cultural)
- Comply with federal and state environmental laws
- Required to secure federal regulatory approval

What it involves:

- Conducting preliminary engineering
- Evaluating options to avoid, minimize or mitigate potential environmental impacts
- Coordinating with federal, state, and local agencies
- Engaging the public in project development
- Select a preferred alternative for Final Design

PROJECT PURPOSE

- Improve capacity for local and regional travel, freight movement, and emergency evacuation.
- Reduce accidents and improve safety issues for vehicles, bicycles, and pedestrians.

PROJECT NEED

- **Capacity:** Population growth and new developments in the study area will increase traffic, creating more congestion and delays.
- **Transportation Demand:** Increase in traffic flow along this segment of CR 510. The CR 510 and US-1 intersection is one of the busiest in the County and has attracted developments such as the Orchid Quay (formerly Bristol Bay).
- **Social Demand/Economic Development:** Additional residential developments east and west of the project corridor.
- **Modal Relationship:** Improve the mobility for all users (bicyclists, pedestrians, freight, vehicles, and trains). The CR 510 corridor provides limited options for pedestrians and bicyclists. The need for bicycle lanes and sidewalks was identified in the Indian River County Bicycle and Pedestrian Master Plan 2015.
- **System Linkage:** Major Evacuation Route for the Region.

PURPOSE & NEED



This project has been identified in the Indian River County MPO's Needs Projects List and Cost Feasible Plan

EXISTING CONDITIONS

ROADWAY CHARACTERISTICS	
Number of Lanes	Two (One in each direction)
Lane width	12-ft
Posted Speed	40 MPH
Sidewalks	<ul style="list-style-type: none"> • None between 58th Avenue and FEC Railway • 6-ft sidewalks between FEC Railway and US-1
Bicycle Facilities	None
Existing Right-of-Way	Varies 80-ft to 130-ft



CR 510 looking east

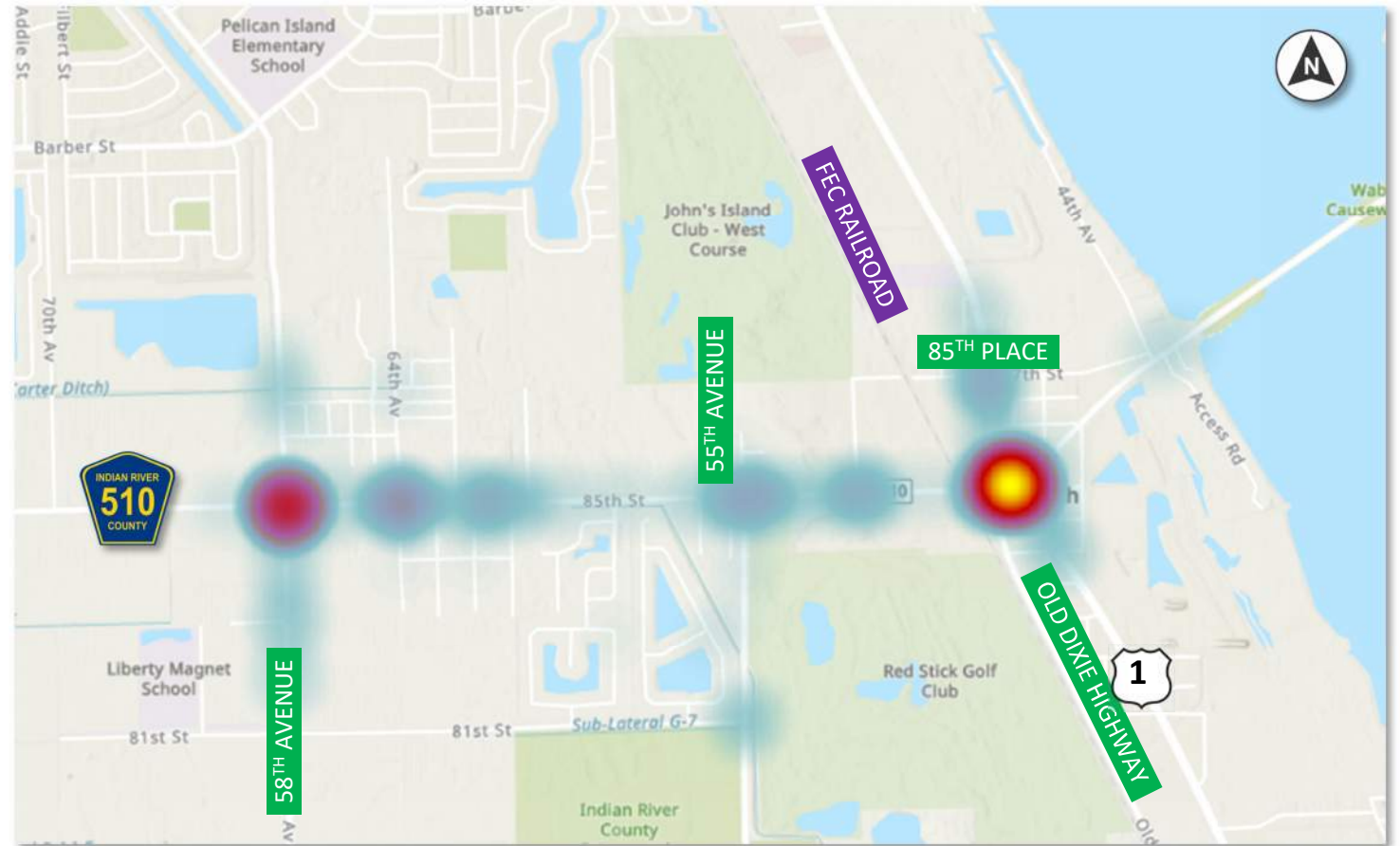
EXISTING SAFETY CONDITIONS

Five years of crash data: 2017-2021

- 336 crashes in total
- 109 injuries (10 serious)
- 5 fatalities
- 1 bicycle
- 0 pedestrian

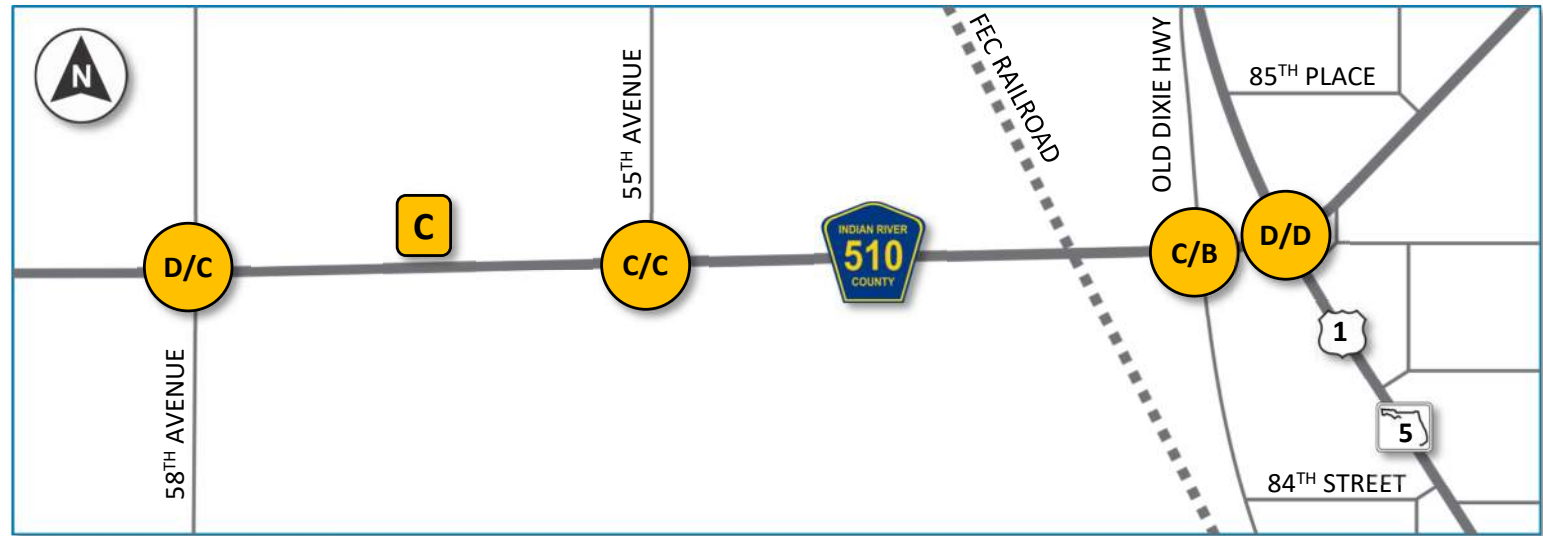
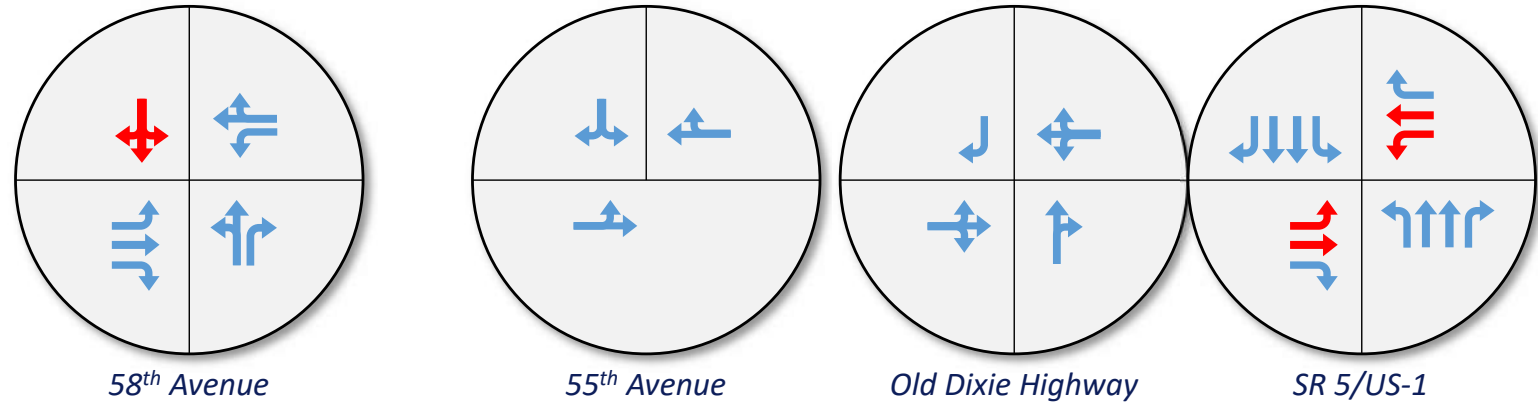
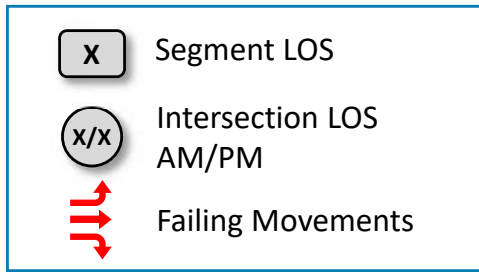
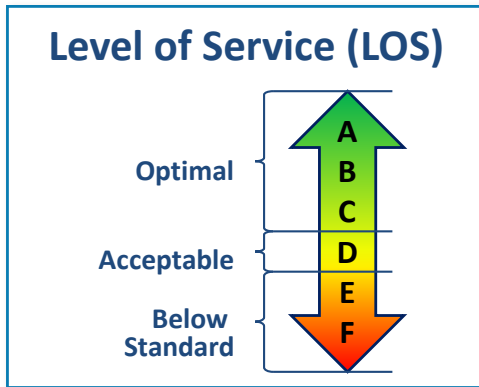
Predominant Crash Type:

