WILLISTON AREA TRANSPORTATION PLAN

CORRIDOR STUDY
for

CORRIDOR A

US Highway 2
(US Highway 85 (South) to US Highway 85 (North))

Williston, ND

December 16, 2016

Prepared for: City of Williston, Williams County, and NDDOT
Written By: SRF Consulting Group, Inc.

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0158658

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CORRIDOR STUDY
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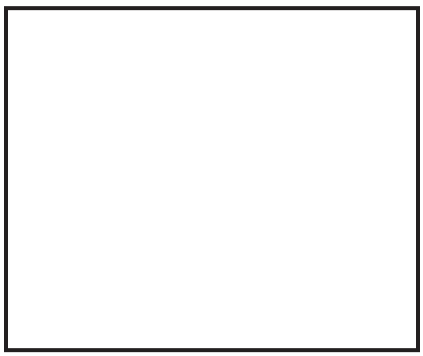
US Highway 2
(US Highway 85 (South) to US Highway 85 (North))

CERTIFICATION

I hereby certify that this report was prepared by me or under my direct supervision and that I am a duly registered professional engineer under the laws of the State of North Dakota. This document was originally issued and sealed by Matthew R Pacyna, Registration number PE-7630 on 12/16/2016 and the original document is stored at SRF Consulting Group, Inc.



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Matthew R Pacyna, P.E. Date

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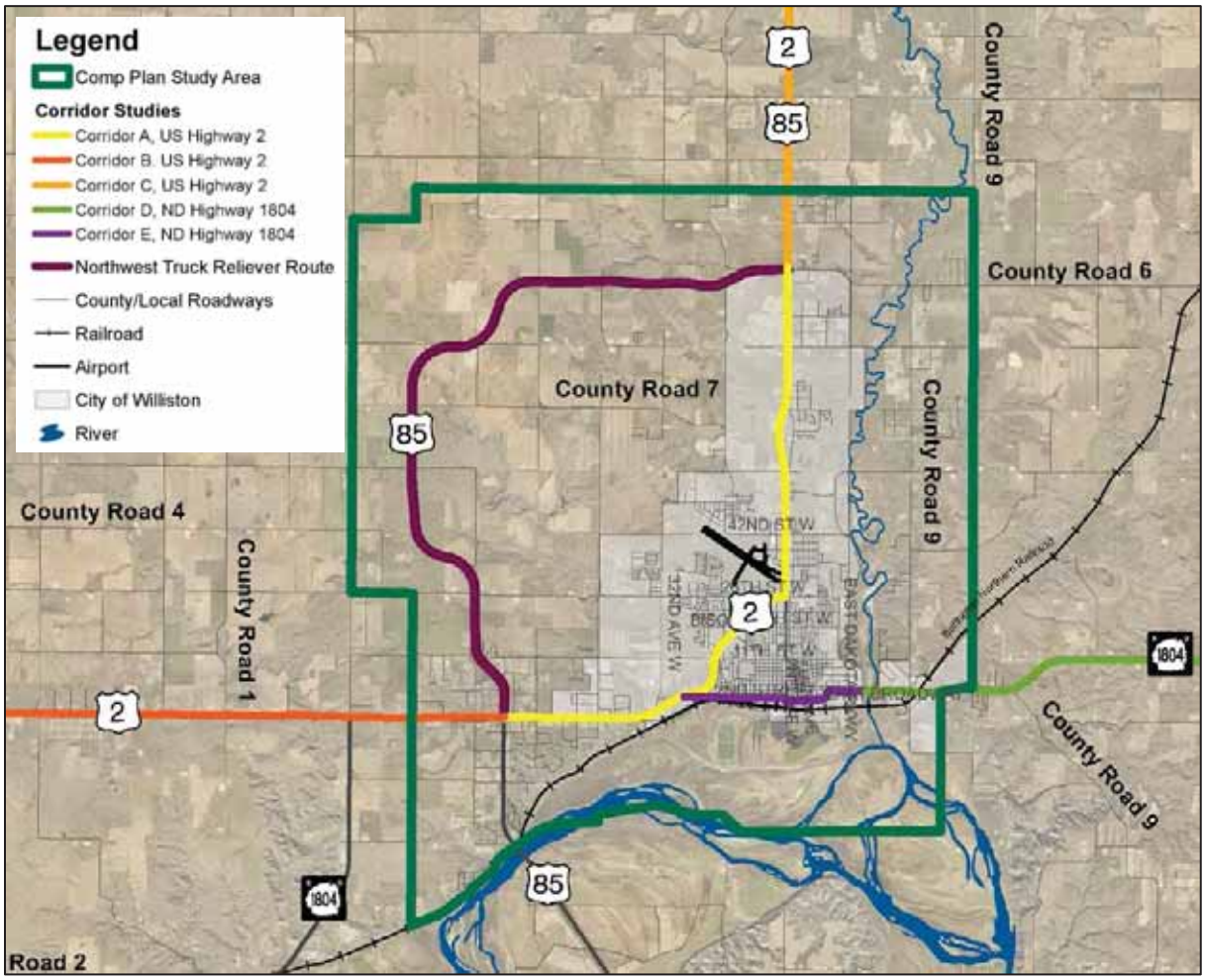
Appendix A – Preliminary Interchange Alternatives

1.0 Introduction

As part of the City Comprehensive Plan and Transportation Plan update process, five specific corridors were identified for more in-depth study. The goals of these corridor studies are to identify the short- and long-term needs of each corridor, particularly from a traffic operations perspective, to ensure safe and efficient operations within the study area. The analysis includes and focuses on access, crashes, roadway and intersection capacity, and any other issues identified through stakeholder involvement. The purpose of the study is to help prioritize the needs within each study corridor, lay the framework for specific project development, and provide stakeholders with a vision to build upon as opportunities arise.

This document focuses on Corridor A, which includes US Highway 2 from US Highway 85 (at 4-Mile Corner) to US Highway 85/US Highway 85B (at Love's Corner) as shown in Figure 1. Corridor A is approximately 11-miles in length and is generally a four-lane divided roadway with a rural cross-section. However, in recent years, several roadway improvements have been implemented creating several sections that have more of an urban cross-section (i.e. curb and gutter). One of the biggest known issues along the corridor is the current access, both in the location and shear number given current traffic volumes. Therefore, the Corridor A study will address both existing and future access, as well as potential redevelopment of the existing Airport. The following information summarizes the results of the Corridor A study.

Figure 1 – Study Corridor Overview



2.0 Existing Conditions

The following sections outline the data collection, roadway characteristics, crash analysis, access inventory, and capacity analysis conducted as part of the existing conditions analysis.

2.1 Data Collection

To understand current conditions along the study corridor, various data collection efforts were conducted. The following data was collected.

Traffic Volumes

Weekday a.m. and p.m. peak period turning movement counts were collected at approximately 30 locations along Corridor A within the study area. These data collection locations, which are graphically shown in Figure 2, were collected using a variety of methods. First, SRF reviewed historical and existing available traffic counts provided by the NDDOT. Based on the available data, SRF collected supplemental intersection turning movement counts during August 2014. These supplemental counts were collected either using CountCam video equipment or a manual short-duration (i.e. pulse count). The purpose of the pulse counts are to identify general travel patterns and the traffic volume order of magnitude.

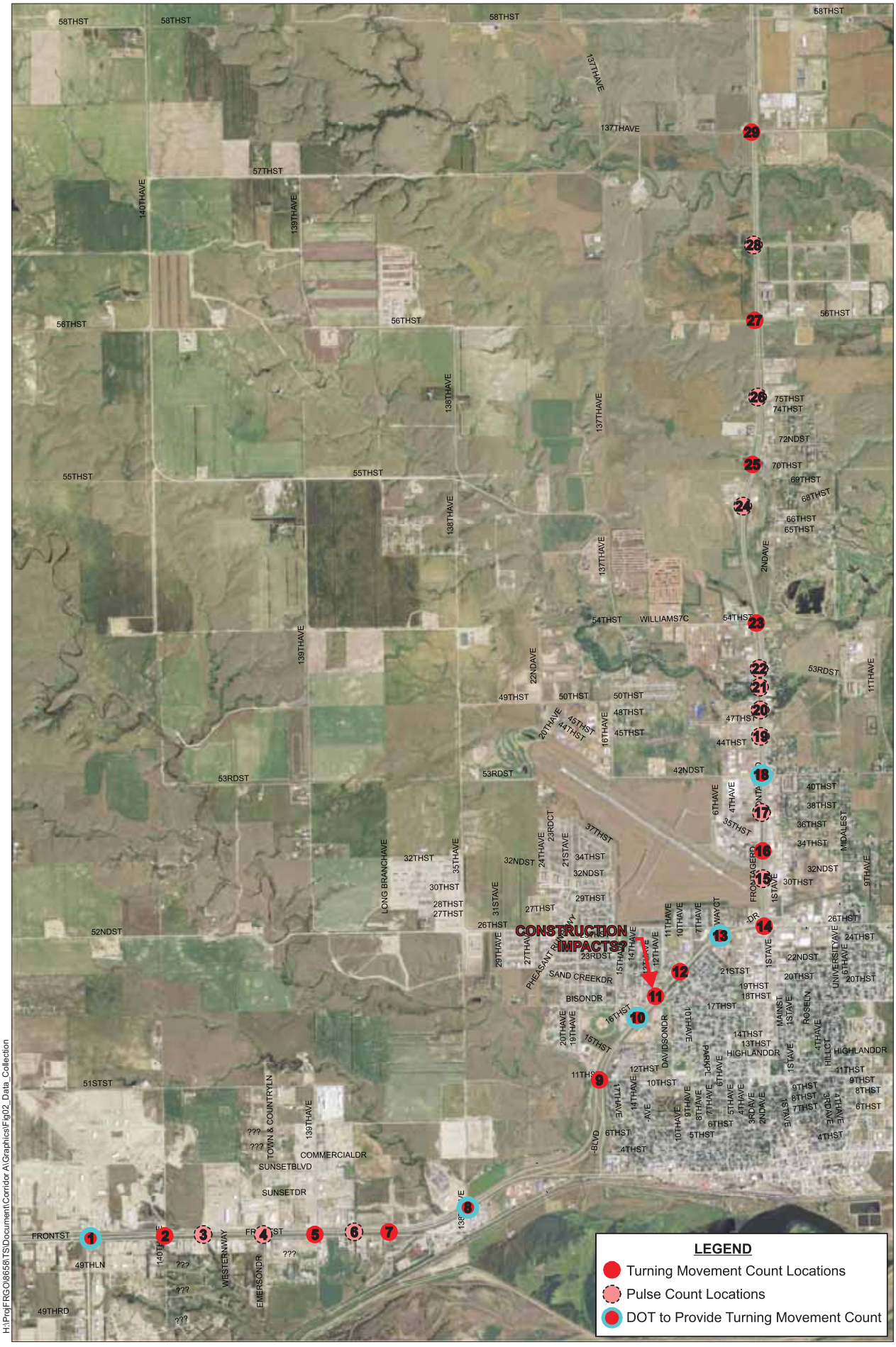
Once completed, SRF compiled the available traffic volume data and developed base year 2014 traffic volumes for all of Corridor A. To rectify any differences in the data sets, modifications were made to balance traffic volumes along the corridor based on engineering judgment. The resultant year 2014 traffic volumes are shown in Figures 3A and 3B. It should be noted that several area transportation improvements were under construction or in design during the data collection phase of this study. These improvements, and their relative impacts to area traffic volumes along US Highway 2, were accounted for as part of the future operations analysis.

Select intersection turning movement counts from three locations along the study corridor were utilized to obtain a daily traffic volume profile and vehicle classification information. The three locations were chosen to achieve a representative sample of the entire corridor. The locations included:

- Location 1: US Highway 2 west of 138th Avenue
- Location 2: US Highway 2 east of 6th Avenue
- Location 3: US Highway 2 south of 42nd Street

Figure 4 represents the traffic volume profile by hour for the three selected locations along the corridor. As shown in Figure 4, traffic volumes begin to increase around 5:00 a.m. and continue to be relatively steady until approximately 7:00 p.m. There are peak periods that generally occur during the morning (7:30 a.m.), midday (12:30 p.m.), and evening (5:30 p.m.) timeframes. The relatively steady traffic volumes along US Highway 2 are primarily a result of the specific land uses and oil related activity within the region.

In addition to the intersection turning movement counts, historical average daily traffic (ADT) volumes within the study area were also provided by the NDDOT. In locations where data was not available from the NDDOT, ADT volumes were estimated based on the year 2014 base traffic volumes and engineering judgment. Existing ADT volumes along US Highway 2 within the study area range from approximately 23,000 to 38,500 vehicles per day (vpd).



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Data Collection Locations

Williston Area Transportation Plan Corridor Study (Corridor A)

City of Williston, Williams County, and NDDOT

Figure 2

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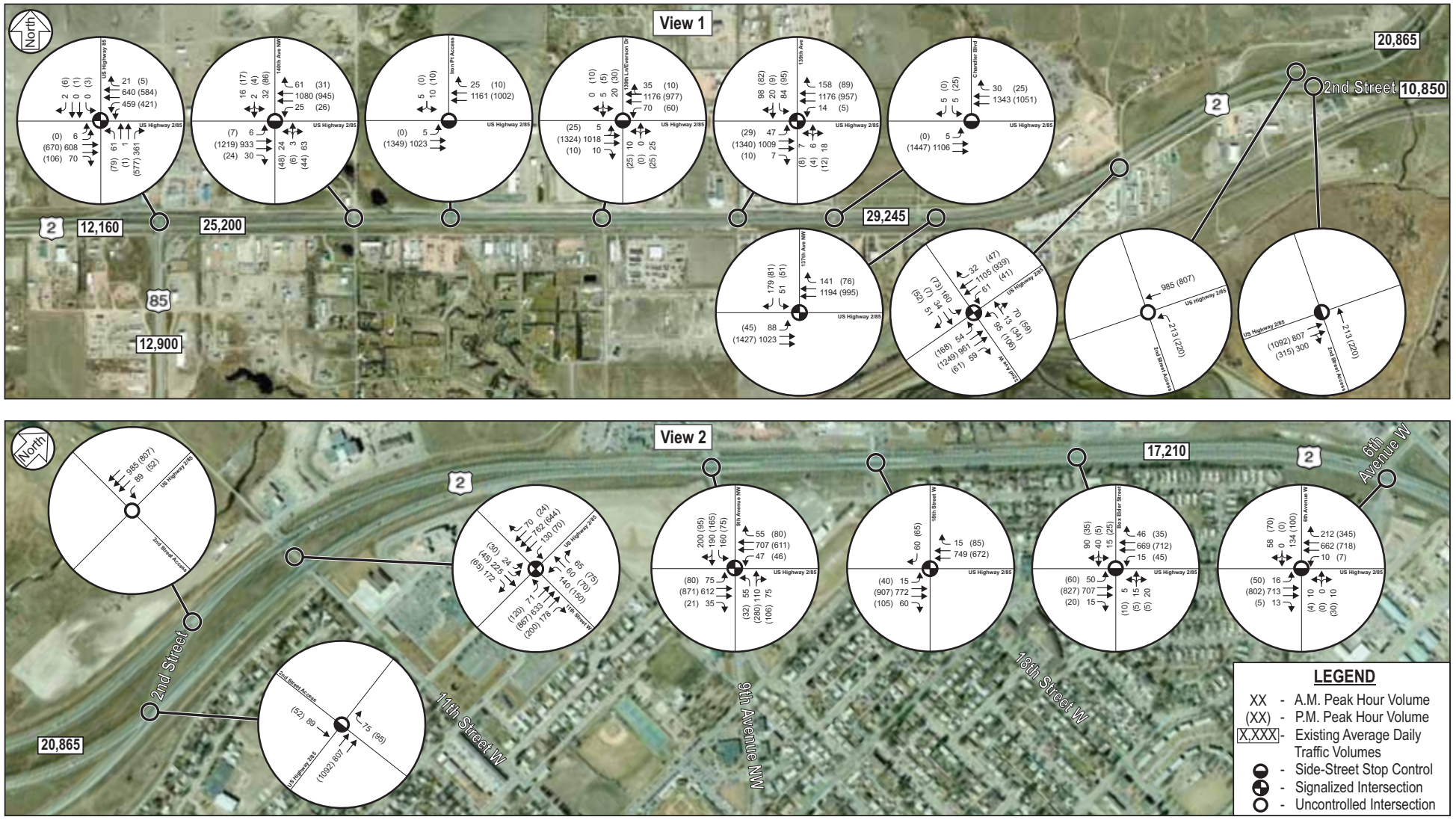

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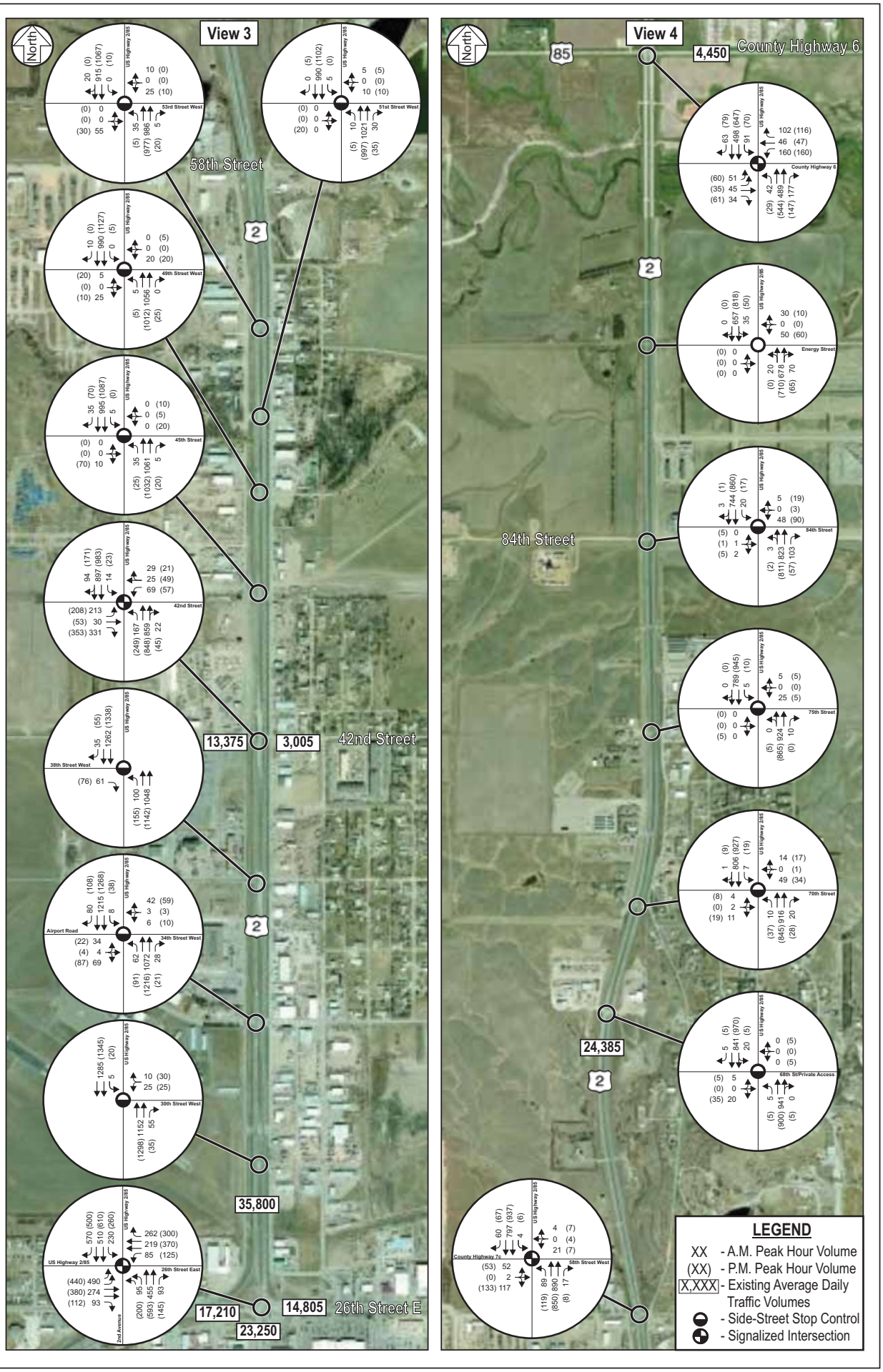
Existing Conditions (South)

Williston Area Transportation Plan Corridor Study (Corridor A)
City of Williston, Williams County, and NDDOT

Figure 3A



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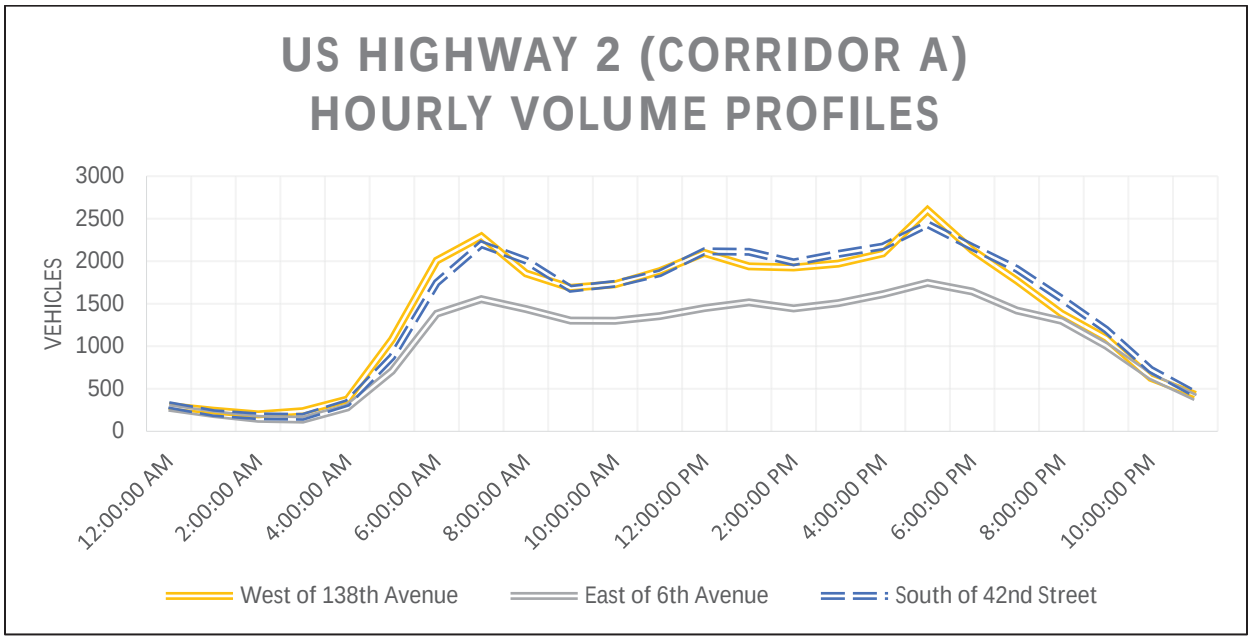
Existing Conditions (North)

Williston Area Transportation Plan Corridor Study (Corridor A)
City of Williston, Williams County, and NDDOT

Figure 3B

Figure 4 – Traffic Volume Profile



Vehicle Classification

Utilizing the three locations noted earlier, as well as the US Highway 2/US Highway 85 intersection at 4-mile corner, the existing average vehicle classification data was summarized. The Federal Highway Administration (FHWA) Vehicle Classifications criteria was used, and is shown in Table 1. In general, classifications one through three were considered passenger vehicles/light trucks, classifications four through seven medium trucks, and classifications eight through 13 heavy/articulated trucks. Figure 5 represents the daily vehicles per classification at each of the four locations reviewed, as well as the overall corridor average. In general, there are approximately five to 10 percent medium trucks and 10 to 15 percent heavy/articulated trucks along the study corridor.

