October 28-29, 2025
Orlando, FL

TRANSPORTATION SYMPOSIUM

Elevating Rail Safety Standards in Florida

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Session Objectives:

- Share Secretary's Rail Safety Charge
- Recap Challenges & Progress
- Provide an Overview of *MUTCD, Part 8*
- Provide an Overview of *FDM 220 (Railroads)*
- Address Rail Safety FAQs
- Highlight Rail Safety Programs & Initiatives

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Secretary Rail Safety Charge

"Let's problem solve and let's do something nobody else in this country has done and let's come up with BIG, **BOLD** recommendations."

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Challenge

Trespassing is the leading cause of rail related fatalities in the U.S.

Driver behavior is the leading cause of rail related fatalities at railroad crossings in the U.S.

Through engineering, education and enforcement, FDOT and partners are sharing with communities the personal role they play in achieving our target of zero injuries and fatalities across the transportation system.

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Actions Toward Elevating Rail Safety in Florida

“First of its kind in the nation, the Florida Rail Safety Coalition is leading the way to a safer transportation future. Actions being taken by this coalition make a real difference in rail safety and save lives. ”

- Secretary Jared W. Perdue, P.E.

FLORIDA RAIL SAFETY COALITION

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Actions Toward Elevating Rail Safety in Florida

- Complete restructuring of Grade Crossing Criteria
  - Reviewed latest technology options and best practices in higher-speed railroad grade crossing safety
  - Reorganized ***FDM 220 (Railroads)*** to better align with the ***Manual on Uniform Traffic Control Devices (MUTCD), Part 8***
  - ***FDM 220*** elevates specific ***MUTCD*** *Guidance* to **Standard**

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Hierarchy of MUTCD and FDM

- The ***Manual for Uniform Traffic Control Devices (MUTCD)***
  - The 11th Edition released in December 2023 will be effective for all projects beginning design in Florida on January 1, 2026.
  - Provides the minimum national **Standards**, Options, and *Guidance* for traffic control devices. Support statements are also provided to establish context.
  - Adopted by Statute and applicable to all public roadways.
- ***FDOT Design Manual (FDM)***
  - Silent on the ***MUTCD*** unless FDOT exceeds the minimum standards.
  - Adds guidance and content not covered by the ***MUTCD***.

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Overview of FDM 220 (Railroads)

- Reorganized ***FDM 220 (Railroads)***
  - Better follows the flow of the ***MUTCD, Part 8 (Traffic Control for Railroad and Light Rail Transit Grade Crossings)***.
  - ***FDM 220.1 - General*** includes detailed descriptions of:
    - ***Florida Administrative Code (FAC) 14-57.013***
    - ***Code of Federal Regulations (CFR)***
  - New "*FDOT Modifications to the MUTCD*" Tables introduced to ***FDM 220***.
    - Used for items already covered by the ***MUTCD***.
    - ***FDM 220*** text supplements the ***MUTCD*** requirements.

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Table 220.2.4 FDOT Modifications to *MUTCD, Part 8D*

MUTCD Section	Paragraph or Figure	MUTCD Status	FDOT Status	FDOT Requirement [Additional Information]
8D.01	4	Option	Deleted	[In conflict with the Florida Administrative Code 14-57.013]
8D.01	6	Standard	Deleted	[See FDOT Standard Plans, Index 509-070]
8D.01	7	Standard	Deleted	[See FDOT Standard Plans, Index 509-070]
8D.01	8	Standard	Deleted	[See FDOT Standard Plans, Index 509-070]
8D.01	10	Standard	Deleted	[See FDOT Standard Plans, Index 711-001]
8D.01	8D-1	Standard	Deleted	[See FDOT Standard Plans, Index 509-070]
8D.02	2	Standard	Standard	Delete "If used,". Change "(shown in Figure 8D-1)" to "{See FDOT Standard Plans, Index 509-070}"
8D.02	3	Guidance	Standard	Change "should" to "must".

