

**City of Benson Railroad  
Crossing Grade Separation  
Study**

Draft Report



Prepared for:  
Benson, Minnesota

Prepared by:  
Stantec Consulting Services Inc.

January 28, 2015

## Sign-off Sheet

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## Abbreviations

BNSF	Burlington Northern Santa Fe
FRA	Federal Railroad Administration
AADT	Annual Average Daily Traffic
VPD	Vehicles Per Day
CBD	Central Business District

# CITY OF BENSON RAILROAD CROSSING GRADE SEPARATION STUDY

Introduction  
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## 1.0 INTRODUCTION

The City of Benson has been dealing with an issue related to its railroad at-grade crossings for many years. Blocked crossings are a common occurrence which hinders the movement of vehicles and pedestrians within the City. This is mostly due to the three closely spaced at-grade crossings in downtown Benson at 12<sup>th</sup>, 13<sup>th</sup> and 14<sup>th</sup> Street. In addition, the nearest at-grade crossings to the northwest and southeast are also sometimes blocked and the emergency service vehicles are not able to know which crossings are blocked or open when the downtown ones are not open. The greatest concern for the blocked crossings is related to emergency services and their ability to serve the City of Benson and surrounding communities. The City of Benson has contracted with Stantec to perform a study to review alternatives that can mitigate the issues the City currently faces. As part of this study, we will also identify funding sources and work with the City to move forward with grant applications to implement an improvement project.

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## 2.0 EXISTING CONDITIONS

The study area for this project includes the entire City limits for the City of Benson and portions outside of the City of Benson within Swift County. In specific, the study will analyze the Morris Subdivision of the BNSF Rail Line that bisects east/west through the City of Benson including all at-grade crossings of the Rail line between 25<sup>th</sup> Street NW and 20<sup>th</sup> Avenue SE. The study area also includes alternative routes to the nearest crossings outside of downtown Benson. This Chapter analyzes the existing conditions for study including existing land use and properties, the BNSF Railroad, affected roadways, related projects and studies, and input from the City of Benson. A summary of the existing conditions is identified in Figure 1.

### 2.1 EXISTING LAND USE, PROPERTIES & SERVICES

#### 2.1.1 Existing/Planned Land Use

The City of Benson completed their Comprehensive Plan in 2000 and an Update to their Comprehensive Plan in 2010. The Land Use Plan included within the Comprehensive Plan identifies Limited Industrial and Park/Open Space Land Use along the BNSF Rail corridor with the exception of the Central Business District (CBD) identified adjacent to the Rail corridor between 12<sup>th</sup> Street and 15<sup>th</sup> Street and between Wisconsin Avenue and Idaho Avenue.

#### 2.1.2 Existing Properties within the Central Business District

The properties located within the CBD are most affected when the three downtown at-grade crossings are closed and have the greatest potential for impacts (both positive and negative) depending on a future implemented alternative. Businesses and offices located within the CBD include but are not limited to:

##### South side of BNSF Rail line

Benson City Hall	Police and Fire Station	Snap Fitness
Family Dollar	Benson Family Dental Care	Tom's Service
New Holland	Hawley's	Larson Associates
Mi Mexico	Benson Bakery	Countryside Public Health
First Security Bank	Zosel's True Value Hardware	Supervalu

##### North side of BNSF Rail line

Post Office	Congregational Church	Public Library
Burger King	Lange Associates	Hollingsworth Agency
Swift County Courthouse	De Marce Theater	Verizon Wireless
Bask Street Media	Reuss Bookkeeping	H&H Veterinary Service
Eco Watersystems	Benson Area Chamber	Swift County RDA



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### 2.1.3 Location of Emergency Services

The Benson Fire and Police Department are both located within the Central Business District on the south side of the BNSF Rail line at 1410 Kansas Avenue in Benson. The Swift County Benson Hospital is also located on the south side of the BNSF Rail line at 1805 Wisconsin Avenue in Benson. All of these emergency services cover a service area both north and south of the BNSF Rail line for the City of Benson and into Swift County.

The existing helipad to Life Link patients to Benson's Hospital is currently located by the airport, west of the City of Benson. Life Link usually brings patients into the hospital an average of 2 or 3 times a month. Due to impacts with at-grade crossings being blocked by train traffic, the ambulance has been unable to travel without delay between the existing helipad and the hospital. The City is currently in the process of relocating the helipad into town at the northwest quadrant of the intersection of 21<sup>st</sup> Street South and Tatges Avenue. The new helipad will be a private permission facility with two approaches and will no longer be affected by blocked railroad crossings, due to its proximity to the hospital.

### 2.1.4 Location and Operations of Industrial Facilities

Several of the nearby industrial facilities located within or near the Benson city limits are either affected by blocked crossings or add to the issue of increased times in which at-grade crossings are blocked. Below is a summary of industrial facilities that were identified during a site visit to the City of Benson in August of 2014.

Elevator Operations – The elevator located just to the east of the CBD has its own siding and does not add to the issue of blocked crossings within the downtown as it only takes a few box cars.

Ethanol Plant – The ethanol plant is located along the north side of CR 20, just west of the BNSF main line. The ethanol plant has its own spur line. The spur line for the ethanol plant often back up onto the BNSF mainline blocking the CR 20 at-grade crossing.

Tank Farm – The flow of two 36-inch pipelines has recently been reversed from New Orleans to Canada. The tank farm became obsolete when they reversed the flow of the propane. Trains can now bring propane to the terminal, which will increase CR 3 at-grade crossing being blocked.

Elevator West of CBD – is not currently operational.

New Business Growth – There is a major potential for continue industrial growth to the west and northwest of Benson. Additional business growth near the existing tank farm location will only increase train traffic on the Appleton Subdivision line and will in turn increase the amount of time the CR 3 at-grade crossing is currently blocked.



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## 2.2 EXISTING RAILROAD FACILITIES

### 2.2.1 Railroad Main Line

The Burlington Northern Santa Fe (BNSF) Rail Line (Twin Cities Division, Morris Subdivision) bisects the City of Benson from the northwest to the southeast. The BNSF Rail Line has a single set of tracks at the CSAH 20 at-grade crossing northwest of the City of Benson, the Appleton Subdivision Line has a “wye” that ties into the Morris Subdivision Line just west of the Chippewa River where one main line and one siding continue through the City of Benson.

### 2.2.2 Existing At-grade Crossings

This study analyzes a total of six existing at-grade crossings; five with the BNSF Morris Subdivision Line and one with the BNSF Appleton Subdivision Line. Each of the six at-grade crossings is summarized in Table 1 below based on information from the Federal Rail Administration (FRA) grade crossing inventory forms. Three of the five existing at-grade crossings of the Morris Subdivision Line are located each one block apart at 14<sup>th</sup> Street (also US 12 and MN 29), 13<sup>th</sup> Street and 12<sup>th</sup> Street. The other two crossing of this line are located approximately 1.6 miles to the northwest (CR 20) and 1.1 miles to the southeast (20<sup>th</sup> Avenue SE). These distances are measured along the rail line itself and do not include the full travel route through town to get to the external crossings. The full FRA inventory forms are attached in Appendix A.

**Table 1 Existing At-grade Crossings within the Project Study Area**

Crossing Name	USDOT Crossing No.	Sub Division Line	Mile Post No.	No. of Tracks Main/Other	Average Daily Trains	Max Speed (mph)	Activated Gates	Annual Average Daily Traffic (AADT)*
25th Ave NW (CR 3)	075348Y	Appleton	00.84	0/1	6	10	2	1,250
CR 20	067925Y	Morris	134.30	1/0	13	40	2	1,600
14 <sup>th</sup> St. (US 12)	067927M	Morris	132.70	1/1	13	40	2	8,200
13 <sup>th</sup> St.	067928U	Morris	132.63	1/1	13	40	2	415
12 <sup>th</sup> St.	067929B	Morris	132.56	1/2	13	40	2	415
20 <sup>th</sup> Ave SE	067912X	Morris	131.62	1/1	13	40	0	200

\*All AADT taken from FRA Inventories shown as year 2009

### 2.2.3 Pedestrian Facilities at the Existing At-Grade Crossings

Pedestrian crossing facilities currently exist at all three downtown at-grade crossings in the CBD. The pedestrian crossings are outside of the crossing arms and do not have protected pedestrian crossing gates. No other pedestrian crossings are located throughout the City or at any of the



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other at-grade crossings included in this study. It was estimated by City staff that during the day, approximately 10-15 people cross the railroad per hour by foot or bike within the City of Benson.

An existing signed on-road bicycle route for MN Highway 29 is currently in place and provides a way for bicyclists to get from the central portion of town to the Northside Recreation area. On-road bicyclists are to act as and follow the same rules as motor vehicles and therefore would be required to stop at the rail crossing when the gates are down.

There is currently a concern for pedestrians trespassing across the BNSF mainline between the residential area south of the tracks and the City swimming pool located north of the tracks and just east of the Chippewa River.

### 2.2.4 Highway-Rail Grade Crossing Accident Reports

Highway-rail grade crossing accident reports were collected for each of the six at-grade crossings. A total of ten accidents were reported at the six at-grade rail crossings, with five of the accidents occurring at 14<sup>th</sup> Street (US Highway 12). Two of the accidents resulted in a fatality, two resulted in injury while the remaining six were property damage only. One of the fatal crashes involved a pedestrian crossing near the 14<sup>th</sup> Street (US Highway 12) crossing. Table 2 summarizes the history of accidents that occurred at each of the at-grade highway-rail crossings. The detailed accident reports are attached in Appendix B.

**Table 2 Existing At-grade Crossings Accident History**

Crossing Name	USDOT Crossing No.	Sub Division Line	Number of Accidents	Year(s) Accident Occurred	Type of Accident	Severity of Accident
25th Ave NW (CSAH 3)	075348Y	Appleton	2	1983	Train Struck Vehicle	Fatal
				1985	Vehicle Struck Train	Property Damage
CSAH 20	067925Y	Morris	1	1980	Vehicle Struck Train	Property Damage
14 <sup>th</sup> St. (US 12)	067927M	Morris	5	1976	Train Struck Vehicle	Injury
				1977	Vehicle Struck Train	Property Damage
				1979	Vehicle Struck Train	Property Damage
				2001	Train Struck Pedestrian	Fatal
				2001	Vehicle Struck Train	Property Damage
13 <sup>th</sup> St.	067928U	Morris	0	--	--	--
12 <sup>th</sup> St.	067929B	Morris	0	--	--	--
20 <sup>th</sup> Ave SE	067912X	Morris	2	1995	Train Struck Vehicle	Property Damage
				1996	Train Struck Vehicle	Injury



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## 2.3 EXISTING ROADWAY FACILITIES

The roadways being analyzed as part of the study are roads that have existing at-grade highway-rail crossings, roads that run parallel to the BNSF Rail Line, roads that serve as an alternate route to access existing at-grade highway-rail crossings outside of Benson's downtown and roads that may serve as future routes for improved highway-rail at-grade or grade separated crossings. Each roadway analyzed within this study is listed in Table 3 including functional classification, most recent AADT volumes and its specific relationship to the study. The project roadways are all also identified in Figure 1.

### 2.3.1 US & State Highways

US Highway 12 – is classified as a principal arterial roadway. It travels east/west along Minnesota Avenue along the south side of the City of Benson, turns north and crosses the BNSF Rail line along 14<sup>th</sup> Street and finally turns east along Atlantic Avenue as it travels outside of the Benson City limits.

State Highway 29 – is classified as a minor arterial roadway. It travels north/south along 14<sup>th</sup> Street south of the City limits and continues to cross the BNSF Rail line at 14<sup>th</sup> Street. The Highway then turns west along Nevada Avenue and curves back to the north along approximately 17<sup>th</sup> Street as it travels outside of the Benson City limits.

State Highway 9 – is classified as a minor arterial roadway. It travels east/west along Atlantic Avenue and turns north at 13<sup>th</sup> Street where it continues to travel to the east and outside of the Benson City limits. Highway 9 does not have an at-grade crossing with the railroad in Benson.

### 2.3.2 County Highways

County Road 3 (CR 3) – is classified as a rural minor collector. It runs north/south along the west edge of the City of Benson between US Highway 12 and County Road 20.

County Road 20 (CR 20) – is classified as a rural major collector. It runs east/west from west of the City limits and continues east until it crosses the BNSF rail line and then connects into the Atlantic Avenue (State Highway 9) intersection.

County Road 57 (CR 57) – is classified as a rural minor collector. It runs north/south just east of the City limits. It connects to Pacific Avenue on the south side of the BNSF rail line, crosses the tracks intersecting with Atlantic Avenue and continues north to State Highway 9.

### 2.3.3 City Roadways

14<sup>th</sup> Street – is classified as a principal arterial roadway along its US 12 designation from Minnesota Avenue to Atlantic Avenue, a minor arterial roadway along its State Highway 29 designation from Atlantic Avenue to Nevada Avenue and a collector roadway between



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Nevada Avenue to its northern limit at Montana Avenue. 14<sup>th</sup> Street is one of the existing downtown at-grade crossings with the BNSF rail line located in Benson's CBD.

13<sup>th</sup> Street – is classified as a local roadway south of Wisconsin Avenue, as a collector roadway between Wisconsin Avenue and Atlantic Avenue and a minor arterial roadway along its State Highway 9 designation from Atlantic Avenue to the north outside of the City limits. 13<sup>th</sup> Street is one of the existing downtown at-grade crossings with the BNSF rail line located in Benson's CBD.

12<sup>th</sup> Street – is classified as a local roadway south of Wisconsin Avenue, as a collector roadway between Wisconsin Avenue and Atlantic Avenue and again as a local roadway north of Atlantic Avenue. 12<sup>th</sup> Street is one of the existing downtown at-grade crossings with the BNSF rail line located in Benson's CBD.

Pacific Avenue – is classified as a local roadway and runs parallel along the south side of the BNSF rail line between 22<sup>nd</sup> Street and 20<sup>th</sup> Ave SE (CR 57).

Atlantic Avenue – is classified as a minor arterial roadway along its State Highway 9 designation from west of the City limits up to 14<sup>th</sup> Street and a principal arterial roadway along its US Highway 12 designation from 14<sup>th</sup> Street as it continues east outside of the City limits. Atlantic Avenue runs parallel along the north side of the BNSF Rail line.

Minnesota Avenue – is a principal arterial roadway along its US Highway 12 designation from west of the City limits up to 14<sup>th</sup> Street and a local roadway from 14<sup>th</sup> Street as it continues east of 9<sup>th</sup> Street. Minnesota Avenue is an east/west roadway south of the BNSF rail line that would likely be used to re-route traffic to alternate at-grade crossings outside of the City limits when the three downtown CBD crossings are blocked when trains are present.

### 2.3.4 Vehicle/Rail Exposures

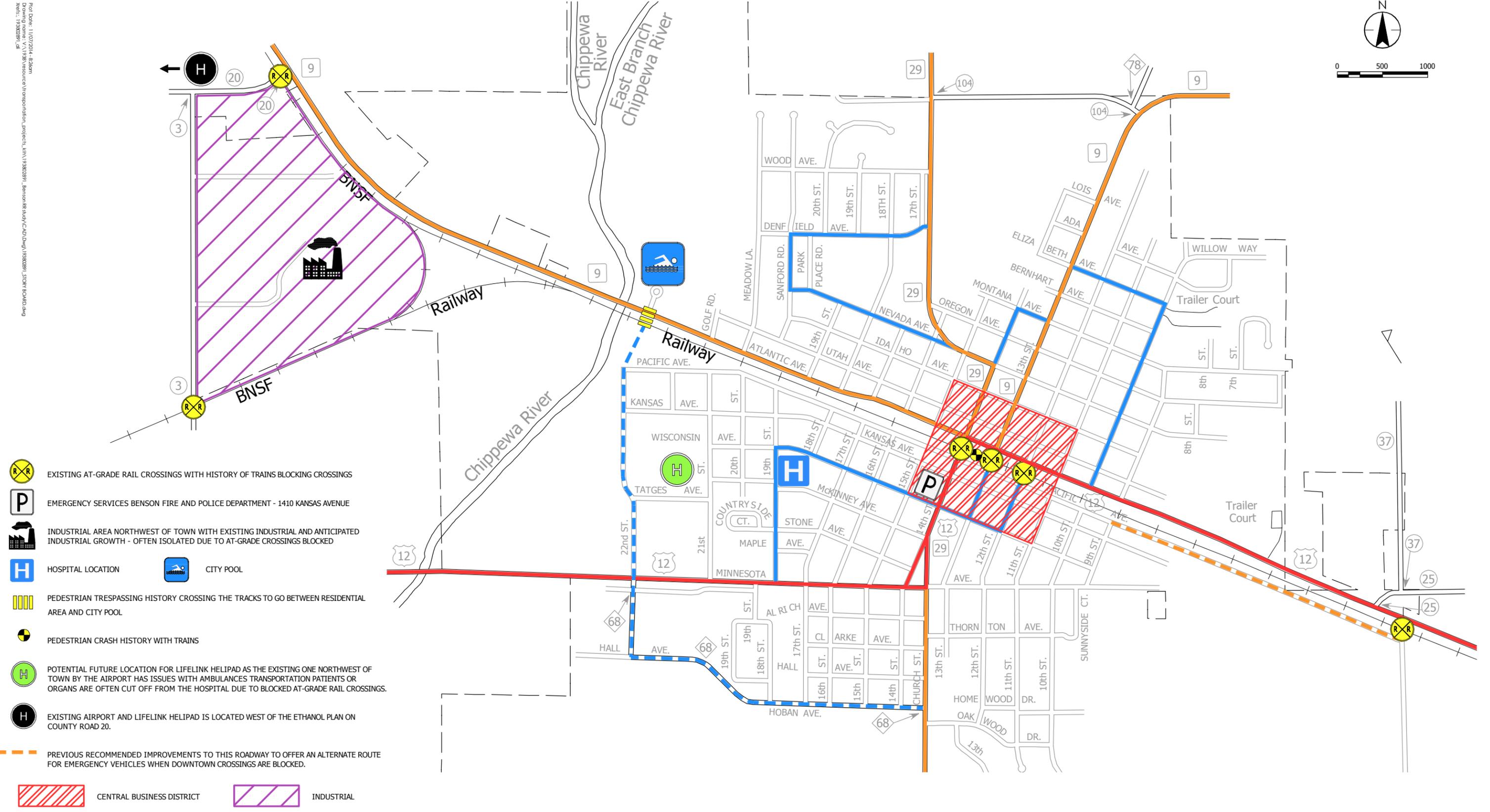
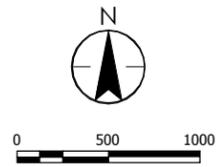
The daily vehicle/rail exposure rate is the product of the number of average daily trains multiplied by the number of average daily vehicles at existing at-grade rail crossings. Typically if the daily vehicle/rail exposure is greater than 500,000 at an at-grade crossing, it then meets the Federal Threshold indicating that a grade separation with the rail should be considered. Currently, the existing vehicle/rail exposure rate, available in Table 3, does not meet the Federal Threshold of 500,000 or greater at any of the existing at-grade crossings analyzed as part of this study. The total daily vehicle/rail exposures at all six of the existing at-grade crossings combined is calculated at 148,290 which is still much lower than the Federal Threshold for considering grade separation.

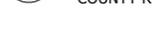
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**Table 3 Existing Daily Vehicle/Rail Exposures**

Crossing Name	USDOT Crossing No.	Average Daily Trains	AADT Volumes (vpd)	Daily Vehicle/Rail Exposure Rate
25th Ave NW (CR 3)	075348Y	6	1,250	7,500
CR 20	067925Y	13	1,600	20,800
14 <sup>th</sup> St. (US 12)	067927M	13	8,200	106,600
13 <sup>th</sup> St.	067928U	13	415	5,395
12 <sup>th</sup> St.	067929B	13	415	5,395
20 <sup>th</sup> Ave SE	067912X	13	200	2,600
<b>Total for all Six Existing At-grade Rail Crossings</b>				<b>148,290</b>



-  EXISTING AT-GRADE RAIL CROSSINGS WITH HISTORY OF TRAINS BLOCKING CROSSINGS
-  EMERGENCY SERVICES BENSON FIRE AND POLICE DEPARTMENT - 1410 KANSAS AVENUE
-  INDUSTRIAL AREA NORTHWEST OF TOWN WITH EXISTING INDUSTRIAL AND ANTICIPATED INDUSTRIAL GROWTH - OFTEN ISOLATED DUE TO AT-GRADE CROSSINGS BLOCKED
-  HOSPITAL LOCATION
-  CITY POOL
-  PEDESTRIAN TRESPASSING HISTORY CROSSING THE TRACKS TO GO BETWEEN RESIDENTIAL AREA AND CITY POOL
-  PEDESTRIAN CRASH HISTORY WITH TRAINS
-  POTENTIAL FUTURE LOCATION FOR LIFELINK HELIPAD AS THE EXISTING ONE NORTHWEST OF TOWN BY THE AIRPORT HAS ISSUES WITH AMBULANCES TRANSPORTATION PATIENTS OR ORGANS ARE OFTEN CUT OFF FROM THE HOSPITAL DUE TO BLOCKED AT-GRADE RAIL CROSSINGS.
-  EXISTING AIRPORT AND LIFELINK HELIPAD IS LOCATED WEST OF THE ETHANOL PLAN ON COUNTY ROAD 20.
-  PREVIOUS RECOMMENDED IMPROVEMENTS TO THIS ROADWAY TO OFFER AN ALTERNATE ROUTE FOR EMERGENCY VEHICLES WHEN DOWNTOWN CROSSINGS ARE BLOCKED.
-  CENTRAL BUSINESS DISTRICT
-  INDUSTRIAL

## EXISTING CONDITIONS

FIGURE 1

## 2.4 RELATED PROJECTS/STUDIES & PROJECT HISTORY

The City of Benson and MnDOT have developed past planning efforts and projects that address vehicle and rail operations within the City.

