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Preemption as Rail Safety Measure

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1

AGENDA

- Introduction
- What is Preemption?
- Preemption Types and References
- Preemption and Rail Safety
- Stakeholder's and Partner's Coordination
- Upcoming efforts (FEC Corridor)
- How Preemption can help in Rail Safety



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2

INTRODUCTION

What is the actual problem we face?

- Railroad crossings are intersections.
- Cars are backing up across the track.
- Cars are backing up through the adjacent intersection.
- Limited storage at some intersections.



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3

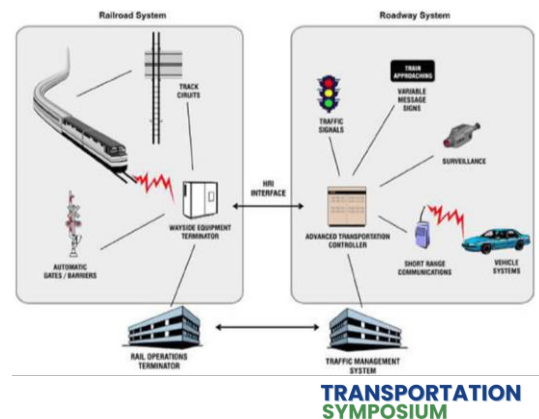
What is Preemption

What is Preemption?

- A system that changes traffic signals to give priority to approaching trains.
- Activates safety measures to stop vehicles and clear railroad crossings
- Automatically changes traffic signals to stop vehicles when a train is approaching

Why Preemption Matters?

- Enhances safety for motorists and pedestrians
- Helps prevent collisions between trains and vehicles, and reduces traffic delays
- Supports coordination between rail operations and local traffic



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4

Preemption Types and Documents

Types of Preemption

- Simultaneous Preemption (short throat solution) – Start up of traffic signal and railroad signal happen at the same time.
- Advanced Preemption (long throat solution) – Start up of traffic signal occurs prior to activation of railroad flashers and gates

Reference for Preemption

- MUTCD 11th Edition recommended guidelines
- FDOT Design Manual Section 220.2.1.2 - Preemption
- Florida Administrative Code (FAC) Rule 14-57.013(5)
- FDOT TEM Section 3.8 – Calculating Railroad Traffic Signal Preemption Time

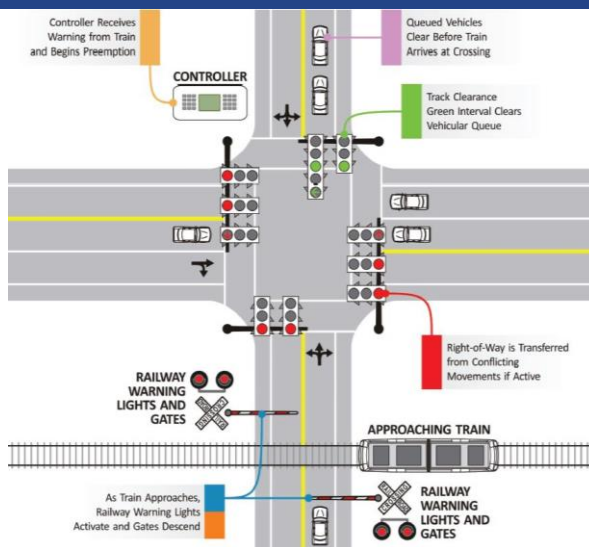


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5

5

What is Preemption



- Sensor detects train arrival
- Notify train control cabinet assembly
- Notify traffic controller assembly
- Traffic controller goes into signal preemption

More time = more \$

AREMA now dictates 50 Seconds Maximum Track Circuit Length

AREMA C&S Manual Part 3.1.10

For grade crossing warning systems interconnected with highway traffic signals, System Design Time minus Equipment Response Time shall not exceed 50 seconds

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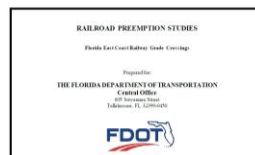
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6

Preemption and Rail Safety

Why Preemption = Safety in Florida

Feature	Safety Benefit
Clears tracks before train arrives	Prevents vehicle-train collisions
Prevents queuing on tracks	Reduces exposure to rail hazard
Enhances signal coordination	Minimizes driver confusion
Required in FDOT design where applicable	Institutionalized as safety best practice
Eligible for safety funds	Recognized as cost-effective safety upgrade



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7

7

Preemption as Rail Safety Measure

Preemption ensures that a vehicle stopped on the track will have sufficient time to move off the track prior to the arrival of a train.

