

# Wyoming Quiet Zone Study



A Report Prepared For

**Wyoming Department of Transportation**

Submitted By

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Economics • Engineering • Service Planning

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# Wyoming Quiet Zone Study

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## Wyoming Quiet Zone Study

### Introduction/Scope of Services

The intent of this study is to show the relative need for railroad quiet zones by community, to outline general community and statewide costs for quiet zones, and to develop a priority ranking formula for implementation of quiet zones.

The R.L. Banks & Associates, Inc., (RLBA) scope of work for this project includes a field assessment of quiet zone options for each of 84 at-grade public crossings in Wyoming. Included in this scope of work is identification of FRA (Federal Railroad Administration) required equipment needed at each crossing, approximate dollar amounts for that equipment, feasible quiet zone treatments, approximate dollar amounts for those treatments, and total costs. Also included is a priority ranking formula for implementation of quiet zones in the communities inspected, and the recommended priority ranking of communities.

### Acknowledgment

RLBA gratefully acknowledges the considerable help received, in performing this assignment, from two officials of the Wyoming Department of Transportation: Dan Kline, Systems Planning Supervisor, and J.W. (Bill) Thompson, Railroad Coordinator.

### Federal Quiet Zone Regulations

The Swift Rail Development Act, Public Law 103-440, enacted by Congress in 1994, requires use of locomotive horns at public grade crossings but gives the Federal Railroad Administration (FRA) authority to make reasonable exceptions. Implementation of this law is embodied in Title 49 Code of Federal Regulations Parts 222 and 229, which were amended by the August 2006 Federal Railroad Administration Final Rule.

RLBA utilizes the August 2006 FRA Final Rule in this and other quiet zone studies.

### Field Assessment/Identification of Equipment Needed/Recommended SSM

RLBA performed a field assessment of quiet zone options with regard to at-grade public crossings in Wyoming in or near municipalities with populations of 100 or higher, and train counts greater than two per day. Wyoming Department of Transportation (WYDOT) provided RLBA a list of 84 public crossings to be

inspected, crossings that met these criteria. These crossings are in or near 34 rail-served incorporated Wyoming communities.

The field assessments took place in two separate periods, July 27-31, and August 10-13. RLBA made considerable use of the "Field Materials" booklet, prepared by WYDOT, which contains maps identifying crossing locations, by community, as well as photos and sketches. At each crossing RLBA entered data on a Crossing Assessment form. RLBA also utilized the U.S. Department of Transportation (USDOT) Crossing Inventory Information (downloaded from Federal Railroad Administration (FRA) website), with regard to each crossing, as a cross check.

In addition to entering data on a Crossing Assessment form, RLBA made sketches of many crossings, in order to assure understanding of the geometrical configuration of the crossing.

The results of the field assessment, with cost information added, are shown in Appendix A, Crossing Assessments. In Appendix A, the 84 crossings are listed by county.

At each designated crossing, RLBA identified:

- (1) Existence of FRA-required equipment per 49 CFR 222.35 (constant warning time (CWT), flashing lights (FL) and gate assemblies (G)).
- (2) Approximate dollar amounts for purchase and installation of any needed equipment.
- (3) Which quiet zone treatments (49 CFR 222, Appendix A) are potentially feasible.
- (4) Approximate dollar amounts for each potential quiet zone treatment.
- (5) Total costs for the array of possible treatments at each crossing.

In accordance with WYDOT instructions, Alternate Safety Measures (ASMs) were not considered. RLBA agrees with these instructions, as annual changes in the Nationwide Significant Risk Threshold (NSRT) can "dis-qualify" a quiet zone qualified on the basis of ASMs, whereas any quiet zone qualified on the basis of SSMs is permanently qualified.

## Estimation of Costs

In coordination with WYDOT, RLBA estimated costs as follows:

### Approximate Capital Costs of Supplementary Safety Measures (SSMs)

Four-quadrant gates	\$500,000
Non-traversable medians/curbs	\$60,000
Add gates to one-way street	\$150,000
Wayside horn	\$115,000

### Costs to Meet Initial FRA Requirements (in addition to cost of SSM selected)

Flashing lights and gates (2-quadrant gates)	\$250,000
Gates only	\$250,000
Constant warning time circuitry	\$150,000 (single track) \$250,000 (multiple track)
Compliance with USDOT FHWA Manual of Uniform Traffic Control Devices (MUTCD)	\$1,000
Advance warning signs advising that locomotive horn will not be sounded (public and private crossings) (to be installed at time when QZ goes into effect):	\$1,000

Because of the likelihood that masts and flashing lights often must be changed out when there are crossing improvements, the “Gates only” cost above is the same as the “Flashing lights and gates” estimate.

It should be understood that these costs are rough estimates, and that precise costs can be made only after decisions are made to implement quiet zones and to design the necessary improvements specific to any given crossing. The ultimate crossing improvements and their design are necessarily site specific.

These rough cost estimates result from recent quotes received from railroads, from crossing equipment vendors, and from RLBA and WYDOT experience.

Appendix B is a listing of all 84 crossings, by county, showing estimated costs if SSMs were placed at each crossing. Please note that this does not necessarily indicate the total cost of a quiet zone (see “Utilization of These Data” section, below).

In the assessment of quiet zone SSM options at each crossing, the least cost SSM deemed feasible -- based upon intersection geometry and other considerations at each crossing location -- is recommended. Costs shown in Appendix A and Appendix B are based on this premise.

If it were decided by a community to install SSMs at each crossing, the total costs, by community, are listed in Appendix C. Once again, the reader is reminded that by aggregating crossings within a community (on the same rail line), and by using the FRA Quiet Zone Risk Calculator, it may not be necessary to install SSMs at every crossing, and quiet zone costs may accordingly be reduced. This subject will be discussed in Phase 2 of this study.

