# Florida Rail Safety Coalition



June 24, 2025



#### Wi-Fi Instructions

Connect to FDOT\_Guest

Send request to: Mazi.Rhodes@dot.state.fl.us



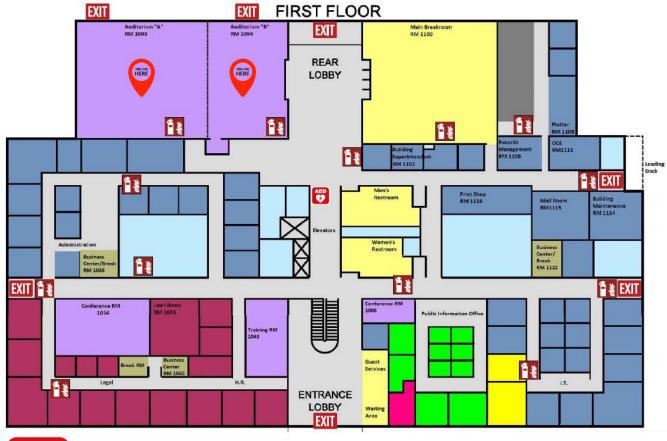
## **Safety Briefing**

Florida Turnpike Enterprise Milepost 263 Turkey Lake Headquarters Bldg. 5315 Ocoee, FL

- AED/first aid kits
- Closest hospital
- Safety/tripping hazards
- Active shooter protocol (run, hide, fight)

- Evacuation route & predetermined place of safety
- Restrooms/water
- Who is CPR certified
- Medical conditions/concerns











## Welcome, Agenda Review & Opening Remarks

## **Agenda**

- Welcome and Meeting Objectives
- Smart North Florida/Coalition in Action Technology Initiative
- Rail Safety Tool & Manual Update
- - Breakout Groups
- Member Comments
- **Public Comments**
- Closing Remarks and Next Steps





## Accelerating Public Sector Modernization!

Jeff Sheffield
Executive Director
North Florida TPO

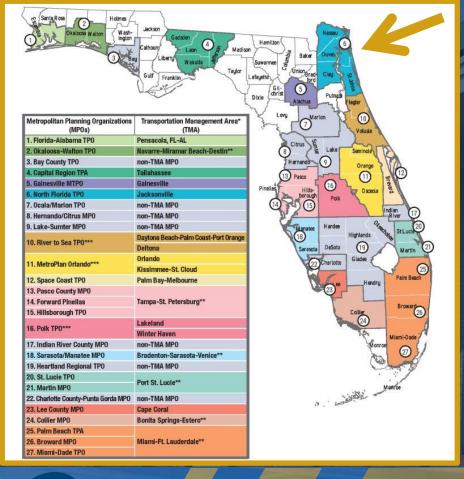












4 Counties = Duval, Clay, Nassau, St. Johns

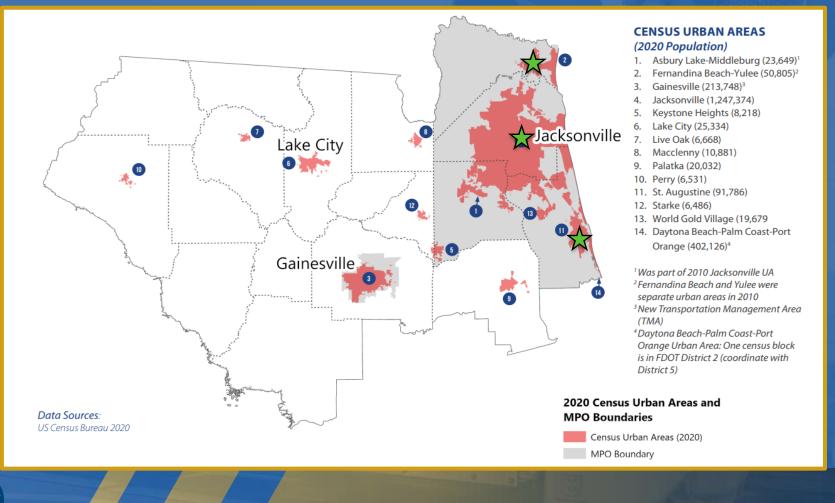
Land Area: over 3,000 sq. mi.

