#4347

TRAFFIC OPERATIONS STUDY

US 52
Beginning of 2-lane to Harvey (ND 3)
RP 101.683 to RP 170.000

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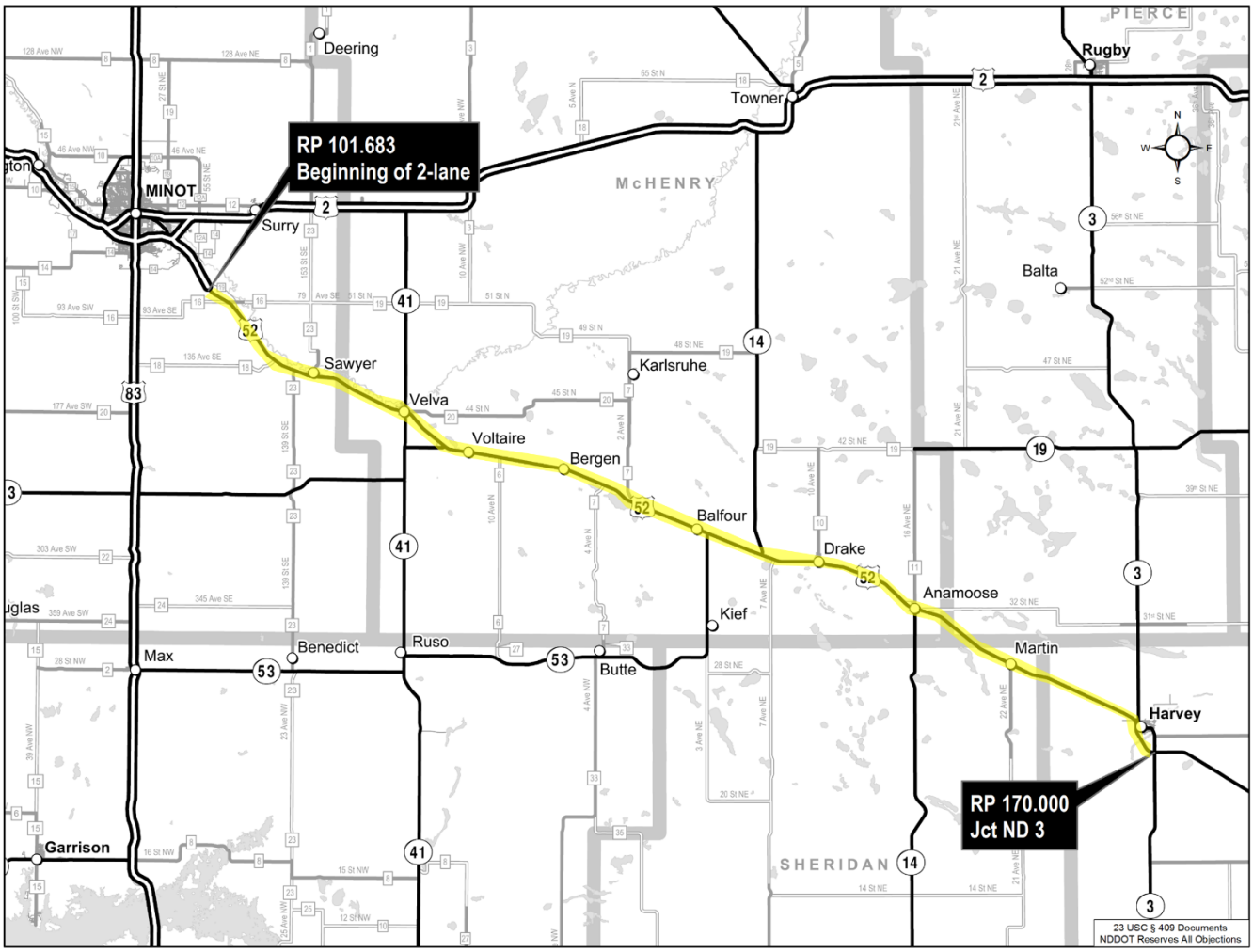

Prepared By:
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
PROGRAMMING DIVISION
TRAFFIC OPERATIONS SECTION

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INTRODUCTION

The traffic control recommendations in this study are based on:

- The 2009 Manual on Uniform Traffic Control Devices (MUTCD), FHWA
- A Policy on Geometric Design of Highways and Streets, AASHTO, 2018
- The Highway Capacity Manual 6th Edition, TRB, 2016
- Highway Safety Manual, 1st Edition, AASHTO, 2010
- Lighting Warrant Policy, NDDOT, 2015
- NDDOT Traffic Operations Manual, November 2018
- Harvey Bypass, Memo to Wilfred Wolf, October 11, 1976

BACKGROUND

The study area is US 52 from the beginning point of the 2-lane section (east of Minot) to Harvey at ND 3. The purpose of this study is to evaluate the need for turn lanes at the study intersections and to evaluate the two-lane highway segment capacity to determine the possible need for passing-lanes.

The study intersections were determined based on:

- US 52 intersections where the minor road is paved and there are no existing turn lanes
- Where US 52 posted speed is greater than 50 mph
- Input from the Minot District Engineer.

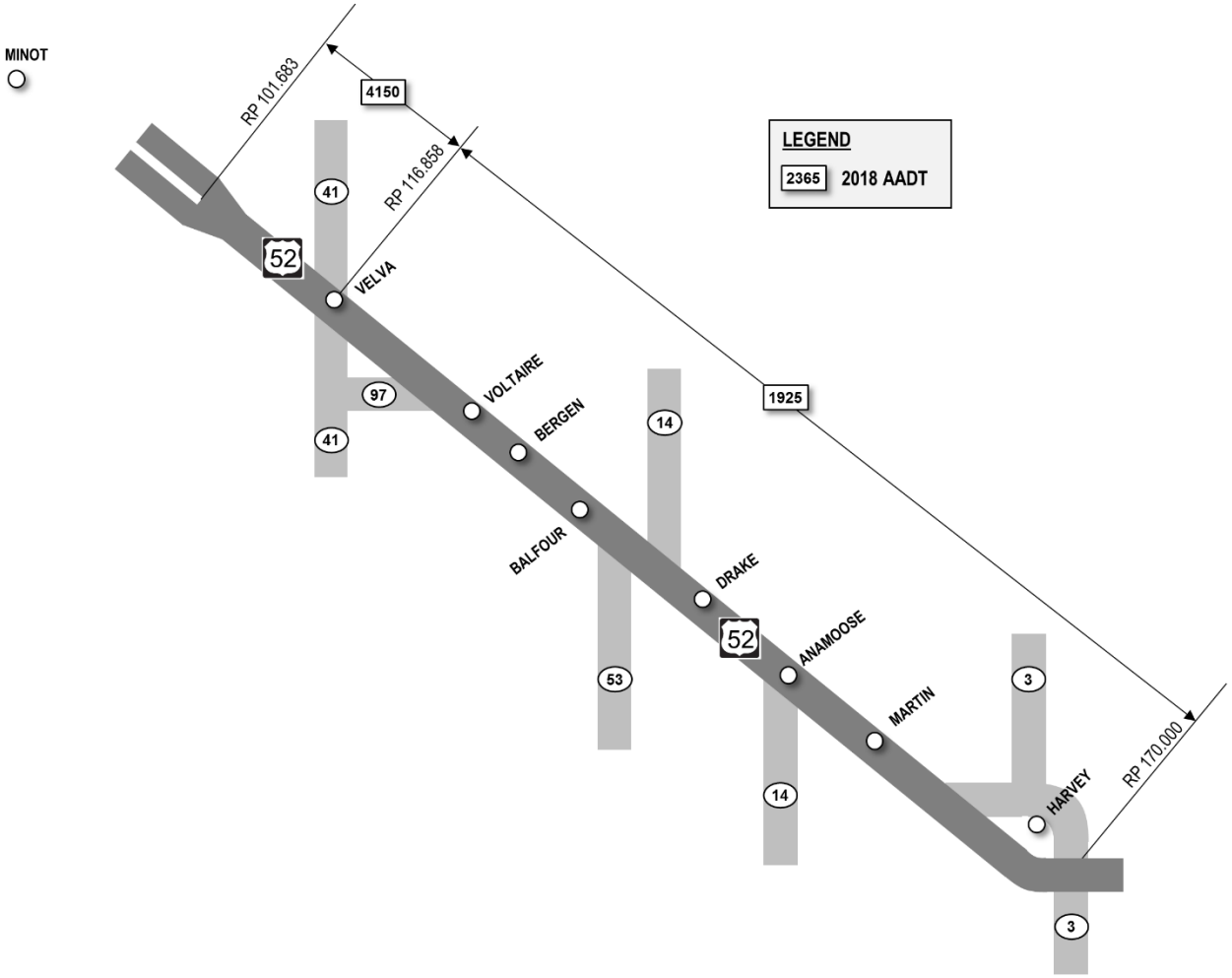
For this study, the intersection capacity analysis was done only at US 52 / ND 91. This intersection had the highest traffic volume with a calculated LOS A (see page 24), therefore it is assumed the remaining study intersections can also expect LOS A.

Study Intersections		Traffic Control	Lighting
#1107	US 52 / Ward 19 S	Two-way Stop	None
#1108	US 52 / 135 Ave SE (Ward 18)	Two-way Stop	None
#1110	US 52 / Central Ave (Ward 23)	Two-way Stop	Destination
#1111	US 52 / 153 St SE (2 St SE)	Two-way Stop	Destination
#1112	US 52 / 1 St E (Ward 25)	Two-way Stop	None
#1114	US 52 / 14 Ave N	Two-way Stop	Destination
#1117	US 52 / 10 Ave N (McHenry 6)	Two-way Stop	None
#1118	US 52 / 6 Ave N	Two-way Stop	None
#1119	US 52 / 4 Ave N	Two-way Stop	None
#631	US 52 / 2 Ave N (McHenry 7)	Two-way Stop	None
#1120	US 52 / Main St	Two-way Stop	Destination
#60	US 52 / ND 53	Two-way Stop	None
#61	US 52 / ND 14 (W Jct)	Two-way Stop	None
#1121	US 52 / 7 Ave NE	Two-way Stop	None
#1122	US 52 / H Ave W	Two-way Stop	None
#1123	US 52 / 32 St NE	Two-way Stop	None
#62	US 52 / ND 14 (E Jct)	Two-way Stop	None
#1124	US 52 / 32 St SE	Two-way Stop	None
#1048	US 52 / ND 91	Two-way Stop	Illumination
#1050	US 52 / US 52B	Two-way Stop	Illumination
#1125	US 52 / 30 Ave N	Two-way Stop	None

Highway	Functional Classification	Performance Classification	Speed Limit
US 52	Principal Arterial Rural	Rural Interregional Corridor	65 mph

Figure 1 – View WB at RP 122.98 (from NDDOT Pathweb)

TRAFFIC DATA



Traffic data was acquired from the Roadway Data Section in June 2018. The current and projected AADTs are summarized below. Note the high percentage of trucks, especially in the second segment. This is due to the low volume of passenger vehicles. Traffic volume details are in appendix A. The peak hour is assumed to be 10% of the total AADT with a 50/50 directional distribution. Segment capacity worksheets are in appendix B.

RP 101.683 to RP 116.858				
Year	**Passenger**	**Trucks**	**Total AADT**	**LOS**
2018	3270	880 (21.2%)	**4150**	**B**
2038	4415	1315 (23.0%)	**5730**	**C**

RP 116.858 to RP 169.979				
Year	**Passenger**	**Trucks**	**Total AADT**	
2018	1270	655 (59.0%)	**1925**	**A**
2038	1715	980 (59.0%)	**2695**	**A**

NDDOT guidance is to meet or exceed an overall LOS D for under 20-year projected automobile traffic[1]. The existing roadway cross section meets LOS guidelines for all 4 segments. Therefore, passing-lanes are not needed based on this capacity analysis.

CRASH HISTORY

Location Description	US 52 – RP 101.683 to RP 170.000
Crash Time Period	January 1, 2013 through December 31, 2017

Crash Severity	
Fatal	5
Incapacitating Injury	7
Non-incapacitating Injury	30
Possible Injury	20
Property Damage Only	112
Total	**174**

Manner of Collision	
Angle	22
Rear End	26
Left Turn	5
Sideswipe	10
Single Vehicle	89
Ped/Bike	1
Other	21
Total	**174**

Surface Conditions	
Dry	102
Wet, ice, snow, frost, other	72
Total	**174**

- Factors in the fatal crashes include: crossing the centerline, failure to yield, loss of control. One fatal crash involved a pedestrian—the pedestrian had been in a single vehicle crash and was trying to flag down a passing vehicle for help.
- Contributing factors for fatal & injury crashes (K,A,B,C) were typically: failure to yield, following too close, failing to keep in proper lane, speed/too fast for conditions.
- Study intersections with 3 or more crashes:
  - #61: US 52 / ND 14 – 3 crashes
  - #62: US 52 / ND 14 – 4 crashes
  - #1048: US 52 / ND 91 – 4 crashes

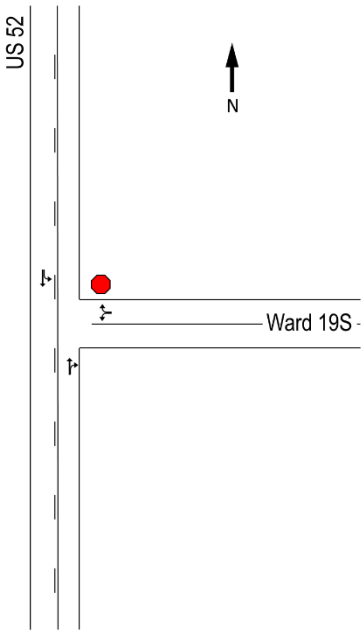
See appendix C for details on the crash data. A crash modification factor (CMF) for a passing-lane is 0.75[2].

