February 16, 2017

Railroad Grade Crossing Quiet Zone Assessment

REVISED FINAL REPORT

FELSBURG HOLT & ULLEVIG

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I. INTRODUCTION

Felsburg Holt and Ullevig (FHU) was contracted by the City of Boulder to complete a railroad grade crossing quiet zone assessment and recommend improvements at 9 highway-rail grade crossings located within the City of Boulder, Colorado. This Railroad Grade Crossing Quiet Zone Assessment will review and evaluate these crossings of the BNSF Railway to determine possible improvements for quiet zone that satisfy the minimum Federal Railroad Administration (FRA) requirements to establish a railroad quiet zone, as stated in the *Final Rule on the Use of Locomotive Horns at Highway-Rail Grade Crossings*, as amended on August 17, 2006.

The analyses of the proposed improvements are addressed in the following sections within this report:

- Existing Conditions
- Quiet Zone Requirements
- Development of Quiet Zone Improvements
- Evaluation of Quiet Zone Concept Improvements
- Implementation Plan

The crossings that are the subject of this study are along the BNSF Railway corridor beginning at North 63rd Street running generally southwest through the crossing at Pearl Parkway, then following the line east to 63rd Street on the south end. This portion includes 9 crossings as follows:

- North 63rd Street
- North 55th Street
- Jay Road
- Independence Road
- 47th Street
- Valmont Road
- Pearl Parkway
- 55th Street (South)
- 63rd Street (South)

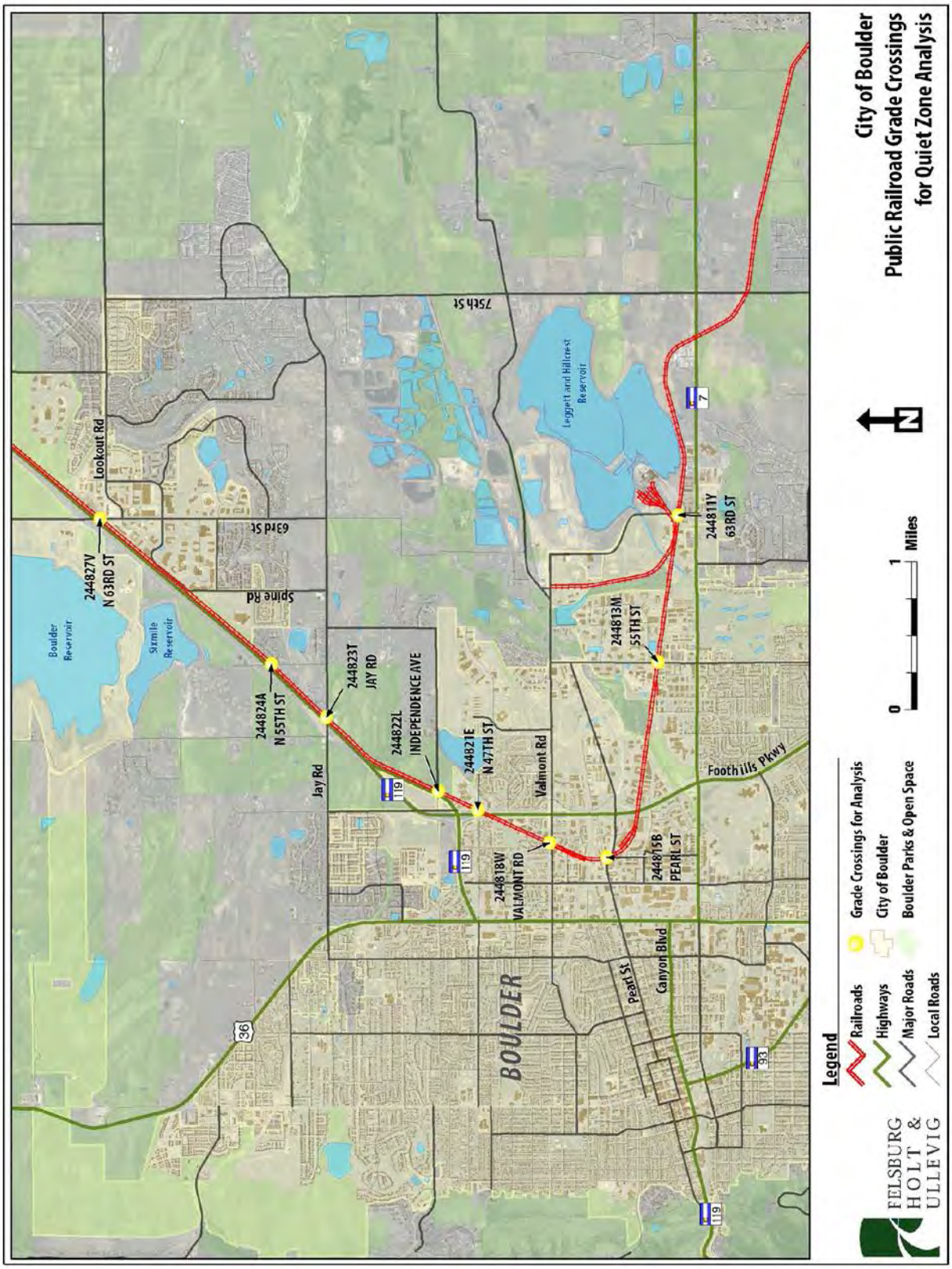
It is noted that these crossings are within the corridor identified by the Regional Transportation District (RTD) as the Northwest Rail Corridor, and were evaluated as part of that effort. For information regarding the evaluation conducted by RTD, the reader is referenced to the RTD Northwest Rail Corridor Final Environmental Evaluation, May 2010.

It is also noted that 3 of the above listed crossings: North 55th Street, Jay Road and Independence Road, are also being reviewed by Boulder County for quiet zone establishment.

The City is seeking input regarding recommended improvements for these 9 crossings, and this report will identify logical groups of crossings for quiet zone establishment.

The study corridor, indicating the limits of the study area along with the 9 at-grade railroad crossings located within the study area, are shown in **Figure 1**.

Figure 1. Railroad Quiet Zone Study Area



II. EXISTING CONDITIONS

The BNSF runs as many as 9 thru trains per day and 9 thru trains at night along this track, with a maximum train speed of 49 MPH through the corridor. All of the crossings along this corridor have active railroad crossing warning devices. Many of the crossings have been upgraded to Constant Warning Time (CWT) circuitry, per the current U.S. DOT Crossing Inventory forms. Several crossings are likely to have CWT circuitry, but it is not reflected on the current Crossing Inventory form. Ultimately, railroad confirmation of circuitry will be needed for design. The U.S. DOT Crossing Inventory forms for each crossing can be found in **Appendix A**.

A. Data Collection

Base study information for this railroad corridor was obtained from the Federal Railroad Administration (FRA) Crossing Inventory database, which include current train movements, average train speed, crossing warning devices in place, crossing circuitry and documented incident reports. Current traffic counts were also available from Boulder County for the crossings being studied by both agencies.

B. Highway-Rail Grade Crossings

Table 1 summarizes the existing conditions present at each of the highway-railroad crossings within the study area, including crossing and equipment information. The highway-rail crossings are listed from north to south along the BNSF Line from North 63rd Street through 63rd Street on the south end.

In addition to the roadway name, the Department of Transportation (DOT) identification number is provided, along with the type of circuitry identified in the FRA Crossing Inventory Reports, and whether the crossing is currently equipped with gates and railroad flashing lights.

Table 1. Existing Crossing Conditions

BNSF Crossings in Study	DOT #	MP	Active Devices	Circuitry	ADT (1)
North 63rd Street	244827V	35.29	Gates/ Flashers	DC (2)	20,600
55th Street (north end)	244824A	33.77	Gates/ Flashers	CWT	249
Jay Road	244823T	33.25	Gates / Flashers	CWT	12,833
Independence Road	244822L	32.33	Gates/ Flashers	CWT	5,052
47th Street	244821E	32.04	Gates/ Flashers	CWT	5,300
Valmont Road	244818W	31.45	Gates/ Flashers	DC (2)	27,100
Pearl Parkway	244815B	27.83	Gates/ Flashers	CWT (3)	22,800
55th Street (south end)	244813M	26.38	Gates/ Flashers	DC (2)	17,700
63rd Street (south end)	244811Y	25.37	Gates/ Flashers	CWT	2,800

(1) Traffic data is from more recent traffic counts conducted by the City of Boulder or Boulder County.
(2) Circuitry shown is as listed in the current FRA Inventory Report, but requires confirmation.
(3) Updated circuitry information provided by City Staff. CWT circuitry was installed as part of a previous crossing improvement project at Pearl Parkway (PUC Docket#12A-730R, Decision #C12-0959 dated August 17, 2012).

The following pages summarize the existing conditions at each railroad crossing along with surrounding land use. Number of residential units that may be affected by train horn noise may be included in the final report.

North 63rd Street Crossing Summary
US DOT Crossing #244827V

BNSF Main Line

The 63rd Street crossing is equipped with mast mounted flashers, gates, cross bucks and bells. One set of tracks are crossed. The roadway is configured to provide two lanes of travel in each direction, with an additional turn lane for the northbound direction. The section includes a raised median. The total roadway width is approximately 80'. Each direction has striped bike lanes, curb, gutter and sidewalks. The roadway surface is paved with hot mix asphalt. The speed limit on 63rd Street is 40 MPH. The picture shown in **Figure 2** is the current aerial view of the existing roadway and railroad at the crossing. Existing, available crossing information is shown in **Table 2**.

This crossing is equipped with a minimum of one cross buck on each approach per MUTCD, and has railroad pavement markings on the south approach.

Fig. 2. North 63rd Street

Table 2. North 63rd Street Crossing Information

Adjacent Land Use	Commercial
Minimum Distance to next crossing	1.01 miles
Current Warning Protection	Signs, flashers, gates
Train Detection	DC/AFO circuitry
Crossing Material	Concrete
Roadway classification/ADT (Source: FRA Inventory Report)	Rural/Major Collector /6,650 (1989)
# of Lanes	5
Exposure Factor = ADT x Trains per Day	18 x 20,600 = 370,800
Total Train/Vehicle Accidents (5 Years)	0

North 55th Street Crossing Summary
US DOT Crossing #244824A

BNSF Main Line

The 55th Street crossing is equipped with mast mounted flashers, cross bucks and bells. One set of tracks are crossed on a skew to the roadway. The roadway is configured to provide two lanes of travel for a total paved width of approximately 20'. Each direction has gravel shoulders along the outer edge of the roadway. The roadway surface is paved with hot mix asphalt. Posted speed limit on 55th Street is 30 MPH. The picture shown in **Figure 3** is the current existing aerial view of the roadway and railroad at the crossing. Existing, available crossing information is shown in **Table 3**.

This crossing is equipped with a minimum of one cross buck on each approach per MUTCD. This crossing does not have railroad pavement markings on either approach.

Fig. 3. North 55th Street

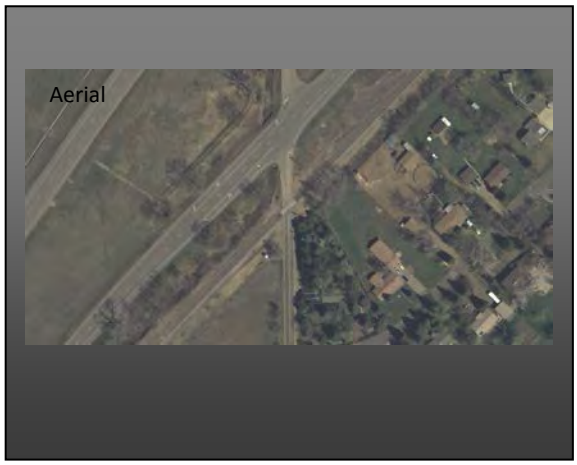


Table 3. North 55th Street Crossing Information

Adjacent Land Use	Residential
Minimum Distance to next crossing	0.45 miles
Current Warning Protection	Signs, flashers and gates
Train Detection	CWT circuitry
Crossing Material	Concrete
Roadway classification/ADT	Rural local/249 (2016)
# of Lanes	2
Exposure Factor = ADT x Trains per Day	18 x 249 = 4,482
Total Train/Vehicle Accidents (5 Years)	0

Jay Road Crossing Summary
US DOT Crossing #244823T

BNSF Main Line

The Jay Road crossing is equipped with mast mounted flashers, gates, cross bucks and bells. One set of tracks are crossed. The roadway is configured to provide three lanes of travel with two lanes in the westbound direction and one lane in the eastbound direction with a raised median for a total roadway width of approximately 53'. Each direction has 4' to 6' paved shoulders along the outer edge of the roadway. The roadway surface is paved with hot mix asphalt. Posted speed limit on Jay Road is 45 MPH. The picture shown in **Figure 4** is the current existing aerial view of the roadway and railroad at the crossing. Existing, available crossing information is shown in **Table 4**.

Figure 4. Jay Road

This crossing is equipped with a minimum of one cross buck on each approach per MUTCD, and has railroad pavement markings on the east approach.

Table 4. Jay Road Crossing Information

Adjacent Land Use	Agricultural/Farming
Minimum Distance to next crossing	0.52 miles
Current Warning Protection	Signs, flashers and gates
Train Detection	CWT circuitry
Crossing Material	Concrete
Roadway classification/ADT	Rural Minor Arterial/12,833 (2016)
# of Lanes	3
Exposure Factor = ADT x Trains per Day	18x 12,833 = 230,994
Total Train/Vehicle Accidents (5 Years)	0

Independence Road Crossing Summary
US DOT Crossing #244822L

BNSF Main Line

The Independence Road crossing is equipped with mast mounted flashers, gates, cross bucks and bells. One set of tracks are crossed. The roadway is configured to provide two lanes of travel with narrow paved shoulders for a total roadway width of approximately 24'. The roadway surface is paved with hot mix asphalt. Posted speed limit on Independence Road is 35 MPH in the vicinity of the tracks. The picture shown in **Figure 5** is the current existing aerial view of the roadway and railroad at the crossing. Existing, available crossing information is shown in **Table 5**.

This crossing is equipped with a minimum of one cross buck on each approach per MUTCD. This crossing does not have railroad pavement markings on either approach.

Fig. 5. Independence Road

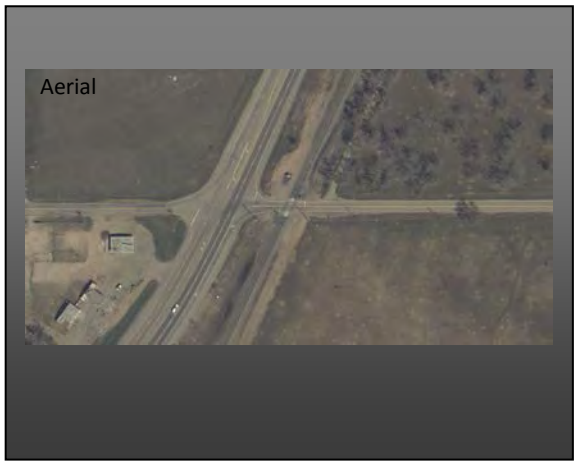


Table 5. Independence Road Crossing Information

Adjacent Land Use	Open Space/ Commercial
Minimum Distance to next crossing	0.29 miles
Current Warning Protection	Signs, flashers and gates
Train Detection	CWT circuitry
Crossing Material	Concrete
Roadway classification/ADT	Urban Major Collector/5,052 (2016)
# of Lanes	2
Exposure Factor = ADT x Trains per Day	18 x 5,052 = 90,936
Total Train/Vehicle Accidents (5 Years)	0

47th Street Crossing Summary
US DOT Crossing #244821E

BNSF Main Line

The 47th Street crossing is equipped with mast mounted flashers, gates, cross bucks and bells. One set of tracks are crossed. The roadway is configured to provide one lane of travel in each direction, with detached, striped bike lanes on each side of the roadway, and a raised median. The total roadway width is approximately 47'. On approach to the crossing, each direction has paved shoulders. The roadway surface is paved with hot mix asphalt. The speed limit on 47th Street is 30 MPH. The picture shown in **Figure 6** is the current aerial view of the existing roadway and railroad at the crossing. Existing, available crossing information is shown in **Table 6**.

This crossing is equipped with a minimum of one cross buck on each approach per MUTCD, and has railroad pavement markings on each approach.

Fig. 6. 47th Street

Table 6. 47th Street Crossing Information

Adjacent Land Use	Commercial
Minimum Distance to next crossing	0.29 miles
Current Warning Protection	Signs, flashers, gates
Train Detection	CWT circuitry
Crossing Material	Concrete
Roadway classification/ADT (Source: FRA Inventory Report)	Urban/Local Road /1,000 (1989)
# of Lanes	2
Exposure Factor = ADT x Trains per Day	18 x 5,300 = 95,400
Total Train/Vehicle Accidents (5 Years)	0

Valmont Road Crossing Summary
US DOT Crossing #244818W

BNSF Main Line

The Valmont Road crossing is equipped with flashers, gates, cross bucks and bells. One set of tracks are crossed. The roadway is configured to provide two lanes of travel with a raised median and striped bike lanes in each direction for a roadway width of approximately 64'. Curb, gutter and sidewalks exist along the outer edge of the roadway on both approaches. The roadway surface is paved with hot mix asphalt. Posted speed limit on Valmont Road is 35 MPH. The picture shown in **Figure 7** is the current aerial view of the existing roadway and railroad at the crossing. Existing, available crossing information is shown in **Table 7**.

This crossing is equipped with a minimum of one cross buck on each approach per MUTCD and has railroad pavement markings on each approach.

Fig. 7. Valmont Road

Table 7. Valmont Road Crossing Information

Adjacent Land Use	Commercial
Minimum Distance to next crossing	0.59 miles
Current Warning Protection	Signs, flashers, gates
Train Detection	DC/AFO circuitry
Crossing Material	Concrete
Roadway classification/ADT (Source: FRA Inventory Report)	Urban/Minor Arterial /7,500 (1989)
# of Lanes	4
Exposure Factor = ADT x Trains per Day	18 x 27,100 = 487,800
Total Train/Vehicle Accidents (5 Years)	0

Pearl Parkway Crossing Summary
US DOT Crossing #244815B

BNSF Main Line

The Pearl Parkway crossing is equipped with mast mounted flashers, gates, cross bucks and bells, with additional mast mounted flashers in the raised medians. One set of tracks are crossed. The roadway is configured to provide two lanes of travel with a raised median for a total roadway width of approximately 52'. Concrete curb, gutter and sidewalk exists along the both sides of the roadway. The roadway surface is paved with concrete. Posted speed limit on Pearl Parkway is 35 MPH. The picture shown in **Figure 8** is the current aerial view of the existing roadway and railroad at the crossing. Existing, available crossing information is shown in **Table 8**.

This crossing is equipped with a minimum of one cross buck on each approach per MUTCD. It has railroad pavement markings on each approach.

Fig. 8. Pearl Parkway

Table 8. Pearl Parkway Crossing Information

Adjacent Land Use	Residential/Commercial
Minimum Distance to next crossing	1.45 miles
Current Warning Protection	Signs, flashers, gates
Train Detection	CWT Circuitry *
Crossing Material	Concrete
Roadway classification/ADT (Source: FRA Inventory Report)	Urban Major Collector/ 1,200 (1989)
# of Lanes	4
Exposure Factor = ADT x Trains per Day	18 x 22,800 = 410,400
Total Train/Vehicle Accidents (5 Years)	0

***** Updated circuitry information provided by City Staff. CWT circuitry was installed as part of a previous crossing improvement project at Pearl Parkway (PUC Docket#12A-730R, Decision #C12-0959 dated August 17, 2012).

55th Street (South) Crossing Summary
US DOT Crossing #244813M

BNSF Main Line

The 55th Street crossing is equipped with mast mounted flashers, gates, cross bucks and bells, with additional mast mounted flashers in the raised medians. One set of tracks are crossed. The roadway is configured to provide two lanes of travel with a raised median, and striped bike lanes, for a total roadway width of approximately 70'. Concrete curb, gutter and sidewalk exists along both sides of the roadway. The roadway surface is paved with concrete. Posted speed limit on 55th Street is 40 MPH. The picture shown in **Figure 9** is the current aerial view of the existing roadway and railroad at the crossing. Existing, available crossing information is shown in **Table 9**.

This crossing is equipped with a minimum of one cross buck on each approach per MUTCD. It has railroad pavement markings on each approach.

Fig. 9. 55th Street (south)

Table 9. 55th Street (south) Crossing Information

Adjacent Land Use	Commercial
Minimum Distance to next crossing	1.01 miles
Current Warning Protection	Signs, flashers and gates
Train Detection	DC/AFO circuitry
Crossing Material	Concrete
Roadway classification/ADT (Source: FRA Inventory Report)	Urban Major Collector/ 7,800 (1989)
# of Lanes	4
Exposure Factor = ADT x Trains per Day	18 x 17,700 = 318,600
Total Train/Vehicle Accidents (5 Years)	0

63rd Street (South) Crossing Summary
US DOT Crossing #244811Y

BNSF Main Line

The 63rd Street crossing has a mainline and industry spur track both controlled by one railroad signal bungalow. Both crossings are equipped with mast mounted flashers, gates, cross bucks and be with additional mast mounted flashers in the raised medians. One set of tracks is crossed at each location. The roadway is configured to provide one lane of travel with a raised median and paved shoulders, for a total roadway width of approximately 44'. Concrete curb and gutter exists along both sides of the roadway. The roadway surface is paved with hot mix asphalt. Posted speed limit on 63rd Street is 30 MPH. The picture shown in **Figure 10** is the current aerial view of the existing roadway and railroad at the mainline and industry spur track crossings. Existing, available crossing information is shown in **Table 10**.

Both crossings are equipped with a minimum of one cross buck on each approach per MUTCD. Railroad pavement markings are present on each approach to the combined track crossing.

Fig. 10. 63rd Street (south)

Table 10. 63rd Street (south) Crossing Information

Adjacent Land Use	Commercial/Industrial
Minimum Distance to next crossing	1.01 miles
Current Warning Protection	Signs, flashers and gates
Train Detection	CWT circuitry
Crossing Material	Concrete
Roadway classification/ADT (Source: FRA Inventory Report)	Rural Local/ 1,700 (1989)
# of Lanes	2
Exposure Factor = ADT x Trains per Day	18 x 2,800 = 50,400
Total Train/Vehicle Accidents (5 Years)	0

III. QUIET ZONE REQUIREMENTS

The City of Boulder is interested in establishing a quiet zone along a portion of the BNSF Railway track corridor. This section of the report will identify the requirements necessary at the study crossings to satisfy the requirements for the establishment of a quiet zone.

This portion of the study is based on the criteria for the establishment of quiet zones as outlined in the *Final Rule on Use of Locomotive Horns at Highway-Rail Grade Crossings* (*Final Rule*), which was made effective on June 24, 2005 by the Federal Railroad Administration (FRA). The *Final Rule* was last amended on August 17, 2006. On December 18, 2003, the FRA published an interim final rule that required the locomotive horn to be sounded while trains approach and enter public highway-rail crossings. The interim final rule provided exceptions to the above requirement, which enabled local communities to improve quality of life by creating "quiet zones" where the locomotive horn would not need to be routinely sounded if highway-rail crossings met certain conditions. The *Final Rule* facilitates the development of these quiet zones, requiring the implementation of Supplemental Safety Measures (SSMs) or Alternative Safety Measures (ASMs), to maintain safety at highway-rail crossings where locomotive horns have been silenced.

A Quiet Zone is a section of rail line that contains one or more consecutive public crossings at which locomotive horns are not routinely sounded. The *Final Rule* contains guidelines and minimum requirements for the establishment of a quiet zone. For the purposes of this study, all potential crossings qualify in the New Quiet Zone category, as train horns are currently being sounded at the crossings, and the quiet zone would be established after the effective date of the *Final Rule*. These minimum requirements for a New Quiet Zone are as follows:

1. A New Quiet Zone must have a minimum length of ½ mile along the railroad right-of-way.

2. Each public highway-rail grade crossing within a New Quiet Zone must be equipped with active grade crossing warning devices. These devices are comprised of both flashing lights and gates which control traffic over the crossing, and must be equipped with constant warning time (CWT) circuitry, if reasonably practical, and power-out indicators. Any necessary upgrades to or installation of active grade crossing warning devices must be completed before the New Quiet Zone implementation date.

3. Each highway approach to every public and private highway-rail grade crossing within a New Quiet Zone shall be equipped with a Manual on Uniform Traffic Control Devices (MUTCD) compliant advanced warning sign that advises motorists that train horns are not sounded at the crossing.

4. Each public highway-rail grade crossing within a New Quiet Zone that is subjected to pedestrian traffic and is equipped with automatic bells shall retain those bells in working condition.

5. Each pedestrian grade crossing within a New Quiet Zone shall be equipped with an MUTCD compliant advanced warning sign that advises pedestrians that train horns are not sounded at the crossing.

A. Quiet Zone Alternatives

The public authority that is responsible for the safety and maintenance of the roadway that crosses the rail corridor is the only entity that can apply for the establishment of a quiet zone. Private companies, citizens, or

neighborhood associations cannot create or apply for the establishment of a quiet zone independent of local roadway authorities.

The focus of this study is to determine if Supplemental Safety Measures (SSMs), or Wayside Horns should be used to fully compensate for the absence of the train horn.

The SSMs to be considered, as identified in the *Final Rule*, include the following:

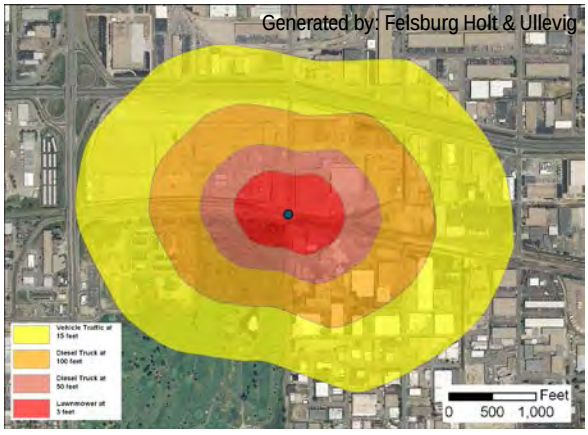
- Temporary Closure (used with a nighttime-only quiet zone)
- Four-Quadrant Gate System
- Gates with Raised Medians or Channelization Devices
- Conversion to One-Way Street with Gates across the roadway
- Permanent Crossing Closure

SSMs are recognized measures that do not require further FRA review or approval prior to implementation. Use of SSM installations is the more efficient way to achieve quiet zone establishment.

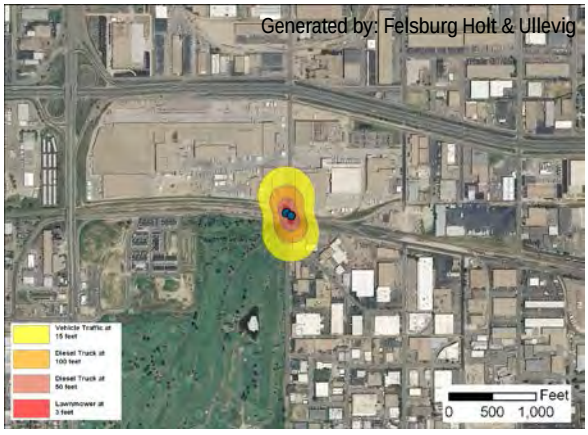
Alternative Safety Measures (ASMs) consist of improvements that fall outside the scope of SSMs, and may be proposed to FRA for consideration and approval. ASMs include Modified SSMs, Non-engineering ASMs, and Engineering ASMs. If used, the effectiveness rate of ASMs must be determined prior to FRA approval. It should also be noted that the implementation of several ASMs may be required in order to reduce the risk below the threshold for the silencing of train horns. For these reasons, this study does not include analysis of ASM installations on this rail corridor.

Wayside Horns are FRA approved devices that may be used in lieu of locomotive horns at individual or multiple highway-rail grade crossings, including those within quiet zones. The wayside horn is a stationary horn located at a highway-rail grade crossing, designed to provide audible warning to oncoming motorists of the approach of a train. As per the *Final Rule*, a highway-rail grade crossing with a wayside horn shall be considered in the same manner as a crossing treated with an SSM. A comparison of train horn and wayside horn noise footprints are depicted in **Figure 11**. A highway-rail crossing with a wayside horn installation is shown in **Figure 12**.

Figure 11. Comparison of Train Horn vs. Wayside Horn Noise Footprint



Train Horn in Crossing



Automated Horn

Figure 12. Highway-Rail Crossing Equipped with Wayside Horns

B. Quiet Zone Establishment

Per the *Final Rule*, there are two different methods for establishing quiet zones; public authority designation and FRA approval. In the public authority designation method, an SSM is applied at every public grade crossing within the proposed quiet zone. In this method, the governmental entity establishing the quiet zone would be required to designate the perimeters of the quiet zone, install the SSMs, and comply with various notice and information requirements set forth in the rule.

The FRA approval method provides a governmental entity greater flexibility in using SSMs and ASMs to address problem crossings. This method allows FRA to consider quiet zones that do not have SSMs at every crossing, if implementation of the proposed SSMs and ASMs in the quiet zone as a whole would cause a reduction in risk to compensate for the absence of routine sounding of the locomotive horn. This process includes an application to the FRA for approval of the proposed improvements, and supporting calculations to show that the proposed treatment reduces the risk below the allowable nationwide threshold at the crossing.

In either method, a series of notices must be sent out to required recipients. These notices include the Notice of Intent to Create a Quiet Zone, and the Notice of Quiet Zone Establishment. Flowcharts depicting the procedure for the establishment of quiet zones as well as sample FRA forms can also be found in **Appendix B.**

C. Quiet Zone Improvements

Each highway-rail grade crossing within the study area of the City of Boulder was evaluated for the implementation of a quiet zone. It may be advantageous to divide the quiet zone into phases along the BNSF Line for implementation. In order to be compliant with the FRA Final Rule, all crossings in a quiet zone need to be contiguous. A quiet zone may be implemented in segments; however, to be included in the original quiet

zone, each subsequent segment must be adjacent to a portion of the existing quiet zone. As a general recommendation, any roadway improvements to crossings within a potential quiet zone should be made compliant with quiet zone requirements.

The concept evaluation of Supplemental Safety Measures (SSMs) focused initially on the construction of raised medians on the roadway approaches to the crossing. Other than permanent or temporary closure, this is typically the most cost effective SSM for the establishment of a quiet zone. For those locations where the construction of raised medians caused roadway widening and/or the need for additional crossing surface material, consideration of channelizing devices is also shown. Where medians or channelizing devices are not practical or feasible, wayside horns were identified as an alternative solution. Where other options are either not feasible or not desired by the community, a 4-quadrant gate installation is a viable, but costlier, option.

To meet the requirements of a quiet zone, the installation of raised medians needs to meet several criteria. The median must extend 100’ from the gate arm unless there is a driveway or intersection, in which case the median must extend at least 60’ from the gate arm. The median should be at least 3’ wide to provide for signing (4’ is desirable), with a 6” barrier curb.

IV. DEVELOPMENT OF QUIET ZONE CONCEPT IMPROVEMENTS

A. Development Procedure

The development of the various concepts identified in this report started with a review of each crossing for its existing roadway and railroad features and equipment. As part of this evaluation, a desktop review was conducted to review existing conditions at each crossing. Conditions reviewed include presence/absence of existing railroad crossing warning devices, roadway and/or sidewalk pavement and widths, signing, striping, and general physical features.

All of the public crossings that are part of this evaluation can be treated with an SSM option. There are no locations where SSMs do not fit or unduly penalized operations.

The ability to treat all crossings with an SSM feature is advantageous to the City in that upon completion of installation or construction of the improvements, a quiet zone can be established by public authority designation, without application to or approval from the FRA. It should be noted that Modified SSMs are treated as Engineering ASMs by the FRA. Unlike the process for SSMs, where the local public authority can designate a quiet zone using the pre-approved measures, ASMs follow a separate procedure whereby an application is made to the FRA for consideration and approval before a quiet zone can be implemented.

Figure 13. Active Controls

Following is a brief description of each of the measures proposed for the public highway-railroad crossings along the study corridor in Boulder:

Active Controls - For each crossing area certain basic active warning devices must be in place to establish a quiet zone. These include flashing lights and gates with cross bucks and constant warning circuitry to provide a consistent message to drivers on the through roadway, as shown in **Figure 13**.

Raised Medians- Raised medians are the lowest cost measure for preventing higher risk behavior of drivers going around the gate arms. Medians should be used wherever possible. Medians can be 60 feet from the gate arm where a parallel street or commercial access intersects the approach roadway. Streets or accesses within 60 feet of the gate arm must be closed or relocated. The preferred length of the raised median is 100 feet from the gate arm. Raised medians must have 6" barrier curb, as shown in **Figure 14**.


Figure 14. Raised Medians

Channelizing Devices- Where roadway width or close proximity adjacent development precludes roadway widening to allow for a raised median, channelizing devices are allowed. Channelizing devices are, by FRA definition, 'a traffic separation system made up of a

raised longitudinal channelizer, with vertical panels or tubular delineators, that is placed between opposing highway lanes designed to alert or guide traffic around an obstacle or to direct traffic in a particular direction. "Tubular markers" and "vertical panels", as described in the MUTCD, are acceptable channelization devices for the purposes of this part.' Readily available prefabricated channelizing devices are available, as shown in **Figure 15**.

Figure 15. Channelizing Devices

Wayside Horns- The wayside horns are considered a one for one replacement for the locomotive horn without application to FRA for approval. Wayside horns provide a sharp cut-off beyond the immediate approaches to the crossing thus reducing (86-98%) the distribution of noise near the railroad corridor within a community. These are shown where other SSMs are not deemed feasible and where residential land uses are not in proximity of the crossing. Wayside horns have a square megaphone shape, and are installed on separate posts on each approach to the highway-rail crossing, as shown in **Figure 16**.

Figure 16. Wayside Horns

4-Quadrant Gates- This installation includes a railroad gate on both the approach and exit sides of the tracks to prevent vehicles from either intentionally or unintentionally entering the track area while a train is approaching. This configuration completely isolates the railroad corridor, and is characteristically the most expensive option. Typically, a mechanism is provided to detect trapped vehicles between the gates, such as vehicle detection loops within the pavement between the two sets of gates. Detection of a vehicle during approach of a train would trigger an exit gate to open, or remain upright, allowing the vehicle to exit the crossing. The need for vehicle detection is ultimately determined by the Colorado Public Utilities Commission. An installation of 4-quadrant gates is shown in **Figure 17**.

Figure 17. 4-Quadrant Gates

Closed Crossing- The safest and least costly treatment is to physically close a crossing whenever possible and where adequate alternate routes are available for circulation. These are generally proposed on cross streets having the lowest through traffic volumes and least continuity across the community. Where crossings can be consolidated and still provide adequate circulation and emergency access, closure should be considered.

Table 11 shows the concept level options considered for each crossing within the study area.

Table 11. Quiet Zone Concept Improvement Options

BNSF CROSSING	FRA DOT NO.	M.P.	DIST BTWN XINGS	RR CIRCUITRY (1)	GATES/ LIGHTS	ADT (2)	Adjacent Land Use	SSM Options: Raised Medians	SSM Options: Channelizing Devices	SSM Options: 4-Quadrant Gates	SSM Options: Wayside Horns
North 63rd Street	244827V	35.29	1.52	DC (1)	YES	20,600	Comm.			X	X
55th Street (north end)	244824A	33.77	0.52	CWT	YES	249	Resid.	X	X	X	X
Jay Road	244823T	33.25	0.52	CWT	YES	12,833	Agricul.			X	X
Independence Road	244822L	32.33	0.29	CWT	YES	5,052	Open/Comm.	X	X	X	X
47th Street	244821E	32.04	0.29	CWT	YES	5,300	Comm.	X			
Valmont Road	244818W	31.45	0.59	DC (1)	YES	27,100	Comm.	X		X	
Pearl Parkway	244815B	27.83	1.45	CWT (3)	YES	22,800	Resid./Comm.			X	
55th Street (south end)	244813M	26.38	1.01	DC (1)	YES	17,700	Comm.	X			X
63rd Street (south end)	244811Y	25.37	1.01	CWT	YES	2,800	Comm./ Indus.	X		X	X

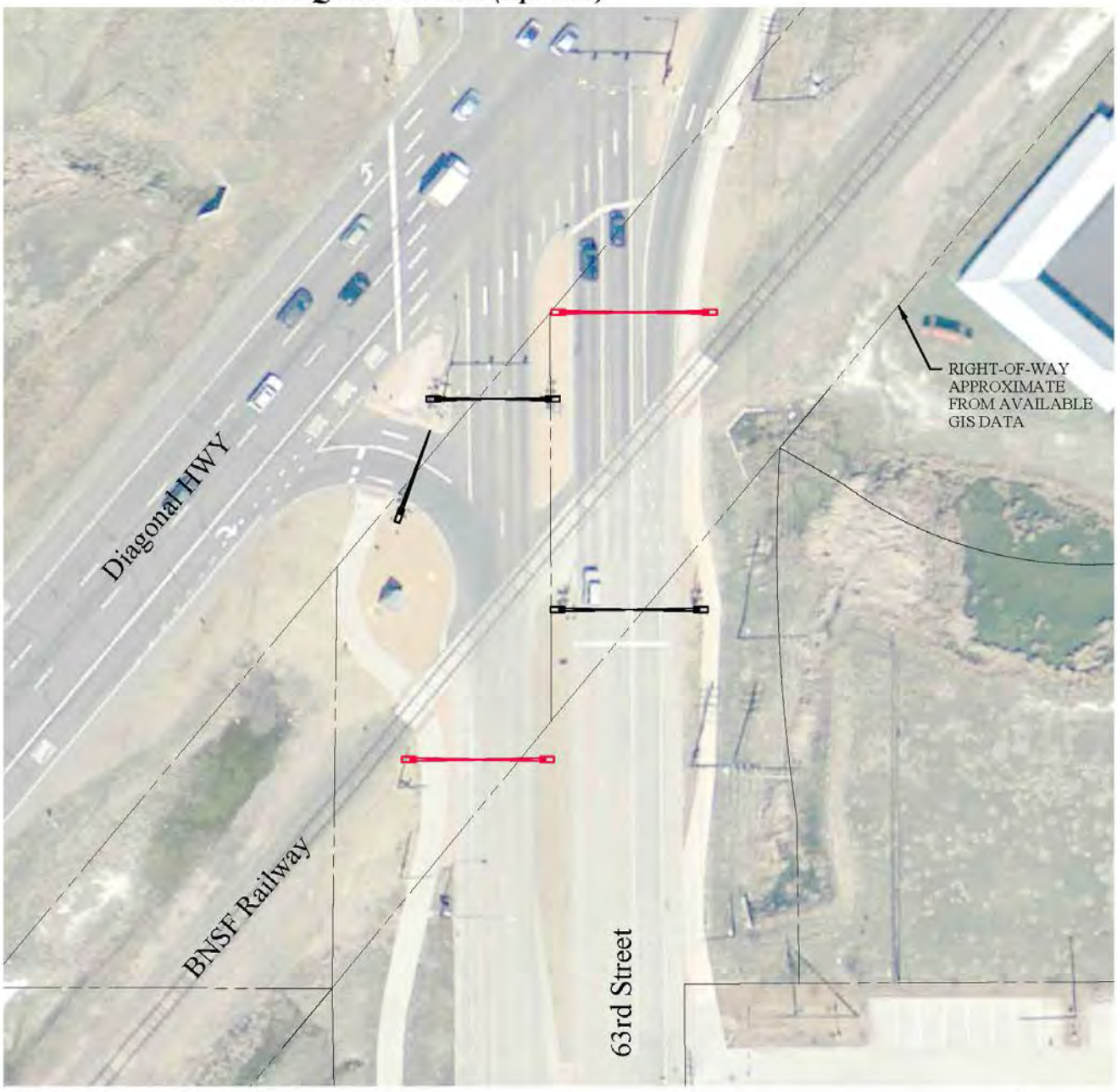
(1) Circuitry shown is as listed in the current FRA Inventory Report, but requires confirmation.
(2) Traffic data is from more recent traffic counts conducted by the City of Boulder or Boulder County.
(3) Updated circuitry information provided by City Staff. CWT circuitry was installed as part of a previous crossing improvement project at Pearl Parkway (PUC Docket#12A-730R, Decision #C12-0959 dated August 17, 2012).

