



# Memorandum

SRF No. 11648

**To:** Michael Maddox  
Fargo-Moorhead Metro COG

**From:** Leif Garnass, PE, Principal  
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**Date:** March 19, 2019

**Subject:** US 10/75 Corridor Study – Data Collection Technical Memorandum

## Introduction

This memorandum summarizes the data collection efforts completed by SRF Consulting Group for the US 10/75 Corridor Study. The purpose of the data collection efforts was to collect existing traffic volumes, review recently/historically collected traffic volume information, perform intersection/corridor observations to understand current operations, as well as to obtain current intersection signal timing at the signalized study intersections, current train pre-emption signal timing assumptions/operations, and crash data information (date, location, severity, crash type, contributing factors, etc.) for the most recent five-year period. This technical memorandum details the scope of the work that was completed.

## Study Area History

In 2013 SRF completed the MnDOT TH 10 (Red River to TH 336), TH 75 (20th Avenue South to TH 10) and Moorhead-Center Avenue (Red River to 8th Street) Corridor Studies. This study plans to build upon the work completed for the 2013 Corridor Study and to update the existing data/analysis to be reflective of the current vision/goals. Since the completion of the 2013 Corridor Study, the following additional projects have occurred that are either along or have impacted travel patterns the study corridor (these projects are also illustrated in Figure 1):

- **Fargo 1st Avenue/NP Avenue One-Way to Two-Way Conversion** (Modified/Constructed in Year 2013)
- **CIMS/Main Avenue Improvements** (Constructed in Year 2015) – The project included both intersection and pedestrian improvements.
- **12th Avenue/15th Avenue Toll Bridge Transferred** (Transfer occurred in February 2015)
- **I-95/US 75 Diverging Diamond Interchange (DDI)** (Constructed in 2016)
- **Moorhead Grade Separation Study** (Year 2014) – The planning study identified 11th Street as the locally preferred location for grade-separating multi-modal and the railroad; with the recommendation to change the US Highway jurisdiction from 8th Street to 11th Street.
- **SE Main Avenue/20th Street/21st Street Underpass** (Currently Under Construction)
- **Fargo Main Avenue Reconstruction** (2019 Construction)

- **Center Avenue Corridor Study (2019 Construction)** – City plans to restripe Center Avenue between the River and 8th Street to a three-lane facility (existing four-lane with turn lanes).

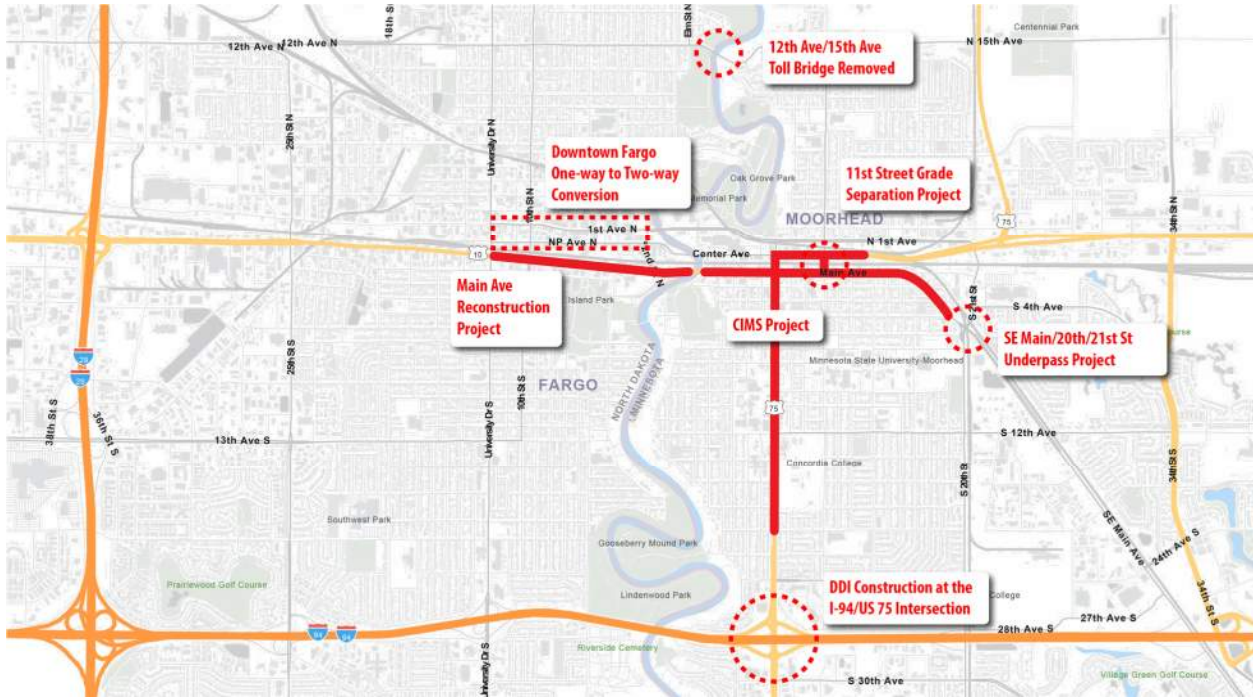


Figure 1. Recent Projects Near/Along Study Corridors

## Data Collection

Data collection efforts include traffic volume, signal timing plans, train assumptions, and crash data.