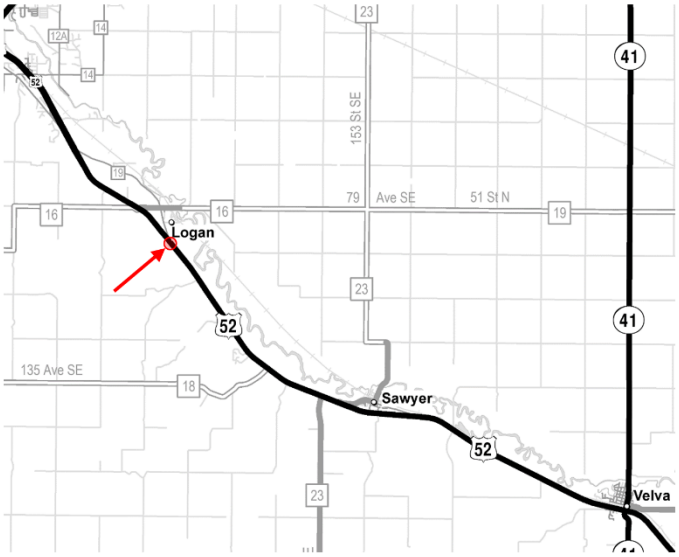
Reference:

1. NDDOT, "Traffic Operations Manual", November 2018. Page 11
2. AASHTO, *"Highway Safety Manual"*, 2010. Table 16-7

INTERSECTION #1107: US 52 / Ward 19 S — RP 104.3

#1107





Intersection-related Crashes

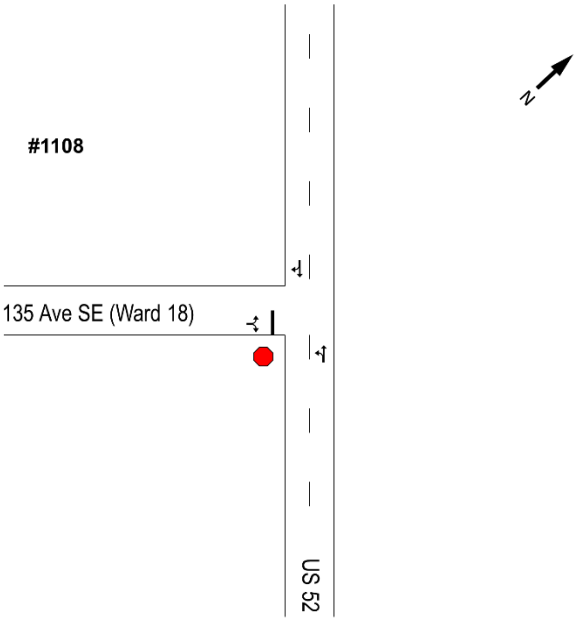
There were no reported crashes at this intersection.

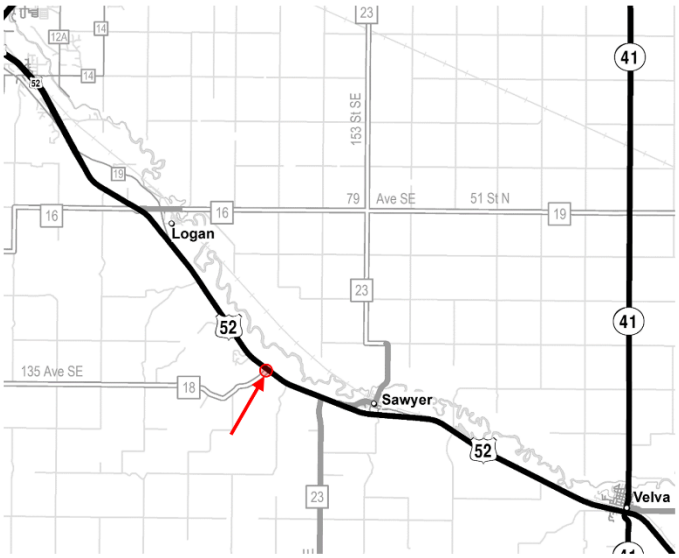
Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
SB to EB Left	No	No	N/A
NB to WB Left	No	No	N/A
SB to WB Right	No	No	N/A
NB to EB Right	No	No	N/A

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	No – cross product is 0.4 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	No
6F	Local government pays 50% and maintains	No

Destination lighting is not warranted.

INTERSECTION #1108: US 52 / 135 Ave SE — RP 108.0





Intersection-related Crashes

There were no reported crashes at this intersection.

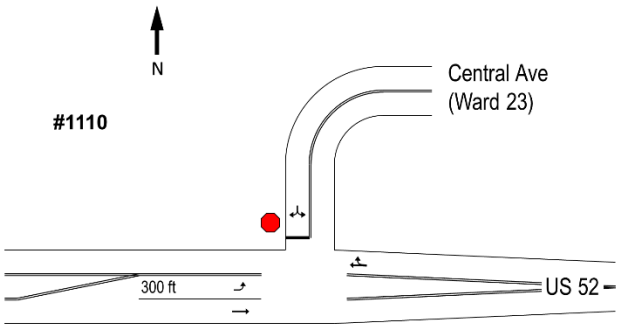
Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
SB to EB Left	No	No	N/A
NB to WB Left	No	Yes	N/A – should be 630 ft
SB to WB Right	No	No	N/A
NB to EB Right	No	No	N/A

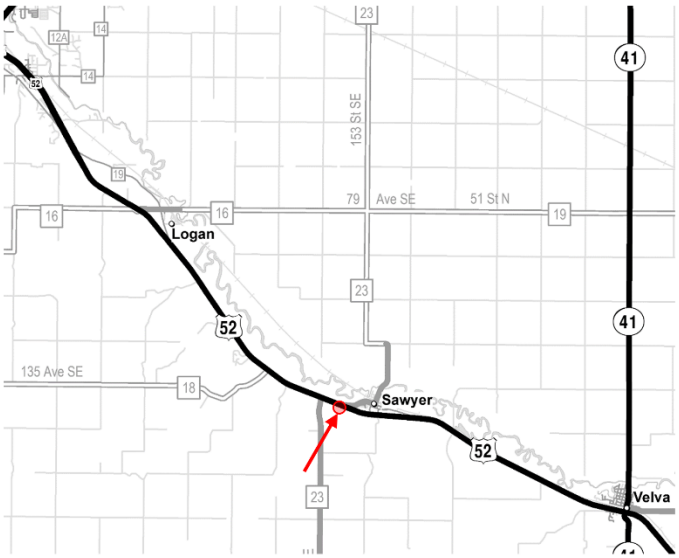
A NB left turn lane is warranted.

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	No – cross product is 0.6 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	No
6F	Local government pays 50% and maintains	No

Destination lighting is not warranted.

INTERSECTION #1110: US 52 / Central Ave — RP 109.8





Intersection-related Crashes

There were no reported crashes at this intersection.

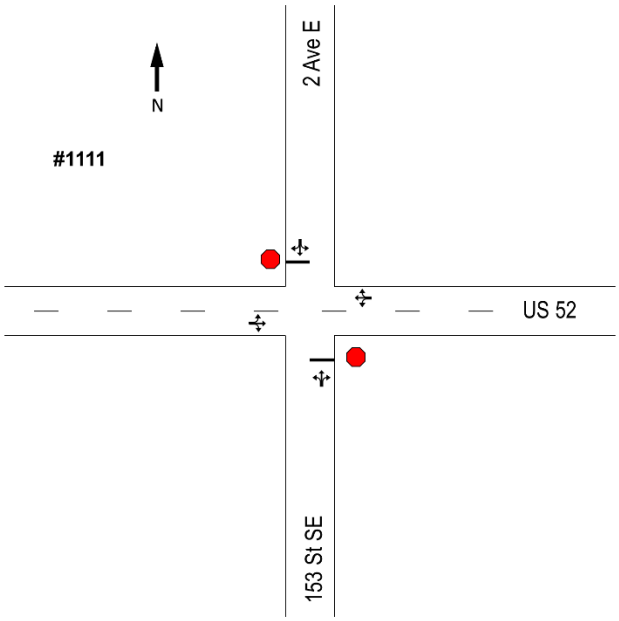
Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
EB to NB Left	Yes	Yes	No – ex. 300 ft, should be 630 ft
WB to SB Left	No	No	N/A
EB to SB Right	No	No	N/A
WB to NB Right	No	No	N/A

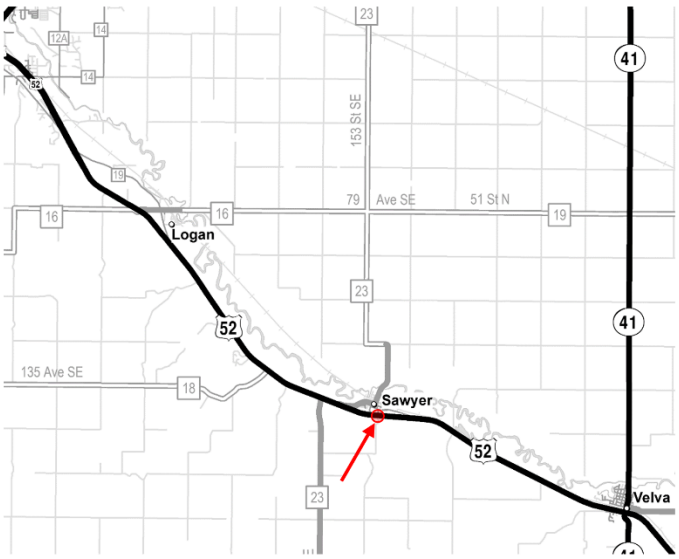
An EB left turn lane is warranted.

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	Yes – cross product is 2.0 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	Yes
6F	Local government pays 50% and maintains	No

Destination lighting is warranted.

INTERSECTION #1111: US 52 / 153 St SE — RP 110.700





Intersection-related Crashes

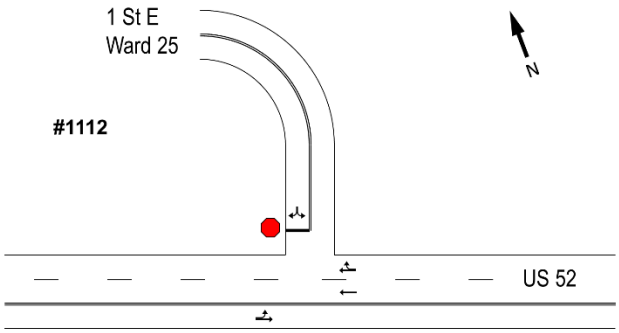
There were no reported crashes at this intersection.

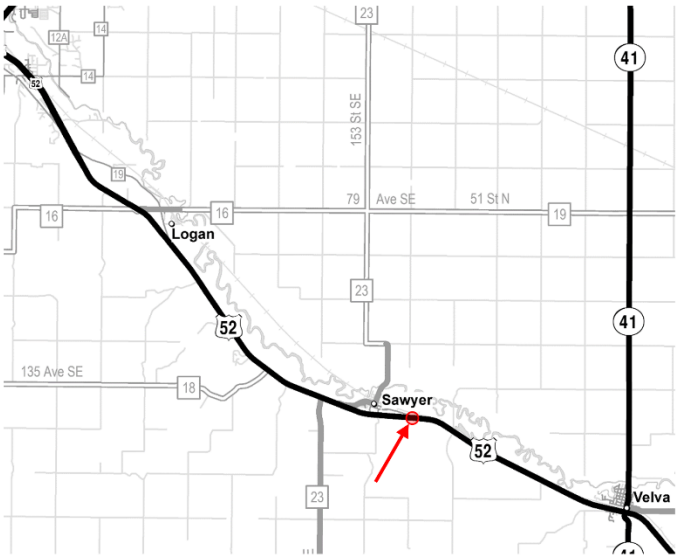
Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
EB to NB Left	No	No	N/A
WB to SB Left	No	No	N/A
EB to SB Right	No	No	N/A
WB to NB Right	No	No	N/A

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	No – cross product is 0.4 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	Yes
6F	Local government pays 50% and maintains	No

Destination lighting is warranted.

INTERSECTION #1112: US 52 / 1 St E — RP 111.600





Intersection-related Crashes

There were no reported crashes at this intersection.

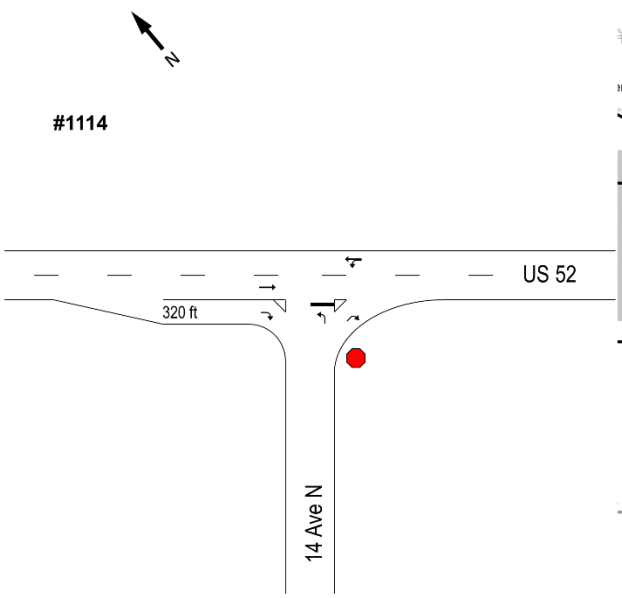
Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
EB to NB Left	No	No	N/A
WB to SB Left	No	No	N/A
EB to SB Right	No	No	N/A
WB to NB Right	No	Yes	N/A -- should be 530 ft

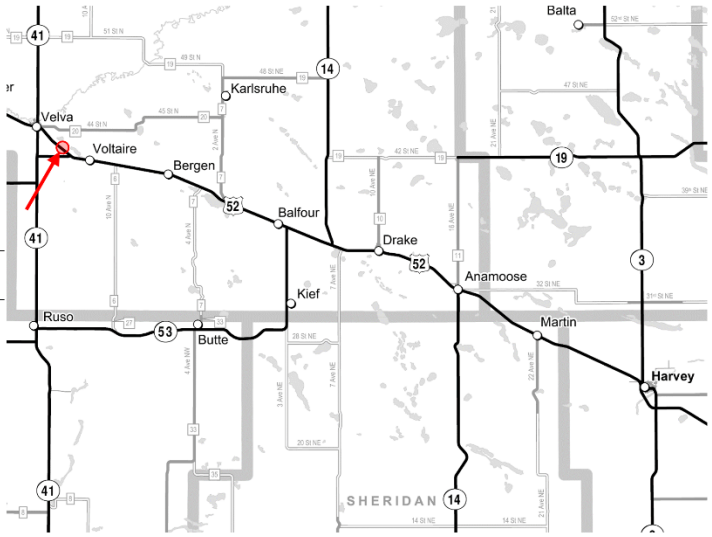
A WB right turn lane is warranted.

