Technical Training Workshop: Quiet Zones

August 27 & 28, 2013
For Handouts:
Please email
admin@tcrpc.org
Subject: FRA handouts
How Will We Move?

Passenger Rail Update for Southeast Florida

TREASURE COAST REGIONAL PLANNING COUNCIL

August 2013
Kim DeLaney, Ph.D.
Strategic Development Coordinator
Treasure Coast Regional Planning Council

kdelaney@tcrpc.org
Florida’s Long History with Rail …

… The East Coast of Florida is Paradise Regained …

(slogan from Florida East Coast Railway advertising poster, 1898)
Today's Transportation System Cannot Meet Increase in Demand

CURRENT & FUTURE HEAVILY CONGESTED CORRIDORS

Legend:
- Heavily Congested Corridors as of Year 2009
- Existing I-95/I-4/I-3 Facilities
- Planned ITS/CERS Facilities

Notes:
1. Heavy congestion in Urban Areas means that traffic is at least moving bumper to bumper all day and on during peak periods of the day.
2. Heavy congestion in Rural Areas means that traffic is at least moving less than 40 mph during peak periods.

2009

Southeast Region
Orlando Region
Tampa Bay Region
Jacksonville Region
Today’s Transportation System Cannot Meet Increase in Demand

CURRENT & FUTURE HEAVILY CONGESTED CORRIDORS

Legend
- Heavily Congested Corridors as of Year 2035
- Existing ST/ES/SS Facilities
- Planned ST/ES/SS Facilities

Notes:
- Heavy congestion in urban areas means that traffic is slow moving but not to the point of stopping or a stop and go during peak periods.
- Heavy congestion in rural areas means that traffic is slow moving during peak periods that may be difficult but not impossible (Level of Service C) to travel.
- 2035 System includes lanes added as a result of implementing the 20-Year Plan through 2035 with Growth Management Funds.
- 2035 System includes lanes added as a result of implementing the 10-Year Plan through 2035 with Growth Management Funds and the 50-Year Freeway Plan through 2050.
A Sample of Existing & Emerging Rail Projects in Florida
SE Florida ~ Passenger Rail Options

- Tampa
- Orlando
- Jacksonville
- West Palm Beach
- Fort Lauderdale
- Miami
- Everglades

**LEGEND**

- CSX (existing Amtrak route)
- CSX/FEC (proposed new Amtrak route)
- CSX (existing Tri-Rail route)
- CSX/FEC (proposed new commuter rail ~ “Tri-Rail Coastal Link” route)
- FECI (proposed “All Aboard Florida” route)
“Silver Star” Existing Service (Amtrak)

Intercity Passenger Rail
“FEC/Amtrak” Proposal (FDOT)

Intercity Passenger Rail

PLANNED NEW STATIONS (East Coast)
- St Augustine
- Daytona Beach
- Titusville
- Cocoa (Port Canaveral)
- Melbourne
- Vero Beach
- Fort Pierce
- Stuart

EXISTING STATIONS (East Coast)
Jacksonville .... West Palm Beach, Delray Beach, Deerfield Beach, Fort Lauderdale, Hollywood, Miami
- Miami International Airport/MIC

Other Existing Stations include Orlando, Tampa, Winter Park, Sanford, Lakeland, and more.
“Tri-Rail” Existing Service (SFRTA)  
Regional Commuter Rail
Proposed South FL Passenger Rail Services

**Regional Commuter Rail**
South FL East Coast Corridor Service

- **Commuter Passenger Rail**
  - Service TBD
- **Commuters and Local Travelers**
- **Miami to Jupiter (Phased)**
  - Miami to Pompano Beach
  - Tri-Rail Extension to Jupiter
  - Miami to Jupiter via FEC Corridor
- **85 miles** (Three Phases likely)
- **Stations Every 3-5 Miles**
- **Integrated with Tri-Rail**
- **Funding TBD**

