



Quiet Zone Assessment

City of Minot, North Dakota

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INTRODUCTION AND BACKGROUND

The City of Minot is investigating options to improve safety for at-grade highway rail crossings and to minimize the impacts of train horn noise throughout the community. The Quiet Zone Final Rule, issued by the Federal Railroad Administration (FRA) in June 2005, offers an opportunity to accomplish this objective. The Rule specifies the procedures and actions necessary to establish a train whistle-free quiet zone for at-grade highway rail crossings.

The City retained the services of SRF Consulting Group, Inc. to assist in preparing a Quiet Zone Assessment study that identifies the range of improvements needed to comply with the FRA Final Rule. SRF has prepared numerous Quiet Zone Assessment Reports and has extensive experience and familiarity with the quiet zone development process.

The Quiet Zone Assessment study is being guided by key staff from the City of Minot with participation from representatives of the Federal Rail Administration (FRA), North Dakota Department of Transportation (NDDOT) Rail Section, Canadian Pacific (CP) Railroad, and Burlington Northern Santa Fe (BNSF) Railway.

As part of the study process, a total of 15 at-grade crossings were identified in the study area and included in the Quiet Zone Assessment. These include 12 mainline and three spur line crossings, on three separate railroad divisions. Six of the crossings are located along Burlington Northern Santa Fe (BNSF) Railway trackage and nine crossings are located along Canadian Pacific (CP) Railroad trackage. Of the BNSF crossings, two (27th St. SE – main and spur crossings) are located along the Twin Cities Division (Glasgow Subdivision, Minot-Glasgow Line) and four are along the Montana Division (Glasgow Subdivision, Minot-Glasgow Line). All of the CP crossings are located on the Heartland Division (Portal Subdivision, MP Line). All of the crossings included in the study are located within Minot’s city limits. The crossings included are listed below and illustrated in Figure 1.

For the purpose of this assessment, the crossings are divided into five separate quiet zones, based on railroad subdivision and geographic location. Each zone includes a range of at-grade crossings, and has one or more possible combinations of treatments to achieve an acceptable quiet zone risk rating. The proposed quiet zones and their respective crossings are listed below:

BNSF – 27th Street SE

27th Street SE
27th Street SE (spur)

BNSF - Southwest

Maple Street
5th Avenue SW
Golf Course Road
Burdick Expressway (spur)

CP - Southeast

8th Avenue SE
9th Street SE

CP – Downtown

3rd Street SE
East Central Avenue (spur)
East Central Avenue

1st Street SE

Main Street

CP - West

3rd Street (Amtrak Depot)
Maple Street

In addition to the quiet zones listed above, a sixth quiet zone configuration was considered as part of this study. Under this quiet zone option, all of the crossings on the Canadian Pacific line were combined. However, as the study progressed it was determined that it would be more practical to include these crossing in three separate Quiet Zones.

EXISTING CONDITIONS

Prior to determining the future safety improvements necessary to establish a quiet zone, it was important to examine each crossing's existing characteristics. To accomplish this goal, the study team conducted a site visit at all 15 at-grade rail crossings. Measurements were taken and the existing roadway and rail characteristics at each crossing were noted.

The FRA Final Rule states that in order for an at-grade rail crossing to be quiet zone eligible, it must be equipped with active warning devices comprising both flashing lights and two quadrant vehicle gates, and conform to the standards contained in the Manual on Uniform Traffic Control Devices (MUTCD). In addition, each crossing must be equipped with constant warning time train detection (CWT) and power out indicators where appropriate. Finally, each quiet zone rail corridor must be at least one-half mile in length. Table 1 highlights the existing traffic and train characteristics such as train volumes, train speeds, and annual average daily traffic (AADT) volumes. In addition, the table identifies the quiet zone eligibility status of each crossing, by stating that the crossing either meets the minimum requirements listed above, or if not, what improvements are needed in order to meet these requirements.

In addition, the United States Department of Transportation (US DOT) provides an inventory of crossing characteristics for all rail crossings throughout the United States. These inventory forms document location, train movements, train speeds, safety devices present, physical characteristics and highway/traffic information for each crossing. The US DOT Grade Crossing Inventory Forms for each of the crossings included in the Minot Quiet Zone Study, updated during field investigation, are provided in Appendix A.

The following is an overview of the existing conditions for each of the proposed quiet zones, as well as each of the at-grade crossings studied. Included are a discussion of the railroad characteristics, existing crossing safety features, and any other issues that may impact the implementation of a quiet zone.

BNSF – 27th Street SE Quiet Zone

The 27th Street SE Quiet Zone crossings are located on the BNSF, Twin Cities Division rail line, which runs on an east-west orientation on the east side of the City of Minot. This line carries an average of 34 trains per day at speeds of up to 60 mph. There are two at-grade rail crossings within this quiet zone, including the 27th Street SE mainline and spur crossings. Note that these two crossings were initially considered a single quiet zone due to their close proximity and common railroad division (Twin Cities Division), however, per the FRA Quiet Zone Rule, each crossing must be considered as a separate quiet zone for the purpose of the quiet zone risk assessment because they are located on separate railroad line segments (mainline and spur). These crossings are treated as a single crossing group, or quiet zone, throughout this report, but each must be implemented independently and will include a separate risk analysis. The following is an overview of these crossings.

27th Street SE Crossings (mainline and spur)

27th Street is a north-south oriented street on the eastern edge of the study area. There are two separate double track crossings at this location, each with its own US DOT Grade Crossing Identification number. The two crossings are spaced approximately 190 feet apart (measured from the nearest rails of each), with the south crossing serving the BNSF mainline and the north crossing serving a spur line.

At the south crossing (mainline tracks), there are 34 trains per day on average, traveling at a maximum speed of 60 mph. This crossing is equipped with two-quadrant vehicle gates, lights, and CWT, meeting the minimum active warning device requirements for quiet zone implementation.

Table 1: Existing Crossing Characteristics

	CROSSING (U.S. DOT NUMBER)	NUMBER OF TRAINS PER DAY	MAXIMUM TRAIN SPEED (MPH)	AVERAGE DAILY TRAFFIC VOLUME (YEAR)	MEETS QZ REQUIREMENT⁽¹⁾
BNSF - 27th Street SE	27th Street SE (093077T)	34	60	5,485 (2008)	Yes
	27th Street SE - spur (093079G)	1	60	5,485 (2008)	No - Needs CWT
BNSF - Southwest	Maple Street (071920W)	40	35	485 (2010)	Yes ⁽²⁾
	5th Avenue SW (071923S)	40	35	720 (2010)	Yes
	Golf Course Road (093868F)	40	55	540 (2010)	Yes
	Burdick Expressway - spur (071927U)	1	10	4,200 (1988)	No - Needs CWT
CP - Southeast	8th Avenue SE (698911H)	25	10	4,385 (2008)	No - Needs CWT
	9th Street SE (698912P)	18	25	1,280 (2010)	No - Needs CWT
CP - Downtown	3rd Street SE (698914D)	16	25	11,400 (2010)	Yes
	East Central Avenue - spur (698919M)	0 ⁽³⁾	10	5,300 (1988)	No - Needs CWT
	East Central Avenue (698915K)	16	25	3900 (2008)	No - Needs CWT
	1st Street SE (698916S)	16	25	1,475 (2008)	No - Needs CWT
	Main Street (698920G)	16	25	1705 (2008)	No - Needs CWT
CP - West	3rd Street/Amtrak Depot (698922V)	16	25	880 (2010)	No - Needs Gates, Lights, and CWT
	Maple Street (698924J)	16	25	400 (2010)	Yes

⁽¹⁾Per the Quiet Zone Rule, all crossings must be equipped with flashing lights and two quadrant vehicle gates, as well as constant warning time (CWT) train detection and power out indicators where appropriate.

⁽²⁾Crossing contains both mainline and spur tracks. Mainline tracks have CWT, but spur tracks do not.

⁽³⁾This spur track is seldom used. The crossing is flagged when a train uses the spur.

The north crossing (spur tracks) has one train per day on average, traveling at a maximum speed of 60 mph. This crossing is equipped with two-quadrant vehicle gates, flashing lights, and bells, but has only DC/AFO train detection. Train detection at this crossing would need to be upgraded to CWT, in order to meet the minimum quiet zone requirements. Because this crossing is on a spur track with extremely low train volumes (one train per day) and because it does not meet the minimum requirements, this spur line crossing could be excluded from a quiet zone while implementing a quiet zone at the mainline crossing.

Based on 2008 data, the average daily traffic (ADT) volume at both the north and south crossings is 5,485 vehicles per day (VPD). There are no pedestrian facilities and no curb and gutter at this location on 27th Street SE, leaving the roadway boundaries in-between the two crossings undefined. There is undefined access serving the Cattleman's Café and the Livestock Auction which are located on the west side of 27th Street between the two crossings. There is also undefined access on the east side of 27th Street between the two tracks, which appears to be used by BNSF to access the tracks and bungalows.

BNSF – Southwest Quiet Zone

The crossings within the proposed Southwest Quiet Zone are on the BNSF, Montana Division rail line, which runs on an east-west orientation through the City of Minot. This line carries an average of 40 trains per day at speeds up to 60 mph. There are four at-grade rail crossings within this quiet zone, including one spur line crossing (Burdick Expressway crossing). The following is an overview of these crossings, including railroad and roadway characteristics, existing crossing safety features, and any other issues that may impact the implementation of a quiet zone.

Maple Street

The Maple Street crossing is on the west edge of the study area and consists of both a double track mainline and a single track spur line. BNSF verified that the spur line is still considered operable and is not to be abandoned; however, it is not currently in use. There are approximately 78-feet between the center of the nearest mainline track to the center of the spur track. There are no pedestrian facilities at this location; however, there is a sidewalk along the south side of Maple Street, west of the spur line, but it stops short of the crossing.

This crossing is equipped with stop bar pavement markings, two-quadrant vehicle gates, flashing lights, and bells. The mainline tracks have CWT, but the spur line does not. There are 40 trains per day on average, traveling at a maximum speed of 35 mph. Based on 2010 data, the crossing has an ADT of 485 VPD. Due to the extremely low train volumes (not currently in use) and because it does not meet the minimum requirements, it is not recommended that the spur line crossing be considered for a quiet zone at this time. The City may choose not to include the spur line in a quiet zone, while still including the mainline tracks.

5th Avenue SW

The 5th Street crossing is located on the west side of the study area and consists of a double track crossing. There are currently no pedestrian facilities at this crossing. 5th Avenue currently serves as the primary public access to the Burdick Expressway for the residential subdivision to the north.

This crossing is equipped stop bar pavement markings on both sides of the crossing and an advanced warning sign to the north. Other traffic control devices include two-quadrant vehicle gates, flashing lights and bells, and CWT. There are 40 trains per day on average, traveling at a maximum speed of 35 mph at this crossing. Based on 2010 data, this crossing has an ADT of 720 VPD.

A concern noted at this crossing is that southbound traffic on 5th Avenue, waiting to turn onto Burdick Expressway, often stops on the tracks. This is a concern because the intersection of 5th Avenue and Burdick Expressway is not signalized.

Golf Course Road

This crossing is on the western edge of the study area and consists of a double track crossing. There are currently no pedestrian facilities along this roadway or crossing the tracks. This crossing is equipped with advanced warning signage, flashing lights and bells, railroad crossing pavement markings, and CWT. The crossing has 40 trains per day on average, traveling at a maximum speed of 55 mph. Based on 2010 data, this crossing has an ADT of 540 VPD.

Burdick Expressway

The Burdick Expressway is a spur line crossing on the west edge of the study area. Burdick Expressway is an undivided five-lane roadway, consisting of two through lanes and a combined left turn lane. There are no pedestrian facilities at this location.

This crossing is equipped with two-quadrant vehicle gates, cantilevered flashing lights, and bells, but has only DC/AFO train detection. This crossing will need to be upgraded to CWT, in order to meet the minimum quiet zone requirements. The crossing has one train per day on average, traveling at a maximum speed of 10 mph. Based on 1988 data, the ADT at this crossing is 4,200 VPD. Due to the extremely low train volumes (one train per day) and because it does not meet the minimum requirements, it is not recommended that this spur line crossing be considered for a quiet zone at this time.

CP – Southeast Quiet Zone

The crossings within the proposed Southeast Quiet Zone are along the Canadian Pacific, Heartland Division rail line, which runs on an east-west orientation through the City of Minot, carrying between 18 to 25 trains per day (depending on location), at speeds up to 25 miles per mph. There are two at-grade rail crossings within the proposed quiet zone. The following is an overview of these crossings, including railroad and roadway characteristics, existing crossing safety features, and any other issues that may impact the implementation of a quiet zone.

8th Avenue SE

The Canadian Pacific and 8th Avenue crossing is on the east edge of the study area. This crossing is equipped motion detectors and two-quadrant gates. The 8th Avenue alignment comes close to crossing perpendicular to the rail. There are pedestrian facilities at this crossing. There is a sidewalk on the west side of 8th Avenue leading up to the railroad tracks, but it does not cross. There are multiple access points southwest of the tracks, serving a warehouse, alley, and other businesses. To the northeast there is an intersection approximately 30-feet from the tracks.

This crossing does not have CWT and would need to be upgrade to be included in a quiet zone. The crossing has 25 trains per day on average, traveling at a maximum speed of 10 mph. Based on 2008 data, the average daily traffic (ADT) volume at this crossing is 4,385 VPD.

9th Street SE

The Canadian Pacific crossing at 9th Street is equipped with motion detectors and two-quadrant gates. Most of the railroad equipment at this crossing is relatively old, and it would require an upgrade to CWT to be included in the quiet zone. There are pedestrian facilities present on both sides of 9th Street at this crossing and this location is part of a school route.

The 9th Street SE crossing has stop bar pavement markings, advanced warning signage, flashing lights, and bells. The crossing has 18 trains per day on average, traveling at a maximum speed of 25 mph. Based on 2010 data, the average daily traffic (ADT) volume at this crossing is 1,280 VPD.

In addition, there is also a spur line crossing a residential alley, just south of the crossing at 9th Street SE. It was determined that this spur line is closed and the tracks have been abandoned. As such, there is no need to include it within the quiet zone.

CP – Downtown Quiet Zone

The proposed Downtown Quiet Zone is along the Canadian Pacific, Heartland Division rail line, which runs on an east-west orientation through Downtown Minot. This line carries approximately 16 trains per day, at speeds up to 25 miles per mph. There are five at-grade rail crossings within the proposed quiet zone, including one spur line crossing (East Central Avenue). In general, there are numerous roadway access issues at each of the crossings within this quiet zone, which could impact potential quiet zone improvements. The following is an overview of these crossings, including railroad and roadway characteristics, existing crossing safety features, and any other issues that may impact the implementation of a quiet zone.

3rd Street SE

This Canadian Pacific crossing is in the central portion of the study area. 3rd Street is a four-lane road with parking allowed on both sides of the street. There are pedestrian facilities on both sides of the roadway, crossing the tracks at this location. This crossing contains a single set of railroad tracks equipped with CWT.

Traffic control devices at this location include two quadrant gates, flashing lights, cantilevered flashing lights, stop bar pavement markings, advanced warning signage, and bells. The crossing has 16 trains per day on average, traveling at a maximum speed of 25 mph. Based on 2010 data, the average daily traffic (ADT) volume at this crossing is 11,440 VPD.

There currently existing driveway and alley accesses within close proximity to the tracks on both sides of the crossing. In addition, the intersection with 1st Street SE is immediately south of the crossing, limiting the potential for quiet zone improvement options.

East Central Avenue - Spur

There is a spur crossing just east of 3rd Street SE on Central Avenue. Canadian Pacific has indicated that this Spur is now a private track after being sold by Canadian Pacific. The track provides access to a nearby grain elevator but is seldom used. According to Canadian Pacific, this crossing is flagged when a train uses the spur. As this is a private crossing with extremely low train volumes (seldom used), and it does not meet the minimum requirements, the City may choose not to include it in a quiet zone at this time.

East Central Avenue

The East Central Avenue crossing is in the central portion of the study area. This single track crossing does not currently have CWT and the signal equipment is relatively old. On street parking is allowed in both directions of travel on East Central Avenue. Pedestrian facilities exist on both sides of East Central Avenue leading up to, and crossing, the tracks.

Traffic control devices at this location include two quadrant gates, flashing lights, stop bar pavement markings, advanced warning signage, and bells. The crossing has 16 trains per day on average, traveling at a maximum speed of 25 mph. Based on 2008 data, the average daily traffic (ADT) volume at this crossing is 3,900 VPD.

1st Street SE

The 1st Street crossing is northwest of the East Central Avenue Crossing in the center of the study area. This single track crossing has motion detectors, but not CWT. In addition, the signal equipment at this crossing is relatively old. Parking is allowed on both sides of 1st Street and there are pedestrian facilities along both sides of the street and crossing the track.

Railroad traffic control devices at 1st Street include two-quadrant gates, flashing lights, stop bar pavement markings, and bells. The crossing has 16 trains per day on average, traveling at a maximum speed of 25 mph. Based on 2008 data, the average daily traffic (ADT) volume at this crossing was 1,475 VPD.

There are currently existing driveway and alley accesses within close proximity to the tracks on both sides of the crossing.

Main Street

The Main Street crossing is in the central portion of the study area. This location has pedestrian facilities on both the east and west side crossing the single track. This crossing is equipped with motion detectors, but not CWT and the signal equipment is relatively old.

Traffic control devices at Main Street include two-quadrant gates, flashing lights, stop bar pavement markings, and bells. The crossing has 16 trains per day on average, traveling at a maximum speed of 25 mph. Based on 2008 data, the average daily traffic (ADT) volume at this crossing is 1,705 VPD.

There are currently existing driveway and alley accesses within close proximity to the tracks on both sides of the crossing.

CP – West Quiet Zone

The crossings within the proposed West Quiet Zone are along the Canadian Pacific, Heartland Division rail line, which runs on an east-west orientation through the west side of Minot, carrying 16 trains per day, at speeds up to 25 miles per mph. There are two at-grade rail crossings within the proposed quiet zone. The following is an overview of these crossings, including railroad and roadway characteristics, existing crossing safety features, and any other issues that may impact the implementation of a quiet zone.

Amtrak Depot

This crossing is located in the west portion of the study area west of Highway 83. This crossing is not equipped with any train detection, gates, or flashers. There are only stop bar pavement markings and stop signs for traffic control

This crossing has 16 trains per day on average, traveling at a maximum speed of 25 mph. Based on 2010 data, the average daily traffic (ADT) volume at this crossing is 880 VPD.

Maple Street

The Maple Street crossing is located on the west edge of the study area. Maple Street is a two lane roadway with no on street parking. A pedestrian sidewalk exists along the east side of the road on the north side of the crossing leading to the tracks but not crossing them.

The Maple Street crossing is equipped with constant warning time train detection and two-quadrant gates. Other traffic control devices are stop bar pavement markings, flashing lights, advanced warning signage for northbound traffic, and bells. The crossing has 16 trains per day on average, traveling at a maximum speed of 25 mph. Based on 2010 data, the average daily traffic (ADT) volume at this crossing is 400 VPD.

Perkett School Pedestrian Crossing

In addition to the at-grade highway crossings described above, there is one pedestrian only crossing within the study area. This crossing is located approximately one mile west of the Maple Street crossing at mile post 470.4 on the west edge of the study area. This is a private, pedestrian only crossing, which provides access to the Perkett School. This crossing is closed with a locked gate, except for before and after school hours when a crossing guard unlocks the gate to walk pedestrians across the railroad tracks. CP indicated that they currently blow the train horn for this crossing. Because this is a private pedestrian only crossing, it is not included in the quiet zone risk analysis and does not need to be included in the quiet zone.

QUIET ZONE ANALYSIS

Diagnostic Meeting Results

A diagnostic team meeting was held for this assessment on March 30 and 31, 2010. The diagnostic team included members of the City of Minot Engineering Department, a representative from BNSF, FRA, NDDOT Rail Section, Canadian Pacific, Ackerman Estvold Engineering, and SRF Consulting Group, Inc.

The diagnostic team met at the Minot Public Works building and was provided background information on the crossing and the quiet zone assessment process. The diagnostic team then completed a field inspection of each crossing and discussed possible Supplemental Safety Measure (SSM) and Alternative Safety Measure (ASM) improvement options at each crossing, to be considered in the development of the quiet zone plan.

SSMs are highway-rail crossing safety improvements determined by the FRA to be effective in reducing risk levels upon the cessation of train whistles at highway-rail crossings. SSMs deemed acceptable by the Final Rule for quiet zone implementation include: 100-foot non-traversable medians or channelization delineators (60-foot medians/delineators are acceptable if intersected by a public street), four-quadrant vehicle gates, one-way pairs, and street closures. In accordance with FRA rules, these SSMs must be installed in addition to the prerequisite quiet zone crossing requirements identified earlier, to satisfy risk reduction objectives. If a community chooses to establish a quiet zone using the FRA pre-approved SSMs, then it may designate and implement a quiet zone after appropriate notification and installation of the SSMs, without an FRA application. Wayside horns can also be used as an alternative to the routine sounding of train horns. Wayside horns are not an SSM, but are an FRA approved substitute for train whistles.

ASMs are highway-rail crossing safety improvements which are not pre-approved for implementation by the Final Rule, and as such are subject to approval upon application and review by the FRA Associate Administrator of Rail Safety. This application process is more time consuming than the designation process described above, but is an acceptable alternative to the designation method. Typical ASMs include: reduced length non-traversable medians (i.e. less than the required length for SSM medians), three-quadrant vehicle gates, programmed/photo enforcement, public awareness education, and other geometric improvements.

The suitability of a particular SSM/ASM depends on various rail crossing factors. For example, four-quadrant vehicle gates are a very effective measure, but have a very high cost. The installation of medians generally has a low relative cost and is effective in reducing risk, but is sometimes not acceptable because it can reduce or eliminate access for existing driveways along the roadway.

In addition to the potential improvements discussed above, the installation of rail corridor fencing and pedestrian safety measures were also discussed. Three options were discussed for each pedestrian crossing, including signing improvements, pedestrian mazes, and/or pedestrian gates. A copy of the

diagnostic meeting minutes and sign-in sheets, as well as the potential SSM/ASM treatments determined by consensus of the diagnostic team, are included in Appendix B.

Quiet Zone Risk Assessment

After diagnostic team input, an evaluation of the area's quiet zone options using the FRA internet-based calculator was conducted. The internet-based calculator has been made available by FRA to determine the risk reduction benefits achieved by various SSMs. Because ASMs are not pre-approved and have no established effectiveness rating, they cannot be evaluated using the internet-based calculator, but instead are evaluated on an individual basis using the FRA ASM Calculation Spreadsheet.

In order to implement a quiet zone, a rail corridor's Quiet Zone Risk Index (QZRI) must be reduced below the Risk Index With Horns (RIWH) or the Nationwide Significant Risk Threshold (NSRT). The QZRI is the risk to the motoring public after the corridor's risk level is adjusted for the increased risk due to a lack of locomotive horn sounding and the reduced risk due to the implementation of acceptable safety measures. The RIWH is the level of risk that would exist in the quiet zone if horns were sounded at every public crossing. The NSRT is a measure of risk, calculated on a nationwide basis, which reflects the average level of risk to the motoring public at public at-grade rail crossings equipped with vehicle gates and flashing lights and at which the locomotive horns are sounded. It should also be noted that a quiet zone can be established if the existing QZRI is below the NSRT. It may be possible to establish one or more of the proposed quiet zones on the basis that the current QZRI is below the NSRT.

Quiet zones that are below the NSRT, but not below the RIWH, are susceptible to changes in the NSRT, which the FRA recalculates annually based on nationwide rail crossing statistics. These quiet zones are reviewed by the FRA annually, to ensure that the QZRI remains below the NSRT. The current NSRT for all crossings, established by the FRA, is 14,007. Since the Quiet Zone Final Rule was released in 2005, the NSRT has been as high as 19,047 and as low as 14,007. As the NSRT may change from year to year, there is no guarantee that this type of quiet zone will remain qualified. If, upon annual review, the QZRI level exceeds the NSRT, the FRA will notify the public authority responsible for the quiet zone. Upon receipt of FRA notification, the public authority would be required to submit a written commitment to the FRA detailing the steps they will take to lower the QZRI back below the NSRT. The public authority would then be required to complete the installation of the additional SSMs/ASMs noted in the written statement within three years of the receipt of FRA notification. Quiet zones that are at, or below the RIWH are not subject to periodic FRA recalculations of the NSRT or annual FRA review. These quiet zones are still subject to regular periodic updates and FRA review every 2.5 to five years.

Using the FRA internet-based calculator, the QZRI and the RIWH for each of the potential quiet zones within the City of Minot was developed, based on the existing conditions. This existing conditions analysis assumes that all crossings either currently meet or will be upgraded to meet the minimum active warning device requirements for quiet zone implementation, as previously described (equipped with lights, gates, power out indicators, and CWT). For the purposes of this study, these calculator results will be considered the Base Scenario. The Base Scenario QZRI and RIWH for each of the proposed quiet zones are displayed in Table 2. Note that based on FRA direction, each of the 27th Street SE crossings (mainline and spur) are considered separate quiet zones for the purpose of the quiet zone risk assessment, because they are located on separate railroad line segments. Each must be implemented independently and will include a separate risk analysis. Copies of the FRA internet-based calculator results for the Base Scenario for each of the proposed quiet zones are included in Appendix C.

In order to qualify for a quiet zone at these crossings, the QZRI for each quiet zone must be below the NSRT or RIWH. As shown in Table 2, all but two of the proposed quiet zones (CP – West, 27th Street SE spur) would require additional safety improvements in order to qualify for quiet zone status, as the QZRI for each is higher than the RIWH and NSRT. Note that the results shown in Table 2 assume that

all crossings either currently meet, or will be upgraded to meet the minimum active warning device standards for quiet zones (equipped with gates, lights, power out indicators, and CWT).

As previously noted, quiet zones that are established by reducing the QZRI below the NSRT, but not the RIWH, are susceptible to changes in the NSRT. As the NSRT may change from year to year, there is no guarantee that a quiet zone implemented under this method will remain qualified. In order to establish a quiet zone that is not subject to periodic fluctuations in the NSRT, sufficient crossing safety measures are needed to reduce the QZRI below the RIWH.

Table 2: Base Scenario Risk Assessment Results

QUIET ZONE	QZRI ¹	RIWH	NSRT
BNSF - Southwest	21,815.94	13,079.10	14,007
CP – Southeast	15,779.77	9,460.3	14,007
CP – Downtown	15,440.93	9,257.15	14,007
CP – West	8,893.34	5,331.74	14,007
BNSF – 27th Street SE ²			
27th Street SE (mainline)	39,998.77	23,980.08	14,007
27th Street SE (spur)	5,659.55	3,393.02	14,007

¹Assumes all crossings meet the minimum active warning device standards (gates, lights, and CWT).

²For the purpose of risk assessment, the two 27th Street SE crossings (mainline and spur) are treated as independent quiet zones.

Crossing Improvement Options

Based on the review of the at-grade crossings and input received from the diagnostic team, a range of SSM and ASM improvement alternatives were developed for each crossing. The potential improvement options, as well as planning level cost estimates for each, are presented in Table 3. Layouts illustrating each of the crossing improvement options, as well as detailed cost estimates, are included in Appendix D. Please note that the preliminary cost estimates were prepared using general unit prices and estimated railroad construction cost based on past project experience and engineering judgment. These cost estimates are considered preliminary, and are included in order to provide the City with a cost comparison between the alternatives. These estimates should not be considered as final construction cost estimates.

In addition to the roadway and railroad crossing improvements, the City will be required to install advanced warning signs and pavement markings at each crossing in accordance with the requirements set forth in the FRA Quiet Zone Rule and the Manual on Uniform Traffic Control Devices (MUTCD), prior to implementation of a quiet zone. The costs for these improvements are included in the estimates for each crossing improvement alternative.

Table 3: Quiet Zone Crossing Improvement Options

	Crossing (U.S. DOT Number)	Improvement Options	Cost	Notes
BNSF - 27th Street SE	27th Street SE (093077T)	1. Four-quadrant gates (SSM)	\$435,960	-Preserves existing roadway access -Highest cost option
		2. Three-Quadrant Gates (ASM)	\$393,120	-Preserves existing roadway access -Lower cost than 4-quad. gate option
		3. Non-traversable medians (ASM)	\$34,065	-Requires modification of existing roadway access -Lowest cost option
	27th Street SE - spur* (093079G)	1. Four-quadrant gates (SSM)	\$435,960	-Preserves existing roadway access -Highest cost option
		2. Three-Quadrant Gates (ASM)	\$391,170	-Preserves existing roadway access -Lower cost than 4-quad. gate option
		3. Non-traversable medians (ASM)	\$152,673	-Requires modification of existing roadway access -Lowest cost option
BNSF - Southwest	Maple Street (071920W)	1. Non-traversable medians (SSM)	\$65,706	-Preserves neighborhood roadway access -Requires roadway widening
		2. Crossing Closure (SSM)	\$15,960	-Limits neighborhood roadway access
	5th Avenue SW (071923S)	1. Four-quadrant gates (SSM)	\$435,960	-Preserves existing roadway access -Highest cost option
		2. Non-traversable median (ASM)	\$17,754	-Requires modification of existing roadway access -Lowest cost option
Golf Course Road (093868F)	1. Non-traversable medians (SSM)	\$34,287	--	
Burdick Expressway - spur* (071927U)	Exclude from quiet zone	--	-Exclude due to low train volumes and lack of CWT	
CP - Southeast	8th Avenue SE* (698911H)	1. Four-quadrant gates (SSM)	\$435,960	-Preserves existing roadway access -Highest cost option
		2. One Way Pair (SSM)	\$399,960	-Reduced cost option -Limits roadway connectivity
		3. Non-traversable medians (ASM)	\$578,424	-Requires modification of existing roadway access -Requires roadway widening
	9th Street SE* (698912P)	1. Crossing Closure (SSM)	\$15,960	-Limits neighborhood roadway access
		2. One Way Pair (SSM)	\$375,960	-Limits roadway connectivity
		3. Four-quadrant gates (SSM)	\$435,960	-Preserves existing roadway access -Highest cost option
4. Non-traversable medians (ASM)	\$413,442	-Requires modification of existing roadway access		
CP - Downtown	3rd Street SE (698914D)	1. Four-quadrant gates (SSM)	\$202,149	-Preserves existing roadway access -Highest cost option
		2. Non-traversable medians (ASM)	\$20,055	-Limits roadway access/requires driveway relocation -Low cost option
	East Central Avenue - spur* (698919M)	Exclude from quiet zone	--	-Exclude due to low train volumes and lack of CWT
	East Central Avenue* (698915K)	1. Non-traversable medians (SSM)	\$386,505	--
	1st Street SE* (698916S)	1. Crossing Closure (SSM)	\$15,906	-Limits neighborhood roadway access
		2. One Way Pair (SSM)	\$401,310	-Limits roadway connectivity
		3. Non-traversable medians (ASM)	\$383,595	-Limits roadway access/requires driveway relocation
	Main Street* (698920G)	1. One Way Pair (SSM)	\$401,010	-Limits roadway connectivity
2. Non-traversable medians (ASM)		\$380,205	-Limits roadway access -Low cost option	
3. Four-quadrant gates (SSM)	\$435,960	-Preserves existing roadway access -Highest cost option		
CP - West	3rd Street/Amtrak Depot* (698922V)	1. Non-traversable medians (ASM)	\$394,395	--
		2. Crossing Closure (SSM)	\$15,960	-Limits neighborhood roadway access
	Maple Street (698924J)	1. Non-traversable medians (SSM)	\$44,274	-Limits neighborhood roadway access
2. Non-traversable medians (ASM)	\$23,100	-North side only		

*Would require installation of CWT in order to meet the minimum active warning device requirements. This upgrade is included in the cost estimates for applicable improvement options.