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	No – cross product is 0.7 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	No
6F	Local government pays 50% and maintains	No

Destination lighting is not warranted.

INTERSECTION #1114: US 52 / 14 Ave N — RP 119.600





Intersection-related Crashes

There were no reported crashes at this intersection.

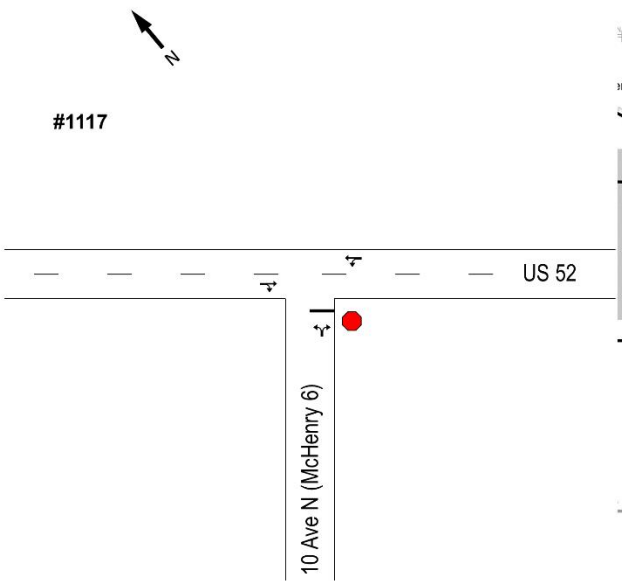
Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
EB to NB Left	No	No	N/A
WB to SB Left	No	No	N/A
EB to SB Right	Yes	Yes	No– ex. 320 ft, should be 530 ft
WB to NB Right	No	No	N/A

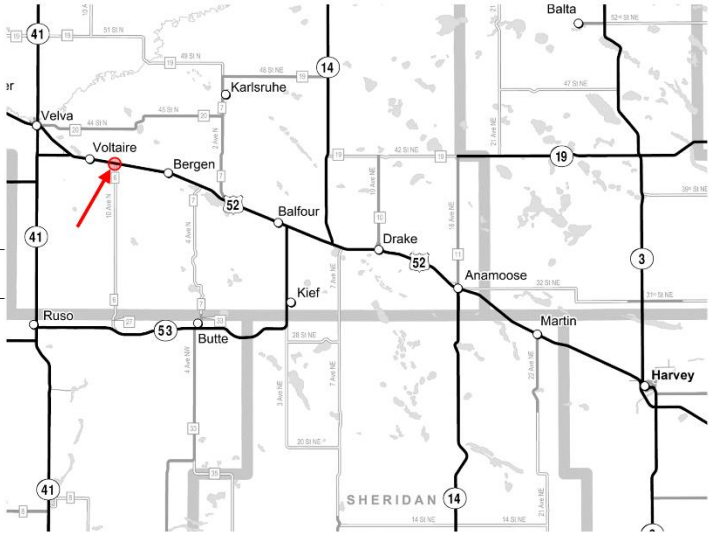
An EB right turn lane is warranted.

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	No – cross product is 0.5 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	Yes
6F	Local government pays 50% and maintains	No

Destination lighting is warranted.

INTERSECTION #1117: US 52 / 10 Ave N — RP 123.800





Intersection-related Crashes

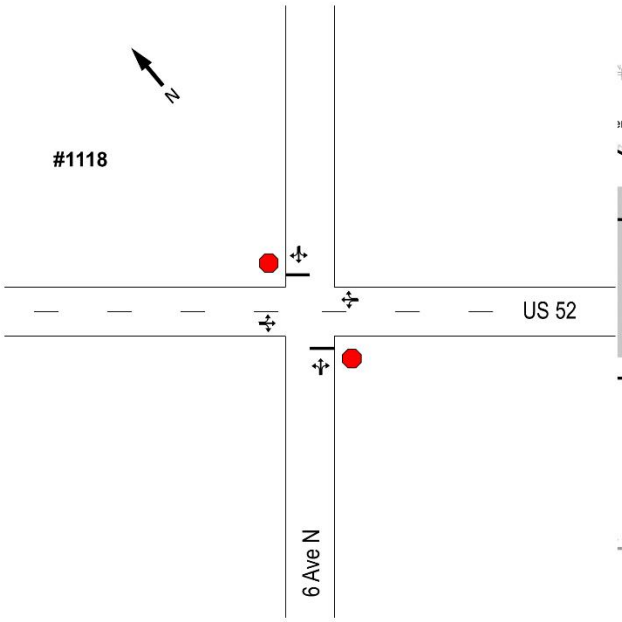
There were no reported crashes at this intersection.

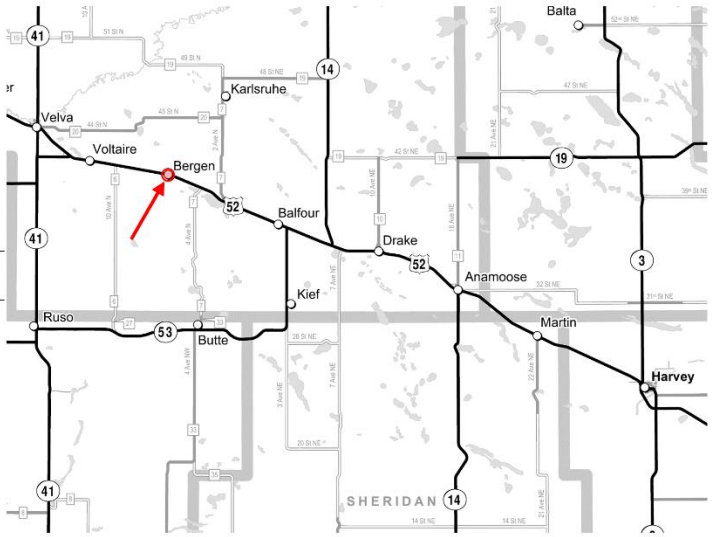
Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
EB to NB Left	No	No	N/A
WB to SB Left	No	No	N/A
EB to SB Right	No	No	N/A
WB to NB Right	No	No	N/A

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	No – cross product is 0.1 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	No
6F	Local government pays 50% and maintains	No

Destination lighting is not warranted.

INTERSECTION #1118: US 52 / 6 Ave N — RP 127.800





Intersection-related Crashes

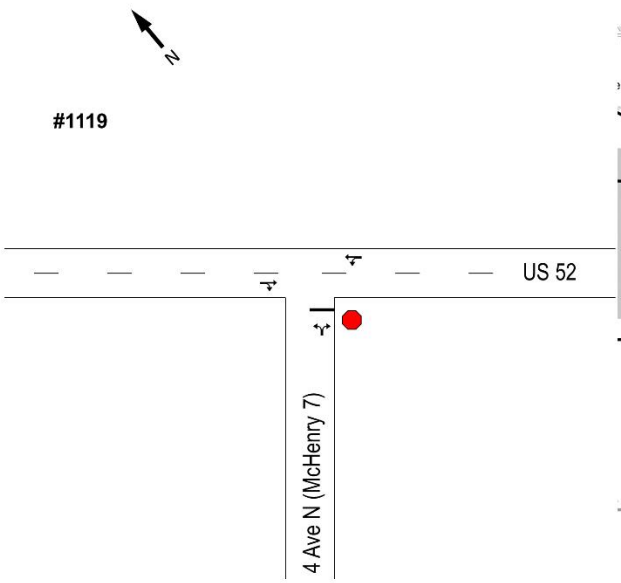
There were no reported crashes at this intersection.

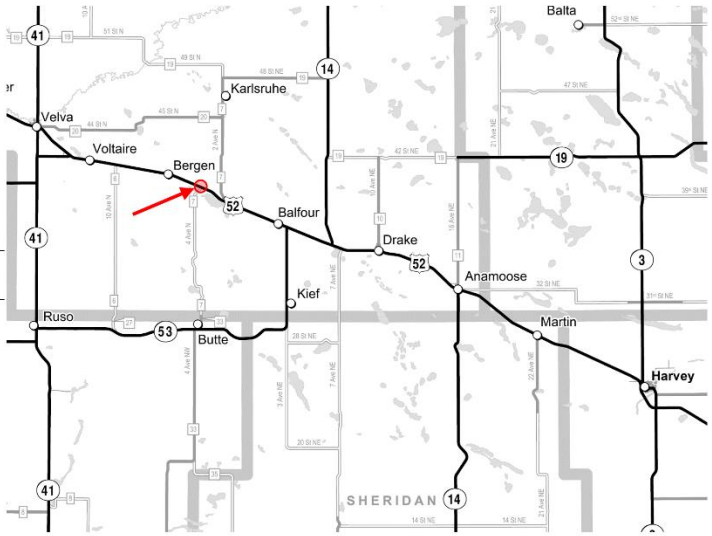
Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
EB to NB Left	No	No	N/A
WB to SB Left	No	No	N/A
EB to SB Right	No	No	N/A
WB to NB Right	No	No	N/A

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	No – cross product is 0.1 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	No
6F	Local government pays 50% and maintains	No

Destination lighting is not warranted.

INTERSECTION #1119: US 52 / 4 Ave N — RP 130.500





Intersection-related Crashes

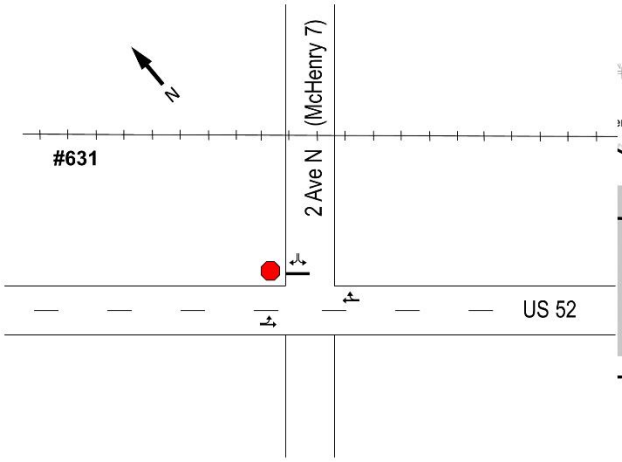
There were no reported crashes at this intersection.

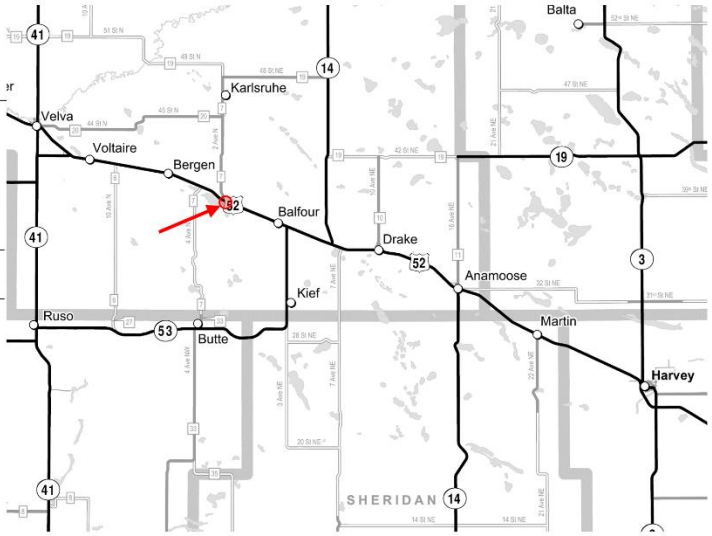
Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
EB to NB Left	No	No	N/A
WB to SB Left	No	No	N/A
EB to SB Right	No	No	N/A
WB to NB Right	No	No	N/A

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	No – cross product is 0.1 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	No
6F	Local government pays 50% and maintains	No

Destination lighting is not warranted.

INTERSECTION #631: US 52 / 2 Ave N — RP 132.500





Intersection-related Crashes

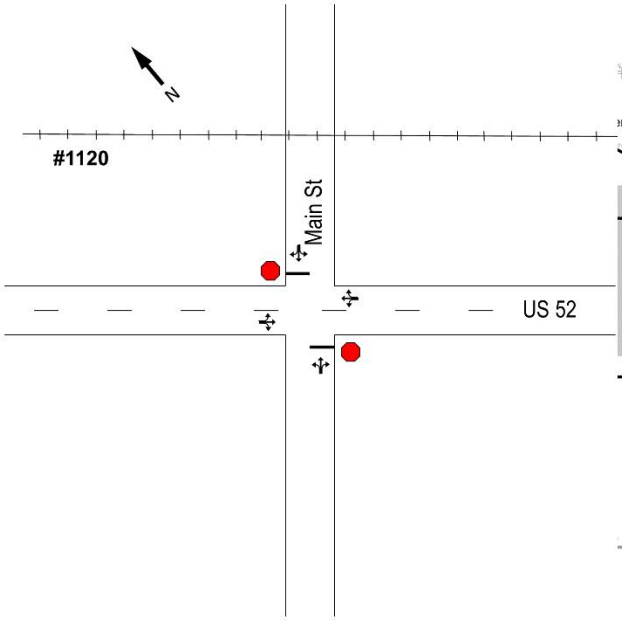
There were no reported crashes at this intersection.

