

# TRAIN HORN FINAL RULE

49 CFR Parts 222 and 229



# Glossary

- FRA = Federal Railroad Administration
- CPUC = California Public Utilities Commission
- SSM = Supplemental Safety Measures
- ASM = Alternative Safety Measures
- dB = decibel level
- NCRA = North Coast Railroad Authority
- NWPCo = Northwestern Pacific Railroad Company
- SMART = Sonoma Marin Area Rail Transit District
- ISTEA = Intermodal Surface Transportation Efficiency Act

# History

- Use of Locomotive Horns at Highway-Rail Grade Crossings; Final Rule, known as the “Train Horn Final Rule”
- Adopted by Federal Railroad Administration and posted to the Federal Register on August 17, 2006
  - [http://www.fra.dot.gov/downloads/safety/trainhorn\\_2005/amended\\_final\\_rule\\_081706.pdf](http://www.fra.dot.gov/downloads/safety/trainhorn_2005/amended_final_rule_081706.pdf)
- Primary Goals – Standardization
  - Use and quality
  - State & local agency implementation of “Whistle Bans”
  - At-grade crossing safety equipment
  - Establish process of Quiet Zones

# Standardization – Use & Quality

- Horns are to be used approaching all at-grade crossings
- Use of horn
  - 15-20 seconds prior to the crossing
  - Not more than  $\frac{1}{4}$  mile in advance
  - Two long blasts, one short blast and one long blast
- Quality of horn sound
  - Minimum output = 96 dB @ 100 feet in front of locomotive
  - Maximum output = 110 dB @ 100 feet in front of locomotive

# Standardization – “Whistle Bans”

- Prior to 2005, States allowed local agencies to establish “Whistle Bans”
- No standard safety evaluations were performed
- Rules were different for every jurisdiction
- High incident rates at crossings resulted

# Standardization – Safety

- Established a process to evaluate the risk at specific at-grade crossings and a national index to measure against
  - National Significant Threshold (NSRT)
  - Risk Index with Horns (RIWH)
- Developed minimum designs for crossings
  - Crossbucks
  - Signs
  - Gates
  - Lights
  - Bells
  - Supplemental Safety Measures (SSM)
  - Alternative Safety Measures (ASM)

# Standardization – Quiet Zones

- Developed a definition
- Developed a process
- Pre-2005 = 212 grandfathered Quiet Zones
- Post-2005 = 280+ new Quiet Zones
- Since May 2012 = 118+ Quiet Zone applications being reviewed by the FRA
- In California = 29 established Quiet Zones

# Quiet Zone - Defined



## A Quiet Zone IS:

- A section of a rail line at least one-half mile in length that contains one or more consecutive public railroad crossings at which locomotive horns are not routinely sounded.



## A Quiet Zone IS NOT:

- A tool used to address noise impacts associated with other railroad conditions and equipment such as rail joints, engine braking, engine noise, car suspension or railroad crossing lights and bells.





# Quiet Zone - Process

## Train Horn Final Rule

- A. Preliminary diagnostic review
- CPUC, FRA, Operators, Caltrans & local agencies
  - Existing conditions are reviewed and basic/preliminary direction is given about additional safety measures.

## Novato Checklist & Notes

A. Completed in 2011:

*(Active/Inactive)*

- Rush Creek Place
- Golden Gate Place (Private)
- Olive Avenue
- Grant Avenue
- Franklin Avenue Path
- Novato Creek 1 (County)
- Novato Creek 2 (County)
- Hanna Ranch Road
- Renaissance Road
- Grandview Avenue (County)
- *Bel Marin Keys Path*
- *Roblar Road*
- *Hamilton Parkway*
- *State Access Road (Scheduled for Closure)*

# Quiet Zone – Process (cont.)

## Train Horn Final Rule

- B. Update National Inventory to reflect conditions
- C. Submit “Notice of Intent to Create New Quiet Zone” (60 day comment period)
- D. Conduct risk evaluation and identify additional safety measures

## Novato Checklist & Notes

- B. In Process by SMART
- C. Pending direction from Council
- D. Completed during diagnostic. Concluded that SSMs and ASMs required at all public crossings for SMART traffic

# Quiet Zone Risk Index

- The average risk index for all public crossings in a proposed quiet zone taking into consideration the increased risk caused by the absence of train horns and any decrease in risk attributable to the use of SSMs or ASMs.

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	
299867W	COURT ST.	1001	Gates	0	12	3,960.97	<input type="button" value="MODIFY"/>
299868D	MONTICELLO ST.	8100	Gates	0	12	8,555.25	<input type="button" value="MODIFY"/>
299869K	CHEROKEE ST.	4400	Gates	0	0	26,525.02	<input type="button" value="MODIFY"/>
299870E	CHICKASAW ST.	3600	Gates	0	0	27,479.87	<input type="button" value="MODIFY"/>
299871L	CHIPPEWA ST.	1001	Gates	0	0	19,942.95	<input type="button" value="MODIFY"/>
299872T	MINNESOTA ST	1001	Gates	0	12	16,894.09	<input type="button" value="MODIFY"/>
299874G	HANSON ST.	1001	Gates	0	0	19,942.95	<input type="button" value="MODIFY"/>

\* Only Public At Grade Crossings are listed.