- Rear-end: 48%
- Off-Road: 3%
- Head-On: 2%



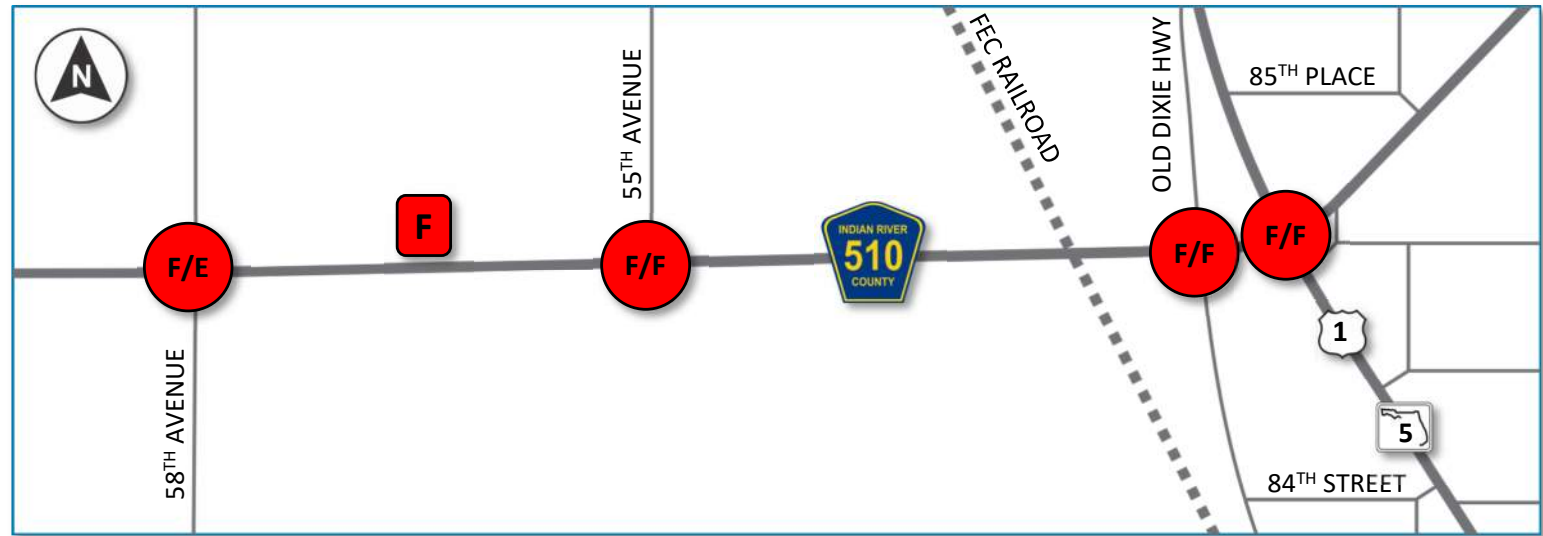
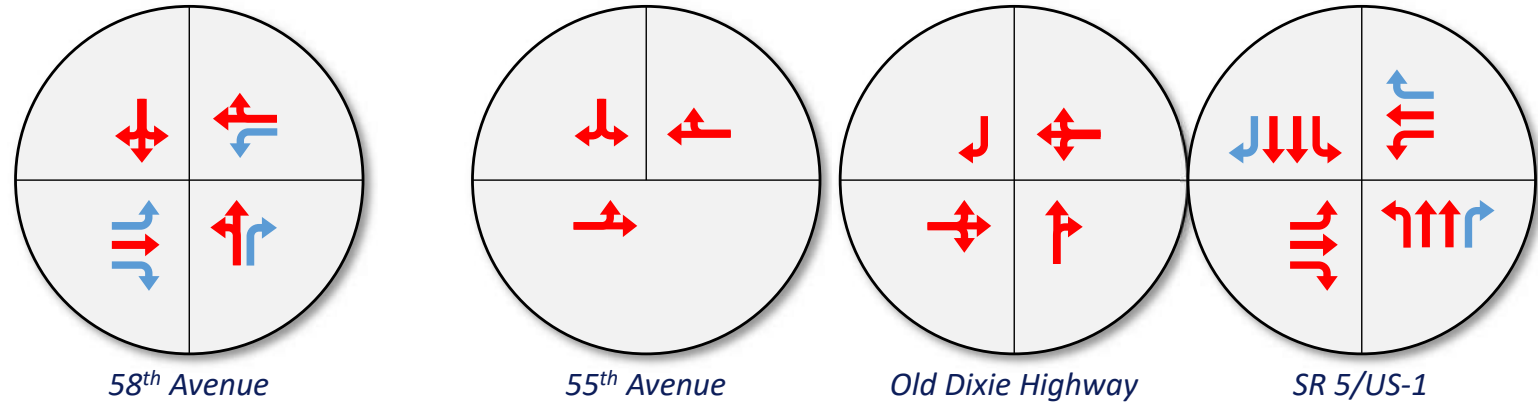
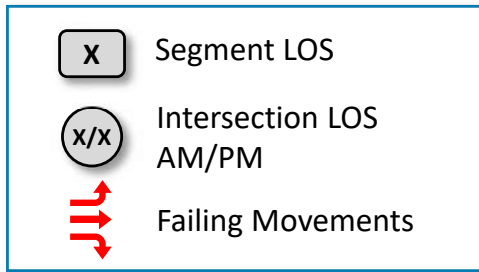
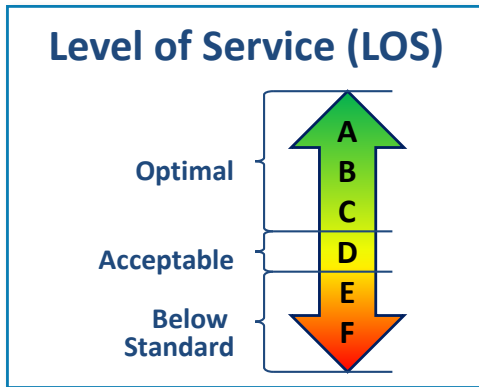
TRAFFIC OPERATIONS – Existing Conditions

- Existing LOS C
- Average truck percentage 7% (observed high truck factors of 20%)



TRAFFIC OPERATIONS – No-Build Conditions (Year 2045)

- Future No-Build LOS F – Year 2045
- Increase traffic due to projected population growth

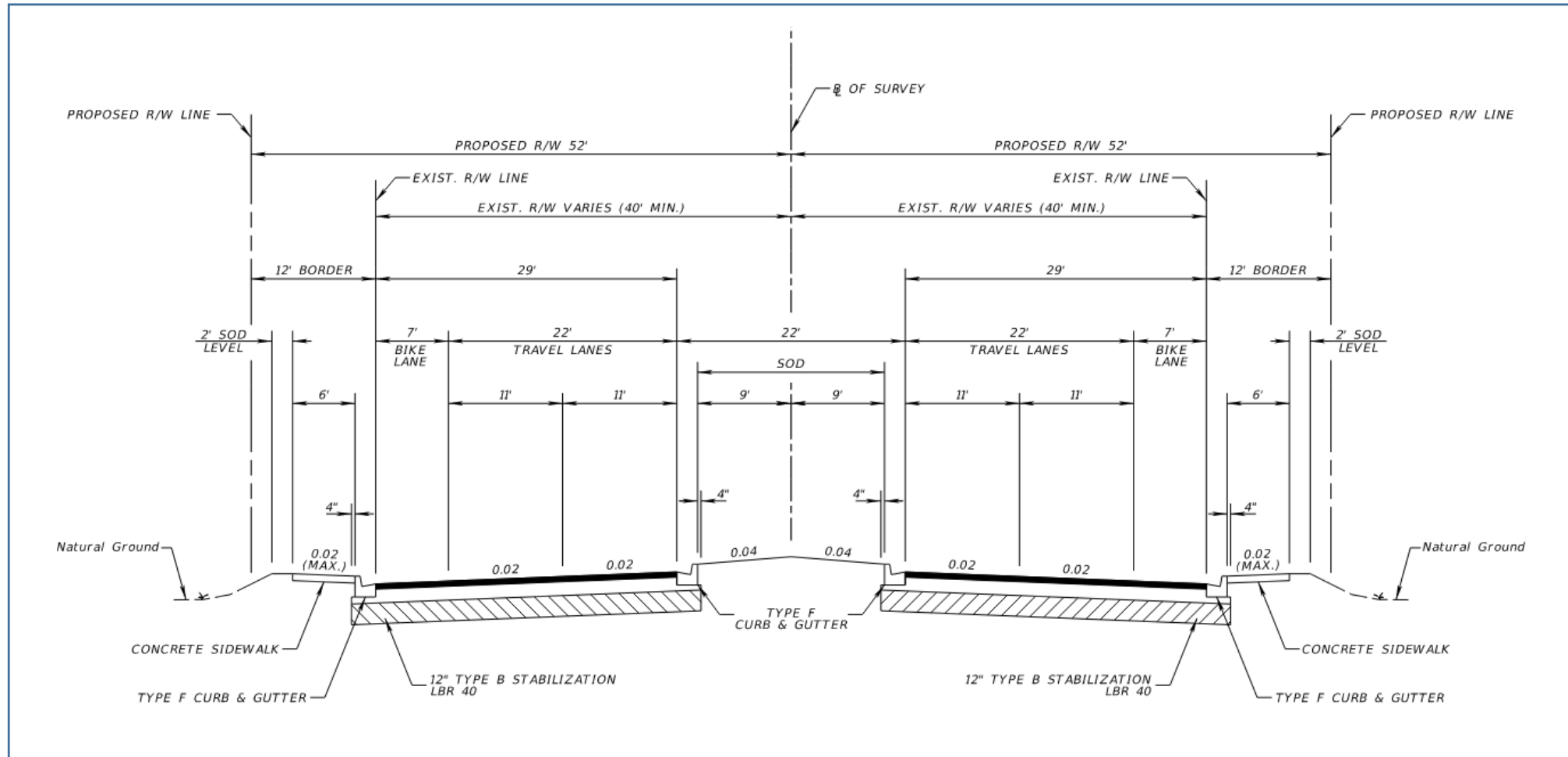


ALTERNATIVES EVALUATION

- Typical Section Analysis
 - Widening CR 510 from two to four lanes
- Intersection Improvements
 - CR 510 at 58th Avenue
 - CR 510 at US-1
- FEC Railway crossing Alternatives
 - At-grade widening
 - Partial grade separation over the FEC Railroad
 - Full grade separation over the FEC Railroad