## Traffic Volumes

During the data collection efforts (September 2018 thru October 2018) there was ongoing construction in the study area that impacted travel patterns and traffic volumes at the study intersections. Construction included:

- 12th Avenue/15th Avenue bridge closed between mid-September and early October 2018
- US 10 (Main Avenue) between 7th Street/8th Street closed early to mid-October 2018
- SE Main Avenue/20th Street/21st Street intersection closed mid-October 2018 to 2021
  - Detour route includes US 10/34th Street/12th Avenue/US 75

Peak periods intersection turning movement counts were collected at the study intersections not directly impacted by construction or where recent count data was not available. The traffic count data was collected from 7:00 to 9:00 a.m. and from 4:00 to 6:00 p.m. All modes collected were grouped by pedestrians, bicyclists, passenger vehicles, transit vehicles/ trucks.

The year 2018 traffic count data was supplemented by recently collected video and/or traffic volumes (year 2015/2016) at the study intersections provided by the City of Moorhead. The study intersections as well as a summary of available dates of traffic count data is provided in Figure 1. Short duration pulse (15-minute) a.m. and p.m. peak period pulse counts were collected along the corridor at 14 locations. The pulse counts were utilized to estimate the low-volume public or private driveway traffic volume/patterns. The locations where pulse counts were collected are also shown in Figure 2.

Using a combination of the year 2018 and recently collected traffic volumes, an existing a.m. and p.m. peak hour volume set was developed. Graphics illustrating the existing peak hour volumes as well as the intersection geometry and traffic control are shown in Figure 3, Figure 4, and Figure 5 for the Downtown, US 10 East, and US 75 South Focus Areas, respectively.

Pedestrian/bicyclist crossing volumes at the study intersections are summarized in Figure 6. It should be noted that pedestrian/bicyclist volumes vary based on the time of year and weather conditions. The volumes are based on the best information available, however, there were locations where data was only available on poor weather days (such as raining or winter conditions).

