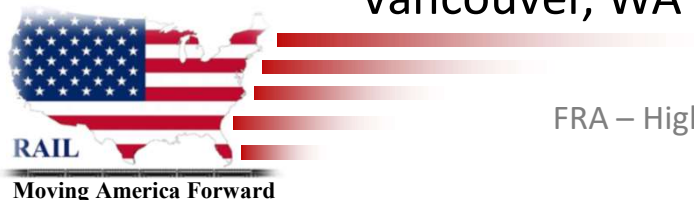


New Quiet Zones

The Process for Establishing One in Your City

Jeffrey P. Stewart
Federal Railroad Administration – Grade Crossing
Vancouver, WA



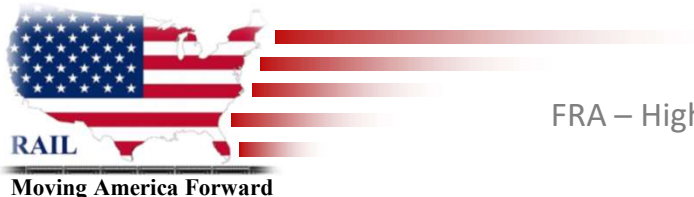
FRA – Highway-Rail Crossing & Trespasser Programs Division
07/22/2022



U.S. Department
of Transportation
Federal Railroad
Administration

What Does the Train Horn Rule (49 CFR 222) Do?

- 01 Requires railroads to sound locomotive horns to warn motorists at public highway-rail grade crossings
- 02 Provides exceptions where risk is minimized
- 03 Enables communities to establish quiet zones by reducing the risk caused by lack of horns



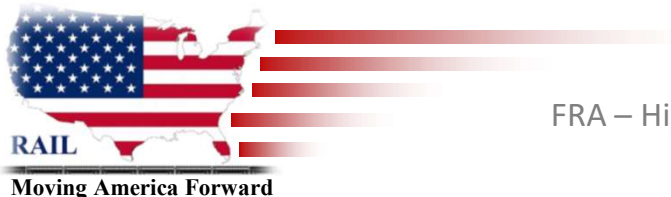
Horn Use at Public Crossings vs. Private and Pedestrian Crossings

Horn Use at Public Crossings

- Time-based pattern (15-20 secs) before arriving at crossing
- 25 seconds okay if good faith effort – err on side of safety
- Retained traditional sounding pattern – 2 longs, 1 short, 1 long
- Cannot begin to sound more than ¼ mile from crossing
- Established a maximum volume limit for the first time - 110 dB(A)

Horn Use at Private and Pedestrian Crossings

- Rule does not require horn to sound when approaching private and pedestrian crossings
- Matter is left to State law
- However, if horn is sounded, it must comply with the horn use requirements in Part 222
- If private or pedestrian crossings are within a quiet zone, must treat in accordance with the rule.



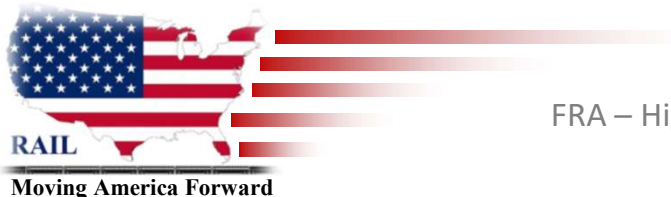
Identify Crossings

- In proposed QZ, determine all crossings to include
 - Public at-grade crossings
 - Private & pedestrian at-grade crossings
 - Grade separated crossings (over/under-pass)
- Identify by crossing ID number and name
 - ID number – 6 numbers and letter
 - Posted at crossing
 - Safety data web site for crossing inventory (<http://safetydata.fra.dot.gov>)



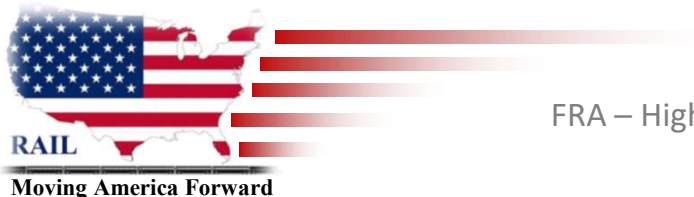
Identify Crossings

- Ensure New QZ must be at least $\frac{1}{2}$ mile in length
 - Minimum condition for a QZ
- FRA interprets this as follows:
 - $\frac{1}{4}$ mile from each of the two outermost public crossings
 - $\frac{1}{4}$ mile either side of a single public crossing
- Private/Pedestrian crossings in a QZ:
 - If between first/last public crossing, must be included
 - If within $\frac{1}{4}$ mile of first/last public crossing, must be included