### 2.4.1 City of Benson 2000 Comprehensive Plan and 2010 Update

The City of Benson completed a full Comprehensive Plan in 2000 with an update to the Plan in 2010. Recommendations and goals from the comprehensive plan that may affect the goals of this study include but are not limited to the following:

- Preserve and strengthen the Central Business District and Establish a cohesive, unified image for the CBD;
- Protect the traveling public for both motorized and non-motorized modes of transportation; and
- Lessen the noise, congestion and safety concerns of truck and train traffic.

### 2.4.2 City of Benson 2000 Transportation Study

As part of the 2000 Transportation Study completed for the City of Benson, a specific analysis was completed for the downtown railroad operations. During that study it was determined that the average daily number of trains was 15 per day with a peak weekday number of trains at 25. Train speeds varied from 25 to 40 mph with lengths varying from 500-foot minimum; 5,500-foot on average and 7,800-foot for the longest. During that analysis it was noted that the railroad was stopping trains outside of the city and having an employee travel downtown to do any necessary switching. This allowed the street crossings to remain open while the trains were waiting. Recommendations from the analysis included the following:

- BNSF pursue electronic automatic switching to reduce blocked crossings within the CBD and
- Long-range consideration for constructing a railroad bypass around the City

### 2.4.3 City of Benson 2007 East Pacific Avenue Preliminary Engineering Report

A preliminary engineering report was completed in 2007 for the improvements of East Pacific Ave between 9<sup>th</sup> Street East and 20<sup>th</sup> Avenue SE. Pacific Avenue, which parallel's the BNSF Rail line on the south, provides a route for emergency vehicles to use when all three crossings in Benson's downtown are blocked by train traffic. However, East Pacific Avenue is currently a gravel roadway with very poor subgrade soils and is often impassible in the spring. This eliminates this route from being an emergency reliever route all year long. The proposed engineering report recommended improvements to the roadway that would allow it to carry the weight of heavy emergency vehicles during any season of the year. The project cost estimate



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in 2007 dollars was \$793,305.25. The challenge with implementing this project has been how to pay for it since the north side of the road is bordered by BNSF and the south side of the roadway is sparsely populated rural property and is not feasible for assessment to the small number of abutting properties.

### 2.4.4 State of Minnesota v. BNSF Railway Company Regarding Blocked Crossing Citations

In 2014, the City of Benson issued four citations to BNSF Railroad for trains blocking rail crossings longer than Minnesota State Statute 219.383 permits. The citations resulted in a legal case in which BNSF Railway Company pleaded not guilty to the citations and submitted a "Memorandum of Law in support of its Motion to Dismiss" the citations issued by the City of Benson, MN, for violations of Minn. Stat. 219.383. The final order of the case found that the charges against BNSF were dismissed since the Federal Railroad Safety Act preempted the Minnesota State Statute.

However, BNSF's motion helped to identify the reasoning for long periods of at-grade crossings being blocked by trains. A synopsis of the reasoning for periods of greater than 10 minutes where at-grade crossings are blocked is summarized below and is taken directly from the "Memorandum of Law" as submitted by BNSF:

- "When a train approaches Benson on the Appleton Subdivision and is directed to go east toward Willmar, a member of the train crew needs to disembark the train and manually throw several switches to line the tracks properly to allow the train to go in the direction intended. The same is true for a train coming through Benson that needs to go down the Appleton Subdivision. At this wye there are security measures in place to prevent tampering with the switches. As a train approaches, it automatically triggers a device that unlocks the switch and allows it to be thrown. The switches can only be operated after a delay of 7-8 minutes. The crew member, usually the conductor, can then throw the switch to allow the train to go where required."
- "The locomotive of the train needs to be in the vicinity of the switch before the anti-locking mechanism can function and the train cannot move through the switch until the lock is released and the switch thrown. Because it is almost impossible to perform this switching maneuver in less than 10 minutes, the trailing ends of lengthy westbound trains at times necessarily block the crossings in downtown Benson for more than 10 minutes."
- Other factors noted in the Memorandum of Law submitted by BNSF include harsh winter conditions in 2013-2014 and increased number of trains due to economic recovery since 2009, a successful grain harvest in 2013 and the increase in crude oil shipments.

This memorandum clearly identifies that the manual switching operations and increased train traffic are contributing factors to the more frequent occurrence and increased time of blocked at-grade crossings in Benson, MN.



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### 2.4.5 BNSF Planned Improvements

The City of Benson received a letter dated July 11, 2014, indicating the BNSF Railway is proposing to construct an approximately 50-foot monopole communications pole in/near Benson, Swift County, Minnesota within the existing railroad right-of-way at M.P. 130.2. This improvement will be constructed outside of the study limits – east of the City of Benson.

At this time, the City of Benson is unsure if BNSF is currently upgrading their manual switching operations to automatic switching. The study is waiting for confirmation from BNSF on current and short-term improvements for their rail operations through the City of Benson.

### 2.4.6 MnDOT December 2014 Report on the Improvements to the Highway-Rail Grade Crossings and Rail Safety

In December 2014, the Minnesota Department of Transportation (MnDOT) published a detailed report on Improvements to the Highway-Rail Grade Crossings and Rail Safety in Minnesota. The report included on the following:

- Evaluated the impacts of additional rail traffic, primarily Bakken crude oil unit trains, on local Minnesotan communities;
- Presented a list of 102 high priority highway-rail grade crossings; and
- Promoted optional safety improvements recognized by the FRA to reduce risk.

The highway-rail grade crossings within the City of Benson at 14<sup>th</sup> St (US 12), 13<sup>th</sup> St, and 12<sup>th</sup> St were all analyzed as part of the report in the report, with the 14<sup>th</sup> St (US 12) highway-rail grade crossing recommended as the site for a long term future grade separation.

MnDOT calculated priority of each highway-rail grade crossing via a point system, in which weighted scores were assessed in three primary categories; Risk, Safety, and Condition. Table 4 provides some of the factors considered within these three primary categories. Within the report, each at-grade crossing and surrounding ½ mile radius was individually evaluated for the presence and severity of these factors. These locations were then ranked assigning priority to highway-rail grade crossings of greater risk.

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**Table 4 Select MnDOT Highway-Rail Grade Crossing Evaluation Criteria**

<b>Risk</b>	<ul style="list-style-type: none"> <li>- General Population Density</li> <li>- Vulnerable Fixed Population                             <ul style="list-style-type: none"> <li>• Hospitals, Nursing Homes, Prisons</li> </ul> </li> <li>- Vulnerable Temporary Population                             <ul style="list-style-type: none"> <li>• Schools, Public Buildings</li> </ul> </li> <li>- Emergency Services                             <ul style="list-style-type: none"> <li>• Police Stations, Fire Departments</li> </ul> </li> </ul>
<b>Safety</b>	<ul style="list-style-type: none"> <li>- USDOT Crash Prediction Model</li> <li>- Safety Records / Accident History</li> <li>- Near Miss Reports</li> </ul>
<b>Conditions at Crossing</b>	<ul style="list-style-type: none"> <li>- Traffic Volumes</li> <li>- Type of Protection                             <ul style="list-style-type: none"> <li>• Active or Passive</li> </ul> </li> <li>- Physical Conditions                             <ul style="list-style-type: none"> <li>• Crossing Geometry, Sight, Multiple Tracks</li> </ul> </li> <li>- Special Highway Status</li> </ul>

The results of the analysis from the report ranked the three crossings in Benson as follows:

- 14<sup>th</sup> Street (US 12) ranked 1st of all 102 crossings and recommended long term consideration for a grade separated crossing;
- 13<sup>th</sup> Street ranked 8th of all 102 crossings; and
- 12<sup>th</sup> Street ranked 15th of all 102 crossings.

The MnDOT report goes on to promote awareness of safety improvement strategies and features currently being employed. These safety improvements range from inexpensive short-term alternatives to capital intensive long-term solutions.

## 3.0 ISSUES IDENTIFICATION

Based on the existing conditions identified in relation to vehicle and rail operations in the City of Benson, the following issues have been developed that will help to support the purpose and need for this project as well as help to recognize potential solutions to mitigate the identified issues.

### 3.1 EXISTING AT-GRADE CROSSINGS BLOCKED BY TRAINS

The BNSF railroad performs a switching operation between the main and branch lines which often causes the trains on the main line to block the crossings at 12<sup>th</sup>, 13<sup>th</sup> and 14<sup>th</sup> Streets in Benson's downtown CBD. Section 2.4.4 of this report explains in detail the mechanisms responsible for the blocked crossings in downtown Benson.

In addition to the blocked downtown crossings, the following blocked crossing issues were discussed at the August 2014 site visit meeting:

Industrial Area west of Benson – Currently the industrial area bound by CR3 to the west, the BNSF main line to the east, CR 20 to the north and the subdivision line to the south; often becomes isolated with both the CR 20 and CR 3 at-grade crossings being blocked at the same time. This creates an issue for access to the electrical sub stations, Swift County Solid Waste Recycling Plant, Power Plant and American Fertilizer. Due to the potential for injuries in industrial areas, it is not only a concern of how these blocked crossings impact business operations, but also the ability for emergency service vehicles to access the area when needed.

Recent Impacts to 20<sup>th</sup> Avenue SE Crossing – During the August 2014 site visit, it was noted that recently the downtown crossings have not had as many issues with stopped trains blocking the downtown at-grade crossings. Instead, the 20<sup>th</sup> Avenue SE crossing has been blocked for long periods of time, in some cases for up to 72 hours at a time. During the site visit, the 20<sup>th</sup> Avenue SE crossing was blocked by parked rail cars.

#### 3.1.1 Travel Delays and Routes/Times to Nearest Unblocked Crossings

An analysis was completed as part of this study to determine the travel time to the nearest at-grade crossing when all three downtown crossings are blocked. Two travel routes were analyzed to determine the amount of time to travel to the nearest crossings which are identified below and shown in Figure 2.

##### Travel Route "A" – Nearest At-Grade Crossing to the Southeast

- 14<sup>th</sup> Street on the south side of the downtown crossings takes Pacific Avenue to the east, crosses the tracks to the north at 20<sup>th</sup> Avenue SE, and travels west on Atlantic Ave (US 12), arriving on north side of the crossing at 14<sup>th</sup> Street.

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- Travel time analysis includes the mileage for the route and the posted speed limit, but does not account for intersection control or traffic delays as a field travel time study was not completed. The estimated travel time for Route "A" = [(1.72 miles/30 mph) + (0.32 miles/50 mph)] \* 60 min/hour = 3.82 minutes.

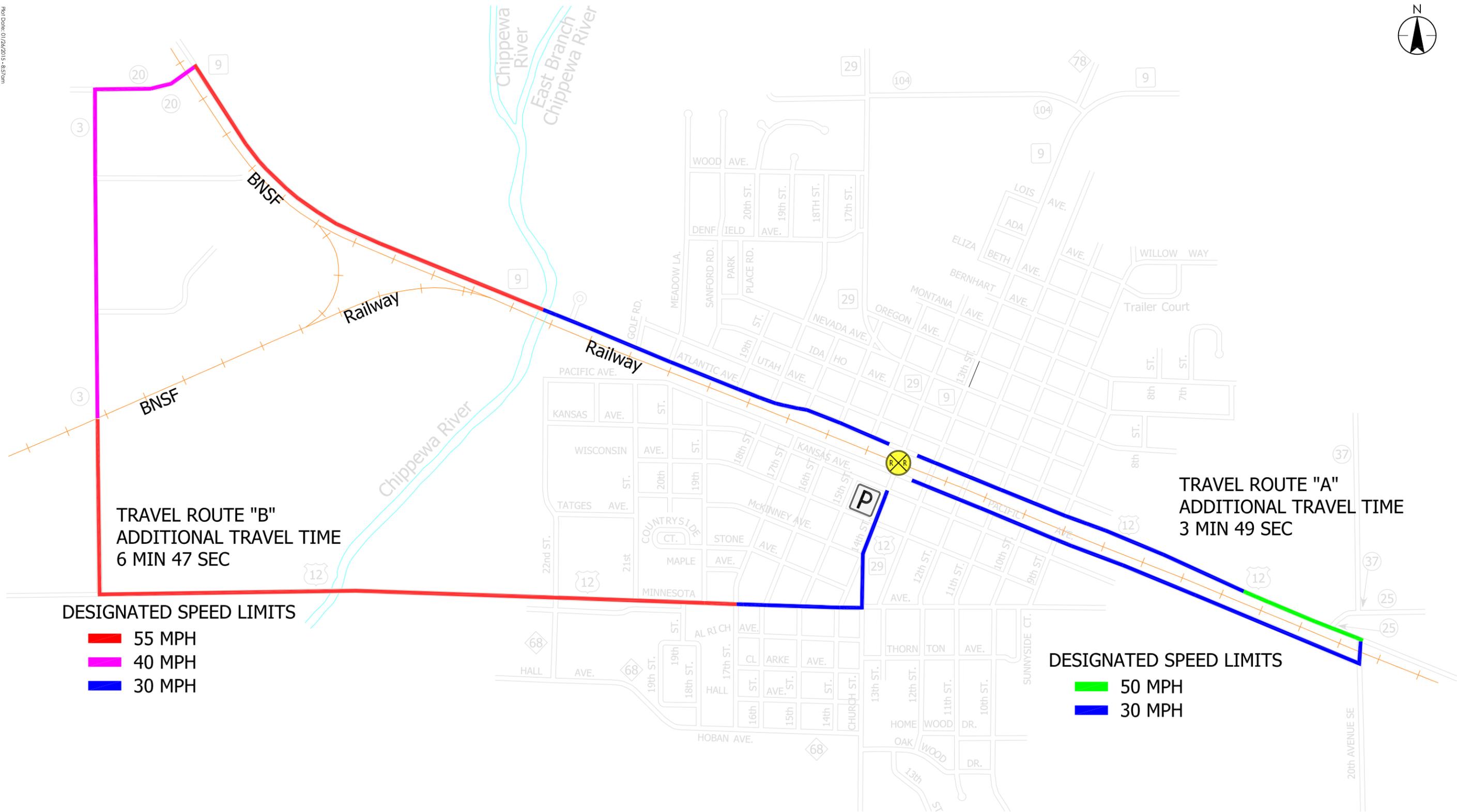
### Travel Route "B" – Nearest At-Grade Crossing to the Northwest

- 14<sup>th</sup> Street on the south side of the downtown crossing follows MN 29 (or 14<sup>th</sup> Street) south to US 12 (or Minnesota Avenue) where the route travels west along US 12 to go north on CR 3 (one at-grade crossing at CR 3). The route then turns east on CR 20 (one at-grade crossing at CR 20) to MN 9 (or Atlantic Avenue) where the route continues to the southeast and parallels the tracks to the north side of the crossing at 14<sup>th</sup> Street.
- Travel time analysis includes the mileage for the route and the posted speed limit, but does not account for intersection control or traffic delays as a field travel time study was not completed. The estimated travel time for Route "B" = [(1.39 miles/30 mph) + (2.12 miles/55 mph) + (0.30 miles/45 mph) + (0.86 miles/40 mph)] \* 60 min/hour = 6.78 minutes.

It is important to note that this analysis does not include traffic delays, intersection control delays or the potential for the alternative route at-grade crossings to also be blocked by train traffic.

### 3.1.2 Impacts to Emergency Services

When the existing at-grade crossings are blocked by trains, it greatly inhibits the response of emergency services. As noted in the existing conditions section of this report, most of the City's emergency services including fire, police and the hospital are all located on the south side of the BNSF Rail Line that bisects the City of Benson. The Benson Public School Campus along with many businesses, City and County residents that are served by these emergency services are located on the north side of the BNSF Rail Line. Long periods of blocked crossings in Benson's downtown, coupled with limited awareness of other potentially blocked crossings to the northwest and southeast of the downtown, pose a major impairment to response times for the emergency service vehicles. The City of Benson has identified improving the mobility and safety of emergency response vehicles as the highest priority outcome of the recommended improvements of this study.



ALTERNATE TRAVEL ROUTES OUTSIDE OF THE CBD

### 3.2 PEDESTRIAN MOBILITY & SAFETY

The City of Benson is almost equally bisected by the BNSF Rail Line coupled with a limited number of passively protected pedestrian rail crossing facilities located exclusively within the CBD. This restricts protected pedestrian mobility across the BNSF Rail Line to the three crossings within the CBD. As no other pedestrian crossing facilities exist, these crossings within the CBD experience high volumes of pedestrian traffic. Pedestrian functions vary from; travelling to and from the Benson public school campus located north on 14<sup>th</sup> St, utilizing the CBD during normal shopping and leisure activities, as well as accessing the golf course and public pool facilities on the northwest side of town. A fatal accident occurred in 2001 when a pedestrian was struck by a train at the 14<sup>th</sup> St (US 12) crossing. The combination of high pedestrian activity and accident history at the 14<sup>th</sup> St (US 12) crossing demonstrates the need for pedestrian safety improvements.

During the site visit, concern was expressed for the safety of pedestrians outside of the downtown CBD. The single pedestrian routes located solely within the CBD is impacting pedestrian mobility within the City of Benson and has created unsafe pedestrian-rail interactions at the BNSF tracks south of the City pool between 22<sup>nd</sup> St and 21<sup>st</sup> St, shown in Figure 1. Rather than lengthen their route by travelling through the CBD, pedestrians are crossing the tracks completely unprotected.

### 3.3 SOCIAL AND ECONOMIC IMPACTS

Residents of the City of Benson are regularly impacted by the increased BNSF rail traffic and subsequent delays being experienced at blocked crossings, during what can normally be defined as everyday activities such as; dropping children off at school, picking up groceries, going to the post office, etc... The equal presence of residential housing and desired destinations on both sides of the BNSF Rail Line ensures this inconvenience is shared by all of Benson.

Growing a prosperous Central Business District (CBD) has been and will continue to be a primary goal in Benson. Local business is adversely affected by the delays resulting from blocked crossings. These inconvenient delays may deter customers from their intended trips to businesses located within the CBD. Logistics become more difficult for businesses receiving shipments or making deliveries, especially when the CBD crossings are blocked during peak hour traffic resulting in substantial backups and queuing.

### 3.4 PURPOSE & NEED STATEMENT

This study has developed a "Purpose and Need Statement" based on the existing conditions and issues that will assist in the future pursuit of Federal Funding sources for implementation of proposed projects. The Purpose and Needs Statement below may seem like a reiteration of information already provided within the report, but is set up according to Federal guidelines and will be able to be directly input into Federal documents or grant applications.



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### 3.4.1 Purpose for the Proposed Project

The proposed improvements will provide: emergency personnel with the ability to detect blocked crossings allowing for effective alternate route planning; the motoring public with an enhanced level of safety during rail-vehicle interactions at the crossings of 14<sup>th</sup> St (US 12), 13<sup>th</sup> St, and 12<sup>th</sup> St; improved mobility to all of the traveling public; improved pedestrian safety with protected CBD crossing facilities; and improved pedestrian mobility outside of the CBD.

The intent of the proposed project is to accomplish the following objectives:

1. Improve mobility and response times for emergency services;
2. Create a higher level of safety at the highway-rail grade crossings of 14<sup>th</sup> St (US 12), 13<sup>th</sup> St, 12<sup>th</sup> St, and 20<sup>th</sup> Ave SE;
3. Improve mobility through the City of Benson for all of the traveling public;
4. Improve safety for pedestrians utilizing the existing facilities within Benson's CBD; and
5. Increased mobility for pedestrian access across the BNSF Main Line outside of the CBD.

### 3.4.2 Need for the Proposed Project

As identified earlier in the study, the City of Benson continues to be adversely affected by increased rail activity on the BNSF Rail Line that bisects the City. In addition, existing problems are compounded by the close proximity of the Appleton Branch Line Wye and manual switches located within western City Limits. Trains often block the highway-rail grade crossings of 14<sup>th</sup> St (US 12), 13<sup>th</sup> St, and 12<sup>th</sup> St during a required stop to perform switching operations, effectively prohibiting north/south mobility within the City. This while, an inconvenience to the travelling public, is a severe detriment to emergency service crews responding to calls within not only the City of Benson but the surrounding community of Swift County. Operational constraints within the switching process can produce scenarios where trains block all three CBD crossings for periods greater than ten minutes, which can be detrimental when considering emergency response times. The residents of the City of Benson and surrounding Swift County should be allowed the comfort of prompt emergency services in their time of need.

A recent December 2014 MnDOT report, "Improvements to Highway-Rail Grade Crossings and Rail Safety" published a list of 102 high priority highway-rail grade crossings recommended for safety improvements, ranking 14<sup>th</sup> St (US 12), 13<sup>th</sup> St, and 12<sup>th</sup> St respectively at 1<sup>st</sup>, 8<sup>th</sup>, and 15<sup>th</sup>. The report further delivers a long-term recommendation of a grade separation for the 14<sup>th</sup> St (US 12) highway-rail grade crossing, recognizing it as a priority project in the future. Additional information pertaining to the MnDOT report can be referenced in Section 2.4.6. Given the accident history of the three CBD crossings, safety improvements creating full width highway-rail grade crossing protection are warranted by the latent possibility of a vehicle initiated catastrophic derailment.



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Pedestrian mobility and safety has been similarly impacted by the increased rail activity. The current pedestrian-rail crossing facilities within the CBD do not restrict pedestrian movements while the crossing is active, allowing for unsafe situations where pedestrians “hurry across” before the train arrives. A pedestrian-train accident in 2001 resulted in the death of a pedestrian crossing at/near the 12<sup>th</sup> Street crossing. In addition pedestrian mobility is needed outside of the CBD with a history of reported “pedestrian trespassing” crossing the tracks where pedestrian crossings are not available. The lack of pedestrian mobility or pedestrian crossings outside of the CBD is closely tied to pedestrian safety as it is very unsafe for pedestrians to cross the tracks outside of pedestrian crossings.

## 4.0 ALTERNATIVE DEVELOPMENT AND EVALUATION

A series of both short-term and long-term alternatives have been developed and evaluated with consideration toward mitigating identified issues being experienced within the City of Benson. The proposed alternatives below are to be assessed as conceptual solutions analyzed through preliminary engineering practices for feasibility.