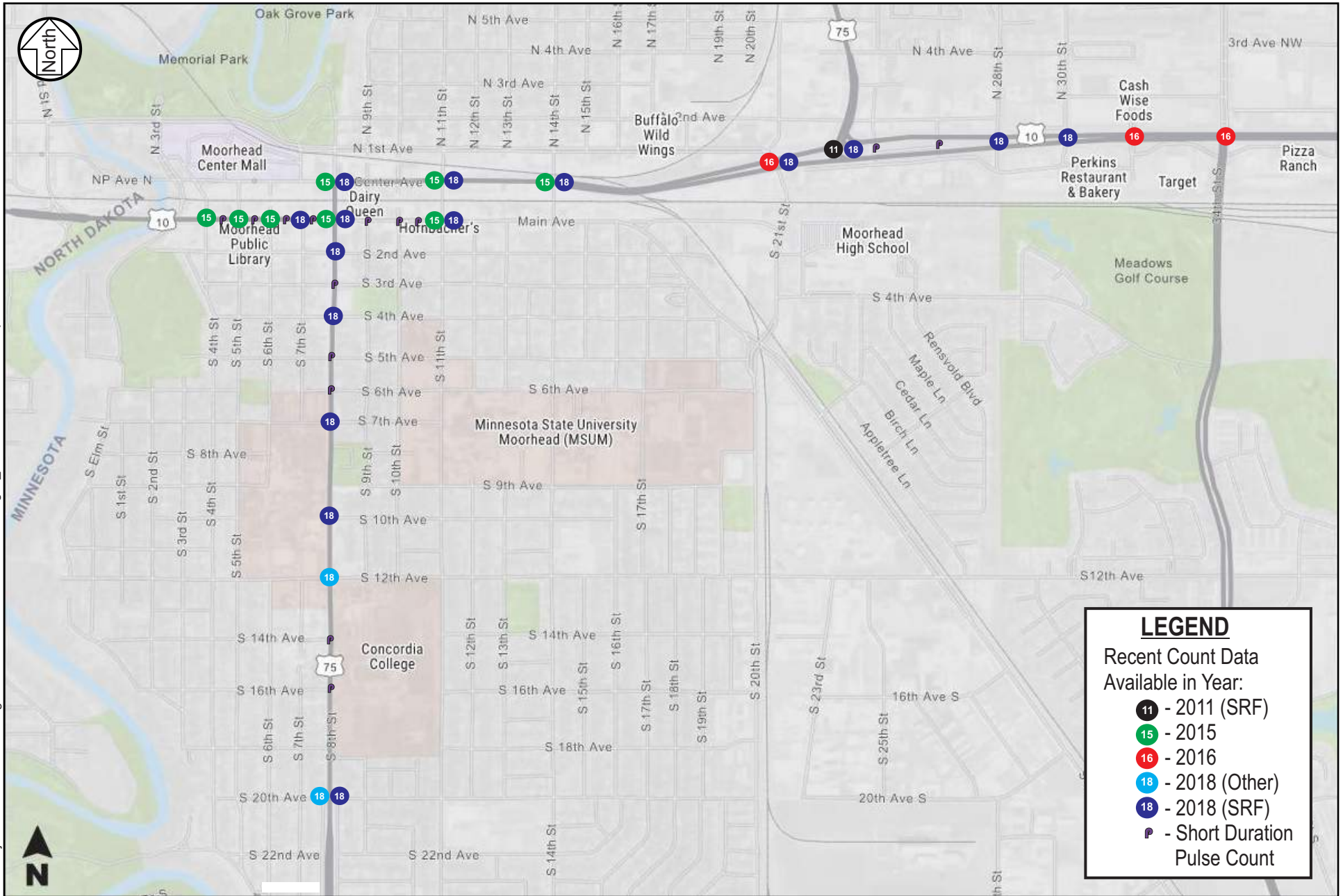
### **Signal Timing**

Existing signal timing was provided by the City of Moorhead at the signalized study intersections. It should be noted that the City is in the process of updating the signal timing along the US 10 corridor. While the cycle length/splits have been adjusted, the intersection offsets are expected to be modified prior to finalizing the signal timing plans. For purposes of this study, the previous intersection offsets were assumed.

