Boulder County

FINAL REPORT
Railroad Grade Crossing Quiet Zone Assessment

FELSBURG HOLT & ULLEVIG

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I. INTRODUCTION

Felsburg Holt and Ullevig (FHU) was contracted by Boulder County to complete a railroad grade crossing quiet zone assessment and recommend improvements at 7 highway-rail grade crossings located within the Boulder County, 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 running generally north-south beginning at 83rd Street on the north end, and extending through Independence Road on the south end. This portion includes 7 crossings as follows:

- 83rd Street
- Main Street (2nd Avenue)
- Niwot Road
- Monarch Road
- 55th Street
- Jay Road
- Independence Road

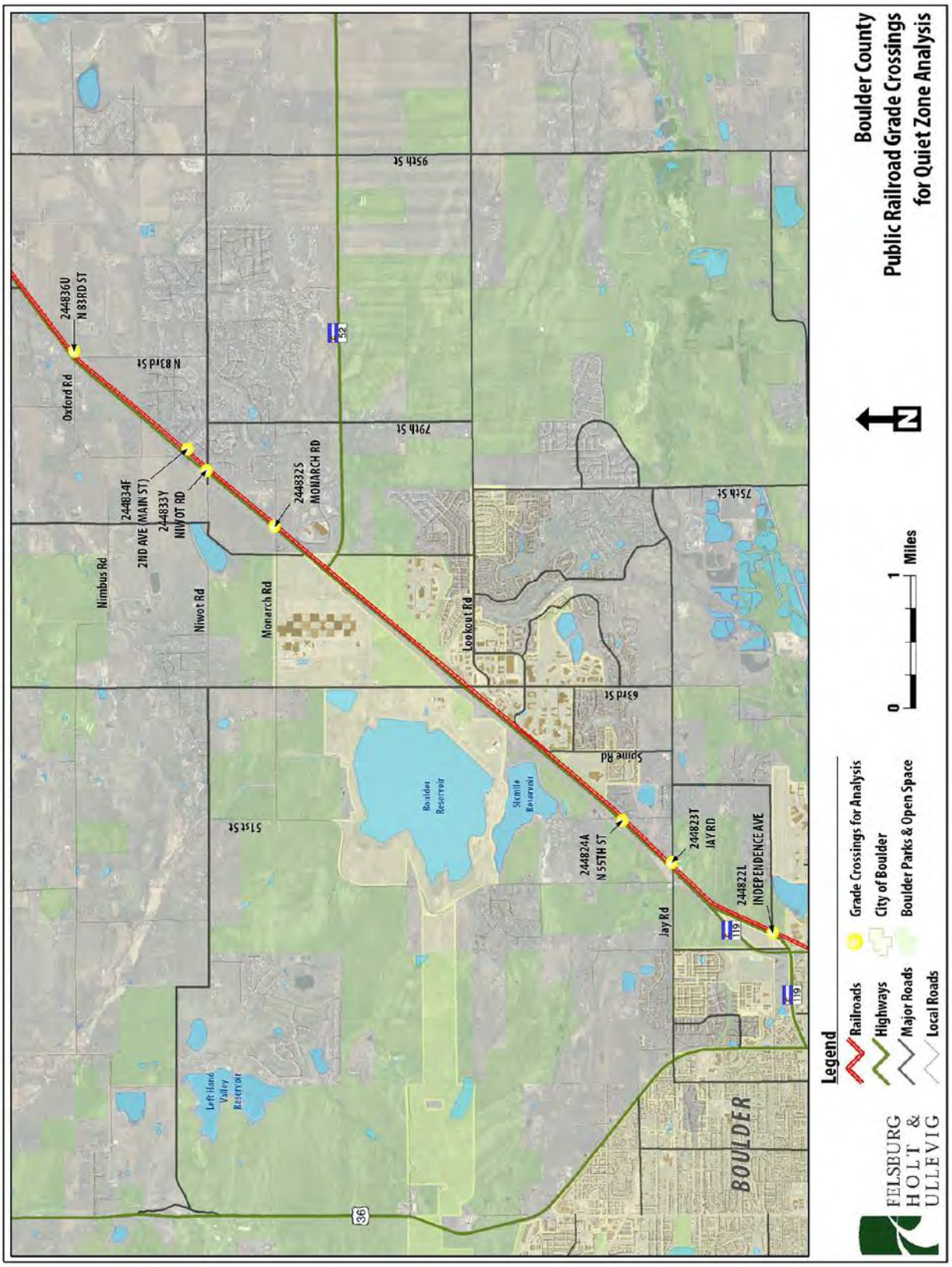
It is noted that these crossings are within the corridor identified by the Regional Transportation District (RTD) as the Northwest Rail Corridor, and were evaluated as part of that effort. For information regarding the evaluation conducted by RTD, the reader is referenced to the RTD Northwest Rail Corridor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

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

The County is seeking input regarding recommended improvements for these 7 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 7 at-grade railroad crossings located within the study area, are shown in **Figure 1**.

Figure 1. Railroad Quiet Zone Study Area



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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, and all of the crossings have been upgraded to Constant Warning Time (CWT) circuitry, per the current U.S. DOT Crossing Inventory forms.

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. The County also provided traffic count information for each of the roadways crossing the BNSF Railway tracks.

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 83rd Street through Independence Road.

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 or not 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
North 83rd Street	244836U	39.17	Gates/ Flashers	CWT	1,692
Main St (2nd Avenue)	244834F	38.05	Gates/ Flashers	CWT	1,026
Niwot Road	244833Y	37.86	Gates/ Flashers	CWT	6,926
Monarch Road	244832S	37.20	Gates/ Flashers	CWT	709
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

The following pages summarize the existing conditions at each railroad crossing along with surrounding land use along this corridor.

83rd Street Crossing Summary
US DOT Crossing #244836U

BNSF Main Line

The 83rd 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 with a roadway width of approximately 22'. Each direction has narrow gravel shoulders. The roadway surface is paved with hot mix asphalt. The speed limit on 83rd Street is 35 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 also has railroad pavement markings on the south approach.

Fig. 2. 83rd Street

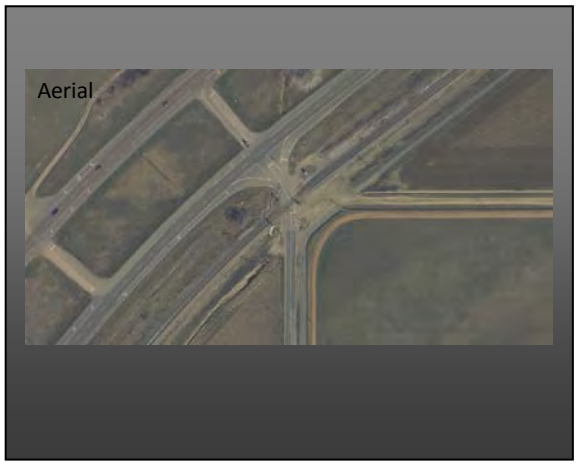


Table 2. 83rd Street Crossing Information

Adjacent Land Use	Agricultural/Farming
Minimum Distance to next crossing	1.1 miles
Current Warning Protection	Signs, flashers, gates
Train Detection	CWT circuitry
Crossing Material	Timber
Roadway classification/ADT	Rural/Local Road /1,692 (2016)
# of Lanes	2
Exposure Factor = ADT x Trains per Day	18 x 1,692 = 30,456
Total Train/Vehicle Accidents (5 Years)	0

Main Street (2nd Avenue) Crossing Summary
US DOT Crossing #244834F

BNSF Main Line

The Main Street (2nd Avenue) 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 roadway width of approximately 30'. Gravel shoulders exist along the outer edge of the roadway on both approaches. The roadway surface is paved with hot mix asphalt. Posted speed limit on Main Street is 25 MPH. The picture shown in **Figure 3** is the current aerial view of the existing 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. It has no railroad pavement markings on either approach.

Fig. 3. Main Street (2nd Avenue)

Table 3. Main Street (2nd Avenue) Crossing Information

Adjacent Land Use	Residential
Minimum Distance to next crossing	0.19 miles
Current Warning Protection	Signs, flashers and gates
Train Detection	CWT circuitry
Crossing Material	Concrete
Roadway classification/ADT	Rural/Local Road /1,026 (2016)
# of Lanes	2
Exposure Factor = ADT x Trains per Day	18 x 1,026 = 18,468
Total Train/Vehicle Accidents (5 Years)	0

Niwot Road Crossing Summary
US DOT Crossing #244833Y

BNSF Main Line

The Niwot Road 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 50'. Concrete curb, gutter and sidewalk exists along the north side of the roadway. A narrow gravel shoulder exists along the south side. The roadway surface is paved with hot mix asphalt. Posted speed limit on Niwot Road is 35 MPH. The picture shown in **Figure 4** is the current aerial view of the existing roadway and railroad at the crossing. Existing, available crossing information is shown in **Table 4**.

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

Fig. 4. Niwot Road

Table 4. Niwot Road Crossing Information

Adjacent Land Use	Residential
Minimum Distance to next crossing	0.19 miles
Current Warning Protection	Signs, flashers and gates
Train Detection	CWT circuitry
Crossing Material	Concrete
Roadway classification/ADT	Rural Major Collector/ 6,926 (2016)
# of Lanes	2
Exposure Factor = ADT x Trains per Day	18 x 6,926 = 124,668
Total Train/Vehicle Accidents (5 Years)	1

Monarch Road Crossing Summary
US DOT Crossing #244832S

BNSF Main Line

The Monarch Road crossing is equipped with signs, mast mounted flashers, cross bucks and bells. One set of tracks are crossed. The roadway is configured to provide two lanes of travel for a total paved roadway 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 Monarch Road is 25 MPH. 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. Monarch Road

Table 5. Monarch Road Crossing Information

Adjacent Land Use	Residential
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 local/709 (2016)
# of Lanes	2
Exposure Factor = ADT x Trains per Day	18 x 709 = 12,762
Total Train/Vehicle Accidents (5 Years)	0

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 6** is the current existing aerial view of the 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. This crossing does not have railroad pavement markings on either approach.

Fig. 6. 55th Street

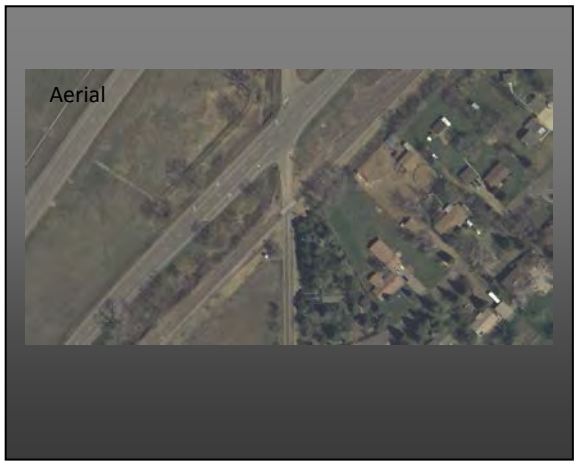


Table 6. 55th Street Crossing Information

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 7** is the current existing aerial view of the roadway and railroad at the crossing. Existing, available crossing information is shown in **Table 7**.

Figure 7. 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 7. 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 8** is the current existing aerial view of the 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. This crossing does not have railroad pavement markings on either approach.

Fig. 8. Independence Road

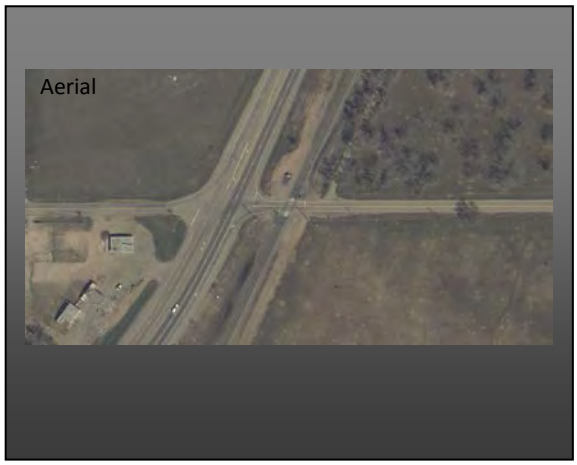


Table 8. Independence Road Crossing Information

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

III. QUIET ZONE REQUIREMENTS

Boulder County 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), so as 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:

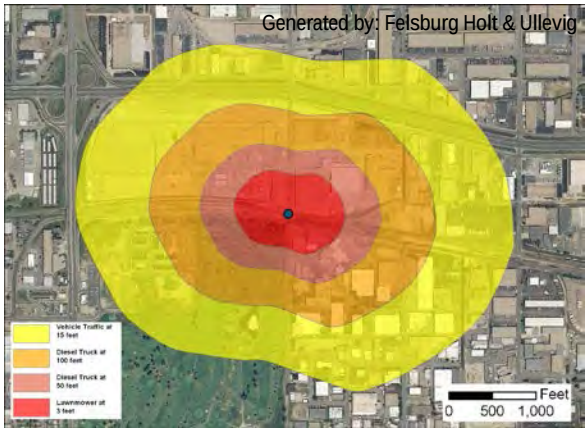
- Temporary Closure (used with a nighttime-only quiet zone)
- Four-Quadrant Gate System
- Gates with Raised Medians or Channelization Devices
- Conversion to One-Way Street with Gates across the roadway
- Permanent Crossing Closure

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.