### 4.1 FUTURE GRADE SEPARATION

Part of the scope for completing this study was to determine the feasibility of a future grade separation (overpass or underpass) of the BNSF Rail Line within Benson's CBD. While developing the existing conditions for this study, it was determined that none of the existing at-grade crossings come close to meeting the recommended rail-vehicle threshold of 500,000 daily vehicle-train exposures that typically warrant consideration of a rail-vehicle grade separation. However, the results of the 2014 MnDOT Safety report recommended 14<sup>th</sup> Street (US 12) as the number one location within the state to consider a long-term rail grade separation. A grade separation of the crossings would also mitigate most of the issues identified within this report including mobility for emergency services, better mobility for both motor vehicles and non-motor vehicles (i.e. pedestrians) and improved safety for motor vehicles and pedestrians.

Preliminary alignments and profiles of the proposed overpass grade separation at 14<sup>th</sup> St (US 12) are shown in Figures 3 and 4. Figure 3 shows an overpass with a 4.9% maximum grade resulting in a required length of 1,384' to achieve 24' of vertical clearance over the BNSF rail line, 18' of clearance over tracks plus an allowance of 6' for the bridge superstructure. Figure 4 depicts the overpass structure footprint creating negative impacts within the CBD at a minimum, between Wisconsin Ave and Idaho Ave. A second overpass option has a steeper 8.0% maximum grade and results in a required length of 1131'. The smaller overpass impact area, shown in Figures 5 and 6, has a southern limit at the midblock of Wisconsin Ave and Kansas Ave and a north terminus midblock of Utah Ave and Idaho Ave. These limits do not account for the any impacts associated with a need for the realignment of US Highway 12 and State Highway 9.

This option proposes the construction of a grade separation within the CBD at either the 14<sup>th</sup> St (US12) or 13<sup>th</sup> St rail crossing. In an effort to minimize impacts to the CBD, both grade separation configurations of overpass and underpass were considered with an overpass selected for preliminary layout, as an underpass was deemed unfeasible due to drainage concerns arising from the close proximity of the Chippewa River and known high water tables. An overpass would provide the City of Benson with an unrestricted route over the BNSF rail line. To ensure pedestrian mobility within the CBD, an at-grade pedestrian rail crossing facility is proposed between 14<sup>th</sup> St (US 12) and 12<sup>th</sup> St, in addition to a separated path on the overpass.

The proposed overpass along either 14<sup>th</sup> St (US 12) or 13<sup>th</sup> St will require the intersecting minor roadways of Wisconsin, Kansas, Utah, and Idaho Avenues to be closed impeding vehicle mobility within the CBD. It may be possible keep Pacific Ave and Atlantic Ave open to local CBD

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traffic under the overpass. US Highway 12 and State Highway 9 will require continuity to be restored by shifting the alignments to the north past the northern termini of the overpass into a new intersection located along Nevada Ave. The southern termini of the proposed 14<sup>th</sup> St overpass will match into the existing alignment of US Highway 12.

## Preliminary Opinion of Probable Cost

The opinion of probable cost is based on a per square foot cost to construct an overpass 38-feet in width which includes two 12-foot travel lanes, 4-foot shoulder and one 6-foot wide path. The cost does not account for costs associated with right of way acquisition, business relocations and the realignment needs for the state highway routes. The opinion of probable costs ranges between \$7.9 M and \$10.5 M depending on the recommended grade of the structure.

**Table 5 Opinion of Probable Cost Estimates for Future Grade Separation in CBD**

	4.9% Max Grade	8.0% Max Grade
Lower Cost (\$150 Per SF)	\$7.9 M	\$6.4 M
Higher Cost (\$200 Per SF)	\$10.5 M	\$8.6 M

### 4.1.1 Mitigation of Identified Issues

The proposed grade separation is an immensely complex, capital intensive, long range alternative. However, a grade separation is the only option capable of alleviating all of the identified issues currently affecting the City of Benson, via the elimination of the highway-rail interaction. This alternative provides the highest possible level of safety while allowing unrestricted access and mobility for both motorized and non-motorized travellers; effectively achieving the desired objectives in Section 3.5.1.

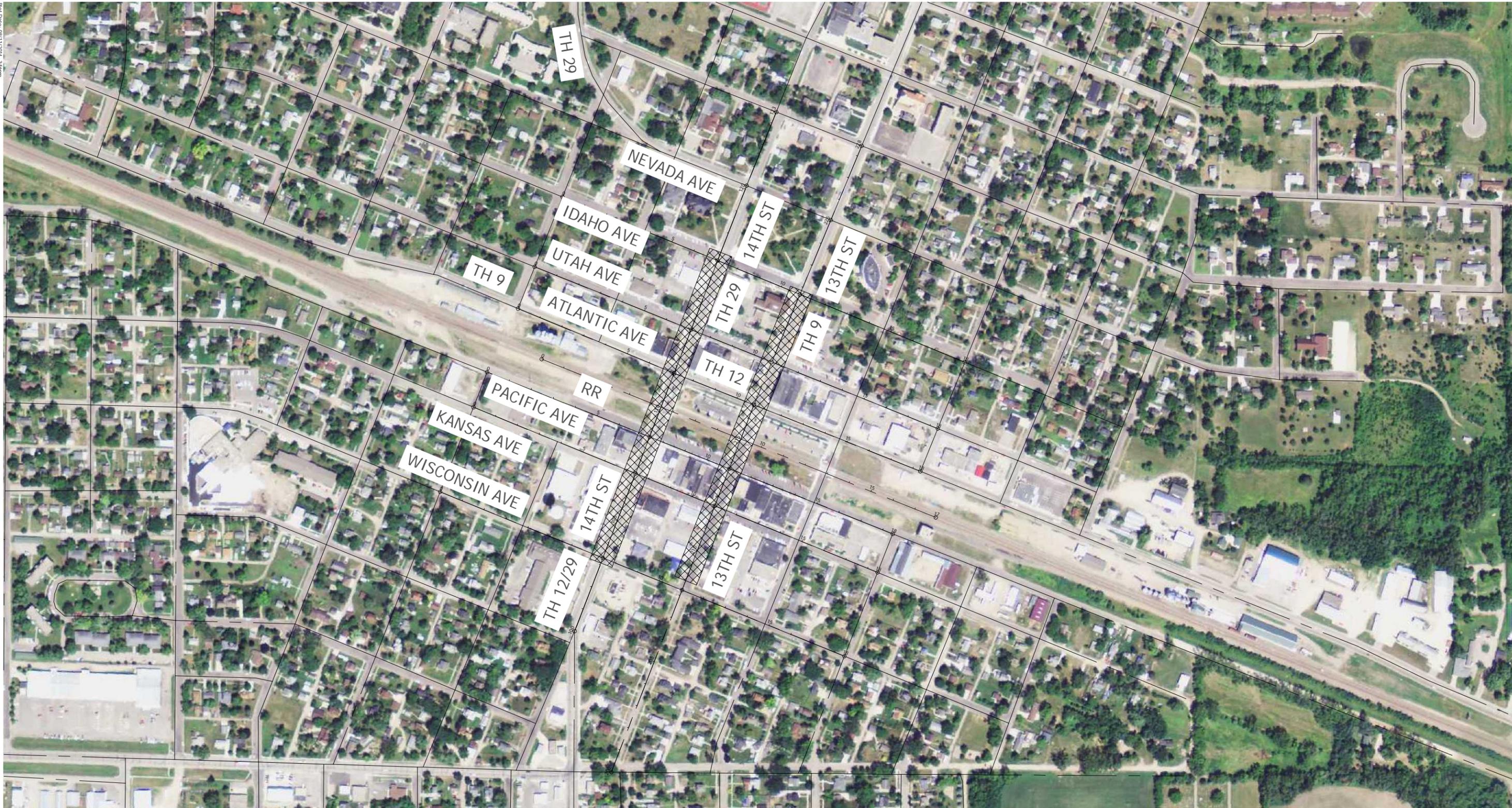
### 4.1.2 New Issues Created

Adverse impacts arising from the proposed alternative are described below;

Social Impacts: The proposed overpass grade separation within the CBD will impact social interactions. The overpass will span the entire CBD reducing traffic volumes within the downtown area and possibly altering the location of public gathering places.



Proj Date: 08/11/2014 3:56pm  
Project Name: City of Benson, MN  
Project Path: \\s:\projects\transportation\project\193802891\_Benson RR Study\CAD\DWG\193802891\_22.dwg  
User: jason@stantec.com

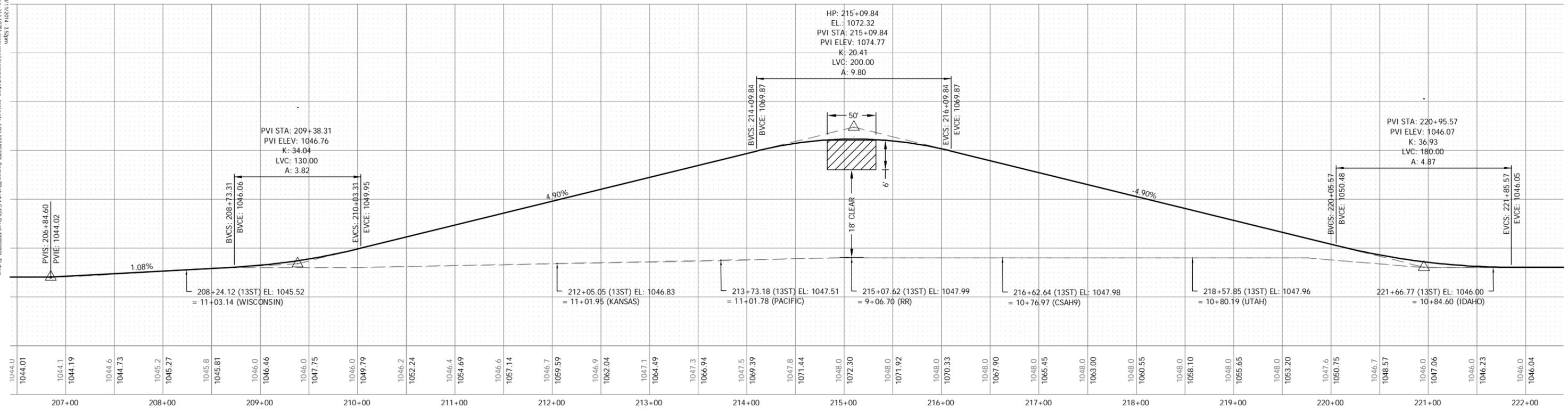


PLAN VIEW - 4.9% MAX GRADES

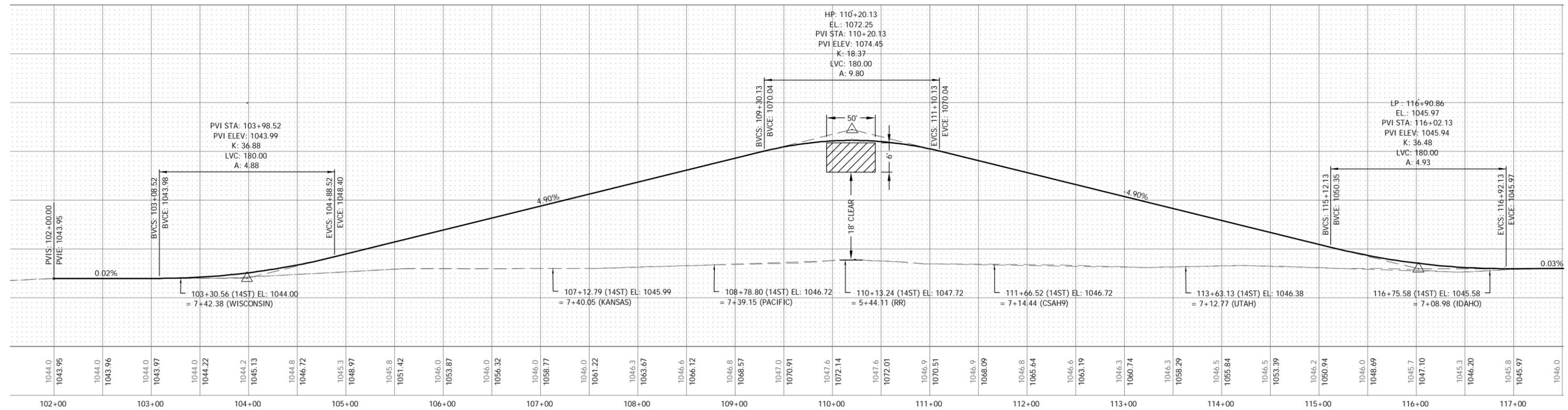
 PRELIMINARY IMPACTS

0 200 400 

### 13TH ST



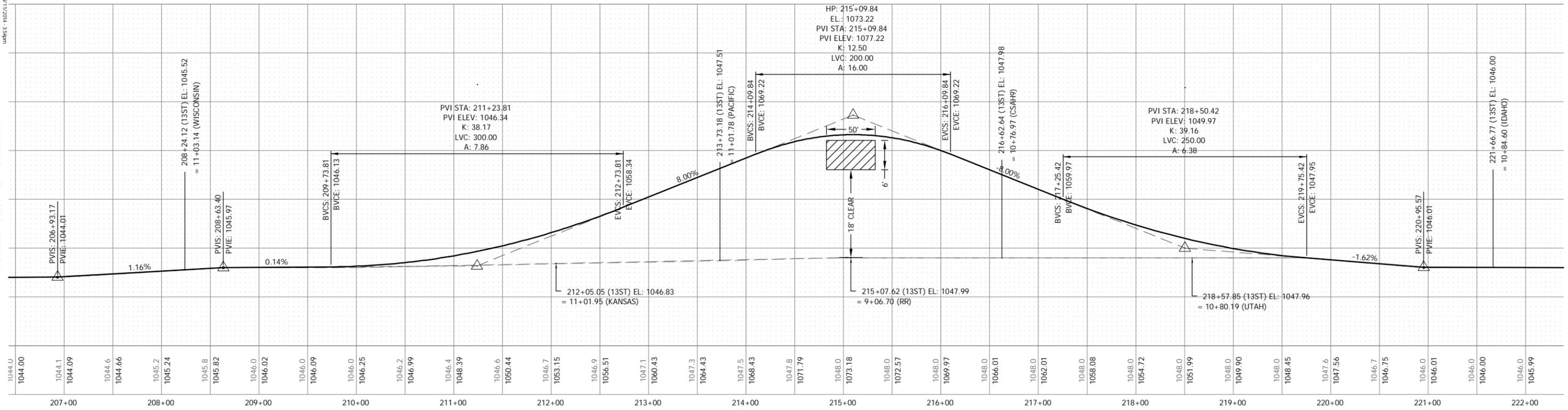
### 14TH ST



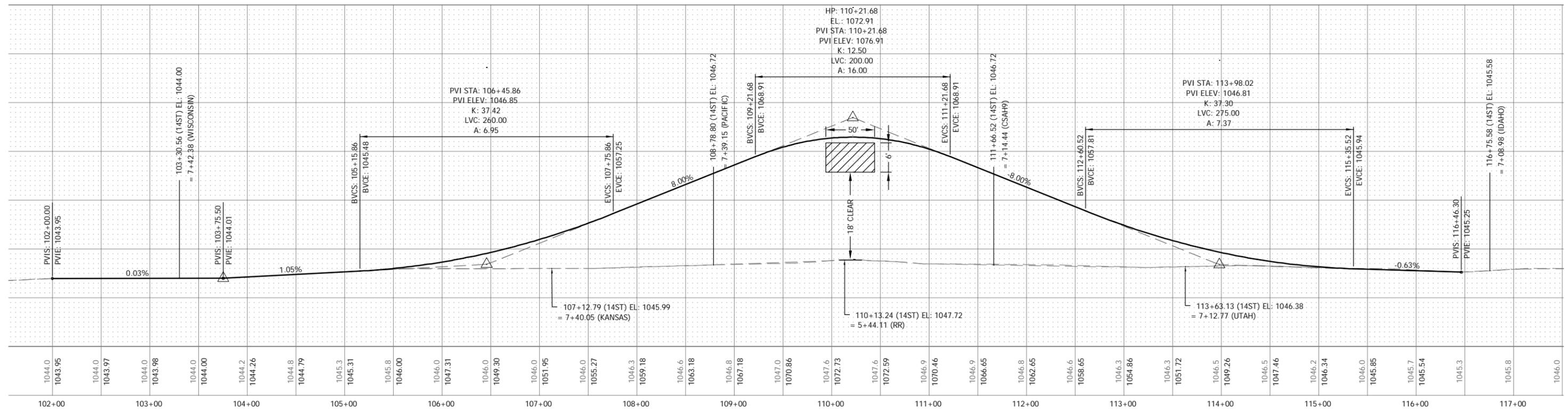
PRELIMINARY PROFILES - 4.9% MAX GRADES



### 13TH ST



### 14TH ST



PRELIMINARY PROFILES - 8% MAX GRADES

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Environmental Impacts: The preliminary development of the footprint of an overpass in the CBD identifies major impacts to right of way and the likelihood for relocation of many businesses located within the CBD. A large overpass structure will visually impact the CBD's skyline and restrict sunlight to neighboring buildings. Potential for discovering contaminated soils during construction is higher in older downtown districts. Air quality may be affected during construction of the structure.

Economic Impacts: The large proposed footprint and new travel way over the CBD rather than through it will; ultimately lower property values adjacent the overpass, require a number of "in the way" local businesses to be relocated, restrict vehicle mobility within the downtown area, impair shopping activities, and reduce outside exposure to local businesses.

### 4.1.3 Summary

It can be concluded from the alternative evaluation that an overpass grade separation in the CBD has many negative impacts to existing properties within the CBD. The alternative would be high cost and likely not receive public support.

A future grade separation could be the City of Benson's most compatible long-term solution, but should be further investigated at a location outside of the CBD where fewer right of way and relocation impacts would occur. Further investigations are warranted as this long-term project has received recommendation by MnDOT as a priority grade separation, in addition to its capability of alleviating the identified issues impacting the City of Benson.

## 4.2 EMERGENCY SERVICES MOBILITY

The current limited operational state of the emergency services necessitates corrective action in the perspective short-term. A proposed twofold strategy of; creating a reliable emergency reliever route to the southeast down Pacific Ave, particularly between 9<sup>th</sup> St and 20<sup>th</sup> Ave SE, and giving emergency services personnel geospatial awareness of Benson's current crossing conditions through the application of an Intelligent Transportation System (ITS). In the event of an emergency, personnel will be able to promptly acquire current access conditions of crossings, enabling selection of the fastest direct route.

The proposed ITS will through either a direct cable connection or wireless modem, communicate the current operational status of the active protection devices to a predetermined central location. Rail crossings are considered blocked when the active protection is engaged. BNSF has offered to provide the City of Benson with cable for making connections to the active protection devices, significantly reducing the cost of the proposed ITS. The remaining costs would be limited to acquiring or assembling a central control board depicting the presence of activity or lack thereof at each rail crossing. A system like this is estimated to cost from \$2,500 to \$5,000 at each location.



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Of the study's at-grade crossings, only the one at 20<sup>th</sup> Ave SE is not currently equipped with active protection devices. The implementation of this ITS configuration will require upgrading the 20<sup>th</sup> Ave SE crossing with active protection features. BNSF has been contacted about this proposed improvement, stating the City of Benson is required to attend/coordinate a diagnostics meeting with BNSF before any formal cost estimates can be obtained. For evaluation purposes, the 20<sup>th</sup> Ave SE crossing upgrade has an estimated probable cost of approximately \$350,000.

For the proposed ITS to bear fruit, reliable secondary routes to both the east and west must exist to circumvent potentially blocked crossings. A route exists to the northwest, but not to the southeast. Proposed improvements to Pacific Ave from 9<sup>th</sup> St to 20<sup>th</sup> Ave SE will stabilize this occasionally impassable road, during spring thaw or after heavy rains, allowing for reliable use by emergency vehicles as a secondary route. The alternative route to utilize the 20<sup>th</sup> Avenue SE crossing when the downtown crossings are blocked is also a much shorter route than traveling to utilize the at-grade crossings northwest of the downtown.

The proposed Pacific Ave improvements are conceptualized from previous design recommendations made in the City of Benson's 2007 Preliminary Engineering Report concerning Improvements to East Pacific Ave. Two perspective improvement methods are detailed below;

Option 1 – Pacific Ave is completely reconstructed by removing the poor quality in-situ soils and replacing them with a better performing subgrade material such as, a select granular borrow soil. The 38' graded roadbed is reinforced with woven geotextile fabric and surfaced with 15 – 18" of aggregate material, similar to a MnDOT Class 5 or Class 1, to produce a 32' wide road top. The proposed option includes the installation of new storm sewer infrastructure, clearing and grubbing, as well as regrading of the roadside ditches to alleviate existing drainage issues.

The proposed Pacific Ave - Reconstruction total project cost is estimated, in 2017 dollars, to be near \$1.1 M. The proposed improvements largely follow those listed in the 2007 East Pacific Avenue Preliminary Engineering Report, (Appendix C) with exception any improvements relating to the watermain which was not included in the proposed work. The 2007 bid prices were extrapolated to 2017 figures by applying 10 years of inflation at a 4% annual rate. Option 2 – The proposed scope of work is significantly reduced, in comparison to Option 1, resulting in a lower expected cost. Pacific Ave will undergo minor grading to allow for the placement of 15 – 18" of new aggregate and maintain a 32' wide road top. Stabilization of the existing roadway will be accomplished by the application of a biaxial geogrid within a 4" layer of crushed rock, which will be surfaced with 10 – 14" of aggregate material, similar to a MnDOT Class 5 or Class 1. Clearing and grubbing will be performed to enhance safety and increase exposure to direct sunlight during the transition seasons of Spring and Fall.