**Intercity Passenger Rail**
“All Aboard Florida”

- **Intercity Passenger Rail Service**
  - 16 Round-trip Trains per Day
- **Tourists and Regional Travelers**
- **Miami to Orlando**
- **240 miles** (One Phase)
- **3 Stations in Southeast Florida**
- **Connections to Local Transit**
- **Privately funded**
TRI-RAIL COASTAL LINK
MEMORANDUM OF UNDERSTANDING

• Eight Signatory Parties

• Carries Project through Operations

Initiated Dec 2012
Fully Executed May 2013
“All Aboard Florida” Proposal (FEC Industries)

Intercity Commuter Express Rail

All Aboard Florida, the first privately owned, operated and maintained intercity passenger rail system in the nation, will give Florida’s residents and visitors a new and reliable transportation solution between Central and South Florida.

- THOUSANDS OF JOBS
- 100% PRIVATE
- PRIVATELY OWNED, OPERATED AND MAINTAINED
- HOURLY SCHEDULED SERVICE
- 3 HOUR TRAVEL TIME
- ADVANCED, CONVENTIONAL TECHNOLOGY

Orlando
West Palm Beach
Fort Lauderdale
Miami
André Goins, P.E.
Rail Operations and Programs Administrator
Florida Department of Transportation

Andre.Goins@dot.state.fl.us
FDOT Rail Office Programs

- Highway-Rail Grade Crossing Inventory
- Highway-Rail Grade Crossing Safety Improvement
- Highway-Rail Grade Crossing Construction and Maintenance
- Grade Crossing Opening / Closure
- Railroad Safety Inspection
- Florida Rail System Plan
- Rail Emergency Mgmt. Plan
- Use of Locomotive Horns and Quiet Zone Application Process
FDOT Programs Overview & History

• Highway-Rail Grade Crossing Safety Improvement
  • Created in the 1970’s
  • Authority – Sect. 335.141(2)(a), F.S.
  • Funding – Sect. 130, 23 USC

• Use of Locomotive Horns and Quiet Zone Application Process
  • Created in 2011
  • Authority – 49 CFR 222 and 229
  • Funding – Locally Funded
Quiet Zones are authorized by the feds and as such, are Federal Quiet Zones. FDOT’s role is strictly as the roadway authority to ensure safe roadway conditions and compliance with the MUTCD.
Diagnostic Field Reviews

• **FDOT**
  • **Purpose**
    o Recommend Safety Improvements in compliance with FAC and MUTCD
  • **Process**
  • **Schedule**
    o Typically Summer (May – Aug.)

• **All Aboard Florida**
  • **Purpose**
    o Determine improvements to achieve minimal level of safety for High speed facility
  • **Process**
    o Similar to FDOT
  • **Schedule**
    o Fall 2013
Quiet Zone Responsibilities

- Municipal Role
  - Pending Diagnostics
  - Application Process

- FDOT Role
  - Preparation
  - Support

- FRA Authority
Tom Drake
Crossing/Trespasser Regional Manager
Office of Safety
Federal Railroad Administration

Thomas.drake@dot.gov
Federal Railroad Administration

Region 3
Atlanta, GA
LOCOMOTIVE HORN
RULE
49 CFR 222

Background and History
IT’S ALL ABOUT SAFETY!
• NOT the Quiet Zone Rule
• PERMITS Quiet Zones
• Does NOT PROMOTE them
Why?

- 49 CFR 222.1—PURPOSE

- The purpose of this part is to provide for safety at public highway-rail grade crossings by requiring locomotive horn use at public highway grade crossings except in quiet zones established and maintained in accordance with this part.
Basics

- The Final Rule was effective on June 24, 2005
What You Need to Know

• BE FAMILIAR WITH:
  • Summary
  • Quick Facts
  • Glossary
  • Appendix C - Final Rule

• www.fra.dot.gov
What is a Quiet Zone?

