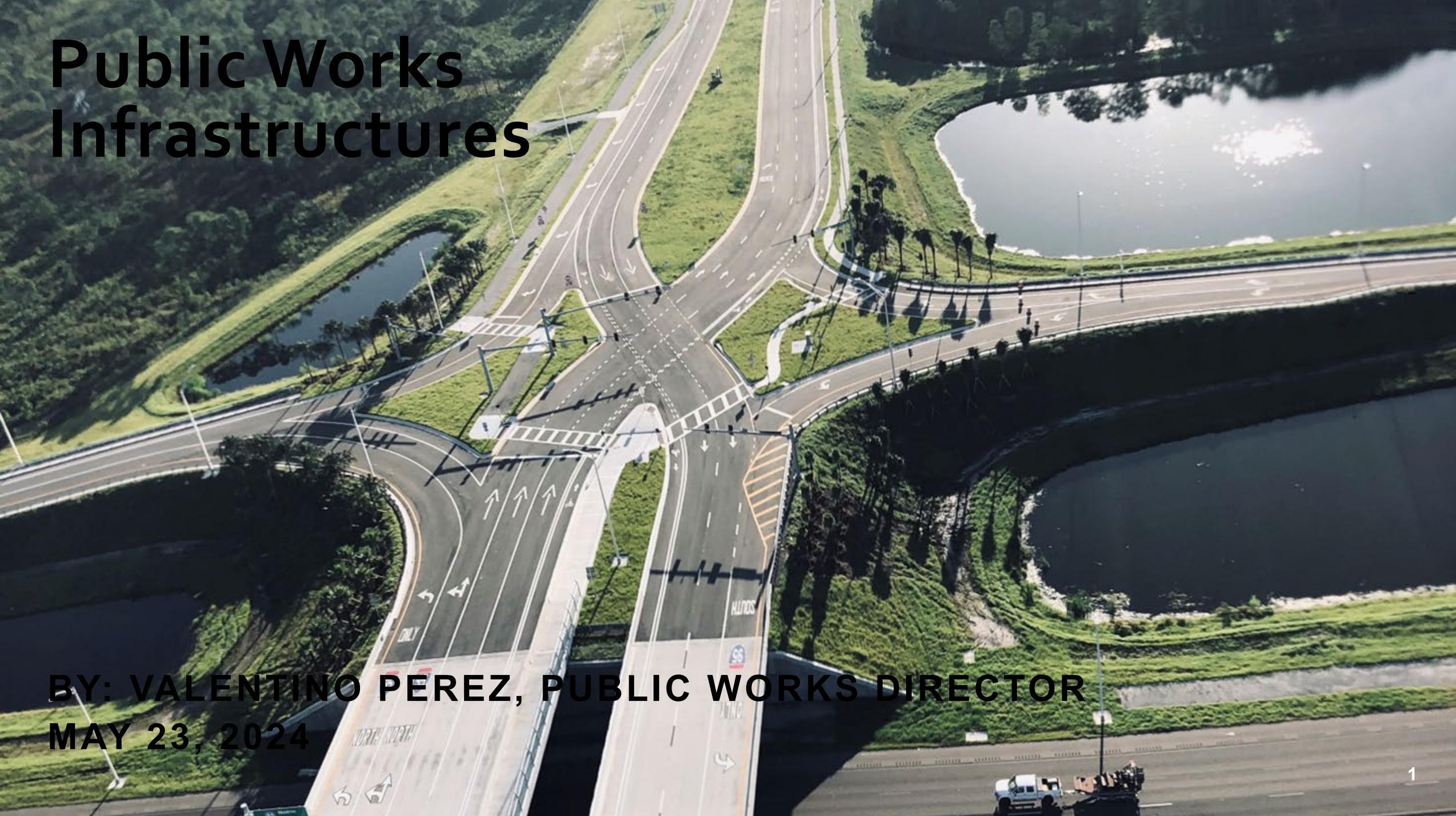


# Public Works Infrastructures

An aerial photograph of a large, modern highway interchange. The interchange features multiple lanes with clear lane markings, including arrows and 'ONLY' signs. Traffic lights are visible at the intersection points. The surrounding area is lush with green grass and trees, with a body of water visible on the right side. The overall scene depicts a well-maintained public works infrastructure project.

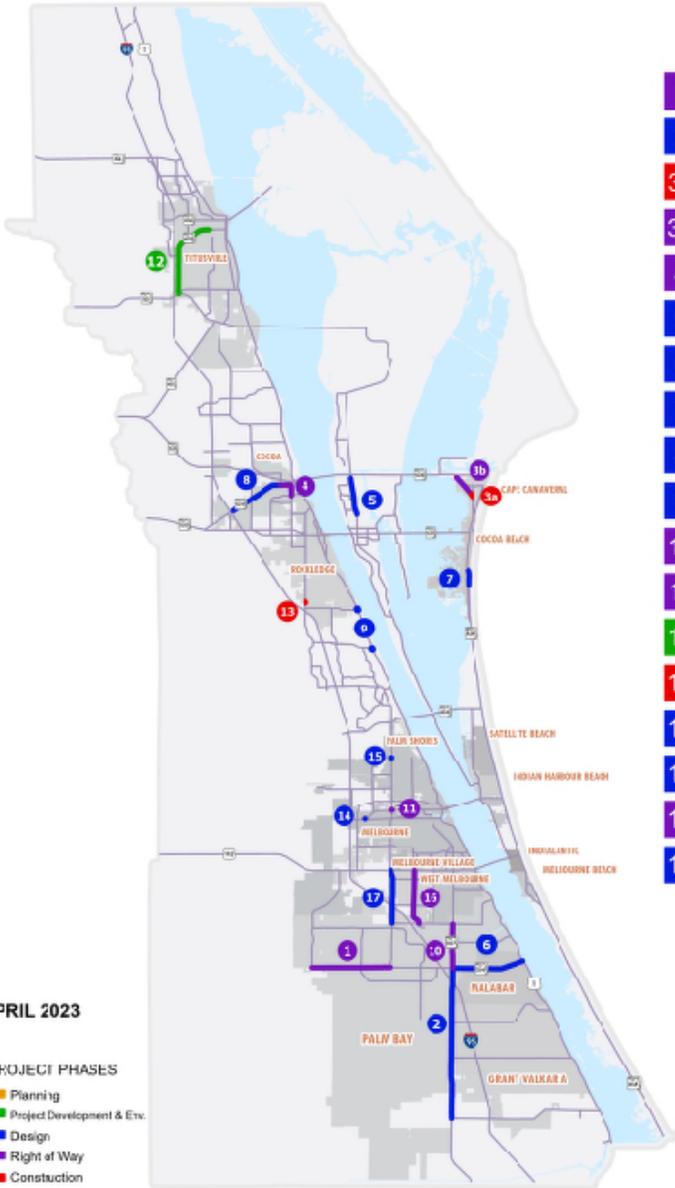
**BY: VALENTINO PEREZ, PUBLIC WORKS DIRECTOR**  
**MAY 23, 2024**