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**Table 6 Opinion of Probable Cost – Pacific Ave Stabilization**

ITEM	UNITS	QUANTITY	UNIT PRICE	TOTAL UNIT PRICE
CLEARING & GRUBBING	LS	1.0	\$ 30,000.00	\$ 30,000.00
MINOR GRADING (MOTOR GRADER HRLY)	HRS	80.0	\$ 175.00	\$ 14,000.00
CRUSHED ROCK	CY	1,450	\$ 34.00	\$ 49,300.00
GEOGRID	SY	15,020	\$ 3.25	\$ 48,815.00
AGGREGATE BASE	TON	9,090	\$ 14.00	\$ 127,260.00
EROSION CONTROL & STABILIZATION	LS	1.0	\$ 8,500.00	\$ 8,500.00
TRAFFIC CONTROL	LS	1.0	\$ 2,500.00	\$ 2,500.00
SUBTOTAL				\$ 280,375.00
ENGINEERING SERVICES (EST)				\$ 55,000.00
CONTINGENCIES (EST)				\$ 15,000.00
<b>ESTIMATED PROJECT COST</b>				<b>\$ 350,375.00</b>

**4.2.1 Mitigation of Identified Issues**

The proposed strategy is focused toward reestablishing the full operational ability of Benson’s emergency services. This goal is accomplished through the provided additional reliable secondary route coupled with intelligent route planning to eliminate delays at blocked crossings. The at-grade crossing of 20<sup>th</sup> Ave SE will offer a greater level of safety as the result of the upgrade from passive protection to active protection.

The identified issues concerning the safety of vehicles and pedestrians at the CBD crossings will remain unaffected.

**4.2.2 New Issues Created**

Plausible adverse impacts of pursuing the proposed alternative are listed below;

Social: Minimal as area is sparsely populated and no major right of way or relocation impacts are anticipated.

Environmental: This option involves clearing a mature row of box elder trees south of Pacific Ave. A wetland inventory will need to be performed to evaluate if any negative impacts will occur.

Economic: No exposure to local business is expected. The costs of improving Pacific Ave are too great to be borne solely by the limited number of adjacent property owners. The City of Benson



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before proceeding with the 20<sup>th</sup> Ave SE at-grade crossing upgrade will be required to coordinate and plan a diagnostics meeting with BNSF.

### 4.2.3 Summary

The proposed improvement plan is a viable, short-term solution capable of significantly reducing, if not eliminating, the delays being caused by blocked crossings. The ITS/secondary route option offers a large savings in cost when compared to the only other alternative resolving this issue of a grade separation. The option will remain purposeful until a permanent solution, like that of a grade separation or rail bypass around the City, can provide an unrestricted route for emergency services.

## 4.3 SAFETY IMPROVEMENTS WITHIN THE CENTRAL BUSINESS DISTRICT

A recent MnDOT report identified the at-grade rail crossings of 14<sup>th</sup> St (US 12), 13<sup>th</sup> St, and 12<sup>th</sup> St within the City of Benson's CBD, as priority locations for risk reducing upgrades. The proposed supplemental improvements to the current CBD crossing's active protection will incorporate "state of the art" strategies to deliver a level of access, safety, and crossing protection only exceeded by a grade separation.

A series of proposed supplemental modifications to the existing at-grade rail crossings follows:

14<sup>th</sup> St (US 12) – The busiest at-grade rail crossing within the City of Benson was listed number one of 102 priority crossings by MnDOT. The existing standard active protection will be modernized, to reflect the "state of the art" in crossing protection, with set of Quadrant "Quad" Gates interconnected to the traffic signals at the adjacent intersections of Pacific Ave and Atlantic Ave. The proposed pedestrian crossing facilities will protect the active crossing, by physically restricting unsafe pedestrian movements through the use of pedestrian automatic gates and/or swing gates. The strategic placement of obstacles; low walls, raised garden beds, hedge fauna, benches, etc, near these gates can deter pedestrian bypassing.

A preliminary opinion of cost for the proposed crossing improvements of 14<sup>th</sup> St (US 12) was approximated by BNSF to be \$1M. Characteristics at 14<sup>th</sup> St (US 12) crossing such as a multiple set of tracks, one thru and two turn lanes broken/intersected mid-length by the rail crossing, and close proximity to traffic signals requiring an interconnect are responsible for the above average cost. Once again, a full diagnostic meeting with BNSF, FRA and the roadway authorities will be required to request an actual cost estimate from BNSF.

13<sup>th</sup> St & 12<sup>th</sup> St – These two at-grade rail crossings simply do not justify the costs required to upgrade both crossings with Quad Gates as much lower traffic volumes are experienced and three at-grade rail crossings currently exist over a span of three blocks. Pedestrian rail crossing facilities could be improved in a manner similar to the 14<sup>th</sup> St (US 12) crossing. The following configuration is proposed to improve safety in a cost effective manner:



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- Paired One-Ways – 13<sup>th</sup> St and 12<sup>th</sup> St are re-designated as paired one-ways either within the CBD or between Pacific Ave and Atlantic Ave. In this configuration, traffic will only approach from one direction, allowing for the opposing standard automatic gate to be relocated across the tracks creating the full width protection of a Quad Gate.

BNSF estimated a probable cost of \$70k - \$80k per crossing or \$140k - \$160k total, to create the proposed automatic gate arrangement through the relocation the existing active protection devices. These estimated costs do not include any costs such as; signal reprogramming, traffic stripping or signage, associated with the re-designation of 13<sup>th</sup> St and 12<sup>th</sup> St as paired one-ways.

### 4.3.1 Mitigation of Identified Issues

The proposed modernization of Benson's CBD at-grade crossings will; create a higher level of safety and protection for the travelling public, substantially reduce the risk of a vehicle initiated derailment, as well as deliver enhanced pedestrian safety and mobility.

The identified issue of improving emergency service's mobility and response times will remain unaffected.

### 4.3.2 New Issues Created

Undesirable effects resulting from the proposed alternative are provided below;

Social Impacts: Minor disruptions could result during the implementation of either proposed option; Closing of the 12<sup>th</sup> St Crossing or Paired One-Ways.

Environmental Impacts: Construction activities within the CBD may temporarily impact local air quality and create marginal levels of noise pollution.

Economic Impacts: The closure of the 12<sup>th</sup> St crossing could marginally impact a select few local businesses at the eastern edges of the CBD.

### 4.3.3 Summary

The proposed alternative is well balanced, realizing the full potential of benefits, minimizing the negative side-effects, remaining cost effective, embracing the City of Benson's growth of the CBD, as well as maintaining the ability to be accomplished in the short to medium term future. This alternative is a feasible mid to long-term solution capable of managing risk at the CBD crossings.

## 4.4 ADDITIONAL POTENTIAL IMPROVEMENTS

During the study, several new developments arose with significant relevance to the identified issues or proposed alternatives, allowing further discussion of their importance. Although these



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issues were outside of the original scope of the study, they are still relevant issues with train interactions in the City of Benson.

### 4.4.1 BNSF Rail Improvements

Section 2.4.5 briefly addresses BNSF's planned improvements near the City of Benson, in particular the potential for upgrading of the existing manual switches to automatic switches. It should be noted that an upgrade to automatic switches will perform in a similar fashion to the manual switches, requiring the train to stop in the nearby vicinity before becoming active. The required stop and subsequent start is a majority of the delay. Automatic switches are manually inoperable by the train's engineer, requiring communications with a dispatcher to remotely toggle the switch; occasionally resulting in delays as the train waits for an available dispatcher.

### 4.4.2 Pedestrian Safety Outside of the CBD

During the site visit, concern was expressed for the safety of pedestrians outside of the Benson's downtown area. The single pedestrian route through the CBD is limiting pedestrian mobility within the City of Benson and has prompted unsafe pedestrian-rail interactions on the BNSF tracks south of the public pool between 21<sup>st</sup> St and 22<sup>nd</sup> St, shown in Figure 1. Rather than lengthen their route by travelling through the CBD, pedestrians are crossing the tracks completely unprotected. This area would benefit from a future pedestrian-rail grade separated crossing facility which safely, increases access and mobility.

## 5.0 RECOMMENDATIONS AND IMPLEMENTATION PLAN

The implementation plan of this study summarizes the recommended short- and mid-term improvements that mitigate the original issues identified within the scope of work for the study. Each recommended improvement includes the opinion of probable cost and an implementation plan with potential funding sources and timelines to make steps toward implementing a future project.

### 5.1 RECOMMENDED IMPROVEMENTS

#### 5.1.1 Emergency Services Mobility Improvements

The recommended projects to improve the mobility and response time for emergency service vehicles in the City of Benson in regards to their interactions with rail traffic include a combination of ITS communications from each crossing to notify emergency responders of open crossings at the time of an emergency and improvements to Pacific Avenue to ensure that the roadway is available for the use by emergency responder vehicles all year round. The projects are individually summarized below:

- ITS Communication Improvements at four at-grade crossings – CR 3, CR 20, 14<sup>th</sup> Street (US 12) and 20<sup>th</sup> Avenue SE - \$5,000 per location = \$20,000 (Cost does not include design).
- Upgrades for active gates, signals and constant warning time at 20<sup>th</sup> Avenue SE = \$350,000 (Cost is high level and needs diagnostic meeting)
- Improvements to Stabilize Pacific Avenue from 9<sup>th</sup> Street to 20<sup>th</sup> Avenue SE – Low Cost Option 2 = \$350,000
- Total opinion of probable cost for all combined improvements = \$720,000

##### 5.1.1.1 Potential Funding Sources and Project Implementation

In order to implement the ITS Communication Improvements and the upgrades to the 20<sup>th</sup> Avenue SE at-grade crossing, the City of Benson would first need to schedule a diagnostic meeting with BNSF, FRA and appropriate roadway authority owners. The purpose of the diagnostic meeting is for all parties involved to review the crossings on site, discuss the project issues and potential solutions as well as request an official cost estimate from BNSF for the crossing improvements. The City of Benson would need to design the ITS required to transfer the communications of whether or not the crossings are open to their emergency service responders in addition to coordinating the connection into the communication cable furnished by BNSF.



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The Highway Safety Improvement Program (HSIP) is a competitive grant program that is solicited annually to make safety improvements on roadways and intersections. This program allows for 90% of the project to apply for the Federal Funds with a 10% local match. The last funding application solicitation held a project maximum dollar amount of \$350,000 per project. It is felt that the ITS Communication Improvements at the four at-grade crossings would be a great application for the competitive HSIP Funds.

The Railroad-Highway Grade Crossing Safety Improvement Program also has funds directly set aside each year for the State to select existing at-grade rail crossings in need of upgraded crossing improvements. This is typically put out on a request list to the State of Minnesota and can be funded at 100% of the cost with the Federal Funds. MnDOT's Office of Freight and Commercial Vehicle Operations (OFCVO), Rail Administration Section typically works with the counties, cities, townships and railroads to improve the railroad-highway transportation infrastructure. It is felt that upgrades for active gates, signals and constant warning time at 20<sup>th</sup> Avenue SE could be 100% funded with this program.

The Local Road Improvement Program (LRIP) is a competitive grant program that provides funding assistance to local agencies on transportation projects. During the last project solicitation process, an applicant could apply for their full project amount up to \$750,000 (not including the costs for right of way acquisition, engineering costs or enhancement projects). Improvements to Pacific Avenue from 9<sup>th</sup> Street to 20<sup>th</sup> Avenue SE – Low Cost Option 2 – \$350,000 would be eligible for LRIP grant funds based on the definition of eligible projects. The City would still need to account for engineering costs for the project.

### 5.1.2 Safety Improvements within the CBD

The recommended projects to improve safety at the existing three at-grade crossings within Benson's CBD is primarily based on the results of the December 2014 MnDOT report for Improvements to the Highway-Rail Grade Crossings and Rail Safety in Minnesota . The recommended projects are individually summarized below:

- 14<sup>th</sup> St (US 12) – Installation of four quadrant gates in all quadrants of the at-grade crossing that will be interconnected to the traffic signals at the adjacent intersections of Pacific Ave and Atlantic Ave. The proposed pedestrian crossing facilities will protect the active crossing, by physically restricting unsafe pedestrian movements through the use of pedestrian automatic gates and/or swing gates = \$1,000,000.
- 13<sup>th</sup> St & 12<sup>th</sup> St – Convert 13<sup>th</sup> and 12<sup>th</sup> Street to a paired one-way system within the CBD between Pacific and Atlantic Avenue. In this configuration, traffic will only approach from one direction, allowing for the opposing standard automatic gate to be relocated across the tracks creating the full width protection of a Quad Gate = \$160,000
- Total opinion of probable cost for all combined improvements = \$1,160,000.



## CITY OF BENSON RAILROAD CROSSING GRADE SEPARATION STUDY

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### 5.1.2.1 Potential Funding Sources and Project Implementation

The main purpose for recommending the at-grade safety improvements at the three downtown crossings is based on the recommendations from the December 2014 MnDOT report for Improvements to the Highway-Rail Grade Crossings and Rail Safety in Minnesota. Within the study, the state was allocated \$2,000,000 for short term improvements. Although none of the Benson crossings were recommended as part of the \$2,000,000 short term improvements, we feel that the City of Benson could meet with their state representatives to discuss making improvements to the three downtown at-grade crossings with the next round of funds. Given that the three crossings ranked number 1, 8 and 15 of all 102 crossings studied by MnDOT and the now completed recommended safety improvements; the estimated cost of \$1,160,000 to make major safety improvements to the three crossings should be considered by the state.

As noted previously that if funds are identified for these improvements, the City of Benson will need to work with BNSF, FRA and other roadway authorities to hold a diagnostic meeting to discuss the full potential of safety options and request more detailed cost estimates for the improvements from BNSF.

### 5.1.3 Long-Term Rail Grade Separation

Although the December 2014 MnDOT report for Improvements to the Highway-Rail Grade Crossings and Rail Safety in Minnesota recommends a future long-term rail grade separation at the at-grade crossing in Benson at 14<sup>th</sup> Street (US 12) as the number one future grade crossing for consideration; the findings of this study determined that a future grade separated crossing in downtown Benson at either the 14<sup>th</sup> or 13<sup>th</sup> Street at-grade crossings is not a feasible option for the City based on the physical impacts that it would have to the businesses located within their CBD. This study has recommended that a long term grade separation should be considered at an alternate location (outside of the CBD) and would likely need to be paired with the relocation or realignment of the state highway system to ensure that the major traffic volumes that currently exist at the 14<sup>th</sup> Street (US 12) at-grade crossing would relocate to the future grade separation. It is recommended that a full feasibility study be completed to looking into potential alternatives for this future grade separation and relocation of the US 12 alignment outside of the Benson CBD.

#### 5.1.3.1 Potential Funding Sources and Project Implementation

Since the future grade separation will likely include the relocation of the State Highway, it is recommended that the City of Benson partner with MnDOT in conducting and funding feasibility study to determine if there are feasible locations to plan for a long-term grade separation. This study may be eligible through planning grant funds or through a funding source dedicated by the state to support the number one recommendation from their December 2014 Study.



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Appendix A  
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## Appendix A FRA CROSSING INVENTORY FORMS

**U.S. DOT - CROSSING INVENTORY INFORMATION  
AS OF 7/24/2014**

Crossing No.: **067929B**      Update Reason: **Changed Crossing**      Effective Begin-Date of Record: **06/29/12**  
 Railroad: **BNSF BNSF Rwy Co. [BNSF]**      End-Date of Record:  
 Initiating Agency **Railroad**      Type and Position: **Public At Grade**

**Part I Location and Classification of Crossing**

Division:	<b>TWIN CITIES</b>	State:	<b>MN</b>
Subdivision:	<b>MORRIS</b>	County:	<b>SWIFT</b>
Branch or Line Name:	<b>CP 98-E BRECK</b>	City:	<b>In BENSON</b>
Railroad Milepost:	<b>0132.56</b>	Street or Road Name:	<b>12TH ST.</b>
RailRoad I.D. No.:	<b>0022</b>	Highway Type & No.:	<b>CITY</b>
Nearest RR Timetable Stn:	<b>BENSON</b>	HSR Corridor ID:	
Parent Railroad:		County Map Ref. No.:	<b>26</b>
Crossing Owner:		Latitude:	<b>45.3139705</b>
ENS Sign Installed:	<b>Yes</b>	Longitude:	<b>-95.5990320</b>
Passenger Service:	<b>None</b>	Lat/Long Source:	<b>Actual</b>
Avg Passenger Train Count:	<b>0</b>	Quiet Zone:	<b>No</b>
Adjacent Crossing with Separate Number:	<b>No</b>		

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:	<b>F0474</b>			

Narrative:

Emergency Contact: **(800)832-5452**      Railroad Contact: **(817)352-1549**      State Contact: **(651)366-3667**

**Part II Railroad Information**

Number of Daily Train Movements:		Less Than One Movement Per Day:	<b>No</b>
Total Trains:	<b>13</b>	Total Switching:	<b>0</b>
Typical Speed Range Over Crossing: From	<b>1</b> to <b>40</b> mph	Day Thru:	<b>7</b>
Type and Number of Tracks: Main:	<b>1</b>	Other:	<b>2</b>
		Specify:	<b>PASS &amp; IND</b>
Does Another RR Operate a Separate Track at Crossing?			<b>No</b>
Does Another RR Operate Over Your Track at Crossing?			<b>No</b>

# U.S. DOT - CROSSING INVENTORY INFORMATION

Crossing **067929B**

Continued

Effective Begin-Date of Record: **06/29/12**

End-Date of Record:

## Part III: Traffic Control Device Information

Signs:

Crossbucks:	<b>0</b>	Highway Stop Signs:	<b>0</b>
Advanced Warning:	<b>Yes</b>	Hump Crossing Sign:	<b>No</b>
Pavement Markings:	<b>Stop Lines</b>	Other Signs: <b>2</b>	Specify: <b>R15-2</b>
		<b>0</b>	

Train Activated Devices:

Gates:	<b>2</b>	4 Quad or Full Barrier:	<b>No</b>
Mast Mounted FL:	<b>4</b>	Total Number FL Pairs:	<b>9</b>
Cantilevered FL (Over):	<b>2</b>	Cantilevered FL (Not over):	<b>0</b>
Other Flashing Lights:	<b>0</b>	Specify Other Flashing Lights:	
Highway Traffic Signals:	<b>0</b>	Wigwags: <b>0</b>	Bells: <b>1</b>
Other Train Activated Warning Devices:		Special Warning Devices Not Train Activated:	
Channelization:	<b>None</b>	Type of Train Detection:	<b>Constant Warning Time</b>
Track Equipped with Train Signals?	<b>Yes</b>	Traffic Light Interconnection/Preemption:	<b>N/A</b>

## Part IV: Physical Characteristics

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

## Part V: Highway Information

Highway System:	<b>Non-Federal-aid</b>	Functional Classification of Road at Crossing:	<b>Rural Local</b>
Is Crossing on State Highway System:	<b>No</b>	AADT Year:	<b>2009</b>
Annual Average Daily Traffic (AADT):	<b>000415</b>	Avg. No of School Buses per Day:	<b>2</b>
Estimated Percent Trucks:	<b>05</b>		
Posted Highway Speed:	<b>30</b>		

# U.S. DOT - CROSSING INVENTORY INFORMATION AS OF 7/24/2014

Crossing No.: 067928U      Update Reason: Changed Crossing      Effective Begin-Date of Record: 06/29/12  
 Railroad: BNSF BNSF Rwy Co. [BNSF]      End-Date of Record:  
 Initiating Agency Railroad      Type and Position: Public At Grade

## Part I Location and Classification of Crossing

Division:	TWIN CITIES	State:	MN
Subdivision:	MORRIS	County:	SWIFT
Branch or Line Name:	CP 98-E BRECK	City:	In BENSON
Railroad Milepost:	0132.63	Street or Road Name:	13TH ST
RailRoad I.D. No.:	0022	Highway Type & No.:	CITY
Nearest RR Timetable Stn:	BENSON	HSR Corridor ID:	
Parent Railroad:		County Map Ref. No.:	27
Crossing Owner:		Latitude:	45.3143586
ENS Sign Installed:	Yes	Longitude:	-95.6003578
Passenger Service:	None	Lat/Long Source:	Actual
Avg Passenger Train Count:	0	Quiet Zone:	No
Adjacent Crossing with Separate Number:	No		

### 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:	F0474A		

Narrative:

Emergency Contact: (800)832-5452      Railroad Contact: (817)352-1549      State Contact: (651)366-3667

## Part II Railroad Information

Number of Daily Train Movements:		Less Than One Movement Per Day:	No
Total Trains:	13	Total Switching:	0
Typical Speed Range Over Crossing: From	1	to	40 mph
Type and Number of Tracks:	Main: 1	Other:	1
		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 067928U

Continued

Effective Begin-Date of Record: 06/29/12

End-Date of Record:

## Part III: Traffic Control Device Information

Signs:

Crossbucks:	0	Highway Stop Signs:	0
Advanced Warning:	No	Hump Crossing Sign:	No
Pavement Markings:	Stop Lines	Other Signs: 2	Specify: R15-2
		0	

Train Activated Devices:

Gates:	2	4 Quad or Full Barrier:	No
Mast Mounted FL:	4	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:	Constant Warning Time
Track Equipped with Train Signals?	Yes	Traffic Light Interconnection/Preemption:	Simultaneous 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?	Yes
Nearby Intersecting Highway?	76 to 200 feet	Is Crossing Illuminated?	Yes
Does Track Run Down a Street?	No		
Is Commercial Power Available? Yes			

## Part V: Highway Information

Highway System:	Non-Federal-aid	Functional Classification of Road at Crossing:	Rural Local
Is Crossing on State Highway System:	No	AADT Year:	2009
Annual Average Daily Traffic (AADT):	000415	Avg. No of School Buses per Day:	0
Estimated Percent Trucks:	10		
Posted Highway Speed:	30		

**U.S. DOT - CROSSING INVENTORY INFORMATION  
AS OF 7/24/2014**

Crossing No.: 067927M      Update Reason: Changed Crossing      Effective Begin-Date of Record: 06/29/12  
Railroad: BNSF BNSF Rwy Co. [BNSF]      End-Date of Record:  
Initiating Agency Railroad      Type and Position: Public At Grade

**Part I Location and Classification of Crossing**

Division:	TWIN CITIES	State:	MN
Subdivision:	MORRIS	County:	SWIFT
Branch or Line Name:	CP 98-E BRECK	City:	In BENSON
Railroad Milepost:	0132.70	Street or Road Name:	14TH ST
RailRoad I.D. No.:	0022	Highway Type & No.:	US 12
Nearest RR Timetable Stn:	BENSON	HSR Corridor ID:	
Parent Railroad:		County Map Ref. No.:	28
Crossing Owner:		Latitude:	45.3147397
ENS Sign Installed:	Yes	Longitude:	-95.6016812
Passenger Service:	None	Lat/Long Source:	Actual
Avg Passenger Train Count:	0	Quiet Zone:	No
Adjacent Crossing with Separate Number:	No		

