

# Implementing a Quiet Zone to Address Train Horn Noise



# FRA Locomotive Horn Final Rule (49 CFR 222)

- Issued 4/27/05
- Rule became effective 6/24/05
- Amended 8/17/06
- Requires horns to be sounded to warn motorists at public crossings
- Provides exceptions where risk is minimized
- Enables communities to establish quiet zones by reducing the risk caused by lack of horns



# Sounding the Horn

*A Train Engineer is required to sound the horn in:*

- 2 long, one short, two long blasts, starting 15 to 20 seconds before the train enters crossing; approximately  $\frac{1}{4}$  mile prior to crossing.
- It shall be repeated or prolonged until the locomotive occupies the crossing.
- The horns must be a minimum 96 dB to a maximum 110 dB, measured 100 feet in front of train



# What is the Purpose of this Regulation?

The purpose of this regulation is to provide for safety at public highway-rail grade crossings by requiring locomotive horn use at public highway-rail grade crossings except in Quiet Zones established and maintained in accordance with CFR 222.



# City of Eugene Conditions

- There are 25 major public at grade crossings within UGB.
- Union Pacific Mainline runs 23 trains per day through 10 City and 3 County crossings daily.

*This represents 90 % of the train horns heard within the UGB*

- Portland & Western runs 2 trains per day through 4 City and 3 Lane County crossing (5% of horns)
- Coos Bay Rail runs 3 trains per day through 4 City and 1 Lane County crossing (5% of horns)
- There are also 13 minor public at grade crossings and about 2 dozen private crossings.