B. Concept Crossing Improvements

The following pages show one or more possible crossing improvement options for each public roadway-railroad crossing in the study area for the City of Boulder.

North 63rd Street
US DOT #244827V
Main Line
SSM: 4-Quadrant Gates (Option 1)

Concept Crossing Improvements



NOTES:
1. Confirm CWT Circuitry.
2. Add railroad exit gates.
3. Railroad signal bungalow may require upgrade to accommodate exit gate operation.
4. Add signing/striping per MUTCD.

LEGEND:
- Existing Gate
- Existing Median
- Existing Stop Bar
- Existing Cantilever
- Existing Sign
- Approximate centerline of road or railway (where needed for reference)
- Proposed Gate
- Proposed Median
- Proposed Curb and Gutter
- Proposed Wayside Horn
- Proposed Sign

N W E S

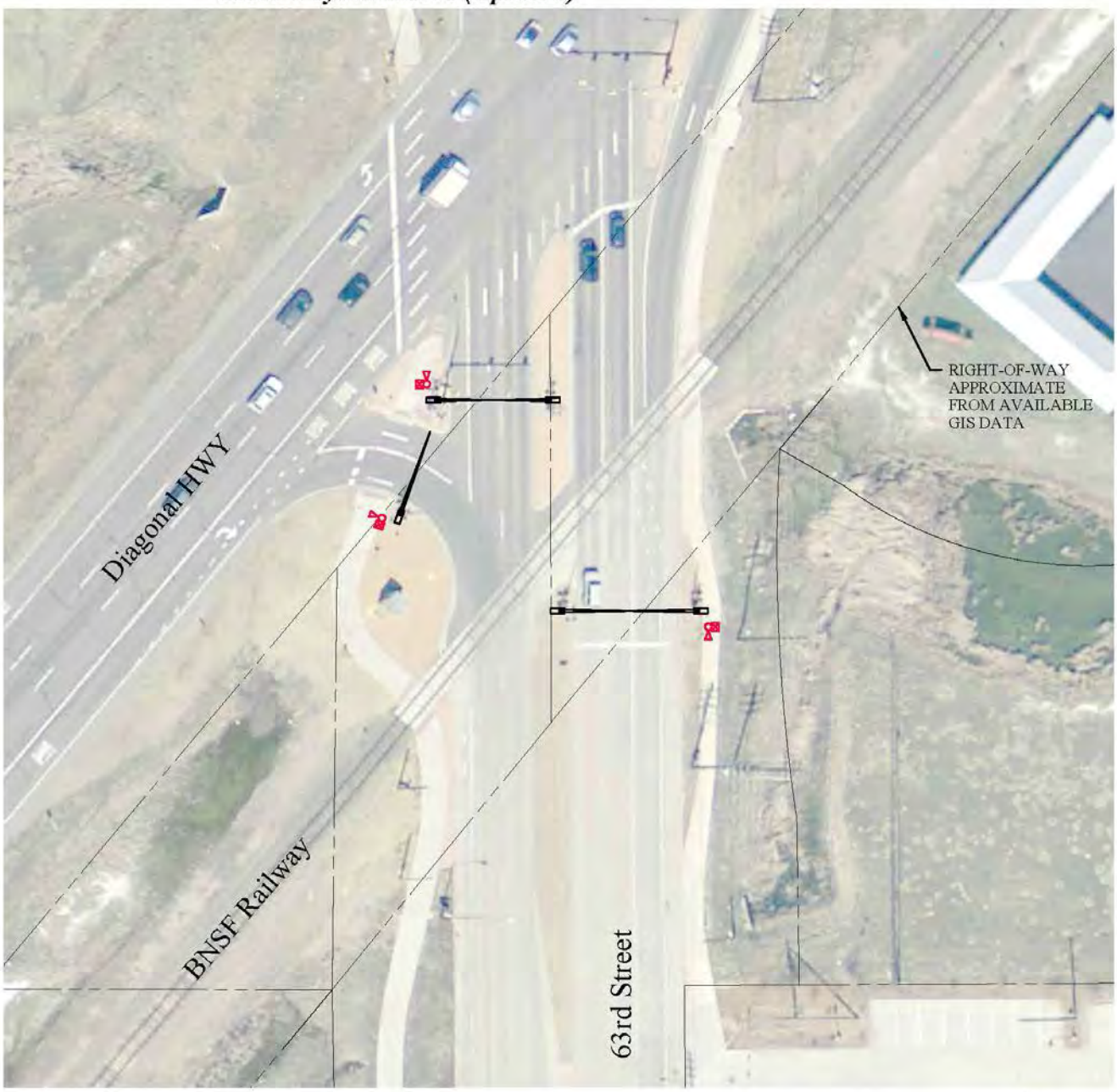
SCALE: 1"=60'

0 30 60

BNSF RAILWAY

North 63rd Street
US DOT #244827V
Main Line
SSM: Wayside Horns (Option 2)

Concept Crossing Improvements



NOTES:
1. Upgrade to CWT Circuitry; requires new bungalow.
2. Add wayside horns on each approach.
3. Add signing/striping per MUTCD.

LEGEND:
- Existing Gate
- Existing Median
- Existing Stop Bar
- Existing Cantilever
- Existing Sign
- Proposed Gate
- Proposed Median
- Proposed Curb and Gutter
- Proposed Wayside Horn
- Proposed Sign
- Approximate centerline of road or railway (where needed for reference)

N W E S

SCALE: 1"=60'

0 30 60

BNSF RAILWAY

North 55th Street
US DOT #244824A
Main Line
SSM: 4-Quadrant Gates (Option 1)

Concept Crossing Improvements

NOTES:
1. Has CWT Circuitry.
2. Add railroad exit gates.
3. Place exit gates parallel to track to close gap between gates in down position (or place gates perpendicular to roadway with stub channelizing devices).
4. Railroad bungalow may require upgrade to accommodate exit gate operation.
5. Add signing/striping per MUTCD.

LEGEND:
- Existing Gate
- Existing Median
- Existing Stop Bar
- Existing Cantilever
- Existing Sign
- Approximate centerline of road or railway (where needed for reference)
- Proposed Gate
- Proposed Median
- Proposed Curb and Gutter
- Proposed Wayside Horn
- Proposed Sign

N W E S

SCALE: 1"=60'

0 30 60

BNSF RAILWAY

North 55th Street
US DOT #244824A
Main Line
SSM: Wayside Horns (Option 2)

Concept Crossing Improvements

NOTES:
1. Has CWT Circuitry.
2. Add wayside horns on each approach.
3. Add signing/striping per MUTCD.

LEGEND:

Existing Gate	Proposed Gate
Existing Median	Proposed Median
Existing Stop Bar	Proposed Curb and Gutter
Existing Cantilever	Proposed Wayside Horn
Existing Sign	Proposed Sign
Approximate centerline of road or railway (where needed for reference)	

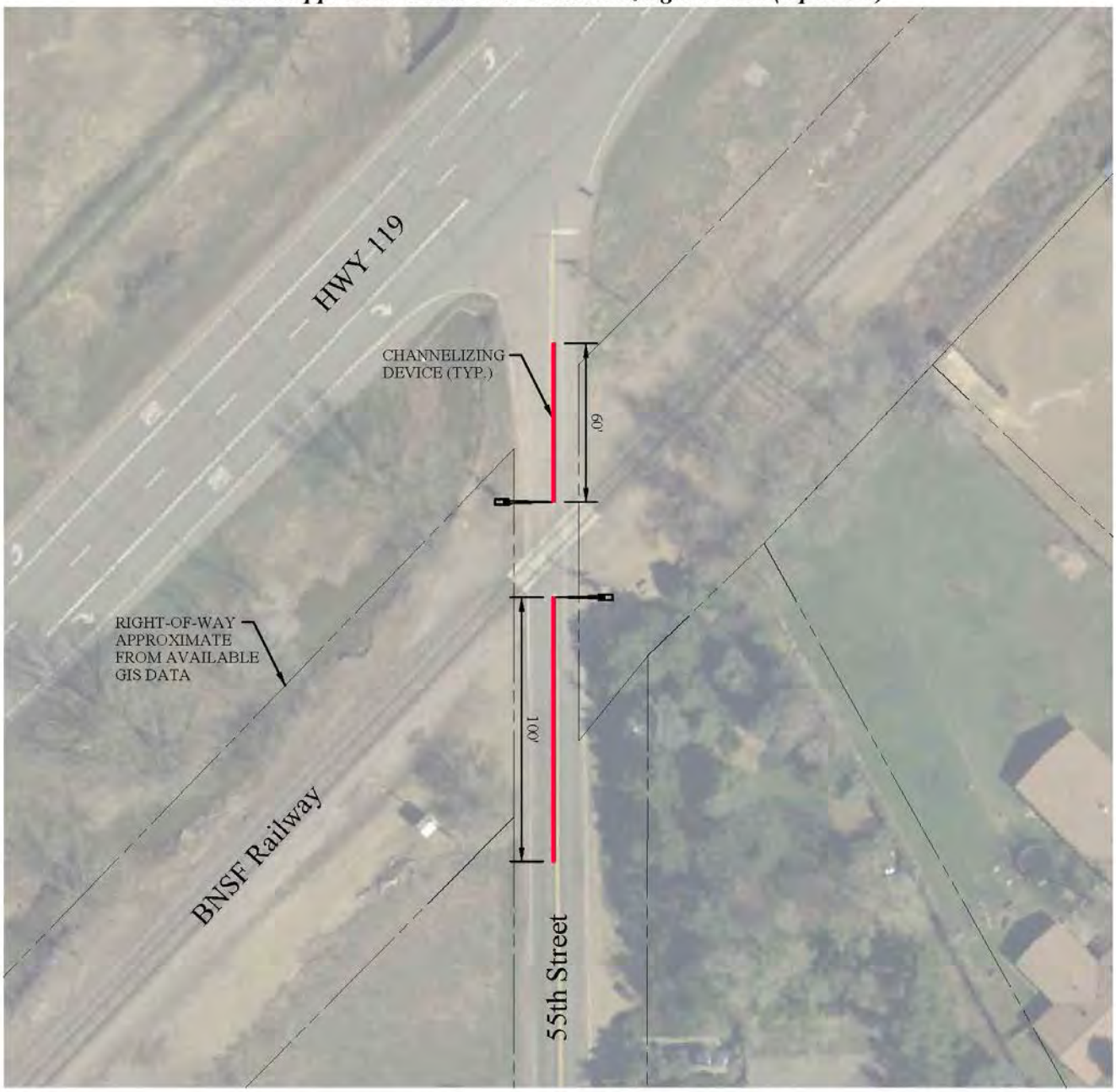
N
W E
S

SCALE: 1"=60'
0 30 60

BNSF RAILWAY

North 55th Street
US DOT #244824A
Main Line
SSM: Approach Gates with Channelizing Devices (Option 3)

Concept Crossing Improvements



NOTES:
1. Has CWT Circuitry.
2. Add channelizing devices on each approach for length shown (measured from railroad gate).
3. Add signing/striping per MUTCD.

LEGEND:

Existing Gate	Proposed Gate
Existing Median	Proposed Median
Existing Stop Bar	Proposed Curb and Gutter
Existing Cantilever	Proposed Wayside Horn
Existing Sign	Proposed Sign
Approximate centerline of road or railway (where needed for reference)	

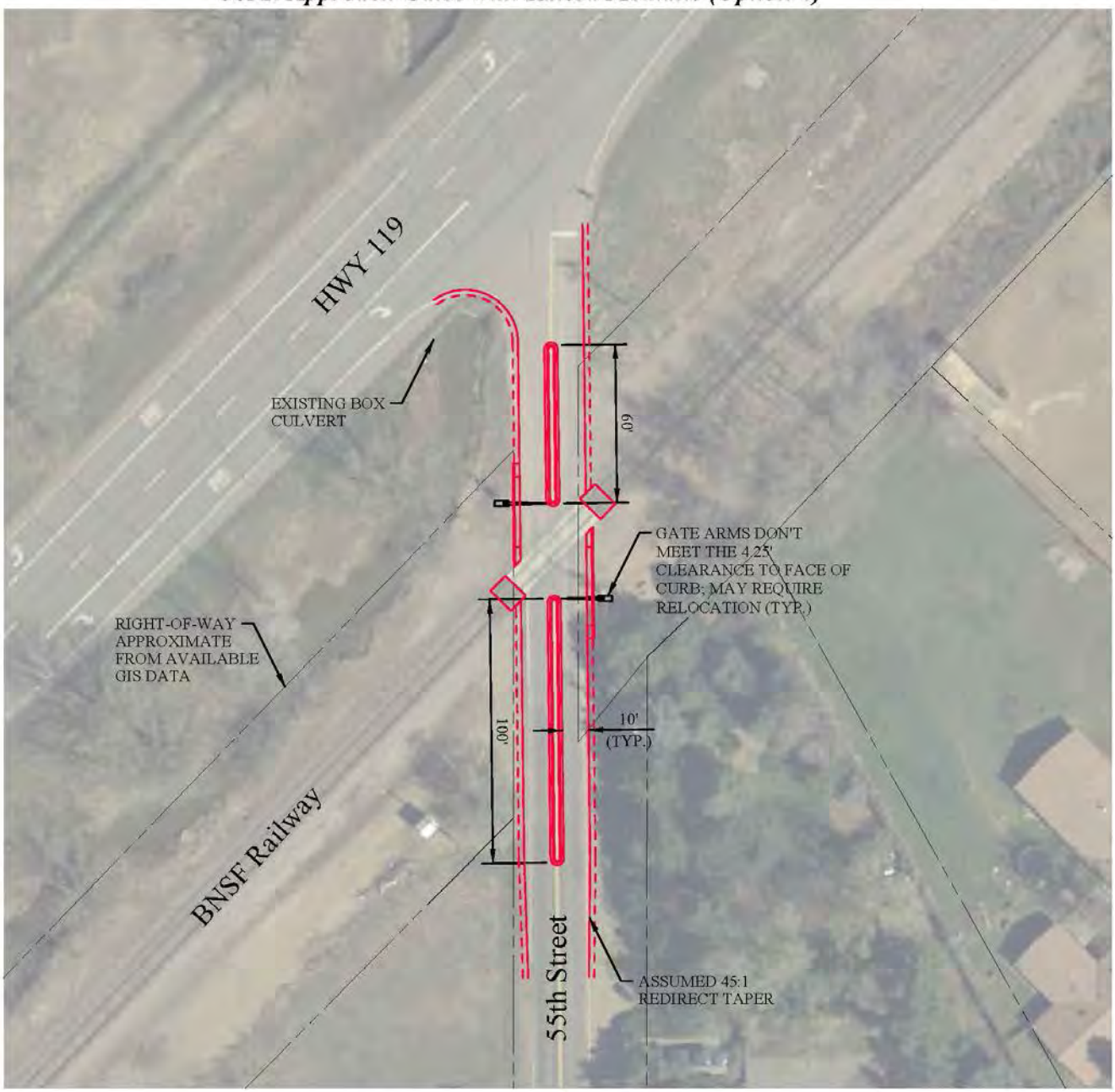
N
W E
S

SCALE: 1"=60'
0 30 60

BNSF RAILWAY

North 55th Street
US DOT #244824A
Main Line
SSM: Approach Gates with Raised Medians (Option 4)

Concept Crossing Improvements



NOTES:
1. Has CWT Circuitry.
2. Add medians on each approach for length shown (measured from railroad gate and along median front face of curb to face of curb).
3. Add signing/striping per MUTCD.
4. Requires roadway widening and additional crossing material to accommodate median.

LEGEND:

Existing Gate	Proposed Gate
Existing Median	Proposed Median
Existing Stop Bar	Proposed Curb and Gutter
Existing Cantilever	Proposed Wayside Horn
Existing Sign	Proposed Sign
Approximate centerline of road or railway (where needed for reference)	

N
W E
S

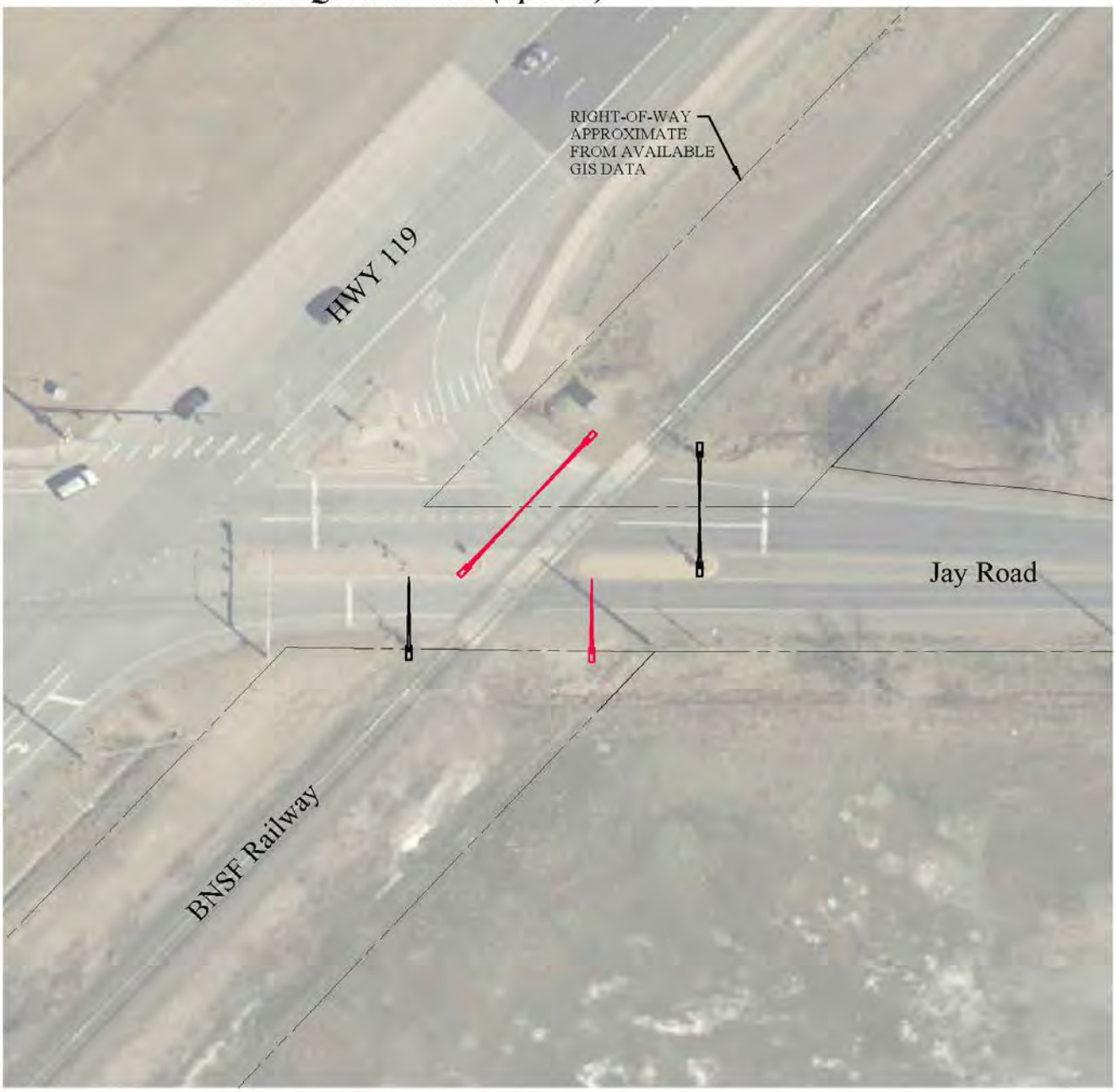
SCALE: 1"=60'

0 30 60

BNSF RAILWAY

Jay Road
US DOT #244823T
Main Line
SSM: 4-Quadrant Gates (Option 1)

Concept Crossing Improvements



NOTES:
1. Has CWT Circuitry.
2. Add railroad exit gates. two (2) WB exit gates installed parallel to track for allowable gate length and to also close accel lane to HWY 119.
3. Railroad signal bungalow may require upgrade to accommodate exit gate operation.
4. Add signing/striping per MUTCD.

LEGEND:

Existing Gate	Proposed Gate
Existing Median	Proposed Median
Existing Stop Bar	Proposed Curb and Gutter
Existing Cantilever	Proposed Wayside Horn
Existing Sign	Proposed Sign
Approximate centerline of road or railway (where needed for reference)	

N
W E
S

SCALE: 1"=60'
0 30 60

BNSF RAILWAY

Jay Road
US DOT #244823T
Main Line
SSM:Wayside Horns (Option 2)

Concept Crossing Improvements

NOTES:
1. Has CWT Circuitry.
2. Add wayside horns on each approach.
3. Add signing/striping per MUTCD.

LEGEND:

Existing Gate	Proposed Gate
Existing Median	Proposed Median
Existing Stop Bar	Proposed Curb and Gutter
Existing Cantilever	Proposed Wayside Horn
Existing Sign	Proposed Sign
Approximate centerline of road or railway (where needed for reference)	

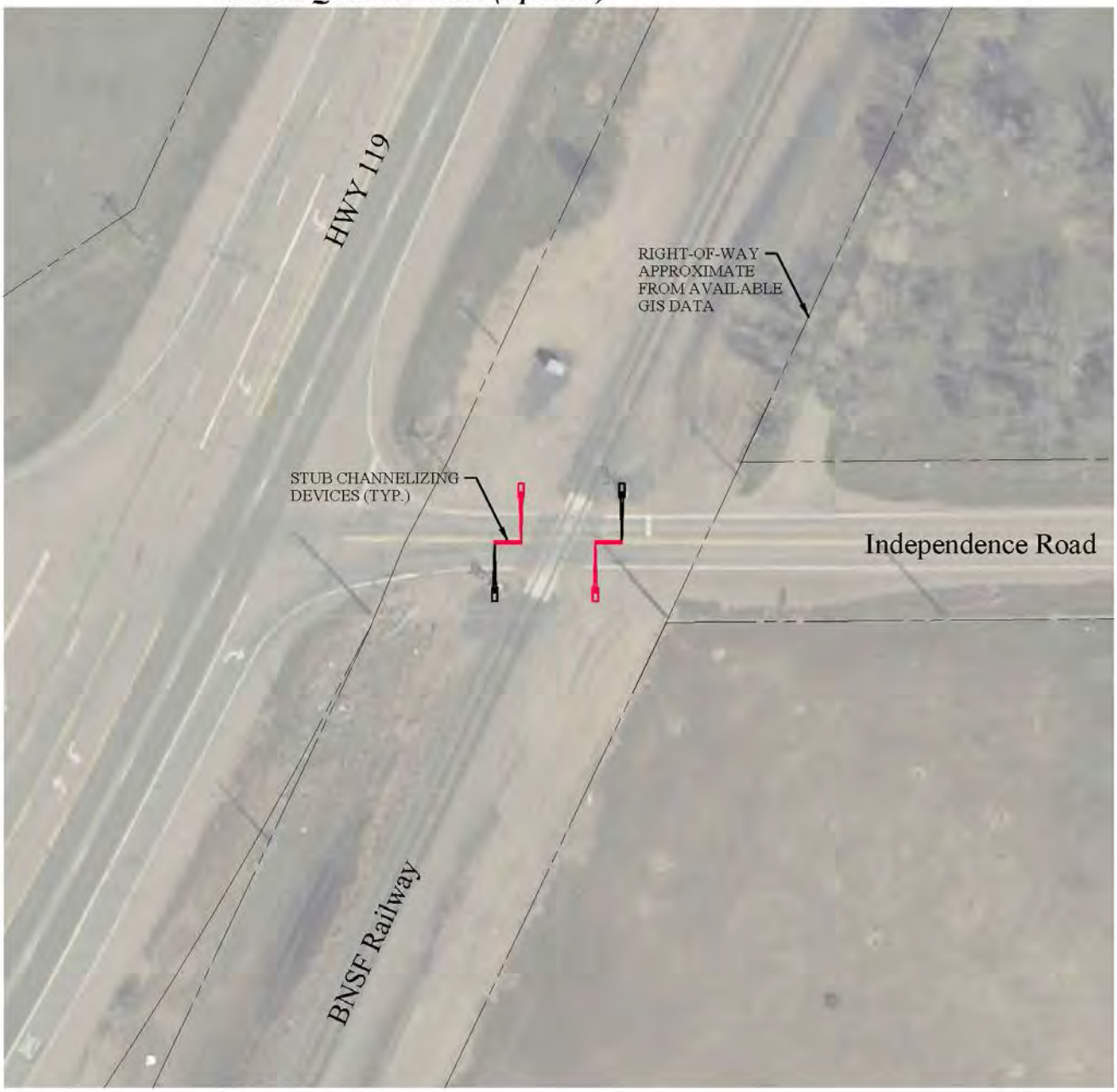
N
W E
S

SCALE: 1"=60'
0 30 60

BNSF RAILWAY

Independence Road
US DOT #244822L
Main Line
SSM: 4-Quadrant Gates (Option 1)

Concept Crossing Improvements



NOTES:
1. Has CWT Circuitry.
2. Stub channelizing devices required to close gap between gates in the down position due to skew.
3. Railroad signal bungalow may require upgrade to accomodate exit gate operation.
4. Add signing/striping per MUTCD.

LEGEND:
- Existing Gate
- Proposed Gate
- Existing Median
- Proposed Median
- Existing Stop Bar
- Proposed Curb and Gutter
- Existing Cantilever
- Proposed Wayside Horn
- Existing Sign
- Proposed Sign
- Approximate centerline of road or railway (where needed for reference)

N W E S

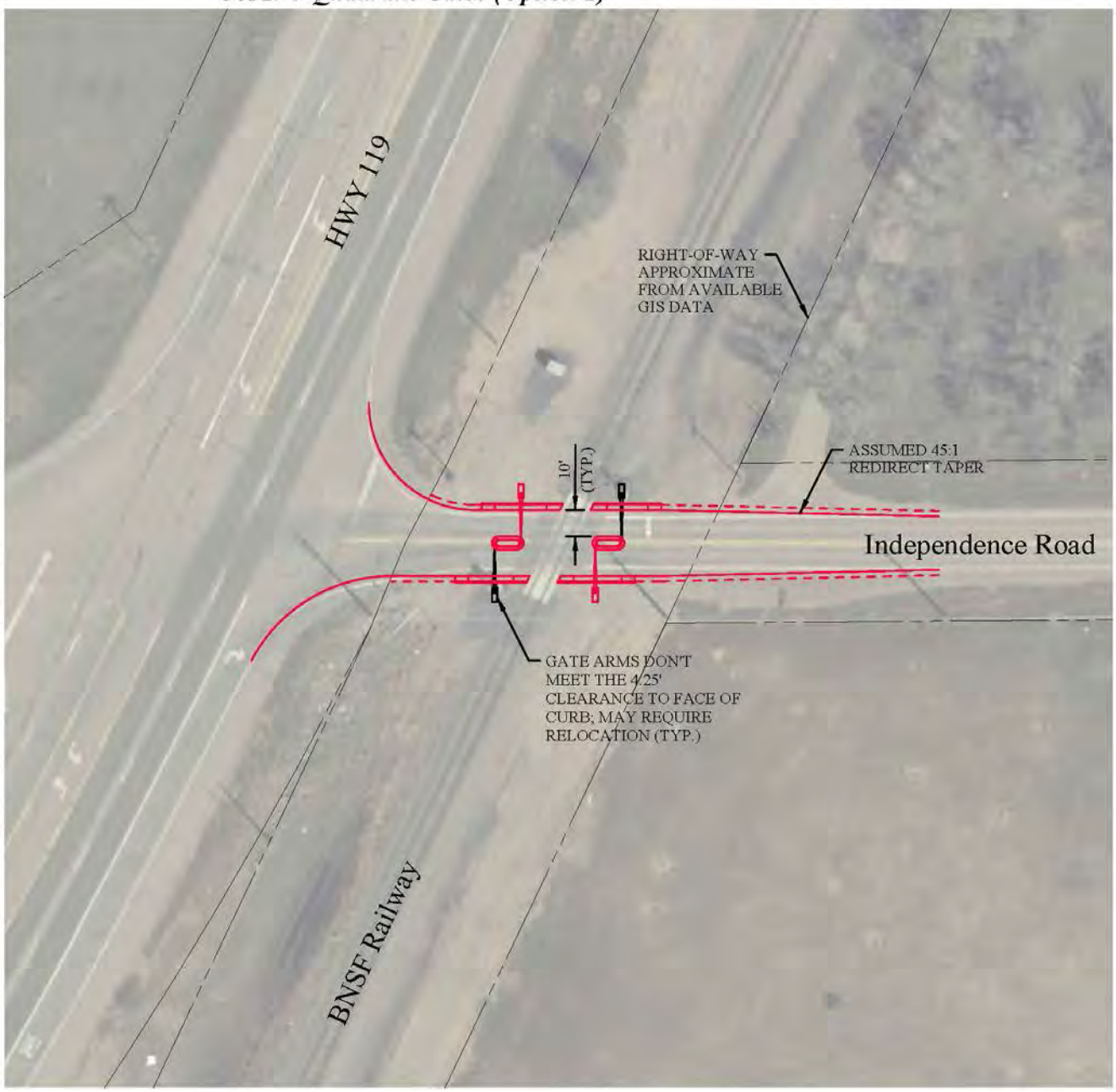
SCALE: 1"=60'

0 30 60

BNSF RAILWAY

Independence Road
US DOT #244822L
Main Line
SSM: 4-Quadrant Gates (Option 2)

Concept Crossing Improvements



NOTES:
1. Has CWT Circuitry.
2. Stub medians required to close gap between gates in the down position due to skew.
3. Railroad signal bungalow may require upgrade to accomodate exit gate operation.
4. Add signing/striping per MUTCD.

LEGEND:
- Existing Gate
- Existing Median
- Existing Stop Bar
- Existing Cantilever
- Existing Sign
- Proposed Gate
- Proposed Median
- Proposed Curb and Gutter
- Proposed Wayside Horn
- Proposed Sign
- Approximate centerline of road or railway (where needed for reference)

N W E S

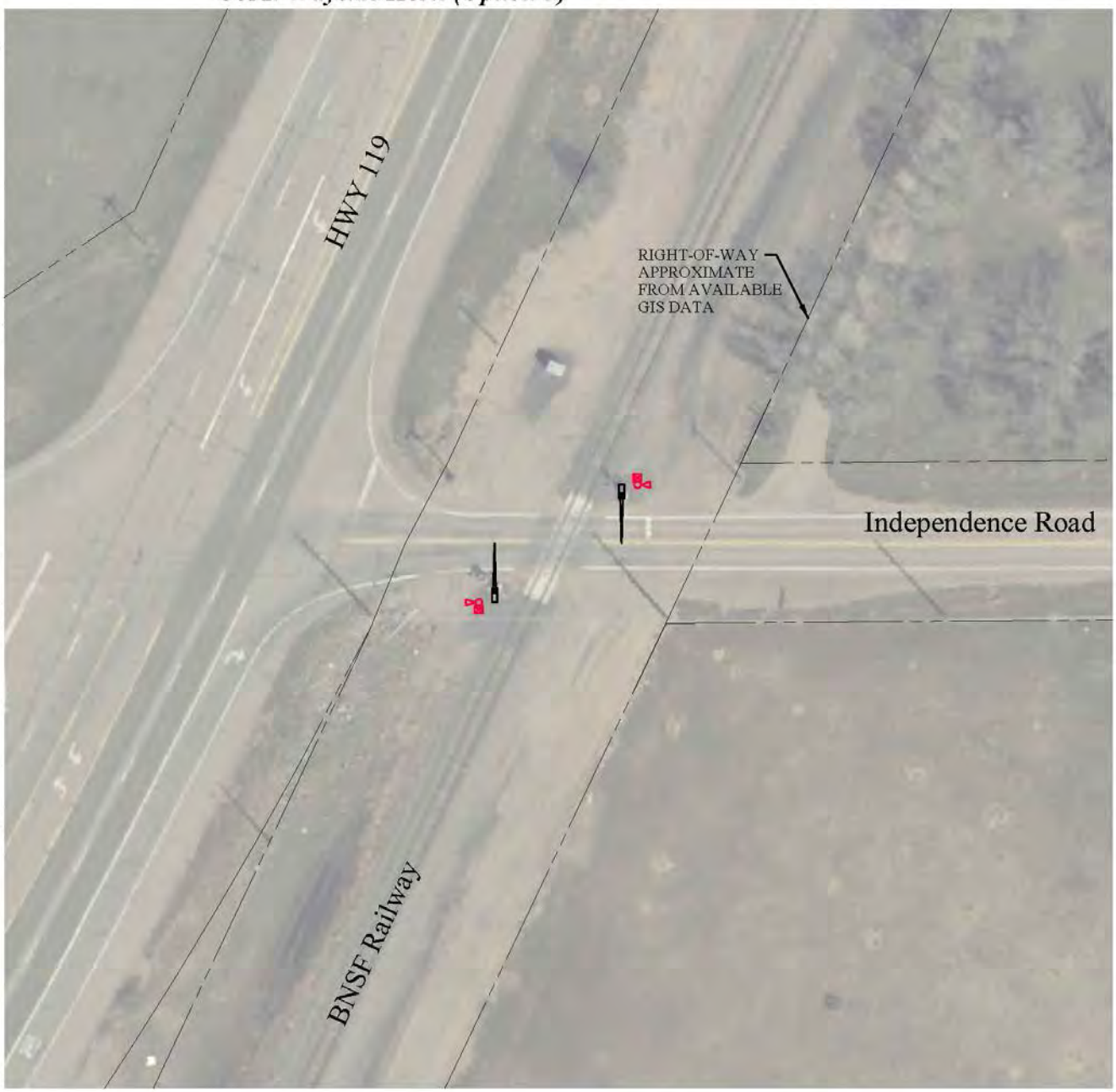
SCALE: 1"=60'

0 30 60

BNSF RAILWAY

Independence Road
US DOT #244822L
Main Line
SSM: Wayside Horn (Option 3)

Concept Crossing Improvements



NOTES:
1. Has CWT Circuitry.
2. Add wayside horns on each approach.
3. Add signing/striping per MUTCD.