Quiet Zone Alternatives

After an evaluation of the quiet zone improvement options, a recommended crossing improvement plan for each of the proposed zones was developed. While the quiet zone risk level and improvement costs played an important part; railroad, vehicular, and pedestrian safety, as well as City and Diagnostic Team input and anticipated funding opportunities, were also given significant weight. In addition, a minimum qualifying scenario was developed in order to provide the City with a basis, or starting point, for a range of quiet zone improvement options that can be implemented over time, as funding becomes available. These improvement scenarios, including planning-level cost estimates, quiet zone risk levels, and layouts illustrating the potential improvement options are discussed below. The FRA calculator results for the recommended and minimum qualifying crossing improvement configurations for each quiet zone are included in Appendix E. For the purpose of this analysis, it is assumed that all crossings either currently meet or will be upgraded to meet the minimum active warning device requirements for quiet zone implementation, as previously described (equipped with lights, gates, power out indicators, and CWT). As previously noted, the calculator results for the base/existing condition scenarios are included in Appendix C.

Note that the quiet zone crossing configurations and risk assessment inputs, such as train and traffic volumes, are subject to change as new data becomes available and should be updated as part of the quiet zone implementation process. The improvement scenarios below represent the conditions present at the time the analysis was conducted.

BNSF – 27th Street SW

As previously described, there are two at-grade rail crossings within this proposed quiet zone, including the 27th Street SE mainline and spur crossings. These two crossings were initially considered a single quiet zone due to their close proximity and common railroad division (Twin Cities Division), however, per the FRA Quiet Zone Rule, each crossing must be considered as a separate quiet zone for the purpose of the quiet zone risk assessment because they are located on separate railroad line segments (mainline and spur). The following is an overview of the potential quiet zone alternatives for each.

27th Street SW (Mainline)

The recommended crossing improvements for the 27th Street SW (mainline) crossing include construction of a 100-foot non-traversable median on the south side of the crossing and a 50-foot median on the north side of the crossing. The north median is limited to 50-feet due to commercial access north of the crossing and therefore, these improvements are considered an ASM. In addition, to the median improvements, curbing should be installed in order to create a defined access/driveway serving the Cattleman's Café and the Livestock Auction, north of the crossing. Further, curb should also be added along the east side of 27th Street between the mainline and spur crossings, with a driveway to provide BNSF access to the crossing.

With the implementation of the recommended improvements, the QZRI will be reduced below both the NSRT and RIWH, hence qualifying for quiet zone status. As this quiet zone includes only one crossing, the recommended and minimum qualifying scenarios are the same. This improvement, as well as the quiet zone risk analysis and estimated cost, is presented in Table 4. A layout illustrating the proposed crossing improvement is included in Figure 2. Refer to Appendix E for the FRA calculator results for the recommended crossing improvements.

Table 4: BNSF – 27th Street SE (Mainline) Quiet Zone Alternatives

CROSSING	SCENARIO	
	MINIMUM	RECOMMENDED
27th Street SE	Non-traversable medians (ASM)	Non-traversable medians (ASM)
Quiet Zone Risk Level	10,000	10,000
Risk Level With Horns	23,980	23,980
National Risk Level	14,007	14,007
Est. Cost	\$34,065	\$34,065

27th Street SW (Spur)

The recommended crossing improvements for the 27th Street SW (spur) crossing include construction of a 60-foot non-traversable median on the north side of the crossing and a 25-foot median on the south side of the crossing. The north median is limited to 60-feet due to a grain elevator access north of the crossing and the south median is limited to 25-feet due to the proximity of a commercial access south of the crossing. Because the medians do not meet the length requirement for an SSM, this crossing improvement is considered an ASM. In addition to the median improvements, curbing should be installed in order to create a defined access/driveway serving the Cattleman’s Café and the Livestock Auction, south of the crossing. Further, curb should also be added along the east side of 27th Street between the mainline and spur crossings, with a driveway opening to provide BNSF access to the crossing. In addition, the active warning devices at this crossing would need to be upgraded to CWT, in order to meet the minimum quiet zone requirements.

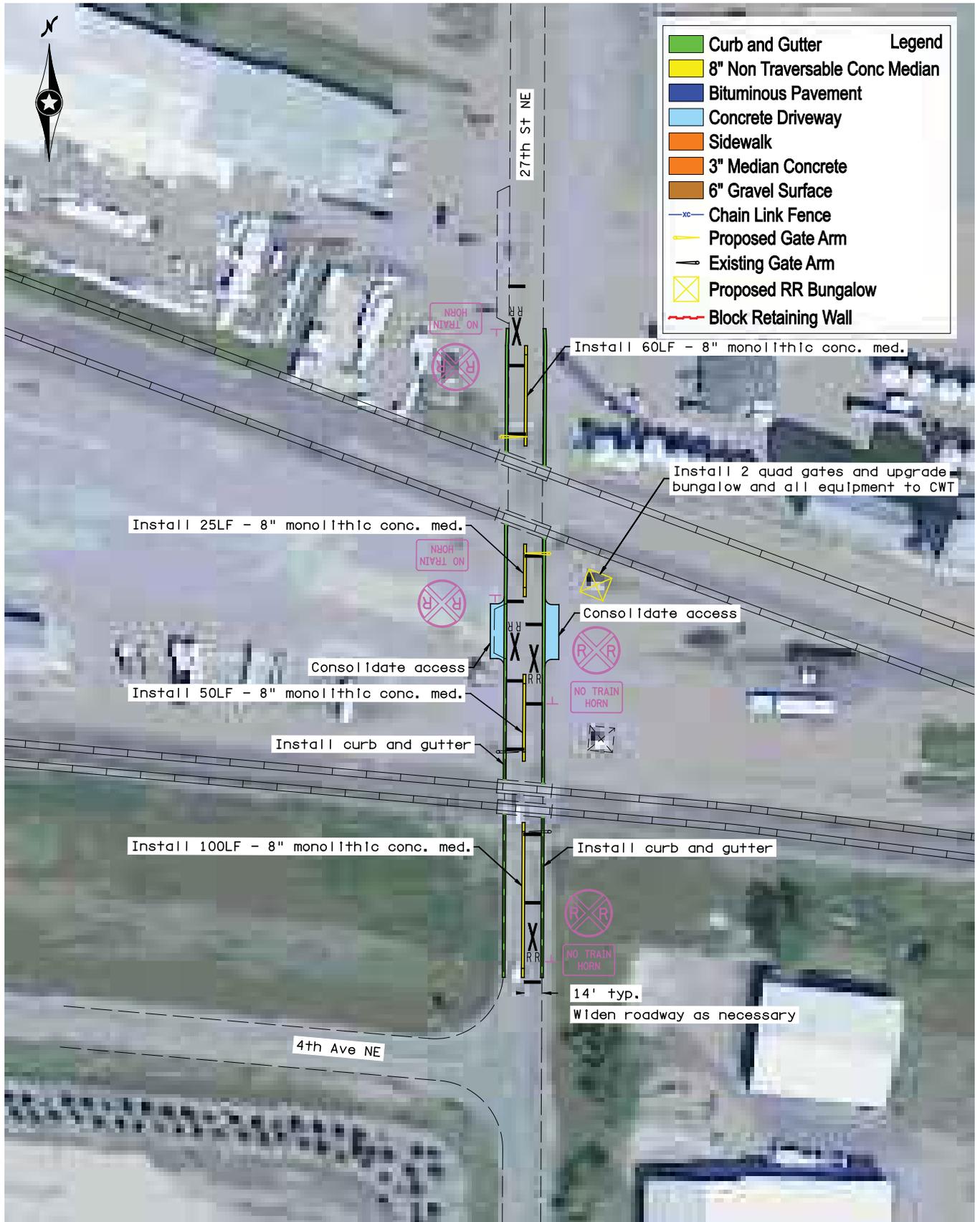
With the implementation of the recommended improvements, the QZRI will be reduced below the NSRT and RIWH, hence qualifying for quiet zone status. As this quiet zone includes only one crossing, the recommended and minimum qualifying scenarios are the same. This improvement, as well as the quiet zone risk analysis and estimated cost, is presented in Table 5. A layout illustrating the proposed crossing improvement is included in Figure 2. Refer to Appendix E for the FRA calculator results for the recommended crossing improvements.

Table 5: 27th Street SE (Spur) Quiet Zone Alternatives

CROSSING	SCENARIO	
	MINIMUM	RECOMMENDED
27th Street SE	No Treatment (upgrade to CWT)*	Non-traversable medians (ASM)*
Quiet Zone Risk Level	5,659	2,490
Risk Level With Horns	3,393	3,393
National Risk Level	14,007	14,007
Est. Cost	\$100,000	\$152,673.00

* Would require installation of CWT in order to meet the minimum active warning device requirements. The estimated cost to install CWT at this crossing is \$100,000. This upgrade is included in the cost estimates for applicable improvement options.

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Crossing: 27th St SE (Mainline and Spur)

Crossing No: 093077T & 093079G

Minot Quiet Zone

Figure 2

BNSF Southwest

The recommended crossing improvements for the proposed BNSF Southwest Quiet Zone include construction of non-traversable medians on both sides of the crossing at the Maple Street (80-foot west, 100-foot east) and Golf Course Road Crossings (100-foot north, 60-foot south), and a 100-foot median on the north side only of the 5th Avenue SW crossing.

At the Maple Street crossing, the west median is limited to 80-feet due to the nearby intersection with the north segment of Maple Street. This improvement option would require the addition of curb, and fencing on the northwest side of the spur track to limit access from an existing parking lot. This is not an official access point, but it is regularly used as one. Curb would also need to be extended on the southwest side of the spur line to delineate the crossing area. Further, on the west side of the crossing, Maple Street would need to be widened in order to accommodate the proposed median. In addition, to further improve safety, a short median would be installed in the space between the spur and mainline tracks at this crossing. As previously noted, the mainline tracks at the Maple Street crossing have CWT, but the spur line does not. Due to the extremely low train volumes (not currently use) and because it does not meet the minimum requirements, it is not recommended that the spur line crossing be considered for a quiet zone at this time. The City may choose to implement a quiet zone on the mainline tracks, while not including the spur.

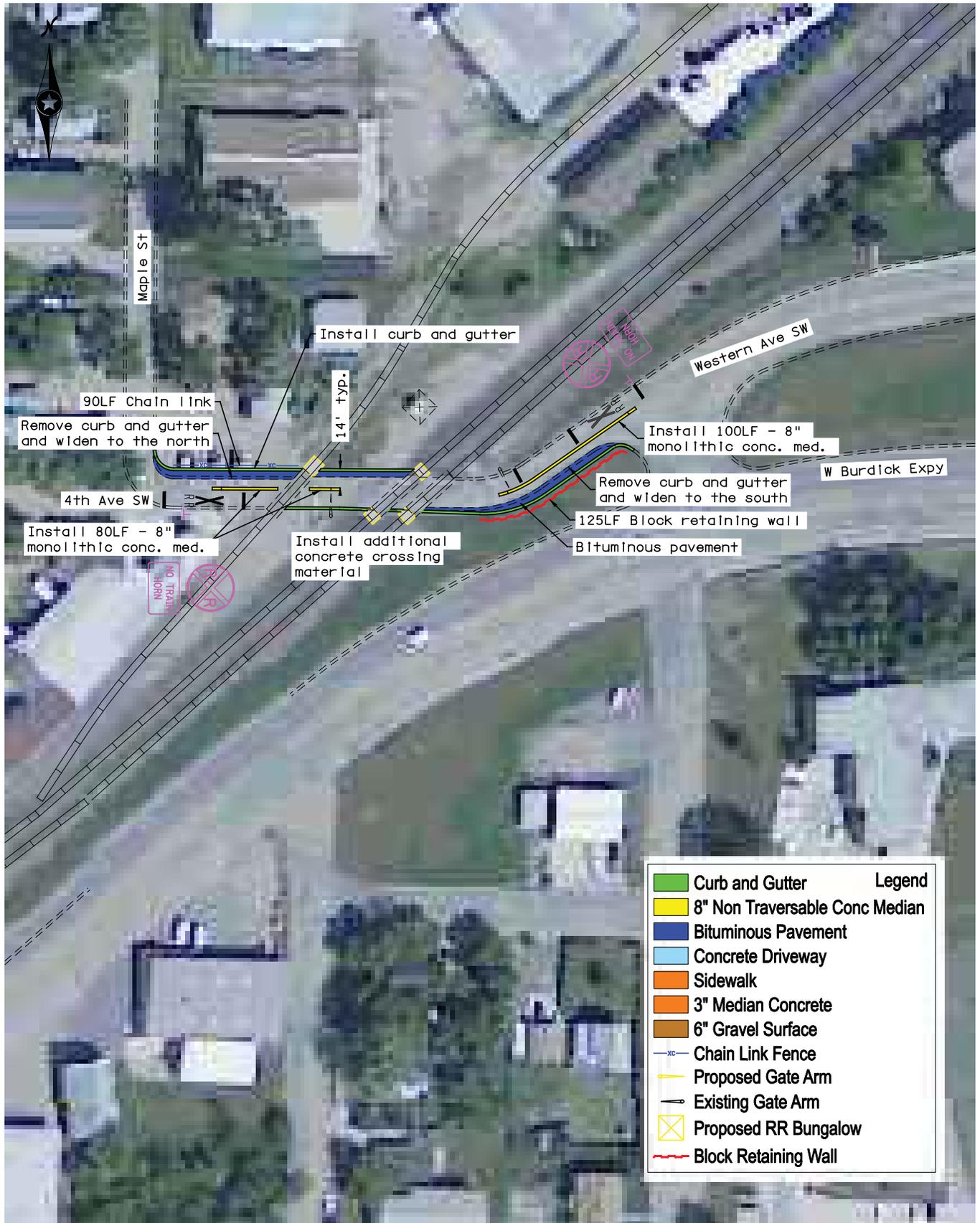
The 5th Avenue SW crossing is limited to a north median only because of the close proximity to Burdick Expressway. This median would limit access to 6th Avenue and one private residential driveway to right-in/right-out turning movements only. Both 6th Avenue and the private driveway are on the west side of 5th Avenue and the traffic would be captured along the right side of the median where an entrance gate exists. Because it includes treatment of the north side of the crossing only, the proposed improvements at the 5th Avenue SW crossing are considered an ASM. The south median at the Golf Course Road crossing is limited to 60-feet, due to the nearby intersection with Burdick Expressway. In addition, Golf Course Road would need to be widened two-feet in order to accommodate the medians. Further, the access to a storage building north of the crossing would need to be relocated to Golf Course Drive, east of the crossing.

With the implementation of the recommended improvements, the QZRI will be reduced below both the NSRT and RIWH, hence qualifying for quiet zone status. The Recommended and Minimum Qualifying Quiet Zone scenarios are presented in Table 6, including the recommended crossing improvements, planning-level cost estimates, and quiet zone risk analysis. Layouts illustrating the proposed crossing improvements are included in Figures 3, 4, and 5. Refer to Appendix E for the FRA calculator results for the proposed crossing improvements.

Table 6: BNSF Southwest Quiet Zone Alternatives

CROSSING	SCENARIO	
	MINIMUM	RECOMMENDED
Maple Street	Non-traversable medians (SSM) - \$65,706	Non-traversable medians (SSM) - \$65,706
5th Avenue SW	No Treatment	Non-traversable median (ASM) - \$17,745
Golf Course Road	Non-traversable medians (SSM) - \$34,287	Non-traversable medians (SSM) - \$34,287
Quiet Zone Risk Level	10,065	7,133
Risk Level With Horns	13,079	13,080
National Risk Level	14,007	14,007
Est. Cost	\$99,993	\$115,747

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Crossing: Maple Street
Crossing No: 071920W
Minot Quiet Zone

Figure 3

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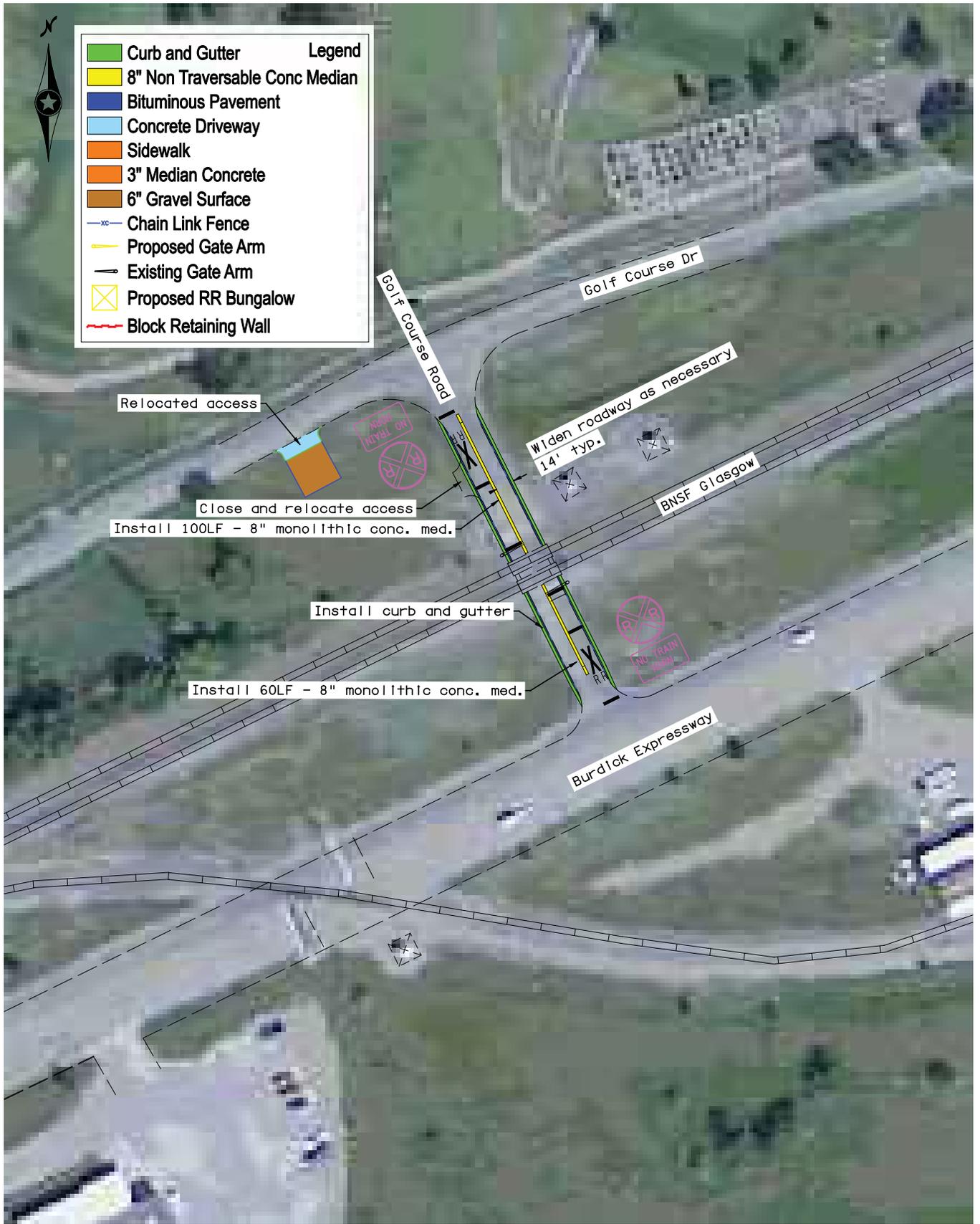


Crossing: 5th Ave SW
Crossing No: 071923S
Minot Quiet Zone

Job # 7089
 12/3/2010

Figure 4

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Crossing: Golf Course Road
Crossing No: 093868F
Minot Quiet Zone

Figure 5

CP – Southeast

Due to the close proximity of Eastern Avenue on the north, and multiple driveway accesses on the south, it would be difficult to treat either the 8th Avenue SE or 9th Avenue SE crossings with median improvements. Therefore, the recommended crossing improvements for the proposed CP Southeast Quiet Zone include construction of four-quadrant gates at the 8th Avenue SE crossing and closure of the 9th Avenue SE crossing. The 8th Avenue SE crossing would also need to be upgraded to CWT, in order to meet the minimum active warning device requirements for a quiet zone.

The four-quadrant gates at the 8th Avenue SE crossing would include installation of exit gates parallel to the tracks, in addition to the existing entrance gates, on both sides of the crossing. This improvement can be implemented with no impact to roadway access near the crossing. The proposed closure at the 9th Avenue SE crossing would preserve the existing driveway accesses near the crossing, but may limit local roadway connectivity.

With the implementation of the recommended improvements, the QZRI will be reduced below both the NSRT and RIWH, hence qualifying for quiet zone status. The Recommended and Minimum Qualifying Quiet Zone scenarios are presented in Table 7, including the recommended crossing improvements, planning-level cost estimates, and quiet zone risk analysis.

In addition, an Alternative scenario has been included in order to show the recommended crossing improvements necessary to establish a quiet zone without a closure at 9th Avenue SE. Note that if this crossing is to remain open, it would need to be upgraded to CWT in order to meet the minimum active warning device requirements for a quiet zone. The cost of this upgrade (approximately \$300,000) is included in the cost estimate for this scenario.

Layouts illustrating the proposed crossing improvements for the Recommended and Minimum Qualifying scenarios and are included in Figures 6, and 7. Refer to Appendix E for the FRA calculator results for each scenario.

Table 7: CP – Southeast Quiet Zone Alternatives

CROSSING	SCENARIO		
	MINIMUM	RECOMMENDED	ALTERNATE RECOMMENDED (NO CLOSURE)
8th Avenue SE	No Treatment (upgrade to CWT)*	Four-Quadrant Gates - \$435,960*	Four-Quadrant Gates - \$435,960*
9th Avenue SE	Crossing Closure (SSM) - \$15,960	Crossing Closure (SSM) - \$15,960	Four-Quadrant Gates - \$435,960*
Quiet Zone Risk Level	9,672	2,224	3,629
Risk Level With Horns	9,460	9,460	9,460
National Risk Level	14,007	14,007	14,007
Est. Cost	\$315,960	\$451,920	\$ 871,920

* Would require installation of CWT in order to meet the minimum active warning device requirements. The estimated cost to install CWT is approximately \$300,000 per crossing. This upgrade is included in the cost estimates for applicable improvement options.

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Legend	
	Curb and Gutter
	8" Non Traversable Conc Median
	Bituminous Pavement
	Concrete Driveway
	Sidewalk
	3" Median Concrete
	6" Gravel Surface
	Chain Link Fence
	Proposed Gate Arm
	Existing Gate Arm
	Proposed RR Bungalow
	Block Retaining Wall

Install 4 quad gates and upgrade bungalow and all equipment to CWT



Crossing: 8th Ave SE
Crossing No: 698911H
Minot Quiet Zone

Figure 6

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Crossing: 9th Street SE
Crossing No: 698912P
Minot Quiet Zone

Figure 7

CP – Downtown

The recommended crossing improvements for the proposed CP Downtown Quiet Zone include construction of non-traversable medians on both sides of the 3rd Street SE (100-foot north, 100-foot south), East Central Avenue (100-foot east, 100-foot west), 1st Street SE (100-foot north, 80-foot south), and Main Street (100-foot north, 50-foot south) crossings. In addition, the East Central Avenue, 1st Street SE, and Main Street crossings would also need to be upgraded to CWT, in order to meet the minimum active warning device requirements for quiet zones.

The installation of medians will impact nearby driveway and/or alley access at each of the crossing included in this quiet zone. At the 3rd Street SE crossing, there is an existing driveway in the northeast quadrant of the crossing servicing AGCO. In order to receive credit as a quiet zone improvement, this access would need to be closed, since it is on the unprotected side of the proposed median. Additional commercial driveways in the northwest quadrant of the crossing could be remaining open since they are on the protected side of the median. The south median would require the intersection of 1st Avenue SE (southwest quadrant of the crossing) to be either closed or limited to right-in/right-out only. For the purpose of the quiet zone risk analysis, it was assumed that 1st Avenue SE would remain open. If the roadway was closed at this intersection, further risk reduction could be achieved. A commercial driveway located in the southeast quadrant of the crossing could remain open since it is on the protected side of the median. In addition, the medians would require either the removal of some of the on-street parking lanes or reduction of the traffic lanes to 11-feet. Because there are existing accesses within 60-feet of the gate arms on both sides of the crossing, the proposed improvements at this crossing are considered an ASM.

At the East Central Avenue crossing, there are existing alleyways parallel to the tracks along the east side of the crossing. Existing businesses have an access easement with CP to use these alleyways. The access in the southwest quadrant is on the protected side of the median and would be limited to right-in only, making the alley a southbound one-way if medians were installed. This would require the addition of curb or fence between the access and the crossing to keep vehicles from turning right-out of the alley way. There is also an alley access in the northwest quadrant, which is used for parking of one vehicle and to store a dumpster for the Impressions Photo business. This access would need to be closed in order to receive credit as a quiet zone improvement. In addition, the installation of medians would require removal of some of the on-street parking. Because there are existing accesses within 60-feet of the gate arms, the proposed improvements at this crossing are considered an ASM.

At the 1st Street SE crossing, there is existing alley and driveway access inside of the proposed medians, in each quadrant of the crossing. The accesses in the northeast and southwest quadrants would need to be closed since they are on the unprotected side of the median. Existing access in the northwest and southeast quadrants would be limited to right-out/right-in only with the installation of the medians, but could remain open. Because there are existing accesses within 60-feet of the gate arms on both sides of the crossing, the proposed improvements at this crossing are considered an ASM.

At the Main Street Crossing, an alley access directly adjacent to the track in the northeast quadrant would need to be closed since it would be on the unprotected side of the median. An existing parking lot access in the northwest quadrant would be limited to right-in/right-out only by the median, but could remain open since it would be on the protected side of the median. A parking lot access in the southeast quadrant of the crossing would be limited to right-in/right-out only and an alley access in the southwest quadrant of the crossing would be outside of the 50-foot median length and would remain a full access. In addition, the medians would require removal of some of the on-street parking lanes. Because there are existing accesses within 60-feet of the gate arms on both sides of the crossing, the proposed improvements at this crossing are considered an ASM.

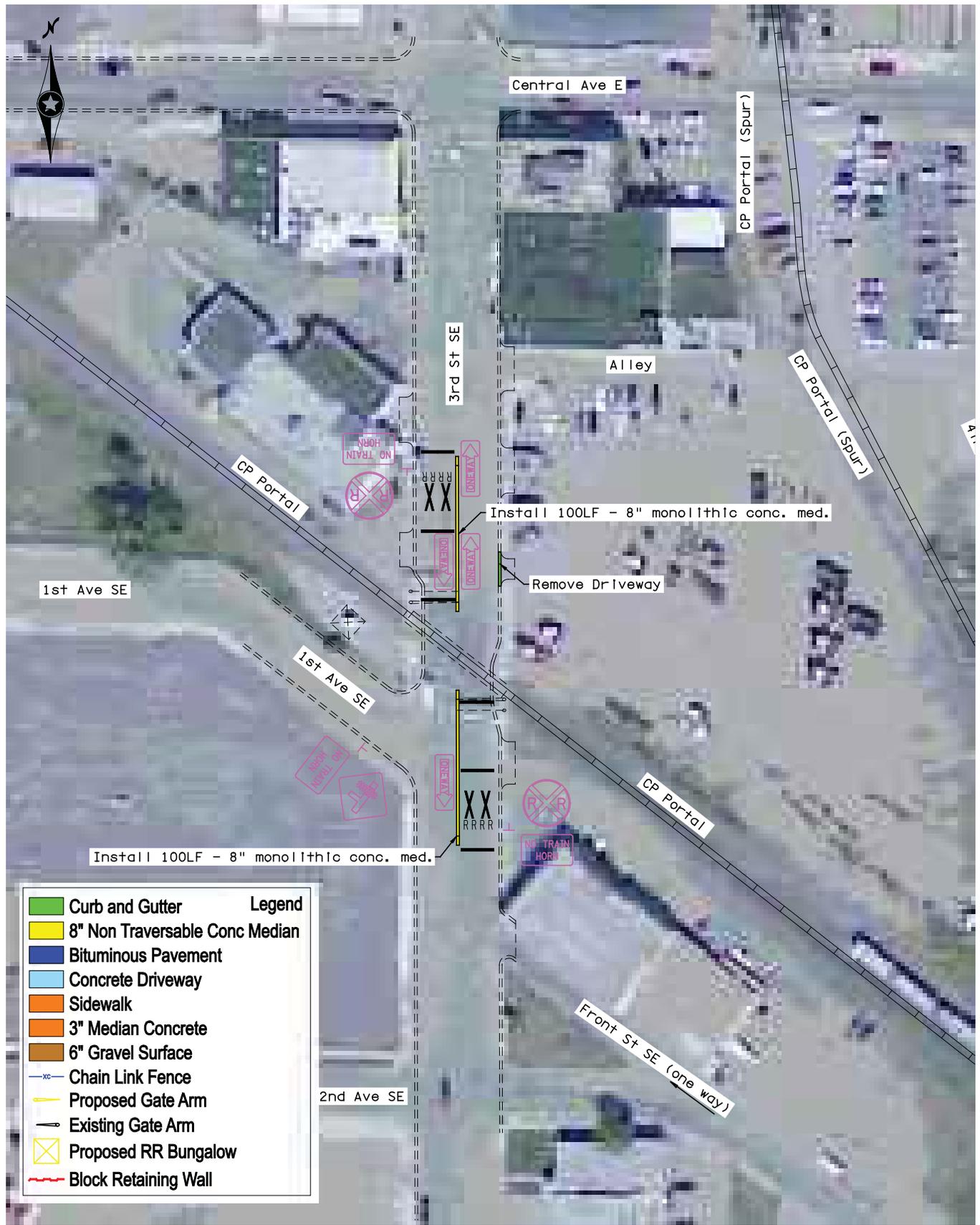
With the implementation of the recommended improvements, the QZRI will be reduced below both the NSRT and RIWH, hence qualifying for quiet zone status. The Recommended and Minimum Qualifying Quiet Zone scenarios are presented in Table 8, including the recommended crossing improvements, planning-level cost estimates, and quiet zone risk analysis. Layouts illustrating the proposed crossing improvements are included in Figures 8, 9, 10, and 11. Refer to Appendix E for the FRA calculator results for the proposed crossing improvements.