# OVERVIEW

- Regional Roadway System
- Future Citywide North South and East West corridors
- Traffic Safety - Vision Zero and Crash Data
- Existing Infrastructure
  1. Roadway Capacity
  2. Intersection turn lanes and traffic signals
  3. Bridge Structures
  4. Intelligent Transportation System (ITS) projects
  5. Street Lighting
  6. Sidewalks and Trails
  7. Roadway Trees and Landscaping
  8. Traffic Calming Safety Enhancements
  9. Railroad Quiet Zones

## Project Ranking FY 25-29

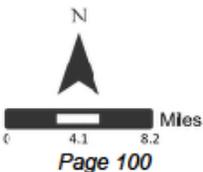
- 1 Malabar Rd (437210-1)
- 2 Babcock St (437204-1)
- 3a SR A1A (430202-5)
- 3b SR A1A (430202-8)
- 4 SR 501 (Clearlake Rd) (433605-1)
- 5 SR 3 (Courtenay Pkwy) (435631-2)
- 6 SR 514 (Malabar Rd) (430136-1)
- 7 SR A1A NB (441445-1)
- 8 SR 524 (437983-1)
- 9 US 1 (433604-1)
- 10 SR 507 (Babcock St) (237650-6)
- 11 SR 518 (Eau Gallie Blvd) @ Wickham Rd (443734-1)
- 12 SR 405 (South St)
- 13 SR 519 (Fiske Blvd) (446600-1)
- 14 SR 518 (Eau Gallie Blvd) @ SR 5054 (Sarno Rd)
- 15 Wickham Rd
- 16 Hollywood Blvd (437203-1)
- 17 Minton Road



APRIL 2023

- PROJECT PHASES**
- Planning
  - Project Development & Env.
  - Design
  - Right of Way
  - Construction

TAC/CAC 5-8-2023



# Regional Roadway System Transportation Improvement Program (TIP)

- Babcock St 4 lanes from Malabar to Micco
- Malabar Rd 4 lanes PD&E study
- Malabar Rd 4 lanes widening design
- SJHP 4 lane widening design
- Minton Rd widening study
- I-95 at Malabar Interchange PD&E
- ITS Malabar/Emerson/San Filippo Construction

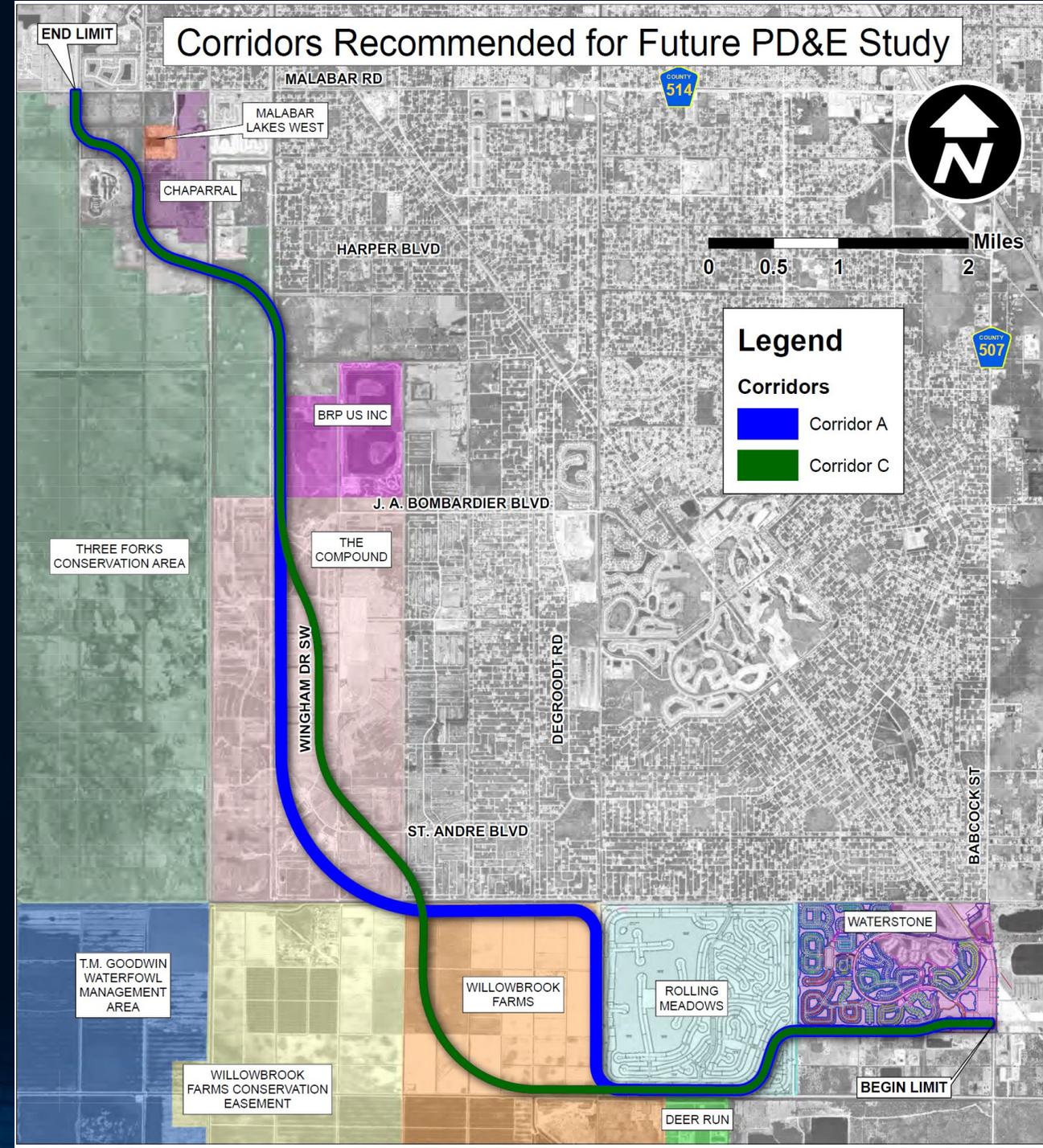
# Future Regional North South & East West Corridors