### **Utilization of These Data**

The total of the estimated cost figures in any given town, as can be derived from Appendix B, does not necessarily indicate the cost of a quiet zone in that town, unless a policy decision is made to install SSMs at every crossing.

An alternative method of quiet zone qualification is available which calculates risk with regard to two or more contiguous crossings and generally does not require SSMs at each crossing. Thus a quiet zone involving a group of crossings may be qualified, for example, by installing a SSM at one of the crossings, not at every crossing. This method of quiet zone qualification is perfectly legitimate, and involves use of the FRA on-line risk calculator, which relates placement of one or more SSMs at one or more of several contiguous crossings, and compares the subsequent Quiet Zone Risk Index (QZRI) with the Risk Index with Horns (RIWH). If the placement of one SSM reduces the QZRI to at least the level of the RIWH, then a quiet zone is qualified.

It also should be understood that a quiet zone must be at least 1/2 mile in length. Therefore if two or more crossings along a rail line are within 1/2 mile of one another, they should all be considered for inclusion in a single quiet zone. (RLBA was not asked to examine this 1/2 mile rule but where RLBA saw this situation, RLBA noted it. See, for example, remarks column in Appendix B.)

The above discussion refers to public crossings, i.e., crossings where the public authority exercises jurisdiction. Private crossings, that is, crossings not owned by the public, also exist in a number of Wyoming communities, and are the result of an agreement between a private owner and the railroad. If there is a private crossing between public crossings in a proposed quiet zone, it must be included in the quiet zone and must be the subject of a diagnostic team inspection, and must be treated in accord with recommendations of the diagnostic team. There are at least a few instances where potential community quiet zones in Wyoming involve private crossings. (RLBA was not asked to examine this private-



### Ranking of Communities

Relative Priority	Community	Trains Per Day	Number of Crossings	Population (thousands)	Relative Priority Index
1	Cheyenne	60.0	1	56.92	3415.20
2	Gillette	12.0	6	26.90	1936.80
3	Cheyenne	17.0	2	56.92	1935.28
4	Laramie	30.0	2	27.60	1656.00
5	Torrington	41.0	6	5.51	1355.46
6	Casper	8.0	2	54.05	864.80
7	Sheridan	32.0	1	17.20	550.40
8	Newcastle	51.0	3	3.38	517.14
9	Evanston	40.0	1	11.78	471.20
10	Lusk	70.0	4	1.48	414.40
11	Rawlins	46.0	1	8.74	402.04
12	Wheatland	16.8	5	3.30	277.20
13	Worland	7.3	5	4.96	179.80
14	Douglas	9.0	3	5.97	161.19
15	Moorcroft	55.3	3	0.89	147.65
16	Pine Bluffs	58.5	2	1.16	135.72
17	Evansville	8.0	5	2.39	95.60
18	Thermopolis	7.0	3	3.24	68.04
19	Ranchester	34.0	2	0.80	54.40
20	Basin	10.0	4	1.20	48.00
21	Lovell	9.0	2	2.28	41.04
22	Greybull	11.5	2	1.74	40.02
23	Ft Laramie	41.0	3	0.23	28.29
24	Glendo	46.0	2	0.22	20.24
25	Lingle	41.0	1	0.48	19.68
26	Cokeville	34.0	1	0.49	16.66
27	Medicine Bow	60.0	1	0.27	16.20
28	Burns	47.0	1	0.31	14.57
29	Granger	89.0	1	0.15	13.35
30	LaGrange	6.0	3	0.33	5.94
31	Chugwater	16.0	1	0.22	3.52
32	Deaver	9.0	2	0.18	3.24
33	Clearmont	29.0	1	0.11	3.19
34	Frannie	9.0	1	0.18	1.62
35	Manderson	8.0	1	0.10	0.80

## Conclusions

This study provides an assessment of 84 Wyoming public grade crossings, including costs necessary to fulfill FRA initial requirements which must be met in quiet zone establishment, identification of the appropriate supplementary safety measure (SSM) for each crossing, its cost, and total costs with regard to each crossing *assuming a SSM is to be placed at each crossing*. As stated above, the qualification of a quiet zone does not require a SSM at each public crossing in the quiet zone.

This study also makes note of FRA's requirements with regard to minimum length of a quiet zone (1/2 mile), and requirements with regard to private grade crossings, if included in a proposed quiet zone.

In Phase 2 of this study, the FRA Quiet Zone Calculator will be utilized to indicate, by community, what minimum level of Quiet Zone cost is possible, by judicious use of SSMS.

# Appendix A

## Crossing Assessments

# Appendix A

## Crossing Assessments

This appendix contains the R.L. Banks & Associates, Inc., (RLBA) assessments with regard to 84 Wyoming grade crossings. The assessments are listed in the same order as on the Wyoming Department of Transportation list of crossings. “2Q gates” means two-quadrant gates. “4Q gates” means four-quadrant gates. See text of report for discussion of quiet zone options. FL = flashing lights. G = gates. CWT = constant warning time.

