

W. S. B.

**AGENDA COVER MEMO**

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DATE: February 8, 2006

TO: Lane County Board of Commissioners

DEPT.: Public Works Department

PRESENTED BY: Edward Chastain – Traffic Engineer

AGENDA ITEM TITLE: Work Session/Discussion – Establishment of “quiet zones” at County Road-Railroad grade crossings.

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I. MOTION

None is suggested.

II. ISSUE OR PROBLEM

The Board requested a work session to discuss the new federal rules and the process to establish a “quiet zone” designation at County Road-Rail crossings.

III. DISCUSSION

A. Background

The sounding of locomotive whistles or horns is a long established safety and warning practice at highway-rail grade crossings. The horns by necessity are loud and command attention but to nearby residents that are disturbed by the loud noise, the horns can be a nuisance.

In response to a legislative mandate, the Federal Railroad Administration (FRA) issued a Final Rule on the Use of Locomotive Horns at Highway-Rail Grade Crossings. The final rule took effect on June 24, 2005 and requires that locomotive horns be sounded as a warning to highway users at public highway-rail crossings. Until June 24, 2005, the sounding of locomotive horns at public crossings remained subject to applicable State and local laws. The final rule provides an opportunity, not available until now, for thousands of localities nationwide to mitigate the effects of train horn noise by establishing new “quiet zones.” The rule also details actions communities with pre-existing “whistle bans” can take to preserve the quiet they have become accustomed to. In Oregon, only the cities of Pendleton, The Dalles, and Umatilla have existing quiet zones obtained under previous rules.

There are three operating railroads in Lane County: Union Pacific (UP), Central Oregon & Pacific (CORP), and Portland & Western (P&W). Portland & Western operates on tracks leased from the Burlington Northern-Santa Fe Railroad from Eugene towards Portland paralleling Hwy 99. There are 8 County Road-P&W at grade crossings. Central Oregon & Pacific tracks run northerly from Redding through Medford, Grants Pass, Roseburg to Eugene then west towards Florence and finally south along the coast to Coquille. There are 32 County Road-CORP at grade crossings. Union Pacific's mainline corridor runs north from Redding through Klamath Falls enters Lane County near Odell Lake running through Oakridge, Westfir, Springfield, Eugene, Junction City and continuing north to Portland. Union Pacific's mainline corridor has 18 County Road-railroad at grade crossings. Union Pacific's mainline route carries approximately 26 freight trains and several Amtrak passenger trains daily, whereas the other rail routes have only a couple of trains per day.

With the publication of these rules and articles about them appearing in the news media, Lane County has received several requests for quiet zones. Our first request was from a resident near Jasper, followed by requests in Westfir and Junction City. So far, the requests are from residents living along Union Pacific's mainline corridor through Lane County. This is likely due to the far greater number of rail movements, about 30 daily, along this corridor compared to the other routes. All 18 of the County Road-UP rail crossings have active warning devices, flashing lights, and most have gates. When contacted for information about quiet zones, Union Pacific staff expressed emphatic support for the continued use of train horns at grade crossings, citing public safety at crossings as their primary concern.

Nationwide, the Association of American Railroads reports that crossing collisions and fatalities have declined significantly over the past 30 years by almost 75 percent from about 11,000 incidents to 3,000 and in 2003 reached a record low. But 2004 brought a reversal in that downward trend with grade crossing fatalities showing their first increase in four years.

ODOT Rail Division records show that there are six incidents in the past 10 years at Lane County Road-Union Pacific mainline grade crossings and another four at other Lane County crossings. In Oregon, Lane County's Irving Road-Union Pacific grade crossing leads the state with the most fatalities and injuries according to Federal Railroad Administration records.

The Federal Railroad Administration (FRA) oversees the administration of the Federal rules pertaining to quiet zones. The FRA's role is that of administrator, assuring that jurisdictions comply fully with the rules in the process of establishing a quiet zone. The FRA's primary goal is the protection of public safety at rail crossings. Because the process of obtaining a quiet zone under the new rules would require modifications to existing grade crossings, the Oregon Department of Transportation Rail Division must approve the design and issue the implementing order. The affected railroads are involved in the design and approval process as they own and maintain devices installed in the railroad right-of-way.