LEGEND:

Existing Gate	Proposed Gate
Existing Median	Proposed Median
Existing Stop Bar	Proposed Curb and Gutter
Existing Cantilever	Proposed Wayside Horn
Existing Sign	Proposed Sign
Approximate centerline of road or railway (where needed for reference)	

N
W E
S

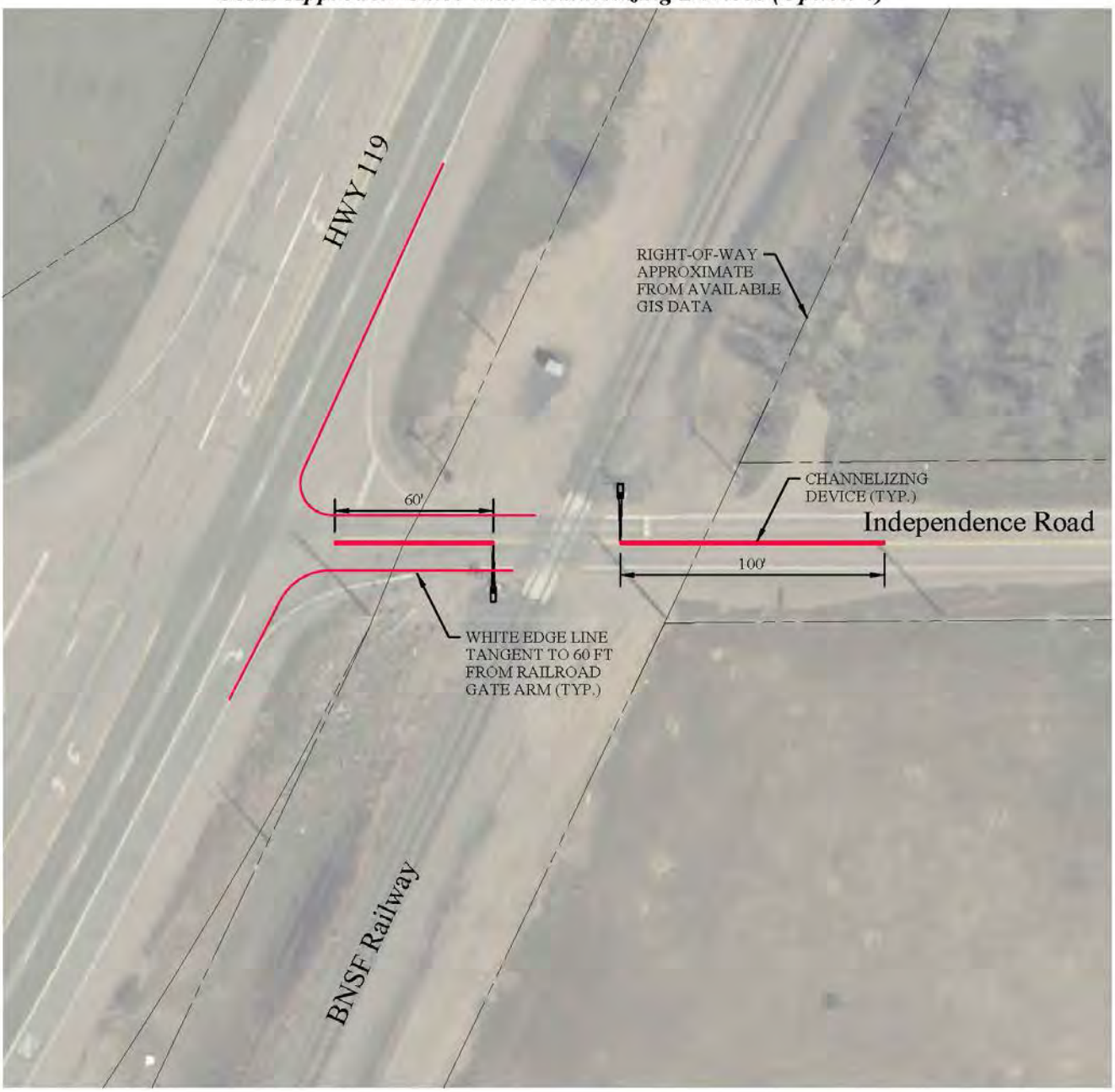
SCALE: 1"=60'
0 30 60

BNSF RAILWAY

Independence Road
US DOT #244822L
Main Line

Concept Crossing Improvements

SSM: Approach Gates with Channelizing Devices (Option 4)



NOTES:
1. Has CWT Circuitry.
2. Add channelizing devices on each approach for length shown (measured from railroad gate).
3. White edge line west of crossing must be tangent for 60 ft from railroad gate arm.
4. Add signing/striping per MUTCD.

LEGEND:
- Existing Gate
- Existing Median
- Existing Stop Bar
- Existing Cantilever
- Existing Sign
- Approximate centerline of road or railway (where needed for reference)
- Proposed Gate
- Proposed Median
- Proposed Curb and Gutter
- Proposed Wayside Horn
- Proposed Sign

N W E S

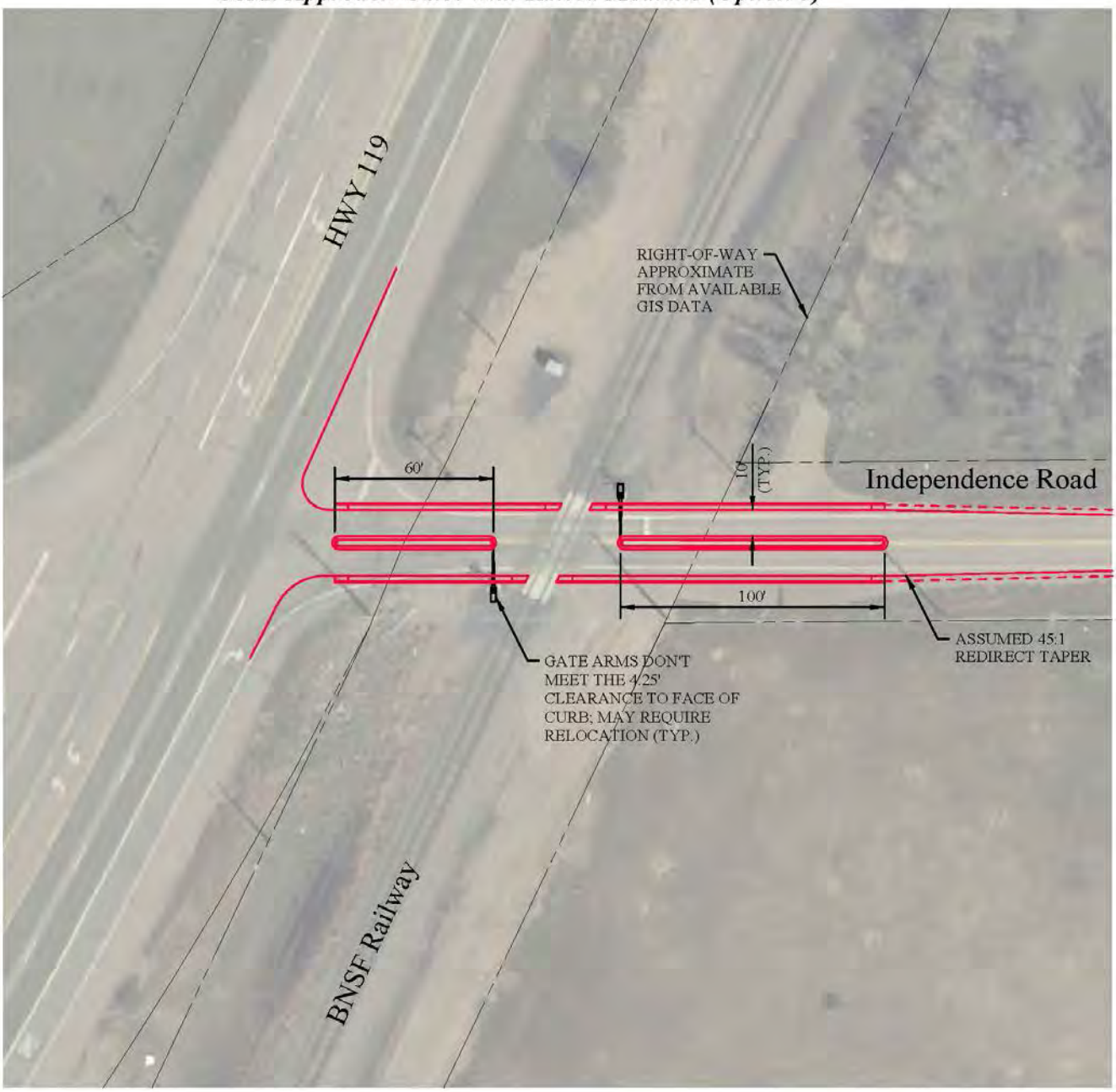
SCALE: 1"=60'

0 30 60

BNSF RAILWAY

Independence Road
US DOT #244822L
Main Line
SSM: Approach Gates with Raised Medians (Option 5)

Concept Crossing Improvements



NOTES:
1. Has CWT Circuitry.
2. Add medians on each approach for length shown (measured from railroad gate along median face of curb to face of curb).
3. Add signing/striping per MUTCD.
4. Requires roadway widening and additional crossing material to accommodate median.

LEGEND:
- Existing Gate
- Existing Median
- Existing Stop Bar
- Existing Cantilever
- Existing Sign
- Approximate centerline of road or railway (where needed for reference)
- Proposed Gate
- Proposed Median
- Proposed Curb and Gutter
- Proposed Wayside Horn
- Proposed Sign

N W E S

SCALE: 1"=60'

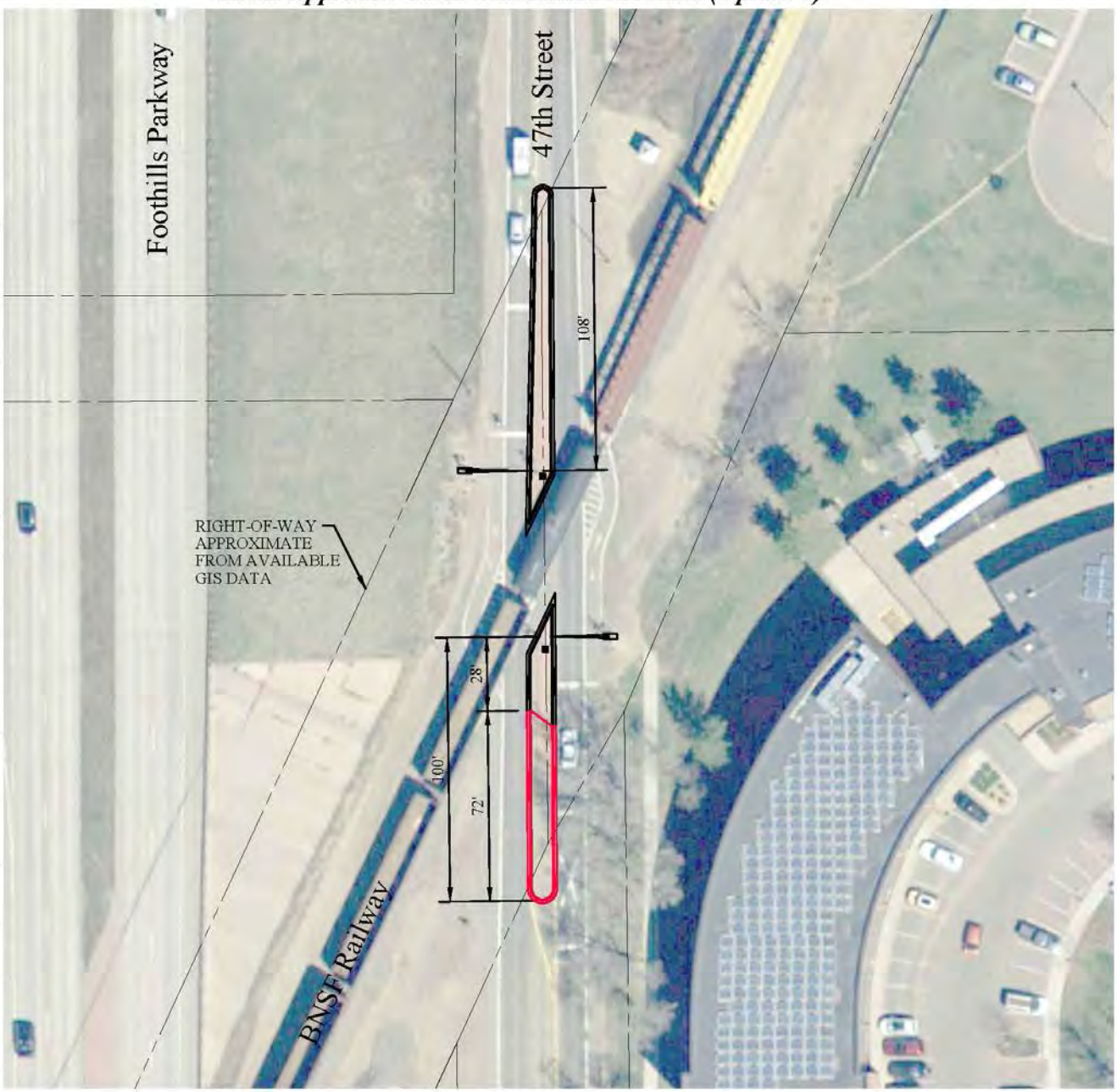
0 30 60

BNSF RAILWAY

47th Street
US DOT #244821E
Main Line

Concept Crossing Improvements

SSM: Approach Gates with Raised Medians (Option 1)



NOTES:
1. Has CWT Circuitry.
2. Has approach gates. Has raised medians.
3. North median is 100 ft (min.) from approach gate arm.
4. South median is 28 ft from approach gate arm. Extend median 72 ft to measure 100 ft (min.) from approach gate arm.
5. Add signing/striping per MUTCD.

LEGEND:
- Existing Gate
- Existing Median
- Existing Stop Bar
- Existing Cantilever
- Existing Sign
- Proposed Gate
- Proposed Median
- Proposed Curb and Gutter
- Proposed Wayside Horn
- Proposed Sign
- Approximate centerline of road or railway (where needed for reference)

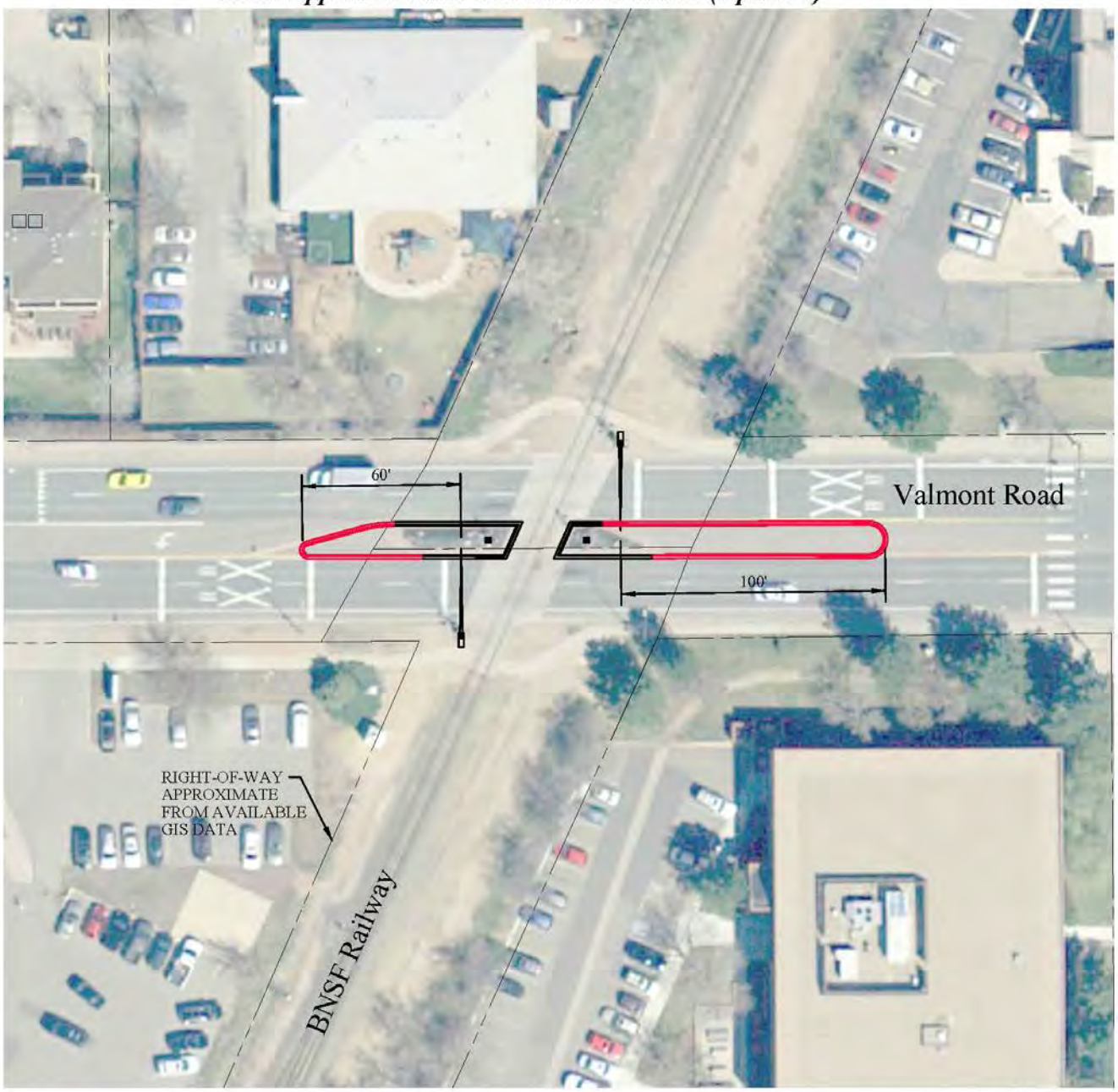
N
W E
S

SCALE: 1"=60'
0 30 60

BNSF RAILWAY

Valmont Road
US DOT #244818W
Main Line
SSM: Approach Gates with Raised Medians (Option 1)

Concept Crossing Improvements



NOTES:
1. Upgrade to CWT Circuitry; requires new bungalow; may require new gates.
2. Has approach gates. Has raised medians.
3. Extend west median to 60 ft from approach gate arm. Extend east median 100 ft from approach gate arm.
4. Add signing/striping per MUTCD.

LEGEND:
- Existing Gate
- Existing Median
- Existing Stop Bar
- Existing Cantilever
- Existing Sign
- Approximate centerline of road or railway (where needed for reference)
- Proposed Gate
- Proposed Median
- Proposed Curb and Gutter
- Proposed Wayside Horn
- Proposed Sign

N W E S

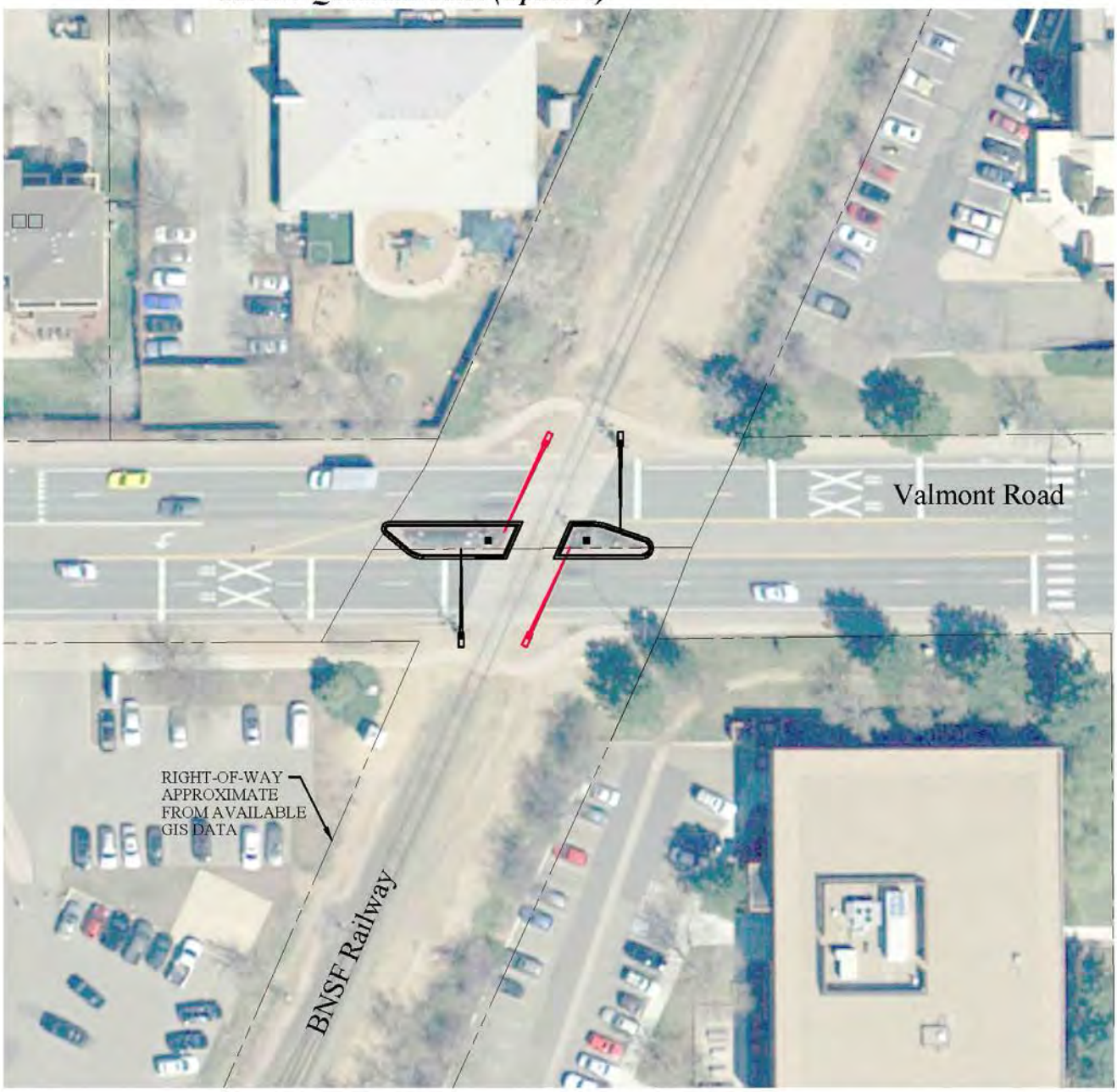
SCALE: 1"=60'

0 30 60

BNSF RAILWAY

Valmont Road
US DOT #244818W
Main Line
SSM: 4-Quadrant Gates (Option 2)

Concept Crossing Improvements



NOTES:
1. Upgrade to CWT Circuitry; requires new bungalow.
2. Add railroad exit gates parallel to tracks, to position gate base in available space.
3. Add signing/striping per MUTCD.

LEGEND:
- Existing Gate
- Existing Median
- Existing Stop Bar
- Existing Cantilever
- Existing Sign
- Proposed Gate
- Proposed Median
- Proposed Curb and Gutter
- Proposed Wayside Horn
- Proposed Sign
- Approximate centerline of road or railway (where needed for reference)

N W E S

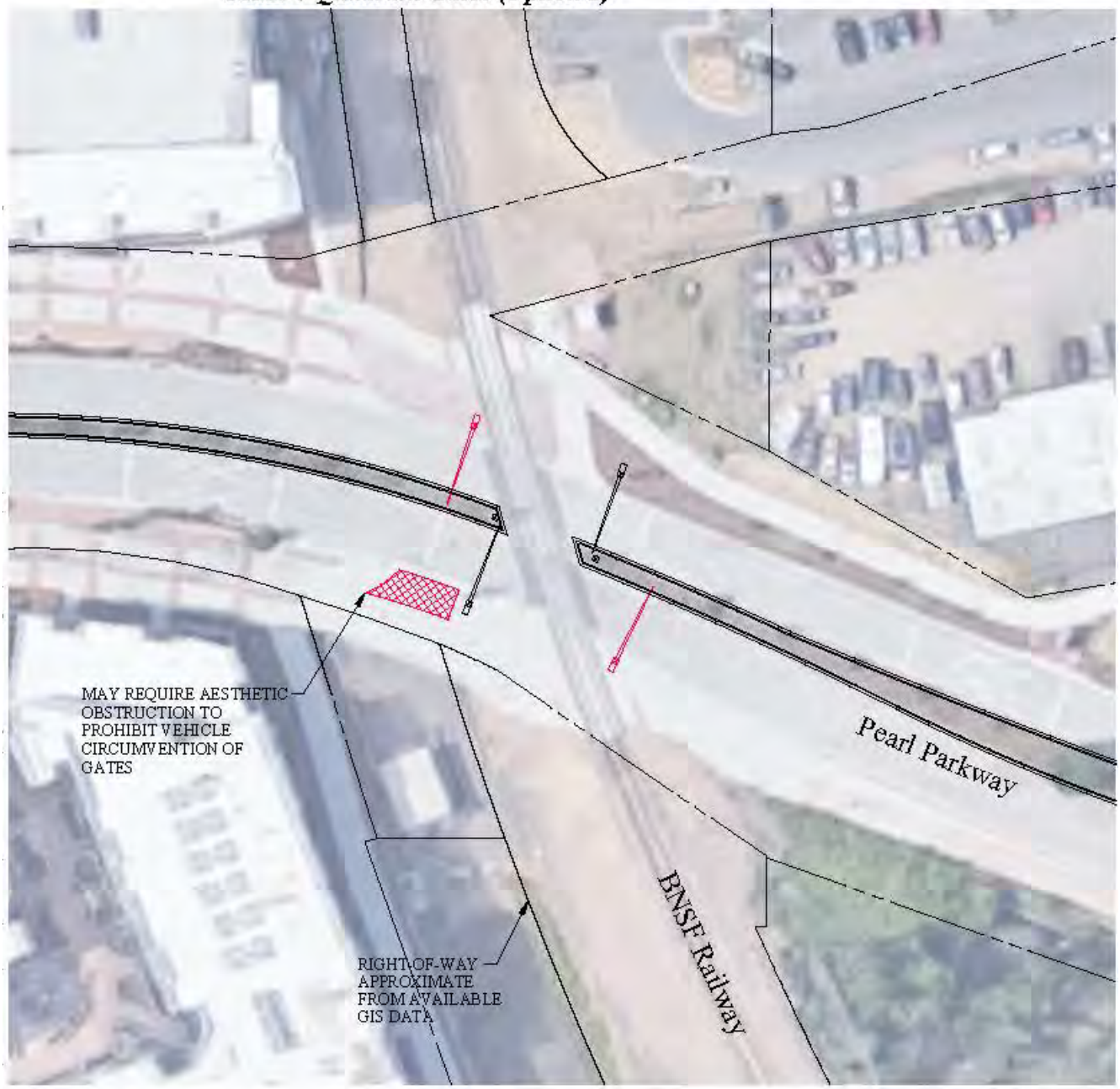
SCALE: 1"=60'

0 30 60

BNSF RAILWAY

Pearl Parkway
US DOT #244815B
Main Line
SSM: 4-Quadrant Gates (Option 1)

Concept Crossing Improvements



NOTES:
1. Confirm CWT Circuitry. Has approach gates.
2. Add railroad exit gates.
3. Add signing/striping per MUTCD.

LEGEND:

Existing Gate	Proposed Gate
Existing Median	Proposed Median
Existing Stop Bar	Proposed Curb and Gutter
Existing Cantilever	Proposed Wayside Horn
Existing Sign	Proposed Sign
Approximate centerline of road or railway (where needed for reference)	

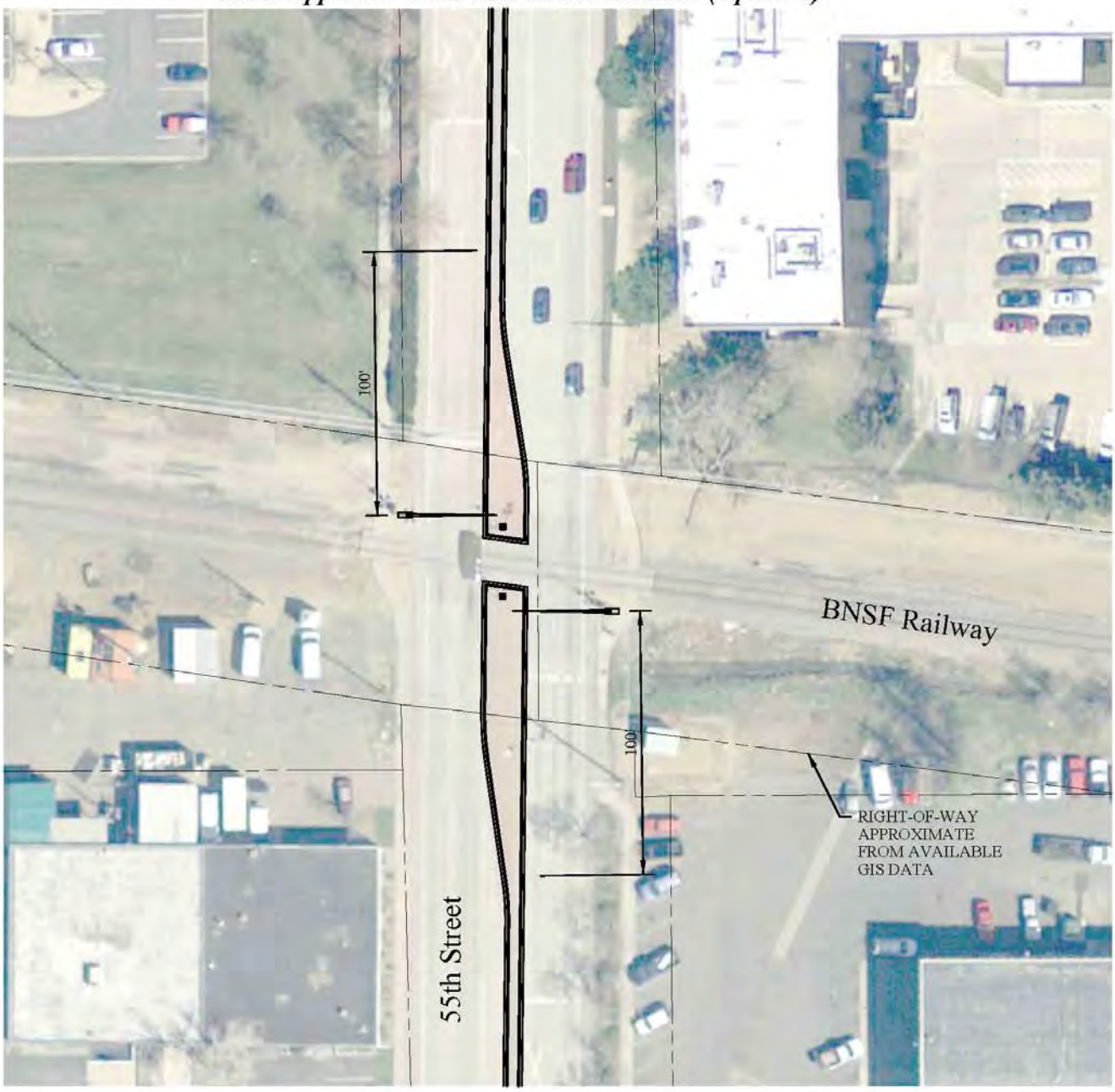
N
W E
S

SCALE: 1"=60'
0 30 60

BNSF RAILWAY

55th Street (south)
US DOT #244813M
Main Line
SSM: Approach Gates with Raised Medians (Option 1)

Concept Crossing Improvements



NOTES:
1. Upgrade to CWT Circuitry; requires new bungalow.
2. Has approach gates. Has raised medians.
3. Both approach medians are 100 ft. (min.) from the approach gate arms.
4. Add signing/striping per MUTCD.
5. Note railroad gates may require upgrade for compatibility with CWT Circuitry.

LEGEND:
- Existing Gate
- Existing Median
- Existing Stop Bar
- Existing Cantilever
- Existing Sign
- Proposed Gate
- Proposed Median
- Proposed Curb and Gutter
- Proposed Wayside Horn
- Proposed Sign
- Approximate centerline of road or railway (where needed for reference)

N W E S

SCALE: 1"=60'

0 30 60

BNSF RAILWAY

55th Street (south)
US DOT #244813M
Main Line
SSM: Wayside Horns (Option 2)

Concept Crossing Improvements

NOTES:
1. Upgrade to CWT Circuitry; requires new bungalow.
2. Add wayside horns on each approach.
3. Add signing/striping per MUTCD.

LEGEND:

Existing Gate	Proposed Gate
Existing Median	Proposed Median
Existing Stop Bar	Proposed Curb and Gutter
Existing Cantilever	Proposed Wayside Horn
Existing Sign	Proposed Sign
Approximate centerline of road or railway (where needed for reference)	

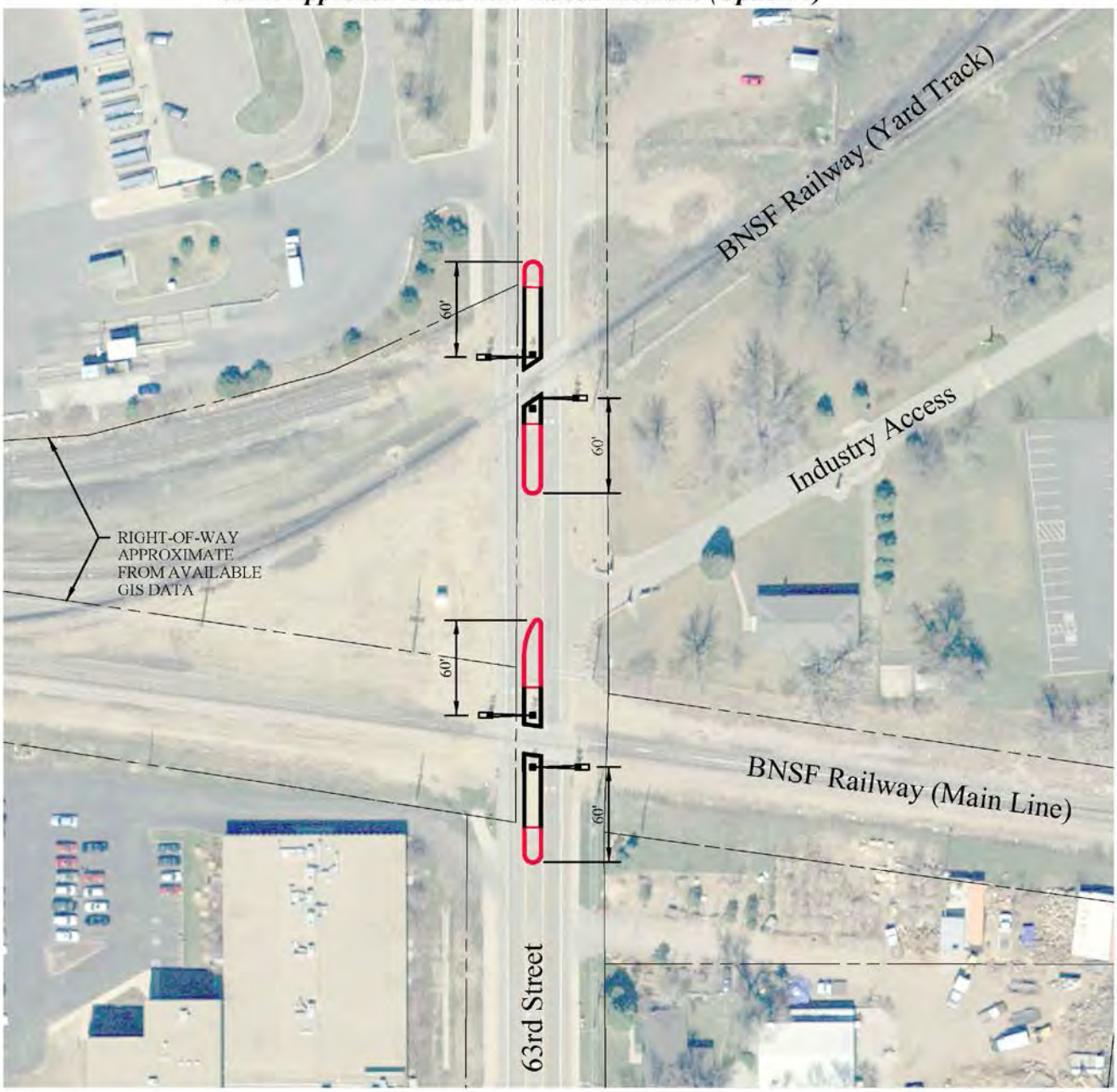
N
W E
S

SCALE: 1"=60'
0 30 60

BNSF RAILWAY

63rd Street (south)
US DOT #244811Y
Main Line/Yard Track
SSM: Approach Gates with Raised Medians (Option 1)

Concept Crossing Improvements



NOTES:
1. Has CWT Circuitry; single bungalow.
2. Extend existing raised medians to 60' from approach gate arms on all approaches.
3. Taper median north of Main Line to allow for SB turn movement from industry (east of 63rd).
4. Add signing/striping per MUTCD.