Table 8: CP – Downtown Quiet Zone Alternatives

CROSSING	SCENARIO	
	MINIMUM	RECOMMENDED
3rd Street SE	Non-traversable medians (ASM) - \$20,055	Non-traversable medians (ASM) - \$20,055
East Central Avenue	No Treatment (upgrade to CWT)*	Non-traversable medians (ASM) - \$386,505*
1st Street SE	No Treatment (upgrade to CWT)*	Non-traversable medians (ASM) - \$383,595*
Main Street	No Treatment (upgrade to CWT)*	Non-traversable medians (ASM) - \$380,205*
Quiet Zone Risk Level	13,454	5,210
Risk Level With Horns	9,257	9,257
National Risk Level	14,007	14,007
Est. Cost	\$920,055	\$1,170,360

* Would require installation of CWT in order to meet the minimum active warning device requirements. The estimated cost to install CWT is approximately \$300,000 per crossing. This upgrade is included in the cost estimates for applicable improvement options.

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Crossing: 3rd Street SE
Crossing No: 698914D
Minot Quiet Zone

Figure 8

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Crossing: East Central Avenue

Crossing No: 698915K
Minot Quiet Zone

Figure 9

Job # 7089
12/17/2010

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Crossing: 1st Street SE
Crossing No: 698916S
Minot Quiet Zone

Figure 10

- Legend**
- Curb and Gutter
 - 8" Non Traversable Conc Median
 - Bituminous Pavement
 - Concrete Driveway
 - Sidewalk
 - 3" Median Concrete
 - 6" Gravel Surface
 - Chain Link Fence
 - Proposed Gate Arm
 - Existing Gate Arm
 - Proposed RR Bungalow
 - Block Retaining Wall



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Crossing: Main Street
Crossing No: 698920G
Minot Quiet Zone

Figure 11

CP – West

The recommended crossing improvements for the proposed CP West Quiet Zone include construction of non-traversable medians on both sides of the 3rd Street/Amtrak Depot (80-foot north, 50-foot south) and on the north side of the Maple Street (80-foot north) crossings. In addition, the 3rd Street/Amtrak Depot crossing would need to be upgraded to an active warning system with CWT, in order to meet the minimum active warning device requirements for quiet zones.

The south median at the 3rd Street/Amtrak Depot crossing would be limited to 50-feet, due to the nearby intersection with 1st Avenue SW. The north median is limited to 80-feet, due to an existing access to the Amtrak Depot northeast of the crossing. In addition, access to garbage receptacles on the northeast side of the crossing, within the proposed median, would need to be relocated. Because the south median is less than 100-feet this crossing improvement is an ASM.

At the Maple Street crossing, the roadway on the south side of the crossing would need to be widened in order to accommodate the proposed median; therefore, a median is only proposed on the north side. The north median is limited to 80-feet due to the nearby 2nd Avenue SW intersection. There are no accesses within 100-feet of the tracks on the south side of the crossing.

With the implementation of the recommended improvements, the QZRI will be reduced below both the NSRT and RIWH, hence qualifying for quiet zone status. The Recommended and Minimum Qualifying Quiet Zone scenarios are presented in Table 9, including the recommended crossing improvements, planning-level cost estimates, and quiet zone risk analysis. Layouts illustrating the proposed crossing improvements are included in Figures 12 and 13. Refer to Appendix E for the FRA calculator results for the proposed crossing improvements.

Table 9: CP – West Quiet Zone Alternatives

CROSSING	SCENARIO	
	MINIMUM	RECOMMENDED
3rd Street/Amtrak Depot	No Treatment*	Non-traversable medians (ASM) - \$394,395*
Maple Street	No Treatment	Non-traversable median (ASM) - \$23,100
Quiet Zone Risk Level	8,893	3,963
Risk Level With Horns	5,331	5,331
National Risk Level	14,007	14,007
Est. Cost	\$300,000	\$417,495

* Would require installation of CWT and vehicle gates in order to meet the minimum active warning device requirements. The estimated cost to install CWT and vehicle gates is approximately \$300,000 per crossing. This upgrade is included in the cost estimates for applicable improvement options.

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Crossing: 3rd Street / Amtrak Depot

Crossing No: 698922V
Minot Quiet Zone

Figure 12

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Crossing: Maple Street

Crossing No: 698924J

Minot Quiet Zone

Figure 13

IMPLEMENTATION ACTIVITIES

In order to establish a quiet zone (or zones) within the City of Minot, a number of implementation activities would be required. The first step is preparing the Quiet Zone Notice of Intent (NOI) for each of the proposed quiet zones and distributing them to the appropriate stakeholders. The required comment period for a Quiet Zone NOI is 60 days.

Following the Notice of Intent, the desired roadway improvements can be designed for each crossing and a Quiet Zone Designation or Application can be prepared and submitted to the FRA and other interested parties (i.e., the same stakeholders receiving the NOI). The FRA Final Rule is very specific on requirements for the design and construction of SSMs/ASMs.

If a community uses the FRA pre-approved SSMs to qualify for a quiet zone, or if the quiet zone already qualifies without implementation of SSMs, a quiet zone may be designated without the need for formal application to, and approval by the FRA. If a community intends to qualify using ASM improvements at one or more crossings, the quiet zone will be subject to approval upon application and review by the FRA Associate Administrator of Rail Safety. The time required for agency and railroad review of a Quiet Zone Application can take a minimum of three to six months, depending on the complexity of the improvements and the number of crossings involved. The application process is more time consuming than the designation process described above, but is an acceptable alternative to the designation method.

Once the design is completed and approved, special attention should be given to the construction and inspection of the improvements. After construction is complete, the City also must file a Quiet Zone Notice of Establishment to FRA and distribute it to interested parties (i.e. the same stakeholders receiving the NOI). The City will also be required to install advanced warning signs, in conformance with the MUTCD standards, advising motorists that “train horns are not sounded” at the crossings included in the quiet zone. The cessation of train horns would begin 21 days from the date on the Notice of Establishment when mailed to appropriate stakeholders.

Appendix A
US DOT Grade Crossing Inventory Forms

U.S. DOT - CROSSING INVENTORY INFORMATION
AS OF 1/18/2010

Crossing No.: **093077T** Update Reason: **Changed Crossing** Effective Begin-Date of Record: **04/17/09**
Railroad: **BNSF BNSF Rwy Co. [BNSF]** End-Date of Record:
Initiating Agency **State** Type and Position: **Public At Grade**

Part I Location and Classification of Crossing

Division: **TWIN CITIES** State: **ND**
Subdivision: **K O** County: **WARD**
Branch or Line Name: **E DLWTH-MINOT** City: **In ~~Near~~ MINOT 27th ST SE**
Railroad Milepost: **0200.97** Street or Road Name: **~~20TH AVE NW~~**
RailRoad I.D. No.: **0033** Highway Type & No.: **~~L-20TH~~ Co. Rd 19**
Nearest RR Timetable Stn: **SWENSON** HSR Corridor ID:
Parent Railroad: County Map Ref. No.: **FAS 376**
Crossing Owner: Latitude: **48.2360342**
ENS Sign Installed: Longitude: **-101.2529136**
Passenger Service: **AMTRAK** Lat/Long Source:
Avg Passenger Train Count: **2** Quiet Zone: **No**
Adjacent Crossing with Separate Number:

Private Crossing Information:

Category: Public Access: **Unknown**
Specify Signs: Specify Signs:

ST/RR A ST/RR B ST/RR C ST/RR D

Railroad Use:

State Use:

Narrative:

Emergency Contact: **(800)832-5452** Railroad Contact: **(913)551-4540** State Contact: **(701)328-4409**

Part II Railroad Information

Number of Daily Train Movements: Less Than One Movement Per Day: **No**
Total Trains: **34** Total Switching: **0** Day Thru: **17**
Typical Speed Range Over Crossing: From **1** to **60** mph Maximum Time Table Speed: **60**
Type and Number of Tracks: Main: **2** Other: **0** Specify:
Does Another RR Operate a Separate Track at Crossing? **No**
Does Another RR Operate Over Your Track at Crossing? **Yes: ATK**

U.S. DOT - CROSSING INVENTORY INFORMATION

Crossing **093077T**

Continued

Effective Begin-Date of Record: **04/17/09**

End-Date of Record:

Part III: Traffic Control Device Information

Signs:

Crossbucks:	0	Highway Stop Signs:	0
Advanced Warning:	Yes	Hump Crossing Sign:	
Pavement Markings:	No Markings Stop Bars Only	Other Signs:	0 Specify:
			0

Train Activated Devices:

Gates:	2	4 Quad or Full Barrier:	No
Mast Mounted FL:	2	Total Number FL Pairs:	7
Cantilevered FL (Over):	0	Cantilevered FL (Not over):	0
Other Flashing Lights:	0	Specify Other Flashing Lights:	
Highway Traffic Signals:	0	Wigwags:	0 Bells: 1
Other Train Activated Warning Devices:		Special Warning Devices Not Train Activated:	
Channelization:		Type of Train Detection:	Motion Detectors Constant Warning Time
Track Equipped with Train Signals?	Yes	Traffic Light Interconnection/Preemption:	

Part IV: Physical Characteristics

Type of Development:	Industrial	Smallest Crossing Angle:	60 to 90 Degrees
Number of Traffic Lanes Crossing Railroad:	2	Are Truck Pullout Lanes Present?	No
Is Highway Paved?	Yes	If Other:	
Crossing Surface:	Rubber	Is it Signalized?	
Nearby Intersecting Highway?	N/A	Is Crossing Illuminated?	
Does Track Run Down a Street?	No		
Is Commercial Power	Yes		

Part V: Highway Information

Highway System:	Other FA Highway - Not NHS	Functional Classification of Road at Crossing:	Urban Minor Arterial
Is Crossing on State Highway System:	No	AADT Year:	1988 2008
Annual Average Daily Traffic (AADT):	001500 5485	Avg. No of School Buses per Day:	0
Estimated Percent Trucks:	10		
Posted Highway Speed:	0		

**U.S. DOT - CROSSING INVENTORY INFORMATION
AS OF 1/18/2010**

Crossing No.: **093079G** Update Reason: **Changed Crossing** Effective Begin-Date of Record: **04/17/09**
 Railroad: **BNSF BNSF Rwy Co. [BNSF]** End-Date of Record:
 Initiating Agency **State** Type and Position: **Public At Grade**

Part I Location and Classification of Crossing

Division:	TWIN CITIES	State:	ND
Subdivision:	K O	County:	WARD
Branch or Line Name:	E DLWTH-MINOT	City:	In Near MINOT
Railroad Milepost:	0200.97	Street or Road Name:	27th Street SE
RailRoad I.D. No.:	0033	Highway Type & No.:	CNTRD19
Nearest RR Timetable Stn:	SWENSON	HSR Corridor ID:	
Parent Railroad:		County Map Ref. No.:	FAS 376
Crossing Owner:		Latitude:	48.2359036
ENS Sign Installed:		Longitude:	-101.2515778
Passenger Service:		Lat/Long Source:	
Avg Passenger Train Count:	0	Quiet Zone:	No

Adjacent Crossing with Separate Number:

Private Crossing Information:

Category:		Public Access:	Unknown
Specify Signs:		Specify Signals:	
	ST/RR A	ST/RR B	ST/RR C
Railroad Use:			ST/RR D
State Use:			
Narrative:			

Emergency Contact: **(800)832-5452** Railroad Contact: **(913)551-4540** State Contact: **(701)328-4409**

Part II Railroad Information

Number of Daily Train Movements:		Less Than One Movement Per Day:	No
Total Trains:	1	Total Switching:	1
Day Thru:		Day Thru:	0
Typical Speed Range Over Crossing: From	1 to 60 mph	Maximum Time Table Speed:	60
Type and Number of Tracks: Main:	0	Other:	3
		Specify:	IND
Does Another RR Operate a Separate Track at Crossing?			No
Does Another RR Operate Over Your Track at Crossing?			No

U.S. DOT - CROSSING INVENTORY INFORMATION

Crossing **093079G**

Continued

Effective Begin-Date of Record: **04/17/09**

End-Date of Record:

Part III: Traffic Control Device Information

Signs:

Crossbucks:	0	Highway Stop Signs:	0
Advanced Warning:	Yes	Hump Crossing Sign:	
Pavement Markings:	No Markings	Other Signs:	0 Specify:
			0

Train Activated Devices:

Gates:	2	4 Quad or Full Barrier:	
Mast Mounted FL:	0	Total Number FL Pairs:	0
Cantilevered FL (Over):	0	Cantilevered FL (Not over):	0
Other Flashing Lights:	3	Specify Other Flashing Lights:	SD LITE
Highway Traffic Signals:	0	Wigwags:	0 Bells: 1
Other Train Activated Warning Devices:		Special Warning Devices Not Train Activated:	
Channelization:		Type of Train Detection:	DC/AFO
Track Equipped with Train Signals?	No	Traffic Light Interconnection/Preemption:	

Part IV: Physical Characteristics

Type of Development:	Industrial	Smallest Crossing Angle:	60 to 90 Degrees
Number of Traffic Lanes Crossing Railroad:	2	Are Truck Pullout Lanes Present?	No
Is Highway Paved?	No	If Other:	
Crossing Surface:	Asphalt	Is it Signalized?	
Nearby Intersecting Highway?	N/A	Is Crossing Illuminated?	
Does Track Run Down a Street?	No		
Is Commercial Power	Yes		

Part V: Highway Information

Highway System:	Other FA Highway - Not NHS	Functional Classification of Road at Crossing:	Urban Minor Arterial
Is Crossing on State Highway System:	No	AADT Year:	2008
Annual Average Daily Traffic (AADT):	001500 5485	Avg. No of School Buses per Day:	1988 0
Estimated Percent Trucks:	10		
Posted Highway Speed:	0		

**U.S. DOT - CROSSING INVENTORY INFORMATION
AS OF 1/18/2010**

Crossing No.: **071920W** Update Reason: **Changed Crossing** Effective Begin-Date of Record: **04/17/09**
 Railroad: **BNSF BNSF Rwy Co. [BNSF]** End-Date of Record:
 Initiating Agency **State** Type and Position: **Public At Grade**

Part I Location and Classification of Crossing

Division:	MONTANA	State:	ND
Subdivision:	GLASGOW	County:	WARD
Branch or Line Name:	MINOT-GLASGOW	City:	In MINOT
Railroad Milepost:	0000.86	Street or Road Name:	MAPLE ST
RailRoad I.D. No.:	0035	Highway Type & No.:	L-MAPLE
Nearest RR Timetable Strn:	MINOT PBS	HSR Corridor ID:	
Parent Railroad:		County Map Ref. No.:	
Crossing Owner:		Latitude:	48.2324547
ENS Sign Installed:		Longitude:	-101.3053776
Passenger Service:	AMTRAK	Lat/Long Source:	Actual
Avg Passenger Train Count:	2	Quiet Zone:	No
Adjacent Crossing with Separate Number:			

Private Crossing Information:

Category:		Public Access:	Unknown		
	Specify Signs:		Specify Signals:		
	ST/RR A	ST/RR B	ST/RR C	ST/RR D	
Railroad Use:					
State Use:					
Narrative:					
Emergency Contact:	(800)832-5452	Railroad Contact:	(913)551-4540	State Contact:	(701)328-4409

Part II Railroad Information

Number of Daily Train Movements:		Less Than One Movement Per Day:	No		
Total Trains:	40	Total Switching:	0		
Typical Speed Range Over Crossing: From	1 to 35 mph	Day Thru:	20		
Type and Number of Tracks: Main:	2	Other:	1	Specify:	IND
Does Another RR Operate a Separate Track at Crossing?			No		
Does Another RR Operate Over Your Track at Crossing?			Yes: ATK		

U.S. DOT - CROSSING INVENTORY INFORMATION

Crossing **071920W**

Continued

Effective Begin-Date of Record: **04/17/09**

End-Date of Record:

Part III: Traffic Control Device Information

Signs:

Crossbucks:	0 Yes	Highway Stop Signs:	0
Advanced Warning:	No Yes	Hump Crossing Sign:	
Pavement Markings:	No Markings Stop Bars Only	Other Signs: 2	Specify: 2 TRKS
		0	

Train Activated Devices:

Gates:	2	4 Quad or Full Barrier:	No
Mast Mounted FL:	0	Total Number FL Pairs:	4
Cantilevered FL (Over):	0	Cantilevered FL (Not over):	0
Other Flashing Lights:	6	Specify Other Flashing Lights:	GATE LT
Highway Traffic Signals:	0	Wigwags:	0 Bells: 2
Other Train Activated Warning Devices:		Special Warning Devices Not Train Activated:	
Channelization:		Type of Train Detection:	Constant Warning Time
Track Equipped with Train Signals?	Yes	Traffic Light Interconnection/Preemption:	

Part IV: Physical Characteristics

Type of Development:	Commercial	Smallest Crossing Angle:	60 to 90 Degrees
Number of Traffic Lanes Crossing Railroad:	2	Are Truck Pullout Lanes Present?	No
Is Highway Paved?	Yes	If Other:	
Crossing Surface:	Asphalt Concrete	Is it Signalized?	
Nearby Intersecting Highway?	N/A	Is Crossing Illuminated?	
Does Track Run Down a Street?	No		
Is Commercial Power	Yes		

Part V: Highway Information

Highway System:	Non-Federal-aid	Functional Classification of Road at Crossing:	Urban Local
Is Crossing on State Highway System:	No	AADT Year:	2010
Annual Average Daily Traffic (AADT):	000000 485		1998
Estimated Percent Trucks:	05	Avg. No of School Buses per Day:	0
Posted Highway Speed:	0		

**U.S. DOT - CROSSING INVENTORY INFORMATION
AS OF 1/18/2010**

Crossing No.: **071923S** Update Reason: **Changed Crossing** Effective Begin-Date of Record: **04/17/09**
 Railroad: **BNSF BNSF Rwy Co. [BNSF]** End-Date of Record:
 Initiating Agency **State** Type and Position: **Public At Grade**

Part I Location and Classification of Crossing

Division:	MONTANA	State:	ND
Subdivision:	GLASGOW	County:	WARD
Branch or Line Name:	MINOT-GLASGOW	City:	In MINOT
Railroad Milepost:	0001.03	Street or Road Name:	5TH AV SW
RailRoad I.D. No.:	0035	Highway Type & No.:	L-5TH
Nearest RR Timetable Str:	MINOT PBS	HSR Corridor ID:	
Parent Railroad:		County Map Ref. No.:	
Crossing Owner:		Latitude:	48.2306257
ENS Sign Installed:		Longitude:	-101.3084070
Passenger Service:	AMTRAK	Lat/Long Source:	Actual
Avg Passenger Train Count:	2	Quiet Zone:	No
Adjacent Crossing with Separate Number:			

Private Crossing Information:

Category: Public Access: **Unknown**

Specify Signs: Specify Signals:

ST/RR A ST/RR B ST/RR C ST/RR D

Railroad Use:

State Use:

Narrative:

Emergency Contact: **(800)832-5452** Railroad Contact: **(913)551-4540** State Contact: **(701)328-4409**

Part II Railroad Information

Number of Daily Train Movements:		Less Than One Movement Per Day:	No
Total Trains:	40	Total Switching:	0
Typical Speed Range Over Crossing: From	1 to 35 mph	Day Thru:	20
Type and Number of Tracks: Main:	2	Other:	0
		Specify:	35
Does Another RR Operate a Separate Track at Crossing?			No
Does Another RR Operate Over Your Track at Crossing?			Yes: ATK

U.S. DOT - CROSSING INVENTORY INFORMATION

Crossing **071923S**

Continued

Effective Begin-Date of Record: **04/17/09**

End-Date of Record:

Part III: Traffic Control Device Information

Signs:

Crossbucks:	2	Highway Stop Signs:	0
Advanced Warning:	No Yes - on North side Only	Hump Crossing Sign:	
Pavement Markings:	No Markings Stop Bars Only	Other Signs:	0 Specify:
			0

Train Activated Devices:

Gates:	2	4 Quad or Full Barrier:	No
Mast Mounted FL:	6	Total Number FL Pairs:	6
Cantilevered FL (Over):	0	Cantilevered FL (Not over):	0
Other Flashing Lights:	6	Specify Other Flashing Lights:	GATE LT
Highway Traffic Signals:	0	Wigwags:	0 Bells: 2
Other Train Activated Warning Devices:		Special Warning Devices Not Train Activated:	
Channelization:		Type of Train Detection:	Constant Warning Time
Track Equipped with Train Signals?	Yes	Traffic Light Interconnection/Preemption:	

Part IV: Physical Characteristics

Type of Development:	Commercial	Smallest Crossing Angle:	60 to 90 Degrees
Number of Traffic Lanes Crossing Railroad:	2	Are Truck Pullout Lanes Present?	No
Is Highway Paved?	Yes	If Other:	
Crossing Surface:	Asphalt Concrete	Is it Signalized?	
Nearby Intersecting Highway?	Less than 75 feet	Is Crossing Illuminated?	
Does Track Run Down a Street?	No		
Is Commercial Power	Yes		

Part V: Highway Information

Highway System:	Non-Federal-aid	Functional Classification of Road at Crossing:	Urban Local
Is Crossing on State Highway System:	No	AADT Year:	1988 2010
Annual Average Daily Traffic (AADT):	001500 720	Avg. No of School Buses per Day:	0
Estimated Percent Trucks:	03		
Posted Highway Speed:	0		

**U.S. DOT - CROSSING INVENTORY INFORMATION
AS OF 1/18/2010**

Crossing No.: **093868F** Update Reason: **Changed Crossing** Effective Begin-Date of Record: **04/17/09**
 Railroad: **BNSF BNSF Rwy Co. [BNSF]** End-Date of Record:
 Initiating Agency **State** Type and Position: **Public At Grade**

Part I Location and Classification of Crossing

Division:	MONTANA	State:	ND
Subdivision:	GLASGOW	County:	WARD
Branch or Line Name:	MINOT-GLASGOW	City:	In MINOT
Railroad Milepost:	0002.02	Street or Road Name:	GOLF COURSE RD
RailRoad I.D. No.:	0035	Highway Type & No.:	
Nearest RR Timetable Stn:	MINOT PBS	HSR Corridor ID:	
Parent Railroad:		County Map Ref. No.:	
Crossing Owner:		Latitude:	48.2222690
ENS Sign Installed:		Longitude:	-101.3250647
Passenger Service:	AMTRAK	Lat/Long Source:	Actual
Avg Passenger Train Count:	2	Quiet Zone:	No
Adjacent Crossing with Separate Number:			

Private Crossing Information:

Category: Public Access: **Unknown**

Specify Signs: Specify Signals:

ST/RR A ST/RR B ST/RR C ST/RR D

Railroad Use:

State Use:

Narrative:

Emergency Contact: **(800)832-5452** Railroad Contact: **(913)551-4540** State Contact: **(701)328-4409**

Part II Railroad Information

Number of Daily Train Movements:		Less Than One Movement Per Day:	No
Total Trains:	40	Total Switching:	0
Typical Speed Range Over Crossing: From	1 to 55 mph	Day Thru:	20
Type and Number of Tracks: Main:	2	Other:	0
		Specify:	55
Does Another RR Operate a Separate Track at Crossing?			No
Does Another RR Operate Over Your Track at Crossing?			Yes: ATK

U.S. DOT - CROSSING INVENTORY INFORMATION

Crossing **093868F**

Continued

Effective Begin-Date of Record: **04/17/09**

End-Date of Record:

Part III: Traffic Control Device Information

Signs:

Crossbucks:	0 2	Highway Stop Signs:	0
Advanced Warning:	Yes	Hump Crossing Sign:	
Pavement Markings:	RR Xing Symbols	Other Signs:	0 Specify:
			0

Train Activated Devices:

Gates:	2	4 Quad or Full Barrier:	
Mast Mounted FL:	2	Total Number FL Pairs:	0
Cantilevered FL (Over):	0	Cantilevered FL (Not over):	0
Other Flashing Lights:	0	Specify Other Flashing Lights:	
Highway Traffic Signals:	0	Wigwags:	0 Bells: 1
Other Train Activated Warning Devices:		Special Warning Devices Not Train Activated:	
Channelization:		Type of Train Detection:	Constant Warning Time
Track Equipped with Train Signals?	Yes	Traffic Light Interconnection/Preemption:	

Part IV: Physical Characteristics

Type of Development:	Commercial	Smallest Crossing Angle:	60 to 90 Degrees
Number of Traffic Lanes Crossing Railroad:	2	Are Truck Pullout Lanes Present?	No
Is Highway Paved?	Yes	If Other:	
Crossing Surface:	Timber	Is it Signalized?	
Nearby Intersecting Highway?	Less than 75 feet	Is Crossing Illuminated?	
Does Track Run Down a Street?	No		
Is Commercial Power	Yes		

Part V: Highway Information

Highway System:	Non-Federal-aid	Functional Classification of Road at Crossing:	Urban Local
Is Crossing on State Highway System:	No	AADT Year:	1988 2010
Annual Average Daily Traffic (AADT):	000200 540	Avg. No of School Buses per Day:	0
Estimated Percent Trucks:	05		
Posted Highway Speed:	0		

**U.S. DOT - CROSSING INVENTORY INFORMATION
AS OF 3/29/2010**

Crossing No.: **071927U** Update Reason: **Changed Crossing** Effective Begin-Date of Record: **06/16/09**
 Railroad: **BNSF BNSF Rwy Co. [BNSF]** End-Date of Record:
 Initiating Agency **State** Type and Position: **Public At Grade**

Part I Location and Classification of Crossing

Division:	TWIN CITIES	State:	ND
Subdivision:	MINOT YARD	County:	WARD
Branch or Line Name:	IND TRK	City:	In MINOT
Railroad Milepost:	0002.00	Street or Road Name:	HWY 2/52 BUS LOOP
RailRoad I.D. No.:	0565	Highway Type & No.:	L-4TH
Nearest RR Timetable Str:	MINOT PBS	HSR Corridor ID:	
Parent Railroad:		County Map Ref. No.:	FAP 14
Crossing Owner:		Latitude:	48.2267420
ENS Sign Installed:		Longitude:	-101.3714520
Passenger Service:	None	Lat/Long Source:	
Avg Passenger Train Count:	0	Quiet Zone:	No
Adjacent Crossing with Separate Number:			

Private Crossing Information:

Category: Public Access: **Unknown**
 Specify Signs: Specify Signals:

ST/RR A ST/RR B ST/RR C ST/RR D

Railroad Use:

State Use:

Narrative:

Emergency Contact: **(800)832-5452** Railroad Contact: **(913)551-4540** State Contact: **(701)328-4409**

Part II Railroad Information

Number of Daily Train Movements:		Less Than One Movement Per Day:	No
Total Trains: 1	Total Switching: 1	Day Thru:	0
Typical Speed Range Over Crossing: From 1 to 10 mph		Maximum Time Table Speed:	10
Type and Number of Tracks: Main: 0 Other 1		Specify:	IND
Does Another RR Operate a Separate Track at Crossing?			No
Does Another RR Operate Over Your Track at Crossing?			No

U.S. DOT - CROSSING INVENTORY INFORMATION

Crossing **071927U**

Continued

Effective Begin-Date of Record: **06/16/09**

End-Date of Record:

Part III: Traffic Control Device Information

Signs:

Crossbucks:	0	Highway Stop Signs:	0
Advanced Warning:	Yes	Hump Crossing Sign:	No
Pavement Markings:	Stop Lines and RR Xing Symbols	Other Signs:	0 Specify:
			0

Train Activated Devices:

Gates:	2	4 Quad or Full Barrier:	
Mast Mounted FL:	2	Total Number FL Pairs:	8
Cantilevered FL (Over):	2	Cantilevered FL (Not over):	0
Other Flashing Lights:	0	Specify Other Flashing Lights:	
Highway Traffic Signals:	0	Wigwags:	0 Bells: 1
Other Train Activated Warning Devices:		Special Warning Devices Not Train Activated:	
Channelization:	None	Type of Train Detection:	DC/AFO
Track Equipped with Train Signals?	Yes	Traffic Light Interconnection/Preemption:	N/A

Part IV: Physical Characteristics

Type of Development:	Commercial	Smallest Crossing Angle:	30 to 59 Degrees
Number of Traffic Lanes Crossing Railroad:	2	Are Truck Pullout Lanes Present?	No
Is Highway Paved?	Yes	If Other:	
Crossing Surface:	Rubber	Is it Signalized?	No
Nearby Intersecting Highway?	N/A	Is Crossing Illuminated?	No
Does Track Run Down a Street?	No		
Is Commercial Power	Yes		