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Standard:

03 **The bottom of the Number of Tracks (R15-2P) plaque (when used) must be located as low as practicable above the flashing-light backgrounds. The Crossbuck (R15-1) sign must be located just above the Number of Tracks (R15-2P) plaque or, if no plaque is present, the bottom of the Crossbuck sign must be located as low as practicable above the flashing-light backgrounds.**

8D.02	3	Guidance	Standard	Change "should" to "must".

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Overview of FDM 220 (Railroads)

- ***CFR 646.214(b) paraphrased:*** "…where a railroad-highway grade crossing is located within the limits of or near the terminus of the project…the crossing shall not be opened … until adequate warning devices for the crossing are installed and functioning properly.
  - Tied to Federal Funding
  - FHWA has not formally defined what constitutes "near the terminus" of a project.
  - The ***FDM*** defines this term.

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Overview of FDM 220 (Railroads)

- ***FAC 14-57.013***:
  - All <u>existing</u> public grade crossings without active warning devices (lights and gates) must have retroreflective cross bucks, advance warning signs, and RXR pavement markings.
  - All <u>new</u> public grade crossings must have, as a minimum, roadside flashing lights and gates on all roadway approaches to the crossing.
  - Overhead (Cantilevered) Flashing Lights must be used when any of the following conditions exist:
    - Multilane highways (for 2 lanes in each direction, median lights and gates are ok)
    - Sight restrictions to the grade crossings affect the motorist or train crew
    - Signal stanchion is located more than 23 feet from the CL of roadway

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Overview of FDM 220 (Railroads)

- ***FAC 14-57.013 (continued)***:
  - Automatic gates in conjunction with flashing lights shall be installed at any existing passive crossing with any of the following conditions:
    1. Multilane highway
    2. Multiple railroad tracks including passing tracks
    3. High-speed train operation (>65mph) or commuter train operation (>45mph)
    4. Traffic counts > 5,000 vehicles per day
    5. Through train count > 30 per day
    6. School bus count > 9 per day
    7. Hazardous materials transport tracks
    8. Crash history continues after installing flashing lights
    9. Signalized intersections located within 200 feet of track resulting in limited vehicle storage

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Overview of FDM 220 (Railroads)

- ***FAC 14-57.013 (continued)***:
  - Traffic Signal Preemption:
    - Automatically required when new and existing grade crossings are within 200 feet of a signalized intersection
    - Must be installed at new and existing grade crossings between 200 and 500 feet from a signalized intersection unless an engineering study is performed showing it is not beneficial to public safety.
  - Train Speed Detection Devices:
    - Must be installed when train speeds vary considerably under normal operation.

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Overview of FDM 220 (Railroads)

220.1 General
- 220.1.1 Railroad Companies
- 220.1.2 **Higher-Speed Rails**

220.2 Highway-Railroad and Light Rail Grade Crossings

220.2.1 General
- **Table 220.2.1 FDOT Modifications to MUTCD Part 8A(General)**
  (Work Near or Within Railroad R/W, **Diagnostic Team**, Quiet Zones, Required Coordination, **Grade Crossing Skews**, Hump Crossings, Surfaces, **Selection of Warning Devices, Illumination at Grade Crossings**)

220.2.2 Signing
- **Table 220.2.2 FDOT Modifications to MUTCD Part 8B (Signs)**
  (**Vehicle Refuge Area, LED-Enhanced Signs**, Advance Warning Signs, **Sign Placement**)

220.2.3 Pavement Markings (Dynamic Envelope Markings)
- **Table 220.2.3 FDOT Modifications to MUTCD Part 8C**
  (Dynamic Envelope Markings)

220.2.4 Flashing-Light Signals, Gates, and Traffic Control Signals
- **Table 220.2.4 FDOT Modifications to MUTCD Part 8D (Flashing- Light Signals, Automatic Gates, and Traffic Control Signals)**
  (Preemption, **Pre-Signals**, **Queue Cutter Signals, Constant Warning Time**, **Barrier Gates, Advanced Obstacle Detection**)