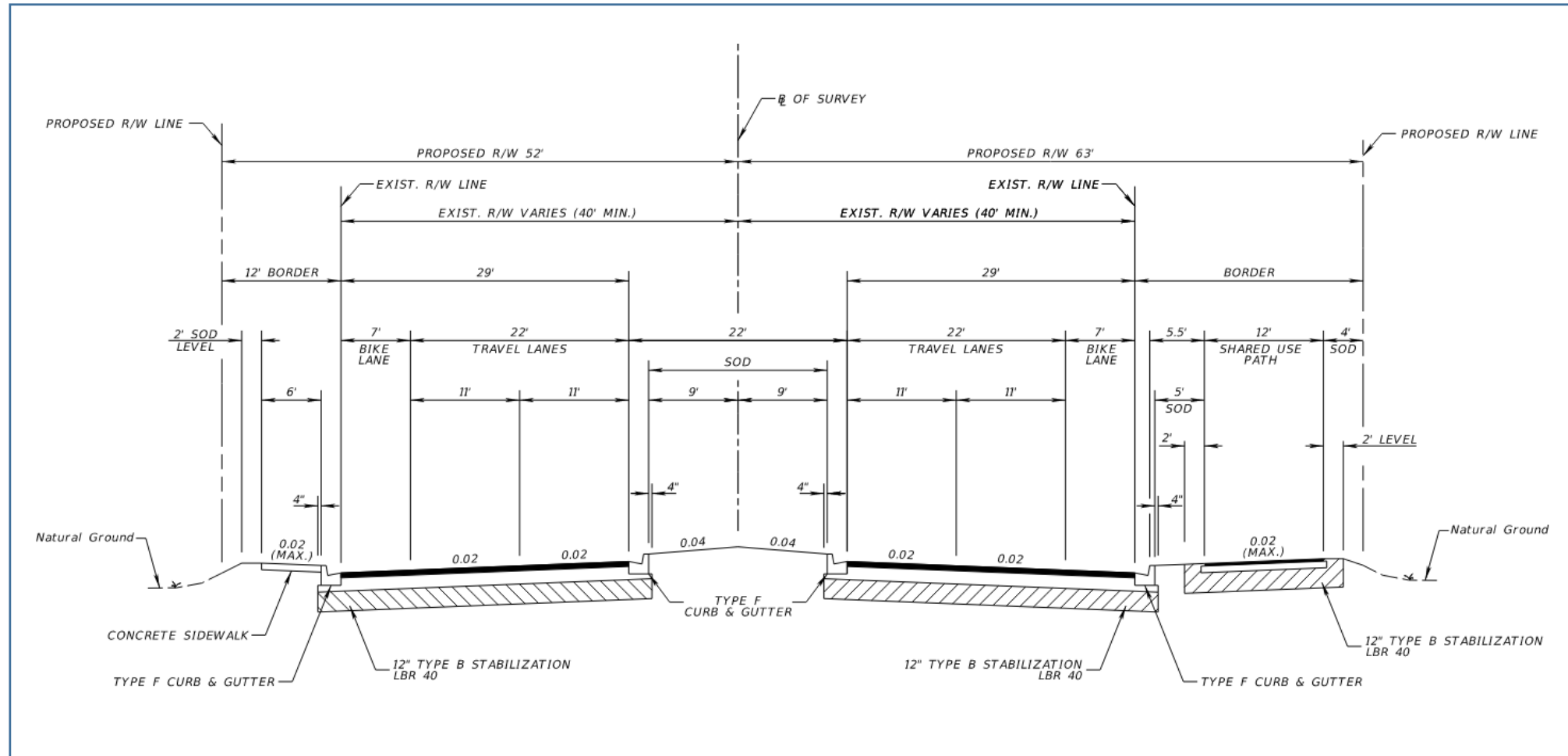


TYPICAL SECTION ANALYSIS – Alternative A



Typical Section Alternative A
(Proposed R/W 104-ft)

TYPICAL SECTION ANALYSIS – Alternative B



Typical Section Alternative B
(Proposed R/W 115-ft)

TYPICAL SECTION ANALYSIS

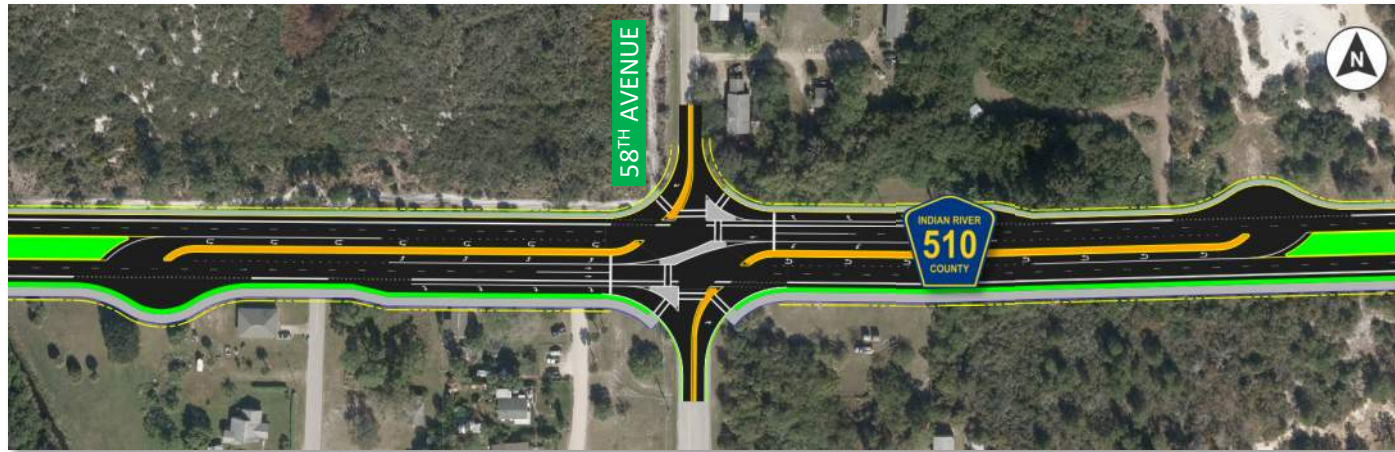
Evaluation Matrix

SCORE CRITERIA:
 1 = Substantially Less Desirable
 2 = Generally Less Desirable
 3 = Neutral or No Effect
 4 = Generally More Desirable
 5 = Substantially More Desirable

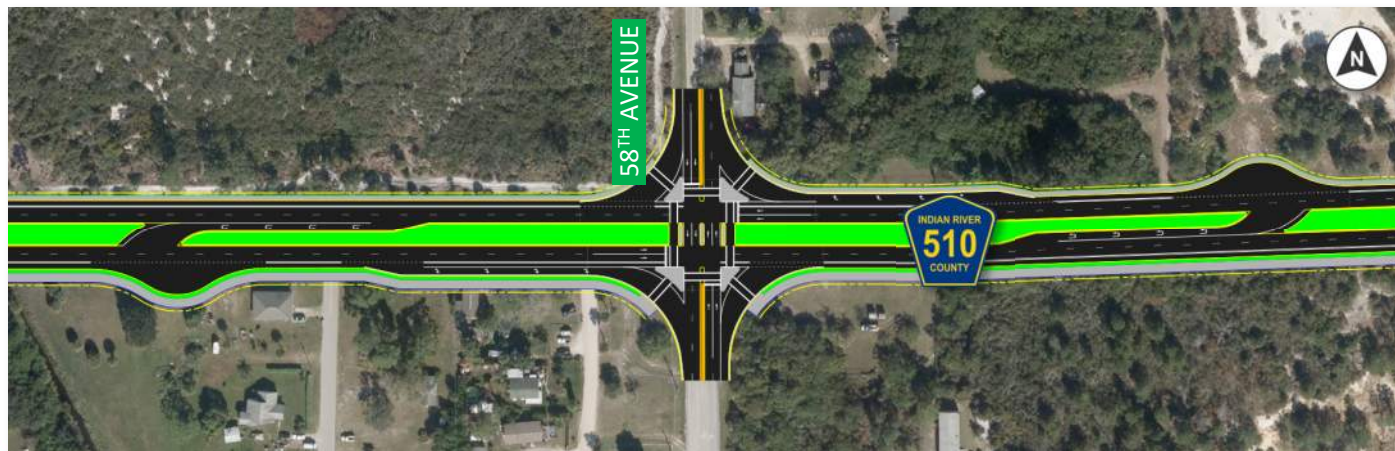
CRITERIA		Typical Section - Alternative A	Typical Section - Alternative B
ENGINEERING	TRAFFIC SERVICE	Divided 4-lane section improves traffic service with operating speeds of 40 MPH (Design) 5	Divided 4-lane section improves traffic service with operating speeds of 40 MPH (Design) 5
	SAFETY	Generally safe for vehicles, bicyclists, and pedestrians. 4	Similar to previous alternative. Shared use path provides a safer alternative to bicyclists to be separated from traffic. 5
	ACCESS ISSUES	Although divided median restricts/changes access, median openings are provided per access management criteria. 4	Similar to previous alternative. 4
	MULTIMODAL ISSUES	Section provides 7-foot buffered bike lanes and 6-foot sidewalks on both sides. 4	Section provides 7-foot buffered bike lanes on both sides, 6-foot sidewalk on north side and 12-foot shared use path on south side. 5
ENVIRONMENTAL	POTENTIAL WETLANDS AND WILDLIFE HABITAD IMPACTS	Smaller footprint, less potential for wetland and habitat impacts. 5	Larger footprint, more potential for wetland and habitat impacts. 4
	WATER QUALITY/DRAINAGE	Smaller area of impervious cover requires least amount of stormwater treatment. 5	Larger area of impervious cover requires largest amount of stormwater treatment. 4
	VISUAL/AESTHETIC IMPACTS	Smallest area for landscaping. 4	Largest area for landscaping. 5
SOCIO-ECONOMIC	HURRICANE EVACUATION/EMERGENCY	Additional capacity and bike lanes that can be used as shoulders for stopped/emergency vehicles facilitates emergency response and hurricane evacuation. 5	Similar to previous alternative. 5
	TRANSPORTATION PLANS COMPATIBILITY	Alternative features are compatible with adopted transportation plan. 4	Similar to previous alternative. Additionally, this alternative supports the IRC Bicycle and Pedestrian Master Plan. 5
	CONTROVERSY POTENTIAL	This alternative does not create controversy. 3	Alternative supported and requested by the community. 5
COST	CONSTRUCTION	Moderate cost due to roadway reconstruction. 5	Increased cost due to larger footprint. 4
	RIGHT-OF-WAY	Least amount of right-of-way required due to smallest footprint. 5	Largest amount of right-of-way required due to largest footprint. 4
SCORE		53	55