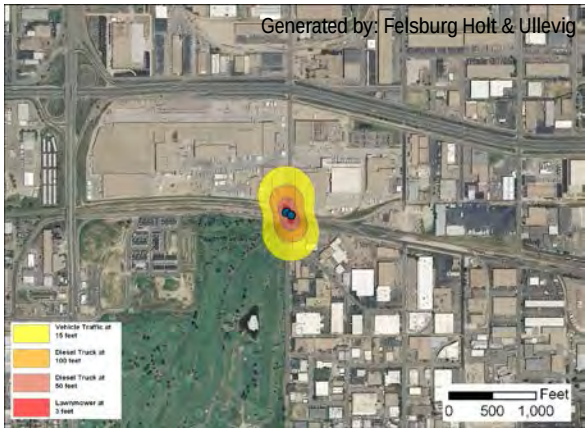
Alternative Safety Measures (ASMs) consist of improvements that fall outside the scope of SSMs, and may be proposed to FRA for consideration and approval. ASMs include Modified SSMs, Non-engineering ASMs, and Engineering ASMs. If used, the effectiveness rate of ASMs must be determined prior to FRA approval. 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 9**. A highway-rail crossing with a wayside horn installation is shown in **Figure 10**.

Figure 9. Comparison of Train Horn vs. Wayside Horn Noise Footprint



Train Horn in Crossing



Automated Horn

Figure 10. 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, as long as 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 interested parties. 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 Boulder County 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.

In order 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 County 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 11. 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 County:

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 11**.

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 12**.


Figure 12. 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 13**.

Figure 13. 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 14**.

Figure 14. 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 15**.

Figure 15. 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 9 shows the concept level options considered for each crossing within the study area.

Table 9. Quiet Zone Concept Improvement Options

BNSF CROSSING	FRA DOT NO.	M.P.	DIST BTWN XINGS	RR CIRCUITRY (1)	GATES/ LIGHTS	ADT	Adjacent Land Use	SSM Options: Raised Medians	SSM Options: Channelizing Devices	SSM Options: 4-Quadrant Gates	SSM Options: Wayside Horns
North 83rd Street	244836U	39.17	1.12	CWT	YES	1,692	Agricul.			X	X
Main St (2nd Avenue)(2)	244834F	38.05	0.19	CWT	YES	1,026	Resid.	X	X	X	X
Niwot Road(2)	244833Y	37.86	0.19	CWT	YES	6,926	Resid.			X	X
Monarch Road	244832S	37.20	0.66	CWT	YES	709	Resid.			X	X
North 55th Street	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	Comm./ Open	X	X	X	X

(1) Crossings have constant warning time circuitry required for Quiet Zone establishment. Note, if new railroad equipment is proposed, circuitry may require upgrade to be compatible.
(2) Crossings are within ¼ mile of each other; must be treated as a corridor for Quiet Zone establishment.

B. Conditions for Additional Consideration

Two crossings have an egress on the downstream side of the crossing, which lead to the closely spaced Highway 119, which runs parallel to the BNSF Railway tracks. This is physically an 'access', and in both cases, is within 60 feet of the railroad gate arm. This condition exists at Niwot Road and Monarch Road. As part of this evaluation, discussion with FRA will be completed to determine if these access points preclude a Raised Median or Channelizing Device option, given that these are one-way access points away from the crossing. Further discussion will be provided in the final assessment report.

C. 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 Boulder County.

83rd Street
US DOT #244836U
Main Line
SSM: 4-Quadrant Gates (Option 1)

Concept Crossing Improvements

NOTES:
1. Has 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
- 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

83rd Street
US DOT #244836U
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

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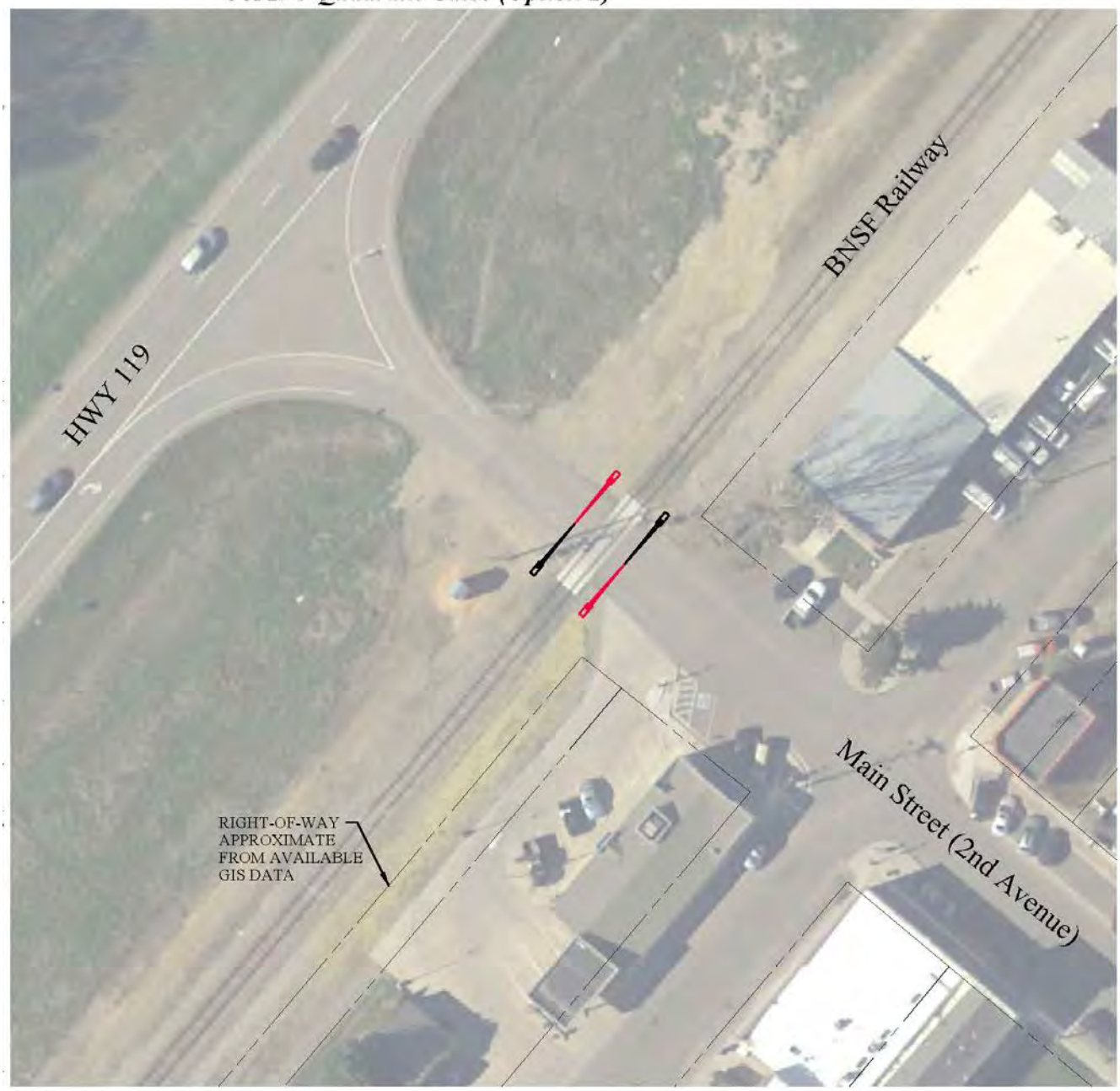
Main Street
US DOT #244834F
Main Line
SSM: 4-Quadrant Gates (Option 1)

Concept Crossing Improvements



NOTES:
1. Has 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.
5. Within ¼ mile of Niwot Road, so must be treated as a corridor.

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

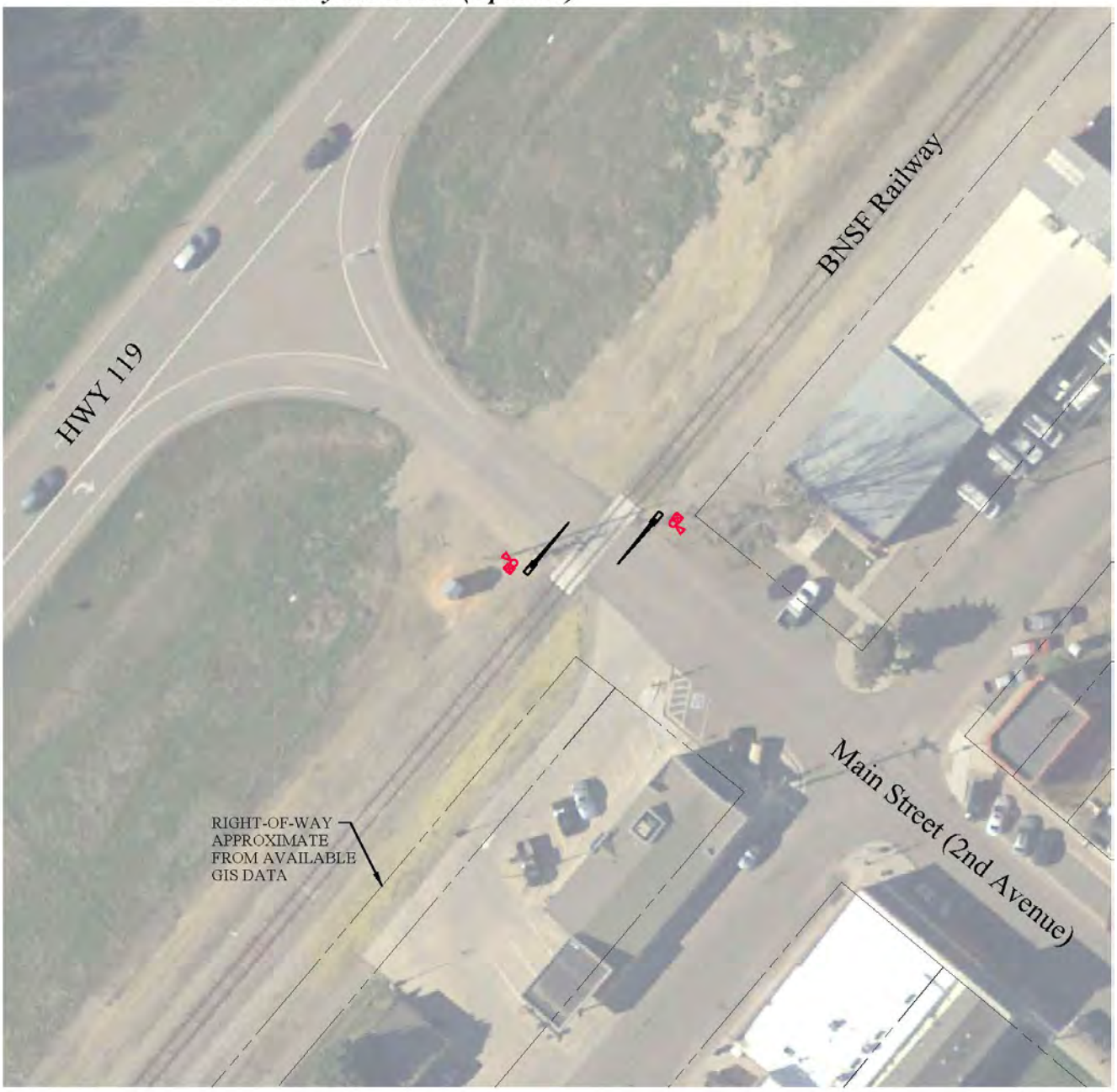
N W E S

SCALE: 1"=60'

0 30 60

Main Street
US DOT #244834F
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.
4. Within ¼ mile of Niwot Road, so must be treated as a corridor.