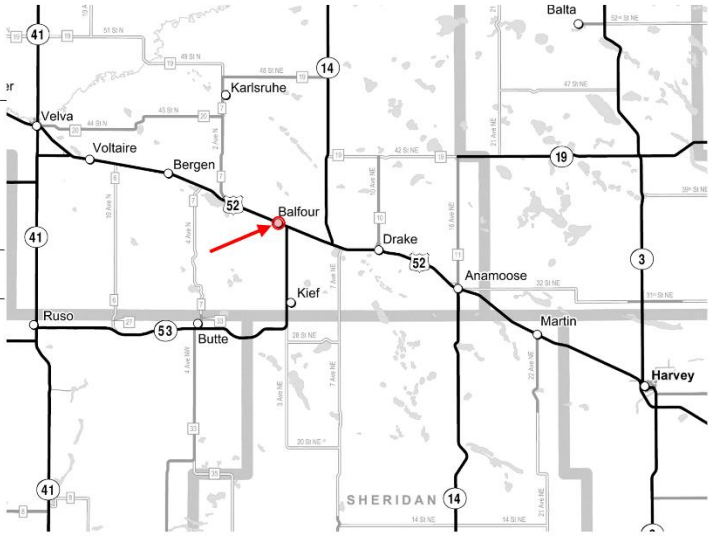
Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
EB to NB Left	No	No	N/A
WB to SB Left	No	No	N/A
EB to SB Right	No	No	N/A
WB to NB Right	No	No	N/A

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	No – cross product is 0.1 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	No
6F	Local government pays 50% and maintains	No

Destination lighting is not warranted.

INTERSECTION #1120: US 52 / Main St — RP 137.000





Intersection-related Crashes

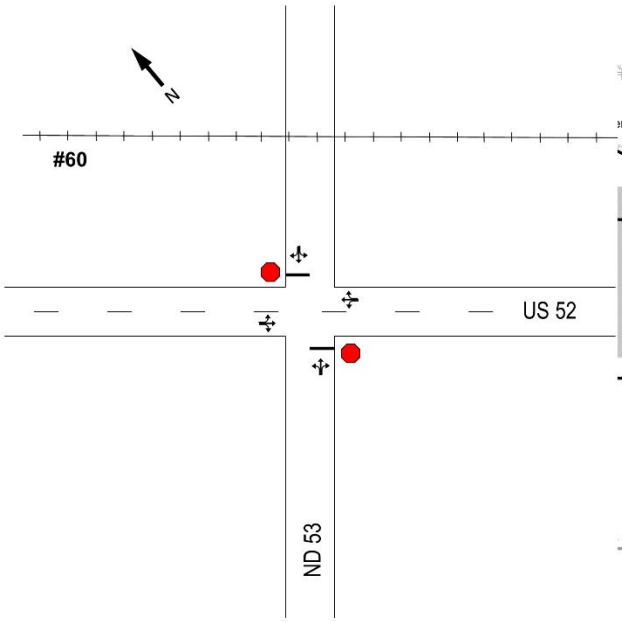
There were no reported crashes at this intersection.

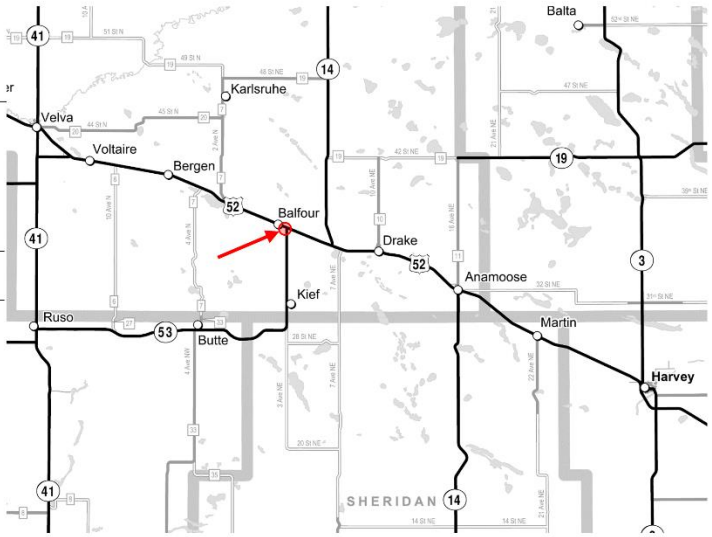
Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
EB to NB Left	No	No	N/A
WB to SB Left	No	No	N/A
EB to SB Right	No	No	N/A
WB to NB Right	No	No	N/A

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	No – cross product is 0.1 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	Yes
6F	Local government pays 50% and maintains	No

Destination lighting is warranted.

INTERSECTION #60: US 52 / ND 53 RP 137.700





Intersection-related Crashes

There were two reported crashes at this intersection. The first crash occurred when a vehicle was slowing to make a WB left turn and was rear ended. The front vehicle was pushed across the centerline and collided head on with an EB vehicle. The other crash occurred when a vehicle had slowed to make a WB left turn and was rear ended by another WB vehicle. These two crashes are susceptible to correction by a turn lane. The crashes occurred within a 3 year period on a roadway with a posted speed of 65 mph. Based on this crash history, criteria 1.B is met to install a WB left turn lane.

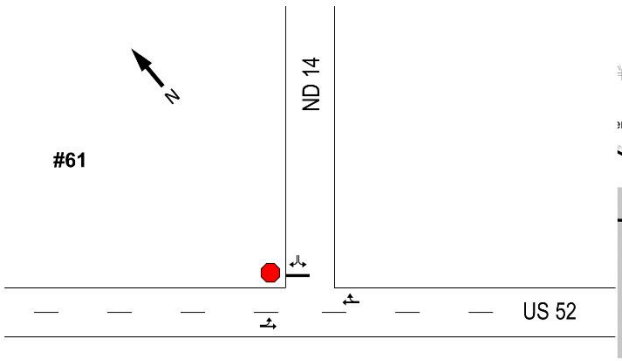
Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
EB to NB Left	No	No	N/A
WB to SB Left	No	No (Yes for 1.B)	N/A – should be 630 ft
EB to SB Right	No	No	N/A
WB to NB Right	No	No	N/A

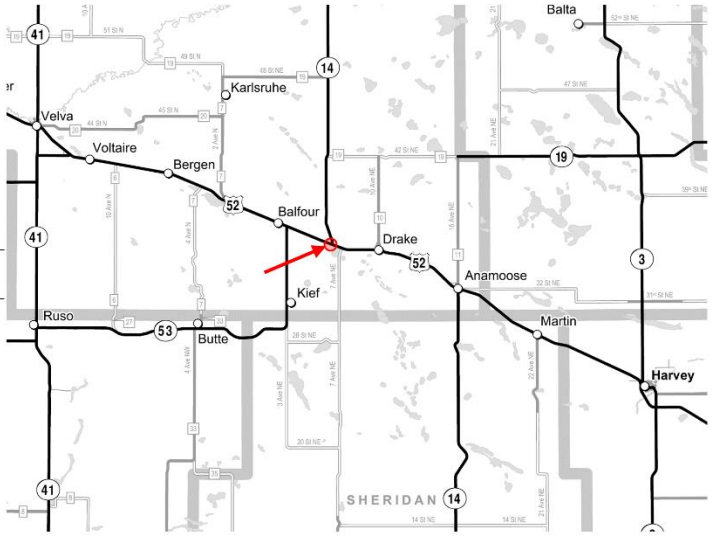
A WB left turn lane is warranted.

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	No – cross product is 0.4 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	No
6F	Local government pays 50% and maintains	No

Destination lighting is not warranted.

INTERSECTION #61: US 52 / ND 14 RP 137.700





Intersection-related Crashes

There were three reported crashes at this intersection. A driver backing up on ND 14 went into the path of a WB truck on US 52. The two other crashes occurred within minutes of each other where a SB vehicle failed to stop and landed in water in the south ditch. The driver then went onto the north side of the road to flag down a vehicle to get help. This individual was struck by a WB truck resulting in fatal injuries.

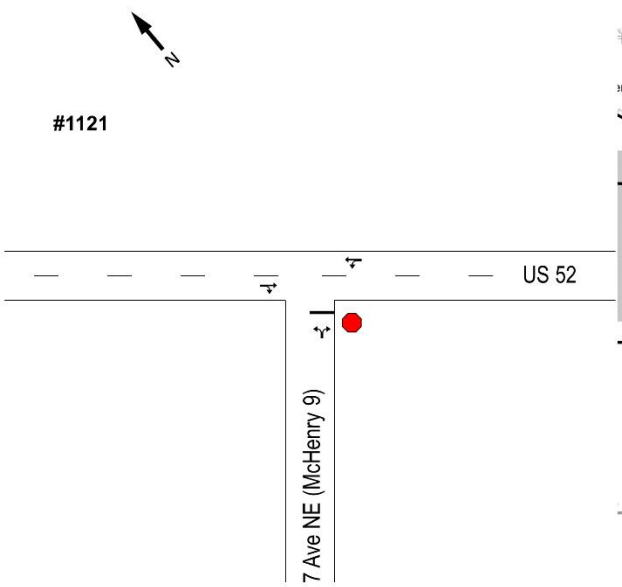
Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
EB to NB Left	No	Yes	N/A – should be 630 ft
WB to SB Left	No	No	N/A
EB to SB Right	No	No	N/A
WB to NB Right	No	No	N/A

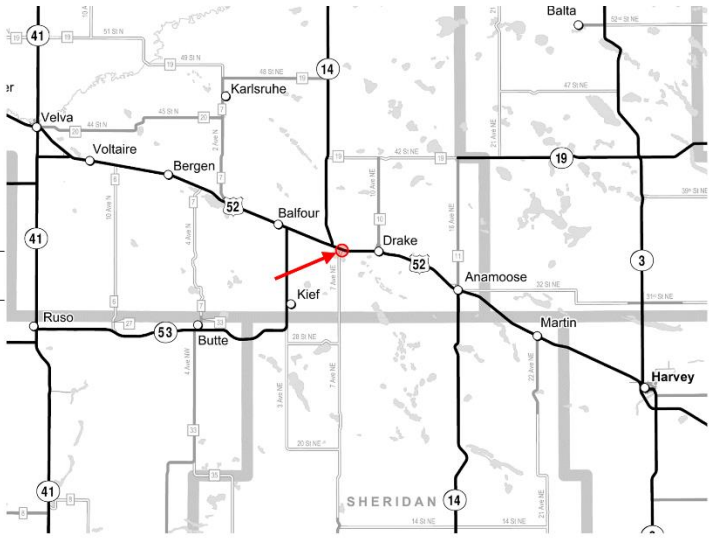
An EB left turn lane is warranted.

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	No – cross product is 0.4 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	No
6F	Local government pays 50% and maintains	No

Destination lighting is not warranted.

INTERSECTION #1121: US 52 / 7 Ave N — RP 142.200





Intersection-related Crashes

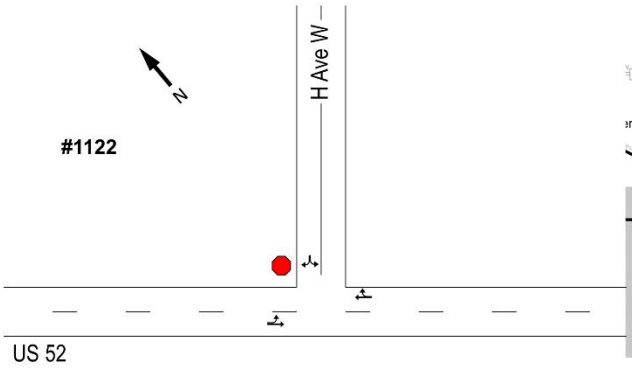
There were two reported crashes at this intersection. One crash occurred when a vehicle was slowing to make an EB right and was rear ended by another EB vehicle. The other crash was an angle collision due to a vehicle making a WB left turn from the right shoulder.

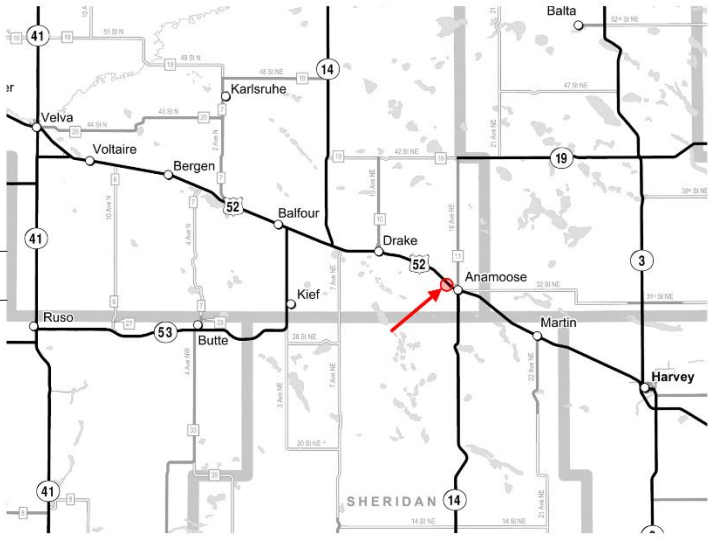
Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
EB to NB Left	No	No	N/A
WB to SB Left	No	No	N/A
EB to SB Right	No	No	N/A
WB to NB Right	No	No	N/A

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	No – cross product is 0.1 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	No
6F	Local government pays 50% and maintains	No

Destination lighting is not warranted.