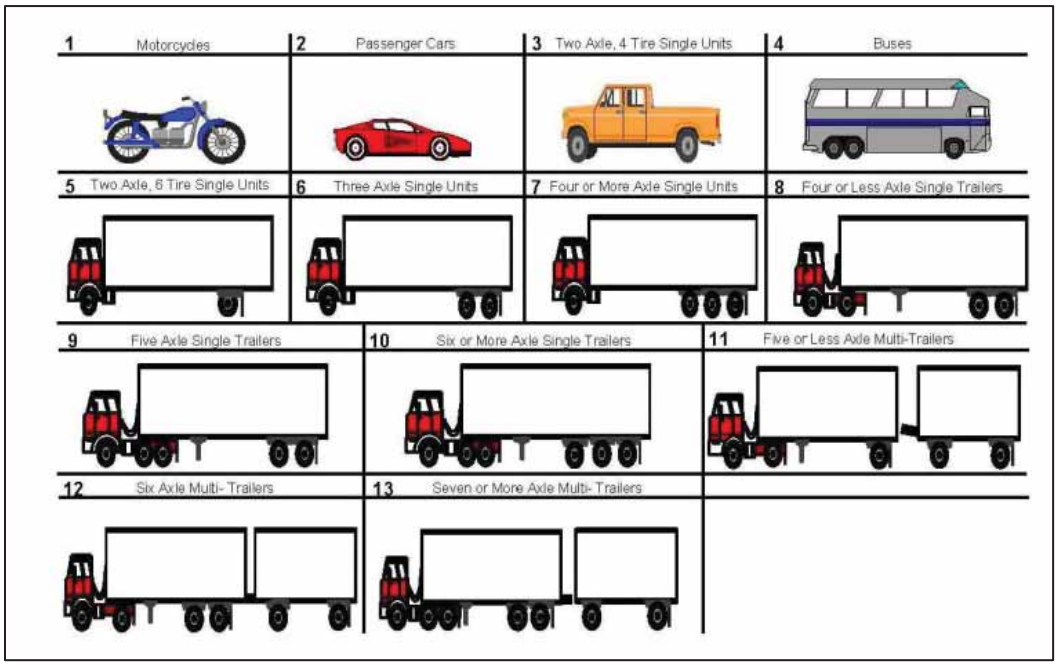
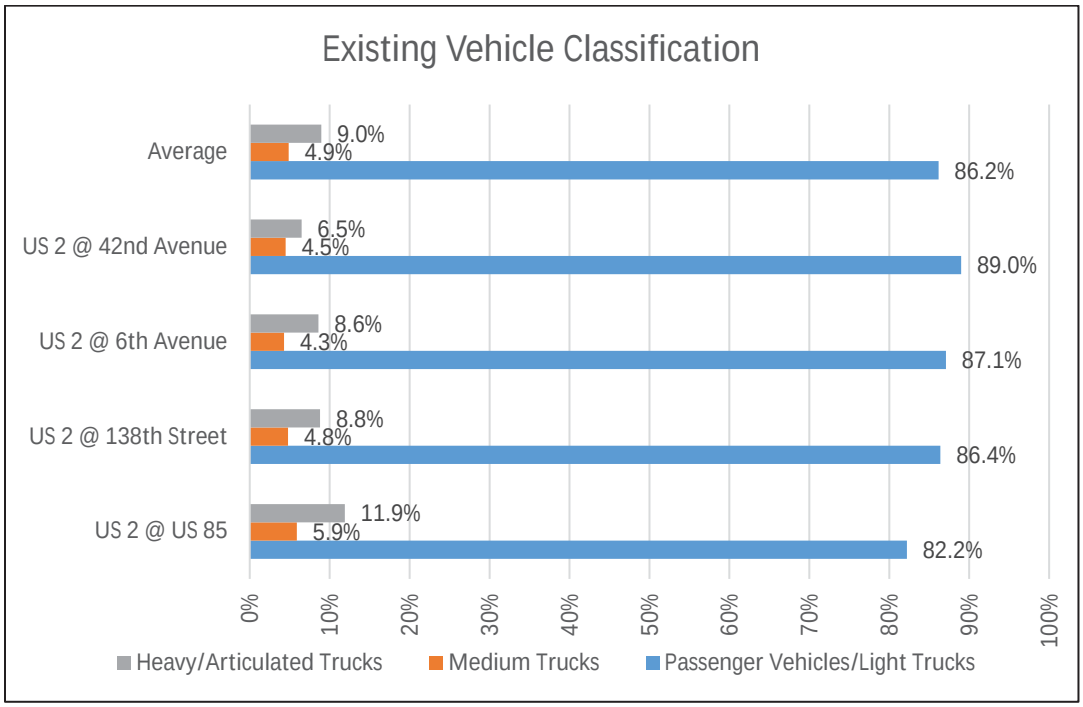


Table 1 - FHWA Vehicle Classifications

Note: #9 represents a standard Semi-Truck

Figure 5 – Existing Vehicle Classification



Travel Speeds

Vehicular speed data was not collected as part of this study due to safety concerns with respect to the data collection process.

2.2 Roadway Characteristics

In addition to traffic data collection, the following observations were completed to identify roadway characteristics within the study area (i.e. roadway geometry, posted speed limits, and traffic controls).

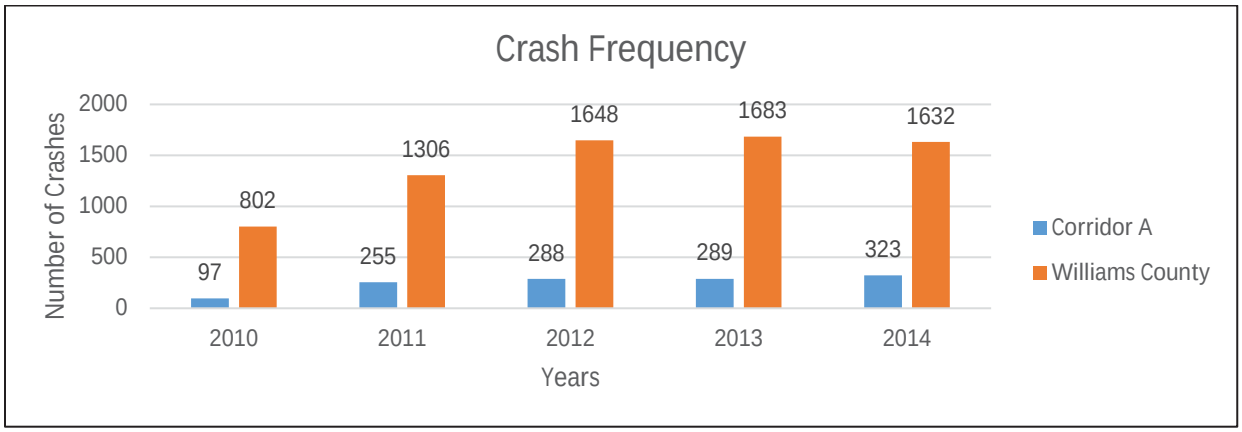
US Highway 2 from US Highway 85 (south) to US Highway 85 (north) is a principal arterial roadway and primarily a four-lane divided facility with a rural cross-section (i.e. no curb and gutter). However, several intersections and segments have been recently reconstructed or are planned to be reconfigured as an urban facility. These locations include 2nd Street (future), 11th Street, 18th Street, and 2nd Avenue/26th Street. The posted speed limit along US Highway 2 within the study corridor is generally 55 miles per hour (mph), with the exception between approximately Sand Creek and north of 58th Street. This segment of roadway has a posted speed limit of 40 mph.

Traffic controls along the study corridor include a combination of signalized and unsignalized intersections. All unsignalized intersections are side-street stop controlled. Signalized intersections are currently located at US Highway 85 (south), 139th Avenue, Chandler Boulevard, 32nd Avenue, 11th Street, 9th Avenue NW, 2nd Avenue/26th Street, 42nd Street, 58th Street, and US Highway 85 (north). Several other intersections are planned to be signalized, which will be discussed later in this study. A summary of the existing conditions is shown in Figure 3.

2.3 Crash History

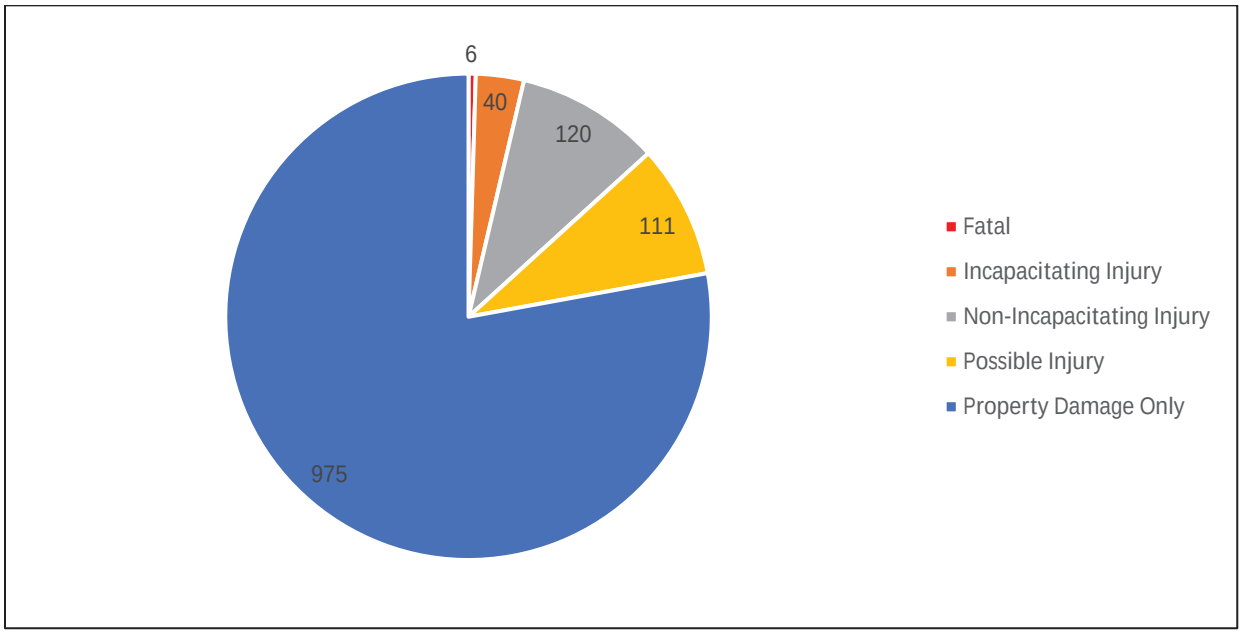
Crash data was provided by the NDDOT from January 1, 2010 through December 31, 2014, which represents the most recent five-year period available at the beginning of this study. This data was used to establish current crash trends and issues along Corridor A. Based on this review, there has been over 1,200 reported crashes along US Highway 2 from US Highway 85 (south) to US Highway 85 (north). A summary of the reported crashes by year for Corridor A is shown in Figure 6, as well as the overall reported crashes for all of Williams County during the same time period.

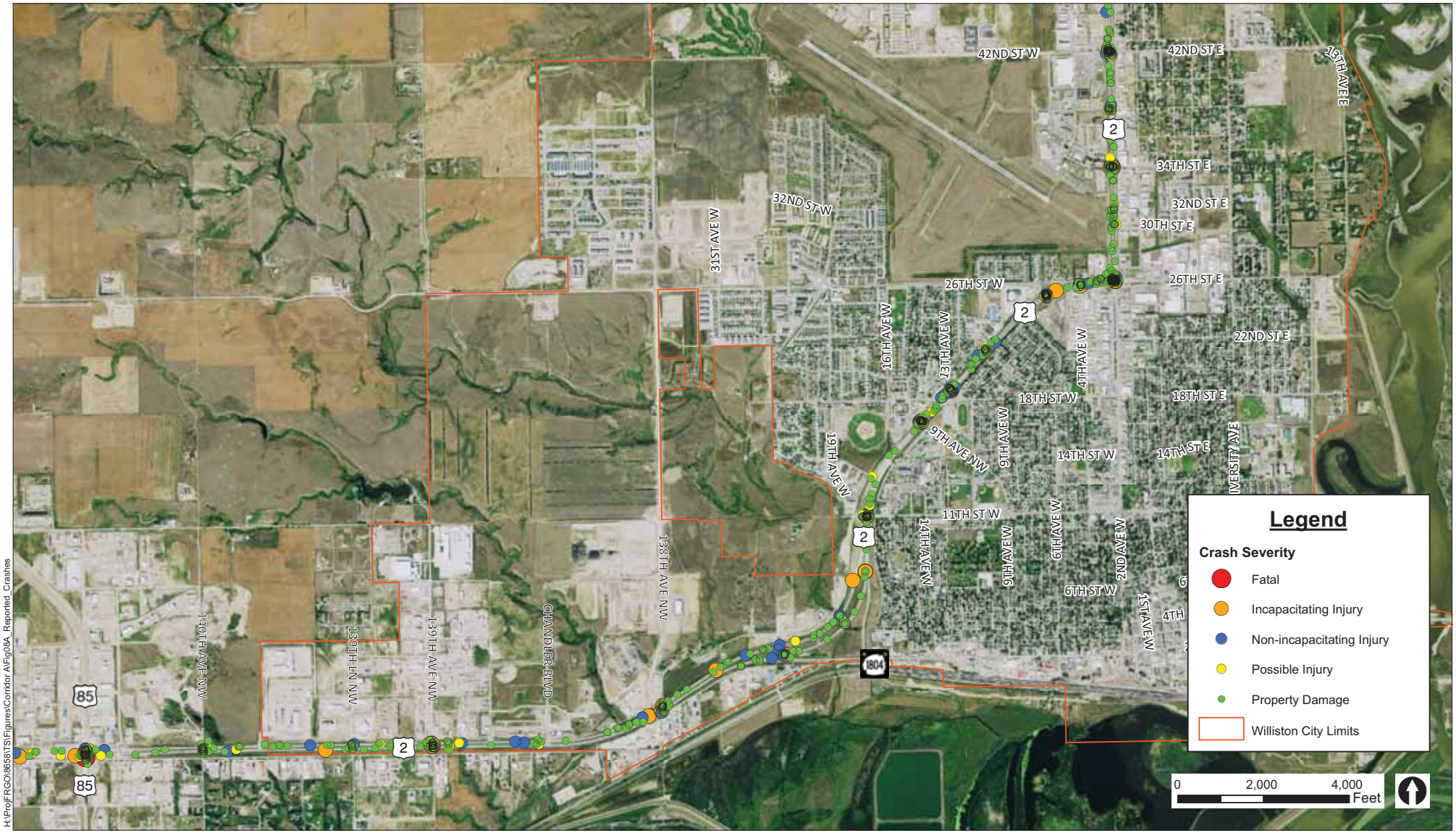
Figure 6 – Crash Frequency by Year



In addition to the overall crash frequency along the study corridor, a more detailed crash analysis was completed that reviewed segment and intersection crashes. This review focused on both the frequency in relation to the roadway characteristics (i.e. crash rates) and the type and general severity of the crashes. The location of the reported crashes within the study period along Corridor A are illustrated in Figures 8A and 8B. This also illustrates the crash severity (i.e. fatal, incapacitating injury, non-incapacitating injury, possible injury, and property damage), which is summarized in Figure 7.

Figure 7 – Crash Severity Summary





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Reported Crashes (South)

Williston Area Transportation Plan Corridor Study (Corridor A)
City of Williston, Williams County, and NDDOT

Figure 8A

Reported Crashes (North)

Williston Area Transportation Plan Corridor Study (Corridor A)

City of Williston, Williams County, and NDDOT

Figure 8B

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The next step in the crash analysis was to review segment and intersection crash rates. The purpose of reviewing crash rates is to determine the statistical significance of the number of crashes. Crash rates were calculated and then compared to typical crash rates for intersections/segments with similar characteristics. Since the NDDOT does not publish crash rates by roadway type or traffic control, published crash rates from the Minnesota Department of Transportation (MnDOT) were referenced for comparison purposes. Crash rates are per million entering vehicles (MEV) for intersections and per million vehicle miles (MVM) for segments.

It should be noted that a higher than typical crash rates do not necessarily indicate a significant crash problem. Therefore, the critical crash rate was calculated to determine the statistical significance of the above average crash rates. If the calculated crash rates are below the critical crash rates, crashes that occurred are likely due to the random nature of crashes and not necessarily a geometric design or traffic control issue. If the calculated crash rates are above the critical crash rates, there are generally a significant number of crashes above normal to warrant further review or mitigation.

Based on review of both segment and intersection crash rates, the following intersections were identified as having an existing crash rate above the critical crash rate for locations with similar characteristics. No segments were identified with a crash rate above the critical crash rate. However, the entire segment of US Highway 2 from US Highway 85 (south) to US Highway 85 (north) has an above average crash rate.

1) US Highway 2 and US Highway 85 (south)
    a. Note this intersection was reconfigured in 2013/2014
2) US Highway 2 and 140th Avenue
3) US Highway 2 and 139th Avenue
    a. A traffic signal was installed at this intersection in 2012
4) US Highway 2 and 18th Street
    a. Note this intersection was reconfigured in 2015
5) US Highway 2 and Box Elder Street
6) US Highway 2 and 6th Avenue
7) US Highway 2 and 2nd Avenue/26th Street
8) US Highway 2 and 34th Street
9) US Highway 2 and 38th Street
10) US Highway 2 and 42nd Street

To determine if there are any trends associated with the types of crashes occurring at these locations, a more detailed crash analysis was completed. Results of the crash type summary for the locations with a statistically significant amount of crashes are summarized in Table 2.

Table 2 - Crash Type Summary

Intersection	Left Turn / Right Angle	Rear End	Sideswipe	Head On	NCWMV(1)	Total
@ US Highway 85 (south) (2)	31 (37%)	39 (46%)	8 (9%)	1 (1%)	6 (7%)	**85**
@ 140th Avenue (3)	19 (68%)	7 (25%)	2 (7%)	0 (0%)	0 (0%)	**28**
@ 139th Avenue (2)	11 (32%)	15 (44%)	2 (6%)	1 (3%)	5 (15%)	**34**
@ 18th Street (2)	23 (58%)	10 (25%)	3 (7%)	1 (3%)	3 (7%)	**40**
@ Box Elder Street (3)	15 (68%)	3 (14%)	2 (9%)	0 (0%)	2 (9%)	**22**
@ 6th Avenue (3)	52 (75%)	13 (19%)	2 (3%)	0 (0%)	2 (3%)	**69**
@ 2nd Avenue/26th Street (2)	14 (10%)	87 (61%)	30 (21%)	1 (1%)	10 (7%)	**142**
@ 34th Street (3)	33 (75%)	7 (16%)	4 (9%)	0 (0%)	0 (0%)	**44**
@ 38th Street (3)	6 (30%)	8 (40%)	3 (15%)	0 (0%)	3 (15%)	**20**
@ 42nd Street (2)	25 (26%)	46 (48%)	13 (14%)	0 (0%)	11 (12%)	**95**

(1) Represents a non-collision with a moving vehicle type crash
(2) Indicates a signalized intersection
(3) Indicates an unsignalized intersection with side-street stop control

Review of the crash types at the key intersections indicate that the majority of the crashes that are occurring at the signalized intersections are either rear-end or angle type crashes, which are the most common types based on the traffic control. At the unsignalized intersections, angle crashes were generally the most common. It should be noted that the 2nd Avenue/26th Street intersection has a higher than normal amount of sideswipe type crashes, which is primarily due to the southbound to westbound channelized right-turn movement. Channelized turns often result in a higher amount of these types of crashes due to the turning speeds and sight challenges with merging traffic.