## North South Connections

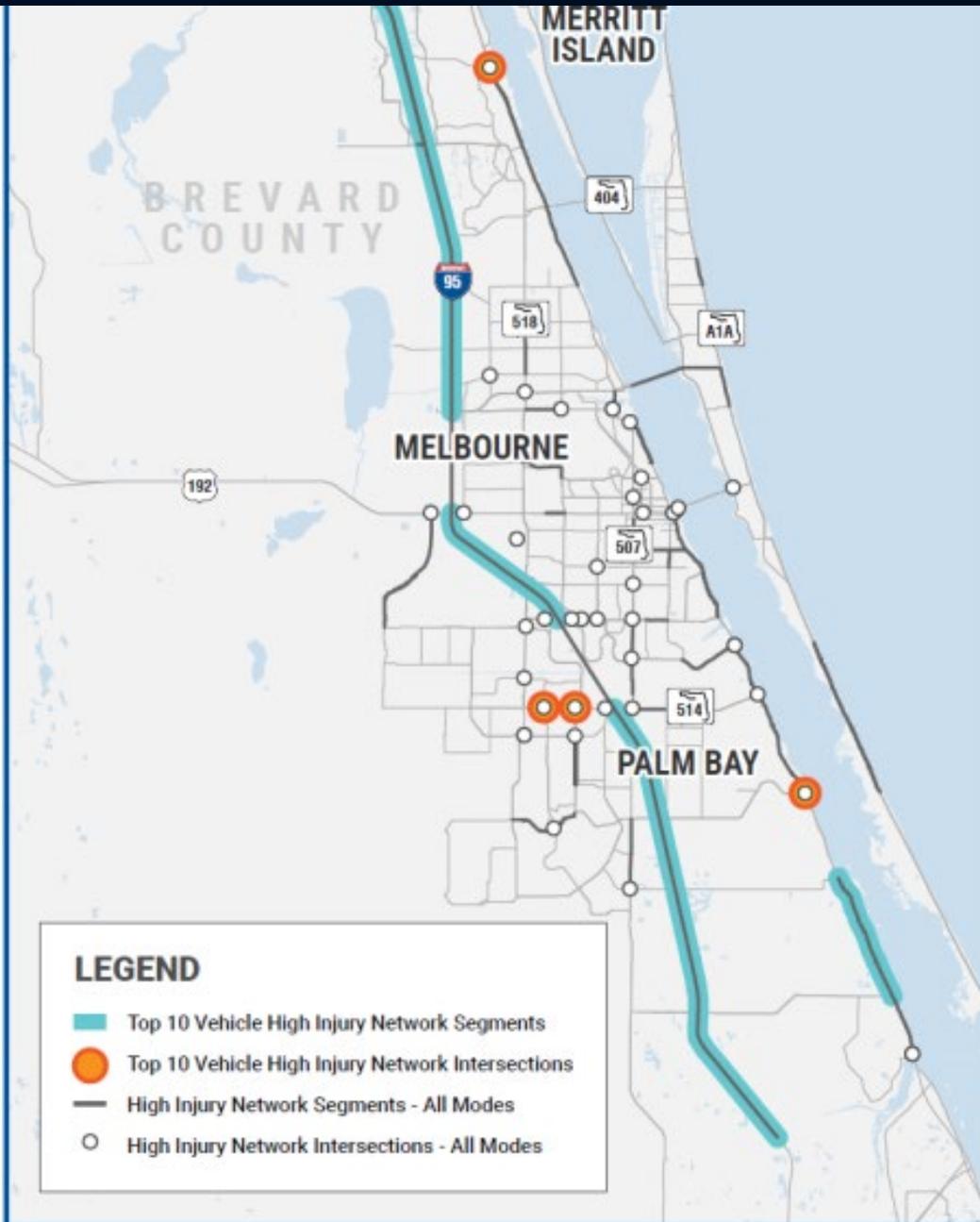
1. Babcock St Widening
2. SJHP Alternative Corridor Evaluation (ACE)
3. SJHP Design & Construction Phasing
4. Wingham Alignment (The Compound)
5. Minton Road Widening
6. Garvey Road Extension
7. Extension of Lowry Blvd

## East West Connections

1. Malabar 4 lane widening
2. Emerson 4 lane widening
3. Osmosis Extension



# TPO Brevard County 2023 Crashes



## Top 10 Vehicle High Injury Network Segments

Rank	Corridor Roadway	From	To	Vehicle Crash Severity Score/Year
1	I-95	Palm Bay Rd.	US 192	1,963
2	I-95	Wickham Rd.	Fiske Blvd. (SR 519)	1,776
3	I-95	Indian River County Line	St. John's Heritage Pkwy.	1,708
4	I-95	Eau Gallie Blvd. (SR 518)	Wickham Rd.	1,426
5	SR 407	SR 528	I-95	1,335
6	US 1	SR 528	Canaveral Groves Blvd.	1,222
6	US 1	Micco Rd.	First St.	1,222
8	I-95	Fiske Blvd. (SR 519)	SR 520	1,081
9	SR 528	US 1	N Courtenay Pkwy. (SR 3)	736
9	I-95	St. John's Heritage Pkwy	Malabar Rd. (SR 514)	736

## Top 10 Vehicle High Injury Network Intersections

Rank	Street 1	Street 2	Vehicle Crash Severity Score/Year
1	N. Courtenay Pkwy. (SR 3)	Merritt Ave.	831
2	US 1	Valkaria Rd.	554
3	SR 520	Clearlake Rd. (SR 501)	368
4	Malabar Rd.	Emerson Dr.	345
4	Eldron Blvd.	Malabar Rd	345
6	US 1 (SB Hopkins Ave.)	SR 406 (Garden St.)	322
6	US 1	Viera Blvd.	322
6	SR 405 (Columbia Blvd.)	Sisson Rd.	322

Note: There are six intersections tied for ninth place in the vehicle HIN list not shown in the map/table.

# Traffic Safety - Vision Zero Crash Data 2022-23

## Increases in Crashes 2022

- Motorcycle 18.4%
- Bicycles 27.7%

## Decrease in Crashes 2022

- Pedestrians 15.2%
- Impaired Driving 13.9%

### SAFETY

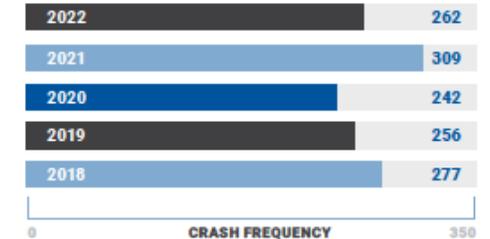
Safety metrics are also reviewed as part of the SOS safety analysis: total number of crashes, crash severity, intersection and corridor crashes, vulnerable road user crashes, lane departure crashes, impaired driving crashes, and distracted driving crashes. Crash numbers refer to all crashes in Brevard County.