Population: approx. 1.4 million

Staff Size: 7

Average Annual Operating Budget: \$5.1M















Dynamic Message Sign



**Regional Transportation Management Center** .....









**Blue TOAD Sensor** 



A STATE OF THE STA **Vehicle Detection Sensor** 



**Road Ranger** 







#### **THE PAST**

## Reports Historical Data



#### NOW

## Historic, Real-time and Predictive









## Innovation

## Barriers

- Public Sector Bandwidth
- Procurement Processes
- GovTech Venture \$\$



## SMART NORTH FLORIDA

501(c)(3)

Harnessing the power of Smart Technologies,

Coordinated Data, and Regional Collaboration
to improve North Florida's economic competitiveness,
sustainability and quality of life.





Best

Better

Good

Is It Good Enough?



#### **SCOUTING TECH**

Scout tech options Match solutions

SANDBOX THE TECH

Understand the tech Accelerate adoption

FOLLOW THE DATA — Analyze, Visualize, Report

SCALE THE SOLUTION —

Help leaders lead Scale smart

**TELL THE STORY** 

Case studies Scalable adoption

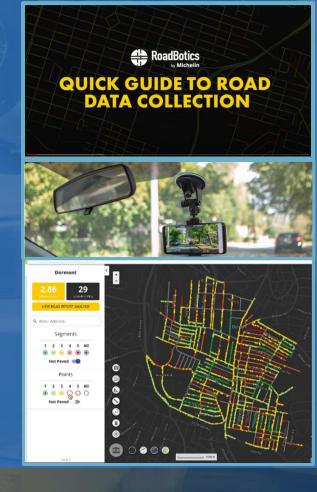


#### **FILLING REAL POTHOLES**

WITH ARTIFICIAL INTELLIGENCE (A.I.)



- Pilot Clay Co.
- 20-year plan Nassau Co.
- Deploying St. Augustine,
   Keystone Heights, Neptune Beach
- Jax-Baldwin Rail Trail Pilot D2
- Pilot City of Perry





#### **POST STORM ASSESSMENT**

**Calculating Erosion (Volumetrics)** 



Pilot – FDOT District 2
 (Hurricane Debby)









GeoMate

## AI AERIAL VISION MAPPING FOR ROADWAY INVENTORY

• Pilot – FDOT D2 SLD Process











#### **DRONE ANALYSIS**

FOR BRIDGE INSPECTION

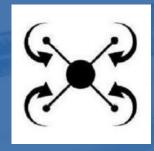
• Pilot – FDOT District 2











Blue Vigil

## UMANNED AERIAL VEHICLE FOR OVERHEAD LIGHTING

- Scheduling Pilot –
   FDOT D2 Construction Zone
- Scheduling Pilot JEA (Jacksonville Utility)







**EMERGENCY RESPONSE** 

WITH DRONE DELIVERY SYSTEMS



**Archer FRS** 



• Demo – April 24, 2025





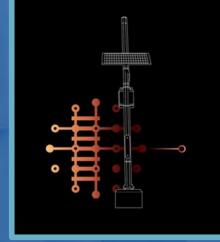
**SAVING LIVES** 

WITH EARLY TRAIN DETECTORS





- Pilot FDOT District 2
- Approved FDOT Innovation Product List (IPL)
- Deployment FDOT District 2









Thank You!



## Rail Detection Technology

Adam Storm, Pete Vega FDOT District 2





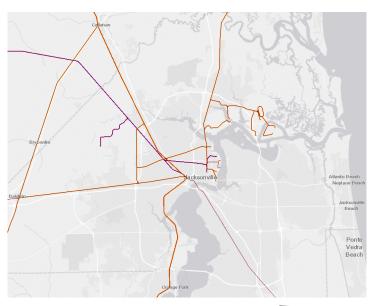




#### Railroads in Northeast Florida

- Nine railroads operate within District Two's 18 counties
- Jacksonville alone contains six, including offices for CSX, FEC, and Genesee & Wyoming
- Major routes along US 1, US 17, US 90, US 301







