US 2/US BUSINESS 2 STUDY

FINAL REPORT

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Grand Forks - East Grand Forks Metropolitan Planning Organization

DEPARTMENT OF TRANSPORTATION

SRF Consulting Group, Inc.

US 2/US Business 2 Study

Grand Forks-East Grand Forks MPO | Minnesota Department of Transportation

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The following Steering Committee members played an important role in the development of the US 2/US Bus 2 Study. Their involvement was key in the identification of intersection issues and alternative recommendations.

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Introduction

The US Highway 2 (US 2) corridor provides an important regional connection for the Grand Forks, North Dakota -East Grand Forks, Minnesota region, while serving local connections in both cities. The US Business 2 (US Bus 2) corridor provides an important local connection within the region, connecting downtown, residential and commercial areas within East Grand Forks, Minnesota. The primary goal of the US 2 and US Bus 2 Study is to assess six intersections along these corridors to ensure safe and efficient operation for all modes of transportation throughout the study area.

There is a long history of discussed improvements to the US 2 and US Bus 2 intersection based on historic crashes, heavy commercial truck movements, truck storage, and roadway grades, among others. Though the intersection has been analyzed and discussed, no changes have been implemented. The Minnesota Department of Transportation (MnDOT) has scheduled a resurfacing project for the westbound lanes of US 2 in 2021 and has allotted safety funding that may be utilized for improvements to this intersection. As a result of this potential funding, the intersection, along with five others in the area, were reviewed to quantify issues and identify potential opportunities.

Study Area

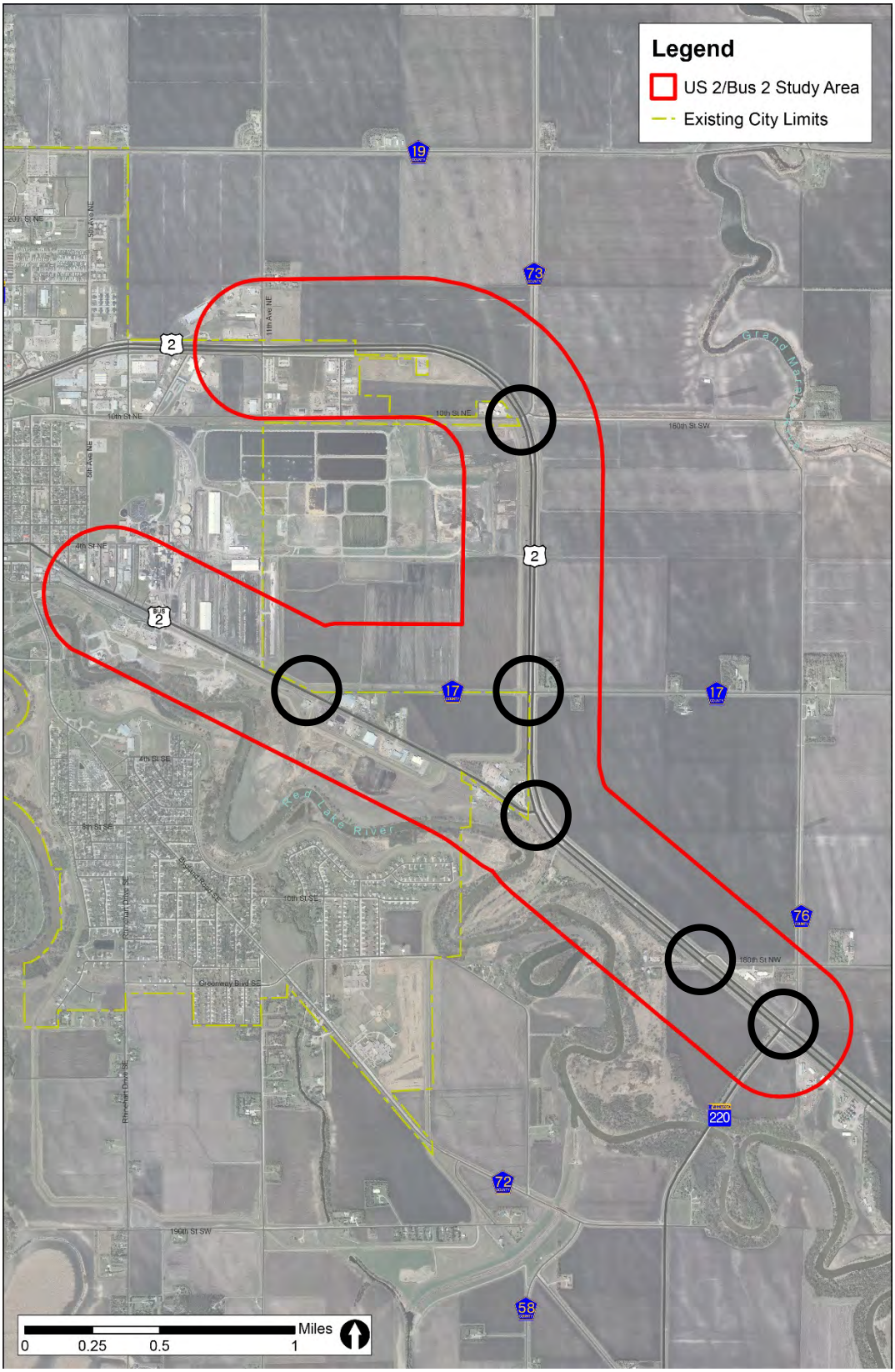
The US 2/Bus 2 study area is comprised of six intersections in East Grand Forks (see Figure 1):

- US 2 and 10th Street/Polk County 73
- US 2 and Polk County 17
- US Bus 2 and Polk County 17
- US 2 and US Bus 2
- US 2 and 180th Street NW
- US 2 and MN 220 South/Polk County 76

The US 2 corridor aligns with the eastern boundary of the City of East Grand Forks; dividing the urban area from agricultural uses within Polk County. Many of East Grand Forks' industrial uses are located within close proximity to the corridor, including Crystal Sugar and Lumbar Mart. The presence of these uses, along with the regional connectivity, make US 2 an important corridor for both heavy commercial and passenger vehicles.

US 2 is currently defined as a principal arterial within the *Grand Forks-East Grand Forks MPO (GF-EGF MPO) Long Range Transportation Plan*. The Kennedy Bridge provides a connection over the Red River between the two cities. This bridge is the only river crossing within a 50-mile radius without load restrictions for heavy commercial vehicles. US Bus 2 is identified as a minor arterial within the LRTP, providing important local connections. The corridor also crosses the Red River, connecting the downtowns Grand Forks and East Grand Forks via the Sorlie Bridge.

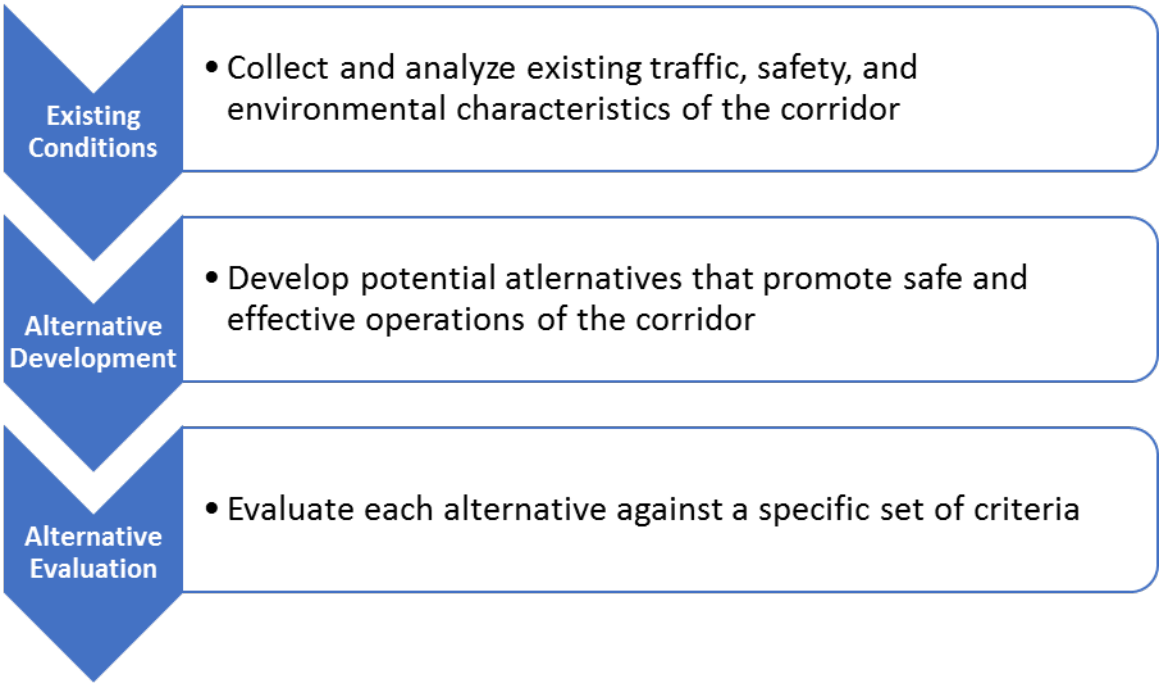
Figure 1. US 2/US Bus 2 Study Area



Study Approach

The US 2/US Bus 2 Study followed a three-stage approach, as illustrated in Figure 2. The first stage was the collection and review of existing conditions. The findings of this stage are summarized within this chapter. These findings were used to inform the development of intersection alternatives as part of the second stage. Additionally, deficiencies and other study goals were used to define evaluation criteria for use in the final stage. The third stage, alternative evaluation, utilized criteria to evaluate each of the alternatives defined to determine a recommended solution within the study area.

Figure 2. US 2/US Bus 2 Study Approach



The process also included a review of existing environmental factors within the study area, as described within this chapter. These factors were reviewed as part of the evaluation criteria to determine potential impacts as a result of each alternative. This evaluation, along with the purpose and need statement, help to inform future National Environment Policy Act (NEPA) documentation during project development.

Background Information

Throughout the study area, US 2 is a 4-lane divided highway with 12-foot lanes and shoulders that range between four (4) and 10-feet. The speed limit is currently posted at 65 mph through the corridor. The US Bus 2 corridor within the study area is currently a 2-lane rural cross-section (no curb) with 11.5-foot lanes and 11-foot shoulders on either side. The roadway is posted at 50 mph throughout the study area. The following information describes each intersection included as part of this study.

US 2 at 10th Street/County Road 73

The intersection of US 2 and 10th Street/CR 73 is located along a high-speed curve and is the northernmost intersection within the study area. 10th Street NE and CR 73 are local 2-lane roadways under the jurisdiction of the City of East Grand Forks and Polk County, respectively. Right- and left-turn lanes are provided on the westbound leg of US 2. No other turn lanes are constructed at this intersection.

US Bus 2 at County Road 17

The intersection of US Bus 2 and County Road 17 (CR 17) was reconstructed in 2007 to modify the former Y-intersection into the current T-intersection alignment. CR 17 is a 2-lane roadway with paved shoulders. A right-turn lane is constructed on westbound US Bus 2. An eastbound bypass lane is constructed along US Bus 2. No turn lanes are constructed on County Road 17.

US 2 at County Road 17

The intersection of US 2 and CR 17 is located between two US 2 curves within the City of East Grand Forks. This four-legged intersection provides an important connection between the urban development within East Grand Forks and the agricultural uses to the east. Right- and left-turn lanes are constructed on the eastbound and westbound legs of US 2. No dedicated turn lanes are constructed on CR 17.

US 2 at US Bus 2

The intersection of US 2 and US Bus 2 is located along a high-speed curve of US 2. The roadway super elevations in this area vary from 5.5 to 6 percent. The maximum superelevation standard is six (6) percent. A westbound left-turn lane and eastbound right-turn lane are constructed along US 2. No turn lanes are constructed on US Bus 2 at this intersection. The intersection of US 2 and US Bus 2 serves as a key intersection along the corridor, providing a connection to US 2 from the central and southern areas of East Grand Forks. Additionally, US Bus 2 provides a connection for many existing industrial and commercial businesses, making the intersection key for passenger and commercial traffic. The American Crystal Sugar Plant is among the existing US Bus 2 businesses.

The annual sugar beet harvest brings approximately 1,500 trucks per day through the intersection.
US 2 at 180th Street

The intersection of US 2 and 180th Street SW provides access to a single residence on the west side of the highway and an industrial business on the east side, via County Road 226. This intersection is a half mile to the west of the US 2 and MN 220 South intersection. No dedicated turn lanes are constructed at this intersection.

US 2 at MN 220 South/County Road 76

The US 2 and MN 220 South/County Road 76 (CR 76) intersection is the southernmost intersection within the study area. MN 220 and CR 76 are 2-lane roadways with paved shoulders and are maintained by the Minnesota Department of Transportation (MnDOT) and Polk County, respectively. A westbound left-turn lane and eastbound right-turn lane are constructed along US 2. No turn lanes are constructed on MN 220 or County Road 76 at this intersection. The intersection provides an important local connection, particularly for destinations within the "Point", or the southern portion of East Grand Forks. This area is bound on two sides by the Red River and the Red Lake River. The Mallory Bridge (MN 220) provides the southernmost crossing of the Red Lake River, providing an important crossing for travelers destined for eastbound US 2. Additionally, the Mallory Bridge and the US 2 and MN 220 South intersection are included as part of a historical flood evacuation route for residents within the Point.

An at-grade railroad crossing of MN 220 is located approximately 70 feet from US 2 at this location. This rail corridor has relatively low volumes, with approximately five (5) trains per day. The crossing of MN 220 is equipped with flashing lights and does not include warning gates.

Safety

A crash analysis was completed within the study area to build upon previous safety efforts associated with the MnDOT District 2 Safety Plan and Polk County Safety Plan. Intersection and segment crashes for the most recent 10-year period were reviewed throughout the study area. The Minnesota Crash Mapping Analysis Tool (MnCMAT) and BI Analytics were used to collect crash data from 2006 to 2015. Of the six intersections, the greatest number of crashes occurred at the intersection of US 2 and US Bus 2, as shown in Table 1. Segment crashes were also reviewed over a five-year period (2011 to 2015). The results of this review are shown in Table 2.

Table 1. Intersection Crash Analysis (2006 to 2015)

Intersection	ADT Volume	Expected Crash Rate	Actual Crash Rate	Critical Crash Rate	Expected Severity Rate	Actual Severity Rate	Critical Severity Rate
US 2 at 10th Street/CR 73	5,725	0.27	0.00	0.59	0.43	0.00	0.82
US 2 at CR 17	5,735	0.27	0.29	0.59	0.43	0.62	0.82
US Bus 2 at CR 17	2,875	0.27	0.19	0.73	0.43	0.19	1.00
US 2 at US Bus 2	7,275	0.27	0.98	0.55	0.43	1.54	0.78
US 2 at 180th Street	7,163	0.27	0.00	0.55	0.43	0.00	0.78
US 2 at MN 220 South/CR 76	6,863	0.27	0.00	0.56	0.43	0.00	0.79

Crash Rate < Expected Crash Rate

Expected Crash Rate < Crash Rate < Critical Crash Rate

Crash Rate > Critical Crash Rate

Table 2. Segment Crash Analysis (2011 to 2015)

Segment	ADT Volume	Expected Crash Rate	Actual Crash Rate	Critical Crash Rate	Expected Severity Rate	Actual Severity Rate	Critical Severity Rate
US 2 – West of CR 73	5,700	0.29	1.68	1.87	0.44	2.40	1.40
US 2 – CR 73 to CR 17	5,700	0.29	0.19	1.15	0.44	0.19	1.02
US 2 – CR 17 to US Bus 2	4,950	0.29	1.38	2.04	0.44	1.38	1.48
US 2 – US Bus 2 to 180th Street	7,200	0.29	0.29	1.15	0.44	0.48	1.01
US 2 – 180th Street to CR 76	7,200	0.29	0.00	1.64	0.44	0.00	1.28
US 2 – East of CR 76	5,600	0.29	0.98	1.89	0.44	2.20	1.41
US Bus 2 – US 2 to CR 17	2,400	0.31	0.25	1.98	0.51	0.25	1.56
US Bus 2 – West of CR 17	2,950	0.31	0.31	2.22	0.51	0.62	1.69

Crash Rate < Expected Crash Rate

Expected Crash Rate < Crash Rate < Critical Crash Rate

Crash Rate > Critical Crash Rate

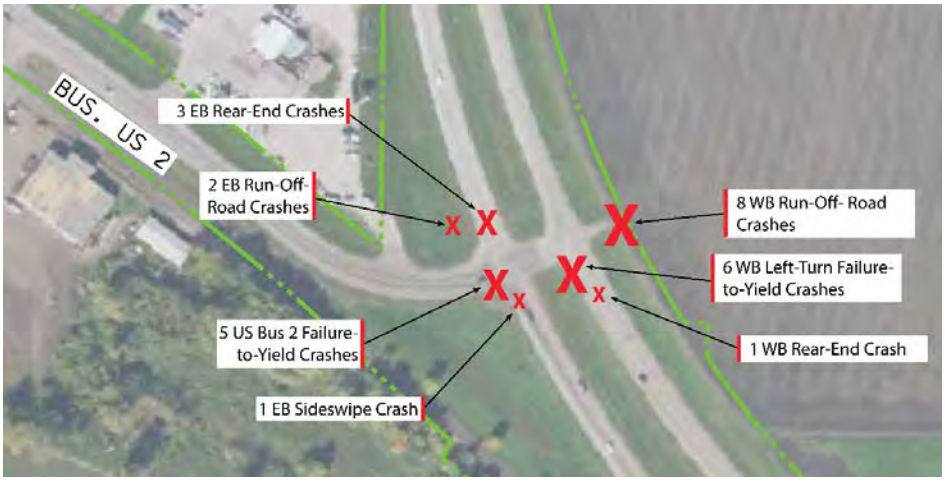
The ten-year crash analysis identified one intersection within the study area with a statistical crash problem, which was US 2 at US Bus 2, with an actual crash rate of 0.98 crashes per million entering vehicles. The intersection of US 2 at CR 17 had the second highest crash rate of the six study intersections; however, the actual crash rate does not indicate a statistical crash problem. Additionally, there was no significant crash problems identified along any of the studied segments.

Crash statistics were reviewed for the 26 crashes identified at the US 2 and US Bus 2 intersection during the 10-year study period. This review allowed for a detailed look at the crash type, location, weather condition, time of day, and time of year. A majority of the intersection crashes occurred on westbound US 2 and included eight (8) run-off road and six (6) failure-to-yield crashes. A total of two (2) severe crashes occurred during the 10-year period. Two (2) additional severe crashes and one (1) fatality were also identified beyond the 10-year history. Figure 3 and Table 3 provide an overview of the crash statistics for the US 2 and US Bus 2 intersection.

Table 3. US 2 at US Bus 2 Crash Statistics (2006-2015)

Crash Criteria		# of Crashes	% of Total
Total Crashes		**26**	**100%**
Crash Type	**WB Run-Off-Road**	**8**	**30.8%**
	WB LT Failure-to-Yield	6	23.1%
	WB Rear End	1	3.8%
	EB Rear End	3	11.5%
	EB Run-Off-Road	2	7.7%
	EB Sideswipe	1	3.8%
	US Bus 2 Failure-to-Yield	5	19.2%
Weather Conditions	**Dry**	**16**	**61.5%**
	Wet	2	7.7%
	Snow/Ice	7	26.9%
Time of Day	**Day**	**20**	**76.9%**
	Dawn/Dusk	4	15.4%
	Dark	2	7.7%
Season	Winter	8	30.8%
	Spring	3	11.5%
	Summer	**12**	**46.2%**
	Fall	3	11.5%

Figure 3. US 2 and US Bus 2 Crash History (2006-2015)



Traffic Forecasts

Intersection turning movement counts were collected by the Grand Forks-East Grand Forks Metropolitan Planning Organization (GF-EGF MPO) in the fall of 2016, during the annual beet harvest. These volumes were supplemented with segment volumes provided by MnDOT to develop a baseline average daily traffic (ADT) volumes for the corridor and are the basis for future year traffic projections. Volumes for each intersection under the existing condition are shown in Table 4. 2040 traffic volumes were forecasted for each intersection leg by applying an annual growth rate between 0.57% and 1.70%, as agreed upon by GF-EGF MPO and MnDOT. The year 2040 traffic volumes are summarized in Table 5.

Table 4. Year 2016 Traffic Volumes

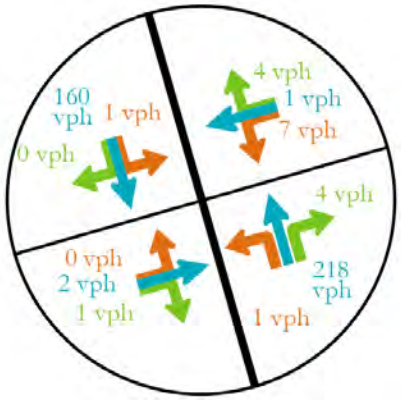
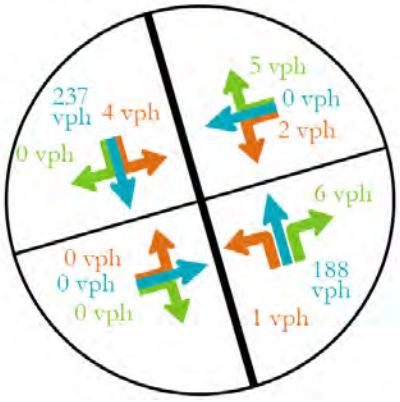
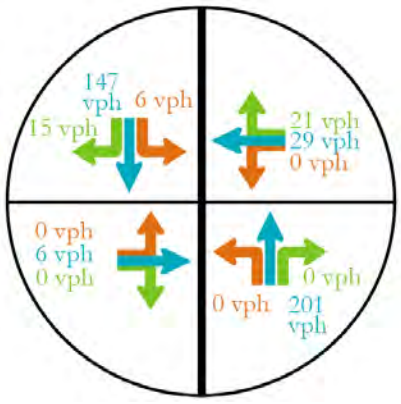
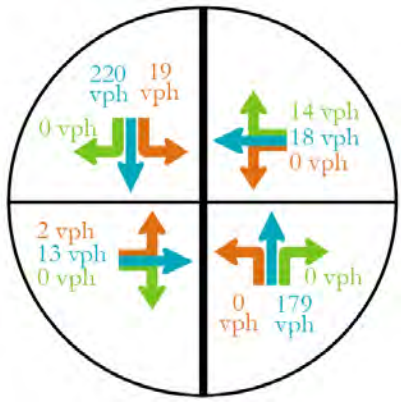
Intersection	North Segment AADT	South Segment AADT	East Segment AADT	West Segment AADT
US 2 at 10th Street/CR 73	5,400	5,400	210	100
US 2 at CR 17	5,400	5,600	720	400
US Bus 2 at CR 17	400	-	2,400	2,950
US 2 at US Bus 2	5,600	7200	-	2,400
US 2 at 180th Street	7,200	7,200	200	20
US 2 at MN 220 South/CR 76	7,200	5,600	155	970

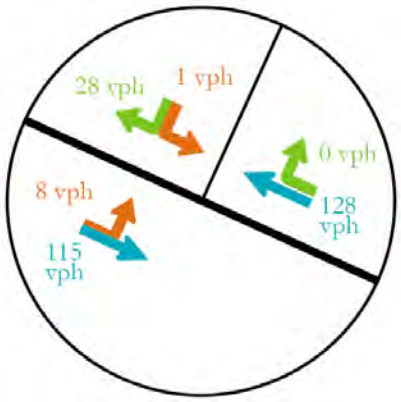
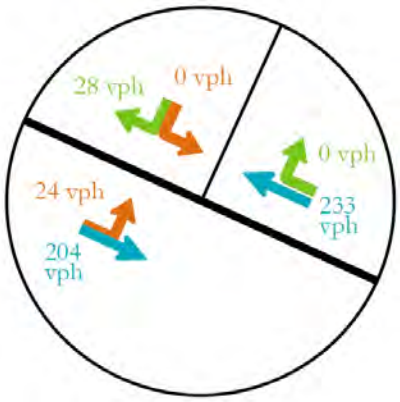
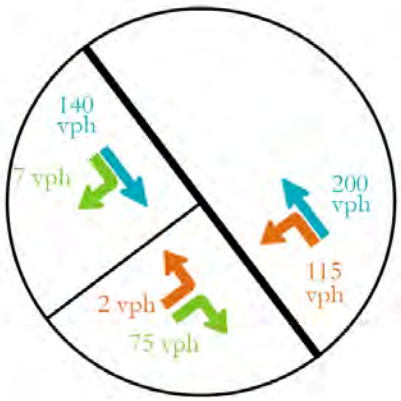
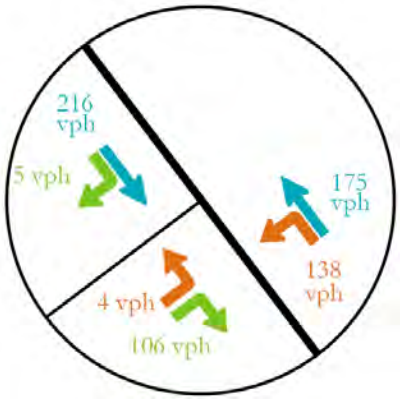
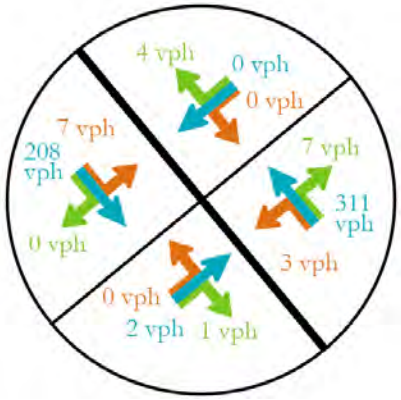
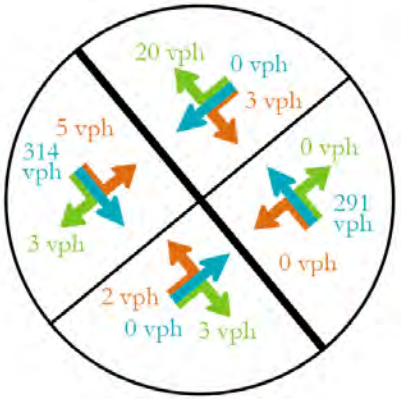
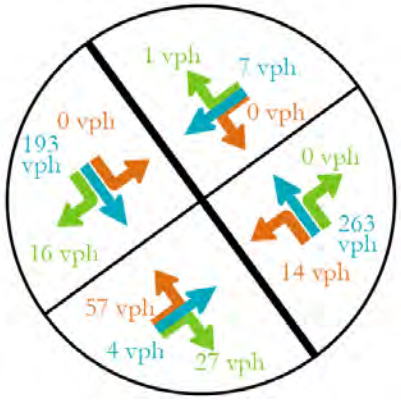
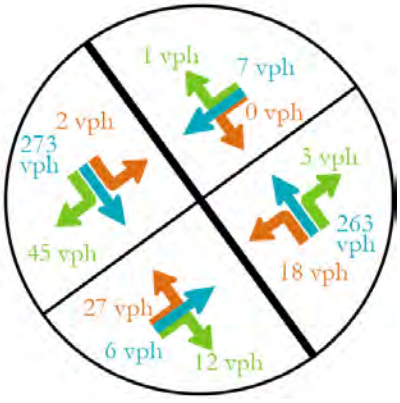
Table 5. Year 2040 Traffic Volumes

Intersection	North Segment AADT	South Segment AADT	East Segment AADT	West Segment AADT
US 2 at 10th Street/CR 73	6,900	6,900	270	130
US 2 at CR 17	6,900	7,100	950	500
US Bus 2 at CR 17	500	-	2,750	3,500
US 2 at US Bus 2	7,100	9,000	-	2,750
US 2 at 180th Street	9,000	9,000	300	25
US 2 at MN 220 South/CR 76	9,000	7,300	180	1,300

The year 2016 turning movement counts collected by the GF-EGF MPO were utilized to develop a.m. and p.m. peak hour turning movement counts for each of the study intersections. This analysis helps to identify the primary movements that need to be preserved at each intersection. Table 6 provides the a.m. and p.m. peak hour turning movement counts for each study intersection.

Table 6. 2016 A.M. and P.M. Peak Hour Turning Movement Counts

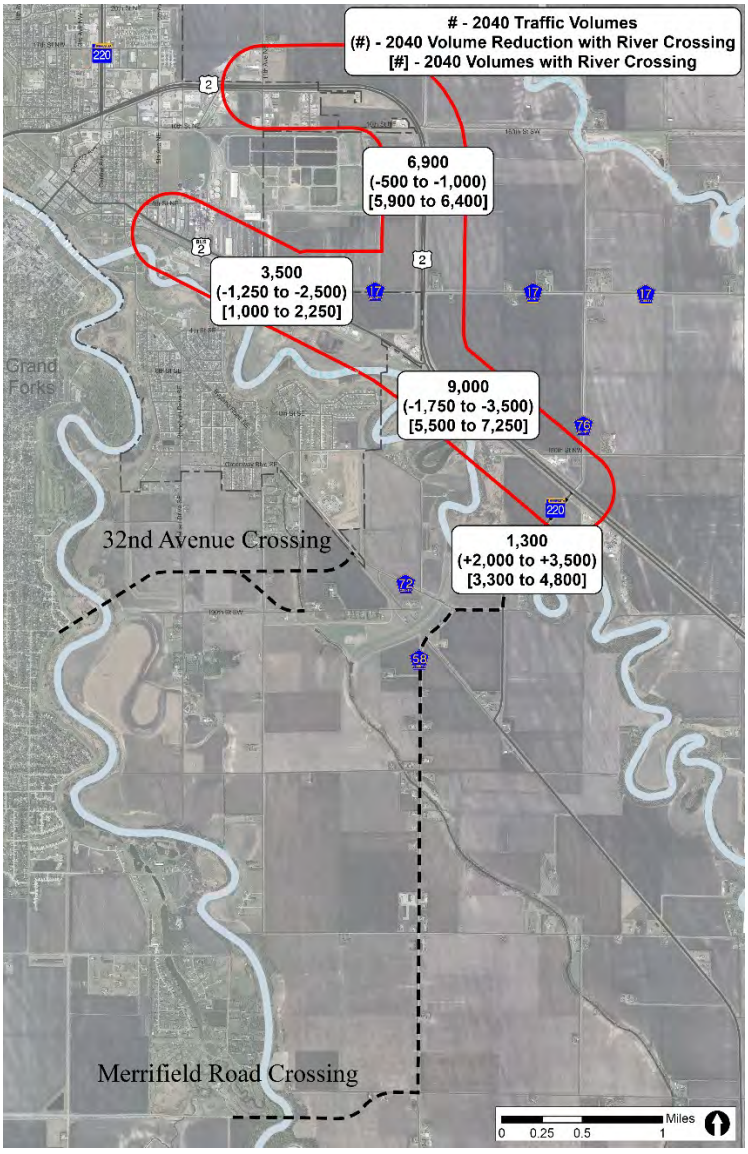
Intersection	A.M. Peak Hour	P.M. Peak Hour
US 2 and 10th Street/CR 73		
US 2 and CR 17		

Intersection	A.M. Peak Hour	P.M. Peak Hour
US Bus 2 and CR 17		
US 2 and US Bus 2		
US 2 and 180th Street		
US 2 and MN 220 South/CR 76		

New River Crossing Impacts

The potential of an additional crossing of the Red River between Grand Forks and East Grand Forks has been discussed. Two potential alignments have been referenced in existing planning document. The first alignment provides a new crossing at 32nd Avenue South in Grand Forks, connecting to Bygland Road in East Grand Forks within the existing flood protection. The second alignment provides a crossing at Merrifield Road connecting to Polk County 58. An additional river crossing at either alignment would result in a 35 percent reduction in the year 2040 traffic forecasts on US 2 and US Bus 2 as traffic would no longer need to drive through East Grand Forks to cross the river. However, traffic volumes on MN 220 South are expected to experience an increase (over 150 percent) with a new river crossing. This increase is anticipated as vehicles originating or destined from US 2 to the east would utilize MN 220 to connect to a new river crossing, rather than traveling through the two downtowns.

Figure 4. Year 2040 Future River Crossing Volume Changes



Traffic Operations

A VISSIM model was developed and calibrated to examine existing and future traffic operations within the study area. The model utilizes the specific movements at each of the intersections to define multiple measure of effectiveness (MOEs), including delay, queue lengths, and travel time. A VISSIM model was run for both the a.m. and p.m. peak hours for all study intersections.

Capacity is evaluated by defining a level of service (LOS) for each intersection. The LOS is defined by a letter grade (A through F). Level of service is determined by the calculated delay and the density of the roadway. A LOS of A through F is then given based on these factors, in accordance with the Highway Capacity Manual (HCM). All MnDOT roadways shall strive to operate at an LOS D or higher. Similarly, the GF-EGF MPO accepts a LOS D as a minimum acceptable value; however, a LOS C or better is preferred.

2016 AM and PM Peak Hours

The VISSIM analysis of the existing 2016 a.m. and p.m. peak hours found that all six intersections operate at an overall LOS A. Side street delay is experienced in some areas; however, the intersections operate at an overall LOS A. Figures 5 and 6 detail the approach LOS for both the a.m. and p.m. peak hours. Analysis was run for year 2016 with and without a train on the adjacent railroad tracks. The following information provides an overview of the key findings under existing peak hour conditions.

- The intersection of US 2 and 10th Street/CR 73 operates at an overall LOS A, but the eastbound and westbound side streets operate at LOS C and B, respectively, during the a.m. peak hour.
- The intersection of US 2 and CR 17 operates at an overall LOS A in both the a.m. and p.m. peak hours; however, the eastbound movement operates at a LOS C in the a.m. and p.m. peak hours and the westbound movement a LOS B in the a.m. peak hour.
- The eastbound US Bus 2 leg of the US 2 and US Bus 2 intersection operates at an overall LOS A in the a.m. and p.m. peak hours. The eastbound left turn operates at a LOS C for both peak hours, while the eastbound right turn operates at a LOS A. The low eastbound left turn volumes and LOS of the right turn movement result in the overall LOS A for the intersection.
- The eastbound side street at US 2 and 180th Street operates at a LOS B in the p.m. peak hour with a train present. Operations improved to LOS A when the train was not present.
- The eastbound side street at US 2 and MN 220 South/CR 76 operates at a LOS C in the a.m. and p.m. peak hours and the westbound side-street operates at a LOS B in the p.m. peak hour. The LOS improved to A (a.m. peak hour) and B (p.m. peak hour) when the train was not present.

Figure 5. 2016 A.M. Peak Hour Level of Service

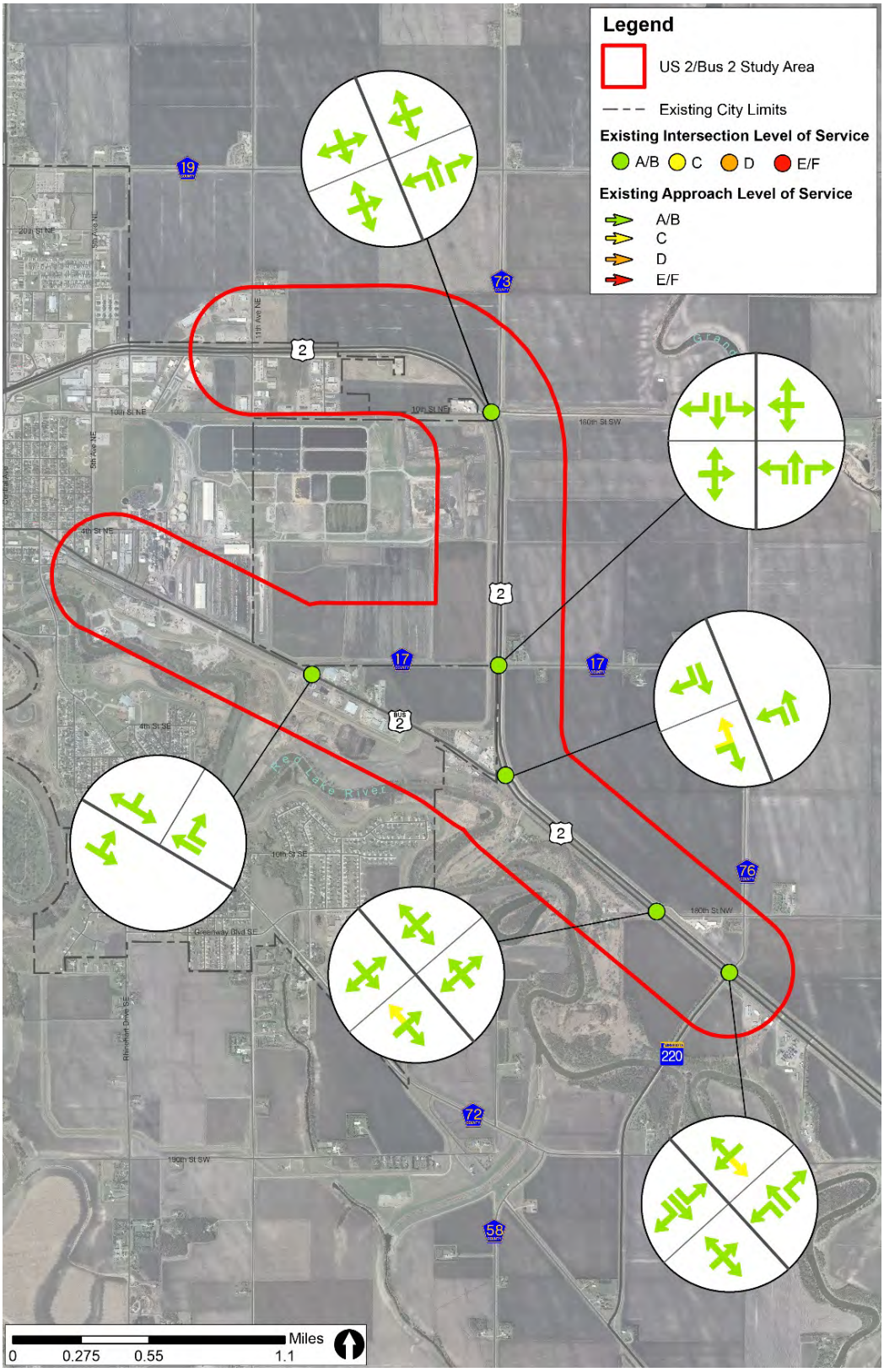
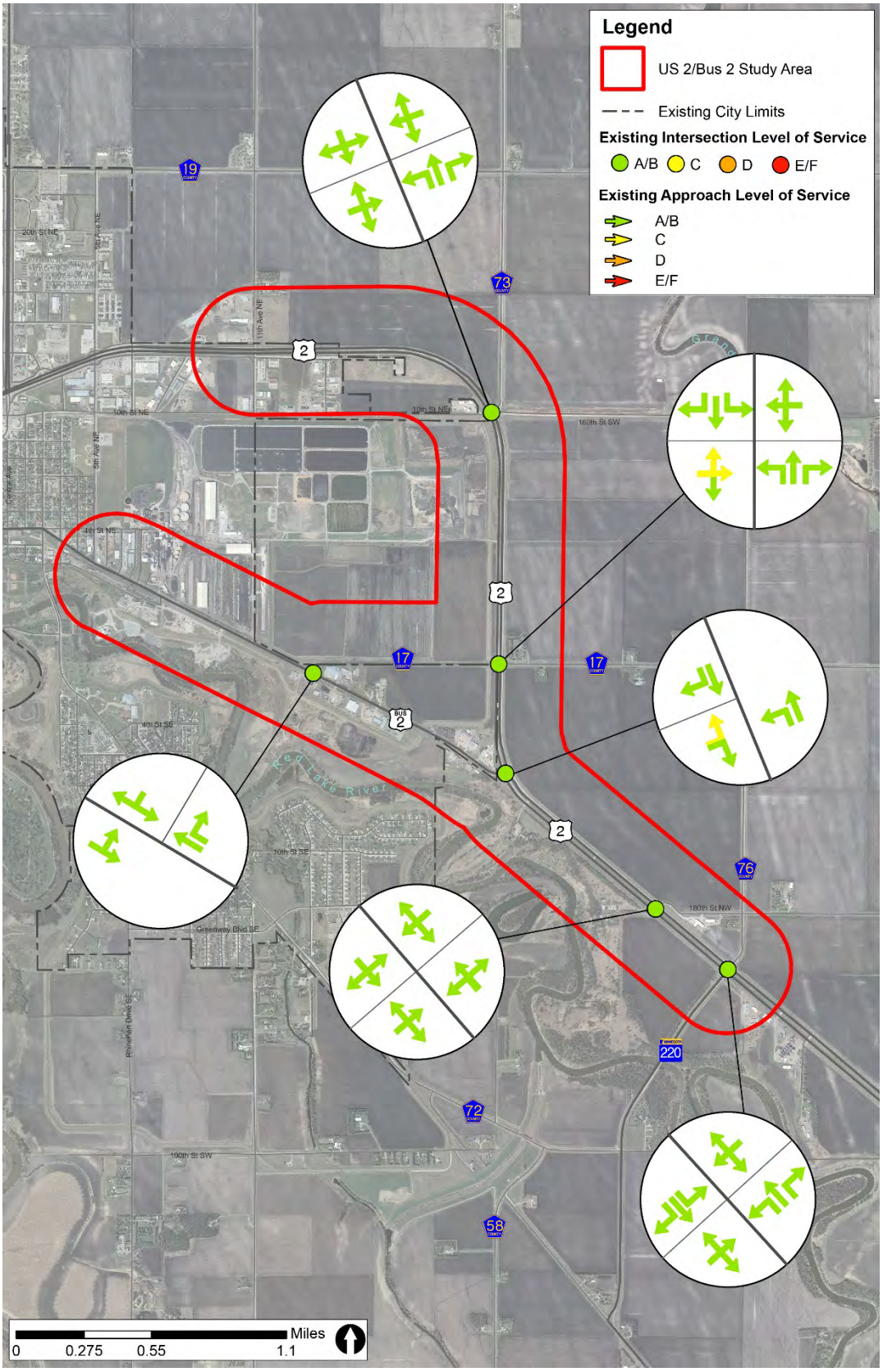


Figure 6. 2016 P.M. Peak Hour Level of Service



2040 AM and PM Peak Hours

A VISSIM model was prepared to analyze the year 2040 traffic projections on the current system. All intersections were found to continue to operate at an overall LOS A under the future traffic volumes. Side-street delay was experienced at the same four intersections highlighted in the 2016 analysis, with relatively minor changes to the LOS.