### PEDESTRIAN CRASHES



↓ 5.4%  
DECREASE  
FROM 2018-2022

↓ 15.2%  
DECREASE  
FROM 2021-2022

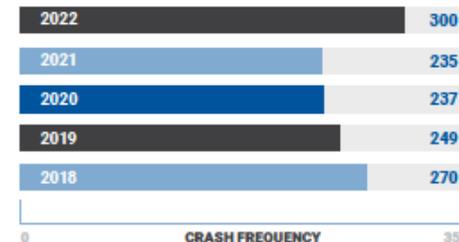


### BICYCLE CRASHES



↑ 11.1%  
INCREASE  
FROM 2018-2022

↑ 27.7%  
INCREASE  
FROM 2021-2022

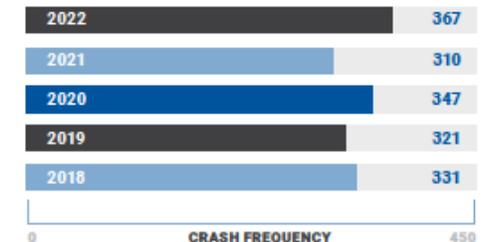


### MOTORCYCLE CRASHES



↑ 10.9%  
INCREASE  
FROM 2018-2022

↑ 18.4%  
INCREASE  
FROM 2021-2022

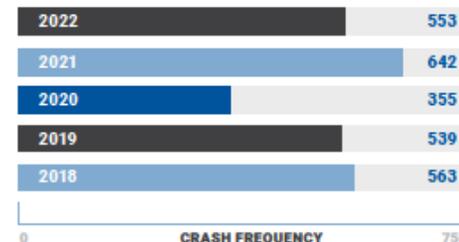


### IMPAIRED DRIVING CRASHES



↓ 1.8%  
DECREASE  
FROM 2018-2022

↓ 13.9%  
DECREASE  
FROM 2021-2022

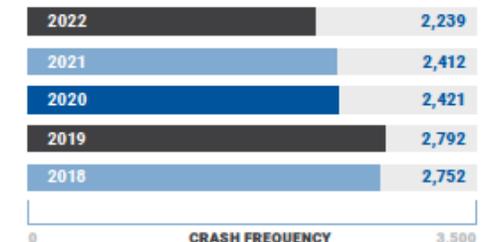


### DISTRACTED DRIVING



↓ 18.6%  
DECREASE  
FROM 2018-2022

↓ 7.2%  
DECREASE  
FROM 2021-2022



	Street	Segment	Average Annual Daily Traffic (AADT)	Maximum Allowable Volume (MAV)
1	Babcock St (ILA)	Malabar to Foundation Park	21,660	17,700
2	Babcock St (ILA)	Foundation Park to Waco	17,910	17,700
3	Babcock St	Waco to Wyoming	13,650	17,700
4	Babcock St	Wyoming to Grant	7,650	17,700
5	Emerson Dr	Minton to Jupiter	23,890	39,800
6	Emerson Dr	Jupiter to SJHP	12,640	17,700
7	Emerson Dr	Culver to Americana	10,370	17,700
8	Emerson Dr	Americana to Malabar	10,050	17,700
9	Emerson Dr	Malabar to Jupiter	16,290	39,800
10	Emerson Dr	Jupiter to Waco	17,390	39,800
11	Emerson Dr	Waco to Bayside Lakes	16,780	39,800
12	Jupiter Blvd	San Filippo to Emerson	11,790	15,600
13	Jupiter Blvd	Emerson to Eldron	11,170	17,700
14	Jupiter Blvd	Eldron to DeGrootd	13,530	17,700
15	Jupiter Blvd	DeGrootd to Malabar	8,020	17,700
14	Malabar Rd	SJHP to Jupiter	10,210	17,700
16	Malabar Rd (PD&E)	Jupiter to Minton	18,400	17,700
17	Malabar Rd	Minton to Emerson	24,240	39,800
18	Malabar Rd	Emerson to San Filippo	33,780	50,900
19	Malabar Rd (FDOT)	San Filippo to I 95	53,400	50,900
20	Malabar Rd	I-95 to Babcock	40,930	50,900
21	Minton Rd	Jupiter to Malabar	15,840	15,600
22	Minton Rd	Malabar to Americana	27,470	39,800
23	Minton Rd	Americana to Emerson	30,730	39,800
24	Minton Rd (County)	Emerson to Palm Bay	52,180	33,800
25	Port Malabar	Babcock to Clearmont	15,790	39,800
26	Port Malabar	Clearmont to US 1	11,990	39,800
27	RJ Conlan	Palm Bay to Commerce Park	10,400	39,800
28	RJ Conlan	Commerce Park to US 1	10,770	39,800
29	SJHP	Malabar to Pace	6,660	15,600
30	SJHP	Pace to Emerson	8,830	15,600
31	SJHP	Babcock to I-95	6,460	39,800
32	San Filippo	Jupiter to Malabar	24,240	39,800

# Roadway Capacity Level of Service (LOS)

- Street over capacity

1. Babcock from Malabar to Foundation Park
2. Babcock from Foundation Park to Waco
3. Malabar Rd from Jupiter to Minton Rd
4. Malabar Rd from San Filippo to I-95 interchange
5. Minton Rd from Emerson Dr to Palm Bay Rd.
6. SJHP from Malabar Rd to north of Emerson Dr.

# Intersections and Traffic Signals

- Traffic Signal Modification (Turn Lanes)

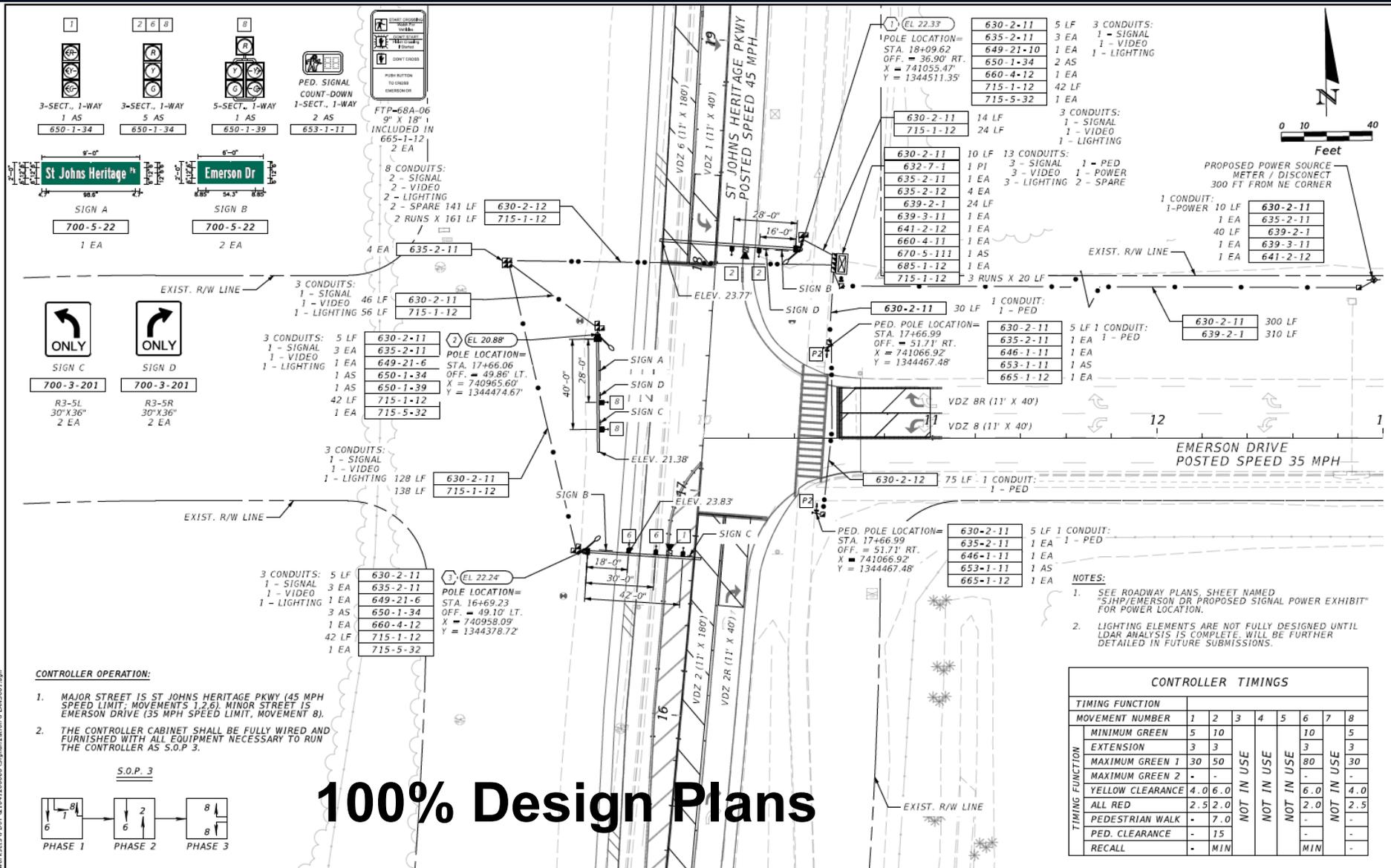
1. San Filippo at Jupiter
2. San Filippo at Wyoming
3. San Filippo at Cogan
4. Malabar Rd at Emerson