It should be noted that roadway and/or traffic control improvements have been implemented at several of the locations noted in Table 2 within the crash data set timeframe reviewed. In particular, US Highway 85 (south) was reconstructed in 2014, which included traffic control improvements; a span-wire traffic signal was installed at 139th Avenue in 2012; and 18th Street was reconstructed in 2015. These improvements are expected to help the current crash issues identified. However, based on a review of crash data after the installation of the traffic signal at 139th Avenue, the intersection continues to have a crash rate over the critical crash rate. This information will be used to help in the development of potential mitigation to improve safety at these locations.

2.4 Access

To determine the existing level of access along US Highway 2, an access inventory was completed and is presented in Figures 9A and 9B. In addition to the study intersections previously mentioned, other access locations along the corridor include public (roadways), commercial (retail and office), and farm/residential type uses. The US Highway 2 corridor (from US Highway 85 (south) to US Highway 85 (north)) is approximately 11 miles in length and has a total of 56 access locations (38 public, 10 commercial, and 8 farm/residential). This equates to an access density of approximately five (5) accesses per mile.

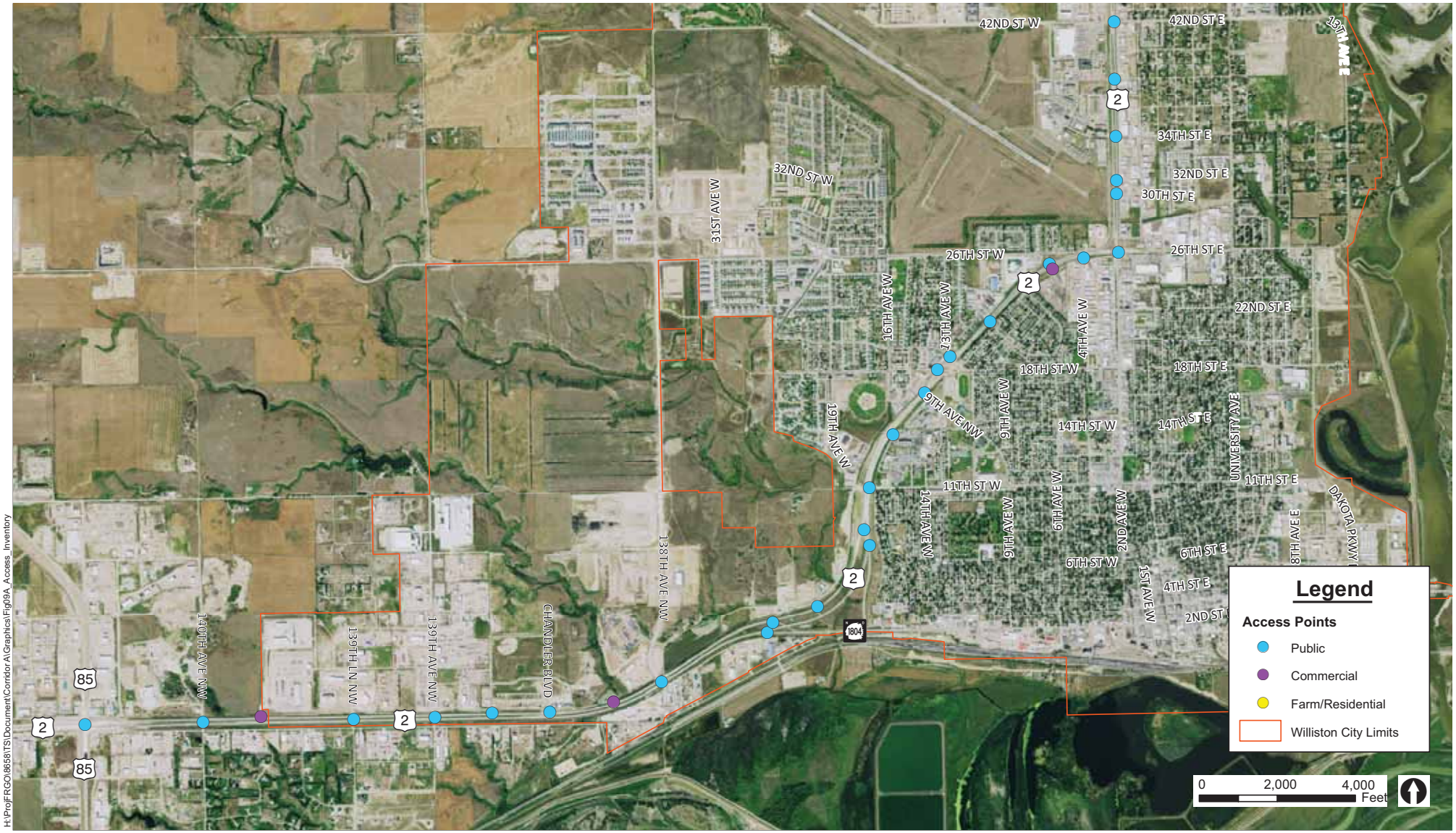
In addition to the overall corridor access, a compliance review of the existing access with respect to current guidance was conducted. This access looked at both the NDDOT and City of Williston guidance. However it should be noted that the study segment of US Highway 2 is currently under NDDOT jurisdiction, although the City could potentially acquire the jurisdiction in the future. Therefore both criteria were considered as part of this corridor study.

1) NDDOT
    a. Intersections should be spaced at least 400 to 600 feet apart in an urban setting.
    b. No more than five (5) access points per side per mile.
2) City of Williston
    a. Principal arterial intersection spacing no less than 1/4 mile.

Based on this criteria, there are multiple locations where the existing access does not meet this criteria. These locations along US Highway 2 include:

1) 30th Street and the West Frontage Road access at approximately 31st Street (325 feet spacing)
2) 2nd Avenue/26th Street to 42nd Street (more than five access points per side per mile)
3) 42nd Street to 58th Street (more than five access points per side per mile)
4) 2nd Street/ND Highway 1804 to Reiger Drive (less than 1/4 mile spacing)
5) 2nd Street (one-way directional split area) to 11th Street (less than 1/4 mile spacing)
6) 9th Avenue to Box Elder Street (less than 1/4 mile spacing)
7) 6th Avenue to 2nd Avenue/26th Street (less than 1/4 mile spacing)
8) 30th Street to 34th Street/Airport Road (less than 1/4 mile segment)
9) 47th Street to approximately 51st Street (less than 1/4 mile segment)

These access locations will be reviewed further as part of the mitigation analysis, which will look at potential alternatives to ensure the entire study corridor meets current access guidelines. In addition to these locations, there are multiple locations along the entire study corridor where the Frontage Roads are closely spaced to US Highway 2. This close spacing creates conflicts, congestion, and introduces wrong-way maneuvers (i.e. non-compliance) for motorists. As opportunities arise, these closely spaced Frontage Roads should be modified or relocated to reduce conflicts and improve operations. Further Frontage Road discussion is provided later in this study.



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Access Inventory (South)

Williston Area Transportation Plan Corridor Study (Corridor A)
City of Williston, Williams County, and NDDOT

Figure 9A

Access Inventory (North)

Williston Area Transportation Plan Corridor Study (Corridor A)

City of Williston, Williams County, and NDDOT

Figure 9B

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2.5 Capacity Analysis

To establish and quantify current operations along the study corridor, a detailed intersection capacity analysis was completed. Traditionally, both a planning-level ADT volume review and a detailed intersection/corridor capacity analysis would be completed. However, given the higher than normal heavy commercial vehicles percentages, the planning level ADT review was not completed as part of this study. Although it should be noted that the ADT volume ranges from approximately 23,000 vpd to 38,500 vpd along the study corridor. Therefore, only the detailed intersection/corridor capacity analysis was completed. This analysis utilized Synchro/SimTraffic (version 8.0) to evaluate the existing a.m. and p.m. peak hours.

Capacity analysis results identify a Level of Service (LOS), which indicates the quality of traffic flow through an intersection. Intersections are given a ranking of LOS A through LOS F. The LOS results are based on average delay per vehicle, which correspond to the delay threshold values shown in Table. LOS A indicates the best traffic operation, with vehicles experiencing minimal delays. LOS F indicates an intersection where demand exceeds capacity, or a breakdown of traffic flow. An overall LOS A through D is considered acceptable traffic flow conditions in urban/suburban areas based on the NDDOT.

Table 3 - Level of Service Criteria for Signalized and Unsignalized Intersections

LOS Designation	Signalized Intersection Average Delay/Vehicle (seconds)	Unsignalized Intersection Average Delay/Vehicle (seconds)
A	≤ 10	≤ 10
B	> 10 - 20	> 10 - 15
C	> 20 - 35	> 15 - 25
D	> 35 - 55	> 25 - 35
E	> 55 - 80	> 35 - 50
F	> 80	> 50

For side-street stop intersections, special emphasis is given to providing an estimate for the level of service of the side-street approach. Traffic operations at an unsignalized intersection with side-street stop can be described in two ways. First, consideration is given to the overall intersection level of service. This takes into account the total number of vehicles entering the intersection and the capability of the intersection to support these volumes.

Second, it is important to consider the delay on the minor approach. Since the mainline does not have to stop, the majority of delay is attributed to the side-street approaches. It is typical of intersections with higher mainline traffic volumes to experience high levels of delay (i.e. poor level of service) on the side-street approaches, but an acceptable overall intersection level of service during peak hour conditions.

Results of the existing intersection capacity analysis shown in Table 4 indicate that all study intersections currently operate at an acceptable overall LOS C or better during a.m. and p.m. peak hours with the existing geometric layout and traffic control. However, there are several side-streets where access to US Highway 2 is challenging, which include 140th Avenue, 139th Lane/Everson Drive, Chandler Loop, 2nd Street/ND Highway 1804, 6th Avenue, 34th Street, 84th Street, and Energy Street. These locations in particular will be reviewed closer as part of the future intersection capacity analysis to determine if any mitigation is warranted.

Table 4 - Existing Peak Hour Intersection Capacity Analysis

US Highway 2 Intersection	Level of Service (Delay)	
	A.M. Peak Hour	P.M. Peak Hour
@ US Highway 85 (south)	B (15 sec.)	B (16 sec.)
@ 140th Avenue (1)	A/D (32 sec.)	A/E (41 sec.)
@ Schlumberger Access (1)	A/C (20 sec.)	A/C (21 sec.)
@ 139th Lane/Everson Drive (1)	A/E (45 sec.)	A/E (49 sec.)
@ 139th Avenue	B (13 sec.)	B (10 sec.)
@ Chandler Loop (1)	A/E (40 sec.)	A/C (23 sec.)
@ Chandler Boulevard	B (13 sec.)	A (9 sec.)
@ 32nd Avenue	B (15 sec.)	B (18 sec.)
@ 2nd Street/ND Highway 1804 (1)	A/D (27 sec.)	B/F (50 sec.)
@ 11th Street	C (22 sec.)	B (18 sec.)
@ 9th Avenue	C (26 sec.)	C (25 sec.)
@ 18th Street (1)	A/B (12 sec.)	A/B (11 sec.)
@ Box Elder Street (1)	A/C (24 sec.)	A/D (25 sec.)
@ 6th Avenue (1)	A/E (37 sec.)	A/D (34 sec.)
@ 2nd Avenue/26th Street	C (23 sec.)	C (27 sec.)
@ 30th Street (1)	A/D (27 sec.)	A/D (26 sec.)
@ 34th Street (1)	A/E (40 sec.)	A/D (33 sec.)
@ 38th Street (1)	A/C (16 sec.)	A/C (17 sec.)
@ 42nd Street	C (20 sec.)	C (27 sec.)
@ 45th Street (1)	A/B (13 sec.)	A/D (32 sec.)
@ 49th Street (1)	A/D (33 sec.)	A/D (27 sec.)
@ 51st Street (1)	A/C (24 sec.)	A/C (23 sec.)
@ 53rd Street (1)	A/D (30 sec.)	A/D (29 sec.)
@ 58th Street	B (11 sec.)	B (13 sec.)
@ 68th Street (1)	A/B (15 sec.)	A/C (19 sec.)
@ 70th Street (1)	A/C (24 sec.)	A/C (21 sec.)
@ 75th Street (1)	A/C (24 sec.)	A/D (26 sec.)
@ 84th Street (1)	A/D (27 sec.)	A/E (36 sec.)
@ Energy Street (1)	A/F (59 sec.)	A/F (76 sec.)
@ US Highway 85 (north)	C (20 sec.)	B (19 sec.)

(1) Indicates an unsignalized intersection with side-street stop control where the overall LOS is shown followed by the worst approach LOS.

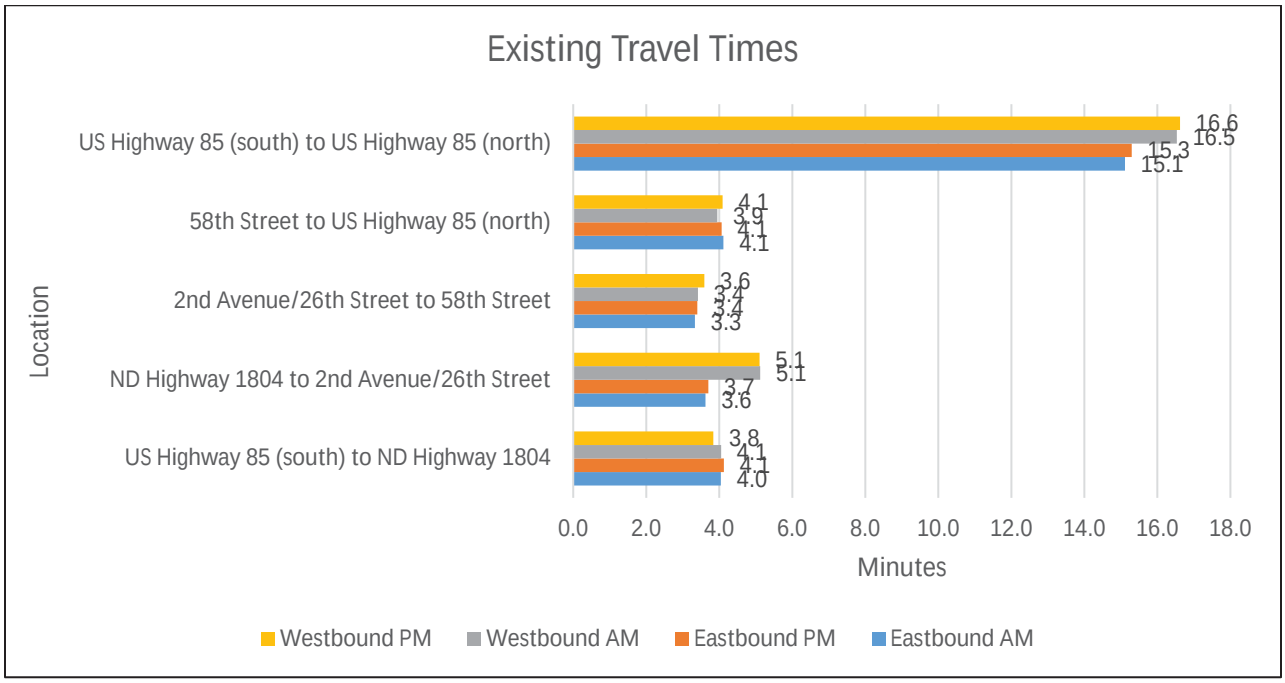
2.6 Travel Time

Corridor travel time was reviewed to establish a baseline condition in which future operations can be compared. The corridor travel times were based on the existing intersection capacity analysis. The overall corridor travel time was calculated, as well as four sub-segments to help illustrate how potential changes may impact the overall corridor travel time. The sub-segments include:

1) US Highway 85 (south) to 2nd Street/ND Highway 1804
2) 2nd Street/ND Highway 1804 to 2nd Avenue/26th Street
3) 2nd Avenue/26th Street to 58th Street
4) 58th Street to US Highway 85 (north)

A summary of the existing travel times are shown in Figure 10, which includes each segment and direction. For purposes of this review, the travel times were shown only as eastbound and westbound since that is the general direction of US Highway 2 (although portions of the study corridor travel north/south). Results of the travel time indicate that the overall corridor travel time from US Highway 85 (south) to US Highway 85 (north) is approximately 15 minutes. The majority of this travel time occurs in the segment between ND Highway 1804 and 2nd Avenue/26th Street.

Figure 10 – Corridor Travel Time



2.7 Public Input

A preliminary public input meeting was held in February 2015. The purpose of the meeting was to introduce the corridor study, provide preliminary traffic and safety information, and receive feedback regarding current issues/concerns. Based on the feedback received at this meeting, two issues maps were developed that summarized the key questions and concerns. These issues maps are shown in Figures 11A and 11B.

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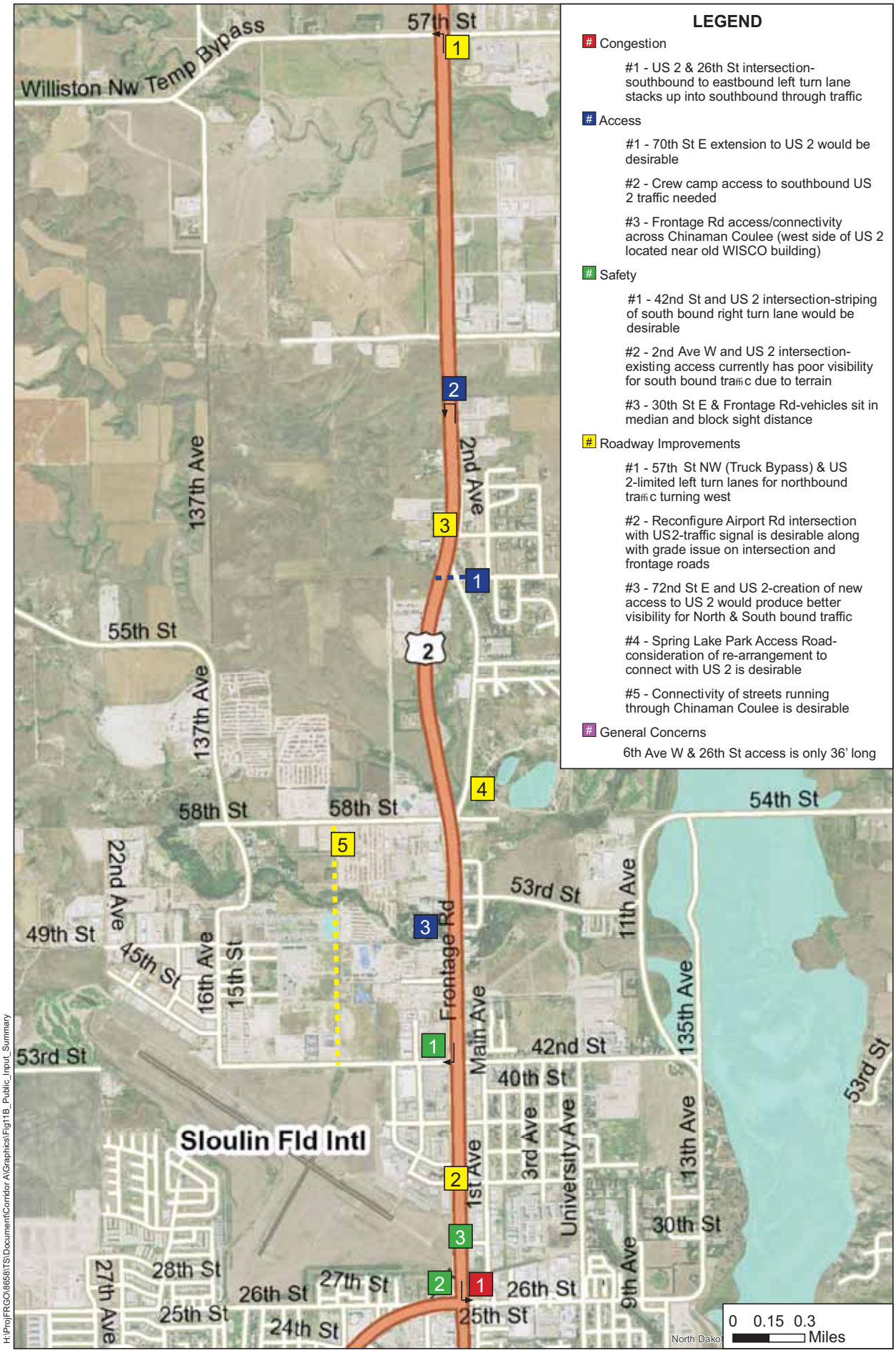
Public Input Summary (South)

Williston Area Transportation Plan Corridor Study (Corridor A)
City of Williston, Williams County, and NDDOT

Figure 11A



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Public Input Summary (North)

Williston Area Transportation Plan Corridor Study (Corridor A)

City of Williston, Williams County, and NDDOT

Figure 11B

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3.0 Traffic Forecasts

Traffic forecasts were developed for year 2040 conditions as part of the *Williston Transportation Plan and Comprehensive Plan Update*. The forecasts incorporate both updated land use within and near the Williston City limits, as well as planned transportation improvements. Key developments and planned transportation improvements, including several under construction, that have a direct impact along the study corridor include:

1) US Highway 85 (Northwest Bypass)
2) Williston Airport Relocation
3) 11th Street Extension West of US Highway 2 (3-Lane Section)
4) US Highway 2 and 2nd Street/ND Highway 1804 Reconfiguration
5) 9th Avenue Reconfiguration/Intersection with US Highway 2
6) 6th Avenue Access Modification
7) 58th Street Turn Lane Improvements
8) 84th Street Turn Lane and Traffic Signal Improvements
9) Energy Street Turn Lane and Traffic Signal Improvements
10) Several Adjacent North/South and East/West Corridors

These improvements were assumed to be completed under year 2040 conditions. Detailed assumptions, methods, and results are provided in the *Williston Transportation Plan and Comprehensive Plan Update*.