- The intersection of US 2 and 10th Street/CR 73 is expected to operate at an overall LOS A, while the eastbound and westbound side streets operate at LOS B in the a.m. peak hour.
- The eastbound and westbound side-street movements at US 2 and CR 17 are expected to operate at LOS C and LOS B, respectively, during both the a.m. and p.m. peak hours.
- The intersection of US 2 and US Bus 2 is expected to continue to operate at an overall LOS A under 2040 conditions. All movements will operate at an LOS A, other than the eastbound left turn movement, which is expected to operate at an LOS C.
- The eastbound side street of the US 2 and 180th Street intersection is expected to operate at a LOS C for both the a.m. and p.m. peak hours.
- The eastbound and westbound side street movements at US 2 and MN 220 South/CR 76 are expected to operate at LOS C and LOS B, respectively, during both the a.m. and p.m. peak hours.

Based upon the results of the year 2016 and 2040 VISSIM analyses, all intersections are operating at an acceptable LOS A and no intersection capacity concerns are expected with the current geometrics under the current or future year traffic volumes.

Heavy Commercial Compatibility

Many of the industrial land uses within the City of East Grand Forks are located to the west of the US 2 corridor and utilize study area intersections to gain access to US 2. These uses depend on passenger vehicles to enter their sites, but also depend on heavy commercial vehicles for delivery and shipment of various products. American Crystal Sugar, Bert's Truck Equipment, Todd's Trailer Sales and Lumber Mart are a few of the businesses along the US Bus 2 corridor that depend on heavy commercial traffic movement.

The regional sugar beet harvest stretches from September to October of each year, generating over 4,500 heavy commercial traffic movements per day destined for the American Crystal Sugar plant. Beet deliveries are strategically timed during all hours of the day to reduce impacts to peak hour travel. The origin of these heavy commercial movements is estimated to be evenly split into thirds, with 1/3 of the trucks coming east on US 2, 1/3 from the north on US 2 or the east on CR 17, and the remaining third from the south via US 2.

Aside from the increase in harvest season heavy commercial traffic volumes, year-round heavy commercial traffic volumes for the corridor averages nearly 10 percent of the overall traffic.

Considering impacts to harvest season and year-round heavy commercial traffic volumes is important for beet harvest season traffic and daily operations of existing and future businesses.

Land Use

The City of East Grand Forks adopted the 2045 Land Use Plan in 2016, which defined future land uses within the study area, see Figure 7. Along with the existing commercial and industrial land uses, future industrial, commercial, and commercial/industrial uses were defined. Agricultural and rural residential uses on the east side of US 2 throughout the study area are maintained throughout the study area. The 2045 Land Use Plan also defined potential growth phasing scenarios within the study area, see Figure 8. Growth of industrial land uses was identified in the northwest quadrant of the US 2 and 10th Street intersection within the next 30 years. Additionally, commercial/industrial growth was identified to the west of US 2 between CR 17 and US Bus 2 within the next 10, 20, and 30 years. Future land uses and the defined growth areas should be consulted to ensure that potential growth is accounted for as improvements are defined.

Figure 7. East Grand Forks Growth Phasing

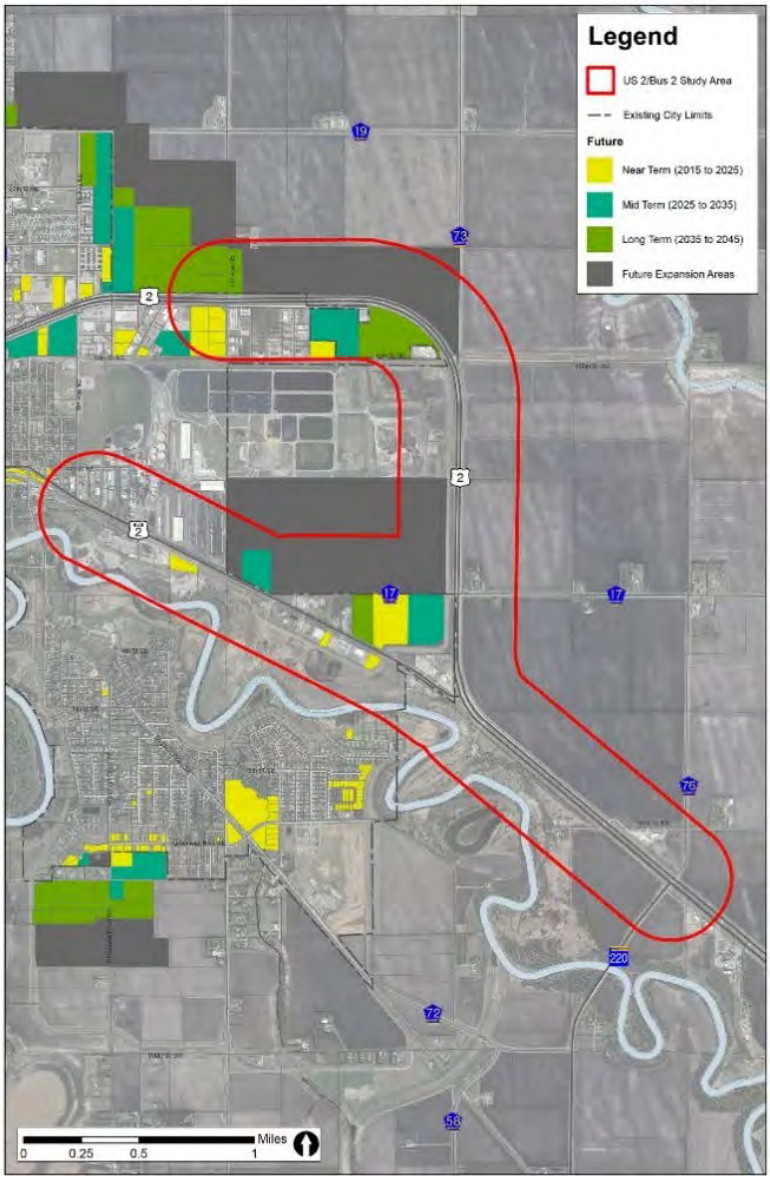
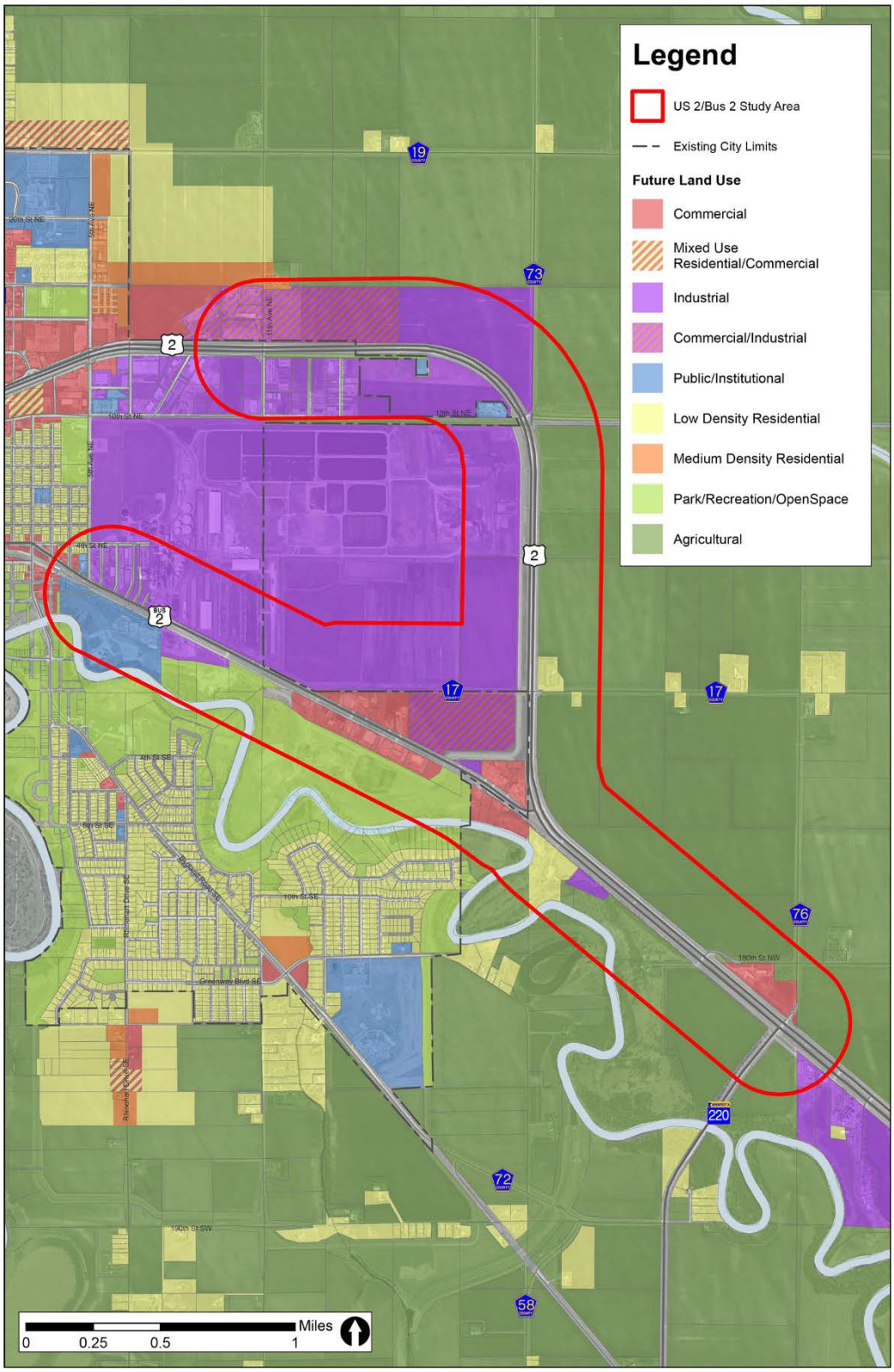


Figure 8. East Grand Forks 2045 Future Land Use Plan



Right-of-Way

The Minnesota Department of Transportation maintains 230- to 430-feet of right-of-way along US 2 through the study area. Additionally, MnDOT maintains approximately 130-feet of right-of-way for US Bus 2. Polk County maintains the right-of-way for CR 17, along with other county roads in the study area. The established right-of-way accommodates the current roadway geometrics and conforms to current standards. Additional improvements to intersections may require the acquisition of additional right-of-way.

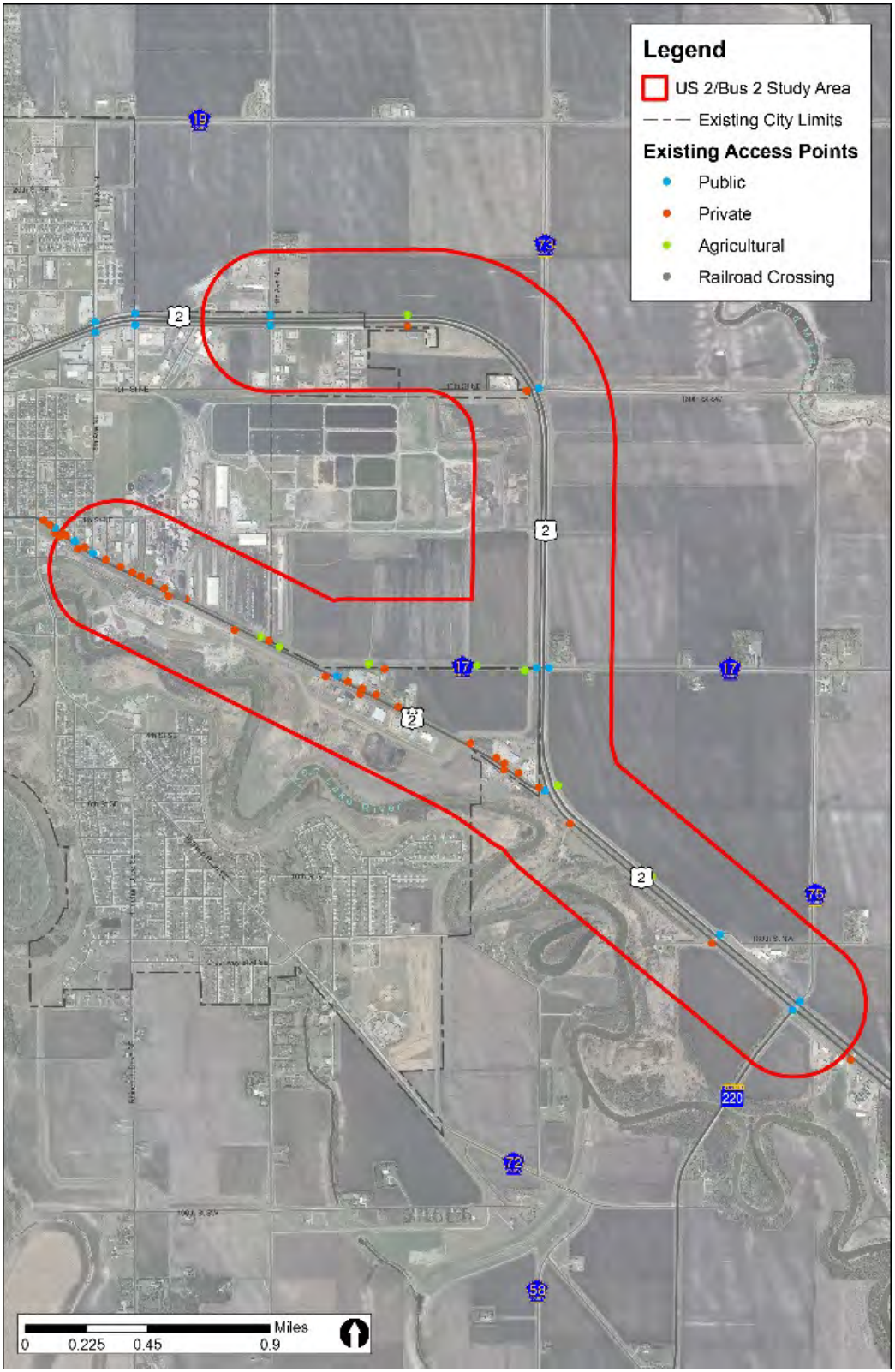
Lighting

Existing intersection lighting is limited to the intersections of US 2 at US Bus 2 and US 2 at MN 220 South South/CR 76. Two lighting standards are installed at each of the intersections. No lighting is provided at the intersections of US 2 at CR 17, US 2 at 180th Street, or US 2 at 10th Street/CR 73. Segment lighting is currently installed along the US Bus 2 corridor between the CR 17 intersection and the US 2 intersection.

Access

MnDOT manages the access control along both the US 2 and US Bus 2 corridors throughout the study area. Currently all access points meet MnDOT access management requirements, other than two private driveways located near the US 2 and US Bus 2 intersection. The eastern driveway of Todd's Trailer Sales is located less than 200-feet from the eastbound US 2 travel lanes. The existing Stable Days driveway is located approximately 720-feet south of the intersection along US 2. Multiple public, private and agriculture access points exist along the corridor, as shown in Figure 9. MnDOT, jointly with the City of East Grand Forks, shall review future access requests for compliance with current standards.

Figure 9. Existing Access



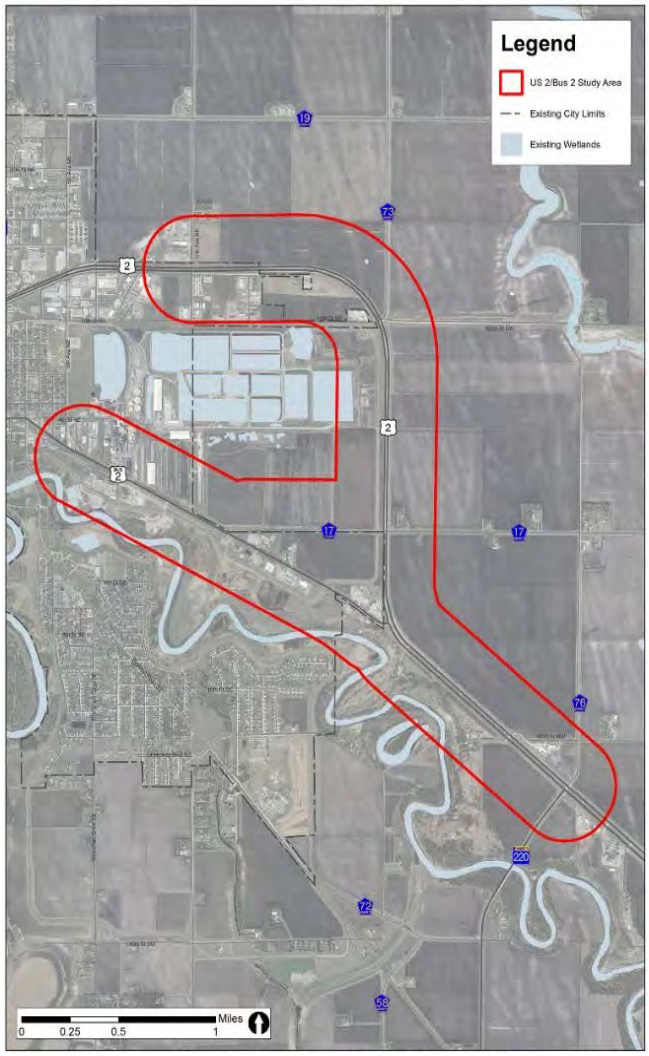
Environmental Conditions

Wetlands

The United State Fish and Wildlife Service National Wetlands Inventory (NWI) was utilized to explore the presence of wetlands within the study area. The NWI provides the most comprehensive listing of existing wetlands in the nation without completing a field wetland delineation. Eight wetlands have been identified within the study area, which are illustrated in Figure 10. However, all wetlands are located outside of the existing US 2 and US Bus 2 right-of-way. Portions of the Red Lake River and a former oxbow are located within the southern part of the study area. The remaining wetlands include freshwater wetlands no greater than two acres in size.

Additional wetlands are anticipated to be present in roadway diches and medians based on aerial photography. These wetlands are anticipated to be artificially created, and should be defined by a field wetland delineation to determine the size and wetland type. The United States Army Corps of Engineers shall complete a jurisdictional determination following the delineation to determine the jurisdiction of each of the wetlands identified within the study area during project development efforts.

Figure 10. Existing NWI Wetlands



Floodplain

There are three major rivers located near the study area, including the Red River of the North, the Red Lake River and the Grand Marais River. The Federal Emergency Management Agency (FEMA) has mapped the existing floodplains for the rivers within the US 2/US Bus 2 study area. Flood Insurance Rate Maps were updated in the study area in 2008 to reflect changes resulting from the construction of the earthen levee. The earthen levee was constructed around the City of East Grand Forks following the historic 1997 flood, providing flood protection within the city and key growth areas.

A majority of the study area is located in Zone X, defined as areas of 500-year flood; areas of 100-year flood with average depths of less than 1-foot, or areas protected by levees from 100-year flood. The intersection of US Bus 2 and County Road 17 is the only study intersection located within the flood protection. The intersection of US 2 and US Bus 2 is adjacent to areas of the Red Lake River floodway (Zone AE). Proposed changes within this floodway area will require close coordination and appropriate approvals obtained with the East Grand Forks floodplain manager during project development.

Farmland

Agricultural production is an important employment sector for East Grand Forks and Polk County, Minnesota. The US 2 corridor is bordered through most of the county by land currently in use for agricultural production. According to the USDA Natural Resources Conservation Service (NRCS), over half of the land within the study area is prime farmland or prime farmland if drained. Potential impacts to the prime farmland areas should be considered during the review of potential improvements.

Economic/Social

Impacts to the social and economic character of an area can be directly experienced by improvements to the transportation system. These impacts can provide benefits and negative impacts as access changes, capacity is modified and other changes occur. Due to the industrial and agricultural nature of the corridor, economic impacts should be carefully considered as alternatives are developed. Impacts to existing businesses along with impacts to future economic growth should be considered. These impacts may include benefits or burdens to business operations and growth as a result of modifications to access management, wayfinding, heavy commercial traffic movements and overall travel time. Impacts to the social environment shall also be considered as it relates to system linkage and changes to connectivity to and from the region.

Environmental Justice

The GF-EFG MPO's Environmental Justice Program outlines the procedures for delineating the presence of environmental justice populations within a study area. Based on this guidance and the 2015 American Community Survey Estimates, no low income or minority block groups were identified within the study area. Therefore, no direct benefits or burdens are assumed because of potential construction projects. The presence of low income or minority block groups should be reassessed during project development to ensure that no changes have occurred.

Visual

Impacts to the visual quality of the corridor should be considered as alternatives are developed for the corridor. Particularly, any improvements that include a roadway grade separation or vertical alignment shifts shall be reviewed for visual impacts to the corridor and surrounding land uses.

Threatened and Endangered Species

The National Heritage Information System (NHIS) is managed by the Minnesota Department of Natural Resources (DNR) and identifies the State's rare plant, animal, native plant communities, and other rare features. Rare species tracked within the NHIS include sightings of Federally listed threatened and endangered species, along with species lists as State endangered, threatened or special concern. The NHIS was reviewed in proximity to the study area, and one occurrence was found within a half-mile of the US 2 and US Bus 2 intersection. This occurrence included a freshwater muscle concentration found within the Red Lake River. No other NHIS occurrences were found within a half-mile of the study area.

The potential for impacts to Federally and State listed species should also be considered during the development of alternatives. There are currently seven Federally listed species for Polk County, Minnesota:

- Gray wolf – Threatened
- Dakota skipper – Threatened
- Dakota skipper critical habitat
- Powershiek skipperling – Endangered
- Powershiek skipperling critical habitat
- Western prairie fringed orchid – Threatened

Additional species listed on the State's endangered, threatened or special concern list should also be reviewed within the study area. Impacts to the NHIS sightings and Federally and State listed species should be carefully reviewed, avoided and mitigated during project development.

Purpose and Need

According to 23 CFR 450 Appendix A, a sound transportation planning process is the primary source of a project purpose and need. A vision for the transportation system and goals for achieving that vision are typically developed through the planning process and can be directly used to develop a purpose and need for a project that frames the scope of the problem to be addressed. The development of a purpose and need statement at the planning level also aids the sound evaluation, prioritization, and elimination of alternatives. The purpose and need statement identified within this study can be directly carried into or refined for future NEPA documentation during project development (if applicable).

Project Purpose

The purpose of the US 2/US Bus 2 study is to review and analyze existing and future conditions at six intersections within the defined study area. The US 2 and US Bus 2 corridors serve as important regional connections for East Grand Forks and the greater region. The corridors are important to existing business vitality and future economic growth of East Grand Forks, providing for passenger vehicles and heavy commercial traffic. Alternative solutions to transportation issues will be evaluated. Issues may include safety, future capacity, and system/roadway deficiencies.

Project Need

Providing a safe and efficient system with capacity to support future passenger and heavy commercial vehicles is the greatest need within the proposed study area. The intersection of US 2 and US Bus 2 experienced a total of 26 crashes between 2006 and 2015, exceeding the critical crash rate for the intersection. The statistical crash rate problem at this intersection warrants the review of solutions to improve intersection safety.

Heavy commercial vehicles are highly dependent on the US 2 corridor with the unrestricted load crossing of the Red River, via Kennedy Bridge, and connections to the American Crystal Sugar plant. During the annual beet harvest, daily heavy commercial volumes can exceed 1,500 trucks per day at the intersection of US 2/US Bus 2 and US 2/CR 17. The geometrics of the corridor intersections need to support these vital movements to support the economics of East Grand Forks and the region.

Public Involvement

Public engagement is an important element of all planning processes. These efforts can help to identify and confirm existing conditions and characteristics of an area, define problems, provide potential solutions, and test recommendations. To provide input for the US 2 and US Bus 2 Study at all four of these levels, a project steering committee was developed and two public open houses were held during project development.

Steering Committee

The project steering committee was comprised of staff from the GF-EGF MPO, MnDOT, City of East Grand Forks, Federal Highway Administration (FHWA), and other area business and property owner representatives. The group was engaged throughout all stages of the project, from data collection to the final report. Steering committee members were tasked with serving as advocates for the planning process by participating in discussion and sharing project milestones within their networks. A total of five meetings were held throughout the study development to review and discuss findings and recommendations (see Appendix A):

- Meeting 1 – Study introduction and committee roles and responsibilities
- Meeting 2 – Existing conditions review and evaluation criteria prioritization
- Meeting 3 – Draft alternative review
- Meeting 4 – Alternative refinement and evaluation matrix
- Meeting 5 – Draft study review

Public Open Houses

Two public open houses were held over the course of the study. The open house meeting format was intended for attendees to review products and ask questions of staff. The first open house was held in early February at the East Grand Forks City Hall to present initial data collection efforts and ask for opinions of the corridor. The importance of understanding heavy commercial traffic movements during and outside of beet harvest were stressed at the first open house. Potential solutions were also discussed with attendees.

The second open house was held in the East Grand Forks City Hall in early April to review and discuss potential alternatives for the six intersections. Comments received from the second meeting helped to refine alternatives. Attendees were provided an opportunity to identify preferred alternatives during the meeting.

Both meetings were advertised in the Exponent two weeks prior to the meeting. Information flyers were mailed to business and property owners along the corridor prior to the second open house to inform them of the project process and provide an invitation to attend. A summary of the written comments received during the public involvement process is included within Appendix B.

Intersection Alternatives

The analysis of existing and future conditions and public and agency input were used to develop potential alternatives for four the six study intersections. The intersections of US Bus 2 and CR 17 and US 2 and 180th Street NW did not present any concerns regarding safety, capacity, or geometry under existing or future conditions. Therefore, the development of alternatives in these locations was not warranted at this time. The alternatives developed for each intersection are discussed within this section. Alternative 1 for all intersections represents a no build scenario, with no future improvements to the intersection. This alternative serves as the baseline for comparison for all build alternatives.

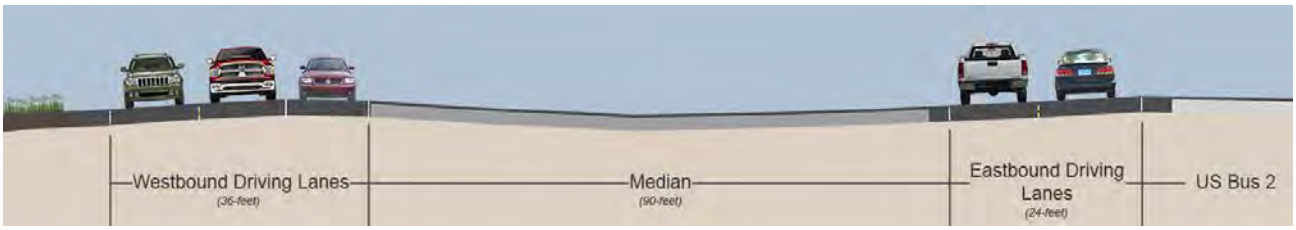
Developing alternatives included a multifaceted approach, which considered technical data, public input, engineering design standards and direction from the project steering committee. Alternatives were developed to address the purpose and need of the overall project, focused at the exploration of improvements that would address safety, heavy commercial traffic, and traffic movement concerns. A range of conceptual intersection alternatives were developed to address these concerns and allowed for evaluation against defined criteria. It is important to note that these alternatives were prepared at a planning-level, and any alternative will require additional design and engineering if selected for construction.

US 2 at US Bus 2

Through the public input process and initial analyses, the intersection of US 2 and US Bus 2 was identified as primary intersection of concern within the study area. Concerns regarding crash rates, roadway elevations, and stacking space were highlighted by the public and agency partners.

The intersection of US 2 at US Bus 2 was identified as the only study intersection with a statistical crash rate concern. In addition, superelevation and cross-section concerns were raised at this intersection as traffic making a US 2 westbound left-turn movement are required to navigate an uneven roadway profile, which is illustrated in Figure 11. The narrow median at US 2 also provides minimum staking space as vehicles wait for oncoming traffic as they complete turning movements.

Figure 11. Existing US 2/US Bus 2 Median



Alternative 1 – No Build

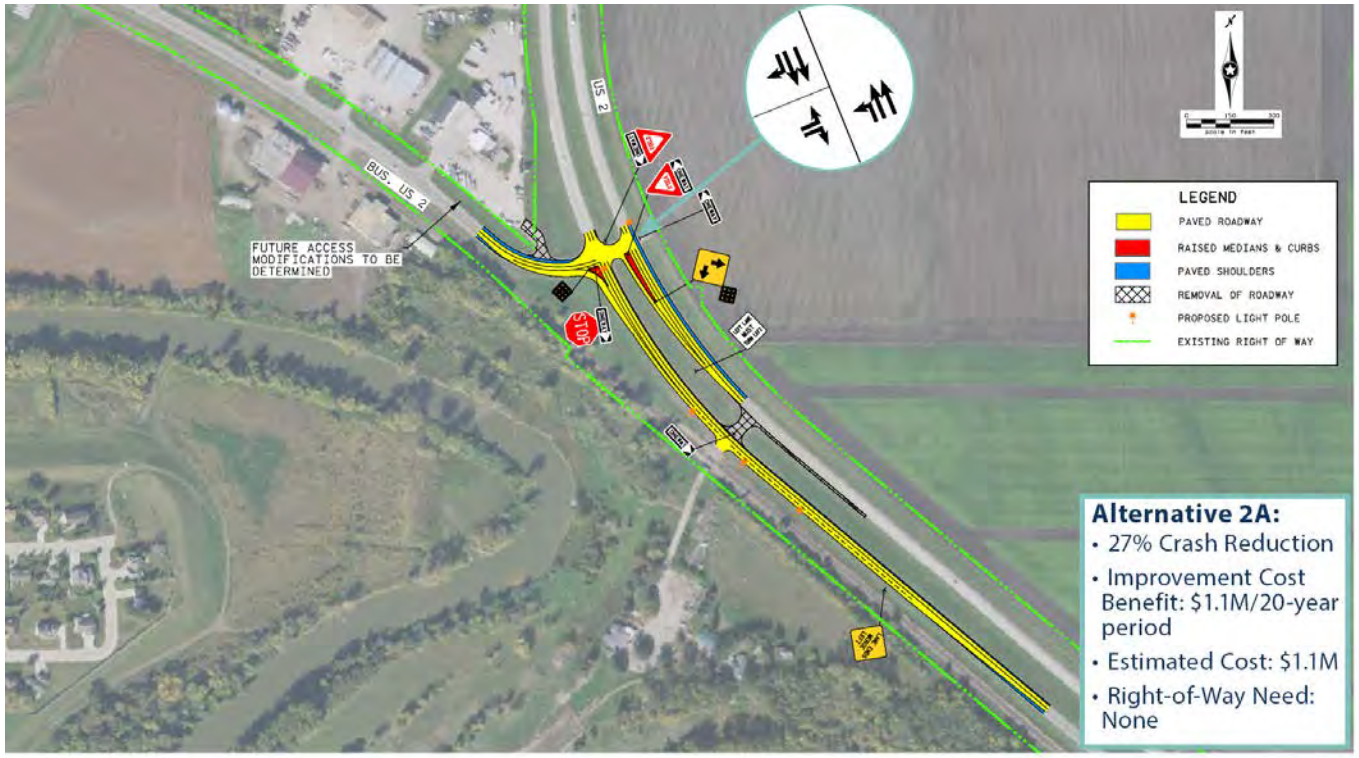
Alternative 1 includes no proposed improvements to the intersection of US 2 and US Bus 2. The intersection would remain within the current geometry and roadway profiles. The current side-street stop control would remain in place with no improvements to intersection lighting or signage. Additionally, no improvements would be made to the turn lane storage length or US 2 median stacking space.