A quiet zone does not restrict railroads from using train horns as a warning or safety device when people or animals are crossing or walking along the tracks or when used for communication between engineers and train crews. The rules specify that a quiet zone should be at least one-half mile long, which means that a road authority shouldn't apply for this designation for just one crossing if there are adjacent crossings within one-half mile.

The new rules establish Supplemental Safety Measures (SSMs) that may be used in obtaining a quiet zone designation. Supplemental Safety Measures (SSMs) include: temporary road closures; permanent road closures; grade separation (over or under crossings); four quadrant gates; medians; and conversion to one-way streets with gates. One of the principal goals of SSMs is to prevent vehicles from entering the crossing area or driving around a gate end. Quadrant gates accomplish this by completely closing off the crossing area. At skewed grade crossings quadrant gates and medians are combined to protect the crossing from vehicle entry. Schematic views of quadrant gates and medians are shown in Attachment A.

A wayside horn may be used in lieu of a locomotive horn at any highway-rail grade crossing equipped with an active warning system consisting of, at a minimum, flashing lights and gates. Wayside horns are mounted on poles at the crossing and emit a loud and consistent audible warning that is directed toward motorists on the roadway. Wayside horns are designed to sound like a train horn however, it is estimated the noise from the wayside horn impacts less than 10% of the area impacted by the noise from a conventional locomotive horn.

The FRA rule establishes a minimum time frame of six months to complete the approval process of establishing a quiet zone. Approval to make modifications to the crossing must be obtained from the ODOT Rail Division. The Rail Division estimates a six- to eight-month approval process for new quiet zones that would not begin until after the first two months of the FRA process, but may overlap the final four months of it. The design and construction processes would add to the total time needed to implement a quiet zone. Community decisions as to the nature of the crossing modifications and a funding mechanism should precede an initial application for the zone.

Under the new Federal rule a "quiet zone" may be established by three different methods:

- A quiet zone may be established by implementing one or more SSMs at every public highway-rail crossing within the quiet zone. This is the most expensive method but it improves public safety at the each crossing within the quiet zone.
- A quiet zone may be established if the Quiet Zone Risk Index is at, or below the Nationwide Significant Risk Threshold, or by implementing

sufficient SSMs to reduce the Quiet Zone Risk Index to a level at, or below the Nationwide Significant Risk Threshold.

- The third method is to implement SSMs that are sufficient to reduce the Quiet Zone Risk Index to a level at or below the Risk Index With Horns.

The Nationwide Significant Risk Threshold is simply an average of the risk indexes for all of the gated crossings nationwide where train horns are routinely sounded. The Nationwide Significant Risk Threshold is recalculated annually.

The Quiet Zone Risk Index is the average of the risk indexes of all the public crossings in a Quiet Zone. It takes into consideration the absence of the horn sound and any safety measures that may have been installed.

## B. Analysis

Information useful in establishing quiet zones at grade crossings, may include: the number of train movements; number of tracks; highway traffic volumes; violations of existing protective measures or crash history; number of residences within one-half mile of the crossings or within the proposed quiet zone area; and support by local residents for the establishment of a quiet zone. Other information could include: whether a crossing is within one-half mile of another road authorities jurisdiction and the cost of the proposed safety measures including additional right-of-way, railroad work, crossing widening, road construction and traffic control devices.

The FRA website (<http://www.fra.dot.gov/>) contains a quiet zone calculator that when given information about a grade crossing determines the risk index with horns, the quiet zone risk index, and when given a proposed SSM it provides the corresponding risk index with SSM. Estimated costs for SSM's from the FRA website are shown in Attachment B however, Union Pacific's Public Projects Manager has indicated that these costs appear low for our area and that doubling them is likely a better estimated actual cost.

County Staff prepared a preliminary evaluation of Union Pacific Railroad crossings. Each is shown with appropriate SSMs to establish a "Risk Index" below the "Nationwide Significant Risk Threshold." (See Attachment C)

Two SSM options were considered:

1. Construction of a raised median island on each approach to the grade crossing to discourage motorists from going around the ends of the closed gates. In most cases at County grade crossings this option would require widening the roadway and crossing area to accommodate the islands and likely relocation or replacement of the existing crossing gates, thus significantly increasing the cost of installation of this SSM. Also, if a driveway or intersection falls within 60 feet of the grade crossing this option might not be practical because turning movements would be limited. There may also be right-of-way constraints requiring acquisition of additional right-

of-way. The estimated cost for this option could range from \$30,000 to well over \$200,000 per crossing.