Based on the forecasts, traffic volumes are expected to remain relatively steady or increase along the study corridor, although some decreases are expected in specific segments due to additional roadway network connectivity. The ADT volumes along US Highway 2 are expected to range from approximately 15,200 vpd to 37,000 vpd. Although significant growth is planned within the region, the expanded transportation system (i.e. the US Highway 85 Northwest Bypass and other adjacent corridors) helps provide alternative routes and connections, which are not currently prevalent.

Although the overall ADT volumes along US Highway 2 are expected to remain relatively consistent, the typical vehicle classification is expected to change as previously discussed in Section 2.1. In particular, the percentage of medium and heavy commercial vehicles is expected to be approximately 10 to 15 percent near Williston. This represents a slight decrease in median and heavy commercial vehicles and is the result of the planned transportation improvements/connections, as well as the shift in future land use which guides more industrial (truck generating) land uses to the outer limits of the City of Williston.

The forecast average daily traffic volumes were then modified to reflect year 2040 a.m. and p.m. peak hour conditions, which are summarized in Figures 12A and 12B. The peak hour volumes, which also account for the change in heavy commercial vehicles, were utilized to determine the future year 2040 intersection capacity and ultimately the future capacity needs of the transportation network.

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Year 2040 Conditions (South)

Williston Area Transportation Plan Corridor Study (Corridor A)
City of Williston, Williams County, and NDDOT

Figure 12A

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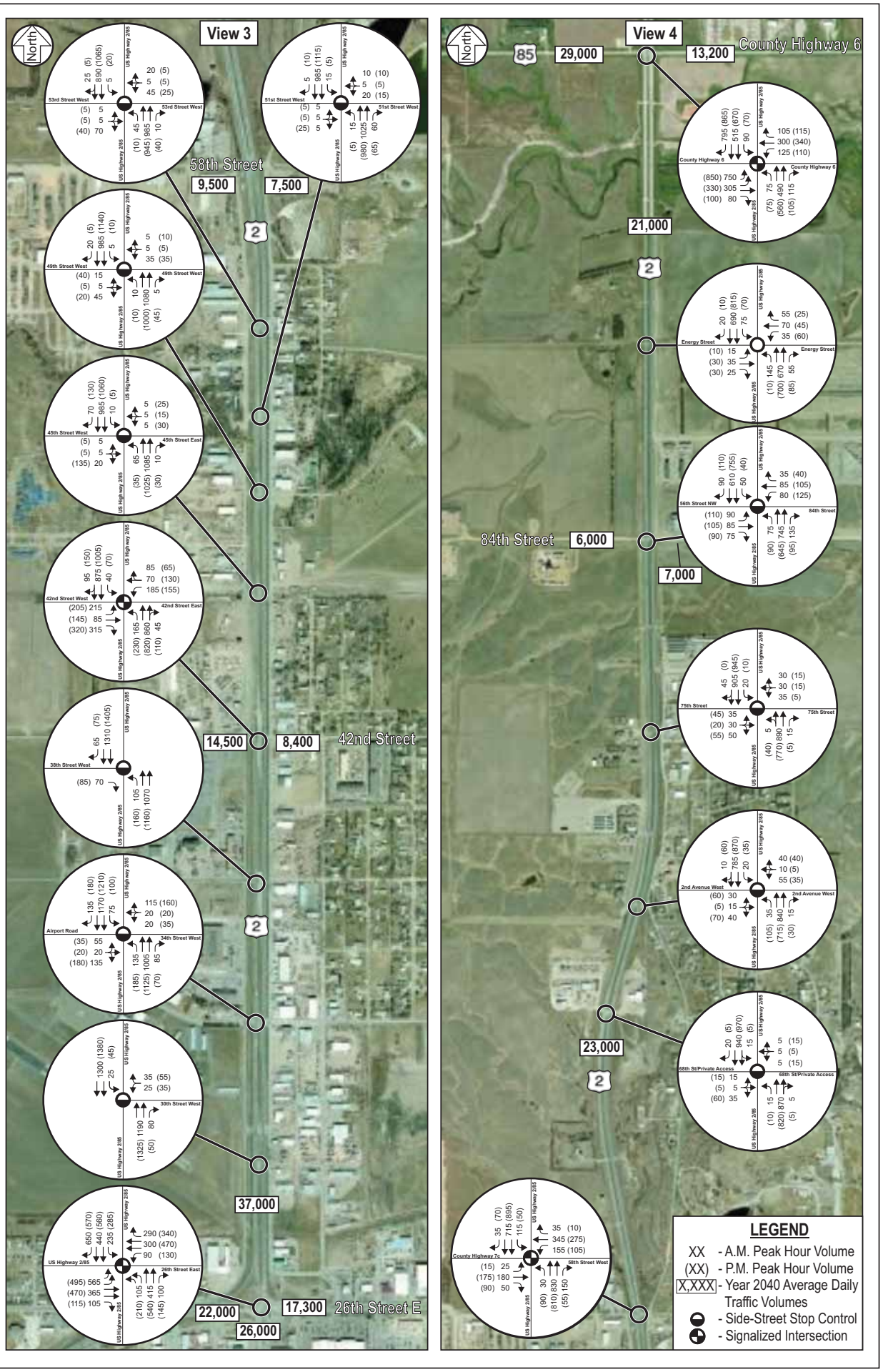

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Year 2040 Conditions (North)

Williston Area Transportation Plan Corridor Study (Corridor A)
City of Williston, Williams County, and NDDOT

Figure 12B

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4.0 Year 2040 Conditions

4.1 Capacity Analysis

To determine how the existing and planned transportation system will be able to accommodate the future year 2040 traffic forecasts, a detailed intersection capacity analysis was completed. The planned transportation improvements noted as part of the traffic forecast development were included as part of this analysis. Once again, the analysis was conducted using Synchro/SimTraffic software.

Results of the year 2040 peak hour intersection capacity analysis, shown in Table 5, indicates that even with the planned transportation improvements, several intersections are expected to operate at unacceptable levels of service. The locations where improvements will be necessary are shaded in gray in Table 5. Mitigation alternatives are presented later in this study.

4.2 Travel Times

A review of the future year 2040 corridor travel times indicates that the average travel time from US Highway 85 (south) to US Highway 85 (north) is expected to be approximately 20 minutes. This represents approximately a five (5) minute increase from existing conditions. Although, several planned transportation improvements were included as part of the year 2040 analysis capacity analysis indicates that there are several locations where improvements are still needed. These improvements are expected to help maintain/improve upon the projected year 2040 corridor travel times. Further discussion regarding specific mitigation alternatives is presented later in this study.

Figure 13 – Year 2040 Corridor Travel Time

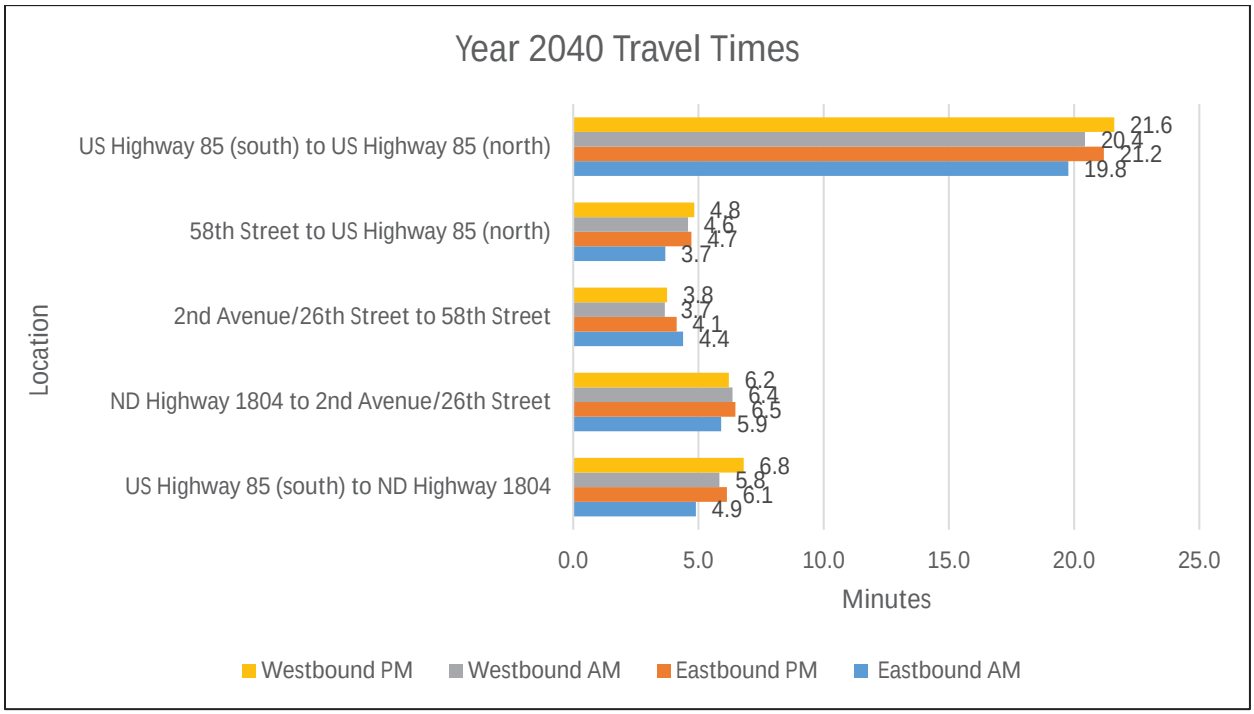


Table 5 - Year 2040 Peak Hour Intersection Capacity Analysis

US Highway 2 Intersection	Level of Service (Delay)	
	A.M. Peak Hour	P.M. Peak Hour
@ US Highway 85 (south)	D (49 sec.)	D (50 sec.)
@ 140th Avenue (1)	A/D (30 sec.)	C/F (~2.8 min.)
@ Schlumberger Access (1)	A/C (19 sec.)	A/C (17 sec.)
@ 139th Lane/Everson Drive (1)	A/F (61 sec.)	A/F (145 sec.)
@ 139th Avenue	B (14 sec.)	B (12 sec.)
@ Chandler Loop (1)	A/C (20 sec.)	A/C (20 sec.)
@ Chandler Boulevard	B (18 sec.)	B (16 sec.)
@ 32nd Avenue	C (20 sec.)	C (27 sec.)
@ 2nd Street/ND Highway 1804 (**)	B (19 sec.)	C (21 sec.)
@ 11th Street (**)	D (43 sec.)	C (33 sec.)
@ 9th Avenue NW	E (74 sec.)	D (38 sec.)
@ 18th Street (1)	A/B (14 sec.)	A/B (13 sec.)
@ Box Elder Street (1)	A/E (36 sec.)	A/D (33 sec.)
@ 9th Avenue (**)	B (11 sec.)	B (10 sec.)
@ 6th Avenue (**)	A/C (22 sec.)	A/C (20 sec.)
@ 2nd Avenue/26th Street	C (25 sec.)	C (34 sec.)
@ 30th Street (1)	A/D (26 sec.)	A/D (31 sec.)
@ 34th Street (1)	A/F (~2 min.)	A/C (24 sec.)
@ 38th Street (1)	A/C (19 sec.)	A/C (20 sec.)
@ 42nd Street	C (30 sec.)	D (37 sec.)
@ 45th Street (1)	A/E (38 sec.)	A/F (51 sec.)
@ 49th Street (1)	A/E (46 sec.)	A/E (41 sec.)
@ 51st Street (1)	A/D (33 sec.)	A/D (28 sec.)
@ 53rd Street (1)	A/E (46 sec.)	A/D (34 sec.)
@ 58th Street (**)	C (27 sec.)	C (23 sec.)
@ 68th Street (1)	A/D (26 sec.)	A/C (23 sec.)
@ 70th Street (1)	A/D (26 sec.)	A/E (42 sec.)
@ 75th Street (1)	A/D (34 sec.)	A/E (47 sec.)
@ 84th Street (**)	C (22 sec.)	C (25 sec.)
@ Energy Street (**)	C (20 sec.)	B (15 sec.)
@ US Highway 85 (north)	F (> 3 min.)	F (> 3 min.)

(1) Indicates an unsignalized intersection with side-street stop control where the overall LOS is shown followed by the worst approach LOS.

(**) Indicates a planned intersection improvement was included.

5.0 Issues Summary and Mitigation Alternatives

Based on the results of the existing conditions analysis, which looked at current issues with respect to access, safety, and roadway capacity as well as the future year 2040 capacity analysis, several locations along the corridor need or are expected to need mitigation to ensure safe and efficient operations. The necessary mitigation alternatives comprise of a combination of access modifications, traffic control changes, and/or turn lane/roadway reconfigurations, including potential interchanges and further study.

It should be noted that access is one of the primary issues along the study corridor. Therefore, an overall access management plan was developed to address the issues identified, which is shown in Figures 14A thru 14G. The focus of the access management plan is along US Highway 2, but also provides some alternatives with respect to adjacent corridor connectivity. Private access should be restricted along US Highway 2 if/when alternative access can be provided. This access management plan provides long-term guidance with respect to access and traffic control. However, each access should be monitored to determine if/when an access modification (i.e. closure, 3/4, or right-in/right-out) is needed and then further evaluated to determine the appropriate configuration based on area conditions at that time.

The following issues summary and mitigation alternatives were developed and offered for consideration as part of this corridor study, which are also shown in Figures 14A thru 14G. These mitigation measures focus on the safety and capacity perspective, but also coincide with the preliminary access management plan. These improvements are expected to provide overall intersection LOS D operations or better.

1) US Highway 85 (south)
    a. Issue(s): Intersection expected to operate near capacity (i.e. near overall LOS D/E) by year 2040
    b. Mitigation: Consider interchange configuration options, which would require further study. Preliminary interchange concepts were developed as part of the *Williston Northwest Bypass Traffic Operations Study* completed in 2013 (provided in the Appendix for reference).

2) 140th Avenue and Schlumberger Access
    a. Issue(s): Statistically significant amount of crashes and intersection capacity issues under year 2040 p.m. peak hour conditions (due to difficult side-street access) at 140th Avenue.
    b. Mitigation: Contingent upon decision at US Highway 85 (south):
        i. *If at-grade intersection at US Highway 85:* Install a traffic signal and turn lane improvements along 140th Avenue; Consider access modification (closure, 3/4, or right-in/right-out) at the Schlumberger Access if/when issues develop. The Schlumberger Access in not intended to be signalized with an at-grade intersection at US 85.
        ii. *If interchange at US Highway 85:* Close access at 140th Avenue and install a traffic signal and turn lane improvements at Schlumberger Access (see Inset Option B).

3) 139th Lane/Everson Drive
    a. Issue(s): Intersection capacity issues under year 2040 a.m. and p.m. peak hour conditions (due to difficult side-street access).
    b. Mitigation: Consider access modification (closure, 3/4, or right-in/right-out) if/when issues develop. Depending on the access modification, an eastbound left-turn lane should be constructed. This location is not intended to be signalized.

4) 139th Avenue
    a. Issue(s): Statistically significant amount of crashes.
    b. Mitigation: Install a permanent traffic signal and provide turn lane improvements along 139th Avenue (to include dedicated left, thru, and right-turn lanes on both the north and south approaches).

5) Chandler Loop
    a. Issue(s): Access spacing near/less than 1/4 mile.
    b. Mitigation: Consider access modification (closure, 3/4, or right-in/right-out) if/when issues develop. This location is not intended to be signalized.

6) Reiger Drive
    a. Issue(s): Access spacing less than 1/4 mile, once ND Highway 1804 is realigned.
    b. Mitigation: Close access.

7) 11th Street
    a. Issue(s): Intersection approaching capacity under year 2040 a.m. peak hour conditions (due to increase in traffic volumes along 11th Street).
    b. Mitigation: Monitor and if needed, extend the eastbound dual left-turn lanes; convert the current westbound right-turn lane to a shared thru/right-turn lane; construct an eastbound right-turn lane and convert the current right-turn lane to a thru lane, which will require continuing the four-lane section for at least 500 feet east of US Highway 2. Extending the four-lane section to 14th Avenue as well as potential West Frontage Road access/alignment options may need to be considered at the time of any improvements.

8) 9th Avenue NW
    a. Issue(s): Intersection capacity issues under year 2040 a.m. and p.m. peak hour conditions.
    b. Mitigation: Construct an eastbound and westbound right-turn lane along 9th Avenue NW.

9) Box Elder Street
    a. Issue(s): Intersection capacity issues under year 2040 a.m. peak hour conditions (due to difficult side-street access).
    b. Mitigation: Consider access modification (closure, 3/4, or right-in/right-out) if/when issues develop. This location is not intended to be signalized.

10) 9th Avenue W and 6th Avenue
    a. Issue(s): Statistically significant amount of crashes at 6th Avenue, access spacing to 2nd Avenue less than 1/4 mile, and existing intersection capacity issues (due to difficult side-street access and queues along US Highway 2).
    b. Mitigation: Close the north approach of 6th Avenue and consider an access modification (closure, 3/4, or right-in/right-out) at the south approach if/when issues develop; Construct a new access to US Highway 2 along the 9th Avenue W alignment, install a traffic signal and turn lane improvements on each approach (constructed in 2016).

11) 2nd Avenue/26th Street
    a. Issue(s): Statistically significant amount of crashes.
    b. Mitigation:
        i. *If no airport redevelopment:* Consolidate/close access near the intersection (4th Avenue); Modify the southbound to westbound diverge/merge areas to reduce conflicts (constructed in 2016); Provide advance flashing traffic signal warning beacons along US Highway 2.
        ii. *If airport redevelopment:* Relocate and realign the US Highway 2/26th Street intersection to allow US Highway 2 to be the through movement (see Inset Option B).

12) 30th Street and 31st Street
    a. Issue(s): Access spacing less than 1/4 mile and proximity of adjacent frontage roads.
    b. Mitigation: Close both access locations.

13) 34th Street
    a. Issue(s): Statistically significant amount of crashes, intersection capacity issues under year 2040 a.m. peak hour conditions (due to difficult side-street access), and proximity of adjacent frontage roads.
    b. Mitigation: Install a traffic signal and reconfigure the frontage road system to provide additional turn lane storage.

14) 38th Street
    a. Issue(s): Statistically significant amount of crashes and proximity of adjacent frontage road to the west.
    b. Mitigation: Close access or reconfigure west frontage road to increase distance from US Highway 2.

15) 42nd Street
    a. Issue(s): Statistically significant amount of crashes and proximity of adjacent frontage road to the west.
    b. Mitigation: Reconfigure the frontage roads to increase distance from US Highway 2; consider additional turn-lanes along 42nd Street, particularly the east approach (under construction); provide advance flashing traffic signal warning beacons along northbound US Highway 2.

16) 45th Street
    a. Issue(s): Intersection capacity issues under year 2040 p.m. peak hour condition and proximity of adjacent frontage roads.
    b. Mitigation:
        i. *If no access at 49th Street:* Construct turn lane improvements on both US Highway 2 and 45th Street; reconfigure the frontage roads to increase distance from US Highway 2; Install a traffic signal.
        ii. *If access at 49th Street:* Consider access modification (closure, 3/4, or right-in/right-out) if/when issues develop. This location is not intended to be signalized under this scenario (see Inset Option B).

17) 48th Street/49th Street

a. Issue(s): Intersection capacity issues under year 2040 a.m. and p.m. peak hour conditions (due to difficult side-street access) and proximity of adjacent frontage roads.
b. Mitigation: Close/modify access due to proximity of adjacent frontage roads; Consider turn lane and signalization if right-of-way is available (see Inset Option B).

18) 50th Street/51st Street

a. Issue(s): Proximity of adjacent frontage roads.
b. Mitigation: Close/modify access due to proximity of adjacent frontage roads; reconfigure the frontage roads to increase distance from US Highway 2 (see Inset Option B).

19) 53rd Street

a. Issue(s): Intersection capacity issues under year 2040 a.m. peak hour conditions (due to difficult side-street access), offset intersection/connectivity, and proximity of adjacent frontage roads.
b. Mitigation: Realign US Highway 2 connection to 53rd Street alignment and consider access modification (closure, 3/4, or right-in/right-out) if/when issues develop; this location is not intended to be signalized; reconfigure frontage roads to increase distance to US Highway 2.

20) US Highway 2: 58th Street to 70th Street

a. Issue(s): Multiple private driveways within this segment; difficult side-street access; lack of a southbound left-turn lane into Dan's Tire Service.
b. Mitigation: Close private access to US Highway 2 if/when alternative access is provided; for locations that are land locked (e.g. Dan's Tire Service), a southbound left-turn lane should be constructed.

21) 70th Street

a. Issue(s): Intersection capacity issues under year 2040 p.m. peak hour conditions (due to difficult side-street access) and proximity of adjacent frontage roads.
b. Mitigation: Realign intersection to the south closer to the existing 70th Street alignment (on the section line); install a traffic signal and corresponding turn-lanes; reconfigure frontage roads to increase distance from US Highway 2.

22) US Highway 2: 70th Street to 84th Street

a. Issue(s): Multiple private driveways within this segment; difficult side-street access.
b. Mitigation: Close private access to US Highway 2 if/when alternative access is provided.

23) 84th Street

a. Issue(s): Intersection capacity issues based on proposed development.
b. Mitigation: Install traffic signal and turn lane improvements per proposed development traffic operations study, as appropriate.

24) Well Street

a. Issue(s): Lack of a northbound right-turn creates conflicts.
b. Mitigation: Consider access modification (closure, 3/4, or right-in/right-out) if/when issues develop; depending on the access modification, a northbound right-turn lane should be constructed; this location is not intended to be signalized.