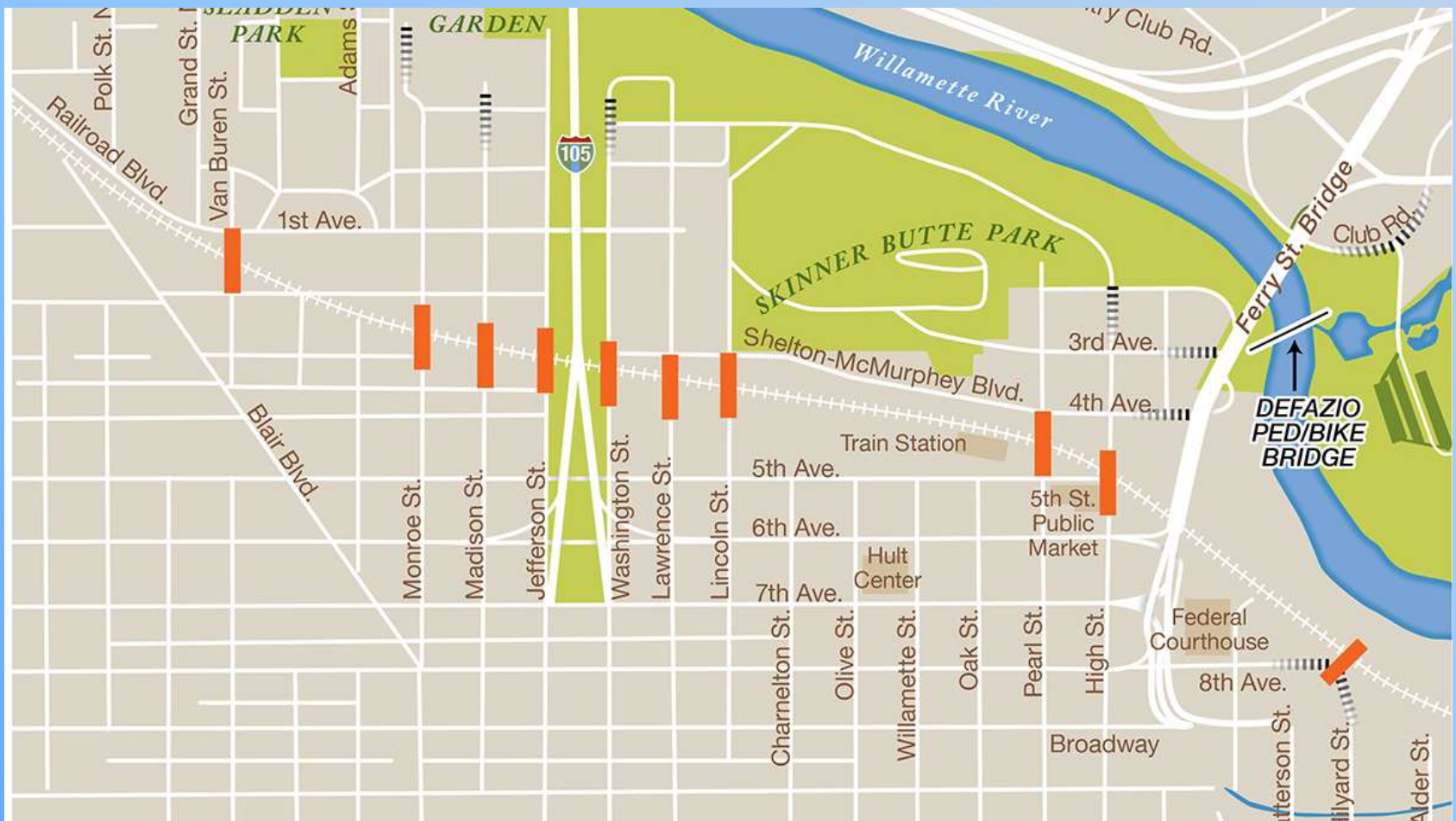


*The Goal of this Project is to silence routine train horns that are sounded on the 10 City crossings of the Union Pacific Line.*

*The Outcome of this Project would be the silencing of 70% of the routine train horns in the UGB.*



# Project Limits



Phase 1: Van Buren to 8<sup>th</sup> & Hilyard (Union Pacific Line)



# What is a Quiet Zone?

- A quiet zone is a section of a rail line that contains one or more consecutive public crossings at which locomotive horns are not routinely sounded.
- A Quiet Zone must be at least  $\frac{1}{2}$  mile long.
- There must be no other crossings within a  $\frac{1}{4}$  mile of the beginning or end of the quiet zone.





# Who Can Establish a Quiet Zone?

- A Public Authority with jurisdiction for the roadway at the crossing.
- If a Quiet Zone includes more than one Public Authority:
  - All agencies must agree.
  - Actions must be taken jointly.
- Quiet Zones may be established irrespective of state law.



# How are Quiet Zones Created?

- Local governments will have two ways of creating a quiet zone:
  - Show that the lack of the horn does not pose a significant safety risk.
  - Implement safety measures to reduce excess risk associated with no horn.



# Steps to Creating A Quiet Zone

1. Form a Diagnostic Team of City, State Rail and Railroad Personnel. (Federal Rail Administration is optional).
2. This team then makes a site inspection of each of the crossings within the proposed Quiet Zone.

The team is reviewing:

- » Roadway/rail line geometry
- » Traffic volume, traffic mix (trucks, autos, bikes, peds) and accident history.
- » Surrounding land use (commercial/residential/etc).
- » Intrusions on the sight-distance of drivers and train engineer.



# Steps to Creating A Quiet Zone

3. The diagnostic team then discusses the limitations of each crossing and what safety measures can work at each crossing.

*Footnote: Usually there are several options (safety measures) that will work at each crossing. The pro/cons of each are discussed; but nothing is finalized. During this exercise, cost of a particular safety measure does not control the discussion.*



# Steps to Creating A Quiet Zone

4. Decide on the added safety measures that will be installed at each crossing.

*Footnote: These safety measures must be sufficient to reduce the QZ Risk Index to at or below the Nationwide Significant Risk Threshold.*

*Footnote 2: We are Here*



# Steps to Creating A Quiet Zone

5. Make a “public authority designation” of a Quiet Zone according to CFR 222.39(a).

*or*

6. Make a “public authority application” to the Federal Rail Administration for a Quiet Zone according to CFR 222.39(b).

*FRA will take about a year to review the application under this alternative.*



# Steps to Creating A Quiet Zone

Under Public Authority Designation –

The Quiet Zone is made by installing SSM'S at each public highway-rail at-grade crossing.

*SSM = Supplemental Safety Measure. A narrow, prescriptive list of 14 measures that, if used will obtain QZ status without formal application to FRA.*

*The 4 common (and relevant to Eugene crossings) SSM's are:*

- *Installation of quad gates.*
- *Convert street to one-way flow with gates.*
- *Install medians through the crossing.*
- *Close the crossing to all use.*

*(Found in Appendix A of CFR 222)*



# Steps to Creating A Quiet Zone

Under Public Authority Application (to FRA) –  
The Quiet Zone is made by proposing ASM'S on an application and receiving approval from FRA to construct a Quiet Zone.