- New Traffic Signals with turn lanes

1. SJHP at Malabar Rd
2. SJHP at Emerson Dr
3. SJHP at Pace
4. Port Malabar at Riviera
5. Babcock St at Cogan
6. Jupiter at Garvey



# SJHP at Emerson Traffic Signal



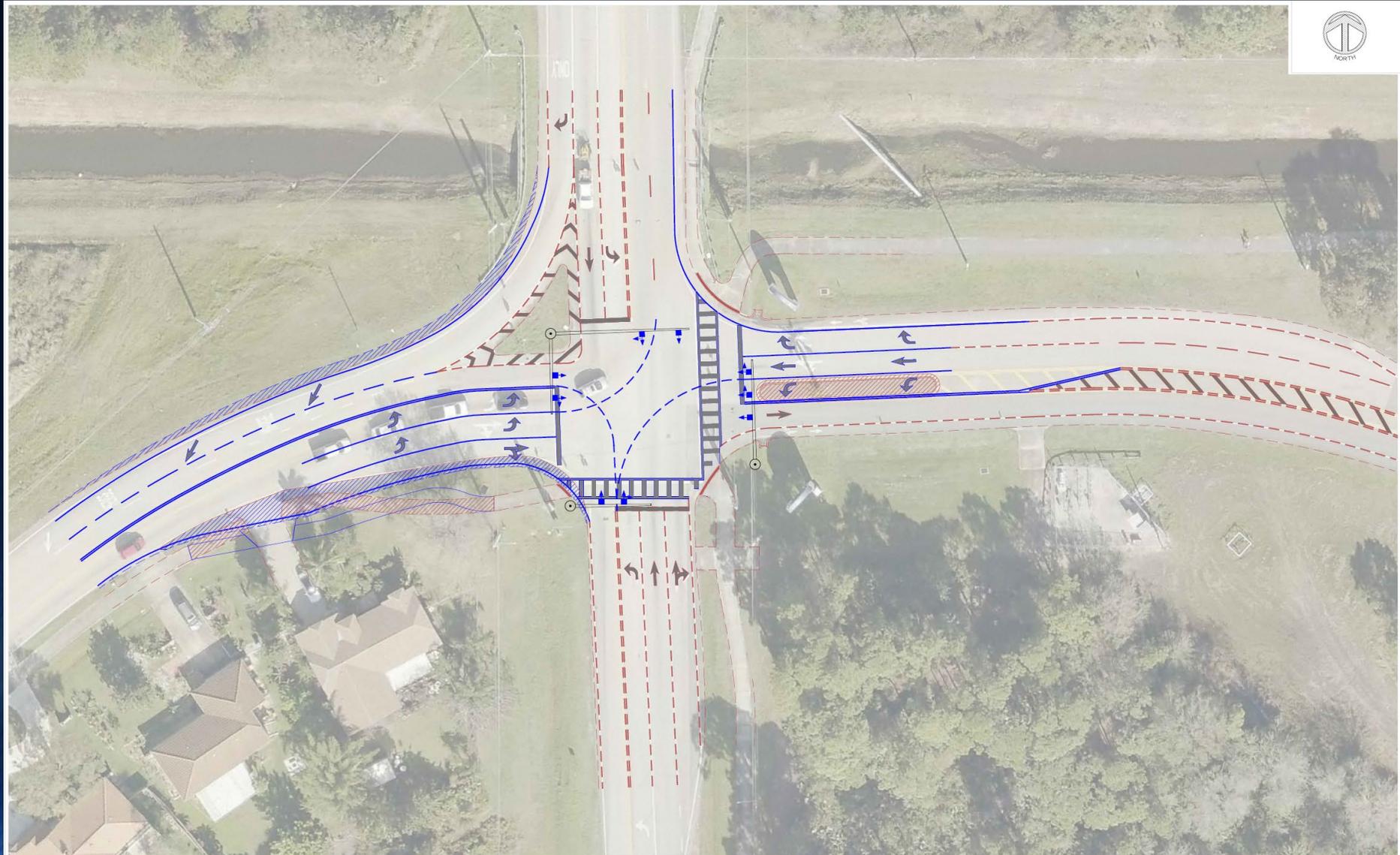
**100% Design Plans**

REVISIONS		ENGINEER OF RECORD		CITY OF PALM BAY PUBLIC WORKS DEPARTMENT 1050 MALABAR ROAD S.W. PALM BAY, FL 32907 (321) 953-8996	SIGNAL PLAN	SHEET NO. T-5
DATE	DESCRIPTION	DATE	DESCRIPTION			
				JONATHAN C. CRISAFI, P.E. LICENSE NUMBER: 89485 KITTELSON & ASSOCIATES, INC. 225 EAST ROBINSON STREET, SUITE 355 ORLANDO, FL 32801		

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



# San Filippo at Jupiter Improvement



REV. NO.	DATE	BY	REVISION

RECEIVED BY  
SWM  
 DRAWN BY  
SWM  
 CHECKED BY  
FTW



**CITY OF PALM BAY**  
**PUBLIC WORKS DEPARTMENT**  
 1050 MALABAR ROAD S.W.  
 PALM BAY, FLORIDA 32907  
 (321) 953-4096