#### **Concept of Operations**

- Detect
  - Train presence at each crossing
  - Average speed, length, direction
  - Continuous vs non-continuous
- Notify
  - RTMC
  - EMS dispatch
  - Drivers
- Analyze
  - Historical corridor measures
  - Predict blockages, clearance, peak period, signal timing implications







#### **Acoustic Sensor Field Assessment**



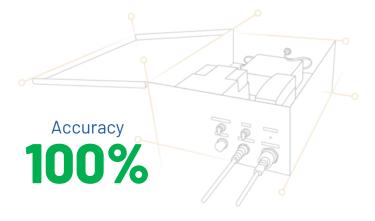




#### **Acoustic Sensor Results**

from 6/27/22 to 7/4/22

A	ATMS ("Ground	ATMS ("Ground Truth")			TRAINFO			<b>Duration Difference</b>
Date	Time	Duration (min)	Date	Time	Duration (min)	Result	Difference (sec)	(sec)
6/27/2022	5:01:50 PM	1.90	6/27/2022	5:01:53 PM	2.05	Match	3	9.0
6/27/2022	6:26:55 PM	4.13	6/27/2022	6:26:57 PM	4.27	Match	2	8.2
6/27/2022	8:10:02 PM	1.92	6/27/2022	8:10:03 PM	2.08	Match	1	9.8
6/27/2022	10:30:49 PM	1.45	6/27/2022	10:30:49 PM	1.60	Match	0	9.0
6/28/2022	1:04:43 AM	4.17	6/28/2022	1:04:43 AM	4.35	Match	0	11.0
6/28/2022	7:44:25 AM	1.15	6/28/2022	7:44:29 AM	1.25	Match	4	6.0
6/28/2022	8:59:22 AM	1.03	6/28/2022	8:59:32 AM	0.98	Match	10	-3.2
6/28/2022	1:59:36 PM	1.83	6/28/2022	1:59:40 PM	1.92	Match	4	5.2
6/28/2022	4:03:10 PM	1.63	6/28/2022	4:03:12 PM	1.75	Match	2	7.0
6/28/2022	5:45:47 PM	4.27	6/28/2022	5:45:48 PM	4.40	Match	1	8.0
6/28/2022	10:37:27 PM	1.53	6/28/2022	10:37:29 PM	1.55	Match	2	1.0
6/28/2022	11:23:03 PM	4.15	6/28/2022	11:23:04 PM	4.10	Match	1	-3.0
6/29/2022	12:50:42 AM	2.27	6/29/2022	12:50:42 AM	2.15	Match	0	-7.0
6/29/2022	6:48:04 AM	1.60	6/29/2022	6:48:06 AM	1.72	Match	2	7.2
6/29/2022	8:07:25 AM	0.93	6/29/2022	8:07:29 AM	1.05	Match	4	7.0
6/29/2022	8:11:20 AM	1.02	6/29/2022	8:11:42 AM	0.68	Match *	22	-20.2
6/29/2022	12:45:46 PM	1.28	6/29/2022	12:45:50 PM	1.38	Match	4	5.8
6/29/2022	1:51:30 PM	1.10	6/29/2022	1:51:34 PM	1.23	Match	4	7.8
6/29/2022	7:35:44 PM	2.85	6/29/2022	7:35:48 PM	2.97	Match	4	7.2
6/29/2022	11:51:26 PM	1.58	6/29/2022	11:51:29 PM	1.42	Match	3	-9.8
6/30/2022	4:52:20 AM	4.52	6/30/2022	4:52:23 AM	4.43	Match	3	-5.2
6/30/2022	8:40:21 AM	0.93	6/30/2022	8:40:46 AM	0.48	Match	25	-27.2
6/30/2022	8:56:16 AM	1.10	6/30/2022	8:56:41 AM	0.63	Match	25	-28.2
6/30/2022	11:01:36 AM	4.32	6/30/2022	11:01:41 AM	4.42	Match	5	6.2
6/30/2022	1:35:57 PM	2.35	6/30/2022	1:36:00 PM	2.40	Match	3	3.0
6/30/2022	3:59:39 PM	1.05	6/30/2022	3:59:42 PM	1.17	Match	3	7.2
6/30/2022	11:52:40 PM	1.50	6/30/2022	11:52:43 PM	1.50	Match	3	0.0
7/1/2022	12:10:14 AM	2.80	7/1/2022	12:10:14 AM	2.95	Match	0	9.0
7/1/2022	8:05:37 AM	1.65	7/1/2022	8:05:39 AM	1.78	Match	2	7.8
7/1/2022	9:39:00 AM	0.88	7/1/2022	9:39:04 AM	1.00	Match	4	7.0
7/1/2022	7:38:32 PM	2.52	7/1/2022	7:38:36 PM	2.62	Match	4	6.2
7/1/2022	11:25:26 PM	2.07	7/1/2022	11:25:30 PM	1.95	Match	4	-7.0
7/2/2022	9:21:26 AM	0.92	7/2/2022	9:21:29 AM	1.07	Match	3	9.2
7/2/2022	10:33:03 AM	1.72	7/2/2022	10:33:06 AM	1.85	Match	3	8.0
7/2/2022	9:17:28 PM	2.45	7/2/2022	9:17:31 PM	2.57	Match	3	7.2
7/2/2022	11:17:38 PM	1.63	7/2/2022	11:17:42 PM	1.67	Match	4	2.2
7/3/2022	7:05:50 AM	1.48	7/3/2022	7:05:51 AM	1.62	Match	1	8.2
7/3/2022	7:42:46 AM	1.62	7/3/2022	7:42:48 AM	1.77	Match	2	9.2
	10:06:51 AM	0.92	7/3/2022	10:06:55 🗥	0.98	Match	4	3.8
	2:27:25 PM	4.48	7/3/2022	2:27:27	4.62	Match	2	8.2
7/3/2022	3:31:13 PM	2.93	7/3/2022	3:31	3.05	Match	3	7.0
				7:	2.45	Match	2	7.0