2. The second option is to install "Quad Gates" at the crossing. This would close all access to the tracks from both directions and all lanes. In addition, there would be monitoring equipment needed to insure a vehicle doesn't get caught between the gates. The estimated cost will range from \$200,000 to \$640,000 per crossing.

The object of SSMS is to reduce the risk index to be equal to or below that of the "National Significant Risk Threshold" or the "Risk Index With Horns." Three Lane County grade crossings have risk indexes falling below the "National Significant Risk Threshold" without any upgrading to the crossings. These crossings are on: Dunning Road and Fish Hatchery Road near Oakridge and 19<sup>th</sup> Avenue East in Glenwood. Lane County could apply for quiet zone designations at these crossings without crossing improvements. However, the "Quiet Zone Risk Index" is 167% greater than the "Risk Factor With Horns" and from a traffic safety perspective providing a risk index that is greater than the current "Risk Index With Horns" may decrease the safety at these grade crossings. Also, if a quiet zone designation were granted, an annual safety study at these crossings is needed to maintain the quiet zone status. If the "National Significant Risk Threshold" decreases or the "Quiet Zone Risk Index" increases then these crossings could lose their quiet zone designations.

### C. Alternatives/Options

The two primary alternatives are:

1. No Action – Do not establish "quiet zones" on County roads.
2. Implement policies or procedures to establish "quiet zones" on County roads.

If Alternative 2 is selected then there are several additional considerations, including:

Should the program be complaint (petition) driven or based on an engineering assessment? An engineering assessment could provide a countywide priority list for grade crossing safety improvements. For example, priorities could be established based on the Quiet Zone Risk Index, higher risk locations could receive higher priority. Whereas, a complaint driven process may be more responsive to the public concerns. Also, it would be possible to combine a complaint driven and engineering assessments.

If a proposed quiet zone would include crossings under another jurisdiction how should the County proceed? If the other jurisdiction was cooperative and proposed improvements to their crossings, then the jurisdictions could proceed concurrently with the quiet zone establishment

process. If however the other jurisdiction didn't want to make improvements due to funding or other concerns would the County choose not to proceed, offer engineering or financial assistance? As an example, two Lane County crossings are near to three Junction City crossings. To have an effective quiet zone all five crossings should be designated.

How should the program and improvements be funded? Funding options for the program and grade crossing improvements include:

- Local improvement district (See Attachment D)
- Road Fund
- Combination of above
- Other?

Lane County has received requests for quiet zones in three areas; Jasper, Westfir, and Junction City. I would like to discuss each of these areas in more detail.

In Jasper, the use of wayside horns or upgrading from two-quadrant gates to four-quadrant gates are likely the best alternatives. The installation of wayside horns wouldn't provide a true "quiet zone" but should reduce the area impacted by train horns. For estimating purposes Union Pacific suggested a cost of \$200,000 for the installation of wayside horns at a crossing. Since there are two public crossings within the proposed Jasper quiet zone the cost for wayside horns is estimated at \$400,000. Upgrading from two-quadrant to four-quadrant gates would provide a true quiet zone using Union Pacific's cost estimate of \$256,000 per crossing, the two crossing would require a total of \$512,000. These cost estimates do not include County staff time to prepare applications, mailings, public hearings or preparing assessments (if desired) or other administrative tasks involved in implementation of a quiet zone program.

The two crossings in the Westfir area are further than one-half mile apart, so either one or both crossings could be made into quiet zones. Most likely residents would want both crossings designated within a quiet zone. The desired alternatives and associated costs for these improvements would be similar to those in Jasper.

The crossings in the Junction City area are more problematic than those in Westfir or Jasper. Since between the two County grade crossings there are three City grade crossings. Cooperation and support between the two agencies would be required to implement a quiet zone. Each grade crossing would require an evaluation of the most applicable Supplemental Safety Measures.

#### D. Recommendations

The primary goal at highway-railroad grade crossings should be maintaining or improving safety. A secondary goal is to strike a balance between safety and preserving or improving residential quality of life.