- Proper preemption significantly reduces the risk of:
 - Vehicle-train collisions.
 - Blocking railways with traffic queues.
 - Emergency response delay and secondary crashes.
- Common Challenges:
 - Lack of sufficient coordination between jurisdictions (railroad vs. roadway owner).
 - Outdated or malfunctioning detection/timing equipment.
 - Inadequate queue storage space leading to vehicle entrapment.
 - Maintenance responsibilities not clearly defined between parties.

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8

Stakeholder & Partner Coordination

- Railroads
 - Joint Inspections with the Roadway Owners and traffic signal maintainers.
 - Coordinate early in project development (conceptual and initial engineering plans) to incorporate railroad input and address concerns proactively
- MPOs
 - Actively coordinate to align projects through LRTP (Long Range Transportation Plan), LOPP (List of Projects Priorities), and TIP (Transportation Improvement Program)
 - Provide comments during the LOPP review on rail-related projects to identify coordination needs in advance
- Counties
 - Partner with counties as the traffic signal maintainers during inspections and project coordination efforts
- FDOT Offices (Design Team, Traffic Operations)
 - The OMD Rail Coordinator supports the design team by coordinating with the railroad on plans reviews throughout all project phases—from design to construction.

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9

9

Upcoming Efforts: FEC Corridor & Brightline

Traffic Studies for Preemption

- The State has identified specific intersections where traffic studies are needed to determine preemption requirements. These studies will guide the next steps in the design process.
- Once traffic studies are complete, we will know whether additional traffic measures, such as preemption, pre-signals, traffic-signals or queue cutters, are necessary to improve safety and flow.

Upcoming Preemption Projects

Scope: Installation of Queue Management Traffic Detection System for improved crossing safety

Palm Beach County (Project 454440-1)

- Location: Northlake Blvd – Old Dixie Hwy and 10th Street

Indian River County (Project 454444-1)

- Location: CR-510 / 85th St / Wabasso Rd at FEC RR Crossing (#272168T)

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10

10

Upcoming Efforts: FEC Corridor & Brightline

RAISE (Rebuilding American Infrastructure with Sustainability and Equity) Grant

Project Scope:

- Enhances safety across **195 miles** of the **FEC/Brightline** shared-use corridor along the east coast of Florida.
- Focuses on targeted locations to maximize impact and coverage.

Grant Objective: Fund critical safety improvements to reduce vehicle collisions and trespasser incidents.

Key Safety Improvements Include:

- Channelization fencing
- RDEs (Railroad Detection Equipment)
- Delineators and roadway striping
- R8-8 "Do Not Stop on Tracks" signs

Scope Addition: Preemption construction (to improve signal coordination and traffic flow at crossings)

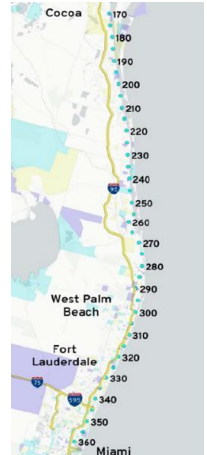


Figure 1

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11

11

Incidents at RR crossings (numbers)

- According to the Federal Railroad Administration, Broward, Palm Beach, and Miami-Dade Counties are all in the top ten counties nationwide with the most railway crossing casualties.
- Most incidents are in Broward County between Atlantic Ave and NW 6th Street in West Palm Beach and 33rd street in Deerfield Beach
- Broward County Sheriff's Office reported citations for the following:
 - 157 incident of people stopping on tracks
 - 146 driving through or around crossing gates arms
 - 122 entering the crossing without space to clear
 - 90 blocking an intersection or crosswalk

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12

12

Safety Message



Be Rail Smart Campaign

- Focuses on educating the public on rail safety and awareness
- Working with Law Enforcement
- Working with Operation Life Saver
- Blue Emergency Notification Sign (ENS) Awareness



13

13

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14

14

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