Intersection Improvement Concepts – CR 510 at 58th Avenue

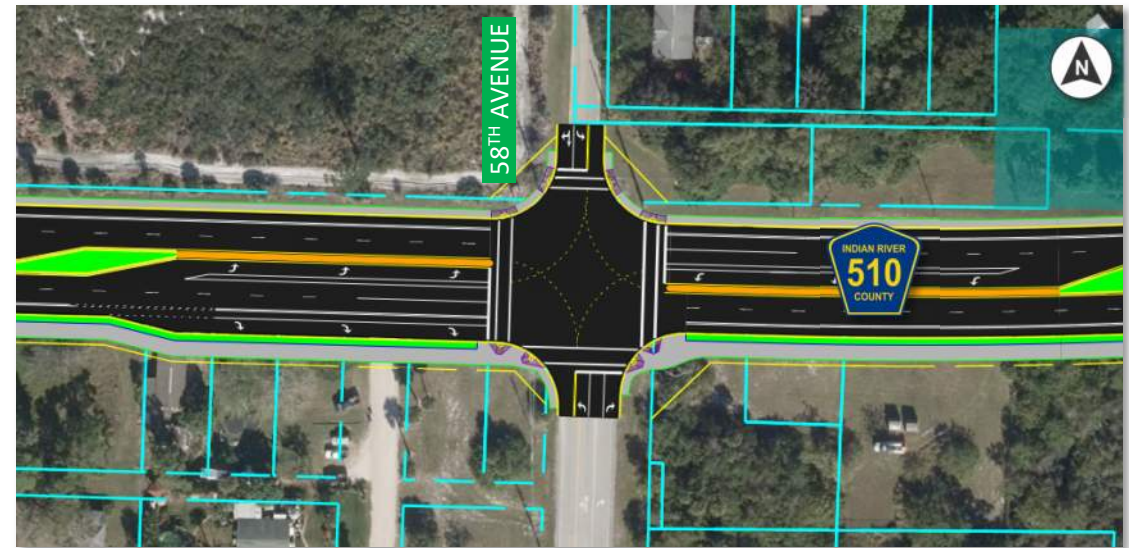
Signalized Restricted Crossing U-Turn E-W (RCUT)



Median U-Turn E-W (MUT)



Conventional Traffic Signal



Intersection Improvement Evaluation Matrix

CR 510 at 58th Avenue

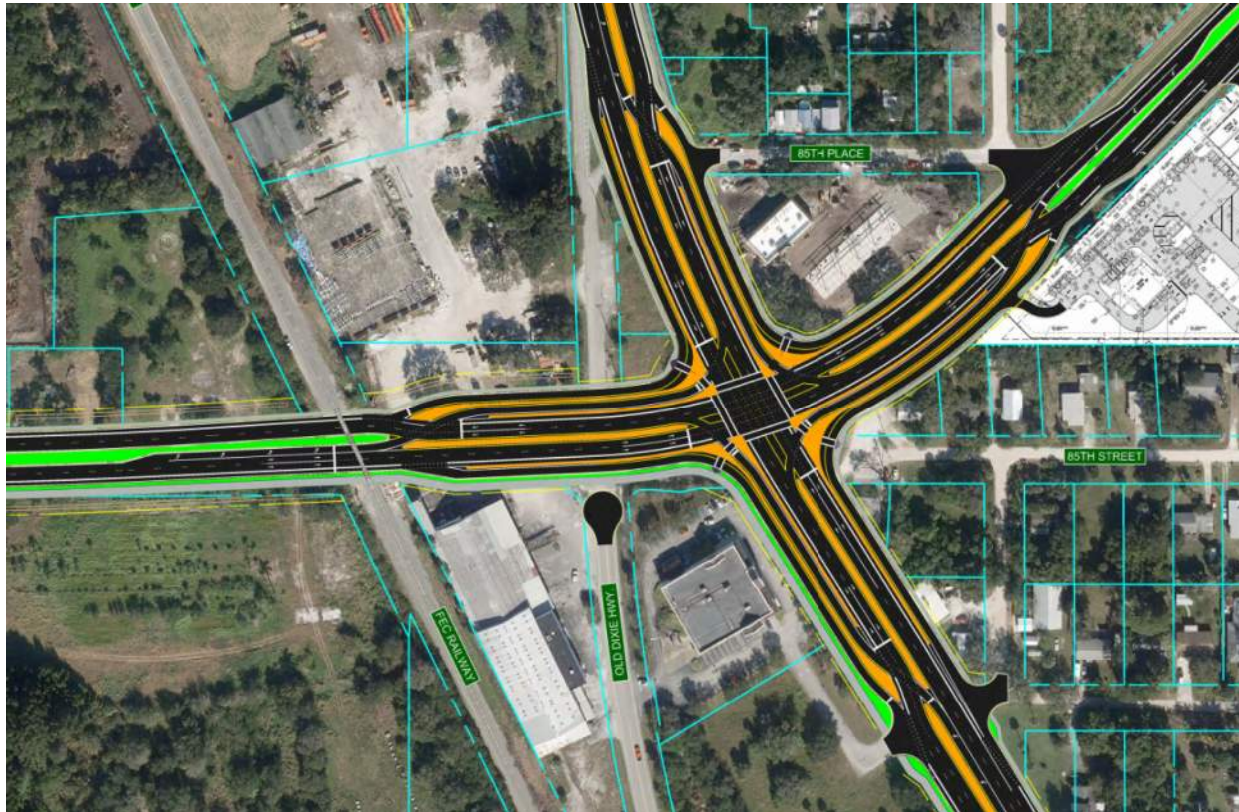
SCORE CRITERIA:
 1 = Substantially Less Desirable
 2 = Generally Less Desirable
 3 = Neutral or No Effect
 4 = Generally More Desirable
 5 = Substantially More Desirable

CRITERIA		RCUT	MUT	Traffic Signal
ENGINEERING	TRAFFIC SERVICE	Best traffic operations. 5	Better traffic operations than traditional traffic signal. 4	Provides adequate traffic operations. 3
	SAFETY	Less conflict points at the intersection will increase safety. 4	Less conflict points at the intersection will increase safety. 4	Provides more conflict points than the other two alternatives. 3
	ACCESS ISSUES	This alternative will required median U-turns to access 58th Avenue. 2	This alternative will required median U-turns to access 58th Avenue. 2	Provides direct access to 58th Avenue at the intersection. 5
ENVIRONMENTAL	POTENTIAL WETLANDS AND WILDLIFE HABITAD IMPACTS	This alternative creates impacts to the Scrub Jay Conservation Area. 2	This alternative creates impacts to the Scrub Jay Conservation Area. 2	This alternative avoids impacts to the Scrub Jay Conservation Area. 5
	WATER QUALITY/DRAINAGE	Larger area of impervious cover requires largest amount of stormwater treatment. 2	Larger area of impervious cover requires largest amount of stormwater treatment. 2	Smaller area of impervious cover requires least amount of stormwater treatment. 4
SOCIO-ECONOMIC	HURRICANE EVACUATION/ EMERGENCY RESPONSE	Restricted access to CR 510 provides less desirable conditions during emergency response. 4	Restricted access to CR 510 provides less desirable conditions during emergency response. 4	More direct access to CR 510 provides easiest access during emergency response. 5
	CONTROVERSY POTENTIAL	New intersection configuration will require education program. 2	New intersection configuration will require education program. 2	Conventional intersection will no create controversy. 3
COST	CONSTRUCTION	Increased cost due to larger footprint. 4	Increased cost due to larger footprint. 4	Moderate cost due to reconstruction. 5
	RIGHT-OF-WAY	Largest amount of right-of-way required due to largest footprint. 4	Largest amount of right-of-way required due to largest footprint. 4	Least amount of right-of-way required due to smallest footprint. 5
SCORE		29	28	38



Intersection Improvements – CR 510 at US-1

Displaced Left Turn (DLT)



Conventional Traffic Signal



Intersection Improvement Evaluation Matrix

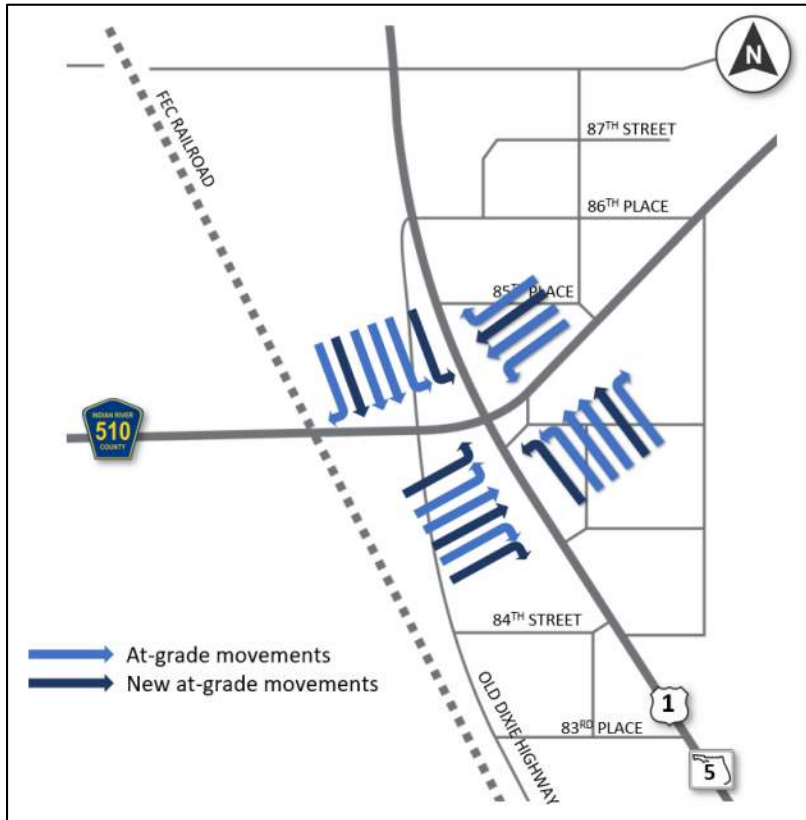
CR 510 at US-1

SCORE CRITERIA:
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 3 = Neutral or No Effect
 4 = Generally More Desirable
 5 = Substantially More Desirable

