FRA/Volpe Center Trespass Prevention Research

Sponsored by the FRA Office of Research & Development
Train Control & Communications Division

2013 National Highway-Rail Grade Crossing Safety Training Conference

November 5, 2013
Outline

- Trespass Problem
- FRA/FTA Trespass Workshop
- CARE Model Demonstration in West Palm Beach, FL

Sponsored by the FRA Office of Research & Development
Train Control & Communications Division
Railroad Trespass Example

2013 SFRC (West Palm Beach, FL)
Railroad Trespass Example

2013 SFRC (West Palm Beach, FL)
Railroad Trespass Examples
The Problem

2012: 433 fatalities
Jan-Jul 2012 vs Jan-Jul 2013: 248 vs 292 (17.7% increase)

Railroad Right-of-Way Trespass Workshop

- August 14-16, 2012
- Keynote address by FRA Administrator Joseph C. Szabo
- 175 Attendees
- 6 Technical Sessions
- Breakout groups developed Research Needs
Railroad Right-of-Way Trespass Workshop

- Breakout groups developed Research Needs
  - Over 90 suggested ideas
  - 23 Research Need statements developed
  - FRA has initiated research on several recommendations

http://www.fra.dot.gov/conference/trespass2012/
<table>
<thead>
<tr>
<th>TOPIC AREA</th>
<th>TITLE</th>
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<tbody>
<tr>
<td>1. Pedestrian Safety Issues</td>
<td>Data collection and analysis</td>
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<td>Engineering design</td>
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<td>Distracted behavior—pedestrians and cyclists</td>
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<td>Lack of standard signage and evaluation of effectiveness of each type</td>
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<td>2. Hazard Management</td>
<td>Safety culture</td>
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<td>Data collection</td>
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<td>Define hazard management</td>
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<td>3. Design, Technology, Infrastructure</td>
<td>Fencing design and utilization</td>
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<td>Barriers designed to mitigate pedestrian distraction</td>
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<td>Exploratory technology research and education</td>
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<td>Train-activated in-pavement lights</td>
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<td>4. Community Outreach</td>
<td>Public awareness campaign</td>
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<td>Community outreach partnerships</td>
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<td>National Community Awareness Day</td>
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<td>Outreach and awareness toolkit</td>
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<td>5. Enforcement</td>
<td>Seek full police authority, across all 50 States, for railroad police officers</td>
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<td>Develop specific railroad/transit trespass law that can be applied broadly across the United States (consistent language)</td>
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<td>(a) Focus on “high value” targets, i.e., trespassers with malicious intent, homeless, drug/alcohol, other; (b) Strategies for different types of trespassers—casual, impaired, malicious</td>
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<td>Strive to have “crucial conversations” with local courts and prosecutors to prioritize trespass</td>
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<td>Seek opportunities to apply for and/or develop law enforcement grants that can target trespass cases</td>
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<td>6. Intentional Deaths/Acts</td>
<td>Education</td>
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<td>Eliminating trigger terminology from public communication</td>
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<td>Exploration of trespass prevention messaging</td>
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Trespass Prevention Research Study
West Palm Beach, FL

Research Objective
- Eliminate trespasser incidents and fatalities
- Provide national guidance on trespass mitigation
- Initiative started in 2009

Study Area
- City of West Palm Beach, FL (2 corridors)
  - SFRTA, CSX, Amtrak (milepost 966-973)
  - FEC (milepost 296-301)

Approach:
- Community
- Analysis
- Response
- Evaluation
- Identify Problem and Stakeholders
- Collect Data, Analyze, Identify Root Cause
- Implement Best Response
- Evaluate Impact and Process

Trespassing on Railway Lines, A Community Problem-Solving Guide.
Incident Data

Yellow: Locomotive Video
White: Engineer Observations
Green: Amtrak Near Miss Data
Red=accident fatals
Brown = suicide fatals or attempted suicides
Hazard Analysis Methodology

- Uses the System Safety Program Hazard Identification/Resolution Process which is based on US-MIL Standard 882D¹
  - Used by several transit agencies, including SFRTA, within their System Safety Program

- By determining the hazard severity and probability, the hazard can be reduced to its lowest practical level

- Attempt to apply methodology to the trespass problem

A (high risk):
B (medium risk):
C (low risk):
D (negligible risk):
Incident Data Analysis – Locomotive Video Sample

CP Mockingbird (South of WPB station platform)

13 trespass events (locomotive video)
  • All involved trespassers crossing the tracks

Mockingbird CP

- System operational 11/15/12-02/12/13 (92 days)
- 24 hr Analysis (11/15/12 (Thu) 5PM -11/16/12 (Fri) 5 PM)
  - 131 trespassers
    - 49 EB (16 to/from West platform ramp)
    - 82 WB (27 to West platform ramp)
    - 46% 2PM-6PM
Mockingbird CP

24-hr Trespass Count at Mockingbird CP
(Nov 15-16, 2012)
Recommended Mitigation Strategies
Mockingbird Control Point (South end of West Palm Beach Station)

Trespass characteristics:
Most events involve rail and/or bus system users walking between west side of the ROW and east side station platform or Tamarind Avenue. Many trespassers are students at the Alexander W Dreyfoos Jr School on Tamarind Avenue.

The Recommended Fence Extension will connect the pedestrian ramp inner fence on the West side of the tracks (across the tracks from the bungalow) to the existing fence at the end of the parking lot further south.
Next Steps

- Support Implementation of Trespass Strategies
- Evaluation
  - Continue data collection at select trespass locations
  - Install surveillance equipment at additional locations
  - Assess effectiveness of implemented treatments
- Refine model and implement on another candidate site
- Guidance/best practices FRA R&D Report
Marco daSilva | General Engineer/ Project Manager
Highway-Rail Grade Crossing and Trespass Prevention Research Program

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