Alternative 2A – Turn Lane Improvements

Alternative 2A provides turn lane improvements to the US 2 westbound left-turn movement and an acceleration lane for eastbound US Bus 2 right-turn movements onto US 2. The existing US 2 median would be re-graded under this alternative to alleviate the uneven roadway profile. All existing intersection movements would be maintained with this alternative. The proposed improvements include:

- Reconstruct an offset westbound US 2 left-turn lane with raised median
- Regrade US 2/US Bus 2 median
- Construct an eastbound acceleration lane for US Bus 2 to US 2
- Close US 2 median at the Stable Days access
- Access modifications at Todd's Trailer Sales

Figure 12. Alternative 2A

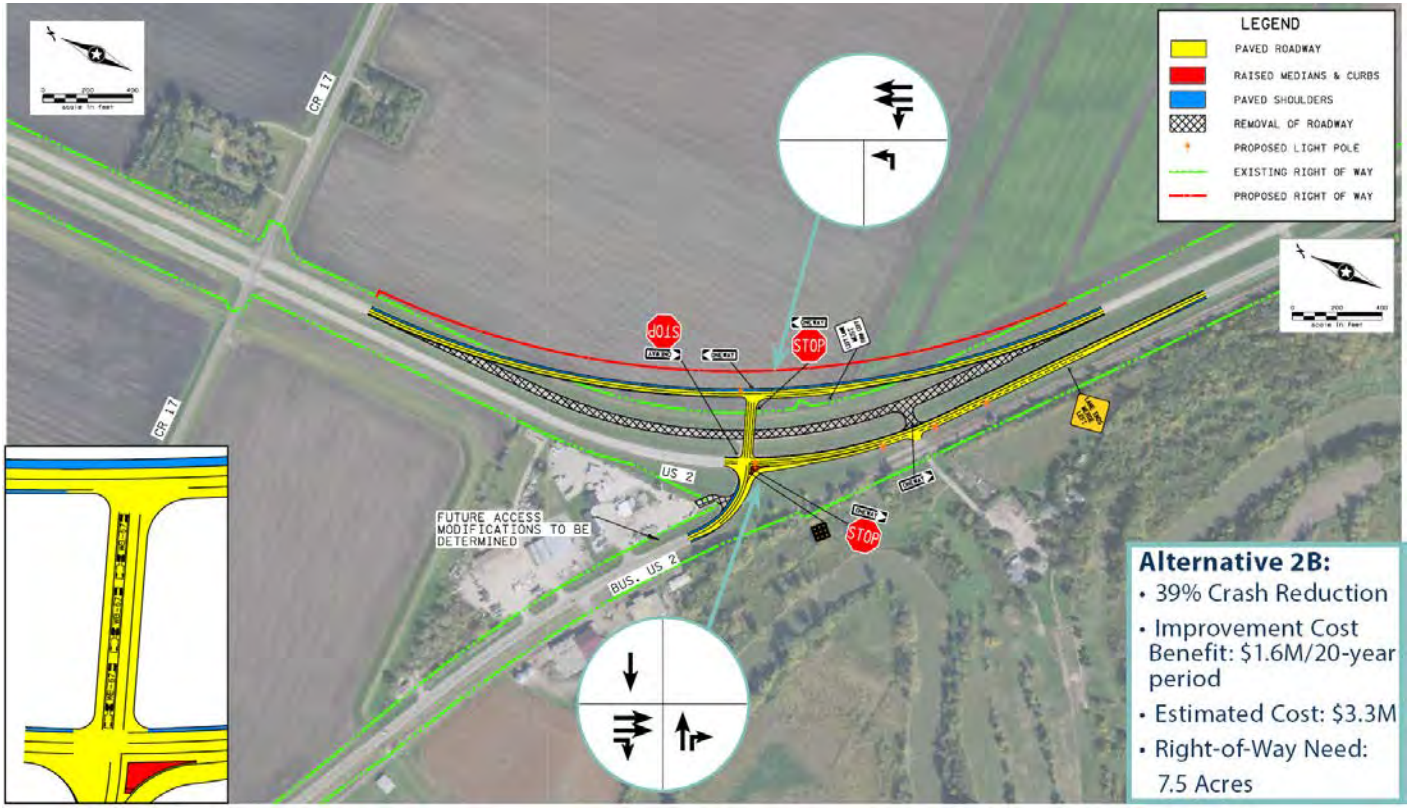


Alternative 2B – US 2 WB Alignment Shift

Alternative 2B was developed to explore enhanced improvements to the intersection and the super-elevation of the westbound US 2 lanes. Under this alternative, the horizontal curve would be softened for the westbound travel lanes, allowing for the superelevation of the driving lanes to be reduced from 6.0 to 4.0 percent. The alignment shift creates an extended US 2/US Bus 2 median with a smooth roadway profile, providing additional stacking space for turning movements. The current yield condition at the median would be modified to a stop condition with the extended median length. All existing intersection movements would be maintained with this alternative. The proposed improvements for Alternative 2B include:

- Westbound US 2 alignment shift and super-elevation reduction to 4.0 percent
- Regrade US 2/US Bus 2 median
- Construct an eastbound acceleration lane for US Bus 2 to US 2
- Close US 2 median at the Stable Days access
- Access modifications at Todd's Trailer Sales

Figure 13. Alternative 2B

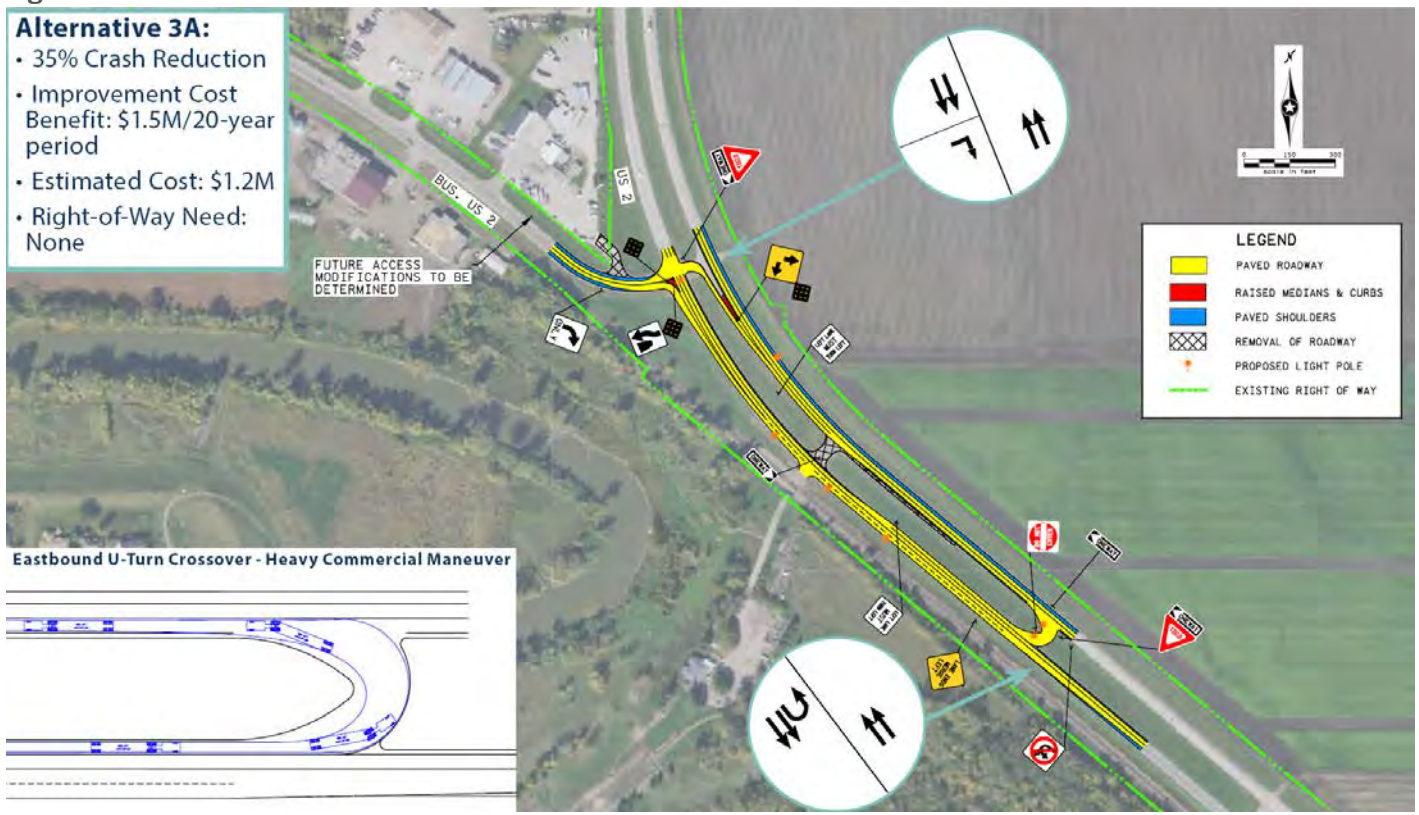


Alternative 3A – Modified RCUT and Acceleration Lane

Alternative 3A was developed to reduce conflicts within the US 2/US Bus 2 median by restricting the lowest volume turning movement (US Bus 2 eastbound left-turn). Under this alternative, the westbound US 2 left-turn lane would be realigned to smooth the left turn movement, while restricting the US Bus 2 eastbound left-turn movement. Though the left-turn movement would be restricted in the traditional sense, the general movement would still be allowed by utilizing the modified RCUT included with this alternative. Under this alternative, US Bus 2 traffic would turn right onto eastbound US 2 and would utilize a U-turn maneuver to access westbound US 2. The U-turn location is placed in a location that allows for the acceleration lane to be maintained. This alternative maintains all but one of the current intersection movements. The proposed improvements for Alternative 3A include:

- Reconstruct an offset westbound US 2 left-turn lane with raised median
- Regrade US 2/US Bus 2 median
- Close the US Bus 2 eastbound left-turn lane
- Construct an eastbound US 2 crossover to facilitate the US Bus 2 left-turn movement to US 2
- Construct an eastbound acceleration lane from US Bus 2 to US 2
- Close US 2 median at the Stable Days access
- Access modifications at Todd's Trailer Sales

Figure 14. Alternative 3A

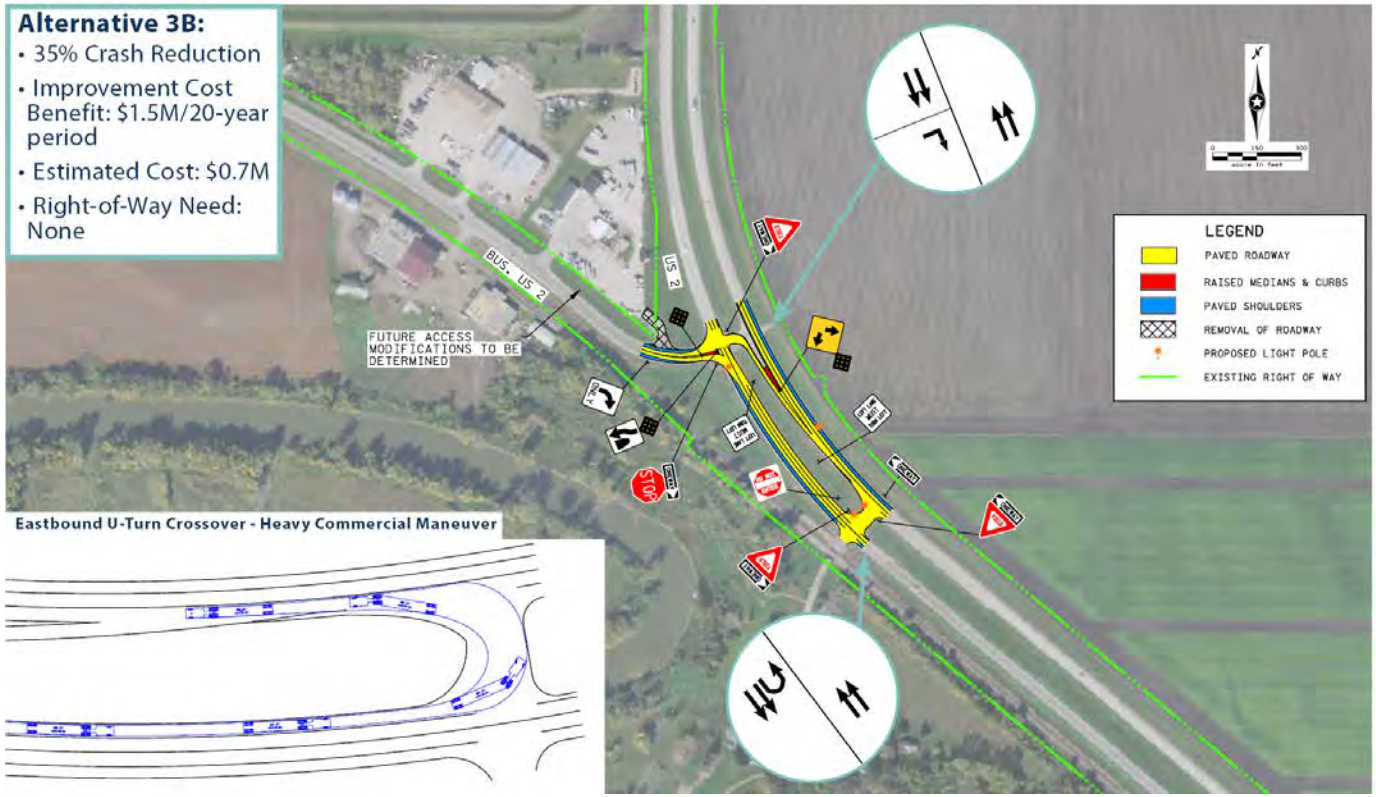


Alternative 3B – Modified RCUT

Alternative 3B proposes similar improvements to Alternative 3A, with slight modifications to reduce impacts to travel time. The westbound US 2 left-turn lane would be treated in the same manner and the US Bus 2 eastbound left-turn movement would be restricted. A median crossover would be constructed using the existing Stable Days median to facilitate U-turn maneuvers. This alternative reduces the distance a driver must travel to make the U-turn maneuver; however, the proposed location creates a situation that does not allow for an acceleration lane. This alternative maintains all but one of the current intersection movements. The proposed improvements for Alternative 3B include:

- Reconstruct an offset westbound US 2 left-turn lane with raised median
- Regrade US 2/US Bus 2 median
- Close the US Bus 2 eastbound left-turn lane
- Construct an eastbound US 2 crossover to facilitate the US Bus 2 left-turn movement to US 2
- Access modifications at Todd's Trailer Sales

Figure 15. Alternative 3B



Alternative 4 – Traffic Signal

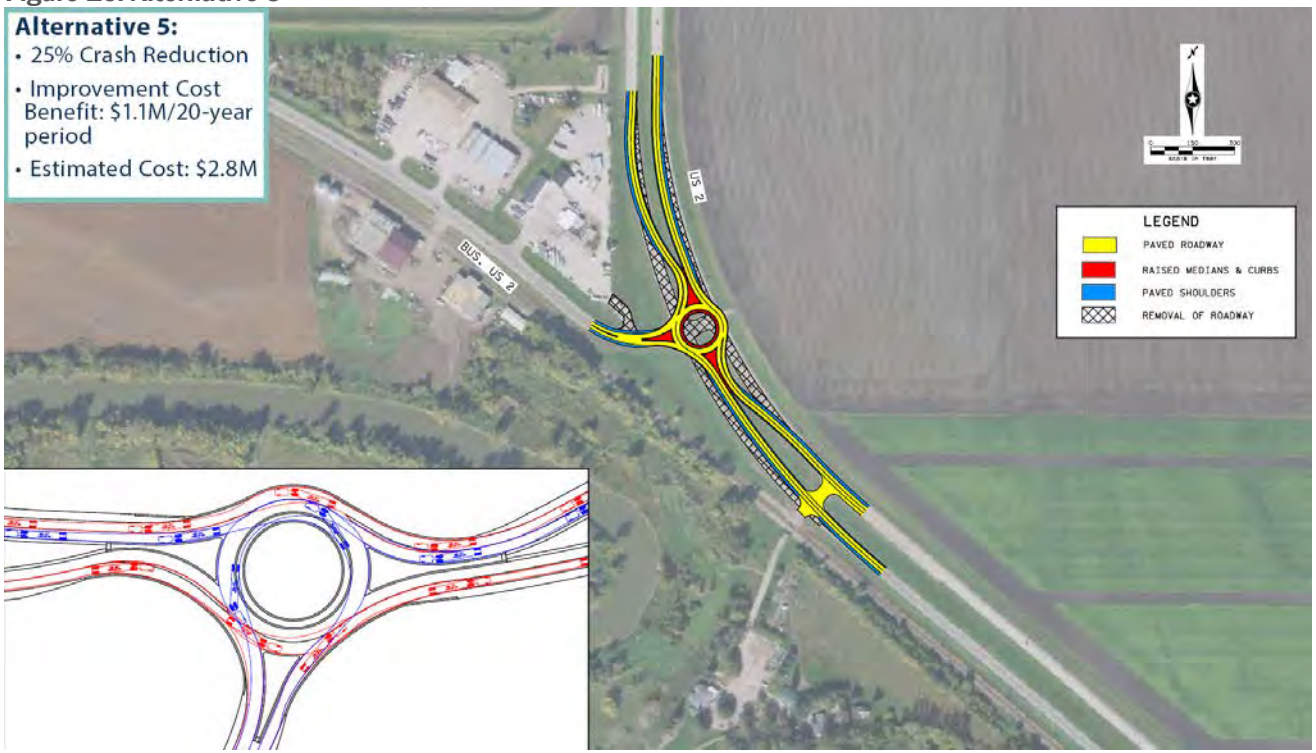
Alternative 4 analyzed the potential for a traffic signal at the intersection of US 2 and US Bus 2. The traffic signal warrant analysis utilizes current conditions, including speed, volume, and crash history, to determine if a signal is warranted at that location. Based on the analysis for the existing 2016 volumes and future year 2040 volumes, no signal warrants were met for the intersection. MnDOT standards do not allow for the construction of a traffic signal that does not meet the warrants; therefore, this alternative is removed from consideration.

Alternative 5 – Roundabout

Alternative 5 proposes to modify the existing US 2 and US Bus 2 intersection alignment into a multi-lane/hybrid roundabout. Speed and crash reduction are two positive factors associated with the roundabout alternative. Additionally, this alternative allows all existing traffic movements to be maintained. The multi-lane design along US 2 requires a large design footprint to accommodate heavy commercial traffic in both lanes of the roundabout. The proposed improvements for Alternative 5 include:

- Construct a multi-lane/hybrid roundabout
- Access modifications at Todd's Trailer Sales

Figure 16. Alternative 5



Alternative 6A – Median Closure

Alternative 6A explores the impacts of a complete closure of the US 2 and US Bus 2 median. The median closure would restrict westbound US 2 left-turn movements and eastbound US Bus 2 left-turn movements. These movements would be redirected to the US 2 and CR 17 intersection. Improvements would be made to the westbound US 2 turn lanes at CR 17 to facilitate additional traffic. The proposed improvements for Alternative 6A include:

- Closure of the US 2/US Bus 2 median
- Construct turn lane improvements at westbound US 2 and CR 17

Figure 17. Alternative 6A

Alternative 6B – Median Closure and US Bus 2/CR 17 Realignment

Alternative 6B builds upon the improvements proposed in Alternative 6A and includes improvements at the intersection of US Bus 2 and CR 17 to accommodate the additional volumes at the intersection. The current T-intersection is proposed for realignment to facilitate a through movement from US Bus 2 to CR 17, while the southern leg of US Bus 2 is realigned to into the newly aligned roadway. The Crystal Sugar driveway would be redesigned with this alternative to create a four-legged intersection. The proposed improvements for Alternative 6B include:

- Closure of the US 2/US Bus 2 median
- Construct turn lane improvements at westbound US 2 and CR 17
- Realign the intersection of US Bus 2 and CR 17
- Realign the Crystal Sugar Access

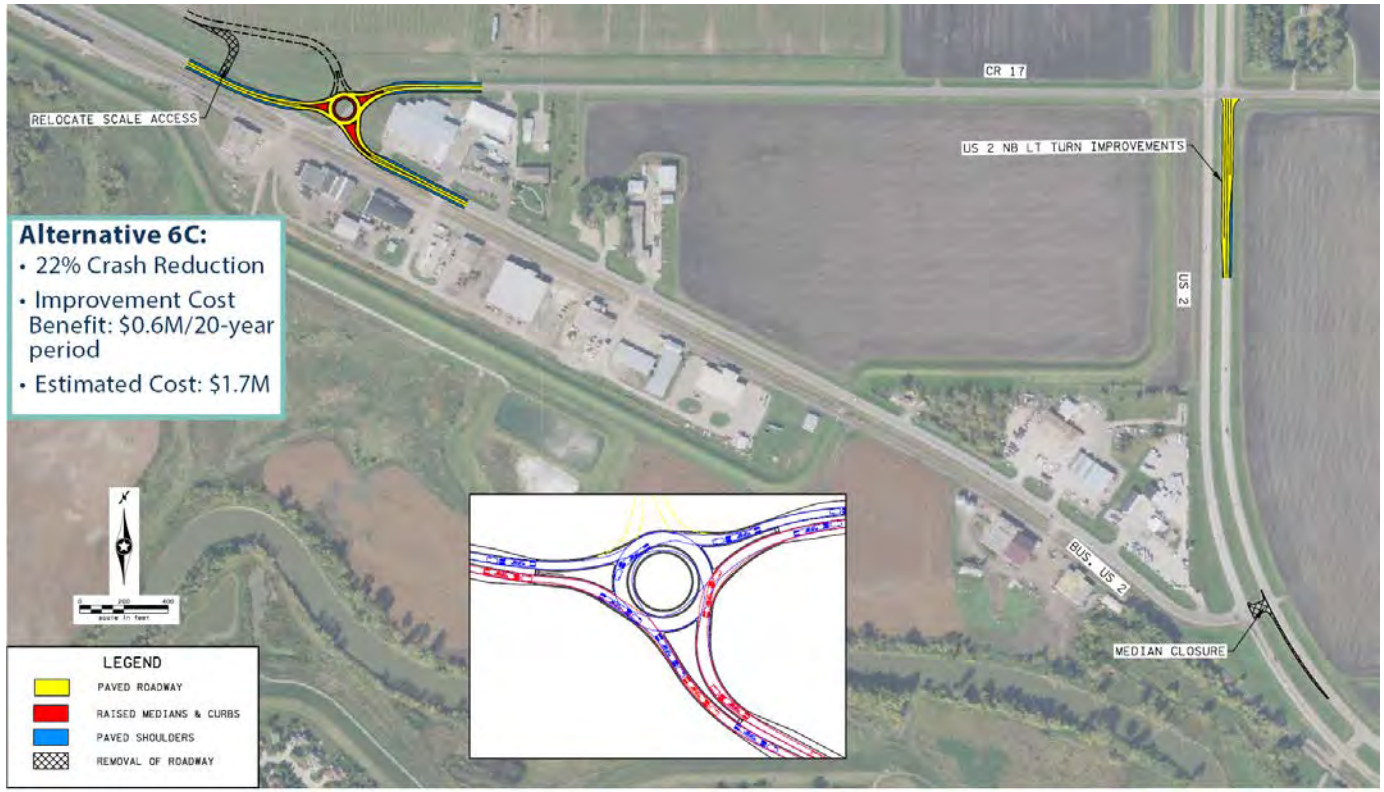
Figure 18. Alternative 6B

Alternative 6C – Median Closure and US Bus 2/CR 17 Roundabout

Alternative 6C was developed to achieve the same concept as Alternative 6B, but with a modified intersection treatment at the US Bus 2 and CR 17 intersection. Under this alternative, the US 2/US Bus 2 median would be closed and improvements would be made to the westbound US 2 turn lanes. A single-lane roundabout would be constructed to replace the current US Bus 2/CR 17 intersection configuration. The roundabout would facilitate traffic movements, including additional movements resulting from the closure of the median. The Crystal Sugar driveway would be realigned to create a four-legged roundabout. This alternative would restrict the westbound US 2 left-turn and eastbound US Bus 2 left-turn movements at the US 2 and US Bus 2 intersection. The proposed improvements for Alternative 6C include:

- Closure of the US 2/US Bus 2 median
- Construct turn lane improvements at westbound US 2 and CR 17
- Construct a roundabout at the intersection of US Bus 2 and CR 17
- Realign the Crystal Sugar Access

Figure 19. Alternative 6C

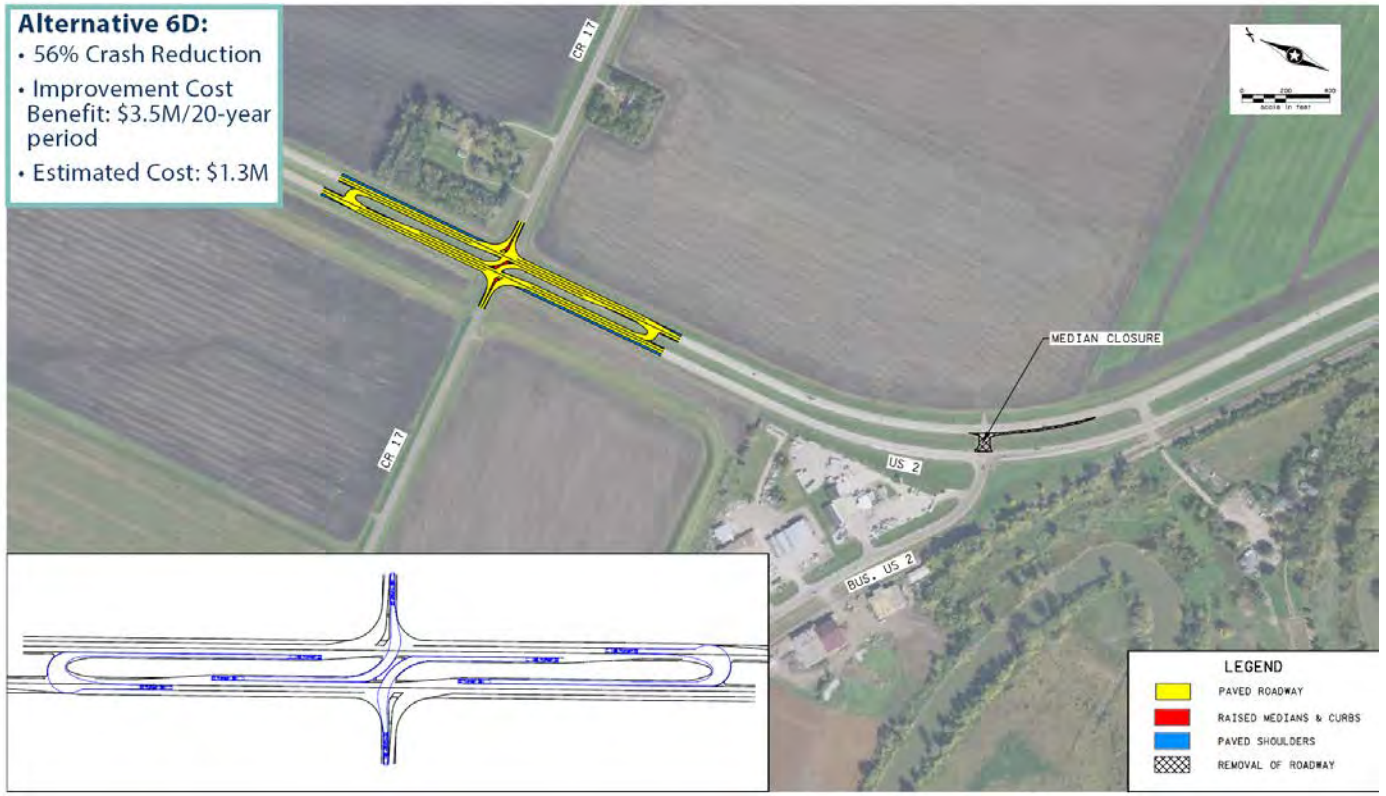


Alternative 6D – Median Closure and US 2/CR 17 RCUT

Alternative 6D was developed to provide a solution that included a full median closure of the US 2/US Bus 2 intersection and provided enhanced improvements to the intersection of US 2 and CR 17 to accommodate additional volumes. A RCUT intersection is proposed at the intersection of US 2 and CR 17 to facilitate these additional movements. All turning movements would be allowed at the US 2 and CR 17 intersection, with side-street thru and left-turn movements utilizing the median U-turns. This alternative would restrict the westbound US 2 left-turn and eastbound US Bus 2 left-turn movements. The proposed improvements for Alternative 6D include:

- Closure of the US 2/US Bus 2 median
- Construct a RCUT intersection a US 2 and CR 17

Figure 20. Alternative 6D



Alternative 6E – CR 17 Overpass of US 2

Alternative 6E was developed to explore the impacts of a grade separated intersection within the study area. CR 17 would be reconstructed to overpass US 2, with no direct access provided. The left- and right-turn movements from US 2 or CR 17 would be required to find an alternate route. This alternative provides benefit to the thru movements of both roadways, particularly heavy commercial traffic during the harvest season. This alternative maintains all intersection movements at the intersection of US 2 and US Bus 2, but restricts all turning movements at the intersection of US 2 and CR 17. The proposed improvements for Alternative 6E include:

- Construct CR 17 overpass of US 2

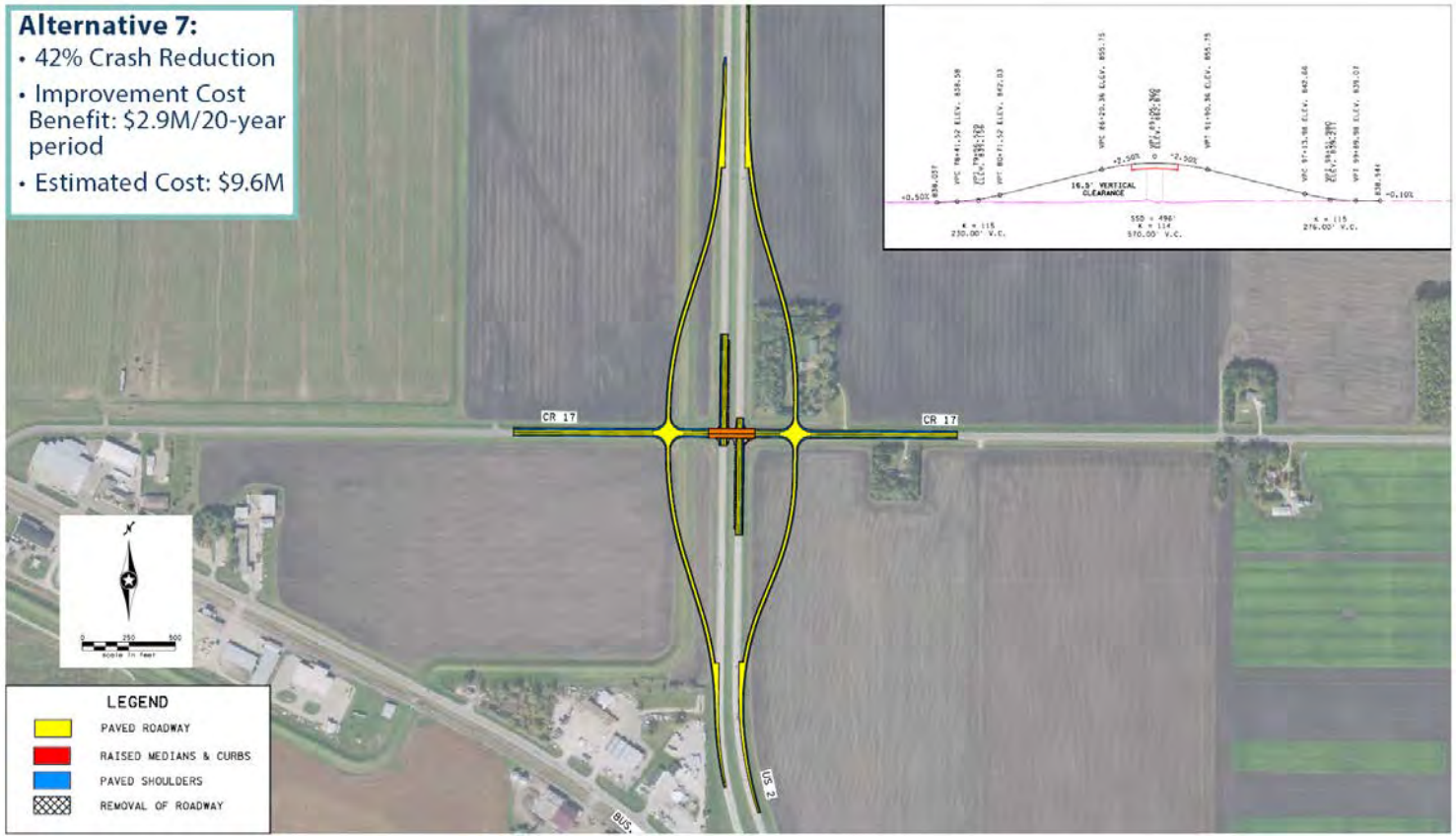
Figure 21. Alternative 6E

Alternative 7 – US 2/CR 17 Interchange

Alternative 7 proposes the consolidation of the US 2/US Bus 2 and US 2/CR 17 intersections into a single interchange. The interchange would be constructed on the existing CR 17 to avoid existing horizontal curve conflicts. The diamond interchange would include on- and off-ramps for westbound and eastbound US 2. This alternative would relocate all existing intersection movements to the proposed interchange. The proposed improvements for Alternative 7 include:

- Closure of the US 2/US Bus 2 median
- Construction of a diamond interchange at CR 17

Figure 22. Alternative 7



Alternative 8 – Median Closure and US 2/CR 17 Realignment

Alternative 8 explores the consolidation of the US 2/US Bus 2 and US 2/CR 17 intersections to a single at-grade intersection. This alternative consolidates the two intersections into one centrally located intersection. Portions of CR 17 and US Bus 2 would require realignment to accommodate the new intersection location. The US 2/US Bus 2 median would be closed for all turning movements and a cul-de-sac constructed at US Bus 2. CR 17 would be removed between US Bus 2 and US 2. All existing intersection movements would be redirected to the new intersection under this alternative. The proposed improvements for Alternative 8 include:

- Closure of the US 2/US Bus 2 median
- Consolidation of the US 2/US Bus 2 and US 2/CR 17 intersections to a mid-block location
- Realignment of CR 17 and US Bus 2
- Removal of CR 17 from US Bus 2 to US 2

Figure 23. Alternative 8

US 2 at 10th Street/CR 73

The intersection of US 2 at 10th Street/CR 73 was found to not have any safety or capacity issues as a result of the crash and capacity analyses completed within study area. However, the 2013 *Polk County Road Safety Plan* identified improvements to the intersection based on risk ratings found due to the intersection's placement on a curve and total crashes. The presence of the East Grand Forks Industrial Park and potential for growth within the northwest quadrant of the intersection should also be considered as improvements are evaluated at this intersection.

Alternative 1 – No Build

Alternative 1 includes no proposed improvements to the intersection of US 2 and 10th Street/CR 73. The four-legged intersection would remain with the current geometry with side-street stop control. No signage or lighting improvements would be included as part of this alternative.

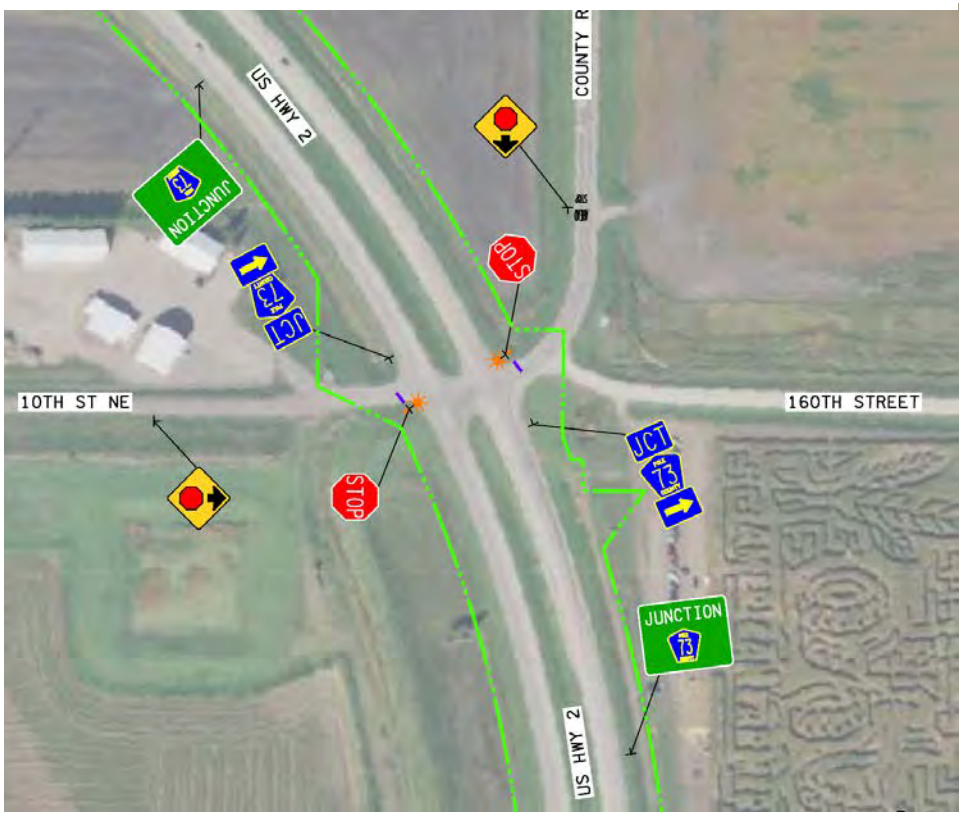
Alternative 2 – County Road Safety Plan Improvements

Alternative B was developed to review the recommendations of the 2013 Polk County Road Safety Plan for this intersection. The analysis completed for this study did not identify concerns warranting intersection improvements. The safety plan recommended signing and lighting upgrades at the intersection of US 2 and 10th Street/CR 73. These improvements are intended to improve wayfinding along the roadway curve. Proposed improvements include:

- Installation of two street lights
- Upgrade existing stop signs
- Upgrade existing junction signs
- Upgrade existing stop ahead signs
- Install ground-in stop ahead marking on CR 73
- Install ground-in stop bars at 10th Street and CR 73

The potential for near term development within the East Grand Forks Industrial Park presents the need for this intersection to be reviewed as development occurs. Depending on the size and type of each development, traffic along 10th Street is expected to increase, especially as the City of East Grand Forks makes improvements to the gravel road. A realignment of 10th Street to the south should be considered as improvements are planned for the intersection. The intersection of US 2 and 10th Street should be relocated to a tangent section of US 2, which would improve the overall safety and visibility of the intersection.

Figure 24. US 2 and 10th Street/CR 73 Alternative 2



US 2 at MN 220 South/CR 76

The intersection of US 2 and MN 220 South/CR 76 provides an important regional connection for East Grand Forks residents located in the Point and other areas south of the City. The safety and capacity analyses of this study found no concerns for this intersection under the current 2016 or future 2040 conditions. The 2013 Polk County Safety Plan also identified potential improvements to this intersection.

Alternative 1 – No Build

Alternative 1 includes no proposed improvements to the intersection of US 2 and MN 220 South/
CR 76. The four-legged intersection would remain with the current geometry with side-street stop control. Existing signage and lighting standards would remain in place under this alternative.

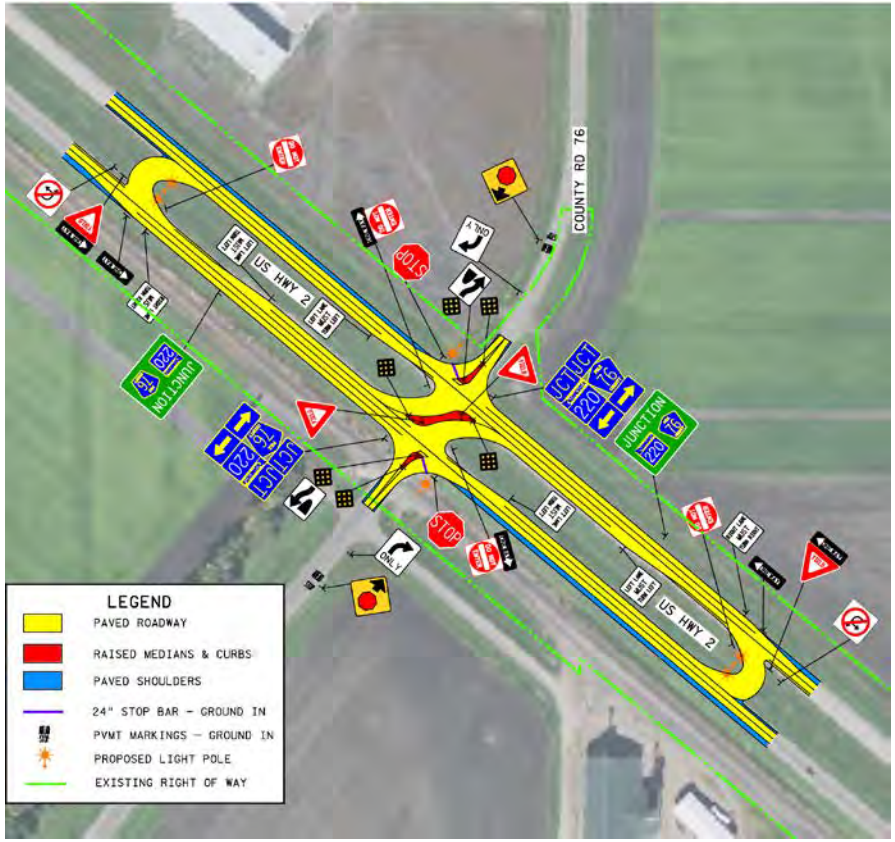
Alternative 2 – County Road Safety Plan Improvements

The 2013 Polk County Road Safety Plan identified potential improvements for the intersection of US 2 and MN 220 South/CR 76 to addressed identified risks due to crashes, proximity to a curve, and nearby railroad crossing. A directional median or Reduced Conflict U-Turn (RCUT) intersection was recommended to alleviate intersection concerns. Additional strategies were also proposed in addition to the RCUT improvement:

- Installation of two street lights *(in place)*
- Upgrade existing stop signs *(in place)*
- Upgrade existing junction signs *(in place)*
- Upgrade existing stop ahead signs
- Install ground-in stop ahead markings on MN 220 South and CR 76
- Install ground-in stop bars at MN 220 South and CR 76

The MnDOT District 2 Safety Plan was updated in 2016 to provide a comprehensive safety review and analysis of the trunk highway system. This plan included an analysis of the US 2 and MN 220 South/CR 76 intersection; however, no improvements were warranted based on the analysis completed. The crash analysis completed with the US 2 and US Bus 2 study uncovered multiple crashes that were miscoded to the MN 220 South intersection, resulting in an inaccurate crash rate. A second intersection of US 2 and MN 220 is located to the north, within East Grand Forks city limits. This intersection is signalized and posted at a lower speed limit, allowing for the miscoded crashes to be identified. Based on this finding, it was determined that the improvements recommended within the Polk County Road Safety Plan were likely developed utilizing the miscoded crash information, creating solutions that are not warranted by actual crash data.

Figure 25. US 2 and MN 220 South Alternative 2



US 2 at CR 17

The intersection of US 2 and CR 17 is located on a tangent section of US 2, between the two highway curves. The intersection provides an important connection between the urban development within East Grand Forks and the agricultural uses to the east. This intersection is of particular concern during the beet harvest season as many loaded beet trucks use CR 17 to cross US 2 to access the Crystal Sugar plant.

The crash analysis completed as part of this study did not identify a statistical crash rate problem at this intersection, but did identify a crash rate higher than the expected crash rate for the intersection. However, the importance of this intersection for heavy commercial truck movements during beet harvest warranted the development of intersection alternatives.