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:	brookhaven MS1
Type:	New 24-hour QZ
Scenario:	BROOKHAVEN_24782
Estimated Total Cost:	\$39,000.00
Nationwide Significant Risk Threshold:	19047 .00
Risk Index with Horns:	18116.82
Quiet Zone Risk Index:	17614.44
<input type="button" value="Select"/>	

# Nationwide Significant Risk Threshold

- “The [Nationwide Significant Risk Threshold] NSRT is an average of the risk indexes for gated public crossings nationwide where train horns are routinely sounded. FRA developed this risk index to serve as one threshold of permissible risk for quiet zones established under this rule across the nation. Thus, a community that is trying to establish and/or maintain its quiet zone, pursuant to 49 CFR Part 222, can compare the Quiet Zone Risk Index calculated for its specific crossing corridor to the NSRT to determine whether sufficient measures have been taken to compensate for the excess risk that results from prohibiting routine sounding of the locomotive horn.”

# Risk Index With Horns

- “In the alternative, a community can establish its quiet zone in comparison to the Risk Index With Horns [RIWH], which is a corridor specific measure of risk to the motoring public when locomotive horns are routinely sounded at every public highway-rail grade crossing within the quiet zone.”

# Quiet Zone – Process (cont.)

## Train Horn Final Rule

- E. Install SSMs & ASMs as directed by the CPUC
- F. Final diagnostic review
  - CPUC, FRA, Operators, Caltrans & local agencies
  - Updated crossing conditions are reviewed for compliance to plan.

## Novato Checklist & Notes

- E. SMART has included most in their initial construction contracts. Work is currently underway.
- F. Pending completion of work by SMART.

# Supplementary Safety Measure (SSM)

- SSMs are engineering improvements, which when installed at highway-rail grade crossings within a quiet zone, would reduce the risk of a collision at the crossing. SSMs are installed to reduce the risk level either to the level that would have existed if the train horn were sounded (compensating for the lack of the train horn) or to a level below the Nationwide Significant Risk Threshold.

Approved SSMs include:

- Four quadrant gates
- Gates with medians or channelization devices, also known as traffic separators
- One-way streets equipped with gates that fully block the street
- Temporary closure (i.e., nighttime closure)
- Permanent closure

# Alternative Safety Measure (ASM)

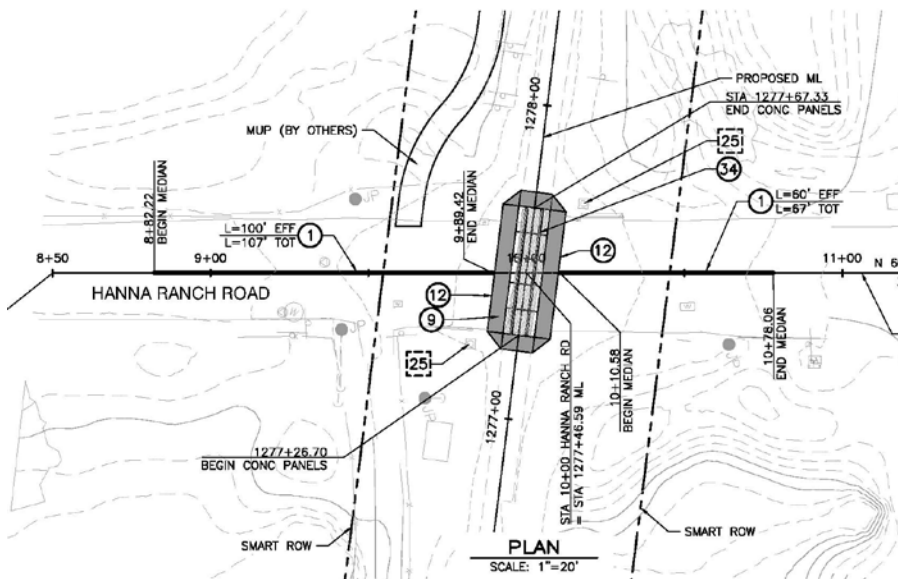
- A safety system or procedure provided by the appropriate traffic control authority which, after individual review and analysis, is determined by the Federal Railroad Administration (FRA) to be an effective substitute for the locomotive horn at specific highway-rail grade crossings.
- ASMs include:
  - Modified Supplementary Safety Measures (SSMs)
  - Engineering improvements other than modified SSMs including improvements that address underlying geometric conditions, including sight distance, that are a source on increased risk at the crossing.
  - Non-engineering Alternative Safety Measures (ASMs) include the following:
    - Programmed law enforcement
    - Programmed public education and awareness
    - Photo enforcement