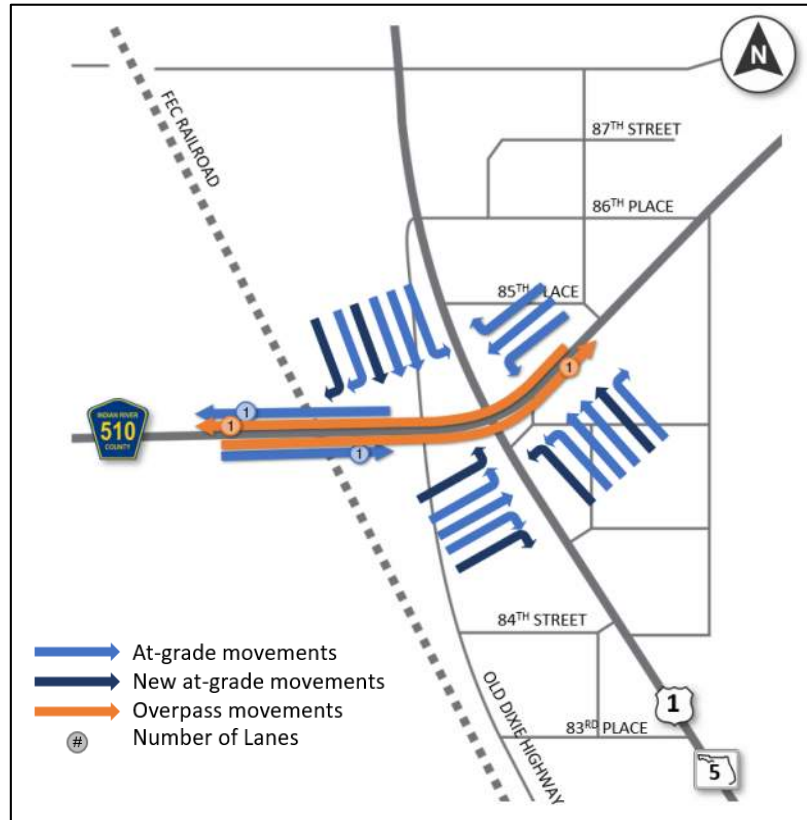
CRITERIA		DLT	Traffic Signal
ENGINEERING	TRAFFIC SERVICE	Best traffic operations. 5	Provides adequate traffic operations. 3
	SAFETY	Less conflict points at the intersection will increase safety. 4	Provides more conflict points than the other two alternatives. 3
	ACCESS ISSUES	This alternative will impact direct access to businesses at three quadrants within the intersection. 2	Provides direct access to all businesses within the intersection. 5
ENVIRONMENTAL	POTENTIAL WETLANDS AND WILDLIFE HABITAD IMPACTS	Minimal impacts 3	Minimal impacts 3
	WATER QUALITY/DRAINAGE	Larger area of impervious cover requires largest amount of stormwater treatment. 2	Smaller area of impervious cover requires less amount of stormwater treatment. 3
SOCIO-ECONOMIC	HURRICANE EVACUATION/ EMERGENCY RESPONSE	Provides adequate access during emergency response. 3	Provides adequate access during emergency response. 3
	CONTROVERSY POTENTIAL	New intersection configuration will require education program. 2	Conventional intersection will no create controversy. 3
COST	CONSTRUCTION	Increased cost due to larger footprint. 4	Moderate cost due to reconstruciton. 5
	RIGHT-OF-WAY	Largest amount of right-of-way required due to largest footprint. 4	Least amount of right-of-way required due to smallest footprint. 5
SCORE		29	33