Alternative 1 – No Build

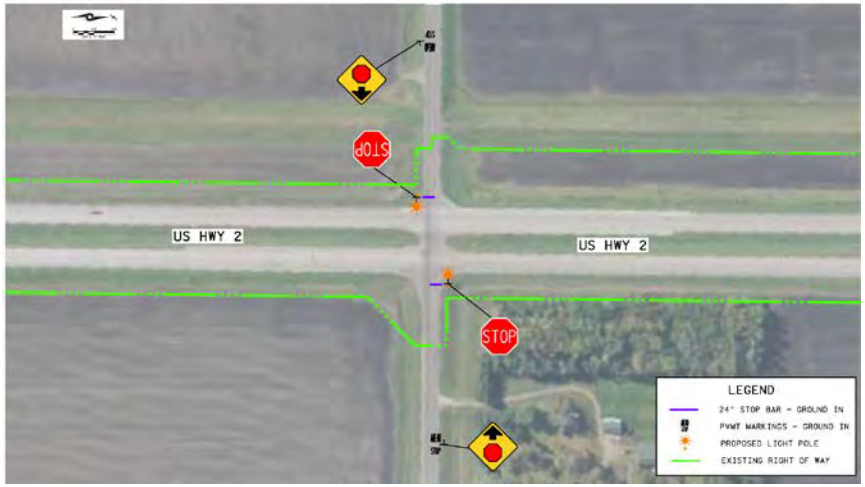
Alternative 1 includes no proposed improvements to the intersection of US 2 and CR 17. The four-legged intersection would remain with the current geometry, turn lane lengths, and side-street stop control. Existing signage and no light standards would remain in place under this alternative.

Alternative 2 – County Road Safety Improvements

The 2013 Polk County Road Safety Plan included recommended improvements for the intersection of US 2 and CR 17 based upon the identified risk rankings (distance from previous stop and total crashes). Alternative 2 includes the improvements identified within the safety plan, including:

- Installation of two street lights
- Upgrade existing stop signs *(in place)*
- Upgrade existing junction signs *(in place)*
- Upgrade existing stop ahead signs
- Install ground-in stop ahead markings on CR 17
- Install ground-in stop bars at CR 17

Figure 26. US 2 and CR 17 Alternative 2



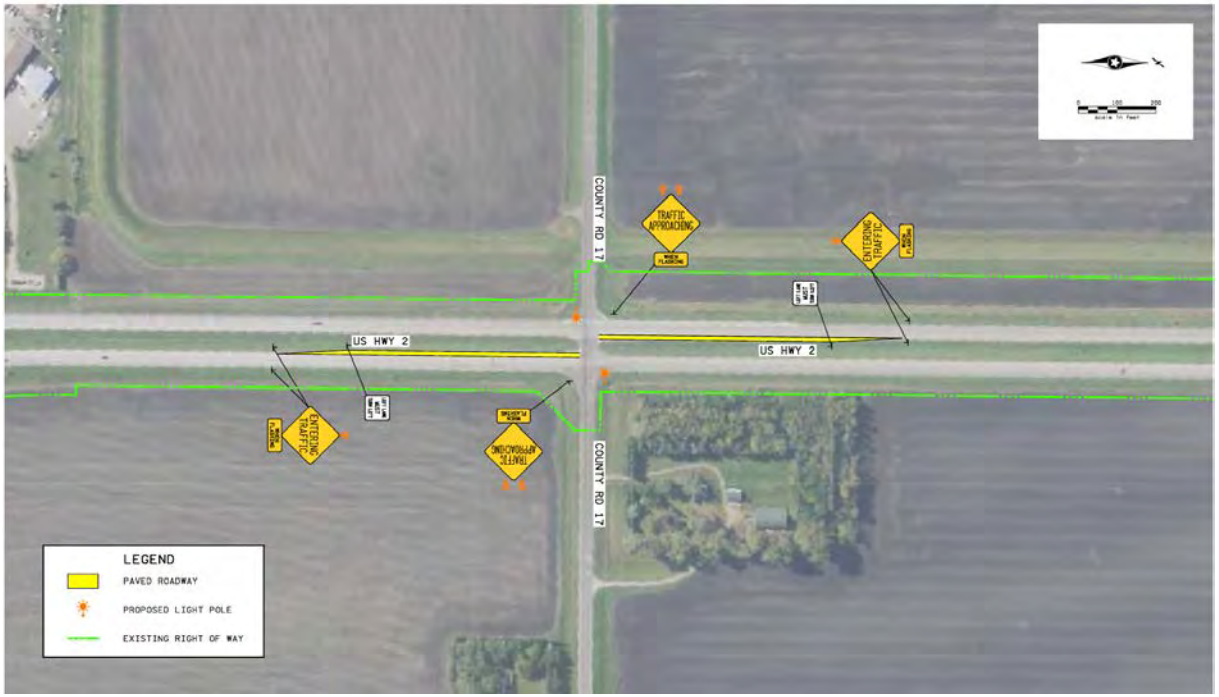
Alternative 3 – Turn Lane Extension and Lighting Improvements

Alternative 3 was developed as a low impact alternative that would provide additional storage and advanced warning lighting. To provide additional storage for the mainline left turn lanes, the eastbound and westbound US 2 left-lanes are extended in this alternative. This improvement provides additional vehicle stacking distance for motorists to wait while making a left-turn onto CR 17.

Two intersection light standards and a Rural Intersection Conflict Warning System (RICWS) are also proposed with this alternative. The RICWS system is an intelligent transportation system that illuminates when conflicting traffic is approaching the intersection, see Figure 27. For example, the RICWS signage would illuminate on US 2 when a vehicle approaches the intersection on CR 17. This system is intended to provide advanced warning of a potential conflict at the intersection.

Figure 27. Example RICWS

Figure 28. US 2 and CR 17 Alternative 3



Alternative 4 – CR 17 Overpass of US 2

Alternative 4 proposes a CR 17 overpass of US 2, removing all access to/from US 2 and CR 17. This alternative was developed to address concerns raised from CR 17 traffic attempting to cross US 2. The narrow median width at the intersection provides limited storage space for CR 17 vehicles to wait in the median as they cross the second direction of US 2 traffic. Public input noted that many drivers run the CR 17 stop sign at this intersection to cross US 2 in one movement.

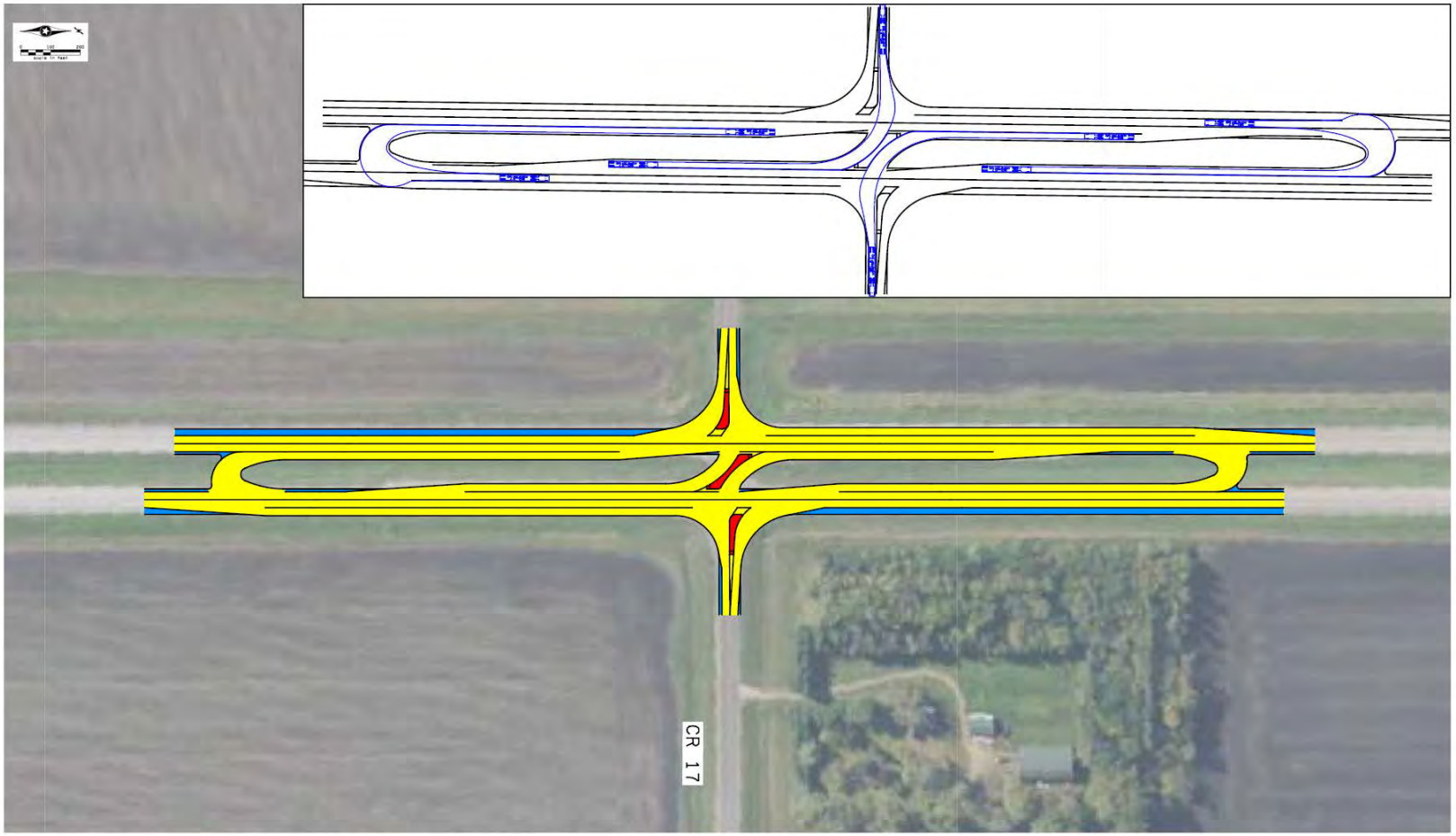
The proposed overpass included in Alternative 4 creates a solution that allows CR 17 to flow east to west (and vice versa) with no conflicts with US 2. This solution does not provide direct access between the two roadways, requiring alternative routes to be identified.

Figure 29. US 2 and CR 17 Alternative 4

Alternative 5 – Reduced Conflict U-Turn Intersection

Alternative 5 was developed to provide an at-grade improvement for US 2 and CR 17 that alleviated conflicts of CR 17 cross-traffic concerns. The proposed RCUT intersection would maintain all movements for US 2 traffic in either direction, but would modify thru and left turn movements from CR 17. To make a thru or left-turn movement from CR 17, drivers would be required to make a right-turn onto US 2 and complete a U-turn downstream to their left-turn or thru movement destination.

Figure 30. US 2 and CR 17 Alternative 5



Alternative Evaluation

Each intersection alternative was developed as a potential solution to meet the study's purpose and need. Evaluation criteria was created based upon the issues and concerns identified along the corridor. The criteria are intended to provide for a quantitative and qualitative evaluation of each of the alternatives, assisting in the refinement of intersection recommendations. Environmental considerations are included within the criteria to provide a planning-level estimate of potential impacts that may require avoidance, minimization or mitigation during project development and the development of the NEPA document.

Early in the planning process, evaluation criteria categories were presented to and prioritized by the project steering committee. Categories were developed based on initial agency input and data collection and provided for the development of measurable criteria for the comparison of alternatives. The prioritized categories include:

1. Purpose and Need
2. Safety
3. Heavy Commercial Compatibility
4. System Linkage
5. Environmental Factors
6. Preliminary Cost
7. Capacity/Mobility
8. Right-of-way
9. Complexity
10. Modal Relationships

Measurable criteria were developed within each of these categories, described below, and allowing for a comparison of alternatives. The US 2 and US Bus 2 alternatives were measured against the criteria to identify the alternatives that best fit the criteria.

Purpose and Need

Alternatives were first evaluated against the purpose and need statement developed for the project. The purpose and need for the project is to identify and explore solutions to existing and future transportation issues, specifically related to safety, capacity and heavy commercial compatibility. Therefore, the US 2 and US Bus 2 alternatives were evaluated for providing a positive benefit to:

- **Safety** – Alternatives should provide an overall safety benefit to the intersections within the study corridor
- **Capacity** – Alternative solutions shall provide sufficient capacity to accommodate existing and future volumes and operate at an acceptable LOS C or higher.
- **Heavy Commercial Compatibility** - Alternatives should provide a solution that accommodates heavy commercial and passenger vehicles

The three specific criteria are revisited again in the appropriate criteria category, but provide an important basis for the alternative's ability to meet the project's purpose and need. Alternatives that do not satisfy one or more of the above criteria were removed from further consideration, as the purpose and need are not met. For this reason, the following alternatives were removed from consideration, and the remaining alternatives carried forward to evaluation:

- **Alternative 1 – No Build** - This alternative does not provide improvements to the intersection that provide an overall safety benefit to the corridor. However, the no build alternative provides an important basis for the comparison of alternatives, and was carried forward into the alternative evaluation.
- **Alternative 4 – Traffic Signal** - During the development of this alternative it was found that the existing and future intersection conditions did meet signal warrants, eliminating the possibility for the construction of a signal at the intersection of US 2 and US Bus 2. Therefore, this alternative is not feasible and was removed from further consideration.
- **Alternative 8 – Median Closure and US 2/CR 17 Realignment** - This alternative meets the capacity and heavy commercial compatibility portions of the purpose and need, but does not provide an overall safety benefit for the corridor. A review of crash reduction factors resulting from the proposed improvements provided a ten-year crash reduction of 1 percent (0.1 crashes) for US 2 at US Bus 2 and US 2 at CR 17. Therefore, this alternative did not provide an overall safety benefit and was removed from further consideration.

Safety

The safety evaluation criteria were developed to screen alternatives that provided an overall safety benefit to the corridor. Public input received throughout the process highlighted the importance of increasing the safety of the US 2 intersections within the study area. The US 2 and US Bus 2 intersection was determined to have a statistical crash problem based upon the ten-year crash history. The following quantifiable criteria were developed to evaluate safety improvements of each of the alternatives.

1. Reduction in Crashes

Based on the identified improvements of each alternative, a specific ten-year crash reduction factor was developed. This factor was then used to determine a percent reduction in crashes over the five-year period. This reduction ranged from 22% to 56% for all build alternatives, providing a positive benefit from all alternatives.

2. Improvement Crash Cost Reduction

Each crash is associated with a cost to clear the scene and replace associated damages to roadway and infrastructure. Utilizing standardized crash costs and the reduction in crashes, an improvement crash cost reduction was developed over a 20-year period. Essentially, this measure identifies the cost savings associated with the reduction of crashes. Improvement crash cost reductions ranged from $0.6 million to $3.5 million among the build alternatives.

3. 20-Year Benefit to Cost Ratio

A 20-year benefit to cost ratio was developed for each alternative utilizing the improvement crash cost reduction and the estimated construction cost. This ratio provides a review of the overall benefit of the improvements in comparison to the cost. Ratios over 1.0 identify improvements that provide a 20-year cost savings greater than cost of constructing the improvements. Four of the build alternatives (2A, 3A, 3B, and 6D) have a benefit to cost ratio of 1.0 or greater. Ratios under 1.0 identify improvements where the construction cost is greater than the 20-year improvement crash cost reduction.

Heavy Commercial Compatibility

A transportation system that adequately accommodates heavy commercial traffic, in addition to passenger vehicles, to support existing and future economic growth within the city. Alternatives were evaluated for the improvements' compatibility with beet harvest and year-round truck volumes. Criteria in this category is qualitative and was evaluated by the ability of the alternative to accommodate of heavy trucks within proposed geometrics, along with input received from the public and stakeholders.

1. Harvest Season Heavy Commercial Compatibility

During the beet harvest season, an estimated 3,000 trucks utilize the US 2/US Bus 2 and US 2/CR 17 intersections to deliver loads to the Crystal Sugar plant in East Grand Forks. Each alternative was evaluated based on the improvement's ability to accommodate these identified movements.

2. Year-Round Heavy Commercial Compatibility

Aside from an increase of heavy commercial volumes during the beet harvest season, approximately 10 percent of the average daily traffic along the US 2 corridor is comprise of heavy commercial traffic. The compatibility of the alternative improvements and these movements is important to businesses located within the study area, and the economic development of the greater region. Each alternative was evaluated based on the improvement's ability to accommodate these identified movements.

System Linkage

Linkages of the transportation system are important to the overall effectiveness of the system and wayfinding for travelers, residents and businesses. This category was used to evaluate the potential impacts to system linkage throughout the corridor. Impacts may include access closures or modifications, requiring the use of an alternate movement.

1. Change to Connectivity within the Study Area

Multiple businesses utilize the intersections of US 2/US Bus 2, US 2/CR 17 and US Bus 2/CR 17 to navigate within the study area. This criterion evaluated changes, both positive and negative,

to the connections provided within each alternative. Impacts include access closures to/from US 2 and may result in modified movements to or from businesses along the corridor.

2. Change to Connectivity to/from the Greater Region

The US 2 corridor provides an important regional connection between northern Minnesota and North Dakota. The corridor is significant for businesses and residents of East Grand Forks. This criterion evaluated modifications to the connections to the greater region. Impacts include modifications that alter access to destinations or connections within the study area from the greater region.

Environmental Factors

A review of the potential impacts to environmental factors at the planning level provides an initial review of avoidance, minimization and mitigation considerations that may need to be managed during design and the development of NEPA documentation. This category evaluated the quantifiable and qualitative impacts to various environmental resources within the study area.

1. Existing Business

Wayfinding and access from the transportation system can be critical to the continued prosperity of businesses. This alternative evaluated the potential benefits and impacts to existing business because of proposed improvements. Input received from the public and corridor stakeholders was utilized to evaluate each of the alternatives in this category.

2. Future Economic Development

Transportation system improvements can have a direct link to the future economic development potential of an area. The industrial and commercial land uses defined within the East Grand Forks 2045 Land Use Plan, can rely on drive by traffic and easy access for patrons and deliveries. This criterion evaluated the potential impacts and benefits to economic growth resulting from the proposed improvements.

3. Agricultural Resource Impacts

Agriculture is an important industry within the Grand Forks – East Grand Forks region. The presence of prime and unique farmlands within the study corridor were identified and are protected under the Farmland Protection Policy Act (FPPA). This criterion evaluated the need to acquire farmland for right-of-way and improvements. Five intersection alternatives require the acquisition of 3 or more acres of farmland adjacent to the corridor. The selection of any of these alternatives would require compliance with FPPA regulations and the completion of a Farmland Conversion Impact Rating.

4. Water Resource Impacts

Existing wetlands were identified within the study area based upon the National Wetlands Inventory. The potential for impacts to these defined wetlands were evaluated with this criterion; however, no impacts were found for any of the alternatives. A field wetland delineation and jurisdictional determination with the USACE should be developed during project development to identify any additional wetlands within the project area, allowing for the reassessment of potential impacts.

5. NHIS Occurrences Impacts

The National Heritage Information System (NHIS) records occurrences of Federally or State listed threatened and endangered species. This criterion evaluated the potential for temporary and permanent construction impacts to NHIS occurrences within a half mile of the corridor and currently listed Federal and State species. Impacts to this criterion include temporary construction noise and vibration impacts at identified habitat areas or permanent impacts to species.

6. Environmental Justice Community Impacts

Executive order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations, directs Federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of Federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. If the project is constructed with federal funding, it would be considered a federal project for the purposes of compliance with Executive Order 12898. Based upon the GF-EGF MPO's guidance for defining minority and low-income populations, no populations were identified within the Census block groups along the corridor. Therefore, each alternative is anticipated to provide no benefit or burden to low-income and minority population. The Census block groups should be reviewed during project development using the most recent Census data to ensure compliance with Executive Order 12898.

7. Floodplain and Historic Evacuation Route Impacts

The entire study area is located within the floodplain or floodways of the Red River of the North, the Red Lake River, and the Grand Marais River. Construction improvements within the floodway, 100-year and 500-year floodplains will require coordination and permitting with the East Grand Forks floodplain administrator prior to construction. Potential impacts to the current flood protection were also evaluated in this category. The existing earthen levee runs parallel to US 2. Any improvements that would require modifications to this existing system were identified and would require additional coordination with the USACE.

Evacuation routes have been developed for residents and businesses of East Grand Forks during major flood events. Residents located in the Point, or southern portion of East Grand Forks, are limited to two crossings of the Red Lake River for evacuation. Impacts to the functionality of evacuation routes were evaluated in this category.

Preliminary Cost

Preliminary construction costs were developed for each alternative based on 2015 construction costs. These estimates are based on preliminary engineering, and will require modification during project development; however, they provide for an initial comparison of the proposed intersection improvements. Criteria within this category includes the evaluation of the overall construction estimate and fiscal constraint within MnDOT's current planning.

1. Estimated Construction Cost

Construction estimates were developed for each alternative based on the planning level design and 2015 dollars. Estimates include the overall cost of construction, engineering contingency and estimated right-of-way acquisition. The estimates for the alternatives ranged from $0.7 million to $9.6 million dollars.

2. Fiscally Constrained Alternatives

MnDOT has planned for a 2021 resurfacing project of the westbound US 2 lanes through the study area. As part of this study, $2 million dollars has been assigned for safety improvements along the entire resurfacing project corridor. Each alternative was evaluated for potential fiscal constraint within the planned safety improvement funding. Therefore, alternatives with a construction estimate under the $2 million are considered to be fiscally constrained.

Capacity/Mobility

Capacity and mobility is an important of maintaining flow and effectiveness of the transportation system. This category set out to assess the benefits and impacts to capacity and mobility for the study corridors as result of improvements.

1. Intersection Level of Service

A future year 2040 intersection level of service was developed for each of the alternatives. This analysis intended to review the improvements impacts to the level of service at each of the study intersections. The 2040 analysis found that all intersections, under all alternatives continued to operate a LOS A under future year 2040 conditions.

2. Approach Level of Service

The overall intersection level of service provides an average level of service for all movements within an intersection. Therefore, one or more approaches within an intersection may operate at a lower LOS than the overall intersection. This criterion analyzed the US 2/US Bus 2 approaches with the lowest LOS under year 2040 conditions. Alternatives 3A and 3B were identified as the only alternatives with approaches at a LOS B in comparison to the other alternatives. It should be noted that a LOS B is considered an acceptable LOS by both MnDOT and GF-EGF MPO standards.

3. Change in Travel Time

Modified turning movements and access closures may results in improvements or impacts to travel time along the corridor. This criterion evaluated changes in travel time for four movements within the US 2/US Bus 2 intersection:

- Westbound US 2 Left-Turn Movement
- Eastbound and Westbound US 2 Thru Movement
- Eastbound US Bus 2 Left-Turn Movement
- Eastbound US Bus 2 Right-Turn Movement

Right-of-Way

MnDOT owns and operates the right-of-way for US 2 and US Bus 2. Proposed improvements outside of the existing right-of-way will require land acquisition. This category evaluates right-of-way acquisition required to complete each alternative.

1. Right-of-Way Impacts

This criterion evaluated the estimate acquisitions, in acres, needed to complete the proposed alternatives. Many alternatives can be completed within the existing right-of-way, however additional acquisition of 4 or more acres would be required to construct various alternatives.

2. Impacted Parcels

The total number of impact parcels (parcels that right-of-way would be acquired from) were assessed in this criterion. Existing Polk County parcels were used to identify impact parcels. Of the alternatives requiring acquisition, one to ten parcels of land would be impacted.

3. Total and Partial Property Acquisitions

Depending on the total right-of-way needed, acquisition will result in total or partial takes. A total property acquisition includes the purchase of an entire parcel for highway right-of-way. In some cases, these total acquisitions can also result in relocations if a residence or business is located on the parcel. This criterion evaluated the number of total and partial property acquisitions required for each alternative.

Complexity

Proposed improvements can vary in complexity related to construction, compatibility with projects, and driver familiarity. This category was developed to evaluate the complexity of each alternative against these three criteria.

1. Coordination with 2021 MnDOT Project

This criterion evaluated the ease of inclusion of the proposed alternative within MnDOT's planned 2021 resurfacing project for the westbound lanes of US 2. Input received from MnDOT and other project stakeholders was important for the evaluation of this criteria. Alternatives that are fiscally constrained and can be completed in a similar construction timeline were evaluated as alternatives meeting this criterion.

2. Construction Timeline

The estimated construction timeline needed to complete the proposed improvements was evaluated with this criterion. Proposed alternatives are anticipated for completion in one to two construction seasons, assuming typical conditions. Alternatives that could be completed within one season were considered to meet the evaluation criteria.

3. Driver Familiarity

This criterion provided a qualitative evaluation of the driver familiarity with the proposed improvements. This analysis utilized the presence of similar transportation solutions within the region that drivers are more familiar with. For example, there are no two-lane roundabouts constructed within MnDOT District 2, resulting in a solution (Alternative 5) that will be unfamiliar to a majority of drivers in the region.

Modal Relationships

Planning for future and accommodating existing modal relationships is an important consideration of all transportation planning projects. Relationships between passenger vehicles, heavy commercial vehicles, transit, bicyclists and pedestrian should be considered as improvements are explored. The existing rural condition of the study corridor limits the current relationships with transit, bicyclists and pedestrians; however, future facility impacts should also be considered.

1. Transit Service Impacts

Local Cities Area Transit does not utilize the US 2 or US Bus 2 corridors within the study area for existing routes. However, regional transit services provided by Jefferson Lines, utilizes the corridor to connect East Grand Forks to cities and destinations to the east. This criterion evaluated in the impacts to current transit service and the ability to provide future transit service as a result of the proposed improvements.

2. Bicycle/Pedestrian Facility Impacts

There are currently no designated bicycle or pedestrian facilities located within the study area. Therefore, this criterion was developed to assess the potential impacts for provided such facilities when warranted in the future. Alternatives that impeded future connections for bicyclist and pedestrians were evaluated lower than other alternatives in this category.

Evaluation Matrix

An evaluation matrix was developed to compare the results of the alternative comparison between each of the defined criteria. This evaluation provided a format for scoring and ranking each of the alternatives based upon the priorities evaluation criteria. The scoring helped to separate the benefits and impacts between each alternative. Public and agency input received throughout the planning process helped to identify a score for qualitative evaluation criteria.

Scoring Criteria

Each alternative was assigned a score based on 31 criteria (see Table 8). Scores were assigned based on the alternative's ability to meet the objectives of each criteria. For example, each alternative was scored based on the reduction of crashes (percent reduction). Under this criterion, alternatives with a crash reduction of 40 percent or greater received the highest score (5 points). Alternatives providing no or little crash reduction received the lowest scores. The scoring metrics are summarized below and shown in Table 7.

- **5 Points** – The alternative demonstrates the highest benefit and/or provides no impact to the screening criteria.
- **4 Points** - Th alternative is acceptable and provides benefit and/or no impact to the screening criteria, but is less desirable than the alternatives receiving 5 points.
- **3 Points** – The alternative moderately satisfies the criteria and provides no distinguishing characteristics.
- **2 Points** – The alternative demonstrates potential impacts of concern and/or offers little to no benefit to the evaluation criteria when compared to other alternatives.
- **1 Point** – The alternative fails to meet the evaluation criteria and demonstrates the highest impact and/or no benefit.

Table 7. Scoring Criteria

Scoring Criteria	
5	Good; meets criteria well
4	Acceptable; but relatively less desirable than 5
3	Moderate; no distinguishing characteristics
2	Less desirable; considering criteria
1	Poor; fails to meet criteria

Table 8. US 2/US Bus 2 Evaluation Matrix

Weight			Alternative 1		Alternative 2A		Alternative 2B		Alternative 3A		Alternative 3B		Alternative 5		Alternative 6A		Alternative 6B		Alternative 6C		Alternative 6D		Alternative 6E		Alternative 7	
			Data	Score	Data	Score	Data	Score	Data	Score	Data	Score	Data	Score	Data	Score	Data	Score	Data	Score	Data	Score	Data	Score	Data	Score
	Purpose and Need																									
	1	Addresses the purpose and need statement	No		Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes	
	Safety																									
1.50	1	Reduction in Crashes	0%	1	27%	4	39%	4	35%	4	35%	4	25%	4	22%	4	22%	4	22%	4	56%	5	56%	5	42%	5
	2	Improvement Crash Cost Reduction (20-year period)	$0k	1	$1.1M	4	$1.6M	4	$1.5M	4	$1.5M	4	$1.1M	4	$0.6M	4	$0.6M	4	$0.6M	4	$3.5M	5	$3.2M	5	$2.9M	5
	3	20-Year Benefit to Cost Ratio	0.0	1	1.0	3	0.5	2	1.3	4	2.1	5	0.4	2	0.9	3	0.3	2	0.3	2	2.7	5	0.6	3	0.3	2
	Heavy Commercial Compatibility																									
1.25	1	Ability to accommodate harvest season heavy commercial traffic volumes and movements	Moderate	3	Good	5	Good	5	Good	5	Acceptable	4	Moderate	3	Less Desirable	2	Moderate	3	Less Desirable	2	Moderate	3	Moderate	3	Acceptable	4
	2	Ability to accommodate year-round heavy commercial traffic movements	Moderate	2	Good	5	Good	5	Good	5	Acceptable	4	Moderate	3	Less Desirable	2	Moderate	3	Less Desirable	2	Moderate	3	Moderate	3	Acceptable	4
	System Linkage																									
1.25	1	Change to connectivity within study area	No Change	4	No Change	4	No Change	4	Slight Change	3	Slight Change	3	No Change	4	Major Change	2	Major Change	2	Major Change	2	Major Change	2	Major Change	2	Improvement	5
	2	Change to connectivity to/from the greater region	No Change	4	No Change	4	No Change	4	Slight Change	4	Slight Change	4	No Change	4	Major Change	2	Major Change	2	Major Change	2	Major Change	2	Major Change	2	Improvement	5
	Environmental Factors																									
1.10	1	Existing business impacts	None	4	Benefit	5	Benefit	5	None	4	None	4	None	4	Moderate	2	Minor	3	Minor	3	Minor	3	Benefit	5	Moderate	2
	2	Future economic development impacts	Minor	3	Benefit	5	Benefit	5	Benefit	5	Benefit	5	None	4	Moderate	2	Minor	3	Minor	3	Minor	3	Benefit	5	Moderate	2
	3	Agricultural Resource Impacts	0 Acres	5	0 Acres	5	7 Acres	2	0 Acres	5	0 Acres	5	3 Acres	4	0 Acres	5	5 Acres	2	5 Acres	2	0 Acres	5	10+ Acres	1	10+ Acres	1
	4	Water Resource Impacts	0 Acres	5	0 Acres	5	0 Acres	5	0 Acres	5	0 Acres	5	0 Acres	5	0 Acres	5	0 Acres	5	0 Acres	5	0 Acres	5	0 Acres	5	0 Acres	5
	5	NHIS features within a half-mile radius	1 - No Impact	5	1 - Minor	2	1 - Minor	2	1 - Minor	2	1 - Minor	2	1 - Moderate	2	1 - Negligible	3	1 - Negligible	3	1 - Negligible	3	1 - Negligible	3	1 - Negligible	3	1 - Minor	2
	6	Environmental Justice Community impacts	None	5	None	5	None	5	None	5	None	5	None	5	None	5	None	5	None	5	None	5	None	5	None	5
	7	Floodplain and historic evacuation route impacts	None	4	None	4	None	4	None	4	None	4	None	4	Impacts	2	Impacts	2	Impacts	2	Impacts	2	Impacts	2	Impacts	2
	Preliminary Cost																									
1.10	1	Estimated Construction Cost *(2015 Dollars)*	$0.0M	5	$1.1 M	4	$3.3 M	3	$1.2 M	4	$0.7M	5	$2.8M	4	$0.7M	5	$1.7M	4	$1.7M	4	$1.3M	4	$5.6M	2	$9.6M	1
	2	Fiscally Constrained	Good	5	Acceptable	4	Less Desirable	2	Acceptable	4	Good	5	Less Desirable	2	Good	5	Acceptable	4	Acceptable	4	Acceptable	4	Less Desirable	2	Poor	1
	Capacity/Mobility																									
1.10	1	Intersection Level of Service	A	5	A	5	A	5	A	5	A	5	A	5	A	5	A	5	A	5	A	5	A	5	A	5
	2	Approach Level of Service (Lowest Scoring US 2/US Bus 2 Approach LOS)	A	5	A	5	A	5	B	4	B	4	A	5	A	5	A	5	A	5	A	5	A	5	-	3
	3	WB US 2 Left Movement Change in Travel Time	None	3	Decrease	4	Decrease	4	Decrease	4	Decrease	4	Decrease	4	Increase	1	Increase	1	Increase	1	Increase	1	Increase	1	Increase	1
	4	US 2 Thru Movement Change in Travel Time	None	3	None	3	None	3	None	3	None	3	Increase	2	None	3	None	3	None	3	None	3	None	3	None	3
	5	US Bus 2 Eastbound Left Change in Travel Time	None	3	None	3	None	3	Increase	2	Increase	2	Decrease	4	Increase	1	Increase	1	Increase	1	Increase	1	Increase	1	Increase	1
	6	US Bus 2 Eastbound Right Change in Travel Time	None	3	Decrease	4	Decrease	4	Decrease	4	None	3	Decrease	4	Decrease	4	Decrease	4	Decrease	4	Decrease	4	Decrease	4	Decrease	4
	Right-of-Way																									
1.05	1	Right-of-way impact area (acreage)	0 Acres	5	0 Acres	5	7.5 Acres	2	0 Acres	5	0 Acres	5	5 Acres	2	0 Acres	5	4 Acres	2	4 Acres	2	0 Acres	5	10+ Acres	1	10+ Acres	1
	2	Impacted parcels (number)	0	5	0	5	4	2	0	5	0	5	1	4	0	5	3	2	3	4	0	5	9	1	10	1
	3	Total property acquisitions (number)	0	5	0	5	2	3	0	5	0	5	0	5	0	5	1	3	1	3	0	5	2	3	3	3
	4	Partial property acquisitions (number)	0	5	0	5	2	3	0	5	0	5	1	4	0	5	2	3	2	4	0	5	7	1	7	1
	Complexity																									
1.05	1	Coordination with 2021 planned maintenance project on westbound US 2	Good	5	Good	5	Acceptable	4	Good	5	Good	5	Moderate	3	Good	5	Moderate	3	Moderate	3	Moderate	3	Less Desirable	2	Poor	1
	2	Construction timeline	Good	5	Good	5	Acceptable	4	Good	5	Good	5	Acceptable	4	Good	5	Good	5	Good	5	Acceptable	4	Less Desirable	2	Poor	1
	3	Driver familiarity	Good	5	Good	5	Acceptable	4	Moderate	3	Moderate	3	Less Desirable	2	Good	5	Good	5	Acceptable	4	Less Desirable	2	Acceptable	4	Acceptable	4
	Modal Relationships																									
1.00	1	Transit service impacts (existing and future)	No Change	3	Minor Benefit	4	Minor Benefit	4	Minor Benefit	4	Minor Benefit	4	Minor Benefit	4	Minor Impact	2	Minor Impact	2	Minor Impact	2	Minor Impact	2	Minor Benefit	4	Minor Benefit	4
	2	Bicycle/pedestrian facility impacts (future)	No Change	3	No Change	3	No Change	3	No Change	3	No Change	3	No Change	3	No Change	3	No Change	3	No Change	3	No Change	3	Minor Impact	2	Minor Impact	2
		Overall Weighted Total	**263**		**311**		**267**		**302**		**303**		**255**		**254**		**227**		**221**		**256**		**209**		**218**	

Scoring Criteria	
5	Good; meets criteria well
4	Acceptable; but relatively less desirable than 5
3	Moderate; no distinguishing characteristics
2	Less desirable; considering criteria
1	Poor; fails to meet criteria

Alternative Evaluation Results		
Above Average	**Average**	**Below Average**
> 275	**275 to 235**	**< 235**

Recommendations

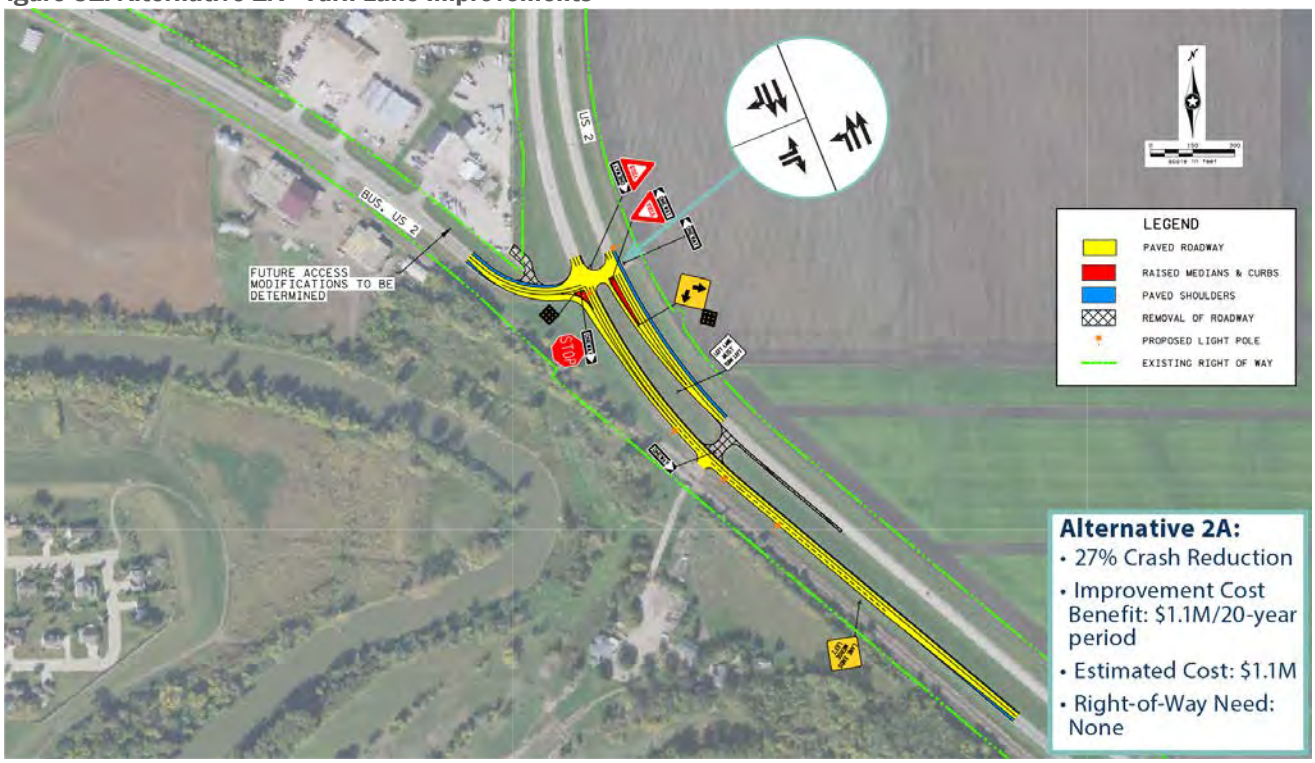
The evaluation matrix provided a score for each of the US 2/US Bus 2 alternatives (see Table 8). Based on the evaluation of the alternatives among the 31 criteria, Alternatives 2A, 3A and 3B were identified as the alternatives with higher than average scores in comparison to all of the alternatives developed. Any of these three alternatives are recommended for improvements to the US 2 and US Bus 2 intersection as they meet the requirements of the project purpose and need.

Alternatives 2A, 3A and 3B provide localized improvements for the US 2 and US Bus 2 alternatives. The remaining alternatives can be utilized to explore additional intersection improvements if warranted based on future conditions. Highlights of the recommended alternatives are described below.