Part V: Highway Information

Highway System:	Other FA Highway - Not NHS	Functional Classification of Road at Crossing:	Urban Other Principal
Is Crossing on State Highway System:	Yes	AADT Year:	1988
Annual Average Daily Traffic (AADT):	004200	Avg. No of School Buses per Day:	0
Estimated Percent Trucks:	08		
Posted Highway Speed:	0		

**U.S. DOT - CROSSING INVENTORY INFORMATION
AS OF 1/18/2010**

Crossing No.: **698911H** Update Reason: **Changed Crossing** Effective Begin-Date of Record: **04/17/09**
 Railroad: **CPRS Canadian Pacific Rwy [CPRS]** End-Date of Record:
 Initiating Agency **State** Type and Position: **Public At Grade**

Part I Location and Classification of Crossing

Division:	HEARTLAND	State:	ND
Subdivision:	PORTAL	County:	WARD
Branch or Line Name:	MP	City:	In MINOT
Railroad Milepost:	0467.80	Street or Road Name:	8TH AVE 13TH ST
RailRoad I.D. No.:		Highway Type & No.:	L-
Nearest RR Timetable Stn:	MINOT PBS	HSR Corridor ID:	
Parent Railroad:		County Map Ref. No.:	
Crossing Owner:		Latitude:	48.2287592
ENS Sign Installed:		Longitude:	-101.2737748
Passenger Service:		Lat/Long Source:	
Avg Passenger Train Count:	0	Quiet Zone:	No
Adjacent Crossing with Separate Number:			

Private Crossing Information:

Category: Public Access: **Unknown**
 Specify Signs: Specify Signs:

ST/RR A ST/RR B ST/RR C ST/RR D

Railroad Use:

State Use:

Narrative:

Emergency Contact: Railroad Contact: State Contact: **(701)328-4409**

Part II Railroad Information

Number of Daily Train Movements:		Less Than One Movement Per Day:	No
Total Trains:	x25	Total Switching:	0
Typical Speed Range Over Crossing: From	5 to 10 mph	Day Thru:	2
Type and Number of Tracks: Main:	1	Other:	0
		Maximum Time Table Speed:	x 25
		Specify:	
Does Another RR Operate a Separate Track at Crossing?			No
Does Another RR Operate Over Your Track at Crossing?			No

U.S. DOT - CROSSING INVENTORY INFORMATION

Crossing **698911H**

Continued

Effective Begin-Date of Record: **04/17/09**

End-Date of Record:

Part III: Traffic Control Device Information

Signs:

Crossbucks:	0 2	Highway Stop Signs:	0
Advanced Warning:	No Yes	Hump Crossing Sign:	
Pavement Markings:	No Markings Stop Bars Only	Other Signs:	0 Specify:
			0

Train Activated Devices:

Gates:	2	4 Quad or Full Barrier:	
Mast Mounted FL:	2	Total Number FL Pairs:	0
Cantilevered FL (Over):	0	Cantilevered FL (Not over):	0
Other Flashing Lights:	2	Specify Other Flashing Lights:	SIDELIGHT
Highway Traffic Signals:	0	Wigwags:	0 Bells: 1
Other Train Activated Warning Devices:		Special Warning Devices Not Train Activated:	
Channelization:		Type of Train Detection:	Constant Warning Time
Track Equipped with Train Signals?	No	Traffic Light Interconnection/Preemption:	Motion Detector

Part IV: Physical Characteristics

Type of Development:	Industrial	Smallest Crossing Angle:	30 to 59 Degrees
Number of Traffic Lanes Crossing Railroad:	2	Are Truck Pullout Lanes Present?	No
Is Highway Paved?	Yes	If Other:	
Crossing Surface:	Timber Concrete	Is it Signalized?	
Nearby Intersecting Highway?	N/A	Is Crossing Illuminated?	
Does Track Run Down a Street?	No		
Is Commercial Power	Yes		

Part V: Highway Information

Highway System:	Non-Federal-aid	Functional Classification of Road at Crossing:	Urban Minor Arterial
Is Crossing on State Highway System:	No	AADT Year:	1992 2008
Annual Average Daily Traffic (AADT):	003250 4,385	Avg. No of School Buses per Day:	0
Estimated Percent Trucks:	02		
Posted Highway Speed:	0		

**U.S. DOT - CROSSING INVENTORY INFORMATION
AS OF 1/18/2010**

Crossing No.: **698912P** Update Reason: **Changed Crossing** Effective Begin-Date of Record: **04/17/09**
 Railroad: **CPRS Canadian Pacific Rwy [CPRS]** End-Date of Record:
 Initiating Agency **State** Type and Position: **Public At Grade**

Part I Location and Classification of Crossing

Division:	HEARTLAND	State:	ND
Subdivision:	PORTAL	County:	WARD
Branch or Line Name:	MP	City:	In MINOT
Railroad Milepost:	0468.11	Street or Road Name:	NINTH ST
RailRoad I.D. No.:		Highway Type & No.:	L-
Nearest RR Timetable Strn:	MINOT PBS	HSR Corridor ID:	
Parent Railroad:		County Map Ref. No.:	
Crossing Owner:		Latitude:	48.2310345
ENS Sign Installed:		Longitude:	-101.2798653
Passenger Service:		Lat/Long Source:	
Avg Passenger Train Count:	0	Quiet Zone:	No
Adjacent Crossing with Separate Number:			

Private Crossing Information:

Category: Public Access: **Unknown**
 Specify Signs: Specify Signals:

	ST/RR A	ST/RR B	ST/RR C	ST/RR D
Railroad Use:				
State Use:				
Narrative:				

Emergency Contact: Railroad Contact: State Contact: **(701)328-4409**

Part II Railroad Information

Number of Daily Train Movements: Less Than One Movement Per Day: **No**
 Total Trains: **X18** Total Switching: **0** Day Thru: **2**
 Typical Speed Range Over Crossing: From **5** to **10** mph Maximum Time Table Speed: **X0 25**
 Type and Number of Tracks: Main: **1** Other **2** Specify: **PASS IND.#**
 Does Another RR Operate a Separate Track at Crossing? **No**
 Does Another RR Operate Over Your Track at Crossing? **No**

U.S. DOT - CROSSING INVENTORY INFORMATION

Crossing **698912P**

Continued

Effective Begin-Date of Record: **04/17/09**

End-Date of Record:

Part III: Traffic Control Device Information

Signs:

Crossbucks:	0 2	Highway Stop Signs:	0
Advanced Warning:	Yes	Hump Crossing Sign:	
Pavement Markings:	No Markings Stop Bars Only	Other Signs:	0 Specify:
			0

Train Activated Devices:

Gates:	2	4 Quad or Full Barrier:	
Mast Mounted FL:	2	Total Number FL Pairs:	0
Cantilevered FL (Over):	0	Cantilevered FL (Not over):	0
Other Flashing Lights:	2	Specify Other Flashing Lights:	SIDELIGHT
Highway Traffic Signals:	0	Wigwags:	0 Bells: 1
Other Train Activated Warning Devices:		Special Warning Devices Not Train Activated:	
Channelization:		Type of Train Detection:	Constant Warning Time Motion Detector
Track Equipped with Train Signals?	No	Traffic Light Interconnection/Preemption:	

Part IV: Physical Characteristics

Type of Development:	Industrial	Smallest Crossing Angle:	60 to 90 Degrees
Number of Traffic Lanes Crossing Railroad:	2	Are Truck Pullout Lanes Present?	No
Is Highway Paved?	Yes	If Other:	
Crossing Surface:	Asphalt Concrete	Is it Signalized?	
Nearby Intersecting Highway?	N/A	Is Crossing Illuminated?	
Does Track Run Down a Street?	No		
Is Commercial Power	Yes		

Part V: Highway Information

Highway System:	Non-Federal-aid	Functional Classification of Road at Crossing:	Urban Local
Is Crossing on State Highway System:	No	AADT Year:	1992 2010
Annual Average Daily Traffic (AADT):	001500 1280	Avg. No of School Buses per Day:	0
Estimated Percent Trucks:	04		
Posted Highway Speed:	0		

**U.S. DOT - CROSSING INVENTORY INFORMATION
AS OF 1/18/2010**

Crossing No.: **698919M** Update Reason: **Changed Crossing** Effective Begin-Date of Record: **04/17/09**
 Railroad: **CPRS Canadian Pacific Rwy [CPRS]** **Private** End-Date of Record:
 Initiating Agency **State** Type and Position: ~~Public At Grade~~

Part I Location and Classification of Crossing

Division:	HEARTLAND	State:	ND
Subdivision:	PORTAL	County:	WARD
Branch or Line Name:	TRK 20	City:	In MINOT
Railroad Milepost:	0468.65	Street or Road Name:	CENTRAL AVE
RailRoad I.D. No.:		Highway Type & No.:	
Nearest RR Timetable Stn:	MINOT PBS	HSR Corridor ID:	
Parent Railroad:		County Map Ref. No.:	
Crossing Owner:		Latitude:	48.2364024
ENS Sign Installed:		Longitude:	-101.2877937
Passenger Service:		Lat/Long Source:	
Avg Passenger Train Count:	0	Quiet Zone:	No
Adjacent Crossing with Separate Number:			

Private Crossing Information:

Category:		Public Access:	Unknown	
	Specify Signs:		Specify Signals:	
	ST/RR A	ST/RR B	ST/RR C	ST/RR D
Railroad Use:				
State Use:				
Narrative:				
Emergency Contact:	Railroad Contact:	State Contact:	(701)328-4409	

Part II Railroad Information

Number of Daily Train Movements:		Less Than One Movement Per Day:	No
Total Trains:	1	Total Switching:	1
Day Thru:		Day Thru:	0
Typical Speed Range Over Crossing: From	5 to 10 mph	Maximum Time Table Speed:	10 25
Type and Number of Tracks: Main:	0	Other:	1
		Specify:	#20
Does Another RR Operate a Separate Track at Crossing?			No
Does Another RR Operate Over Your Track at Crossing?			No

U.S. DOT - CROSSING INVENTORY INFORMATION

Crossing **698919M**

Continued

Effective Begin-Date of Record: **04/17/09**

End-Date of Record:

Part III: Traffic Control Device Information

Signs:

Crossbucks:	0	Highway Stop Signs:	0
Advanced Warning:	No	Hump Crossing Sign:	
Pavement Markings:	No Markings	Other Signs:	0 Specify:
			0

Train Activated Devices:

Gates:	0	4 Quad or Full Barrier:	
Mast Mounted FL:	0	Total Number FL Pairs:	0
Cantilevered FL (Over):	0	Cantilevered FL (Not over):	0
Other Flashing Lights:	0	Specify Other Flashing Lights:	
Highway Traffic Signals:	0	Wigwags:	0 Bells: 0
Other Train Activated Warning Devices:		Special Warning Devices Not Train Activated:	
Channelization:		Type of Train Detection:	None
Track Equipped with Train Signals?	No	Traffic Light Interconnection/Preemption:	

Part IV: Physical Characteristics

Type of Development:	Industrial	Smallest Crossing Angle:	60 to 90 Degrees
Number of Traffic Lanes Crossing Railroad:	2	Are Truck Pullout Lanes Present?	No
Is Highway Paved?	Yes	If Other:	
Crossing Surface:	Asphalt	Is it Signalized?	
Nearby Intersecting Highway?	N/A	Is Crossing Illuminated?	
Does Track Run Down a Street?	No		
Is Commercial Power	Yes		

Part V: Highway Information

Highway System:	Non-Federal-aid	Functional Classification of Road at Crossing:	Urban Local
Is Crossing on State Highway System:	No	AADT Year:	1988 2010
Annual Average Daily Traffic (AADT):	005300 4100	Avg. No of School Buses per Day:	0
Estimated Percent Trucks:	02		
Posted Highway Speed:	0		

**U.S. DOT - CROSSING INVENTORY INFORMATION
AS OF 1/18/2010**

Crossing No.: **698914D** Update Reason: **Changed Crossing** Effective Begin-Date of Record: **04/17/09**
 Railroad: **CPRS Canadian Pacific Rwy [CPRS]** End-Date of Record:
 Initiating Agency **State** Type and Position: **Public At Grade**

Part I Location and Classification of Crossing

Division:	HEARTLAND	State:	ND
Subdivision:	PORTAL	County:	WARD
Branch or Line Name:	MP	City:	In MINOT
Railroad Milepost:	0468.61	Street or Road Name:	THIRD ST
RailRoad I.D. No.:		Highway Type & No.:	L-3RDST
Nearest RR Timetable Stn:	MINOT PBS	HSR Corridor ID:	
Parent Railroad:		County Map Ref. No.:	
Crossing Owner:		Latitude:	48.2352627
ENS Sign Installed:		Longitude:	-101.2884896
Passenger Service:		Lat/Long Source:	
Avg Passenger Train Count:	0	Quiet Zone:	No

Adjacent Crossing with Separate Number:

Private Crossing Information:

Category: Public Access: **Unknown**
 Specify Signs: Specify Signals:

ST/RR A ST/RR B ST/RR C ST/RR D

Railroad Use:

State Use:

Narrative:

Emergency Contact: Railroad Contact: State Contact: **(701)328-4409**

Part II Railroad Information

Number of Daily Train Movements: Less Than One Movement Per Day: **No**
 Total Trains: **X 16** Total Switching: **0** Day Thru: **2**
 Typical Speed Range Over Crossing: From **5** to **10** mph Maximum Time Table Speed: **10 25**
 Type and Number of Tracks: Main: **1** Other **3** Specify: **#26 #14 #3**
 Does Another RR Operate a Separate Track at Crossing? **No**
 Does Another RR Operate Over Your Track at Crossing? **No**

U.S. DOT - CROSSING INVENTORY INFORMATION

Crossing **698914D**

Continued

Effective Begin-Date of Record: **04/17/09**

End-Date of Record:

Part III: Traffic Control Device Information

Signs:

Crossbucks:	0 2	Highway Stop Signs:	0
Advanced Warning:	No Yes	Hump Crossing Sign:	
Pavement Markings:	No Markings	Other Signs:	0 Specify:
			0

Train Activated Devices:

Gates:	2	4 Quad or Full Barrier:	
Mast Mounted FL:	2	Total Number FL Pairs:	0
Cantilevered FL (Over):	2	Cantilevered FL (Not over):	0
Other Flashing Lights:	1	Specify Other Flashing Lights:	SIDELIGHT
Highway Traffic Signals:	0	Wigwags:	0 Bells: 1
Other Train Activated Warning Devices:		Special Warning Devices Not Train Activated:	
Channelization:		Type of Train Detection:	Constant Warning Time
Track Equipped with Train Signals?	No	Traffic Light Interconnection/Preemption:	

Part IV: Physical Characteristics

Type of Development:	Industrial	Smallest Crossing Angle:	30 to 59 Degrees
Number of Traffic Lanes Crossing Railroad:	2	Are Truck Pullout Lanes Present?	No
Is Highway Paved?	Yes	If Other:	
Crossing Surface:	Timber Concrete	Is it Signalized?	
Nearby Intersecting Highway?	N/A	Is Crossing Illuminated?	
Does Track Run Down a Street?	No		
Is Commercial Power	Yes		

Part V: Highway Information

Highway System:	Other FA Highway - Not NHS	Functional Classification of Road at Crossing:	Urban Minor Arterial
Is Crossing on State Highway System:	No	AADT Year:	1992 2008
Annual Average Daily Traffic (AADT):	008200 11,440	Avg. No of School Buses per Day:	0
Estimated Percent Trucks:	04		
Posted Highway Speed:	0		

**U.S. DOT - CROSSING INVENTORY INFORMATION
AS OF 1/18/2010**

Crossing No.: **698915K** Update Reason: **Changed Crossing** Effective Begin-Date of Record: **04/17/09**
 Railroad: **CPRS Canadian Pacific Rwy [CPRS]** End-Date of Record:
 Initiating Agency **State** Type and Position: **Public At Grade**

Part I Location and Classification of Crossing

Division:	HEARTLAND	State:	ND
Subdivision:	PORTAL	County:	WARD
Branch or Line Name:	MP	City:	In MINOT
Railroad Milepost:	0468.74	Street or Road Name:	CENTRAL AVE
RailRoad I.D. No.:		Highway Type & No.:	L-
Nearest RR Timetable Stn:	MINOT PBS	HSR Corridor ID:	
Parent Railroad:		County Map Ref. No.:	
Crossing Owner:		Latitude:	48.2364012
ENS Sign Installed:		Longitude:	-101.2906768
Passenger Service:		Lat/Long Source:	
Avg Passenger Train Count:	0	Quiet Zone:	No
Adjacent Crossing with Separate Number:			

Private Crossing Information:

Category: Public Access: **Unknown**
 Specify Signs: Specify Signals:

	ST/RR A	ST/RR B	ST/RR C	ST/RR D
Railroad Use:				
State Use:				
Narrative:				

Emergency Contact: Railroad Contact: State Contact: **(701)328-4409**

Part II Railroad Information

Number of Daily Train Movements: Less Than One Movement Per Day: **No**
 Total Trains: **x 16** Total Switching: **0** Day Thru: **2**
 Typical Speed Range Over Crossing: From **5** to **10** mph Maximum Time Table Speed: **x 25**
 Type and Number of Tracks: Main: **1** Other **1** Specify: **TRK#35**
 Does Another RR Operate a Separate Track at Crossing? **No**
 Does Another RR Operate Over Your Track at Crossing? **No**

U.S. DOT - CROSSING INVENTORY INFORMATION

Crossing **698915K**

Continued

Effective Begin-Date of Record: **04/17/09**

End-Date of Record:

Part III: Traffic Control Device Information

Signs:

Crossbucks:	0 2	Highway Stop Signs:	0
Advanced Warning:	No Yes	Hump Crossing Sign:	
Pavement Markings:	No Markings Stop Bars Only	Other Signs:	0 Specify:
			0

Train Activated Devices:

Gates:	2	4 Quad or Full Barrier:	
Mast Mounted FL:	2	Total Number FL Pairs:	0
Cantilevered FL (Over):	0	Cantilevered FL (Not over):	0
Other Flashing Lights:	1	Specify Other Flashing Lights:	SIDELIGHT
Highway Traffic Signals:	0	Wigwags:	0 Bells: 1
Other Train Activated Warning Devices:		Special Warning Devices Not Train Activated:	
Channelization:		Type of Train Detection:	Constant Warning Time Motion Detector
Track Equipped with Train Signals?	No	Traffic Light Interconnection/Preemption:	

Part IV: Physical Characteristics

Type of Development:	Commercial	Smallest Crossing Angle:	30 to 59 Degrees
Number of Traffic Lanes Crossing Railroad:	2	Are Truck Pullout Lanes Present?	No
Is Highway Paved?	Yes	If Other:	
Crossing Surface:	Timber Concrete	Is it Signalized?	
Nearby Intersecting Highway?	N/A	Is Crossing Illuminated?	
Does Track Run Down a Street?	No		
Is Commercial Power	No		

Part V: Highway Information

Highway System:	Other FA Highway - Not NHS	Functional Classification of Road at Crossing:	Urban Collector
Is Crossing on State Highway System:	No	AADT Year:	1992 2008
Annual Average Daily Traffic (AADT):	004000 3,900	Avg. No of School Buses per Day:	0
Estimated Percent Trucks:	04		
Posted Highway Speed:	0		

**U.S. DOT - CROSSING INVENTORY INFORMATION
AS OF 1/18/2010**

Crossing No.: **698916S** Update Reason: **Changed Crossing** Effective Begin-Date of Record: **04/17/09**
 Railroad: **CPRS Canadian Pacific Rwy [CPRS]** End-Date of Record:
 Initiating Agency **State** Type and Position: **Public At Grade**

Part I Location and Classification of Crossing

Division:	HEARTLAND	State:	ND
Subdivision:	PORTAL	County:	WARD
Branch or Line Name:	MP	City:	In MINOT
Railroad Milepost:	0468.79	Street or Road Name:	FIRST ST SE
RailRoad I.D. No.:		Highway Type & No.:	L-
Nearest RR Timetable Strn:	MINOT PBS	HSR Corridor ID:	
Parent Railroad:		County Map Ref. No.:	
Crossing Owner:		Latitude:	48.2368378
ENS Sign Installed:		Longitude:	-101.2916079
Passenger Service:		Lat/Long Source:	
Avg Passenger Train Count:	0	Quiet Zone:	No
Adjacent Crossing with Separate Number:			

Private Crossing Information:

Category: Public Access: **Unknown**
 Specify Signs: Specify Signs:

ST/RR A ST/RR B ST/RR C ST/RR D

Railroad Use:

State Use:

Narrative:

Emergency Contact: Railroad Contact: State Contact: **(701)328-4409**

Part II Railroad Information

Number of Daily Train Movements: Less Than One Movement Per Day: **No**
 Total Trains: ~~10~~ **16** Total Switching: **0** Day Thru: **2**
 Typical Speed Range Over Crossing: From **5** to **10** mph Maximum Time Table Speed: ~~10~~ **25**
 Type and Number of Tracks: Main: **1** Other **2** Specify: **#35 #37**
 Does Another RR Operate a Separate Track at Crossing? **No**
 Does Another RR Operate Over Your Track at Crossing? **No**

U.S. DOT - CROSSING INVENTORY INFORMATION

Crossing **698916S**

Continued

Effective Begin-Date of Record: **04/17/09**

End-Date of Record:

Part III: Traffic Control Device Information

Signs:

Crossbucks:	0 2	Highway Stop Signs:	0
Advanced Warning:	No	Hump Crossing Sign:	
Pavement Markings:	No Markings	Other Signs:	0 Specify:
	Stop Bars Only		0

Train Activated Devices:

Gates:	2	4 Quad or Full Barrier:	
Mast Mounted FL:	2	Total Number FL Pairs:	0
Cantilevered FL (Over):	0	Cantilevered FL (Not over):	0
Other Flashing Lights:	0	Specify Other Flashing Lights:	
Highway Traffic Signals:	0	Wigwags:	0 Bells: 1
Other Train Activated Warning Devices:		Special Warning Devices Not Train Activated:	
Channelization:		Type of Train Detection:	Constant Warning Time
Track Equipped with Train Signals?	No	Traffic Light Interconnection/Preemption:	Motion Detector

Part IV: Physical Characteristics

Type of Development:	Commercial	Smallest Crossing Angle:	30 to 59 Degrees
Number of Traffic Lanes Crossing Railroad:	2	Are Truck Pullout Lanes Present?	No
Is Highway Paved?	Yes	If Other:	
Crossing Surface:	Timber Concrete	Is it Signalized?	
Nearby Intersecting Highway?	N/A	Is Crossing Illuminated?	
Does Track Run Down a Street?	No		
Is Commercial Power	Yes		

Part V: Highway Information

Highway System:	Non-Federal-aid	Functional Classification of Road at Crossing:	Urban Local
Is Crossing on State Highway System:	No	AADT Year:	1992 2008
Annual Average Daily Traffic (AADT):	000925 1475	Avg. No of School Buses per Day:	0
Estimated Percent Trucks:	03		
Posted Highway Speed:	0		

**U.S. DOT - CROSSING INVENTORY INFORMATION
AS OF 1/18/2010**

Crossing No.: **698920G** Update Reason: **Changed Crossing** Effective Begin-Date of Record: **04/17/09**
 Railroad: **CPRS Canadian Pacific Rwy [CPRS]** End-Date of Record:
 Initiating Agency **State** Type and Position: **Public At Grade**

Part I Location and Classification of Crossing

Division:	HEARTLAND	State:	ND
Subdivision:	PORTAL	County:	WARD
Branch or Line Name:	MP	City:	In MINOT
Railroad Milepost:	0468.86	Street or Road Name:	MAIN ST
RailRoad I.D. No.:		Highway Type & No.:	L-
Nearest RR Timetable Stn:	MINOT PBS	HSR Corridor ID:	
Parent Railroad:		County Map Ref. No.:	
Crossing Owner:		Latitude:	48.2587240
ENS Sign Installed:		Longitude:	-101.5626750
Passenger Service:		Lat/Long Source:	
Avg Passenger Train Count:	0	Quiet Zone:	No
Adjacent Crossing with Separate Number:			

Private Crossing Information:

Category: Public Access: **Unknown**
 Specify Signs: Specify Signals:

ST/RR A ST/RR B ST/RR C ST/RR D

Railroad Use:

State Use:

Narrative:

Emergency Contact: Railroad Contact: State Contact: **(701)328-4409**

Part II Railroad Information

Number of Daily Train Movements: Less Than One Movement Per Day: **No**
 Total Trains: **16** Total Switching: **0** Day Thru: **2**
 Typical Speed Range Over Crossing: From **5** to **10** mph Maximum Time Table Speed: **10 25**
 Type and Number of Tracks: Main: **1** Other **0** Specify:
 Does Another RR Operate a Separate Track at Crossing? **No**
 Does Another RR Operate Over Your Track at Crossing? **No**

U.S. DOT - CROSSING INVENTORY INFORMATION

Crossing 698920G

Continued

Effective Begin-Date of Record: 04/17/09

End-Date of Record:

Part III: Traffic Control Device Information

Signs:

Crossbucks:	0 2	Highway Stop Signs:	0
Advanced Warning:	No	Hump Crossing Sign:	
Pavement Markings:	No Markings	Other Signs:	0 Specify:
	Stop Bars Only		0

Train Activated Devices:

Gates:	2	4 Quad or Full Barrier:	
Mast Mounted FL:	2	Total Number FL Pairs:	0
Cantilevered FL (Over):	0	Cantilevered FL (Not over):	0
Other Flashing Lights:	1	Specify Other Flashing Lights:	SIDELIGHT
Highway Traffic Signals:	0	Wigwags:	0 Bells: 1
Other Train Activated Warning Devices:		Special Warning Devices Not Train Activated:	
Channelization:		Type of Train Detection:	Constant Warning Time
Track Equipped with Train Signals?	No	Traffic Light Interconnection/Preemption:	Motion Detector

Part IV: Physical Characteristics

Type of Development:	Commercial	Smallest Crossing Angle:	60 to 90 Degrees
Number of Traffic Lanes Crossing Railroad:	2	Are Truck Pullout Lanes Present?	No
Is Highway Paved?	Yes	If Other:	
Crossing Surface:	Timber Concrete	Is it Signalized?	
Nearby Intersecting Highway?	N/A	Is Crossing Illuminated?	
Does Track Run Down a Street?	No		
Is Commercial Power	Yes		

Part V: Highway Information

Highway System:	Non-Federal-aid	Functional Classification of Road at Crossing:	Urban Local
Is Crossing on State Highway System:	No	AADT Year:	1992 2008
Annual Average Daily Traffic (AADT):	000675 1705	Avg. No of School Buses per Day:	0
Estimated Percent Trucks:	03		
Posted Highway Speed:	0		

**U.S. DOT - CROSSING INVENTORY INFORMATION
AS OF 1/18/2010**

Crossing No.: **698922V** Update Reason: **Changed Crossing** Effective Begin-Date of Record: **07/21/08**
 Railroad: **CPRS Canadian Pacific Rwy [CPRS]** End-Date of Record:
 Initiating Agency **State** Type and Position: **Public At Grade**

Part I Location and Classification of Crossing

Division:	HEARTLAND	State:	ND
Subdivision:	PORTAL	County:	WARD
Branch or Line Name:	MP	City:	In MINOT
Railroad Milepost:	0469.16	Street or Road Name:	PARK STR. → ? Amtrak Depot
RailRoad I.D. No.:		Highway Type & No.:	
Nearest RR Timetable Str:	MINOT PBS	HSR Corridor ID:	
Parent Railroad:		County Map Ref. No.:	
Crossing Owner:		Latitude:	48.2322500
ENS Sign Installed:		Longitude:	-101.3376850
Passenger Service:		Lat/Long Source:	
Avg Passenger Train Count:	0	Quiet Zone:	No
Adjacent Crossing with Separate Number:			

Private Crossing Information:

Category:		Public Access:	Unknown
Specify Signs:		Specify Signals:	
	ST/RR A	ST/RR B	ST/RR C
Railroad Use:			ST/RR D
State Use:			
Narrative:			
Emergency Contact:		Railroad Contact:	
		State Contact:	(701)328-4409

Part II Railroad Information

Number of Daily Train Movements:		Less Than One Movement Per Day:	No
Total Trains:	X 16	Total Switching:	0
Typical Speed Range Over Crossing: From	5 to 10 mph	Day Thru:	2
Type and Number of Tracks: Main:	1	Other:	0
		Specify:	X 25
Does Another RR Operate a Separate Track at Crossing?			No
Does Another RR Operate Over Your Track at Crossing?			No

U.S. DOT - CROSSING INVENTORY INFORMATION

Crossing **698922V**

Continued

Effective Begin-Date of Record: **07/21/08**

End-Date of Record:

Part III: Traffic Control Device Information

Signs:

Crossbucks: **2**
 Advanced Warning: **No**
 Pavement Markings: ~~No Markings~~
Stop Bars Only

Highway Stop Signs: x2
 Hump Crossing Sign:
 Other Signs: **0** Specify:
0

Train Activated Devices:

Gates: **0**
 Mast Mounted FL: **0**
 Cantilevered FL (Over): **0**
 Other Flashing Lights: **0**
 Highway Traffic Signals: **0**
 Other Train Activated Warning Devices:
 Channelization:
 Track Equipped with Train Signals? **No**

4 Quad or Full Barrier:
 Total Number FL Pairs: **0**
 Cantilevered FL (Not over): **0**
 Specify Other Flashing Lights:
 Wigwags: **0** Bells: **0**
 Special Warning Devices Not Train Activated:
 Type of Train Detection: **None**
 Traffic Light Interconnection/Preemption:

Part IV: Physical Characteristics

Type of Development: **Commercial**
 Number of Traffic Lanes
 Crossing Railroad: **2**
 Is Highway Paved? **Yes**
 Crossing Surface: ~~Asphalt~~
Timber
 Nearby Intersecting Highway? **N/A**
 Does Track Run Down a Street? **No**
 Is Commercial Power **Yes**

Smallest Crossing Angle: **60 to 90 Degrees**
 Are Truck Pullout Lanes Present? **No**
 If Other:
 Is it Signalized?
 Is Crossing Illuminated?