25) Energy Street

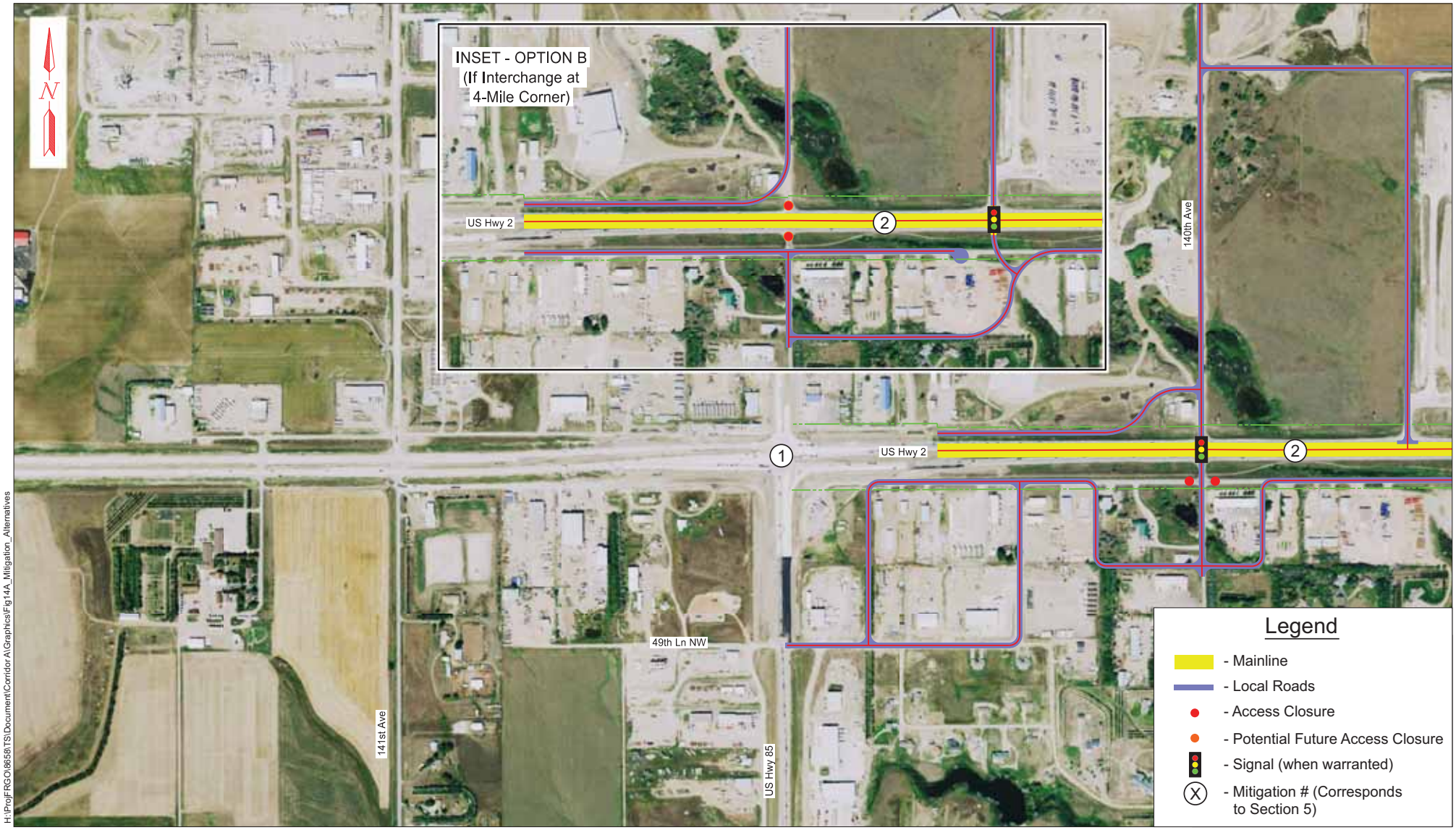
a. Issue(s): Intersection capacity issues based on proposed development.
b. Mitigation: Install traffic signal and turn lane improvements per proposed development traffic operations study, as appropriate.

26) US Highway 2: Energy Street to US Highway 85 (north)

a. Issue(s): Multiple private driveways/farm accesses within this segment; difficult side-street access.
b. Mitigation: Close private/farm access to US Highway 2 if/when alternative access is provided; consider new access as appropriate given current access spacing guidelines and operations; no signals are intended to be within this segment.

27) US Highway 85 (north)

a. Issue(s): Intersection expected to operate over capacity (i.e. overall LOS F) by year 2040
b. Mitigation: Consider interchange configuration options, which would require further study. Preliminary interchange concepts were developed as part of the *Williston Northwest Bypass Traffic Operations Study* completed in 2013 (provided in the Appendix for reference).



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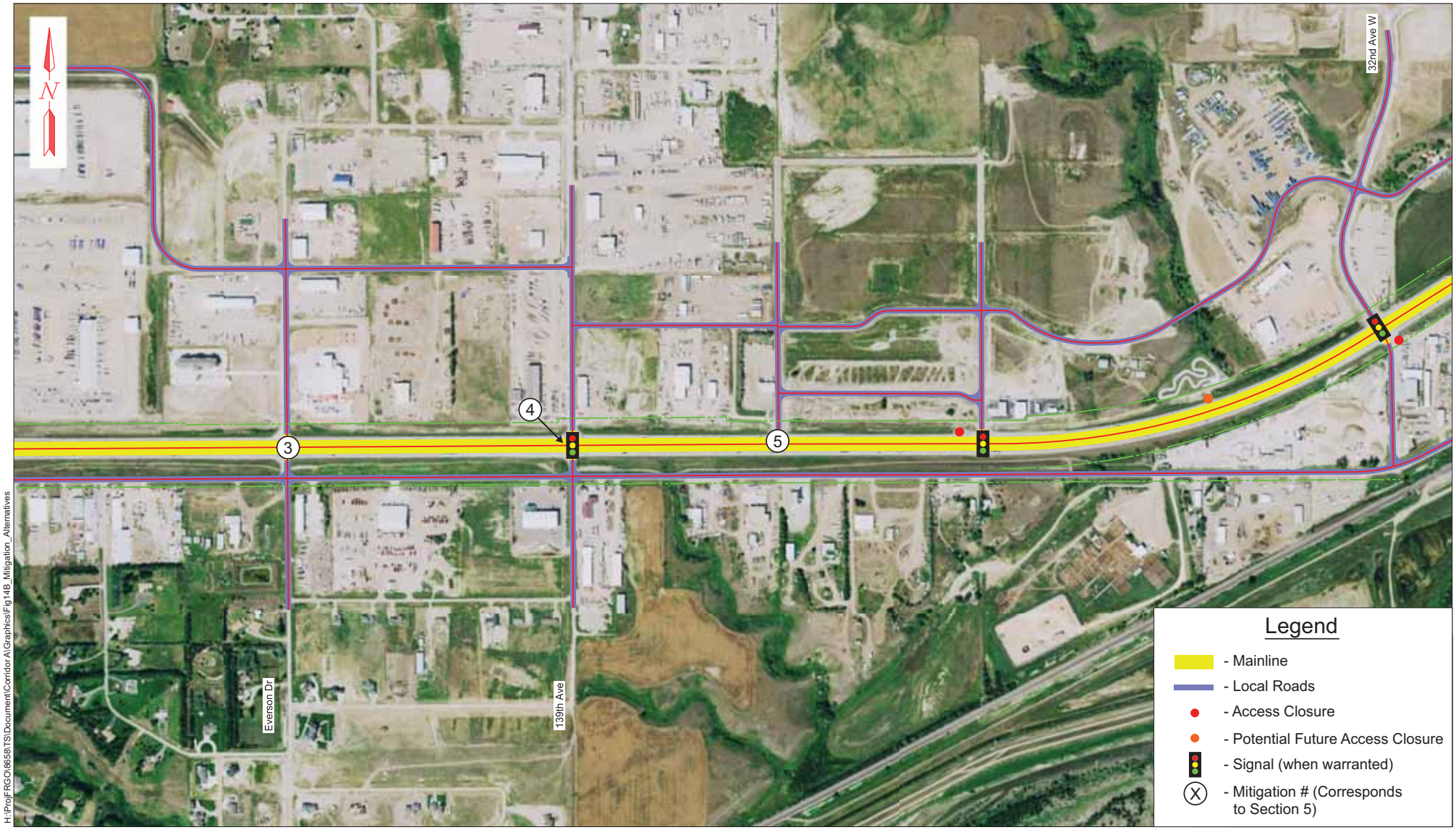
Mitigation Alternatives

Williston Area Transportation Plan Corridor Study (Corridor A)
City of Williston, Williams County, and NDDOT

Figure 14A



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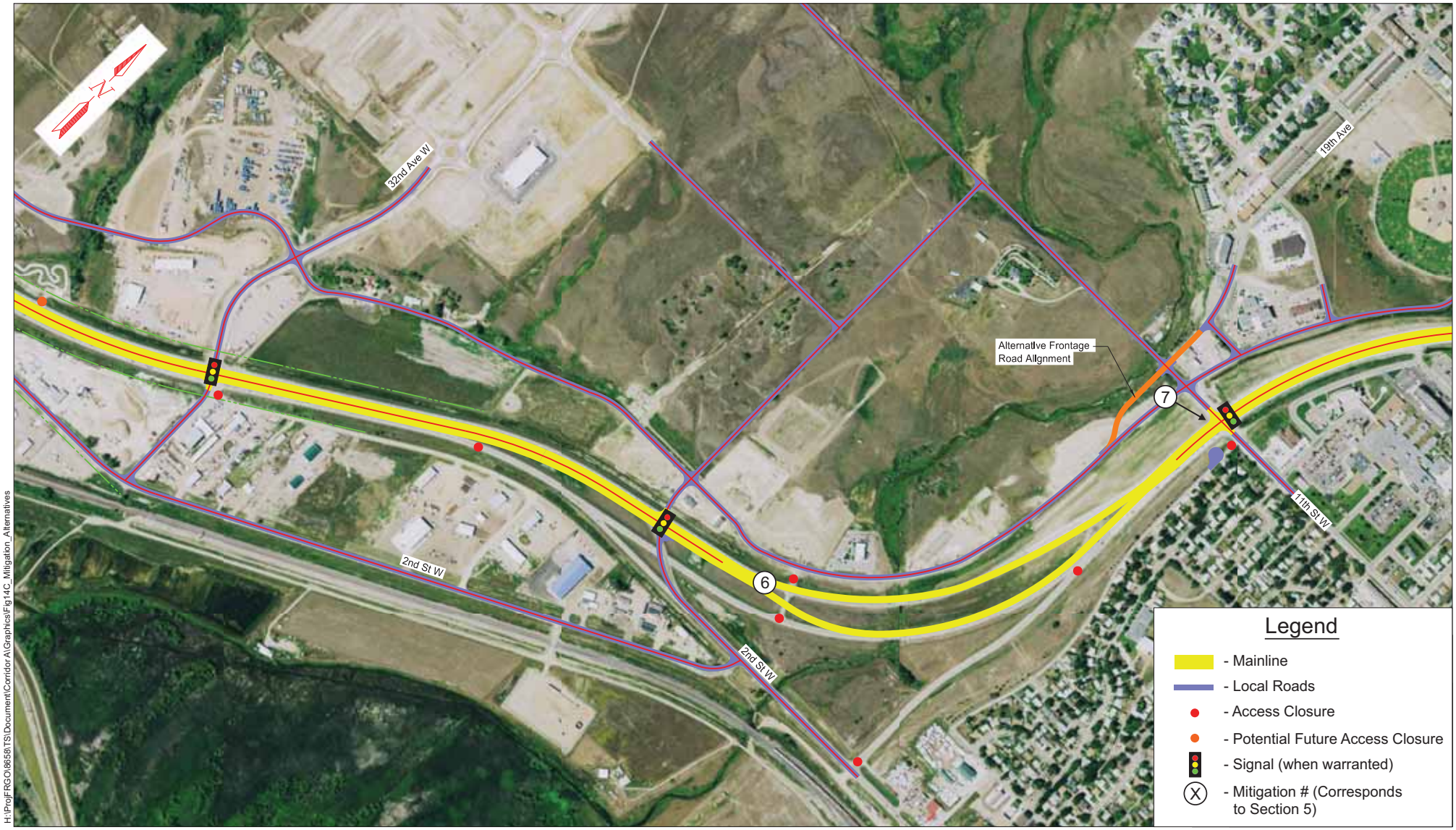
Mitigation Alternatives

Williston Area Transportation Plan Corridor Study (Corridor A)
City of Williston, Williams County, and NDDOT

Figure 14B



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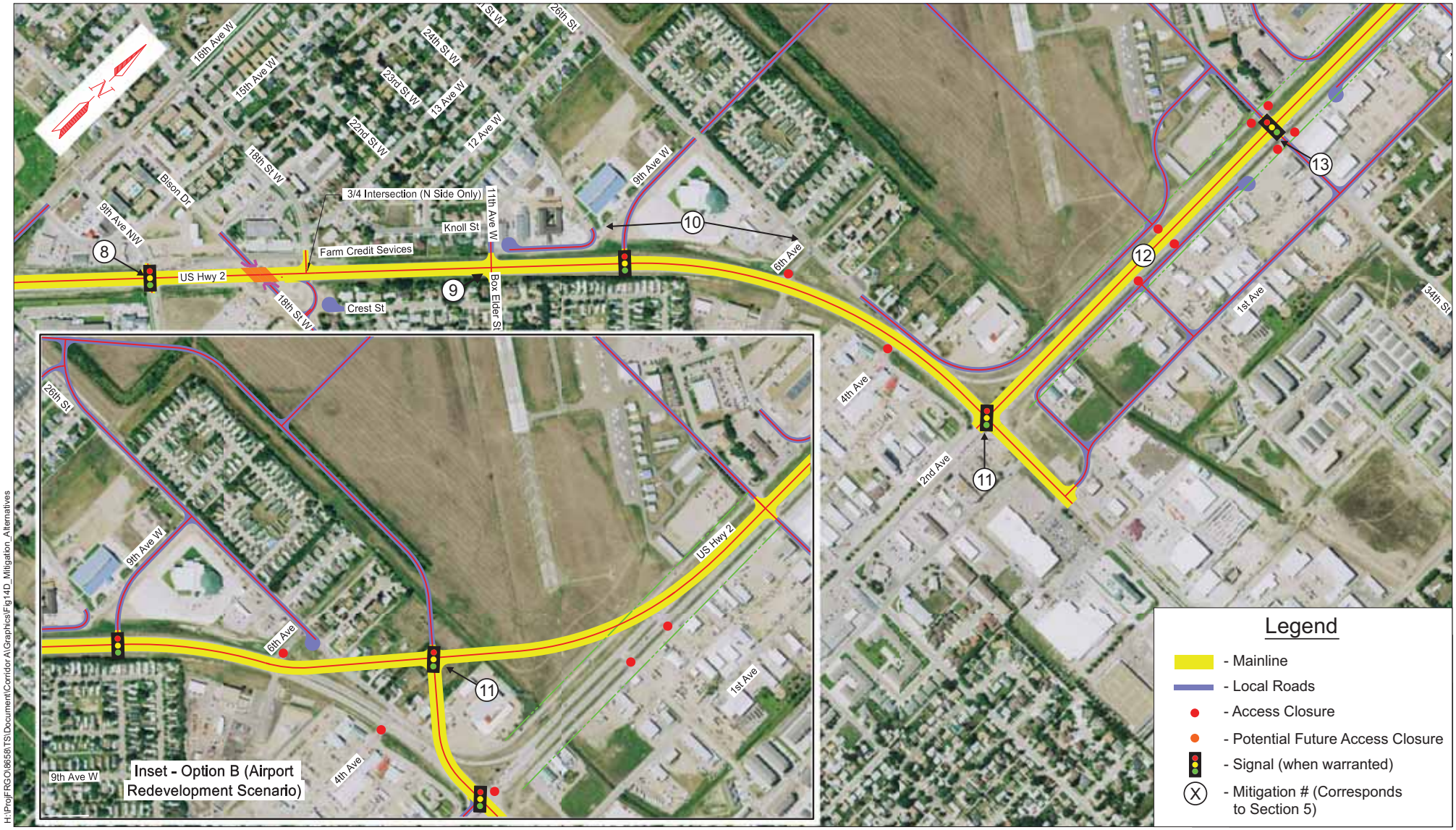
Mitigation Alternatives

Williston Area Transportation Plan Corridor Study (Corridor A)
City of Williston, Williams County, and NDDOT

Figure 14C



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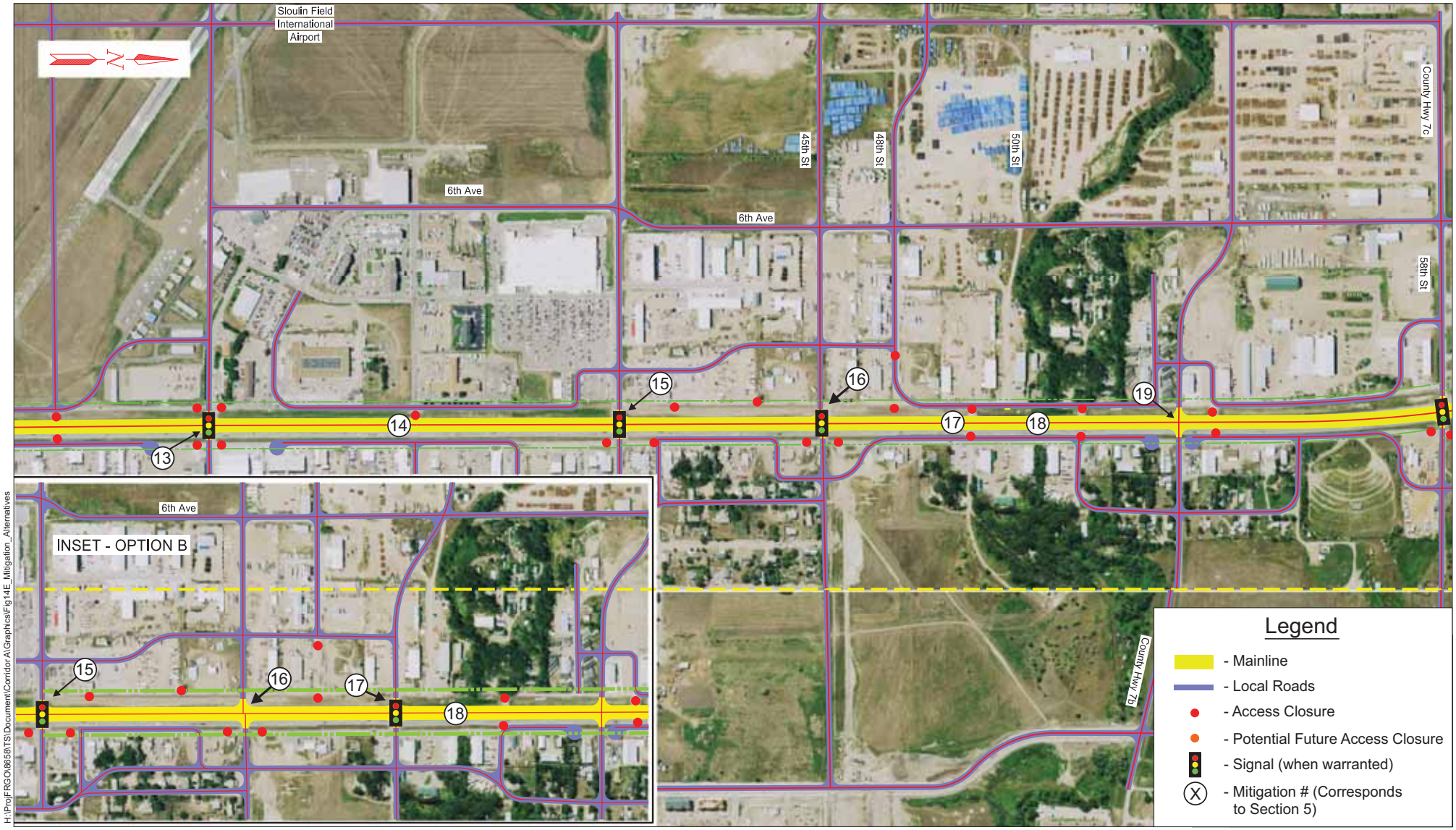
Mitigation Alternatives

Williston Area Transportation Plan Corridor Study (Corridor A)
City of Williston, Williams County, and NDDOT