Alternative 2A – Turn Lane Improvements

- $1.1 million estimated construction cost
- 27% crash reduction over a ten-year period
- $1.1 million improvement crash cost reduction
- 1.0 benefit to cost ratio
- Compatible and fiscally constrained with the 2021 planned resurfacing project
- High compatibility with beet harvest and year-round heavy commercial traffic

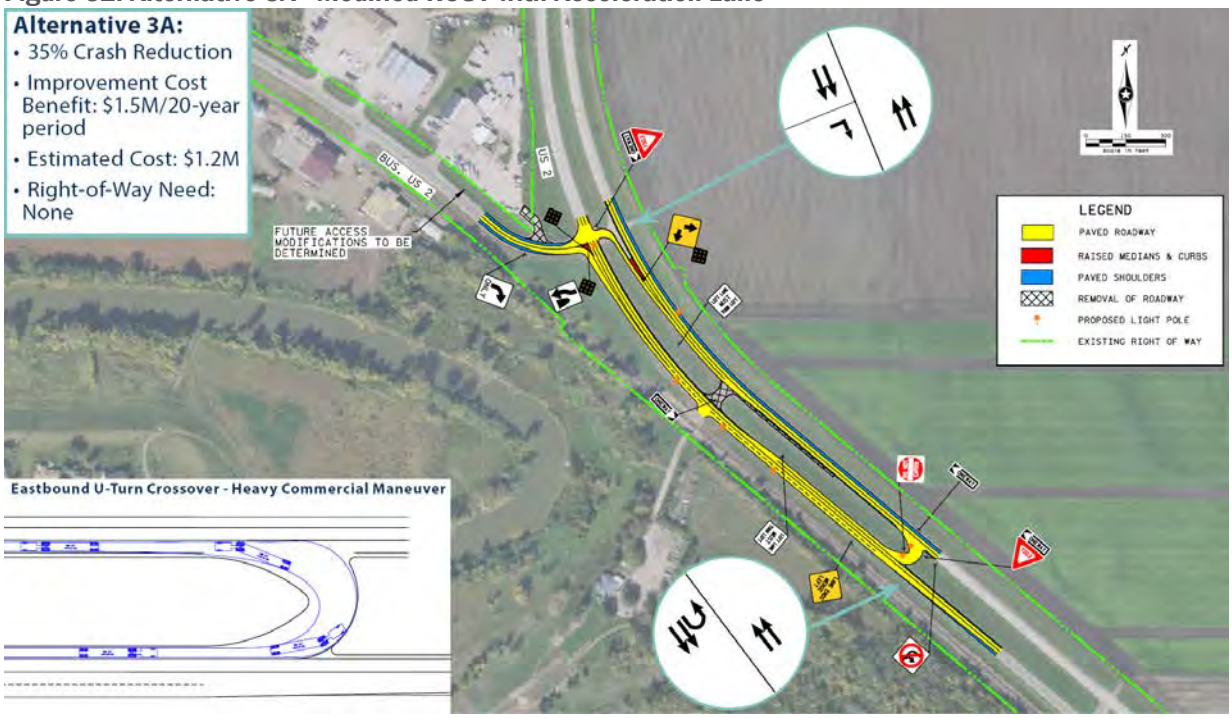
Figure 31. Alternative 2A - Turn Lane Improvements



Alternative 3A – Modified RCUT and Acceleration Lane

- $1.2 million estimated construction cost
- 35% crash reduction over a ten-year period
- $1.5 million improvement crash cost reduction
- 1.3 benefit to cost ratio
- Compatible and fiscally constrained with the 2021 planned resurfacing project
- High compatibility with beet harvest and year-round heavy commercial traffic

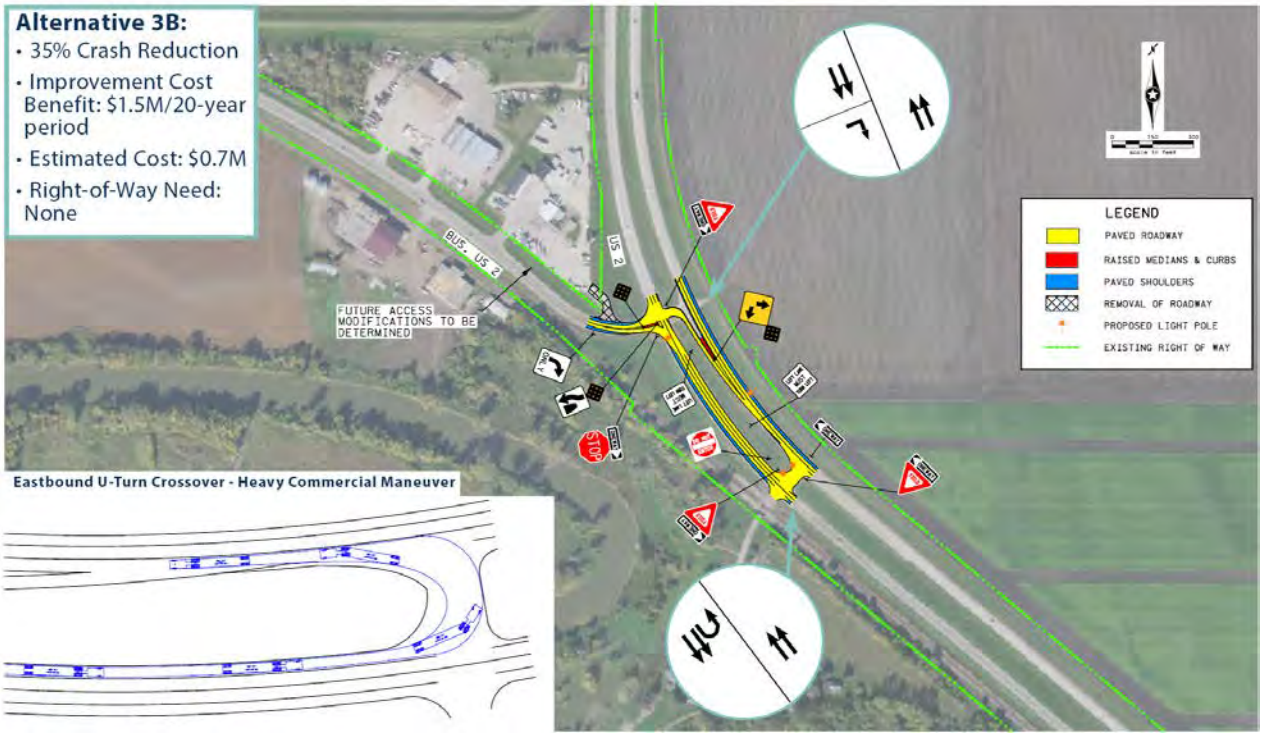
Figure 32. Alternative 3A - Modified RCUT with Acceleration Lane



ALTERNATIVE 3B – MODIFIED RCUT

- $0.7 million estimated construction cost
- 35% crash reduction over a ten-year period
- $1.5 million improvement crash cost reduction
- 2.1 benefit to cost ratio
- Compatible and fiscally constrained with the 2021 planned resurfacing project
- Acceptable compatibility with beet harvest and year-round heavy commercial traffic

Figure 33. Figure 3B - Modified RCUT



Overall, Alternatives 2A, 3A, and 3B received the highest cumulative score, and are all recommended solutions for improvements for the US 2 and US Bus 2 intersection. This recommendation is a result of the alternative evaluation and input received from the public and corridor stakeholders throughout the process. Further analysis during project development and NEPA evaluation should be used to determine a preferred solution for the intersection.

Appendix A – Steering Committee Record of Meetings

Meeting 1 – January 19, 2017

Meeting 2 – February 8, 2017

Meeting 3 – March 1, 2017

Meeting 4 – April 5, 2017

Meeting 5 – May 9, 2017

SRF Consulting Group, Inc. | Engineers Planners Designers

Record of Meeting

SRF No. 10005

Location:	East Grand Forks City Hall
Project:	US 2/US Bus 2 Study
Date:	January 19, 2017
Subject:	Steering Committee Meeting #1
Attendees:	See Attached Sign-In Sheet

Purpose of Meeting:

The purpose of the first Steering Committee Meeting was to kick-off the US 2/US Bus 2 Study with committee members. The presentation was aimed to provide members with an overview of the US 2/US Bus 2 Study purpose and process, committee responsibilities, existing conditions, and the public involvement process.

Summary of Meeting

Earl Haugen, Grand Forks-East Grand Forks MPO, opened the meeting and welcomed everyone to the first meeting of the US 2/US Bus 2 Steering Committee. He introduced the MnDOT and SRF Consulting Group team and then asked for introductions for those members in attendance.

Matt Pacyna, SRF Consulting Group, began the presentation with an overview of the study and the general roles and responsibilities of the steering committee. Matt discussed each of the six intersections included within the study: US 2 and 10th Street/CR 73, US 2 and CR 17, US Bus 2 and CR 17, US 2 and US Bus 2, US 2 and 180th Street, and US 2 and MN 220 South/CR 76. He provided an overview of the previous studies completed within the study area, including the MnDOT District 2 Safety Plan (2016) and the Polk County Safety Plan (2013). Earl added that the six intersections selected for this study were based upon the recommendations of the safety plan improvements. Rich Sanders, Polk County, noted that the County has applied to be a part of the second round of Safety Plan Updates.

Questions were asked about expanding the study area to include the first stop light within East Grand Forks (5th Avenue NE). Earl responded that improvements to these intersections will be addressed in the upcoming Long Range Transportation Plan (LRTP).

The group discussed previous discussions of turning US 2 into an urban section through East Grand Forks, and noted that the group should keep an open mind. The expanding business park should also be considered throughout the development of this study.

Matt continued to discuss existing conditions within the study area, include traffic volumes, destinations, railroad/vehicle conflicts, and access challenges. Darren Laesch, MnDOT, questioned

the number of trains that utilized the tracks. Rich responded that the tracks averaged about ten trains per day, during all times of the day.

Trent Peabody, Lumber Mart, discussed previous improvements proposed after flood events. However, no improvements were ever made. The efforts did not include any form of an agreement.

Matt reviewed the crash history for the last three years at each of the study intersections. He described the actual crash rate and the analysis against the expected crash rate, which is a statewide average. The group discussed a fatality that recently occurred at the intersection of US 2 and CR 17 and if that was shown in the crash history. It was noted that this incident likely occurred outside of the three year period reviewed. SRF and MnDOT will work to review crash history for five-years for all study intersections.

The group discussed the intersection of US Bus 2 and CR 17 and the routing of traffic, particularly during the harvest season. It was noted that drivers during this time can be relatively inexperienced and don't follow proper rules or regulations.

Matt described the traffic volumes of each intersection for the existing AM and PM peak hours. It was noted that all intersections currently operate at an LOS (Level of Service) A or better. The group questioned if beet harvest volumes were factored into this review. Matt responded that the analysis includes volumes that were gathered during the 2016 beet harvest.

Stephanie Falkers, SRF Consulting Group, provided an overview of the East Grand Forks Future Land Use Plan and the connections to the US 2/US Bus 2 Study. Matt concluded the discussion of existing conditions with an overview of traffic volumes and the potential impacts from a south side river crossing.

Matt described the process for developing intersection alternatives, and noted that this effort would begin a the next meeting of the Steering Committee. Earl added that committee members should provide any additional thoughts regarding potential alternatives prior to our next meeting.

Matt closed the meeting with a review of the project schedule and agenda for the next steering committee meeting. He thanked everyone for their participation and looks forward to working together on the US 2/US Bus 2 Study

M.P.O. M.P.O. M.P.O.

Grand Forks - East Grand Forks Metropolitan Planning Organization

SFN 59531 (Rev. 03-2012)

SIGN-IN SHEET

Division/District/Consultant

Meeting Location	Meeting Type	Meeting Date
EGF City Hall / Training Room	SC	19 Jan 2017
Project Number Forks MPO	**PCN** NA.	
Project Description US2 / US Bus 2 study		

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Darren Laesch	MNDOT Planning		
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Name (Please Print)	Title/Representing		
Cory Kritzberger	Ag Operations Manager ACSC		
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City East Grand Forks	**State** MINN	**Zip Code** 5672[illegible]	**E-Mail** Bob@LumberMartInc

Name (Please Print)	Title/Representing		
Michelle Rognerud	MnDOT Traffic		
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M.P.O. M.P.O. M.P.O.

Grand Forks - East Grand Forks Metropolitan Planning Organization

SFN 59531 (Rev. 03-2012)

SIGN-IN SHEET

Division/District/Consultant

Meeting Location	Meeting Type	Meeting Date
EGF City Council Chamber	SC	19 Jan 2017
Project Number: Forks MPO	PCN:	
Project Description: US 2 / Us Bus 2 Study		

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Name (Please Print)	Title/Representing		
Ryan Gregoire Bert's Truck Eq	Owner		
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Ryan Gregoire R6 Truck Sales	Owner		
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Name (Please Print)	Title/Representing		
Mike Pokrzywinski	EGF City Council		
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M.P.O. M.P.O. M.P.O.

Grand Forks - East Grand Forks Metropolitan Planning Organization

SFN 59531 (Rev. 03-2012)

SIGN-IN SHEET

Division/District/Consultant	

Meeting Location	EGF City Hall Council Chambers	Meeting Type	Meeting Date
		SC	19 Jan 2017
Project Number	Forks MPO	PCN	NA
Project Description	US2 / US Bus 2 study		

Name (Please Print)	Todd Gregoire	Title/Representing	OWNER
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E-Mail	Toddenterprises@invisimax.com		

Name (Please Print)		Title/Representing	
Address			
City	State	Zip Code	E-Mail

Name (Please Print)		Title/Representing	
Address			
City	State	Zip Code	E-Mail

Name (Please Print)		Title/Representing	
Address			
City	State	Zip Code	E-Mail

Name (Please Print)		Title/Representing	
Address			
City	State	Zip Code	E-Mail

SRF Consulting Group, Inc. | Engineers Planners Designers

Record of Meeting

SRF No. 10005

Location:	East Grand Forks City Hall
Project:	US 2/US Bus 2 Study
Date:	February 8, 2017
Subject:	Steering Committee Meeting #2
Attendees:	See Attached Sign-In Sheet

Purpose of Meeting:

The purpose of the second Steering Committee Meeting was to discuss the alternative development process and develop evaluation criteria. The presentation includes highlights of the public input meeting summary and exercises for the prioritization of evaluation criteria.

Summary of Meeting

Earl Haugen, Grand Forks-East Grand Forks MPO, opened the meeting and welcomed everyone to the second meeting of the US 2/US Bus 2 Steering Committee.

Matt Pacyna, SRF Consulting Group, began the presentation with an overview of the agenda and a recap of the previous night's public input meeting. He discussed the number of attendees and highlighted the comments heard. Wayne Gregorie, Bert's Truck Equipment, noted that similar curves in Crookston and Fisher were discussed at the previous night's meeting. He questioned if these intersections were also on MnDOT's radar. Rich Sanders, Polk County, noted that both intersections are included in the Polk County and MnDOT District 2 Safety Plans.

Clarence Vetter, East Grand Forks City Council, noted that the realignment of the Stable Days access to the north should be considered to reduce conflicts with US 2 traffic.

Matt continued the presentation with a review of an updated crash analysis. Based upon the discussion at the first Steering Committee meeting, the crash history was expanded to a five-year review (2011 to 2015). It was also found that ten crashes coded to the US 2 and MN 220 South /CR 76 intersection were incorrectly coded within the crash database. These incorrectly coded crashes were modified in the updated analysis. The updated analysis found that the intersection of US 2 and US Bus 2 was the only intersection with a statistical crash problem.

Trent Peabody, Lumber Mart, questioned if there were additional crash details available (i.e. type, time of date, etc.). He discussed the number of run off road and read ends related to high speeds through the corridor. Wayne added that a majority of the crashes he sees are run off road crashes. Matt responded that the crash type, time of day, etc. are available and can be summarized for our next meeting.

Matt continued the presentation with a review of the draft purpose and need statement and alternative development/evaluation process. He described key intersection issues including heavy commercial debris and access, intersection safety, access management, and turn lanes. Michelle Rognerud, MnDOT District 2, discussed the current standards for turn lanes on high speed expressways. She noted that the current standard requires 480' of stacking space; however, MnDOT is moving to a standard of 680' to accommodate declaration within the turn lane.

Matt discussed the development of evaluation criteria that would be used to evaluate intersection alternatives within the study process. This criterion is intended to be measurable that is related to the purpose and need of the project to compare various alternatives. He reviewed a preliminary list of evaluation criteria categories:

- Preliminary Cost
- Capacity/Mobility
- Safety
- Right-of-Way
- Environmental Factors
- System Linkage
- Heavy Commercial Compatibility
- Complexity
- Modal Relationships

Earl noted that capacity is very important to Crystal Sugar operations, as it is based on travel times of the trucks. Rich added that there is a second harvest season that comes from other storage locations scatter throughout the region. Transystems operators haul through March, with larger trucks (length and weight).

Stephanie Hickman, FHWA, noted that data is being collected from many State DOTs regarding traffic movements and heavy commercial compatibility. Darren Laesch, MnDOT, added that permit data can be pulled to investigate oversized load information.

Bob Peabody, Lumber Mart, stated that large loads, including 60' trusses, are moved through these intersections, and the ability to maintain these movements is vital to their operations. Trent added that the instability of the road (roadway grade) also adds to the challenges of the intersection and added that the US 2/5th Street intersection does not provide a viable alternative.

Darren commented that signal wouldn't provide a safety benefit at any of these intersections. He added that MnDOT District 2 is hesitant about the installation of multi-lane roundabouts, and single-lane roundabouts are still uncommon in the District.

Warren Strandell, MPO/Polk County Commission, spoke of the RICWS (Rural Intersection Conflict Warning System) that is currently in place at US 75 and Polk County 21 in Euclid. He noted that a lighted warning system could be a successful solution here. Darren asked for the group's thoughts regarding this system and if it would be successful for the US 2/US Bus 2

intersection. Rich commented that the multi-lane condition of the highway may poise challenges. He spoke of a RICWS used on Highway 52 in Rochester that wasn't successful under similar conditions. Darren added that a RICWS may have the most benefit for left turn movements to US Bus 2.

Following a discussion of the potential evaluation criteria, each committee member was asked to independently prioritize their top criteria. Based upon this exercised, the criteria were prioritized in the following rankings:

1. Safety
2. Heavy Commercial Compatibility
3. System Linkage
4. Environmental Factors
5. Preliminary Cost
6. Capacity/Mobility
7. Right-of-Way
8. Complexity
9. Modal Relationships

Matt continued the presentation with a review other alternative development process. He reviewed high level sketch alternatives for each of the intersections:

- US 2 at 10th Street/CR 73
  - No Build
  - Improve Skew
  - Alternative Connection
- US Bus 2 at CR 17
  Darren noted that this is a critical intersection, even though there are no crash issues present.
  - No Build
  - 4-Legged Intersection
    Trent noted that this was the alignment of the road about 15 years ago. He added that the intersection was realigned to its current configuration based on safety concerns.
  - CR 17 Realignment
    It was noted that this alternative would redirect Crystal Sugar traffic to utilize CR 17. Clarence noted that we can't assume that all traffic utilizes the east scale.
    Bob and Trent voiced concerns about the realignment of the roadway and the impacts to businesses along the corridor. Not only would the realignment redirect drive by traffic, but would also change traffic movements for any businesses in that area.
  - 3-Legged Roundabout
  - 4-Legged Roundabout

- US 2 at CR 17
  It was noted that an overpass was discussed at this location during the public meeting. Darren added that fly-over was installed in Bemidji with a cost of around $5 million.
  - No Build
  - Traffic Control Modification
    Earl questioned the turning movements at this intersection.
  - Turn Lane Improvements
- US 2 at US Bus 2
  - No Build
  - Restrict EB Left Turn Movements
  - Close Median
    Earl questioned if the intersection of US 2/CR 17 and US 2/US Bus 2 could be combined into one intersection.
  - Traffic Control Modifications
    The group discussed softening the curve through this intersection and adding additional storage space for trucks in the left turn lane. Steve Emery, City of East Grand Forks, noted that softening the curve at this intersection makes a lot of sense. Darren responded that he would like to see the curve softened in combination with other intersection alternatives.
- US 2 at 180th Street
  - No Build
  - WB ¾ Access (No WB Left Turn)
  - Close WB Access
- US 2 at MN 220 South/CR 76
  - No Build
  - Traffic Control Modification
  - Backage Road

Matt closed the meeting with an over view of the next steps and timing of the next Steering Committee Meeting.

SIGN-IN SHEET

M.P.O. M.P.O. M.P.O. **Grand Forks - East Grand Forks Metropolitan Planning Organization**

US 2/US Bus 2 Study

Meeting Location	Meeting Type	Meeting Date
East Grand Forks City Hall - 608 DeMers Ave	Steering Committee Meeting	Wednesday, February 8, 2017
Project Number: N/A		PCN: N/A
Project Description: US 2/US Bus 2 Study from CR 73.10th Street to MN 220 South/CR 76		

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Name (Please print)	Title/Representing		
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Name (Please print)	Title/Representing		
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Name (Please print)	Title/Representing		
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SIGN-IN SHEET

M.P.O. M.P.O. M.P.O. Grand Forks - East Grand Forks Metropolitan Planning Organization

US 2/US Bus 2 Study

Meeting Location	Meeting Type	Meeting Date
East Grand Forks City Hall - 608 DeMers Ave	Steering Committee Meeting	Wednesday, February 8, 2017
Project Number: N/A		PCN: N/A
Project Description: US 2/US Bus 2 Study from CR 73.10th Street to MN 220 South/CR 76		

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Name (Please print)	Title/Representing		
Wayne Gregoire	Owner Berti Truck Eq.		
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Name (Please print)	Title/Representing		
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Name (Please print)	Title/Representing		
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Name (Please print)	Title/Representing		
Stephanie Hickman / Richard Duran	FHWA-ND		
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City:	State:	Zip code:	Email:

Name (Please print)	Title/Representing		
Michelle Rognerud	MnDOT Dist #2		
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SRF Consulting Group, Inc. | Engineers Planners Designers

Record of Meeting

SRF No. 10005

Location:	East Grand Forks City Hall
Project:	US 2/US Bus 2 Study
Date:	March 1, 2017
Subject:	Steering Committee Meeting #3
Attendees:	See Attached Sign-In Sheet

Purpose of Meeting:

The purpose of the third Steering Committee Meeting was to discuss the draft alternatives developed for each of the study intersections.

Summary of Meeting

Matt Pacyna, SRF Consulting Group, opened the meeting and thanked everyone for their attendance. He began the presentation with an overview of the agenda and an update of beet harvest truck volumes following a conversation with Crystal Sugar. It was found that 4,500 to 5,000 trucks visit the plant each day during harvest, with over 60 percent using the US 2/CR 17 and US 2/US Bus 2 intersections. Earl Haugen, Grand Forks-East Grand Forks MPO, questioned how this information jives with the traffic counts collected by the MPO. Matt responded that it validates our numbers, but questioned how a river crossing changes future movements. Darren Laesch, MnDOT District 2, questioned the duration of these volumes. Matt responded that these volumes are experienced in a four to six-week window.

Matt continued the presentation with a recap of the US 2 and US Bus 2 intersection. He described the 14 crashes at the only intersection found to have a statistical crash issue. Trent Peabody, Lumber Mart, questioned the time of year and road conditions of each of these intersections. He spoke of a recent accident that involved a single car roll over due to conditions. Many of these crashes may have speed, winter driving conditions, and inactivity as a cause. Rich Sanders, Polk County, added that the WB failure to yield needs to be addressed. Lighting and ITS could be helpful here.

Matt reviewed the turning movements for the US 2/US Bus 2 intersection and surrounding intersections. Darren noted that there are very few left turning movements from US Bus 2 to northbound/westbound US 2.

Matt provided an overview of the 8 alternatives development for the US 2 and US Bus 2 intersection:

- Alternative 1 – No Build
- Alternative 2A – WB Left-Turn Lane and EB Acceleration Lane

  - The closure of the private access is suggested to comply with access spacing regulations. It was noted that the closure of this access may warrant a larger review of the site circulation.
  - Trent noted that this intersection is currently avoided due to the uneven grade. Lumber Mart directs loads to use the CR 17 intersection. If the intersection was smoothed out and hand an acceleration lane it would be more palatable.
  - Matt noted that the superlevation of the roadway could be smoothed out with this alternative.
- Alternative 2B – WB Alignment Shift and EB Acceleration Lane
  - Stephanie Hickman, FHWA, noted that the requirements for median safety should be reviewed with this alternative.
  - The group discussed the benefits of the increased stacking space, but questioned how uncomfortable drivers would be waiting in that area.
  - Darren noted that this condition is similar to a current intersection in Crookston that is currently a high crash intersection. The conditions are slightly different, but the two intersection should be compared.
  - Rich noted that the visuals for drivers under this alternative would be very challenges, and an increase in failure to yield crashes may occur. Left-turn movements would be forced to look out their passenger window to see oncoming traffic. A RICWS could be helpful for this alternative
  - The group questioned if the median could be skewed to improve sight distances.
- Alternative 3A – WB Left-Turn Lane, EB Acceleration Lane, and EB U-Turn
  - The group noted that this alternative makes the intersection more confusing and it would be challenging to get into the left turn lane.
  - Darren noted that the introduction of the J Turn may shift movements to CR 17. The closure the Stable Days access should be considered with this alternative.
- Alternative 3B – WB Left-Turn Lane and EB U-Turn Crossover
  - Trent stated that the addition of an eastbound acceleration lane is more important than the provision of a J Turn. He added that the current placement and left-turn lane for the Stable Days access is very confusing.
- Alternative 4 – Traffic Signal
  - Matt noted that the warrants were not met for a traffic signal at this intersection
- Alternative 5 – Roundabout
  - The group questioned the number of high-speed, multi-lane roundabouts were currently construction in Minnesota? Darren responded that MnDOT is not necessarily encouraging this and it may not see enough crash reduction to be viable.
- Alternative 6A – Median Closure and WB Left-Turn Improvements at CR 17
  - Stephanie questioned if there was enough traffic to warrant a signal under this condition. Matt responded that no warrants were met.
  - The group discussed the impacts of moving 2/3 of the beet harvest truck traffic to one intersection.

  - Trent noted that he discussed the project with business owners along the corridor, and many are looking for basic improvements.
- Alternative 6B – Median Closure, WB LT Improvements and Bus 2/CR 17 Realignment
  - The group discussed additional improvements to the right-turn lane at CR 17 in addition to the left-turn lane improvements
- Alternative 6C – Median Closure, WB LT Improvements and Bus 2/CR 17 Roundabout
- Alternative 6D – Median Closure and CR 17 RCUT
  - Matt noted that this alternative would result in a travel time increase by a minute or so for cross-street thru or left-turn movements only. He added that these intersections have been studied for fully loaded semis.
  - Darren discussed the dash or die comments regarding the current movements at the intersection. We don't want to make the intersection worse than it already is.
  - The group discussed the benefits of making this movement in a car vs fully loaded truck.
  - Rich questioned if an alternative could widen the median by moving the lanes out or reducing the US 2 through lanes from 2 to 1.
- Alternative 6E – US 2 Overpass on CR 17
  - Rich compared an overpass to underpass and questioned the cost. Darren was concerned with water impacts if an underpass was considered.
- Alternative 7A – Close US 2/US Bus 2 and US 2 and CR 17 Interchange
- Alternative 8 – Realign US 2 and CR 17
  - Stephanie questioned the amount of right-of-way needed for this alternative.
  - Matt noted that part of the road would be become part of the flood protection.
  - The group discussed the odd placement of businesses between the new alignment and existing US Bus 2.

Matt presented the alternatives developed for the remaining study intersections. Stephanie Falkers, SRF Consulting Group, provided the results of the prioritization exercise for evaluation criteria and discussed how this would inform the overall study. She then reviewed a matrix of preliminary evaluation criteria for each of the alternatives discussed, including crash reduction, improvement crash cost reduction, estimated construction cost, access closure, speed limit modifications, and change in travel time. Each Steering Committee member was asked the rank their top three alternatives based on today's discuss and the prelim evaluation results. The following ranking resulted from this exercise:

1. Alternative 2B
2. Alternative 2A
3. Alternative 3B
4. Alternative 3A
5. Alternative 1

Matt closed the meeting with a discussion of the evaluation criteria and next steps.

SIGN-IN SHEET

M.P.O. M.P.O. M.P.O. **Grand Forks - East Grand Forks Metropolitan Planning Organization**

US 2/US Bus 2 Study

Meeting Location	Meeting Type	Meeting Date
East Grand Forks City Hall - 608 DeMers Ave	Steering Committee Meeting	Wednesday, March 1, 2017
Project Number: N/A		PCN: N/A
Project Description: US 2/US Bus 2 Study from CR 73.10th Street to MN 220 South/CR 76		

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SIGN-IN SHEET

M.P.O. M.P.O. M.P.O. **Grand Forks - East Grand Forks Metropolitan Planning Organization**

US 2/US Bus 2 Study

Meeting Location	Meeting Type	Meeting Date
East Grand Forks City Hall - 608 DeMers Ave	Steering Committee Meeting	Wednesday, March 1, 2017
Project Number: N/A		PCN: N/A
Project Description: US 2/US Bus 2 Study from CR 73.10th Street to MN 220 South/CR 76		

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SRF Consulting Group, Inc. | Engineers Planners Designers

Record of Meeting

SRF No. 10005

Location:	East Grand Forks City Hall
Project:	US 2/US Bus 2 Study
Date:	April 4, 2017
Subject:	Steering Committee Meeting #4
Attendees:	See Attached Sign-In Sheet

Purpose of Meeting:

The purpose of the fourth Steering Committee Meeting was to review the input received at the second public meeting and discuss the refined alternative and evaluation criteria.

Summary of Meeting

Matt Pacyna, SRF Consulting Group, opened the meeting and thanked everyone for their attendance. He began the presentation with a review of the input received at the second public input meeting. Matt highlighted the various discussions and noted that Alternatives 2B, 2A, 3A and 3B ranked the highest.

Matt provided an overview of the alternatives for US 2 at CR 17:

- Alternative 2 – County Road Safety Improvements
- Alternative 3- Turn Lane Extension and Lighting Improvements
    - Michelle Rognerud, MnDOT District 2, noted that she would not be opposed to a mainline RICWS in this location as it increases the awareness of an intersection. Rich Sanders, Polk County, noted that a RICWS on Hwy 52 in Rochester was just removed. Michelle commented that there are a couple installed in District 3.
    - Trent Peabody, Lumber Mart, noted that more lighting would be helpful in addition to the RICWS.
- Alternative 4 – CR 17 Overpass of US 2
    - Trent questioned the ability to reduce the speed limit of US 2. Darren Laesch, MnDOT District 2, discussed the current procedure for changing speed limits.
- Alternative 5 – Reduced Conflict U-Turn Intersection(RCUT)
    - Wayne Gregorie, Bert's Truck, noted that this solution may push traffic to go south of CR 76 and then right on US 2, rather than using the CR 17 intersection under this condition. Trent added that this alternative would likely cause drivers to find an alternative route, thus it would just divert traffic.

Matt reviewed the alternatives for US 2 at US Bus 2:

- Alternative 2A

  - Michelle noted that mainline RICWS systems typically provide an interim solution, prior to a construction solution. A construction solution would be preferred for this intersection.
  - The group discussed the addition of additional turn lane lighting.
- Alternative 2B
  - Trent noted that the acceleration lane provides a lot of benefit for his drivers when hauling trusses.
  - The group agreed that this alternative provide positive business impacts.
- Alternative 3A
  - Trent commented that he already directs drivers to CR 17 rather than US Bus 2 with the median differences. This alternative will create more confusion.
  - The group discussed the placement of signage to inform drivers of proper movements.
- Alternative 3B
  - Trent discussed the confusion with the Stable Days left-turn lane which would still be present under this scenario.

The group discussed the US 2 and 10th Street/CR 73 alternatives, noting that flashing lights could be very helpful here. Warren Strandell, Grand Forks-East Grand Forks MPO, noted that a warning lighting system needs to be included in the ultimate solution. The potential impacts at US 2 and MN 220 South as a result of a new river crossing were also discussed with the group. The importance of the intersection during flooding events was also discussed.

Stephanie Falkers, SRF Consulting Group, reviewed the draft evaluation criteria developed to compare each alternative. She noted that the committee completed a prioritization exercise at the second meeting to prioritize each category. Stephanie noted that each criterion was developed in support of the overall purpose and need statement, and that each alternative would first be screen against its ability the meet the purpose and need statement. Alternative 8 was removed from future consideration because it does not meet the Purpose and Need of the project (i.e. does not provide a safety benefit). The evaluation categories were prioritized into the following order and individual criteria developed within each. Stephanie walked the group through the following criteria:

1. Safety
   a. Reduction in crashes
   b. Improvement crash cost reduction (over a 20-year period)
   c. 20-year benefit to cost ratio
2. Heavy Commercial Compatibility
   a. Ability to accommodate harvest season truck volumes and movements
   b. Ability to accommodate year-round truck volumes and movements
3. System Linkage
   a. Change to connectivity within the study area
   b. Change to connectivity to/from the greater region

4. Environmental Factors
    a. Existing business impacts
    b. Future economic development impacts
    c. Agricultural and wetland resource impacts
    d. Natural heritage information system features
    e. Environmental justice community impacts
    f. Floodplain and historic evaluation route impacts
5. Preliminary Cost
    a. Estimated construction cost
    b. Fiscally constrained
6. Capacity/Mobility
    a. Intersection level of service
    b. Cross-street delay
    c. Travel speeds
        i. The group discussed the subjectivity of this criteria and determined that it should be removed from consideration
    d. Access spacing compliance
    e. Change in travel time
7. Right-of-Way
    a. Right-of-way impact area (acreage)
    b. Impacted parcels (number)
    c. Total property acquisitions (number)
    d. Partial property acquisitions (number)
8. Complexity
    a. Ability to coordinate with 2021 planned maintenance project
    b. Construction timeline
    c. Harvest season impacts
        i. The group discussed if this criterion was doubling with criteria included in the heavy commercial compatibility category.
    d. Driver familiarity
9. Modal Relationships
    a. Transit service impacts (existing and future)
    b. Bicycle/Pedestrian facility impacts (future)

Stephanie continued with a review of an example evaluation matrix. Matt closed the meeting with a discussion of the next steps and the release of the draft plan.

SIGN-IN SHEET

Grand Forks - East Grand Forks Metropolitan Planning Organization

US 2/US Bus 2 Study

Meeting Location	Meeting Type	Meeting Date
East Grand Forks City Hall - 608 DeMers Ave	Steering Committee Meeting	Wednesday, April 5, 2017
Project Number: N/A		PCN: N/A
Project Description: US 2/US Bus 2 Study from CR 73.10th Street to MN 220 South/CR 76		

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SIGN-IN SHEET

Grand Forks - East Grand Forks Metropolitan Planning Organization

US 2/US Bus 2 Study

Meeting Location	Meeting Type	Meeting Date
East Grand Forks City Hall - 608 DeMers Ave	Steering Committee Meeting	Wednesday, April 5, 2017
Project Number: N/A		PCN: N/A
Project Description: US 2/US Bus 2 Study from CR 73.10th Street to MN 220 South/CR 76		

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SRF Consulting Group, Inc. | Engineers Planners Designers

Record of Meeting

SRF No. 10005

Location: East Grand Forks City Hall
Project: US 2/US Bus 2 Study
Date: May 9, 2017
Subject: Steering Committee Meeting #5
Attendees: See Attached Sign-In Sheet

Purpose of Meeting:

The purpose of the final Steering Committee Meeting was to review and discuss the Draft US 2 and US Bus 2 Study.

Summary of Meeting

Matt Pacyna, SRF Consulting Group, opened the meeting and thanked everyone for their participation throughout the US 2/US Bus 2 Study. Stephanie Falkers, SRF Consulting Group, reviewed the results of the evaluation matrix, see attachment. She noted that alternatives were first screened for their ability to meet the project purpose and need statement. Alternatives 4 and 8 were removed from future consideration as they did not meet capacity and safety needs of the project.

Stephanie reviewed the weighting system of each of the evaluation categories, with safety receiving the highest weighting (1.50 multiplier) of all categories. She explained the scoring system for each evaluation criteria on a 1 to 5 scale, and noted in the table below.

Scoring Criteria	
5	Good; meets criteria well
4	Acceptable; but relatively less desirable than 5
3	Moderate; no distinguishing characteristics
2	Less desirable; considering criteria
1	Poor; fails to meet criteria

Stephanie walked through each category describing the attributes of the highest scoring alternatives:

Evaluation Criteria	Highest Scoring Attributes:
Safety	Provides a reduction in crashes and a 20-year benefit to cost ratio great than 1.0

Heavy Commercial Compatibility	Accommodates both harvest season and year-round heavy commercial volumes
System Linkage	Maintains connectivity within the study area and to/from the greater region
Environmental Factors	Provides a benefit or no impact to existing or future economic development and limits impacts to environmental resources
Preliminary Cost	Proposed alternative is estimate to be constructed for less than $3million and is fiscally constrained within the safety funds allotted for the 2021 resurfacing project ($2 million or less)
Capacity/Mobility	Maintains a LOS C or better and improves/maintains travel times
Right-of-Way	No right-of-way or acquisition impacts
Complexity	Can be coordinated with the 2021 resurfacing project and provides solutions familiar to drivers in the region
Modal Relationships	Does not impact the provision of existing or future transit services or bicycle/pedestrian facilities

Stephanie described the results of the evaluation matrix, highlighting the three alternatives which scored "above average": Alternative 2A, Alternative 3A, and Alternative 3B.

Trent Peabody, Lumber Mart, noted that an RCUT (Alternatives 3A/3B) is not going to be acceptable for truck drivers. He added that Alternative 2B had the highest crash reduction.

Wayne Gregorie, Bert's Truck, noted that through each of our five steering committee meetings, safety has been discussed each time. He spoke of the safety funds included in the 2021 resurfacing project and the source of that funding. Darren Laesch, MnDOT District 2, spoke about the allotted safety funding, and how that money is used throughout the entire District.

Trent commented that a value cannot be placed on the businesses in this area. He wouldn't recommend an RCUT for East Grand Forks, and added that there are not many located in the region. Trent spoke of Alternative 2A and its viability. He added that the other intersections aren't addressing the run off road crashes or solving the stacking space issues.

The group discussed the addition of more lighting on CR 17 and the lowering of speed limits. It was noted that a speed study was needed to result in any change to speed limits.

Wayne commented on the three other similar curves within a 21 mile stretch and question if improvements were going to be made. He noted that tractor trailers need to go into the dirt to make movements during some times of the year. The group discussed the need for improvements for the turning radius for SB to WB movements at US 2 and US Bus 2

Trent commented that Alternative 2A may provide a good option, as it still provides the option for a US Bus 2 left turn and we are still getting improvements. Darren agreed with Trent, noting that the improvements of this alternative would continue to be monitored to ensure safety improvements. If no improvements result, Alternative 3A/3B may need to be considered. Trent added that his gut feeling is that Alternatives 3A or 3B aren't going to work. He commented that vendor already won't deliver to his business during certain times of the year.

Corey Kritzberger, Crystal Sugar, noted that he is comfortable with Alternatives 2A, 2B, 3A, and 3B from Crystal Sugar's perspective. Trent noted that he thinks that trucks would still like the additional stacking space.

Warren Strandell, Grand Forks-East Grand Forks MPO, commented that safety lighting would reduce crashes even more beyond the crash reduction shown in the matrix. The group discussed the potential for including RICWS and other lighting systems in combination with any of the alternatives along the mainline.