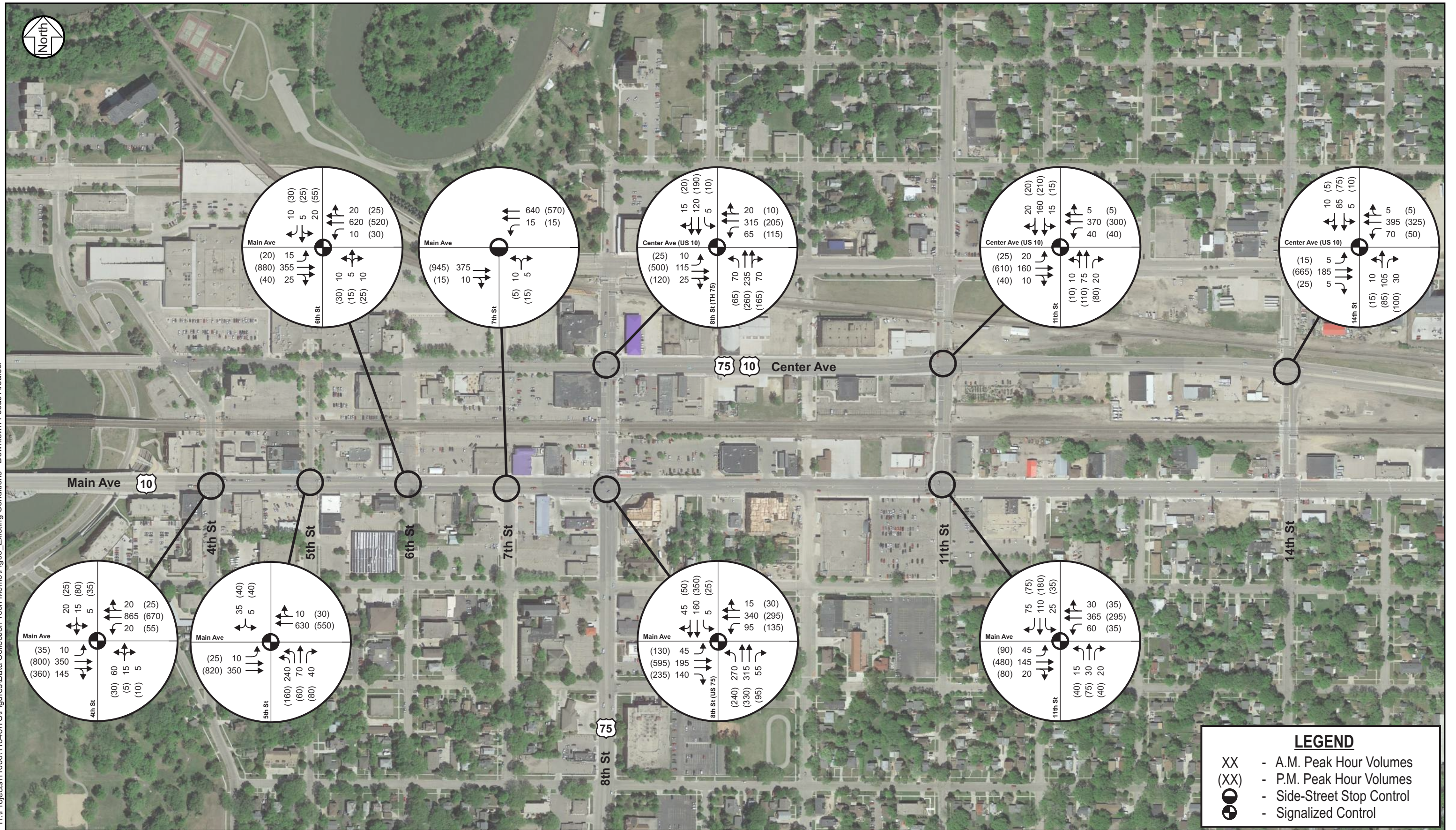
### **Train Assumptions**

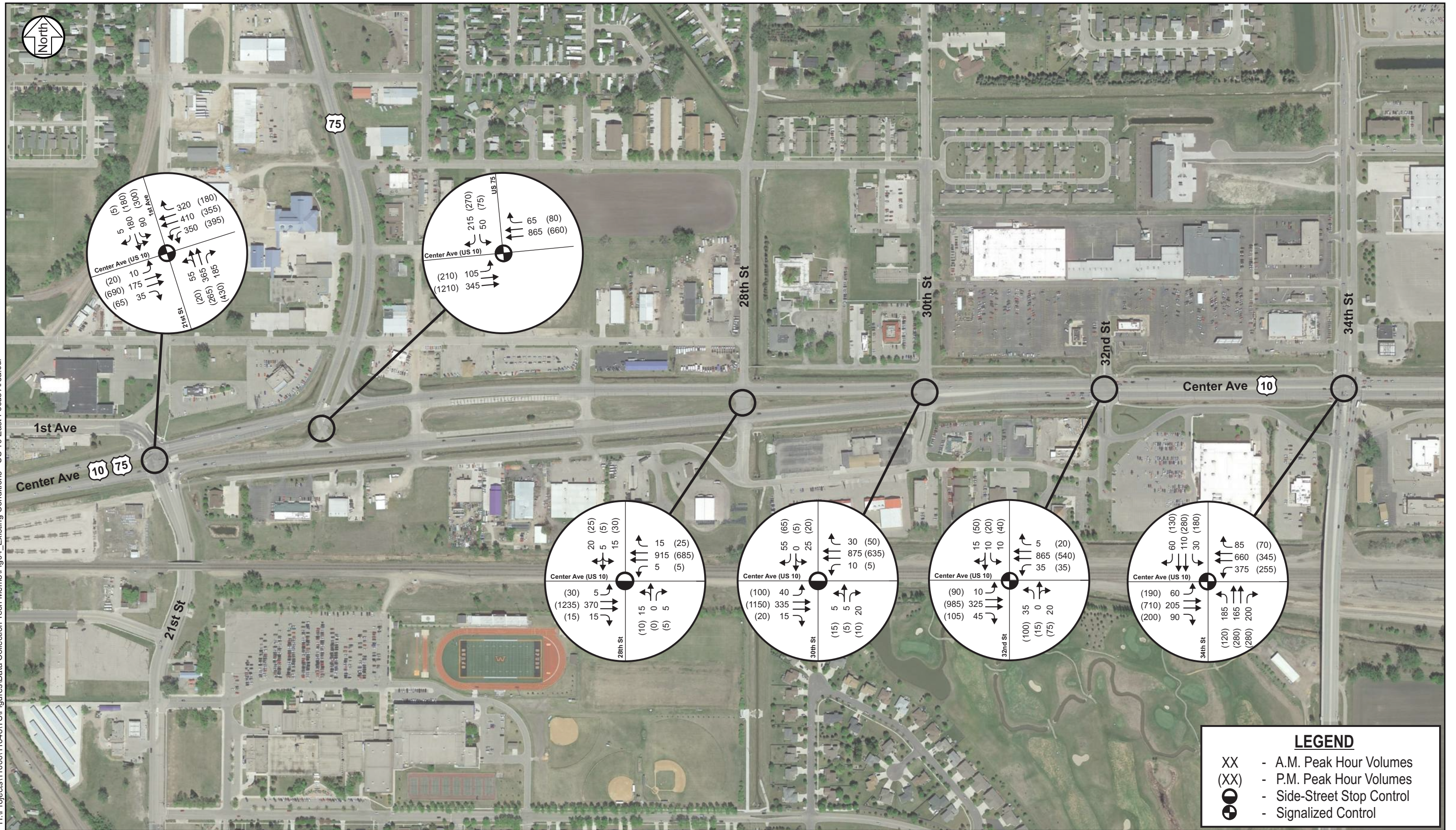
Two BNSF railroad subdivision lines run east/west through downtown Moorhead: the KO line (operates between Center Avenue and Main Avenue) and Prosper line (operates between 1st Avenue and Center Avenue). Both subdivision lines cross study roadways at three locations within the study area (8th Street, 11th Street, and 14th Street), with the KO line crossing an additional two study roadways (4th Street and 5th Street). All these locations have flashing light and gate signal systems, are within locomotive-horn Quiet Zones, and have advance pre-emption systems with the adjacent roadway and intersection traffic signal system. All signal pre-emption operations were provided by the City of Moorhead.