INTERSECTION #1122: US 52 / H Ave W — RP 151.000





Intersection-related Crashes

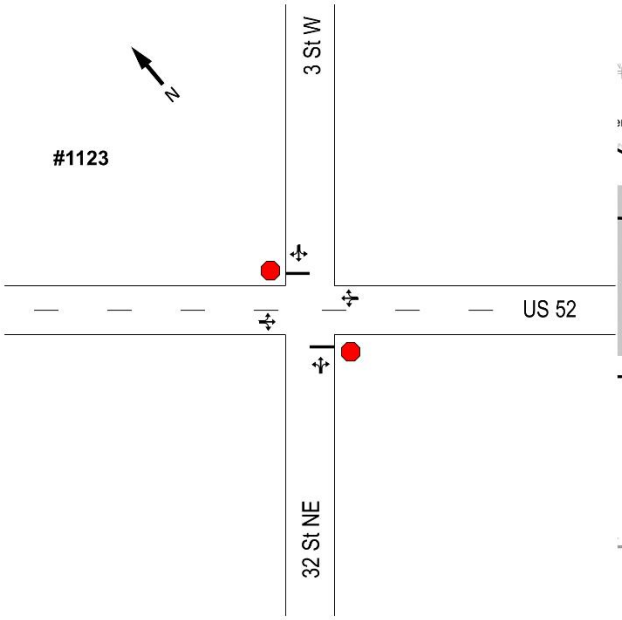
There were no reported crashes at this intersection.

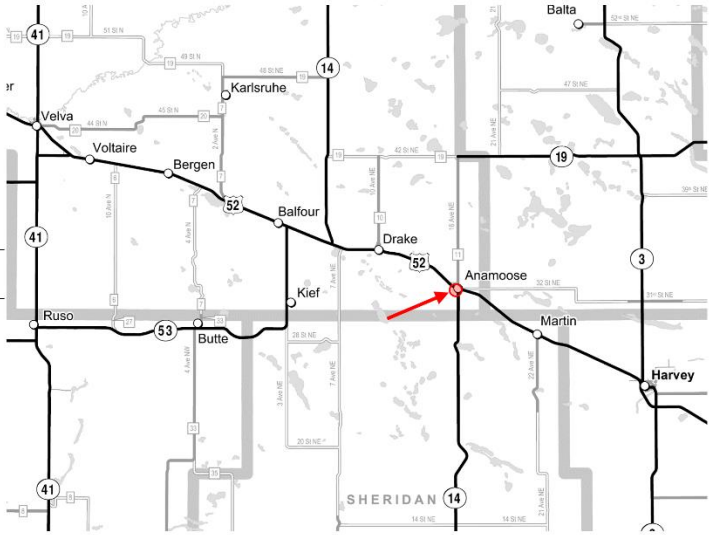
Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
EB to NB Left	No	No	N/A
WB to SB Left	No	No	N/A
EB to SB Right	No	No	N/A
WB to NB Right	No	No	N/A

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	No – cross product is 0.2 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	No
6F	Local government pays 50% and maintains	No

Destination lighting is not warranted.

INTERSECTION #1123: US 52 / 32 St NE — RP 151.610





Intersection-related Crashes

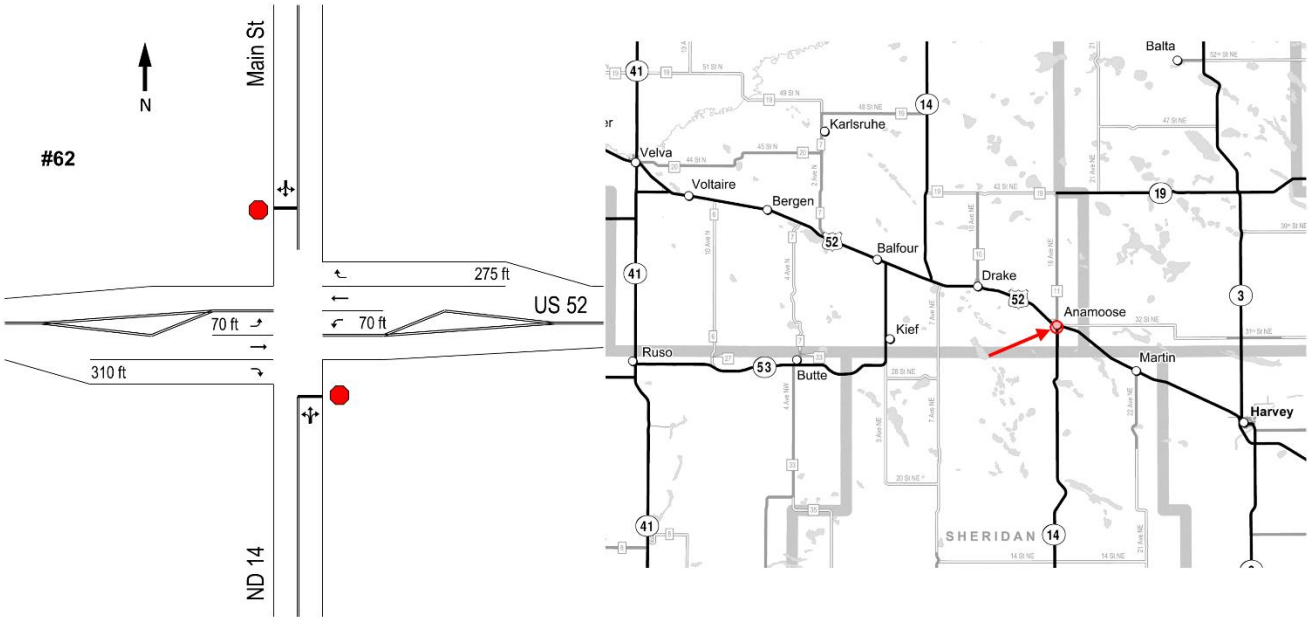
There were two reported crashes at this intersection. One was an angle crash where a vehicle made an improper turn (motorist tried to make a WB left turn from the right shoulder of the road and struck an EB vehicle). The other crash was a single vehicle where a motorist made an EB left too fast and slid off the roadway.

Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
EB to NB Left	No	No	N/A
WB to SB Left	No	No	N/A
EB to SB Right	No	No	N/A
WB to NB Right	No	No	N/A

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	No – cross product is 0.1 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	No
6F	Local government pays 50% and maintains	No

Destination lighting is not warranted.

INTERSECTION #62: US 52 / ND 14 RP 151.900



Intersection-related Crashes

There were four reported crashes at this intersection. There were two angle crashes where a vehicle failed to yield. One crash involved improper backing/turning. The other crash was a single vehicle that overturned at the intersection.

Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
EB to NB Left	Yes	Yes	No– ex. 70 ft, should be 630 ft
WB to SB Left	Yes	Yes	No– ex. 70 ft, should be 630 ft
EB to SB Right	Yes	No	No– ex. 275 ft, should be 530 ft
WB to NB Right	Yes	No	No– ex. 275 ft, should be 530 ft

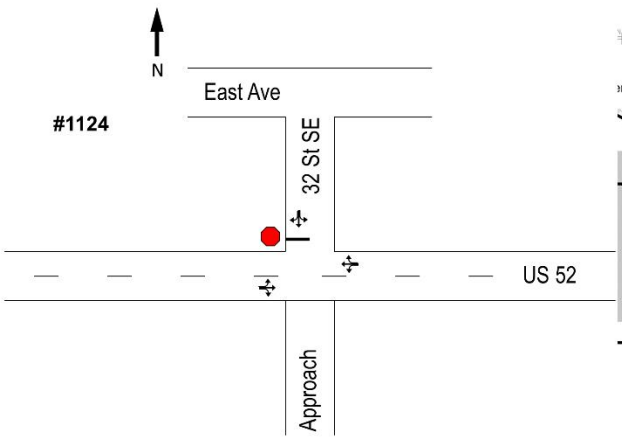
An EB left turn lane is warranted. A WB left turn lane is warranted.

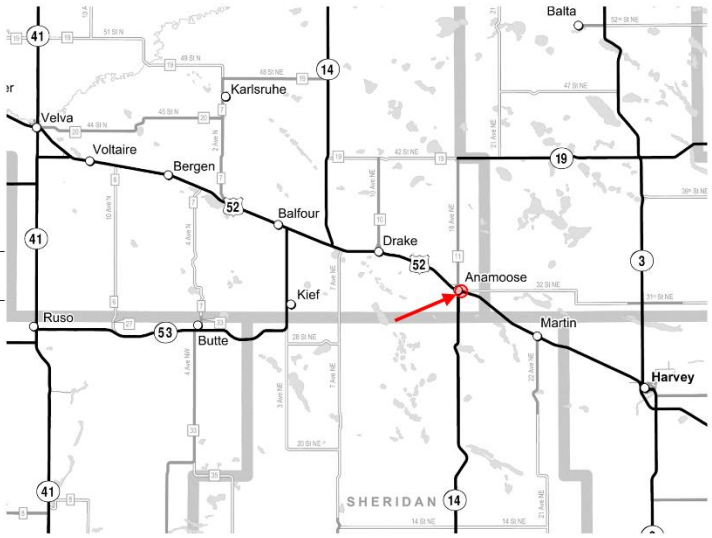
Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	No – cross product is 1.0 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	No*
6F	Local government pays 50% and maintains	No

*On the northwest quadrant of the intersection, there is an existing light standard set back approximately 130 feet from the centerline of US 52.

Destination lighting is not warranted.

INTERSECTION #1124: US 52 / 32 St SE — RP 152.060





Intersection-related Crashes

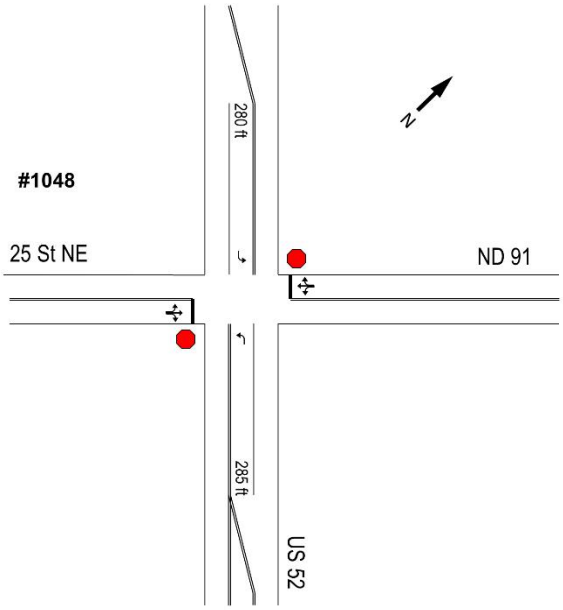
There were no reported crashes at this intersection.

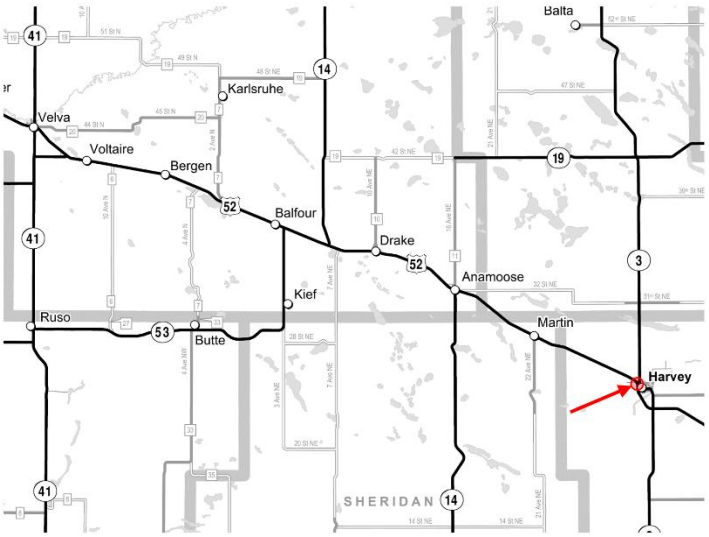
Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
EB to NB Left	No	No	N/A
WB to SB Left	No	No	N/A
EB to SB Right	No	No	N/A
WB to NB Right	No	No	N/A

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	No – cross product is 0.2 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	No
6F	Local government pays 50% and maintains	No

Destination lighting is not warranted.

INTERSECTION #1048: US 52 / ND 91 RP 167.400





Intersection-related Crashes

There were four reported crashes at this intersection. Three of these were angle crashes where a vehicle failed to yield, pulled out into the intersection and was struck by a mainline vehicle. One crash was a single vehicle where a trailer tipped over while the vehicle was turning.

Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
SB to EB Left	Yes	Yes	No– ex. 280 ft, should be 435 ft
NB to WB Left	Yes	Yes	No– ex. 285 ft, should be 435 ft
SB to WB Right	No	No	N/A
NB to EB Right	No	Yes	N/A – should be 335 ft

A SB left turn lane is warranted. A NB left turn lane is warranted. A NB right turn lane is warranted.