Average Latency

4 sec

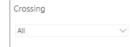
Closure Duration Offset

±7.8 sec





#### **TRAINFO Blockage Insights - Crossing Activity**



364 Longest Activation Duration (min)

11.93 Avg. Daily Activation (hr)

201 Avg. Number of Activations per

3.61 Avg. Activation Duration (min)

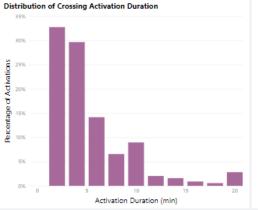
Date

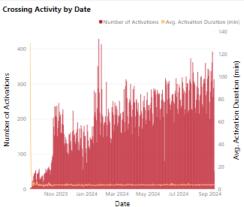
Duration 0.13 363.17

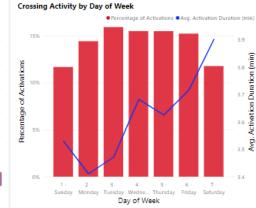
Day of Week

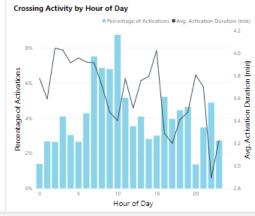
Hour of Day

Movement Type

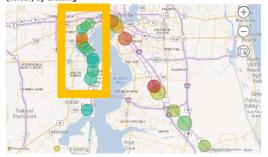








Avg. Daily Activation Frequency (size) and Avg. Activation Duration (colour) by Crossing



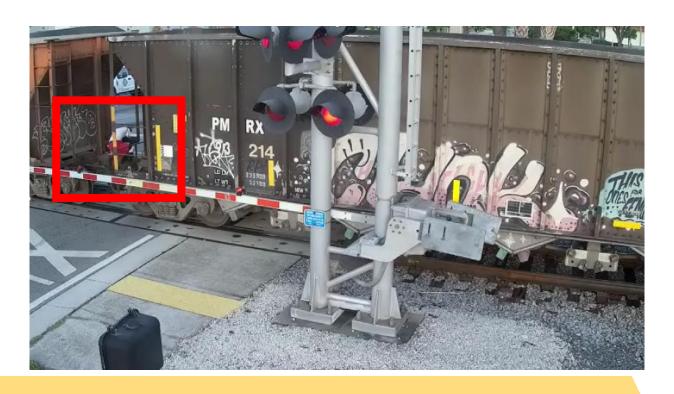
Date ▼	Crossing		Movement Type	Video File
9/10/2024 3:57:54 AM	Sunbeam Road - 271824W	7.32	Continuous	