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)	

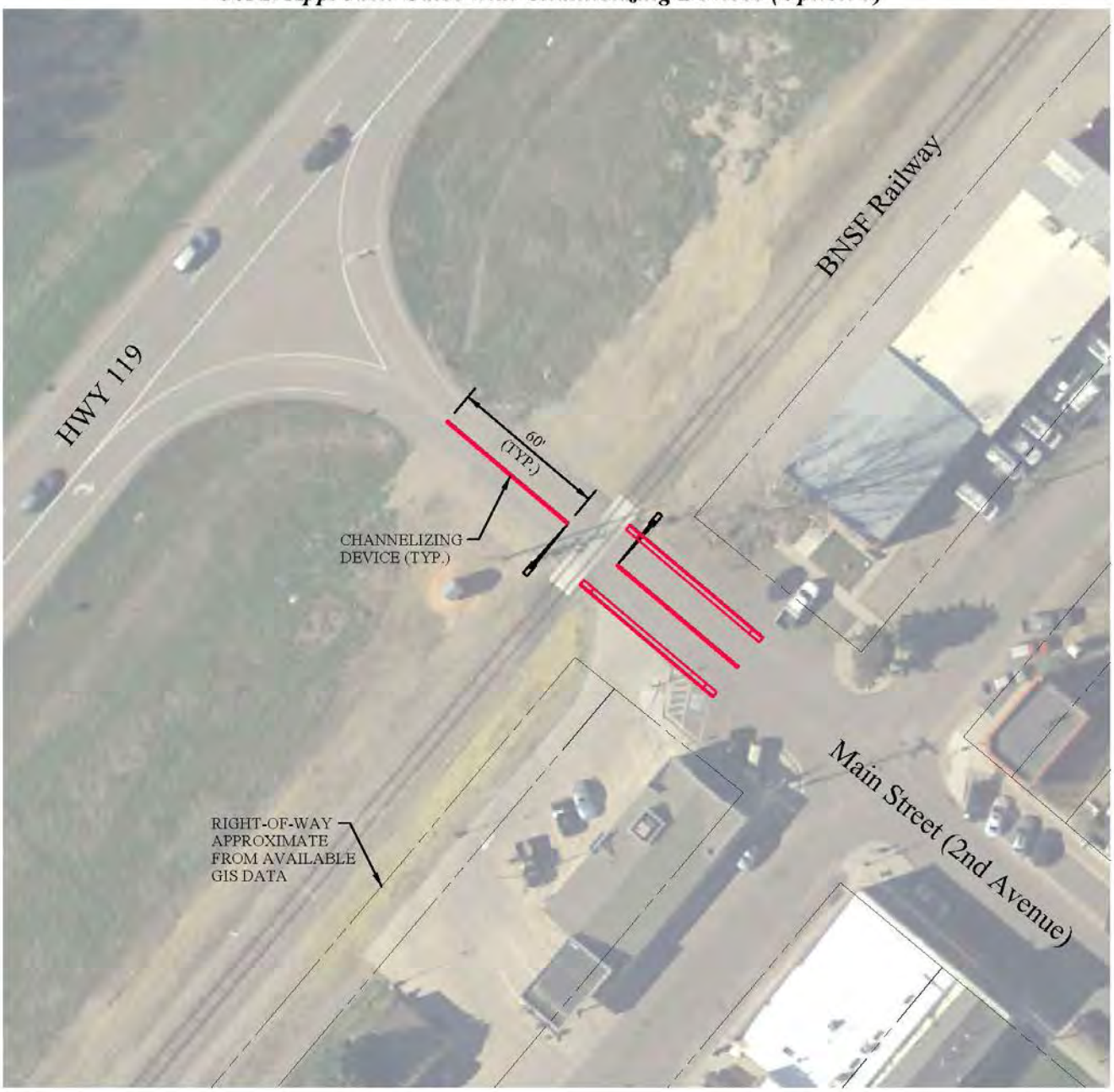
N W E S

SCALE: 1"=60'

0 30 60

Main Street
US DOT #244834F
Main Line
SSM: Approach Gates with Channelizing Devices (Option 3)

Concept Crossing Improvements



NOTES:
1. Has CWT Circuitry.
2. Add outer curb & gutter to formalize closest access at 60 ft.
3. Bank access/circulation/parking would need to be reconfigured.
4. Parking north of main within 60 ft would need to be reconfigured or eliminated.
5. Within ¼ mile of Niwot Road, so must be treated as a corridor.

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

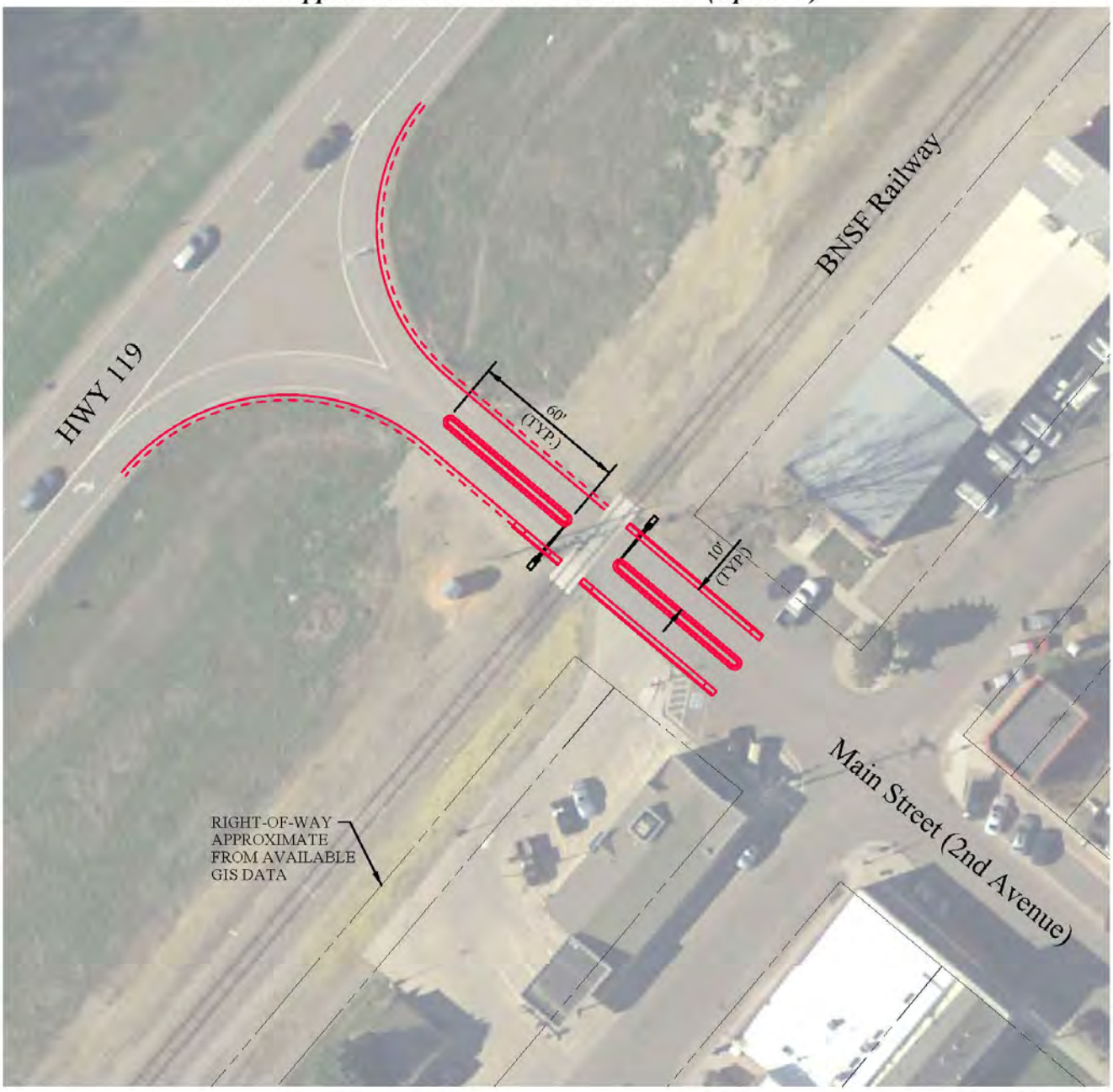
SCALE: 1"=60'

0 30 60

BNSF RAILWAY

Main Street
US DOT #244834F
Main Line
SSM: Approach Gates with Raised Medians (Option 4)

Concept Crossing Improvements



NOTES:
1. Has CWT Circuitry.
2. East approach requires outer curb & gutter to formalize closest access at 60 ft.
3. Bank access/circulation/parking would need to be reconfigured.
4. Parking north of main within 60 ft would need to be reconfigured or eliminated.
5. Within ¼ mile of Niwot Road, so must be treated as a corridor.

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

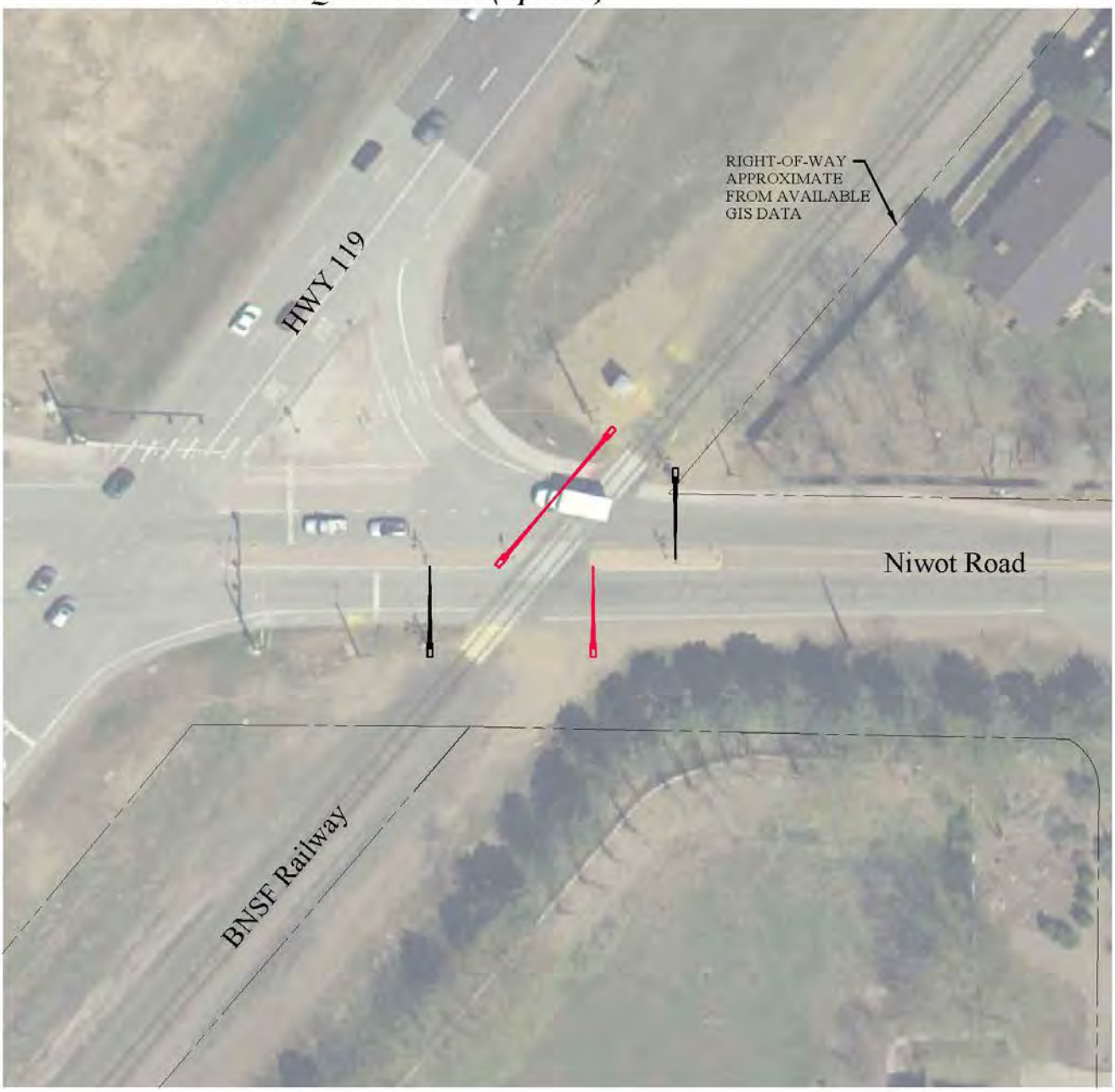
N W E S

SCALE: 1"=60'

0 30 60

Niwot Road
US DOT #244833Y
Main Line
SSM: 4-Quadrant Gates (Option 1)

Concept Crossing Improvements



NOTES:
1. Has CWT Circuitry.
2. Add railroad exit gates. Requires two (2) WB exit gates installed parallel to track for allowable gate length.
3. Railroad bungalow may require upgrade to accommodate exit gate operation.
4. Add signing/striping per MUTCD.
5. Within ¼ mile of Main Street, so must be treated as a corridor.