220.2.5 Pathway and Sidewalk Grade Crossings
- **Table 220.2.5 FDOT Modifications to MUTCD Part 8E (Pathway and Sidewalk Grade Crossings)**
  (**Higher-Speed Rail Corridor Pathway Crossings, Anti-Trespass Panels**)

220.2.6 Innovative Technology Countermeasures
(**In-Roadway Lights, Red Light Running Cameras, Variable Message Warning System, Warning Systems Integrated with Connected Vehicle Technologies**)

220.3 Grade Separated Highway-Railroad Crossings
No Changes to Grade Separated Criteria

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Overview of FDM 220 (Railroads)

220.2.2.2 Illumination at Grade Crossings

In further support of ***MUTCD, Section 8A.10***, when determining number of train passages at night, consider seasonal and daily variations in freight and passenger rail schedules as well as seasonal variation of nighttime conditions. See ***FDM 231*** for lighting requirements.

Install grade crossing lighting at locations meeting one or more of the following conditions:

(1) Train traffic exceeds 17 trains in nighttime conditions over a 24-hour period,

(2) Crossing comprises two or more tracks, or

(3) Track is skewed 30 degrees or greater from perpendicular.

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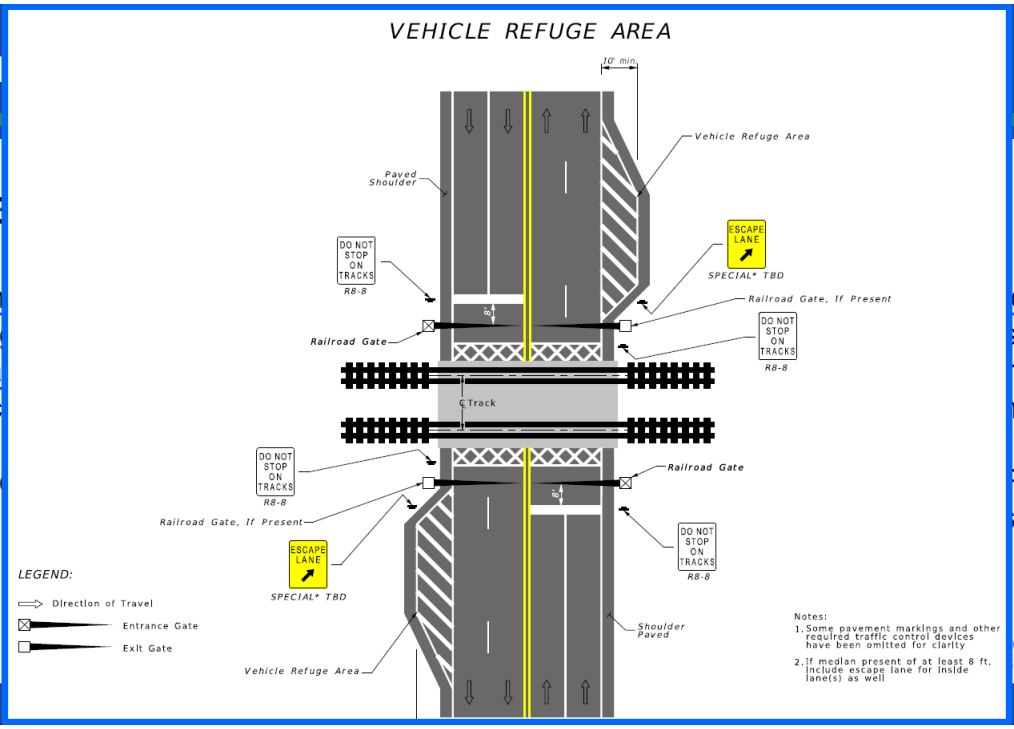

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Overview of FDM 220 (Railroads)

- **Signal Coordination Strategies:**
  - **Traffic Signal Preemption:** Coordination of nearby traffic signals to ensure vehicles can clear the tracks and restrict vehicle movements toward the tracks.
    - Activated only when train is approaching the grade crossing.
  - **Pre-Signals:** Supports traffic signals immediately downstream of the crossing. Pre-signal is placed upstream of the railroad tracks to prevent vehicles from stopping on the tracks.
    - Reacts to preemption.
    - Activated with downstream signal in every cycle regardless of train approach.
  - **Queue Cutter Signals:** Traffic signals used to stop vehicles before they reach the tracks when downstream congestion could cause queuing over the tracks.
    - Reacts to Preemption.
    - Activated by queue detection regardless of train approach.