**PORT MALABAR UNIT 57**  
**JUPITER AND SAN FILIPPO DR SE INTERSECTION IMPROVEMENTS**  
 CONCEPTUAL PLANS  
 OVERALL

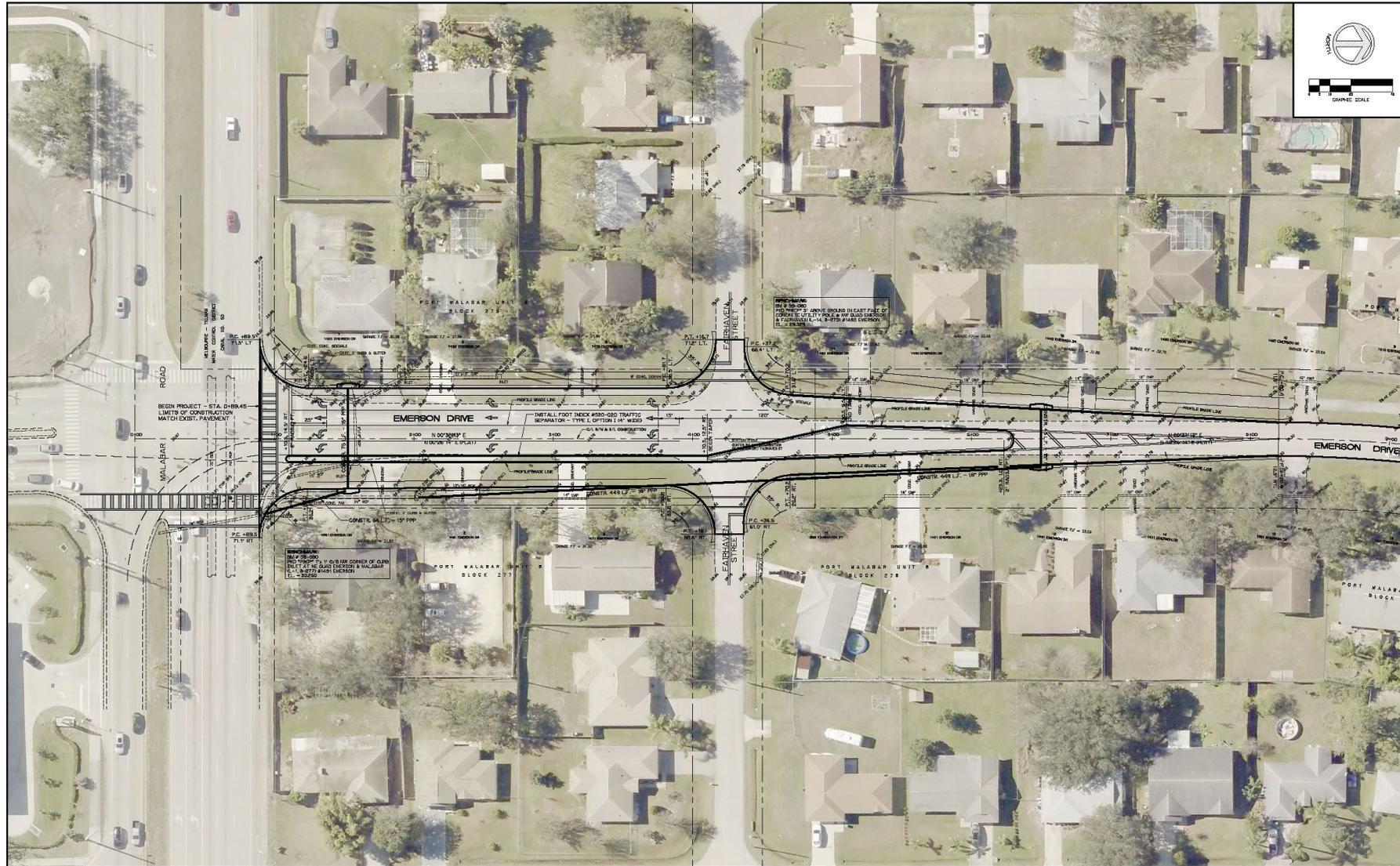
DATE  
OCTOBER 2022  
 SCALE  
 HORIZ: 1" = 20'  
 VERT: 1" = 20'

PROJECT NUMBER  
—  
 SHEET  
1 OF 1

FILE NAME: I:\ENGINEERING\PROJECTS\Jupiter at San Filippo Intersection Improvements\Drawings\PO22-Jup\_San\_Filippo\_Overall.dwg, Oct 19, 2022 - 1:08PM



# Emerson at Malabar Rd Intersection



REV. NO.	DATE	BY	REVISION

DESIGNED BY  
FTW  
 DRAWN BY  
MJB  
 CHECKED BY  
FTW



**CITY OF PALM BAY**  
 PUBLIC WORKS DEPARTMENT  
 1050 MALABAR ROAD S.W.  
 PALM BAY, FLORIDA 32909  
 321.953-8996

**EMERSON DRIVE NE**  
**ROAD WIDENING**  
 MALABAR ROAD INTERSECTION  
 PLAN VIEW - STA. 0+00 THRU STA. 8+00

DATE	JAN 2021
SCALE	1" = 30'
HORIZ.	N/A
VERT.	N/A

PROJECT NUMBER	21-03
DATE	

FRANK T. WATANABE	P.E. NO. 66730

1 OF 1

# Roadway Bridge Structures

## Per FDOT Rating– Bridges are in good condition

	BRIDGE NO.	FACILITY CARRIED	LOCATION	LENGTH (Ft.)	POST REQ.	LAST INSP. DATE	INSP FREQ. (Mo.)	SUFF RATING	HEALTH INDEX
1	704150	Robt J Conla BI WB	1.35 mi North of SR-516	161.4	NO	2/13/2024	24	95.1	77.67
2	704151	Robt J Conla BI EB	1.35 Mi North of SR-516	161.4	NO	2/13/2024	24	94.7	70.87
3	705906	Emerson Drive	1 mi North of Malabar Rd	210.0	NO	3/18/2024	24	74.4	93.03
4	705907	Eldron Blvd	0.5 mi N of Malabar Road	74.0	NO	3/22/2024	24	65.5	97.91
5	705908	Aviation Ave.	0.5 mi N of Malabar Rd.	74.0	NO	3/22/2024	24	88.9	99.32
6	705909	Jupiter Blvd.	1 mi N of Malabar Road	126.3	NO	3/18/2024	24	77.3	97.55
7	705910	Port Malabar BI EB	1.6 miles East of SR-507	130.0	NO	3/19/2024	24	73.5	98.20
8	705913	Caballero Ave	0.2 mi S of Jupiter Blvd	72.0	NO	3/21/2024	24	80.8	97.63
9	705914	Eldron Blvd	1.0Mi. S of Malabar Rd NE	72.0	NO	3/21/2024	24	70.8	99.19
10	705915	Brittan Avenue	0.2 mi S of Cocoa Street	72.0	NO	3/21/2024	24	85.7	93.60
11	705916	Eldron Blvd	1.5 Mi S of Malabar Rd.	72.0	NO	3/21/2024	24	70.8	95.00
12	705917	Eldron Blvd.	2.0Mi. S of Malabar Rd NE	102.0	NO	3/21/2024	24	76.7	96.16
13	705918	Americana Blvd.	40 ft E of Minton Road	147.8	NO	3/18/2024	24	96.3	98.64
14	705919	Hurley Blvd	1 mi S of Malabar Rd	124.0	NO	3/18/2024	24	90.7	91.76
15	705920	Port Malabar BL WB	1.6 miles East of SR-507	130.0	NO	3/19/2024	24	97.3	99.81
16	705923	Jupiter Boulevard	At Minton Rd. Intersectn	128.0	NO	3/8/2023	24	97.6	97.47
17	705924	St Johns Hrtge Pky	0.26 Mi South of Pace Dr.	240.0	NO	12/7/2022	24	95.4	97.25
18	705925	Pace Drive	2 Mi West of Jupiter Blvd	25.0	NO	12/7/2022	24	99.2	97.59
19	705953	Malabar Rd	0.1 mi E of Minton Rd	141.2	NO	3/22/2024	24	84.0	98.54