Part V: Highway Information

Highway System: **Non-Federal-aid**
 Is Crossing on State Highway System: **No**
 Annual Average Daily Traffic (AADT): ~~002000~~ 880
 Estimated Percent Trucks: **10**
 Posted Highway Speed: **0**

Functional Classification of Road at Crossing: **Urban Local**
 AADT Year: ~~1998~~ 2010
 Avg. No of School Buses per Day: **0**

**U.S. DOT - CROSSING INVENTORY INFORMATION
AS OF 1/18/2010**

Crossing No.: **698924J** Update Reason: **Changed Crossing** Effective Begin-Date of Record: **04/17/09**
 Railroad: **CPRS Canadian Pacific Rwy [CPRS]** End-Date of Record:
 Initiating Agency **State** Type and Position: **Public At Grade**

Part I Location and Classification of Crossing

Division:	HEARTLAND	State:	ND
Subdivision:	PORTAL	County:	WARD
Branch or Line Name:	MP	City:	In MINOT
Railroad Milepost:	0469.52	Street or Road Name:	MAPLE STR
RailRoad I.D. No.:		Highway Type & No.:	
Nearest RR Timetable Stn:	MINOT PBS	HSR Corridor ID:	
Parent Railroad:		County Map Ref. No.:	
Crossing Owner:		Latitude:	48.2340565
ENS Sign Installed:		Longitude:	-101.3064259
Passenger Service:		Lat/Long Source:	
Avg Passenger Train Count:	0	Quiet Zone:	No
Adjacent Crossing with Separate Number:			

Private Crossing Information:

Category: Public Access: **Unknown**
 Specify Signs: Specify Signals:

ST/RR A ST/RR B ST/RR C ST/RR D

Railroad Use:

State Use:

Narrative:

Emergency Contact: Railroad Contact: State Contact: **(701)328-4409**

Part II Railroad Information

Number of Daily Train Movements: Less Than One Movement Per Day: **No**
 Total Trains: **X 16** Total Switching: **0 5 10** Day Thru: **2**
 Typical Speed Range Over Crossing: From **30** to **40** mph Maximum Time Table Speed: **40 X 25**
 Type and Number of Tracks: Main: **0** Other: **1** Specify: **#4**
 Does Another RR Operate a Separate Track at Crossing? **No**
 Does Another RR Operate Over Your Track at Crossing? **No**

U.S. DOT - CROSSING INVENTORY INFORMATION

Crossing **698924J**

Continued

Effective Begin-Date of Record: **04/17/09**

End-Date of Record:

Part III: Traffic Control Device Information

Signs:

Crossbucks:	0	Highway Stop Signs:	0
Advanced Warning:	No <i>1-for NB traffic only</i>	Hump Crossing Sign:	
Pavement Markings:	No Markings	Other Signs:	0 Specify:
			0

Train Activated Devices:

Gates:	2	4 Quad or Full Barrier:	
Mast Mounted FL:	2	Total Number FL Pairs:	0
Cantilevered FL (Over):	0	Cantilevered FL (Not over):	0
Other Flashing Lights:	0	Specify Other Flashing Lights:	
Highway Traffic Signals:	0	Wigwags:	0 Bells: 1
Other Train Activated Warning Devices:		Special Warning Devices Not Train Activated:	
Channelization:		Type of Train Detection:	None Constant Warning Time
Track Equipped with Train Signals?	No	Traffic Light Interconnection/Preemption:	

Part IV: Physical Characteristics

Type of Development:	Commercial	Smallest Crossing Angle:	60 to 90 Degrees
Number of Traffic Lanes Crossing Railroad:	2	Are Truck Pullout Lanes Present?	No
Is Highway Paved?	Yes	If Other:	
Crossing Surface:	Asphalt Concrete	Is it Signalized?	
Nearby Intersecting Highway?	N/A	Is Crossing Illuminated?	
Does Track Run Down a Street?	No		
Is Commercial Power	Yes		

Part V: Highway Information

Highway System:	Non-Federal-aid	Functional Classification of Road at Crossing:	Urban Minor Arterial
Is Crossing on State Highway System:	No	AADT Year:	1981 2010
Annual Average Daily Traffic (AADT):	000200 400	Avg. No of School Buses per Day:	0
Estimated Percent Trucks:	08		
Posted Highway Speed:	0		

Appendix B
Diagnostic Meeting Summary

RECORD OF MEETING

Minot Quiet Zone Assessment

Diagnostic Team Meeting

Tuesday March 30, 2010 – 10:00 a.m.

Wednesday March 31, 2010 – 8:00 a.m.

Minot Public Works Building – 1025 31st Street SE

Members in Attendance:

Rusten Roteliuk
Matt Petron
Tammy Wagner
Jim Styron
Lynn Leibfried
John Rambeck
Jim Krieger
Hank Janz
Mark Mattison
Jeffrey Rodacker
Rick Lane
Peggy Harter

Representing:

City of Minot – Engineering (30th and 31st)
City of Minot – Engineering (30th and 31st)
Federal Rail Administration (30th and 31st)
NDDOT – Central Office Rail Division (30th and 31st)
Burlington Northern Santa Fe Railroad (30th Only)
Canadian Pacific Railroad (31st Only)
Ackerman Estvold Engineering (30th and 31st)
SRF Consulting Group, Inc. (30th and 31st)
SRF Consulting Group, Inc. (30th and 31st)

Introductions

Rick Lane welcomed everyone to the meeting and asked each person to introduce themselves and who they were representing. A copy of the sign in sheets for each day is attached. Rick Lane then explained that the City of Minot has retained SRF Consulting Group, Inc. to complete a 24-hour quiet zone assessment for twelve railroad crossings within the City of Minot.

Diagnostic Team Meeting

Rick Lane explained that one of the first steps in completing a Quiet Zone (QZ) Assessment is to hold a Diagnostic Team meeting in which all involved parties review each of the crossings and consider safety improvements for each crossing to meet the QZ requirements. The diagnostic team reviewed the Burlington Northern Santa Fe (BNSF) railroad crossings on Tuesday, March 30, 2010; and the Canadian Pacific (CP) railroad crossings on Wednesday, March 31, 2010. The BNSF and CP lines run parallel to each other through the City of Minot. On the east side of

the City, the BNSF rail line is north of the CP rail line. The rail lines cross each other between 5th and 6th Street and from that point west, the BNSF rail line is south of the CP rail line.

A set of handouts provided at the meeting included an agenda; assessment area map; summary of crossing characteristics; quiet zone assessment schedule; FRA charts for creating new quiet zones; FRA explanations of the Notice of Intent, Notice of Establishment, and the Train Horn Rule Glossary; aerial photos of each crossing; U.S. DOT crossing inventory for each crossing; a note sheet for potential improvements and issues for each crossing; and a Quiet Zone 101 power point handout explaining the process for creating a quiet zone. A copy of the entire diagnostic handout is attached.

Lynn Leibfried noted that BNSF encourages the City to consider safety over cost when choosing quiet zone improvements. BNSF requires vehicle detection loops to be installed wherever 4-quadrant gates are the chosen improvement. The City is responsible for ownership and maintenance of the vehicle detection loops, and the City is also required to pay a maintenance fee at any crossing where 3- or 4-quadrant gates are the chosen improvement. This existing maintenance fee is around \$5,000 to \$8,000 per year. Lynn also informed the City that the train engineer has the authority to blow the train horn at a crossing after the quiet zone is in place if they see a potentially dangerous situation at the crossing or if construction is occurring near the crossing.

The Diagnostic Team reviewed the current US DOT crossing inventory sheets both in the diagnostic meeting and in the field. Marked up inventory forms with updated information will be forwarded to NDDOT, BNSF, and CP to forward on to FRA.

Field Diagnostic

Representatives from the City of Minot, FRA, BNSF, CP, NDDOT and SRF visited the railroad crossings to review the existing conditions and determine what would need to be done to construct the SSM and/or ASM improvements to meet both railroad and FRA requirements. The key issues and possible improvements to be considered for each crossing are listed below:

BNSF Crossings

27th Street SE Crossings – US DOT # 093077T & 093079G

- It was verified that the crossings are within the City of Minot's jurisdiction.
- No pedestrian facilities exist at these crossings.
- There are two lines at this crossing both with double tracks. The crossings are approximately 190-feet apart from nearest rail to nearest rail. Between the sets of tracks there is no curb on either side of 27th Street to define the access for the Cattleman's Café and Livestock Auction which is located west of 27th Street between the two sets of tracks. It appears that BNSF accesses the east side of 27th Street between the tracks to access the tracks and bungalows.

- It was discussed during the field review that this crossing would be analyzed as its own zone because it is more than a half mile away from the next crossing and it is a separated division and subdivision from the other BNSF crossings. The City representatives also felt this crossing should be analyzed separately because it would not be the City's priority to quiet this crossing since it is further away from residential.
- The main line tracks have Constant Warning Time (CWT) detection; however, the spur tracks only have DC-AFO Circuitry. The spur tracks (further north) would need to be upgraded to Constant Warning to be considered as a quiet zone.
- There only SSM option would be 4-quadrant gates due to the access needed between the tracks for the Café and Livestock Auction. This would be the highest cost option.
- An option for improvements as an ASM would include 3-quadrant gates, with an entrance and exit gate between the two lines of tracks and an entrance only gate with a median both north of the spur line and south of the main line.
- Another option for ASM improvements would include 2-quadrant gates with shorter medians. The main line could have a 100-foot median on the south side with a shorter median on the north side (dependent on the location of the access to the Café and Livestock Auction and the length of the median for the other track). The 100-foot median on the south side of the main line would not interfere with the 4th Avenue NE intersection, which is approximately 170-feet south of the centerline of the nearest track. The spur line could have a shorter median on the south side (dependent on the location of the access to the Café and Livestock Auction and the length of the median for the other track) and a 60-foot median on the north side. The north side of the spur track is limited by the access to the grain elevator to the east of 27th Street and the access to Farroh Roof and Truss Company to the west of 27th Street. With this alternative a defined access should be developed for the Café and Livestock Auction entrance with the use of curb. Curb should also be added along the east side of 27th Street between the two sets of tracks with an access for BNSF to use, along the east and west side of 27th Street north of the spur line up to the access for the Roof/Truss Company and the Grain Elevator.

Maple Street Crossing – US DOT # 071920W

- A single spur line exists to the northwest of the main line. BNSF verified that the spur line is still considered operable and is not to be abandoned; however, it is not currently in use. Tammy Wagner (FRA) stated that the spur line would not need to be upgraded with CWT and does not need to be included in the quiet zone. The main line has CWT.
- Tammy Wagner (FRA) stated that the City consider installing a safety measure because this is an Amtrak route.
- A sidewalk exists along the south side of Maple Street, west of the spur line, but it does not go up to or cross the tracks. No pedestrian facilities cross the tracks at this location.

- One optional SSM would include closure of this crossing. The neighborhood north and west of the crossing has limited access. One other access entering/exiting the neighborhood is further north which crosses the CP railroad tracks. The neighborhood could access 5th Avenue by traveling through the Moose Lodge parking lot; however, the parking lot is private and is currently marked for no through traffic. The City was not favorable of the closure due to limited access for the neighborhood. Benefits to closing this intersection would include improving traffic operations at the nearest intersection east of the crossing (Maple Street and Western Avenue) and the ability to use the existing gates to upgrade a different crossing to four-quadrant gates.
- Another optional SSM would include use of the existing two-quadrant gates with median. FRA indicated that they would prefer a short median between the main line and spur line. There is approximately 78-feet between the center of the nearest main line track to the center of the spur track. There is room for a 70-foot median east of the mainline track. The median would need to be 70-feet due to the intersection of Maple Street with Western Avenue. There is room for a 60-foot median to the west of the spur track. The median would need to be 60-feet due to a driveway access for a business located on the south side of Maple Street. This option would require the addition of curb, fencing, or some type of barrier on the northwest side of the spur track to limit access from an existing parking lot. This is not the actual access for the parking lot; however, tire tracks have indicated that it is being used as an access. Curb would also need to be extended on the southwest side of the spur line. Maple Street on the west side of the crossing is only 24-feet wide, curb to curb, and would need to be widened by four to six feet to add a median. The City is going to check their right-of-way plats to determine if right-of-way would be needed for this.

5th Avenue SW Crossing – US DOT # 071923S

- This crossing is equipped with CWT and two-quadrant gates.
- Tammy Wagner (FRA) stated that the City consider installing a safety measure because this is an Amtrak route.
- No pedestrian facilities currently exist at this location.
- One optional SSM improvement at this location would be to install 4-quadrant gates. Lynn Leibfried (BNSF) indicated that if the Maple Street crossing were closed, the equipment from Maple Street could be used to upgrade this crossing to a 4-quadrant gate at a lower cost than purchasing new equipment. Jim Styron (NDDOT) agreed that the state would allow the Maple Street equipment to be used at this crossing if it were closed.

- One optional ASM improvement at this location would be to add a median on the north side of the crossing only. This median could be a full 100-foot median. The full 100-foot median would limit 6th Avenue and one private residential driveway to right-in/right-out turning movements only. Both 6th Avenue and the private driveway are on the west side of 5th Avenue and the traffic would be captured along the right side of the median where an entrance gate exists. No median would be placed on the south side of the crossing because there is only 28-feet from the Gate Arm to the intersection of 5th Avenue with Burdick Expressway.
- An additional problem noted at this intersection is that traffic on 5th Avenue traveling southbound waiting to turn onto Burdick Expressway has been sitting on the tracks. The intersection of 5th Avenue and Burdick Expressway is not signalized.
- This neighborhood also has limited access. A second access is to the west of the neighborhood which comes out to 16th Street; however, it is not a well marked access and the road is not a platted City Street.

Golf Course Road Crossing – US DOT # 093868F

- This crossing is equipped with CWT and two-quadrant gates.
- Tammy Wagner (FRA) stated that the City consider installing a safety measure because this is an Amtrak route.
- No pedestrian facilities currently exist at this location.
- One optional SSM improvement at this location would be to add medians. There is room for a 100-foot median on the north side of the crossing and a 60-foot median to the south (due to the intersection of Golf Course Road and Burdick Expressway). The medians would require Golf Course Road to be widened at least two-feet. The existing width of the roadway is only 24-feet. A storage building exists north of the tracks and west of Golf Course Road. The current access to the storage building begins 62-feet from the center line of the nearest track. The access for the storage building should be relocated to Golf Course Drive and curb should be added at this location to keep it from being used as an access.

Burdick Expressway Crossing (Spur Line) – US DOT # 071927U

- This crossing is equipped with DC/AFO detection and does have existing gates and lights.
- Lynn Leibfried (BNSF) verified that this crossing is still active and BNSF is not in favor of abandoning the spur due to future economic development opportunities. This crossing would not need to be included as part of the quiet zone.
- No pedestrian facilities currently exist at this location.
- Burdick Expressway at this location is a five-lane section (two through lanes in each direction and a common left turn lane. It would be possible to add medians at this location where the common left turn lane currently exists.

CP Crossings

8th Avenue SE Crossing – US DOT # 698911H

- This crossing is equipped motion detectors and two-quadrant gates and would require an upgrade to CWT to be included in the quiet zone. The required upgrade to CWT would require a complete upgrade of the gates, bungalow, etc. due to the age of the equipment.
- Pedestrian facilities only exist along the west side of 8th Avenue south of the tracks. The sidewalk ends at the tracks. The City is comfortable with only improving pedestrian signage at this location since pedestrians would still hear bells at the crossing.
- One optional SSM improvement at this location is to install 4-quadrant gates. This was noted as the most expensive improvement.
- A second optional SSM improvement would be to make 8th Avenue a one-way pair with 9th Street. Eighth Avenue would be a northbound one-way and 9th Street would be a southbound one-way. It was noted that the one-way pairs could begin/end between Valley Street and Burdick Expressway.
- An optional ASM improvement would be two-quadrant gates with medians. The median on the north side of the crossing could be 100-feet and would limit the intersection of Eastern Avenue with 8th Avenue to right-in/right-out only. The median on the south side would be a 60-foot median. A garage door access currently exists on the south side of the crossing on the east side of 8th Avenue for the Trinity Health warehouse. This access could remain since it would be on the entrance gate side of the median. Curb would need to be installed along the west side of 8th Avenue to remove access to an existing alley that runs parallel along the south side of the tracks. An access to Action Auto would remain open but would be outside of the 60-foot median. The street width on the south side of the crossing is only 28-foot curb to curb and would require some widening to install the median. CP noted that widening the roadway would require relocation of two switches. The City of Minot will complete turning movement counts at the intersection of 8th Avenue and Eastern Avenue to determine the significance of the impact of a median on the north side of the crossing.

9th Street SE Crossing – US DOT # 698912P

- This crossing is equipped motion detectors and two-quadrant gates and would require an upgrade to CWT to be included in the quiet zone. The required upgrade to CWT would require a complete upgrade of the gates, bungalow, etc. due to the age of the equipment.
- Pedestrian facilities are present on both sides of 9th Street at this crossing. The sidewalk on the east side of 9th Street is not continuous across the tracks or on the north side of the crossing. This crossing was noted as a school route. The City is comfortable with only improving pedestrian signage at this location since pedestrians would still hear bells at the crossing.
- One optional SSM improvement at this location is to close the crossing. The City was not favorable of this closure due to the school and commercial properties on the north side of the crossing.
- A second optional SSM improvement would be to make 8th Avenue a one-way pair with 9th Street. Eighth Avenue would be a northbound one-way and 9th Street would be a

southbound one-way. It was noted that the one-way pairs could begin/end between Valley Street and Burdick Expressway.

- An optional ASM improvement would be two-quadrant gates with medians. The median on the north side of the crossing could be 90-feet if the intersection of 9th Street and Eastern Avenue were closed. There is only 24-feet between the gate arm on the north side of the tracks and Eastern Avenue so there is not enough room to install a median. Eastern Avenue is on the exit side (unprotected side) of the median so it would not be allowed to remain open with this option. The median on the south side would be 80-feet. An alleyway that is being used for property access and garbage pick-up along the south side of the track would be within the 80-foot median but would be allowed to remain in place since it would be on the entrance gate side of the median. A driveway for OK Tires that is located within the 80-foot on the unprotected side of the median would need to be closed or relocated. The business has a second existing access further south onto 9th Street that could be used instead with some improvements. The City of Minot will complete turning movement counts at the intersection of 9th Street and Eastern Avenue to determine the significance of the impact of the closure of this intersection.

CP Portal Alley Spur Crossing – US DOT # 698918F

- It was determined that this spur line is closed and the tracks have been abandoned.

CP Portal Central Avenue Spur Crossing – US DOT # 698919M

- Jim Krieger (CP) verified that this Spur is now a private track that was sold to Sun Prairie Grain. The track is in place and does access the grain elevator but is used very seldom. It was stated that the crossing is flagged when a train uses the spur. Tammy Wagner (FRA) verified that this crossing would not need to be included in the quiet zone.

3rd Street SE Crossing – US DOT # 698914D

- This crossing is equipped with CWT and two-quadrant gates.
- 3rd Street SE is a 4-lane road with two lanes in each direction with parking allowed on both sides of the street. The total street width is 64-feet curb to curb (four 12-foot driving lanes and two 8-foot parking lanes).
- Pedestrian facilities exist along both sides of 3rd Street. The City is comfortable with only improving pedestrian signage at this location since pedestrians would still hear bells at the crossing.
- One optional SSM improvement would be to install 4-quadrant gates. This was noted as the most expensive option. CP noted that they felt the existing bungalow could handle the equipment needed for four quadrant gates. Since the crossing has a significant skew to the street, the curb in the southwest quadrant would need to be extended further south to place the exit gate arm. The crossing arms can be a maximum of 30-feet in length, so the curbs would also need to be bumped out into the roadway to place the gate arm standards. This would require the removal of at least some on-street parking lanes for the placement of the two exit gate arm standards. The intersection of 1st Avenue may need to be modified to accommodate 4-quadrant gates or the gate arms may be re-oriented to be parallel with the tracks.

- One optional ASM improvement would be to utilize the existing 2-quadrant gates and add medians. An 80-foot median could be installed on the north side of the crossing. This would require the first driveway in the northeast quadrant (AGCO) to be limited to right-in/right-out only or closed since it would be on the unprotected side of the median. The AGCO lot is being used to store large farming equipment and this appears to be their only access. Another driveway further north is the Renaissance building parking lot entrance and is located further north than the median would extend. Commercial driveways located in the northwest quadrant would be able to remain open since they are on the protected side of the median. A 100-foot median could be installed on the south side of the crossing. This would require the intersection of 1st Avenue and 3rd Street (located in the southwest quadrant of the crossing) to either be closed or limited to right-in/right-out only. A commercial driveway located in the southeast quadrant of the crossing would be able to remain open since it is on the protected side of the median. The medians would require either the removal of some of the on-street parking lanes or reduction of the traffic lanes to 11-feet.

East Central Avenue Crossing – US DOT # 698915K

- This crossing is equipped with motion detectors and two-quadrant gates and would require an upgrade to CWT to be included in the quiet zone. The required upgrade to CWT would require a complete upgrade of the gates, bungalow, etc. due to the age of the equipment.
- The total street width is 40-feet curb to curb (two 12-foot driving lanes and two 8-foot parking lanes).
- Pedestrian facilities exist on both sides of East Central Avenue. The City is comfortable with only improving pedestrian signage at this location since pedestrians would still hear bells at the crossing.
- One optional SSM improvement would be 2-quadrant gates with medians. A 100-foot median could be installed on the east side of the crossing without interfering with any driveways or streets. Curb should be extended on the north side of Central Avenue on the east side of the crossing from where it is currently exists further to the west to limit vehicles from using this opening as an access. It is not a designated access. A 100-foot median could be installed on the west side of the crossing. There are existing alleyways parallel along the east side of the tracks. Existing businesses have an access easement with CP to use these alleyways. The access in the southwest quadrant is on the protected side of the median and could be limited to right-in only to make the alley a southbound one-way. This would require the addition of curb or fence to be added between the access and the crossing to keep vehicles from turning right-out of the alley way. The right-out movement needs to be eliminated because the access is located between the gate arm and the tracks and it would not be a protected movement. The alley access in the northwest quadrant appears to be utilized for parking of one vehicle and a dumpster for the Impressions photo business. Typically this would require the access to be limited to right-in/right-out or closed since it would be on the unprotected side of the median. Tammy Wagner (FRA) will check to see if this access can remain open since CP has an access agreement with the business owner. The medians would require removal of some of the on-street parking lanes.

1st Street SE Crossing – US DOT # 698916S

- This crossing is equipped motion detectors and two-quadrant gates and would require an upgrade to CWT to be included in the quiet zone. The required upgrade to CWT would require a complete upgrade of the gates, bungalow, etc. due to the age of the equipment.
- The total street width varies from 43-feet to 47-feet curb to curb (two 12-foot driving lanes and two parking lanes).
- Pedestrian facilities exist on both sides of 1st Street SE. The City is comfortable with only improving pedestrian signage at this location since pedestrians would still hear bells at the crossing.
- One optional SSM improvement would be to close the crossing. This would be a low cost option since it wouldn't require upgrades for CWT requirements. Main Street to the west and 2nd Street to the east could be used as alternate routes if 1st Street were closed. An unnamed east/west street exists north of the crossing. The City was fairly confident that the unnamed street is on BNSF property. Vehicles currently use the street for public use; however, the City has no jurisdiction of the street and would not be able to designate it as an access to businesses located north of the crossing and south of the unnamed street. The businesses located between the crossing and the unnamed street would have no other access if the unnamed street was not available for use. The City will check to verify that BNSF is the owner of the unnamed street and if they may be able to take ownership of the street or get an easement to use as a public street and assume maintenance responsibilities.
- A second optional SSM improvement would be to make 1st Street SE a one-way pair with Main Street. First Street would be a northbound one-way and Main Street would be a southbound one-way. It was noted that the one-way pairs could begin/end between Central Avenue and the unnamed street north of the crossing. Once again, it would need to be determined if the City could use the unnamed street, as a public street.
- An optional ASM improvement would be installation of 2-quadrant gates with medians. A 100-foot median could be constructed on both the north and south side of the crossing. An existing driveway access adjacent to the tracks in the northwest quadrant does not have an easement with CP and can be closed by extending the curb to the gate arm standard. An access directly adjacent to the track in the northeast quadrant may have an access agreement with CP. CP will check to verify if an access agreement is in place. An alley access also exists in the northeast quadrant and would be located within the 100-foot median. These accesses would need to be either closed or limited to right-in/right-out only since they would be located on the unprotected side of the median. An existing driveway access adjacent to the tracks in the southwest quadrant may have an access agreement with CP. CP will check to determine if an agreement is in place. This access would either need to be closed or limited to right-in/right-out only since it is located on the unprotected side of the median. A garage door also exists within the southwest quadrant of the crossing and would be within the median length. This garage door can not be used by vehicles since the access is curbed. It was stated at the diagnostic meeting that the garage is a personal garage used as a workshop and is not used by vehicles. An alley access adjacent to the tracks in the southeast quadrant would be allowed to remain open since it is on the protected side of the median. The medians would require removal of some of the on-street parking lanes.

Main Street Crossing – US DOT # 698920G

- This crossing is equipped with motion detectors and two-quadrant gates and would require an upgrade to CWT to be included in the quiet zone. The required upgrade to CWT would require a complete upgrade of the gates, bungalow, etc. due to the age of the equipment.
- The total street width is 50-foot curb to curb (two driving lanes and two parking lanes).
- Pedestrian facilities exist on both sides of Main Street. The City is comfortable with only improving pedestrian signage at this location since pedestrians would still hear bells at the crossing.
- One optional SSM improvement would be to make 1st Street SE a one-way pair with Main Street. First Street would be a northbound one-way and Main Street would be a southbound one-way. It was noted that the one-way pairs could begin/end between Central Avenue and the unnamed street north of the crossing. Once again, it would need to be determined if the City could use the unnamed street, as a public street.
- An optional ASM improvement would be installation of 2-quadrant gates with medians. A 100-foot median could be constructed on the north side of the crossing. An alley access directly adjacent to the track in the northeast quadrant would either need to be closed or limited to right-in/right-out only since they would be located on the unprotected side of the median. An existing access to a parking lot in the northwest quadrant would be limited to right-in/right-out only by the median but would be allowed to remain since it would be on the protected side of the median. A 50-foot median could be constructed on the south side of the crossing. A parking lot access in the southeast quadrant of the crossing would be limited to right-in/right-out only but would be allowed to remain open since it is on the protected side of the median. An alley access in the southwest quadrant of the crossing would be outside of the 50-foot median length and would remain a full access. The medians would require removal of some of the on-street parking lanes.

Amtrak Depot Crossing – US DOT # 698922V

- The street for this crossing does not have a name sign. The crossing inventory indicates that this street is called Park Street. The railroad employees refer to the crossing as the Amtrak Depot crossing. The City of Minot will look for the correct street name.
- The inventory indicates that the crossing is a public crossing. However, the group was not sure that the crossing should be public. The City will check to see if they have right of way on both sides of the crossing to verify that it is a public crossing.
- This crossing is not equipped with any type of train detection, gates, or flashers. The required upgrade to CWT, gates, flashers, etc. would be necessary to include this crossing in the quiet zone.
- The total street width is 36-foot curb to curb (two driving lanes and no designated parking lanes).
- No pedestrian facilities exist at this crossing.

- The crossing is currently signed with stop signs. The Amtrak Depot employee working during the diagnostic meeting stated that many vehicles do not stop at the crossing and she stated that the crossing is very unsafe.
- An optional SSM at this location would be to close the crossing. This would be a low cost option since it wouldn't require the installation of CWT detection, signals, or gates. This crossing is intended for traffic going to and from the Amtrak Depot only. However, east of the Amtrak Depot is the unnamed east/west street that was previously discussed in the 1st Street and Main Street crossing summaries. On-site observations indicate that this crossing has a lot of cut through traffic from 1st Avenue to the unnamed east/west street for access to the downtown area. Closure of this crossing would eliminate this cut through traffic and improve safety. The City did not feel closure of the crossing would be acceptable since they just put funds into improvements of the Amtrak Depot building.
- A second optional SSM improvement would be installation of 2-quadrant gates with medians. A 60-foot median could be constructed on the south side of the crossing without interfering with turning movements at 1st Avenue. Curb would need to be installed from the 1st Avenue intersection to the gate arm bases. An 80-foot median could be constructed on the north side of the crossing without interfering with the Depot entrance. Curb would need to be added from the Depot entrance to the gate arm bases. The trash receptacles located in the northeast quadrant of the crossing would need to be relocated, or accessed from another location.

Maple Street Crossing – US DOT # 698924J

- This crossing is equipped with CWT and two-quadrant gates.
- Maple Street is a two lane roadway with no on street parking. The total street width is 36-foot curb to curb on the north side of the crossing and 22-foot curb to curb on the south side of the crossing.
- A pedestrian sidewalk exists along the east side of Maple Street on the north side of the crossing only and is not continuous across the tracks. The City is comfortable with only improving pedestrian signage at this location since pedestrians would still hear bells at the crossing. In order to continue the pedestrian sidewalk across the tracks, an eight-foot section of crossing material would need to be added to the east side of the crossing. It was noted that crossing material is \$200 to \$250 per linear foot.
- An optional SSM improvement would be to utilize the existing 2-quadrant gates and construction of medians. An 80-foot median could be constructed on the north side of the crossing with no impacts to turning movements with the 2nd Avenue South intersection. The roadway on the north side of the crossing has no existing access and is wide enough for construction of the medians. A 100-foot median could be constructed on the south side of the crossing. This would require widening of the roadway since it is only 22-foot wide curb to curb. This may require additional right-of-way. An existing access to a lumber yard on the southeast side of the tracks is used by trucks. The access begins approximately 113-feet from the crossing arm. However, a 100-foot median would interfere with trucks turning into and out of the lumber yard.

- An optional ASM improvement would be to utilize the existing 2-quadrant gates and construct an 80-foot median on the north side only.
- A second optional ASM improvement would be to do nothing or make no safety improvements at this crossing.
- CP was in favor of closing this crossing. It was previously discussed in these meeting minutes under the BNSF Maple Street crossing that the neighborhood has limited access. The City would not consider closure of this crossing.