Trent commented that he would personally prefer Alternative 2B, but if he needed to make a concession it would be for Alternative 2A. Darren discussed concerns with the similarities between Alternative 2B and the existing curve in Crookston.

Wayne noted that the one thing that can be agreed upon is that something must be done and he would like to be notified of the final product. Darren asked the group how they would like to stay informed of process. The group discussed that email correspondence was preferred.

Trent discussed what the improvements might look like if this was improved via a standalone project vs combined with the 2021 project.

Darren commented that MnDOT would like to narrow down to one alternative within the next year. It is recognized that the steering committee seems to prefer Alternative 2A out of the top three alternatives, though some would prefer Alternative 2B. It was discussed that any improvements before 2021 would including lighting improvements.

Matt and Darren discussed the contents of the Draft US 2/US Bus 2 Study and asked that any additional comments on the plan be passed along to the consultant team. They thanked the group for their participation throughout the process.

SIGN-IN SHEET

M.P.O. M.P.O. M.P.O. **Grand Forks - East Grand Forks Metropolitan Planning Organization**

US 2/US Bus 2 Study

Meeting Location	Meeting Type	Meeting Date
East Grand Forks City Hall - 608 DeMers Ave	Steering Committee Meeting	Tuesday, May 9, 2017
Project Number: N/A		PCN: N/A
Project Description: US 2/US Bus 2 Study from CR 73.10th Street to MN 220 South/CR 76		

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SIGN-IN SHEET

Grand Forks - East Grand Forks Metropolitan Planning Organization

US 2/US Bus 2 Study

Meeting Location	Meeting Type	Meeting Date
East Grand Forks City Hall - 608 DeMers Ave	Steering Committee Meeting	Tuesday, May 9, 2017
Project Number: N/A		PCN: N/A
Project Description: US 2/US Bus 2 Study from CR 73.10th Street to MN 220 South/CR 76		

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Table 8. US 2/US Bus 2 Evaluation Matrix

Weight			Alternative 1		Alternative 2A		Alternative 2B		Alternative 3A		Alternative 3B		Alternative 5		Alternative 6A		Alternative 6B		Alternative 6C		Alternative 6D		Alternative 6E		Alternative 7	
			Data	Score	Data	Score	Data	Score	Data	Score	Data	Score	Data	Score	Data	Score	Data	Score	Data	Score	Data	Score	Data	Score	Data	Score
	Purpose and Need																									
	1	Addresses the purpose and need statement	No		Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes	
	Safety																									
1.50	1	Reduction in Crashes	0%	1	27%	4	39%	4	35%	4	35%	4	25%	4	22%	4	22%	4	22%	4	56%	5	56%	5	42%	5
	2	Improvement Crash Cost Reduction (20-year period)	$0k	1	$1.1M	4	$1.6M	4	$1.5M	4	$1.5M	4	$1.1M	4	$0.6M	4	$0.6M	4	$0.6M	4	$3.5M	5	$3.2M	5	$2.9M	5
	3	20-Year Benefit to Cost Ratio	0.0	1	1.0	3	0.5	2	1.3	4	2.1	5	0.4	2	0.9	3	0.3	2	0.3	2	2.7	5	0.6	3	0.3	2
	Heavy Commercial Compatibility																									
1.25	1	Ability to accommodate harvest season heavy commercial traffic volumes and movements	Moderate	3	Good	5	Good	5	Good	5	Acceptable	4	Moderate	3	Less Desirable	2	Moderate	3	Less Desirable	2	Moderate	3	Moderate	3	Acceptable	4
	2	Ability to accommodate year-round heavy commercial traffic movements	Moderate	2	Good	5	Good	5	Good	5	Acceptable	4	Moderate	3	Less Desirable	2	Moderate	3	Less Desirable	2	Moderate	3	Moderate	3	Acceptable	4
	System Linkage																									
1.25	1	Change to connectivity within study area	No Change	4	No Change	4	No Change	4	Slight Change	3	Slight Change	3	No Change	4	Major Change	2	Major Change	2	Major Change	2	Major Change	2	Major Change	2	Improvement	5
	2	Change to connectivity to/from the greater region	No Change	4	No Change	4	No Change	4	Slight Change	4	Slight Change	4	No Change	4	Major Change	2	Major Change	2	Major Change	2	Major Change	2	Major Change	2	Improvement	5
	Environmental Factors																									
1.10	1	Existing business impacts	None	4	Benefit	5	Benefit	5	None	4	None	4	None	4	Moderate	2	Minor	3	Minor	3	Minor	3	Benefit	5	Moderate	2
	2	Future economic development impacts	Minor	3	Benefit	5	Benefit	5	Benefit	5	Benefit	5	None	4	Moderate	2	Minor	3	Minor	3	Minor	3	Benefit	5	Moderate	2
	3	Agricultural Resource Impacts	0 Acres	5	0 Acres	5	7 Acres	2	0 Acres	5	0 Acres	5	3 Acres	4	0 Acres	5	5 Acres	2	5 Acres	2	0 Acres	5	10+ Acres	1	10+ Acres	1
	4	Water Resource Impacts	0 Acres	5	0 Acres	5	0 Acres	5	0 Acres	5	0 Acres	5	0 Acres	5	0 Acres	5	0 Acres	5	0 Acres	5	0 Acres	5	0 Acres	5	0 Acres	5
	5	NHIS features within a half-mile radius	1 - No Impact	5	1 - Minor	2	1 - Minor	2	1 - Minor	2	1 - Minor	2	1 - Moderate	2	1 - Negligible	3	1 - Negligible	3	1 - Negligible	3	1 - Negligible	3	1 - Negligible	3	1 - Minor	2
	6	Environmental Justice Community impacts	None	5	None	5	None	5	None	5	None	5	None	5	None	5	None	5	None	5	None	5	None	5	None	5
	7	Floodplain and historic evacuation route impacts	None	4	None	4	None	4	None	4	None	4	None	4	Impacts	2	Impacts	2	Impacts	2	Impacts	2	Impacts	2	Impacts	2
	Preliminary Cost																									
1.10	1	Estimated Construction Cost *(2015 Dollars)*	$0.0M	5	$1.1 M	4	$3.3 M	3	$1.2 M	4	$0.7M	5	$2.8M	4	$0.7M	5	$1.7M	4	$1.7M	4	$1.3M	4	$5.6M	2	$9.6M	1
	2	Fiscally Constrained	Good	5	Acceptable	4	Less Desirable	2	Acceptable	4	Good	5	Less Desirable	2	Good	5	Acceptable	4	Acceptable	4	Acceptable	4	Less Desirable	2	Poor	1
	Capacity/Mobility																									
1.10	1	Intersection Level of Service	A	5	A	5	A	5	A	5	A	5	A	5	A	5	A	5	A	5	A	5	A	5	A	5
	2	Approach Level of Service (Lowest Scoring US 2/US Bus 2 Approach LOS)	A	5	A	5	A	5	B	4	B	4	A	5	A	5	A	5	A	5	A	5	A	5	-	3
	3	WB US 2 Left Movement Change in Travel Time	None	3	Decrease	4	Decrease	4	Decrease	4	Decrease	4	Decrease	4	Increase	1	Increase	1	Increase	1	Increase	1	Increase	1	Increase	1
	4	US 2 Thru Movement Change in Travel Time	None	3	None	3	None	3	None	3	None	3	Increase	2	None	3	None	3	None	3	None	3	None	3	None	3
	5	US Bus 2 Eastbound Left Change in Travel Time	None	3	None	3	None	3	Increase	2	Increase	2	Decrease	4	Increase	1	Increase	1	Increase	1	Increase	1	Increase	1	Increase	1
	6	US Bus 2 Eastbound Right Change in Travel Time	None	3	Decrease	4	Decrease	4	Decrease	4	None	3	Decrease	4	Decrease	4	Decrease	4	Decrease	4	Decrease	4	Decrease	4	Decrease	4
	Right-of-Way																									
1.05	1	Right-of-way impact area (acreage)	0 Acres	5	0 Acres	5	7.5 Acres	2	0 Acres	5	0 Acres	5	5 Acres	2	0 Acres	5	4 Acres	2	4 Acres	2	0 Acres	5	10+ Acres	1	10+ Acres	1
	2	Impacted parcels (number)	0	5	0	5	4	2	0	5	0	5	1	4	0	5	3	2	3	4	0	5	9	1	10	1
	3	Total property acquisitions (number)	0	5	0	5	2	3	0	5	0	5	0	5	0	5	1	3	1	3	0	5	2	3	3	3
	4	Partial property acquisitions (number)	0	5	0	5	2	3	0	5	0	5	1	4	0	5	2	3	2	4	0	5	7	1	7	1
	Complexity																									
1.05	1	Coordination with 2021 planned maintenance project on westbound US 2	Good	5	Good	5	Acceptable	4	Good	5	Good	5	Moderate	3	Good	5	Moderate	3	Moderate	3	Moderate	3	Less Desirable	2	Poor	1
	2	Construction timeline	Good	5	Good	5	Acceptable	4	Good	5	Good	5	Acceptable	4	Good	5	Good	5	Good	5	Acceptable	4	Less Desirable	2	Poor	1
	3	Driver familiarity	Good	5	Good	5	Acceptable	4	Moderate	3	Moderate	3	Less Desirable	2	Good	5	Good	5	Acceptable	4	Less Desirable	2	Acceptable	4	Acceptable	4
	Modal Relationships																									
1.00	1	Transit service impacts (existing and future)	No Change	3	Minor Benefit	4	Minor Benefit	4	Minor Benefit	4	Minor Benefit	4	Minor Benefit	4	Minor Impact	2	Minor Impact	2	Minor Impact	2	Minor Impact	2	Minor Benefit	4	Minor Benefit	4
	2	Bicycle/pedestrian facility impacts (future)	No Change	3	No Change	3	No Change	3	No Change	3	No Change	3	No Change	3	No Change	3	No Change	3	No Change	3	No Change	3	Minor Impact	2	Minor Impact	2
		Overall Weighted Total	**263**		**311**		**267**		**302**		**303**		**255**		**254**		**227**		**221**		**256**		**209**		**218**	

Scoring Criteria	
5	Good; meets criteria well
4	Acceptable; but relatively less desirable than 5
3	Moderate; no distinguishing characteristics
2	Less desirable; considering criteria
1	Poor; fails to meet criteria

Alternative Evaluation Results		
Above Average	Average	Below Average
> 275	275 to 235	< 235

Appendix B – Public Input Meeting Summaries

Meeting 1 – February 7, 2017

Meeting 2 – April 4, 2017

SRF Consulting Group, Inc. | Engineers Planners Designers

Meeting Summary

SRF No. 10005

To: Earl Haugen, Director
Grand Forks – East Grand Forks MPO

From: Matt Pacyna, Senior Associate
Stephanie Falkers, Associate

Subject: US 2/US Bus 2 Study – Public Input Meeting #1 Summary

The Grand Forks-East Grand Forks MPO, MnDOT and SRF Consulting Group set out to collection public input to inform the US 2/US 2 Bus Study. A public input meeting was held early in the study process to review information collected about the six study intersections and to provide the public with an opportunity to share challenges and opportunities for the corridor.

A public meeting was held on February 7, 2017 to review the existing conditions of the study area. The open house format was held from 5:00 to 7:00 p.m. in the East Grand Forks City Hall Rotunda. Attendees were invited to review a series of boards that provided an overview of the project and study area and highlighted existing conditions. The existing conditions presented throughout the open house included:

- Existing Traffic Operations during AM and PM Peak Hours
- Intersection Crash History (2011 – 2015)
- Segment Crash History (2011 – 2015)
- Future Land Use
- Existing and 2040 Traffic Volumes
- Heavy Commercial Traffic Patterns
- Existing Access Points

A copy of the boards is included in Appendix A. Matt Pacyna and Stephanie Falkers from SRF Consulting Group, Inc., MPO Staff and MnDOT staff were on hand to help answer questions.

A total of seven participants signed-in as they participated in the open house. However, not all participant completed the sign-in sheet as they walked through a review the boards. Two individuals chose to completed the Title VI Public Participation Survey. A summary of the Title VI responses is listed in Table 1.

Table 1. Title VI Public Participation Survey Results

Sex	
Female:	1
Male:	1
Disability	
Yes:	0
No:	2
Age	
34 and younger:	0
35-54:	1
55 and older:	1
Race	
American Indian/Alaskan Native:	0
Asian:	0
Black/African American:	0
Hispanic or Latino:	0
Native Hawaiian/Other Pacific Islander:	0
White:	2
Other:	0
Do you receive public assistance?	
Yes:	0
No:	2

Language most frequently spoken in your home	
Arabic:	0
Bosnian:	0
Croatian:	0
English:	2
German:	0
Napali:	0
Russian:	0
Serbian:	0
Somali:	0
Spanish:	0
Swahili:	0
Turkish:	0
Vietnamese:	0
Other:	0
Indicate how you heard about the event	
Internet:	1
Mailing:	0
NDDOT Contact:	0
Newspaper:	1
Radio:	0
Social Service Group:	0
Television:	0
Advocacy Group:	0
Other – Walk In	1

Public Input Meeting Discussion

Throughout the open house, many discussions with participants focused on the intersections of US 2/US Bus 2, US 2/CR 17, and US Bus 2 and CR 17 and the commercial traffic using these intersections. Multiple improvements to the US 2 and US Bus 2 intersection were discussed with participants, including the softening of the curve, lightings, and warning light systems. A large map of the study area was available at the open house for participants to comment upon, a summary of these comments is provided in Appendix B.

The recent improvements to the Crystal Sugar scales were discussed with MPO, MnDOT and SRF staff. The third, and easternmost, scale was recently installed on site, and is located closest to the intersection of US Bus 2 and CR 17. During the beet harvest, the western scale is used by truck traffic coming from North Dakota or the north. The eastern two scales are used by truck traffic coming from the south and east. It was noted that a truck can make up to eight round trips to Crystal Sugar during the beet harvest season and that nearly 1 million tons of sugar beets are hauled on site per season. Participants noted the typical movements used by truck drivers to access Crystal Sugar. It is not uncommon for trucks to run the stop sign on CR 17 to cross US 2 in one movement. The impacts of a potential south side bridge were also discussed and their impacts to current beet harvest truck movements.

Moving Forward

The input received at this first public input meeting will be used to inform the existing conditions of the study area. Additional interviews may be held with key stakeholders to gain additional information.

Attachment A: Public Input Meeting Boards

Attachment B: Public Meeting Map Summary

Attachment A: Public Input Meeting Boards

WELCOME

US 2/US BUS 2 STUDY
PUBLIC INPUT MEETING

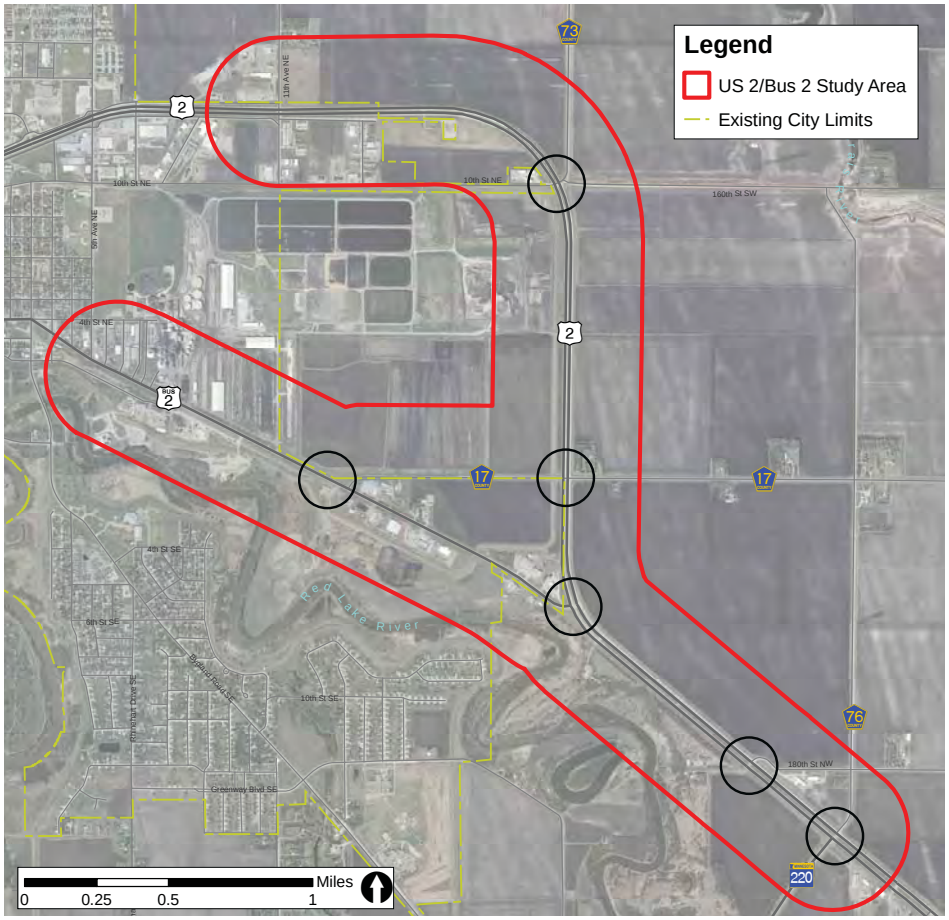
FEBRUARY 7, 2017

M.P.O. M.P.O. M.P.O.
Grand Forks - East Grand Forks
Metropolitan Planning Organization

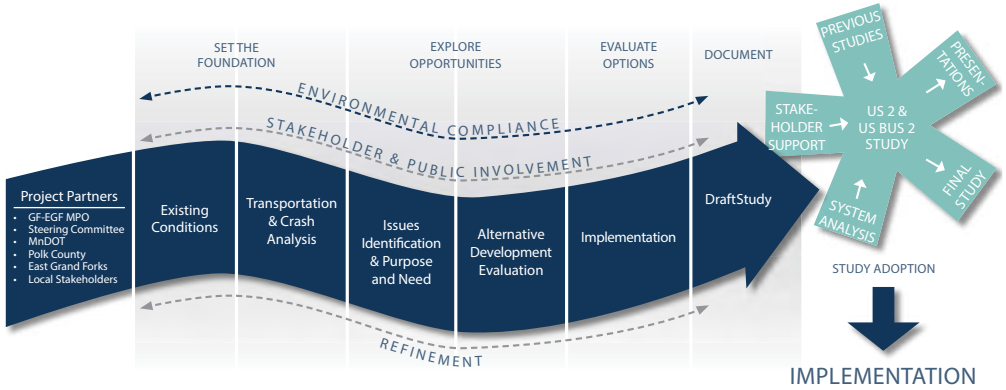
DEPARTMENT OF TRANSPORTATION

SRF
Consulting Group, Inc.

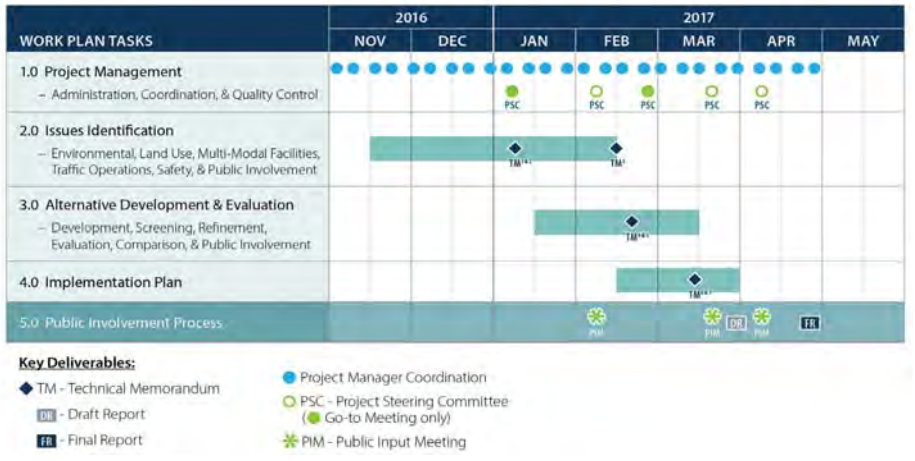
US 2/US BUS 2 STUDY OVERVIEW



- US 2 at 10th Street/CR 73
- US 2 at CR 17
- US Bus 2 at CR 17
- US 2 at US Bus 2
- US 2 at 180th Street
- US 2 at MN 220/CR 76



STUDY PROCESS



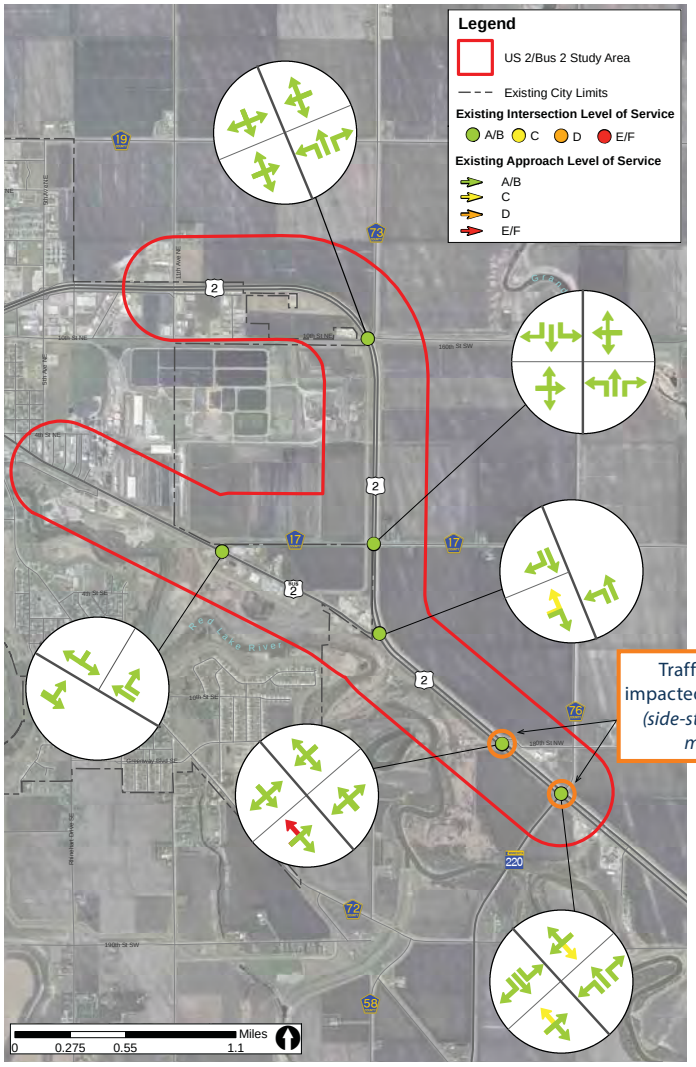
STUDY SCHEDULE

US 2/US BUS 2 STUDY GOALS

Study Goals:

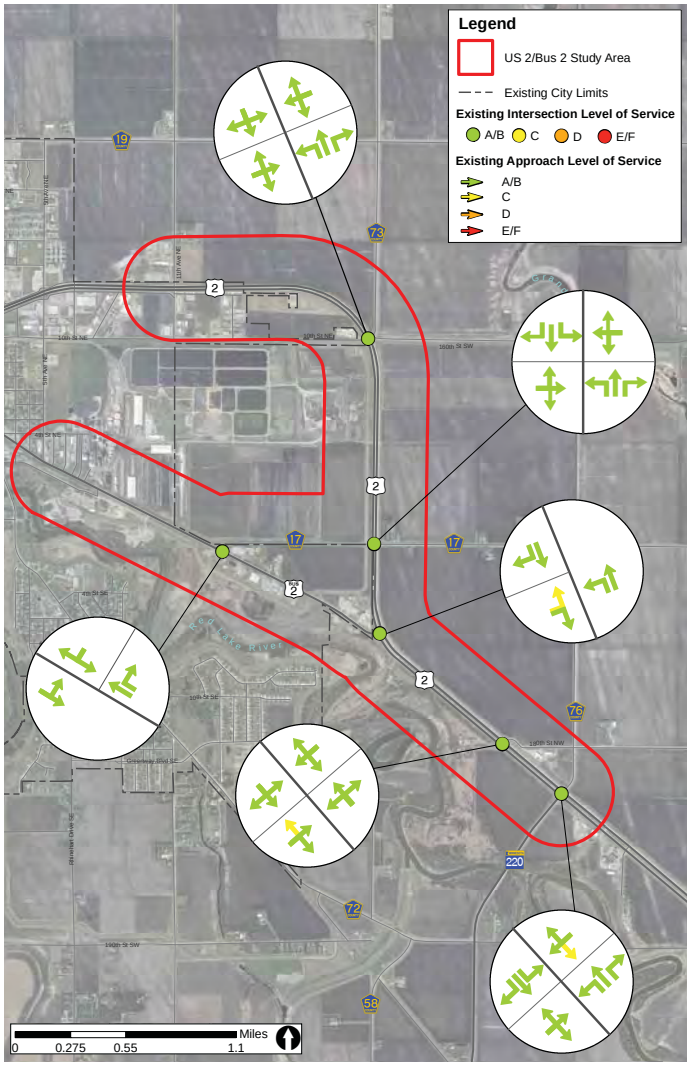
- Identify deficiencies and areas of improvement at the study intersections.
- Identify and evaluate design alternatives for potential inclusion in a planned 2021 maintenance project or pursued as a separate project.
- Gain input and consensus from stakeholders.
- Complete Planning and Environment Linkages (PEL) review to aid in project development.

EXISTING TRAFFIC OPERATIONS - AM



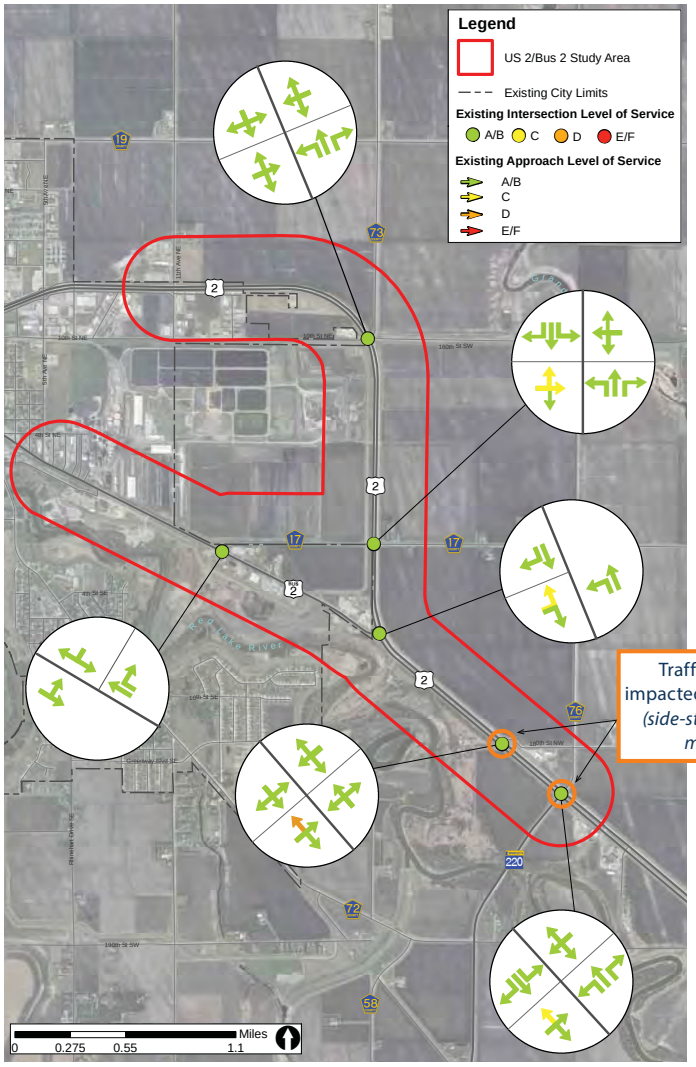
Traffic Operations impacted by passing train *(side-street left turning movements)*

Existing AM Operations - With Train



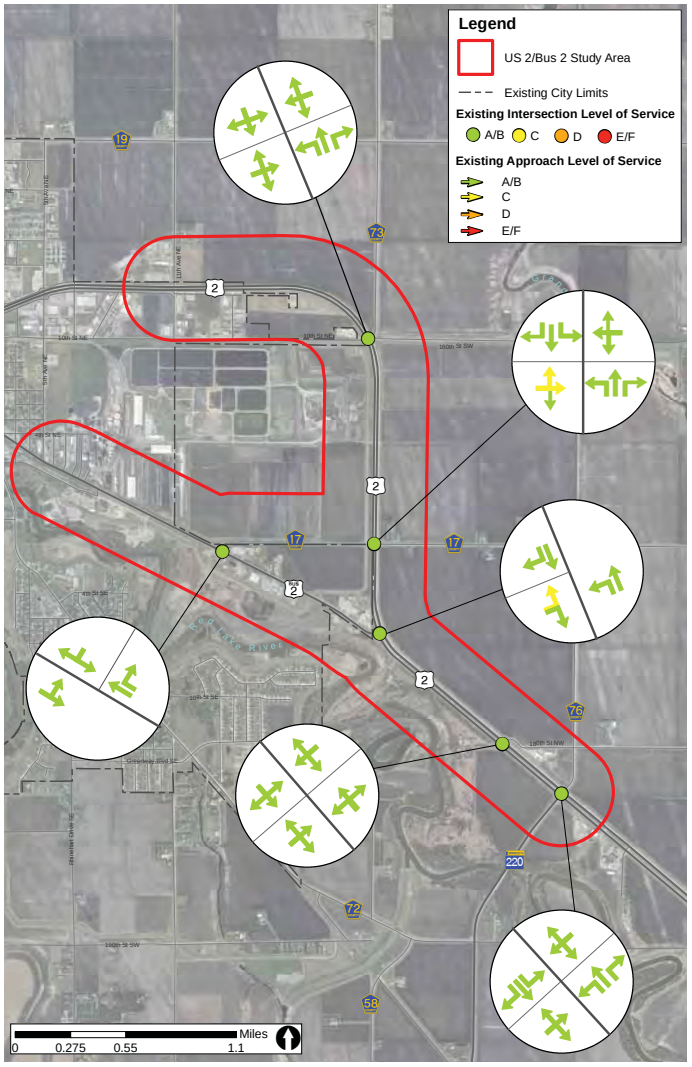
Existing AM Operations - Without Train

EXISTING TRAFFIC OPERATIONS - PM



Traffic Operations impacted by passing train *(side-street left turning movements)*

Existing PM Operations - With Train



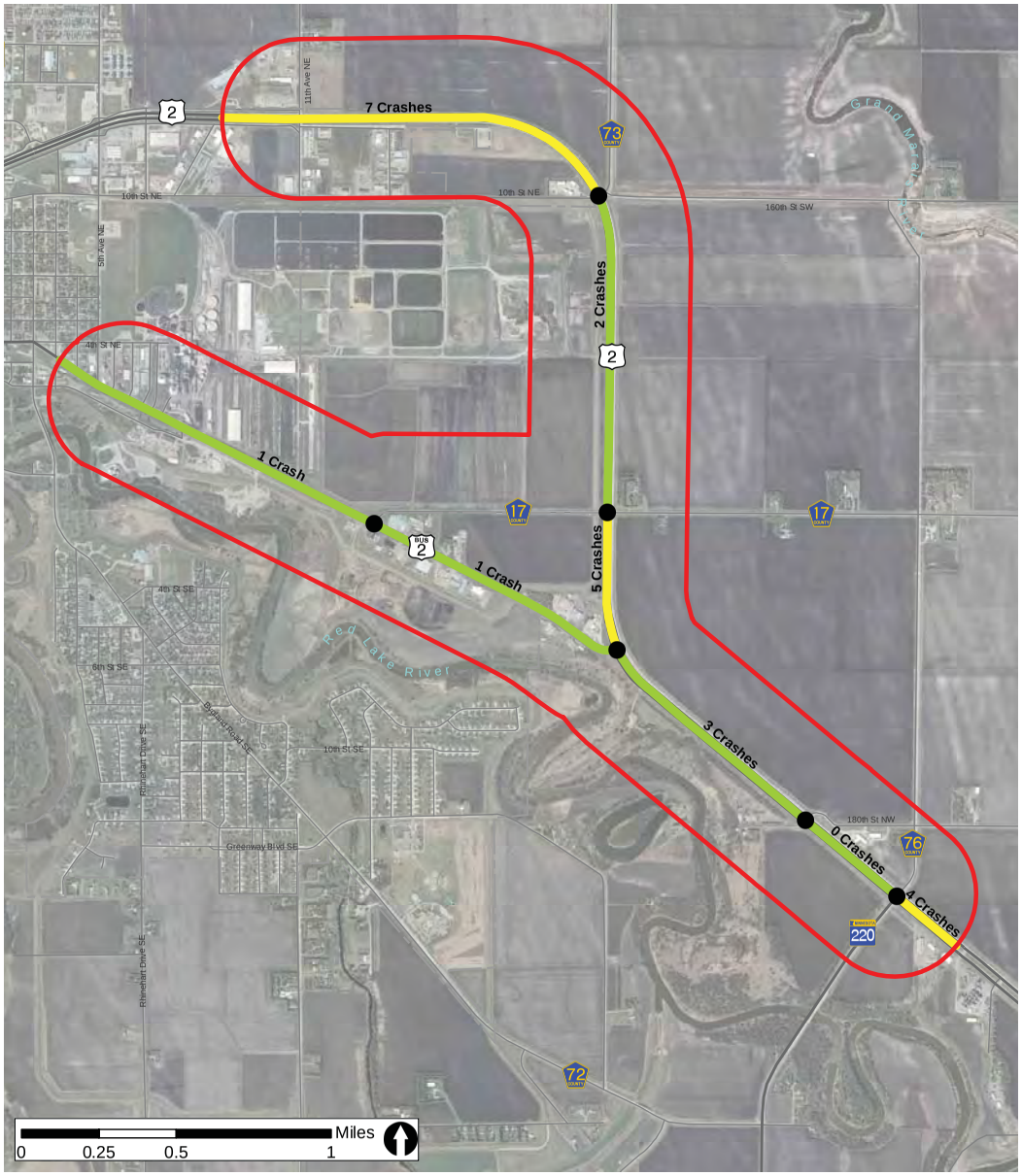
Existing PM Operations - Without Train

CRASH HISTORY (2011 - 2015) - INTERSECTION CRASHES

Intersection	ADT Volume	Expected Crash Rate	Actual Crash Rate	Critical Crash Rate	Severity Rate	Total Crashes	Total Severe Crashes
US 2 at 10th Street/CR 73	5,725	0.25	0.38	0.70	0.48	4	0
US 2 at CR 17	5,735	0.25	0.29	0.70	0.67	3	1
US 2 at US Bus 2	5,275	0.25	1.05	0.64	1.28	14	0
US 2 at 180th Street	7,163	0.25	0.00	0.64	0.00	0	0
US 2 at MN 220 South/CR 76	6,863	0.25	0.32	0.65	0.40	4	0
US Bus 2 at CR 17	2,875	0.25	0.00	0.91	0.00	0	0

- Crash Rate < Expected Crash Rate
- Expected Crash Rate < Crash Rate < Critical Crash Rate
- Crash Rate > Critical Crash Rate

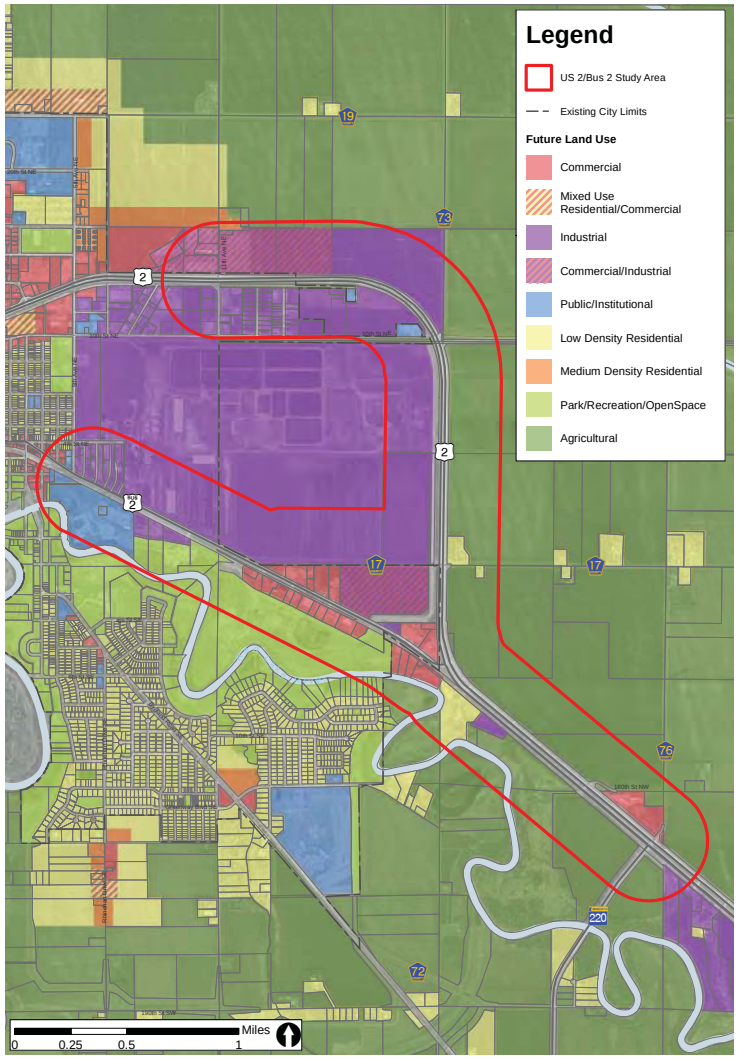
CRASH HISTORY (2011 - 2015) - SEGMENT CRASHES