# Intelligent Transportation System (ITS)

## What is ITS for Palm Bay?

- Synchronize signal timings
- Traveler Information
- Incident management
- Reduce delays and stops
- Improves travel time
- Improves safety & mobility
- Improves quality of driving

Stakeholder	Number of Signals	Number of Interconnected Signals	Number of Adaptive Signals	Number of Coordinated Signals
Brevard County	351	219	112	unavailable
City of Melbourne	67	67	0	56
City of Palm Bay	43	0	0	11
City of Titusville	42	4	4	0

# Malabar/Emerson/San Filippo ITS Design by FDOT

Street	Miles	Cost
Malabar ITS	6.4	\$ 3,584,056.70
San Filippo ITS	2.3	\$ 1,288,020.38
Emerson ITS	3.0	\$ 1,680,026.58

- IT-1 KEY SHEET
- IT-2 GENERAL NOTES
- IT-3 LEGEND
- IT-4 DEVICE DATA TABLE
- IT-5 - IT-7 PLAN LAYOUT
- IT-8 - IT-30 ITS PLAN SHEET
- IT-31 - IT-33 SPLICE DIAGRAM
- IT-34 WIRING DIAGRAM
- IT-35 DEVICE MOUNTING DETAIL

**Project Limit  
Malabar Road  
From SJHP to I-95**

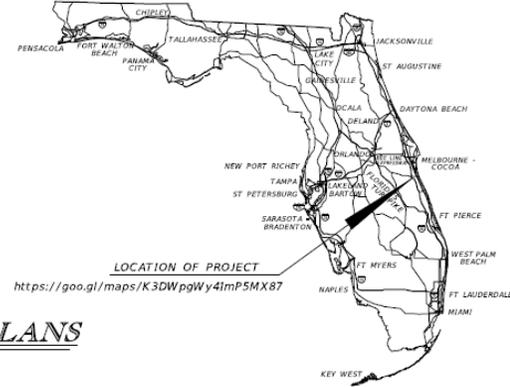
STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION

**CONTRACT PLANS**

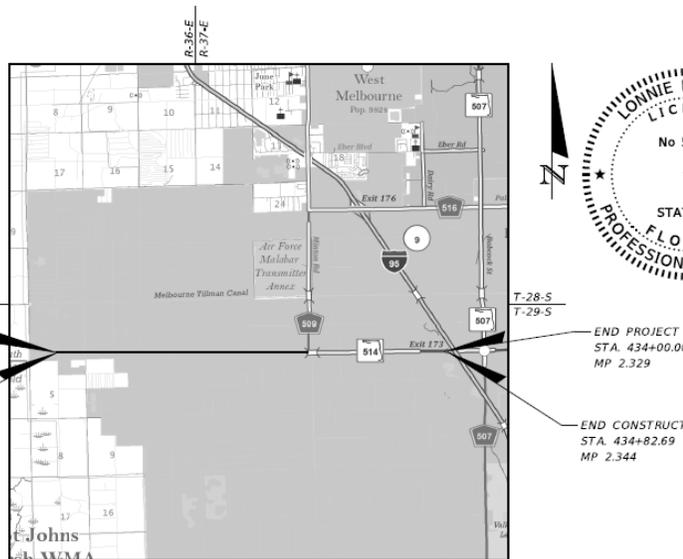
FINANCIAL PROJECT ID 443731-1-52-01

BREVARD COUNTY (70180000)

STATE ROAD NO. SR 514 /MALABAR ROAD



**INTELLIGENT TRANSPORTATION SYSTEMS PLANS**



THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY  
ON THE DATE ADJACENT TO THE SEAL  
PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

INTELLIGENT TRANSPORTATION SYSTEMS PLANS  
ENGINEER OF RECORD:

LONNIE D. OGDEN  
P.E. LICENSE NUMBER: 53200  
LTG, INC.  
12574 FLAGLER CENTER BLVD. SUITE 101  
JACKSONVILLE, FL 32258  
CONTRACT NO.: CAF47  
VENDOR NO.: F030424608005

FDOT PROJECT MANAGER:  
HEIDI TRIVETT

GOVERNING STANDARD PLANS:  
FLORIDA DEPARTMENT OF TRANSPORTATION, FY 2022-23 STANDARD PLANS FOR ROAD AND BRIDGE CONSTRUCTION AND APPLICABLE INTERIM REVISIONS (IRS).  
STANDARD PLANS FOR ROAD CONSTRUCTION AND ASSOCIATED IRS ARE AVAILABLE AT THE FOLLOWING WEBSITE: <http://www.fdot.gov/design/standardplans>

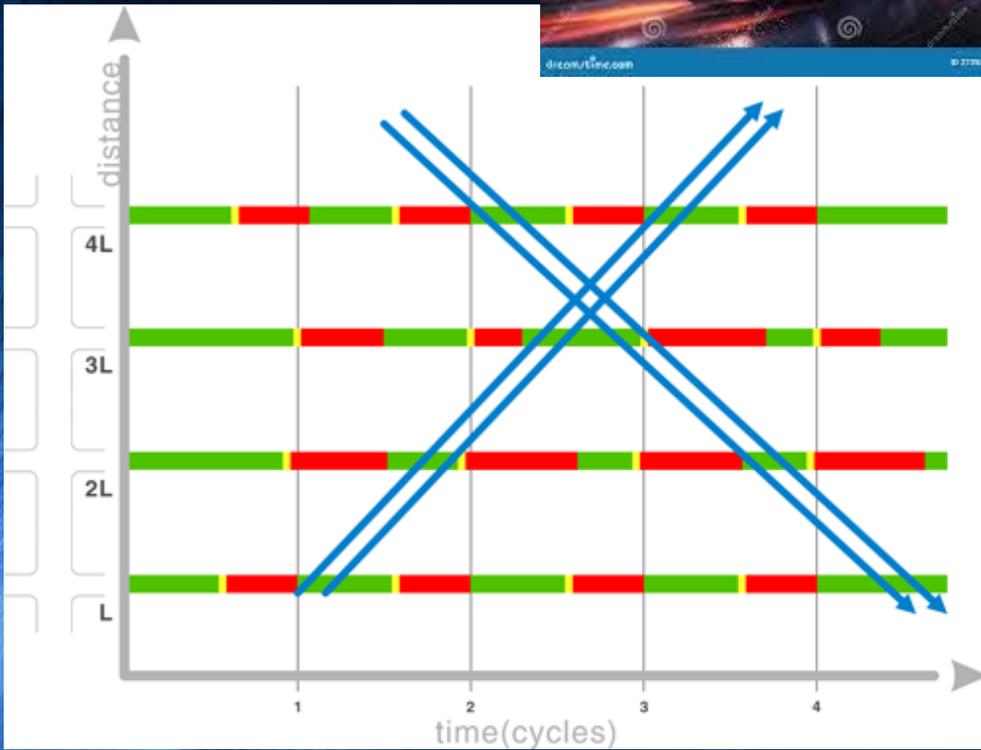
GOVERNING STANDARD SPECIFICATIONS:  
FLORIDA DEPARTMENT OF TRANSPORTATION, JULY 2022 TO JUNE 2023 STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AT THE FOLLOWING WEBSITE: <http://www.fdot.gov/programmanagement/implemented/specbooks>

**100% Design Plans**

CONSTRUCTION CONTRACT NO.	FISCAL YEAR	SHEET NO.
	2023	IT-1

# ITS Signal Priority Emergency Vehicle Preemption (EVP)

- In 2021, 198 people died in the US due to crashes with emergency vehicles
- In 2020 there were an estimated 15,675 fire truck collisions



- Per FHWA - Reduce intersection crash rates by up to 70%
- Improve response times by up to 25%.