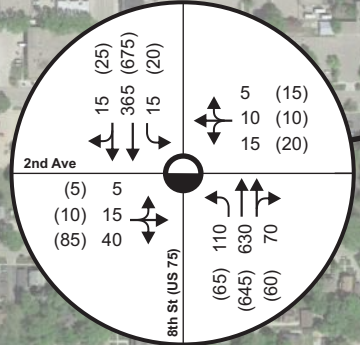
SRF conducted video observations to determine the average amount of trains that passed during peak hours and the average time that gate arms were down, blocking traffic. A summary of what was assumed for analysis for each line is shown in Table 1.



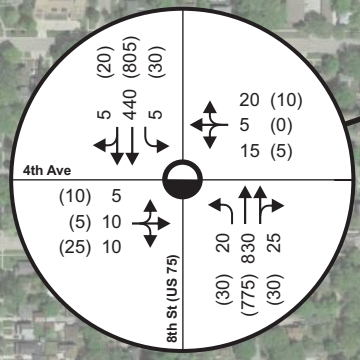
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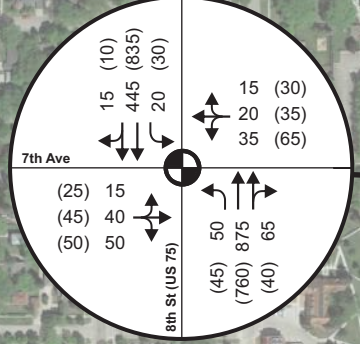