### **Crossing Assessment**

Crossing: 810434Y, located in Laramie, Albany County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not feasible because of intersection geometry

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for 4Q gates, plus the \$1,000 upgrade cost

### **Crossing Assessment**

Crossing: 810427N, located in Laramie, Albany County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: feasible and recommended

4Q gates: feasible

Wayside horns: feasible

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$60,000 for median barriers to \$500,000 for 4Q gates, plus \$1,000 upgrade costs

### **Crossing Assessment**

Crossing: 090830Y, located in Basin, Big Horn County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not feasible because of intersection geometry

4Q gates: feasible

Wayside horns: feasible and recommended  
 One way with gates: not deemed feasible  
 Temporary or permanent closure: not deemed feasible  
Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for  
 4Q gates, plus \$1,000 upgrade costs

### **Crossing Assessment**

Crossing: 090831F, located in Basin, Big Horn County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not feasible because of intersection geometry

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for  
 4Q gates, plus \$1,000 upgrade costs

### **Crossing Assessment**

Crossing: 090832M, Basin, Big Horn County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for  
 4Q gates, plus \$1,000 upgrade costs

### **Crossing Assessment**

Crossing: 090833U, Basin, Big Horn County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for  
 4Q gates, plus \$1,000 upgrade costs

**Crossing Assessment**

Crossing: 091482B, Deaver, Big Horn County

Requisite Equipment: gates, pavement markings

Cost to Upgrade: \$251,000

Quiet Zone Options:

2Q gates & median barriers: feasible and recommended

4Q gates: feasible

Wayside horns: feasible

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$60,000 for median to \$500,000 for 4Q

gates, plus \$251,000 upgrade costs

**Crossing Assessment**

Crossing: 091483H, Deaver, Big Horn County

Requisite Equipment: gates, CWT, pavement markings

Cost to Upgrade: \$401,000

Quiet Zone Options:

2Q gates & median barriers: feasible and recommended

4Q gates: feasible

Wayside horns: feasible

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$60,000 for medians to \$500,000 for 4Q

gates, plus \$401,000 upgrade costs

**Crossing Assessment**

Crossing: 091476X, Frannie, Big Horn County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for

4Q gates, plus \$1,000 upgrade costs

**Crossing Assessment**

Crossing: 091020K, Grebull, Big Horn County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended  
 One way with gates: not deemed feasible  
 Temporary or permanent closure: not deemed feasible  
Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for  
 4Q gates, plus \$1,000 upgrade costs

### **Crossing Assessment**

Crossing: 086338Y, Greybull, Big Horn County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for  
 4Q gates, plus \$1,000 upgrade costs

### **Crossing Assessment**

Crossing: 091498X, Lovell, Big Horn County

Requisite Equipment: FL, G, CWT, pavement markings

Cost to Upgrade: \$501,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for  
 4Q gates, plus \$501,000 upgrade costs

### **Crossing Assessment**

Crossing: 091500W, Lovell, Big Horn County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for  
 4Q gates, plus \$1,000 upgrade costs

**Crossing Assessment**

Crossing: 090842T, Manderson, Big Horn County

Requisite Equipment: none

Cost to Upgrade: none

Quiet Zone Options:

2Q gates & median barriers: feasible and recommended

4Q gates: feasible

Wayside horns: feasible

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$60,000 for medians to \$500,000 for 4Q gates

**Crossing Assessment**

Crossing: 064969N, Gillette, Campbell County

Requisite Equipment: CWT, pavement markings

Cost to Upgrade: \$151,000

Quiet Zone Options:

2Q gates & median barriers: feasible and recommended

4Q gates: feasible

Wayside horns: feasible

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$60,000 for medians to \$500,000 for 4Q gates, plus \$151,000 upgrade costs

**Crossing Assessment**

Crossing: 064970H, Gillette, Campbell County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: feasible and recommended

4Q gates: feasible

Wayside horns: feasible

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$60,000 for medians to \$500,000 for 4Q gates, plus \$1,000 upgrade costs

**Crossing Assessment**

Crossing: 064975S, Gillette, Campbell County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not applicable

4Q gates: four-quadrant gates are currently in place

Wayside horns: not applicable  
 One way with gates: not applicable  
 Temporary or permanent closure: not applicable

Range of total cost for quiet zone options: four-quadrant gates are in place at this grade crossing. Pavement markings should be added (\$1,000).

### **Crossing Assessment**

Crossing: 064976Y, Gillette, Campbell County

Requisite Equipment: CWT on one track, pavement markings

Cost to Upgrade: \$151,000

Quiet Zone Options:

2Q gates & median barriers: not feasible  
 4Q gates: feasible  
 Wayside horns: feasible and recommended  
 One way with gates: not deemed feasible  
 Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for 4Q gates, plus \$151,000 upgrade costs

### **Crossing Assessment**

Crossing: 095097L, Gillette, Campbell County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: feasible and recommended  
 4Q gates: feasible  
 Wayside horns: feasible  
 One way with gates: not deemed feasible  
 Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$60,000 for medians to \$500,000 for 4Q gates, plus \$1,000 upgrade costs

### **Crossing Assessment**

Crossing: 098836S, Gillette, Campbell County

Requisite Equipment: none

Cost to Upgrade: none

Quiet Zone Options:

2Q gates & median barriers: feasible and recommended  
 4Q gates: feasible  
 Wayside horns: feasible  
 One way with gates: not deemed feasible  
 Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$60,000 for medians to \$500,000 for 4Q gates

**Crossing Assessment**

Crossing: 810437U, Medicine Bow, Carbon County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for

4Q gates, plus \$1,000 upgrade costs

**Crossing Assessment**

Crossing: 810468T, Rawlins, Carbon County

Requisite Equipment: none

Cost to Upgrade: none

Quiet Zone Options:

2Q gates & median barriers: feasible and recommended

4Q gates: feasible

Wayside horns: feasible

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$60,000 for medians to \$500,000 for 4Q

gates

**Crossing Assessment**

Crossing: 089291R, Douglas, Converse County

Requisite Equipment: CWT, pavement markings

Cost to Upgrade: \$151,000

Quiet Zone Options:

2Q gates & median barriers: feasible and recommended

4Q gates: feasible

Wayside horns: feasible

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$60,000 for medians to \$500,000 for 4Q

gates, plus \$151,000 upgrade costs

**Crossing Assessment**

Crossing: 094931Y, Douglas, Converse County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: feasible and recommended