Crossing Activity Records

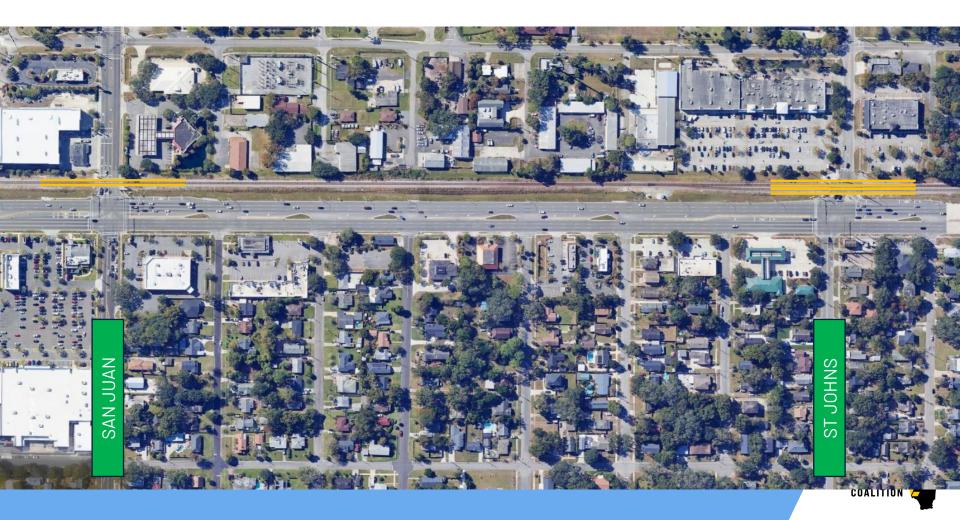
	3:57:54 AM	271824W	1.52	Continuous
	9/10/2024 3:55:24 AM	Shad Road - 271825D	6.42	Continuous
	9/10/2024 3:44:25 AM	Greenland Road - 271829F	2.83	Continuous
	9/10/2024 3:44:14 AM	Old St Augustine Road - 271830A	0.47	Continuous
	9/10/2024 3:41:37 AM	Old St Augustine Road - 271830A	0.47	Continuous

	3:41:37 AM Road - 271	1830A	
	Crossing	CSV	I
	120Th Street - 620893U	https://portal.trainfo.ca/doc/us/fl/fl115/120TH_ STREET.csv	
	Atlantic Boulevard - 271816E	https://portal.trainfo.ca/doc/us/fl/fl115/Atlantic _Boulevard.csv	
	Birkenhead St - 621224M	https://portal.trainfo.ca/doc/us/fl/fl115/BIRKEN HEAD_ST.csv	
	Cr 108 - 620796K	https://portal.trainfo.ca/doc/us/fl/fl115/CR_108. csv	
	Cr 210 West - 271832	https://portal.trainfo.ca/doc/us/fl/fl115/CR_210	

#### Wed, 19 Jun 2024 06:47am to 09:02am







#### Part II: Railroad Information 1. Estimated Number of Daily Train Movements 1.B. Total Night Thru Trains 1.C. Total Switching Trains 1.D. Total Transit Trains 1.E. Check if Less Than 1.A. Total Day Thru Trains (6 AM to 6 PM) (6 PM to 6 AM) One Movement Per Day How many trains per week? 2 0 2. Year of Train Count Data (YYYY) 3. Speed of Train at Crossing 3.A. Maximum Timetable Speed (mph) 10 2024 to 10 3.B. Typical Speed Range Over Crossing (mph) From 10 4. Type and Count of Tracks Yard 0 Siding 0 Transit 0 Main 1 Industry 0









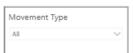
## Crossing All

Date		
6/12/2024	6/12/2025	
-		





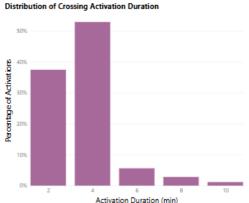


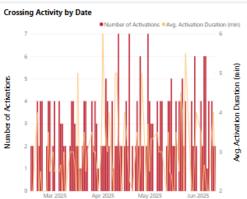


### **TRAINFO Blockage Insights - Crossing Activity**

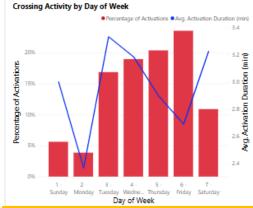
10 Longest Activation Duration (min) 0.15
Avg. Daily Activation (hr)