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)

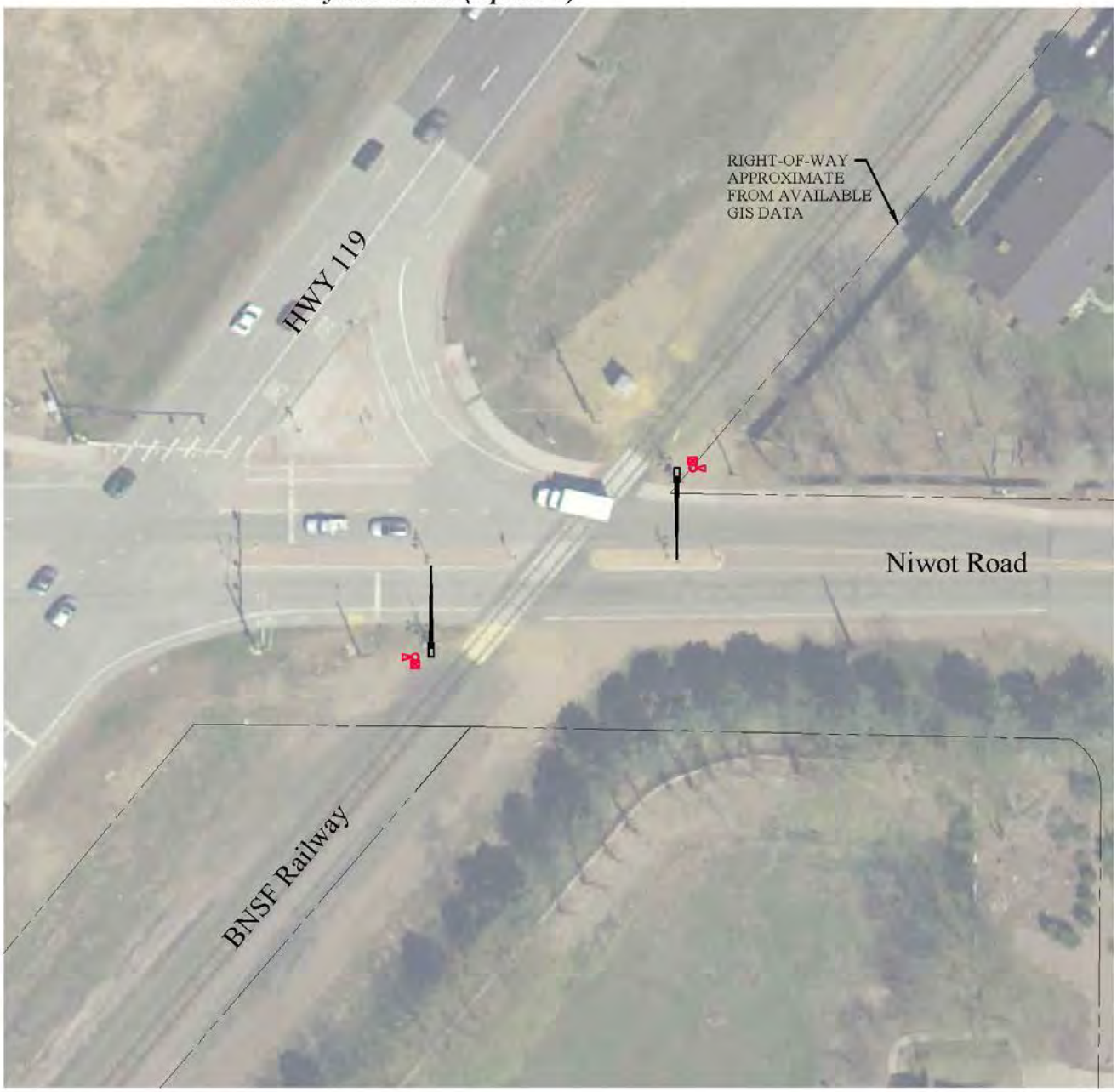
N W E S

SCALE: 1"=60'

0 30 60

Niwot Road
US DOT #244833Y
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.
4. Within ¼ mile of Main Street, so must be treated as a corridor.

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

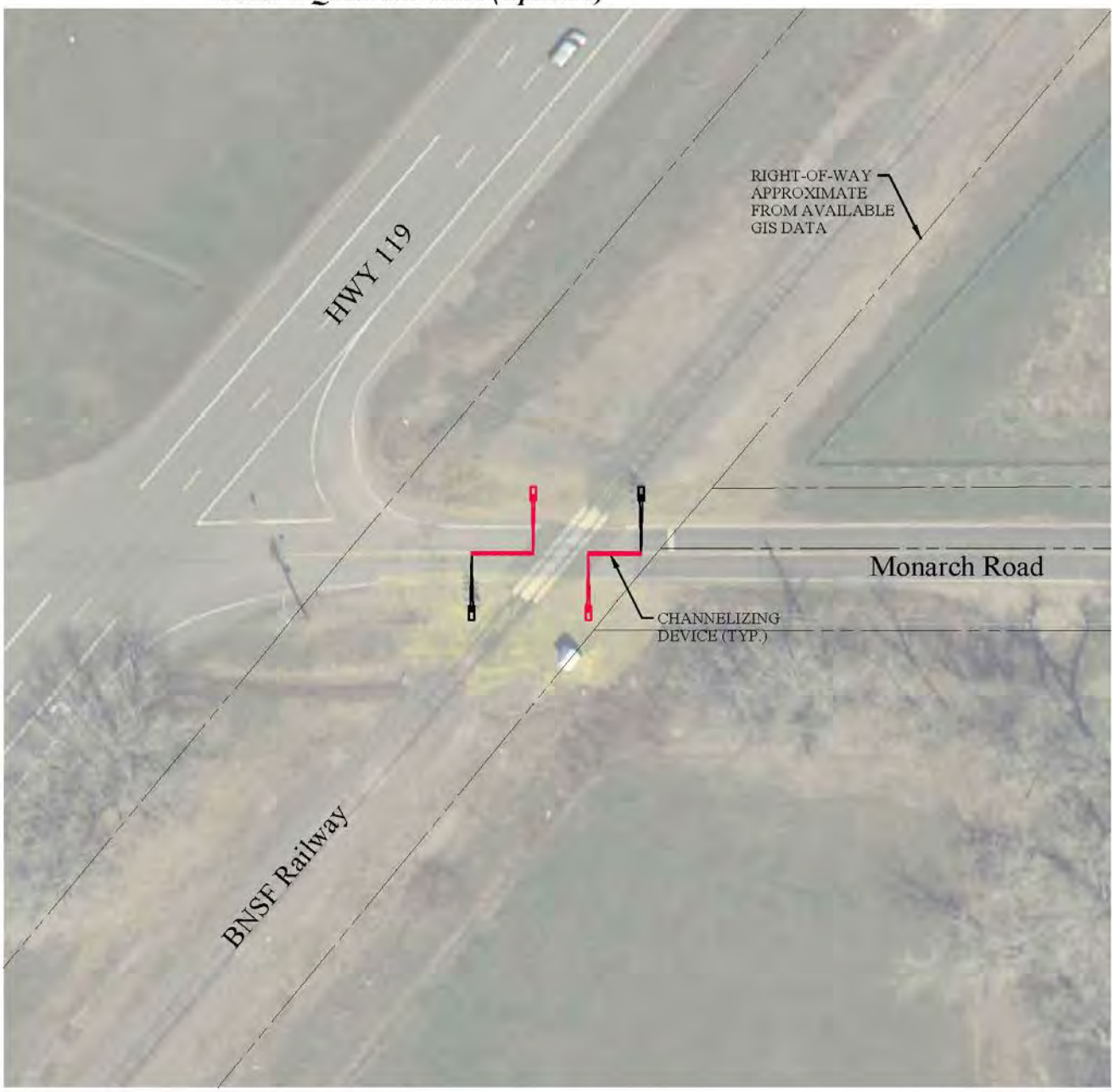
SCALE: 1"=60'

0 30 60

FELSBURG HOLT & ULLEVIG

Monarch Road
US DOT #244832S
Main Line
SSM: 4-Quadrant Gates (Option 1)

Concept Crossing Improvements



NOTES:
1. Has CWT Circuitry.
2. Add railroad exit gates.
3. Stub channelizing devices required to close gap between gates in the down position due to skew.
4. Railroad signal 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
- Proposed Gate
- Proposed Median
- Proposed Curb and Gutter
- Proposed Wayside Horn
- Proposed Sign
- Approximate centerline of road or railway (where needed for reference)

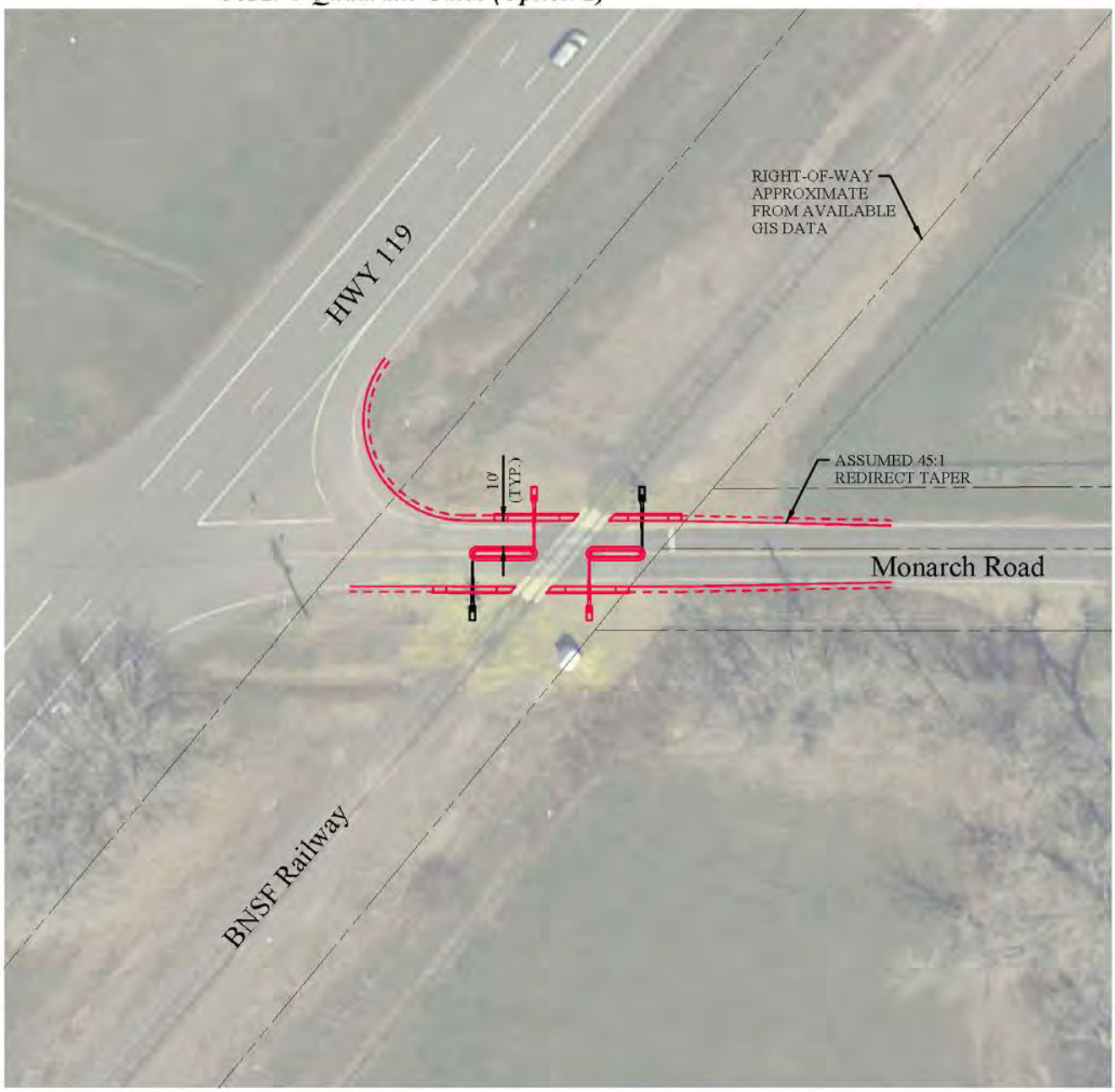
N W E S

SCALE: 1"=60'

0 30 60

Monarch Road
US DOT #244832S
Main Line
SSM: 4-Quadrant Gates (Option 2)

Concept Crossing Improvements



NOTES:
1. Has CWT Circuitry.
2. Add railroad exit gates.
3. Stub medians required to close gap between gates in the down position due to skew.
4. Railroad signal 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