4Q gates: feasible

Wayside horns: feasible  
 One way with gates: not deemed feasible  
 Temporary or permanent closure: not deemed feasible  
Range of total cost for quiet zone options: \$60,000 for medians to \$500,000 for 4Q gates, plus \$1,000 upgrade costs

### **Crossing Assessment**

Crossing: 089293E, Douglas, Converse County

Requisite Equipment: CWT

Cost to Upgrade: \$150,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for 4Q gates, plus \$150,000 upgrade costs

### **Crossing Assessment**

Crossing: 927512F, Moorcroft, Crook County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for 4Q gates, plus \$1,000 upgrade costs

### **Crossing Assessment**

Crossing: 064947N, Moorcroft, Crook County

Requisite Equipment: none

Cost to Upgrade: none

Quiet Zone Options:

2Q gates & median barriers: not feasible on 12' wide gravel road

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for 4Q gates

**Crossing Assessment**

Crossing: 064950W, Moorcroft, Crook County

Requisite Equipment: none

Cost to Upgrade: none

Quiet Zone Options:

2Q gates & median barriers: feasible and recommended

4Q gates: feasible

Wayside horns: feasible

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$60,000 for medians to \$500,000 for 4Q gates

**Crossing Assessment**

Crossing: 089241M, Fort Laramie, Goshen County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: feasible and recommended

4Q gates: feasible

Wayside horns: feasible

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$60,000 for medians to \$500,000 for 4Q gates, plus \$1,000 upgrade costs

**Crossing Assessment**

Crossing: 089242U, Fort Laramie, Goshen County

Requisite Equipment: CWT, pavement markings

Cost to Upgrade: \$151,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for 4Q gates, plus \$151,000 upgrade costs

**Crossing Assessment**

Crossing: 089243B, Fort Laramie, Goshen County

Requisite Equipment: CWT

Cost to Upgrade: \$150,000

Quiet Zone Options:

2Q gates & median barriers: feasible and recommended

4Q gates: feasible

Wayside horns: feasible

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$60,000 for medians to \$500,000 for 4Q gates, plus \$150,000 upgrade costs

### **Crossing Assessment**

Crossing: 816026J, LaGrange, Goshen County

Requisite Equipment: G, CWT, pavement markings

Cost to Upgrade: \$401,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for 4Q gates, plus \$401,000 upgrade costs

### **Crossing Assessment**

Crossing: 816027R, LaGrange, Goshen County

Requisite Equipment: FL, G, CWT

Cost to Upgrade: \$400,000

Quiet Zone Options:

2Q gates & median barriers: not feasible on 12' wide gravel road

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for 4Q gates, plus \$400,000 upgrade costs

### **Crossing Assessment**

Crossing: 816028X, LaGrange, Goshen County

Requisite Equipment: G, CWT

Cost to Upgrade: \$400,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for 4Q gates, plus \$400,000 upgrade costs

**Crossing Assessment**

Crossing: 089227S, Lingle, Goshen County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for

4Q gates, plus \$1,000 upgrade costs

**Crossing Assessment**

Crossing: 089204K, Torrington, Goshen County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for

4Q gates, plus \$1,000 upgrade costs

**Crossing Assessment**

Crossing: 089205S, Torrington, Goshen County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for

4Q gates, plus \$1,000 upgrade costs

**Crossing Assessment**

Crossing: 089208M, Torrington, Goshen County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible and recommended because of downtown setting

Wayside horns: feasible  
 One way with gates: not deemed feasible  
 Temporary or permanent closure: not deemed feasible  
Range of total cost for quiet zone options: \$500,000 for 4Q gates, plus \$1,000 upgrade costs

### **Crossing Assessment**

Crossing: 089209U, Torrington, Goshen County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for 4Q gates, plus \$1,000 upgrade costs

### **Crossing Assessment**

Crossing: 089210N, Torrington, Goshen County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for 4Q gates, plus \$1,000 upgrade costs

### **Crossing Assessment**

Crossing: 089211V, Torrington, Goshen County

Requisite Equipment: CWT, pavement markings

Cost to Upgrade: \$151,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for 4Q gates, plus \$151,000 upgrade costs

**Crossing Assessment**

Crossing: 090462L, Thermopolis, Hot Springs County

Requisite Equipment: FL, G, CWT

Cost to Upgrade: \$400,000

Quiet Zone Options:

2Q gates & median barriers: not feasible on 12' gravel road

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for

4Q gates, plus \$400,000 upgrade costs

**Crossing Assessment**

Crossing: 090463T, Thermopolis, Hot Springs County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for

4Q gates, plus \$1,000 upgrade costs

**Crossing Assessment**

Crossing: 090465G, Thermopolis, Hot Springs County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible and recommended (downtown setting)

Wayside horns: feasible, but many nearby residences

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$500,000 for 4Q gates, plus \$1,000 upgrade costs

**Crossing Assessment**

Crossing: 817680H, Burns, Laramie County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: feasible and recommended

4Q gates: feasible

Wayside horns: feasible

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$60,000 for medians to \$500,000 for 4Q gates, plus \$1,000 upgrade costs

### **Crossing Assessment**

Crossing: 810600N, Cheyenne, Laramie County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for 4Q gates, plus \$1,000 upgrade costs

### **Crossing Assessment**

Crossing: 245617J, Cheyenne, Laramie County

Requisite Equipment: none

Cost to Upgrade: none

Quiet Zone Options:

2Q gates & median barriers: feasible and recommended

4Q gates: feasible

Wayside horns: feasible

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$60,000 for medians to \$500,000 for 4Q gates

### **Crossing Assessment**

Crossing: 245684D, Cheyenne, Laramie County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not applicable

4Q gates: in place

Wayside horns: not applicable

One way with gates: not applicable

Temporary or permanent closure: not applicable

Range of total cost for quiet zone options: 4Q gates are in place. Add pavement markings (\$1,000) and this grade crossing is qualified.