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:	F0474B			
Narrative:	NEW GATES, CANTS AND SURFACE 2005			

Emergency Contact: (800)832-5452      Railroad Contact: (817)352-1549      State Contact: (651)366-3667

**Part II Railroad Information**

Number of Daily Train Movements:		Less Than One Movement Per Day:	No
Total Trains: 13	Total Switching: 0	Day Thru:	7
Typical Speed Range Over Crossing: From 1 to 40 mph		Maximum Time Table Speed:	40
Type and Number of Tracks: Main: 1 Other: 1		Specify:	PASSING
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 067927M

Continued

Effective Begin-Date of Record: 06/29/12

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	Other Signs: 2	Specify: R15-2
		0	

Train Activated Devices:

Gates:	2	4 Quad or Full Barrier:	No
Mast Mounted FL:	3	Total Number FL Pairs:	6
Cantilevered FL (Over):	1	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:	Constant Warning Time
Track Equipped with Train Signals?	Yes	Traffic Light Interconnection/Preemption:	Advance Preemption

## Part IV: Physical Characteristics

Type of Development:	Commercial	Smallest Crossing Angle:	60 to 90 Degrees
Number of Traffic Lanes Crossing Railroad:	4	Are Truck Pullout Lanes Present?	No
Is Highway Paved?	Yes	If Other:	
Crossing Surface:	Concrete	Is it Signalized?	Yes
Nearby Intersecting Highway?	76 to 200 feet	Is Crossing Illuminated?	Yes
Does Track Run Down a Street?	No		
Is Commercial Power Available? Yes			

## Part V: Highway Information

Highway System:	Other National Highway	Functional Classification of Road at Crossing:	Rural Minor Arterial
Is Crossing on State Highway System:	Yes	AADT Year:	2009
Annual Average Daily Traffic (AADT):	008200	Avg. No of School Buses per Day:	16
Estimated Percent Trucks:	22		
Posted Highway Speed:	30		

# U.S. DOT - CROSSING INVENTORY INFORMATION AS OF 7/24/2014

Crossing No.: 067912X      Update Reason: Changed Crossing      Effective Begin-Date of Record: 09/20/10  
 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:	MN
Subdivision:	MORRIS	County:	SWIFT
Branch or Line Name:	CP 98-E BRECK	City:	In BENSON
Railroad Milepost:	0131.62	Street or Road Name:	20TH AVE SE
RailRoad I.D. No.:	0022	Highway Type & No.:	TWN 192
Nearest RR Timetable Stn:	BENSON	HSR Corridor ID:	
Parent Railroad:		County Map Ref. No.:	25
Crossing Owner:		Latitude:	45.3092605
ENS Sign Installed:	Yes	Longitude:	-95.5826726
Passenger Service:	None	Lat/Long Source:	Actual
Avg Passenger Train Count:	0	Quiet Zone:	No
Adjacent Crossing with Separate Number:	No		

### 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: (817)352-1549      State Contact: (651)366-3667

## Part II Railroad Information

Number of Daily Train Movements:		Less Than One Movement Per Day:	No
Total Trains: 13	Total Switching: 0	Day Thru:	7
Typical Speed Range Over Crossing: From 1 to 40 mph		Maximum Time Table Speed:	40
Type and Number of Tracks: Main: 1 Other: 1		Specify:	PASSING
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 067912X

Continued

Effective Begin-Date of Record: 09/20/10

End-Date of Record:

## Part III: Traffic Control Device Information

Signs:

Crossbucks:	2	Highway Stop Signs:	0
Advanced Warning:	Yes	Hump Crossing Sign:	No
Pavement Markings:	No Markings	Other Signs: 2	Specify: R1-2
		2	W10-3

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?	Yes	Traffic Light Interconnection/Preemption:	N/A

## Part IV: Physical Characteristics

Type of Development:	Open Space	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	Is it Signalized?	No
Nearby Intersecting Highway?	Less than 75 feet	Is Crossing Illuminated?	No
Does Track Run Down a Street?	No		
Is Commercial Power Available? Yes			

## Part V: Highway Information

Highway System:	Non-Federal-aid	Functional Classification of Road at Crossing:	Rural Local
Is Crossing on State Highway System:	No	AADT Year:	2009
Annual Average Daily Traffic (AADT):	000200	Avg. No of School Buses per Day:	2
Estimated Percent Trucks:	10		
Posted Highway Speed:	55		

# U.S. DOT - CROSSING INVENTORY INFORMATION AS OF 7/24/2014

Crossing No.: 075348Y      Update Reason: Changed Crossing      Effective Begin-Date of Record: 01/06/14  
 Railroad: BNSF BNSF Rwy Co. [BNSF]      End-Date of Record:  
 Initiating Agency Railroad      Type and Position: Public At Grade

## Part I Location and Classification of Crossing

Division:	TWIN CITIES	State:	MN
Subdivision:	APPLETON	County:	SWIFT
Branch or Line Name:	BENSON-ABERDEEN	City:	Near BENSON
Railroad Milepost:	0000.84	Street or Road Name:	25TH AVE NW
RailRoad I.D. No.:	0200	Highway Type & No.:	CSAH 3
Nearest RR Timetable Stn:	BENSON	HSR Corridor ID:	
Parent Railroad:		County Map Ref. No.:	36
Crossing Owner:	BNSF Rwy Co. [BNSF]	Latitude:	45.3161046
ENS Sign Installed:		Longitude:	-95.6347518
Passenger Service:	None	Lat/Long Source:	Actual
Avg Passenger Train Count:	0	Quiet Zone:	No
Adjacent Crossing with Separate Number:	No		

### 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: F1483

Narrative:

Emergency Contact: (800)832-5452      Railroad Contact: (817)352-1549      State Contact: (651)366-3667

## Part II Railroad Information

Number of Daily Train Movements:		Less Than One Movement Per Day:	No
Total Trains:	6	Day Thru:	3
Total Switching:	0	Maximum Time Table Speed:	10
Typical Speed Range Over Crossing: From	1 to 10 mph	Specify:	Other Non
Type and Number of Tracks: Main:	0	Other:	1
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 075348Y

Continued

Effective Begin-Date of Record: 01/06/14

End-Date of Record:

## Part III: Traffic Control Device Information

Signs:

Crossbucks:	2	Highway Stop Signs:	0
Advanced Warning:	Yes	Hump Crossing Sign:	No
Pavement Markings:	Stop Lines and RR Xing Symbols	Other Signs:	2 Specify: W14-3
			0

Train Activated Devices:

Gates:	2	4 Quad or Full Barrier:	No
Mast Mounted FL:	2	Total Number FL Pairs:	4
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:	None	Type of Train Detection:	Constant Warning Time
Track Equipped with Train Signals?	Yes	Traffic Light Interconnection/Preemption:	N/A

## Part IV: Physical Characteristics

Type of Development:	Open Space	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:	Concrete	Is it Signalized?	No
Nearby Intersecting Highway?	N/A	Is Crossing Illuminated?	No
Does Track Run Down a Street?	No		
Is Commercial Power Available? Yes			

## Part V: Highway Information

Highway System:	Non-Federal-aid	Functional Classification of Road at Crossing:	Rural Local
Is Crossing on State Highway System:	No		
Annual Average Daily Traffic (AADT):	001250	AADT Year:	2009
Estimated Percent Trucks:	05	Avg. No of School Buses per Day:	0
Posted Highway Speed:	55		

**U.S. DOT - CROSSING INVENTORY INFORMATION  
AS OF 7/24/2014**

Crossing No.: 067925Y      Update Reason: Changed Crossing      Effective Begin-Date of Record: 03/01/14  
Railroad: BNSF BNSF Rwy Co. [BNSF]      End-Date of Record:  
Initiating Agency Railroad      Type and Position: Public At Grade

**Part I Location and Classification of Crossing**

Division:	TWIN CITIES	State:	MN
Subdivision:	MORRIS	County:	SWIFT
Branch or Line Name:	CP 98-E BRECK	City:	Near BENSON
Railroad Milepost:	0134.30	Street or Road Name:	20TH ST NW
RailRoad I.D. No.:	0022	Highway Type & No.:	CSAH 20
Nearest RR Timetable Stn:	BENSON	HSR Corridor ID:	
Parent Railroad:		County Map Ref. No.:	29
Crossing Owner:		Latitude:	45.3256173
ENS Sign Installed:	Yes	Longitude:	-95.6305301
Passenger Service:	None	Lat/Long Source:	Actual
Avg Passenger Train Count:	0	Quiet Zone:	No
Adjacent Crossing with Separate Number:	No		

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:      F0749

Narrative:

Emergency Contact: (800)832-5452      Railroad Contact: (817)352-1549      State Contact: (651)366-3667

**Part II Railroad Information**

Number of Daily Train Movements:		Less Than One Movement Per Day:	No
Total Trains:      13      Total Switching:      0		Day Thru:	7
Typical Speed Range Over Crossing: From      1      to 40 mph		Maximum Time Table Speed:	40
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 067925Y

Continued

Effective Begin-Date of Record: 03/01/14

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:	No Markings	Other Signs: 2	Specify: W10-2
		1	W14-3

Train Activated Devices:

Gates:	0	4 Quad or Full Barrier:	No
Mast Mounted FL:	2	Total Number FL Pairs:	4
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:	None	Type of Train Detection:	Constant Warning Time
Track Equipped with Train Signals?	Yes	Traffic Light Interconnection/Preemption:	N/A

## 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:	Concrete	Is it Signalized?	No
Nearby Intersecting Highway?	Less than 75 feet	Is Crossing Illuminated?	No
Does Track Run Down a Street?	No		
Is Commercial Power Available? Yes			

## Part V: Highway Information

Highway System:	Other FA Highway - Not NHS	Functional Classification of Road at Crossing:	Rural Minor Collector
Is Crossing on State Highway System:	No		
Annual Average Daily Traffic (AADT):	001600	AADT Year:	2009
Estimated Percent Trucks:	05	Avg. No of School Buses per Day:	2
Posted Highway Speed:	55		

Appendix B  
January 28, 2015

## Appendix B RAIL CROSSING ACCIDENT REPORTS

HIGHWAY-RAIL GRADE CROSSING

ACCIDENT/INCIDENT REPORT

DEPARTMENT OF TRANSPORTATION  
FEDERAL RAILROAD ADMINISTRATION (FRA)

OMB Approval No. 2130-0500

Name Of				Alphabetic Code	RR Accident/Incident No.
1. Reporting Railroad <b>BNSF Rwy Co. [BNSF]</b>				1a. <b>BNSF</b>	1b. <b>DK0701201</b>
2. Other Railroad Involved in Train Accident/Incident				2a.	2b. <b>DK0701201</b>
3. Railroad Responsible for Track Maintenance <b>BNSF Rwy Co. [BNSF]</b>				3a. <b>BNSF</b>	3b. <b>DK0701201</b>
4. U.S. DOT-AAR Grade Crossing ID No. <b>067927M</b>		5. Date of Accident/Incident <b>07/31/01</b>		6. Time of Accident/Incident <b>09:45 AM</b>	
7. Nearest Railroad Station <b>BENSON</b>		8. Division <b>DAKOTA</b>		9. County <b>SWIFT</b>	
11. City (if in a city) <b>BENSON</b>		12. Highway Name or No. <b>14TH STREET</b>		10. State Abbr. <b>27</b> Code <b>MN</b>	
Highway User Involved			Rail Equipment Involved		
13. Type C. Truck-trailer F. Bus J. Other Motor Vehicle A. Auto D. Pick-up truck G. School Bus K. Pedestrian B. Truck E. Van H. Motorcycle M. Other (specify) <b>A</b>			17. Equipment 1. Train (units pulling) 5. Car(s) (standing) 2. Train (units pushing) 6. Light loco(s) (moving) 3. Train (standing) 7. Light loco(s) (standing) 8. Other (specify) A. Train pulling- RCL B. Train pushing- RCL C. Train standing- RCL <b>4</b>		
14. Vehicle Speed (est. mph at impact) <b>25</b>		15. Direction (geographical) 1. North 2. South 3. East 4. West <b>3</b>		18. Position of Car Unit in Train <b>1</b>	
16. Position 1. Stalled on crossing 3. Moving over crossing 2. Stopped on Crossing 4. Trapped <b>3</b>			19. Circumstance 1. Rail equipment struck highway user 2. Rail equipment struck by highway user <b>2</b>		
20a. Was the highway user and/or rail equipment involved in the impact transporting hazardous materials? 1. Highway User 2. Rail Equipment 3. Both 4. Neither <b>4</b>			20b. Was there a hazardous materials release by 1. Highway User 2. Rail Equipment 3. Both 4. Neither <b>4</b>		
20c. State the name and quantity of the hazardous material released, if any					
21. Temperature (specify if minus) <b>95</b> °F		22. Visibility (single entry) 1. Dawn 2. Day 3. Dusk 4. Dark <b>2</b>		23. Weather (single entry) 1. Clear 2. Cloudy 3. Rain 4. Fog 5. Sleet 6. Snow <b>1</b>	
24. Type of Equipment Consist 1. Freight train 4. Work train 7. Yard/Switching (single entry) 2. Passenger train 5. Single car 8. Light loco(s) 3. Commuter train 6. Cut of cars 9. Main./inspect. car <b>9</b>			25. Track Type Used by Rail Equipment Involved 1. Main 2. Yard 3. Siding 4. Industry <b>1</b>		26. Track Number or Name <b>MAIN</b>
27. FRA Track Class <b>3</b>		28. Number of Locomotive Units <b>0</b>	29. Number of Cars <b>1</b>	30. Consist Speed (Recorded if available) R. Recorded E. Estimated <b>2</b> mph <b>E</b>	
31. Time Table Direction 1. North 2. South 3. East 4. West <b>4</b>			32. Type of Crossing 1. Gates 4. Wig wags 7. Crossbucks 10. Flagged by crew 2. Cantilever FLS 5. Hwy. traffic signals 8. Stop signs 11. Other (specify) Warning 3. Standard FLS 6. Audible 9. Watchman 12. None Code(s) <b>10</b>		
33. Signaled Crossing Warning		34. Whistle Ban 1. Yes 2. No 3. Unknown <b>2</b>		35. Location of Warning 1. Both Sides 2. Side of Vehicle Approach 3. Opposite Side of Vehicle Approach <b>2</b>	
36. Crossing Warning Interconnected with Highway Signals 1. Yes 2. No 3. Unknown <b>2</b>		37. Crossing Illuminated by Street Lights or Special Lights 1. Yes 2. No 3. Unknown <b>2</b>		38. Driver's Age 39. Driver's Gender 1. Male 2. Female <b>1</b>	
40. Driver Drove Behind or in Front of Train and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown <b>2</b>		41. Driver 1. Drove around or thru the gate 4. Stopped on crossing 2. Stopped and then proceeded 5. Other (specify) 3. Did not stop <b>3</b>		42. Driver Passed Standing Highway Vehicle 1. Yes 2. No 3. Unknown <b>1</b>	
43. View of Track Obscured by (primary obstruction) 1. Permanent Structure 3. Passing Train 5. Vegetation 7. Other (specify) 2. Standing railroad equipment 4. Topography 6. Highway Vehicles 8. Not Obstructed <b>8</b>			44. Driver was 1. Killed 2. Injured 3. Uninjured <b>3</b>		
45. Was Driver in the Vehicle? 1. Yes 2. No <b>1</b>		46. Highway-Rail Crossing Users Killed Injured <b>0 0</b>		47. Highway Vehicle Property Damage (est. dollar damage) <b>\$1,000</b>	
48. Total Number of Highway-Rail Crossing Users (include driver) <b>1</b>		49. Railroad Employees <b>0 0</b>		50. Total Number of People on Train (include passengers and crew) <b>1</b>	
51. Is a Rail Equipment Accident / Incident Report Being Filed 1. Yes 2. No <b>2</b>		52. Passengers on Train <b>0 0</b>		53a. Special Study Block	
53b. Special Study Block		54. Narrative Description <b>AGE OF DRIVER UNKNOWN.</b>			
55. Typed Name and Title		56. Signature			57. Date

HIGHWAY-RAIL GRADE CROSSING

ACCIDENT/INCIDENT REPORT

DEPARTMENT OF TRANSPORTATION  
FEDERAL RAILROAD ADMINISTRATION (FRA)

OMB Approval No. 2130-0500

Name Of				Alphabetic Code	RR Accident/Incident No.
1. Reporting Railroad <b>BNSF Rwy Co. [BNSF]</b>				1a. <b>BNSF</b>	1b. <b>DK0601200</b>
2. Other Railroad Involved in Train Accident/Incident				2a.	2b. <b>DK0601200</b>
3. Railroad Responsible for Track Maintenance <b>BNSF Rwy Co. [BNSF]</b>				3a. <b>BNSF</b>	3b. <b>DK0601200</b>
4. U.S. DOT-AAR Grade Crossing ID No. <b>067927M</b>		5. Date of Accident/Incident <b>06/14/01</b>		6. Time of Accident/Incident <b>10:05 PM</b>	
7. Nearest Railroad Station <b>BENSON</b>		8. Division <b>DAKOTA</b>		9. County <b>SWIFT</b>	
11. City (if in a city) <b>BENSON</b>		12. Highway Name or No. <b>14TH ST</b>		10. State Abbr. <b>27</b> Code <b>MN</b>	
<input checked="" type="checkbox"/> Public <input type="checkbox"/> Private					
Highway User Involved			Rail Equipment Involved		
13. Type C. Truck-trailer F. Bus J. Other Motor Vehicle A. Auto D. Pick-up truck G. School Bus K. Pedestrian B. Truck E. Van H. Motorcycle M. Other (specify) <b>K</b>			17. Equipment 1. Train (units pulling) 5. Car(s) (standing) 2. Train (units pushing) 6. Light loco(s) (moving) 3. Train (standing) 7. Light loco(s) (standing) <b>1</b>		
14. Vehicle Speed (est. mph at impact)		15. Direction (geographical) 1. North 2. South 3. East 4. West <b>4</b>		18. Position of Car Unit in Train <b>1</b>	
16. Position 1. Stalled on crossing 3. Moving over crossing 2. Stopped on Crossing 4. Trapped <b>3</b>		19. Circumstance 1. Rail equipment struck highway user 2. Rail equipment struck by highway user <b>1</b>			
20a. Was the highway user and/or rail equipment involved in the impact transporting hazardous materials? 1. Highway User 2. Rail Equipment 3. Both 4. Neither <b>4</b>		20b. Was there a hazardous materials release by 1. Highway User 2. Rail Equipment 3. Both 4. Neither <b>4</b>			
20c. State the name and quantity of the hazardous material released, if any					
21. Temperature (specify if minus) <b>60</b> °F		22. Visibility (single entry) 1. Dawn 2. Day 3. Dusk 4. Dark <b>4</b>		23. Weather (single entry) 1. Clear 2. Cloudy 3. Rain 4. Fog 5. Sleet 6. Snow <b>1</b>	
24. Type of Equipment Consist 1. Freight train 4. Work train 7. Yard/Switching (single entry) 2. Passenger train 5. Single car 8. Light loco(s) 3. Commuter train 6. Cut of cars 9. Main./inspect. car <b>1</b>			25. Track Type Used by Rail Equipment Involved 1. Main 2. Yard 3. Siding 4. Industry <b>1</b>		26. Track Number or Name <b>MAIN</b>
27. FRA Track Class <b>3</b>		28. Number of Locomotive Units <b>2</b>	29. Number of Cars <b>115</b>	30. Consist Speed (Recorded if available) R. Recorded <b>8</b> mph E. Estimated <b>E</b>	
31. Time Table Direction 1. North 2. South 3. East 4. West <b>4</b>					
32. Type of Crossing 1. Gates 4. Wig wags 7. Crossbucks 10. Flagged by crew 2. Cantilever FLS 5. Hwy. traffic signals 8. Stop signs 11. Other (specify) Warning 3. Standard FLS 6. Audible 9. Watchman 12. None Code(s) <b>01 03</b>			33. Signaled Crossing Warning <b>20 sec warn min (1);</b>		34. Whistle Ban 1. Yes 2. No 3. Unknown <b>2</b>
35. Location of Warning 1. Both Sides 2. Side of Vehicle Approach 3. Opposite Side of Vehicle Approach Code <b>1</b>		36. Crossing Warning Interconnected with Highway Signals 1. Yes 2. No 3. Unknown Code <b>3</b>		37. Crossing Illuminated by Street Lights or Special Lights 1. Yes 2. No 3. Unknown Code <b>1</b>	
38. Driver's Age <b>20</b>	39. Driver's Gender 1. Male 2. Female Code <b>1</b>	40. Driver Drove Behind or in Front of Train and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown Code		41. Driver 1. Drove around or thru the gate 4. Stopped on crossing 2. Stopped and then proceeded 5. Other (specify) 3. Did not stop Code	
42. Driver Passed Standing Highway Vehicle 1. Yes 2. No 3. Unknown Code		43. View of Track Obscured by (primary obstruction) 1. Permanent Structure 3. Passing Train 5. Vegetation 7. Other (specify) 2. Standing railroad equipment 4. Topography 6. Highway Vehicles 8. Not Obstructed Code <b>8</b>			
Casualties to:		Killed	Injured	44. Driver was 1. Killed 2. Injured 3. Uninjured Code	
46. Highway-Rail Crossing Users <b>1</b>		<b>0</b>	<b>0</b>	47. Highway Vehicle Property Damage (est. dollar damage) <b>\$0</b>	
49. Railroad Employees <b>0</b>		<b>0</b>	<b>0</b>	48. Total Number of Highway-Rail Crossing Users (include driver) <b>1</b>	
52. Passengers on Train <b>0</b>		<b>0</b>	<b>0</b>	50. Total Number of People on Train (include passengers and crew) <b>2</b>	
53a. Special Study Block		53b. Special Study Block			
54. Narrative Description					
55. Typed Name and Title		56. Signature			57. Date