LEGEND:
- Existing Gate
- Existing Median
- Existing Stop Bar
- Existing Cantilever
- Existing Sign
- Proposed Gate
- Proposed Median
- Proposed Curb and Gutter
- Proposed Wayside Horn
- Proposed Sign
- Approximate centerline of road or railway (where needed for reference)

N W E S

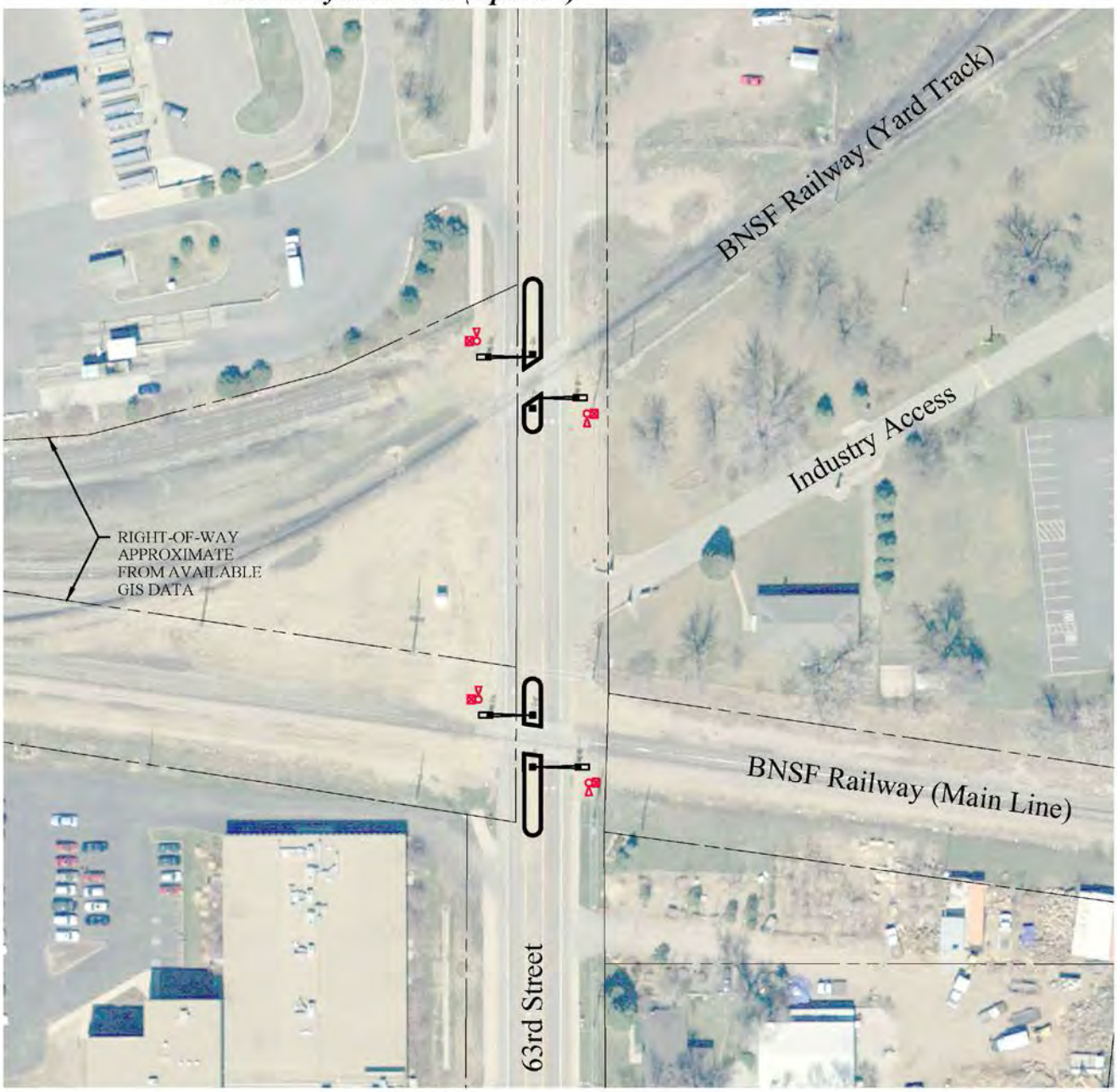
SCALE: 1"=100'

0 50 100

BNSF RAILWAY

63rd Street (south)
US DOT #244811Y
Main Line/Yard Track
SSM: Wayside Horns (Option 2)

Concept Crossing Improvements



NOTES:
1. Has CWT Circuitry; single bungalow.
2. Add wayside horns on each approach.
3. Add signing/striping per MUTCD.

LEGEND:

Existing Gate	Proposed Gate
Existing Median	Proposed Median
Existing Stop Bar	Proposed Curb and Gutter
Existing Cantilever	Proposed Wayside Horn
Existing Sign	Proposed Sign
Approximate centerline of road or railway (where needed for reference)	

N W E S

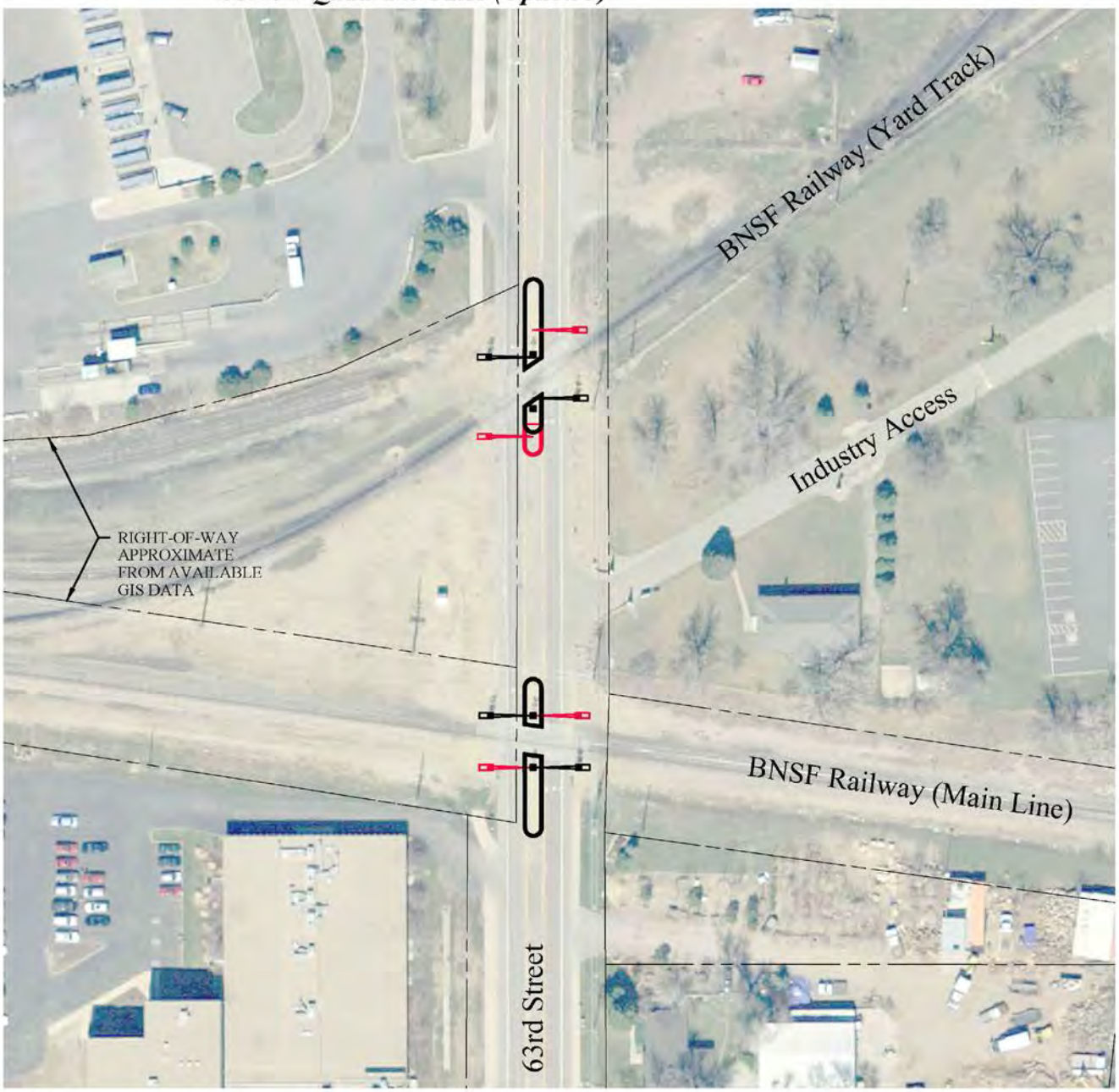
SCALE: 1"=100'

0 50 100

BNSF RAILWAY

63rd Street(south)
US DOT #244811Y
Main Line/Yard Track
SSM: 4-Quadrant Gates (Option 3)

Concept Crossing Improvements



NOTES:
1. Has CWT Circuitry; single bungalow.
2. Add railroad exit gates.
3. Railroad signal bungalow may require upgrade to accommodate exit gate operation.
4. Add signing/striping per MUTCD.
5. Extend median south of yard track to end of new exit gate (min.).

LEGEND:
- Existing Gate
- Existing Median
- Existing Stop Bar
- Existing Cantilever
- Existing Sign
- Proposed Gate
- Proposed Median
- Proposed Curb and Gutter
- Proposed Wayside Horn
- Proposed Sign
- Approximate centerline of road or railway (where needed for reference)

N W E S

SCALE: 1"=100'

0 50 100

V. Evaluation of Quiet Zone Concept Improvements

A. Safety Considerations

Northern Segment

The northern segment of BNSF track runs parallel and to the east of Highway 119 between Boulder and Longmont, Colorado. The crossings of North 63rd Street, North 55th Street, Jay Road and Independence Road are within the segment that is parallel to Hwy 119. The distance between the two corridors varies between 80 feet and 95 feet, measured from edge of pavement of Highway 119 to centerline of track of the BNSF Railway.

The four northern roadways cross the railroad tracks on a skew, which can create a gap between railroad approach gates for drivers to attempt to circumvent the gates, when in the down position. This can be a safety concern when considering crossings for quiet zone establishment.

Traffic control along this corridor varies by roadway crossing. At the northern crossings, there is a wide separation between the two directions of travel along Highway 119. This allows for vehicles entering the highway to wait for a gap in traffic, and maneuver crossing one direction of travel at a time. North 63rd Street and Jay Road have existing traffic signals at their respective intersections with Highway 119. North 55th and Independence Road are stop controlled at their respective intersections with Highway 119. At this time, neither of the stop-controlled roadways is slated for traffic signals at Highway 119.

Current traffic counts were obtained along many of these northern roadways being evaluated as part of this study. To date, there are no concerns regarding queuing traffic backing up over the tracks along any roadway, due to the amount of vehicle storage between Highway 119 and the railroad tracks, and vehicles waiting for a gap in traffic along Hwy 119 to enter the highway.

Southwest Segment

The next three crossings to the south and west across 47th Street, Valmont Road and Pearl Parkway, pass through more densely residential and commercial areas. All three roadways have bike lanes or adjacent parallel pathways for non-motorized use. A thorough public outreach program educating the community on safety awareness around railroad quiet zones should be conducted for the entirety of the corridor. Additional information should be provided to businesses and residents in close proximity to crossings where train horns are to be silenced. While active warning devices at the public vehicular at-grade crossings provide adequate warning for non-motorized sidewalks and paths within 25 feet of the travel way (per MUTCD), more awareness is needed for 'distracted users', who may be using a phone/tablet/surface while walking, or may be using headphones or ear buds, and my not see railroad gates descending, or hear crossing bells sounding.

East Segment

The remaining portion of the track to the east passes through predominantly commercial and industrial areas, with residential development south of Arapahoe Avenue, about ¼ mile south. Both 55th Street and 63rd Street on the south end are treated with gates, flashers, cross bucks and raised medians with additional post-mounted flashers. Consideration should be given to vehicle turning movements, particularly trucks, and property access and circulation relative to the crossings such that the improvement installations for quiet zone establishment are not unnecessarily damaged, or become long term maintenance issues for the City.

B. Field Diagnostic Review

A field diagnostic review was held on January 17, 2017 along this corridor to review existing crossing conditions, discuss any safety concerns, and identify the viability of concept crossing improvements for quiet zone establishment. The diagnostic team met onsite at each crossing, and included staff from the City of Boulder, BNSF Railway, Federal Railroad Administration, Colorado Public Utilities Commission, and Boulder County (for crossings within the County's jurisdiction). Key results and action items of the Field Diagnostic Review are listed below. Meeting minutes produced and distributed to all attendees of the field diagnostic review are included in **Appendix D**.

Key Results and Action Items:

- BNSF staff was asked to verify the type of circuitry at each crossing, to assist in identifying potential modifications or upgrades that may be needed for certain quiet zone treatment options.
- A letter of request for interpretation will be developed and sent to the FRA Associate Administrator asking for the Administration's interpretation of the viability of SSM treatments of Approach Gates with Raised Medians or Channelization Devices at crossings where the egress turn lane from the crossing roadway to Hwy 119 is within 60 feet of the approach railroad gate arm. At these locations, Hwy 119 is divided, with a natural median of 160 to 320 feet in width, which precludes the possibility of wrong direction travel through the close proximity turn lane, to circumvent an approach railroad gate in the down position.
- A letter of request for interpretation will be developed and sent to the FRA Associate Administrator asking for the Administration's interpretation of the viability of SSM treatment of Approach Gates with Raised Medians at the Pearl Parkway crossing. West of this crossing, there are driveways into the adjacent developments that are within 60 feet of the approach railroad gate arm, but function in a way where wrong direction travel to circumvent an approach gate in the down position, is not possible.

C. Noise Contour Diagram

A Noise Contour Diagram was developed to show a generalized level of noise surrounding the BNSF corridor from North 63rd Street to 63rd Street on the south. These contours can be used by the City to approximate the number of residential units within each noise contour range to estimate the number of residences that may be affected by train horn noise in proximity to each crossing. This element of evaluation may assist in the determination of grouping the crossings into economically feasible projects for pursuit as funding allows.

A Noise Contour Diagram is included in **Appendix C** of this report.

D. Concept Costs

FHU generated an opinion of conceptual level construction costs for each Quiet Zone Improvement option. Roadway improvement costs are taken from current industry information for materials and utilize approximate percentages of construction items to estimate drainage, stormwater management, construction traffic control, mobilization, signing & striping, and contingencies. Costs for railroad elements are also taken from current, available industry information for materials and labor. It should be noted that these costs are conceptual in nature and conservative, and would be refined as the City proceeds into design of actual crossing improvements.

Concept costs for each crossing option are shown in **Table 12**.

Table 12. Opinion of Conceptual Costs

			SSM Options					
CROSSING	STREET	M.P.	Raised Medians	Channelizing Devices	4-Quad Gates	Wayside Horns	Opinion of Construction Cost Rounded	Comments/Assumptions
244827V	North 63rd Street	35.29			X		$432,000	CWT upgrade & new gates
						X	$312,000	CWT upgrade & 3 horns
244824A	North 55th Street	33.77			X		$432,000	CWT upgrade & new gates
						X	$240,000	CWT upgrade & 2 horns
				X			$156,000	1-60 ft & 1-100 ft channelizing devices
			X				$180,000	1-60 ft & 1-100 ft medians; some curb/gutter
244823T	Jay Road	33.25			X		$480,000	3 exit gates & CWT upgrade
						X	$240,000	CWT upgrade & 2 horns
244822L	Independence Road	32.33			X		$492,000	CWT upgrade; 2 exit gates; stub channeliz.
					X		$516,000	CWT upgrade; 2 exit gates; stub medians
						X	$240,000	CWT upgrade & 2 horns
				X			$156,000	1-60 ft & 1-100 ft channelizing devices
			X				$216,000	1-60 ft & 1-100 ft medians; full curb/gutter
244821E	47th Street	32.04	X				$72,000	South median extension to 100 ft
244818W	Valmont Road	31.45	X				$0 [(1)]	CWT/gates/medians (under separate project)
					X		$432,000	CWT upgrade & new gates
244815B	Pearl Parkway	27.83			X		$175,000 [(2)]	Add two (2) exit gates only
244813M	55th Street (south end)	26.38	X				$216,000	CWT upgrade & new gates
						X	$240,000	CWT upgrade & 2 horns
244811Y	63rd Street (south end)	25.37	X				$144,000	Extension of 4 medians to 60 ft
					X		$528,000	CWT upgrade & new gates
						X	$384,000	CWT upgrade & 4 horns

[(1)] Valmont Road is scheduled to receive upgraded CWT circuitry, new railroad approach gates, crossbucks, flashers, and bells as part of a crossing improvement project scheduled for construction in 2018. Additionally, this crossing will receive raised medians measuring 100 feet from the approach railroad gates on each approach. This construction, upon completion, will render this crossing quiet zone compliant by means of the SSM installation of Approach Gates with Raised Medians, and require no additional improvements, resulting in no further anticipated cost. It is noted that if this scheduled construction project does not occur, the previous estimated concept cost of $216,000, would remain applicable.

[(2)] Per City Staff, crossing improvements completed at the crossing of Pearl Parkway at the BNSF tracks included CWT circuitry, new railroad approach gates, crossbucks, flashers and bells, along with conduit in preparation for exit railroad gates to be added for a 4-quadrant gate installation. Therefore, this cost assumes installation and connection of two (2) exit railroad gates only, to complete the 4-quadrant gate installation, and assumes that all existing equipment can remain without upgrade. This installation, upon completion, would render this crossing quiet zone compliant by means of the SSM installation of 4-Quadrant Gates. It is noted that if the exit gates are not installed in the near term, and the existing equipment becomes antiquated such that at the time of exit gate installation, the exit gate technology is newer and does not properly communicate with the existing equipment, then all of the railroad crossing warning system will need to be upgraded, and the previous estimated concept cost of $432,000, would remain applicable.

VI. IMPLEMENTATION PLAN

A. Funding and Oversight

State jurisdiction over railroad safety is extremely broad, however most areas have been preempted by the federal government. The Public Utilities Commission (PUC) of Colorado has primary jurisdiction over all public highway-rail crossings, including the opening and closing of at-grade crossings, upgrading of crossings, overpasses or underpasses, and the allocation of costs for grade separations, if requested. All economic jurisdiction over railroads that are part of the national railroad system come under the jurisdiction of the Surface Transportation Board.

Typically, applications to the PUC are required for highway-railroad crossings if the roadway is being widened, if additional crossing elements (such as pedestrian walkways, bike trails, etc.) are being added to a crossing, or if there are operational changes on the part of the railroad. The following activities do not require a PUC application:

1. Replacement of the roadway crossing surface material (provided the surface is not being lengthened to widen the roadway)
2. Placement or replacement of approach signing or striping in accordance with MUTCD standards
3. Slight raising or lowering of the crossing to match approaches for smoothness

Per PUC regulations, costs for improvements to at-grade crossings are allocated to the road authority and railroad as follows:

1. Surfacing
    a. Road Authority
        i. Crossing material and maintenance
        ii. Road approach material, labor and maintenance
    b. Railroad
        i. Labor to install crossing material
        ii. Track, tie, ballast, subballast material, labor and maintenance

2. Signing, Striping and Signals
    a. Road Authority
        i. Approach warning signs and pavement striping in accordance with MUTCD
        ii. Signal improvements if the road authority is the project proponent
    b. Railroad
        i. Crossing sign (cross bucks)

<u>Federal and State Funding</u>

The recent passing of the Fixing America's Surface Transportation (FAST) Act has provided more federal level funding availability for crossing improvements that could assist communities in working toward quiet zone compliance. Historically, none of the funding opportunities specifically indicated use for quiet zones. However, the more recent funding announcements provide several grant options that could include improvements that render crossings quiet zone compliant, as well as a grant program that specifically includes quiet zone projects. The following is a summary of some of the programs and funding available:

Colorado Section 130 Funds: The Federal Section 130 railroad/highway hazard elimination program (Section 130 Funding) is a source of federal funds available for crossing safety improvements. CDOT allocates the Federal Section 130 money for the State of Colorado for at-grade crossings and grade separated crossings.

CDOT now receives approximately $5.0 million in funding from the Federal government each year for Section 130 crossings improvements. As a general rule, about half of the funding is budgeted for the additional of railroad flashing lights and gates at crossings. CDOT utilizes a hazard index analysis to prioritize crossings in need of safety improvements, and allocates funding to those crossings accordingly each year.

Activities eligible for the use of Section 130 safety funds are as follows:

- Crossing consolidations (including the funding of incentive payments up to $15,000 on a 50-percent matching basis to local jurisdictions for crossing closures).
- Installation of grade separations at crossings or repair of existing grade separations.
- Signing.
- Pavement marking.
- Illumination.
- New highway-railroad grade crossing signals.
- Upgraded highway-railroad grade crossing signals or circuits.
- Improved crossing surfaces.
- Traffic signal interconnection/preemption.
- Sight distance or geometric improvements.
- Data improvements (up to 2 percent of apportionment).

Nationally Significant Freight and Highway Projects Funding: This is a competitive grant process through the USDOT. Grants must be at least $25 million. Eligible applicants include states, MPOs over 200,000 in population, local governments, political subdivisions of a state or local government, tribal governments, public authority with a transportation function, and federal land management agencies jointly applying with a state. Eligible projects include highway freight projects, rail freight projects, and railway-highway grade crossings or grade separation projects. There are other stipulations to the government's allocation of this funding that can be reviewed on the USDOT website.

TIGER Grant Funding: Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant program provides funds for surface transportation projects that will have a significant impact on the Nation, a metropolitan area or a region. Within Colorado, the Town of Windsor was successful in their pursuit of TIGER V funds for quiet zone improvements to 13 at-grade crossings within the Town's limits. Since the program was established in 2009, the types of projects receiving TIGER Grant funds have become more diverse and the locations, more widespread. This funding is a viable option for funding quiet zone improvements.

Intercity Passenger Rail Funding: This new Grant Program is to assist in financing the cost of improving passenger and freight rail. This grant program specifically indicates that eligible projects include Positive Train Control (PTC), capital projects, highway-rail grade crossing projects, including quiet zones. Federal share is limited to 80%, giving preference to projects requesting 50% or less, and setting aside 25% for rural areas. Funding under this program is subject to annual appropriations. Although the City does not currently have passenger rail, current freight rail operations and planned commuter rail through the City may allow for pursuit of this funding if City funds can be allocated to support the non-subsidized portion.

Other Funds: Other potential funding sources include local General Fund, Sales Tax revenue, Special Districts, Tax Increment Financing (TIF) and Federal earmarks. The Federal Railroad Administration also offers a loan

program specifically titled Railroad Rehabilitation & Improvement Financing (RRIF) Program that provides direct loans and loan guarantees to finance a variety of acquisitions or improvements related to railroad equipment or facilities, including track. It should be mentioned that any use of federal funding would trigger studies following the National Environmental Policy Act (NEPA). The cost to perform NEPA studies are not included in the estimates provided in this report.

B. Crossing Groups and Associated Costs

Many communities interested in quiet zone establishment prioritize and phase crossing improvements over a period of time to allow for budgeting, planning and design, and to spread the costs out, making the overall pursuit more affordable.

The Final Rule indicates a necessary length for a quiet zone of ½ mile. Therefore, ¼ mile is needed on each side of each crossing to meet this criterion. Where crossings are in closer proximity than ¼ mile, these crossings need to be addressed as a corridor, in order to render the series of crossings quiet.

There are no crossings being evaluated as part of this study that are within ¼ mile of each other along this BNSF corridor. Therefore, no crossings are required to be treated for quiet zone compliance concurrent with any other crossings. However, there are clusters of crossings that may affect the same general noise receptor areas, such as similar residential communities, and therefore should be considered for quiet zone establishment concurrently or in close succession for maximum benefit.

The City requested consideration of logical grouping of the crossings based on location, type of treatment and amount of existing crossing warning devices currently in place that contribute to quiet zone establishment. It should be noted that the grouping of crossings is not intended to represent a prioritization, but rather the names of the crossings that may be addressed at the same time, due to proximity or other issues. The logically grouped crossings are as follows:

Group 1 Crossings – North 55th Street and Jay Road. While these two crossings are not required to be treated together, the ½ mile distance between them places them in close enough proximity that there is benefit in establishing both crossings as quiet zones in relatively close succession.

North 55th Street currently has active warning devices including approach railroad gates, flashers, cross bucks and CWT circuitry. The location of the track crossing is further from the intersection of North 55th Street with the diagonal Hwy 119, which allows for consideration of Raised Medians or Channelizing Devices at this crossing for quiet zone establishment. For installation of a standard 3-foot wide median, the concept layout on available aerials suggests additional crossing material at the railroad may be needed. This would need to be confirmed with site survey if this option is preferred by the City. Channelizing devices could be installed with no additional crossing material or roadway widening.

Jay Road is currently treated with approach railroad gates, flashers, cross bucks and CWT circuitry. This is one of the crossings that has the westbound egress from Jay Road to northeast bound Hwy 119 beginning immediately west of the railroad crossing, placing it within 60 feet of the approach gate arm. Interpretation is being requested from FRA regarding the location of this egress relative to the railroad approach gate, and the viability of consideration of an SSM of Approach Gates with Raised Medians. Conservatively, the addition of exit gates for a 4-quadrant gate installation is the most viable treatment at this location, to completely isolate the tracks in the event of an approaching train, and provide quiet zone compliance.

Group 2 Crossings – 47th Street, Valmont Road and Pearl Parkway. While these three crossings are not required to be treated together, distance between them places them in close enough proximity that there is benefit in establishing these crossings as quiet zones in relatively close succession.

The 47th Street crossing currently has approach railroad gates, flashers, cross bucks and CWT circuitry, and is most easily established as a quiet zone crossing by extending the existing Raised Medians to the required length. This would result in an SSM treatment of Approach Gates with Raised Medians, and does not require upgrade to the railroad equipment, but only necessitates roadway approach improvements.

Valmont Road currently has approach railroad gates, flashers, and cross bucks, and the older version of circuitry. As a result of discussions at the Field Diagnostic Review Meeting, City Staff identified that this crossing will be upgraded with new railroad approach gates, flashers, cross bucks, bells, CWT circuitry and raised medians on each approach. This project is anticipated to be constructed in 2018. Upon completion of construction, this crossing improvement project will render the Valmont Road crossing of BNSF quiet zone compliant.

Pearl Parkway was recently widened and realigned, at which time new railroad gates and signal bungalow were installed. While the current FRA Inventory Report indicates railroad circuitry is DC circuitry, it was confirmed by City Staff at the Field Diagnostic Review Meeting that the crossing improvement project included upgraded circuitry to CWT at that time. This crossing has extended raised medians on each approach. However, the presence of public access driveways into the adjacent development within 60 feet of the approach railroad gate on the west side of the crossing currently precludes viability of the SSM, Approach Gates with Raised Medians. Interpretation is being requested from FRA regarding the location of these driveways relative to the railroad approach gate, and the viability of consideration of Approach Gates with Raised Medians SSM. Conservatively, the addition of exit gates for a 4-quadrant gate installation is the most viable quiet zone compliant treatment at this location.

Group 3 Crossing – Independence Road. Independence Road is currently treated with approach railroad gates, flashers, cross bucks and CWT circuitry. This crossing is approximately 0.30 miles north of 47th Street at the north edge of more densely developed residential property to the south. Independence Road is configured such that Raised Medians or Channelizing Devices could be viable options but would necessitate some restriping of the roadway between the track corridor and Hwy 119. This restriping may not allow for adequate turn movements for some vehicles, and may need to be considered further, based on anticipated traffic. The 4-quadrant gate installation would require stub medians, or stub channelizing devices, to close the gap between approach and exit gates when in the down position, due to the crossing skew. This crossing would be beneficial to be pursued for quiet zone establishment in close succession with the Group 2 crossings to the south, as this group of crossings begin to pass through more areas of residential development.

Group 4 Crossing – North 63rd Street. North 63rd Street is currently treated with approach railroad gates, flashers, cross bucks and DC circuitry, per the current FRA Inventory Report. The type of circuitry is being confirmed with the railroad. This crossing is in closer proximity to the diagonal Hwy 119, and is configured with ingress as well as egress turn lanes. The northeast bound ingress from Hwy 119 to southbound 63rd Street is inside the railroad approach gates at the crossing, so an additional approach gate exists for the ingress turn bay. Because of this lane configuration, the SSM utilizing Raised Medians or Channelizing Devices is not readily viable at this crossing. Interpretation is being requested from FRA regarding the location of the egress lane relative to the railroad approach gate, and the viability of consideration of an SSM of Approach Gates with Raised Medians. Conservatively, the addition of exit gates for a 4-quadrant gate installation is the most viable

treatment at this location for quiet zone establishment. The closest adjacent crossing to North 63rd is approximately 1.5 miles. This crossing can be pursued independent of other crossings.

Group 5 Crossings – 55th Street (south) and 63rd Street (south). 55th Street is currently treated with approach railroad gates, flashers, cross bucks and CWT circuitry. The southern crossing of 63rd Street is currently treated with approach railroad gates, flashers, cross bucks and DC circuitry, per the current FRA Inventory Report. The type of circuitry is being confirmed with the railroad. These two crossings are not required to be treated together. However, their relative distance of about ¼ mile north of the residential communities south of Arapahoe Avenue, places both crossings within about the same distance to the residential development. If not concurrent, there is benefit in establishing both crossings as quiet zones in relatively close succession. Creating quiet zones at 55th and 63rd would effectively silence the routine sounding of locomotive horns for a reach of approximately 6.0 miles east of Foothills Parkway along this track segment.

Table 13 shows the grouping of the crossings, along with notes regarding implementation, and approximate summarized concept costs for Groups 1 through 5.

Table 13. Crossing Groups and Associated Costs

GROUP	CROSSINGS/LOCATIONS	QUIET ZONE TREATMENT	Opinion of Constr Cost Per Site	Opinion of Constr Cost Total (Range)	Comments/Notes
1	North 55th Street	4-Quadrant Gates	$432,000	$446,000 to $962,000	
		Wayside Horns	$240,000		May require circuitry upgrade
		Gates/Chan.Dev.	$156,000		
		Gates/Medians	$180,000		May require add'l crossing material
	Jay Road	4-Quadrant Gates	$480,000		
		Wayside Horns	$240,000		May require circuitry upgrade
	Contingencies		$50,000		
2	47th Street	Gates/Medians	$72,000	$297,000 to $729,000	Median extension only
	Valmont Road	Gates/Medians	$0		CWT/gates/medians (separate project)
		4-Quadrant Gates	$432,000		Reqs circuitry upgrade
	Pearl Parkway	4-Quadrant Gates	$175,000		Add two (2) exit gates only
	Contingencies		$50,000		
3	Independence Road	4-Quadrant Gates	$492,000	$206,000 to $566,000	Reqs stub channelizing devices
		4-Quadrant Gates	$516,000		Reqs stub medians
		Wayside Horns	$240,000		May require circuitry upgrade
		Gates/Chan.Dev.	$156,000		Reqs restriping/turn lane restriction
		Gates/Medians	$216,000		Reqs restriping/turn lane restriction
	Contingencies		$50,000		
4	North 63rd Street	4-Quadrant Gates	$432,000	$362,000 to $482,000	CWT upgrade & 4 exit gates
		Wayside Horns	$312,000		CWT upgrade & 3 horns
	Contingencies		$50,000		
5	55th Street (south)	Gates/Medians	$216,000	$410,000 to $818,000	Reqs circuitry upgrade
		Wayside Horns	$240,000		Reqs circuitry upgrade
	63rd Street (south)	Gates/Medians	$144,000		Median extension only
		4-Quadrant Gates	$528,000		Exit gates at both crossings
		Wayside Horns	$384,000		May require circuitry upgrade
	Contingencies		$50,000		
Range of Costs for All Crossings:			**$1,721,000**	**to**	**$3,557,000**

APPENDIX A U.S. DOT CROSSING INVENTORY SUMMARY SHEETS

U. S. DOT CROSSING INVENTORY FORM

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

OMB No. 2130-0017

Instructions for the initial reporting of the following types of new or previously unreported crossings: For public highway-rail grade crossings, complete the entire inventory Form. For private highway-rail grade crossings, complete the Header, Parts I and II, and the Submission Information section. For public pathway grade crossings (including pedestrian station grade crossings), complete the Header, Parts I and II, and the Submission Information section. For Private pathway grade crossings, complete the Header, Parts I and II, and the Submission Information section. For grade-separated highway-rail or pathway crossings (including pedestrian station crossings), complete the Header, Part I, and the Submission Information section. For changes to existing data, complete the Header, Part I Items 1-3, and the Submission Information section, in addition to the updated data fields. Note: For private crossings only, Part I Item 20 and Part III Item 2.K. are required unless otherwise noted. An asterisk * denotes an optional field.

A. Revision Date (MM/DD/YYYY)	B. Reporting Agency	C. Reason for Update (Select only one)	D. DOT Crossing Inventory Number
03 / 04 / 2016	☒ Railroad ☐ Transit ☐ State ☐ Other	☒ Change in Data ☐ New Crossing ☐ Closed ☐ No Train Traffic ☐ Quiet Zone Update ☐ Re-Open ☐ Date Change Only ☐ Change in Primary Operating RR ☐ Admin. Correction	244827V

Part I: Location and Classification Information

1. Primary Operating Railroad	2. State	3. County
BNSF Railway Company [BNSF]	COLORADO	BOULDER

4. City / Municipality	5. Street/Road Name & Block Number	6. Highway Type & No.
☐ In ☒ Near BOULDER	N 63RD ST (Street/Road Name) | * (Block Number)	Not Yet Reported by State

7. Do Other Railroads Operate a Separate Track at Crossing?	8. Do Other Railroads Operate Over Your Track at Crossing?
☐ Yes ☒ No If Yes, Specify RR	☐ Yes ☒ No If Yes, Specify RR

9. Railroad Division or Region	10. Railroad Subdivision or District	11. Branch or Line Name	12. RR Milepost
☐ None POWDER RIVER	☐ None FRONT RANGE	☐ None DEN UD-WENDOVER	(prefix) | 0035.289 (nnnn.nnn) | (suffix)

13. Line Segment *	14. Nearest RR Timetable Station *	15. Parent RR (if applicable)	16. Crossing Owner (if applicable)
0476	LONGMONT	☒ N/A	☐ N/A BNSF

17. Crossing Type	18. Crossing Purpose	19. Crossing Position	20. Public Access (if Private Crossing)	21. Type of Train	22. Average Passenger Train Count Per Day
☒ Public ☐ Private	☒ Highway ☐ Pathway, Ped. ☐ Station, Ped.	☒ At Grade ☐ RR Under ☐ RR Over	☐ Yes ☐ No	☒ Freight ☐ Intercity Passenger ☐ Commuter ☐ Transit ☐ Shared Use Transit ☐ Tourist/Other	☐ Less Than One Per Day ☐ Number Per Day 0

23. Type of Land Use
☐ Open Space ☐ Farm ☐ Residential ☒ Commercial ☐ Industrial ☐ Institutional ☐ Recreational ☐ RR Yard

24. Is there an Adjacent Crossing with a Separate Number?	25. Quiet Zone (FRA provided)
☐ Yes ☒ No If Yes, Provide Crossing Number	☒ No ☐ 24 Hr ☐ Partial ☐ Chicago Excused Date Established

26. HSR Corridor ID	27. Latitude in decimal degrees	28. Longitude in decimal degrees	29. Lat/Long Source
☒ N/A	(WGS84 std: nn.nnnnnnn) 40.0732310	(WGS84 std: -nnn.nnnnnnn) -105.2068720	☐ Actual ☒ Estimated

30.A. Railroad Use *	31.A. State Use *
30.B. Railroad Use *	31.B. State Use *
30.C. Railroad Use *	31.C. State Use *
30.D. Railroad Use *	31.D. State Use *
32.A. Narrative (Railroad Use) *	32.B. Narrative (State Use) *

33. Emergency Notification Telephone No. (posted)	34. Railroad Contact (Telephone No.)	35. State Contact (Telephone No.)
800-832-5452	817-352-1549	303-757-9425

Part II: Railroad Information

1. Estimated Number of Daily Train Movements

1.A. Total Day Thru Trains (6 AM to 6 PM)	1.B. Total Night Thru Trains (6 PM to 6 AM)	1.C. Total Switching Trains	1.D. Total Transit Trains	1.E. Check if Less Than One Movement Per Day ☐ How many trains per week?
9	9	0	0	

2. Year of Train Count Data (YYYY)	3. Speed of Train at Crossing
2013	3.A. Maximum Timetable Speed (mph) 49 3.B. Typical Speed Range Over Crossing (mph) From 1 to 49

4. Type and Count of Tracks
Main 1 Siding 0 Yard 0 Transit 0 Industry 0

5. Train Detection (Main Track only)
☐ Constant Warning Time ☐ Motion Detection ☐AFO ☐ PTC ☒ DC ☐ Other ☐ None

6. Is Track Signaled?	7.A. Event Recorder	7.B. Remote Health Monitoring
☐ Yes ☒ No	☐ Yes ☐ No	☐ Yes ☐ No

U. S. DOT CROSSING INVENTORY FORM

A. Revision Date *(MM/DD/YYYY)*	PAGE 2	D. Crossing Inventory Number *(7 char.)*
03/04/2016		244827V

Part III: Highway or Pathway Traffic Control Device Information

1. Are there Signs or Signals? ☒ Yes ☐ No

2. Types of Passive Traffic Control Devices associated with the Crossing

2.A. Crossbuck Assemblies *(count)*	2.B. STOP Signs *(R1-1)* *(count)*	2.C. YIELD Signs *(R1-2)* *(count)*	2.D. Advance Warning Signs *(Check all that apply; include count)* ☐ None
0	0		☒ W10-1 _____ ☐ W10-3 _____ ☐ W10-11 _____ ☐ W10-2 _____ ☐ W10-4 _____ ☐ W10-12 _____

2.E. Low Ground Clearance Sign *(W10-5)*	2.F. Pavement Markings	2.G. Channelization Devices/Medians	2.H. EXEMPT Sign *(R15-3)*	2.I. ENS Sign *(I-13)* Displayed
☐ Yes *(count_____)* ☐ No	☒ Stop Lines ☐ Dynamic Envelope ☒ RR Xing Symbols ☐ None	☐ All Approaches ☐ Median ☐ One Approach ☐ None	☐ Yes ☐ No	☐ Yes ☐ No

2.J. Other MUTCD Signs ☐ Yes ☒ No	2.K. Private Crossing Signs *(if private)*	2.L. LED Enhanced Signs *(List types)*
Specify Type _____ Count _____ Specify Type _____ Count _____ Specify Type _____ Count _____	☐ Yes ☐ No	

3. Types of Train Activated Warning Devices at the Grade Crossing *(specify count of each device for all that apply)*

3.A. Gate Arms *(count)*	3.B. Gate Configuration	3.C. Cantilevered *(or Bridged)* Flashing Light Structures *(count)*	3.D. Mast Mounted Flashing Lights *(count of masts)* 5	3.E. Total Count of Flashing Light Pairs
Roadway 3 Pedestrian _____	☐ 2 Quad ☐ 3 Quad ☐ 4 Quad ☐ Full *(Barrier)* Resistance ☐ Median Gates	Over Traffic Lane 0 ☐ Incandescent Not Over Traffic Lane 0 ☐ LED	☐ Incandescent ☐ LED ☐ Back Lights Included ☐ Side Lights Included	0

3.F. Installation Date of Current Active Warning Devices: *(MM/YYYY)*	3.G. Wayside Horn	3.H. Highway Traffic Signals Controlling Crossing	3.I. Bells *(count)*
_____/_____ ☐ Not Required	☐ Yes Installed on *(MM/YYYY)* _____/_____ ☐ No	☐ Yes ☒ No	2

3.J. Non-Train Active Warning	3.K. Other Flashing Lights or Warning Devices
☐ Flagging/Flagman ☐ Manually Operated Signals ☐ Watchman ☐ Floodlighting ☐ None	Count 0 Specify type _____

4.A. Does nearby Hwy Intersection have Traffic Signals?	4.B. Hwy Traffic Signal Interconnection	4.C. Hwy Traffic Signal Preemption	5. Highway Traffic Pre-Signals	6. Highway Monitoring Devices *(Check all that apply)*
☐ Yes ☐ No	☐ Not Interconnected ☒ For Traffic Signals ☐ For Warning Signs	☒ Simultaneous ☐ Advance	☐ Yes ☐ No Storage Distance * _____ Stop Line Distance * _____	☐ Yes - Photo/Video Recording ☐ Yes – Vehicle Presence Detection ☐ None

Part IV: Physical Characteristics

1. Traffic Lanes Crossing Railroad	2. Is Roadway/Pathway Paved?	3. Does Track Run Down a Street?	4. Is Crossing Illuminated? *(Street lights within approx. 50 feet from nearest rail)*
☐ One-way Traffic ☐ Two-way Traffic ☐ Divided Traffic Number of Lanes 4	☒ Yes ☐ No	☐ Yes ☒ No	☐ Yes ☐ No

5. Crossing Surface *(on Main Track, multiple types allowed)* Installation Date * *(MM/YYYY)* _____/_____ Width * _____ Length * _____
☐ 1 Timber ☐ 2 Asphalt ☐ 3 Asphalt and Timber ☒ 4 Concrete ☐ 5 Concrete and Rubber ☐ 6 Rubber ☐ 7 Metal
☐ 8 Unconsolidated ☐ 9 Composite ☐ 10 Other *(specify)* _____

6. Intersecting Roadway within 500 feet?	7. Smallest Crossing Angle	8. Is Commercial Power Available? *
☒ Yes ☐ No If Yes, Approximate Distance *(feet)* 75	☐ 0° – 29° ☒ 30° – 59° ☐ 60° - 90°	☒ Yes ☐ No

Part V: Public Highway Information

1. Highway System	2. Functional Classification of Road at Crossing	3. Is Crossing on State Highway System?	4. Highway Speed Limit
☐ (01) Interstate Highway System ☐ (02) Other Nat Hwy System (NHS) ☐ (03) Federal AID, Not NHS ☒ (08) Non-Federal Aid	☒ (0) Rural ☐ (1) Urban ☐ (1) Interstate ☒ (5) Major Collector ☐ (2) Other Freeways and Expressways ☐ (3) Other Principal Arterial ☐ (6) Minor Collector ☐ (4) Minor Arterial ☐ (7) Local	☐ Yes ☒ No	_____ MPH ☐ Posted ☐ Statutory

5. Linear Referencing System *(LRS Route ID)* *

6. LRS Milepost *

7. Annual Average Daily Traffic *(AADT)*	8. Estimated Percent Trucks	9. Regularly Used by School Buses?	10. Emergency Services Route
Year 1989 AADT 006650	05 %	☐ Yes ☒ No Average Number per Day 0	☐ Yes ☐ No

Submission Information - *This information is used for administrative purposes and is not available on the public website.*

Submitted by _____ Organization _____ Phone _____ Date _____

U. S. DOT CROSSING INVENTORY FORM

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

OMB No. 2130-0017

Instructions for the initial reporting of the following types of new or previously unreported crossings: For public highway-rail grade crossings, complete the entire inventory Form. For private highway-rail grade crossings, complete the Header, Parts I and II, and the Submission Information section. For public pathway grade crossings (including pedestrian station grade crossings), complete the Header, Parts I and II, and the Submission Information section. For Private pathway grade crossings, complete the Header, Parts I and II, and the Submission Information section. For grade-separated highway-rail or pathway crossings (including pedestrian station crossings), complete the Header, Part I, and the Submission Information section. For changes to existing data, complete the Header, Part I Items 1-3, and the Submission Information section, in addition to the updated data fields. Note: For private crossings only, Part I Item 20 and Part III Item 2.K. are required unless otherwise noted. An asterisk * denotes an optional field.