**Crossing Assessment**

Crossing: 817675L, Pine Bluffs, Laramie County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for

4Q gates, plus \$1,000 upgrade costs

**Crossing Assessment**

Crossing: 817676T, Pine Bluffs, Laramie County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: feasible and recommended

4Q gates: feasible

Wayside horns: feasible

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$60,000 for medians to \$500,000 for 4Q

gates, plus \$1,000 upgrade costs

**Crossing Assessment**

Crossing: 807292G, Cokeville, Lincoln County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not deemed feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for

4Q gates, plus \$1,000 upgrade costs

**Crossing Assessment**

Crossing: 095107P, Casper, Natrona County

Requisite Equipment: G, CWT

Cost to Upgrade: \$400,000

Quiet Zone Options:

2Q gates & median barriers: not applicable (one lane)

4Q gates: not applicable (one lane)

Wayside horns: feasible and recommended  
 One way with gates: feasible  
 Temporary or permanent closure: not deemed feasible  
Range of total cost for quiet zone options: \$115,000 for wayside horns to \$150,000 to add gates, plus \$400,000 upgrade costs

### **Crossing Assessment**

Crossing: 089345U, Casper, Natrona County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: feasible and recommended

4Q gates: feasible

Wayside horns: feasible

One way with gates: not feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$60,000 for medians to \$500,000 for 4Q gates, plus \$1,000 upgrade costs

### **Crossing Assessment**

Crossing: 089336V, Evansville, Natrona County

Requisite Equipment: none

Cost to Upgrade: none

Quiet Zone Options:

2Q gates & median barriers: feasible and recommended

4Q gates: feasible

Wayside horns: feasible

One way with gates: not feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$60,000 for medians to \$500,000 for 4Q gates

### **Crossing Assessment**

Crossing: 089337C, Evansville, Natrona County

Requisite Equipment: CWT, pavement markings

Cost to Upgrade: \$151,000

Quiet Zone Options:

2Q gates & median barriers: feasible and recommended

4Q gates: feasible

Wayside horns: feasible

One way with gates: not feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$60,000 for medians to \$500,000 for 4Q gates, plus \$151,000 upgrade costs

**Crossing Assessment**

Crossing: 089340K, Evansville, Natrona County

Requisite Equipment: CWT, pavement markings

Cost to Upgrade: \$151,000

Quiet Zone Options:

2Q gates & median barriers: feasible and recommended

4Q gates: feasible

Wayside horns: feasible

One way with gates: not feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$60,000 for medians to \$500,000 for 4Q

gates, plus \$151,000 upgrade costs

**Crossing Assessment**

Crossing: 089341S, Evansville, Natrona County

Requisite Equipment: CWT, pavement markings

Cost to Upgrade: \$151,000

Quiet Zone Options:

2Q gates & median barriers: feasible and recommended

4Q gates: feasible

Wayside horns: feasible

One way with gates: not feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$60,000 for medians to \$500,000 for 4Q

gates, plus \$151,000 upgrade costs

**Crossing Assessment**

Crossing: 089342Y, Evansville, Natrona County

Requisite Equipment: G, CWT, pavement markings

Cost to Upgrade: \$401,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for

4Q gates, plus \$401,000 upgrade costs

**Crossing Assessment**

Crossing: 188630R, Lusk, Niobrara County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: feasible and recommended

4Q gates: feasible

Wayside horns: feasible  
 One way with gates: not feasible  
 Temporary or permanent closure: not deemed feasible  
Range of total cost for quiet zone options: \$60,000 for medians to \$500,000 for 4Q gates, plus \$1,000 upgrade costs

### **Crossing Assessment**

Crossing: 188632E, Lusk, Niobrara County  
Requisite Equipment: pavement markings  
Cost to Upgrade: \$1,000  
Quiet Zone Options:  
 2Q gates & median barriers: not feasible  
 4Q gates: feasible  
 Wayside horns: feasible and recommended  
 One way with gates: not feasible  
 Temporary or permanent closure: not deemed feasible  
Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for 4Q gates, plus \$1,000 upgrade costs

### **Crossing Assessment**

Crossing: 188628P, Lusk, Niobrara County  
Requisite Equipment: pavement markings  
Cost to Upgrade: \$1,000  
Quiet Zone Options:  
 2Q gates & median barriers: not feasible  
 4Q gates: feasible  
 Wayside horns: feasible and recommended  
 One way with gates: not feasible  
 Temporary or permanent closure: not deemed feasible  
Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for 4Q gates, plus \$1,000 upgrade costs

### **Crossing Assessment**

Crossing: 188627H, Lusk, Niobrara County  
Requisite Equipment: FL, G, CWT, pavement markings  
Cost to Upgrade: \$401,000  
Quiet Zone Options:  
 2Q gates & median barriers: feasible and recommended  
 4Q gates: feasible  
 Wayside horns: feasible  
 One way with gates: not feasible  
 Temporary or permanent closure: not deemed feasible  
Range of total cost for quiet zone options: \$60,000 for medians to \$500,000 for 4Q gates, plus \$401,000 upgrade costs

**Crossing Assessment**

Crossing: 245470L, Chugwater, Platte County

Requisite Equipment: CWT, pavement markings

Cost to Upgrade: \$151,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for

4Q gates, plus \$151,000 upgrade costs

**Crossing Assessment**

Crossing: 089268W, Glendo, Platte County

Requisite Equipment: none

Cost to Upgrade: none

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for

4Q gates

**Crossing Assessment**

Crossing: 089425M, Glendo, Platte County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: feasible and recommended