- A quiet zone is a section of a rail line at least one-half mile in length that contains one or more public crossings at which locomotive horns are not routinely sounded.
Who Can Apply for a QZ?

- Only the public authority can apply to the FRA for a Quiet Zone
  - If more than one public authority is involved, all must agree to the QZ
  - If any public authority does not want to pay for improvements, they can refuse but there can still be QZ
Railroad Responsibility

- Railroads can not prohibit the creation of a QZ
- Railroads may sound the horn in a QZ at the sole judgement of the engineer
- The railroad is not required to sound the horn in the event of an emergency
Liability

• FRA Preemption of most State and Local laws regarding Locomotive Horns at public crossings

• FRA Preemption Attorney
  Colleen Brennan---202-493-6028

• FRA Grade Crossing Attorney:
  Kathy Shelton---202-493-6063
Helping Yourself

• Public authorities need to work with railroads regarding the cost of additional safety measures and their subsequent maintenance
• Public Authorities must provide a 60 day comment period for the State DOT and Railroad-Notice of Intent (NOI)
New Quiet Zones

• All public crossings must have gates, lights, Constant Warning Time (where practical), and Power Out Indicator

• The inventory information for each crossing in the QZ must be accurate and complete prior to establishing the QZ
### U.S. DOT - CROSSING INVENTORY INFORMATION

**AS OF 5/20/2010**

<table>
<thead>
<tr>
<th>Crossing No.</th>
<th>717825R</th>
<th>Update Reason:</th>
<th>Changed Crossing</th>
<th>Effective Begin-Date of Record: 05/06/04</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railroad:</td>
<td>NS Norfolk Southern Corp. [NS ]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initiating Agency</td>
<td>State</td>
<td>Type and Position:</td>
<td>Public At Grade</td>
<td></td>
</tr>
</tbody>
</table>

### Part I Location and Classification of Crossing

<table>
<thead>
<tr>
<th>Division:</th>
<th>PIEDMONT</th>
<th>State: GA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subdivision:</td>
<td>ATLтовASHMAIN</td>
<td>County: GWINNETT</td>
</tr>
<tr>
<td>Branch or Line Name:</td>
<td></td>
<td>City: In BUFORD</td>
</tr>
<tr>
<td>Railroad Milepost:</td>
<td>0601.46</td>
<td>Street or Road Name: W MAIN ST</td>
</tr>
<tr>
<td>RR Road I.D. No.:</td>
<td></td>
<td>Highway Type &amp; No.: CS 1139</td>
</tr>
<tr>
<td>Nearest RR Timetable Stn:</td>
<td>BUFORD</td>
<td>HSR Corridor ID:</td>
</tr>
<tr>
<td>Parent Railroad:</td>
<td></td>
<td>County Map Ref. No.: 067</td>
</tr>
<tr>
<td>Crossing Owner:</td>
<td></td>
<td>Latitude: 34.1140580</td>
</tr>
<tr>
<td>ENS Sign Installed:</td>
<td></td>
<td>Longitude: -84.0142210</td>
</tr>
<tr>
<td>Passenger Service:</td>
<td></td>
<td>Lat/Long Source: Estimate</td>
</tr>
<tr>
<td>Avg Passenger Train Count:</td>
<td>0</td>
<td>Quiet Zone: No</td>
</tr>
<tr>
<td>Adjacent Crossing with Separate Number:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Private Crossing Information:

<table>
<thead>
<tr>
<th>Category:</th>
<th>Public Access: Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specify Signs:</td>
<td>Specify Signals:</td>
</tr>
<tr>
<td>ST/RR A</td>
<td>ST/RR B</td>
</tr>
<tr>
<td>ST/RR C</td>
<td>ST/RR D</td>
</tr>
</tbody>
</table>