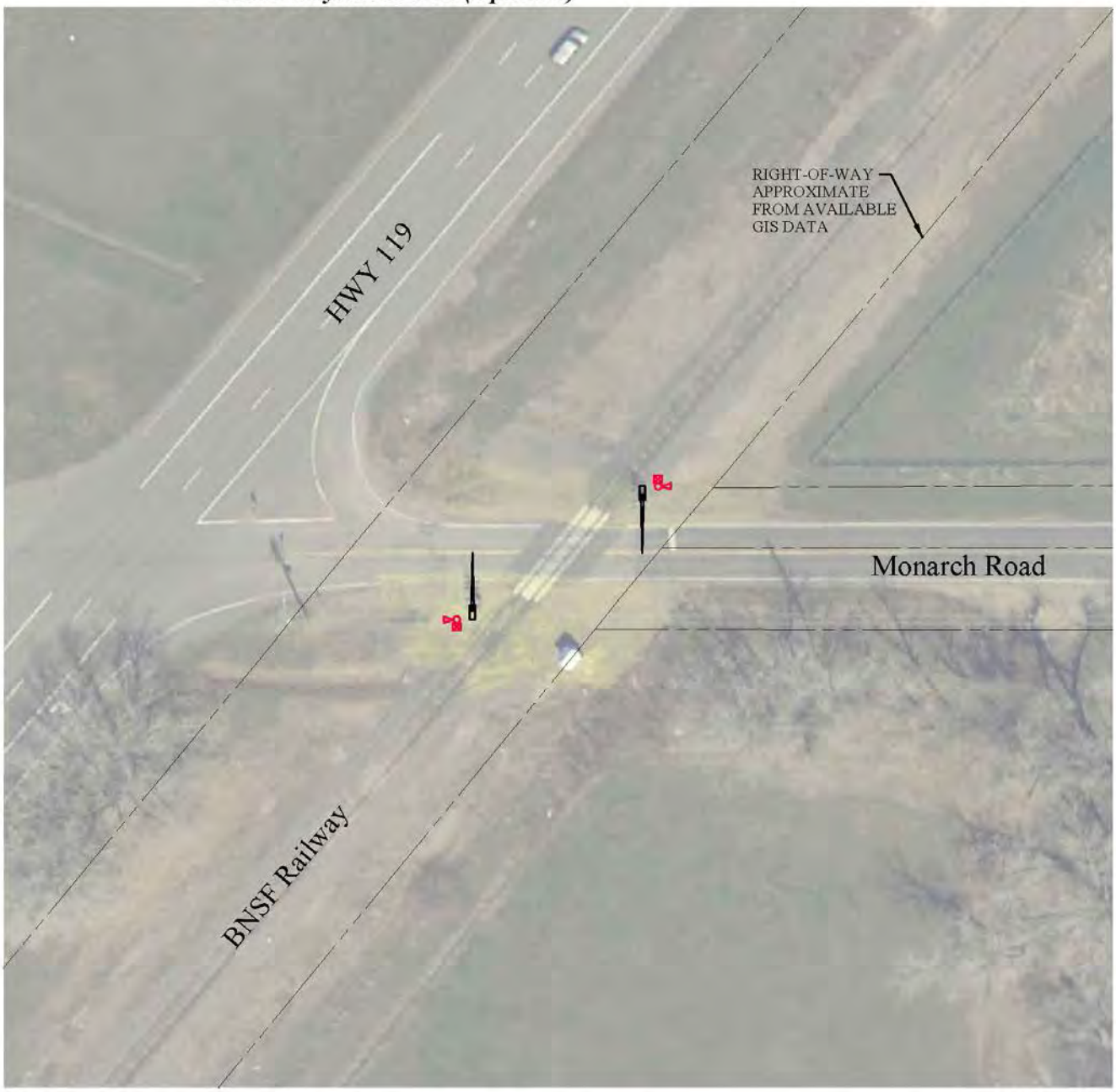
SCALE: 1"=60'

0 30 60

FELSBURG HOLT & ULLEVIG

Monarch Road
US DOT #244832S
Main Line
SSM: Wayside Horns (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
- 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

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
- 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

FELSBURG HOLT & ULLEVIG

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
- 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)

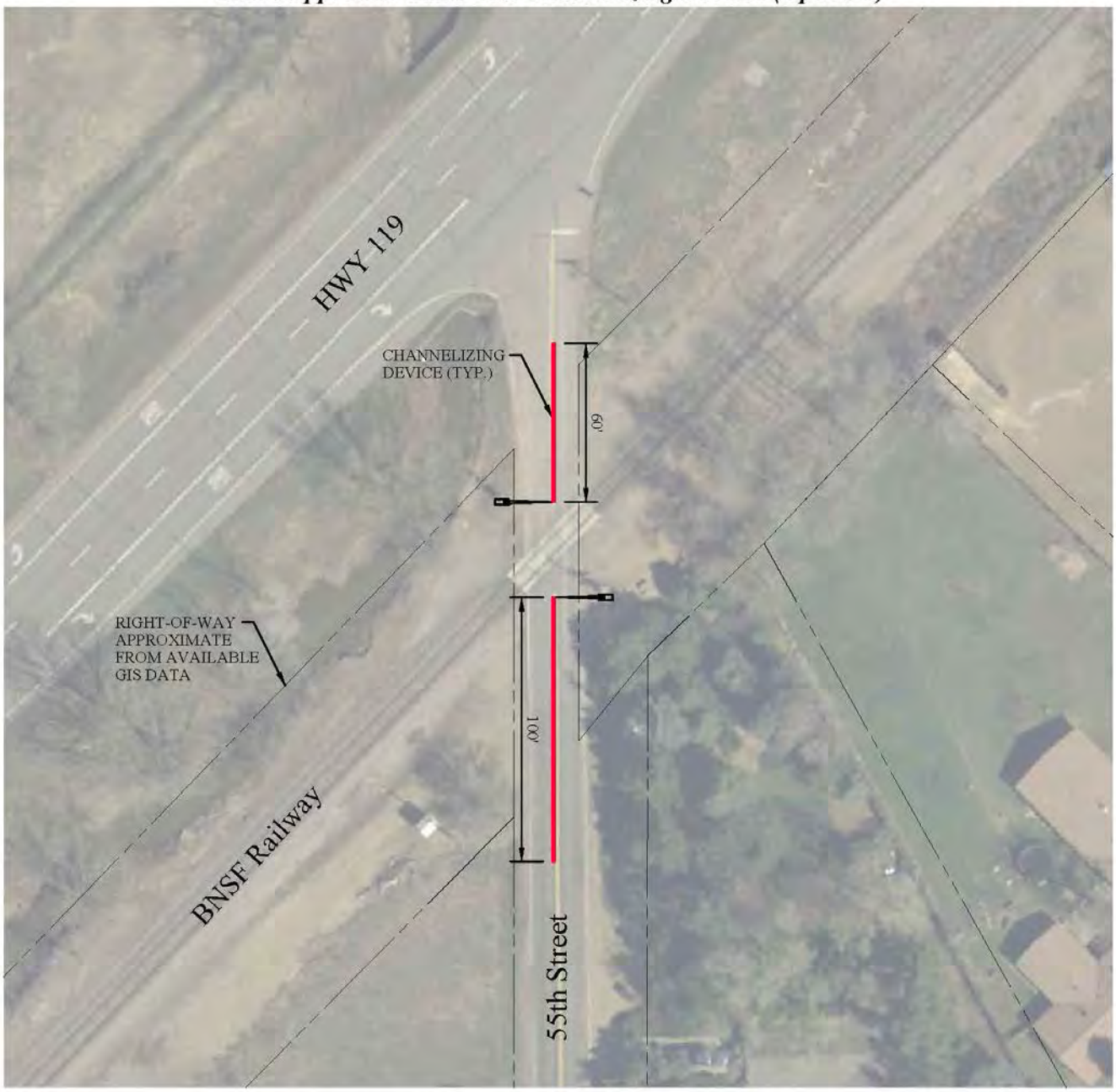
N W E S

SCALE: 1"=60'

0 30 60

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)

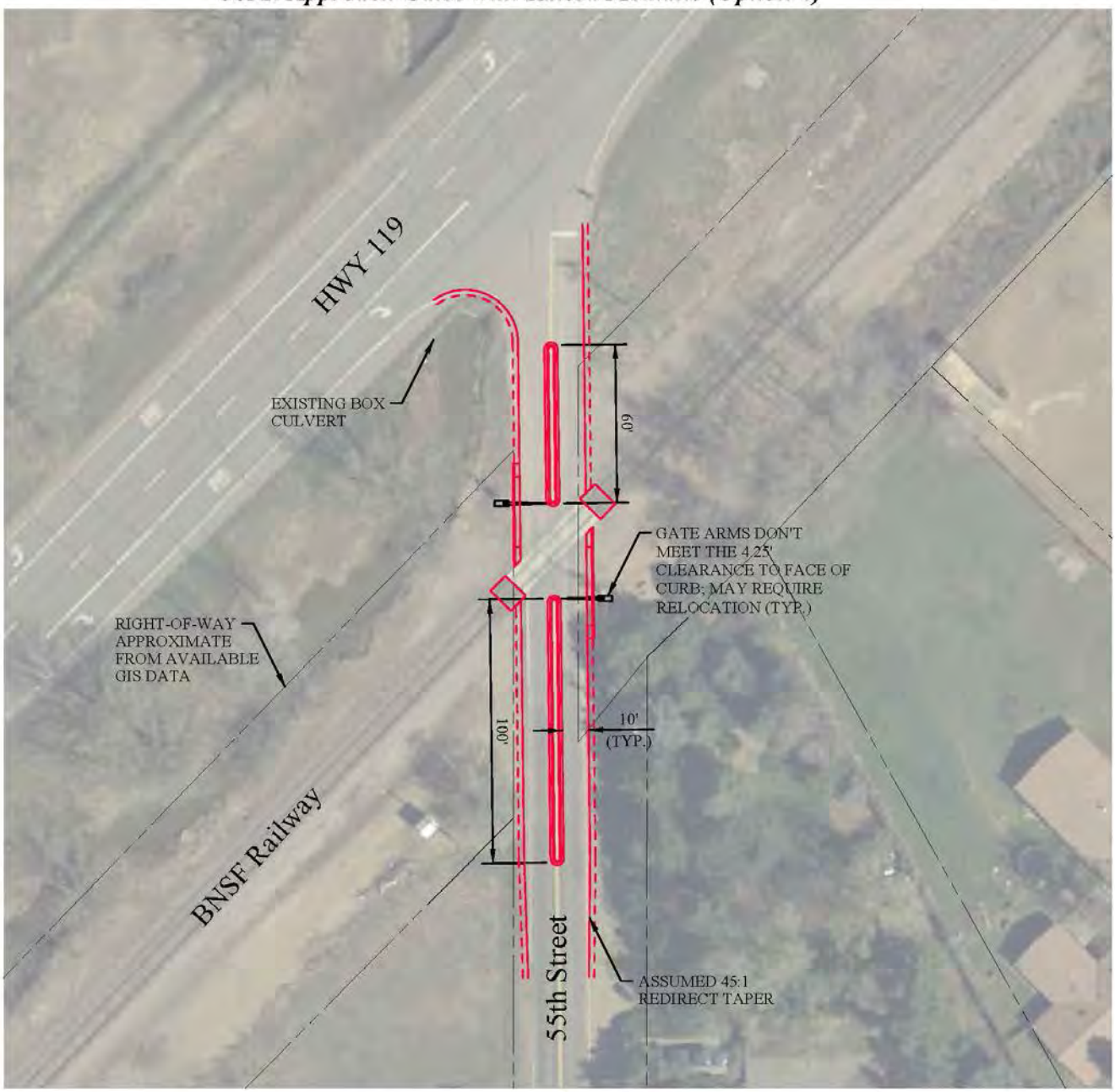
N W E S

SCALE: 1"=60'

0 30 60

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
- 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

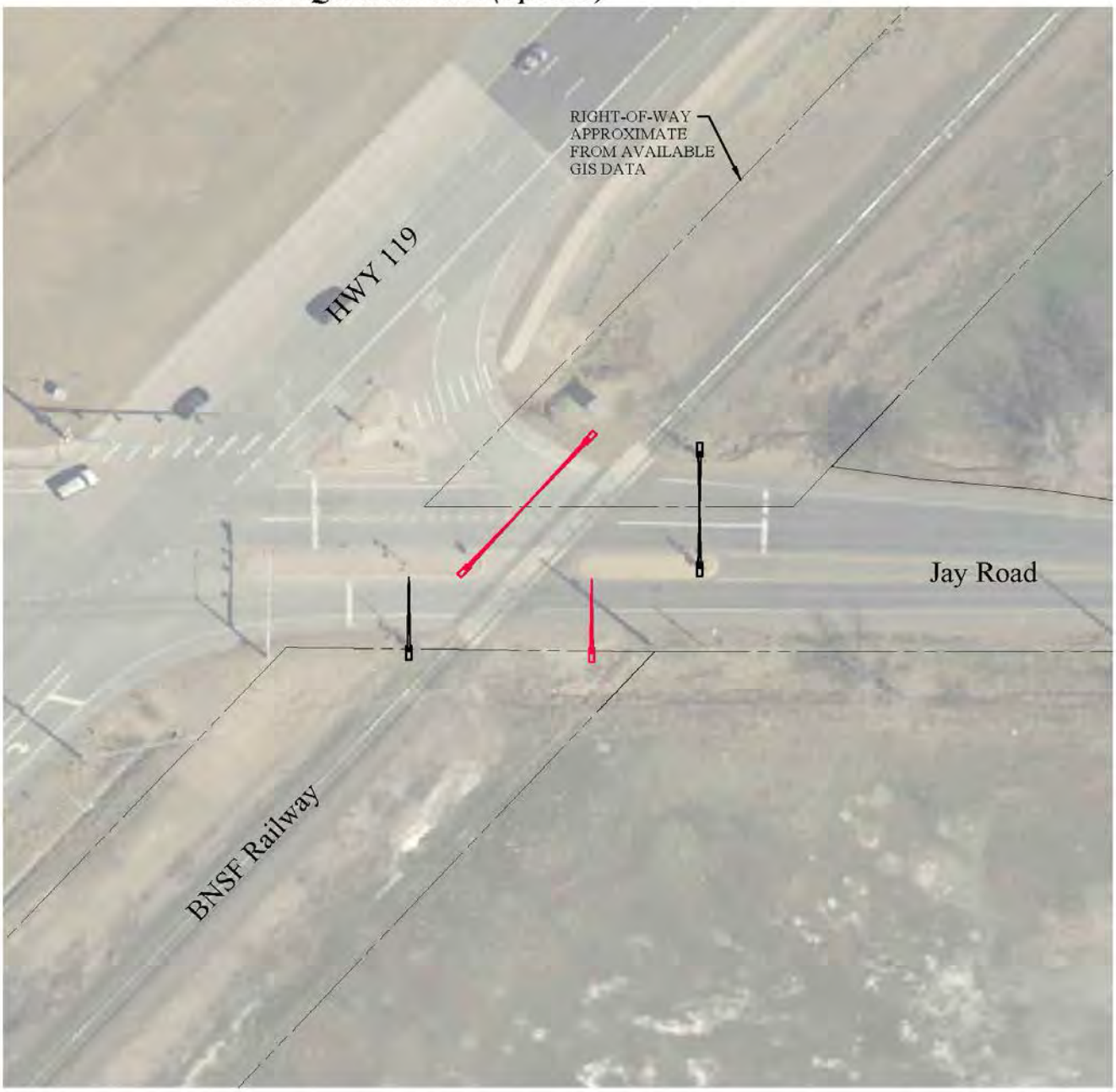
SCALE: 1"=60'