4Q gates: feasible

Wayside horns: feasible

One way with gates: not feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$60,000 for medians to \$500,000 for 4Q

gates, plus \$1,000 upgrade costs

**Crossing Assessment**

Crossing: 245488W, Wheatland, Platte County

Requisite Equipment: FL, G, CWT

Cost to Upgrade: \$400,000

Quiet Zone Options:

2Q gates & median barriers: not feasible on 9' gravel road

4Q gates: feasible

Wayside horns: feasible and recommended  
 One way with gates: not feasible  
 Temporary or permanent closure: probably not deemed feasible  
Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for  
 4Q gates, plus \$400,000 upgrade costs

### **Crossing Assessment**

Crossing: 245489D, Wheatland, Platte County  
Requisite Equipment: CWT, pavement markings  
Cost to Upgrade: \$151,000  
Quiet Zone Options:

2Q gates & median barriers: not feasible  
 4Q gates: feasible  
 Wayside horns: feasible and recommended  
 One way with gates: not feasible  
 Temporary or permanent closure: probably not deemed feasible  
Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for  
 4Q gates, plus \$151,000 upgrade costs

### **Crossing Assessment**

Crossing: 245492L, Wheatland, Platte County  
Requisite Equipment: CWT, pavement markings  
Cost to Upgrade: \$151,000  
Quiet Zone Options:

2Q gates & median barriers: not feasible  
 4Q gates: feasible  
 Wayside horns: feasible and recommended  
 One way with gates: not feasible  
 Temporary or permanent closure: probably not deemed feasible  
Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for  
 4Q gates, plus \$151,000 upgrade costs

### **Crossing Assessment**

Crossing: 245494A, Wheatland, Platte County  
Requisite Equipment: CWT, pavement markings  
Cost to Upgrade: \$251,000  
Quiet Zone Options:

2Q gates & median barriers: not feasible because of roadway width  
 4Q gates: feasible  
 Wayside horns: feasible and recommended  
 One way with gates: not feasible  
 Temporary or permanent closure: not deemed feasible  
Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for  
 4Q gates, plus \$251,000 upgrade costs

**Crossing Assessment**

Crossing: 245496N, Wheatland, Platte County

Requisite Equipment: CWT, pavement markings

Cost to Upgrade: \$151,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for

4Q gates, plus \$151,000 upgrade costs

**Crossing Assessment**

Crossing: 098898P, Clearmont, Sheridan County

Requisite Equipment: CWT, pavement markings

Cost to Upgrade: \$251,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommend

One way with gates: not feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for

4Q gates, plus \$251,000 upgrade costs

**Crossing Assessment**

Crossing: 104151E, Rancheater, Sheridan County

Requisite Equipment: CWT, pavement markings

Cost to Upgrade: \$251,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for

4Q gates, plus \$251,000 upgrade costs

**Crossing Assessment**

Crossing: 104150X, Rancheater, Sheridan County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: feasible and recommended

4Q gates: feasible

Wayside horns: feasible

One way with gates: not feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$60,000 for medians to \$500,000 for 4Q gates, plus \$1,000 upgrade costs

### **Crossing Assessment**

Crossing: 103877K, Sheridan, Sheridan County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for 4Q gates, plus \$1,000 upgrade costs

### **Crossing Assessment**

Crossing: 810480A, Granger, Sweetwater County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: feasible and recommended

4Q gates: feasible

Wayside horns: feasible

One way with gates: not feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$60,000 for medians to \$500,000 for 4Q gates, plus \$1,000 upgrade costs

### **Crossing Assessment**

Crossing: 810323G, Evanston, Uinta County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for 4Q gates, plus \$1,000 upgrade costs

**Crossing Assessment**

Crossing: 924582K, Worland, Washakie County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: feasible and recommended

4Q gates: feasible

Wayside horns: feasible

One way with gates: not feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$60,000 for medians to \$500,000 for 4Q gates, plus \$1,000 upgrade costs

**Crossing Assessment**

Crossing: 090867N, Worland, Washakie County

Requisite Equipment: none

Cost to Upgrade: none

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible and recommended (downtown setting)

Wayside horns: feasible

One way with gates: not feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115 for wayside horns to \$500,000 for 4Q gates

**Crossing Assessment**

Crossing: 090866G, Worland, Washakie County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for 4Q gates, plus \$1,000 upgrade costs

**Crossing Assessment**

Crossing: 090864T, Worland, Washakie County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended  
 One way with gates: not feasible  
 Temporary or permanent closure: not deemed feasible  
Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for  
 4Q gates, plus \$1,000 upgrade costs

### **Crossing Assessment**

Crossing: 099131E, Worland, Washakie County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for  
 4Q gates, plus \$1,000 upgrade costs

### **Crossing Assessment**

Crossing: 046920E, Newcastle, Weston County

Requisite Equipment: pavement markings (faded)

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible and recommended (downtown setting)

Wayside horns: feasible

One way with gates: not feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for  
 4Q gates, plus \$1,000 upgrade costs

### **Crossing Assessment**

Crossing: 064921L, Newcastle, Weston County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not feasible

Temporary or permanent closure: probably not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for  
 4Q gates, plus \$1,000 upgrade costs

### **Crossing Assessment**

Crossing: 064922T, Newcastle, Weston County

Requisite Equipment: pavement markings

Cost to Upgrade: \$1,000

Quiet Zone Options:

2Q gates & median barriers: not feasible

4Q gates: feasible

Wayside horns: feasible and recommended

One way with gates: not feasible

Temporary or permanent closure: not deemed feasible

Range of total cost for quiet zone options: \$115,000 for wayside horns to \$500,000 for

4Q gates, plus \$1,000 upgrade costs

# Appendix B

## Estimated Costs

**Appendix B  
Estimated Costs**

In the "Requisite Equipment" column: P = pavement markings. G = gates. CWT = constant warning time.  
FL = flashing lights.