Figure 14D



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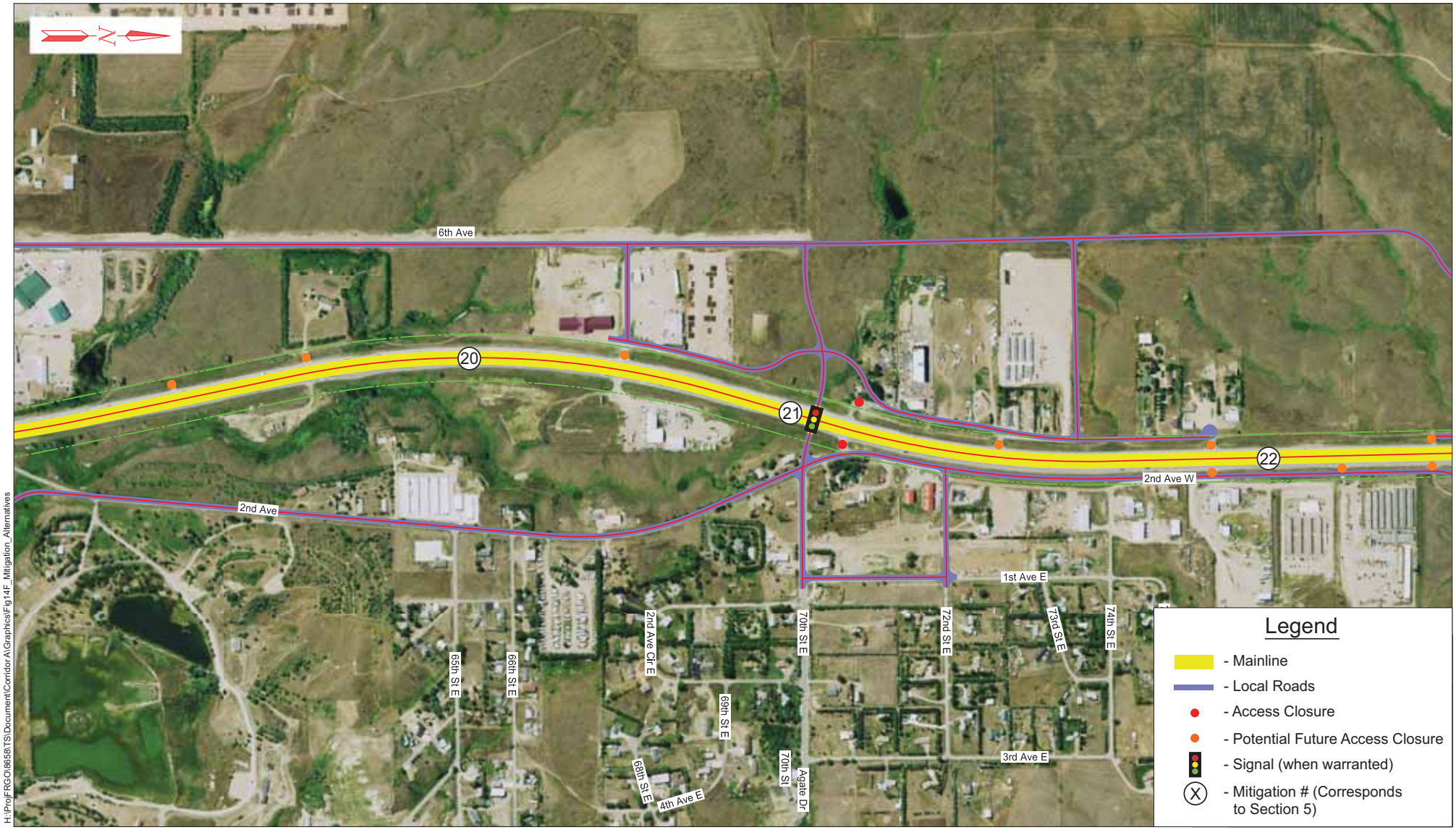
Mitigation Alternatives

Williston Area Transportation Plan Corridor Study (Corridor A)
City of Williston, Williams County, and NDDOT

Figure 14E



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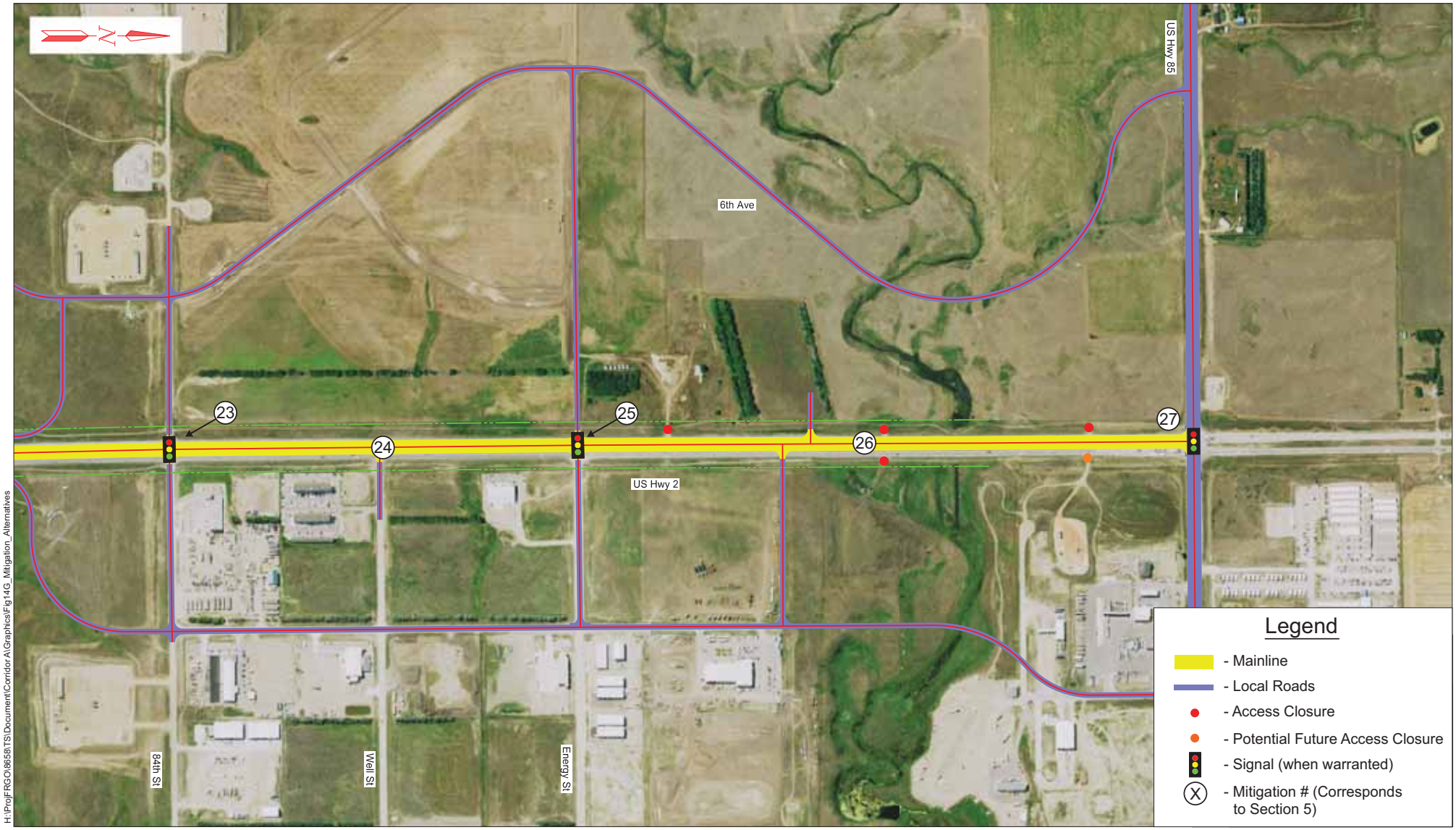
Mitigation Alternatives

Williston Area Transportation Plan Corridor Study (Corridor A)
City of Williston, Williams County, and NDDOT

Figure 14F



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Mitigation Alternatives

Williston Area Transportation Plan Corridor Study (Corridor A)
City of Williston, Williams County, and NDDOT

Figure 14G

6.0 Project Prioritization

6.1 Prioritization Approach

Given the mitigation necessary to ensure long-term safe and efficient operations along US Highway 2, there is a need to help prioritize the potential improvements. However, since there are multiple projects currently in-progress, as well as potential development that could re-prioritize the improvements, a planning level prioritization approach was completed. This approach focused on locations with existing issues, but also considered the approximate timeline when capacity improvements may be needed. Mitigation alternatives were prioritized into short- (existing to year 2020), medium- (year 2020 to year 2030), and long-term (year 2030 to year 2040+) improvements and are summarized as follows:

1) Short-Term Mitigation (Existing to Year 2020)
    a. 140th Avenue and Schlumberger Access: Signal, Capacity, and Access Modifications
    b. Reiger Drive: Access Modification (planned 2017 construction)
    c. Box Elder Street: Access Modification
    d. 9th Avenue W /6th Avenue: Traffic Control and Access Modifications (2016 construction)
    e. 2nd Avenue/26th Street: Safety Improvements (2016 construction)
    f. 30th Street and 31st Street: Access Modification
    g. 34th Street: Traffic Control and Capacity
    h. 38th Street: Access Modification
    i. 42nd Street: Safety and Access Modification (2016 construction)
    j. 84th Street: Traffic Control and Capacity
    k. Energy Street: Traffic Control and Capacity
2) Mid-Term Mitigation (Year 2020 to Year 2030)
    a. 139th Lane/Everson Drive: Access Modification
    b. 139th Avenue: Traffic Control and Capacity
    c. Chandler Loop: Access Modification
    d. 45th Street: Traffic Control, Capacity, and Access Modification
    e. 49th Street to 58th Street: Traffic Control, Capacity, and Access Modification
    f. 70th Street: Traffic Control, Capacity, and Alignment
    g. Well Street: Access Modification
3) Long-Term Mitigation (Year 2030 to Year 2040+)
    a. US Highway 85 (south): Interchange Study and Construction
    b. 11th Street: Capacity Improvements (east of US Highway 2)
    c. 9th Avenue NW: Capacity Improvements
    d. US Highway 2: 58th Street to 70th Street: Access Management
    e. US Highway 2: 70th Street to 84th Street: Access Management
    f. US Highway 2: Energy Street to US Highway 85 (north): Access Management
    g. US Highway 85 (north): Interchange Study and Construction

Although these projects were prioritized based on existing and future needs, the City, County, and NDDOT should monitor area operations and leverage opportunities when available to complete this mitigation.

6.2 Preliminary Cost Estimates

To aide in future corridor planning, preliminary concept cost estimates were developed. The intent of these cost estimates is to provide an approximate cost to allow stakeholders to plan for future improvements along the study corridor. The preliminary cost estimates utilized typical planning level thresholds for various traffic controls and roadway improvements. The following information summarizes the planning level cost estimates, which generally follows the US Highway 2 projects as listed in the previous section, as well as the mitigation ID listed in Section 5.0. Costs shown are based on year 2016 pricing and do not include any contingency, engineering/administration, and/or right-of-way costs.

Table 6 - Mitigation and Preliminary Cost Estimate Summary

Mitigation ID(s)	US Highway 2 Location	Type of Improvement	Priority	Approximate Cost ($)
2	140th Avenue and Schlumberger Access	Signal, Capacity, Access	Short-Term	$3.1M
6	Reiger Drive	Access*	Short-Term	$25,000*
9	Box Elder Street	Access	Short-Term	$30,000
10	9th Avenue W and 6th Avenue	Signal, Capacity, Access*	Short-Term	$0.8M*
11	2nd Avenue/26th Street	Safety**	Short-Term	$5.6M
12	30th Street and 31st Street	Access**	Short-Term	$1.5M
13	34th Street	Signal, Capacity	Short-Term	$0.6M
14	38th Street	Access	Short-Term	$60,000
15	42nd Street	Safety, Access*	Short-Term	$1.0M*
23	84th Street	Signal, Capacity	Short-Term	$0.4M
25	Energy Street	Signal, Capacity	Short-Term	$0.4M
3	139th Lane/Everson Drive	Access	Mid-Term	$0.2M
4	139th Avenue	Safety, Access	Mid-Term	$0.3M
5	Chandler Loop	Access	Mid-Term	$10,000
16	45th Street	Access	Mid-Term	$1.2M
17, 18, 19	49th Street to 58th Street	Signal, Access	Mid-Term	$3.5M
21	70th Street	Signal, Capacity, Alignment	Mid-Term	$6.2M
24	Well Street	Access	Mid-Term	$40,000
1	US Highway 85 (south)	Study/Interchange	Long-Term	$23M to $32M
7	11th Street	Capacity	Long-Term	$0.8M
8	9th Avenue NW	Capacity	Long-Term	$40,000
20	58th Street to 70th Street	Access	Long-Term	$50,000
22	70th Street to 84th Street	Access	Long-Term	$3.1M
26	Energy Street to US Highway 85 (north)	Access	Long-Term	$10,000
27	US Highway 85 (north)	Study/Interchange	Long-Term	$29M to $32M

(*) Coincides/Planned with ND Highway 1804 realignment project, which is funded.

(**) Contingent upon airport redevelopment.

7.0 Airport Redevelopment

The planned Williston Airport relocation provides an opportunity to redevelop the former Williston Airport and the approximate 650 acres of land it encompasses. This has the potential to have a significant impact on US Highway 2 and its access locations. Although the airport redevelopment planning is in the early stages, a preliminary high-level review was completed as part of this study. This review focused on land use and transportation network information provided by City staff and the relative long-term impacts to US Highway 2.

The Williston Airport redevelopment plan will likely include a wide-range of land uses. From a transportation perspective, the redevelopment looks to build upon the existing roadway network and connectivity. One of the key transportation components is a new east/west roadway, which is located at approximately 30th Street. From an access spacing perspective, this location makes sense as it is approximately one-quarter (1/4) mile from both 26th Street and 34th Street. However in general, the US Highway 2 corridor has signal spacing at one-half (1/2) mile or more, which is desirable. Therefore, a more detailed review of US Highway 2 (from 42nd Street to the future 9th Avenue) was completed, which assumed the existing alignment of US Highway 2 and a traffic signal at the proposed 30th Street alignment, as well as at 34th Street, which was identified earlier as a needed mitigation alternative.

Results of the year 2040 intersection capacity analysis (airport redevelopment comparison) indicates that the redevelopment of the airport has a relatively local impact. In other words, from a traffic operations perspective, the redevelopment has a small impact south of 9th Avenue W and north of 42nd Street. However, between 9th Avenue and 42nd Street, several intersections are expected to need additional capacity improvements, including 6th Avenue, 2nd Avenue/26th Street, 38th Street, and 42nd Street. Mitigation in these locations range from access modifications to turn lane and traffic control improvements. However, further analysis and study needs to be conducted as the future land use is refined to determine the appropriate level of mitigation.

Table 7 - Year 2040 Peak Hour Capacity (Airport Redevelopment Comparison)

US Highway 2 Intersection	Year 2040 Level of Service (Delay)			
	A.M. Peak Hour		P.M. Peak Hour	
	Base	With Airport Redevelopment	Base	With Airport Redevelopment
@ 9th Avenue W (**)	B (11 sec.)	B (11 sec.)	B (10 sec.)	B (11 sec.)
@ 6th Avenue (**)	A/C (22 sec.)	A/E (39 sec.)	A/C (20 sec.)	A/D (27 sec.)
@ 2nd Avenue/26th Street	C (25 sec.)	C (30 sec.)	C (34 sec.)	D (45 sec.)
@ 30th Street (1)	A/D (26 sec.)	C (23 sec.) *	A/D (31 sec.)	C (27 sec.) *
@ 34th Street (1)	A/F (~2 min.)	B (17 sec.) *	A/C (24 sec.)	C (20 sec.) *
@ 38th Street (1)	A/C (19 sec.)	A/E (46 sec.)	A/C (20 sec.)	B/E (48 sec.)
@ 42nd Street	C (30 sec.)	C (29 sec.)	D (37 sec.)	D (44 sec.)

(1) Indicates an unsignalized intersection with side-street stop control where the overall LOS is shown followed by the worst approach LOS.

(*) Indicates a traffic signal and turn lane improvements were assumed.

(**) Indicates a planned intersection improvement was included.

It should be noted that redevelopment of the Williston Airport does provide a unique opportunity to address current issues within the area. In particular, addressing the existing US Highway 2 alignment should be considered to provide a more consistent through movement (see Inset B on Figure 14D). This would require a detailed analysis and concept development process that is beyond the scope of this corridor study.

8.0 Jurisdictional Transfer

The City has expressed the potential desire to transfer the jurisdiction of the current US Highway 2 alignment to the City, which would move the US Highway 2 designation to the Northwest Truck Reliever Route (in conjunction with US Highway 85). The City envisions more of an urban arterial roadway or business route. Further discussions with the NDDOT and City need to occur before this type of transfer can occur. Key discussion items would include the overall corridor function (i.e. mobility versus access), establishing access and signal spacing guidelines, and the corridor cross-section, amongst others. However, from an overall traffic operations perspective, the corridor and intersections will operate relatively similar under either condition as the speed limits would be generally similar.

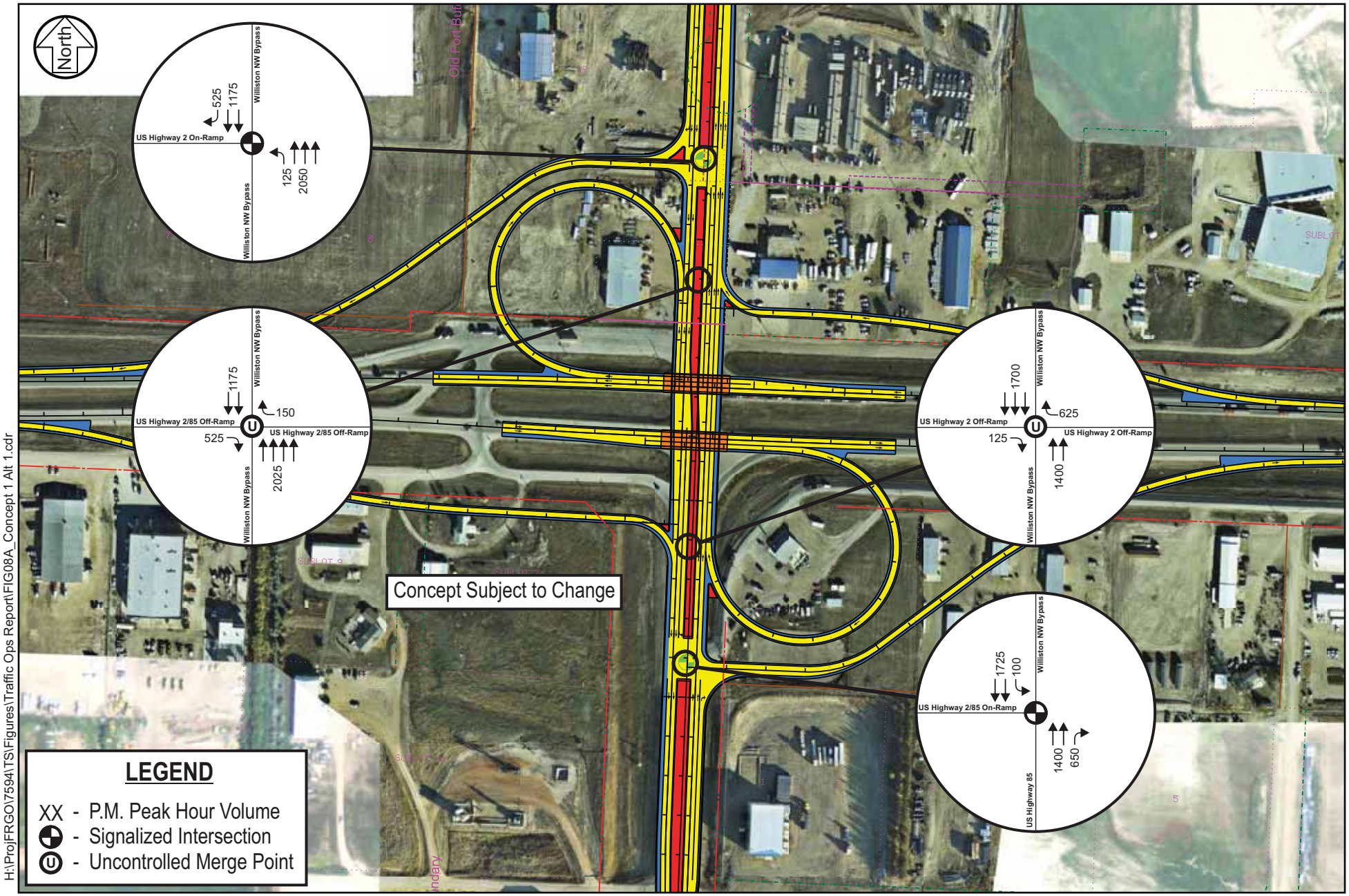
9.0 Summary and Conclusions

The goal of this corridor study was to identify the short- and long-term needs of US Highway 2 from US Highway 85 (at 4-Mile Corner) to US Highway 85/US Highway 85B (at Love's Corner). The identified needs of the corridor were based on traffic operations, providing as safe and efficient operations within the study area as possible. The analysis included and focused on access, crashes, roadway and intersection capacity, and any other issues identified through stakeholder involvement. Through this analysis, several issues were identified throughout the study corridor.

To address the issues identified, multiple mitigation alternatives were developed for the corridor. The issues and corresponding mitigation alternatives are summarized in Section 5 (Issues Summary and Mitigation Alternatives). These mitigation alternatives were then prioritized based on need (safety, capacity, access) into short- (existing to year 2020), medium- (year 2020 to year 2030), and long-term (year 2030 to year 2040+) mitigation, which is summarized in Table 6. Furthermore, preliminary cost estimates were developed for the majority of the mitigation alternatives to help with capital planning and funding. This preliminary costs estimates are also summarized in Table 6. Further discussion with stakeholders should occur as planning and opportunities arise with respect to infrastructure investment.

It should be noted that the redevelopment of the Williston airport provides a unique opportunity to reconfigure and improve operations along US Highway 2 and other locations within the study area. Since the redevelopment of the airport property is expected to reduce the available capacity at multiple intersections within the study area (particularly near the airport), additional roadway mitigation alternatives should be considered. However, this type of opportunity investigation is outside the scope of this study. Preliminary investigation results of the airport redevelopment impacts are summarized in Section 7.