A. Revision Date (MM/DD/YYYY)	B. Reporting Agency	C. Reason for Update (Select only one)	D. DOT Crossing Inventory Number
03 / 04 / 2016	☒ Railroad ☐ Transit ☐ State ☐ Other	☒ Change in Data ☐ New Crossing ☐ Closed ☐ No Train Traffic ☐ Quiet Zone Update ☐ Re-Open ☐ Date Change Only ☐ Change in Primary Operating RR ☐ Admin. Correction	244824A

Part I: Location and Classification Information

1. Primary Operating Railroad	2. State	3. County
BNSF Railway Company [BNSF]	COLORADO	BOULDER

4. City / Municipality	5. Street/Road Name & Block Number	6. Highway Type & No.
☐ In ☒ Near BOULDER	N 55TH ST (Street/Road Name) | * (Block Number)	CR 43

7. Do Other Railroads Operate a Separate Track at Crossing?	8. Do Other Railroads Operate Over Your Track at Crossing?
☐ Yes ☒ No If Yes, Specify RR	☐ Yes ☒ No If Yes, Specify RR

9. Railroad Division or Region	10. Railroad Subdivision or District	11. Branch or Line Name	12. RR Milepost
☐ None POWDER RIVER	☐ None FRONT RANGE	☐ None DEN UD-WENDOVER	(prefix) | 0033.770 (nnnn.nnn) | (suffix)

13. Line Segment *	14. Nearest RR Timetable Station *	15. Parent RR (if applicable)	16. Crossing Owner (if applicable)
0476	BOULDER	☒ N/A	☐ N/A BNSF

17. Crossing Type	18. Crossing Purpose	19. Crossing Position	20. Public Access (if Private Crossing)	21. Type of Train	22. Average Passenger Train Count Per Day
☒ Public ☐ Private	☒ Highway ☐ Pathway, Ped. ☐ Station, Ped.	☒ At Grade ☐ RR Under ☐ RR Over	☐ Yes ☐ No	☒ Freight ☐ Intercity Passenger ☐ Commuter ☐ Transit ☐ Shared Use Transit ☐ Tourist/Other	☐ Less Than One Per Day ☐ Number Per Day 0

23. Type of Land Use
☒ Open Space ☐ Farm ☐ Residential ☐ Commercial ☐ Industrial ☐ Institutional ☐ Recreational ☐ RR Yard

24. Is there an Adjacent Crossing with a Separate Number?	25. Quiet Zone (FRA provided)
☐ Yes ☒ No If Yes, Provide Crossing Number	☒ No ☐ 24 Hr ☐ Partial ☐ Chicago Excused Date Established

26. HSR Corridor ID	27. Latitude in decimal degrees	28. Longitude in decimal degrees	29. Lat/Long Source
☒ N/A	(WGS84 std: nn.nnnnnnn) 40.0564710	(WGS84 std: -nnn.nnnnnnn) -105.2255260	☐ Actual ☒ Estimated

30.A. Railroad Use *	31.A. State Use *
30.B. Railroad Use *	31.B. State Use *
30.C. Railroad Use *	31.C. State Use *
30.D. Railroad Use *	31.D. State Use *
32.A. Narrative (Railroad Use) *	32.B. Narrative (State Use) *

33. Emergency Notification Telephone No. (posted)	34. Railroad Contact (Telephone No.)	35. State Contact (Telephone No.)
800-832-5452	817-352-1549	303-757-9425

Part II: Railroad Information

1. Estimated Number of Daily Train Movements

1.A. Total Day Thru Trains (6 AM to 6 PM)	1.B. Total Night Thru Trains (6 PM to 6 AM)	1.C. Total Switching Trains	1.D. Total Transit Trains	1.E. Check if Less Than One Movement Per Day ☐ How many trains per week?
9	9	0	0	

2. Year of Train Count Data (YYYY)	3. Speed of Train at Crossing
2013	3.A. Maximum Timetable Speed (mph) 49 3.B. Typical Speed Range Over Crossing (mph) From 1 to 49

4. Type and Count of Tracks
Main 1 Siding 0 Yard 0 Transit 0 Industry 0

5. Train Detection (Main Track only)
☒ Constant Warning Time ☐ Motion Detection ☐AFO ☐ PTC ☐ DC ☐ Other ☐ None

6. Is Track Signaled?	7.A. Event Recorder	7.B. Remote Health Monitoring
☐ Yes ☒ No	☐ Yes ☐ No	☐ Yes ☐ No

U. S. DOT CROSSING INVENTORY FORM

A. Revision Date *(MM/DD/YYYY)*	PAGE 2	D. Crossing Inventory Number *(7 char.)*
03/04/2016		244824A

Part III: Highway or Pathway Traffic Control Device Information

1. Are there Signs or Signals? ☒ Yes ☐ No

2. Types of Passive Traffic Control Devices associated with the Crossing

2.A. Crossbuck Assemblies *(count)*	2.B. STOP Signs *(R1-1)* *(count)*	2.C. YIELD Signs *(R1-2)* *(count)*	2.D. Advance Warning Signs *(Check all that apply; include count)* ☐ None
0	0		☒ W10-1 ____ ☐ W10-3 ____ ☐ W10-11 ____ ☐ W10-2 ____ ☐ W10-4 ____ ☐ W10-12 ____

2.E. Low Ground Clearance Sign *(W10-5)*	2.F. Pavement Markings	2.G. Channelization Devices/Medians	2.H. EXEMPT Sign *(R15-3)*	2.I. ENS Sign *(I-13)* Displayed
☐ Yes *(count_____)* ☐ No	☐ Stop Lines ☐ Dynamic Envelope ☐ RR Xing Symbols ☒ None	☐ All Approaches ☐ Median ☐ One Approach ☐ None	☐ Yes ☐ No	☐ Yes ☐ No

2.J. Other MUTCD Signs ☐ Yes ☒ No	2.K. Private Crossing Signs *(if private)*	2.L. LED Enhanced Signs *(List types)*
Specify Type ____ Count ____ Specify Type ____ Count ____ Specify Type ____ Count ____	☐ Yes ☐ No	

3. Types of Train Activated Warning Devices at the Grade Crossing *(specify count of each device for all that apply)*

3.A. Gate Arms *(count)*	3.B. Gate Configuration	3.C. Cantilevered *(or Bridged)* Flashing Light Structures *(count)*	3.D. Mast Mounted Flashing Lights *(count of masts)* 2	3.E. Total Count of Flashing Light Pairs
Roadway 2 Pedestrian ____	☐ 2 Quad ☐ 3 Quad ☐ 4 Quad ☐ Full *(Barrier)* Resistance ☐ Median Gates	Over Traffic Lane 0 ☐ Incandescent Not Over Traffic Lane 0 ☐ LED	☐ Incandescent ☐ LED ☐ Back Lights Included ☐ Side Lights Included	4

3.F. Installation Date of Current Active Warning Devices: *(MM/YYYY)*	3.G. Wayside Horn	3.H. Highway Traffic Signals Controlling Crossing	3.I. Bells *(count)*
____/____ ☐ Not Required	☐ Yes Installed on *(MM/YYYY)* ____/____ ☐ No	☐ Yes ☒ No	1

3.J. Non-Train Active Warning	3.K. Other Flashing Lights or Warning Devices
☐ Flagging/Flagman ☐ Manually Operated Signals ☐ Watchman ☐ Floodlighting ☐ None	Count 0 Specify type ____

4.A. Does nearby Hwy Intersection have Traffic Signals?	4.B. Hwy Traffic Signal Interconnection	4.C. Hwy Traffic Signal Preemption	5. Highway Traffic Pre-Signals	6. Highway Monitoring Devices *(Check all that apply)*
☐ Yes ☐ No	☐ Not Interconnected ☐ For Traffic Signals ☐ For Warning Signs	☐ Simultaneous ☐ Advance	☐ Yes ☐ No Storage Distance * ____ Stop Line Distance * ____	☐ Yes - Photo/Video Recording ☐ Yes – Vehicle Presence Detection ☐ None

Part IV: Physical Characteristics

1. Traffic Lanes Crossing Railroad	2. Is Roadway/Pathway Paved?	3. Does Track Run Down a Street?	4. Is Crossing Illuminated? *(Street lights within approx. 50 feet from nearest rail)*
☐ One-way Traffic ☐ Two-way Traffic Number of Lanes 2 ☐ Divided Traffic	☒ Yes ☐ No	☐ Yes ☒ No	☐ Yes ☐ No

5. Crossing Surface *(on Main Track, multiple types allowed)* Installation Date * *(MM/YYYY)* ____/____ Width * ____ Length * ____

☐ 1 Timber ☐ 2 Asphalt ☐ 3 Asphalt and Timber ☒ 4 Concrete ☐ 5 Concrete and Rubber ☐ 6 Rubber ☐ 7 Metal ☐ 8 Unconsolidated ☐ 9 Composite ☐ 10 Other *(specify)* ____

6. Intersecting Roadway within 500 feet?	7. Smallest Crossing Angle	8. Is Commercial Power Available? *
☒ Yes ☐ No If Yes, Approximate Distance *(feet)* 75	☐ 0° – 29° ☒ 30° – 59° ☐ 60° - 90°	☒ Yes ☐ No

Part V: Public Highway Information

1. Highway System	2. Functional Classification of Road at Crossing	3. Is Crossing on State Highway System?	4. Highway Speed Limit
☐ (01) Interstate Highway System ☐ (02) Other Nat Hwy System (NHS) ☐ (03) Federal AID, Not NHS ☒ (08) Non-Federal Aid	☒ (0) Rural ☐ (1) Urban ☐ (1) Interstate ☐ (5) Major Collector ☐ (2) Other Freeways and Expressways ☐ (3) Other Principal Arterial ☐ (6) Minor Collector ☐ (4) Minor Arterial ☒ (7) Local	☐ Yes ☒ No	____ MPH ☐ Posted ☐ Statutory

5. Linear Referencing System *(LRS Route ID)* *

6. LRS Milepost *

7. Annual Average Daily Traffic *(AADT)*	8. Estimated Percent Trucks	9. Regularly Used by School Buses?	10. Emergency Services Route
Year 1989 AADT 000200	05 %	☐ Yes ☒ No Average Number per Day 0	☐ Yes ☐ No

Submission Information - *This information is used for administrative purposes and is not available on the public website.*

Submitted by ____ Organization ____ Phone ____ Date ____

U. S. DOT CROSSING INVENTORY FORM

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

OMB No. 2130-0017

Instructions for the initial reporting of the following types of new or previously unreported crossings: For public highway-rail grade crossings, complete the entire inventory Form. For private highway-rail grade crossings, complete the Header, Parts I and II, and the Submission Information section. For public pathway grade crossings (including pedestrian station grade crossings), complete the Header, Parts I and II, and the Submission Information section. For Private pathway grade crossings, complete the Header, Parts I and II, and the Submission Information section. For grade-separated highway-rail or pathway crossings (including pedestrian station crossings), complete the Header, Part I, and the Submission Information section. For changes to existing data, complete the Header, Part I Items 1-3, and the Submission Information section, in addition to the updated data fields. Note: For private crossings only, Part I Item 20 and Part III Item 2.K. are required unless otherwise noted. An asterisk * denotes an optional field.

A. Revision Date (MM/DD/YYYY)	B. Reporting Agency	C. Reason for Update (Select only one)	D. DOT Crossing Inventory Number
04 / 28 / 2016	☒ Railroad ☐ Transit ☐ State ☐ Other	☒ Change in Data ☐ New Crossing ☐ Closed ☐ No Train Traffic ☐ Quiet Zone Update ☐ Re-Open ☐ Date Change Only ☐ Change in Primary Operating RR ☐ Admin. Correction	244823T

Part I: Location and Classification Information

1. Primary Operating Railroad	2. State	3. County
BNSF Railway Company [BNSF]	COLORADO	BOULDER

4. City / Municipality	5. Street/Road Name & Block Number	6. Highway Type & No.
☐ In ☒ Near BOULDER	JAY RD (Street/Road Name) | * (Block Number)	CR 44

7. Do Other Railroads Operate a Separate Track at Crossing?	8. Do Other Railroads Operate Over Your Track at Crossing?
☐ Yes ☒ No If Yes, Specify RR	☐ Yes ☒ No If Yes, Specify RR

9. Railroad Division or Region	10. Railroad Subdivision or District	11. Branch or Line Name	12. RR Milepost
☐ None POWDER RIVER	☐ None FRONT RANGE	☐ None DEN UD-WENDOVER	(prefix) | 0033.250 (nnnn.nnn) | (suffix)

13. Line Segment *	14. Nearest RR Timetable Station *	15. Parent RR (if applicable)	16. Crossing Owner (if applicable)
0476	BOULDER	☒ N/A	☐ N/A BNSF

17. Crossing Type	18. Crossing Purpose	19. Crossing Position	20. Public Access (if Private Crossing)	21. Type of Train	22. Average Passenger Train Count Per Day
☒ Public ☐ Private	☒ Highway ☐ Pathway, Ped. ☐ Station, Ped.	☒ At Grade ☐ RR Under ☐ RR Over	☐ Yes ☐ No	☒ Freight ☐ Intercity Passenger ☐ Commuter ☐ Transit ☐ Shared Use Transit ☐ Tourist/Other	☐ Less Than One Per Day ☐ Number Per Day 0

23. Type of Land Use
☒ Open Space ☐ Farm ☐ Residential ☐ Commercial ☐ Industrial ☐ Institutional ☐ Recreational ☐ RR Yard

24. Is there an Adjacent Crossing with a Separate Number?	25. Quiet Zone (FRA provided)
☐ Yes ☒ No If Yes, Provide Crossing Number	☒ No ☐ 24 Hr ☐ Partial ☐ Chicago Excused Date Established

26. HSR Corridor ID	27. Latitude in decimal degrees	28. Longitude in decimal degrees	29. Lat/Long Source
☒ N/A	(WGS84 std: nn.nnnnnnn) 40.0510640	(WGS84 std: -nnn.nnnnnnn) -105.2323240	☐ Actual ☒ Estimated

30.A. Railroad Use *	31.A. State Use *
30.B. Railroad Use *	31.B. State Use *
30.C. Railroad Use *	31.C. State Use *
30.D. Railroad Use *	31.D. State Use *
32.A. Narrative (Railroad Use) *	32.B. Narrative (State Use) *

33. Emergency Notification Telephone No. (posted)	34. Railroad Contact (Telephone No.)	35. State Contact (Telephone No.)
800-832-5452	817-352-1549	303-757-9425

Part II: Railroad Information

1. Estimated Number of Daily Train Movements

1.A. Total Day Thru Trains (6 AM to 6 PM)	1.B. Total Night Thru Trains (6 PM to 6 AM)	1.C. Total Switching Trains	1.D. Total Transit Trains	1.E. Check if Less Than One Movement Per Day ☐ How many trains per week?
9	9	0	0	

2. Year of Train Count Data (YYYY)	3. Speed of Train at Crossing
2013	3.A. Maximum Timetable Speed (mph) 49 3.B. Typical Speed Range Over Crossing (mph) From 1 to 49

4. Type and Count of Tracks
Main 1 Siding 0 Yard 0 Transit 0 Industry 0

5. Train Detection (Main Track only)
☒ Constant Warning Time ☐ Motion Detection ☐ AFO ☐ PTC ☐ DC ☐ Other ☐ None

6. Is Track Signaled?	7.A. Event Recorder	7.B. Remote Health Monitoring
☐ Yes ☒ No	☐ Yes ☐ No	☐ Yes ☐ No

U. S. DOT CROSSING INVENTORY FORM

A. Revision Date *(MM/DD/YYYY)*	PAGE 2	D. Crossing Inventory Number *(7 char.)*
04/28/2016		244823T

Part III: Highway or Pathway Traffic Control Device Information

1. Are there Signs or Signals? ☒ Yes ☐ No

2. Types of Passive Traffic Control Devices associated with the Crossing

2.A. Crossbuck Assemblies *(count)*	2.B. STOP Signs *(R1-1)* *(count)*	2.C. YIELD Signs *(R1-2)* *(count)*	2.D. Advance Warning Signs *(Check all that apply; include count)* ☐ None
0	0		☒ W10-1 _____ ☐ W10-3 _____ ☐ W10-11 _____ ☐ W10-2 _____ ☐ W10-4 _____ ☐ W10-12 _____

2.E. Low Ground Clearance Sign *(W10-5)*	2.F. Pavement Markings	2.G. Channelization Devices/Medians	2.H. EXEMPT Sign *(R15-3)*	2.I. ENS Sign *(I-13)* Displayed
☐ Yes *(count_____)* ☐ No	☒ Stop Lines ☐ Dynamic Envelope ☒ RR Xing Symbols ☐ None	☐ All Approaches ☐ Median ☐ One Approach ☐ None	☐ Yes ☐ No	☐ Yes ☐ No

2.J. Other MUTCD Signs ☐ Yes ☒ No	2.K. Private Crossing Signs *(if private)*	2.L. LED Enhanced Signs *(List types)*
Specify Type _____ Count _____ Specify Type _____ Count _____ Specify Type _____ Count _____	☐ Yes ☐ No	

3. Types of Train Activated Warning Devices at the Grade Crossing *(specify count of each device for all that apply)*

3.A. Gate Arms *(count)*	3.B. Gate Configuration	3.C. Cantilevered *(or Bridged)* Flashing Light Structures *(count)*	3.D. Mast Mounted Flashing Lights *(count of masts)* 4	3.E. Total Count of Flashing Light Pairs
Roadway 3 Pedestrian _____	☐ 2 Quad ☐ 3 Quad ☐ 4 Quad ☐ Full *(Barrier)* Resistance ☐ Median Gates	Over Traffic Lane 0 ☐ Incandescent Not Over Traffic Lane 0 ☐ LED	☐ Incandescent ☐ LED ☐ Back Lights Included ☐ Side Lights Included	0

3.F. Installation Date of Current Active Warning Devices: *(MM/YYYY)*	3.G. Wayside Horn	3.H. Highway Traffic Signals Controlling Crossing	3.I. Bells *(count)*
_____/_____ ☐ Not Required	☐ Yes Installed on *(MM/YYYY)* _____/_____ ☐ No	☐ Yes ☒ No	2

3.J. Non-Train Active Warning	3.K. Other Flashing Lights or Warning Devices
☐ Flagging/Flagman ☐ Manually Operated Signals ☐ Watchman ☐ Floodlighting ☐ None	Count 0 Specify type _____

4.A. Does nearby Hwy Intersection have Traffic Signals?	4.B. Hwy Traffic Signal Interconnection	4.C. Hwy Traffic Signal Preemption	5. Highway Traffic Pre-Signals	6. Highway Monitoring Devices *(Check all that apply)*
☐ Yes ☐ No	☐ Not Interconnected ☒ For Traffic Signals ☐ For Warning Signs	☒ Simultaneous ☐ Advance	☐ Yes ☐ No Storage Distance * _____ Stop Line Distance * _____	☐ Yes - Photo/Video Recording ☐ Yes – Vehicle Presence Detection ☐ None

Part IV: Physical Characteristics

1. Traffic Lanes Crossing Railroad	2. Is Roadway/Pathway Paved?	3. Does Track Run Down a Street?	4. Is Crossing Illuminated? *(Street lights within approx. 50 feet from nearest rail)*
☐ One-way Traffic ☐ Two-way Traffic ☐ Divided Traffic Number of Lanes 3	☒ Yes ☐ No	☐ Yes ☒ No	☐ Yes ☐ No

5. Crossing Surface *(on Main Track, multiple types allowed)* Installation Date * *(MM/YYYY)* _____/_____ Width * _____ Length * _____
☐ 1 Timber ☐ 2 Asphalt ☐ 3 Asphalt and Timber ☒ 4 Concrete ☐ 5 Concrete and Rubber ☐ 6 Rubber ☐ 7 Metal
☐ 8 Unconsolidated ☐ 9 Composite ☐ 10 Other *(specify)* _____

6. Intersecting Roadway within 500 feet?	7. Smallest Crossing Angle	8. Is Commercial Power Available? *
☐ Yes ☒ No If Yes, Approximate Distance *(feet)* 0	☐ 0° – 29° ☒ 30° – 59° ☐ 60° - 90°	☒ Yes ☐ No

Part V: Public Highway Information

1. Highway System	2. Functional Classification of Road at Crossing	3. Is Crossing on State Highway System?	4. Highway Speed Limit
☐ (01) Interstate Highway System ☐ (02) Other Nat Hwy System (NHS) ☐ (03) Federal AID, Not NHS ☒ (08) Non-Federal Aid	☒ (0) Rural ☐ (1) Urban ☐ (1) Interstate ☐ (5) Major Collector ☐ (2) Other Freeways and Expressways ☐ (3) Other Principal Arterial ☐ (6) Minor Collector ☒ (4) Minor Arterial ☐ (7) Local	☐ Yes ☒ No	_____ MPH ☐ Posted ☐ Statutory

5. Linear Referencing System *(LRS Route ID)* *

6. LRS Milepost *

7. Annual Average Daily Traffic *(AADT)*	8. Estimated Percent Trucks	9. Regularly Used by School Buses?	10. Emergency Services Route
Year 1998 AADT 008400	05 %	☐ Yes ☒ No Average Number per Day 0	☐ Yes ☐ No

Submission Information - *This information is used for administrative purposes and is not available on the public website.*

Submitted by _____ Organization _____ Phone _____ Date _____

U. S. DOT CROSSING INVENTORY FORM

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

OMB No. 2130-0017

Instructions for the initial reporting of the following types of new or previously unreported crossings: For public highway-rail grade crossings, complete the entire inventory Form. For private highway-rail grade crossings, complete the Header, Parts I and II, and the Submission Information section. For public pathway grade crossings (including pedestrian station grade crossings), complete the Header, Parts I and II, and the Submission Information section. For Private pathway grade crossings, complete the Header, Parts I and II, and the Submission Information section. For grade-separated highway-rail or pathway crossings (including pedestrian station crossings), complete the Header, Part I, and the Submission Information section. For changes to existing data, complete the Header, Part I Items 1-3, and the Submission Information section, in addition to the updated data fields. Note: For private crossings only, Part I Item 20 and Part III Item 2.K. are required unless otherwise noted. An asterisk * denotes an optional field.

A. Revision Date *(MM/DD/YYYY)*	B. Reporting Agency	C. Reason for Update *(Select only one)*	D. DOT Crossing Inventory Number
03 / 04 / 2016	☒ Railroad ☐ Transit ☐ State ☐ Other	☒ Change in Data ☐ New Crossing ☐ Closed ☐ No Train Traffic ☐ Quiet Zone Update ☐ Re-Open ☐ Date Change Only ☐ Change in Primary Operating RR ☐ Admin. Correction	244822L

Part I: Location and Classification Information

1. Primary Operating Railroad	2. State	3. County
BNSF Railway Company [BNSF]	COLORADO	BOULDER

4. City / Municipality	5. Street/Road Name & Block Number	6. Highway Type & No.
☒ In ☐ Near BOULDER	INDEPENDENCE ST *(Street/Road Name)* | * *(Block Number)*	Not Yet Reported by State

7. Do Other Railroads Operate a Separate Track at Crossing?	8. Do Other Railroads Operate Over Your Track at Crossing?
☐ Yes ☒ No If Yes, Specify RR	☐ Yes ☒ No If Yes, Specify RR

9. Railroad Division or Region	10. Railroad Subdivision or District	11. Branch or Line Name	12. RR Milepost
☐ None POWDER RIVER	☐ None FRONT RANGE	☐ None DEN UD-WENDOVER	*(prefix)* | 0032.329 *(nnnn.nnn)* | *(suffix)*

13. Line Segment *	14. Nearest RR Timetable Station *	15. Parent RR *(if applicable)*	16. Crossing Owner *(if applicable)*
0476	BOULDER	☒ N/A	☐ N/A BNSF

17. Crossing Type	18. Crossing Purpose	19. Crossing Position	20. Public Access *(if Private Crossing)*	21. Type of Train	22. Average Passenger Train Count Per Day
☒ Public ☐ Private	☒ Highway ☐ Pathway, Ped. ☐ Station, Ped.	☒ At Grade ☐ RR Under ☐ RR Over	☐ Yes ☐ No	☒ Freight ☐ Intercity Passenger ☐ Commuter ☐ Transit ☐ Shared Use Transit ☐ Tourist/Other	☐ Less Than One Per Day ☐ Number Per Day 0

23. Type of Land Use
☒ Open Space ☐ Farm ☐ Residential ☐ Commercial ☐ Industrial ☐ Institutional ☐ Recreational ☐ RR Yard

24. Is there an Adjacent Crossing with a Separate Number?	25. Quiet Zone *(FRA provided)*
☐ Yes ☒ No If Yes, Provide Crossing Number	☒ No ☐ 24 Hr ☐ Partial ☐ Chicago Excused Date Established

26. HSR Corridor ID	27. Latitude in decimal degrees	28. Longitude in decimal degrees	29. Lat/Long Source
☒ N/A	*(WGS84 std: nn.nnnnnnn)* 40.0401200	*(WGS84 std: -nnn.nnnnnnn)* -105.2418330	☐ Actual ☒ Estimated

30.A. Railroad Use *	31.A. State Use *
30.B. Railroad Use *	31.B. State Use *
30.C. Railroad Use *	31.C. State Use *
30.D. Railroad Use *	31.D. State Use *
32.A. Narrative *(Railroad Use)* *	32.B. Narrative *(State Use)* *

33. Emergency Notification Telephone No. *(posted)*	34. Railroad Contact *(Telephone No.)*	35. State Contact *(Telephone No.)*
800-832-5452	817-352-1549	303-757-9425

Part II: Railroad Information

1. Estimated Number of Daily Train Movements

1.A. Total Day Thru Trains *(6 AM to 6 PM)*	1.B. Total Night Thru Trains *(6 PM to 6 AM)*	1.C. Total Switching Trains	1.D. Total Transit Trains	1.E. Check if Less Than One Movement Per Day ☐ How many trains per week?
9	9	0	0	

2. Year of Train Count Data *(YYYY)*	3. Speed of Train at Crossing
2013	3.A. Maximum Timetable Speed *(mph)* 49 3.B. Typical Speed Range Over Crossing *(mph)* From 1 to 49

4. Type and Count of Tracks
Main 1 Siding 0 Yard 0 Transit 0 Industry 0

5. Train Detection *(Main Track only)*
☒ Constant Warning Time ☐ Motion Detection ☐AFO ☐ PTC ☐ DC ☐ Other ☐ None

6. Is Track Signaled?	7.A. Event Recorder	7.B. Remote Health Monitoring
☐ Yes ☒ No	☐ Yes ☐ No	☐ Yes ☐ No

U. S. DOT CROSSING INVENTORY FORM

A. Revision Date *(MM/DD/YYYY)*	PAGE 2	D. Crossing Inventory Number *(7 char.)*
03/04/2016		244822L

Part III: Highway or Pathway Traffic Control Device Information

1. Are there Signs or Signals? ☒ Yes ☐ No

2. Types of Passive Traffic Control Devices associated with the Crossing

2.A. Crossbuck Assemblies *(count)*	2.B. STOP Signs *(R1-1)* *(count)*	2.C. YIELD Signs *(R1-2)* *(count)*	2.D. Advance Warning Signs *(Check all that apply; include count)* ☐ None
0	0		☒ W10-1 _____ ☐ W10-3 _____ ☐ W10-11 _____ ☐ W10-2 _____ ☐ W10-4 _____ ☐ W10-12 _____

2.E. Low Ground Clearance Sign *(W10-5)*	2.F. Pavement Markings	2.G. Channelization Devices/Medians	2.H. EXEMPT Sign *(R15-3)*	2.I. ENS Sign *(I-13)* Displayed
☐ Yes *(count_____)* ☐ No	☒ Stop Lines ☐ Dynamic Envelope ☒ RR Xing Symbols ☐ None	☐ All Approaches ☐ Median ☐ One Approach ☐ None	☐ Yes ☐ No	☐ Yes ☐ No

2.J. Other MUTCD Signs ☐ Yes ☒ No	2.K. Private Crossing Signs *(if private)*	2.L. LED Enhanced Signs *(List types)*
Specify Type _____ Count _____ Specify Type _____ Count _____ Specify Type _____ Count _____	☐ Yes ☐ No	

3. Types of Train Activated Warning Devices at the Grade Crossing *(specify count of each device for all that apply)*

3.A. Gate Arms *(count)*	3.B. Gate Configuration	3.C. Cantilevered *(or Bridged)* Flashing Light Structures *(count)*	3.D. Mast Mounted Flashing Lights *(count of masts)* 2	3.E. Total Count of Flashing Light Pairs
Roadway 2 Pedestrian _____	☐ 2 Quad ☐ 3 Quad ☐ 4 Quad ☐ Full *(Barrier)* Resistance ☐ Median Gates	Over Traffic Lane 0 ☐ Incandescent Not Over Traffic Lane 0 ☐ LED	☐ Incandescent ☐ LED ☐ Back Lights Included ☐ Side Lights Included	0

3.F. Installation Date of Current Active Warning Devices: *(MM/YYYY)*	3.G. Wayside Horn	3.H. Highway Traffic Signals Controlling Crossing	3.I. Bells *(count)*
_____/_____ ☐ Not Required	☐ Yes Installed on *(MM/YYYY)* _____/_____ ☐ No	☐ Yes ☒ No	1

3.J. Non-Train Active Warning	3.K. Other Flashing Lights or Warning Devices
☐ Flagging/Flagman ☐ Manually Operated Signals ☐ Watchman ☐ Floodlighting ☐ None	Count 0 Specify type _____

4.A. Does nearby Hwy Intersection have Traffic Signals?	4.B. Hwy Traffic Signal Interconnection	4.C. Hwy Traffic Signal Preemption	5. Highway Traffic Pre-Signals	6. Highway Monitoring Devices *(Check all that apply)*
☐ Yes ☐ No	☐ Not Interconnected ☐ For Traffic Signals ☐ For Warning Signs	☐ Simultaneous ☐ Advance	☐ Yes ☐ No Storage Distance * _____ Stop Line Distance * _____	☐ Yes - Photo/Video Recording ☐ Yes – Vehicle Presence Detection ☐ None

Part IV: Physical Characteristics

1. Traffic Lanes Crossing Railroad	2. Is Roadway/Pathway Paved?	3. Does Track Run Down a Street?	4. Is Crossing Illuminated? *(Street lights within approx. 50 feet from nearest rail)*
☐ One-way Traffic ☐ Two-way Traffic ☐ Divided Traffic Number of Lanes 2	☒ Yes ☐ No	☐ Yes ☒ No	☐ Yes ☐ No

5. Crossing Surface *(on Main Track, multiple types allowed)* Installation Date * *(MM/YYYY)* _____/_____ Width * _____ Length * _____
☐ 1 Timber ☐ 2 Asphalt ☐ 3 Asphalt and Timber ☒ 4 Concrete ☐ 5 Concrete and Rubber ☐ 6 Rubber ☐ 7 Metal
☐ 8 Unconsolidated ☐ 9 Composite ☐ 10 Other *(specify)* _____

6. Intersecting Roadway within 500 feet?	7. Smallest Crossing Angle	8. Is Commercial Power Available? *
☒ Yes ☐ No If Yes, Approximate Distance *(feet)* 75	☐ 0° – 29° ☐ 30° – 59° ☒ 60° - 90°	☒ Yes ☐ No

Part V: Public Highway Information

1. Highway System	2. Functional Classification of Road at Crossing	3. Is Crossing on State Highway System?	4. Highway Speed Limit
☐ (01) Interstate Highway System ☐ (02) Other Nat Hwy System (NHS) ☐ (03) Federal AID, Not NHS ☒ (08) Non-Federal Aid	☐ (0) Rural ☒ (1) Urban ☐ (1) Interstate ☒ (5) Major Collector ☐ (2) Other Freeways and Expressways ☐ (3) Other Principal Arterial ☐ (6) Minor Collector ☐ (4) Minor Arterial ☐ (7) Local	☐ Yes ☒ No	_____ MPH ☐ Posted ☐ Statutory

5. Linear Referencing System *(LRS Route ID)* *

6. LRS Milepost *

7. Annual Average Daily Traffic *(AADT)*	8. Estimated Percent Trucks	9. Regularly Used by School Buses?	10. Emergency Services Route
Year 1994 AADT 002100	05 %	☐ Yes ☒ No Average Number per Day 0	☐ Yes ☐ No

Submission Information - *This information is used for administrative purposes and is not available on the public website.*

Submitted by _____ Organization _____ Phone _____ Date _____

U. S. DOT CROSSING INVENTORY FORM

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

OMB No. 2130-0017

Instructions for the initial reporting of the following types of new or previously unreported crossings: For public highway-rail grade crossings, complete the entire inventory Form. For private highway-rail grade crossings, complete the Header, Parts I and II, and the Submission Information section. For public pathway grade crossings (including pedestrian station grade crossings), complete the Header, Parts I and II, and the Submission Information section. For Private pathway grade crossings, complete the Header, Parts I and II, and the Submission Information section. For grade-separated highway-rail or pathway crossings (including pedestrian station crossings), complete the Header, Part I, and the Submission Information section. For changes to existing data, complete the Header, Part I Items 1-3, and the Submission Information section, in addition to the updated data fields. Note: For private crossings only, Part I Item 20 and Part III Item 2.K. are required unless otherwise noted. An asterisk * denotes an optional field.