HIGHWAY-RAIL GRADE CROSSING

ACCIDENT/INCIDENT REPORT

DEPARTMENT OF TRANSPORTATION  
FEDERAL RAILROAD ADMINISTRATION (FRA)

OMB Approval No. 2130-0500

Name Of 1. Reporting Railroad <b>Burlington Northern RR Co. [BN ]</b>				Alphabetic Code 1a. <b>BN</b>		RR Accident/Incident No. 1b. <b>MN1183</b>			
2. Other Railroad Involved in Train Accident/Incident				2a.		2b.			
3. Railroad Responsible for Track Maintenance <b>Burlington Northern RR Co. [BN ]</b>				3a. <b>BN</b>		3b. <b>MN1183</b>			
4. U.S. DOT-AAR Grade Crossing ID No. <b>067927M</b>		5. Date of Accident/Incident <b>09/04/79</b>		6. Time of Accident/Incident <b>05:43 PM</b>					
7. Nearest Railroad Station <b>BENSON</b>		8. Division		9. County <b>SWIFT</b>		10. State Abbr. <b>27</b>	Code <b>MN</b>		
11. City (if in a city) <b>BENSON</b>		12. Highway Name or No. <b>14TH ST</b>				<input checked="" type="checkbox"/> Public	<input type="checkbox"/> Private		
Highway User Involved				Rail Equipment Involved					
13. Type C. Truck-trailer F. Bus J. Other Motor Vehicle A. Auto D. Pick-up truck G. School Bus K. Pedestrian B. Truck E. Van H. Motorcycle M. Other (specify)		Code <b>A</b>		17. Equipment 1. Train (units pulling) 5. Car(s) (standing) 2. Train (units pushing) 6. Light loco(s) (moving) 3. Train (standing) 7. Light loco(s) (standing)		8. Other (specify) A. Train pulling- RCL B. Train pushing- RCL C. Train standing- RCL		Code <b>1</b>	
14. Vehicle Speed (est. mph at impact) <b>0</b>		15. Direction (geographical) 1. North 2. South 3. East 4. West		Code <b>1</b>		18. Position of Car Unit in Train <b>1</b>		Code <b>1</b>	
16. Position 1. Stalled on crossing 3. Moving over crossing 2. Stopped on Crossing 4. Trapped		Code <b>1</b>		19. Circumstance 1. Rail equipment struck highway user 2. Rail equipment struck by highway user		Code <b>1</b>			
20a. Was the highway user and/or rail equipment involved in the impact transporting hazardous materials? 1. Highway User 2. Rail Equipment 3. Both 4. Neither		Code <b>4</b>		20b. Was there a hazardous materials release by 1. Highway User 2. Rail Equipment 3. Both 4. Neither		Code			
20c. State the name and quantity of the hazardous material released, if any									
21. Temperature (specify if minus) <b>65</b> °F		22. Visibility (single entry) 1. Dawn 2. Day 3. Dusk 4. Dark		Code <b>2</b>		23. Weather (single entry) 1. Clear 2. Cloudy 3. Rain 4. Fog 5. Sleet 6. Snow		Code <b>1</b>	
24. Type of Equipment Consist 1. Freight train 4. Work train 7. Yard/Switching (single entry) 2. Passenger train 5. Single car 8. Light loco(s) 3. Commuter train 6. Cut of cars 9. Main./inspect. car		A. Spec. MoW Equip Code <b>1</b>		25. Track Type Used by Rail Equipment Involved 1. Main 2. Yard 3. Siding 4. Industry		Code <b>1</b>		26. Track Number or Name <b>SINGLE MAIN TRACK</b>	
27. FRA Track Class <b>2</b>		28. Number of Locomotive Units <b>1</b>	29. Number of Cars <b>38</b>	30. Consist Speed (Recorded if available) R. Recorded E. Estimated <b>25</b> mph		Code <b>E</b>		31. Time Table Direction 1. North 2. South 3. East 4. West	Code <b>3</b>
32. Type of Crossing 1. Gates 4. Wig wags 7. Crossbucks 10. Flagged by crew 2. Cantilever FLS 5. Hwy. traffic signals 8. Stop signs 11. Other (specify) Warning 3. Standard FLS 6. Audible 9. Watchman 12. None		Code(s) <b>03</b>		33. Signaled Crossing Warning <b>20 sec warn min (1);</b>		34. Whistle Ban 1. Yes 2. No 3. Unknown		Code	
35. Location of Warning 1. Both Sides 2. Side of Vehicle Approach 3. Opposite Side of Vehicle Approach		Code <b>1</b>		36. Crossing Warning Interconnected with Highway Signals 1. Yes 2. No 3. Unknown		Code <b>1</b>		37. Crossing Illuminated by Street Lights or Special Lights 1. Yes 2. No 3. Unknown	Code <b>1</b>
38. Driver's Age	39. Driver's Gender 1. Male 2. Female	Code	40. Driver Drove Behind or in Front of Train and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown		Code <b>2</b>		41. Driver 1. Drove around or thru the gate 4. Stopped on crossing 2. Stopped and then proceeded 5. Other (specify) 3. Did not stop		Code <b>4</b>
42. Driver Passed Standing Highway Vehicle 1. Yes 2. No 3. Unknown		Code <b>2</b>		43. View of Track Obscured by (primary obstruction) 1. Permanent Structure 3. Passing Train 5. Vegetation 7. Other (specify) 2. Standing railroad equipment 4. Topography 6. Highway Vehicles 8. Not Obstructed				Code <b>8</b>	
Casualties to:		Killed	Injured	44. Driver was 1. Killed 2. Injured 3. Uninjured		Code <b>3</b>		45. Was Driver in the Vehicle? 1. Yes 2. No	Code <b>2</b>
46. Highway-Rail Crossing Users		<b>0</b>	<b>0</b>	47. Highway Vehicle Property Damage (est. dollar damage) <b>\$200</b>		48. Total Number of Highway-Rail Crossing Users (include driver) <b>0</b>			
49. Railroad Employees		<b>0</b>	<b>0</b>	50. Total Number of People on Train (include passengers and crew)		51. Is a Rail Equipment Accident / Incident Report Being Filed 1. Yes 2. No		Code <b>2</b>	
52. Passengers on Train				<b>0</b>		<b>0</b>		<b>0</b>	
53a. Special Study Block				53b. Special Study Block					
54. Narrative Description									
55. Typed Name and Title				56. Signature			57. Date		

HIGHWAY-RAIL GRADE CROSSING

ACCIDENT/INCIDENT REPORT

DEPARTMENT OF TRANSPORTATION  
FEDERAL RAILROAD ADMINISTRATION (FRA)

OMB Approval No. 2130-0500

Name Of				Alphabetic Code	RR Accident/Incident No.
1. Reporting Railroad <b>Burlington Northern RR Co. [BN ]</b>				1a. <b>BN</b>	1b. <b>MN1536</b>
2. Other Railroad Involved in Train Accident/Incident				2a.	2b.
3. Railroad Responsible for Track Maintenance <b>Burlington Northern RR Co. [BN ]</b>				3a. <b>BN</b>	3b. <b>MN1536</b>
4. U.S. DOT-AAR Grade Crossing ID No. <b>067927M</b>		5. Date of Accident/Incident <b>11/23/77</b>		6. Time of Accident/Incident <b>11:10 AM</b>	
7. Nearest Railroad Station <b>BENSON</b>		8. Division		9. County <b>SWIFT</b>	
11. City (if in a city) <b>BENSON</b>		12. Highway Name or No. <b>14TH STREET</b>		10. State Abbr. <b>27</b> Code <b>MN</b>	
<input checked="" type="checkbox"/> Public <input type="checkbox"/> Private					
Highway User Involved			Rail Equipment Involved		
13. Type C. Truck-trailer F. Bus J. Other Motor Vehicle A. Auto D. Pick-up truck G. School Bus K. Pedestrian B. Truck E. Van H. Motorcycle M. Other (specify) Code <b>A</b>			17. Equipment 1. Train (units pulling) 5. Car(s) (standing) 2. Train (units pushing) 6. Light loco(s) (moving) 3. Train (standing) 7. Light loco(s) (standing) 8. Other (specify) A. Train pulling- RCL B. Train pushing- RCL C. Train standing- RCL Code <b>4</b>		
14. Vehicle Speed (est. mph at impact) <b>2</b>		15. Direction (geographical) 1. North 2. South 3. East 4. West Code <b>1</b>		18. Position of Car Unit in Train <b>1</b>	
16. Position 1. Stalled on crossing 3. Moving over crossing 2. Stopped on Crossing 4. Trapped Code <b>3</b>		19. Circumstance 1. Rail equipment struck highway user 2. Rail equipment struck by highway user Code <b>2</b>			
20a. Was the highway user and/or rail equipment involved in the impact transporting hazardous materials? 1. Highway User 2. Rail Equipment 3. Both 4. Neither Code <b>4</b>		20b. Was there a hazardous materials release by 1. Highway User 2. Rail Equipment 3. Both 4. Neither Code			
20c. State the name and quantity of the hazardous material released, if any					
21. Temperature (specify if minus) <b>25</b> °F		22. Visibility (single entry) 1. Dawn 2. Day 3. Dusk 4. Dark Code <b>2</b>		23. Weather (single entry) 1. Clear 2. Cloudy 3. Rain 4. Fog 5. Sleet 6. Snow Code <b>6</b>	
24. Type of Equipment Consist 1. Freight train 4. Work train 7. Yard/Switching (single entry) 2. Passenger train 5. Single car 8. Light loco(s) 3. Commuter train 6. Cut of cars 9. Main./inspect. car Code			25. Track Type Used by Rail Equipment Involved 1. Main 2. Yard 3. Siding 4. Industry Code <b>1</b>		26. Track Number or Name <b>SINGLE MAIN</b>
27. FRA Track Class <b>5</b>		28. Number of Locomotive Units <b>0</b>	29. Number of Cars <b>1</b>	30. Consist Speed (Recorded if available) R. Recorded E. Estimated <b>3</b> mph Code <b>E</b>	
31. Time Table Direction 1. North 2. South 3. East 4. West Code <b>3</b>					
32. Type of Crossing 1. Gates 4. Wig wags 7. Crossbucks 10. Flagged by crew 2. Cantilever FLS 5. Hwy. traffic signals 8. Stop signs 11. Other (specify) 3. Standard FLS 6. Audible 9. Watchman 12. None Code(s) <b>03</b>			33. Signaled Crossing Warning		34. Whistle Ban 1. Yes 2. No 3. Unknown Code
35. Location of Warning 1. Both Sides 2. Side of Vehicle Approach 3. Opposite Side of Vehicle Approach Code <b>1</b>		36. Crossing Warning Interconnected with Highway Signals 1. Yes 2. No 3. Unknown Code <b>2</b>		37. Crossing Illuminated by Street Lights or Special Lights 1. Yes 2. No 3. Unknown Code <b>3</b>	
38. Driver's Age	39. Driver's Gender 1. Male 2. Female Code	40. Driver Drove Behind or in Front of Train and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown Code <b>2</b>		41. Driver 1. Drove around or thru the gate 4. Stopped on crossing 2. Stopped and then proceeded 5. Other (specify) 3. Did not stop Code <b>3</b>	
42. Driver Passed Standing Highway Vehicle 1. Yes 2. No 3. Unknown Code <b>2</b>		43. View of Track Obscured by (primary obstruction) 1. Permanent Structure 3. Passing Train 5. Vegetation 7. Other (specify) 2. Standing railroad equipment 4. Topography 6. Highway Vehicles 8. Not Obstructed Code <b>8</b>			
Casualties to:		Killed	Injured	44. Driver was 1. Killed 2. Injured 3. Uninjured Code <b>3</b>	
45. Was Driver in the Vehicle? 1. Yes 2. No Code <b>1</b>					
46. Highway-Rail Crossing Users <b>0</b>		47. Highway Vehicle Property Damage (est. dollar damage) <b>\$25</b>		48. Total Number of Highway-Rail Crossing Users (include driver) <b>1</b>	
49. Railroad Employees <b>0</b>		50. Total Number of People on Train (include passengers and crew) <b>0</b>		51. Is a Rail Equipment Accident / Incident Report Being Filed 1. Yes 2. No Code <b>2</b>	
52. Passengers on Train <b>0</b>					
53a. Special Study Block			53b. Special Study Block		
54. Narrative Description					
55. Typed Name and Title		56. Signature			57. Date

HIGHWAY-RAIL GRADE CROSSING

ACCIDENT/INCIDENT REPORT

DEPARTMENT OF TRANSPORTATION  
FEDERAL RAILROAD ADMINISTRATION (FRA)

OMB Approval No. 2130-0500

Name Of				Alphabetic Code	RR Accident/Incident No.
1. Reporting Railroad <b>Burlington Northern RR Co. [BN ]</b>				1a. <b>BN</b>	1b. <b>MN472</b>
2. Other Railroad Involved in Train Accident/Incident				2a.	2b.
3. Railroad Responsible for Track Maintenance <b>Burlington Northern RR Co. [BN ]</b>				3a. <b>BN</b>	3b. <b>MN472</b>
4. U.S. DOT-AAR Grade Crossing ID No. <b>067927M</b>		5. Date of Accident/Incident <b>04/19/76</b>		6. Time of Accident/Incident <b>08:45 AM</b>	
7. Nearest Railroad Station <b>BENSON</b>		8. Division		9. County <b>SWIFT</b>	
11. City (if in a city) <b>BENSON</b>		12. Highway Name or No. <b>14TH STREET</b>		10. State Abbr. <b>27</b> Code <b>MN</b>	
<input checked="" type="checkbox"/> Public <input type="checkbox"/> Private					
Highway User Involved			Rail Equipment Involved		
13. Type C. Truck-trailer F. Bus J. Other Motor Vehicle A. Auto D. Pick-up truck G. School Bus K. Pedestrian B. Truck E. Van H. Motorcycle M. Other (specify) Code <b>A</b>			17. Equipment 1. Train (units pulling) 5. Car(s) (standing) 2. Train (units pushing) 6. Light loco(s) (moving) 3. Train (standing) 7. Light loco(s) (standing) 8. Other (specify) A. Train pulling- RCL B. Train pushing- RCL C. Train standing- RCL Code <b>2</b>		
14. Vehicle Speed (est. mph at impact) <b>15</b>		15. Direction (geographical) 1. North 2. South 3. East 4. West Code <b>1</b>		18. Position of Car Unit in Train <b>4</b>	
16. Position 1. Stalled on crossing 3. Moving over crossing 2. Stopped on Crossing 4. Trapped Code <b>3</b>		19. Circumstance 1. Rail equipment struck highway user 2. Rail equipment struck by highway user Code <b>1</b>			
20a. Was the highway user and/or rail equipment involved in the impact transporting hazardous materials? 1. Highway User 2. Rail Equipment 3. Both 4. Neither Code <b>4</b>		20b. Was there a hazardous materials release by 1. Highway User 2. Rail Equipment 3. Both 4. Neither Code			
20c. State the name and quantity of the hazardous material released, if any					
21. Temperature (specify if minus) <b>35</b> °F		22. Visibility (single entry) 1. Dawn 2. Day 3. Dusk 4. Dark Code <b>2</b>		23. Weather (single entry) 1. Clear 2. Cloudy 3. Rain 4. Fog 5. Sleet 6. Snow Code <b>1</b>	
24. Type of Equipment Consist 1. Freight train 4. Work train 7. Yard/Switching (single entry) 2. Passenger train 5. Single car 8. Light loco(s) 3. Commuter train 6. Cut of cars 9. Main./inspect. car Code <b>7</b>			25. Track Type Used by Rail Equipment Involved 1. Main 2. Yard 3. Siding 4. Industry Code <b>1</b>		26. Track Number or Name <b>SINGLE MAIN TRACK</b>
27. FRA Track Class <b>5</b>		28. Number of Locomotive Units <b>1</b>	29. Number of Cars <b>3</b>	30. Consist Speed (Recorded if available) R. Recorded <b>5</b> mph E. Estimated Code <b>R</b>	
31. Time Table Direction 1. North 2. South 3. East 4. West Code <b>3</b>					
32. Type of Crossing 1. Gates 4. Wig wags 7. Crossbucks 10. Flagged by crew 2. Cantilever FLS 5. Hwy. traffic signals 8. Stop signs 11. Other (specify) Warning 3. Standard FLS 6. Audible 9. Watchman 12. None Code(s) <b>03 10</b>			33. Signaled Crossing Warning <b>20 sec warn min (1);</b>		34. Whistle Ban 1. Yes 2. No 3. Unknown Code
35. Location of Warning 1. Both Sides 2. Side of Vehicle Approach 3. Opposite Side of Vehicle Approach Code <b>1</b>		36. Crossing Warning Interconnected with Highway Signals 1. Yes 2. No 3. Unknown Code <b>2</b>		37. Crossing Illuminated by Street Lights or Special Lights 1. Yes 2. No 3. Unknown Code <b>3</b>	
38. Driver's Age	39. Driver's Gender 1. Male 2. Female Code	40. Driver Drove Behind or in Front of Train and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown Code <b>2</b>		41. Driver 1. Drove around or thru the gate 4. Stopped on crossing 2. Stopped and then proceeded 5. Other (specify) 3. Did not stop Code <b>3</b>	
42. Driver Passed Standing Highway Vehicle 1. Yes 2. No 3. Unknown Code <b>2</b>		43. View of Track Obscured by (primary obstruction) 1. Permanent Structure 3. Passing Train 5. Vegetation 7. Other (specify) 2. Standing railroad equipment 4. Topography 6. Highway Vehicles 8. Not Obstructed Code <b>8</b>			
Casualties to:		Killed	Injured	44. Driver was 1. Killed 2. Injured 3. Uninjured Code <b>2</b>	
46. Highway-Rail Crossing Users <b>0</b>		<b>1</b>	47. Highway Vehicle Property Damage (est. dollar damage) <b>\$900</b>		45. Was Driver in the Vehicle? 1. Yes 2. No Code <b>1</b>
49. Railroad Employees <b>0</b>		<b>0</b>	50. Total Number of People on Train (include passengers and crew) <b>0</b>		48. Total Number of Highway-Rail Crossing Users (include driver) <b>1</b>
52. Passengers on Train <b>0</b>		<b>0</b>	51. Is a Rail Equipment Accident / Incident Report Being Filed 1. Yes 2. No Code <b>2</b>		
53a. Special Study Block			53b. Special Study Block		
54. Narrative Description					
55. Typed Name and Title		56. Signature			57. Date

HIGHWAY-RAIL GRADE CROSSING

ACCIDENT/INCIDENT REPORT

DEPARTMENT OF TRANSPORTATION  
FEDERAL RAILROAD ADMINISTRATION (FRA)

OMB Approval No. 2130-0500

Name Of				Alphabetic Code	RR Accident/Incident No.
1. Reporting Railroad Burlington Northern RR Co. [BN ]				1a. BN	1b. SD0052
2. Other Railroad Involved in Train Accident/Incident				2a.	2b.
3. Railroad Responsible for Track Maintenance Burlington Northern RR Co. [BN ]				3a. BN	3b. SD0052
4. U.S. DOT-AAR Grade Crossing ID No. 067912X		5. Date of Accident/Incident 02/28/96		6. Time of Accident/Incident 10:42 AM	
7. Nearest Railroad Station HURON LINE JUNCTION		8. Division		9. County SWIFT	
11. City (if in a city)		12. Highway Name or No. COUNTY ROAD		10. State Code Abbr. 27 MN	
				<input checked="" type="checkbox"/> Public <input type="checkbox"/> Private	
Highway User Involved			Rail Equipment Involved		
13. Type C. Truck-trailer F. Bus J. Other Motor Vehicle Code A. Auto D. Pick-up truck G. School Bus K. Pedestrian B. Truck E. Van H. Motorcycle M. Other (specify) A			17. Equipment 4. Car(s) (moving) 8. Other (specify) Code 1. Train (units pulling) 5. Car(s) (standing) A. Train pulling- RCL 2. Train (units pushing) 6. Light loco(s) (moving) B. Train pushing- RCL 3. Train (standing) 7. Light loco(s) (standing) C. Train standing- RCL 1		
14. Vehicle Speed (est. mph at impact) 0		15. Direction (geographical) 1. North 2. South 3. East 4. West 1		18. Position of Car Unit in Train 1	
16. Position 1. Stalled on crossing 3. Moving over crossing Code 2. Stopped on Crossing 4. Trapped 2		19. Circumstance 1. Rail equipment struck highway user Code 2. Rail equipment struck by highway user 1			
20a. Was the highway user and/or rail equipment involved in the impact transporting hazardous materials? 1. Highway User 2. Rail Equipment 3. Both 4. Neither 4		20b. Was there a hazardous materials release by 1. Highway User 2. Rail Equipment 3. Both 4. Neither		Code	
20c. State the name and quantity of the hazardous material released, if any					
21. Temperature (specify if minus) 5 °F		22. Visibility (single entry) Code 1. Dawn 2. Day 3. Dusk 4. Dark 2		23. Weather (single entry) Code 1. Clear 2. Cloudy 3. Rain 4. Fog 5. Sleet 6. Snow 6	
24. Type of Equipment A. Spec. MoW Equip Consist 1. Freight train 4. Work train 7. Yard/Switching (single entry) 2. Passenger train 5. Single car 8. Light loco(s) Code 3. Commuter train 6. Cut of cars 9. Main./inspect. car 1			25. Track Type Used by Rail Code Equipment Involved 1. Main 2. Yard 3. Siding 4. Industry 1		26. Track Number or Name SINGLE MAIN TRACK
27. FRA Track Class 4		28. Number of Locomotive Units 2	29. Number of Cars 93	30. Consist Speed (Recorded if available) Code R. Recorded E. Estimated 38 mph E	31. Time Table Direction Code 1. North 2. South 3. East 4. West 3
32. Type of Crossing 1. Gates 4. Wig wags 7. Crossbucks 10. Flagged by crew Warning 2. Cantilever FLS 5. Hwy. traffic signals 8. Stop signs 11. Other (specify) 3. Standard FLS 6. Audible 9. Watchman 12. None			33. Signaled Crossing Warning		34. Whistle Ban Code 1. Yes 2. No 3. Unknown
Code(s) 07		35. Location of Warning Code 1. Both Sides 2. Side of Vehicle Approach 3. Opposite Side of Vehicle Approach 1		36. Crossing Warning Interconnected with Highway Signals Code 1. Yes 2. No 3. Unknown 3	
37. Crossing Illuminated by Street Lights or Special Lights Code 1. Yes 2. No 3. Unknown 2		38. Driver's Age 39. Driver's Gender Code 1. Male 2. Female		40. Driver Drove Behind or in Front of Train and Struck or was Struck by Second Train Code 1. Yes 2. No 3. Unknown 2	
41. Driver Code 1. Drove around or thru the gate 4. Stopped on crossing 2. Stopped and then proceeded 5. Other (specify) 3. Did not stop 4		42. Driver Passed Standing Highway Vehicle Code 1. Yes 2. No 3. Unknown 2		43. View of Track Obscured by (primary obstruction) Code 1. Permanent Structure 3. Passing Train 5. Vegetation 7. Other (specify) 2. Standing railroad equipment 4. Topography 6. Highway Vehicles 8. Not Obstructed 8	
Casualties to:		Killed	Injured	44. Driver was Code 1. Killed 2. Injured 3. Uninjured 2	
45. Was Driver in the Vehicle? Code 1. Yes 2. No 1		46. Highway-Rail Crossing Users 0 1		47. Highway Vehicle Property Damage (est. dollar damage) \$2,500	
48. Total Number of Highway-Rail Crossing Users (include driver) 1		49. Railroad Employees 0 0		50. Total Number of People on Train (include passengers and crew)	
51. Is a Rail Equipment Accident / Incident Report Being Filed Code 1. Yes 2. No 2		52. Passengers on Train 0 0			
53a. Special Study Block			53b. Special Study Block		
54. Narrative Description					
55. Typed Name and Title		56. Signature			57. Date