Appendix



H:\Proj\FRGO\7594\TS\Figures\Traffic Ops Report\FIG08A_Concept 1 Alt 1.cdr

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US Highway 2/85 at "Four Mile Corner" - Concept 1 (Alternative 1)

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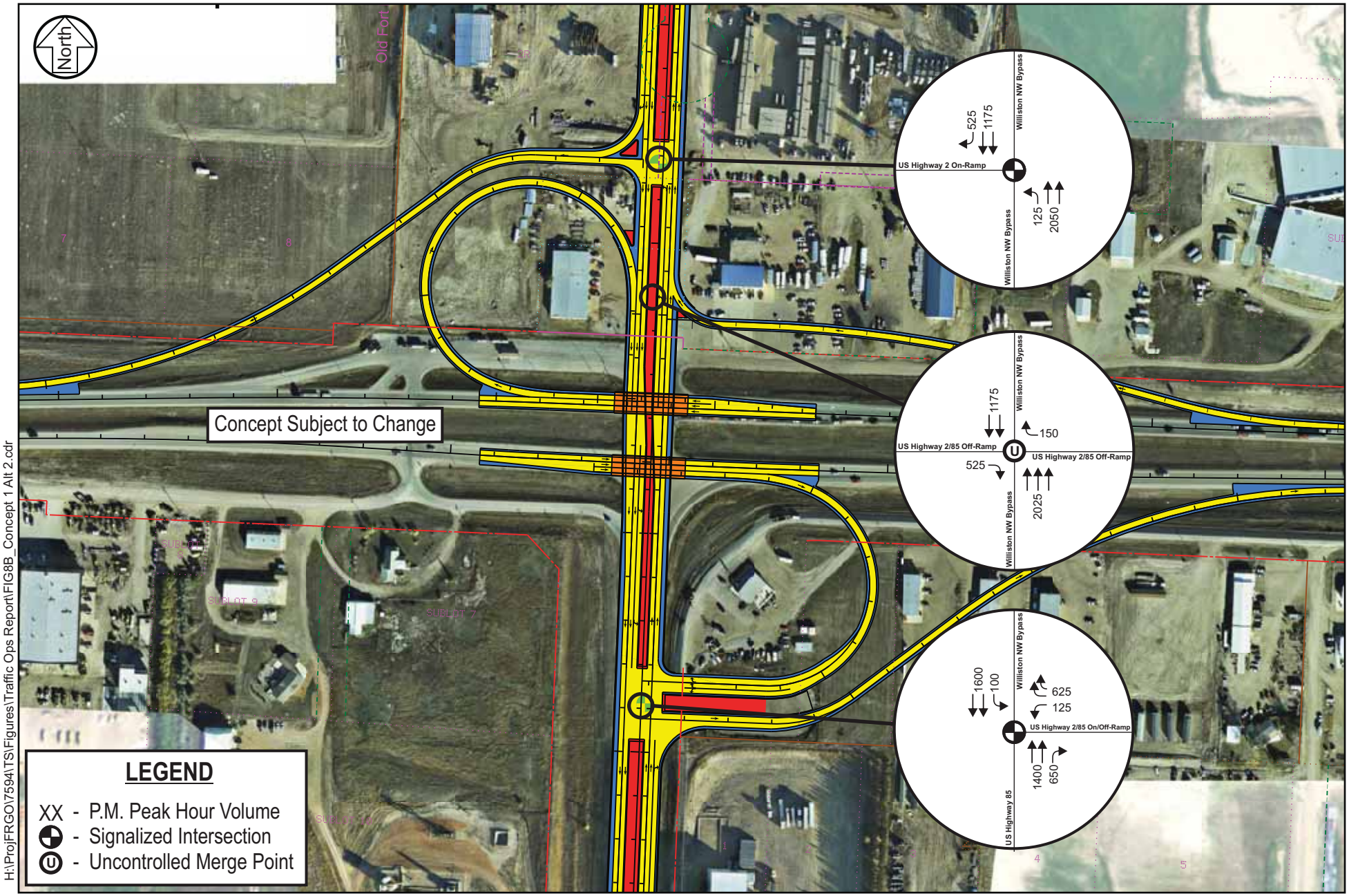
Figure 8A



H:\Proj\FRGO\7594\TS\Figures\Traffic Ops Report\FIG8B_Concept 1 Alt 2.cdr

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US Highway 2/85 at "Four Mile Corner" - Concept 1 (Alternative 2)

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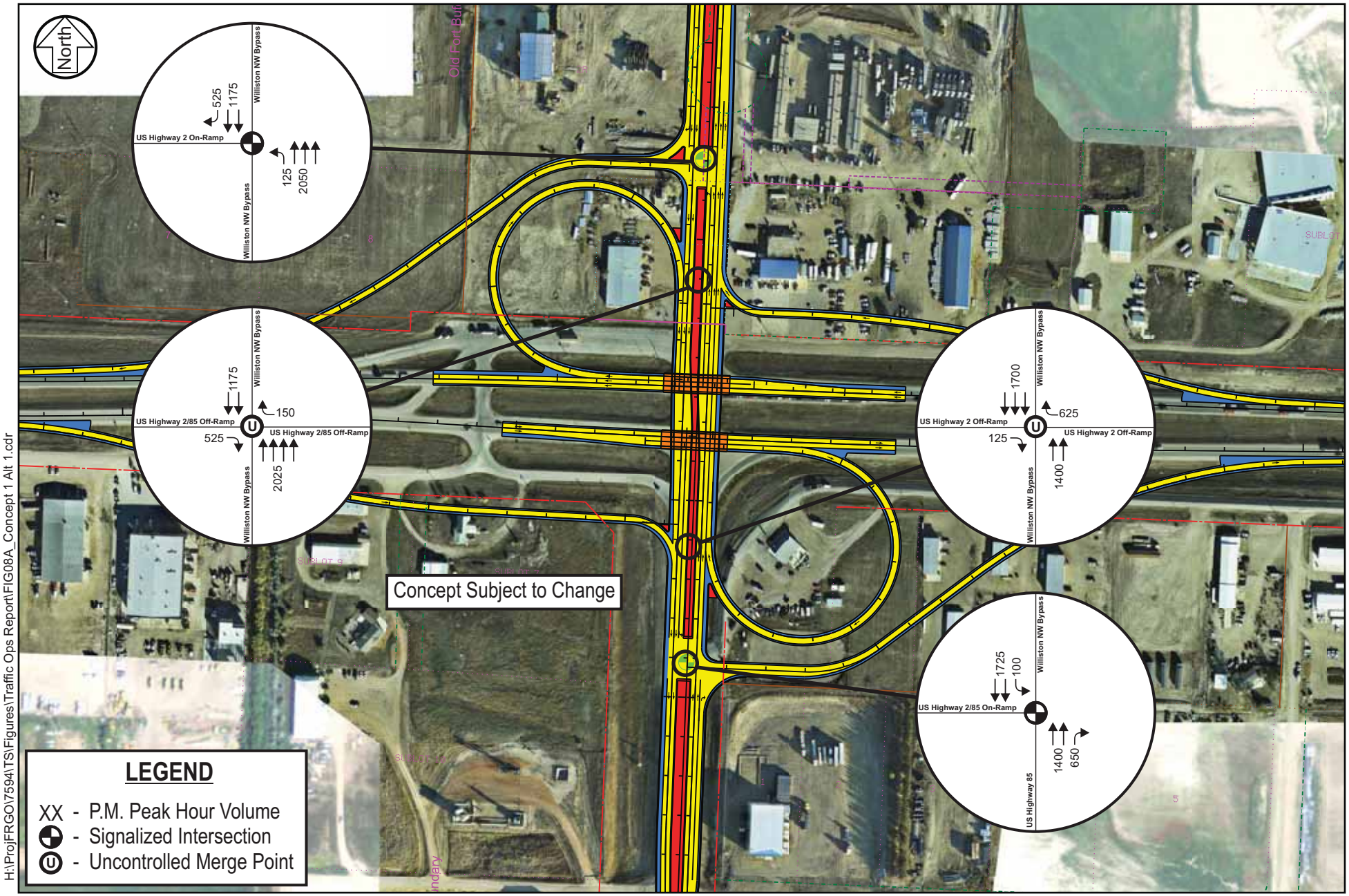
Figure 8B



H:\Proj\FRGO\7594\TS\Figures\Traffic Ops Report\FIG08A_Concept 1 Alt 1.cdr

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US Highway 2/85 at "Four Mile Corner" - Concept 1 (Alternative 1)

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Figure 8A

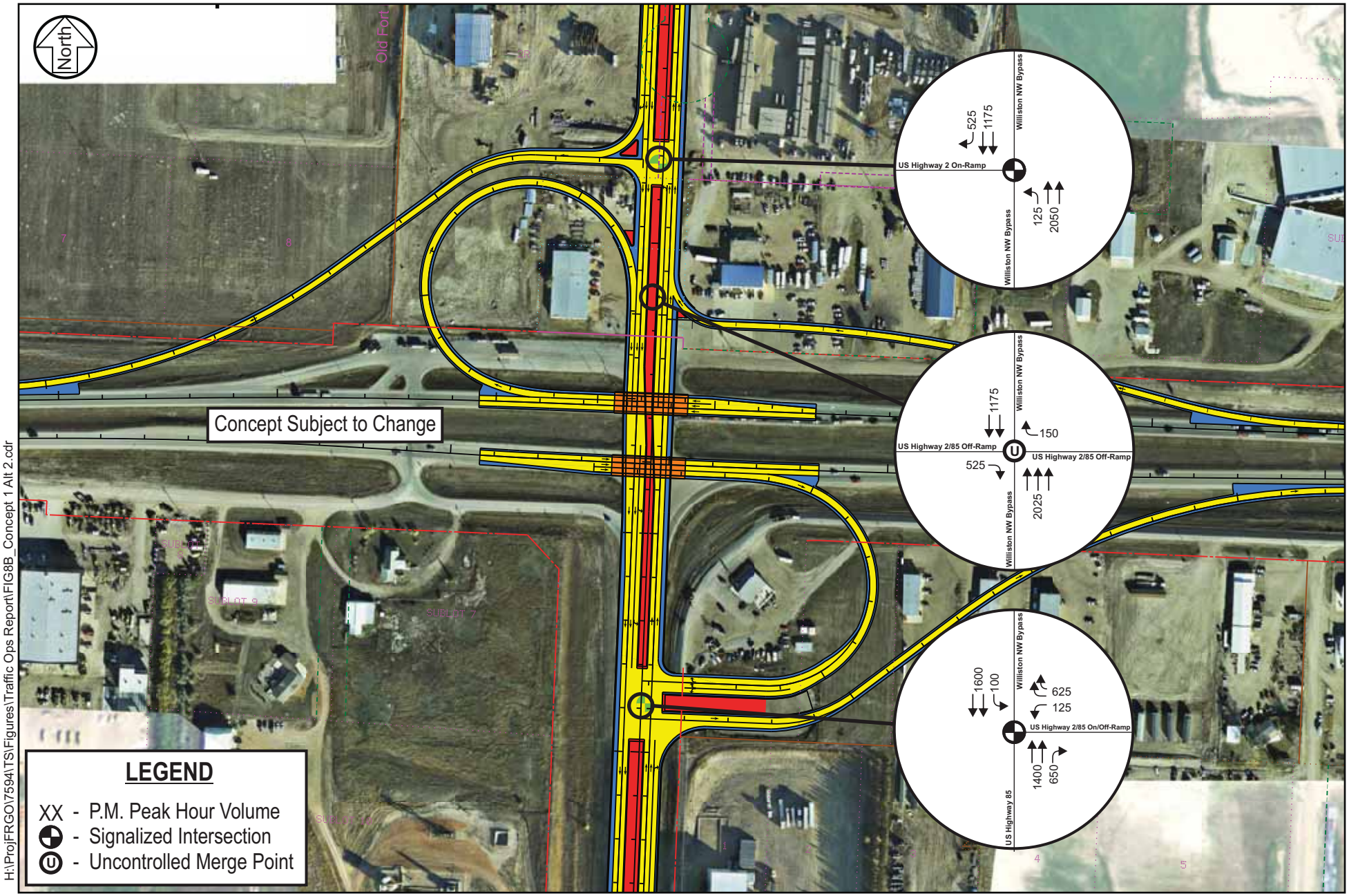

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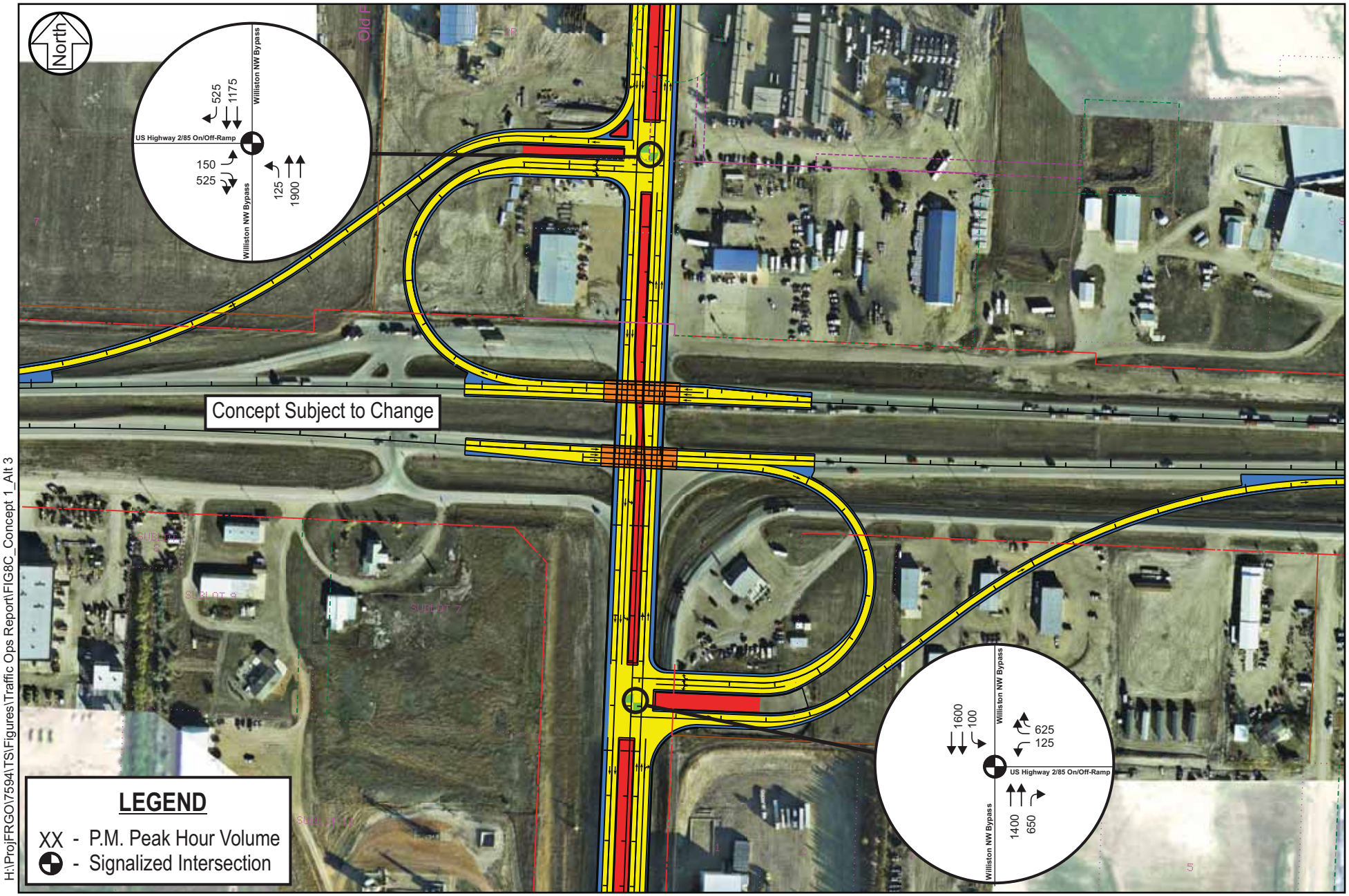
Figure 8B



H:\Proj\FRGO\7594\TS\Figures\Traffic Ops Report\FIG8C_Concept 1_Alt 3

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US Highway 2/85 at "Four Mile Corner" - Concept 1 (Alternative 3)

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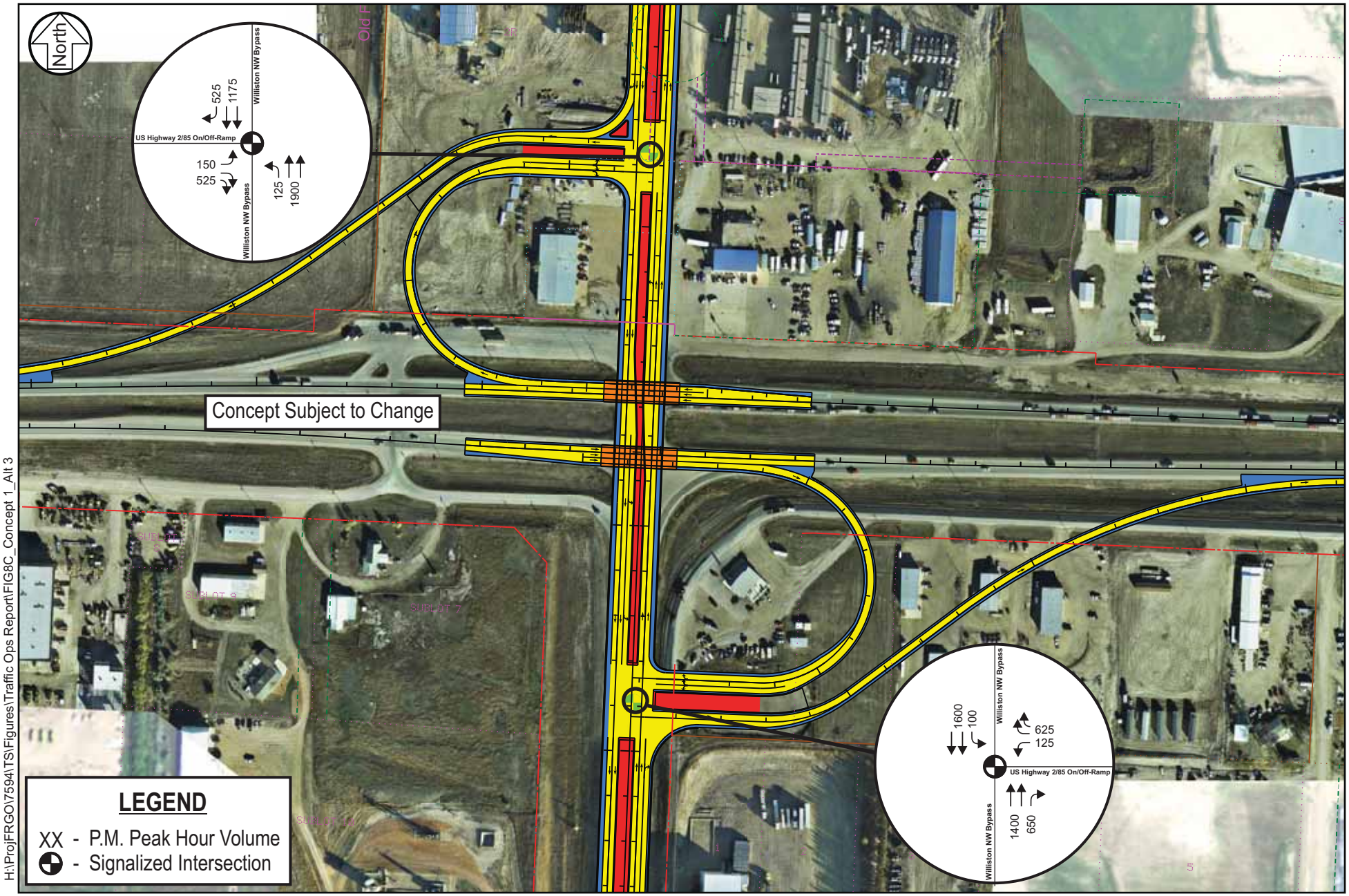
Figure 8C



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US Highway 2/85 at "Four Mile Corner" - Concept 1 (Alternative 3)

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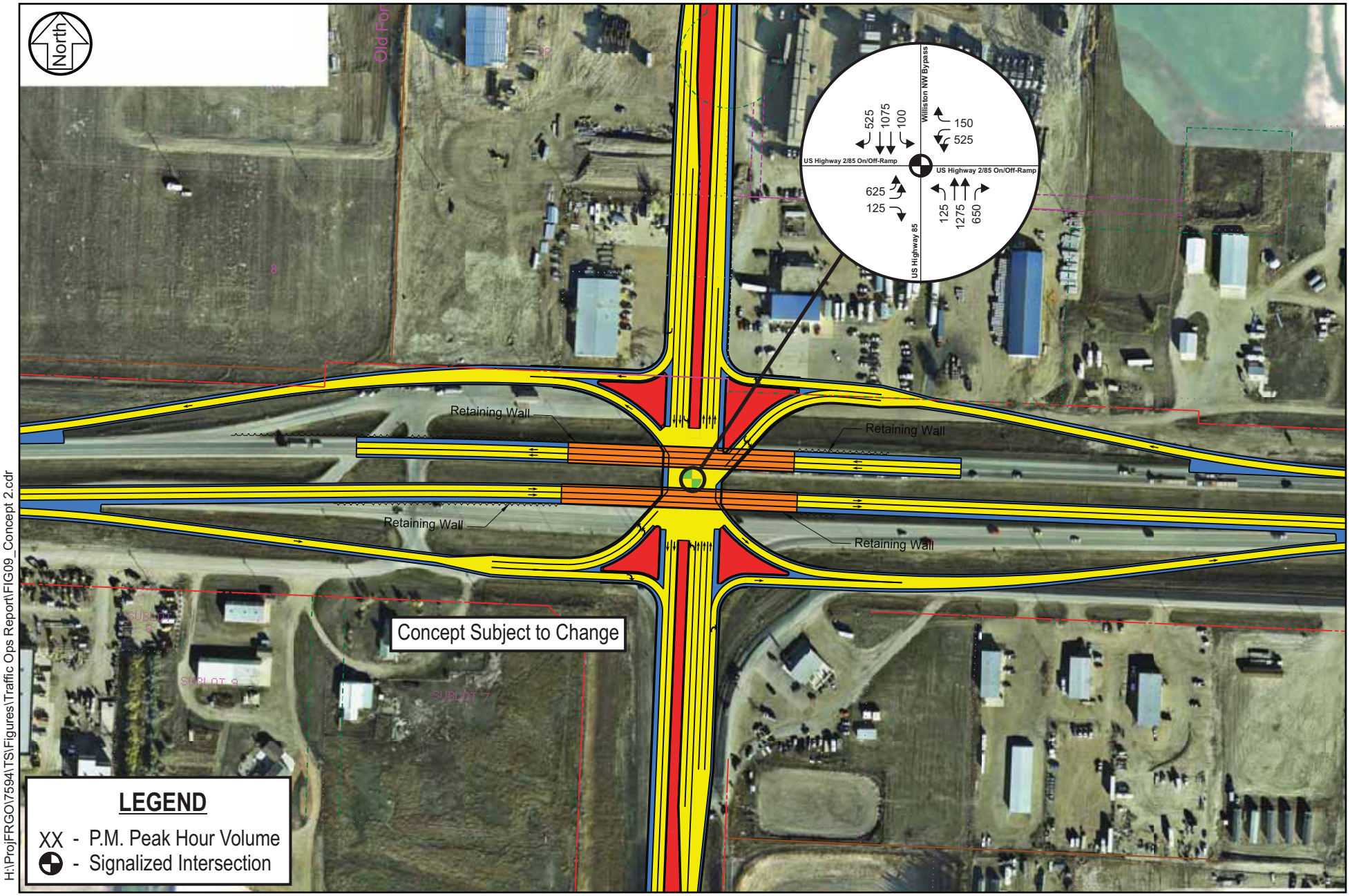
Figure 8C