Perkett School Pedestrian Only Crossing – No US DOT Crossing #

- The Perkett School pedestrian only crossing does not have a US DOT crossing number. The crossing is located approximately one mile west of the Maple Street crossing at mile post 470.4. It is a private pedestrian crossing which is gated with a locked gate. A crossing guard is stationed in a warming house before and after school hours to unlock and walk pedestrians across the railroad tracks. CP indicated that they currently blow the train horn for this crossing. Because the crossing is more than a half mile away from the Maple Street crossing it is not required to be included as part of the quiet zone. Tammy Wagner (FRA) indicated that this crossing must be an agreement between CP and the school and it is up to the railroad's discretion whether they choose to blow their horn at this crossing.

The options for each crossing as described will be further analyzed with preliminary sketches and cost estimates for each alternative. Different combinations of the alternatives will also be analyzed to determine the FRA quiet zone calculator results. The results of the analysis will be included in the Quiet Zone assessment for the establishment of the Minot Railroad Quiet Zone.

Action Items

- Peggy Harter will send marked up inventory forms with updated information to NDDOT, BNSF, and CP to forward on to FRA.
- The City is going to check their right-of-way plats to determine if right-of-way would be needed for widening Maple Street on the east side of the BNSF Maple Street crossing for installation of a median.
- NDDOT will conduct updated daily traffic volume counts at the Golf Course Road and Amtrak Depot crossings.
- The City of Minot will complete turning movement counts at the intersection of 8th Avenue and Eastern Avenue to determine the significance of the impact of a median on the north side of the crossing.
- The City of Minot will complete turning movement counts at the intersection of 9th Street and Eastern Avenue to determine the significance of the impact of the closure of this intersection.
- Tammy Wagner (FRA) will check to see if the accesses in the northwest and southwest quadrant at the East Central Avenue crossing can remain open since CP has an access agreement with the business owner.

- The City will check to verify that BNSF is the owner of the unnamed street and if they may be able to take ownership of the street or get an easement to use it as a public street and assume maintenance responsibilities.
- The City of Minot will check for the correct street name at the Amtrak Depot crossing. The City will also check their plats to determine if they have right of way on both sides of the crossing to verify that it is a public crossing.

If there are any additions or corrections to these minutes, please contact Peggy Harter of SRF at (701) 237-0010.

PH/RL

Appendix C

Base Scenario Quiet Zone Calculator Results

Print This Page

BNSF - 27th Street SE (Mainline) Baseline

Home | Help | Contact | logoff deddger@srfrconsulting.com

Change Scenario: 110120_27_34715

Crossing	Street	Traffic	Warning Device	Pre-SSM	SSM	Risk
093077T	29TH AVE NW	5485 Gates		0	0	39,998.77
<input type="button" value="MODIFY"/>						

Create New Zone

Manage Existing Zones

Log Off

Step by Step Instructions:

Step 1: To specify New Warning Device (For Pre-Rule Quiet Zone Only) and/or SSM, click the [MODIFY](#) Button

Step 2: Select proposed warning device or SSM. Then click the [UPDATE](#) button. To generate a spreadsheet of the values on this page, click on [ASM](#) button—This spreadsheet can then be used for ASM calculations.

Step 3: Repeat Step (2) until the [SELECT](#) button is shown at the bottom right side of this page. Note that the [SELECT](#) button is shown **ONLY** when the Quiet Zone Risk Index falls below the NSRT or the Risk Index with Horn.

Step 4: To save the scenario and continue, click the [SELECT](#) button

* Only Public At Grade Crossings are listed. [Click](#) for [Supplementary Safety Measures \[SSM\]](#)

[Click](#) for ASM spreadsheet: * Note: The use of ASMs requires an application to and approval from the FRA.

Summary	
Proposed Quiet Zone:	110120_27
Type:	New 24-hour QZ
Scenario:	110120_27_34715
Estimated Total Cost:	\$0.00
Nationwide Significant Risk Threshold:	14007 .00
Risk Index with Horns:	23980.08
Quiet Zone Risk Index:	39998.77

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BNSF - 27th Street SE (Spur) Baseline

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Crossing	Street	Traffic Warning Device	Pre-SSM	SSM	Risk
093079G	NO NAME	5485 Gates	0	0	5,659.55
<input type="button" value="MODIFY"/>					

Create New Zone

Manage Existing Zones

Log Off

* Only Public At Grade Crossings are listed.

Click for [Supplementary Safety Measures \[SSM\]](#)

Click for ASM spreadsheet: * Note: The use of ASMs requires an application to and approval from the FRA.

Step by Step Instructions:

Step 1: To specify New Warning Device (For Pre-Rule Quiet Zone Only) and/or SSM, click the MODIFY Button

Step 2: Select proposed warning device or SSM. Then click the UPDATE button. To generate a spreadsheet of the values on this page, click on ASM button—This spreadsheet can then be used for ASM calculations.

Step 3: Repeat Step (2) until the SELECT button is shown at the bottom right side of this page. Note that the SELECT button is shown ONLY when the Quiet Zone Risk Index falls below the NSRT or the Risk Index with Horn.

Step 4: To save the scenario and continue, click the SELECT button

Summary	
Proposed Quiet Zone:	110120_27THSPUR
Type:	New 24-hour QZ
Scenario:	110120_27T_34716
Estimated Total Cost:	\$0.00
Nationwide Significant Risk Threshold:	14007 .00
Risk Index with Horns:	3393.02
Quiet Zone Risk Index:	5659.55
<input type="button" value="Select"/>	

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BNSF - Southwest Baseline

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[Create New Zone](#)
[Manage Existing Zones](#)
[Log Off](#)

Crossing	Street	Traffic	Warning Device	Pre-SSM	SSM	Risk	
071920W	MAPLE ST	485	Gates	0	0	18,828.62	<input type="button" value="MODIFY"/>
071923S	5TH AV SW	720	Gates	0	0	21,999.57	<input type="button" value="MODIFY"/>
093868F	GOLF COURSE RD	540	Gates	0	0	24,619.63	<input type="button" value="MODIFY"/>

Step by Step Instructions:

Step 1: To specify New Warning Device (For Pre-Rule Quiet Zone Only) and/or SSM, click the [MODIFY](#) Button

Step 2: Select proposed warning device or SSM. Then click the [UPDATE](#) button. To generate a spreadsheet of the values on this page, click on [ASM](#) button—This spreadsheet can then be used for ASM calculations.

Step 3: Repeat Step (2) until the [SELECT](#) button is shown at the bottom right side of this page. Note that the [SELECT](#) button is shown **ONLY** when the Quiet Zone Risk Index falls below the NSRT or the Risk Index with Horn.

Step 4: To save the scenario and continue, click the [SELECT](#) button

* Only Public At Grade Crossings are listed.

[Click](#) for [Supplementary Safety Measures \[SSM\]](#)

[Click](#) for ASM spreadsheet: * **Note:**The use of ASMs requires an application to and approval from the FRA.

Summary	
Proposed Quiet Zone:	110120_BNSF_SW
Type:	New 24-hour QZ
Scenario:	110120_BNS_34719
Estimated Total Cost:	\$0.00
Nationwide Significant Risk Threshold:	14007 .00
Risk Index with Horns:	13079.1
Quiet Zone Risk Index:	21815.94

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CP - Southeast - Baseline

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Change Scenario: 110120_MIN_34722

Crossing	Street	Traffic Warning Device	Pre-SSM	SSM	Risk
698911H	8TH AVE 13TH ST	4385 Gates	0	0	18,204.63
698912P	NINTH ST	1280 Gates	0	0	13,354.92

Create New Zone

Manage Existing Zones

Log Off

* Only Public At Grade Crossings are listed.

Click for Supplementary Safety Measures [SSM]

Step 1: To specify New Warning Device (For Pre-Rule Quiet Zone Only) and/or SSM, click the MODIFY Button

Step 2: Select proposed warning device or SSM. Then click the UPDATE button. To generate a spreadsheet of the values on this page, click on ASM button—This spreadsheet can then be used for ASM calculations.

Step 3: Repeat Step (2) until the SELECT button is shown at the bottom right side of this page. Note that the SELECT button is shown ONLY when the Quiet Zone Risk Index falls below the NSRT or the Risk Index with Horn.

Step 4: To save the scenario and continue, click the SELECT button

Summary

Proposed Quiet Zone:	110120_MINOT_CP_SE
Type:	New 24-hour QZ
Scenario:	110120_MIN_34722
Estimated Total Cost:	\$0.00
Nationwide Significant Risk Threshold:	14007 .00
Risk Index with Horns:	9460.3
Quiet Zone Risk Index:	15779.77

Click for ASM spreadsheet: **ASM** * **Note:**The use of ASMs requires an application to and approval from the FRA.

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CP - Downtown Baseline

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Change Scenario: 110120_MIN_34724

Create New Zone

Manage Existing Zones

Log Off

Crossing	Street	Traffic	Warning Device	Pre-SSM	SSM	Risk
698914D	THIRD ST	11400 Gates		0	0	19,866.35
698915K	CENTRAL AVE	3900 Gates		0	0	17,877.38
698916S	FIRST ST SE	1475 Gates		0	0	13,182.40
698920G	MAIN ST	400 Gates		0	0	10,837.58

Step by Step Instructions:

Step 1: To specify New Warning Device (For Pre-Rule Quiet Zone Only) and/or SSM, click the MODIFY Button

Step 2: Select proposed warning device or SSM. Then click the UPDATE button. To generate a spreadsheet of the values on this page, click on ASM button—This spreadsheet can then be used for ASM calculations.

Step 3: Repeat Step (2) until the SELECT button is shown at the bottom right side of this page. Note that the SELECT button is shown ONLY when the Quiet Zone Risk Index falls below the NSRT or the Risk Index with Horn.

Step 4: To save the scenario and continue, click the SELECT button

* Only Public At Grade Crossings are listed.

Click for Supplementary Safety Measures [SSM]

Click for ASM spreadsheet: * Note: The use of ASMs requires an application to and approval from the FRA.

Summary	
Proposed Quiet Zone:	110120_MINOT_CP_DT
Type:	New 24-hour QZ
Scenario:	110120_MIN_34724
Estimated Total Cost:	\$0.00
Nationwide Significant Risk Threshold:	14007 .00
Risk Index with Horns:	9257.15
Quiet Zone Risk Index:	15440.93

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CP - West Baseline

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Create New Zone

Manage Existing Zones

Log Off

Crossing	Street	Traffic	Warning Device	Pre-SSM	SSM	Risk
698922V	PARK STR.	880	Gates	0	0	8,320.95
698924J	MAPLE STR	400	Gates	0	0	9,465.73

* Only Public At Grade Crossings are listed.

Click for Supplementary Safety Measures [SSM]

Step 1: To specify New Warning Device (For Pre-Rule Quiet Zone Only) and/or SSM, click the MODIFY Button

Step 2: Select proposed warning device or SSM. Then click the UPDATE button. To generate a spreadsheet of the values on this page, click on ASM button—This spreadsheet can then be used for ASM calculations.

Step 3: Repeat Step (2) until the SELECT button is shown at the bottom right side of this page. Note that the SELECT button is shown ONLY when the Quiet Zone Risk Index falls below the NSRT or the Risk Index with Horn.

Step 4: To save the scenario and continue, click the SELECT button

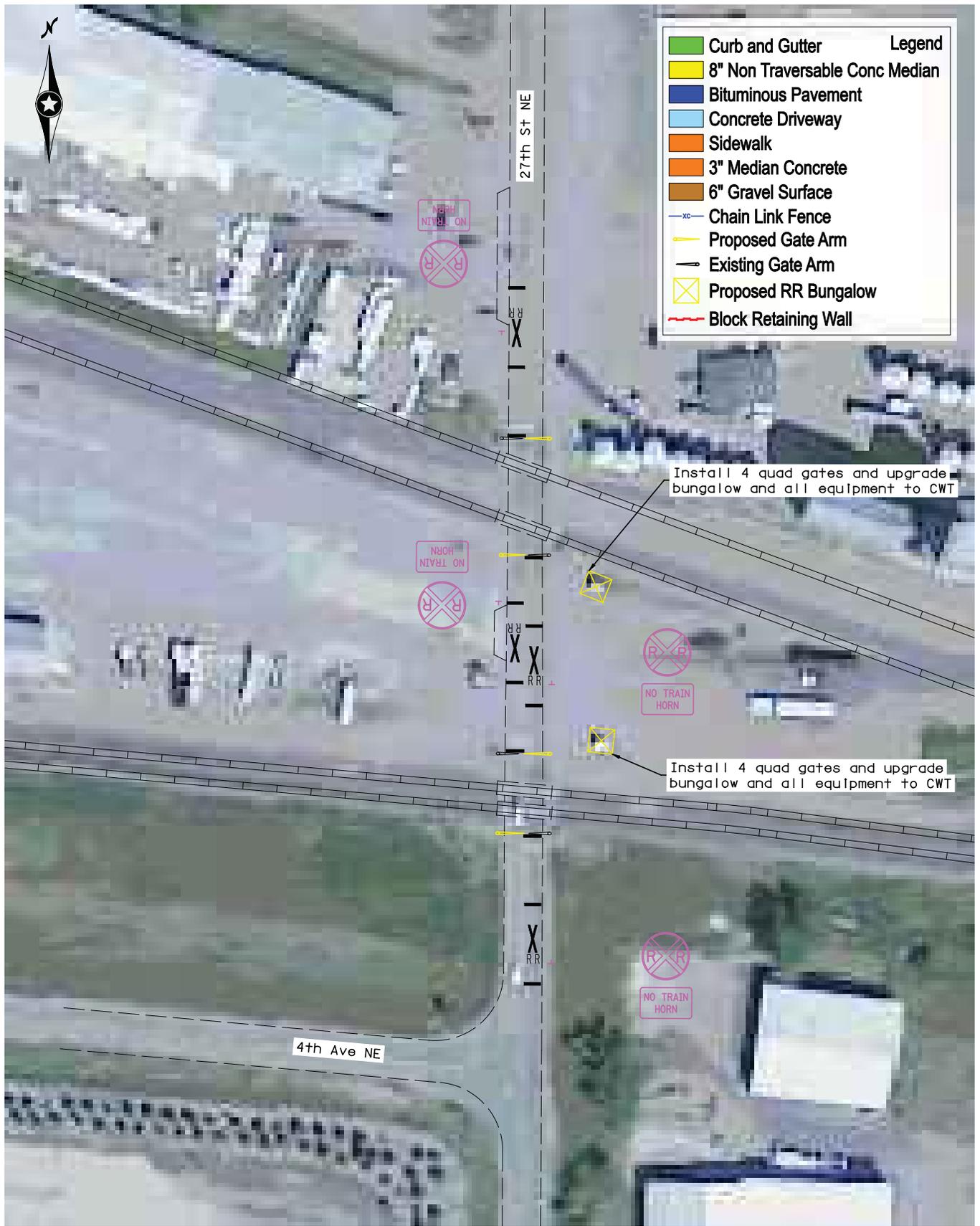
Click for ASM spreadsheet: **ASM** * **Note:**The use of ASMs requires an application to and approval from the FRA.

Summary

Proposed Quiet Zone:	110120_MINOT_CP_WEST
Type:	New 24-hour QZ
Scenario:	110120_MIN_34725
Estimated Total Cost:	\$0.00
Nationwide Significant Risk Threshold:	14007 .00
Risk Index with Horns:	5331.74
Quiet Zone Risk Index:	8893.34
<input type="button" value="Select"/>	

Appendix D
Crossing Improvement Options

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Crossing: 27th Street SE (Mainline and Spur)

Crossing No: 093077T & 093079G

Minot Quiet Zone

Figure D1

Job # 7089
12/3/2010

Preliminary Cost Estimate

27th Street SE

BNSF
M.P. - 200.97

Crossing No.
093077T

Four Quadrant Gates (SSM)

Alternative - 1

Item Descriptions For: City of Minot

	Quantity	Unit Cost	Unit	Qty Total
4-Quad Active Warning System, BNSF	1	\$350,000.00	LS	\$350,000.00
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
		Subtotal		\$363,300.00
		Contingency: 20%		\$72,660.00
		Alternate Total:		\$435,960.00



Four Quadrant Gates (SSM)

City of Minot
Minot Quiet Zone

Figure D2

Preliminary Cost Estimate
27th Street SE (Spur)

BNSF
M.P. - 200.97

Crossing No.
093079G

Four Quadrant Gates (SSM)

Alternative - 1

Item Descriptions For: City of Minot

	Quantity	Unit Cost	Unit	Qty Total
4-Quad Active Warning System (Upgrade to CWT), BNSF	1	\$350,000.00	LS	\$350,000.00
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
		Subtotal		\$363,300.00
		Contingency: 20%		\$72,660.00
		Alternate Total:		\$435,960.00

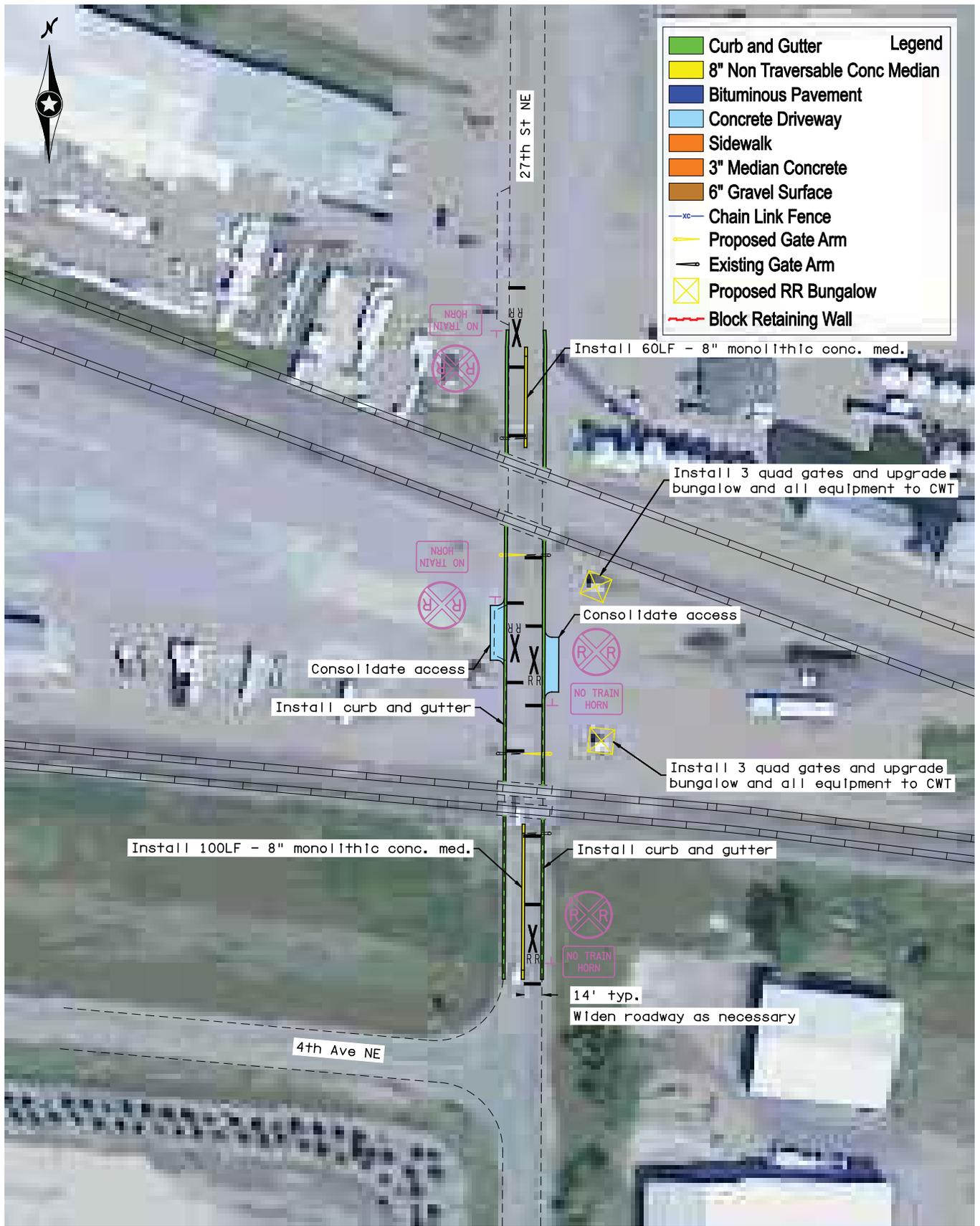


Four Quadrant Gates (SSM)

City of Minot
Minot Quiet Zone

Figure D3

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Crossing: 27th Street SE (Mainline and Spur)

Crossing No: 093077T & 093079G

Minot Quiet Zone

Figure D4

Job # 7089
12/3/2010

Preliminary Cost Estimate

27th Street SE

BNSF
M.P. - 200.97

Crossing No.
093077T

Three Quadrant Gates (ASM)

Alternative - 2

Item Descriptions For: City of Minot

	Quantity	Unit Cost	Unit	Qty Total
3-Quad Active Warning System, BNSF	1	\$300,000.00	LS	\$300,000.00
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Remove Pavements (Includes streets, approaches, and sidewalks)	230	\$0.50	SF	\$115.00
Concrete Driveway	410	\$5.00	SF	\$2,050.00
Furnish & Install Curb and Gutter	415	\$25.00	LF	\$10,375.00
Bituminous Pavement	25	\$6.00	SF	\$150.00
Install Monolithic Concrete Median	230	\$7.00	SF	\$1,610.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
		Subtotal		\$327,600.00
		Contingency: 20%		\$65,520.00
		Alternate Total:		\$393,120.00



Three Quadrant Gates (ASM)

City of Minot
Minot Quiet Zone

Figure D5

Preliminary Cost Estimate

27th Street SE (Spur)

BNSF
M.P. - 200.97

Crossing No.
093079G

Three Quadrant Gates (ASM)

Alternative - 2

Item Descriptions For: City of Minot

	Quantity	Unit Cost	Unit	Qty Total
3-Quad Active Warning System (Upgrade to CWT), BNSF	1	\$300,000.00	LS	\$300,000.00
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Remove Pavements (Includes streets, approaches, and sidewalks)	150	\$0.50	SF	\$75.00
Install Monolithic Concrete Median	150	\$7.00	SF	\$1,050.00
Concrete Driveway	410	\$5.00	SF	\$2,050.00
Furnish & Install Curb and Gutter	380	\$25.00	LF	\$9,500.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
		Subtotal		\$325,975.00
		Contingency: 20%		\$65,195.00
		Alternate Total:		\$391,170.00

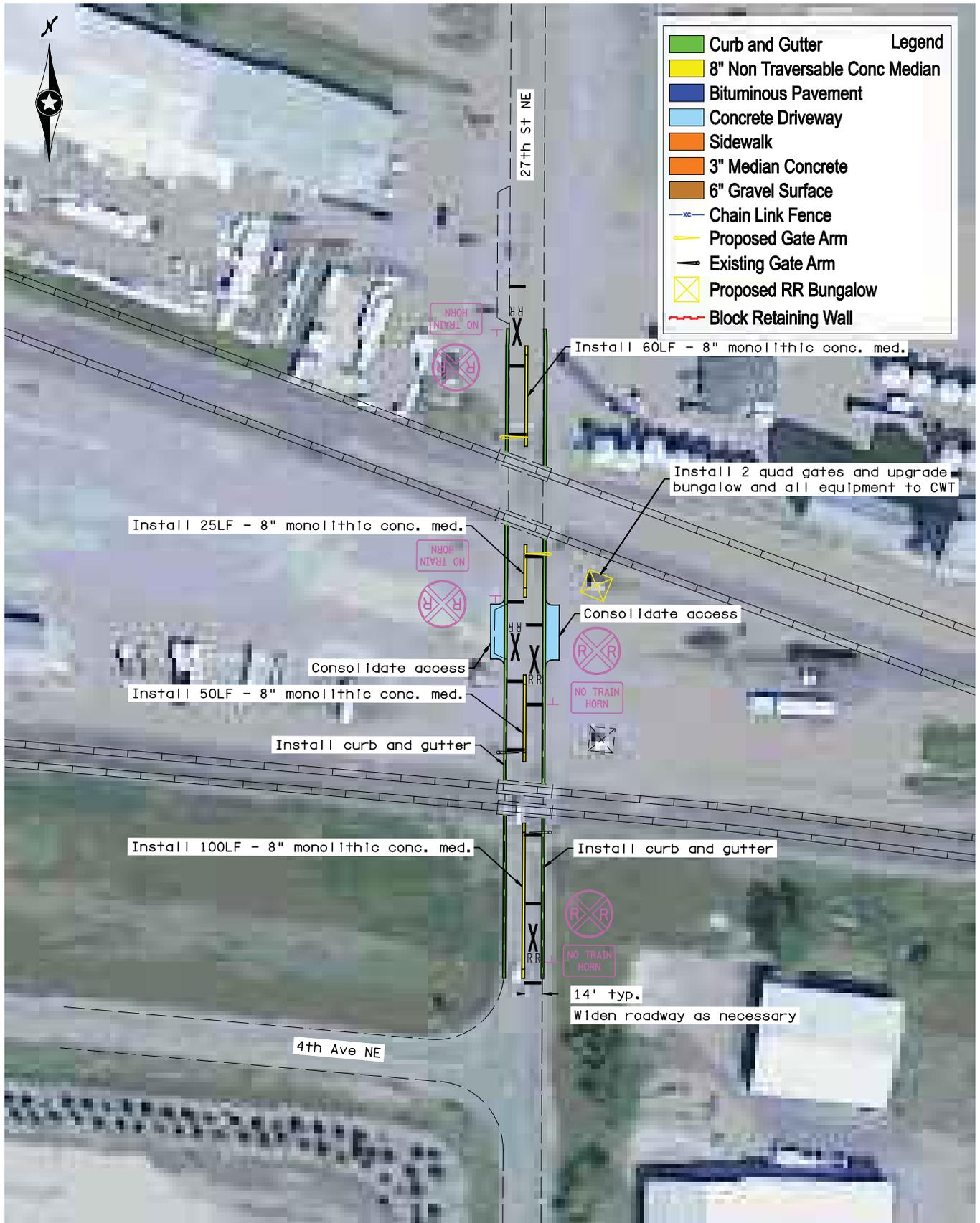


Three Quadrant Gates (ASM)

City of Minot
Minot Quiet Zone

Figure D6

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Crossing: 27th Street SE (Mainline and Spur)

Crossing No: 093077T & 093079G

Minot Quiet Zone

Figure D7

Job # 7089
12/3/2010

Preliminary Cost Estimate

27th Street SE

BNSF
M.P. - 200.97

Crossing No.
093077T

Two Quadrant Gates and Medians (ASM)

Alternative - 3

Item Descriptions For: City of Minot

	Quantity	Unit Cost	Unit	Qty Total
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Remove Pavements (Includes streets, approaches, and sidewalks)	355	\$0.50	SF	\$177.50
Concrete Driveway	410	\$5.00	SF	\$2,050.00
Furnish & Install Curb and Gutter	415	\$25.00	LF	\$10,375.00
Install Monolithic Concrete Median	355	\$7.00	SF	\$2,485.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
		Subtotal		\$28,387.50
		Contingency: 20%		\$5,677.50
		Alternate Total:		\$34,065.00



Two Quadrant Gates and Medians (ASM)

City of Minot
Minot Quiet Zone

Figure D8

Preliminary Cost Estimate
27th Street SE (Spur)

BNSF
M.P. - 200.97

Crossing No.
093079G

Two Quadrant Gates and Medians (ASM)

Alternative - 3

Item Descriptions For: City of Minot

	Quantity	Unit Cost	Unit	Qty Total
2-Quad Active Warning System (Upgrade to CWT), BNSF	1	\$100,000.00	LS	\$100,000.00
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Remove Pavements (Includes streets, approaches, and sidewalks)	225	\$0.50	SF	\$112.50
Furnish & Install Curb and Gutter	380	\$25.00	LF	\$9,500.00
Concrete Driveway	410	\$5.00	SF	\$2,050.00
Install Monolithic Concrete Median	225	\$7.00	SF	\$1,575.00
Bituminous Pavement	115	\$6.00	SF	\$690.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
		Subtotal		\$127,227.50
		Contingency: 20%		\$25,445.50
		Alternate Total:		\$152,673.00

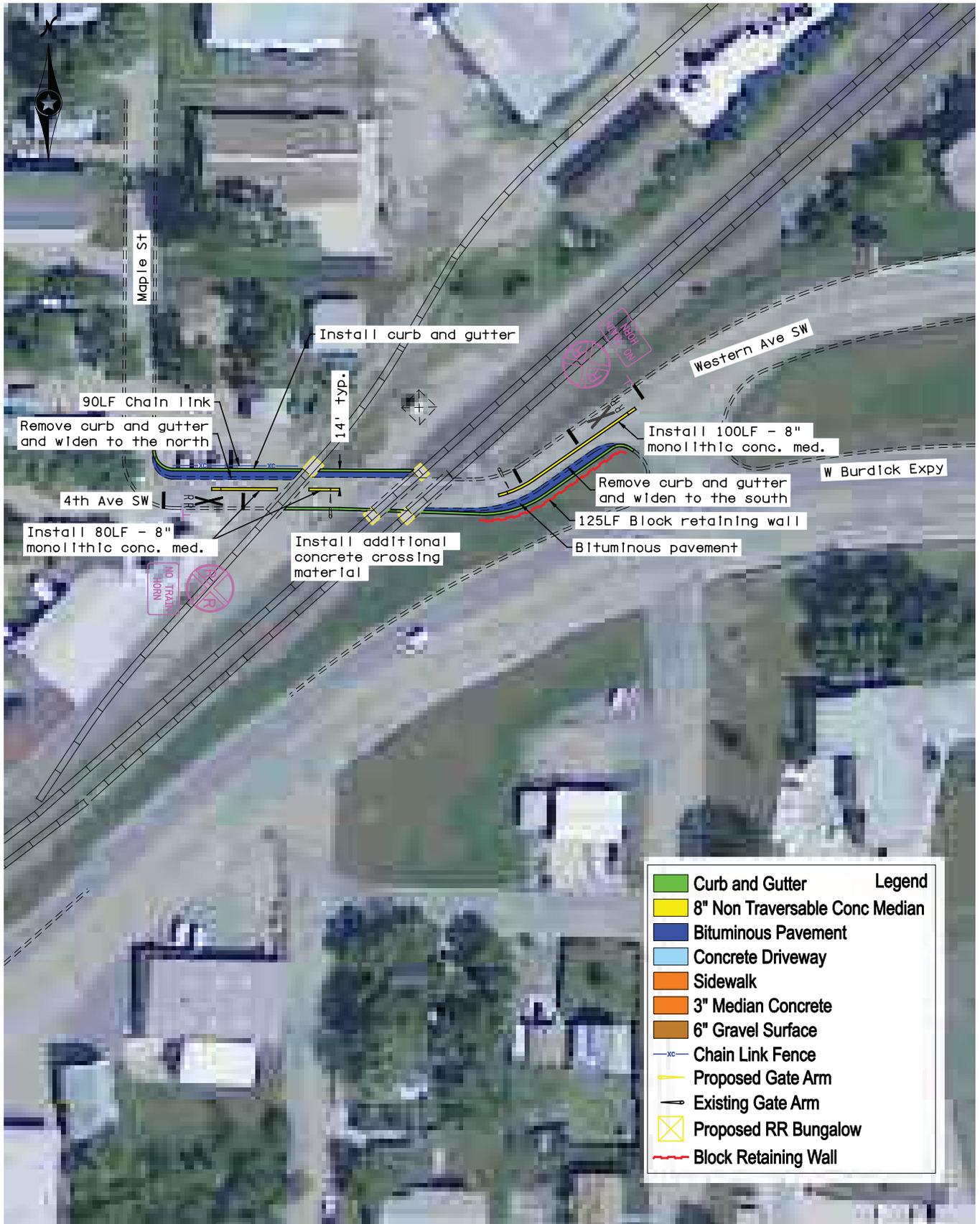


Two Quadrant Gates and Medians (ASM)

City of Minot
Minot Quiet Zone

Figure D9

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Crossing: Maple Street

Crossing No: 071920W

Minot Quiet Zone

Figure D10

Job # 7089
12/3/2010

Preliminary Cost Estimate

Maple Street (BNSF)

BNSF
M.P. - 0.86

Crossing No.
071920W

Two Quadrant Gates and Medians (SSM)

Alternative - 1

Item Descriptions For: [City of Minot](#)

	Quantity	Unit Cost	Unit	Qty Total
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Remove Curb and Gutter	545	\$14.00	LF	\$7,630.00
Remove Pavements (Includes streets, approaches, and sidewalks)	590	\$0.50	SF	\$295.00
Chain Link Fence	80	\$25.00	LF	\$2,000.00
Bituminous Pavement	1670	\$6.00	SF	\$10,020.00
Furnish & Install Curb and Gutter	740	\$25.00	LF	\$18,500.00
Install Monolithic Concrete Median	430	\$7.00	SF	\$3,010.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
		Subtotal		\$54,755.00
		Contingency: 20%		\$10,951.00
		Alternate Total:		\$65,706.00



Two Quadrant Gates and Medians (SSM)

City of Minot
Minot Quiet Zone

Figure D11

Job # 7089
12/6/2010

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Crossing: Maple Street
Crossing No: 071920W
Minot Quiet Zone

Figure D12

Preliminary Cost Estimate

Maple Street (BNSF)

BNSF
M.P. - 0.86

Crossing No.
071920W

Crossing Closure (SSM)

Alternative - 2

Item Descriptions For: City of Minot

	Quantity	Unit Cost	Unit	Qty Total
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
		Subtotal		\$13,300.00
		Contingency: 20%		\$2,660.00
		Alternate Total:		\$15,960.00



Crossing Closure (SSM)

City of Minot
Minot Quiet Zone

Figure D13

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Crossing: 5th Avenue SW
Crossing No: 071923S
Minot Quiet Zone

Figure D14

Job # 7089
 12/3/2010

Preliminary Cost Estimate

5th Avenue SW

BNSF
M.P. - 1.03

Crossing No.
071923S

Four Quadrant Gates (SSM)

Alternative - 1

Item Descriptions For: City of Minot

	Quantity	Unit Cost	Unit	Qty Total
4-Quad Active Warning System (Upgrade to CWT), BNSF	1	\$350,000.00	LS	\$350,000.00
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
		Subtotal		\$363,300.00
		Contingency: 20%		\$72,660.00
		Alternate Total:		\$435,960.00

The active warning system cost could be reduced by using equipment from the Maple Street crossing. Assume a 25% reduction in this item cost.