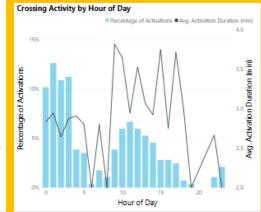
3 Avg. Number of Activations per Day 3.00 Avg. Activation Duration (min)





Date





### Avg. Daily Activation Frequency (size) and Avg. Activation Duration (colour) by Crossing



Crossing Activity Records					
	Date ▼	Crossing	Duration (min)	Movement Type	Video File
	6/12/2025 3:07:03 AM	Heckscher Dr - 620872B	1.58	Continuous	<u>Download</u>
	6/12/2025 12:20:08 AM	Heckscher Dr - 620872B	1.63	Continuous	Download
	6/11/2025 4:38:22 AM	Heckscher Dr - 620872B	2.68	Continuous	Download
	6/11/2025 2:04:11 AM	Heckscher Dr - 620872B	2.17	Continuous	<u>Download</u>
	6/10/2025 2-07-10 PM	Heckscher Dr - 6208728	2.58	Continuous	Download

Crossing	CSV
Heckscher Dr - 620872B	https://portal.trainfo.ca/doc/us/fl/fl115/HECKS CHER_DR.csv

### **Corridor Evaluation**

- How dense must sensor placement be?
  - Realtime presence/rerouting (dense?), predicting crossing TOD/length (sparse?)
  - Good interpolation algorithm, but what if a stopped train occupies an unequipped crossing?
- What data is worth sharing to dispatch, drivers, and/or partner agencies?
- Better source of rail traffic data than public feedback, FRA crossing reports, field investigation, preemption logs



# **Expansion**

- Cover more corridors
  - 36 total crossings covering NFTPO counties
    - Nassau (US 17), St Johns (US 1), and Clay (US 17)
  - Mix of acoustic and video for crossing detection
    - Acoustic evaluation: draw bridge horn detection
    - Video evaluation: train characteristics, road user safety analysis
  - Targeting approximately 200 locations in Northeast Florida
- Dissemination
  - EMS dispatch at high priority crossings
  - FL511/Waze/Google Maps for general wayfinding
  - Beacons for edge cases

#### **Crossing Activity**

#### NORMAN ST

Blockage Start: 08:37 Blockage End: 08:48

#### ORTEGA HILLS DR

Blockage Start: 08:48 Blockage End: 08:49

#### KINGSLEY AVE

Last Blockage: 08:41

Duration: 1 minute

#### VERONA AVE

Last Blockage: 07:38

Duration: 1 minute

#### **120TH ST**

Last Blockage: 08:37 Duration: 0 minutes

#### ST JOHNS AVE

Last Blockage: 08:32

Duration: 4 minutes

#### **TIMUQUANA RD**

Last Blockage: 08:36

Duration: 0 minutes

#### S LONGBOW RD

Last Blockage: 08:36

Duration: 0 minutes

#### SAN JUAN AVE

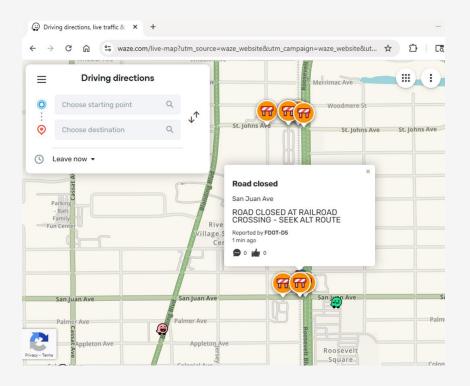
Last Blockage: 08:33

Duration: 2 minutes



# **Partnerships**

- Emergency Response Agencies
- TRAINFO
  - Founded 2018
  - FDOT partnered since 2022
  - 600 crossings in 20 states by end of 2025
- Waze
  - Rail crossing API
  - · Realtime alerts to customers
- Google Maps
  - Mobility analytics
  - Alerting coming soon
- Rail Carriers
  - CSX Innovation





# **Questions?**

Peter.Vega@dot.state.fl.us D2 TSM&O Program Manager

Adam.Storm@dot.state.fl.us D2 TSM&O Engineer













### Introduction

To provide updated design practices and standards for highway-rail grade crossings within the State of Florida.