More Minimum Conditions for a QZ

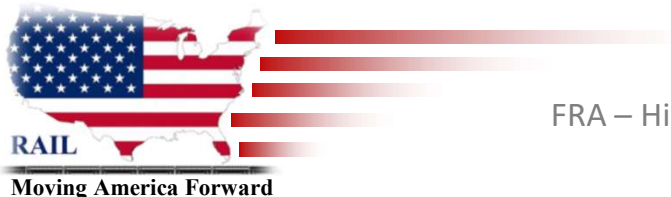
- All public crossings must have lights and gates
- Must have power out indicators
- Must have constant warning time if reasonably practical
 - Railroad, state agency, FRA determine
 - Discuss during diagnostic review
- Advance warning signs conforming to the MUTCD



Decide on Basis for QZ

- Supplementary Safety Measures (SSMs) at all public crossings – QZ qualified (FRA recommended)
- SSMs at some, but not all crossings
 - Reduces risk to less than NSRT or RIWH
- QZ can be qualified with no SSMs if risk less than NSRT (Caution!)
- Risk reduction using ASMs: Requires FRA application

- Definitions
 - *Supplementary Safety Measure (SSM): safety system/procedure determined to be an effective substitute for the train horn*
 - *Alternative Safety Measure (ASM): safety system/procedure other than an SSM which FRA analysis determines to be an effective substitute for an SSM*



Diagnostic Review for QZ

- A team of knowledgeable representatives organized by the public authority responsible for the crossing, who use crossing safety management principles to make recommendations for safety needs at a crossing
- Typically held to allow public authority to preview plans for QZ crossing improvements
 - Each crossing in proposed QZ reviewed by diagnostic team
 - Private crossings allowing public access to industrial or commercial sites **MUST** be evaluated
 - Pedestrian crossings **MUST** be evaluated

Must be equipped as recommended by diagnostic team

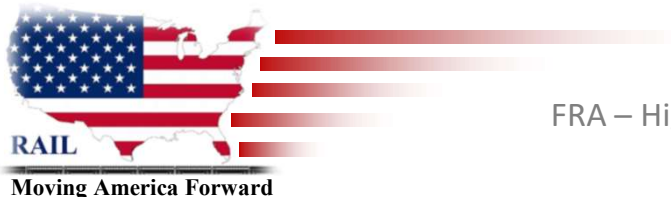
Notice of Intent

- Public Authority (PA) must provide written Notice of Intent to establish a QZ **via certified mail** to:
 - All railroads operating over crossings
 - State highway safety agency
 - State agency responsible for crossing safety
- Purpose – provides brief summary of PA plans for the QZ and gives opportunity for comments and recommendations to PA
- 60 days to provide comments to PA



Calculate Risk Index

- Using the QZ Calculator, determine Risk Index for each public crossing
 - Non-gated crossings: calculate as if gates were present
 - Gates must be installed prior to QZ establishment
- Use current and accurate data
 - Input data populated from grade crossing inventory report
 - Most input data can be updated if you have more accurate values
- Private & pedestrian crossings not included in risk calculations



QZ Calculator

FRA - Quiet Zone Calculator - Work - Microsoft Edge

https://safetydata.fra.dot.gov/quiet/newzone2.aspx?err=&crossing=760044w&state_cd=41&county_cd=C005&rrcode=UP

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Federal Railroad Administration

QUIET ZONE CALCULATOR

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Update and Verify Crossing Information CONTINUE

Create New Zone

Manage Existing Zones

Log Off

Step by Step Instructions:

Step 1: To add more crossings to the zone Click the ADD CROSSING.

Step 2: To Make changes to the default information, select the crossing from list. Enter the changes in the appropriate box, then click the UPDATE button.

Step 3: To permanently remove a crossing from the zone, select Crossing from list. Click the DELETE CROSSING button.

Step 4: Verify All Crossing Information Provided is correct. Then Click the Check Box, then CONTINUE button.

* Note: To see a list of SSMS, click on "Pre-Existing SSM".

Zone: 760042H IVY STREET
Quiet Zone Type : New 24-hour Quiet Zone

760042H IVY STREET
760043P GRANT STREET
760044W ELM STREET

Present warn device: Gates

Number of highway vehicles per day: 8156

Total trains: 15

Day through trains: 8

Total Switching Trains: 0

Number of main tracks: 1

Number of other tracks: 1

R.Minor Urban(U-)/Rural(R.): Arterial

Highways paved: Yes

Maximum timetable speed mph: 70

Number of highway lanes: 3

Number of years accident data: 5

Number of accidents in accident data years: 1

Wayside horn: No

Pre-Existing SSM: No

Note: Updating Crossing information on the Quiet Zone Calculator DOES NOT update the crossing inventory. Be sure that an updated current and accurate inventory form is also submitted.

To verify ALL CROSSING INFORMATION PROVIDED is correct, click on the check box here.