HIGHWAY-RAIL GRADE CROSSING

ACCIDENT/INCIDENT REPORT

DEPARTMENT OF TRANSPORTATION  
FEDERAL RAILROAD ADMINISTRATION (FRA)

OMB Approval No. 2130-0500

Name Of				Alphabetic Code	RR Accident/Incident No.
1. Reporting Railroad Burlington Northern RR Co. [BN ]				1a. BN	1b. MN0477
2. Other Railroad Involved in Train Accident/Incident				2a.	2b.
3. Railroad Responsible for Track Maintenance Burlington Northern RR Co. [BN ]				3a. BN	3b. MN0477
4. U.S. DOT-AAR Grade Crossing ID No. 067912X		5. Date of Accident/Incident 10/29/95		6. Time of Accident/Incident 04:25 AM	
7. Nearest Railroad Station BENSON		8. Division		9. County SWIFT	
11. City (if in a city)		12. Highway Name or No. SWIFT CO RD 25		10. State Abbr. 27 MN	
				<input checked="" type="checkbox"/> Public <input type="checkbox"/> Private	
Highway User Involved			Rail Equipment Involved		
13. Type C. Truck-trailer F. Bus J. Other Motor Vehicle A. Auto D. Pick-up truck G. School Bus K. Pedestrian B. Truck E. Van H. Motorcycle M. Other (specify)			17. Equipment 1. Train (units pulling) 5. Car(s) (standing) 2. Train (units pushing) 6. Light loco(s) (moving) 3. Train (standing) 7. Light loco(s) (standing)		
14. Vehicle Speed (est. mph at impact) 0			15. Direction (geographical) 1. North 2. South 3. East 4. West		
16. Position 1. Stalled on crossing 3. Moving over crossing 2. Stopped on Crossing 4. Trapped			18. Position of Car Unit in Train 1		
20a. Was the highway user and/or rail equipment involved in the impact transporting hazardous materials? 1. Highway User 2. Rail Equipment 3. Both 4. Neither			19. Circumstance 1. Rail equipment struck highway user 2. Rail equipment struck by highway user		
20c. State the name and quantity of the hazardous material released, if any			20b. Was there a hazardous materials release by 1. Highway User 2. Rail Equipment 3. Both 4. Neither		
21. Temperature (specify if minus) 35 °F		22. Visibility (single entry) 1. Dawn 2. Day 3. Dusk 4. Dark		23. Weather (single entry) 1. Clear 2. Cloudy 3. Rain 4. Fog 5. Sleet 6. Snow	
24. Type of Equipment Consist 1. Freight train 4. Work train 7. Yard/Switching (single entry) 2. Passenger train 5. Single car 8. Light loco(s) 3. Commuter train 6. Cut of cars 9. Main./inspect. car			25. Track Type Used by Rail Equipment Involved 1. Main 2. Yard 3. Siding 4. Industry		26. Track Number or Name SINGLE MAIN TRACK
27. FRA Track Class 4		28. Number of Locomotive Units 2	29. Number of Cars 53	30. Consist Speed (Recorded if available) R. Recorded 40 mph E. Estimated	31. Time Table Direction 1. North 2. South 3. East 4. West
32. Type of Crossing 1. Gates 4. Wig wags 7. Crossbucks 10. Flagged by crew 2. Cantilever FLS 5. Hwy. traffic signals 8. Stop signs 11. Other (specify) Warning 3. Standard FLS 6. Audible 9. Watchman 12. None			33. Signaled Crossing Warning		34. Whistle Ban 1. Yes 2. No 3. Unknown
35. Location of Warning 1. Both Sides 2. Side of Vehicle Approach 3. Opposite Side of Vehicle Approach			36. Crossing Warning Interconnected with Highway Signals 1. Yes 2. No 3. Unknown		37. Crossing Illuminated by Street Lights or Special Lights 1. Yes 2. No 3. Unknown
38. Driver's Age	39. Driver's Gender 1. Male 2. Female	40. Driver Drove Behind or in Front of Train and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown		41. Driver 1. Drove around or thru the gate 4. Stopped on crossing 2. Stopped and then proceeded 5. Other (specify) 3. Did not stop	
42. Driver Passed Standing Highway Vehicle 1. Yes 2. No 3. Unknown		43. View of Track Obscured by (primary obstruction) 1. Permanent Structure 3. Passing Train 5. Vegetation 7. Other (specify) 2. Standing railroad equipment 4. Topography 6. Highway Vehicles 8. Not Obstructed			
Casualties to:		Killed	Injured	44. Driver was 1. Killed 2. Injured 3. Uninjured	
46. Highway-Rail Crossing Users		0	0	45. Was Driver in the Vehicle? 1. Yes 2. No	
49. Railroad Employees		0	0	47. Highway Vehicle Property Damage (est. dollar damage) \$3,000	
52. Passengers on Train		0	0	48. Total Number of Highway-Rail Crossing Users (include driver) 0	
53a. Special Study Block			53b. Special Study Block		
54. Narrative Description					
55. Typed Name and Title		56. Signature			57. Date

HIGHWAY-RAIL GRADE CROSSING

ACCIDENT/INCIDENT REPORT

DEPARTMENT OF TRANSPORTATION  
FEDERAL RAILROAD ADMINISTRATION (FRA)

OMB Approval No. 2130-0500

Name Of				Alphabetic Code	RR Accident/Incident No.
1. Reporting Railroad Burlington Northern RR Co. [BN ]				1a. BN	1b. MN48
2. Other Railroad Involved in Train Accident/Incident				2a.	2b.
3. Railroad Responsible for Track Maintenance Burlington Northern RR Co. [BN ]				3a. BN	3b. MN48
4. U.S. DOT-AAR Grade Crossing ID No. 075348Y		5. Date of Accident/Incident 01/23/85		6. Time of Accident/Incident 11:35 PM	
7. Nearest Railroad Station BENSON		8. Division		9. County SWIFT	
11. City (if in a city)		12. Highway Name or No. CO RD 3		10. State Code Abbr. 27 MN	
11. City (if in a city)		12. Highway Name or No. CO RD 3		<input checked="" type="checkbox"/> Public <input type="checkbox"/> Private	
Highway User Involved			Rail Equipment Involved		
13. Type C. Truck-trailer F. Bus J. Other Motor Vehicle Code A. Auto D. Pick-up truck G. School Bus K. Pedestrian B. Truck E. Van H. Motorcycle M. Other (specify) A			17. Equipment 4. Car(s) (moving) 8. Other (specify) Code 1. Train (units pulling) 5. Car(s) (standing) A. Train pulling- RCL 2. Train (units pushing) 6. Light loco(s) (moving) B. Train pushing- RCL 3. Train (standing) 7. Light loco(s) (standing) C. Train standing- RCL 1		
14. Vehicle Speed (est. mph at impact) 30		15. Direction (geographical) Code 1. North 2. South 3. East 4. West 2		18. Position of Car Unit in Train 1	
16. Position 1. Stalled on crossing 3. Moving over crossing Code 2. Stopped on Crossing 4. Trapped 3		19. Circumstance 1. Rail equipment struck highway user Code 2. Rail equipment struck by highway user 2		20a. Was the highway user and/or rail equipment involved in the impact transporting hazardous materials? Code 1. Highway User 2. Rail Equipment 3. Both 4. Neither 4	
20b. Was there a hazardous materials release by Code 1. Highway User 2. Rail Equipment 3. Both 4. Neither					
20c. State the name and quantity of the hazardous material released, if any					
21. Temperature (specify if minus) 20 °F		22. Visibility (single entry) Code 1. Dawn 2. Day 3. Dusk 4. Dark 4		23. Weather (single entry) Code 1. Clear 2. Cloudy 3. Rain 4. Fog 5. Sleet 6. Snow 6	
24. Type of Equipment A. Spec. MoW Equip Consist 1. Freight train 4. Work train 7. Yard/Switching (single entry) 2. Passenger train 5. Single car 8. Light loco(s) Code 3. Commuter train 6. Cut of cars 9. Main./inspect. car 1			25. Track Type Used by Rail Code Equipment Involved 1. Main 2. Yard 3. Siding 4. Industry 1		26. Track Number or Name SINGLE MAIN TRACK
27. FRA Track Class 2		28. Number of Locomotive Units 1	29. Number of Cars 26	30. Consist Speed (Recorded if available) Code R. Recorded E. Estimated 25 mph E	31. Time Table Direction Code 1. North 2. South 3. East 4. West 4
32. Type of Crossing 1. Gates 4. Wig wags 7. Crossbucks 10. Flagged by crew Warning 2. Cantilever FLS 5. Hwy. traffic signals 8. Stop signs 11. Other (specify) 3. Standard FLS 6. Audible 9. Watchman 12. None			33. Signaled Crossing Warning		34. Whistle Ban Code 1. Yes 2. No 3. Unknown
35. Location of Warning Code 1. Both Sides 2. Side of Vehicle Approach 3. Opposite Side of Vehicle Approach 1			36. Crossing Warning Interconnected with Highway Signals Code 1. Yes 2. No 3. Unknown 3		37. Crossing Illuminated by Street Lights or Special Lights Code 1. Yes 2. No 3. Unknown 1
38. Driver's Age	39. Driver's Gender Code 1. Male 2. Female	40. Driver Drove Behind or in Front of Train and Struck or was Struck by Second Train Code 1. Yes 2. No 3. Unknown 2		41. Driver Code 1. Drove around or thru the gate 4. Stopped on crossing 2. Stopped and then proceeded 5. Other (specify) 3. Did not stop 3	
42. Driver Passed Standing Highway Vehicle Code 1. Yes 2. No 3. Unknown 2		43. View of Track Obscured by (primary obstruction) Code 1. Permanent Structure 3. Passing Train 5. Vegetation 7. Other (specify) 2. Standing railroad equipment 4. Topography 6. Highway Vehicles 8. Not Obstructed 8			
Casualties to:		Killed	Injured	44. Driver was Code 1. Killed 2. Injured 3. Uninjured 3	
46. Highway-Rail Crossing Users		0	0	47. Highway Vehicle Property Damage (est. dollar damage) \$1,500	
49. Railroad Employees		0	0	48. Total Number of Highway-Rail Crossing Users (include driver) 1	
52. Passengers on Train		0	0	50. Total Number of People on Train (include passengers and crew)	
53a. Special Study Block		53b. Special Study Block			
54. Narrative Description					
55. Typed Name and Title		56. Signature			57. Date

HIGHWAY-RAIL GRADE CROSSING

ACCIDENT/INCIDENT REPORT

DEPARTMENT OF TRANSPORTATION  
FEDERAL RAILROAD ADMINISTRATION (FRA)

OMB Approval No. 2130-0500

Name Of				Alphabetic Code	RR Accident/Incident No.
1. Reporting Railroad Burlington Northern RR Co. [BN ]				1a. BN	1b. MN752
2. Other Railroad Involved in Train Accident/Incident				2a.	2b.
3. Railroad Responsible for Track Maintenance Burlington Northern RR Co. [BN ]				3a. BN	3b. MN752
4. U.S. DOT-AAR Grade Crossing ID No. 075348Y		5. Date of Accident/Incident 09/10/83		6. Time of Accident/Incident 01:20 AM	
7. Nearest Railroad Station BENSON		8. Division		9. County SWIFT	
11. City (if in a city)		12. Highway Name or No. COUNTY RD 5		10. State Code Abbr. 27 MN	
				<input checked="" type="checkbox"/> Public <input type="checkbox"/> Private	
Highway User Involved			Rail Equipment Involved		
13. Type C. Truck-trailer F. Bus J. Other Motor Vehicle A. Auto D. Pick-up truck G. School Bus K. Pedestrian B. Truck E. Van H. Motorcycle M. Other (specify)			17. Equipment 1. Train (units pulling) 5. Car(s) (standing) 2. Train (units pushing) 6. Light loco(s) (moving) 3. Train (standing) 7. Light loco(s) (standing)		
14. Vehicle Speed (est. mph at impact) 5			15. Direction (geographical) 1. North 2. South 3. East 4. West		
16. Position 1. Stalled on crossing 3. Moving over crossing 2. Stopped on Crossing 4. Trapped			18. Position of Car Unit in Train 66		
20a. Was the highway user and/or rail equipment involved in the impact transporting hazardous materials? 1. Highway User 2. Rail Equipment 3. Both 4. Neither			19. Circumstance 1. Rail equipment struck highway user 2. Rail equipment struck by highway user		
20c. State the name and quantity of the hazardous material released, if any			20b. Was there a hazardous materials release by 1. Highway User 2. Rail Equipment 3. Both 4. Neither		
21. Temperature (specify if minus) 46 °F		22. Visibility (single entry) 1. Dawn 2. Day 3. Dusk 4. Dark		23. Weather (single entry) 1. Clear 2. Cloudy 3. Rain 4. Fog 5. Sleet 6. Snow	
24. Type of Equipment Consist 1. Freight train 4. Work train 7. Yard/Switching (single entry) 2. Passenger train 5. Single car 8. Light loco(s) 3. Commuter train 6. Cut of cars 9. Main./inspect. car			25. Track Type Used by Rail Equipment Involved 1. Main 2. Yard 3. Siding 4. Industry		26. Track Number or Name SINGLE MAIN
27. FRA Track Class 1	28. Number of Locomotive Units 3	29. Number of Cars 120	30. Consist Speed (Recorded if available) R. Recorded E. Estimated 10 mph		31. Time Table Direction 1. North 2. South 3. East 4. West
32. Type of Crossing 1. Gates 4. Wig wags 7. Crossbucks 10. Flagged by crew 2. Cantilever FLS 5. Hwy. traffic signals 8. Stop signs 11. Other (specify) Warning 3. Standard FLS 6. Audible 9. Watchman 12. None			33. Signaled Crossing Warning		34. Whistle Ban 1. Yes 2. No 3. Unknown
35. Location of Warning 1. Both Sides 2. Side of Vehicle Approach 3. Opposite Side of Vehicle Approach			36. Crossing Warning Interconnected with Highway Signals 1. Yes 2. No 3. Unknown		37. Crossing Illuminated by Street Lights or Special Lights 1. Yes 2. No 3. Unknown
38. Driver's Age	39. Driver's Gender 1. Male 2. Female	40. Driver Drove Behind or in Front of Train and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown		41. Driver 1. Drove around or thru the gate 4. Stopped on crossing 2. Stopped and then proceeded 5. Other (specify) 3. Did not stop	
42. Driver Passed Standing Highway Vehicle 1. Yes 2. No 3. Unknown		43. View of Track Obscured by (primary obstruction) 1. Permanent Structure 3. Passing Train 5. Vegetation 7. Other (specify) 2. Standing railroad equipment 4. Topography 6. Highway Vehicles 8. Not Obstructed			
Casualties to:		Killed	Injured	44. Driver was 1. Killed 2. Injured 3. Uninjured	
46. Highway-Rail Crossing Users		1	0	47. Highway Vehicle Property Damage (est. dollar damage) \$400	
49. Railroad Employees		0	0	50. Total Number of People on Train (include passengers and crew)	
52. Passengers on Train		0	0	51. Is a Rail Equipment Accident / Incident Report Being Filed 1. Yes 2. No	
53a. Special Study Block			53b. Special Study Block		
54. Narrative Description					
55. Typed Name and Title			56. Signature		57. Date

HIGHWAY-RAIL GRADE CROSSING

ACCIDENT/INCIDENT REPORT

DEPARTMENT OF TRANSPORTATION  
FEDERAL RAILROAD ADMINISTRATION (FRA)

OMB Approval No. 2130-0500

Name Of				Alphabetic Code	RR Accident/Incident No.
1. Reporting Railroad Burlington Northern RR Co. [BN ]				1a. BN	1b. MN1307
2. Other Railroad Involved in Train Accident/Incident				2a.	2b.
3. Railroad Responsible for Track Maintenance Burlington Northern RR Co. [BN ]				3a. BN	3b. MN1307
4. U.S. DOT-AAR Grade Crossing ID No. 067925Y		5. Date of Accident/Incident 10/12/80		6. Time of Accident/Incident 06:50 AM	
7. Nearest Railroad Station BENSON		8. Division		9. County SWIFT	
11. City (if in a city)		12. Highway Name or No. COUNTY ROAD 20		10. State Code Abbr. 27 MN	
				<input checked="" type="checkbox"/> Public <input type="checkbox"/> Private	
Highway User Involved			Rail Equipment Involved		
13. Type C. Truck-trailer F. Bus J. Other Motor Vehicle A. Auto D. Pick-up truck G. School Bus K. Pedestrian B. Truck E. Van H. Motorcycle M. Other (specify)			17. Equipment 1. Train (units pulling) 5. Car(s) (standing) 2. Train (units pushing) 6. Light loco(s) (moving) 3. Train (standing) 7. Light loco(s) (standing)		
14. Vehicle Speed (est. mph at impact) 5			18. Position of Car Unit in Train 99		
15. Direction (geographical) 1. North 2. South 3. East 4. West			19. Circumstance 1. Rail equipment struck highway user 2. Rail equipment struck by highway user		
16. Position 1. Stalled on crossing 3. Moving over crossing 2. Stopped on Crossing 4. Trapped			20a. Was the highway user and/or rail equipment involved in the impact transporting hazardous materials? 1. Highway User 2. Rail Equipment 3. Both 4. Neither		
20b. Was there a hazardous materials release by 1. Highway User 2. Rail Equipment 3. Both 4. Neither			20c. State the name and quantity of the hazardous material released, if any		
21. Temperature (specify if minus) 35 °F		22. Visibility (single entry) 1. Dawn 2. Day 3. Dusk 4. Dark		23. Weather (single entry) 1. Clear 2. Cloudy 3. Rain 4. Fog 5. Sleet 6. Snow	
24. Type of Equipment Consist 1. Freight train 4. Work train 7. Yard/Switching (single entry) 2. Passenger train 5. Single car 8. Light loco(s) 3. Commuter train 6. Cut of cars 9. Main./inspect. car		25. Track Type Used by Rail Equipment Involved 1. Main 2. Yard 3. Siding 4. Industry		26. Track Number or Name SINGLE MAIN TRACK	
27. FRA Track Class 2		28. Number of Locomotive Units 3		29. Number of Cars 108	
30. Consist Speed (Recorded if available) R. Recorded E. Estimated		31. Time Table Direction 1. North 2. South 3. East 4. West		Code 25 mph E 4	
32. Type of Crossing 1. Gates 4. Wig wags 7. Crossbucks 10. Flagged by crew 2. Cantilever FLS 5. Hwy. traffic signals 8. Stop signs 11. Other (specify) Warning 3. Standard FLS 6. Audible 9. Watchman 12. None		33. Signaled Crossing Warning		34. Whistle Ban 1. Yes 2. No 3. Unknown	
35. Location of Warning 1. Both Sides 2. Side of Vehicle Approach 3. Opposite Side of Vehicle Approach		36. Crossing Warning Interconnected with Highway Signals 1. Yes 2. No 3. Unknown		37. Crossing Illuminated by Street Lights or Special Lights 1. Yes 2. No 3. Unknown	
38. Driver's Age		39. Driver's Gender 1. Male 2. Female		40. Driver Drove Behind or in Front of Train and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown	
41. Driver 1. Drove around or thru the gate 4. Stopped on crossing 2. Stopped and then proceeded 5. Other (specify) 3. Did not stop		42. Driver Passed Standing Highway Vehicle 1. Yes 2. No 3. Unknown		43. View of Track Obscured by (primary obstruction) 1. Permanent Structure 3. Passing Train 5. Vegetation 7. Other (specify) 2. Standing railroad equipment 4. Topography 6. Highway Vehicles 8. Not Obstructed	
Casualties to:		44. Driver was 1. Killed 2. Injured 3. Uninjured		45. Was Driver in the Vehicle? 1. Yes 2. No	
46. Highway-Rail Crossing Users 0		47. Highway Vehicle Property Damage (est. dollar damage) \$500		48. Total Number of Highway-Rail Crossing Users (include driver) 1	
49. Railroad Employees 0		50. Total Number of People on Train (include passengers and crew) 0		51. Is a Rail Equipment Accident / Incident Report Being Filed 1. Yes 2. No	
52. Passengers on Train 0		53a. Special Study Block		53b. Special Study Block	
54. Narrative Description					
55. Typed Name and Title		56. Signature			57. Date