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Rail Safety FAQs – Diagnostic Team

- Evaluates highway-rail crossings for safety.
- Includes highway, railroad, and stakeholder reps.
- Recommends appropriate warning/control devices.
- Ensures coordinated, data-driven safety decisions.

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Rail Safety FAQs – Vehicle Refuge Areas

- Escape lanes offer a clear, paved path where a driver can pull forward and out of the path of an oncoming train if they find themselves illegally stopped on the tracks.
- Remember, never stop on railroad tracks.

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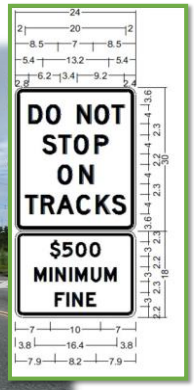
Rail Safety FAQs – Do Not Stop On Tracks

Florida Law – Stopping on Railroad Tracks

- Governed by Florida Statutes 316.1575 & 316.1576.
- Illegal to stop or block a railroad crossing at any time.
- First offense: $500 fine or 25 hours community service + 6 license points.
- Repeat offense: $1,000 fine + 6 license points.
- Aimed at improving railroad crossing safety and preventing collisions.



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Rail Safety FAQs – Emergency Notification System

Emergency Signs At Crossings

- Posted at all public rail crossings.
- Show crossing ID and emergency contact number.
- Used to report vehicles, signal issues, or emergencies.
- Enable fast response by railroads and emergency crews.

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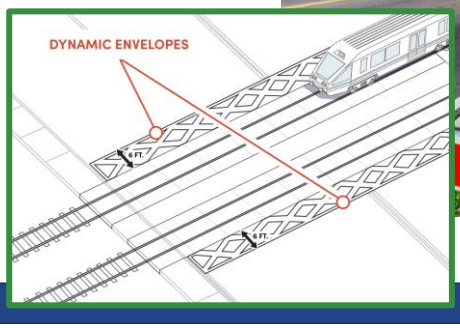
Rail Safety FAQs – Dynamic Envelope

- A dynamic envelope is known as the area near railroad crossings designed to keep motorists out of the danger zone.
- White roadway markings in the shape of connecting X's found within dynamic envelopes are used to visually highlight stopping distances at railroad crossings.



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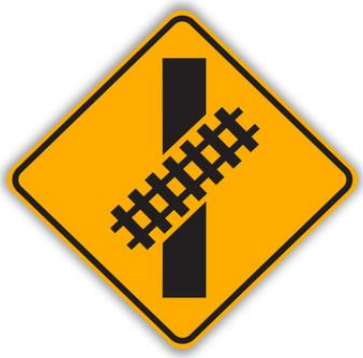
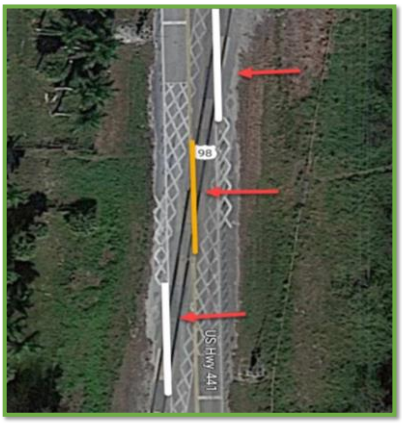
Rail Safety FAQs – Grade Crossing Skews





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Rail Safety FAQs – Quiet Zones

- Original intention was to reduce train horn noise in areas with hospitals, etc.
- Becoming more popular throughout Florida
- Must be maintained to quiet zone standards
- Federal Railroad Administration is closely monitoring and suspending quiet zones that are not properly maintained
- Only a public authority, defined as the entity responsible for traffic control or law enforcement at the public crossings (such as a city or county) may establish quiet zones.