0 30 60

FELSBURG HOLT & ULLEVIG

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
- 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

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
- 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

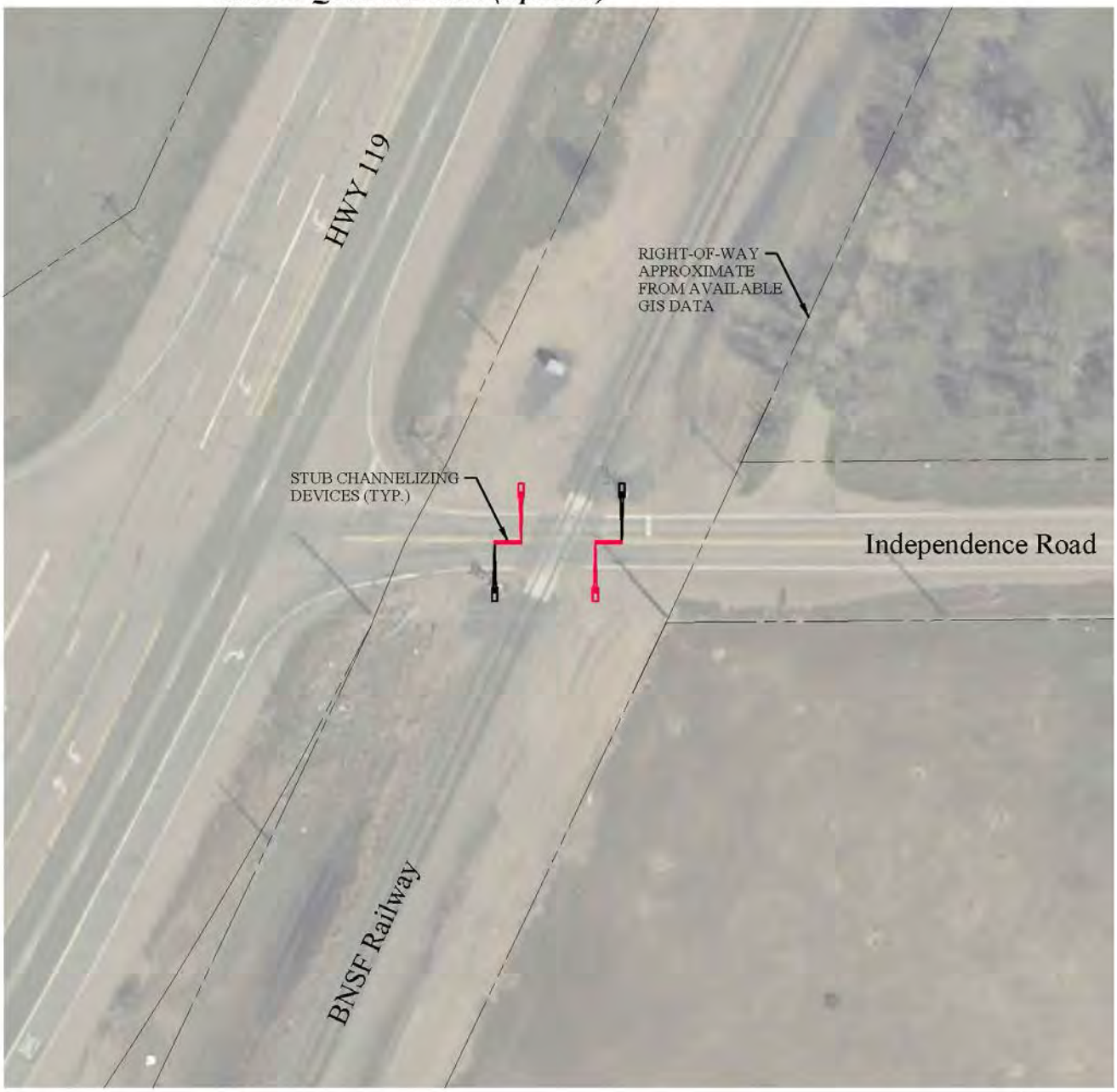
SCALE: 1"=60'

0 30 60

FELSBURG HOLT & ULLEVIG

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

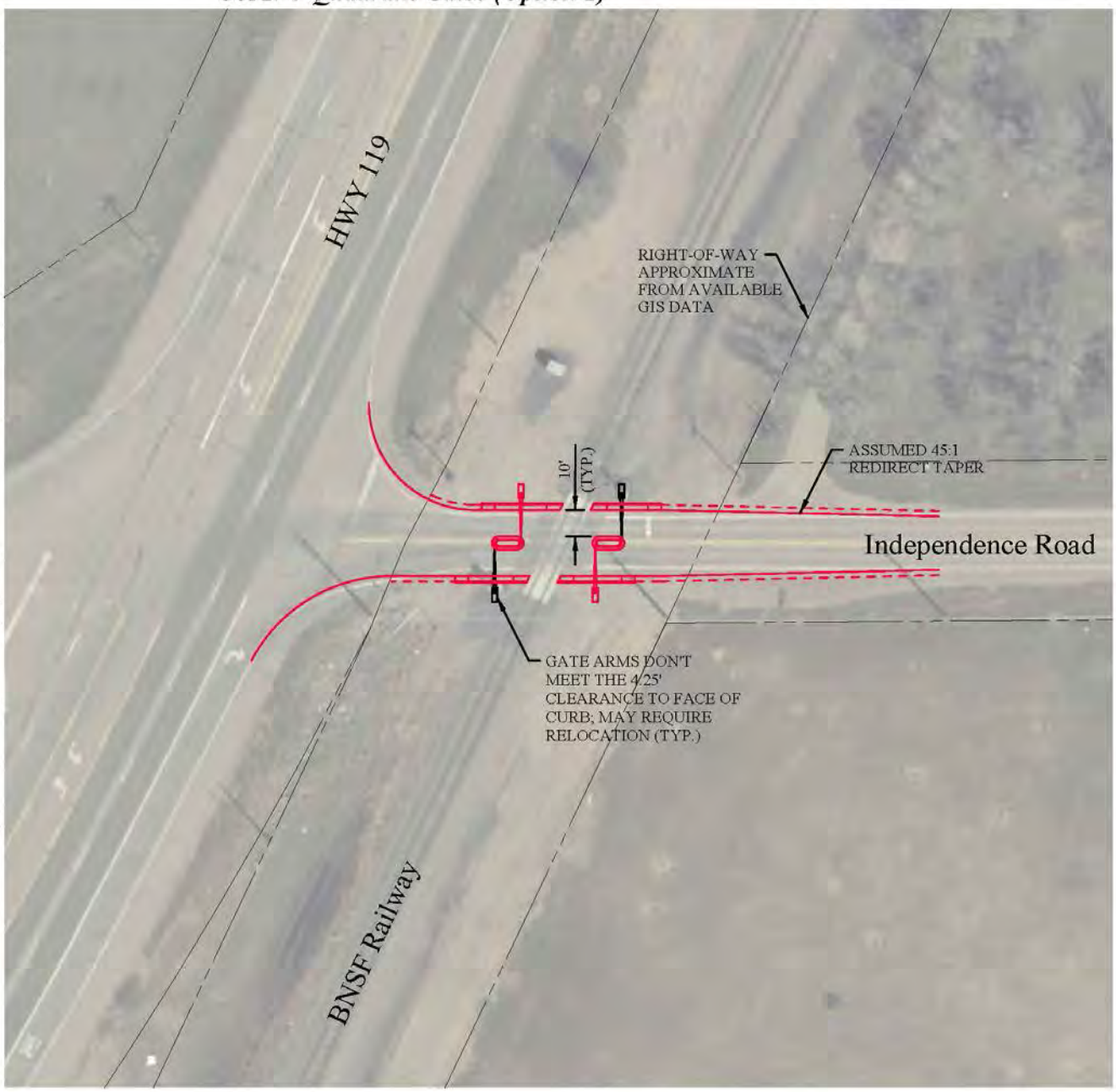
SCALE: 1"=60'

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	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)	

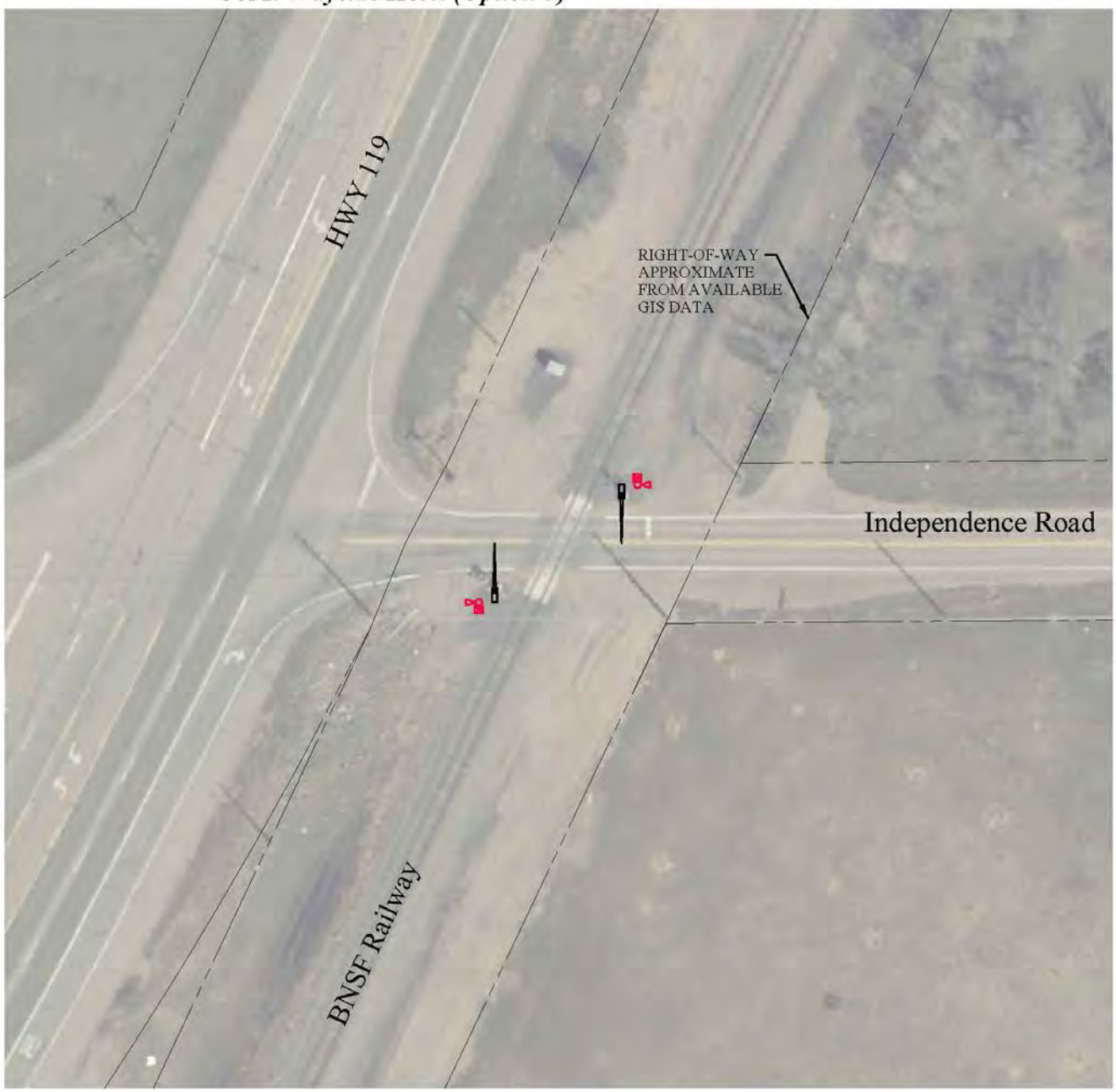
N
W E
S

SCALE: 1"=60'
0 30 60

FELSBURG HOLT & ULLEVIG

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
- 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'