A. Revision Date (MM/DD/YYYY)	B. Reporting Agency	C. Reason for Update (Select only one)	D. DOT Crossing Inventory Number
04 / 28 / 2016	☒ Railroad ☐ Transit ☐ State ☐ Other	☒ Change in Data ☐ New Crossing ☐ Closed ☐ No Train Traffic ☐ Quiet Zone Update ☐ Re-Open ☐ Date Change Only ☐ Change in Primary Operating RR ☐ Admin. Correction	244821E

Part I: Location and Classification Information

1. Primary Operating Railroad	2. State	3. County
BNSF Railway Company [BNSF]	COLORADO	BOULDER

4. City / Municipality	5. Street/Road Name & Block Number	6. Highway Type & No.
☒ In ☐ Near BOULDER	N 47TH ST (Street/Road Name) | * (Block Number)	Not Yet Reported by State

7. Do Other Railroads Operate a Separate Track at Crossing?	8. Do Other Railroads Operate Over Your Track at Crossing?
☐ Yes ☒ No If Yes, Specify RR	☐ Yes ☒ No If Yes, Specify RR

9. Railroad Division or Region	10. Railroad Subdivision or District	11. Branch or Line Name	12. RR Milepost
☐ None POWDER RIVER	☐ None FRONT RANGE	☐ None DEN UD-WENDOVER	(prefix) | 0032.039 (nnnn.nnn) | (suffix)

13. Line Segment *	14. Nearest RR Timetable Station *	15. Parent RR (if applicable)	16. Crossing Owner (if applicable)
0476	BOULDER	☒ N/A	☐ N/A BNSF

17. Crossing Type	18. Crossing Purpose	19. Crossing Position	20. Public Access (if Private Crossing)	21. Type of Train	22. Average Passenger Train Count Per Day
☒ Public ☐ Private	☒ Highway ☐ Pathway, Ped. ☐ Station, Ped.	☒ At Grade ☐ RR Under ☐ RR Over	☐ Yes ☐ No	☒ Freight ☐ Intercity Passenger ☐ Commuter ☐ Transit ☐ Shared Use Transit ☐ Tourist/Other	☐ Less Than One Per Day ☐ Number Per Day 0

23. Type of Land Use
☐ Open Space ☐ Farm ☐ Residential ☒ Commercial ☐ Industrial ☐ Institutional ☐ Recreational ☐ RR Yard

24. Is there an Adjacent Crossing with a Separate Number?	25. Quiet Zone (FRA provided)
☐ Yes ☒ No If Yes, Provide Crossing Number	☒ No ☐ 24 Hr ☐ Partial ☐ Chicago Excused Date Established

26. HSR Corridor ID	27. Latitude in decimal degrees	28. Longitude in decimal degrees	29. Lat/Long Source
☒ N/A	(WGS84 std: nn.nnnnnnn) 40.0362520	(WGS84 std: -nnn.nnnnnnn) -105.2442140	☐ Actual ☒ Estimated

30.A. Railroad Use *	31.A. State Use *
30.B. Railroad Use *	31.B. State Use *
30.C. Railroad Use *	31.C. State Use *
30.D. Railroad Use *	31.D. State Use *
32.A. Narrative (Railroad Use) *	32.B. Narrative (State Use) *

33. Emergency Notification Telephone No. (posted)	34. Railroad Contact (Telephone No.)	35. State Contact (Telephone No.)
800-832-5452	817-352-1549	303-757-9425

Part II: Railroad Information

1. Estimated Number of Daily Train Movements

1.A. Total Day Thru Trains (6 AM to 6 PM)	1.B. Total Night Thru Trains (6 PM to 6 AM)	1.C. Total Switching Trains	1.D. Total Transit Trains	1.E. Check if Less Than One Movement Per Day ☐ How many trains per week?
9	9	0	0	

2. Year of Train Count Data (YYYY)	3. Speed of Train at Crossing
2013	3.A. Maximum Timetable Speed (mph) 49 3.B. Typical Speed Range Over Crossing (mph) From 1 to 49

4. Type and Count of Tracks
Main 1 Siding 0 Yard 0 Transit 0 Industry 0

5. Train Detection (Main Track only)
☒ Constant Warning Time ☐ Motion Detection ☐AFO ☐ PTC ☐ DC ☐ Other ☐ None

6. Is Track Signaled?	7.A. Event Recorder	7.B. Remote Health Monitoring
☐ Yes ☒ No	☐ Yes ☐ No	☐ Yes ☐ No

U. S. DOT CROSSING INVENTORY FORM

A. Revision Date *(MM/DD/YYYY)*	PAGE 2	D. Crossing Inventory Number *(7 char.)*
04/28/2016		244821E

Part III: Highway or Pathway Traffic Control Device Information

1. Are there Signs or Signals? ☒ Yes ☐ No

2. Types of Passive Traffic Control Devices associated with the Crossing

2.A. Crossbuck Assemblies *(count)*: 0

2.B. STOP Signs *(R1-1) (count)*: 0

2.C. YIELD Signs *(R1-2) (count)*:

2.D. Advance Warning Signs *(Check all that apply; include count)* ☐ None
☒ W10-1 _____ ☐ W10-3 _____ ☐ W10-11 _____
☐ W10-2 _____ ☐ W10-4 _____ ☐ W10-12 _____

2.E. Low Ground Clearance Sign *(W10-5)*
☐ Yes *(count_____)*
☐ No

2.F. Pavement Markings
☒ Stop Lines ☐ Dynamic Envelope
☒ RR Xing Symbols ☐ None

2.G. Channelization Devices/Medians
☐ All Approaches ☐ Median
☐ One Approach ☐ None

2.H. EXEMPT Sign *(R15-3)*
☐ Yes
☐ No

2.I. ENS Sign *(I-13)* Displayed
☐ Yes
☐ No

2.J. Other MUTCD Signs ☐ Yes ☒ No
Specify Type _____ Count _____
Specify Type _____ Count _____
Specify Type _____ Count _____

2.K. Private Crossing Signs *(if private)*
☐ Yes ☐ No

2.L. LED Enhanced Signs *(List types)*

3. Types of Train Activated Warning Devices at the Grade Crossing *(specify count of each device for all that apply)*

3.A. Gate Arms *(count)*
Roadway 2
Pedestrian _____

3.B. Gate Configuration
☐ 2 Quad ☐ Full *(Barrier)* Resistance
☐ 3 Quad
☐ 4 Quad ☐ Median Gates

3.C. Cantilevered *(or Bridged)* Flashing Light Structures *(count)*
Over Traffic Lane 0 ☐ Incandescent
Not Over Traffic Lane 0 ☐ LED

3.D. Mast Mounted Flashing Lights *(count of masts)* 4
☐ Incandescent ☐ LED
☐ Back Lights Included ☐ Side Lights Included

3.E. Total Count of Flashing Light Pairs: 0

3.F. Installation Date of Current Active Warning Devices: *(MM/YYYY)*
_____/_____ ☐ Not Required

3.G. Wayside Horn
☐ Yes Installed on *(MM/YYYY)* _____/_____
☐ No

3.H. Highway Traffic Signals Controlling Crossing
☐ Yes ☒ No

3.I. Bells *(count)*: 2

3.J. Non-Train Active Warning
☐ Flagging/Flagman ☐ Manually Operated Signals ☐ Watchman ☐ Floodlighting ☐ None

3.K. Other Flashing Lights or Warning Devices
Count 0 Specify type _____

4.A. Does nearby Hwy Intersection have Traffic Signals?
☐ Yes ☐ No

4.B. Hwy Traffic Signal Interconnection
☐ Not Interconnected
☐ For Traffic Signals
☐ For Warning Signs

4.C. Hwy Traffic Signal Preemption
☐ Simultaneous
☐ Advance

5. Highway Traffic Pre-Signals
☐ Yes ☐ No
Storage Distance * _____
Stop Line Distance * _____

6. Highway Monitoring Devices *(Check all that apply)*
☐ Yes - Photo/Video Recording
☐ Yes – Vehicle Presence Detection
☐ None

Part IV: Physical Characteristics

1. Traffic Lanes Crossing Railroad
Number of Lanes 2
☐ One-way Traffic
☐ Two-way Traffic
☐ Divided Traffic

2. Is Roadway/Pathway Paved?
☒ Yes ☐ No

3. Does Track Run Down a Street?
☐ Yes ☒ No

4. Is Crossing Illuminated? *(Street lights within approx. 50 feet from nearest rail)*
☐ Yes ☐ No

5. Crossing Surface *(on Main Track, multiple types allowed)* Installation Date * *(MM/YYYY)* _____/_____ Width * _____ Length * _____
☐ 1 Timber ☐ 2 Asphalt ☐ 3 Asphalt and Timber ☐ 4 Concrete ☐ 5 Concrete and Rubber ☒ 6 Rubber ☐ 7 Metal
☐ 8 Unconsolidated ☐ 9 Composite ☐ 10 Other *(specify)* _____

6. Intersecting Roadway within 500 feet?
☐ Yes ☒ No If Yes, Approximate Distance *(feet)* 0

7. Smallest Crossing Angle
☒ 0° – 29° ☐ 30° – 59° ☐ 60° - 90°

8. Is Commercial Power Available? *
☒ Yes ☐ No

Part V: Public Highway Information

1. Highway System
☐ (01) Interstate Highway System
☐ (02) Other Nat Hwy System (NHS)
☐ (03) Federal AID, Not NHS
☒ (08) Non-Federal Aid

2. Functional Classification of Road at Crossing
☐ (0) Rural ☒ (1) Urban
☐ (1) Interstate ☐ (5) Major Collector
☐ (2) Other Freeways and Expressways
☐ (3) Other Principal Arterial ☐ (6) Minor Collector
☐ (4) Minor Arterial ☒ (7) Local

3. Is Crossing on State Highway System?
☐ Yes ☒ No

4. Highway Speed Limit _____ MPH
☐ Posted ☐ Statutory

5. Linear Referencing System *(LRS Route ID)* *

6. LRS Milepost *

7. Annual Average Daily Traffic *(AADT)*
Year 1989 AADT 001000

8. Estimated Percent Trucks
08 %

9. Regularly Used by School Buses?
☐ Yes ☒ No Average Number per Day 0

10. Emergency Services Route
☐ Yes ☐ No

Submission Information - *This information is used for administrative purposes and is not available on the public website.*

Submitted by _____ Organization _____ Phone _____ Date _____

U. S. DOT CROSSING INVENTORY FORM

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

OMB No. 2130-0017

Instructions for the initial reporting of the following types of new or previously unreported crossings: For public highway-rail grade crossings, complete the entire inventory Form. For private highway-rail grade crossings, complete the Header, Parts I and II, and the Submission Information section. For public pathway grade crossings (including pedestrian station grade crossings), complete the Header, Parts I and II, and the Submission Information section. For Private pathway grade crossings, complete the Header, Parts I and II, and the Submission Information section. For grade-separated highway-rail or pathway crossings (including pedestrian station crossings), complete the Header, Part I, and the Submission Information section. For changes to existing data, complete the Header, Part I Items 1-3, and the Submission Information section, in addition to the updated data fields. Note: For private crossings only, Part I Item 20 and Part III Item 2.K. are required unless otherwise noted. An asterisk * denotes an optional field.

A. Revision Date (MM/DD/YYYY)	B. Reporting Agency	C. Reason for Update (Select only one)	D. DOT Crossing Inventory Number
03 / 04 / 2016	☒ Railroad ☐ Transit ☐ State ☐ Other	☒ Change in Data ☐ New Crossing ☐ Closed ☐ No Train Traffic ☐ Quiet Zone Update ☐ Re-Open ☐ Date Change Only ☐ Change in Primary Operating RR ☐ Admin. Correction	244818W

Part I: Location and Classification Information

1. Primary Operating Railroad	2. State	3. County
BNSF Railway Company [BNSF]	COLORADO	BOULDER

4. City / Municipality	5. Street/Road Name & Block Number	6. Highway Type & No.
☒ In ☐ Near BOULDER	VALMONT RD (Street/Road Name) | * (Block Number)	FAU4058

7. Do Other Railroads Operate a Separate Track at Crossing?	8. Do Other Railroads Operate Over Your Track at Crossing?
☐ Yes ☒ No If Yes, Specify RR	☐ Yes ☒ No If Yes, Specify RR

9. Railroad Division or Region	10. Railroad Subdivision or District	11. Branch or Line Name	12. RR Milepost
☐ None POWDER RIVER	☐ None FRONT RANGE	☐ None DEN UD-WENDOVER	(prefix) | 0031.449 (nnnn.nnn) | (suffix)

13. Line Segment *	14. Nearest RR Timetable Station *	15. Parent RR (if applicable)	16. Crossing Owner (if applicable)
0476	BOULDER	☒ N/A	☐ N/A BNSF

17. Crossing Type	18. Crossing Purpose	19. Crossing Position	20. Public Access (if Private Crossing)	21. Type of Train	22. Average Passenger Train Count Per Day
☒ Public ☐ Private	☒ Highway ☐ Pathway, Ped. ☐ Station, Ped.	☒ At Grade ☐ RR Under ☐ RR Over	☐ Yes ☐ No	☒ Freight ☐ Intercity Passenger ☐ Commuter ☐ Transit ☐ Shared Use Transit ☐ Tourist/Other	☐ Less Than One Per Day ☐ Number Per Day 0

23. Type of Land Use
☐ Open Space ☐ Farm ☐ Residential ☒ Commercial ☐ Industrial ☐ Institutional ☐ Recreational ☐ RR Yard

24. Is there an Adjacent Crossing with a Separate Number?	25. Quiet Zone (FRA provided)
☐ Yes ☒ No If Yes, Provide Crossing Number	☒ No ☐ 24 Hr ☐ Partial ☐ Chicago Excused Date Established

26. HSR Corridor ID	27. Latitude in decimal degrees	28. Longitude in decimal degrees	29. Lat/Long Source
☒ N/A	(WGS84 std: nn.nnnnnnn) 40.0291910	(WGS84 std: -nnn.nnnnnnn) -105.2484330	☐ Actual ☒ Estimated

30.A. Railroad Use *	31.A. State Use *
30.B. Railroad Use *	31.B. State Use *
30.C. Railroad Use *	31.C. State Use *
30.D. Railroad Use *	31.D. State Use *
32.A. Narrative (Railroad Use) *	32.B. Narrative (State Use) *

33. Emergency Notification Telephone No. (posted)	34. Railroad Contact (Telephone No.)	35. State Contact (Telephone No.)
800-832-5452	817-352-1549	303-757-9425

Part II: Railroad Information

1. Estimated Number of Daily Train Movements

1.A. Total Day Thru Trains (6 AM to 6 PM)	1.B. Total Night Thru Trains (6 PM to 6 AM)	1.C. Total Switching Trains	1.D. Total Transit Trains	1.E. Check if Less Than One Movement Per Day ☐ How many trains per week?
9	9	0	0	

2. Year of Train Count Data (YYYY)	3. Speed of Train at Crossing
2013	3.A. Maximum Timetable Speed (mph) 49 3.B. Typical Speed Range Over Crossing (mph) From 1 to 49

4. Type and Count of Tracks
Main 1 Siding 0 Yard 0 Transit 0 Industry 0

5. Train Detection (Main Track only)
☐ Constant Warning Time ☐ Motion Detection ☐AFO ☐ PTC ☒ DC ☐ Other ☐ None

6. Is Track Signaled?	7.A. Event Recorder	7.B. Remote Health Monitoring
☐ Yes ☒ No	☐ Yes ☐ No	☐ Yes ☐ No

U. S. DOT CROSSING INVENTORY FORM

A. Revision Date *(MM/DD/YYYY)*	PAGE 2	D. Crossing Inventory Number *(7 char.)*
03/04/2016		244818W

Part III: Highway or Pathway Traffic Control Device Information

1. Are there Signs or Signals? ☒ Yes ☐ No

2. Types of Passive Traffic Control Devices associated with the Crossing

2.A. Crossbuck Assemblies *(count)*	2.B. STOP Signs *(R1-1)* *(count)*	2.C. YIELD Signs *(R1-2)* *(count)*	2.D. Advance Warning Signs *(Check all that apply; include count)* ☐ None
0	0		☒ W10-1 _____ ☐ W10-3 _____ ☐ W10-11 _____ ☐ W10-2 _____ ☐ W10-4 _____ ☐ W10-12 _____

2.E. Low Ground Clearance Sign *(W10-5)*	2.F. Pavement Markings	2.G. Channelization Devices/Medians	2.H. EXEMPT Sign *(R15-3)*	2.I. ENS Sign *(I-13)* Displayed
☐ Yes *(count_____)* ☐ No	☒ Stop Lines ☐ Dynamic Envelope ☒ RR Xing Symbols ☐ None	☐ All Approaches ☐ Median ☐ One Approach ☐ None	☐ Yes ☐ No	☐ Yes ☐ No

2.J. Other MUTCD Signs	2.K. Private Crossing Signs *(if private)*	2.L. LED Enhanced Signs *(List types)*
☐ Yes ☒ No Specify Type _____ Count _____ Specify Type _____ Count _____ Specify Type _____ Count _____	☐ Yes ☐ No	

3. Types of Train Activated Warning Devices at the Grade Crossing *(specify count of each device for all that apply)*

3.A. Gate Arms *(count)*	3.B. Gate Configuration	3.C. Cantilevered *(or Bridged)* Flashing Light Structures *(count)*	3.D. Mast Mounted Flashing Lights *(count of masts)* 4	3.E. Total Count of Flashing Light Pairs
Roadway 2 Pedestrian _____	☐ 2 Quad ☐ Full *(Barrier)* Resistance ☐ 3 Quad ☐ 4 Quad ☐ Median Gates	Over Traffic Lane 0 ☐ Incandescent Not Over Traffic Lane 0 ☐ LED	☐ Incandescent ☐ LED ☐ Back Lights Included ☐ Side Lights Included	0

3.F. Installation Date of Current Active Warning Devices: *(MM/YYYY)*	3.G. Wayside Horn	3.H. Highway Traffic Signals Controlling Crossing	3.I. Bells *(count)*
_____/_____ ☐ Not Required	☐ Yes Installed on *(MM/YYYY)* _____/_____ ☐ No	☐ Yes ☒ No	1

3.J. Non-Train Active Warning	3.K. Other Flashing Lights or Warning Devices
☐ Flagging/Flagman ☐ Manually Operated Signals ☐ Watchman ☐ Floodlighting ☐ None	Count 0 Specify type _____

4.A. Does nearby Hwy Intersection have Traffic Signals?	4.B. Hwy Traffic Signal Interconnection	4.C. Hwy Traffic Signal Preemption	5. Highway Traffic Pre-Signals	6. Highway Monitoring Devices *(Check all that apply)*
☐ Yes ☐ No	☐ Not Interconnected ☐ For Traffic Signals ☐ For Warning Signs	☐ Simultaneous ☐ Advance	☐ Yes ☐ No Storage Distance * _____ Stop Line Distance * _____	☐ Yes - Photo/Video Recording ☐ Yes – Vehicle Presence Detection ☐ None

Part IV: Physical Characteristics

1. Traffic Lanes Crossing Railroad	2. Is Roadway/Pathway Paved?	3. Does Track Run Down a Street?	4. Is Crossing Illuminated? *(Street lights within approx. 50 feet from nearest rail)*
☐ One-way Traffic ☐ Two-way Traffic ☐ Divided Traffic Number of Lanes 4	☒ Yes ☐ No	☐ Yes ☒ No	☐ Yes ☐ No

5. Crossing Surface *(on Main Track, multiple types allowed)* Installation Date * *(MM/YYYY)* _____/_____ Width * _____ Length * _____

☐ 1 Timber ☐ 2 Asphalt ☐ 3 Asphalt and Timber ☒ 4 Concrete ☐ 5 Concrete and Rubber ☐ 6 Rubber ☐ 7 Metal
☐ 8 Unconsolidated ☐ 9 Composite ☐ 10 Other *(specify)* _____

6. Intersecting Roadway within 500 feet?	7. Smallest Crossing Angle	8. Is Commercial Power Available? *
☐ Yes ☒ No If Yes, Approximate Distance *(feet)* _____	☐ 0° – 29° ☐ 30° – 59° ☒ 60° - 90°	☒ Yes ☐ No

Part V: Public Highway Information

1. Highway System	2. Functional Classification of Road at Crossing	3. Is Crossing on State Highway System?	4. Highway Speed Limit
☐ (01) Interstate Highway System ☐ (02) Other Nat Hwy System (NHS) ☒ (03) Federal AID, Not NHS ☐ (08) Non-Federal Aid	☐ (0) Rural ☒ (1) Urban ☐ (1) Interstate ☐ (5) Major Collector ☐ (2) Other Freeways and Expressways ☐ (3) Other Principal Arterial ☐ (6) Minor Collector ☒ (4) Minor Arterial ☐ (7) Local	☐ Yes ☒ No	_____ MPH ☐ Posted ☐ Statutory

5. Linear Referencing System *(LRS Route ID)* *

6. LRS Milepost *

7. Annual Average Daily Traffic *(AADT)*	8. Estimated Percent Trucks	9. Regularly Used by School Buses?	10. Emergency Services Route
Year 1989 AADT 007500	05 %	☐ Yes ☒ No Average Number per Day 0	☐ Yes ☐ No

Submission Information - *This information is used for administrative purposes and is not available on the public website.*

Submitted by _____ Organization _____ Phone _____ Date _____

U. S. DOT CROSSING INVENTORY FORM

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

OMB No. 2130-0017

Instructions for the initial reporting of the following types of new or previously unreported crossings: For public highway-rail grade crossings, complete the entire inventory Form. For private highway-rail grade crossings, complete the Header, Parts I and II, and the Submission Information section. For public pathway grade crossings (including pedestrian station grade crossings), complete the Header, Parts I and II, and the Submission Information section. For Private pathway grade crossings, complete the Header, Parts I and II, and the Submission Information section. For grade-separated highway-rail or pathway crossings (including pedestrian station crossings), complete the Header, Part I, and the Submission Information section. For changes to existing data, complete the Header, Part I Items 1-3, and the Submission Information section, in addition to the updated data fields. Note: For private crossings only, Part I Item 20 and Part III Item 2.K. are required unless otherwise noted. An asterisk * denotes an optional field.

A. Revision Date (MM/DD/YYYY)	B. Reporting Agency	C. Reason for Update (Select only one)	D. DOT Crossing Inventory Number
03 / 04 / 2016	☒ Railroad ☐ Transit ☐ State ☐ Other	☒ Change in Data ☐ New Crossing ☐ Closed ☐ No Train Traffic ☐ Quiet Zone Update ☐ Re-Open ☐ Date Change Only ☐ Change in Primary Operating RR ☐ Admin. Correction	244815B

Part I: Location and Classification Information

1. Primary Operating Railroad	2. State	3. County
BNSF Railway Company [BNSF]	COLORADO	BOULDER

4. City / Municipality	5. Street/Road Name & Block Number	6. Highway Type & No.
☒ In ☐ Near BOULDER	PEARL ST (Street/Road Name) | * (Block Number)	FAU4042

7. Do Other Railroads Operate a Separate Track at Crossing?	8. Do Other Railroads Operate Over Your Track at Crossing?
☐ Yes ☒ No If Yes, Specify RR	☐ Yes ☒ No If Yes, Specify RR

9. Railroad Division or Region	10. Railroad Subdivision or District	11. Branch or Line Name	12. RR Milepost
☐ None POWDER RIVER	☐ None FRONT RANGE	☐ None DEN UD-WENDOVER	(prefix) | 0027.829 (nnnn.nnn) | (suffix)

13. Line Segment *	14. Nearest RR Timetable Station *	15. Parent RR (if applicable)	16. Crossing Owner (if applicable)
0476	BOULDER	☒ N/A	☐ N/A BNSF

17. Crossing Type	18. Crossing Purpose	19. Crossing Position	20. Public Access (if Private Crossing)	21. Type of Train	22. Average Passenger Train Count Per Day
☒ Public ☐ Private	☒ Highway ☐ Pathway, Ped. ☐ Station, Ped.	☒ At Grade ☐ RR Under ☐ RR Over	☐ Yes ☐ No	☒ Freight ☐ Intercity Passenger ☐ Commuter ☐ Transit ☐ Shared Use Transit ☐ Tourist/Other	☐ Less Than One Per Day ☐ Number Per Day 0

23. Type of Land Use
☐ Open Space ☐ Farm ☐ Residential ☒ Commercial ☐ Industrial ☐ Institutional ☐ Recreational ☐ RR Yard

24. Is there an Adjacent Crossing with a Separate Number?	25. Quiet Zone (FRA provided)
☐ Yes ☒ No If Yes, Provide Crossing Number	☒ No ☐ 24 Hr ☐ Partial ☐ Chicago Excused Date Established

26. HSR Corridor ID	27. Latitude in decimal degrees	28. Longitude in decimal degrees	29. Lat/Long Source
☒ N/A	(WGS84 std: nn.nnnnnnn) 40.0236200	(WGS84 std: -nnn.nnnnnnn) -105.2503370	☐ Actual ☒ Estimated

30.A. Railroad Use *	31.A. State Use *
30.B. Railroad Use *	31.B. State Use *
30.C. Railroad Use *	31.C. State Use *
30.D. Railroad Use *	31.D. State Use *
32.A. Narrative (Railroad Use) *	32.B. Narrative (State Use) *

33. Emergency Notification Telephone No. (posted)	34. Railroad Contact (Telephone No.)	35. State Contact (Telephone No.)
800-832-5452	817-352-1549	303-757-9425

Part II: Railroad Information

1. Estimated Number of Daily Train Movements

1.A. Total Day Thru Trains (6 AM to 6 PM)	1.B. Total Night Thru Trains (6 PM to 6 AM)	1.C. Total Switching Trains	1.D. Total Transit Trains	1.E. Check if Less Than One Movement Per Day ☐ How many trains per week?
9	9	0	0	

2. Year of Train Count Data (YYYY)	3. Speed of Train at Crossing
2013	3.A. Maximum Timetable Speed (mph) 49 3.B. Typical Speed Range Over Crossing (mph) From 1 to 49

4. Type and Count of Tracks
Main 1 Siding 0 Yard 0 Transit 0 Industry 0

5. Train Detection (Main Track only)
☐ Constant Warning Time ☐ Motion Detection ☐AFO ☐ PTC ☒ DC ☐ Other ☐ None

6. Is Track Signaled?	7.A. Event Recorder	7.B. Remote Health Monitoring
☐ Yes ☒ No	☐ Yes ☐ No	☐ Yes ☐ No

U. S. DOT CROSSING INVENTORY FORM

A. Revision Date *(MM/DD/YYYY)*	PAGE 2	D. Crossing Inventory Number *(7 char.)*
03/04/2016		244815B

Part III: Highway or Pathway Traffic Control Device Information

1. Are there Signs or Signals? ☒ Yes ☐ No

2. Types of Passive Traffic Control Devices associated with the Crossing

2.A. Crossbuck Assemblies *(count)*	2.B. STOP Signs *(R1-1) (count)*	2.C. YIELD Signs *(R1-2) (count)*	2.D. Advance Warning Signs *(Check all that apply; include count)* ☐ None
4	0		☒ W10-1 ☐ W10-3 ☐ W10-11 ☐ W10-2 ☐ W10-4 ☐ W10-12

2.E. Low Ground Clearance Sign *(W10-5)*	2.F. Pavement Markings	2.G. Channelization Devices/Medians	2.H. EXEMPT Sign *(R15-3)*	2.I. ENS Sign *(I-13)* Displayed
☐ Yes *(count_____)* ☐ No	☒ Stop Lines ☐ Dynamic Envelope ☒ RR Xing Symbols ☐ None	☐ All Approaches ☐ Median ☐ One Approach ☐ None	☐ Yes ☐ No	☐ Yes ☐ No

2.J. Other MUTCD Signs ☐ Yes ☒ No	2.K. Private Crossing Signs *(if private)*	2.L. LED Enhanced Signs *(List types)*
Specify Type _____ Count _____ Specify Type _____ Count _____ Specify Type _____ Count _____	☐ Yes ☐ No	

3. Types of Train Activated Warning Devices at the Grade Crossing *(specify count of each device for all that apply)*

3.A. Gate Arms *(count)*	3.B. Gate Configuration	3.C. Cantilevered *(or Bridged)* Flashing Light Structures *(count)*	3.D. Mast Mounted Flashing Lights *(count of masts)* 4	3.E. Total Count of Flashing Light Pairs
Roadway 4 Pedestrian _____	☐ 2 Quad ☐ 3 Quad ☐ 4 Quad ☐ Full *(Barrier)* Resistance ☐ Median Gates	Over Traffic Lane 0 ☐ Incandescent Not Over Traffic Lane 0 ☐ LED	☐ Incandescent ☐ LED ☐ Back Lights Included ☐ Side Lights Included	0

3.F. Installation Date of Current Active Warning Devices: *(MM/YYYY)*	3.G. Wayside Horn	3.H. Highway Traffic Signals Controlling Crossing	3.I. Bells *(count)*
_____/_____ ☐ Not Required	☐ Yes Installed on *(MM/YYYY)* _____/_____ ☐ No	☐ Yes ☒ No	1

3.J. Non-Train Active Warning	3.K. Other Flashing Lights or Warning Devices
☐ Flagging/Flagman ☐ Manually Operated Signals ☐ Watchman ☐ Floodlighting ☐ None	Count 0 Specify type _____

4.A. Does nearby Hwy Intersection have Traffic Signals?	4.B. Hwy Traffic Signal Interconnection	4.C. Hwy Traffic Signal Preemption	5. Highway Traffic Pre-Signals	6. Highway Monitoring Devices *(Check all that apply)*
☐ Yes ☐ No	☐ Not Interconnected ☐ For Traffic Signals ☐ For Warning Signs	☐ Simultaneous ☐ Advance	☐ Yes ☐ No Storage Distance * _____ Stop Line Distance * _____	☐ Yes - Photo/Video Recording ☐ Yes – Vehicle Presence Detection ☐ None

Part IV: Physical Characteristics

1. Traffic Lanes Crossing Railroad	2. Is Roadway/Pathway Paved?	3. Does Track Run Down a Street?	4. Is Crossing Illuminated? *(Street lights within approx. 50 feet from nearest rail)*
☐ One-way Traffic ☐ Two-way Traffic ☐ Divided Traffic Number of Lanes 4	☒ Yes ☐ No	☐ Yes ☒ No	☐ Yes ☐ No

5. Crossing Surface *(on Main Track, multiple types allowed)* Installation Date * *(MM/YYYY)* _____/_____ Width * _____ Length * _____

☐ 1 Timber ☐ 2 Asphalt ☐ 3 Asphalt and Timber ☐ 4 Concrete ☒ 5 Concrete and Rubber ☐ 6 Rubber ☐ 7 Metal
☐ 8 Unconsolidated ☐ 9 Composite ☐ 10 Other *(specify)* _____

6. Intersecting Roadway within 500 feet?	7. Smallest Crossing Angle	8. Is Commercial Power Available? *
☒ Yes ☐ No If Yes, Approximate Distance *(feet)* 75	☐ 0° – 29° ☐ 30° – 59° ☒ 60° - 90°	☒ Yes ☐ No

Part V: Public Highway Information

1. Highway System	2. Functional Classification of Road at Crossing	3. Is Crossing on State Highway System?	4. Highway Speed Limit
☐ (01) Interstate Highway System ☐ (02) Other Nat Hwy System (NHS) ☒ (03) Federal AID, Not NHS ☐ (08) Non-Federal Aid	☐ (0) Rural ☒ (1) Urban ☐ (1) Interstate ☒ (5) Major Collector ☐ (2) Other Freeways and Expressways ☐ (3) Other Principal Arterial ☐ (6) Minor Collector ☐ (4) Minor Arterial ☐ (7) Local	☐ Yes ☒ No	_____ MPH ☐ Posted ☐ Statutory

5. Linear Referencing System *(LRS Route ID)* *

6. LRS Milepost *

7. Annual Average Daily Traffic *(AADT)*	8. Estimated Percent Trucks	9. Regularly Used by School Buses?	10. Emergency Services Route
Year 1989 AADT 001200	05 %	☐ Yes ☒ No Average Number per Day 0	☐ Yes ☐ No

Submission Information - *This information is used for administrative purposes and is not available on the public website.*

Submitted by _____ Organization _____ Phone _____ Date _____

U. S. DOT CROSSING INVENTORY FORM

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

OMB No. 2130-0017

Instructions for the initial reporting of the following types of new or previously unreported crossings: For public highway-rail grade crossings, complete the entire inventory Form. For private highway-rail grade crossings, complete the Header, Parts I and II, and the Submission Information section. For public pathway grade crossings (including pedestrian station grade crossings), complete the Header, Parts I and II, and the Submission Information section. For Private pathway grade crossings, complete the Header, Parts I and II, and the Submission Information section. For grade-separated highway-rail or pathway crossings (including pedestrian station crossings), complete the Header, Part I, and the Submission Information section. For changes to existing data, complete the Header, Part I Items 1-3, and the Submission Information section, in addition to the updated data fields. Note: For private crossings only, Part I Item 20 and Part III Item 2.K. are required unless otherwise noted. An asterisk * denotes an optional field.