In the "Recommended SSM" (supplementary safety measure) column: W = wayside horns. M = medians.  
4Q = four-quadrant gates.

County	Town	USDOT Number	Requisite Equipment	Req Equip	Recomm SSM	SSM	Total	Remarks
				Est Cost (\$thousands)		Est Cost (\$thousands)	Est Cost (\$thousands)	
Albany	Laramie	810434Y	P	1	W	115	117	
	Laramie	810427N	P	1	M	60	62	
Big Horn	Basin	090830Y	P	1	W	115	117	
	Basin	090831F	P	1	W	115	117	
	Basin	090832M	P	1	W	115	117	
	Basin	090833U	P	1	W	115	117	
	Deaver	091482B	G, P	251	M	60	312	1/2 mile
	Deaver	091483H	G, CWT, P	401	M	60	462	1/2 mile
	Frannie	091476X	P	1	W	115	117	
	Greybull	091020K	P	1	W	115	117	
	Greybull	086338Y	P	1	W	115	117	
	Lovell	091498X	FL,G,CWT,P	501	W	115	617	
	Lovell	091500W	P	1	W	115	117	
	Manderson	090842T	none	0	M	60	61	
Campbell	Gillette	064969N	CWT,P	151	M	60	212	
	Gillette	064970H	P	1	M	60	62	
	Gillette	064975S	P	1	none	0		2 4Q gates
	Gillette	064976Y	CWT, P	151	W	115	267	
	Gillette	095097L	P	1	M	60	62	
	Gillette (fringe)	098836S	none	0	M	60	61	
Carbon	Medicine Bow	810437U	P	1	W	115	117	
	Rawlins (fringe)	810468T	none	0	M	60	61	
Converse	Douglas	089291R	CWT,P	151	M	60	212	
	Douglas	094931Y	P	1	M	60	62	
	Douglas	089293E	CWT	150	W	115	266	
Crook	Moorcroft	927512F	P	1	W	115	117	
	Moorcroft	064947N	none	0	W	115	116	
	Moorcroft	064950W	none	0	M	60	61	private
Goshen	Fort Laramie	089241M	P	1	M	60	62	
	Fort Laramie	089242U	CWT,P	151	W	115	267	1/2 mile
	Fort Laramie	089243B	CWT	150	M	60	211	1/2 mile
	LaGrange	816026J	G,CWT,P	401	W	115	517	
	LaGrange	816027R	FL,G,CWT	400	W	115	516	
	LaGrange	816028X	G,CWT	400	W	115	516	
	Lingle	089227S	P	1	W	115	117	
	Torrington	089204K	P	1	W	115	117	
	Torrington	089205S	P	1	W	115	117	private
	Torrington	089208M	P	1	4Q	500	502	private
	Torrington	089209U	P	1	W	115	117	
	Torrington	089210N	P	1	W	115	117	
	Torrington	089211V	CWT,P	151	W	115	267	
Hot Springs	Thermopolis	090462L	FL,G,CWT	400	W	115	516	1/2 mile
	Thermopolis	090463T	P	1	W	115	117	1/2 mile
	Thermopolis	090465G	P	1	4Q	500	502	1/2 mile
Laramie	Burns	817680H	P	1	M	60	62	
	Cheyenne	810600N	P	1	W	115	117	
	Cheyenne	245617J	none	0	M	60	61	
	Cheyenne	245684D	P	1	none	0		2 4Q gates

	Pine Bluffs	817675L	P	1	W	115	117
	Pine Bluffs (fringe)	817676T	P	1	M	60	62
Lincoln	Cokeville	807292G	P	1	W	115	117
Natrona	Casper	095107P	G,CWT	400	W	115	516
	Casper	089345U	P	1	M	60	62
	Evansville	089336V	none	0	M	60	61
	Evansville	089337C	CWT,P	151	M	60	212
	Evansville	089340K	CWT,P	151	M	60	212 1/2 mile
	Evansville	089341S	CWT,P	151	M	60	212 1/2 mile
	Evansville	089342Y	G,CWT,P	401	W	115	517 1/2 mile
Niobrara	Lusk	188630R	P	1	M	60	62
	Lusk	188632E	P	1	W	115	117
	Lusk	188628P	P	1	W	115	117
	Lusk	188627H	FL,G,CWT,P	401	M	60	462
Platte	Chugwater	245470L	CWT,P	151	W	115	267
	Glendo	089268W	none	0	W	115	116
	Glendo	089425M	P	1	M	60	62
	Wheatland	245488W	FL,G,CWT	400	W	115	516
	Wheatland	245489D	CWT,P	151	W	115	267
	Wheatland	245492L	CWT,P	151	W	115	267
	Wheatland	245494A	CWT,P	251	W	115	367
	Wheatland	245496N	CWT,P	151	W	115	267
Sheridan	Clearmont	098898P	CWT,P	251	W	115	367
	Ranchester (closure)	104151E	CWT,P	251	W	115	367
	Ranchester (firnge)	104150X	P	1	M	60	62
	Sheridan	103877K	P	1	W	115	117
Sweetwater	Granger	810480A	P	1	M	60	62
Uinta	Evanston	810323G	P	1	W	115	117
Washakie	Worland	924582K	P	1	M	60	62
Washakie	Worland	090867N	none	0	4Q	500	501 1/2 mile
Washakie	Worland	090866G	P	1	W	115	117 1/2 mile
Washakie	Worland	090864T	P	1	W	115	117 1/2 mile
Washakie	Worland	099131E	P	1	W	115	117 1/2 mile
Weston	Newcastle	064920E	P	1	4Q	500	502
	Newcastle	064921L	P	1	W	115	117
	Newcastle	064922T	P	1	W	115	117