Alternatives at the FEC Railroad Crossing

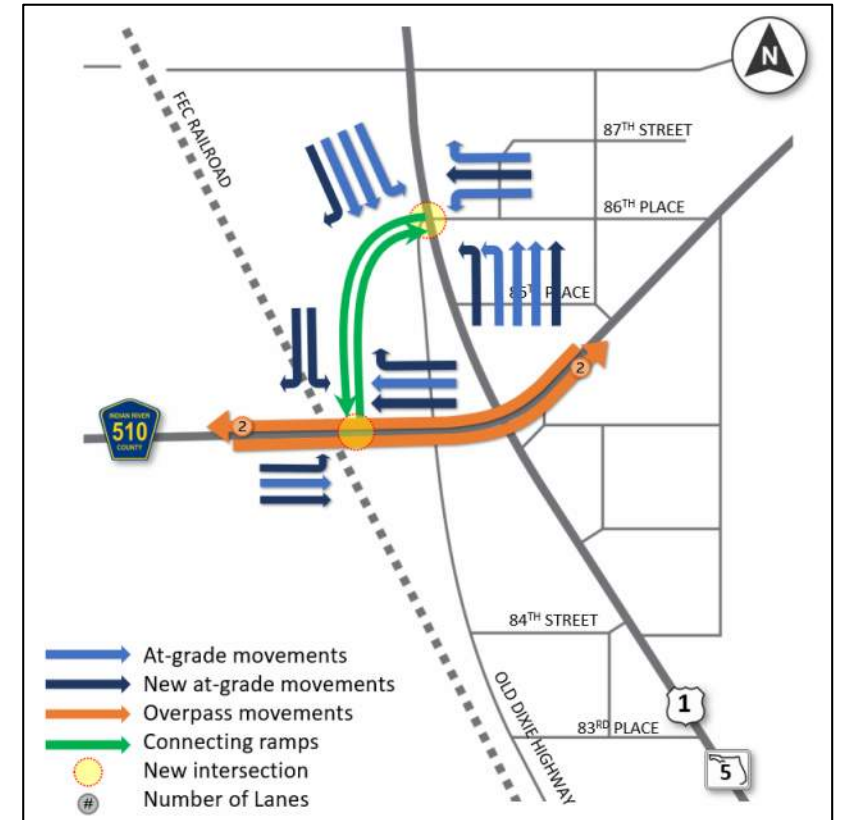
Alternative 1



Alternative 2

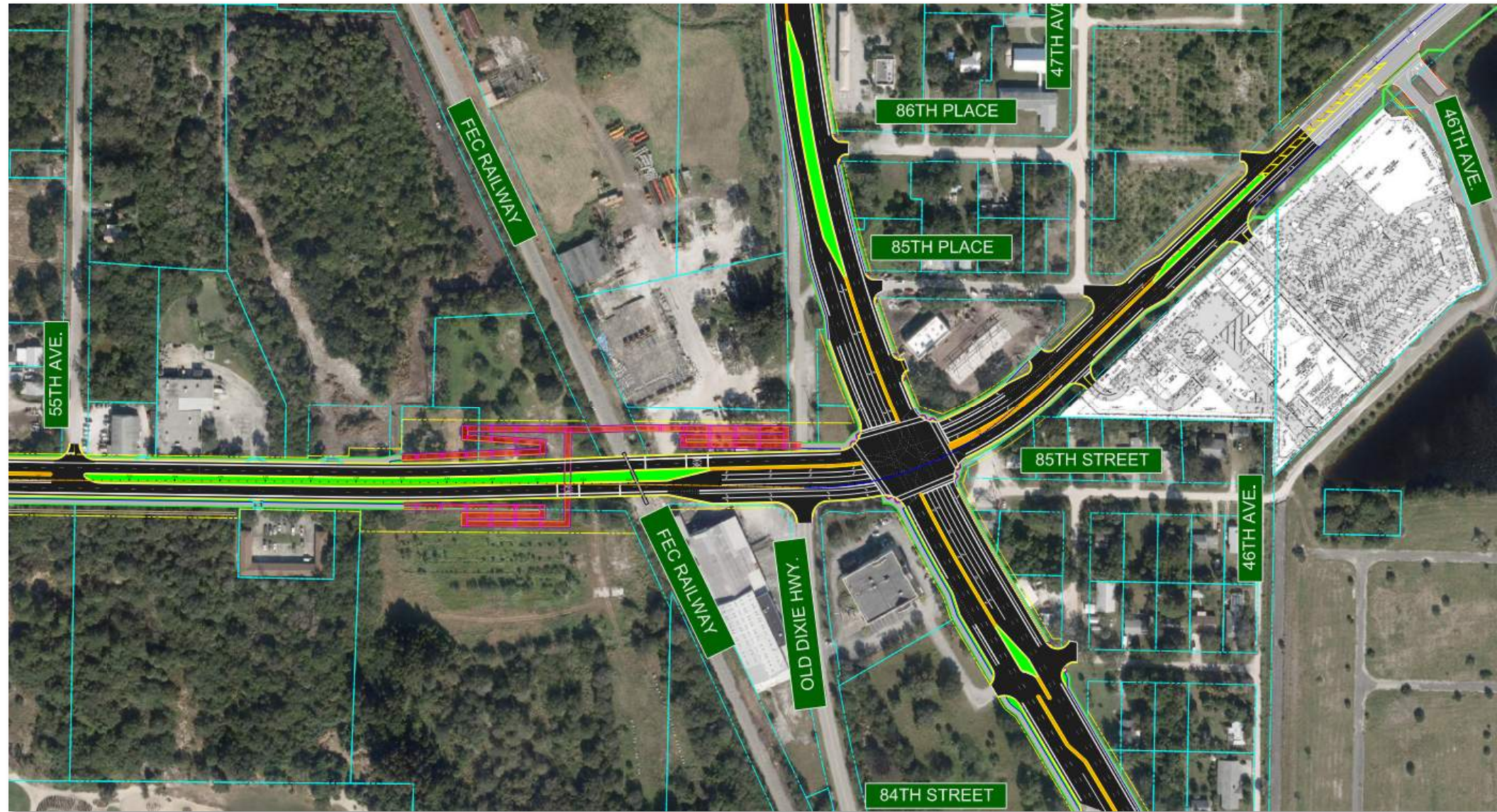


Alternative 3



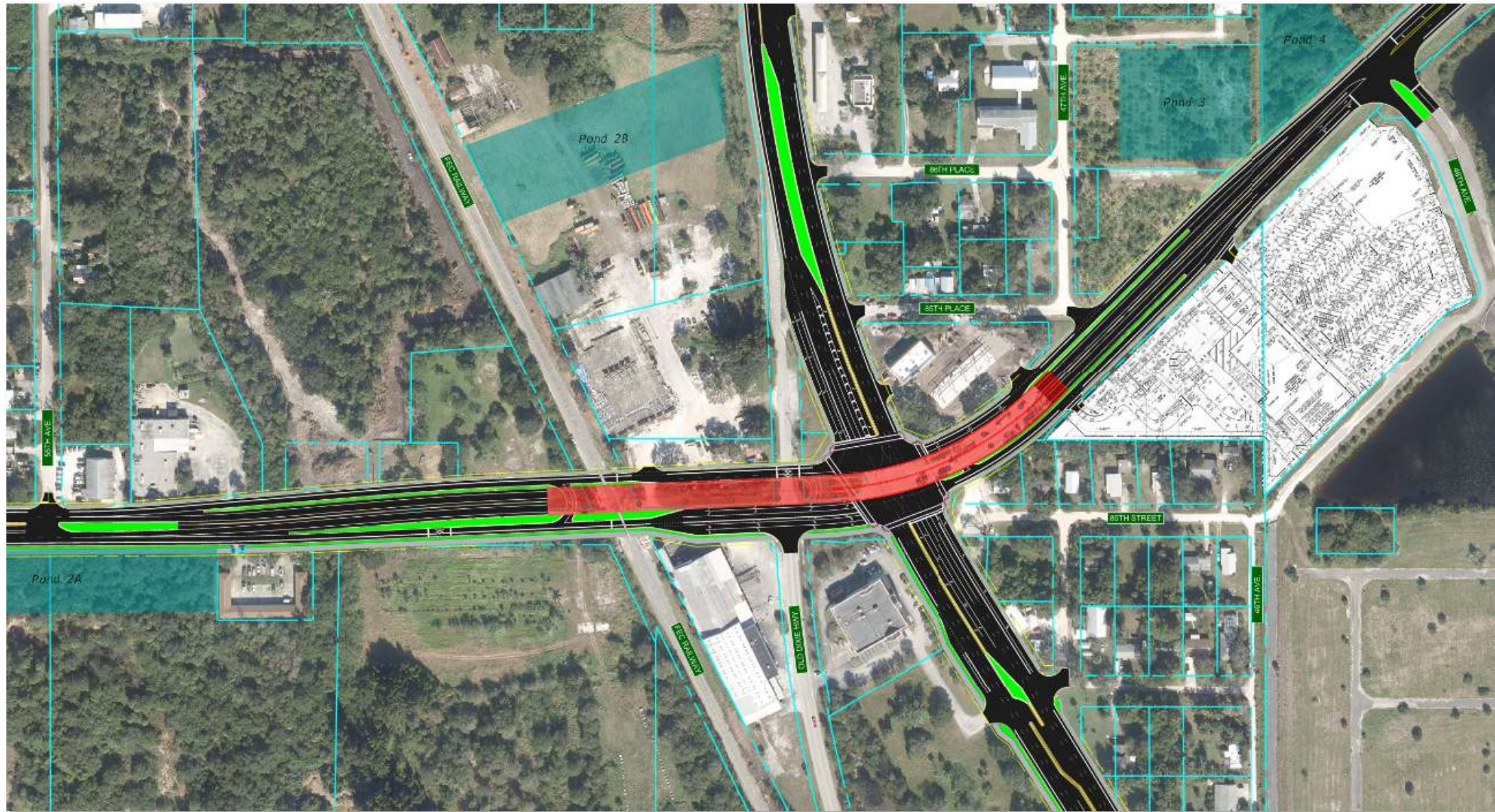
Alternatives 1

At-Grade Widening



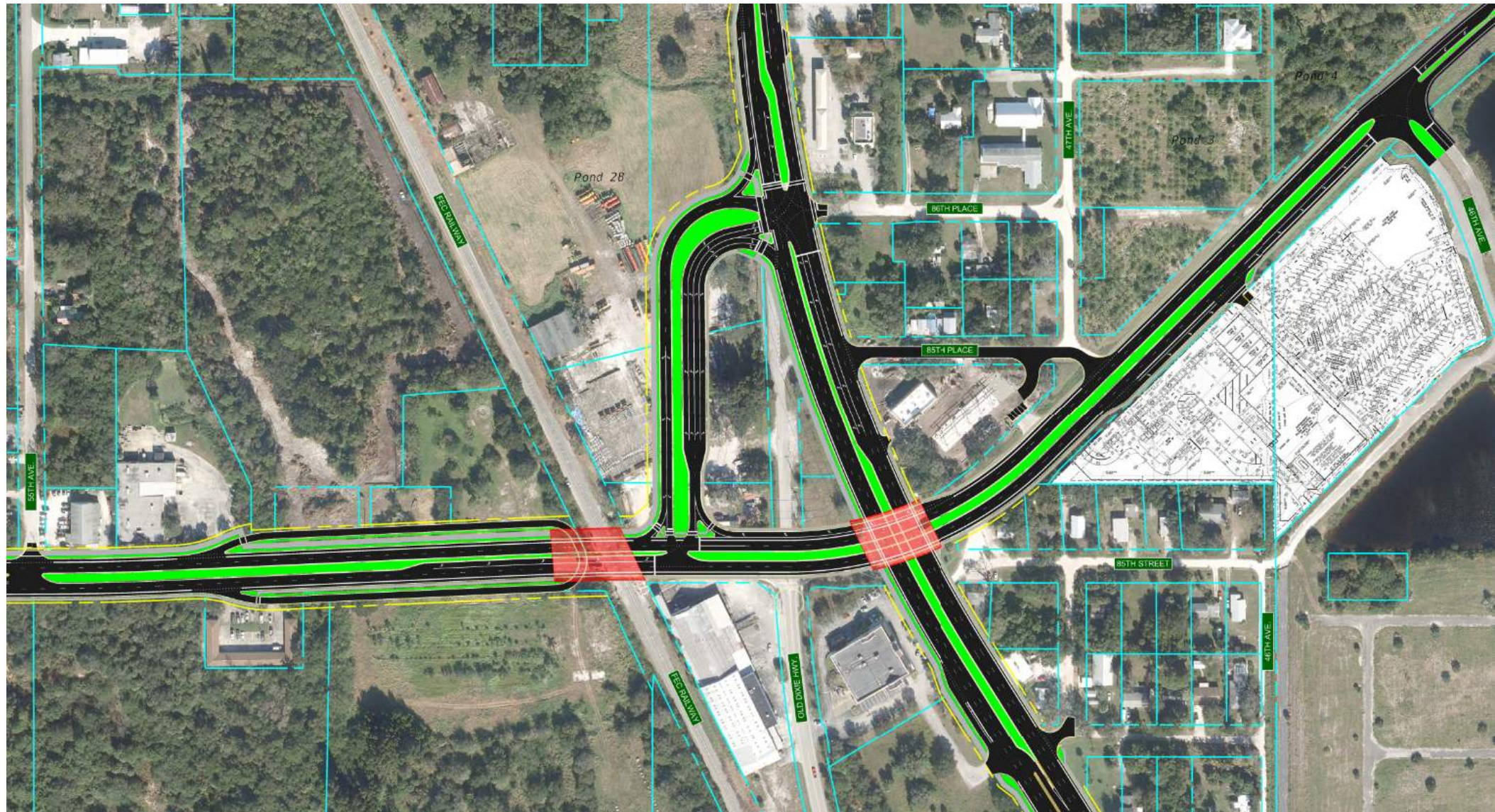
Alternatives 2

Partial Grade Separation over FEC



Alternatives 3

Full Grade Separation over FEC



Alternatives at the FEC Railroad Crossing Evaluation Matrix

SCORE CRITERIA:
 1 = Substantially Less Desirable
 2 = Generally Less Desirable
 3 = Neutral or No Effect
 4 = Generally More Desirable
 5 = Substantially More Desirable

CRITERIA		ALTERNATIVE 1 At-Grade Widening	ALTERNATIVE 2 Partial Grade Separation over FEC	ALTERNATIVE 3 Full Grade Separation over FEC
Purpose & Need	Capacity	Improves along CR 510 and at the US-1 intersection will improve capacity. 4	Improves along CR 510 and at the US-1 intersection will improve capacity. 5	Improves along CR 510 and at the US-1 intersection will improve capacity. This alternatives impacts additional intersection. 4
	Transportation Demand	Improvements will meet the transportation demand along CR 510 4	Improvements will meet the transportation demand along CR 510 4	Improvements will meet the transportation demand along CR 510 4
	Social Demand/Economic Development	Maintains access to Bridge Marketplace development and other new developments 5	Maintains access to Bridge Marketplace development and other new developments 5	Provides access impacts at Bridge Marketplace development 2
	Modal Relationship	Provides sidewalks and bicycle lanes, providing connectivity to the US-1 SUP 4	Provides sidewalks and bicycle lanes, providing connectivity to the US-1 SUP 4	Provides sidewalks and bicycle lanes, providing connectivity to the US-1 SUP 4
	System Linkage	Improves evacuation. Improves connectivity with US-1. 5	Improves evacuation. Improves connectivity with US-1. 5	Improves evacuation. Modifies connecting access to US-1. 4
Engineering	Geometric Compliance to Design Criteria	This alternative could be implemented per FDM 5	This alternative could be implemented per FDM 5	In order to maintain access to local businesses this alternative will require design exceptions 4
	Access Management	Maintains existing driveway access points. Closes access to Old Dixie Highway. 4	Maintains existing driveway access points. Closes access to Old Dixie Highway. 4	Closes access to Old Dixie Highway. Closes 3 existing driveways: at Graves Brothers, packing house, 7-eleven. 1
	Multimodal Accommodations	This alternative provides sidewalks and bicycle lanes throughout the corridor 4	This alternative provides sidewalks and bicycle lanes throughout the corridor 4	This alternative provides sidewalks and bicycle lanes throughout the corridor 4
	Mobility	Improves mobility 4	Improves mobility 5	Improves mobility but modifies connection/ wayfinding at the CR 510 and US-1 intersection. 1
	Safety Impacts	Provides additional safety improvements along CR 510 and adds turn lanes improving the existing conditions 3	Provides additional safety improvements along CR 510 and removes through traffic from the US-1 intersection 5	Provides additional safety improvements along CR 510 and modifies the existing US-1 intersection creating a new T-intersection with CR 510 2
	Utility Impacts	Minor 3	Moderate 2	Substantial 1
	Maintenance of Traffic	Least Complex TTCP 4	More Complex TTCP 3	Most Complex TTCP 1

(Table continues next slide)

Alternatives at the FEC Railroad Crossing

Evaluation Matrix

SCORE CRITERIA:
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 2 = Generally Less Desirable
 3 = Neutral or No Effect
 4 = Generally More Desirable
 5 = Substantially More Desirable

CRITERIA		ALTERNATIVE 1 At-Grade Widening	ALTERNATIVE 2 Partial Grade Separation over FEC	ALTERNATIVE 3 Full Grade Separation over FEC
Social-Economic	Social & Neighborhood Impacts	Lower neighborhood impacts 3	Moderate neighborhood impacts 2	Greater neighborhood impacts 1
	Relocation Potential	This alternative could be implemented without relocations 3	This alternative could be refined to eliminate relocations 2	Connecting ramps will impact properties at the northwest quadrant of the CR 510 and US-1 1
	Community Services Facilities	No impacts to any community service facilities 3	No impacts to any community service facilities 3	Access impacts to businesses at the US-1 intersection 2
	Public Comments	Preferable option 5	Publicly accepted 4	Least public support 1
Environmental	Water Quality and Quantity	Ponds required. Easiest to maintain existing stormwater conditions. 5	Ponds required. Easier to maintain existing offsite treatment but basins change due to proposed bridge. 4	Biggest ponds required. Basins and offsite flow routes change due to ramp and bridge. 2
	Wildlife and Habitat	Impacts to existing habitat will need to be mitigated 2	Impacts to existing habitat will need to be mitigated 2	Impacts to existing habitat will need to be mitigated 2
	Cultural/Historical/Archeological	Packing house potential historical resource. Alternative avoids impacts at this location. 3	Packing house potential historical resource. Alternative avoids impacts at this location. 3	Packing house potential historical resource. Alternative avoids impacts at this location. 3
	Noise Impacts	All travel lanes at-grade 4	Two elevated lanes 3	Four elevated lanes and additional ramps at 86th Place 2
	Contamination	Moderate risk 2	Moderate risk 2	Moderate risk 2
Other Considerations	Right-of-Way Impacts	This alternative will require additional R/W for the widening of CR 510 and the least amount of R/W at the US-1 intersection. 3	This alternative will require additional R/W for the widening of CR 510 and additional R/W at the US-1 intersection for the partial overpass. 2	This alternative will require additional R/W for the widening of CR 510 and a substantial amount of R/W at the US-1 intersection for the additional connecting ramps. 1
	Preliminary Construction Cost	Moderate Cost 3	High Cost 2	Highest Cost 1
	Constructability	Least Complex 3	More Complex 2	Most Complex 1
	MPO Support	Widens CR 510 from 2 to 4 lanes and provides improvements at the US-1 intersection 4	Widens CR 510 from 2 to 4 lanes and provides improvements at the US-1 intersection 4	Widens CR 510 from 2 to 4 lanes but provides higher impacts at the US-1 Intersection 2
	Compatible with FEC Railroad Requirements	Not compatible with FEC requirements to grade separate any CR 510 improvements 1	Maintaining two at-grade lanes will require the closure of another existing at grade railroad crossing 4	This alternative removes all at-grade railroad crossing conflict points 5
SCORE		93	90	58
RANKING		1	2	3