Appendix C  
January 28, 2015

## Appendix C 2007 PACIFIC AVE IMPROVEMENTS REPORT



# Preliminary Engineering Report

East Pacific Avenue

City of Benson

February 2007

Project Number: 000037-06113-0

**PRELIMINARY ENGINEERING REPORT  
FOR  
EAST PACIFIC AVENUE IMPROVEMENTS  
BENSON, MINNESOTA**

FEBRUARY 2007

PROJECT NO. 37-06-113

MAYOR:

PAUL KITTELSON

COUNCIL MEMBERS:

BOB CLAUSSEN  
SUE FITZ  
GARY LANDMARK  
LEE WESTRUM

CITY ADMINISTRATOR:

ROB WOLFINGTON

PUBLIC WORKS DIRECTOR:

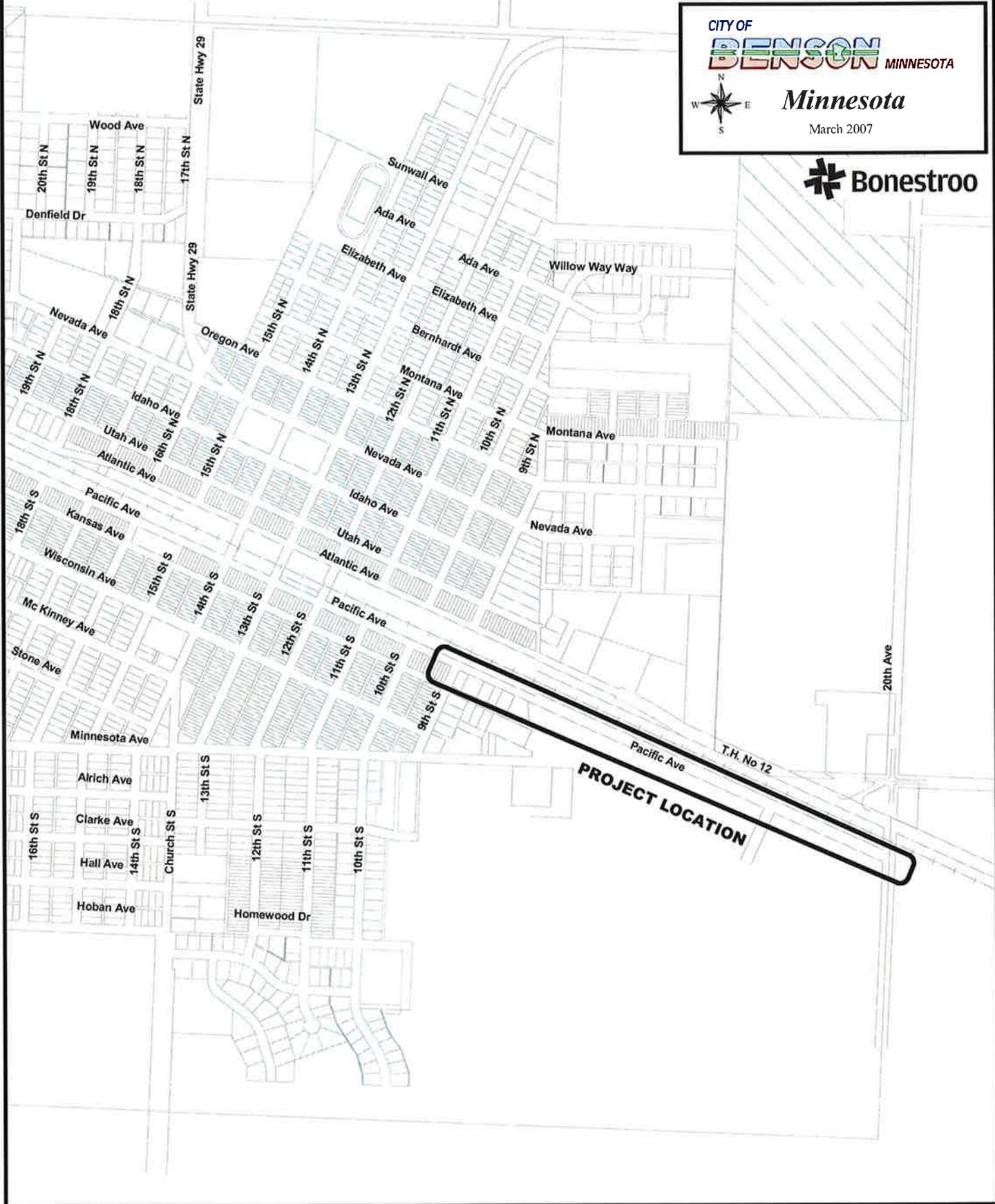
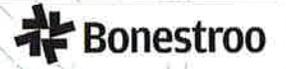
ELLIOT NELSON

I hereby certify that this Report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.



Dale L. Swanson, P.E.

Minnesota Registration No. 12466



1000 0 1000 Feet

1 INCH = 2000'

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**PRELIMINARY ENGINEERING REPORT  
FOR  
EAST PACIFIC AVENUE IMPROVEMENTS  
BENSON, MINNESOTA**

**1. INTRODUCTION**

The City of Benson has directed our firm, Bonestroo, to conduct a feasibility study and prepare a Preliminary Engineering Report on the improvement of East Pacific Avenue. This Preliminary Engineering Report is being prepared pursuant to Minnesota Statute 429, which provides the city the option to assess a portion of the costs of these improvements against benefiting properties, if deemed appropriate.

The East Pacific Avenue Improvement is of extreme importance to the city for safety reasons. There are numerous trains that travel through the city each day. They often travel very slowly through the downtown area or stop, blocking all access in the city center between the north and south side of town. During those times, East Pacific Avenue provides the only prompt route for emergency vehicles to access the portion of the city on the other side of the tracks.

East Pacific Avenue is underlain by very poor soils and is subject to frost boils and heaves. Often, in the Spring, these conditions cause the road to be impassable, thereby blocking this emergency route for days or even weeks.

The road needs to be constructed to carry the weight of heavy emergency vehicles during any season of the year and since it is bordered by the BNSF Railroad on the north side and sparsely populated rural property on the other it is not feasible to assess more than a small portion against abutting properties.

**2. SCOPE**

The proposed project is located adjacent to and along the south side of the BNSF Railroad from approximately 9<sup>th</sup> Street east to 20th Avenue SE. The project includes the reconstruction of the existing

bituminous street in the vicinity of 9<sup>th</sup> Street and of the existing gravel road from east of 9<sup>th</sup> Street to 20<sup>th</sup> Avenue SE. This project will also address the drainage and underlying soil problems that exist along most of the length of the road.

### **3. DESIGN CONSIDERATIONS**

#### **A. Wastewater**

Only repair work, if necessary, will be done with this project.

#### **B. Watermain**

An 8" watermain is proposed to be installed from the intersection of 9<sup>th</sup> Street to the east approximately 650 feet for future system looping.

#### **C. Street Construction**

East Pacific Avenue will be reconstructed beginning just west of the intersection of 9<sup>th</sup> Street and continuing east to the intersection of 20<sup>th</sup> Avenue SE. The 9<sup>th</sup> Street intersection is proposed to be urban design with the street transitioning to a rural section just east of the 9<sup>th</sup> Street intersection. It is proposed to pave the street with a bituminous surface to a point approximately 600 feet east of 9<sup>th</sup> Street. The remainder will have a gravel surface. The gravel section can be paved at any time in the future.

The road will have a 32-foot road surface which allows for 12-foot driving lanes and 4-foot shoulders.

The soil boring information indicates that the soils beneath the road surface exhibit poor drainage, poor stability and poor strength characteristics. Removal of the top portion of the existing road to allow for 3.5 feet of appropriate granular materials is recommended in the geotechnical report.

#### **D. Storm Water Management System**

A storm water run-off drainage system is required for the proper construction and maintenance of this street. The storm water system will include road ditch drainage and storm water piping.

Road ditches will be graded to various low spots where the surface water will be transferred to the storm sewer piping. Plastic drain tile will be installed to assure the granular road bed is properly drained.

E. Other Utilities

Both public and private utilities may want to participate in the project or conduct improvement projects of their own in conjunction with the city's project.

F. Right-of-Way

Nine (9) feet of permanent additional right of way will need to be obtained, either by easement or title, along the south side of the roadway from the north-south quarter line of Section 5 east to 20<sup>th</sup> Avenue SE. This will provide a uniform right of way in both the urban and rural areas. It will also assure that the ditch bottom will be within the permanent right of way for maintenance purposes.

Temporary construction easements will be required from the property owners along the south side of the road for constructing proper back slopes on the ditch. These temporary easements will be 15 feet in width and expire upon completion of the construction.

The north right of way line of Pacific Avenue is the property line of the BNSF Railroad. The north ditch of the road will impact BNSF property. Discussions with BNSF will need to occur prior to or during design to determine if the work on their property can be accomplished by agreement or if a permit is necessary.

G. Tree Removal

The row of large cottonwood trees along the south side of Pacific Avenue is within the present road right of way. They will all be removed as a part of this project. Some of the brush along the south right of way will also be removed along the eastern portion of the road.

H. Wetland Impact

A wetland inventory and impact will need to be completed prior to project design to determine if any mitigation is necessary.

#### **4. PROJECT COST ESTIMATE**

The following pages provide our best estimates of the costs associated with this project. These estimates are the results of our experience and our exposure to many of these types of projects. However, these estimates should not be considered as the final cost of the project as the items, unit costs, and quantities will change in the course of development, design, and bidding of the final project. The current market for construction costs (primarily material and fuel costs) fluctuates and it is difficult to predict accurate construction costs. For the purpose of this estimate, construction costs have been estimated based on prices at the time of the preparation of this report.

## COST ESTIMATE

No.	Item	Units	Qty	EE Unit Price	EE Total Price
<b>EAST PACIFIC AVENUE</b>					
1	GRUB	Tree	77.00	\$125.00	\$9,625.00
2	CLEARING	Tree	77.00	\$250.00	\$19,250.00
3	REMOVE STORM SEWER PIPE	LF	40.00	\$4.50	\$180.00
4	REMOVE CATCH BASIN	EA	3.00	\$165.00	\$495.00
5	REMOVE CMP CULVERT	LF	90.00	\$5.00	\$450.00
6	REMOVE STORM MANHOLE	EA	2.00	\$325.00	\$650.00
7	REMOVE SANITARY SEWER MANHOLE	EA	1.00	\$325.00	\$325.00
8	REMOVE CURB AND GUTTER	LF	62.00	\$6.00	\$372.00
9	REMOVE AGGREGATE SURFACING	SY	10,800.00	\$0.90	\$9,720.00
10	REMOVE BITUMINOUS PAVEMENT	SY	2,519.00	\$2.75	\$6,927.25
11	SAWING BITUMINOUS PAVEMENT	LF	73.00	\$3.00	\$219.00
12	ABANDON SANITARY SEWER PIPE	LF	296.00	\$2.50	\$740.00
13	ABANDON WATER SERVICE	EA	1.00	\$50.00	\$50.00
14	ABANDON WATER MAIN	LF	1.00	\$250.00	\$250.00
15	SALVAGE SIGN	EA	4.00	\$25.00	\$100.00
16	SALVAGE MAILBOX ASSEMBLY	EA	3.00	\$75.00	\$225.00
17	COMMON EXCAVATION (P)	CY	18,900.00	\$4.00	\$75,600.00
18	TOPSOIL BORROW (LV)	CY	2,850.00	\$15.00	\$42,750.00
19	SELECT GRANULAR BORROW (LV)	CY	11,500.00	\$8.00	\$92,000.00
20	GEOTEXTILE FABRIC, TYPE V	SY	15,020.00	\$1.50	\$22,530.00
21	AGGREGATE BASE, CLASS 5	TN	10,800.00	\$10.25	\$110,700.00
22	BITUMINOUS WEARING COURSE MIXTURE	TN	220.00	\$58.00	\$12,760.00

No.	Item	Units	Qty	EE Unit Price	EE Total Price
<b>EAST PACIFIC AVENUE</b>					
23	BITUMINOUS NON WEARING COURSE MIXTURE	TN	300.00	\$51.00	\$15,300.00
24	BITUMINOUS MATERIAL FOR TACK COAT	GAL	130.00	\$1.85	\$240.50
25	CONCRETE CURB AND GUTTER DS B618	LF	70.00	\$18.50	\$1,295.00
26	12" RC PIPE SEWER DES 3006 CL V	LF	838.00	\$26.50	\$22,207.00
27	15" RC PIPE SEWER DES 3006 CL V	LF	2,015.00	\$28.50	\$57,427.50
28	12" RC PIPE APRON W/TRASH GUARD	EA	4.00	\$750.00	\$3,000.00
29	CATCH BASIN, DESIGN H	EA	6.00	\$1,250.00	\$7,500.00
30	MANHOLE, DES 4020 - 48"	EA	6.00	\$1,825.00	\$10,950.00
31	CONNECT TO EXISTING RCP	EA	1.00	\$350.00	\$350.00
32	PIPE FOUNDATION (LV)	CY	250.00	\$15.00	\$3,750.00
33	4" PERFORATED POLYETHYLENE PIPE	LF	7,000.00	\$5.00	\$35,000.00
34	CASTING ASSEMBLY	EA	16.00	\$400.00	\$6,400.00
<del>35</del>	<del>8" D.I. WATERMAIN, CL. 52</del>	<del>LF</del>	<del>672.00</del>	<del>\$28.75</del>	<del>\$19,320.00</del>
<del>36</del>	<del>10" D.I. WATERMAIN, CL. 52</del>	<del>LF</del>	<del>12.00</del>	<del>\$34.00</del>	<del>\$408.00</del>
<del>37</del>	<del>8" GATE VALVE AND BOX</del>	<del>EA</del>	<del>2.00</del>	<del>\$1,000.00</del>	<del>\$2,000.00</del>
<del>38</del>	<del>5" HYDRANT</del>	<del>EA</del>	<del>1.00</del>	<del>\$2,400.00</del>	<del>\$2,400.00</del>
<del>39</del>	<del>FITTINGS</del>	<del>LB</del>	<del>465.00</del>	<del>\$3.85</del>	<del>\$1,790.25</del>
<del>40</del>	<del>1" CORPORATION STOP</del>	<del>EA</del>	<del>3.00</del>	<del>\$125.00</del>	<del>\$375.00</del>
<del>41</del>	<del>1" CURB STOP AND BOX</del>	<del>EA</del>	<del>3.00</del>	<del>\$160.00</del>	<del>\$480.00</del>
<del>42</del>	<del>1" COPPER SERVICE PIPE</del>	<del>LF</del>	<del>150.00</del>	<del>\$16.50</del>	<del>\$2,475.00</del>
<del>43</del>	<del>CONNECT TO EXISTING WATER MAIN</del>	<del>EA</del>	<del>1.00</del>	<del>\$1,200.00</del>	<del>\$1,200.00</del>
<del>44</del>	<del>CONNECT TO EXISTING WATER SERVICE</del>	<del>EA</del>	<del>3.00</del>	<del>\$300.00</del>	<del>\$900.00</del>
45	SEEDING	AC	3.75	\$500.00	\$1,875.00
46	SEED	LB	280.00	\$4.00	\$1,120.00

- 31,348.25

No.	Item	Units	Qty	EE Unit Price	EE Total Price
<b>EAST PACIFIC AVENUE</b>					
47	FERTILIZER	LB	1,125.00	\$0.50	\$562.50
48	MULCH	TN	7.50	\$150.00	\$1,125.00
49	DISK ANCHOR	AC	3.75	\$175.00	\$656.25
50	SILT FENCE, TYPE MACHINE SLICED	LF	3,850.00	\$1.50	\$5,775.00
51	BALE CHECK	EA	4.00	\$100.00	\$400.00
52	TEMPORARY ROCK CONSTRUCTION ENTRANCE	EA	2.00	\$1,500.00	\$3,000.00
53	INLET PROTECTION, TYPE A	EA	6.00	\$400.00	\$2,400.00
54	CATCH BASIN PROTECTION, TYPE C	EA	6.00	\$280.00	\$1,680.00
55	TRAFFIC CONTROL	LS	1.00	\$1,800.00	\$1,800.00
56	STOP SIGN ASSEMBLY	EA	1.00	\$235.00	\$235.00
57	TRAFFIC SIGN WITH POST	EA	3.00	\$300.00	\$900.00
58	4" BROKEN LINE, YELLOW EPOXY	LF	180.00	\$0.50	\$90.00

	<u>- 31,348.25</u>
ESTIMATED CONSTRUCTION COST	\$622,305.25
	<u>\$ 590,957.00</u>
Design	\$49,000.00
Construction Administration (est)	\$10,000.00
Construction Staking & Observation (est)	\$52,000.00
Wetland Assessment & Record Drawings (est)	\$10,000.00
Admin, Fiscal & Legal (est)	\$20,000.00
Contingencies (est)	\$30,000.00
<b>TOTAL ESTIMATED PROJECT COST</b>	<u>\$793,305.25</u>
	<u>\$ 761,957.00</u>

2007 PROJECT COST • 10YR INFLATION @ 4% Y/Y = 2017 PROJECT COST (EST)

$761,957.00 \cdot (1 + 0.04)^{10} = \$1,127,882.$

## 5. CONCLUSION

An adequate street and storm water run-off containment system is necessary to protect the wellbeing of the property owners adjacent to the project as well as ensuring the general public that a safe and integrated transportation system is provided.

It is my professional opinion that the benefits derived from this project exceeds the cost associated with it; and that the project is feasible as proposed. Construction costs are based on estimates of the construction industry standards. Costs can and will vary as the project proceeds to bidding and construction.

Quantity estimates for this report are based on topography provided by a survey completed by this firm, the Report of Geotechnical Explorations conducted by Independent Testing technologies and the information obtained from the City of Benson. If the topography is determined to have changed or is different by the time the project goes to design, quantities and planning may be altered.





**Benson East Pacific Avenue Reconstruct** CITY OF **BENSON** MINNESOTA

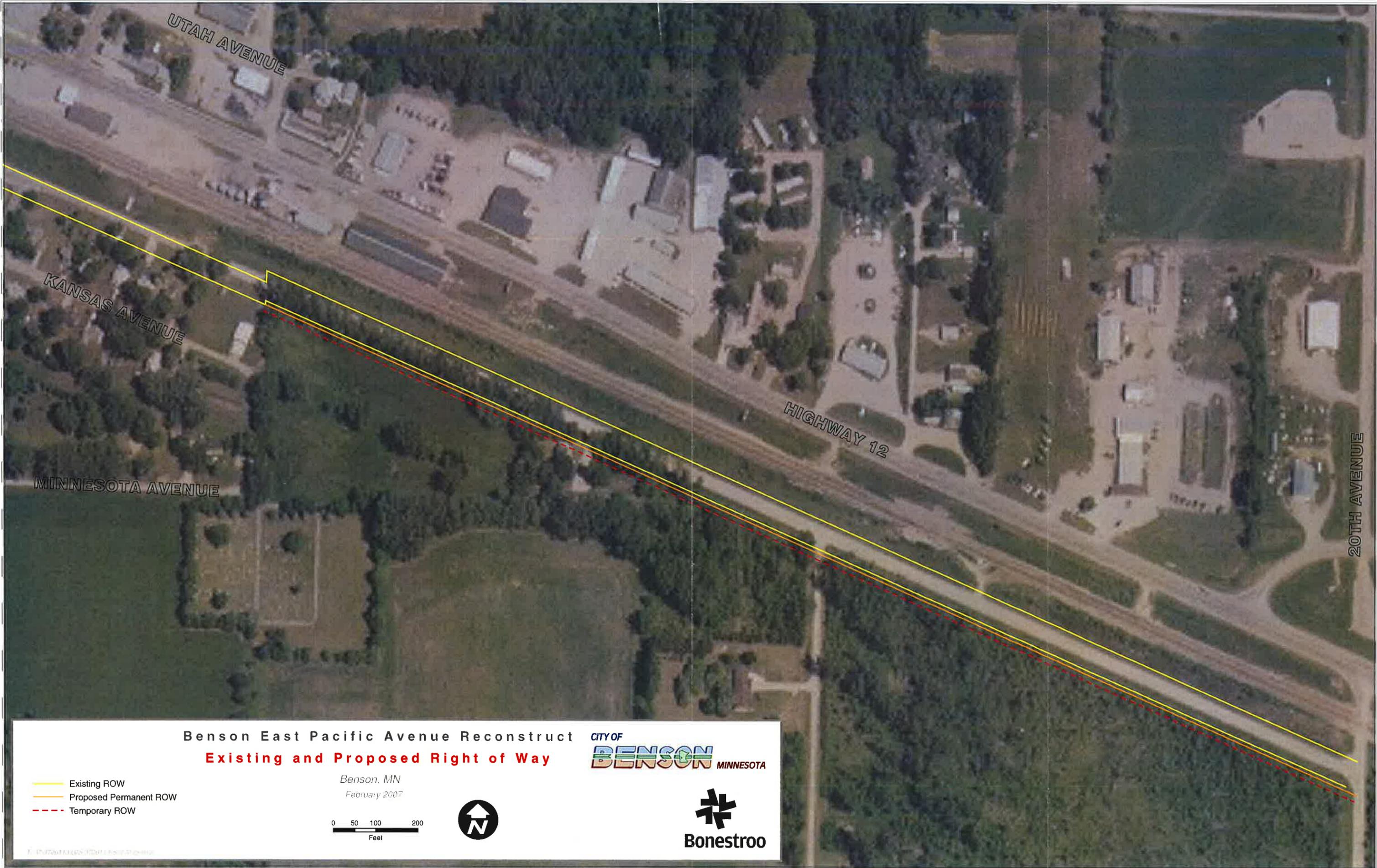
**Proposed Storm Sewer**

Benson, MN  
February 2007

0 50 100 200  
Feet

**Bonestroo**

- Right of Way
- Existing Storm Sewer
- Ex. CB
- ⊕ Ex. STMH
- Proposed Storm Sewer
- ▲ Proposed Apron
- Proposed CB
- Proposed STMH



**Benson East Pacific Avenue Reconstruct**  
**Existing and Proposed Right of Way**



Benson, MN  
February 2007  
0 50 100 200  
Feet



- Existing ROW
- Proposed Permanent ROW
- Temporary ROW