FRA - Quiet Zone Calculator - Work - Microsoft Edge

https://safetydata.fra.dot.gov/quiet/scen.aspx?zoneid=44436

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QUIET ZONE CALCULATOR

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Change Scenario: CANBY_OR_66819

Create New Zone

Manage Existing Zones

Log Off

Step by Step Instructions:

Step 1: To specify New Warning Device (For Pre-Rule Quiet Zone Only) and/or SSM, click the MODIFY button.

Step 2: Select proposed warning device or SSM. Then click the UPDATE button.To generate a spreadsheet of the values on this page, click on ASM button—This spreadsheet can then be used for ASM calculations.

Step 3: Repeat Step (2) until the SELECT button is shown at the bottom right side of this page. Note that the SELECT button is shown ONLY when the Quiet Zone Risk Index falls below the NSRT or the Risk Index with Horn.

Step 4: To save the scenario and continue, click the SELECT button

Crossing	Street	Traffic/Warning Device	Pre-SSM	SSM	Risk	
760042H	IVY STREET	8156 Gates	0	13	27,904.16	<input type="button" value="MODIFY"/>
760043P	GRANT STREET	4400 Gates	0	13	7,189.09	<input type="button" value="MODIFY"/>
760044W	ELM STREET	5482 Gates	0	0	37,781.14	<input type="button" value="MODIFY"/>

* Only Public At Grade Crossings are listed.

ALERT: Quiet Zone qualifies because QZRI is less than Risk Index with Horns.

Click for Supplementary Safety Measures (SSM)

Click for ASM spreadsheet: * Note:The use of ASMs requires an application to and approval from the FRA.

Summary

Proposed Quiet Zone:	CANBY OR
Type:	New 24-hour QZ
Scenario:	CANBY_OR_66819
Estimated Total Cost:	\$30,000.00
Nationwide Significant Risk Threshold:	15488.00
Risk Index with Horns:	42615.39
Quiet Zone Risk Index:	24291.47

Most data can be updated

Supplementary Safety Measures (SSMs)

- Closures (permanent & temporary)
- 4 quadrant gate system
- Gates with medians and/or channelization devices
- One-way street with gate(s)

Temporary Closure



Permanent Closure



Four Quadrant Gate System



Gates with Medians and/or Channelization Devices

Channelization devices



Non-traversable medians



One-Way Street



Wayside Horn

1 for 1
replacement for
train horn

Available only at
gated crossings



Treated as a
crossing with an
SSM when used
within a QZ

Does not
contribute to
reducing QZRI

Alternative Safety Measures (ASMs)

- Non-complying SSMS (e.g. shorter traffic channelization devices)
- Programmatic education and awareness
- Photo enforcement
- Engineering treatments
- Programmatic enforcement

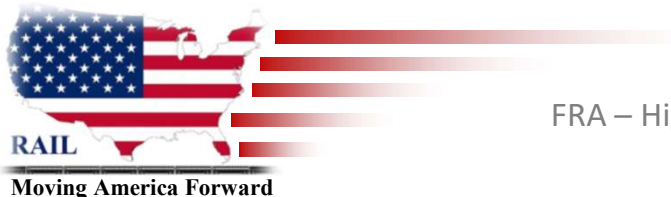
Education, enforcement and engineering options: must demonstrate a statistically significant improvement in effectiveness, and must be approved by the FRA.

Public Authority Application to FRA – 222.39(b)

- If Alternative Safety Measures utilized to reduce the QZRI, then Public Authority must apply for FRA approval.
- Requirement for Public Authority application, its contents and procedures for applying are found in 49 CFR 222.39 (b).

Notice of QZ Establishment

- Purpose – advise affected parties of QZ establishment
- Required when New QZ is ready to “go live”
 - Sent via **certified mail**:
 - All railroads operating over QZ
 - Highway or traffic control authority, or law enforcement, having control over vehicular traffic on crossings
 - State agencies responsible for highway/road and grade crossing safety
 - Private property owners
 - FRA Associate Administrator for Safety



Periodic QZ Updates

- Re-affirm to FRA that QZ continues to comply with Appendix A of 49 CFR 222
 - Report required every five years for QZs with SSMs at every public crossing in the QZ
 - Otherwise, report is required every three years
- Reports should be sent to all recipients of the QZ Notice of Intent



FRA Assistance

- FRA personnel are available to help local governments assess safety measures for their crossings
- FRA has provided a Quiet Zone Calculator that can be used to develop and store multiple scenarios for each proposed Quiet Zone <http://safetydata.fra.dot.gov/quiet>
- Guide for establishing a QZ:
 - 49 CFR 222, Appendix C: Guide to Establishing Quiet Zones
 - <https://railroads.dot.gov/elibrary/how-create-quiet-zone>

Quiet Zone Reviews



Public Authorities should expect FRA to periodically inspect their QZs – If we find conditions similar to the photos above...we'll be in touch! The Public Authority is responsible for assuring SSMs and ASMs, pavement markings and signage remain in place and effective.

Questions?