The new FRA rules provide alternatives that Lane County may use in striving to balance public safety at highway-rail grade crossings and improving residential quality of life. The Supplemental Safety Measures (SSMs) can be used to balance the loss of train horns by safety improvements at grade crossings. However, there are significant costs associated with making these improvements.

If the Board of County Commissioners chooses to implement quiet zones at County grade crossings, I would recommend that staff be directed to use Supplemental Safety Measures (SSMs) that reduce the risk index to at or below the "Risk Index With Horns." Using SSMs that only meet the "National Significant Risk Threshold" instead of the "Risk Index With Horns" may decrease public safety at grade crossings below existing levels.

A funding source for implementation of a quiet zone program is at the discretion of the Board.

V. IMPLEMENTATION/FOLLOW-UP

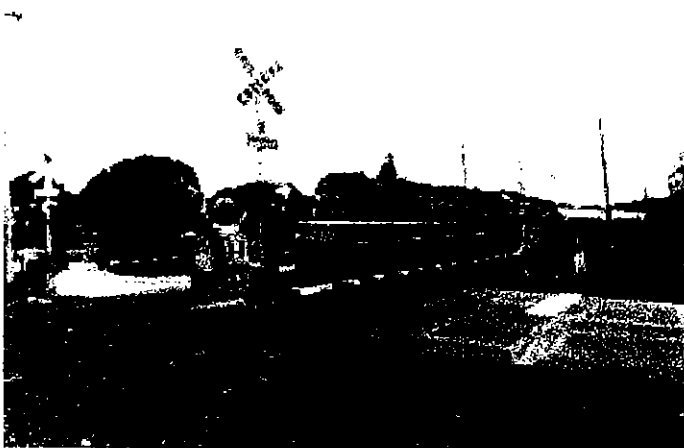
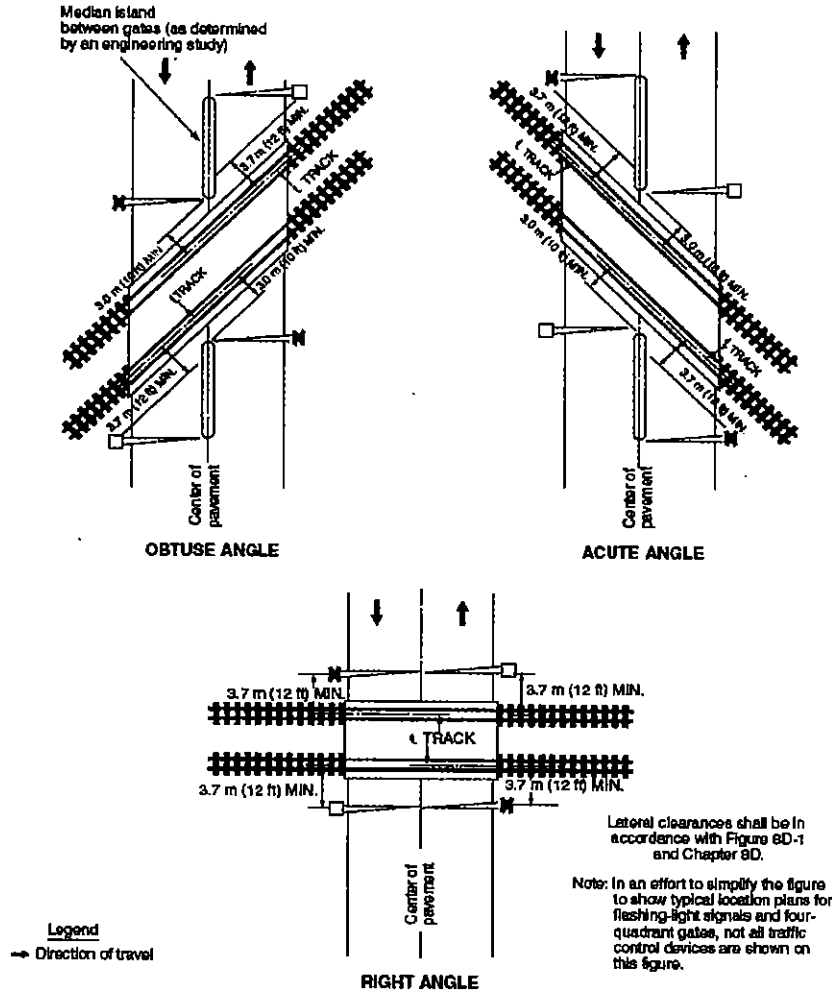
Dependant upon the Board's decision, staff will follow-up as needed.