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Rail Safety FAQs – Quiet Zones

Supplementary Safety Measures for Quiet Zones:

- Closure of a Public Highway-Rail Grade Crossing
- Four-Quadrant Gate System
- Gates With Medians of Channelization Devices
- One Way Street with Gates

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Rail Safety Programs & Initiatives

Rail Safety Inspection Program

- Signal & Train Control
- Operating Practices
- Hazardous Materials
- Motive Power & Equipment
- Grade Crossing

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Rail Safety Programs & Initiatives

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Rail Safety Programs & Initiatives

FDOT Railroad Crossing Opening & Closure Program

- Ensures safe, efficient, and compliant rail-highway crossings.
- Openings/closures initiated by governments, railroads, or citizens.
- Decisions based on safety, traffic need, and operational impact.
- Involves Notices of Intent, hearings, and Final Orders.
- Details and applications available on the FDOT website.

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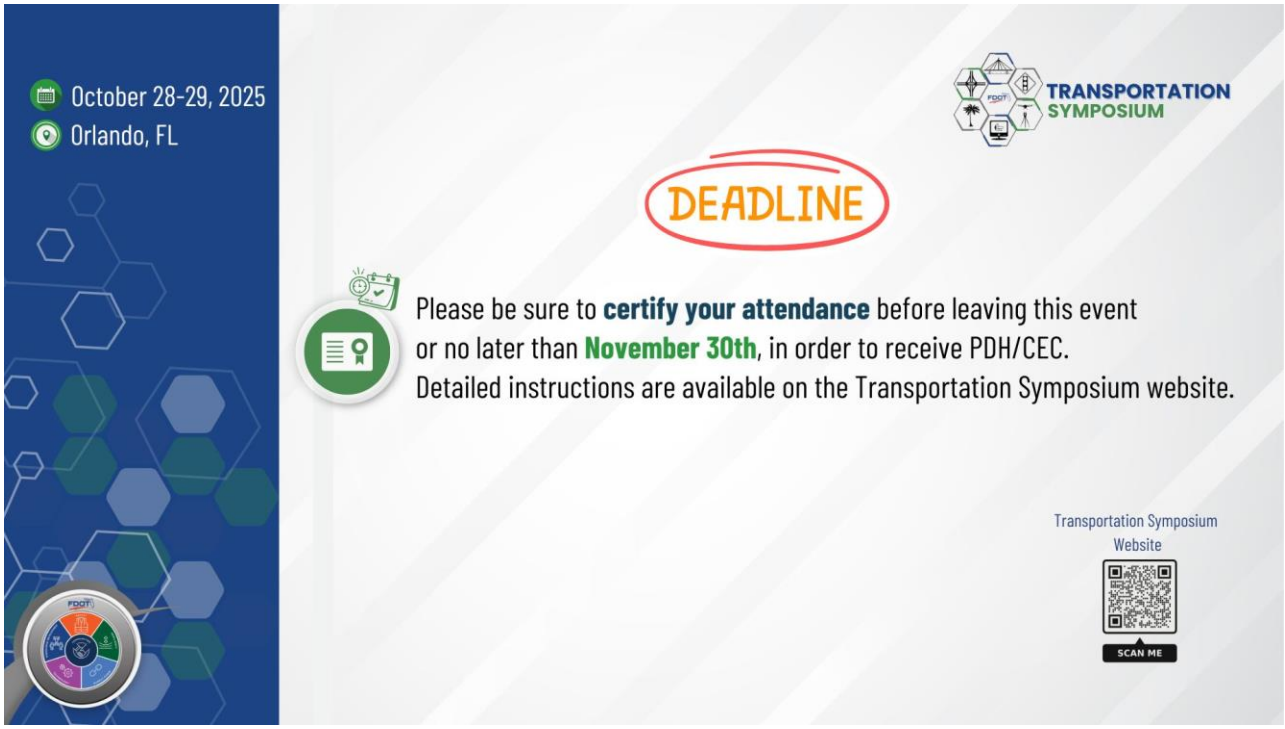
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