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US Highway 2/85 at "Four Mile Corner" - Concept 2

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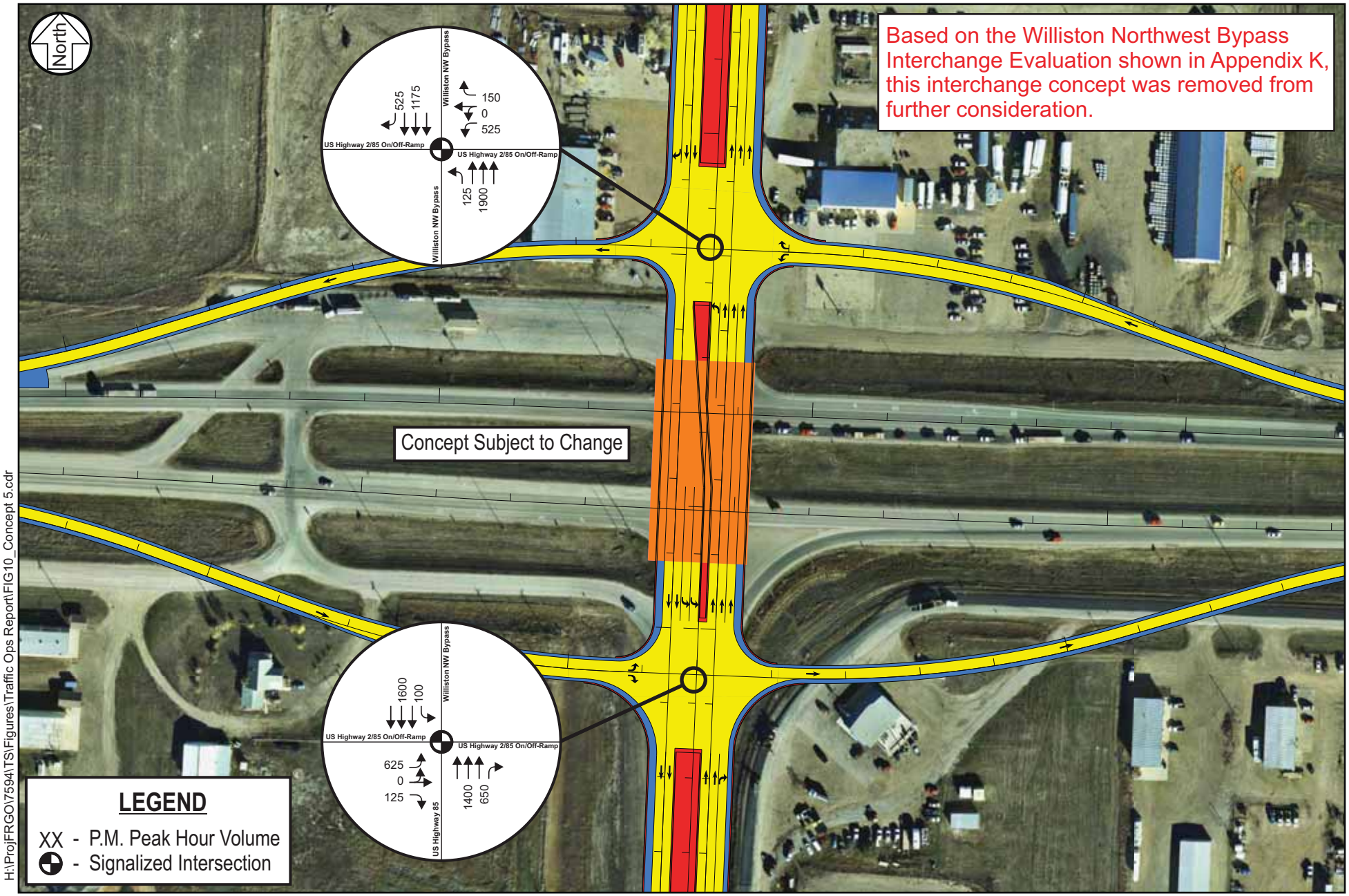
Figure 9



H:\Proj\FRGO\7594\TS\Figures\Traffic Ops Report\FIG10_Concept 5.cdr

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US Highway 2/85 at "Four Mile Corner" - Concept 5

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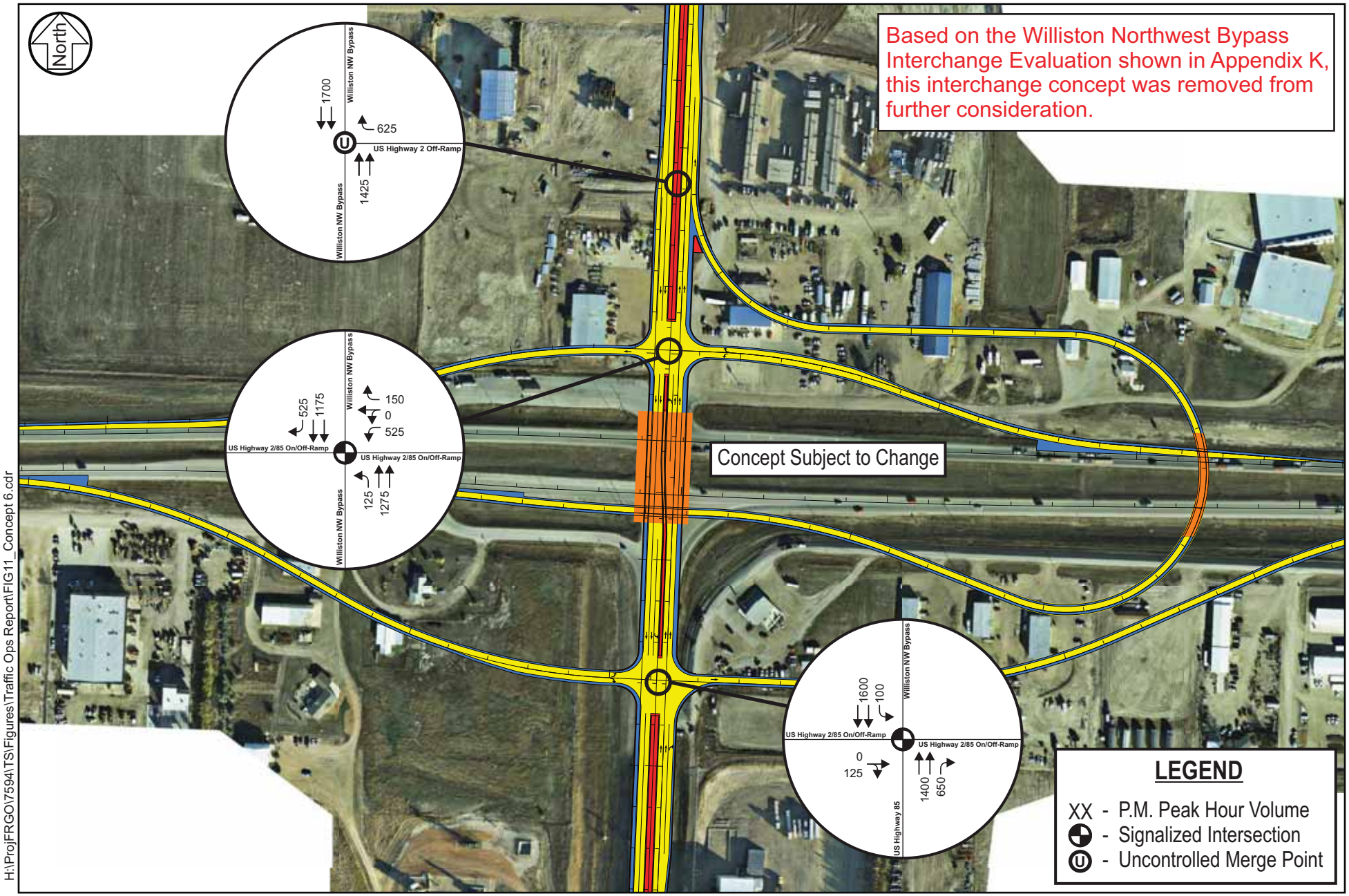
Figure 10



H:\Proj\FRGO\7594\TS\Figures\Traffic Ops Report\FIG11_Concept 6.cdr

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US Highway 2/85 at "Four Mile Corner" - Concept 6

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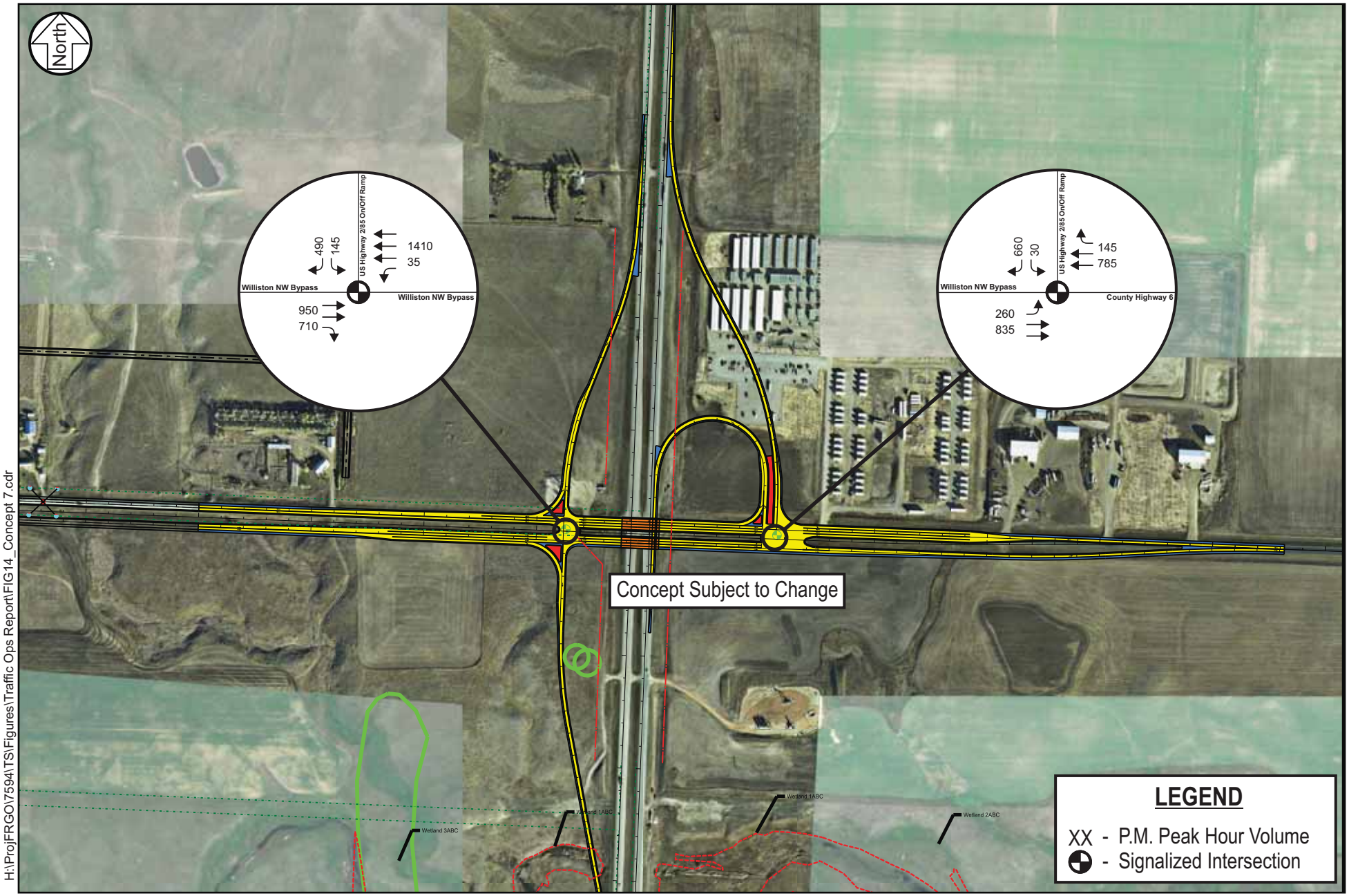
Figure 11



H:\Proj\FRGO\7594\TS\Figures\Traffic Ops Report\FIG14_Concept 7.cdr

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US Highway 2/85 and County Highway 6 - Concept 7

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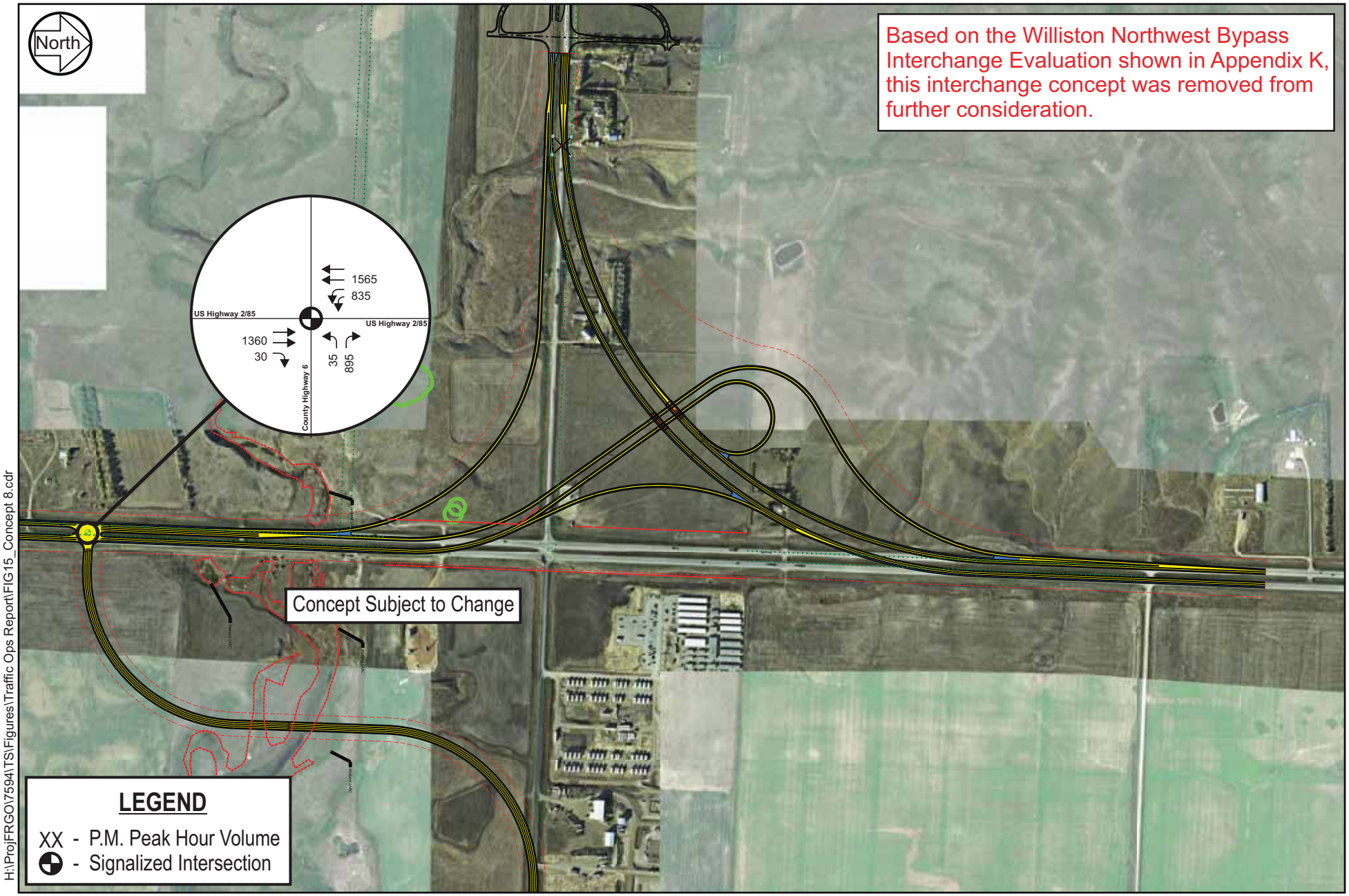
Figure 14



H:\Proj\FRGO\7594\TS\Figures\Traffic Ops Report\FIG15_Concept 8.cdr

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US Highway 2/85 and County Highway 6 - Concept 8

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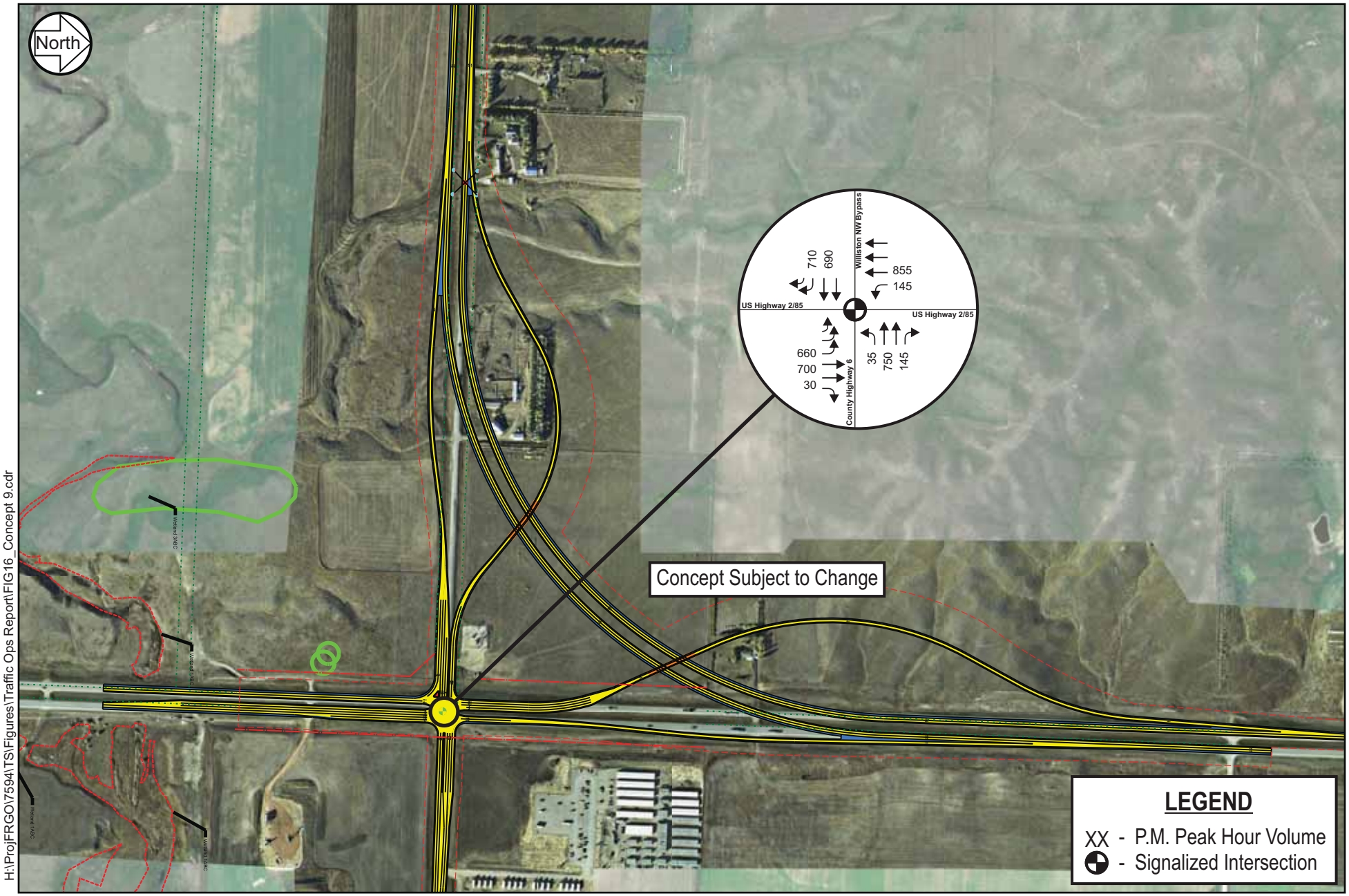
Figure 15



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US Highway 2/85 and County Highway 6 - Concept 9

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Figure 16