### Railroad Use:
Part II  Railroad Information

Number of Daily Train Movements: 27
Total Trains: 27  Total Switching: 0
Typical Speed Range Over Crossing: From 35 to 55 mph
Maximum Time Table Speed: 79
Type and Number of Tracks: Main: 2  Other: 0

Less Than One Movement Per Day: No
Day Thru: 9

Does Another RR Operate a Separate Track at Crossing? No
Does Another RR Operate Over Your Track at Crossing? Yes: ATK

Emergency Contact: (800)946-4744  Railroad Contact:  State Contact: (404)635-8120
**U.S. DOT - CROSSING INVENTORY INFORMATION**

**Crossing: 717825R**

**Effective Begin-Date of Record: 05/06/04**

**End-Date of Record:**

### Part III: Traffic Control Device Information

<table>
<thead>
<tr>
<th>Sign Category</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crossbucks</td>
<td>2</td>
</tr>
<tr>
<td>Advanced Warning</td>
<td>Yes</td>
</tr>
<tr>
<td>Pavement Markings</td>
<td>Stop Lines and RR Xing Symbols</td>
</tr>
<tr>
<td>Highway Stop Signs</td>
<td>0</td>
</tr>
<tr>
<td>Hump Crossing Sign</td>
<td>0</td>
</tr>
<tr>
<td>Other Signs</td>
<td>0</td>
</tr>
<tr>
<td>Specify</td>
<td></td>
</tr>
</tbody>
</table>

**Train Activated Devices:**

<table>
<thead>
<tr>
<th>Device Category</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gates</td>
<td>2</td>
</tr>
<tr>
<td>Mast Mounted FL</td>
<td>2</td>
</tr>
<tr>
<td>Cantilevered FL (Over)</td>
<td>0</td>
</tr>
<tr>
<td>Other Flashing Lights</td>
<td>0</td>
</tr>
<tr>
<td>Highway Traffic Signals</td>
<td>0</td>
</tr>
<tr>
<td>Other Train Activated Warning Devices</td>
<td></td>
</tr>
<tr>
<td>Channelization</td>
<td></td>
</tr>
<tr>
<td>Track Equipped with Train Signals?</td>
<td>Yes</td>
</tr>
<tr>
<td>1 Quad or Full Barrier</td>
<td></td>
</tr>
<tr>
<td>Total Number FL Pairs</td>
<td>0</td>
</tr>
<tr>
<td>Cantilevered FL (Not over)</td>
<td>0</td>
</tr>
<tr>
<td>Specify Other Flashing Lights</td>
<td></td>
</tr>
<tr>
<td>Wignwags</td>
<td>0</td>
</tr>
<tr>
<td>Bells</td>
<td>1</td>
</tr>
<tr>
<td>Special Warning Devices Not Train Activated</td>
<td></td>
</tr>
<tr>
<td>Type of Train Detection</td>
<td>Constant Warning Time</td>
</tr>
<tr>
<td>Traffic Light</td>
<td></td>
</tr>
<tr>
<td>Interconnection/Preemption</td>
<td></td>
</tr>
</tbody>
</table>

### Part IV: Physical Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Development</td>
<td>Commercial</td>
</tr>
<tr>
<td>Smallest Crossing Angle</td>
<td>30 to 59 Degrees</td>
</tr>
<tr>
<td>Number of Traffic Lanes</td>
<td>2</td>
</tr>
<tr>
<td>Are Truck Pullout Lanes Present?</td>
<td>No</td>
</tr>
</tbody>
</table>
### Part IV: Physical Characteristics