### What's New

- > FDOT Rail Crossing Manual (FRCM) developed as a reference tool
- GUI tool created for internal FDOT use
- > Introduced FDM 220 to mirror MUTCD format with FDOT-specific tables

### **Key Integration Sources**

- > Existing FDOT Design Manual guidance
- Florida Administrative Code (FAC) 14-57.013
- Draft Higher-Speed Grade Crossing Manual (traffic control content only)

### **Implementation**

- FDM 220 becomes the official FDOT standard
- > FRCM remains a supplemental reference for clarity



# FDOT Rail Crossing Criteria & Tools

What's New?

FRCM is being migrated to FDM 220

FDM 220 is now the official FDOT standard for highway-rail crossings

The FDM 220 draft version is shared for comment

**How It Was Built** 

Based on MUTCD 11th Edition, Part 8

Integrated FAC 14-57.013 requirements

Content related to Traffic Control Devices from the draft of the Higher-Speed Grade Crossing Manual was referenced

**Key Enhancements** 

Tables modifying MUTCD Part 8 are placed in FDM 220

GUI tool developed for internal FDOT use Latest technology options are added to the list of rail countermeasures



# FDM 220 Implementation Schedule



### **Update Process:**

> FDM 220 will be updated through FDOT's standard publications process for the November 2025 FDOT Design Manual release.



### **Key Dates:**

> Drafts must be completed by Fall 2025 as part of standard review.





# **Five Subgroups**

Policy

Outreach

Standards, Innovation, & Engineering

Law Enforcement Behavioral Health (Human Factors)



# **Subgroup Expectations**

- Review discussion items from February meeting and report on updates
- Review draft Strategic Plan and identify 1-2 key initiatives to implement or ideas to explore over the next few months that support the goals within the plan
  - Identify key players, tasks to be accomplished, assignments and target deadlines, etc.
- Identify potential people to invite to participate in the Coalition and/or Subgroup
- Designate a champion for report out



# **Room Assignments**

Subgroup	Room (all rooms on 1st floor)
Standards, Innovation and Engineering	Auditorium A
Policy	Auditorium B
Law Enforcement	Conference Room 1006
Outreach	Conference Room 1054
Human Factors	Conference Room 1043

Subgroups Report Out 1:30PM









### **OPERATION LIFESAVER MATERIALS**

Campaign materials in the ENS Sign Awareness Day Toolkit include:

- Social Media Posts
- Social Media Stories
- Public Service Announcement Videos



### **SOCIAL MEDIA POSTS**



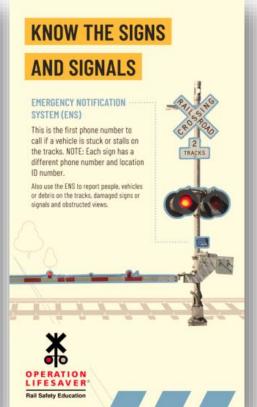






### **SOCIAL MEDIA STORIES**









### **PSA VIDEOS**









# **Mentimeter Polling**

Join on the web or by scanning the QR code:

Go to

www.menti.com

Enter the code

9507 9779



Or use QR code



### What are your plans for Rail Safety Week (Sept 15-21, 2025)?

All responses to your question will be shown here

Each response can be up to 200 characters long

Turn on voting to let participants vote for their favorites





## FUELING THROUGH THE STORM

**FUEL SUPPLY & DISASTER READINESS** 

Marriott Fort Lauderdale Airport



### FOR MORE INFORMATION:

co-seaport@dot.state.fl.us







# Closing Remarks



### **Save the Date!**

### **Next FRSC Meeting – VIRTUAL!!!**

• August 11, 2025

### **Future 2025 Meetings**

• November 13, 2025



# Thank you!

Kim Holland, PE Assistant Secretary of Strategic Development Florida Department of Transportation