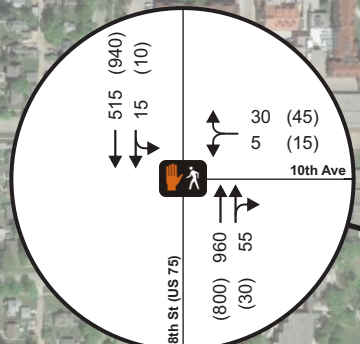
2nd Ave



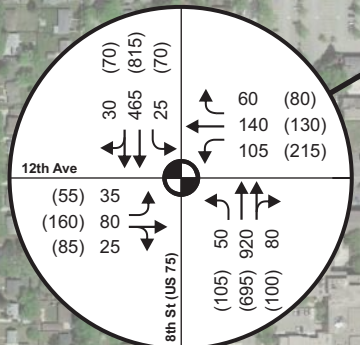
4th Ave



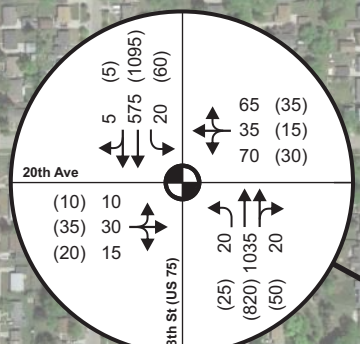
7th Ave



10th Ave



12th Ave



20th Ave

**LEGEND**

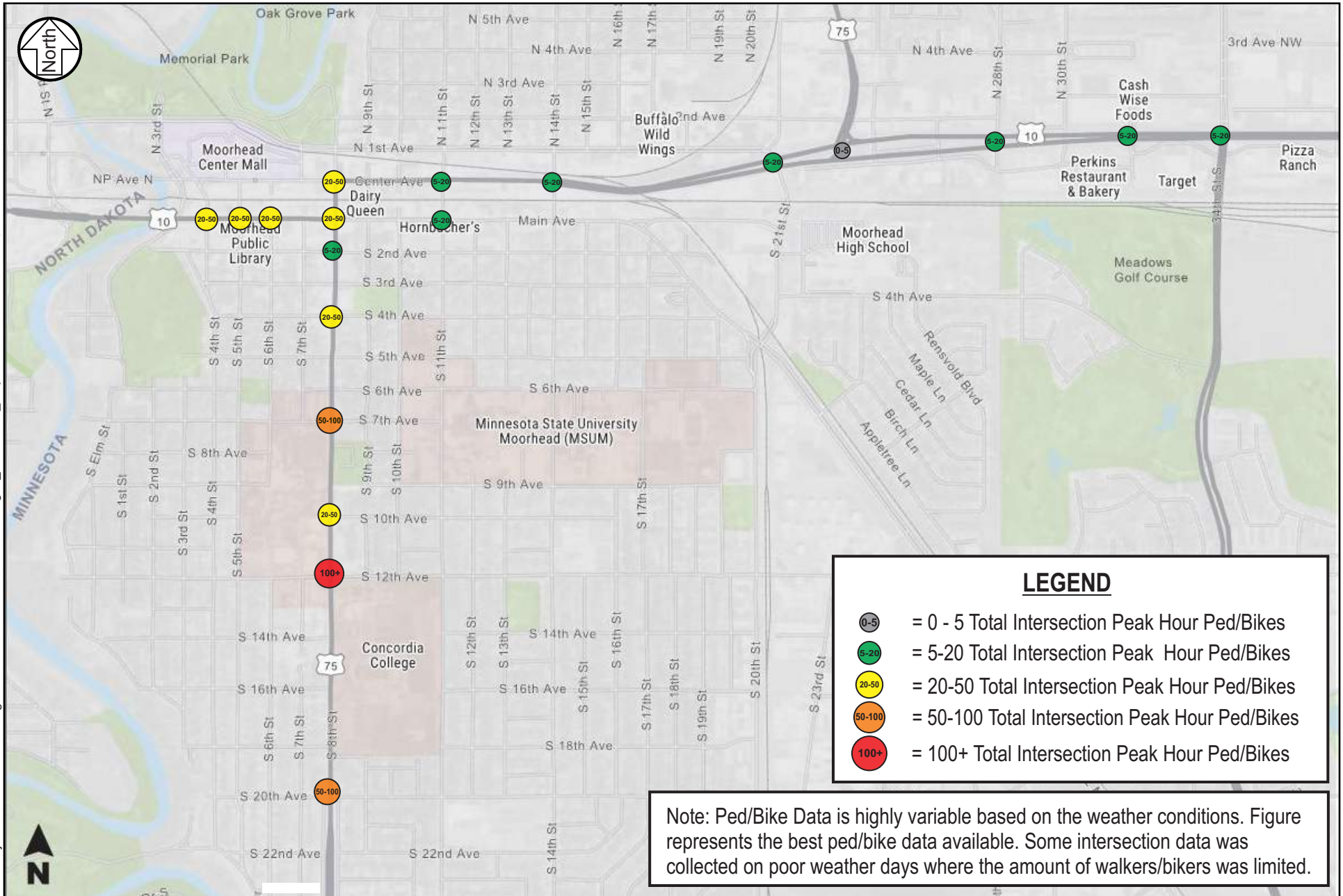
- XX - A.M. Peak Hour Volumes
- (XX) - P.M. Peak Hour Volumes
- - Side-Street Stop Control
- ⊕ - Signalized Control
- 🚶 - Pedestrian Signal/Side-Street Stop Control

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**Existing Conditions - US 75 South Focus Area**  
 US 10/ US 75 Corridor Study  
 Fargo-Moorhead Metropolitan Council