A. Revision Date *(MM/DD/YYYY)*	**B. Reporting Agency**	**C. Reason for Update** *(Select only one)*	**D. DOT Crossing Inventory Number**
03 / 04 / 2016	☒ Railroad ☐ Transit ☐ State ☐ Other	☒ Change in Data ☐ New Crossing ☐ Closed ☐ No Train Traffic ☐ Quiet Zone Update ☐ Re-Open ☐ Date Change Only ☐ Change in Primary Operating RR ☐ Admin. Correction	244813M

Part I: Location and Classification Information

1. Primary Operating Railroad	**2. State**	**3. County**
BNSF Railway Company [BNSF]	COLORADO	BOULDER

4. City / Municipality	**5. Street/Road Name & Block Number**	**6. Highway Type & No.**
☒ In ☐ Near BOULDER	55TH ST *(Street/Road Name)* | * *(Block Number)*	FAU4065

7. Do Other Railroads Operate a Separate Track at Crossing? ☐ Yes ☒ No	**8. Do Other Railroads Operate Over Your Track at Crossing?** ☐ Yes ☒ No
If Yes, Specify RR	If Yes, Specify RR

9. Railroad Division or Region	**10. Railroad Subdivision or District**	**11. Branch or Line Name**	**12. RR Milepost**
☐ None POWDER RIVER	☐ None FRONT RANGE	☐ None DEN UD-WENDOVER	| 0026.379 | *(prefix) | (nnnn.nnn) | (suffix)*

13. Line Segment *	**14. Nearest RR Timetable Station** *	**15. Parent RR** *(if applicable)*	**16. Crossing Owner** *(if applicable)*
0476	BOULDER	☒ N/A	☐ N/A BNSF

17. Crossing Type	**18. Crossing Purpose**	**19. Crossing Position**	**20. Public Access** *(if Private Crossing)*	**21. Type of Train**	**22. Average Passenger Train Count Per Day**
☒ Public ☐ Private	☒ Highway ☐ Pathway, Ped. ☐ Station, Ped.	☒ At Grade ☐ RR Under ☐ RR Over	☐ Yes ☐ No	☒ Freight ☐ Intercity Passenger ☐ Commuter ☐ Transit ☐ Shared Use Transit ☐ Tourist/Other	☐ Less Than One Per Day ☐ Number Per Day 0

23. Type of Land Use
☐ Open Space ☐ Farm ☐ Residential ☒ Commercial ☐ Industrial ☐ Institutional ☐ Recreational ☐ RR Yard

24. Is there an Adjacent Crossing with a Separate Number?	**25. Quiet Zone** *(FRA provided)*
☐ Yes ☒ No If Yes, Provide Crossing Number	☒ No ☐ 24 Hr ☐ Partial ☐ Chicago Excused Date Established

26. HSR Corridor ID	**27. Latitude in decimal degrees**	**28. Longitude in decimal degrees**	**29. Lat/Long Source**
☒ N/A	*(WGS84 std: nn.nnnnnnn)* 40.0185450	*(WGS84 std: -nnn.nnnnnnn)* -105.2254160	☐ Actual ☒ Estimated

30.A. Railroad Use *	**31.A. State Use** *
30.B. Railroad Use *	**31.B. State Use** *
30.C. Railroad Use *	**31.C. State Use** *
30.D. Railroad Use *	**31.D. State Use** *
32.A. Narrative *(Railroad Use)* *	**32.B. Narrative** *(State Use)* *

33. Emergency Notification Telephone No. *(posted)*	**34. Railroad Contact** *(Telephone No.)*	**35. State Contact** *(Telephone No.)*
800-832-5452	817-352-1549	303-757-9425

Part II: Railroad Information

1. Estimated Number of Daily Train Movements

1.A. Total Day Thru Trains *(6 AM to 6 PM)*	1.B. Total Night Thru Trains *(6 PM to 6 AM)*	1.C. Total Switching Trains	1.D. Total Transit Trains	1.E. Check if Less Than One Movement Per Day ☐ How many trains per week?
9	9	0	0	

2. Year of Train Count Data *(YYYY)*	3. Speed of Train at Crossing
2013	3.A. Maximum Timetable Speed *(mph)* 30 3.B. Typical Speed Range Over Crossing *(mph)* From 1 to 30

4. Type and Count of Tracks
Main 1 Siding 0 Yard 0 Transit 0 Industry 0

5. Train Detection *(Main Track only)*
☐ Constant Warning Time ☐ Motion Detection ☐AFO ☐ PTC ☒ DC ☐ Other ☐ None

6. Is Track Signaled?	7.A. Event Recorder	7.B. Remote Health Monitoring
☐ Yes ☒ No	☐ Yes ☐ No	☐ Yes ☐ No

U. S. DOT CROSSING INVENTORY FORM

A. Revision Date *(MM/DD/YYYY)*	PAGE 2	D. Crossing Inventory Number *(7 char.)*
03/04/2016		244813M

Part III: Highway or Pathway Traffic Control Device Information

1. Are there Signs or Signals? ☒ Yes ☐ No

2. Types of Passive Traffic Control Devices associated with the Crossing

2.A. Crossbuck Assemblies *(count)*	2.B. STOP Signs *(R1-1)* *(count)*	2.C. YIELD Signs *(R1-2)* *(count)*	2.D. Advance Warning Signs *(Check all that apply; include count)* ☐ None
0	0		☒ W10-1 _____ ☐ W10-3 _____ ☐ W10-11 _____ ☐ W10-2 _____ ☐ W10-4 _____ ☐ W10-12 _____

2.E. Low Ground Clearance Sign *(W10-5)*	2.F. Pavement Markings	2.G. Channelization Devices/Medians	2.H. EXEMPT Sign *(R15-3)*	2.I. ENS Sign *(I-13)* Displayed
☐ Yes *(count_____)* ☐ No	☒ Stop Lines ☐ Dynamic Envelope ☒ RR Xing Symbols ☐ None	☐ All Approaches ☐ Median ☐ One Approach ☐ None	☐ Yes ☐ No	☐ Yes ☐ No

2.J. Other MUTCD Signs ☐ Yes ☒ No	2.K. Private Crossing Signs *(if private)*	2.L. LED Enhanced Signs *(List types)*
Specify Type _____ Count _____ Specify Type _____ Count _____ Specify Type _____ Count _____	☐ Yes ☐ No	

3. Types of Train Activated Warning Devices at the Grade Crossing *(specify count of each device for all that apply)*

3.A. Gate Arms *(count)*	3.B. Gate Configuration	3.C. Cantilevered *(or Bridged)* Flashing Light Structures *(count)*	3.D. Mast Mounted Flashing Lights *(count of masts)* 4	3.E. Total Count of Flashing Light Pairs
Roadway 2 Pedestrian _____	☐ 2 Quad ☐ 3 Quad ☐ 4 Quad ☐ Full *(Barrier)* Resistance ☐ Median Gates	Over Traffic Lane 0 ☐ Incandescent Not Over Traffic Lane 0 ☐ LED	☐ Incandescent ☐ LED ☐ Back Lights Included ☐ Side Lights Included	0

3.F. Installation Date of Current Active Warning Devices: *(MM/YYYY)*	3.G. Wayside Horn	3.H. Highway Traffic Signals Controlling Crossing	3.I. Bells *(count)*
_____/_____ ☐ Not Required	☐ Yes Installed on *(MM/YYYY)* _____/_____ ☐ No	☐ Yes ☒ No	1

3.J. Non-Train Active Warning	3.K. Other Flashing Lights or Warning Devices
☐ Flagging/Flagman ☐ Manually Operated Signals ☐ Watchman ☐ Floodlighting ☐ None	Count 0 Specify type _____

4.A. Does nearby Hwy Intersection have Traffic Signals?	4.B. Hwy Traffic Signal Interconnection	4.C. Hwy Traffic Signal Preemption	5. Highway Traffic Pre-Signals	6. Highway Monitoring Devices *(Check all that apply)*
☐ Yes ☐ No	☐ Not Interconnected ☐ For Traffic Signals ☐ For Warning Signs	☐ Simultaneous ☐ Advance	☐ Yes ☐ No Storage Distance * _____ Stop Line Distance * _____	☐ Yes - Photo/Video Recording ☐ Yes – Vehicle Presence Detection ☐ None

Part IV: Physical Characteristics

1. Traffic Lanes Crossing Railroad	2. Is Roadway/Pathway Paved?	3. Does Track Run Down a Street?	4. Is Crossing Illuminated? *(Street lights within approx. 50 feet from nearest rail)*
☐ One-way Traffic ☐ Two-way Traffic ☐ Divided Traffic Number of Lanes 4	☒ Yes ☐ No	☐ Yes ☒ No	☐ Yes ☐ No

5. Crossing Surface *(on Main Track, multiple types allowed)* Installation Date * *(MM/YYYY)* _____/_____ Width * _____ Length * _____

☐ 1 Timber ☐ 2 Asphalt ☐ 3 Asphalt and Timber ☒ 4 Concrete ☐ 5 Concrete and Rubber ☐ 6 Rubber ☐ 7 Metal ☐ 8 Unconsolidated ☐ 9 Composite ☐ 10 Other *(specify)* _____

6. Intersecting Roadway within 500 feet?	7. Smallest Crossing Angle	8. Is Commercial Power Available? *
☐ Yes ☒ No If Yes, Approximate Distance *(feet)* _____	☐ 0° – 29° ☐ 30° – 59° ☒ 60° - 90°	☒ Yes ☐ No

Part V: Public Highway Information

1. Highway System	2. Functional Classification of Road at Crossing	3. Is Crossing on State Highway System?	4. Highway Speed Limit
☐ (01) Interstate Highway System ☐ (02) Other Nat Hwy System (NHS) ☒ (03) Federal AID, Not NHS ☐ (08) Non-Federal Aid	☐ (0) Rural ☒ (1) Urban ☐ (1) Interstate ☒ (5) Major Collector ☐ (2) Other Freeways and Expressways ☐ (3) Other Principal Arterial ☐ (6) Minor Collector ☐ (4) Minor Arterial ☐ (7) Local	☐ Yes ☒ No	_____ MPH ☐ Posted ☐ Statutory

5. Linear Referencing System *(LRS Route ID)* *

6. LRS Milepost *

7. Annual Average Daily Traffic *(AADT)*	8. Estimated Percent Trucks	9. Regularly Used by School Buses?	10. Emergency Services Route
Year 1989 AADT 007800	11 %	☐ Yes ☒ No Average Number per Day 0	☐ Yes ☐ No

Submission Information - *This information is used for administrative purposes and is not available on the public website.*

Submitted by _____ Organization _____ Phone _____ Date _____

U. S. DOT CROSSING INVENTORY FORM

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

OMB No. 2130-0017

Instructions for the initial reporting of the following types of new or previously unreported crossings: For public highway-rail grade crossings, complete the entire inventory Form. For private highway-rail grade crossings, complete the Header, Parts I and II, and the Submission Information section. For public pathway grade crossings (including pedestrian station grade crossings), complete the Header, Parts I and II, and the Submission Information section. For Private pathway grade crossings, complete the Header, Parts I and II, and the Submission Information section. For grade-separated highway-rail or pathway crossings (including pedestrian station crossings), complete the Header, Part I, and the Submission Information section. For changes to existing data, complete the Header, Part I Items 1-3, and the Submission Information section, in addition to the updated data fields. Note: For private crossings only, Part I Item 20 and Part III Item 2.K. are required unless otherwise noted. An asterisk * denotes an optional field.

A. Revision Date (MM/DD/YYYY)	B. Reporting Agency	C. Reason for Update (Select only one)	D. DOT Crossing Inventory Number
03 / 04 / 2016	☒ Railroad ☐ Transit ☐ State ☐ Other	☒ Change in Data ☐ New Crossing ☐ Closed ☐ No Train Traffic ☐ Quiet Zone Update ☐ Re-Open ☐ Date Change Only ☐ Change in Primary Operating RR ☐ Admin. Correction	244811Y

Part I: Location and Classification Information

1. Primary Operating Railroad	2. State	3. County
BNSF Railway Company [BNSF]	COLORADO	BOULDER

4. City / Municipality	5. Street/Road Name & Block Number	6. Highway Type & No.
☐ In ☒ Near BOULDER	63RD ST (Street/Road Name) | * (Block Number)	CR 39

7. Do Other Railroads Operate a Separate Track at Crossing?	8. Do Other Railroads Operate Over Your Track at Crossing?
☐ Yes ☒ No If Yes, Specify RR	☐ Yes ☒ No If Yes, Specify RR

9. Railroad Division or Region	10. Railroad Subdivision or District	11. Branch or Line Name	12. RR Milepost
☐ None POWDER RIVER	☐ None FRONT RANGE	☐ None DEN UD-WENDOVER	(prefix) | 0025.370 (nnnn.nnn) | (suffix)

13. Line Segment *	14. Nearest RR Timetable Station *	15. Parent RR (if applicable)	16. Crossing Owner (if applicable)
0476	BOULDER	☒ N/A	☐ N/A BNSF

17. Crossing Type	18. Crossing Purpose	19. Crossing Position	20. Public Access (if Private Crossing)	21. Type of Train	22. Average Passenger Train Count Per Day
☒ Public ☐ Private	☒ Highway ☐ Pathway, Ped. ☐ Station, Ped.	☒ At Grade ☐ RR Under ☐ RR Over	☐ Yes ☐ No	☒ Freight ☐ Intercity Passenger ☐ Commuter ☐ Transit ☐ Shared Use Transit ☐ Tourist/Other	☐ Less Than One Per Day ☐ Number Per Day 0

23. Type of Land Use
☐ Open Space ☐ Farm ☐ Residential ☒ Commercial ☐ Industrial ☐ Institutional ☐ Recreational ☐ RR Yard

24. Is there an Adjacent Crossing with a Separate Number?	25. Quiet Zone (FRA provided)
☐ Yes ☒ No If Yes, Provide Crossing Number	☒ No ☐ 24 Hr ☐ Partial ☐ Chicago Excused Date Established

26. HSR Corridor ID	27. Latitude in decimal degrees	28. Longitude in decimal degrees	29. Lat/Long Source
☒ N/A	(WGS84 std: nn.nnnnnnn) 40.0165290	(WGS84 std: -nnn.nnnnnnn) -105.2066540	☐ Actual ☒ Estimated

30.A. Railroad Use *	31.A. State Use *
30.B. Railroad Use *	31.B. State Use *
30.C. Railroad Use *	31.C. State Use *
30.D. Railroad Use *	31.D. State Use *
32.A. Narrative (Railroad Use) *	32.B. Narrative (State Use) *

33. Emergency Notification Telephone No. (posted)	34. Railroad Contact (Telephone No.)	35. State Contact (Telephone No.)
800-832-5452	817-352-1549	303-757-9425

Part II: Railroad Information

1. Estimated Number of Daily Train Movements

1.A. Total Day Thru Trains (6 AM to 6 PM)	1.B. Total Night Thru Trains (6 PM to 6 AM)	1.C. Total Switching Trains	1.D. Total Transit Trains	1.E. Check if Less Than One Movement Per Day ☐ How many trains per week?
8	8	0	0	

2. Year of Train Count Data (YYYY)	3. Speed of Train at Crossing
2013	3.A. Maximum Timetable Speed (mph) 30 3.B. Typical Speed Range Over Crossing (mph) From 1 to 30

4. Type and Count of Tracks
Main 1 Siding 0 Yard 1 Transit 0 Industry 0

5. Train Detection (Main Track only)
☒ Constant Warning Time ☐ Motion Detection ☐AFO ☐ PTC ☐ DC ☐ Other ☐ None

6. Is Track Signaled?	7.A. Event Recorder	7.B. Remote Health Monitoring
☐ Yes ☒ No	☐ Yes ☐ No	☐ Yes ☐ No

U. S. DOT CROSSING INVENTORY FORM

A. Revision Date *(MM/DD/YYYY)*	PAGE 2	D. Crossing Inventory Number *(7 char.)*
03/04/2016		244811Y

Part III: Highway or Pathway Traffic Control Device Information

1. Are there Signs or Signals? ☒ Yes ☐ No

2. Types of Passive Traffic Control Devices associated with the Crossing

2.A. Crossbuck Assemblies *(count)*	2.B. STOP Signs *(R1-1)* *(count)*	2.C. YIELD Signs *(R1-2)* *(count)*	2.D. Advance Warning Signs *(Check all that apply; include count)* ☐ None
0	0		☒ W10-1 _____ ☐ W10-3 _____ ☐ W10-11 _____ ☐ W10-2 _____ ☐ W10-4 _____ ☐ W10-12 _____

2.E. Low Ground Clearance Sign *(W10-5)*	2.F. Pavement Markings	2.G. Channelization Devices/Medians	2.H. EXEMPT Sign *(R15-3)*	2.I. ENS Sign *(I-13)* Displayed
☐ Yes *(count_____)* ☐ No	☒ Stop Lines ☐ Dynamic Envelope ☒ RR Xing Symbols ☐ None	☐ All Approaches ☐ Median ☐ One Approach ☐ None	☐ Yes ☐ No	☐ Yes ☐ No

2.J. Other MUTCD Signs ☐ Yes ☒ No	2.K. Private Crossing Signs *(if private)*	2.L. LED Enhanced Signs *(List types)*
Specify Type _____ Count _____ Specify Type _____ Count _____ Specify Type _____ Count _____	☐ Yes ☐ No	

3. Types of Train Activated Warning Devices at the Grade Crossing *(specify count of each device for all that apply)*

3.A. Gate Arms *(count)*	3.B. Gate Configuration	3.C. Cantilevered *(or Bridged)* Flashing Light Structures *(count)*	3.D. Mast Mounted Flashing Lights *(count of masts)* 8	3.E. Total Count of Flashing Light Pairs
Roadway 4 Pedestrian _____	☐ 2 Quad ☐ 3 Quad ☐ 4 Quad ☐ Full *(Barrier)* Resistance ☐ Median Gates	Over Traffic Lane 0 ☐ Incandescent Not Over Traffic Lane 0 ☐ LED	☐ Incandescent ☐ LED ☐ Back Lights Included ☐ Side Lights Included	0

3.F. Installation Date of Current Active Warning Devices: *(MM/YYYY)*	3.G. Wayside Horn	3.H. Highway Traffic Signals Controlling Crossing	3.I. Bells *(count)*
_____/_____ ☐ Not Required	☐ Yes Installed on *(MM/YYYY)* _____/_____ ☐ No	☐ Yes ☒ No	2

3.J. Non-Train Active Warning	3.K. Other Flashing Lights or Warning Devices
☐ Flagging/Flagman ☐ Manually Operated Signals ☐ Watchman ☐ Floodlighting ☐ None	Count 0 Specify type _____

4.A. Does nearby Hwy Intersection have Traffic Signals?	4.B. Hwy Traffic Signal Interconnection	4.C. Hwy Traffic Signal Preemption	5. Highway Traffic Pre-Signals	6. Highway Monitoring Devices *(Check all that apply)*
☐ Yes ☐ No	☐ Not Interconnected ☐ For Traffic Signals ☐ For Warning Signs	☐ Simultaneous ☐ Advance	☐ Yes ☐ No Storage Distance * _____ Stop Line Distance * _____	☐ Yes - Photo/Video Recording ☐ Yes – Vehicle Presence Detection ☐ None

Part IV: Physical Characteristics

1. Traffic Lanes Crossing Railroad	2. Is Roadway/Pathway Paved?	3. Does Track Run Down a Street?	4. Is Crossing Illuminated? *(Street lights within approx. 50 feet from nearest rail)*
☐ One-way Traffic ☐ Two-way Traffic Number of Lanes 2 ☐ Divided Traffic	☒ Yes ☐ No	☐ Yes ☒ No	☐ Yes ☐ No

5. Crossing Surface *(on Main Track, multiple types allowed)* Installation Date * *(MM/YYYY)* _____/_____ Width * _____ Length * _____

☐ 1 Timber ☐ 2 Asphalt ☐ 3 Asphalt and Timber ☒ 4 Concrete ☐ 5 Concrete and Rubber ☐ 6 Rubber ☐ 7 Metal ☐ 8 Unconsolidated ☐ 9 Composite ☐ 10 Other *(specify)* _____

6. Intersecting Roadway within 500 feet?	7. Smallest Crossing Angle	8. Is Commercial Power Available? *
☐ Yes ☒ No If Yes, Approximate Distance *(feet)* _____	☐ 0° – 29° ☐ 30° – 59° ☒ 60° - 90°	☒ Yes ☐ No

Part V: Public Highway Information

1. Highway System	2. Functional Classification of Road at Crossing ☒ (0) Rural ☐ (1) Urban	3. Is Crossing on State Highway System?	4. Highway Speed Limit
☐ (01) Interstate Highway System ☐ (02) Other Nat Hwy System (NHS) ☐ (03) Federal AID, Not NHS ☒ (08) Non-Federal Aid	☐ (1) Interstate ☐ (5) Major Collector ☐ (2) Other Freeways and Expressways ☐ (3) Other Principal Arterial ☐ (6) Minor Collector ☐ (4) Minor Arterial ☒ (7) Local	☐ Yes ☒ No	_____ MPH ☐ Posted ☐ Statutory
		5. Linear Referencing System *(LRS Route ID)* *	
		6. LRS Milepost *	

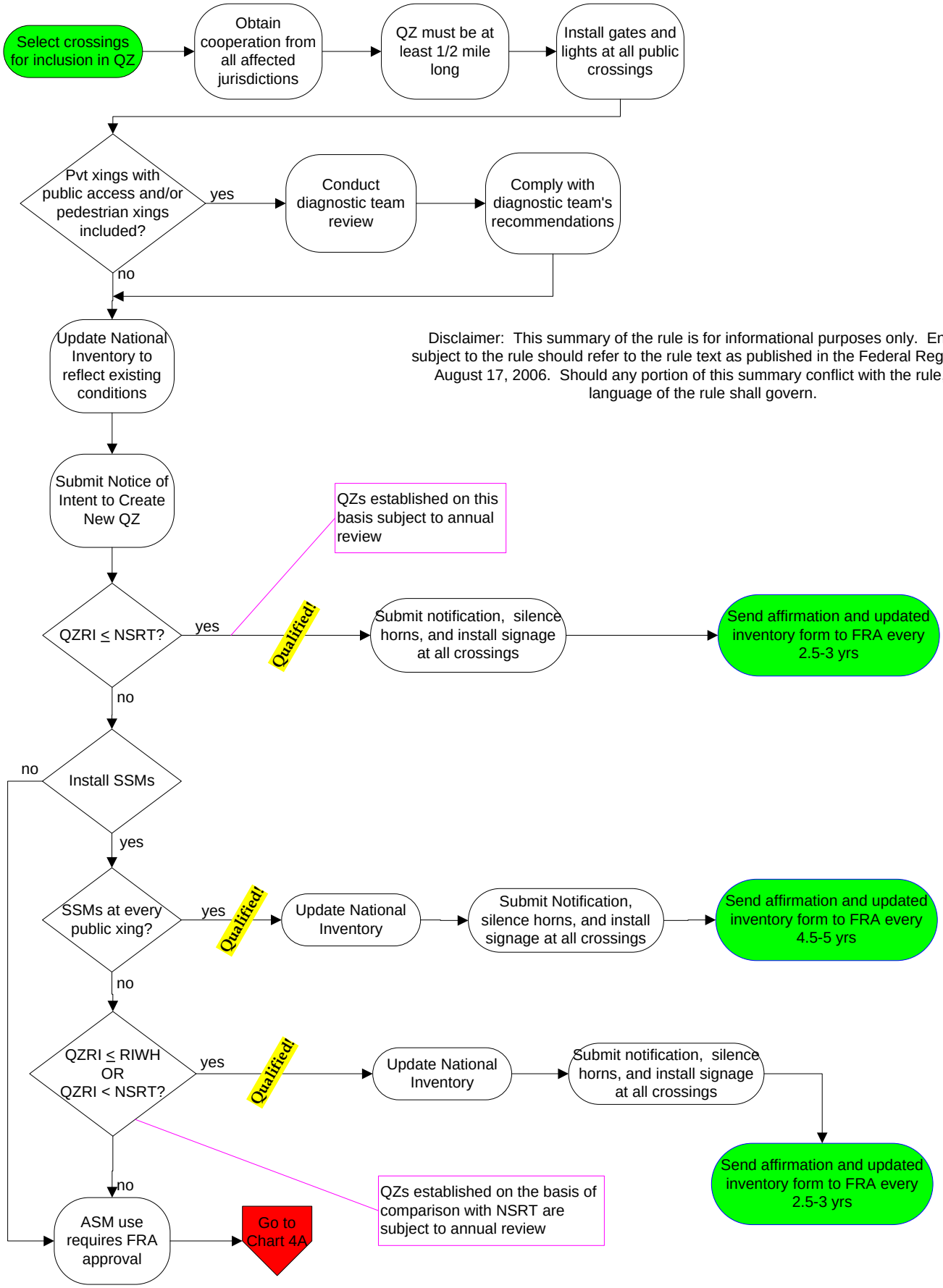
7. Annual Average Daily Traffic *(AADT)*	8. Estimated Percent Trucks	9. Regularly Used by School Buses?	10. Emergency Services Route
Year 1989 AADT 001700	08 %	☐ Yes ☒ No Average Number per Day 0	☐ Yes ☐ No

Submission Information - *This information is used for administrative purposes and is not available on the public website.*

Submitted by _____ Organization _____ Phone _____ Date _____

APPENDIX B QUIET ZONE SUMMARY FLOWCHART

Chart 3 - Creating a New Quiet Zone or New Partial Quiet Zone using SSMs



Notice of Intent to Create a Quiet Zone[1]

Who should submit this notice

A public authority seeking to create a New Quiet Zone or a New Partial Quiet Zone should submit notice of its intent.

Parties to be notified

Before a public authority establishes a quiet zone either through public authority designation or through FRA approval, it must provide written notice to several parties. These parties include the following:

- All railroads operating over the public highway-rail grade crossings within the quiet zone,
- The State agency responsible for highway and road safety, and
- The State agency responsible for grade crossing safety.

All notices must be provided by certified mail, return receipt requested.

Deadlines

A party may submit information or comments to the public authority during the 60-day period after the date on which the Notice of Intent was mailed. This 60-day comment period may terminate early, if the public authority obtains from each party either written comments or written statements that the parties do not have any comments.

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[1] The information collection submission for the final rule has been approved by the OMB. The OMB control number is 2130-0560.

Notification contents

- The notice must unambiguously state which crossings will be contained within the quiet zone. Each public, pedestrian, and private crossing must be identified by both the U.S. DOT National Highway-Rail Grade Crossing Inventory number and the street or highway name.

- The notice must indicate the time period during which train horn restrictions would be imposed (i.e. 24 hours or from 10 pm to 7 am)

- The notice must contain a brief explanation of the tentative plans for implementing improvements within the quiet zone.

- The notice must clearly indicate the name, title, and contact information for the person who will act as point of contact during the development process.

- All notifications must contain list of the names and addresses of each party notified.

Notice of Quiet Zone Establishment[1]

Who should submit this notice

A public authority wishing to establish a New Quiet Zone, a New Partial Quiet Zone, a Pre-Rule Quiet Zone, or a Pre-Rule Partial Quiet Zone must submit a notice of Quiet Zone Establishment.

Parties to be notified ((§222.43(a)(4))

The public authority must provide written notice to several parties. These parties include the following:

- ❑ All railroads operating over the public highway-rail grade crossing within the quiet zone,
- ❑ The highway or traffic control authority, or the law enforcement authority with jurisdiction over motor vehicle traffic at the quiet zone crossings,
- ❑ Landowners with control over any private crossings within the quiet zone,
- ❑ The State agency responsible for highway and road safety,
- ❑ The State agency responsible for grade crossing safety, and
- ❑ The FRA Associate Administrator.

All notices must be provided by certified mail, return receipt requested.

Deadlines

Notice of the establishment of a Quiet Zone should be mailed no later than 21 days before the date on which train horns are scheduled to cease sounding. For New Quiet Zones and New Partial Quiet Zones, the Notice of Quiet Zone Establishment can not be served earlier than 60 days after the Notice of Intent was mailed, unless the Notice of Quiet Zone Establishment contains a written statement affirming that

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[1] The information collection submission for the final rule has been approved by the OMB. The OMB control number is 2130-0560.

written comments and/or 'no comment' statements have been received from each party that received the Notice of Intent. For Pre-Rule Quiet Zones that qualified for automatic approval, the Notice of Quiet Zone Establishment should be mailed out before December 24, 2005.

Notification contents (§222.43(e))

- ❑ The notice must unambiguously state which crossings are contained within the quiet zone. All public, pedestrian, and private crossings must be identified by both the U.S. DOT National Highway-Rail Grade Crossing Inventory Number, and by street or highway name.

- ❑ The notification must clearly cite the regulatory provision that provides the basis for establishing the Quiet Zone:

  - § 222.39(a)(1), implementation of SSMs at every public crossing in the New Quiet Zone or New Partial Quiet Zone;

  - §222.39(a)(2)(i), the QZRI is at or below the NSRT without installation of any SSMs at the New Quiet Zone or New Partial Quiet Zone;

  - §222.39(a)(2)(ii), SSMs were implemented at some crossings in the New Quiet Zone or New Partial Quiet Zone to bring the QZRI to a level at or below the NSRT;

  - §222.39(a)(3), SSMs were implemented at some crossings in the New Quiet Zone or New Partial Quiet Zone to bring the QZRI to a level at or below the RIWH; or

  - §222.39(b), public authority application to the FRA for a New Quiet Zone or New Partial Quiet Zone.

  - § 222.41(a)(i) Pre-Rule Quiet Zones that qualify for automatic approval because every crossing is equipped with an SSM,

  - § 222.41(a)(ii) Pre-Rule Quiet Zones that qualify for automatic approval because QZRI $\leq$ NSRT,

  - § 222.41(a)(iii) Pre-Rule Quiet Zones that qualify for automatic approval because NSRT < QZRI < 2* NSRT, and there have been no relevant collisions within the 5 years preceding April 27th, 2005.

- § 222.41(b)(i) Pre-Rule Partial Quiet Zones that qualify for automatic approval because every crossing is equipped with an SSM,

- § 222.41(b)(ii) Pre-Rule Partial Quiet Zones that qualify for automatic approval because QZRI $\leq$ NSRT,

- § 222.41(b)(iii) Pre-Rule Partial Quiet Zones that qualify for automatic approval because NSRT < QZRI < 2* NSRT, and there have been no relevant collisions within the 5 years preceding April 27th, 2005.

- § 222.41(c) Pre-Rule Quiet Zones and Pre-Rule Partial Quiet Zones that do not qualify for automatic approval

- § 222.41(d) Pre-Rule Partial Quiet Zones that will be converted to 24-hour New Quiet Zones

- § 222.42(a) Intermediate Quiet Zones or Intermediate Partial Quiet Zones

- § 222.42(b) Intermediate Partial Quiet Zones that will be converted to 24-hour New Quiet Zones.

❑ If the notice contains a reference to §222.39(a)(2)(i), 222.39(a)(2)(ii), 222.39(a)(3), 222.41(a)(2), 222.41(a)(3), 222.41(b)(2), or 222.41(b)(3), that is, any time a determination of QZRI is used to justify establishment of a quiet zone, the notification must include a copy of the FRA Quiet Zone Calculator web page that contains the data on which the public authority is relying.

❑ If the notice contains a reference to §222.39(b), the notice must include a copy of the FRA's notification of approval.

❑ If a diagnostic team is required under §222.25 (private crossings) or §222.27 (pedestrian crossings), the notice must include a statement affirming that the State agency responsible for grade crossing safety and all affected railroads were provided an opportunity to participate in the diagnostic team review. The notice must also include a list of the diagnostic team's recommendations.

❑ The notice must contain a statement indicating the time period during which horn restrictions will be observed.

- An accurate and complete Grade Crossing Inventory Form for each public, pedestrian, and private crossing within the quiet zone that accurately reflects conditions at the crossing before any new SSMs or ASMs were implemented.

- An accurate, complete, and current Grade Crossing Inventory Form for each public, pedestrian, and private crossing within the quiet zone that accurately reflects SSMs and ASMs in place upon establishment of the Quiet Zone. SSMs and ASMs that cannot fully be described on the Inventory form shall be described separately.

- If the public authority was required to file a Notice of Intent (New Quiet Zones and New Partial Quiet Zones), the Notice of Quiet Zone Establishment shall contain a written statement affirming that the Notice of Intent was provided in accordance with the rule, and indicating the date on which the Notice of Intent was mailed.

- If the public authority was required to file a Notice of Intent, and did so less than 60 days before mailing the Notice of Quiet Zone Establishment, they must also include a written statement affirming that they received written comments and/or 'no comment' statements from the parties that received the Notice of Intent.

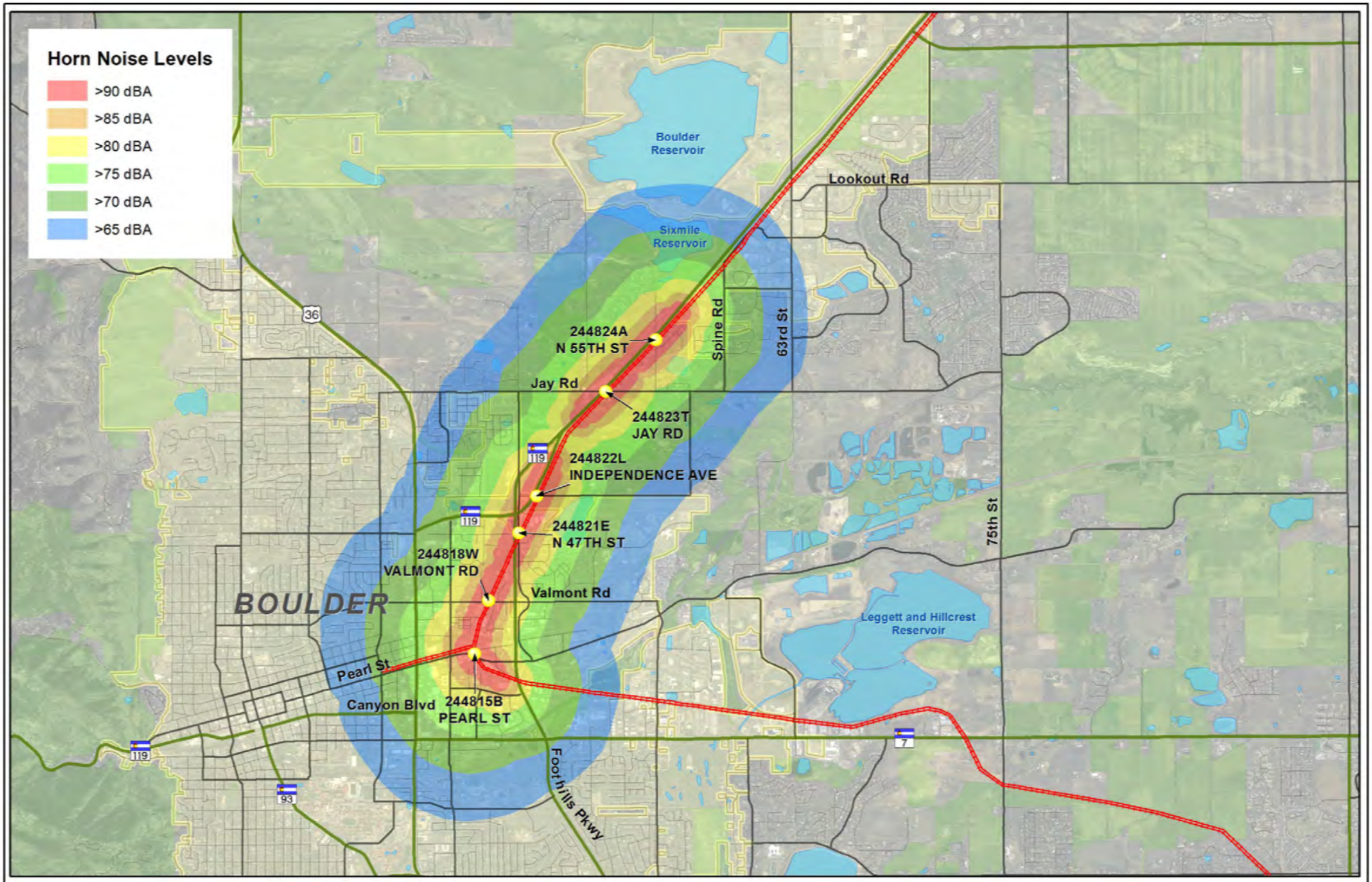
- If the public authority was required to submit a Notice of Detailed Plan, they must include a written statement affirming that the Notice of Detailed Plan was provided in accordance with the rule, and they must state the date on which it was provided.

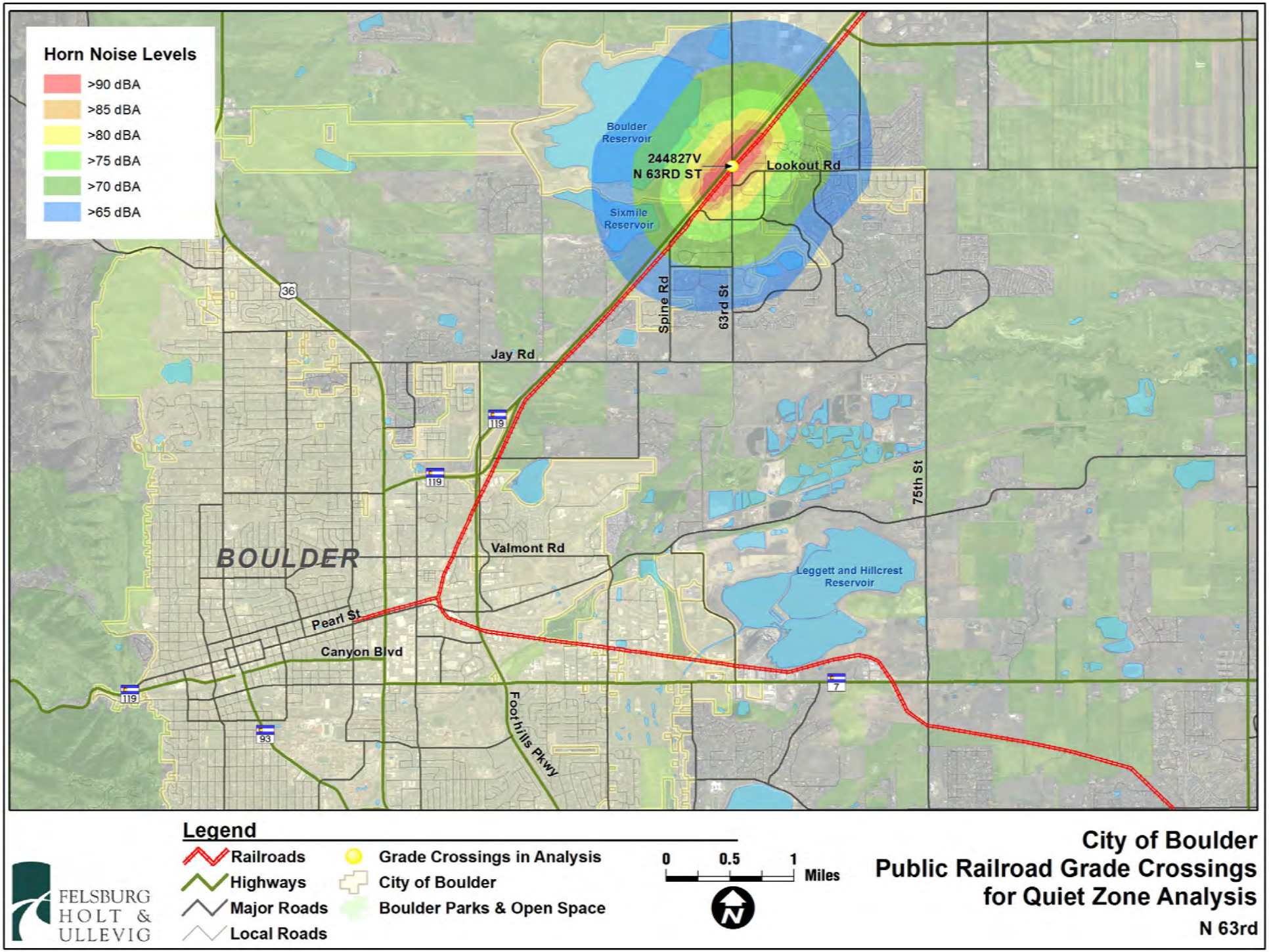
- The name and title of the person responsible for monitoring compliance with the requirements of the rule and his/her contact information. In addition to the person's name, title, and organization, contact information should include his/her business address, telephone number, fax number, and email address.