VI. ATTACHMENTS

- (A) Example of Four-Quadrant Gates & Curb Medians
- (B) "FRA" Supplemental Safety Measures (SSM)
- (C) "FRA" Quiet Zone Calculations of Risk Index
- (D) General Assessment Procedures On Road Improvements

# Railroad Quiet Zone – (Attachment A)

## Example of Location Plan for Flashing-Light Signals and Four-Quadrant Gates (2003 Edition of the MUTCD)





**Railroad Quiet Zone (Attachment B)**  
**FRA Supplemental Safety Measures (SSM) CODES**

- 1) *Temporary Closure of a Public Highway-Rail Grade Crossing*
- 2) *Permanent Closure of a Public Highway-Rail Grade Crossing*
- 3) *Grade Separation of a Public Highway-Rail Grade Crossing*
- 4) *Four-Quadrant Gates Upgrade from Two Quadrant gates, No Vehicle Presence Detection \*(\$100,000 Estimated Cost)*
- 5) *Four-Quadrant Gates Upgrade from Two Quadrant Gates, with medians and no Vehicle Presence Detection \*(\$115,000 Estimated Cost)*
- 6) *Four-Quadrant Gates Upgrade from Two Quadrant Gates, with Vehicle Presence Detection \*(\$128,000 Estimated Cost)*
- 7) *Four-Quadrant Gates Upgrade from Two Quadrant Gates, with medians and Vehicle Presence Detection \*(\$140,000 Estimated Cost)*
- 8) *Four-Quadrant Gates New Installation, No Vehicle Presence Detection \*(\$280,000 Estimated Cost)*
- 9) *Four-Quadrant Gates New Installation with medians and no Vehicle Presence Detection \*(\$295,000 Estimated Cost)*
- 10) *Four-Quadrant Gates New Installation with Vehicle Presence Detection \*(\$308,000 Estimated Cost)*
- 11) *Four-Quadrant Gates New Installation with medians and Vehicle Presence Detection \*(\$320,000 Estimated Cost)*
- 12) *Mountable medians with Reflective Traffic Channelization Devices \*(\$13,000 Estimated Cost)*
- 13) *Non-Traversable Curb Medians with or without Channelization Devices \*(\$15,000 Estimated Cost)*
- 14) *One-Way Streets with Gates \*(\$35,000 Estimated Cost)*

**\* Estimated Cost Using "FRA – Quiet Zone Calculator." Union Pacific Railroad's recommendation is to double the "FRA's" estimate.**

**FRA Railroad Quiet Zone Calculations  
At Union Pacific Grade Crossings**

(Attachment C)