FEC Railroad Coordination



ENVIRONMENTAL ANALYSIS



Social Effects

- Land Use Changes
- Social
- Relocation Potential
- Farmlands
- Aesthetic Effect
- Economic
- Mobility

Natural Resources

- Wetlands
- Aquatic Preserves
- Water Quality and Quantity
- Wild and Scenic Rivers
- Floodplains
- Protected Species and Habitat
- Essential Fish Habitat

Cultural Resources

- Historic Sites/Districts
- Archeological Sites
- Recreation Areas
- Section 4(f) Potential

Physical Effects

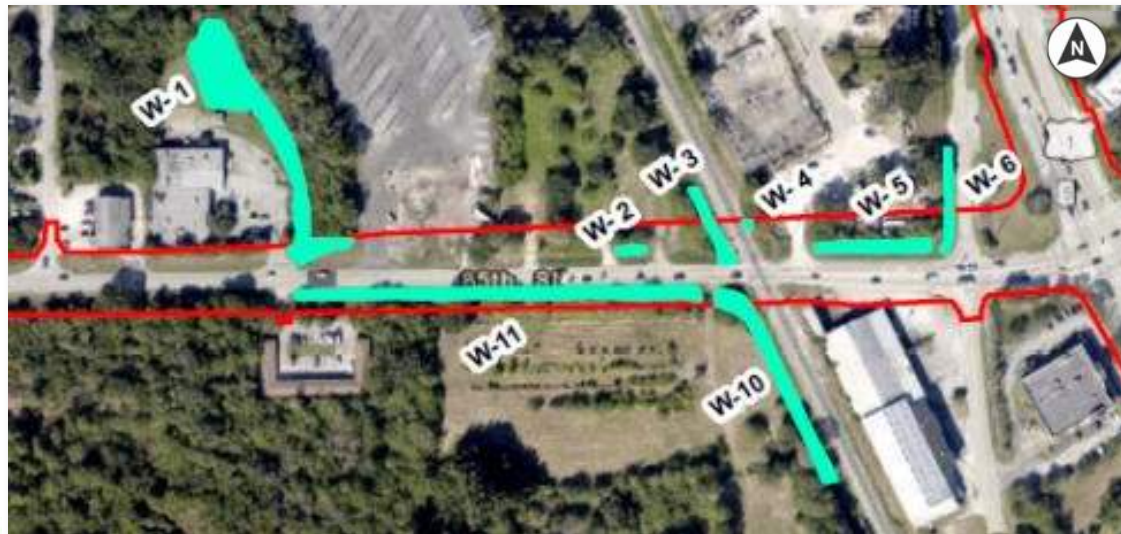
- Traffic Noise
- Air Quality
- Contamination
- Infrastructure

Natural Resources

- 10 Wetlands along the corridor
- Mostly near CR-510 and the FEC Railroad



Existing wetlands along CR 510 west of US-1



Existing wetlands along CR 510 east of US-1



Natural Resources

- 13 Gopher tortoise burrows. All but two between 58th Avenue and 55th Avenue
- Potential scrub-jay habitat along CR 510 between 58th Avenue and 55th Avenue. Scrub-jay survey will be conducted in the spring 2024