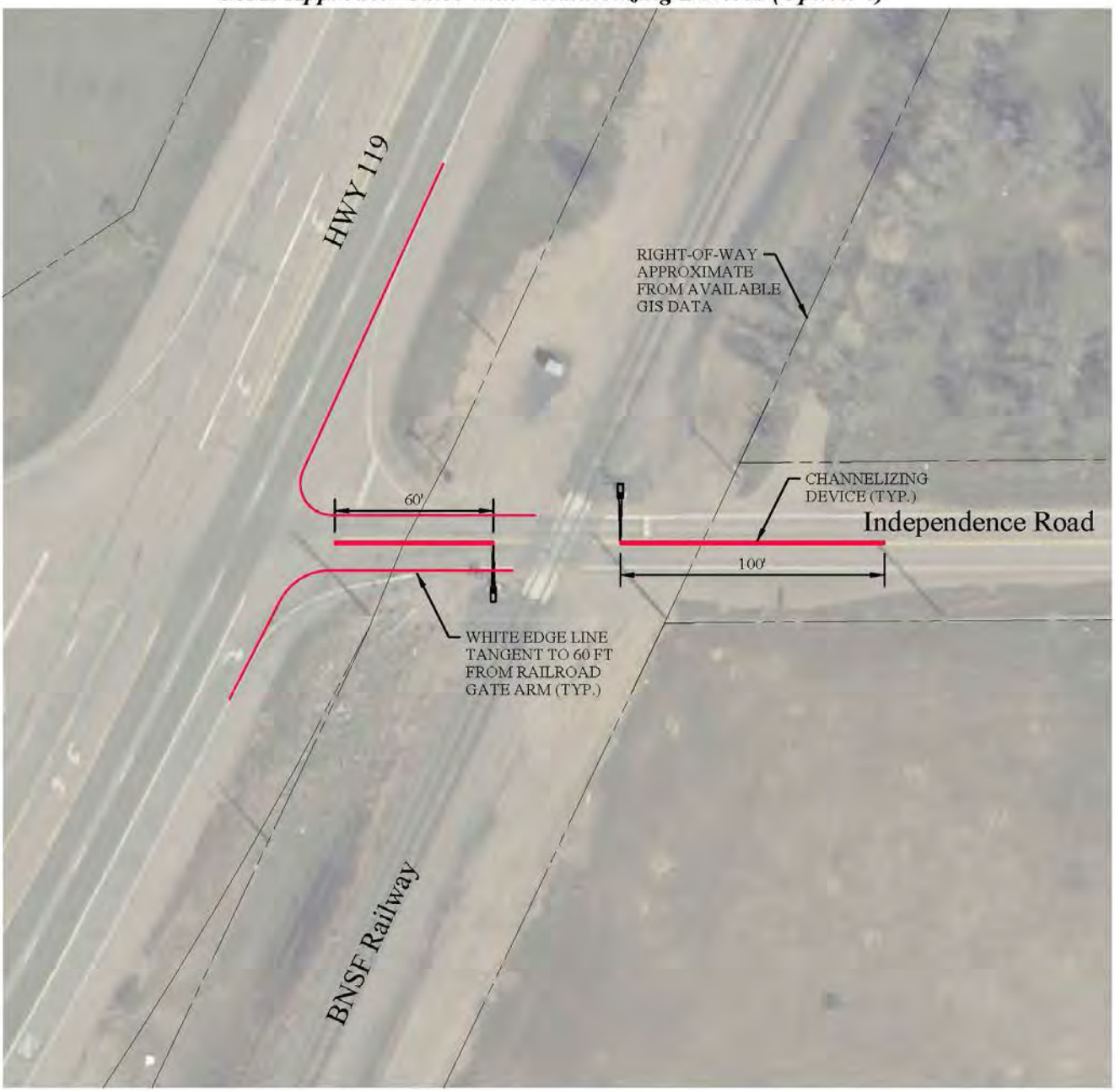
0 30 60

FELSBURG HOLT & ULLEVIG

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

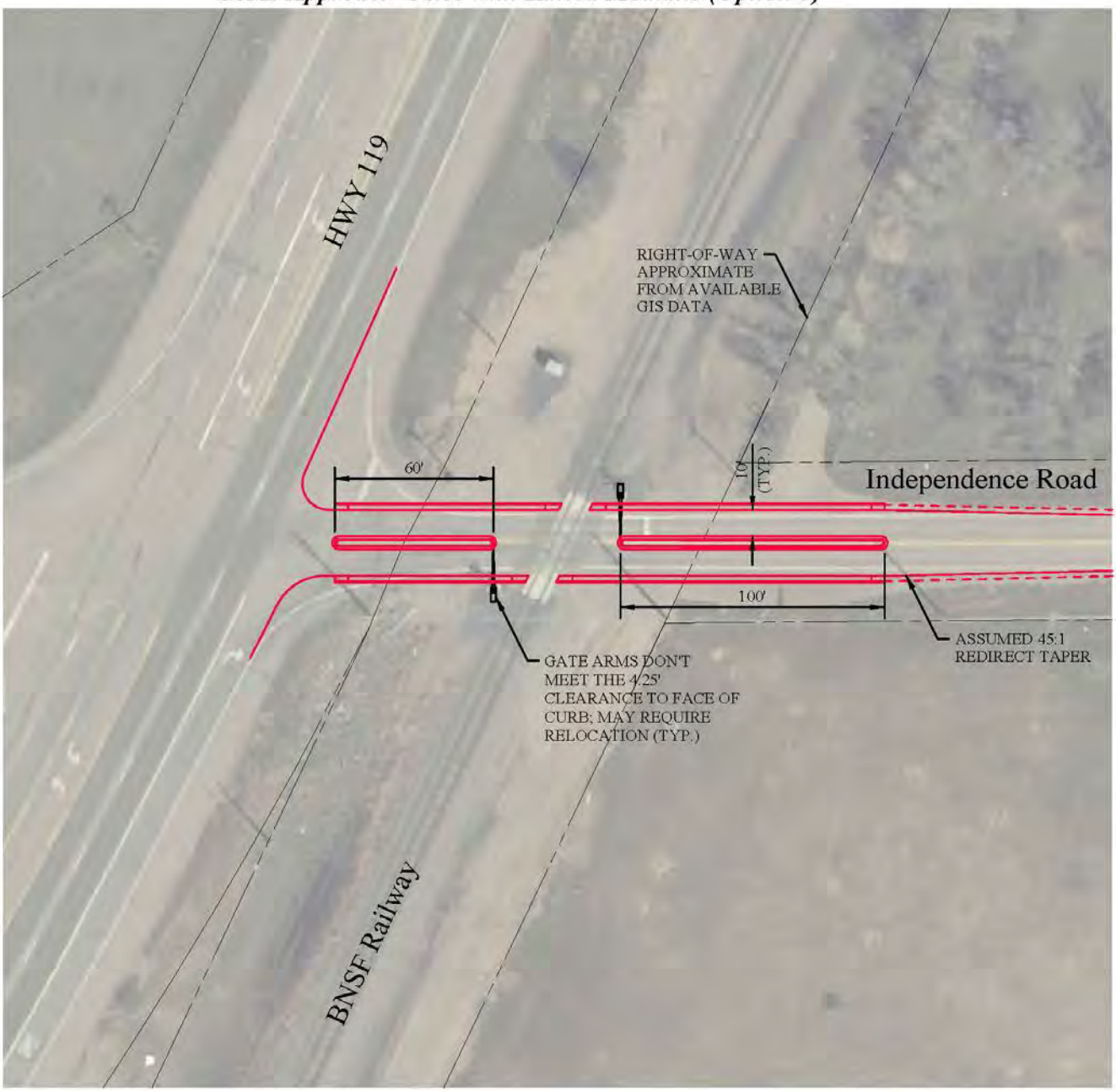
N W E S

SCALE: 1"=60'

0 30 60

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

V. Evaluation of Quiet Zone Concept Improvements

A. Safety Considerations

This segment of BNSF track runs parallel and to the east of Highway 119 between Boulder and Longmont, Colorado. The distance between the two corridors varies between 80 feet and 120 feet, measured from edge of pavement of Highway 119 to centerline of track of the BNSF Railway. The primary issue associated with this configuration for the crossing roadways, is the limited vehicle storage distance between the tracks and Hwy 119 for highway vehicles.

The majority of these roadways cross the railroad tracks on a skew, which creates a significant 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 majority of 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. Niwot Road and Jay Road have existing traffic signals at their respective intersections with Highway 119. The remaining roadways are stop controlled at their respective intersections with Highway 119. At this time, none of the stop-controlled roadways are slated for traffic signals at Highway 119.

Current traffic counts were collected for each of the roadways to be 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 limited vehicle storage between Highway 119 and the railroad tracks, and vehicles waiting for a gap in traffic along Hwy 119 to enter the highway.

B. Field Diagnostic Review

A field diagnostic review is being coordinated, and may be conducted prior to publication of the final assessment report. If conducted, a diagnostic team will meet onsite, to include staff from Boulder County, BNSF Railway, Federal Railroad Administration, Colorado Public Utilities Commission, City of Boulder (for crossings within the City's jurisdiction) and the Colorado Department of Transportation (due to proximity of Highway 119). The group will discuss existing conditions at each crossing, along with safety concerns, planned improvements (if any), and will review the concept level options presented for possible quiet zone establishment. BNSF staff will be 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.

Key results and recommendations of the Field Diagnostic Review, if held, will be included in the final version of the assessment report.

C. Noise Contour Diagram

A Noise Contour Diagram is being developed to show a generalized level of noise surrounding the BNSF corridor from North 83rd Street to Independence Road. Following development of the noise contours, County staff will utilize GIS to calculate the number of residential units within each noise contour range to reflect the approximate number of residences that may be affected by train horn noise in proximity to each crossing. The

crossings may be grouped into economically feasible projects and pursued as funding allows, and the noise contours and assessment of residents within the various sound levels, will assist the County in understanding the areas likely to be most affected.

The Noise Contour Diagram will be included in Appendix C of the final 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 County proceeds into design of actual crossing improvements.

Concept costs for each crossing option are shown in **Table 10**.

Table 10. 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
244836U	North 83rd Street	39.17			X		$432,000	CWT upgrade & new gates
						X	$240,000	CWT upgrade & 2 horns
244834F	Main Street (2nd Avenue)	38.05			X		$432,000	CWT upgrade & new gates
						X	$240,000	CWT upgrade & 2 horns
				X			$120,000	2-60 ft channelizing devices
			X				$144,000	60' medians; curb/gutter east approach
244833Y	Niwot Road	37.86			X		$480,000	3 exit gates & CWT upgrade
						X	$240,000	CWT upgrade & 2 horns
244832S	Monarch Road	37.20			X		$456,000	CWT upgrade; 2 exit gates; stub channeliz.
					X		$516,000	CWT upgrade; 2 exit gates; stub medians
						X	$240,000	CWT upgrade & 2 horns
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

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

According to 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 brief 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 County does not currently have passenger rail, current freight rail operations and planned commuter rail through the County may allow for pursuit of this funding if County 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. 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.

One such corridor is the BNSF mainline crossings of Main Street (2nd Avenue) and Niwot Road. This reach has close proximity residential development to the east of the BNSF track, and these crossings are approximately 0.19 miles apart.

The County 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 can or must be addressed at the same time, due to proximity or other issues. The logically grouped crossings are as follows:

Group 1 Crossings – Niwot Road and Main Street (2nd Avenue). Niwot Road and Main Street are required to be treated for quiet zone establishment concurrently due to their proximity within ¼ mile of each other.

The Main Street crossing currently has approach railroad gates, flashers, cross bucks and CWT circuitry, and is most easily established as a quiet zone crossing utilizing either Raised Medians or Channelizing Devices, as these options do not require upgrade to the railroad equipment, but rather only necessitate roadway approach improvements. The issue at this crossing is the access and parking, north and south of Main Street, that is currently available to the east of the tracks. This access/parking is within 60 feet of the approach railroad gate arm, and both accesses/parking locations would need to be closed/eliminated, or relocated. Closure of the access to the south into the bank, may have circulation issues for this location, and should be studied. If it is possible to push the south side vehicular access to a point 60 feet from the gate arm, parking could be reconfigured within the bank property to retain access from Main Street, and the current circulation pattern through the lot.

Niwot Road also currently has approach railroad gates, flashers, cross bucks and CWT circuitry. However, this location has the westbound egress from Niwot to northbound Hwy 119 that is within 60 feet of the approach gate arm. This eliminates the possibility of utilizing Raised Medians or Channelizing Devices as an SSM treatment. Further conversation with FRA may result in a Modified SSM option at this location, noting that any options other than standard SSM installations, require application to and approval from the FRA.

Conservatively, the addition of exit gates for a 4-quadrant gate installation is the most viable treatment at this location for quiet zone establishment.

Group 2 Crossing – Monarch Road. Monarch Road is currently treated with approach railroad gates, flashers, cross bucks and CWT circuitry. While Monarch Road is not required to be treated concurrently with Niwot Road and Main Street, this crossing is located 0.65 miles south of the Niwot Road crossing, and is the next closest crossing to the Niwot Road-Main Street pair. This crossing should be considered for treatment in close succession to the Niwot Road-Main Street pair, because horn sounding by locomotives in the southbound direction, in advance of the Monarch Road crossing, is within the proximity of the residential neighborhoods east of the tracks. Silencing trains horns at Monarch Road, in conjunction with Niwot and Main Street, would effectively create a 2-mile segment of track with no routine sounding of train horns.