*ASM = Alternative Safety Measure. Engineering measures and modified SSM's at a crossing that reduce the QZ Risk Index to at or below the Risk index with Horns.*

*Common examples of ASM's are:*

- Three gate crossings with medians.*
- Medians with a driveway entrance within 60 feet if it is on the gated side of the crossing.*
- Close crossings to motor vehicles, but leave open for bike/peds.*

*(Found in Appendix B of CFR 222)*





# SSM vs ASM

- SSMs at all crossings offers the highest safety improvement; can be implemented faster; but are generally more costly.

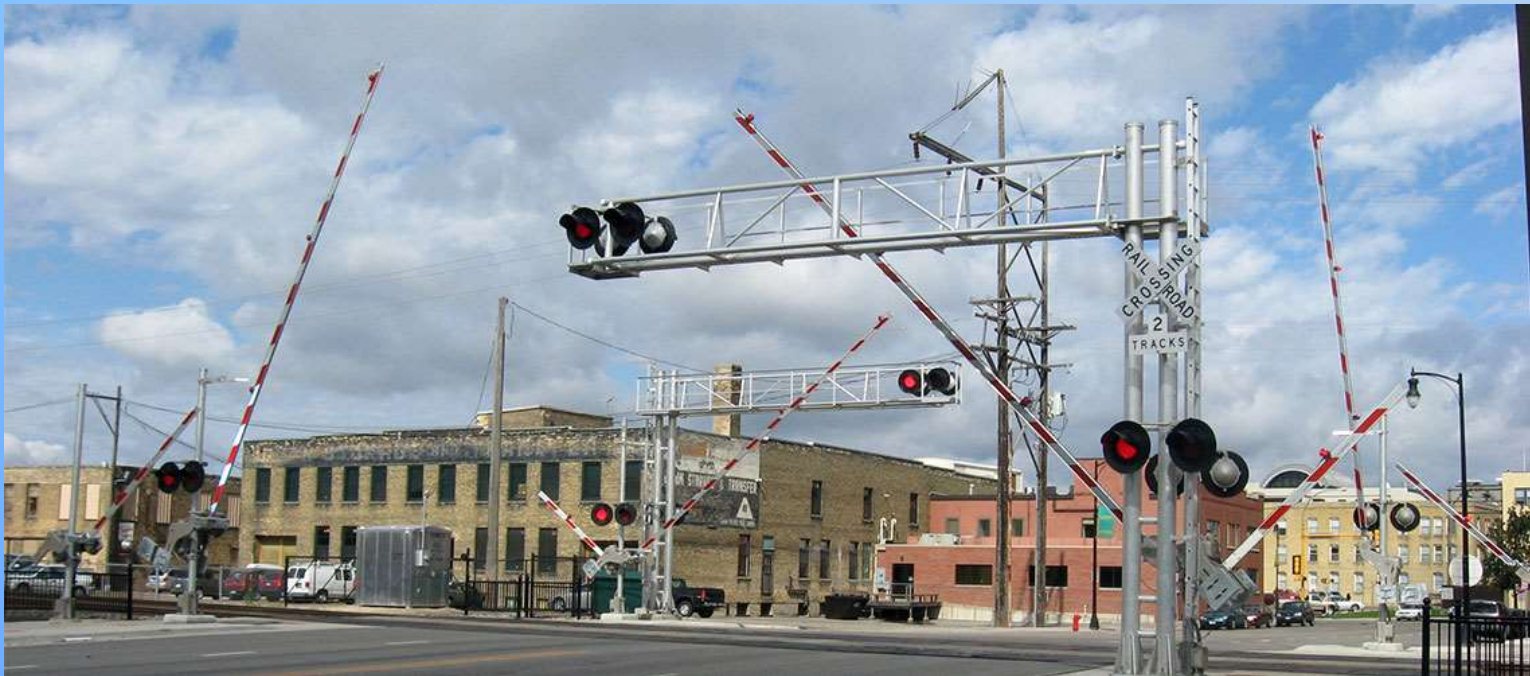
*(City of Salem used this method )*

- Alternate Safety Measures require FRA approval for the specific ASM before construction can begin; but may be substantially less expensive than SSM's.

*(City of Vancouver, Wa used this method)*



# Supplemental Safety Measure



Quad Gate System

# Supplemental Safety Measure



Median



# Supplemental Safety Measure



One-Way Street with Gates



# Supplemental Safety Measure



Permanent Road Closure



Questions?

Thank you