Four Quadrant Gates (SSM)

City of Minot
Minot Quiet Zone

Figure D15

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Legend	
	Curb and Gutter
	8" Non Traversable Conc Median
	Bituminous Pavement
	Concrete Driveway
	Sidewalk
	3" Median Concrete
	6" Gravel Surface
	Chain Link Fence
	Proposed Gate Arm
	Existing Gate Arm
	Proposed RR Bungalow
	Block Retaining Wall



Crossing: 5th Avenue SW

Crossing No: 071923S

Minot Quiet Zone

Figure D16

Job # 7089
12/3/2010

Preliminary Cost Estimate

5th Avenue SW

BNSF
M.P. - 1.03

Crossing No.
071923S

Single Median (ASM)

Alternative - 2

Item Descriptions For: City of Minot

	Quantity	Unit Cost	Unit	Qty Total
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Remove Pavements (Includes streets, approaches, and sidewalks)	230	\$0.50	SF	\$115.00
Bituminous Pavement	230	\$6.00	SF	\$1,380.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
		Subtotal		\$14,795.00
		Contingency: 20%		\$2,959.00
		Alternate Total:		\$17,754.00

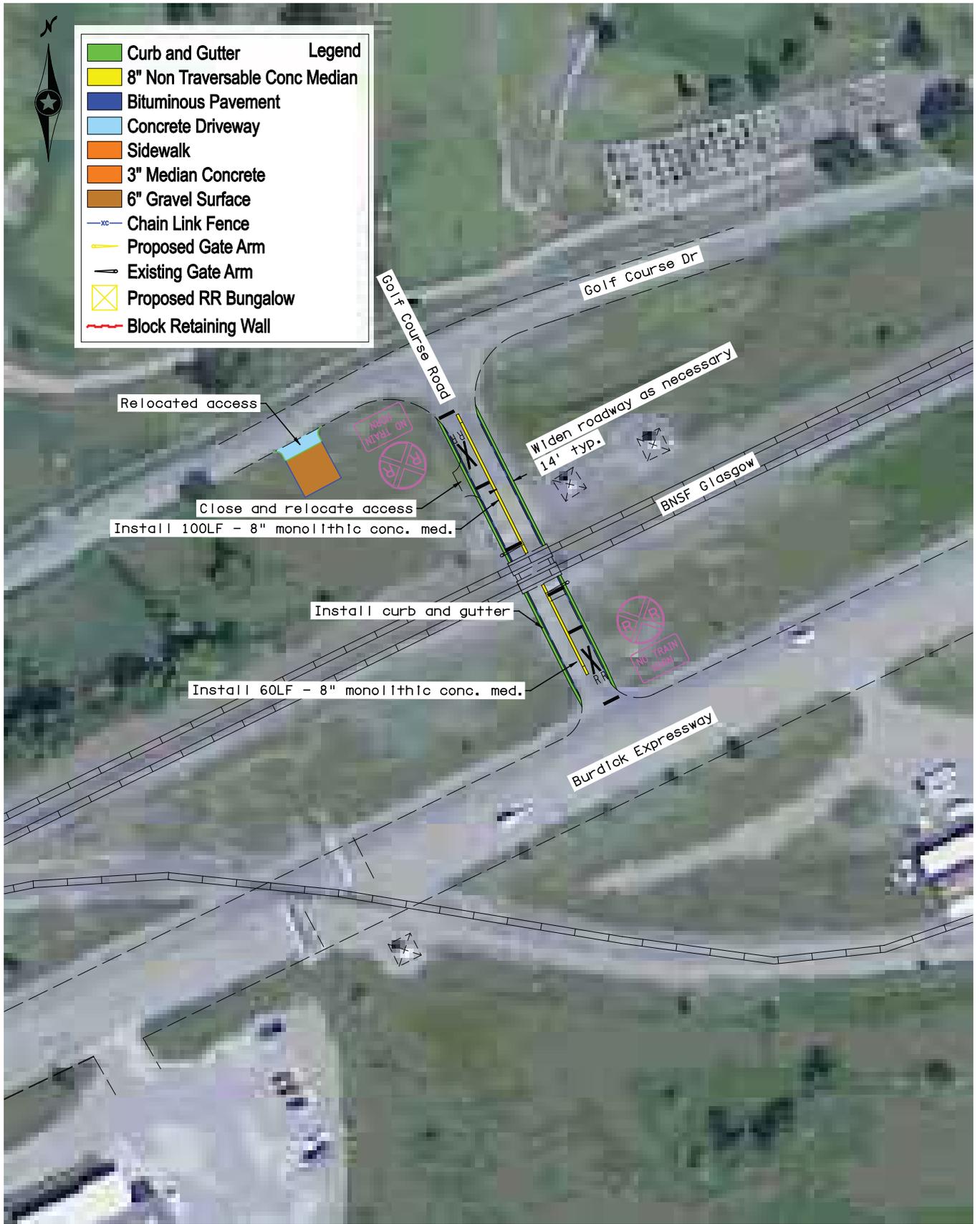


Single Median (ASM)

City of Minot
Minot Quiet Zone

Figure D17

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Legend

- Curb and Gutter
- 8" Non Traversable Conc Median
- Bituminous Pavement
- Concrete Driveway
- Sidewalk
- 3" Median Concrete
- 6" Gravel Surface
- Chain Link Fence
- Proposed Gate Arm
- Existing Gate Arm
- Proposed RR Bungalow
- Block Retaining Wall



Crossing: Golf Course Road
Crossing No: 093868F
Minot Quiet Zone

Figure D18

Preliminary Cost Estimate

Golf Course Road

BNSF
M.P. - 2.02

Crossing No.
093868F

Two Quadrant Gates and Medians (SSM)

Alternative - 1

Item Descriptions For: City of Minot

	Quantity	Unit Cost	Unit	Qty Total
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Remove Pavements (Includes streets, approaches, and sidewalks)	375	\$0.50	SF	\$187.50
Bituminous Pavement	410	\$6.00	SF	\$2,460.00
Install Monolithic Concrete Median	375	\$7.00	SF	\$2,625.00
Furnish & Install Curb and Gutter	400	\$25.00	LF	\$10,000.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
		Subtotal		\$28,572.50
		Contingency: 20%		\$5,714.50
		Alternate Total:		\$34,287.00



Two Quadrant Gates and Medians (SSM)

City of Minot
Minot Quiet Zone

Figure D19

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Legend	
	Curb and Gutter
	8" Non Traversable Conc Median
	Bituminous Pavement
	Concrete Driveway
	Sidewalk
	3" Median Concrete
	6" Gravel Surface
	Chain Link Fence
	Proposed Gate Arm
	Existing Gate Arm
	Proposed RR Bungalow
	Block Retaining Wall

Install 4 quad gates and upgrade bungalow and all equipment to CWT



Crossing: 8th Avenue SE
Crossing No: 698911H
 Minot Quiet Zone

Figure D20

Preliminary Cost Estimate

8th Avenue SE

Canadian Pacific
M.P. - 467.8

Crossing No.
698911H

Four Quadrant Gates (SSM)

Alternative - 1

Item Descriptions For: City of Minot

	Quantity	Unit Cost	Unit	Qty Total
4-Quad Active Warning System (Upgrade to CWT), BNSF	1	\$350,000.00	LS	\$350,000.00
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
		Subtotal		\$363,300.00
		Contingency: 20%		\$72,660.00
		Alternate Total:		\$435,960.00



Four Quadrant Gates (SSM)

City of Minot
Minot Quiet Zone

Figure D21

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Crossing: 8th Avenue SE
Crossing No: 698911H
Minot Quiet Zone

Figure D22

Preliminary Cost Estimate

8th Avenue SE

Canadian Pacific
M.P. - 467.8

Crossing No.
698911H

Convert to One Way Pair (SSM)

Alternative - 2

Item Descriptions For: City of Minot

	Quantity	Unit Cost	Unit	Qty Total
2-Quad Active Warning System (Upgrade to CWT), CP	1	\$300,000.00	LS	\$300,000.00
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Revise Signal System	1	\$20,000.00	LS	\$20,000.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
		Subtotal		\$333,300.00
		Contingency: 20%		\$66,660.00
		Alternate Total:		\$399,960.00



Convert to One Way Pair (SSM)

City of Minot
Minot Quiet Zone

Figure D23



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Crossing: 8th Avenue SE
Crossing No: 698911H
Minot Quiet Zone

Figure D24

Job # 7089
 12/3/2010

Preliminary Cost Estimate

8th Avenue SE

Canadian Pacific
M.P. - 467.8

Crossing No.
698911H

Two Quadrant Gates and Medians (ASM)

Alternative - 3

Item Descriptions For: City of Minot

	Quantity	Unit Cost	Unit	Qty Total
Relocate Track Switch	2	\$75,000.00	EA	\$150,000.00
2-Quad Active Warning System (Upgrade to CWT), CP	1	\$300,000.00	LS	\$300,000.00
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Remove Pavements (Includes streets, approaches, and sidewalks)	350	\$0.50	SF	\$175.00
Remove Curb and Gutter	365	\$14.00	LF	\$5,110.00
Bituminous Pavement	310	\$6.00	SF	\$1,860.00
Furnish & Install Curb and Gutter	365	\$25.00	LF	\$9,125.00
Install Monolithic Concrete Median	350	\$7.00	SF	\$2,450.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
		Subtotal		\$482,020.00
		Contingency: 20%		\$96,404.00
		Alternate Total:		\$578,424.00



Two Quadrant Gates and Medians (ASM)

City of Minot
Minot Quiet Zone

Figure D25

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Crossing: 9th Street SE
Crossing No: 698912P
Minot Quiet Zone

Figure D26

Preliminary Cost Estimate

9th Street SE

Canadian Pacific
M.P. - 468.11

Crossing No.
698912P

Crossing Closure (SSM)

Alternative - 1

Item Descriptions For: City of Minot

	Quantity	Unit Cost	Unit	Qty Total
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
		Subtotal		\$13,300.00
		Contingency: 20%		\$2,660.00
		Alternate Total:		\$15,960.00



Crossing Closure (SSM)

City of Minot
Minot Quiet Zone

Figure D27

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Crossing: 9th Street SE
Crossing No: 698912P
Minot Quiet Zone

Figure D28

Preliminary Cost Estimate

9th Street SE

Canadian Pacific
M.P. - 468.11

Crossing No.
698912P

Convert to One Way Pair (SSM)

Alternative - 2

Item Descriptions For: City of Minot

	Quantity	Unit Cost	Unit	Qty Total
2-Quad Active Warning System (Upgrade to CWT), CP	1	\$300,000.00	LS	\$300,000.00
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
		Subtotal		\$313,300.00
		Contingency: 20%		\$62,660.00
		Alternate Total:		\$375,960.00



Convert to One Way Pair (SSM)

City of Minot
Minot Quiet Zone

Figure D29

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Crossing: 9th Street SE
Crossing No: 698912P
Minot Quiet Zone

Figure D30

Preliminary Cost Estimate

9th Street SE

Canadian Pacific
M.P. - 468.11

Crossing No.
698912P

Two Quadrant Gates and Medians (ASM)

Alternative - 3

Item Descriptions For: City of Minot

	Quantity	Unit Cost	Unit	Qty Total
2-Quad Active Warning System (Upgrade to CWT), CP	1	\$300,000.00	LS	\$300,000.00
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Remove Pavements (Includes streets, approaches, and sidewalks)	2890	\$0.50	SF	\$1,445.00
Remove Curb and Gutter	160	\$14.00	LF	\$2,240.00
Bituminous Pavement	2640	\$6.00	SF	\$15,840.00
Concrete Driveway	339	\$5.00	SF	\$1,695.00
Furnish & Install Curb and Gutter	290	\$25.00	LF	\$7,250.00
Install Monolithic Concrete Median	395	\$7.00	SF	\$2,765.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
		Subtotal		\$344,535.00
		Contingency: 20%		\$68,907.00
		Alternate Total:		\$413,442.00



Two Quadrant Gates and Medians (ASM)

City of Minot
Minot Quiet Zone

Figure D31

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Crossing: 9th Street SE
Crossing No: 698912P
Minot Quiet Zone

Figure D32

Preliminary Cost Estimate

9th Street SE

Canadian Pacific
M.P. - 468.11

Crossing No.
698912P

Four Quadrant Gates (SSM)

Alternative - 4

Item Descriptions For: City of Minot

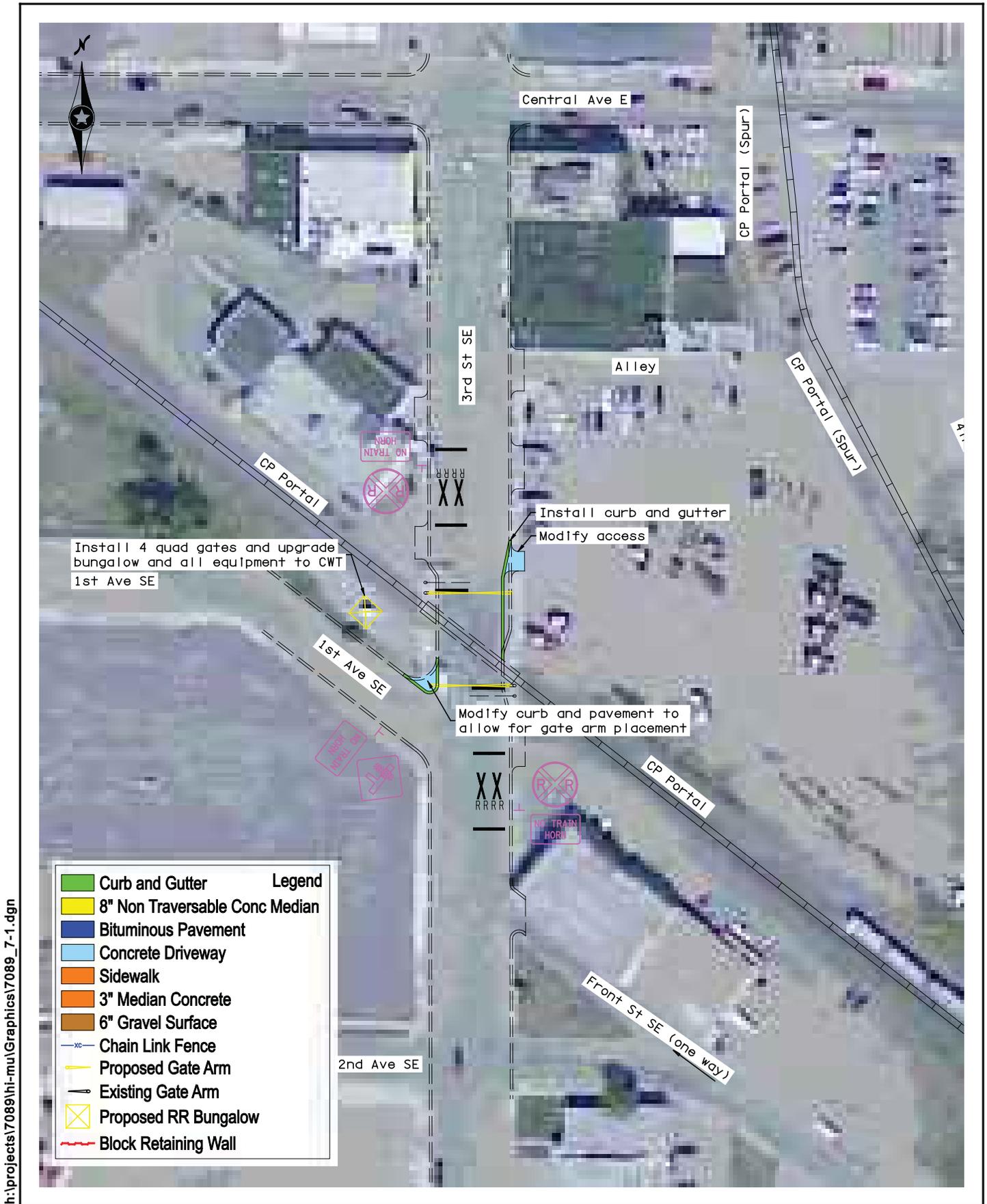
	Quantity	Unit Cost	Unit	Qty Total
4-Quad Active Warning System (Upgrade to CWT), CP	1	\$350,000.00	LS	\$350,000.00
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
		Subtotal		\$363,300.00
		Contingency: 20%		\$72,660.00
		Alternate Total:		\$435,960.00



Four Quadrant Gates (SSM)

City of Minot
Minot Quiet Zone

Figure D33



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Crossing: 3rd Street SE

Crossing No: 698914D

Minot Quiet Zone

Figure D34

Preliminary Cost Estimate

3rd Street SE

Canadian Pacific
M.P. - 468.61

Crossing No.
698914D

Four Quadrant Gates (SSM)

Alternative - 1

Item Descriptions For: City of Minot

	Quantity	Unit Cost	Unit	Qty Total
4-Quad Active Warning System, CP	1	\$150,000.00	LS	\$150,000.00
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Remove Pavements (Includes streets, approaches, and sidewalks)	585	\$0.50	SF	\$292.50
Remove Curb and Gutter	135	\$14.00	LF	\$1,890.00
Concrete Driveway	45	\$5.00	SF	\$225.00
Furnish & Install Curb and Gutter	110	\$25.00	LF	\$2,750.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
		Subtotal		\$168,457.50
		Contingency: 20%		\$33,691.50
		Alternate Total:		\$202,149.00

CP indicated that a new bungalow is not required to install this option. They could simply revise existing equipment.



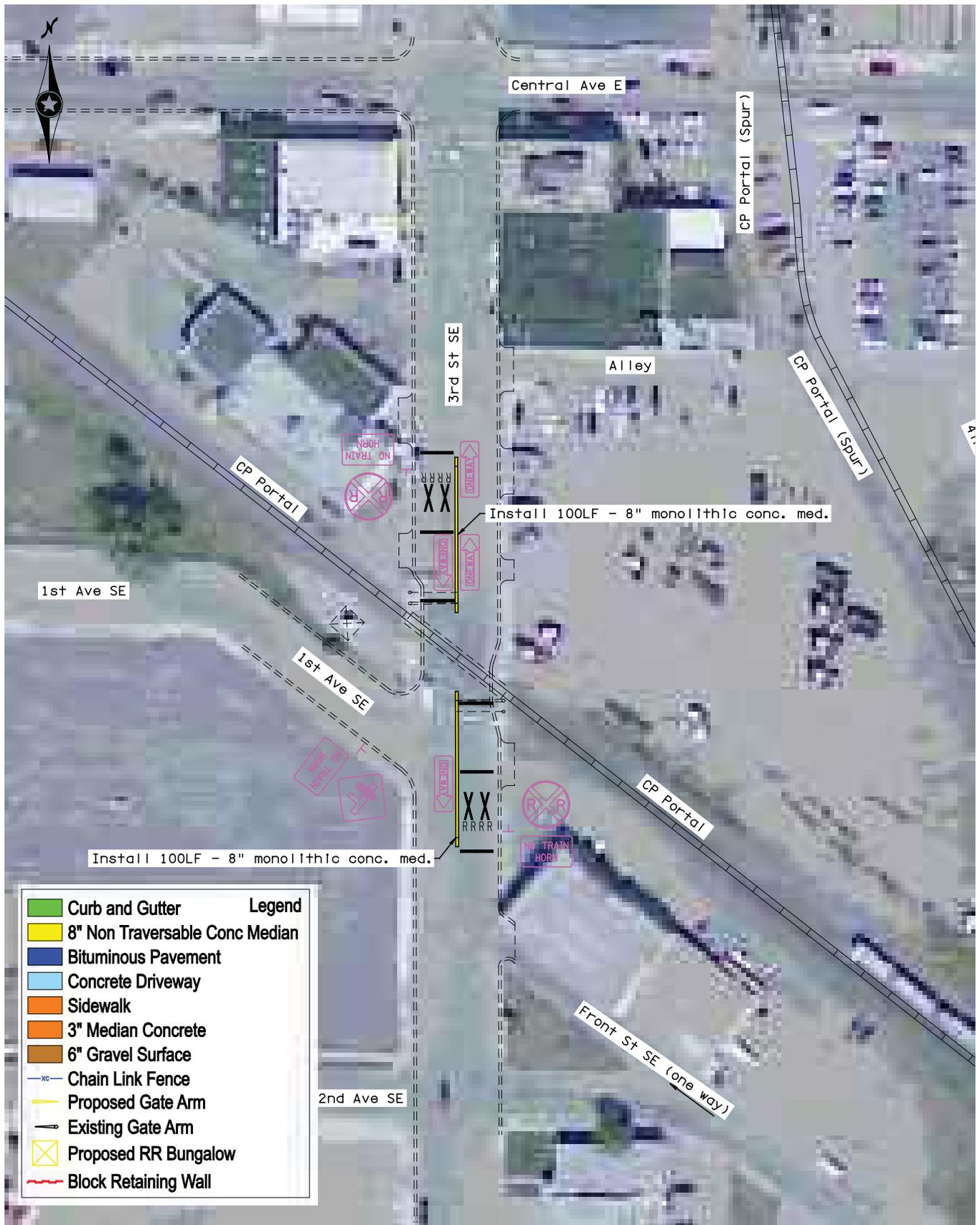
Four Quadrant Gates (SSM)

City of Minot
Minot Quiet Zone

Figure D35

Job # 7089
12/3/2010

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Crossing: 3rd Street SE

Crossing No: 698914D

Minot Quiet Zone

Figure D36

Preliminary Cost Estimate

3rd Street SE

Canadian Pacific
M.P. - 468.61

Crossing No.
698914D

Two Quadrant Gates and Medians (ASM)

Alternative - 2

Item Descriptions For: City of Minot

	Quantity	Unit Cost	Unit	Qty Total
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Remove Pavements (Includes streets, approaches, and sidewalks)	455	\$0.50	SF	\$227.50
Install Monolithic Concrete Median	455	\$7.00	SF	\$3,185.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
		Subtotal		\$16,712.50
		Contingency: 20%		\$3,342.50
		Alternate Total:		\$20,055.00



Two Quadrant Gates and Medians (ASM)

City of Minot
Minot Quiet Zone

Figure D37

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Crossing: East Central Avenue

Crossing No: 698915K
Minot Quiet Zone

Figure D38

Preliminary Cost Estimate

East Central Avenue

Canadian Pacific
M.P. - 468.74

Crossing No.
698915K

Two Quadrant Gates and Medians (SSM)

Alternative - 1

Item Descriptions For: City of Minot

	Quantity	Unit Cost	Unit	Qty Total
2-Quad Active Warning System (Upgrade to CWT), CP	1	\$300,000.00	LS	\$300,000.00
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Remove Pavements (Includes streets, approaches, and sidewalks)	455	\$0.50	SF	\$227.50
Install Monolithic Concrete Median	455	\$7.00	SF	\$3,185.00
Furnish & Install Curb and Gutter	215	\$25.00	LF	\$5,375.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
			Subtotal	\$322,087.50
			Contingency: 20%	\$64,417.50
			Alternate Total:	\$386,505.00



Two Quadrant Gates and Medians (SSM)

City of Minot
Minot Quiet Zone

Figure D39

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Crossing: 1st Street SE
Crossing No: 698916S
Minot Quiet Zone

Figure D40

Job # 7089
 12/3/2010

Preliminary Cost Estimate

1st Street SE

Canadian Pacific
M.P. - 468.79

Crossing No.
698916S

Crossing Closure (SSM)

Alternative - 1

Item Descriptions For: City of Minot

	Quantity	Unit Cost	Unit	Qty Total
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
		Subtotal		\$13,300.00
		Contingency: 20%		\$2,660.00
		Alternate Total:		\$15,960.00



Crossing Closure (SSM)

City of Minot
Minot Quiet Zone

Figure D41

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Crossing: 1st Street SE
Crossing No: 698916S
Minot Quiet Zone

Figure D42

Preliminary Cost Estimate

1st Street SE

Canadian Pacific
M.P. - 468.79

Crossing No.
698916S

Convert to One Way Pair (SSM)

Alternative - 2

Item Descriptions For: City of Minot

	Quantity	Unit Cost	Unit	Qty Total
2-Quad Active Warning System (Upgrade to CWT), CP	1	\$300,000.00	LS	\$300,000.00
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Furnish & Install Curb and Gutter	45	\$25.00	LF	\$1,125.00
Revise Signal System	1	\$20,000.00	LS	\$20,000.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
		Subtotal		\$334,425.00
		Contingency: 20%		\$66,885.00
		Alternate Total:		\$401,310.00