Illumination Lighting Warrant		Met?
5A	All signalized intersections	No
5B	All roundabout and J-turn intersections	No
5C	Raised channelization/medians present	No
5D	Roadway segment lighting	Yes
5E	AADT cross product ≥ 10,000,000	No – cross product is 2.1 million
5F	Engineering judgment	No
5G	Existing illumination lighting present	Yes
5H	Local government pays 50% and maintains	No

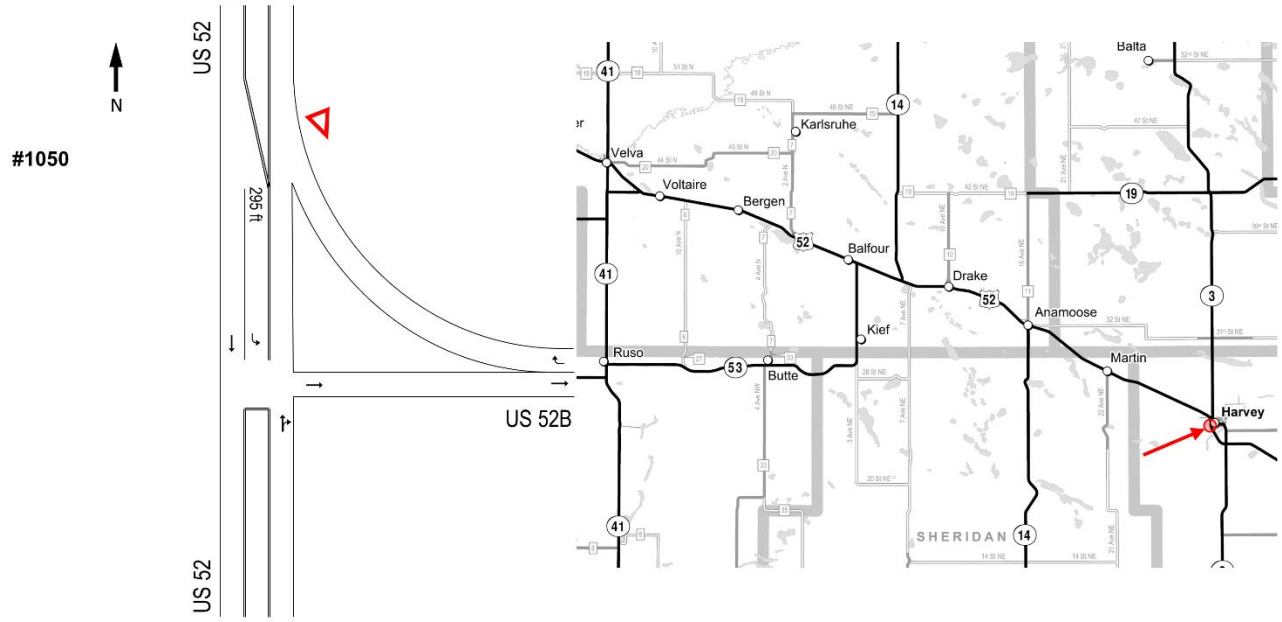
Illumination lighting is warranted.

Capacity analysis – EXISTING GEOMETRY Peak Hour

Approach	2018 LOS	2018 Delay (sec)
Eastbound:	A	10
Westbound:	B	10
Northbound:	A*	1
Southbound:	A*	1
Intersection	**A***	**3**

*Equivalent LOS shown, mainline approaches and the overall intersection LOS are not calculated for TWSC intersections.

INTERSECTION #1050: US 52 / US 52B RP 167.700



The WB to NB right-turn slip lane has a skew of 10 degrees. This requires the driver to look almost directly backwards to look for gaps in approaching traffic. To re-design this to a proper acceleration ramp per current Green Book, a 320 ft full-width lane of acceleration plus another 300 ft of taper would be needed (see appendix E) Doing this would only complicate the driving environment on US 52 since the taper would overlap with the functional area of the intersection to the north (ND 91).

If the right-turn slip lane were removed, thus creating a typical "T" type intersection adjacent to the existing EB lane, the resulting intersection would have a skew of 53 degrees. The Green Book states that an intersection shouldn't have a skew angle of less than 75 degrees. Squaring up the intersection and getting rid of the right-turn slip lane was proposed back in 1976 (see appendix F).

Removing this entire intersection is an option here since there are alternate routes to access Harvey from US 52. A distance of about 2300 ft separates US 52/ND 91 from US 52/ND 3 (the slip ramp is about halfway between). Further discussion on this option is shown on page 27.

Intersection-related Crashes

There was one crash at the slip ramp: a driver tried to make a left turn onto US 52 from the right-turn slip ramp and was struck by a NB vehicle on US 52.

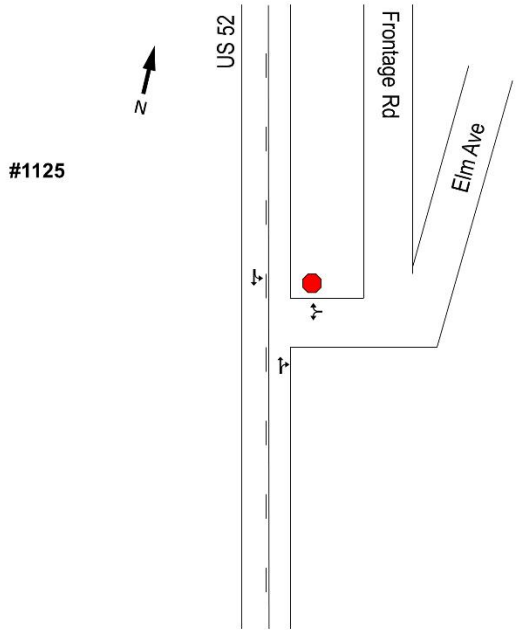
Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
SB to EB Left	Yes	Yes	No– ex. 295 ft, should be 435 ft
NB to WB Left	No	No	N/A
SB to WB Right	No	No	N/A
NB to EB Right	No	No	N/A

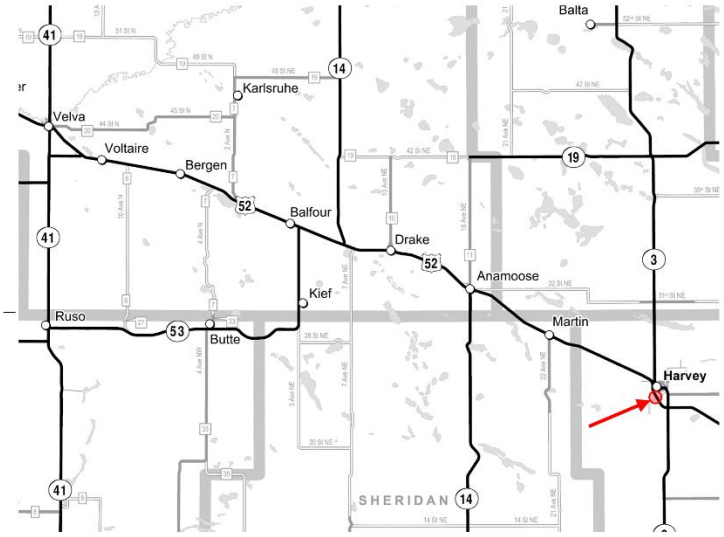
A SB left turn lane is warranted.

Illumination Lighting Warrant		Met?
5A	All signalized intersections	No
5B	All roundabout and J-turn intersections	No
5C	Raised channelization/medians present	No
5D	Roadway segment lighting	Yes
5E	AADT cross product ≥ 10,000,000	No – cross product is 1.8 million
5F	Engineering judgment	No
5G	Existing illumination lighting present	Yes
5H	Local government pays 50% and maintains	No

Illumination lighting is warranted.

INTERSECTION #1125: US 52 / 30 Ave N — RP 168.500





Intersection-related Crashes

There was one reported crash at this intersection. A vehicle at the stop sign made a left turn and was struck by a vehicle heading northbound on US 52.

Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
SB to EB Left	No	Yes	N/A – should be 435 ft
NB to WB Left	No	No	N/A
SB to WB Right	No	No	N/A
NB to EB Right	No	Yes	N/A – should be 335 ft

A SB left turn lane is warranted. A NB right turn lane is warranted.

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	No – cross product is 0.9 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	No
6F	Local government pays 50% and maintains	No

Destination lighting is not warranted.

ACCESS MANAGEMENT NEAR HARVEY

Access management is a proven safety countermeasure[1]. The area on the west side of Harvey may be a good candidate for consolidation or closure of some access points. Although detailed recommendations are outside of the scope of this study, conceptual access control options are described below.

Concept #1

The intersection of US 52 / US 52B would be removed. This includes the slip ramp and US 52B eastbound lane that connects to ND 3. Remove another slip ramp for northbound ND 3 to US 52B. This concept is shown below in figure 2.

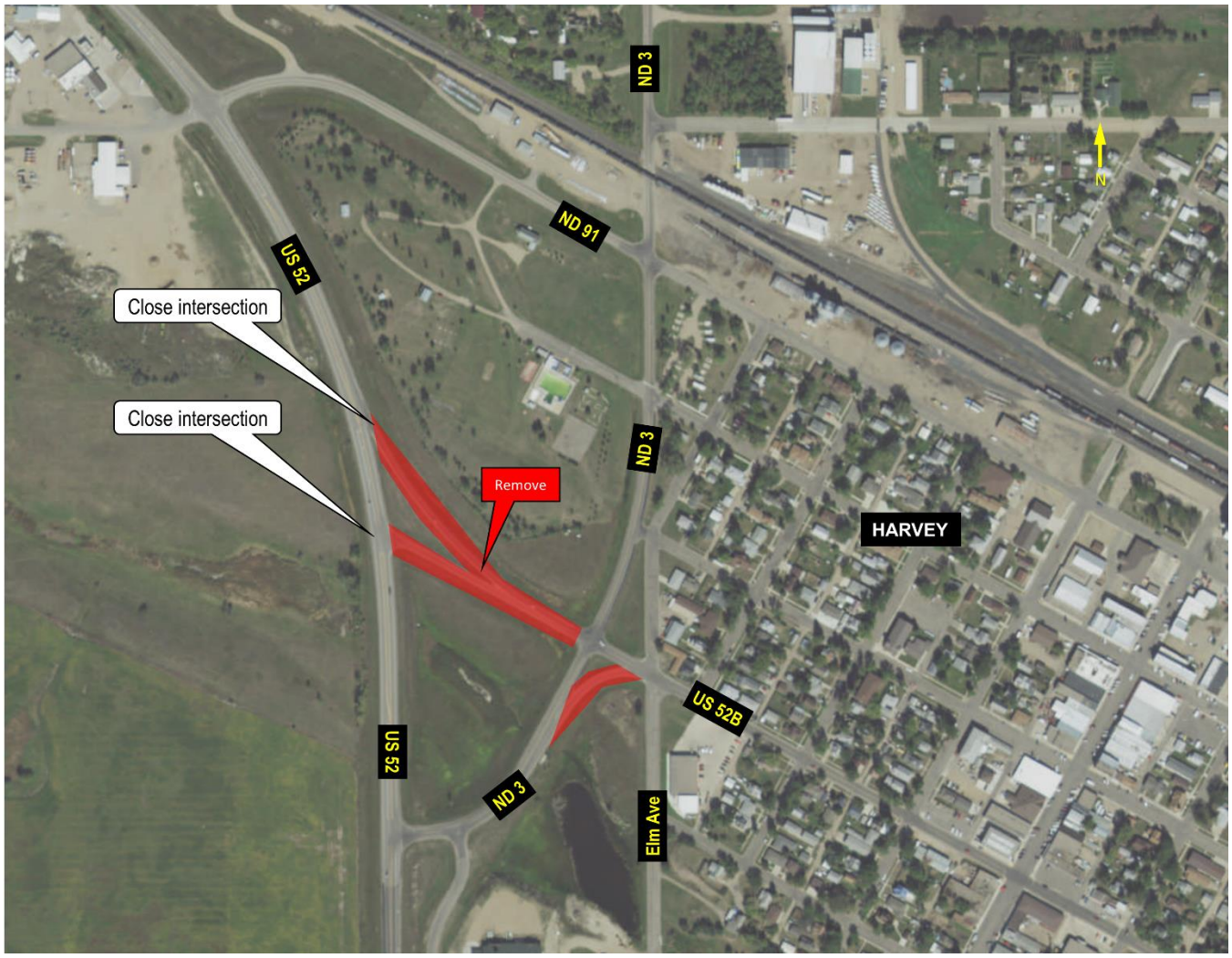


Figure 2 – Access management concept #1

Reference:

3. FHWA, *"Proven Safety Countermeasures"*, November 2018.

Concept #2

Concept #2 would include everything with concept #1 and add in a new roadway of US 52B that would connect to US 52 at a right angle. The existing US 52 / ND 3 intersection would be closed and the frontage road would be realigned to connect up with ND 3. This concept is shown below in figure 3.