<table>
<thead>
<tr>
<th>Type of Development:</th>
<th>Commercial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Traffic Lanes</td>
<td>2</td>
</tr>
<tr>
<td>Crossing Railroad:</td>
<td>No</td>
</tr>
<tr>
<td>Is Highway Paved?</td>
<td>Yes</td>
</tr>
<tr>
<td>Crossing Surface:</td>
<td>Asphalt</td>
</tr>
<tr>
<td>Nearby Intersecting Highway?</td>
<td>Less than 75 feet</td>
</tr>
<tr>
<td>Does Track Run Down a Street?</td>
<td>No</td>
</tr>
<tr>
<td>Is Commercial Power</td>
<td>Yes</td>
</tr>
<tr>
<td>Smallest Crossing Angle:</td>
<td>30 to 59 Degrees</td>
</tr>
<tr>
<td>Are Truck Pullout Lanes Present?</td>
<td>No</td>
</tr>
<tr>
<td>If Other:</td>
<td></td>
</tr>
<tr>
<td>Is it Signalized?</td>
<td>No</td>
</tr>
<tr>
<td>Is Crossing Illuminated?</td>
<td></td>
</tr>
</tbody>
</table>

### Part V: Highway Information

<table>
<thead>
<tr>
<th>Highway System:</th>
<th>Other FA Highway - Not NHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is Crossing on State Highway System:</td>
<td>Yes</td>
</tr>
<tr>
<td>Annual Average Daily Traffic (AADT):</td>
<td>002560</td>
</tr>
<tr>
<td>Estimated Percent Trucks:</td>
<td>02</td>
</tr>
<tr>
<td>Posted Highway Speed:</td>
<td>35</td>
</tr>
<tr>
<td>Functional Classification of Road at Crossing:</td>
<td>Urban Minor Arterial</td>
</tr>
<tr>
<td>AADT Year:</td>
<td>2006</td>
</tr>
<tr>
<td>Avg. No of School Buses per Day:</td>
<td>6</td>
</tr>
</tbody>
</table>
• State DOTs or Railroads officially update crossing inventories

• Must comply with the Manual of Uniform Traffic Control Devices (MUTCD)
Funding of Improvements

• GENERALLY, all QZ improvements must be locally funded

• Unless otherwise qualified, Section 130 funds may not be used for QZ improvements

• When proposing a QZ, look at the whole corridor to determine the most cost-effective methods
Safety Measures

- SSM-Supplementary Safety Measures (Public Authority DESIGNATION)
- ASM-Alternative Safety Measure (Public Authority APPLICATION)
SSM

- 4 quad gates
- Channelization and median barriers
- One way roads
- Temporary closure
- Permanent closure

- SSMs do not need approval from FRA
- All other safety measures are ASMs
4 Quad Gates
Non-Traversable Median
Traversable Channelization
Gates with Medians or Channelization Devices

No intersections or commercial driveways within 60’ of gate arm. Access to residences (4 units or less) allowed if exiting motorists can not move against the flow of traffic.

10D’

6” Minimum Curb Height

100’ Minimum Length Median
Gates with Medians or Channelization Devices

60’ Minimum Length

100’ Median
One Way Streets
100’ curb on tip end required

One Way Street with Gate(s)

Gate arm should extend to within one foot of the far edge of pavement

Two foot Maximum from Gate Tip to Gate Tip
Temporary Closures

- Only times permitted are between 10 p.m. and 7 a.m.
- Must be enforced 7 days per week
ASM

- Any modified SSMs (e.g. medians less than 60 feet in length)
- Education and/or law enforcement programs (including photo enforcement)
- Any combination of above
  - All ASMs and modified SSMs must be approved by FRA in writing
  - Some ASMs must be tested prior to approval and data provided to show their effectiveness
Safety Goal

- QZRI for proposed quiet zone corridor must be:
  - Less than or equal to the risk with train horn sounding (RIWH)
  - OR
  - Less than the National Significant Risk Threshold (NSRT)
Important Concepts

- RIWH - Risk Index With Horns
- QZRI - Quiet Zone Risk Index
- NSRT - National Significant Risk Threshold
  - CURRENTLY 13,772, recalculated annually
• NSRT is the average risk at gated crossings where train horns are sounding. This number can fluctuate up or down each year based on accident statistics.