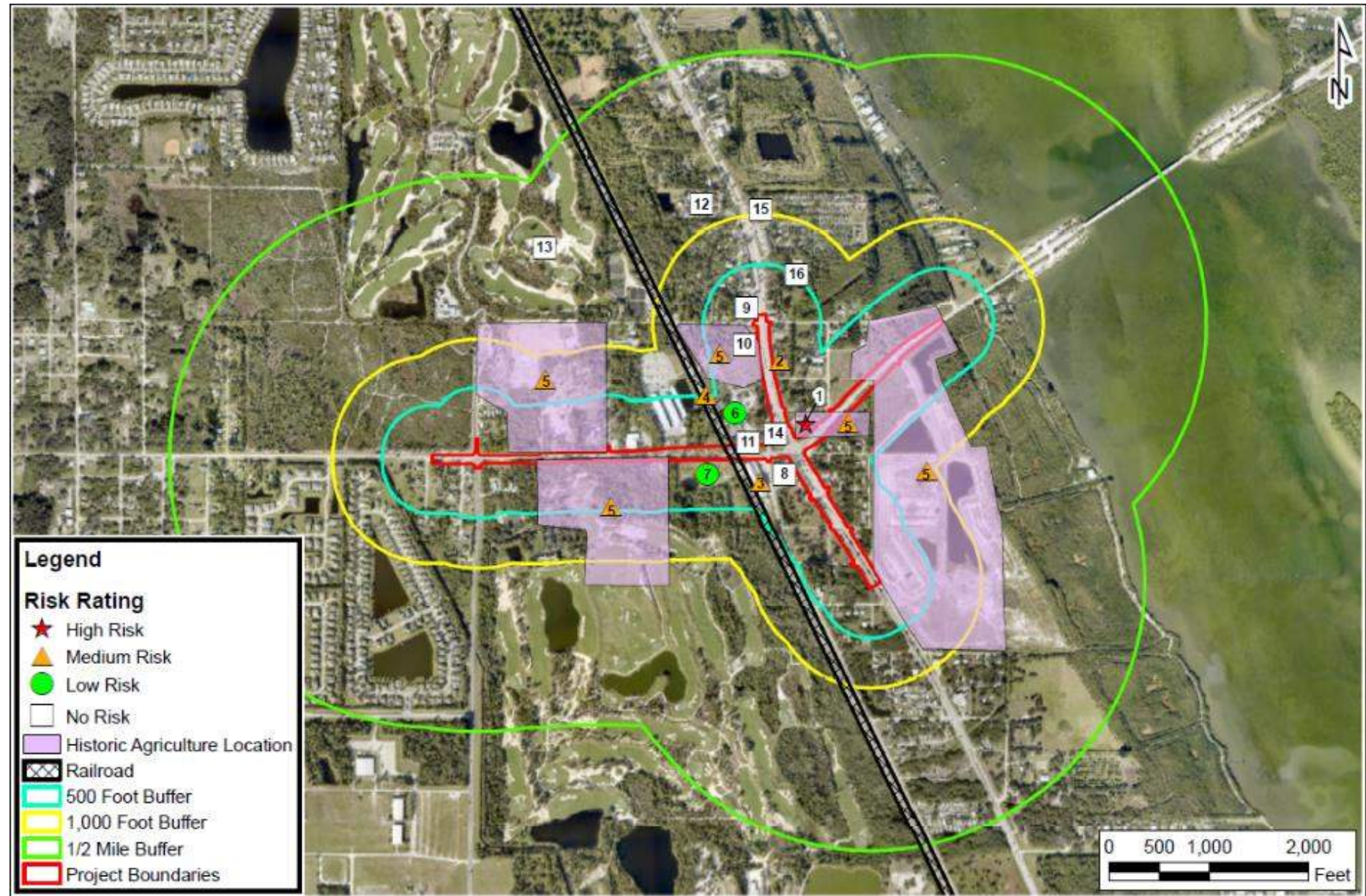


Existing Gopher tortoise burrow along CR 510 at location #3



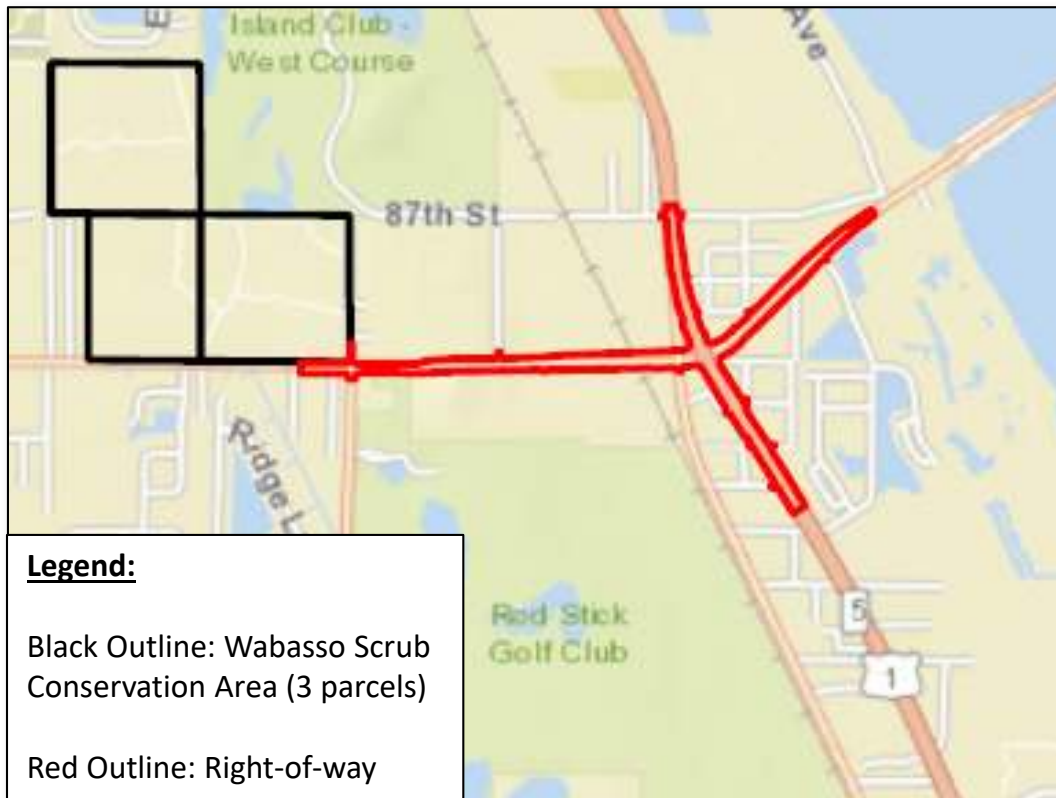
Contamination

- 16 sites
 - 1 high risk
 - 4 medium risk
 - 2 low risk
 - 9 no risk



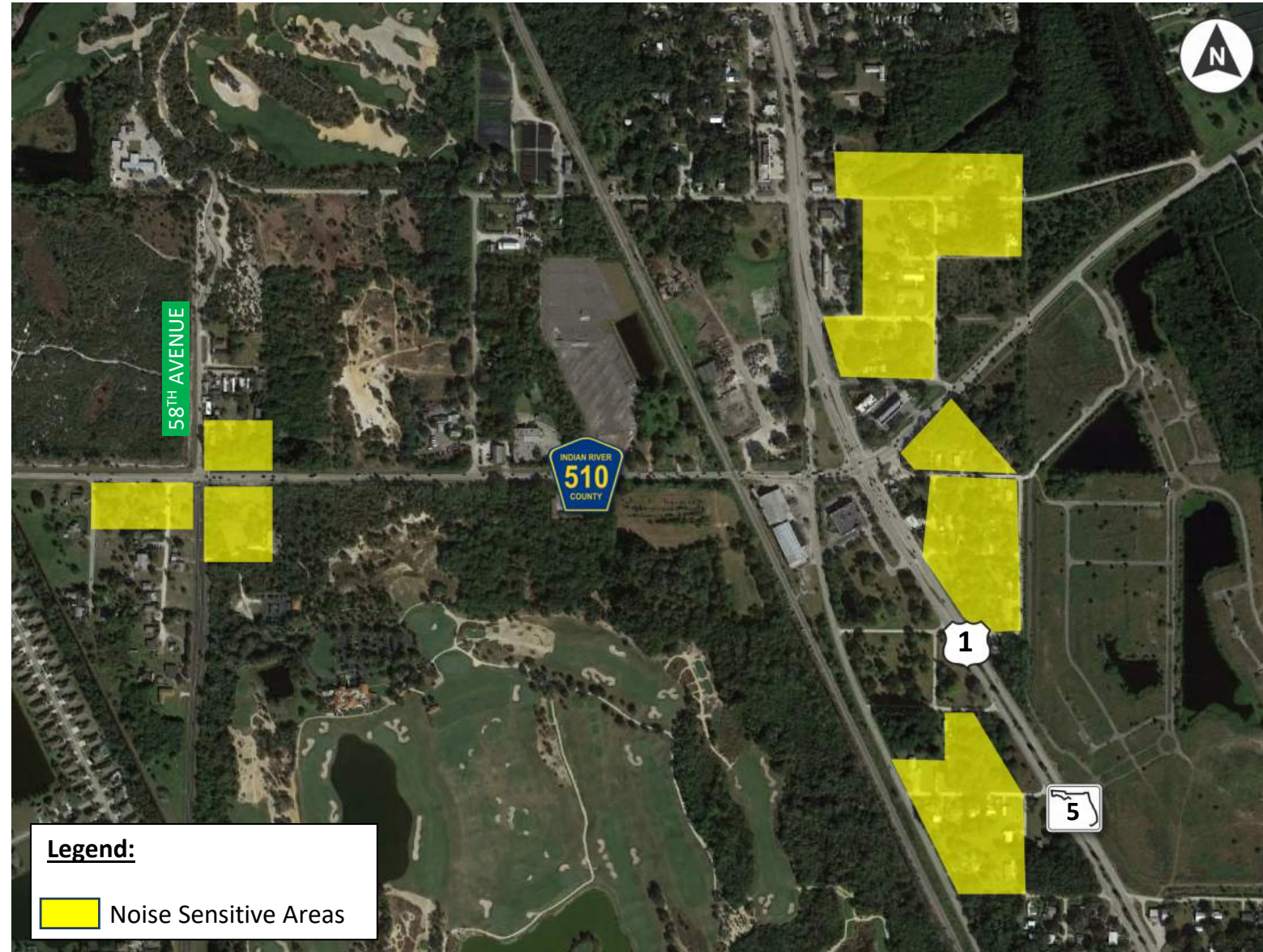
Section 4(f)

- Wabasso Scrub Conservation Area directly adjacent to project at NW corner or CR-510 & 58th Avenue



Noise Analysis

- Most of the existing noise sensitive areas are located along the east side of US-1
- Existing noise levels were measured at three locations within the project limits during August 2023
- Ranged from 58.0 to 66.3 dB(A)
- FDOT’s Noise Abatement Criteria for homes is 66 dB(A).
- Noise abatement will be considered for all locations within the project limits where traffic noise levels are predicted to be greater than the FDOT’s NAC.



Cultural Resources

- A Cultural Resource Assessment Survey (CRAS) is being completed
- 3 linear resources
 - FEC Railroad (8IR01497)
 - Old Dixie Highway (8IR01519)
 - US-1 (8IR01520)
- 1 newly recorded resource eligible for listing in the National Register of Historic Places (NRHP)
 - Graves Brother Packing House (8IR01920)



PUBLIC INVOLVEMENT

- Public Meetings:
 - Public Kick-off Meeting:
 - *January 26, 2023 (Virtual)*
 - *January 31, 2023 (In-Person)*
 - Alternatives Public Workshop:
 - *February 27, 2024 (Virtual)*
 - *February 29, 2024 (In-Person)*
 - Public Hearing:
 - *Summer 2024 (Tentative)*

- Submit Comments to:
 - Maria Formoso, PE
 - E-mail: maria.formoso@dot.state.fl.us
 - Project Website: <https://www.fdot.gov/projects/cr510-58ave-us1>

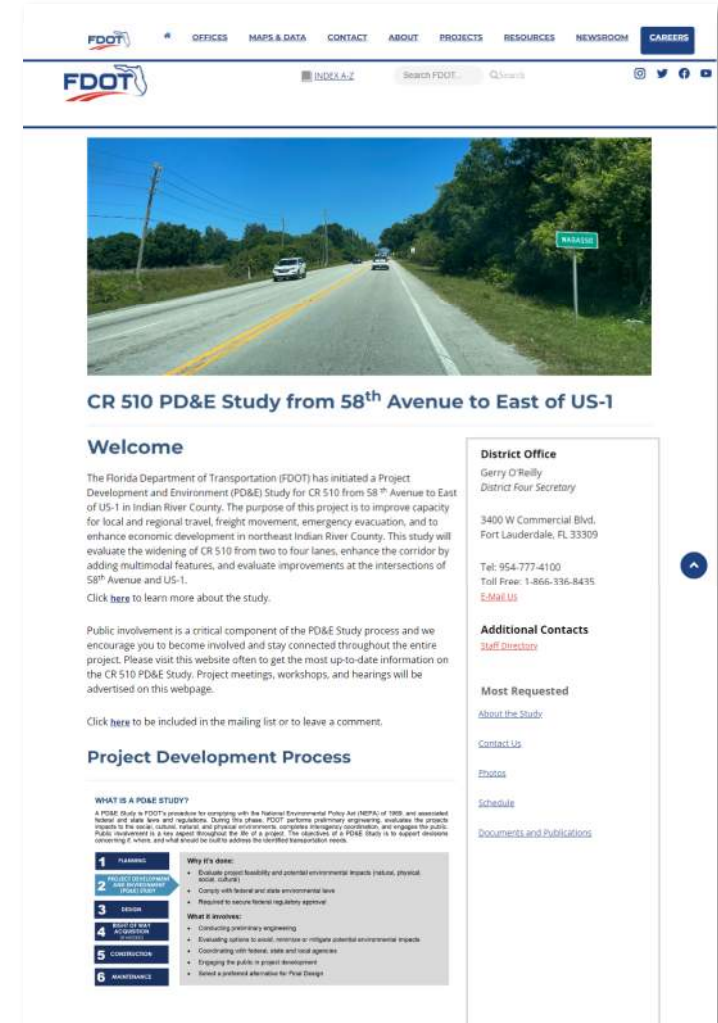
Public comments and questions are welcomed at any time throughout the study.

Social Media



Facebook: MyFDOTSEFL
 Instagram: myfdot_sefl
 X: @MyFDOT_SEFL

GET INVOLVED!
STAY INFORMED!



PROJECT SCHEDULE

Funding:

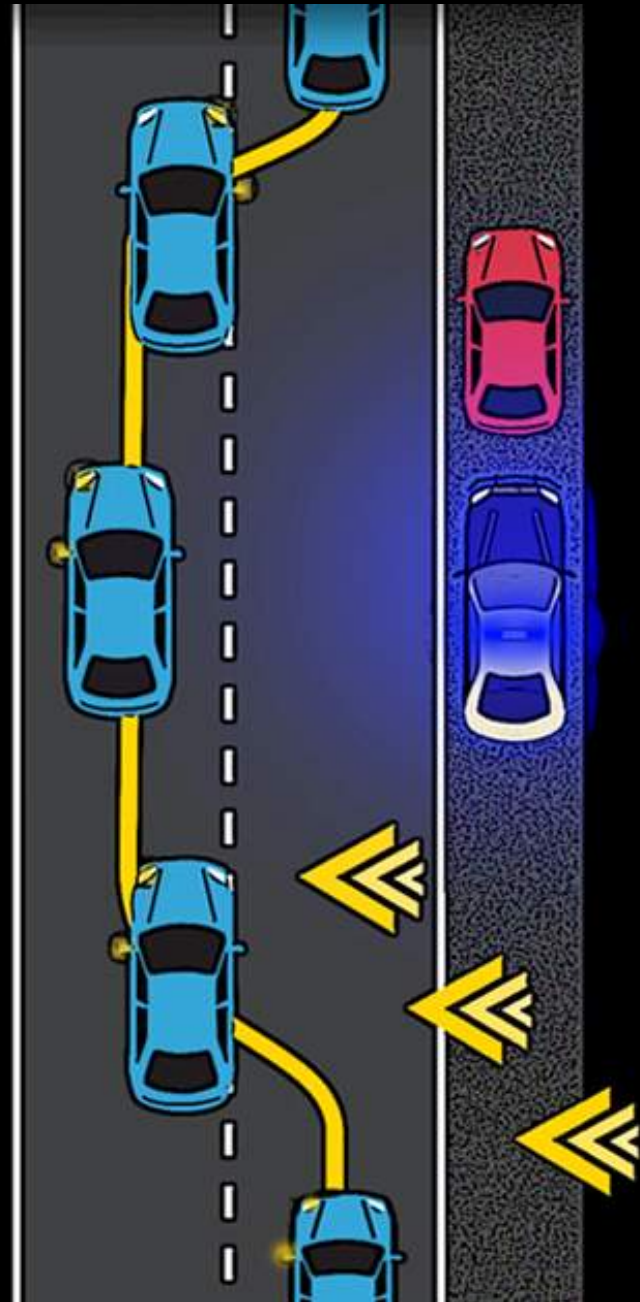
- PD&E Study (Fiscal Year 2022)
- Design (Fiscal Year 2024)
- Right-of-Way (Fiscal Year 2026)
- Construction (Currently not funded)

TASK	2022					2023												2024																		
	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D							
Notice to Proceed	▶ Notice to Proceed																																			
Existing Conditions Analysis	█																																			
Public Kick-Off Meeting	◆ Public Kick-Off Meeting																																			
Development of Alternatives	█																																			
Engineering Analysis	█																																			
Environmental Analysis	█																																			
IRC – MPO Presentations	◆ IRC – MPO Presentations																																			
Alternatives Public Workshop	◆ Alternatives Public Workshop																																			
Select Preferred Alternative	◆ Select Preferred Alternative																																			
Draft Engineering Reports	█																																			
Draft Environmental Reports	█																																			
IRC – MPO Presentations	◆ IRC – MPO Presentations																																			
Public Hearing	◆ Public Hearing (Tentative)																																			
Final Engineering Reports	█																																			
Final Environmental Reports	█																																			
SWEPT Submittal – OEM Review	█																																			
Location and Design Concept Acceptance (LDCA)	◆ LDCA																																			



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Thank you!

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