Figure 5





**Table 1. Train Amount/Duration Assumptions**

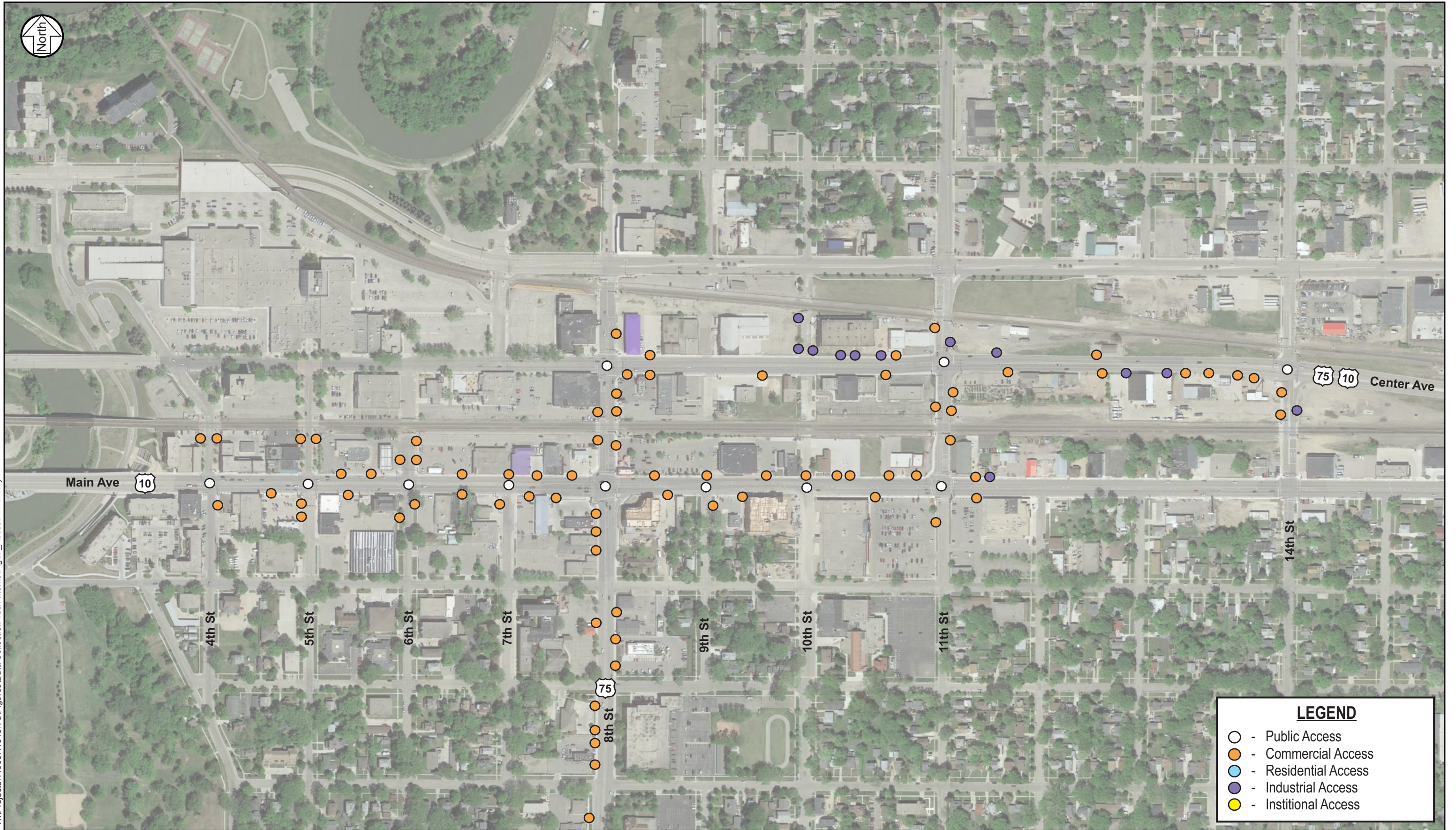
<b>BNSF Line</b>	<b>Trains During Peak Hour</b>	<b>Average Gate Down Time</b>
KO Line	3	2min 50sec.
Prosper Line	2	7min 15sec.

### Access Inventory

Access along the study corridors was inventoried and is illustrated in Figure 7, Figure 8, and Figure 9 for the Downtown, US 10 East, and US 75 South Focus Areas, respectively. In addition to the access location, access was classified as public (P), commercial (C), residential (R), industrial (I), or institutional (IN). A table summarizing the access type and density is shown in Table 2.