# Quiet Zone – Process (cont.)

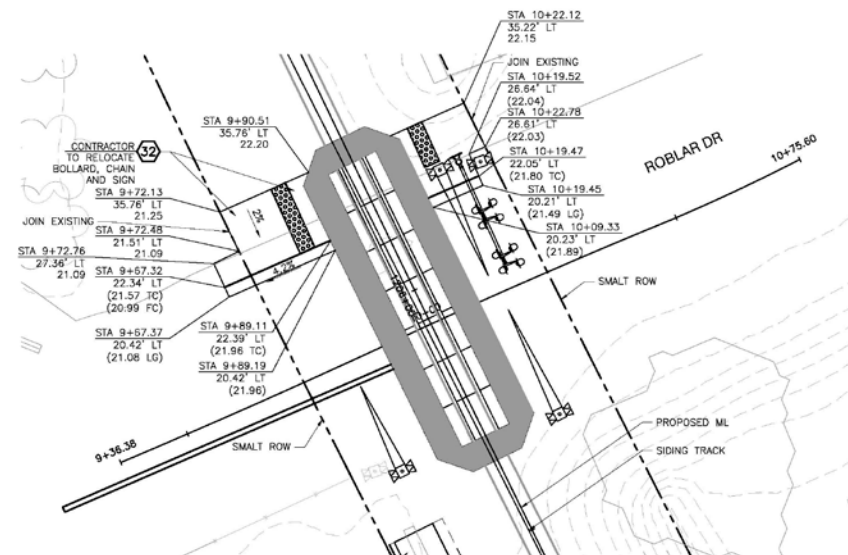
## SSM Example: Hanna Ranch Road

- Medians on both East and West approaches



## ASM Example: Roblar Road

- Median on western approach & exit gate on eastern approach



# Quiet Zone – Process (cont.)

## Train Horn Final Rule

- F. Issue “Notice of Quiet Zone Establishment” to FRA, CPUC, Operators, State and public safety agencies.

## Novato Checklist & Notes

- F. Pending direction from Council



# Coordination with County

- The 2008 Consent Decree required NCRA/NWPCo to construct SSMs & ASMs at Grandview Avenue, which is outside the City limit.
- County must follow Quiet Zone process separately for this one crossing.
- Through a Memorandum of Understanding, the County has agreed to delegate authority to City to establish a Quiet Zone at Grandview Avenue.

# SSM & ASM Costs

- The 2008 Consent Decree, the NCRA/NWPCo were required to install, at their sole cost, all improvements required for the City to issue a Notice of Intent.
- 2010 MOU between SMART & NCRA/NWPCo associated with the Consent Decree and use of ISTEPA funds, dedicated \$1.25M toward installation of SSMs & ASMs at 7 crossings along freight corridor in Novato.
- At their August 15, 2012, Board of Directors meeting, SMART established a cost sharing for SSM & ASM improvements at other crossings.
  - SMART will install medians as SSMs where applicable, or
  - SMART will provide \$50,000 toward other SSM or ASM improvements at a crossing.

# SSM & ASM Costs (cont.)

## Crossing Improvements

- A. Rush Creek Place – SSM quad gates
- B. Golden Gate Place – SSM quad gates
- C. Olive Avenue – ASM median w/exit gate
- D. Grant Avenue – ASM median w/exit gate
- E. Franklin Avenue Path – SSM swing gates
- F. Novato Creek 1 - signage
- G. Novato Creek 2 - signage
- H. Hanna Ranch Road – SSM medians
- I. Renaissance Road – ASM median w/exit gate
- J. Private Storage Facility - signage
- K. Grandview Avenue – SSM quad gates
- L. Bel Marin Keys Path – SSM swing gates
- M. Roblar Road – ASM median w/exit gate
- N. Hamilton Parkway – SSM medians
- O. State Access Road – Scheduled to be closed

## Status – Who Pays

- A. In Process – SMART & NCRA/NWPCo
- B. In Process – SMART & NCRA/NWPCo
- C. In Process – SMART & NCRA/NWPCo
- D. In Process – SMART & NCRA/NWPCo
- E. In Process – SMART & NCRA/NWPCo
- F. In Process – County
- G. In Process – County
- H. In Process – SMART & NCRA/NWPCo
- I. In Process – SMART & NCRA/NWPCo
- J. In Process – Private
- K. In Process – SMART & NCRA/NWPCo
- L. In Design – SMART & NCRA/NWPCo
- M. In Design – City pays for exit gate (~\$150k)
- N. In Design – SMART & NCRA/NWPCo
- O. In Design – SMART & NCRA/NWPCo

# Quiet Zone Maintenance

## SMART & NCRA/NWPCo

- Maintain all safety equipment within the rail right-of-way or designated easement in perpetuity.

## Novato

- Maintain safety equipment that exist outside the rail right-of-way including medians, signage and pavement markings.
- Submit affirmation to FRA every 4.5-5 years.

# Staff Recommendation

- Allow SMART to begin operations
- Evaluate conditions after 6 months
  1. If not significant impacts, do not submit “Notice of Intent to Establish” (NOI)
  2. If some impacts, evaluate the times of the most severe conditions. If at night, proceed with NOI for night-time operations only
  3. If the community is fed-up with the train horns, file NOI to 24/7 operations.

# Questions?