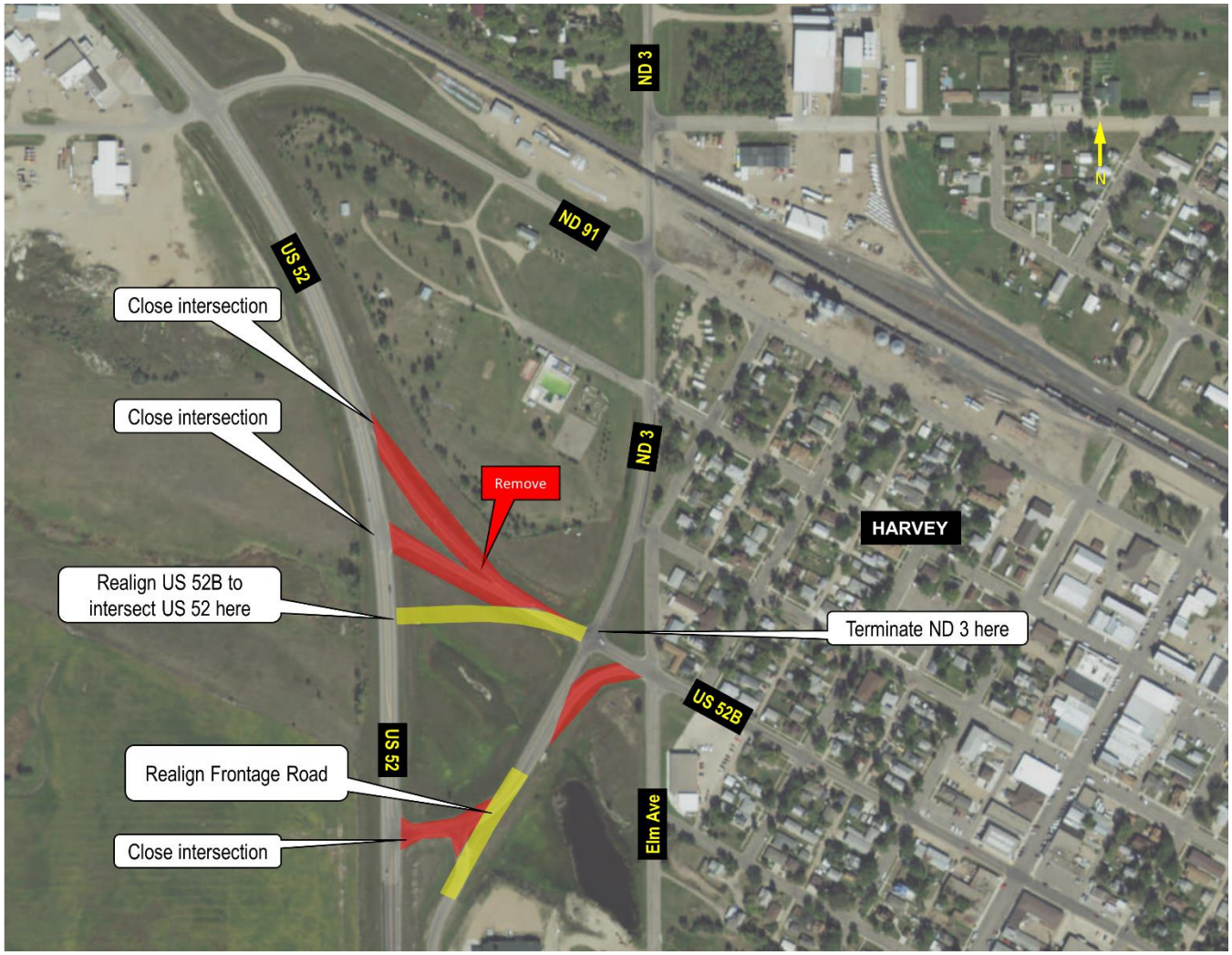


Figure 3 – Access management concept #2

Concept #3

The existing intersection of US 52 / ND 3 would remain. However a portion of what is currently ND 3 would be reassigned as US 52B. ND 3 would terminate further north at the intersection of ND 91.

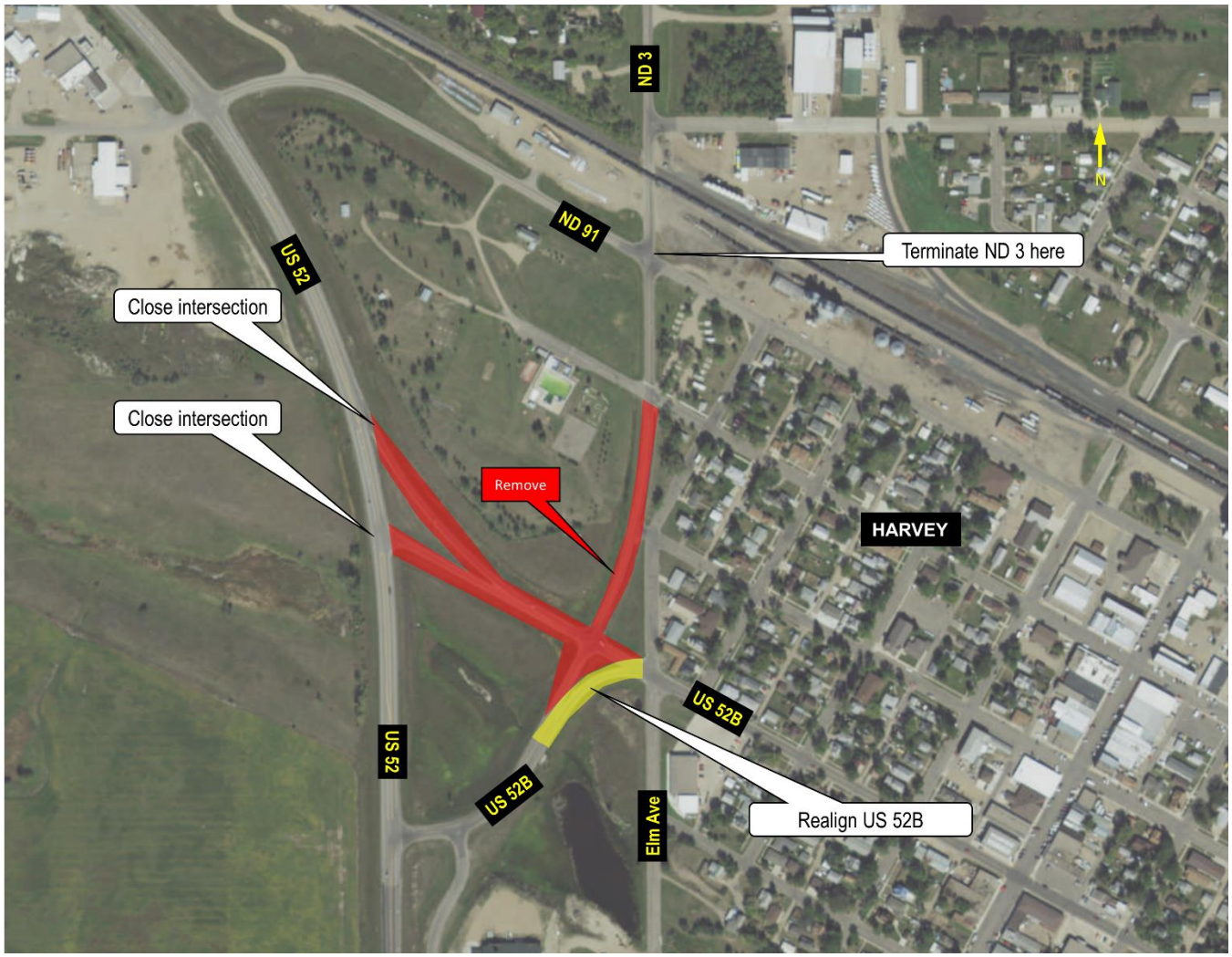


Figure 4 – Access management concept #3

Concept #4

The existing intersections of US 52 / US 52B and US 52 / ND 3 would be removed. A new roadway for US 52B would serve as a perpendicular connection between US 52 and Elm Ave. ND 3 would terminate at ND 91. See figure 5.

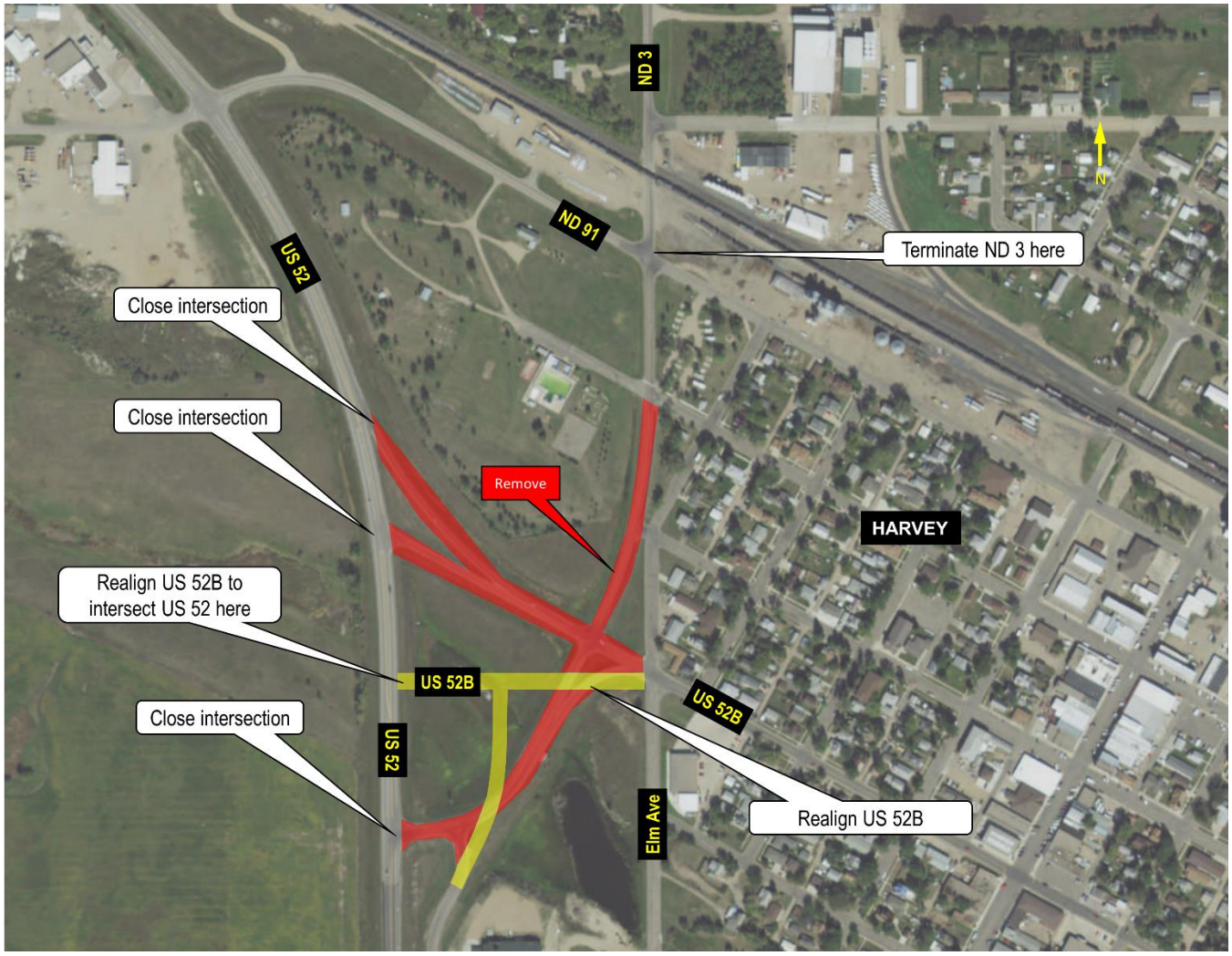


Figure 5 – Access management concept #4

SUMMARY

- Turn Lane Warrants — Page reference
  - US 52 / 135 Ave SE: NB left — 7
  - US 52 / Central Ave: an EB left* — 8
  - US 52 / 1 St E: WB right — 10
  - US 52 / 14 Ave N: EB right* — 11
  - US 52 / ND 53: WB left — 17
  - US 52 / ND 14 (W Jct): EB left* — 18
  - US 52 / ND 14 (E Jct): EB left*, WB left* — 22
  - US 52 / ND 91: SB left*, NB left*, NB right — 24
  - US 52 / US 52B: SB left* — 25
  - US 52 / 30 Ave N: SB left, NB right — 26

  *Existing turn lane in place—may not meet current standards.

- Lighting Warrants: — Page reference
  - US 52 / Central Ave: destination* — 8
  - US 52 / 153 St SE: destination* — 9
  - US 52 / 14 Ave N: destination* — 11
  - US 52 / Main St: destination* — 16
  - US 52 / ND 91: illumination* — 24
  - US 52 / US 52B: illumination* — 25

  *Existing lighting already in place.

- Consider access revisions on the west side of Harvey (see pages 27-30)

ESTIMATE OF CURRENT AND FUTURE TRAFFIC
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
(PLANNING DIV. TRAFFIC INFO. SECTION)

RECNO: 11400

DATE PRINTED OR REPRINTED: 11/27/2018 PROJECT NO:

DATE PREPARED: 11/26/2018 COUNTY: WARD ROUTE ID: 0

HIGHWAY NO: 52 HWY SUFFIX: HWY DIRECTION: E

REF PT: 101.000 OFFSET: .6830 LENGTH: 150.2832

PASSENGER EXPANSION FACTOR: 1.35 TRUCK EXPANSION FACTOR: 1.49

TRAFFIC'S ANNUAL % OF GROWTH: 1.5 ESAL'S ANNUAL % OF GROWTH: 2.0

LOCATION: RP 101.683 TO RP 116.858

* * * * * * * * * * * * * * * * * * * *
* ALL AADT'S & ESALS, ARE AT THE HIGHEST POINT OF THE PROJECT SEGMENT *

	YEAR	PASS	TRUCKS	TOTAL	30TH MAX HR	E.S.A.L.'S FLEX	RIGID
CURRENT	2018	3,270	880	4,150	415	830	1,490
FORECAST	2038	4,415	1,315	5,730	575	1,240	2,225

* * * * * * * * * * * * * * * * * * * *

PAVEMENT EQUIVALENCY FACTORS: FLEXIBLE AT SN4 RIGID AT 9 INCHES

WAS CLASS WIM DATA AVAILABLE FOR THIS PARTICULAR LOCATION? N

IS THIS A REVISED ESTIMATE? N SUPERCEDES EST. OF

REQUESTED BY: DONOVAN SLAG- PROGRAMMING

* * * * * * * * REMARKS! * * * * * * * *

TRAFFIC FORECAST ESTIMATE IS BASED ON 2018 TRAFFIC COUNTS.
TRAFFIC FOR BOTH DIRECTIONS.
COMPLETED BY NR.