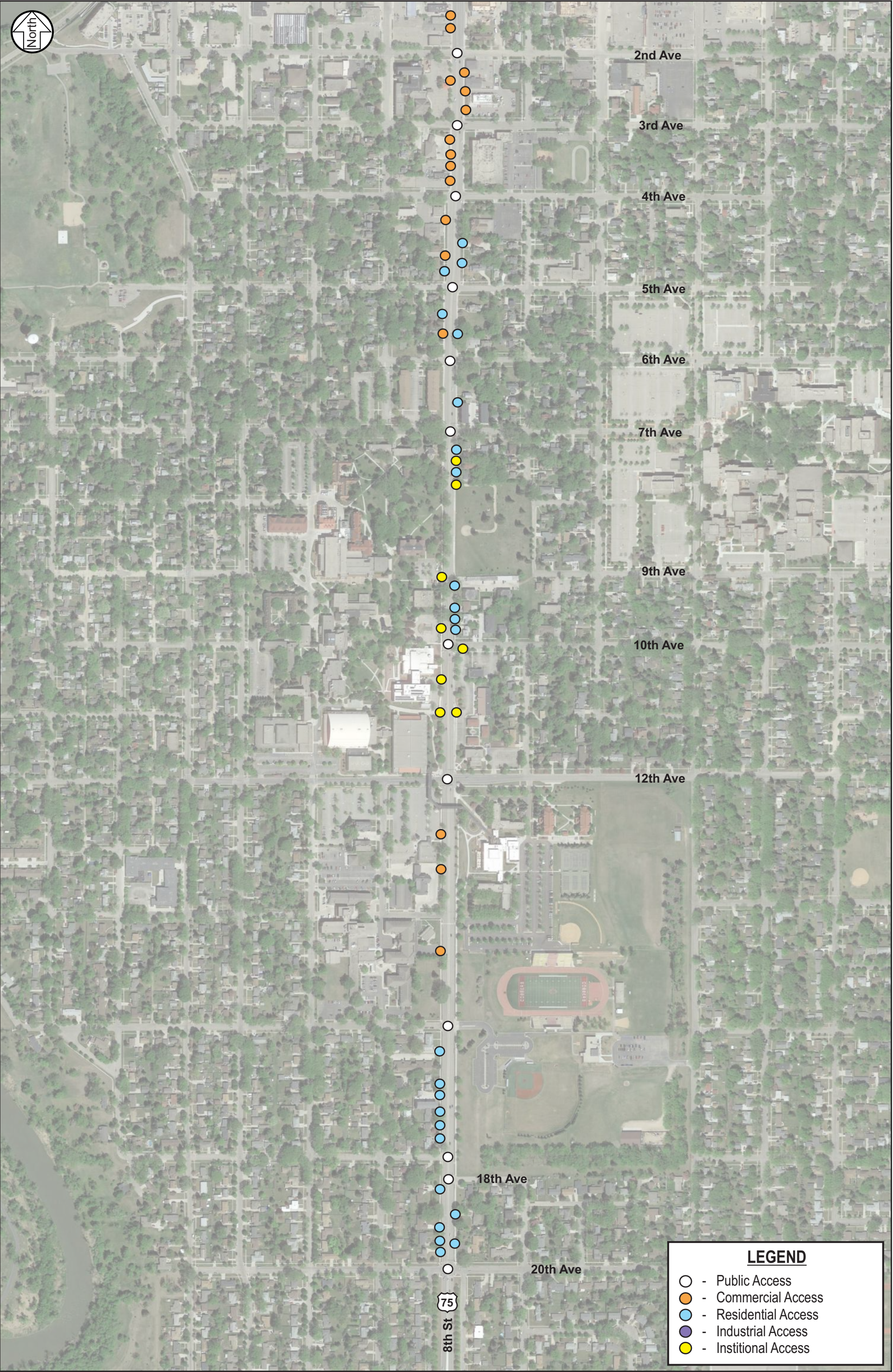
**Table 2. Access Type and Density Summary**

<b>Roadway Segment</b>	<b>Number of Access Points by Type</b>						<b>Density (Access/Mile)</b>
	<b>P</b>	<b>C</b>	<b>R</b>	<b>I</b>	<b>In</b>	<b>Total</b>	
Main Avenue (US 10) from the River to 8th Street	4	11	0	0	0	15	52
Main Avenue (US 10) from 8th Street to 11th Street	4	11	0	0	0	15	63
Center Avenue (US 10/US 75) from 8th Street to 14th Street	2	13	0	6	0	21	48
Center Avenue (US 10/US 75) from 14th Street to 21st Street/1st Avenue	1	0	0	1	0	2	4
Center Avenue (US 10) from 21st Street/1st Avenue to 34th Street	8	0	0	0	0	8	8
8th Street (US 75) from 2nd Avenue to 12th Avenue	7	13	12	0	8	40	60
8th Street (US 75) from 12th Avenue to 20th Avenue	5	3	12	0	0	20	36



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### **Crash Data**

MnDOT provided crash data in the form of GIS shapefiles for Clay County for January 1, 2016 to March 2018. The crash data includes the date, location, severity, pre-crash maneuver, contributing factor, manner of collision, direction of travel, harmful event, unit type, road condition, amongst other information.

Additional crash data was provided from the Minnesota Crash Mapping Analysis Tool (MnCMAT). MnCMAT from January 1, 2013 to December 31, 2015. This data was combined with the 2016/2017 crash data to create a five-year period crash data set.