Road Name	Road #	Crossing Mile Post	Crossing #	Crossing Width	Existing Warning Device	Nat. Significant Risk Threshold	Risk Index With Horns	Quiet Zone Risk Index	Proposed SSM	Risk Index With SSM	Estimated Cost
Dunning Rd	6172-00	0.28	CF 577.40	28'	2 Gates	17,030.00	7,406.81	12,354.56			
Fish Hatchery Rd	6170-00	1.35	CF 579.70	29'	2 Gates	17,030.00	8,519.56	14,210.62	4 Gates	3,829.45	\$250,000
Westfir Oakridge	6128-00	3.36	CF 582.30	27'	2 Gates	17,030.00	12,754.62	21,274.70	4 Gates	3,135.54	\$250,000
Winfrey Rd	6126-00	0.43	CF 583.80	25'	2 Gates	17,030.00	10,443.44	17,419.67	4 Gates	5,174.12	\$250,000
Hills Creek Rd (1)	6222-00	0.05	CF 613.10	25'	2 Gates	17,030.00	17,233.27	28,745.10	4 Gates	5,284.85	\$250,000
Wallace Creek Rd (1)	6210-00	0.02	CF 613.40	25'	2 Gates	17,030.00	17,602.10	29,360.30	4 Gates	3,572.62	\$250,000
Brand S Rd (4)	1021-00	0.02	CF 614.90	23'	2 Gates	17,030.00	10,709.30	17,863.11	4 Gates		
Smith Rd (3)(4)	No Number	0.02	CF 615.35		Flashers Only	17,030.00					
Mt. Vernon Rd	1042-00	1.15	CF 616.20	33'	2 Gates	17,030.00	52,003.07	86,741.12	4 Gates	15,613.40	\$250,000
19th Ave. E	1822-00	0.32	CF 621.40	27.5'	2 Gates	17,030.00	6,434.31	10,732.42			
Irving Rd	3268-00	1.38	C-652.20	28'	2 Gates	17,030.00	44,704.32	74,566.80	4 Gates	14,913.36	\$250,000
Irvington Dr	3195-00	1.43	C 653.20	35.5'	2 Gates	17,030.00	14,946.98	24,931.56	4 Gates	4,487.68	\$250,000
Awbrey Ln	3440-00	0.16	C 654.00	23'	2 Gates	17,030.00	12,158.26	20,279.98	4 Gates	3,650.40	\$250,000
Milliron Rd E	3450-00	0.35	C 657.30	28'	2 Gates	17,030.00	10,385.61	17,323.20	4 Gates	3,118.18	\$250,000
Prairie Rd	3470-00	7.64	C 658.63	51'	2 Gates	17,030.00	18,130.72	30,242.04	4 Gates	5,443.57	\$250,000
River Rd (2)	3100-00	0.17	C 660.30	35'	2 Gates	17,030.00	16,532.97	27,576.99	4 Gates	4,963.86	\$250,000
18th Ave E (2)	3475-00	0.17	C 661.30	21'	2 Gates	17,030.00	11,134.79	18,582.84	4 Gates	3,343.11	\$250,000
(1) Hills Creek Rd & Wallace Creek Rd Crossings are within 1/2 mile of each other and both should be upgraded to create a quiet zone.											
(2) Between River Road & 18th Ave E Crossings are three crossings under the jurisdiction of Junction City, all within 1/2 mile of each other. All five crossings should be upgraded to create a quiet zone.											
(3) No Gates - Does not qualify for quiet zone.											
(4) Brand S Rd & Smith Rd Crossings are within 1/2 mile of each other and both should be upgraded to create a quiet zone.											

## Railroad Quiet Zone – Attachment D

### GENERAL ASSESSMENT PROCEDURES ON LANE COUNTY ROAD IMPROVEMENTS

When a County road or street improvement is determined to be assessable to the benefiting property owners by the Board of County Commissioners the following procedures occur:

- 1 The Public Works Director investigates the proposed improvement and reports an estimated cost and the method of payment to the Board of County Commissioners (ORS 371.625). If the report is accepted then;
- 2 There is a 20-day remonstrance period in which the property owners may submit their written objections to the Director(ORS 371.630). If remonstrance is minimal;
3. “The Board” may order the improvement to be made. “The Order and estimated improvement costs for each parcel of land affected are recorded which makes each parcel **subject to a lien of an assessment for the cost of the improvement, in an amount to be determined later by an order of the Board**” (ORS 371.635). This is an estimated assessment but it is not payable at this time because the actual unit costs are not known until the contractor with the low bid is chosen for the project and the actual quantities also are not known until measured after being placed during construction;
4. After the improvement has been made, which is generally within one calendar year, inspected by the Field Supervisor and, in accordance with ORS 371.640, approved by the County Engineer and, in accordance with Lane Manual Chapter 21.149(2), accepted by the Director of Public Works, the Director will compile the improvement cost in a report to “The Board” and if it is accepted;
5. A public hearing is set to hear objections to the final assessments and the property owners are notified. The final assessments are then subsequently certified by “The Board” and the recording of the order and itemized improvement costs for each parcel of land assessed is a “**lien upon the land against which the same are assessed from the date of the filing with the county clerk of the order of the Board for the improvement**” (ORS 371.650);
6. The certified assessments are then due and payable within 30 days of the date of certification (ORS 371.655) at the Department of Assessment and Taxation. Property owners will have the option of paying the assessment in full or in semi-annual installments over a 10-year period at an interest rate to be set by the Board at the time of certification.

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