Group 3 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 County. Channelizing devices could be installed with no additional crossing material.

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 northbound Hwy 119 beginning immediately west of the railroad crossing, placing it within 60 feet of the approach gate arm. Further conversation is being conducted with FRA regarding the interpretation of this egress as an access. 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 4 Crossing – Independence Road. Independence Road is currently treated with approach railroad gates, flashers, cross bucks and CWT circuitry. This crossing is the furthest south in the study limits, and about 0.30 miles north of the next crossing to the south, which is within the city limits of Boulder. The next closest crossing to the north is Jay Road, which is approximately 1.0 mile north. 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 conjunction with the next two crossings to the south (outside the County's study area), as this group of crossings begin to pass through residential development.

Group 5 Crossing – North 83rd Street. North 83rd Street is currently treated with approach railroad gates, flashers, cross bucks and CWT circuitry. This crossing is in closer proximity to the diagonal Hwy 119, and is configured with ingress as well as egress turn lanes that merge with North 83rd Street within 30 feet of the

approach railroad gate. Because of this lane configuration, the SSM utilizing Raised Medians or Channelizing Devices is not viable at this crossing. Consideration was given to tightening the turn radii from Hwy 119 to pull the turn bays closer to the diagonal highway, however this adjustment may not be maneuverable for vehicles, particularly trucks turning to or from the highway. Further consideration can be given to this option, which would require coordination with the Colorado Department of Transportation. The closest adjacent crossing to North 83rd is 0.68 miles to the north, and outside the County's limits for this study. Niwot Road is the next adjacent crossing to the south, and is over 1.0 mile away. This crossing can be pursued independent of other crossings.

Table 11 shows the grouping of the crossings, along with notes regarding implementation, and approximate summarized concept costs for Groups 1 through 5.

Table 11. 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	Main Street (2nd Avenue)	4-Quadrant Gates	$432,000	$410,000 to $962,000	
		Wayside Horns	$240,000		May req circuitry upgrade
		Gates/Chan.Dev.	$120,000		Reqs adj. accesses closed/moved
		Gates/Medians	$144,000		Reqs adj. accesses closed/moved
	Niwot Road	4-Quadrant Gates	$480,000		
		Wayside Horns	$240,000		May req circuitry upgrade
	Contingencies		$50,000		
2	Monarch Road	4-Quadrant Gates	$456,000	$290,000 to $566,000	Reqs stub channelizing devices
		4-Quadrant Gates	$516,000		Reqs stub medians
		Wayside Horns	$240,000		May require circuitry upgrade
	Contingencies		$50,000		
3	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		
4	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		
5	North 83rd Street	4-Quadrant Gates	$432,000	$290,000 to $482,000	
		Wayside Horns	$240,000		May require circuitry upgrade
	Contingencies		$50,000		
Range of Costs for All Crossings:			**$1,642,000**	**to**	**$3,538,000**

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	244836U

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 NIWOT	83RD ST *(Street/Road Name)* | * *(Block Number)*	CR 25

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)* | 0039.172 *(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)* 40.1161450	*(WGS84 std: -nnn.nnnnnnn)* -105.1594590	☐ 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		244836U

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)* 2
☐ 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)*: 1

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)* 75

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 1994 AADT 001150

8. Estimated Percent Trucks
05 %

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

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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	244834F

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 NIWOT	MAIN ST (Street/Road Name) | * (Block Number)	CR NW5

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) | 0038.050 (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) 40.1038100	(WGS84 std: -nnn.nnnnnnn) -105.1732240	☐ 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		244834F

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 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 000500	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	244833Y

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 NIWOT	NIWOT RD (Street/Road Name) | * (Block Number)	COUNTY

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) | 0037.860 | (suffix) (nnnn.nnn)

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) 40.1016600	(WGS84 std: -nnn.nnnnnnn) -105.1755890	☐ 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		244833Y

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	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 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 1989 AADT 000820	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	244832S

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 NIWOT	MONARCH ST *(Street/Road Name)* | * *(Block Number)*	CR 36

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	| 0037.200 | *(prefix) | (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)* 40.0943410	*(WGS84 std: -nnn.nnnnnnn)* -105.1836460	☐ 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		244832S

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 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 000070	00 %	☐ 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 Number of Lanes 3 ☐ 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	☐ 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 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 *

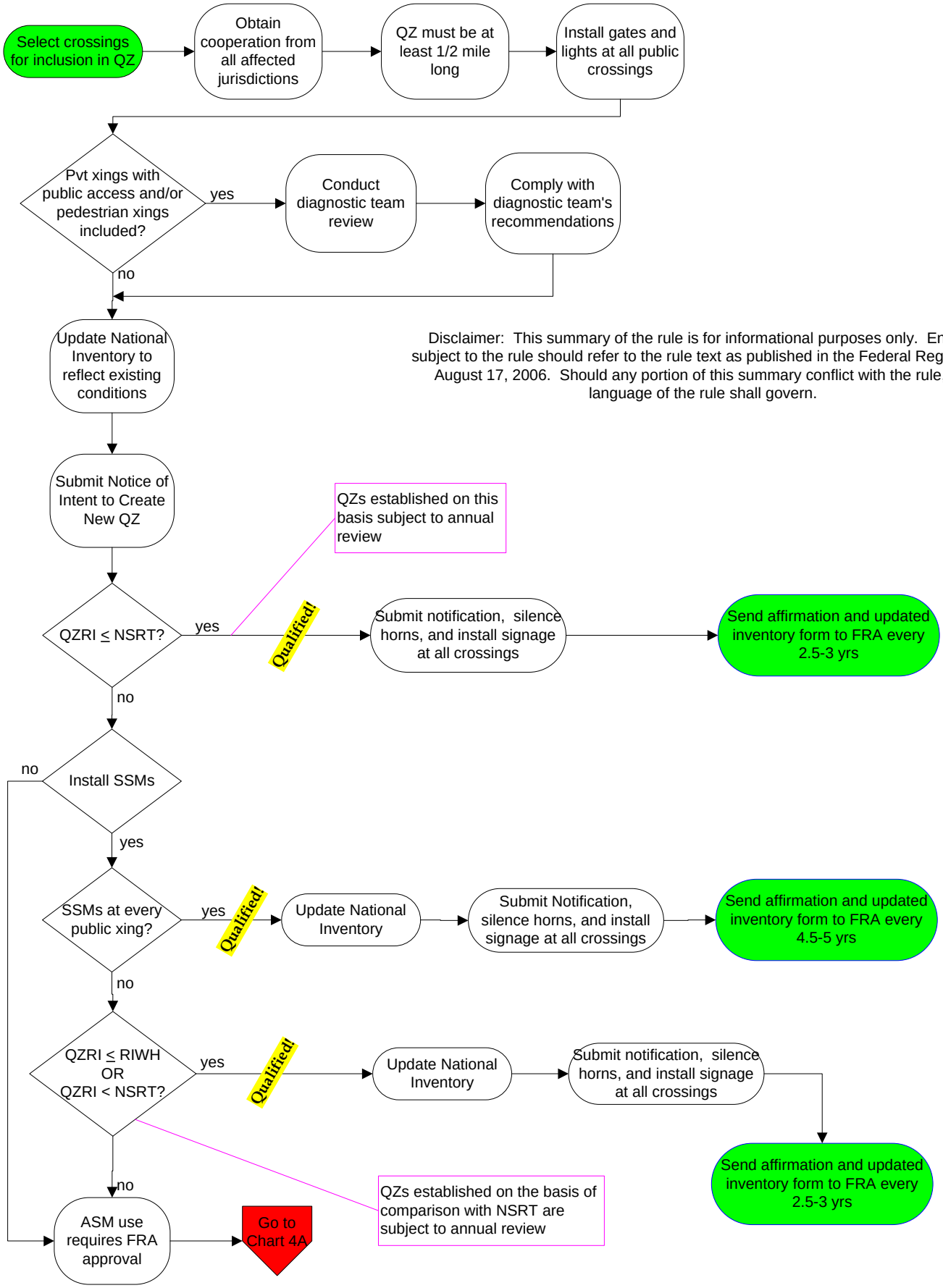
7. Annual Average Daily Traffic *(AADT)*	8. Estimated Percent Trucks	9. Regularly Used by School Buses?	10. Emergency Services Route
Year 1994 AADT 002100	05 %	☐ Yes ☒ No Average Number per Day 0	☐ Yes ☐ No

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

Submitted by _____ Organization _____ Phone _____ Date _____

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.

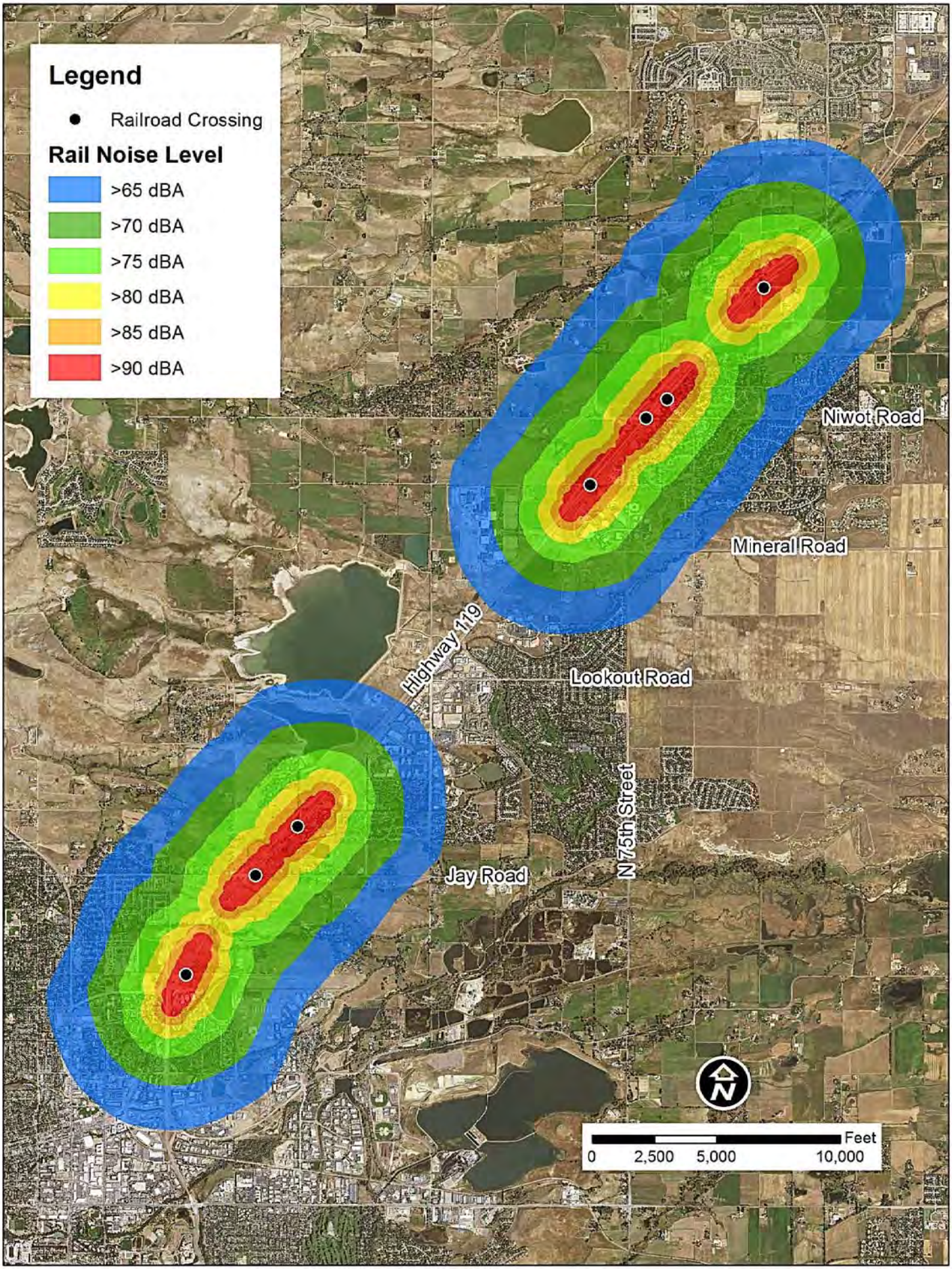
- ❑ If the public authority was required to submit a Notice of Detailed Plan, they must include a written statement affirming that the Notice of Detailed Plan was provided in accordance with the rule, and they must state the date on which it was provided.

- ❑ 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


Legend
Railroad Crossing
Rail Noise Level
>65 dBA
>70 dBA
>75 dBA
>80 dBA
>85 dBA
>90 dBA
Niwot Road
Mineral Road
Highway 119
Lookout Road
N 75th Street
Jay Road
N
Feet
0
2,500
5,000
10,000

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