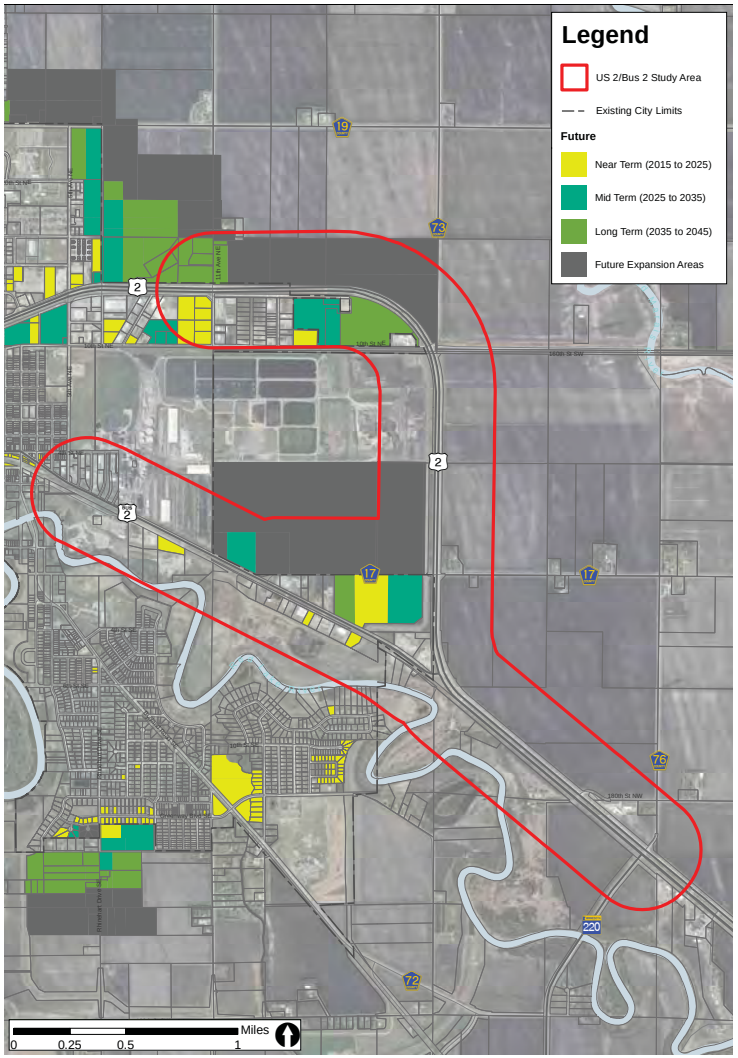
Intersection		ADT Volume	Length (mi)	Expected Crash Rate	Actual Crash Rate	Critical Crash Rate	Total Crashes	Total Severe Crashes
US 2	West of CR 73	5,700	0.4	0.29	1.68	1.87	7	0
	CR 73 to CR 17	5,700	1.0	0.29	0.19	1.15	2	0
	CR 17 to US Bus 2	4,950	0.4	0.29	1.38	2.04	5	0
	US Bus 2 to 180th Street	7,200	0.8	0.29	0.29	1.15	3	0
	180th Street to CR 76	7,200	0.4	0.29	0.00	1.64	0	0
	East of CR 76	5,600	0.4	0.29	0.98	1.89	4	1
US Bus 2	West of CR 17	2,950	0.6	0.31	0.31	2.22	1	0
	CR 17 to US 2	2,400	0.9	0.31	0.25	1.98	1	0

- Crash Rate < Expected Crash Rate
- Expected Crash Rate < Crash Rate < Critical Crash Rate
- Crash Rate > Critical Crash Rate

EAST GRAND FORKS 2045 FUTURE LAND USE

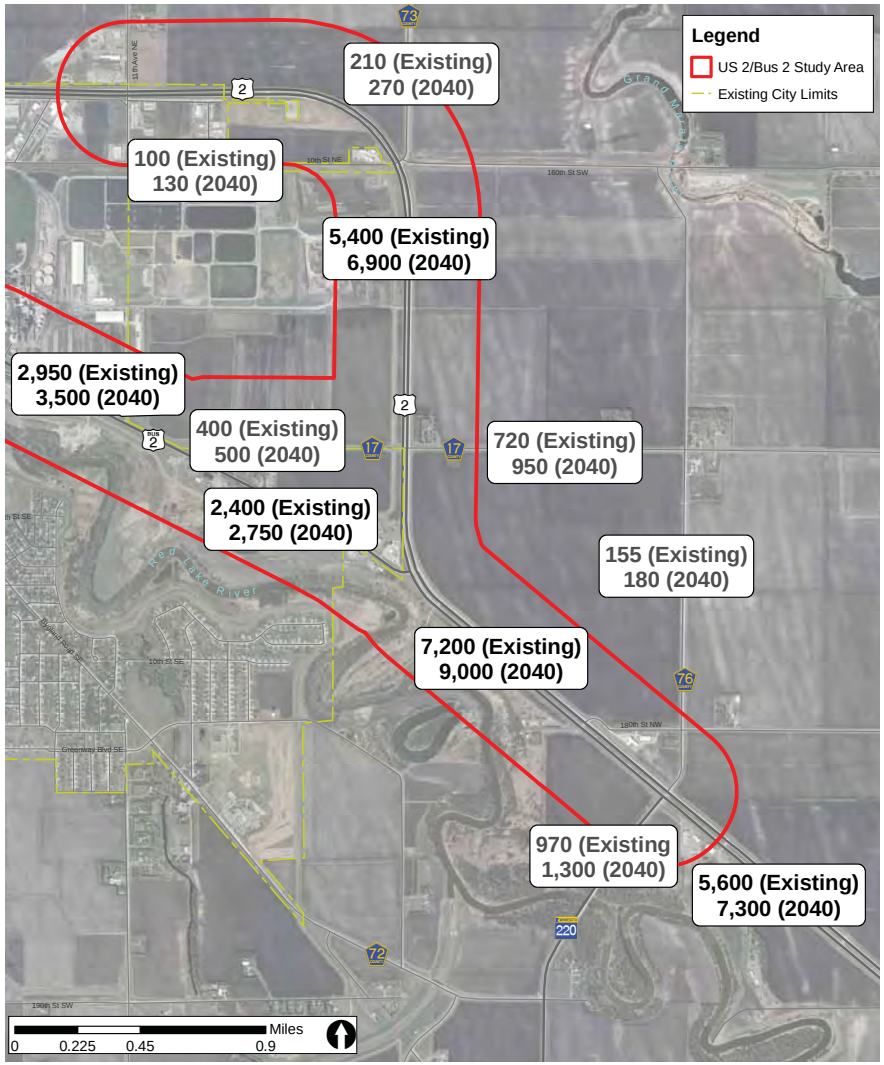


2045 Future Land Use Plan

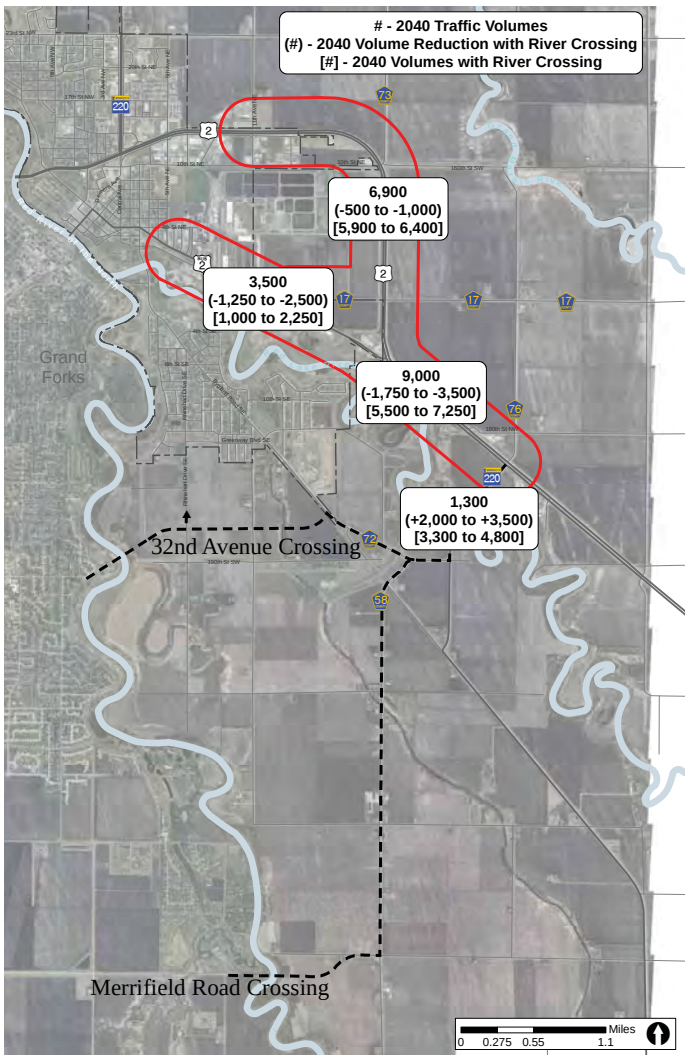


2045 Growth Phasing

US 2/US BUS 2 TRAFFIC VOLUMES

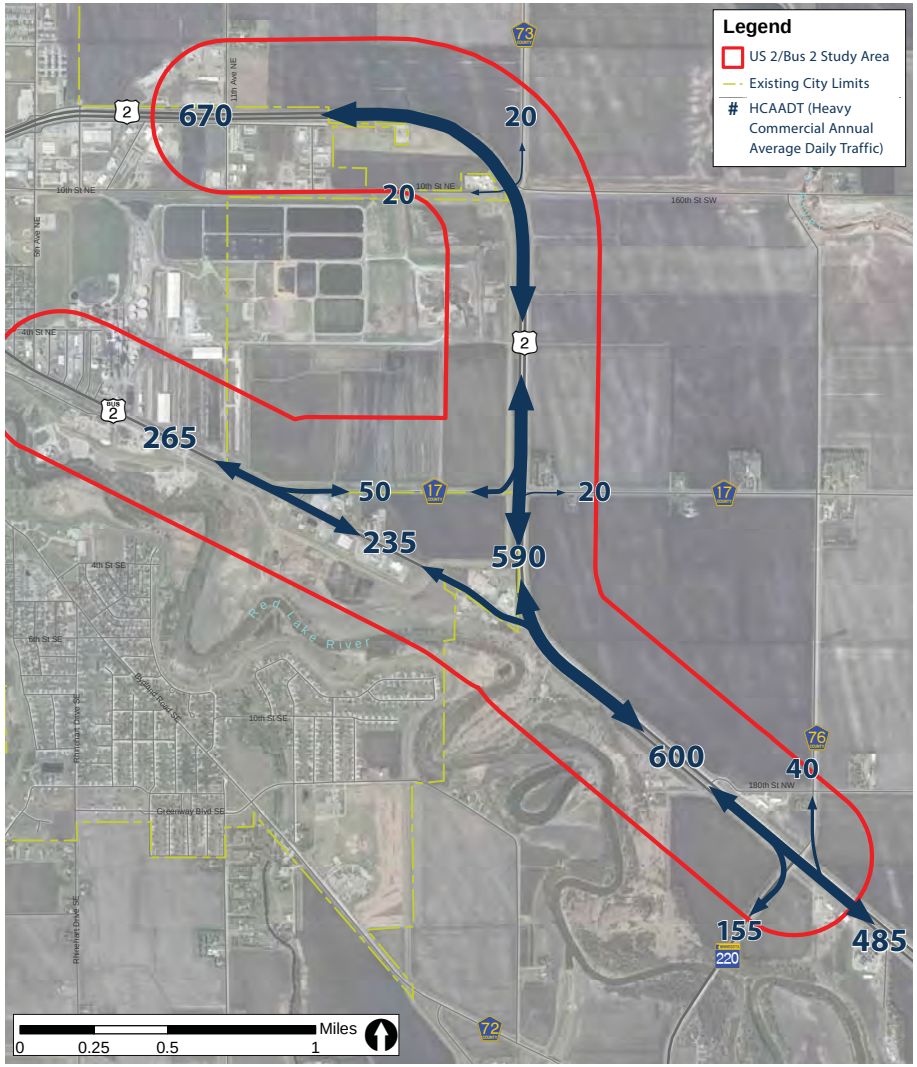


Existing and 2040 Traffic Volumes

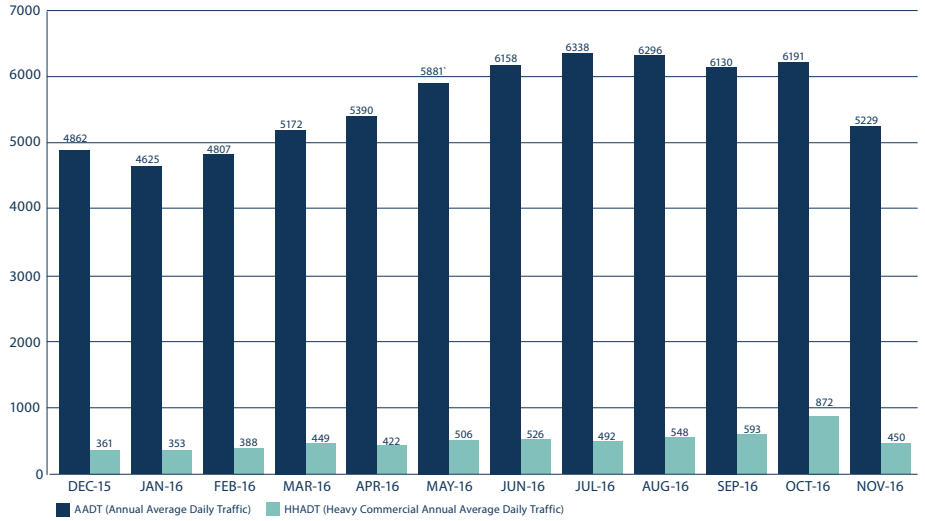


Traffic Volume Impacts with Potential River Crossing

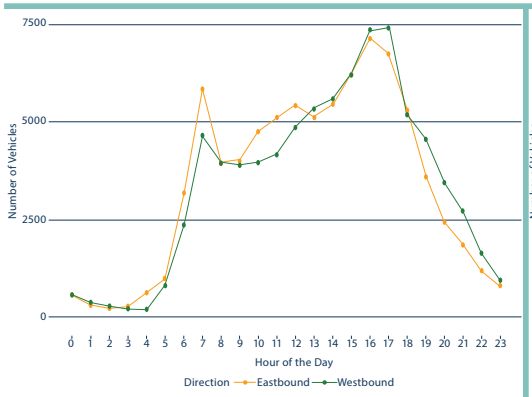
US 2/US BUS 2 HEAVY COMMERCIAL TRAVEL PATTERNS



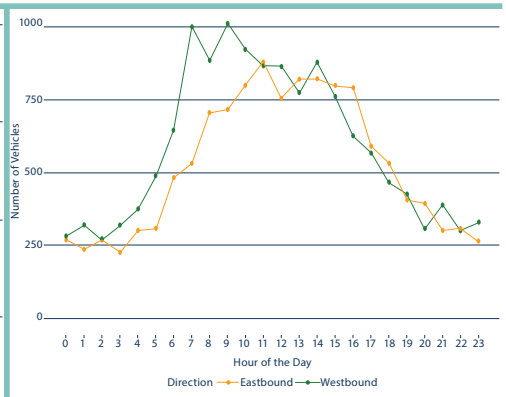
Existing Heavy Commercial Travel Patterns



Traffic Volumes by Month (US 2 East of MN 220)

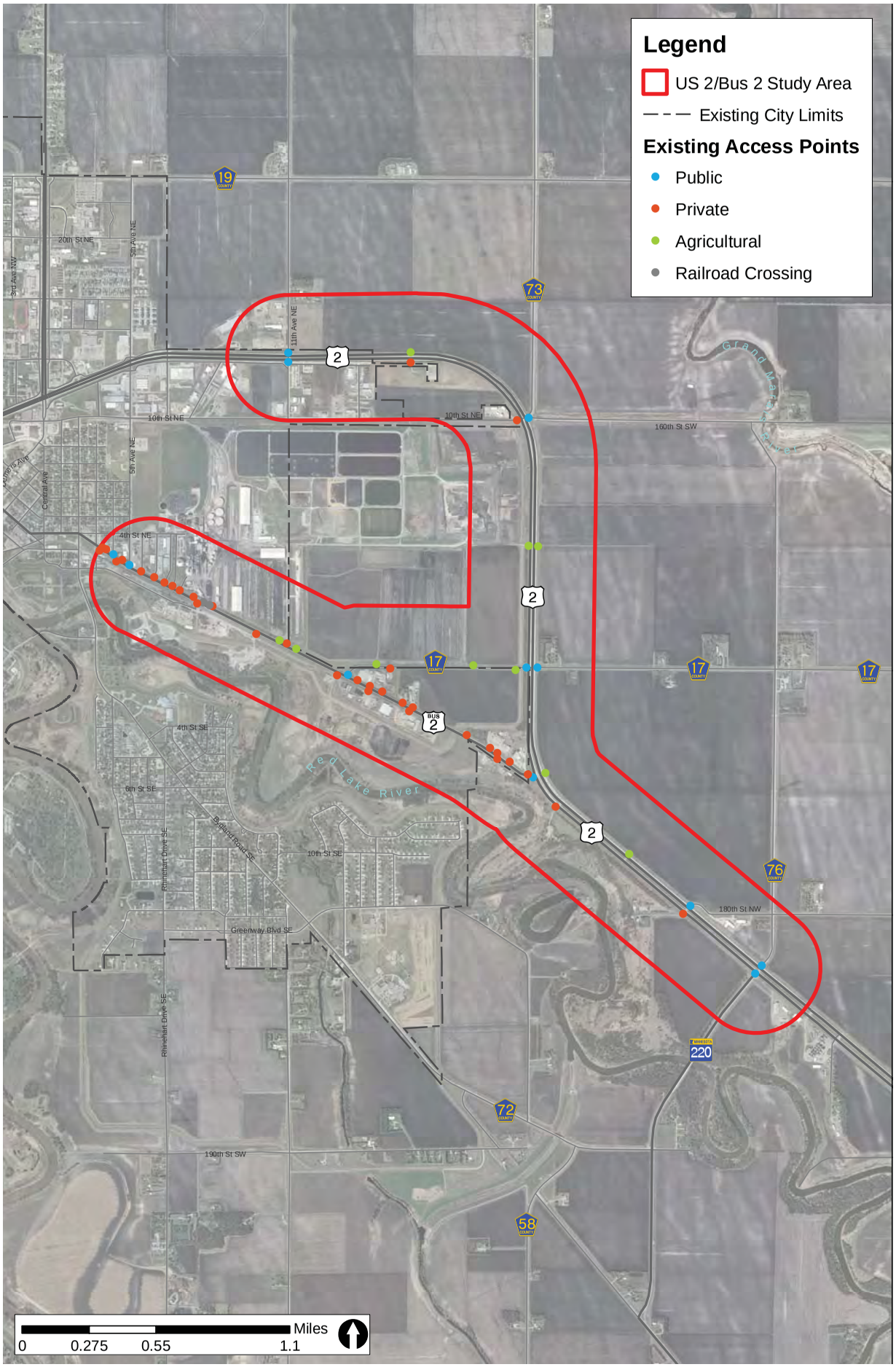


Passenger Vehicle Volumes by Time of Day



Heavy Commercial Vehicle Volumes by Time of Day

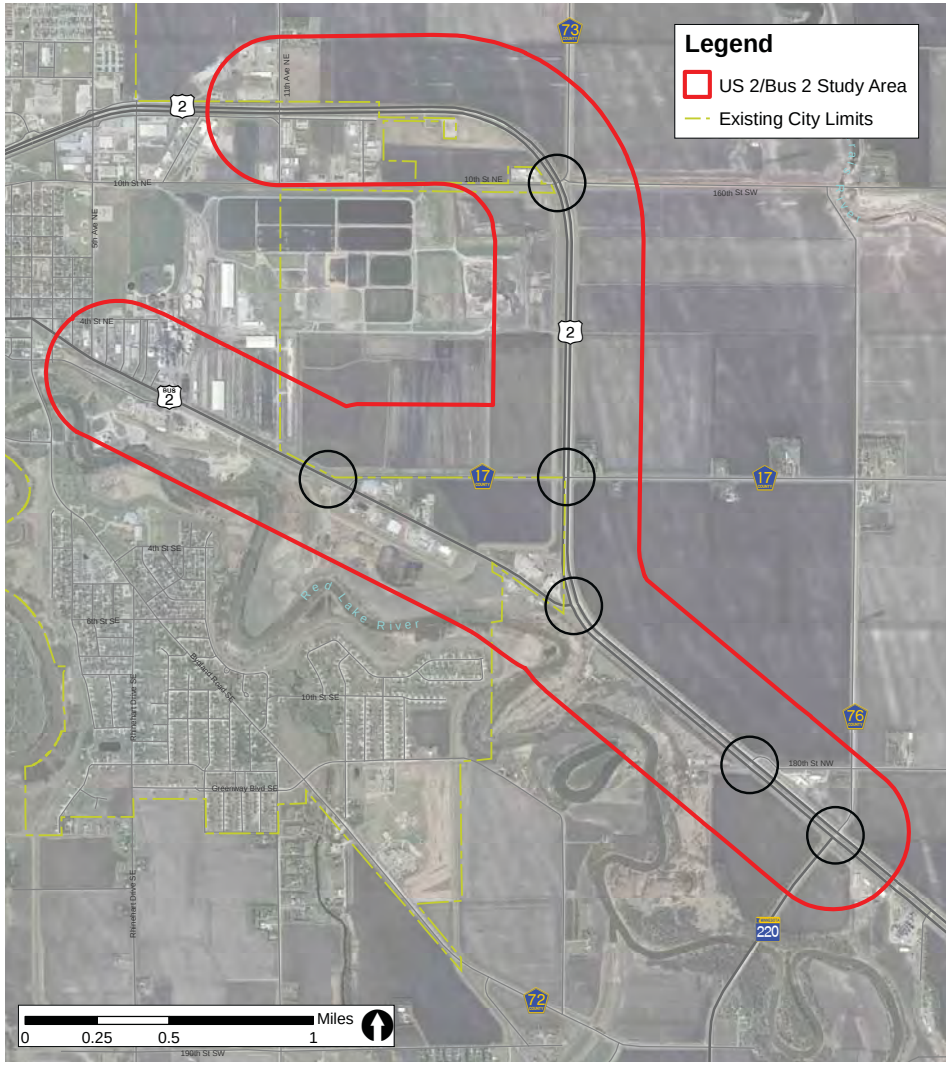
EXISTING ACCESS POINTS



NEXT STEPS

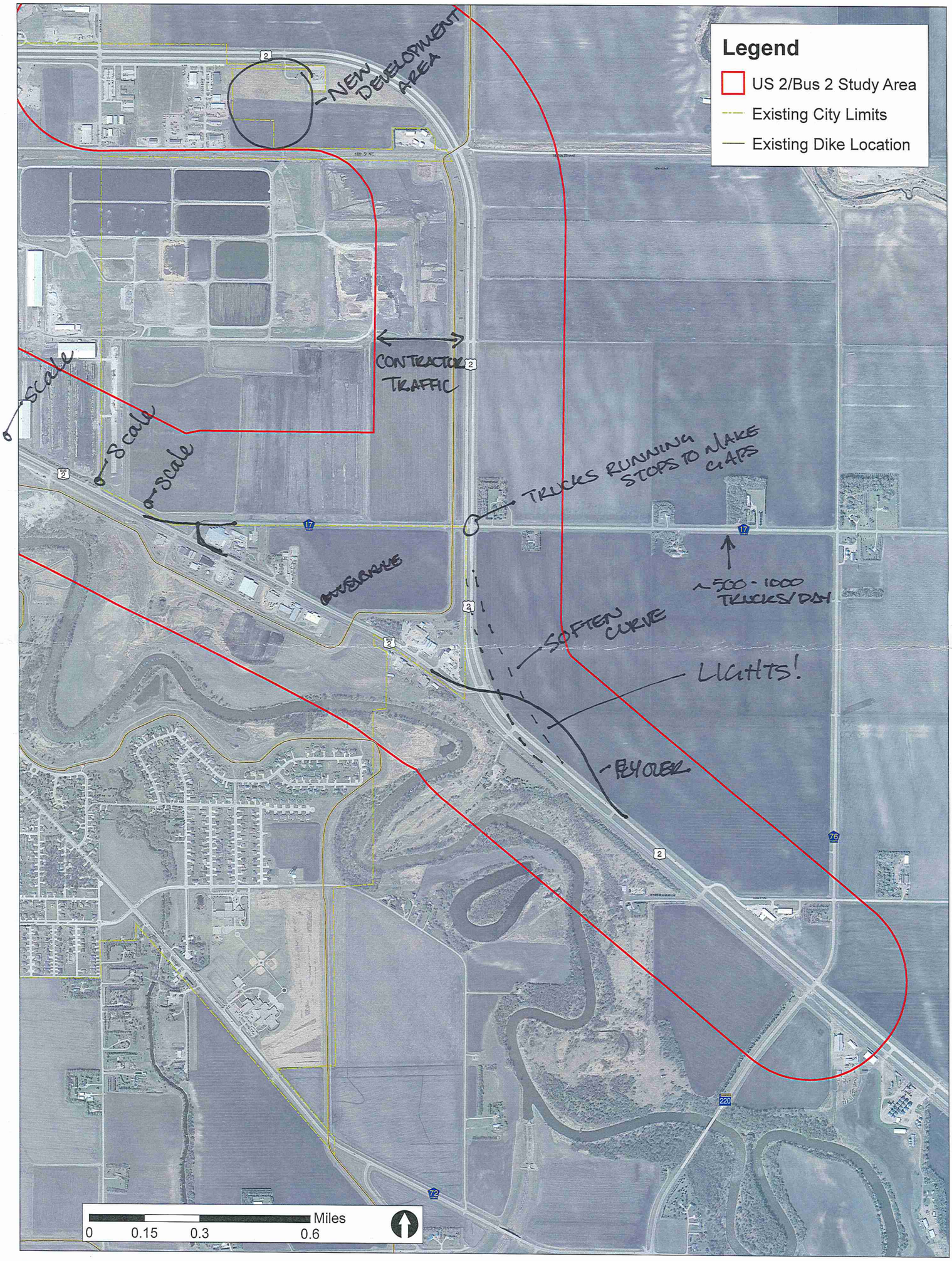
Next Steps:

- Complete Existing Conditions Review
- Refine Purpose and Need Statement
- Develop Review Criteria
- Define Intersection Alternatives
- Evaluate Alternatives
- Public Input Meeting #2 (March 2017)
- Draft US 2/US BUS 2 Study



Attachment B: Public Meeting Map Summary

PUBLIC MTG #1 NOTES



SRF Consulting Group, Inc.

US 2/US Bus 2 Study Area

US 2 and US Bus 2 Study | Grand Forks-East Grand Forks MPO

SRF Consulting Group, Inc. | Engineers Planners Designers

Meeting Summary

SRF No. 10005

To: Earl Haugen, Director
Grand Forks – East Grand Forks MPO

From: Matt Pacyna, Senior Associate
Stephanie Falkers, Associate

Subject: US 2/US Bus 2 Study – Public Meeting #2 Summary

The Grand Forks-East Grand Forks MPO and MnDOT held an open house on April 4, 2017 to discuss the draft intersection alternatives developed as part of the US 2/US Bus 2 Study. The meeting was held from 5:00 p.m. to 7:00 p.m. at the East Grand Forks City Hall Rotunda. The purpose of the meeting was to provide participants with an opportunity to review and comment on the intersection alternatives developed for the study intersections. Participants were each given the opportunity to identify their top alternative selections with the placement of dots to identify their top contenders. Matt Pacyna and Stephanie Falkers from SRF Consulting Group, Inc., MPO staff and MnDOT Staff were on hand to help answer questions.

The meeting participants attended at various times throughout the two-hour open house. Participants were invited to review the boards and review the intersection alternatives. The boards available throughout the open house provided an overview of the study goals, purpose and need statement, intersection concerns, and intersection alternatives. Additionally, a video animation of one of the US 2 at US Bus 2 alternatives was available for review for participants. A copy of the open house boards is provided in Appendix A.

Based on the findings of the first public input meeting and the data collected, focus was placed on the development of alternatives for the intersection of US 2 and US Bus 2. Based on a ten-year crash history review, this intersection was found to be the only one with a statistical crash problem. The following alternatives were presented at the open house:

US 2 and US Bus 2 Intersection

- Alternative 1 – No Build
- Alternative 2A – Turn Lane Improvements
- Alternative 2B – US 2 WB Alignment Shift
- Alternative 3A – Modified RCUT and Acceleration Lane
- Alternative 3B – Modified RCUT
- Alternative 4 – Traffic Signal
- Alternative 5 – Roundabout
- Alternative 6A – Median Closure
- Alternative 6B – Median Closure and US Bus 2/CR 17 Realignment
- Alternative 6C – Median Closure and US Bus 2/CR 17 Roundabout
- Alternative 6D – Median Closure and US 2/CR 17 RCUT

- Alternative 6E – CR 17 Overpass of US 2
- Alternative 7 – US 2/CR 17 Interchange
- Alternative 8 – Median Closure and US 2/CR 17 Realignment

US 2 and 10th Street/County Road 73 Intersection

- Alternative 1 – No Build
- Alternative 2 – County Road Safety Plan Improvements

US 2 and MN 220 South/County Road 76 Intersection

- Alternative 1 – No Build
- Alternative 2 – County Road Safety Plan Improvements

US 2 and County Road 17 Intersection

- Alternative 1 – No Build
- Alternative 2 – County Road Safety Plan Improvements
- Alternative 3 – Turn Lane Extension and Lighting Improvements
- Alternative 4 – CR 17 Overpass of US 2
- Alternative 5 – Reduced Conflict U-Turn Intersection (RCUT)

A total of ten participants signed-in as they participated in the various input activities. However, not all participants attending the open house signed-in. Nine individuals chose to fill out a Title VI Public Participate Survey. A summary of the Title VI responses is listed in Table 1.

Table 1. Title VI Public Participation Survey Results

Sex	
Female:	0
Male:	9
Disability	
Yes:	0
No:	7
Age	
34 and younger:	0
35-54:	3
55 and older:	5
Race	
American Indian/Alaskan Native:	0
Asian:	0
Black/African American:	0
Hispanic or Latino:	0
Native Hawaiian/Other Pacific Islander:	0
White:	9
Other:	0
Do you receive public assistance?	
Yes:	0
No:	7

Language most frequently spoken in your home	
Arabic:	0
Bosnian:	0
Croatian:	0
English:	9
German:	0
Napali:	0
Russian:	0
Serbian:	0
Somali:	0
Spanish:	0
Swahili:	0
Turkish:	0
Vietnamese:	0
Other:	0
Indicate how you heard about the event	
Internet:	1
Mailing:	2
NDDOT Contact:	0
Newspaper:	3
Radio:	1
Social Service Group:	0
Television:	0
Advocacy Group:	0
Other	4

Public Input Meeting Findings

Each participant was given the opportunity to identify their top three selections for intersection alternatives throughout the study area. This exercise found that the US 2 and US Bus 2 Alternative 2B was the top selection of meeting participants. Alternatives 2A, 3A, and 3B also received a high number of dots during the meeting.

Moving Forward

Based on the input received from participants, alternatives will be refined prior to the completion of the alternative evaluation.

Attachment A: Public Meeting Boards

Attachment A: Public Meeting Boards

WELCOME

US 2/US BUS 2 STUDY
PUBLIC INPUT MEETING

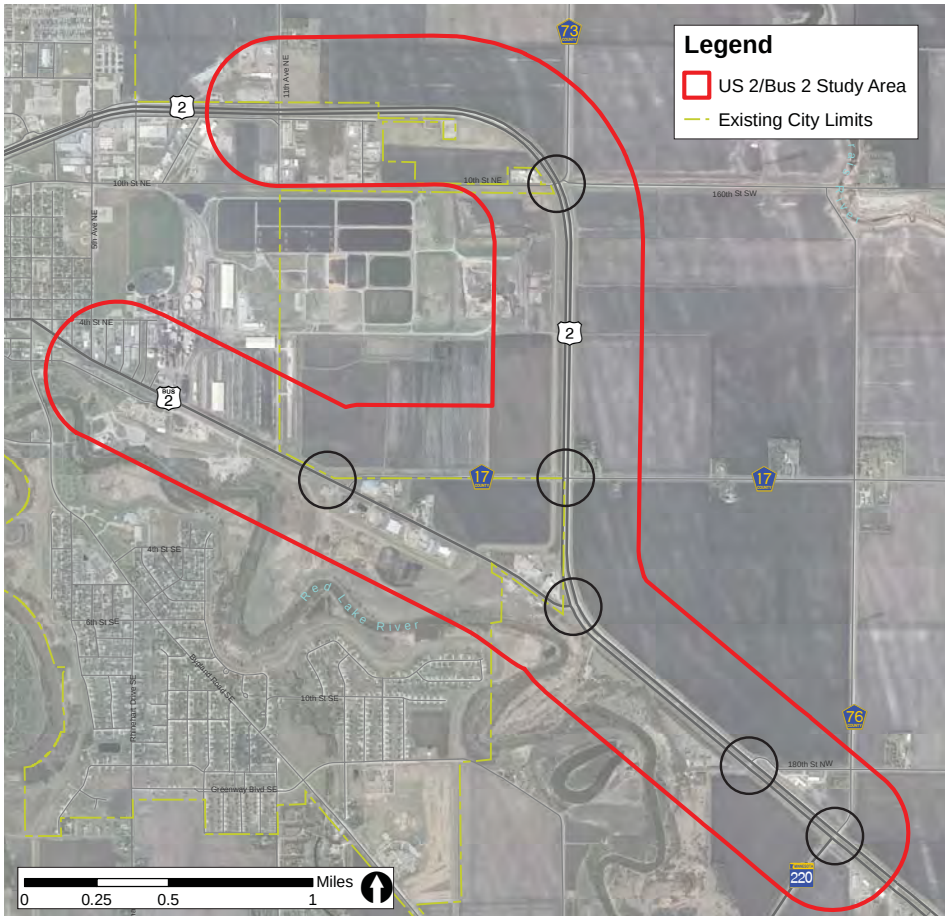
APRIL 4, 2017

Grand Forks - East Grand Forks Metropolitan Planning Organization

DEPARTMENT OF TRANSPORTATION

SRF Consulting Group, Inc.

US 2/US BUS 2 STUDY OVERVIEW



- US 2 at 10th Street/CR 73
- US 2 at CR 17
- US Bus 2 at CR 17
- US 2 at US Bus 2
- US 2 at 180th Street
- US 2 at MN 220/CR 76

WORK PLAN TASKS	2016 NOV	2016 DEC	2017 JAN	2017 FEB	2017 MAR	2017 APR	2017 MAY
1.0 Project Management – Administration, Coordination, & Quality Control	●●	●● ●●	●● ●● PSC	●● ○ PSC	●● ●● PSC	●● ○ PSC	●● ●● PSC
2.0 Issues Identification – Environmental, Land Use, Multi-Modal Facilities, Traffic Operations, Safety, & Public Involvement							
3.0 Alternative Development & Evaluation – Development, Screening, Refinement, Evaluation, Comparison, & Public Involvement							
4.0 Implementation Plan							
5.0 Public Involvement Process				PIM		PIM DR	PIM FR

Key Deliverables:

DR - Draft Report

FR - Final Report

- Project Manager Coordination
- PSC - Project Steering Committee (● Go-to Meeting only)
- PIM - Public Input Meeting

Revised March 22, 2017

STUDY SCHEDULE

Purpose:

- The purpose of the US 2/US Bus 2 study is to review and analyze existing and future conditions at six intersections within the study area. Alternative solutions to transportation issues will be evaluated. Issues may include future capacity, system/roadway deficiencies and safety.

Need:

- The US 2 and US Bus 2 corridors serve as important regional connections within the City of East Grand Forks and the greater region. The proposed study area includes multiple destinations for heavy commercial and local traffic, resulting in the need for potential access management and safety improvements.

PURPOSE AND NEED

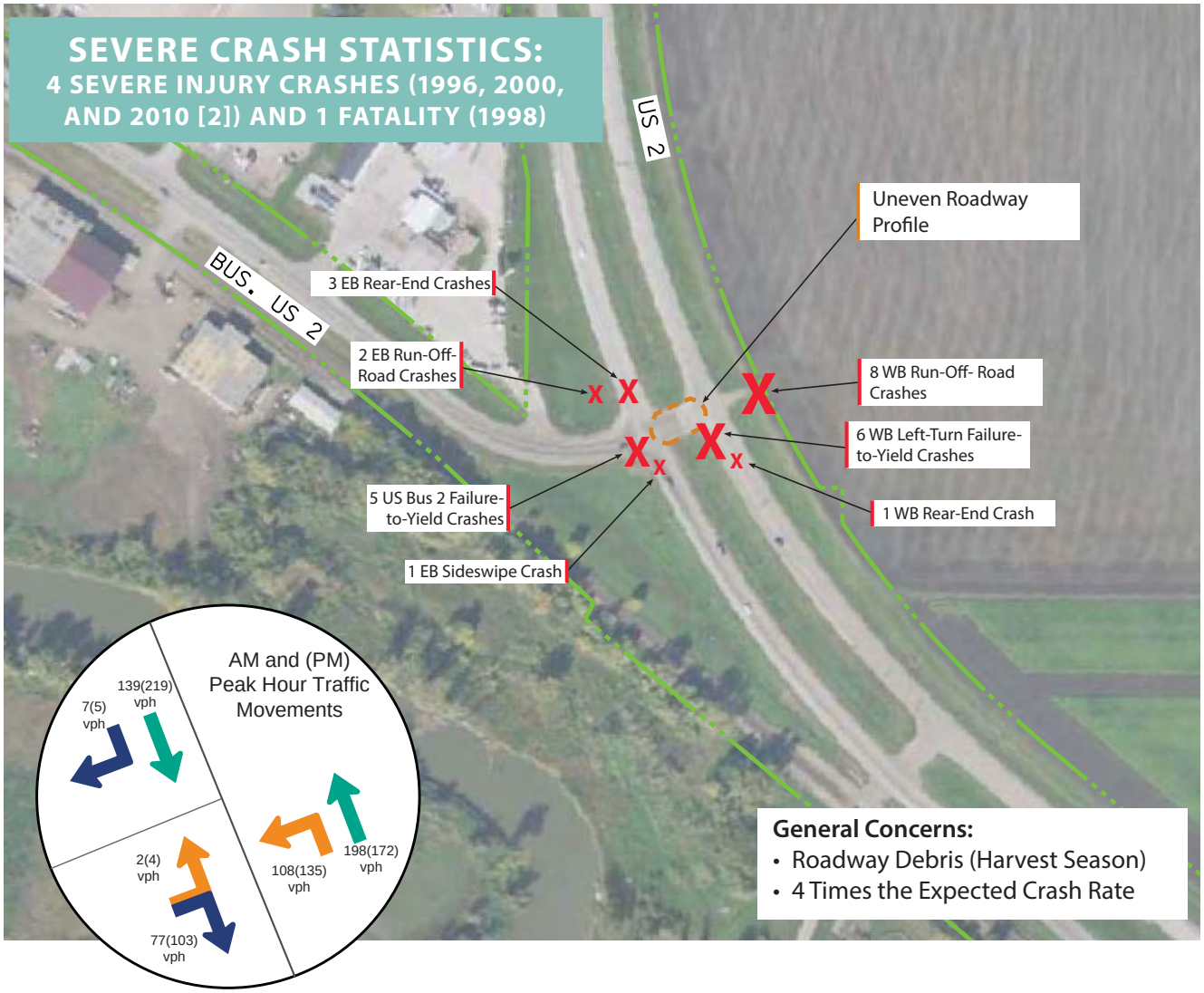
Study Goals:

- Identify deficiencies and areas of improvement at the study intersections.
- Identify and evaluate design alternatives for potential inclusion in a planned 2021 maintenance project or pursued as a separate project.
- Gain input and consensus from stakeholders.
- Complete Planning and Environment Linkages (PEL) review to aid in project development.