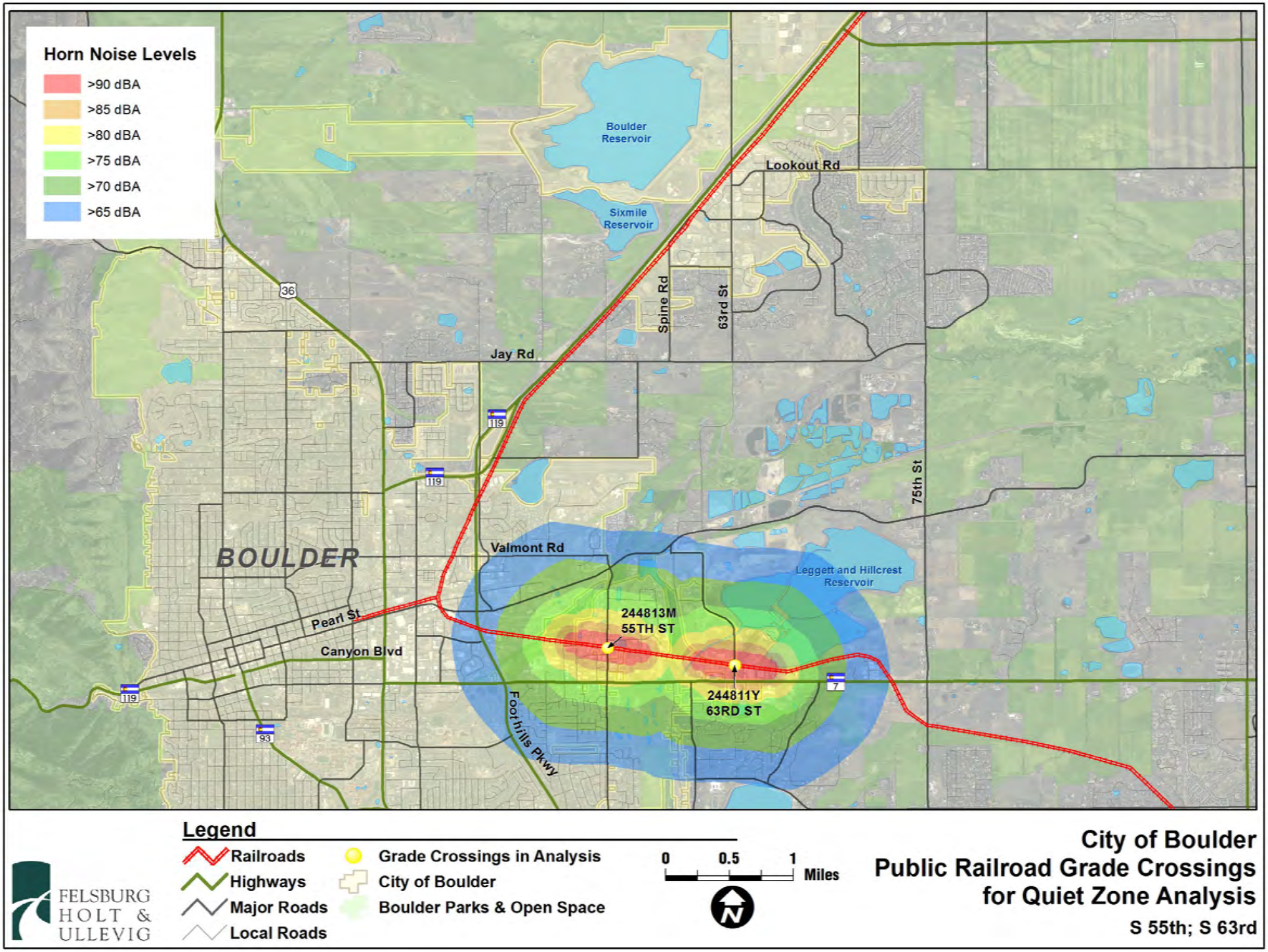
- Names and addresses of all parties notified in accordance with the rule; and

- A statement signed by the Chief Executive Officer (CEO) of each public authority continuing the quiet zone. In the CEO's statement, he or she must certify that the information submitted by the public authority is accurate and complete to the best of his/her knowledge and belief.

APPENDIX C NOISE CONTOUR DIAGRAM


Horn Noise Levels
>90 dBA
>85 dBA
>80 dBA
>75 dBA
>70 dBA
>65 dBA
Boulder Reservoir
Sixmile Reservoir
Lookout Rd
Spine Rd
63rd St
75th St
244824A
N 55TH ST
Jay Rd
244823T
JAY RD
244822L
INDEPENDENCE AVE
244821E
N 47TH ST
244818W
VALMONT RD
Valmont Rd
BOULDER
Leggett and Hillcrest Reservoir
Pearl St
Canyon Blvd
244815B
PEARL ST
Foothills Pkwy
36
119
93
7
Legend
Railroads
Highways
Major Roads
Local Roads
Grade Crossings in Analysis
City of Boulder
Boulder Parks & Open Space
0
0.5
1
Miles
N
FELSBURG HOLT & ULLEVIG
City of Boulder
Public Railroad Grade Crossings
for Quiet Zone Analysis
Pearl; Valmont; N 47th; Independence; Jay; N 55th


Horn Noise Levels
>90 dBA
>85 dBA
>80 dBA
>75 dBA
>70 dBA
>65 dBA
Boulder Reservoir
244827V
N 63RD ST
Lookout Rd
Sixmile Reservoir
Spine Rd
63rd St
36
Jay Rd
119
119
75th St
BOULDER
Valmont Rd
Leggett and Hillcrest Reservoir
Pearl St
Canyon Blvd
119
93
Foothills Pkwy
7
Legend
Railroads
Highways
Major Roads
Local Roads
Grade Crossings in Analysis
City of Boulder
Boulder Parks & Open Space
0
0.5
1
Miles
N
FELSBURG HOLT & ULLEVIG
City of Boulder
Public Railroad Grade Crossings
for Quiet Zone Analysis
N 63rd


Horn Noise Levels
>90 dBA
>85 dBA
>80 dBA
>75 dBA
>70 dBA
>65 dBA
Boulder Reservoir
Sixmile Reservoir
Lookout Rd
Spine Rd
63rd St
Jay Rd
75th St
Valmont Rd
BOULDER
Leggett and Hillcrest Reservoir
Pearl St
Canyon Blvd
244813M
55TH ST
244811Y
63RD ST
Foothills Pkwy
36
119
93
7
Legend
Railroads
Highways
Major Roads
Local Roads
Grade Crossings in Analysis
City of Boulder
Boulder Parks & Open Space
0
0.5
1
Miles
N
FELSBURG HOLT & ULLEVIG
City of Boulder
Public Railroad Grade Crossings
for Quiet Zone Analysis
S 55th; S 63rd

APPENDIX D FIELD DIAGNOSTIC REVIEW MEETING MINUTES

(January 17, 2017)

FELSBURG HOLT & ULLEVIG
connecting and enhancing communities

February 16, 2017

MEETING MINUTES – REVISED FINAL

CITY OF BOULDER/BOULDER COUNTY/BNSF RAILWAY

Field Diagnostic Review Meeting
@ BNSF Crossings

Date of Meeting: Tuesday, January 17, 2017, 8:00 AM – 1:00 PM

In attendance: SEE ATTACHED SIGN-IN SHEET

Meeting Notes:

1. The group gathered at the 83rd Street crossing (northernmost crossing)
2. Self introductions were made
3. BNSF personnel provided a safety briefing at each crossing in advance of discussion
4. BNSF did not have a signal representative in attendance for confirmation of circuitry at each crossing, but will follow up with that information

North 83rd Street-BNSF Crossing DOT# 244836U (Road Authority-Boulder County):

1. FRA Inventory Report indicates Constant Warning Time circuitry (to be confirmed by BNSF; along with version/type if CWT. The crossing is currently treated with approach railroad gates with cross bucks, flashers and a bell.
2. FHU identified this crossing has more than 60 feet of storage between the southbound railroad approach gate and the travel lane of parallel Highway 119, however the accel/decal lanes to/from Hwy 119 merge with 83rd Street at a point closer than 60 feet to the gates.
3. BNSF identified that the surfacing at this crossing is programmed to be replaced in 2017
4. PUC Staff identified that the existing southbound W10-1 sign is too close to the crossing, and should be relocated a minimum of 100 feet in advance of the crossing, which would place it between the two directions of travel of the divided Highway 119. Appropriate W-series signing should be placed along northbound Hwy 119 in advance of 83rd Street.
5. Boulder County asked if any additional signing is needed for the parallel trail. PUC Staff indicated that because the trail does not cross the crossing, no additional signing is needed.
6. FHU identified that this is one of several crossings where the accel/decal lanes from Hwy 119 are within 60 feet of the railroad approach gate. However Hwy 119 is a divided highway, with natural median on the order of 160 feet wide. Therefore, the potential for wrong-direction travel to circumvent a railroad gate in the down position is unlikely.
7. FRA identified that this issue could be sent via letter to the Associate Administrator for interpretation given the unique geometric condition and unlikeliness of wrong-direction traffic to use the lanes to circumvent a railroad gate in the down position.

8. FHU will draft a letter requesting interpretation and forward to the City of Boulder and Boulder County for review and formal transmittal to the FRA Administrator.

Railroad Action Items	BNSF confirmation of circuitry, and version (if CWT)
Roadway Action Items	Relocation of W10-1 advance warning sign for southbound 83rd Street and addition of appropriate W-series signing along northbound Hwy 119 in advance of the 83rd Street intersection Request for Interpretation letter to FRA
SSM Quiet Zone Options:	• Wayside Horns – 1 horn by the northbound approach gate; 2 horns by the southbound approach gate – 1 facing west and 1 facing southwest along Highway 119 • 4-Quadrant Gates • Approach Gates with Raised Medians (pending interpretation from FRA Administrator)

Main Street (2nd Avenue)-BNSF Crossing DOT# 244834F (Road Authority-Boulder County):

1. FRA Inventory Report indicates Constant Warning Time circuitry (to be confirmed by BNSF; along with version/type if CWT. The crossing is current treated with approach railroad gates with cross bucks, flashers and a bell.
2. FHU identified this crossing has sufficient distance from the parallel Highway 119 for an SSM of Raised Medians or Channelizing Devices with Approach Gates. Public accesses within 60 feet on the east side of the crossing would need to be relocated or closed.
3. FHU noted that this crossing is within ¼ mile of the Niwot Road crossing, and therefore must be treated for quiet zone concurrent with Niwot Road.
4. Boulder County identified that the north side of the crossing is an area of shared right-of-way between the railroad and the Colorado Department of Transportation (CDOT), which would require coordination for any improvements northwest of the crossing. Selection of crossing improvements that would affect the north side of the crossing would require confirmation of right-of-way and property ownership.

Railroad Action Items	BNSF confirmation of circuitry, and version (if CWT). Confirm BNSF ROW near town parking.
Roadway Action Items	Confirm ROW with CDOT and their possible involvement.
SSM Quiet Zone Options:	• Wayside Horns – 1 on each approach • 4-Quadrant Gates • Approach Gates with Raised Medians (requires close proximity public accesses to be closed or relocated • Approach Gates with Channelizing Devices (requires close proximity public accesses to be closed or relocated

Niwot Road-BNSF Crossing DOT# 244833Y (Road Authority-Boulder County):

1. FRA Inventory Report indicates Constant Warning Time circuitry (to be confirmed by BNSF; along with version/type if CWT. The crossing is currently treated with approach railroad gates with cross bucks, flashers and bells, and raised medians with post-mounted flashers.

2. FHU noted that the center median west of the crossing is ~75 feet from the approach gate arm to the west end of the median. The center median east of the crossing is 20 feet from the approach gate arm, and would require extension for an SSM of Approach Gates with Raised Medians.
3. FHU noted that this crossing is within ¼ mile of the Main Street (2nd Avenue) crossing, and therefore must be treated for quiet zone concurrent with Main Street (2nd Avenue).
4. BNSF identified that the railroad's preference is for railroad gates to be perpendicular to the roadway, rather than parallel to the track, as currently shown in the 4-quadrant gate option for this crossing (with regard to the west exit gates).
5. The group discussed the attached sidewalk along the north side of Niwot Road being inside the railroad gate, and issues related to trapping sidewalk users if exit gates are placed for a 4-quadrant gate treatment. Consideration should be given to detaching the sidewalk if a 4-quadrant gate option is pursued.
6. FHU identified that this is one of several crossings where the turn lane from westbound Niwot Road to northeast bound Hwy 119 begins within 60 feet of the railroad approach gate. However Hwy 119 is a divided highway, with natural median on the order of 320 feet wide at this location. Therefore, the potential for wrong-direction travel to circumvent a railroad gate in the down position is unlikely.
7. FRA identified that this issue could be sent via letter to the Associate Administrator for interpretation given the unique geometric condition and unlikeliness of wrong-direction traffic to use the turn lane to circumvent a railroad gate in the down position.
8. FHU will draft a letter requesting interpretation and forward to the City of Boulder and Boulder County for review and formal transmittal to the FRA Administrator.
9. FRA suggested this crossing might be pursued as an Alternative Safety Measure (ASM), specifically a Modified SSM, which is defined as an SSM that does not fully comply with the provisions set forth by FRA for standard SSMs, if the turn lane proximity disallows an SSM of Raised Medians with Approach Gates. This would be an application process with the FRA.

Railroad Action Items	BNSF confirmation of circuitry, and version (if CWT)
Roadway Action Items	Request for Interpretation letter to FRA
SSM Quiet Zone Options:	• Wayside Horns – 1 on each approach • 4-Quadrant Gates • Approach Gates with Raised Medians (requires extension of east median and acceptable interpretation from FRA Administrator regarding the proximity of the WB to Northeast Bound turn lane merge point to the approach railroad gate arm)
ASM Quiet Zone Option:	• Modified SSM – Approach Gates with Raised Medians, noting that the west egress turn lane is not 60 feet from the gate arm (pending FRA Administrator interpretation)

<u>Monarch Road-BNSF Crossing DOT# 244832S (Road Authority-Boulder County):</u>

1. FRA Inventory Report indicates Constant Warning Time circuitry (to be confirmed by BNSF; along with version/type if CWT. The crossing is currently treated with approach railroad gates with cross bucks, flashers and a bell.
2. FHU identified this crossing has more than 60 feet of storage between the eastbound railroad approach gate and the travel lane of parallel Highway 119.

3. FHU identified that this is one of several crossings where the turn lane from westbound Monarch Road to northeast bound Hwy 119 begins within 60 feet of the railroad approach gate. However Hwy 119 is a divided highway, with natural median on the order of 150 feet wide at this location. Therefore, the potential for wrong-direction travel to circumvent a railroad gate in the down position is unlikely.
4. FRA identified that this issue could be sent via letter to the Associate Administrator for interpretation given the unique geometric condition and unlikeliness of wrong-direction traffic to use the turn lane to circumvent a railroad gate in the down position.
5. FHU will draft a letter requesting interpretation and forward to the City of Boulder and Boulder County for review and formal transmittal to the FRA Administrator.
6. FRA suggested this crossing might be pursued as an Alternative Safety Measures (ASM), specifically a Modified SSM, which is defined as an SSM that does not fully comply with the provisions set forth by FRA for standard SSMs, if the turn lane proximity disallows an SSM of Raised Medians with Approach Gates. This would be an application process with the FRA.
7. PUC Staff identified that the existing eastbound W10-1 sign is too close to the crossing, and should be relocated a minimum of 100 feet in advance of the crossing, which would place it between the two directions of travel of the divided Highway 119. Appropriate W-series signing should be placed along northbound Hwy 119 in advance of Monarch Road.
8. BNSF noted that the railroad does not like the channelizing devices as they have a tendency to break off, or be stolen, and if not replaced/maintained, will cause a locomotive engineer to sound the train horn.
9. Boulder County identified that traffic along Monarch Road is local. There is an IBM facility in the development review stage for west of Hwy 119 that may modify traffic volumes/patterns.

Railroad Action Items	BNSF confirmation of circuitry, and version (if CWT)
Roadway Action Items	Relocation of W10-1 advance warning sign for southbound 83rd Street and addition of appropriate W-series signing along northeast bound Hwy 119 in advance of the 83rd Street intersection Request for Interpretation letter to FRA
SSM Quiet Zone Options:	• Wayside Horns – 1 on each approach • 4-Quadrant Gates (requires stub medians, or short channelizing devices in gap between gate ends, due to skew) • Approach Gates with Raised Medians (pending interpretation from FRA Administrator regarding the proximity of the WB to Northeast Bound turn lane merge point to the approach railroad gate arm) • Approach Gates with Channelizing Devices (pending interpretation from FRA Administrator regarding the proximity of the WB to Northeast Bound turn lane merge point to the approach railroad gate arm)
ASM Quiet Zone Option:	• Modified SSM – Approach Gates with Raised Medians or Channelizing Devices, noting that the west egress turn lane is not 60 feet from the gate arm (pending FRA Administrator interpretation)

NOTE: BNSF asked about the State Highway 52 crossing of BNSF tracks between Monarch and North 63rd Street. The County and City identified that this is a state highway under the jurisdiction of CDOT. Therefore, it is not currently being evaluated or pursued as part of the County's or City's quiet zone projects. SH 52 is more than ¼ mile from the next adjacent crossing in each direction. Separate quiet zones will be required on either side of the Hwy 52 crossing.

North 63rd Street-BNSF Crossing DOT# 244827V (Road Authority-City of Boulder):

1. FRA Inventory Report indicates DC circuitry. (NOTE: Previous diagnostic minutes dated July 25,2013 indicate BNSF personnel confirmed the crossing has Constant Warning Time (CWT) circuitry). The crossing is currently treated with approach railroad gates with cross bucks, flashers and bells. There is an additional approach railroad gate with flashers, cross bucks and bell on the northeast bound Hwy 119 to southbound 63rd Street turn lane. There are raised, curbed medians on each approach.
2. FHU noted that the center median north of the crossing is 60 feet from the gate arm to the north end of the median. However, this is one of several crossings where the turn lane from northbound 63rd Street to northeast bound Hwy 119 begins within 60 feet of the railroad approach gate. This is also a location where Hwy 119 is a divided highway, with natural median on the order of 275 feet wide at this location. Therefore, the potential for wrong-direction travel to circumvent a railroad gate in the down position is unlikely.
3. FRA identified that this issue could be sent via letter to the Associate Administrator for interpretation given the unique geometric condition and unlikeliness of wrong-direction traffic to use the turn lane to circumvent a railroad gate in the down position.
4. FHU will draft a letter requesting interpretation and forward to the City of Boulder and Boulder County for review and formal transmittal to the FRA Administrator.
5. FRA suggested this crossing might be pursued as an Alternative Safety Measure (ASM), specifically a Modified SSM, which is defined as an SSM that does not fully comply with the provisions set forth by FRA for standard SSMs, if the turn lane proximity disallows an SSM of Raised Medians with Approach Gates. This would be an application process with the FRA.
6. BNSF asked if the traffic signal at North 63rd and Hwy 119 was interconnected. PUC Staff confirmed the signal is interconnected with simultaneous preemption.
7. BNSF and PUC Staff expressed concern regarding the potential for trapping sidewalk users if a 4-quadrant gate treatment is pursued. The sidewalks may need to be detached, placed outside of gates, and additional railroad crossing surface added, if a 4-quadrant gate option is pursued.

Railroad Action Items	BNSF confirmation of circuitry, and version (if CWT)
Roadway Action Items	Request for Interpretation letter to FRA
SSM Quiet Zone Options:	• Wayside Horns – 1 on each approach, and 1 on turn lane approach (NB Hwy 119 to SB 63rd) • 4-Quadrant Gates • Approach Gates with Raised Medians (requires interpretation from FRA Administrator regarding the proximity of the NB to Northeast Bound turn lane merge point to the approach railroad gate arm)
ASM Quiet Zone Option:	• Modified SSM – Approach Gates with Raised Medians, noting that the northbound egress turn lane is not 60 feet from the gate arm (pending FRA Administrator interpretation)

North 55th Street-BNSF Crossing DOT# 244824A (Road Authority-Boulder County):

1. FRA Inventory Report indicates Constant Warning Time circuitry (to be confirmed by BNSF; along with version/type if CWT. The crossing is currently treated with approach railroad gates with cross bucks, flashers and a bell.
2. FHU noted that there is more than 60 feet of storage between the BNSF track crossing and the parallel Hwy 119, along 55th Street.
3. BNSF noted that the railroad does not like the channelizing devices (shown as an option with approach gates for this crossing) as they tend to break off, or be stolen, and if not replaced/maintained, will cause a locomotive engineer to sound the train horn.
4. The County indicated that traffic along this roadway is about 200 to 250 vehicles per day.
5. BNSF identified that the railroad's preference is for railroad gates to be perpendicular to the roadway, rather than parallel to the track, as currently shown in the 4-quadrant gate option for this crossing.

Railroad Action Items	BNSF confirmation of circuitry, and version (if CWT)
Roadway Action Items	None
SSM Quiet Zone Options:	• Wayside Horns – 1 on each approach • 4-Quadrant Gates (if perpendicular, would need stub medians or channelizing devices to close the gap) • Approach Gates with Raised Medians (may require roadway widening to accommodate a standard median) • Approach Gates with Channelizing Devices

Jay Road-BNSF Crossing DOT# 244823T (Road Authority-Boulder County):

1. FRA Inventory Report indicates Constant Warning Time circuitry (to be confirmed by BNSF; along with version/type if CWT. The crossing is currently treated with approach railroad gates with cross bucks, flashers and bells. There are raised, curbed medians on each approach.
2. FHU identified this crossing has about 60 feet of storage between the eastbound railroad approach gate and the travel lane of parallel Highway 119.
3. FHU identified that this is one of several crossings where the turn lane from westbound Jay Road to northeast bound Hwy 119 begins within 60 feet of the railroad approach gate. However Hwy 119 is a divided highway, with natural median on the order of 280 feet wide at this location. Therefore, the potential for wrong-direction travel to circumvent a railroad gate in the down position is unlikely.
4. FRA identified that this issue could be sent via letter to the Associate Administrator for interpretation given the unique geometric condition and unlikeliness of wrong-direction traffic to use the turn lane to circumvent a railroad gate in the down position.
5. FHU will draft a letter requesting interpretation and forward to the City of Boulder and Boulder County for review and formal transmittal to the FRA Administrator.
6. County indicated that the intersection of Jay Road with Highway 119 is a CDOT intersection and is interconnected with simultaneous preemption.
7. BNSF identified that the railroad's preference is for railroad gates to be perpendicular to the roadway, rather than parallel to the track, as currently shown in the 4-quadrant gate option for this crossing.
8. FRA identified that the crossings needing interpretation can be presented to the FRA Administrator in one letter, with supporting diagrams/crossing layouts with dimensions to describe the condition at each crossing, if the City and County would like.

Railroad Action Items	BNSF confirmation of circuitry, and version (if CWT)
Roadway Action Items	Request for FRA Interpretation letter
SSM Quiet Zone Options:	• Wayside Horns – 1 on each approach • 4-Quadrant Gates • Approach Gates with Raised Medians (requires extension of east median and interpretation from FRA Administrator regarding the proximity of the WB to Northeast Bound turn lane merge point to the approach railroad gate arm)

Independence Road-BNSF Crossing DOT# 244822L (Road Authority-Boulder County):

1. FRA Inventory Report indicates Constant Warning Time circuitry (to be confirmed by BNSF; along with version/type if CWT. The crossing is currently treated with approach railroad gates with cross bucks, flashers and a bell.
2. FHU noted that there is about 60 feet of storage between the BNSF track crossing and the parallel Hwy 119, along Independence Road.
3. BNSF suggested this may be a good crossing for Wayside Horns given the surrounding land use being mostly non-residential.
4. The County indicated that this roadway does not have a lot of large truck traffic, but more box truck size traffic.
5. FHU indicated that the striping reconfiguration to allow for a Raised Median or Channelizing Device option would require that the vehicles stay within the new striping. Because this area is within the right-of-way of Hwy 119, it would involve coordination with CDOT. The County indicated they are communicating with CDOT regarding the potential for striping changes.

Railroad Action Items	BNSF confirmation of circuitry, and version (if CWT)
Roadway Action Items	County communication with CDOT regarding potential for restriping the turn edge line
SSM Quiet Zone Options:	• Wayside Horns – 1 on each approach • 4-Quadrant Gates (requires stub medians or channelizing devices to close gap due to skew) • Approach Gates with Raised Medians (requires restriping of edge lines or curb and gutter placement between tracks and Hwy 119 to clearly define 60 feet from approach gate) • Approach Gates with Channelizing Devices (requires restriping of edge lines between tracks and Hwy 119 to clearly define 60 feet from approach gate)

47th Street-BNSF Crossing DOT# 244821E (Road Authority-City of Boulder):

1. FRA Inventory Report indicates Constant Warning Time circuitry (to be confirmed by BNSF). The crossing is currently treated with approach railroad gates with cross bucks, flashers and bells, and has post mounted flashers with cross bucks in raised, curbed medians on each approach.
2. The group discussed historical issues of trespassing in this area, and the current construction of the Wonderland Creek bridge project which will provide a trail underpass of the BNSF tracks, and should help alleviate the trespassing issue. FRA and PUC staff also encouraged the City to incorporate public education into the outreach plan, to identify the dangers and illegality of trespassing on railroad property.

3. The group discussed the discontinued sidewalk along the east side of 47th Street. The City would like to connect the sidewalk at some point. However, it is not required for quiet zone establishment.

Railroad Action Items	BNSF confirmation of circuitry
Roadway Action Items	None
SSM Quiet Zone Options:	• Approach Gates with Raised Medians (requires extension of south median to a minimum of 60 feet from the approach gate arm)

Valmont Road-BNSF Crossing DOT# 244818W (Road Authority-City of Boulder):

1. FHU indicated that this crossing is currently in the final design stage for improvements that have been coordinated among the City, BNSF Railway and PUC. The resulting improvements will include Constant Warning Time (CWT) circuitry, raised medians in excess of 60 feet from the approach railroad gate, and new approach railroad gates with flashers, crossbucks and bells. As a result of this project, this crossing will be quiet zone compliant.
2. The City's Project Manager, Alex May, distributed a plan sheet from the current project showing the crossing improvements to be constructed, and identifying the resulting configuration as quiet zone compliant. Construction is anticipated Spring of 2018.
3. FRA indicated that where possible, it is advantageous to include 8" curb on the medians, which allows for some roadway overlay, without reducing the curb height below the required 6" vertical.
4. Discussion of new community center and pedestrian path nearby, resulting in increased pedestrian traffic at crossing.
5. BNSF asked if the crossing warning devices will be sufficient for sidewalk users. PUC indicated this issue was discussed at the diagnostic in 2016 associated with the Valmont Road crossing improvement project, and it was determined that active warning to be installed as part of the roadway improvement will be sufficient for sidewalk users as well. No additional equipment is needed.
6. FHU noted that upon completion of construction and following circulation of the required notices and installation of required advance warning signs, this crossing will be quiet zone compliant.

Railroad Action Items	None, pending crossing improvement project construction
Roadway Action Items	None, pending crossing improvement project construction
SSM Quiet Zone Options:	• Approach Gates with Raised Medians (upon completion of roadway crossing improvement project construction)

Pearl Parkway-BNSF Crossing DOT# 244815B (Road Authority-City of Boulder):

1. FHU indicated that this crossing was recently improved to include raised medians and new railroad equipment, and asked the City's Project Manager to provide the project details to the group.
2. The City's Project Manager, Alex May, identified that the crossing was improved in 2014-15 with longer crossing material to accommodate detached walks, Constant Warning Time (CWT) circuitry, new approach railroad gates, and raised curbed medians on each approach in excess of 100 feet from the approach railroad gate arm. The crossing improvement design

included conduit and pull boxes in locations to accommodate exit gates for a 4-quadrant gate installation, if needed, for quiet zone establishment, and adequate vertical profile to accommodate the potential future second track. The west side of the crossing has one-way driveways into/out of the adjacent developments that are within 60 feet of the west side approach railroad gates. The operation of these driveways should not allow for wrong direction travel to circumvent a railroad gate in the down position, and can be evaluated via request for interpretation by the FRA Administrator.

3. FHU will draft a letter requesting interpretation and forward to the City of Boulder and Boulder County for review and formal transmittal to the FRA Administrator.
4. FRA suggested this crossing might be pursued as an Alternative Safety Measures (ASM), specifically a Modified SSM, which is defined as an SSM that does not fully comply with the provisions set forth by FRA for standard SSMs, if the proximity of the driveways to adjacent development disallows an SSM of Raised Medians with Approach Gates. This would be an application process with the FRA.
5. BNSF asked if the crossing warning devices will be sufficient for sidewalk users. PUC indicated this issue was discussed at the diagnostic (2012) associated with the Pearl Parkway crossing improvement project, and it was determined that active warning to be installed as part of the roadway improvement will be sufficient for sidewalk users as well. No additional equipment is needed.
6. The group discussed the extra pavement along the south side of Pearl Parkway which allows for utility and railroad access. There were concerns expressed regarding this access area.

Railroad Action Items	None
Roadway Action Items	Request for Interpretation letter to FRA and options for access area.
SSM Quiet Zone Options:	• 4-Quadrant Gates • Approach Gates with Raised Medians (requires interpretation from FRA Administrator regarding the proximity of the west side driveways to the approach railroad gate arm)

South 55th Street-BNSF Crossing DOT# 244813M (Road Authority-City of Boulder):

1. FRA Inventory Report indicates DC circuitry (to be confirmed by BNSF). The crossing is currently treated with approach railroad gates with cross bucks, flashers and a bell, and has post mounted flashers with cross bucks in raised, curbed medians on each approach.
2. The existing railroad circuitry, if confirmed to be DC, would require upgrade to Constant Warning Time (CWT) circuitry.
3. BNSF identified a private crossing (DOT# 094486N) that exists between Pearl Parkway and 55th Street, and asked if that crossing is to be included in the quiet zone. See 'Private Crossing" discussion following the 63rd Street evaluation for further information.

Railroad Action Items	Requires upgrade to Constant Warning Time (CWT) circuitry
Roadway Action Items	None

SSM Quiet Zone Options:	• Approach Gates with Raised Medians – once upgraded railroad circuitry has been installed, this crossing will be Quiet Zone compliant (Note: this may require modification/upgrades to other railroad equipment for proper communication/operation with circuitry)

South 63rd Street-BNSF Crossing DOT# 244811Y (Road Authority-City of Boulder):

1. FRA Inventory Report indicates Constant Warning Time circuitry (to be confirmed by BNSF). This crossing has a mainline track crossing on the south, and an industry spur crossing on the north, both of which are controlled by the same railroad signal bungalow. Will need BNSF confirmation of circuitry at each crossing.
2. Each crossing is currently treated with approach railroad gates with cross bucks, flashers and a bell, and each has post mounted flashers with cross bucks in raised, curbed medians on each approach.
3. FRA noted the sidewalks were discontinued through the railroad right of way and track area, but are completed north and south of the 2-track crossing. BNSF suggested checking the roadway right-of-way width to determine if sidewalk connections can be made with in the public roadway easement width.
4. FHU stated that if each crossing has CWT, the existing medians could be extended to a minimum of 60 feet to achieve an SSM of Approach Gates with Raised Medians at each crossing. There is a utility access road for Xcel between the mainline and industry spur, to the east. Therefore, the extension of the raised median north of the mainline would need to be tapered to allow exiting traffic from the Xcel industry to turn south. This maneuver would need to be confirmed using turning templates, during design. The group discussed the possibility of approaching Xcel regarding relocating their access to be more perpendicular with 63rd, which would place the access further north away from the mainline track crossing. City staff indicated this may not be feasible, as the City and Xcel are currently in disagreement regarding energy issues in Boulder.
5. The group discussed separating these crossings so each has its own DOT number. BNSF will determine if the industry track crossing is BNSF track (or if it belongs to the industry), and proceed accordingly regarding separate assignment of the DOT number.

Railroad Action Items	BNSF confirmation of circuitry at each crossing BNSF determination of ownership of the industry track (for assignment of a separate DOT number) Confirm BNSF ROW
Roadway Action Items	City to determine public roadway easement width for potential sidewalk connection between the mainline and industry tracks Evaluate turn templates from Xcel industry access road for southbound turns relative to a median extension north of the mainline track (in design)
SSM Quiet Zone Options:	• Wayside Horns – 1 on each approach • 4-Quadrant Gates • Approach Gates with Raised Medians

NOTE: The private crossing below was not visited by the entire diagnostic team, and was not reviewed for Quiet Zone establishment. If it is decided to include this private crossing in the Quiet Zone, the City will initiate a separate diagnostic review meeting at that time. If not pursued, separate quiet zones will be required on either side of the private crossing.

Private Access-BNSF Crossing DOT# 094486N (Road Authority-Private)

1. Members of the diagnostic team from the City, FRA and FHU visited this private crossing following the formal diagnostic meeting with all parties that concluded after review of the 63rd Street crossings (south end).
2. This crossing is a 2-track crossing with one mainline and one siding track. The crossing has bollards with chain blocking the access on the north side.
3. The City will review property records to determine if the properties on each side of the crossing are owned by the same company, in which case the private crossing may be under permit to a single company.
4. The group observed that the BNSF right-of-way has limited access in this area, and wondered if this access is used by BNSF forces for maintenance. Use of this crossing by BNSF will be requested to further understand if it also serves a railroad maintenance access function.

DISCUSSION THAT OCCURRED AMONG THE DIAGNOSTIC TEAM REGARDING THIS PRIVATE CROSSING PRIOR TO ADJOURNMENT OF THE SCHEDULED DIAGNOSTIC:

1. FRA indicated to the group (prior to leaving the 55th Street field review) that the private crossing could be included in the quiet zone, but would need to be treated in accordance with the recommendations of a diagnostic team. Members of the diagnostic team were not available to return to the private crossing following review of the scheduled crossings due to other schedule commitments.
2. FHU indicated that Colorado State Statute does not require locomotive horn sounding at private crossings. Therefore, the group needs to know if it is in BNSF's Operating Policy to sound the locomotive horn at private crossings, and if BNSF is sounding the locomotive horn at this crossing currently. If it is not within BNSF's Operating Rules to sound the locomotive horn at private crossings, and BNSF is not currently sounding the horn at this crossing, the City may opt to leave this crossing out of any quiet zone evaluation or designation pursuit. The group asked BNSF to confirm their Operating Rule/Policy regarding sounding locomotive horns at private crossings in the State of Colorado. BNSF indicated the rule does not affect whether the crossing will be included in the quiet zone. City staff and FHU indicated that if the operating rule does not indicate required horn sounding currently at private crossings, the City may not include the private crossing in a quiet zone.
3. BNSF indicated they are reviewing if this crossing can be closed.

ACTION ITEMS:

Task Responsibilities Summary Table

Responsible Party → **Crossing ↓**	**City of Boulder**	**Boulder County**	**BNSF Railway**	**FHU**
North 83rd St		Relocation of W10-1 sign	Confirm circuitry (and type if CWT)	Draft Request for Interpretation Letter to FRA
Main St (2nd Ave)		Confirm ROW with CDOT and their possible involvement.	Confirm circuitry (and type if CWT); Confirm BNSF ROW near town parking	
Niwot Road			Confirm circuitry (and type if CWT)	Draft Request for Interpretation Letter to FRA
Monarch Road			Confirm circuitry (and type if CWT)	Draft Request for Interpretation Letter to FRA
North 63rd St			Confirm circuitry (and type if CWT)	Draft Request for Interpretation Letter to FRA
North 55th St			Confirm circuitry (and type if CWT)	
Jay Road			Confirm circuitry (and type if CWT)	Draft Request for Interpretation Letter to FRA
Independence Road		Discuss possible restriping with CDOT	Confirm circuitry (and type if CWT)	
47th Street			Confirm circuitry (and type if CWT)	
Valmont Road				
Pearl Parkway				Draft Request for Interpretation Letter to FRA
55th Street (south end)			Confirm circuitry (and type if CWT)	
63rd Street (south end)	Determine roadway easement width for possible sidewalk connection		Confirm circuitry for both crossings (and type if CWT); determine ownership of industry track (BNSF or industry); Confirm BNSF ROW	
Private Crossing (not formally included in Diagnostic Review)	Determine land owners on each side of crossing		Provide Operating Policy to group regarding horn sounding at private crossings	

ATTENDANCE SIGN-IN SHEET

City of Boulder/Boulder County/BNSF Railway
Review of Thirteen (13) Crossings

BNSF Crossing Diagnostic Field Review
Tuesday, January 17, 2017
8:00 AM – 12:00 PM

Name/Title	Organization	Phone	E-Mail	Initial if present
Kathleen Bracke GO Boulder Manager	City of Boulder	303-441-4155	BrackeK@bouldercolorado.gov	
Gerrit Slatter Principal Trans Engineer	City of Boulder	303-441-3266	SlatterG@bouldercolorado.gov	GLS
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Cherese Montgomery Engineering Project Manager	City of Boulder	303-441-4442	montgomeryc@bouldercolorado.gov	
Marc Ambrosi Long Range Trans Planner	Boulder County	720-564-2751	mambrosi@bouldercounty.org	MA
Pamela Fischhaber Section Chief - Rail/Transit Safety	Colorado Public Utilities Commission	303-894-2529	pamela.fischhaber@state.co.us	PF
Howard Gillespie Regional Mgr-Grade Crossing Safety	Federal Railroad Administration	816-329-3840	howard.gillespie@dot.gov	
Steve Jankowski Regional Mgt-Grade Crossing & Trespassing	Federal Railroad Administration	720-526-4296	steven.jankowski@dot.gov	
Amber Stoffels Manager Public Projects	BNSF Railway	303-480-6584	amber.stoffels@bnsf.com	
Kate Kalinosky Public Projects	BNSF Railway		kate.kalinosky@bnsf.com	KK
Stephanie Anzia Assoc Sr Engr-RR Coord	Felsburg Holt & Ullevig	303-721-1440	stephanie.anzia@fhueng.com	

ATTENDANCE SIGN-IN SHEET

City of Boulder/Boulder County/BNSF Railway
Review of Thirteen (13) Crossings

BNSF Crossing Diagnostic Field Review
Tuesday, January 17, 2017
8:00 AM – 12:00 PM

Name/Title	Organization	Phone	E-Mail
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Mark Williams	FRA	720-545-4525	Mark.Williams@DOT.GOV
OSCAR SAUCEDO	City of Boulder	720-940-8370	Saucedo-Andrade@bouldercolorado.gov

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