# 2024 USDOE Grant - Interim Malabar ITS



- Grant \$160K for ITS
- Wireless communication
- Central master controller
- Signal synchronization



# Street Lights



## Safety Benefits:

Lighting can reduce crashes up to:

**42%**

for nighttime injury pedestrian crashes at intersections.<sup>1</sup>

**33-38%**

for nighttime crashes at rural and urban intersections.<sup>2,1</sup>

**28%**

for nighttime injury crashes on rural and urban highways.<sup>1</sup>



1. Need a lighting master plan
2. Replace US 1 light poles
3. Research solar lights
4. Working with FPL on 61 locations for new street lights.

# Street leaf Solar Streetlights Cost vs. FPL Streetlights Comparison Lease Option

## STREET LEAF 30-40-WATT LED SOLAR STREETLIGHTS MONTHLY MAINTENANCE COST

- Model RS40L-40W\_3000k\_D  
\$50.00 per month
- Model RS30L-30W\_4000k\_S  
\$50.00 per month

## FLORIDA POWER AND LIGHT 30-40-WATT LED STREETLIGHTS MONTHLY MAINTENANCE COST

- Model C700603 28/30 watts  
\$7.87 per month
- Model C861204 39/40 watts  
\$8.07 per month

# Street leaf Solar Streetlights Purchase Cost vs. FPL Streetlights Comparison

## STREET LEAF 30-40-WATT LED SOLAR STREETLIGHTS MONTHLY MAINTENANCE COST

- Model RS40L-40W\_3000k\_D  
\$5,175.00 each  
\$10.00 per month
- Model RS30L-30W\_4000k\_S  
\$5,175.00 each  
\$10.00 per month

## FLORIDA POWER AND LIGHT 30-40- WATT LED STREETLIGHTS MONTHLY MAINTENANCE COST

- Model C700603 28/30 watts  
Lease Option Only  
\$7.87 per month
- Model C861204 39/40 watts  
Lease Option Only  
\$8.07 per month



# Sidewalks Program

1. Eldron Blvd SE (from Diane to San Filippo Dr. SE)
2. Wichita Blvd SE. ( From Babcock St SE to San Filippo Dr. SE)
3. San Filippo Dr SE. ( From Wichita Blvd SE. to Eldron Blvd.)
4. San Filippo Dr. SE. ( From Eldron Blvd SE. to Quintin Ave. SE.)
5. San Filippo Dr. SE ( From Jaslo St. SE. to south of Treeland Blvd SE.)
6. Eldron Blvd. SE. ( From San Filippo Dr. SE. to Ray Rd. SE.)
7. Cross City Trail in FPL easement ( From Walpole Rd. SW to Gerlitz Rd. SW.) FPL consent agreement required.
8. Garvey road SW. ( From Jupiter Blvd SW to Bryan Rd. SW.)
9. Hurley Blvd. SW. ( From Seabold Rd. SW to Seafury Ave SW. )
10. Harper Blvd. ( From Hurley Blvd. To Gerry Rd. SW.)
11. Babcock St. NE. ( East side From Auto zone to Sun Lake Road excluding Dynamic Muffler site) FDOT right of way.
12. Malabar road SE. ( North side Racetrack to Villa Nueva ALF)

# Roadway Trees and Landscaping



- Low Maintenance
- Zero Landscape
- Stamp concrete
- Native Plants

# Traffic Calming Safety Enhancements



# Speed Hump Warrant & Design

- Asphalt or rubber
- Slows vehicles
- Impact to emergency response time
- Increase in travel time
- Divert traffic to use a parallel collector street

City of Palm Bay Traffic Operations Traffic Calming Assessment							
Roadway			Dallam				
Minimum Criteria for Speed Humps						Status	
1	Length of road needs to be at least 1000 feet					Checked	
2	No Drainage Conflicts					not checked	
3	No Driveway Conflicts					not checked	
4	Road is not designated as a Collector in Land Development Comprehensive Plan					Verified	
5	Road is not designated as a Primary Fire Route by Fire Department					False	
6	Traffic Study will be conducted to identify volume, speed and the resulting information must satisfy the conditions: A and B or A and C					done	
Traffic Study Criteria and data recorded					Results	Status	
A	Average Daily Traffic needs to be between 500 and 3000 vehicles				785.50	Met	
B	65% Percent of vehicles need to be traveling 12 mph over the Posted				1.255	Not Met	
C	At Least 25% of Vehicles that are cut-through traffic				NA	NA	
D	Roadway Length				3914	Met	
Traffic Data							
Averaged 85% Speed				Averaged Daily Traffic			
NB	SB	EB	WB	NB	SB	EB	WB
33.67	32.33	0.00	0.00	362.00	423.50	0.00	0.00
Combined 85% Speed				Combined Average Daily Traffic			
NB/SB		EB/WB		NB/SB		EB/WB	
33.00		0.00		785.50		0.00	
Percentage of Vehicles traveling 12 MPH above Speed Limit							
Speed Limit	30	Total Percentage above	42 mph	1.255			
Did the roadway pass warrants needed to install Speed Humps						No	
Crash Data		Start Date	1/1/2018		End Date	12/18/2022	
Date	Time	Report #	Type	Light Condition	Weather	Comments	
8/11/2021	5:17 PM	24251668	angle	Daylight	Cloudy	both drivers claim right of way	
one crash found in the last 3 years							

## 1 Speed bump

Used mostly in private residential developments and shopping centers.

4 to 6 inches

**Not Allowed**

Speed bump

1 to 3 feet



## 2 Speed hump

Used mostly on residential streets with speed limits up to 25 mph.

3 to 4 inches

Speed hump

10 to 12 feet



## 3 Speed table

Used on more traveled residential streets with speed limits up to 30 mph.

3 to 4 inches

Speed table

22 feet



Note: Drawings not to scale

# Railroad Quiet Zones

- A segment of a railroad corridor where the train operator has the option to not sound its horn.
- Three Railroad Crossings: Hessey, Palm Bay Rd and Port Malabar
- Working with Federal Rail Adm on the notice of intent

# Questions?