## NOTES

- Every crossing in a QZ will require, at time of implementation, an advance warning sign stating that no locomotive horn will be sounded. In the Total Est Cost column, \$1,000 is added as the estimated cost of these advance warning signs.
- The "1/2 mile" notation in the remarks column indicates that two or more crossings within a community fall within this distance along the rail corridor. The minimum length of a quiet zone is 1/2 mile. RLBA did not make a thorough check with regard to the 1/2 mile rule; this should be done.
- The "4Q gates" notation in the remarks column indicates that four-quadrant gates are now in place at this grade crossing.
- The "private" notation in the remarks column indicates presence of a nearby private crossing. Where a private crossing lies within a proposed quiet zone, it must be inspected by a diagnostic team and treated in accord with diagnostic team recommendations. RLBA did not make a thorough check with regard to existence of private crossings; this should be done.
- The total of the estimated cost figures in any given town do not necessarily indicate the cost of a quiet zone in that town, unless a policy decision is made to install SSMs (supplementary safety measures) at every crossing. An alternative method of quiet zone qualification is available which calculates risk with regard to two or more contiguous crossings and generally does not require SSMs at each crossing.
- Total cost for all communities listed, assuming a SSM is placed at each crossing, is \$16.782 million. Phase 2 of this study will indicate that a considerable reduced cost is possible, based upon aggregation of community crossings, and use of the FRA Quiet Zone Risk Calculator.

# Appendix C

## Costs by Community

**Appendix C**  
**Costs by Community**

The cost estimates in this appendix assume a SSM is placed at every grade crossing. Phase 2 of this study will indicate that quiet zone cost may be minimized by aggregating crossings on the same rail line within any given community, and by using the FRA quiet zone risk calculator to add SSMs as required to reduce the Quiet Zone Risk Index to at least the level of the Risk Index With Horns.

<u>County</u>	<u>Town</u>	<u>USDOT Number</u>	<u>Total Est Cost (\$thousands)</u>	<u>Cost by Community (\$thousands)</u>	
Albany	Laramie	810434Y	117		
	Laramie	810427N	62		
				179	
Big Horn	Basin	090830Y	117		
	Basin	090831F	117		
	Basin	090832M	117		
	Basin	090833U	117		
					468
	Deaver	091482B	312		
	Deaver	091483H	462		
					774
	Frannie	091476X	117		
					117
	Greybull	091020K	117		
	Greybull	086338Y	117		
					234
	Lovell	091498X	617		
Lovell	091500W	117			
				734	
	Manderson	090842T	61		
				61	
Campbell	Gillette	064969N	212		
	Gillette	064970H	62		
	Gillette	064975S	2		
	Gillette	064976Y	267		
	Gillette	095097L	62		
	Gillette (fringe)	098836S	61		
				666	
Carbon	Medicine Bow	810437U	117		
	Rawlins (fringe)	810468T	61		
				117	
				61	
Converse	Douglas	089291R	212		
	Douglas	094931Y	62		
	Douglas	089293E	266		
				540	
Crook	Moorcroft	927512F	117		
	Moorcroft	064947N	116		
	Moorcroft	064950W	61		
				294	
Goshen	Fort Laramie	089241M	62		
	Fort Laramie	089242U	267		
	Fort Laramie	089243B	211		
				540	

	LaGrange	816026J	517	
	LaGrange	816027R	516	
	LaGrange	816028X	516	
				1549
	Lingle	089227S	117	
				117
	Torrington	089204K	117	
	Torrington	089205S	117	
	Torrington	089208M	502	
	Torrington	089209U	117	
	Torrington	089210N	117	
	Torrington	089211V	267	
				1237
Hot Springs	Thermopolis	090462L	516	
	Thermopolis	090463T	117	
	Thermopolis	090465G	502	
				1135
Laramie	Burns	817680H	62	
				62
	Cheyenne	810600N	117	
	Cheyenne	245617J	61	
	Cheyenne	245684D	2	
				180
	Pine Bluffs	817675L	117	
	Pine Bluffs (fringe)	817676T	62	
				179
Lincoln	Cokeville	807292G	117	
				117
Natrona	Casper	095107P	516	
	Casper	089345U	62	
				578
	Evansville	089336V	61	
	Evansville	089337C	212	
	Evansville	089340K	212	
	Evansville	089341S	212	
	Evansville	089342Y	517	
				1214
Niobrara	Lusk	188630R	62	
	Lusk	188632E	117	
	Lusk	188628P	117	
	Lusk	188627H	462	
				758
Platte	Chugwater	245470L	267	
				267
	Glendo	089268W	116	
	Glendo	089425M	62	
				178
	Wheatland	245488W	516	
	Wheatland	245489D	267	
	Wheatland	245492L	267	
	Wheatland	245494A	367	
	Wheatland	245496N	267	
				1684
Sheridan	Clearmont	098898P	367	
				367
	Ranchester (closure?)	104151E	367	
	Ranchester (firnge)	104150X	62	
				429

	Sheridan	103877K	117	
				117
Sweetwater	Granger	810480A	62	
				62
Uinta	Evanston	810323G	117	
				117
Washakie	Worland	924582K	62	
Washakie	Worland	090867N	501	
Washakie	Worland	090866G	117	
Washakie	Worland	090864T	117	
Washakie	Worland	099131E	117	
				914
Weston	Newcastle	064920E	502	
	Newcastle	064921L	117	
	Newcastle	064922T	117	
				736