• NSRT is computed annually by HQ.
• If the NSRT number goes down after a QZ is established, a QZ based on NSRT may be canceled if their QZRI is not low enough to stay qualified.

• Collisions in the QZ may cause the QZRI to be larger than the NSRT and thus not qualified.
Quiet Zone Calculator

• AVAILABLE ON FRA WEBSITE
  • MUST DISABLE POP-UP BLOCKERS TO USE
    • REGISTER AND GET PASSWORD
    • FRA will assist in use of the calculator
Using the Calculator

- Select pertinent crossings and print out from inventory database
- Temporarily update any out-of-date information, adding gates if needed
- Calculate QZRI
- Experiment with safety scenarios to estimate what is necessary to achieve QZ
QZRI w/SSM is higher than RIWH but lower than NSRT

RIWH = 10,000
NSRT = 13,772
QZRI = 16,680
QZRI-SSM = 4765 after SSM
QZRI w/SSM is lower than the NSRT and RIWH

RIWH = 21,000

NSRT = 13,772

QZRI = 35028

QZRI = 7005 after SSM
QZRI w/SSM is lower than the RIWH but higher than NSRT

RIWH = 75,000
NSRT = 13,772
QZRI = 125,100
QZRI = 25,020 after SSM
Keeping a Quiet Zone

- QZs must remain below thresholds to stay viable – any future collisions can change the safety level and the QZ status can be lost.

- The FRA can inspect and review any QZ at any time.

- All SSM’s = QZ for life.
Private Crossings

• The train horn rule does not generally address private crossings

• If private crossings are included in a QZ, they must have at a minimum crossbucks, stop signs and an advanced warning sign indicating no horn will sound

• Industrial and commercial private crossings must have a diagnostic review and are subject to the recommendations of the diagnostic review team
Pedestrian Crossings

• The train horn rule does not generally address pedestrian crossings

• If pedestrian crossings are included in a QZ, they must have advanced warning signs indicating no horn will sound

• Pedestrian crossings in a QZ must have a diagnostic review and are subject to the recommendations of the diagnostic review team
Notification Requirements for Establishing a QZ (NOE)

• Public road authority must provide written notice to:
  • All railroads that operate over QZ rail line
  • The highway or traffic control authority or law enforcement authority having control over vehicular traffic at the crossings
  • The state agency responsible for highway safety
• The state agency responsible for crossing safety

• If applicable, the landowner of any private crossings within the QZ

• FRA—Washington

• All information goes to all parties
State Involvement

• “State agencies retain their existing roles (which vary from state to state) related to engineering standards and ordering implementation of safety improvements. Further, the primary expertise for highway-rail crossing safety can normally be found at the state level, in a department of transportation or regulatory commission.”
Train Horn Sound Levels

- As of June 24, 2005, train horn sound level must be between 96 dB(A) and 110 dB(A). No exceptions
  - Older locomotives will have 5 years to be tested and certified for compliance
  - New locomotives must be certified as of the date of manufacture. Rebuilt locomotives must be certified at the time they are rebuilt
Train Horn Sounding Distance

- All locomotives must sound the horn starting 15 but no more than 20 seconds before reaching a public highway-rail grade crossing. However, **in no case** may the horn be sounded more than \(\frac{1}{4}\) mile before the crossing

- Horn may be sounded for 25 seconds if engineer is unable to precisely estimate time to the crossing
Wayside Horns

- Classified as a traffic control device
- Regulated by FHWA
- Approved by FRA as a “one-for-one” substitute for a locomotive horn
• Permitted volume 92-110 dB(A)

• Crossing must have Gates, Lights, CWT (when reasonably practical) and Power Out Indicator

• Indicator (signal) to train crew to show that it is operating correctly
Here to Help You

- GX Manager-Tom Drake: 770-251-6186
- GX Manager-Liz Hudd: 770-375-9634
- Toll Free: 800-724-5993
always expect a train