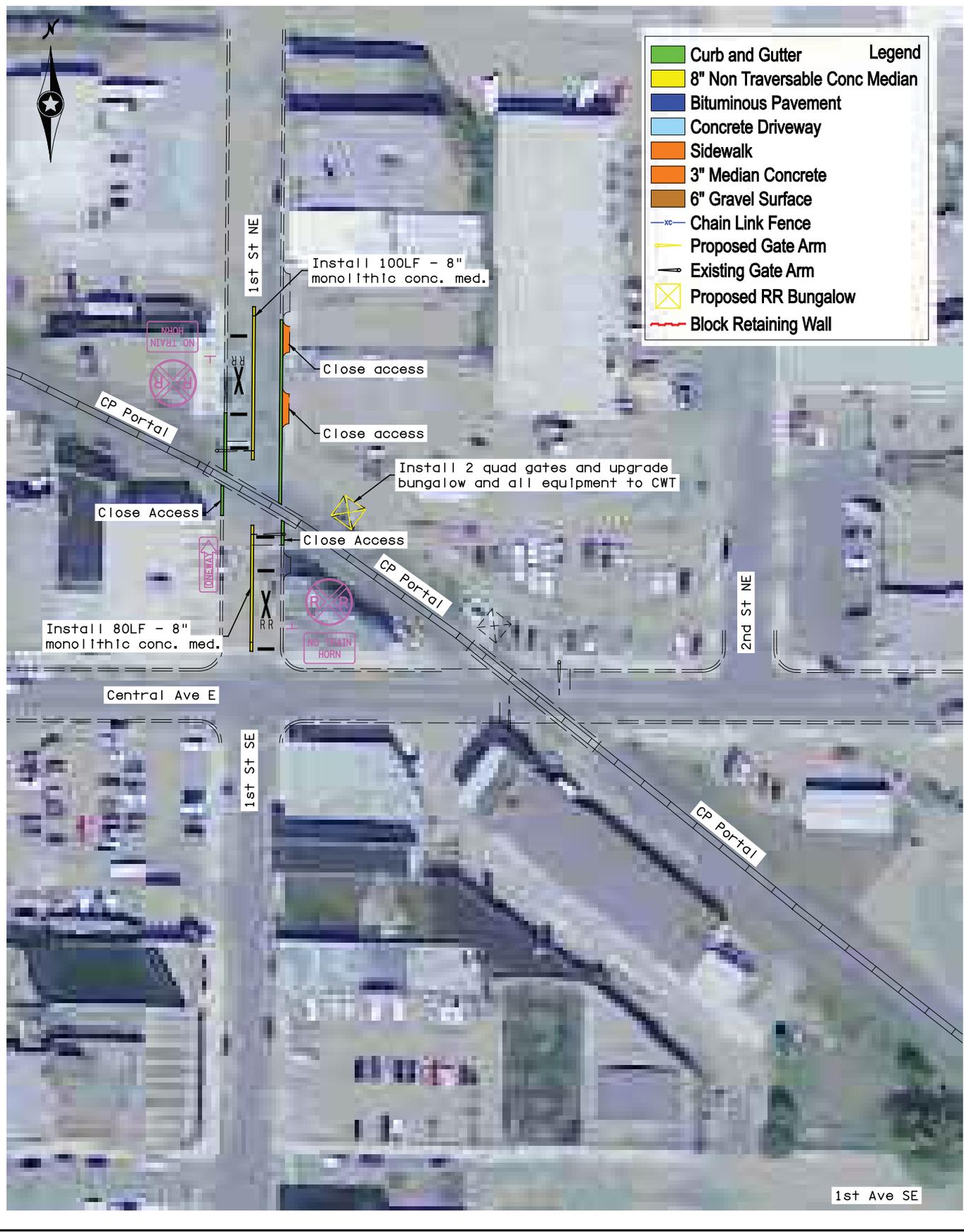


Convert to One Way Pair (SSM)

City of Minot
Minot Quiet Zone

Figure D43

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Crossing: 1st Street SE
Crossing No: 698916S
Minot Quiet Zone

Figure D44

Job # 7089
 12/3/2010

Preliminary Cost Estimate

1st Street SE

Canadian Pacific
M.P. - 468.79

Crossing No.
698916S

Two Quadrant Gates and Medians (ASM)

Alternative - 3

Item Descriptions For: City of Minot

	Quantity	Unit Cost	Unit	Qty Total
2-Quad Active Warning System (Upgrade to CWT), CP	1	\$300,000.00	LS	\$300,000.00
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Remove Pavements (Includes streets, approaches, and sidewalks)	415	\$0.50	SF	\$207.50
Furnish & Install Curb and Gutter	130	\$25.00	LF	\$3,250.00
Install Monolithic Concrete Median	415	\$7.00	SF	\$2,905.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
			Subtotal	\$319,662.50
			Contingency: 20%	\$63,932.50
			Alternate Total:	\$383,595.00



Two Quadrant Gates and Medians (ASM)

City of Minot
Minot Quiet Zone

Figure D45

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Crossing: Main Street
Crossing No: 698920G
Minot Quiet Zone

Figure D46

Job # 7089
 12/3/2010

Preliminary Cost Estimate

Main Street

Canadian Pacific
M.P. - 468.86

Crossing No.
698920G

Convert to One Way Pair (SSM)

Alternative - 1

Item Descriptions For: City of Minot

	Quantity	Unit Cost	Unit	Qty Total
2-Quad Active Warning System (Upgrade to CWT), CP	1	\$300,000.00	LS	\$300,000.00
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Furnish & Install Curb and Gutter	35	\$25.00	LF	\$875.00
Revise Signal System	1	\$20,000.00	LS	\$20,000.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
		Subtotal		\$334,175.00
		Contingency: 20%		\$66,835.00
		Alternate Total:		\$401,010.00



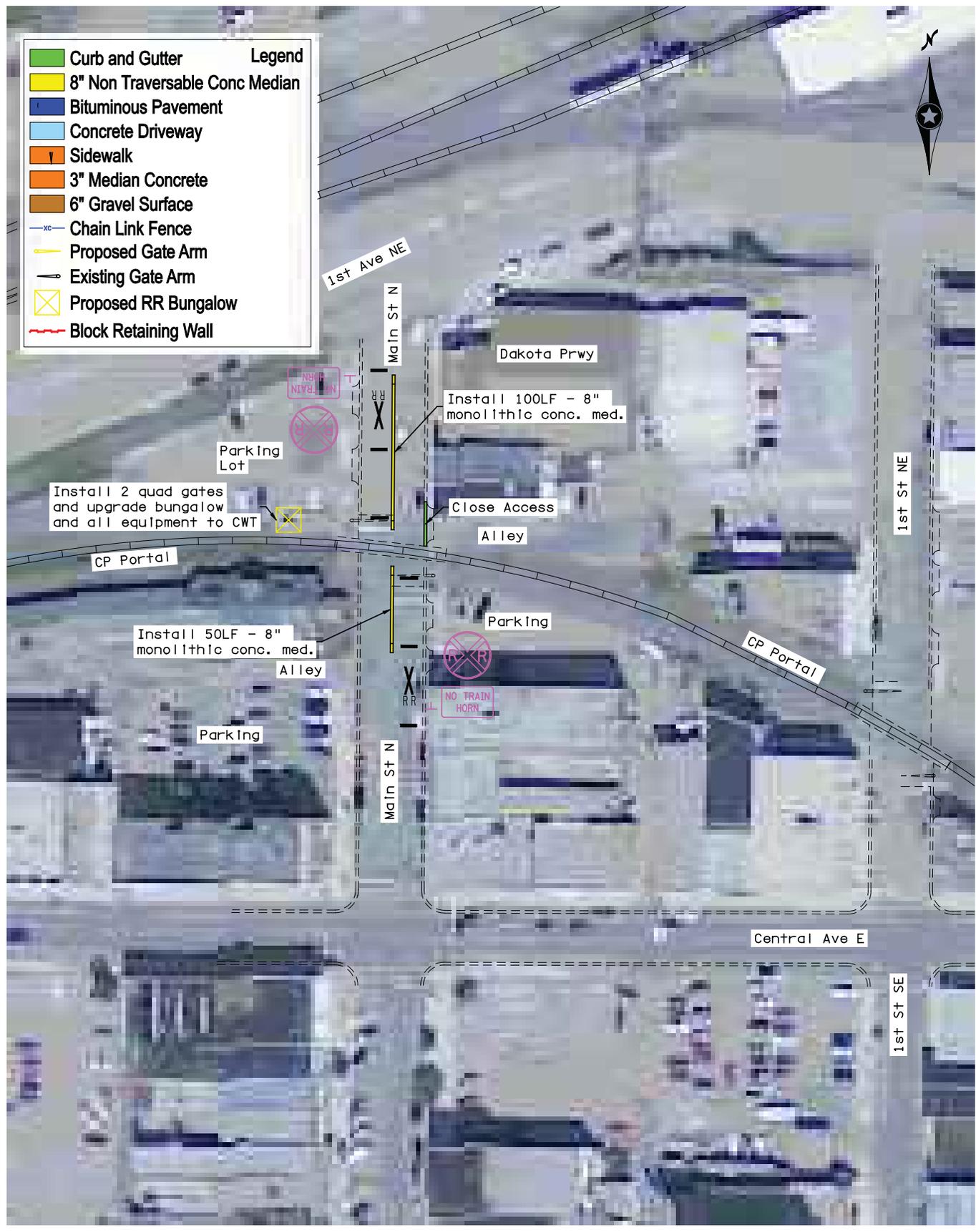
Convert to One Way Pair (SSM)

City of Minot
Minot Quiet Zone

Figure D47



- Legend**
- Curb and Gutter
 - 8" Non Traversable Conc Median
 - Bituminous Pavement
 - Concrete Driveway
 - Sidewalk
 - 3" Median Concrete
 - 6" Gravel Surface
 - Chain Link Fence
 - Proposed Gate Arm
 - Existing Gate Arm
 - Proposed RR Bungalow
 - Block Retaining Wall



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Crossing: Main Street
Crossing No: 698920G
Minot Quiet Zone

Figure D48

Job # 7089
 12/3/2010

Preliminary Cost Estimate

Main Street

Canadian Pacific
M.P. - 468.86

Crossing No.
698920G

Two Quadrant Gates and Medians (ASM)

Alternative - 2

Item Descriptions For: City of Minot

	Quantity	Unit Cost	Unit	Qty Total
2-Quad Active Warning System (Upgrade to CWT), CP	1	\$300,000.00	LS	\$300,000.00
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Remove Pavements (Includes streets, approaches, and sidewalks)	355	\$0.50	SF	\$177.50
Install Monolithic Concrete Median	355	\$7.00	SF	\$2,485.00
Furnish & Install Curb and Gutter	35	\$25.00	LF	\$875.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
				Subtotal
				\$316,837.50
				Contingency: 20%
				\$63,367.50
				Alternate Total:
				\$380,205.00



Two Quadrant Gates and Medians (ASM)

City of Minot
Minot Quiet Zone

Figure D49

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Crossing: Main Street
Crossing No: 698920G
Minot Quiet Zone

Figure D50

Preliminary Cost Estimate

Main Street

Canadian Pacific
M.P. - 468.86

Crossing No.
698920G

Four Quadrant Gates (SSM)

Alternative - 4

Item Descriptions For: City of Minot

	Quantity	Unit Cost	Unit	Qty Total
4-Quad Active Warning System (Upgrade to CWT), CP	1	\$350,000.00	LS	\$350,000.00
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
		Subtotal		\$363,300.00
		Contingency: 20%		\$72,660.00
		Alternate Total:		\$435,960.00



Four Quadrant Gates (SSM)

City of Minot
Minot Quiet Zone

Figure D51

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Crossing: 3rd Street / Amtrak Depot

Crossing No: 698922V
Minot Quiet Zone

Figure D52

Preliminary Cost Estimate

Amtrak Depot

Canadian Pacific
M.P. - 469.16

Crossing No.
698922V

Two Quadrant Gates and Medians (SSM)

Alternative - 1

Item Descriptions For: City of Minot

	Quantity	Unit Cost	Unit	Qty Total
2-Quad Active Warning System (Upgrade to CWT), CP	1	\$300,000.00	LS	\$300,000.00
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Remove Pavements (Includes streets, approaches, and sidewalks)	335	\$0.50	SF	\$167.50
Install Monolithic Concrete Median	335	\$7.00	SF	\$2,345.00
Concrete Driveway	495	\$5.00	SF	\$2,475.00
Furnish & Install Curb and Gutter	415	\$25.00	LF	\$10,375.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
		Subtotal		\$328,662.50
		Contingency: 20%		\$65,732.50
		Alternate Total:		\$394,395.00



Two Quadrant Gates and Medians (SSM)

City of Minot
Minot Quiet Zone

Figure D53

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Crossing: 3rd Street / Amtrak Depot

Crossing No: 698922V
Minot Quiet Zone

Figure D54

Preliminary Cost Estimate

Amtrak Depot

Canadian Pacific
M.P. - 469.16

Crossing No.
698922V

Crossing Closure (SSM)

Alternative - 2

Item Descriptions For: City of Minot

	Quantity	Unit Cost	Unit	Qty Total
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
		Subtotal		\$13,300.00
		Contingency: 20%		\$2,660.00
		Alternate Total:		\$15,960.00



Crossing Closure (SSM)

City of Minot
Minot Quiet Zone

Figure D55

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Crossing: Maple Street

Crossing No: 698924J

Minot Quiet Zone

Figure D56

Job # 7089
12/3/2010

Preliminary Cost Estimate

Maple Street (CP)

Canadian Pacific
M.P. - 469.52

Crossing No.
698924J

Two Quadrant Gates and Medians (SSM)

Alternative - 1

Item Descriptions For: City of Minot

	Quantity	Unit Cost	Unit	Qty Total
Concrete Crossing Material	8	\$500.00	LF	\$4,000.00
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Remove Pavements (Includes streets, approaches, and sidewalks)	420	\$0.50	SF	\$210.00
Remove Curb and Gutter	310	\$14.00	LF	\$4,340.00
Concrete Walk	105	\$5.00	SF	\$525.00
Install Monolithic Concrete Median	420	\$7.00	SF	\$2,940.00
Bituminous Pavement	555	\$6.00	SF	\$3,330.00
Furnish & Install Curb and Gutter	330	\$25.00	LF	\$8,250.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
		Subtotal		\$36,895.00
		Contingency: 20%		\$7,379.00
		Alternate Total:		\$44,274.00

The cost of this option will also include purchasing ROW for widening on the south side of the tracks in areas of median installation. ROW costs are not included in this estimate.



Two Quadrant Gates and Medians (SSM)

City of Minot
Minot Quiet Zone

Figure D57

Job # 7089
12/3/2010

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Crossing: Maple Street

Crossing No: 698924J

Minot Quiet Zone

Figure D58

Preliminary Cost Estimate

Maple Street (CP)

Canadian Pacific
M.P. - 469.52

Crossing No.
698924J

Single Median (ASM)

Alternative - 2

Item Descriptions For: City of Minot

	Quantity	Unit Cost	Unit	Qty Total
Concrete Crossing Material	8	\$500.00	LF	\$4,000.00
Mobilization, RR Insurance, RR Flagging	1	\$3,000.00	LS	\$3,000.00
Remove Pavements (Includes streets, approaches, and sidewalks)	190	\$0.50	SF	\$95.00
Concrete Walk	105	\$5.00	SF	\$525.00
Install Monolithic Concrete Median	190	\$7.00	SF	\$1,330.00
Signing & Pavement Markings	1	\$5,300.00	LS	\$5,300.00
Traffic Control	1	\$5,000.00	LS	\$5,000.00
			Subtotal	\$19,250.00
			Contingency: 20%	\$3,850.00
			Alternate Total:	\$23,100.00



Single Median (ASM)

City of Minot
Minot Quiet Zone

Figure D59

Appendix E
Quiet Zone Risk Calculations

Quiet Zone Risk Levels - Including the Proposed Improvements

FRA Train Horn Quiet Zone
 Calculation of Risk Indices for ASMs

Minot Quiet Zone - 27th Street (Mainline) ASM Calculation - Recommended/Minimum Scenario

ZoneID	Scenario ID	Crossing	Street	Warning Device	Pre SSM	Pre SSM	RiskIndex	Eff. of Pre-SSM	Eff. of new SSM	RIWH	RIWH w/Pre-SSMs	Pre-ASM eff	RIWH w/Pre-ASMs	Eff. of New ASM	Final QZRI
26193	34715	093077T	29TH AVE NW	Gates	0	0	39998.76824	-	-	23,980	23,980	0	23,980	0.75	10,000
Averages										23,980	23,980		23,980		10,000

QZ Improvements

Non-traversable medians (new-ASM)

NSRT	14,007
RIWH	23,980
QZRI	10,000

Quiet Zone Risk Levels - Including the Proposed Improvements

FRA Train Horn Quiet Zone
 Calculation of Risk Indices for ASMs

Minot Quiet Zone - 27th Street (Spur) ASM Calculation - Recommended Scenario

ZoneID	Scenario ID	Crossing	Street	Warning Device	Gates	Pre SSM	Pre SSM	RiskIndex
26194	34716	093079G	NO NAME			0	0	5659.553413

Eff. of Pre-SSM	Eff. of new SSM	RIWH	RIWH w/Pre-SSMs	Pre-ASM eff	RIWH w/Pre-ASMs	Eff. of New ASM	Final QZRI
-	-	3,393	3,393	0	3,393	0.56	2,490

Averages **3,393** **3,393** **3,393** **0** **3,393** **0.56** **2,490**

QZ Improvements

Non-traversable medians (new-ASM)

NSRT **14,007**
RIWH **3,393**
QZRI **2,490**

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BNSF - 27th Street SE (Spur) Minimum Qualifying Scenario

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Change Scenario: 110120_27T_34716

Crossing	Street	Traffic Warning Device	Pre-SSM	SSM	Risk
093079G	NO NAME	5485 Gates	0	0	5,659.55
<input type="button" value="MODIFY"/>					

Create New Zone

Manage Existing Zones

Log Off

* Only Public At Grade Crossings are listed.

Click for [Supplementary Safety Measures \[SSM\]](#)

Click for ASM spreadsheet: * Note: The use of ASMs requires an application to and approval from the FRA.

Step by Step Instructions:

Step 1: To specify New Warning Device (For Pre-Rule Quiet Zone Only) and/or SSM, click the MODIFY Button

Step 2: Select proposed warning device or SSM. Then click the UPDATE button. To generate a spreadsheet of the values on this page, click on ASM button—This spreadsheet can then be used for ASM calculations.

Step 3: Repeat Step (2) until the SELECT button is shown at the bottom right side of this page. Note that the SELECT button is shown ONLY when the Quiet Zone Risk Index falls below the NSRT or the Risk Index with Horn.

Step 4: To save the scenario and continue, click the SELECT button

Summary	
Proposed Quiet Zone:	110120_27THSPUR
Type:	New 24-hour QZ
Scenario:	110120_27T_34716
Estimated Total Cost:	\$0.00
Nationwide Significant Risk Threshold:	14007 .00
Risk Index with Horns:	3393.02
Quiet Zone Risk Index:	5659.55
<input type="button" value="Select"/>	

Quiet Zone Risk Levels - Including the Proposed Improvements

FRA Train Horn Quiet Zone
Calculation of Risk Indices for ASMs

Minot Quiet Zone - BNSF Southwest - ASM Calculation - Recommended Scenario

ZoneID	Scenario ID	Crossing	Street	Warning Device	Pre SSM	Risk Index
26195	34719	071920W	MAPLE ST	Gates	13	0
26195	34719	071923S	5TH AV SW	Gates	0	0
26195	34719	093868F	GOLF COURSE RD	Gates	14	0

Eff. of Pre-SSM	Eff. of new SSM	RIWH	RIWH w/Pre-SSMs	Pre-ASM eff	RIWH w/Pre-ASMs	Eff. of New ASM	Final QZRI
-	0.80	11,290	11,290	0	11,290	0	3,766
-	-	13,189	13,189	0	13,189	0.4	13,200
-	0.82	14,761	14,761	0	14,761	0	4,432
Averages		13,080	13,080		13,080		7,133

QZ Improvements

5th Ave SW Non-traversable medians (ASM)
Golf Course Road Non-traversable medians (SSM)

NSRT 14,007
RIWH 13,080
QZRI 7,133

BNSF - Southwest Quiet Zone Minimum Qualifying Scenario

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Change Scenario: 110120_BNS_34719

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Create New Zone
Manage Existing Zones
Log Off

Crossing	Street	Traffic	Warning Device	Pre-SSM	SSM	Risk	
071920W	MAPLE ST	485	Gates	0	13	3,765.72	<input type="button" value="MODIFY"/>
071923S	5TH AV SW	720	Gates	0	0	21,999.57	<input type="button" value="MODIFY"/>
093868F	GOLF COURSE RD	540	Gates	0	14	4,431.53	<input type="button" value="MODIFY"/>

Step by Step Instructions:

Step 1: To specify New Warning Device (For Pre-Rule Quiet Zone Only) and/or SSM, click the MODIFY Button

Step 2: Select proposed warning device or SSM. Then click the UPDATE button. To generate a spreadsheet of the values on this page, click on ASM button—This spreadsheet can then be used for ASM calculations.

Step 3: Repeat Step (2) until the SELECT button is shown at the bottom right side of this page. Note that the SELECT button is shown ONLY when the Quiet Zone Risk Index falls below the NSRT or the Risk Index with Horn.

Step 4: To save the scenario and continue, click the SELECT button

* Only Public At Grade Crossings are listed.

Click for Supplementary Safety Measures [SSM]

Click for ASM spreadsheet: * Note: The use of ASMs requires an application to and approval from the FRA.

Summary	
Proposed Quiet Zone:	110120_BNSF_SW
Type:	New 24-hour QZ
Scenario:	110120_BNS_34719
Estimated Total Cost:	\$50,000.00
Nationwide Significant Risk Threshold:	14007 .00
Risk Index with Horns:	13079.1
Quiet Zone Risk Index:	10065.61
	<input type="button" value="Select"/>

CP - Southeast Quiet Zone Recommended Scenario

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Change Scenario: 110120_MIN_34722

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Crossing	Street	Traffic Warning Device	Pre-SSM	SSM	Risk
698911H	8TH AVE 13TH ST	5665 Gates	0	6	4,449.53
698912P	NINTH ST	0 CLOSED(SSM 2)	0	2	0

Create New Zone

Manage Existing Zones

Log Off

Step by Step Instructions:

Step 1: To specify New Warning Device (For Pre-Rule Quiet Zone Only) and/or SSM, click the MODIFY Button

Step 2: Select proposed warning device or SSM. Then click the UPDATE button. To generate a spreadsheet of the values on this page, click on ASM button—This spreadsheet can then be used for ASM calculations.

Step 3: Repeat Step (2) until the SELECT button is shown at the bottom right side of this page. Note that the SELECT button is shown ONLY when the Quiet Zone Risk Index falls below the NSRT or the Risk Index with Horn.

Step 4: To save the scenario and continue, click the SELECT button

* Only Public At Grade Crossings are listed.

ALERT: Quiet Zone qualifies because SSM has been applied in each crossing.

Click for Supplementary Safety Measures [SSM]

Click for ASM spreadsheet: * Note: The use of ASMs requires an application to and approval from the FRA.

Summary	
Proposed Quiet Zone:	110120_Minot_CP_SE
Type:	New 24-hour QZ
Scenario:	110120_MIN_34722
Estimated Total Cost:	\$133,000.00
Nationwide Significant Risk Threshold:	14007 .00
Risk Index with Horns:	9460.3
Quiet Zone Risk Index:	2224.77
<input type="button" value="Select"/>	

CP - Southeast Quiet Zone
Alternative Recommended Scenario
(No Closure)

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Change Scenario: 110120_Min_34769

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Crossing	Street	Traffic	Warning Device	Pre-SSM	SSM	Risk
698911H	8TH AVE 13TH ST	4385	Gates	0	6	4,187.06
698912P	NINTH ST	1280	Gates	0	6	3,071.63

Create New Zone

Manage Existing Zones

Log Off

Step by Step Instructions:

Step 1: To specify New Warning Device (For Pre-Rule Quiet Zone Only) and/or SSM, click the MODIFY Button

Step 2: Select proposed warning device or SSM. Then click the UPDATE button. To generate a spreadsheet of the values on this page, click on ASM button—This spreadsheet can then be used for ASM calculations.

Step 3: Repeat Step (2) until the SELECT button is shown at the bottom right side of this page. Note that the SELECT button is shown ONLY when the Quiet Zone Risk Index falls below the NSRT or the Risk Index with Horn.

Step 4: To save the scenario and continue, click the SELECT button

* Only Public At Grade Crossings are listed.

ALERT: Quiet Zone qualifies because SSM has been applied in each crossing.

Click for Supplementary Safety Measures [SSM]

Click for ASM spreadsheet: * **Note:**The use of ASMs requires an application to and approval from the FRA.

Summary

Proposed Quiet Zone:	110120_Minot_CP_SE
Type:	New 24-hour QZ
Scenario:	110120_Min_34769
Estimated Total Cost:	\$256,000.00
Nationwide Significant Risk Threshold:	14007 .00
Risk Index with Horns:	9460.3
Quiet Zone Risk Index:	3629.35
	<input type="button" value="Select"/>

CP - Southeast Quiet Zone Minimum Qualifying Scenario

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Change Scenario: 110120_MIN_34722

Crossing	Street	Traffic	Warning Device	Pre-SSM	SSM	Risk
698911H	8TH AVE 13TH ST	5665	Gates	0	0	19,345.80
698912P	NINTH ST	0	CLOSED(SSM 2)	0	2	0

Create New Zone

Manage Existing Zones

Log Off

* Only Public At Grade Crossings are listed.

Click for Supplementary Safety Measures [SSM]

Step by Step Instructions:

Step 1: To specify New Warning Device (For Pre-Rule Quiet Zone Only) and/or SSM, click the MODIFY Button

Step 2: Select proposed warning device or SSM. Then click the UPDATE button. To generate a spreadsheet of the values on this page, click on ASM button—This spreadsheet can then be used for ASM calculations.

Step 3: Repeat Step (2) until the SELECT button is shown at the bottom right side of this page. Note that the SELECT button is shown ONLY when the Quiet Zone Risk Index falls below the NSRT or the Risk Index with Horn.

Step 4: To save the scenario and continue, click the SELECT button

Summary	
Proposed Quiet Zone:	110120_Minot_CP_SE
Type:	New 24-hour QZ
Scenario:	110120_MIN_34722
Estimated Total Cost:	\$5,000.00
Nationwide Significant Risk Threshold:	14007 .00
Risk Index with Horns:	9460.3
Quiet Zone Risk Index:	9672.9
	Select

Quiet Zone Risk Levels - Including the Proposed Improvements

FRA Train Horn Quiet Zone
 Calculation of Risk Indices for ASMs

Minot Quiet Zone - CP Downtown - ASM Calculation - Recommended Scenario

ZoneID	Scenario ID	Crossing	Street	Warning Device	SSM	Pre SSM	RiskIndex
26197	34724	698914D	THIRD ST	Gates	0	0	19866.35224
26197	34724	698915K	CENTRAL AVE	Gates	0	0	17877.38245
26197	34724	698916S	FIRST ST SE	Gates	0	0	13182.39676
26197	34724	698920G	MAIN ST	Gates	0	0	10837.57959

Eff. of Pre-SSM	Eff. of new SSM	RIWH	RIWH w/Pre-SSMs	Pre-ASM eff	RIWH w/Pre-ASMs	Eff. of New ASM	Final QZRI
-	-	11,910	11,910	0	11,910	0.4	11,920
-	-	10,718	10,718	0	10,718	0.8	3,575
-	-	7,903	7,903	0	7,903	0.8	2,636
-	-	6,497	6,497	0	6,497	0.75	2,709

Averages **9,257** **9,257** **9,257** **9,257** **5,210**

QZ Improvements

- 3rd Street SE non-traversable median (ASM)
- East Central Ave non-traversable medians (SSM)
- 1st Street SE non-traversable median (ASM)
- Main Street non-traversable median (ASM)

NSRT **14,007**
RIWH **9,257**
QZRI **5,210**

Quiet Zone Risk Levels - Including the Proposed Improvements

FRA Train Horn Quiet Zone
 Calculation of Risk Indices for ASMs

Minot Quiet Zone - CP Downtown - ASM Calculation - Minimum Qualifying

ZoneID	Scenario ID	Crossing	Street	Warning Device	SSM	Pre SSM	RiskIndex
26197	34724	698914D	THIRD ST	Gates	0	0	19866.35224
26197	34724	698915K	CENTRAL AVE	Gates	0	0	17877.38245
26197	34724	698916S	FIRST ST SE	Gates	0	0	13182.39676
26197	34724	698920G	MAIN ST	Gates	0	0	10837.57959

Eff. of Pre-SSM	Eff. of new SSM	RIWH	RIWH w/Pre-SSMs	Pre-ASM eff	RIWH w/Pre-ASMs	Eff. of New ASM	Final QZRI
-	-	11,910	11,910	0	11,910	0.4	11,920
-	-	10,718	10,718	0	10,718	0	17,877
-	-	7,903	7,903	0	7,903	0	13,182
-	-	6,497	6,497	0	6,497	0	10,838

Averages 9,257 9,257 9,257 9,257 9,257 13,454

QZ Improvements

3rd Street SE non traversable median
 East Central Ave none
 1st Street SE none
 Main Street none

NSRT 14,007
RIWH 9,257
QZRI 13,454

Quiet Zone Risk Levels - Including the Proposed Improvements

FRA Train Horn Quiet Zone
Calculation of Risk Indices for ASMs

Minot Quiet Zone - CP West - ASM Calculation - Recommended Scenario

ZoneID	Scenario	Crossing Street	Warning Device	Pre SSM	RiskIndex
26200	34725	698922V PARK STR.	Gates	0	8320.95008
26200	34725	698924J MAPLE STR	Gates	0	9465.733918

QZ Improvements

Amtrak Depot non-traversable median (80' north, 50' south)
Maple Street north median only (80')

Eff. of Pre-SSM	Eff. of new SSM	RIWH	RIWH w/Pre-SSMs	Pre-ASM eff	RIWH w/Pre-ASMs	Eff. of New ASM	Final QZRI
-	-	4,989	4,989	0	4,989	0.73	2,247
-	-	5,675	5,675	0	5,675	0.4	5,679

Averages 5,332 5,332 5,332 5,332 3,963

NSRT 14,007
RIWH 5,332
QZRI 3,963

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CP - West Quiet Zone Minimum Scenario

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Change Scenario: 110120_MIN_34725

Crossing	Street	Traffic	Warning Device	Pre-SSM	SSM	Risk
698922V	PARK STR.	880	Gates	0	0	8,320.95
698924J	MAPLE STR	400	Gates	0	0	9,465.73

Create New Zone

Manage Existing Zones

Log Off

* Only Public At Grade Crossings are listed.

Click for Supplementary Safety Measures [SSM]

Step 1: To specify New Warning Device (For Pre-Rule Quiet Zone Only) and/or SSM, click the MODIFY Button

Step 2: Select proposed warning device or SSM. Then click the UPDATE button. To generate a spreadsheet of the values on this page, click on ASM button—This spreadsheet can then be used for ASM calculations.

Step 3: Repeat Step (2) until the SELECT button is shown at the bottom right side of this page. Note that the SELECT button is shown ONLY when the Quiet Zone Risk Index falls below the NSRT or the Risk Index with Horn.

Step 4: To save the scenario and continue, click the SELECT button

Click for ASM spreadsheet: * **Note:**The use of ASMs requires an application to and approval from the FRA.

Summary	
Proposed Quiet Zone:	110120_MINOT_CP_WEST
Type:	New 24-hour QZ
Scenario:	110120_MIN_34725
Estimated Total Cost:	\$0.00
Nationwide Significant Risk Threshold:	14007 .00
Risk Index with Horns:	5331.74
Quiet Zone Risk Index:	8893.34
<input type="button" value="Select"/>	