STUDY GOALS

US 2 AND US BUS 2 INTERSECTION CONCERNS

US 2 at US Bus 2 Crash Statistics (2006-2015)			
		# of Crashes	% of Total
TOTAL CRASHES		26	100%
Crashes by Year	2006	4	*15.4%*
	2007	1	*3.8%*
	2008	2	*7.7%*
	2009	2	*7.7%*
	2010	3	*11.5%*
	2011	1	*3.8%*
	2012	0	*0%*
	2013	5	*19.2%*
	2014	2	*7.7%*
	2015	6	*23.1%*
Crash Type	WB Run-Off-Road	8	*30.8%*
	WB LT Failure to Yield	6	*23.1%*
	WB Rear End	1	*3.8%*
	EB Rear End	3	*11.5%*
	EB Run-Off-Road	2	*7.7%*
	EB Sideswipe	1	*3.8%*
	Bus 2 Failure to Yield	5	*19.2%*
Direction Most Crashes Occurred		NB/WB US 2 *(57.7%)*	
Weather Conditions	Dry	16	*61.5%*
	Wet	2	*7.7%*
	Snow/Ice	7	*26.9%*
Time of Day	Day	20	*76.9%*
	Dawn/Dusk	4	*15.4%*
	Dark	2	*7.7%*
Season	Winter	8	*30.8%*
	Spring	3	*11.5%*
	Summer	12	*46.2%*
	Fall	3	*11.5%*

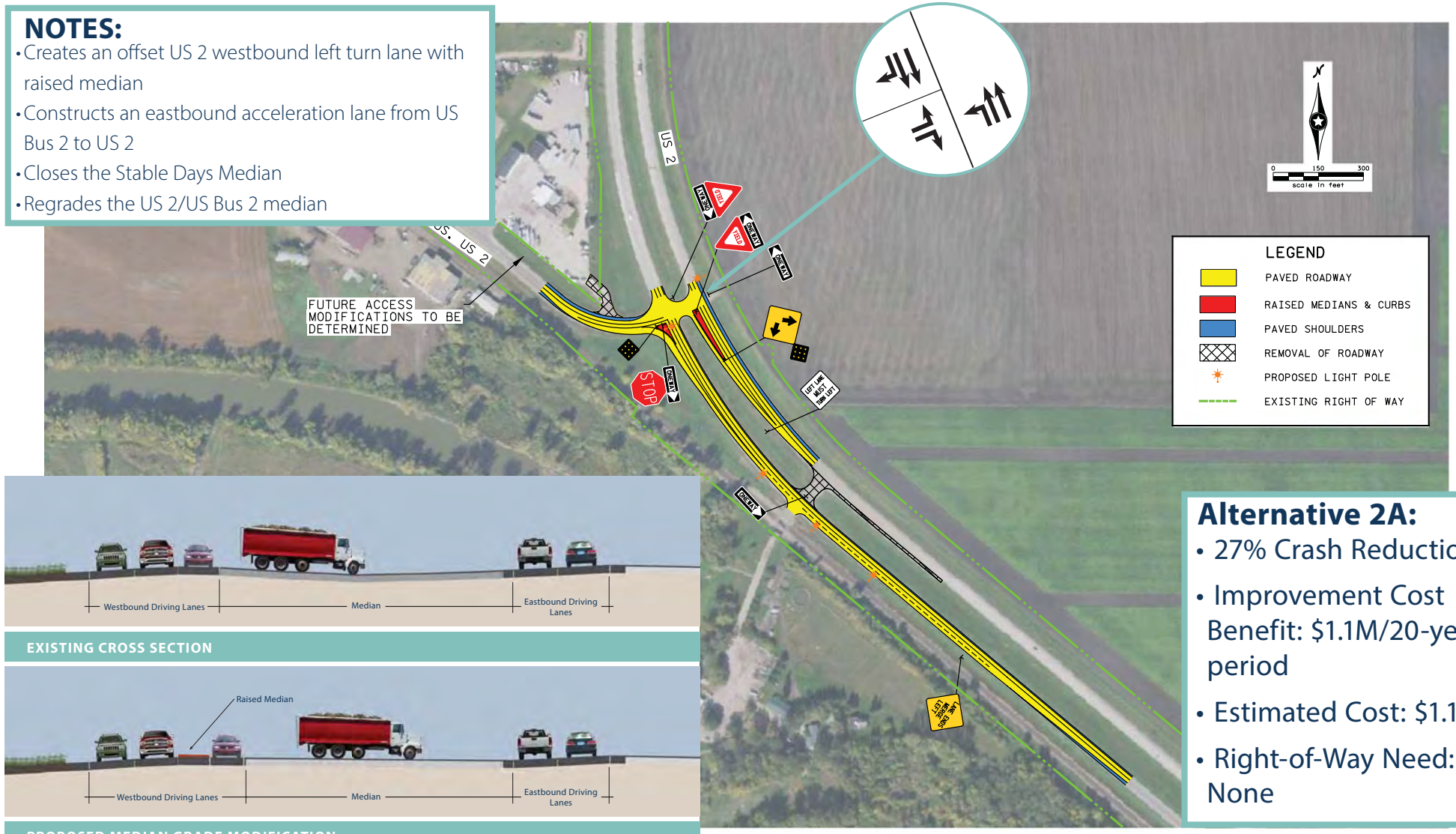


US 2 AT US BUS 2 ALTERNATIVE 2A

Alternative 1: No Build
No proposed improvements to the study area.

NOTES:

- Creates an offset US 2 westbound left turn lane with raised median
- Constructs an eastbound acceleration lane from US Bus 2 to US 2
- Closes the Stable Days Median
- Regrades the US 2/US Bus 2 median



EXISTING CROSS SECTION

PROPOSED MEDIAN GRADE MODIFICATION

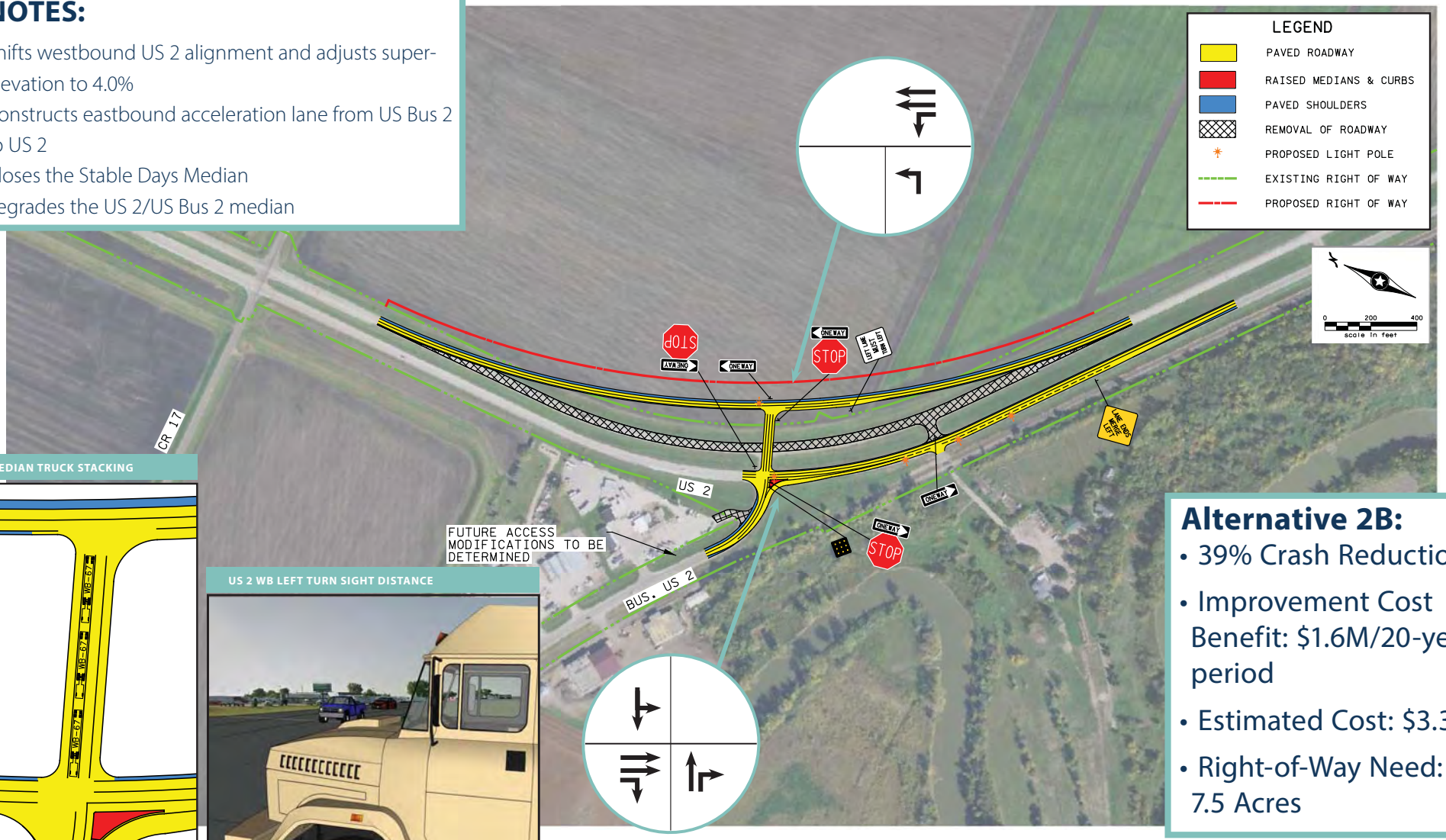
Alternative 2A:

- 27% Crash Reduction
- Improvement Cost Benefit: $1.1M/20-year period
- Estimated Cost: $1.1M
- Right-of-Way Need: None

US 2 AT US BUS 2 ALTERNATIVE 2B

NOTES:

- Shifts westbound US 2 alignment and adjusts super-elevation to 4.0%
- Constructs eastbound acceleration lane from US Bus 2 to US 2
- Closes the Stable Days Median
- Regrades the US 2/US Bus 2 median



MEDIAN TRUCK STACKING

US 2 WB LEFT TURN SIGHT DISTANCE

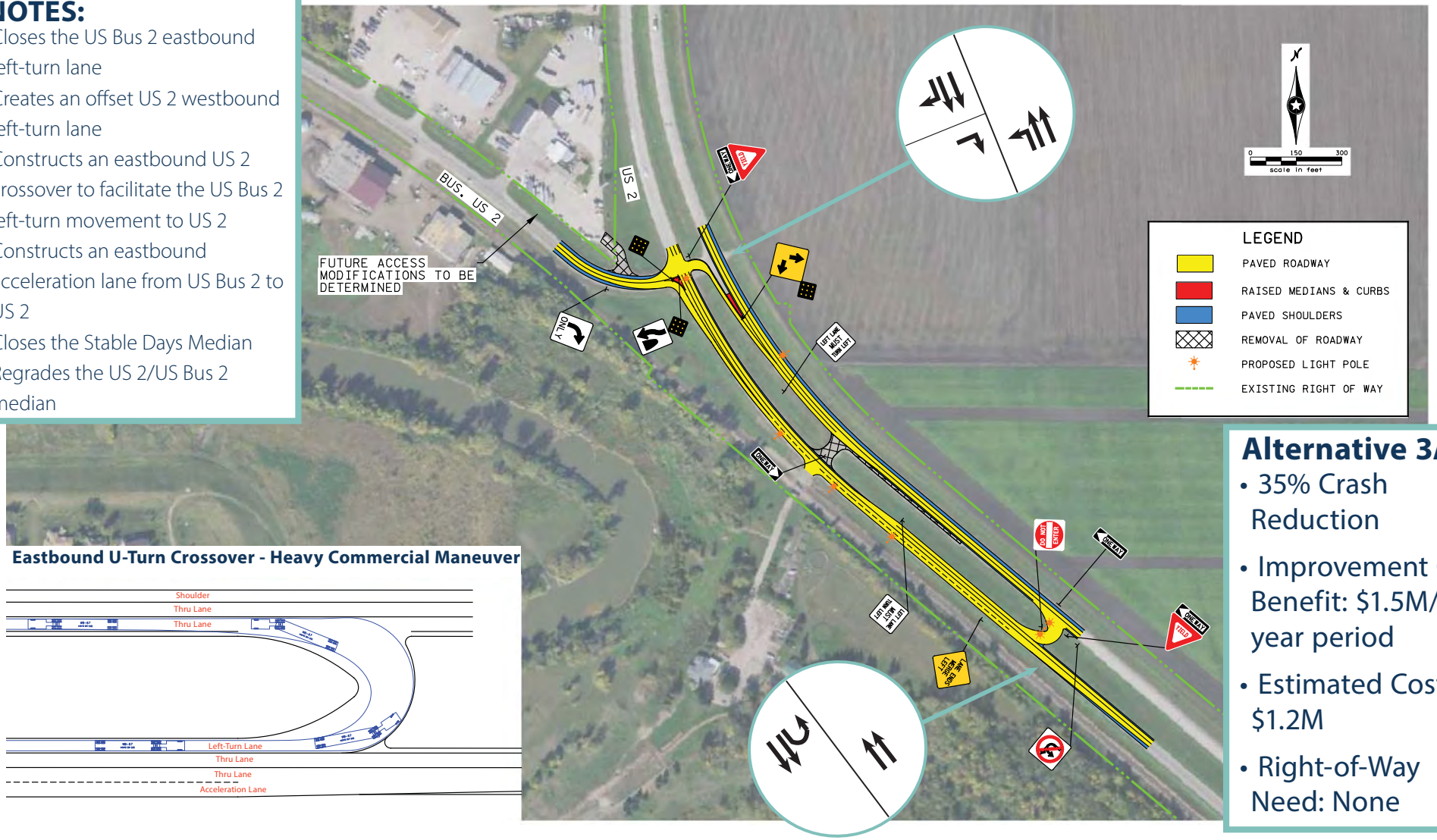
Alternative 2B:

- 39% Crash Reduction
- Improvement Cost Benefit: $1.6M/20-year period
- Estimated Cost: $3.3M
- Right-of-Way Need: 7.5 Acres

US 2 AT US BUS 2 ALTERNATIVE 3A

NOTES:

- Closes the US Bus 2 eastbound left-turn lane
- Creates an offset US 2 westbound left-turn lane
- Constructs an eastbound US 2 crossover to facilitate the US Bus 2 left-turn movement to US 2
- Constructs an eastbound acceleration lane from US Bus 2 to US 2
- Closes the Stable Days Median
- Regrades the US 2/US Bus 2 median



Eastbound U-Turn Crossover - Heavy Commercial Maneuver

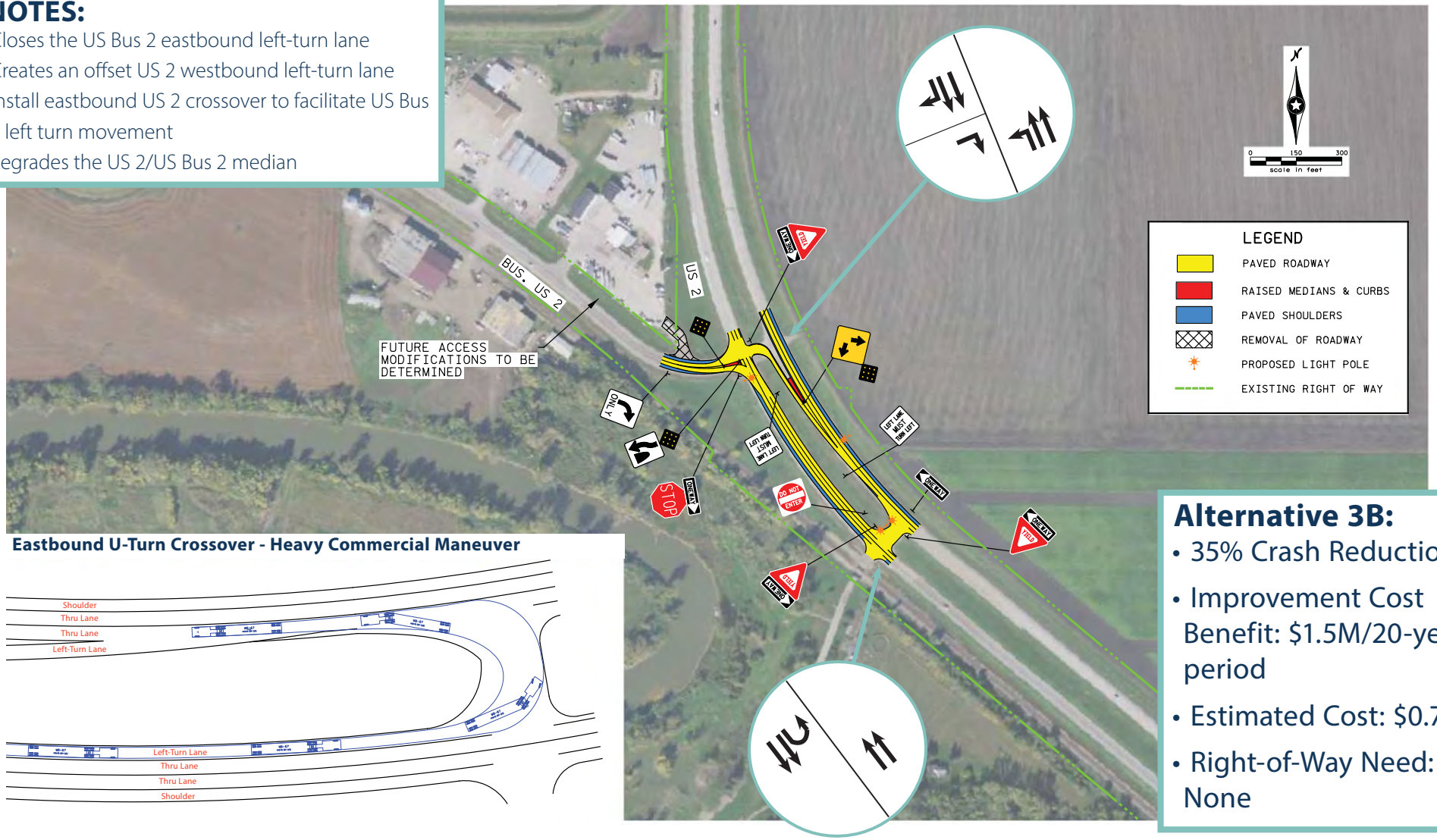
Alternative 3A:

- 35% Crash Reduction
- Improvement Cost Benefit: $1.5M/20-year period
- Estimated Cost: $1.2M
- Right-of-Way Need: None

US 2 AT US BUS 2 ALTERNATIVE 3B

NOTES:

- Closes the US Bus 2 eastbound left-turn lane
- Creates an offset US 2 westbound left-turn lane
- Install eastbound US 2 crossover to facilitate US Bus 2 left turn movement
- Regrades the US 2/US Bus 2 median



Eastbound U-Turn Crossover - Heavy Commercial Maneuver

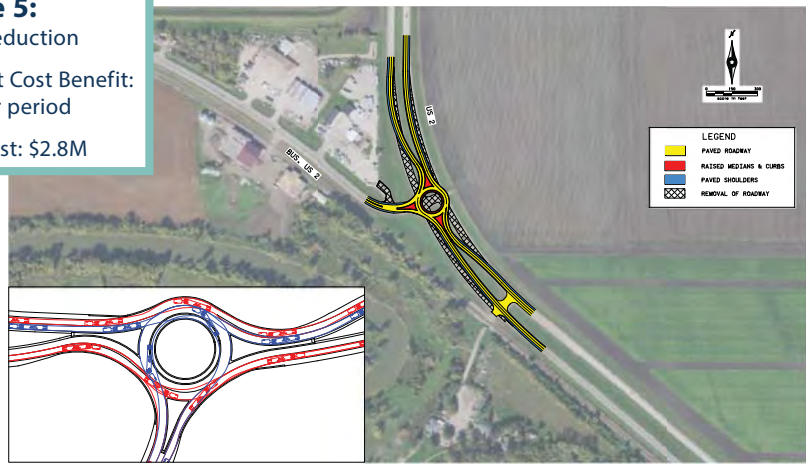
Alternative 3B:

- 35% Crash Reduction
- Improvement Cost Benefit: $1.5M/20-year period
- Estimated Cost: $0.7M
- Right-of-Way Need: None

US 2 AT US BUS 2 ALTERNATIVES 4 TO 6C

Alternative 4: Traffic Signal
No traffic signal warrants were met, and Alternative 4 was removed from consideration.

Alternative 5:
- 25% Crash Reduction
- Improvement Cost Benefit: $1.1M/20-year period
- Estimated Cost: $2.8M



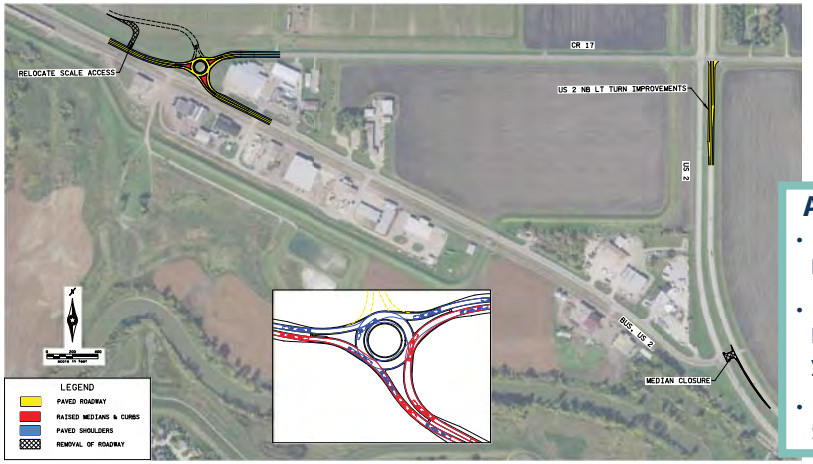
ALTERNATIVE 5 - US 2/US BUS 2 ROUNDABOUT

Alternative 6A:
- 22% Crash Reduction
- Improvement Cost Benefit: $0.6M/20-year period
- Estimated Cost: $0.7M

ALTERNATIVE 6A - US 2/US BUS 2 MEDIAN CLOSURE AND TURN LANE IMPROVEMENTS

Alternative 6B:
- 22% Crash Reduction
- Improvement Cost Benefit: $0.6M/20-year period
- Estimated Cost: $1.7M

ALTERNATIVE 6B - US 2/US BUS 2 MEDIAN CLOSURE & BUS 2 REALIGNMENT



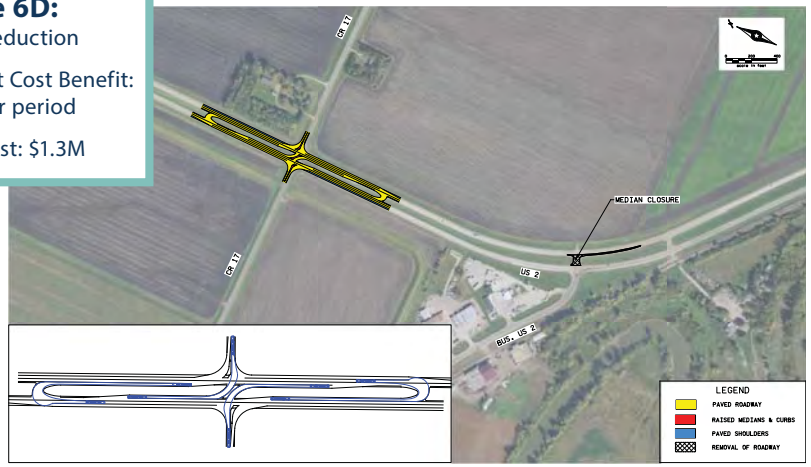
ALTERNATIVE 6C - US 2/US BUS 2 MEDIAN CLOSURE & BUS 2/CR 17 ROUNDABOUT

Alternative 6C:
- 22% Crash Reduction
- Improvement Cost Benefit: $0.6M/20-year period
- Estimated Cost: $1.7M

US 2 AT US BUS 2 ALTERNATIVES 6D TO 8

Alternative 6D:

- 56% Crash Reduction
- Improvement Cost Benefit: $3.5M/20-year period
- Estimated Cost: $1.3M



ALTERNATIVE 6D - US 2/US BUS 2 MEDIAN CLOSURE & US 2/CR 17 RCUT

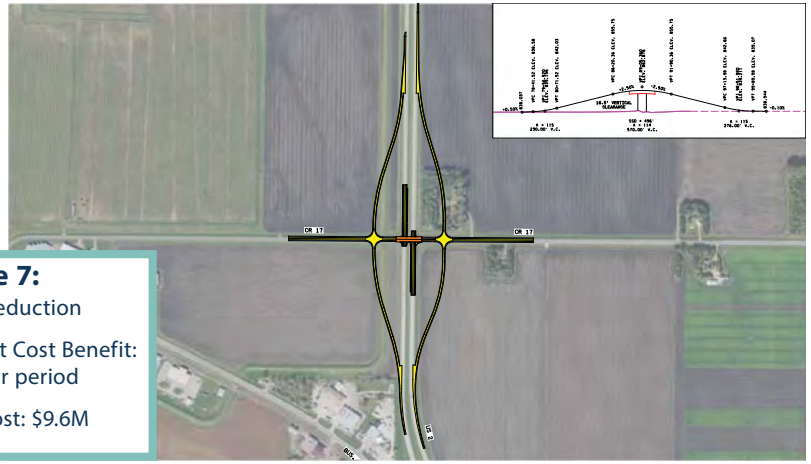
ALTERNATIVE 6E - CR 17 OVERPASS OF US 2

Alternative 6E:

- 56% Crash Reduction
- Improvement Cost Benefit: $3.2M/20-year period
- Estimated Cost: $5.6M

Alternative 7:

- 42% Crash Reduction
- Improvement Cost Benefit: $2.9M/20-year period
- Estimated Cost: $9.6M



ALTERNATIVE 7 - US 2 & CR 17 INTERCHANGE

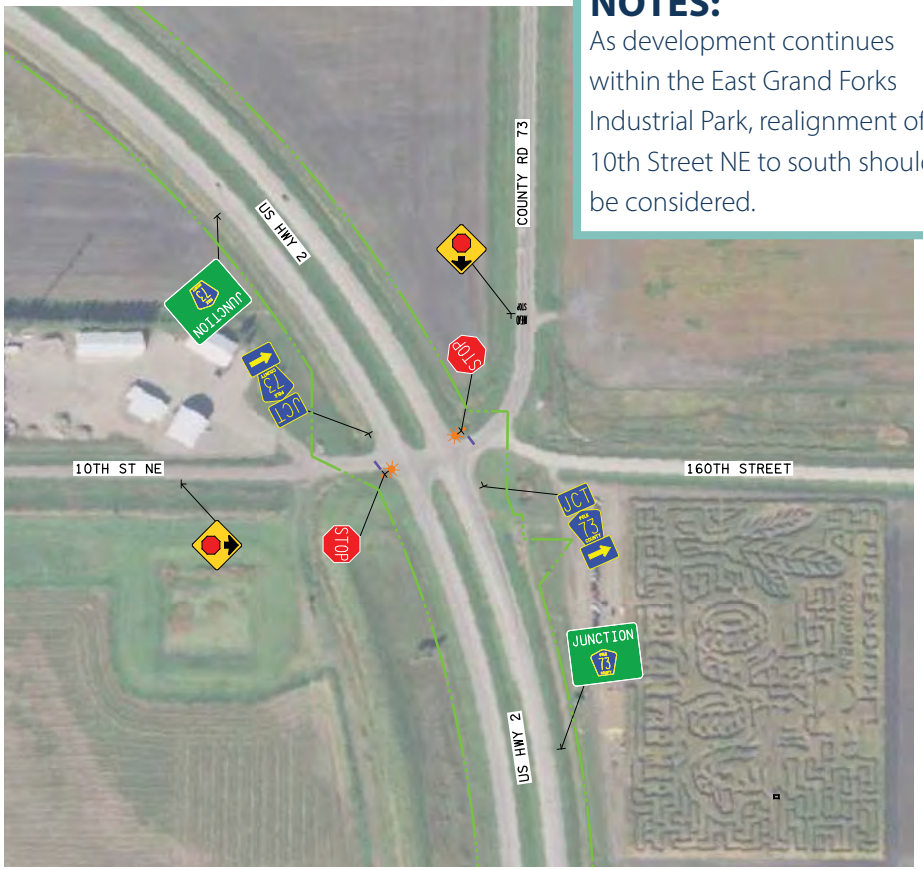
ALTERNATIVE 8 - CR 17 REALIGNMENT

Alternative 8:

- 1% Crash Reduction
- Improvement Cost Benefit: $0.1M/20-year period
- Estimated Cost: $6.3M

US 2 AT 10TH STREET/CR 73 ALTERNATIVES

ALTERNATIVE 1 - NO BUILD



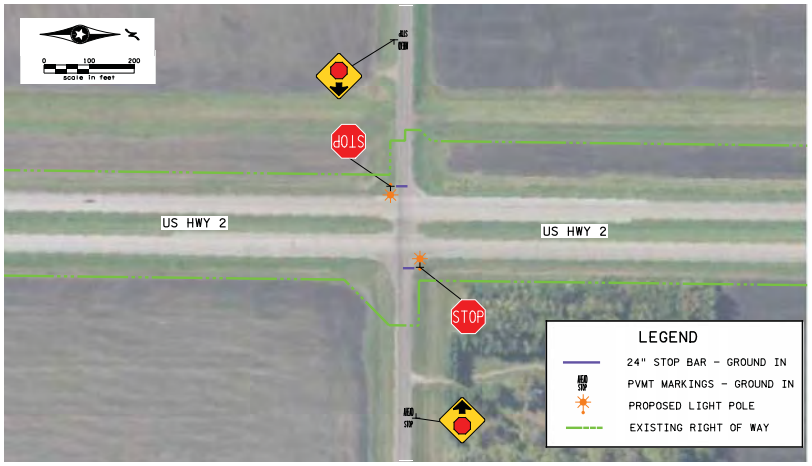
ALTERNATIVE 2 - COUNTY ROAD SAFETY PLAN IMPROVEMENTS

NOTES:

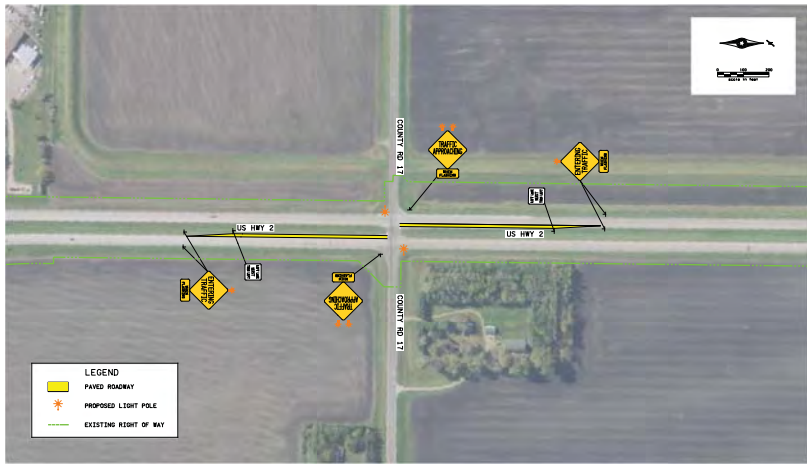
As development continues within the East Grand Forks Industrial Park, realignment of 10th Street NE to south should be considered.

US 2 AT CR 17 ALTERNATIVES 1 TO 5

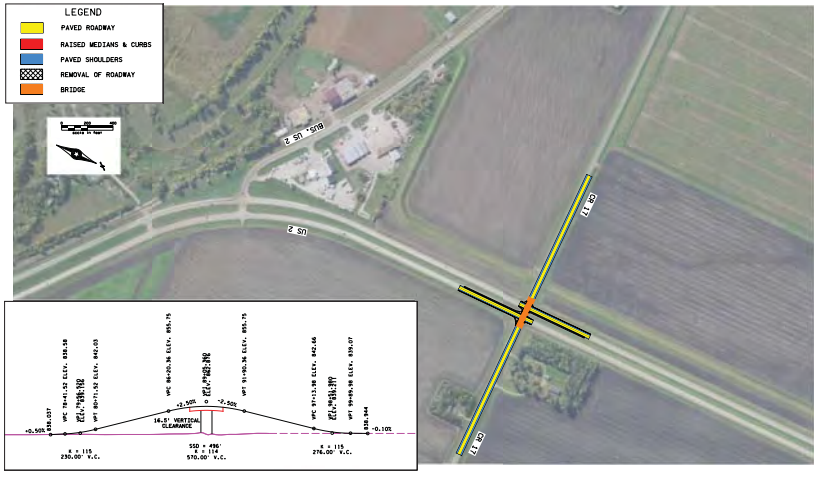
Alternative 1: No Build
No proposed improvements to the study area.



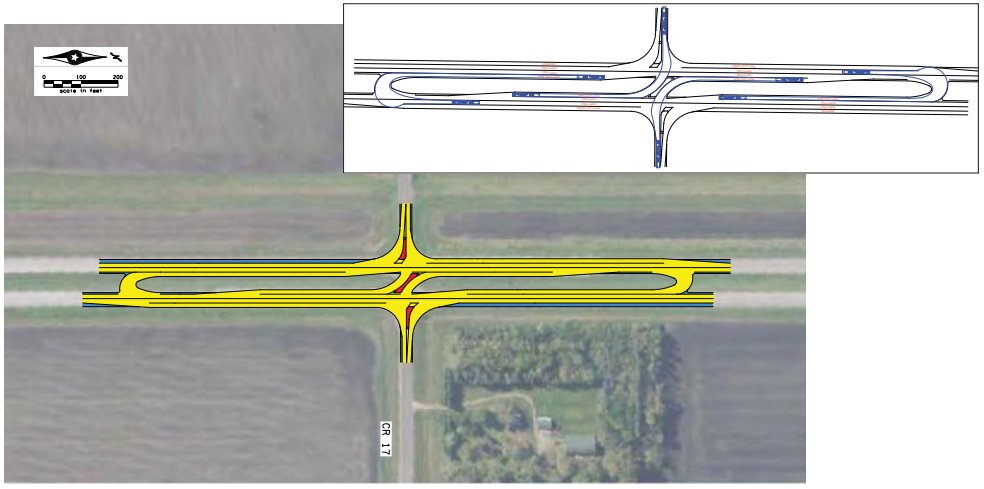
ALTERNATIVE 2 - COUNTY ROAD SAFETY PLAN IMPROVEMENTS



ALTERNATIVE 3 - TURN LANE EXTENSION AND LIGHTING IMPROVEMENTS



ALTERNATIVE 4 - CR 17 OVERPASS OF US 2

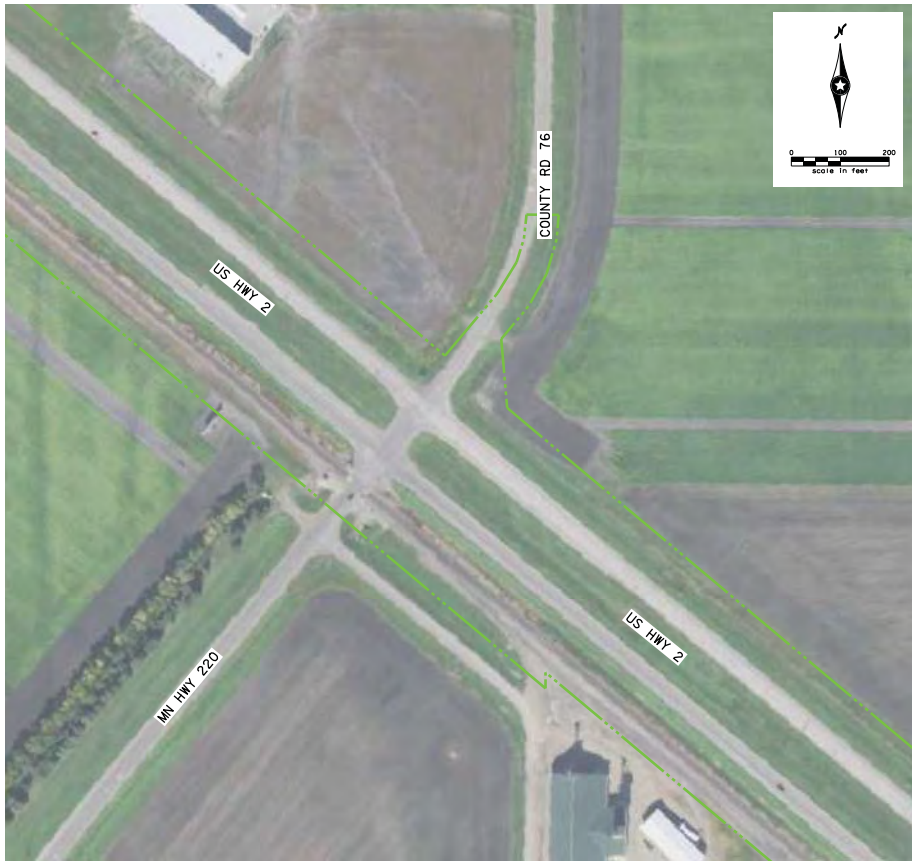


ALTERNATIVE 5 - REDUCED CONFLICT U-TURN INTERSECTION

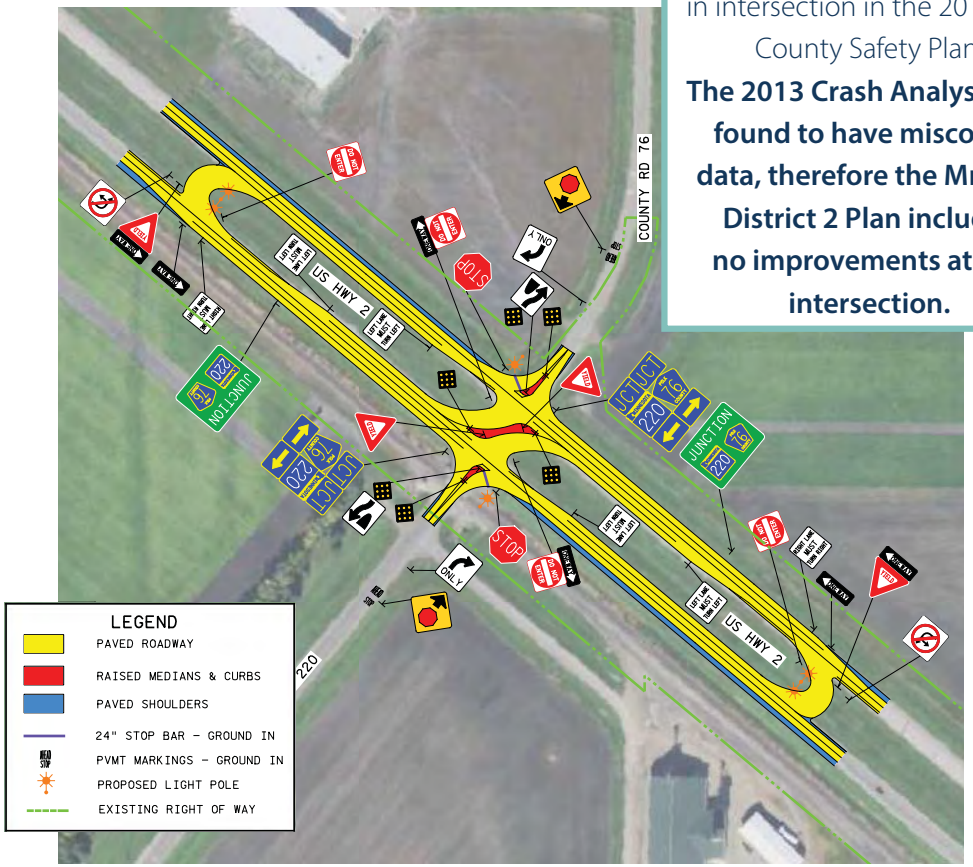
US 2 AT MN 220 SOUTH/CR 76 ALTERNATIVES

A Reduced Conflict U-Turn Intersection was recommended for the US 2 and MN 220/CR 76 in intersection in the 2013 Polk County Safety Plan.

The 2013 Crash Analysis was found to have miscoded data, therefore the MnDOT District 2 Plan includes no improvements at this intersection.



ALTERNATIVE 1 - NO BUILD



ALTERNATIVE 2 - COUNTY ROAD SAFETY PLAN IMPROVEMENTS