ESTIMATE OF CURRENT AND FUTURE TRAFFIC
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
(PLANNING DIV. TRAFFIC INFO. SECTION)

RECNO: 11401

DATE PRINTED OR REPRINTED: 11/27/2018 PROJECT NO:

DATE PREPARED: 11/26/2018 COUNTY: WARD ROUTE ID: 0

HIGHWAY NO: 52 HWY SUFFIX: HWY DIRECTION: E

REF PT: 101.000 OFFSET: .6830 LENGTH: 150.2832

PASSENGER EXPANSION FACTOR: 1.35 TRUCK EXPANSION FACTOR: 1.49

TRAFFIC'S ANNUAL % OF GROWTH: 1.5 ESAL'S ANNUAL % OF GROWTH: 2.0

LOCATION: RP 116.858 TO RP 169.979

* * * * * * * * * * * * * * * * * * * *
* ALL AADT'S & ESALS, ARE AT THE HIGHEST POINT OF THE PROJECT SEGMENT *

	YEAR	PASS	TRUCKS	TOTAL	30TH MAX HR	E.S.A.L.'S FLEX	RIGID
CURRENT	2018	1,270	655	1,925	195	620	1,110
FORECAST	2038	1,715	980	2,695	270	925	1,660

* * * * * * * * * * * * * * * * * * * *

PAVEMENT EQUIVALENCY FACTORS: FLEXIBLE AT SN4 RIGID AT 9 INCHES

WAS CLASS WIM DATA AVAILABLE FOR THIS PARTICULAR LOCATION? N

IS THIS A REVISED ESTIMATE? N SUPERCEDES EST. OF

REQUESTED BY: DONOVAN SLAG- PROGRAMMING

* * * * * * * * REMARKS! * * * * * * * *

TRAFFIC FORECAST ESTIMATE IS BASED ON 2018 TRAFFIC COUNTS.
TRAFFIC FOR BOTH DIRECTIONS.
COMPLETED BY NR.

Intersection Traffic Volumes

North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

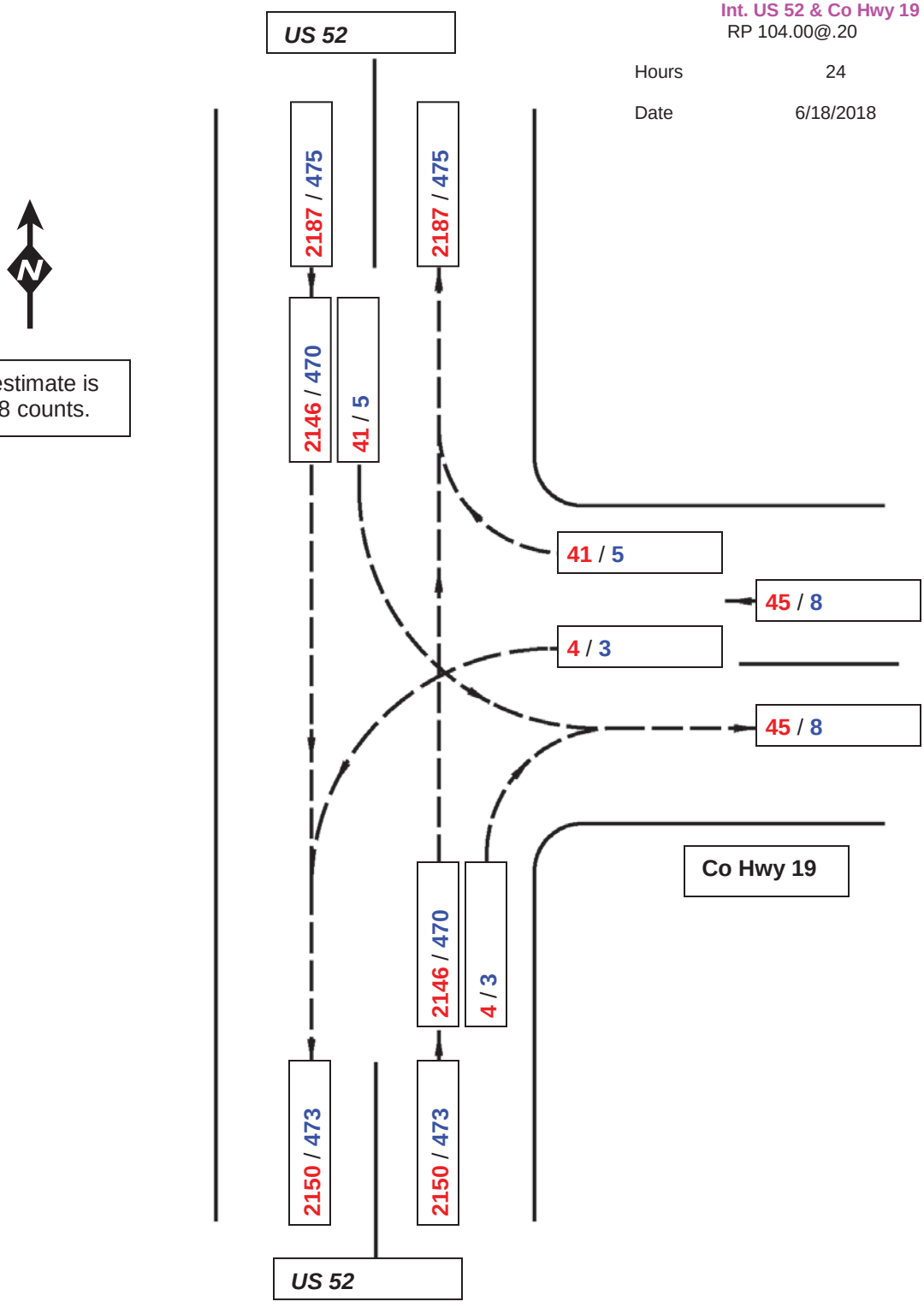
1107

Intersection No. 15

Description
Int. US 52 & Co Hwy 19
RP 104.00@.20

Hours 24

Date 6/18/2018



Note: Traffic estimate is based on 2018 counts.

LEGEND: AADT / TRUCKS - 2018

Completed by NR

Intersection Traffic Volumes

North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

1108

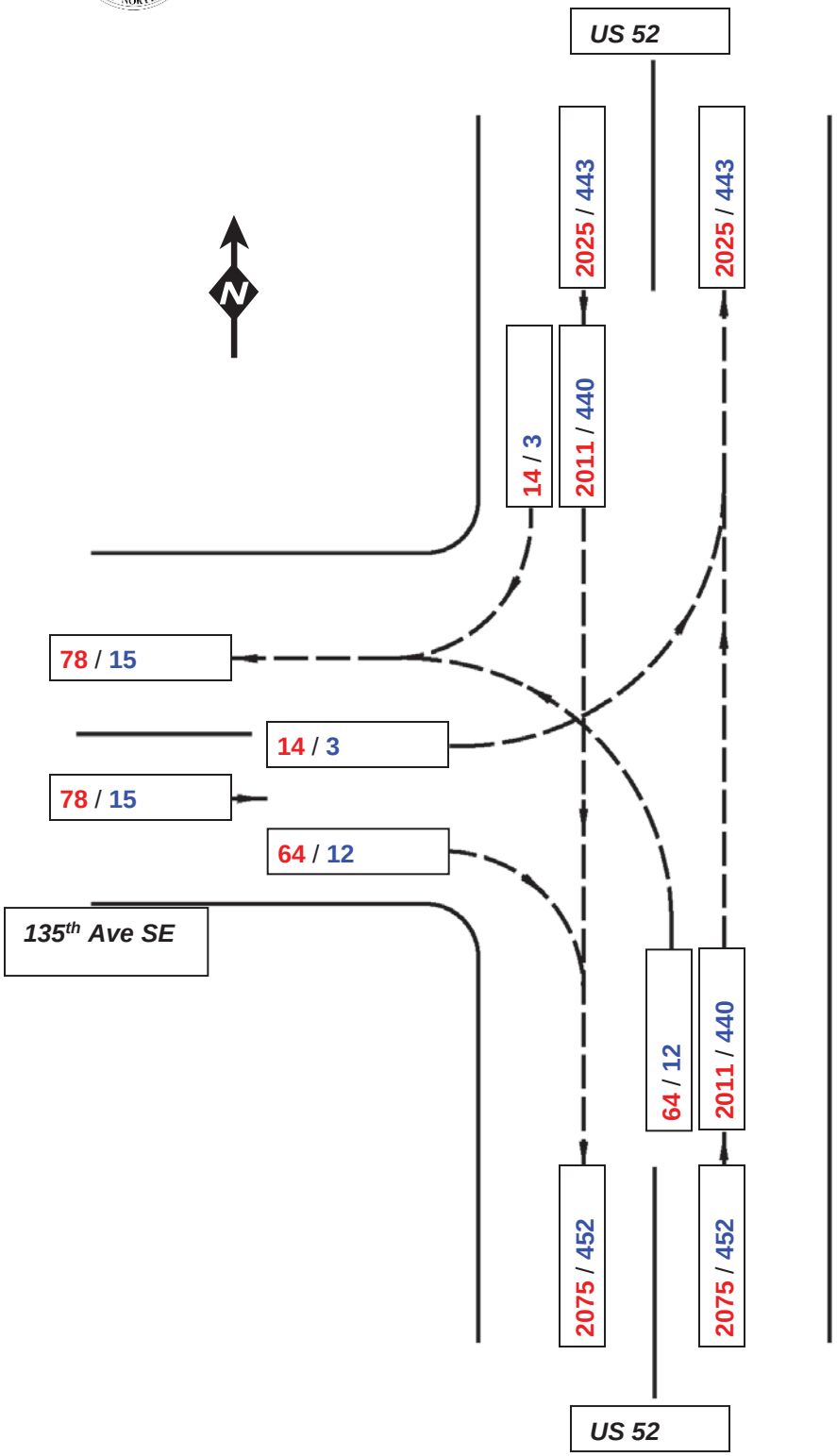
Intersection No. 16

Description:
Int US 52 & 135th Ave SE
RP 108.00@.00

Hours 24

Date 6/18/2018

Note: Traffic estimate is based on 2018 traffic counts.



LEGEND: AADT / TRUCKS - 2018

Completed by NR

1110

Intersection Traffic Volumes

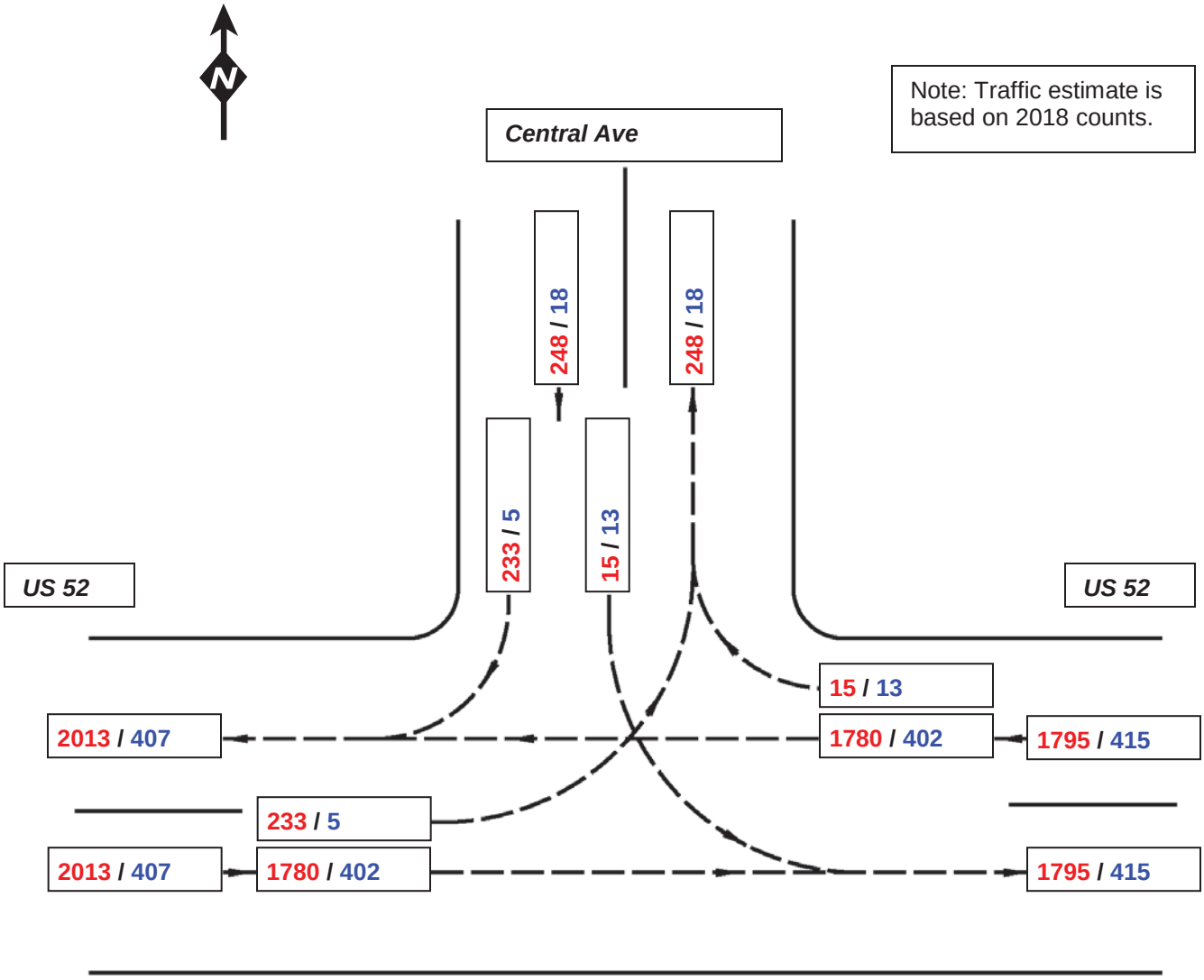
North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

Intersection No. 17

Description
Int. US 52 & Central Ave
RP 109.00@.788 (US 52)

Hours: 24

Date: 6/18/2018



Note: Traffic estimate is based on 2018 counts.

LEGEND: **AADT** / **TRUCKS** - 2018

Completed by NR

Intersection Traffic Volumes

North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

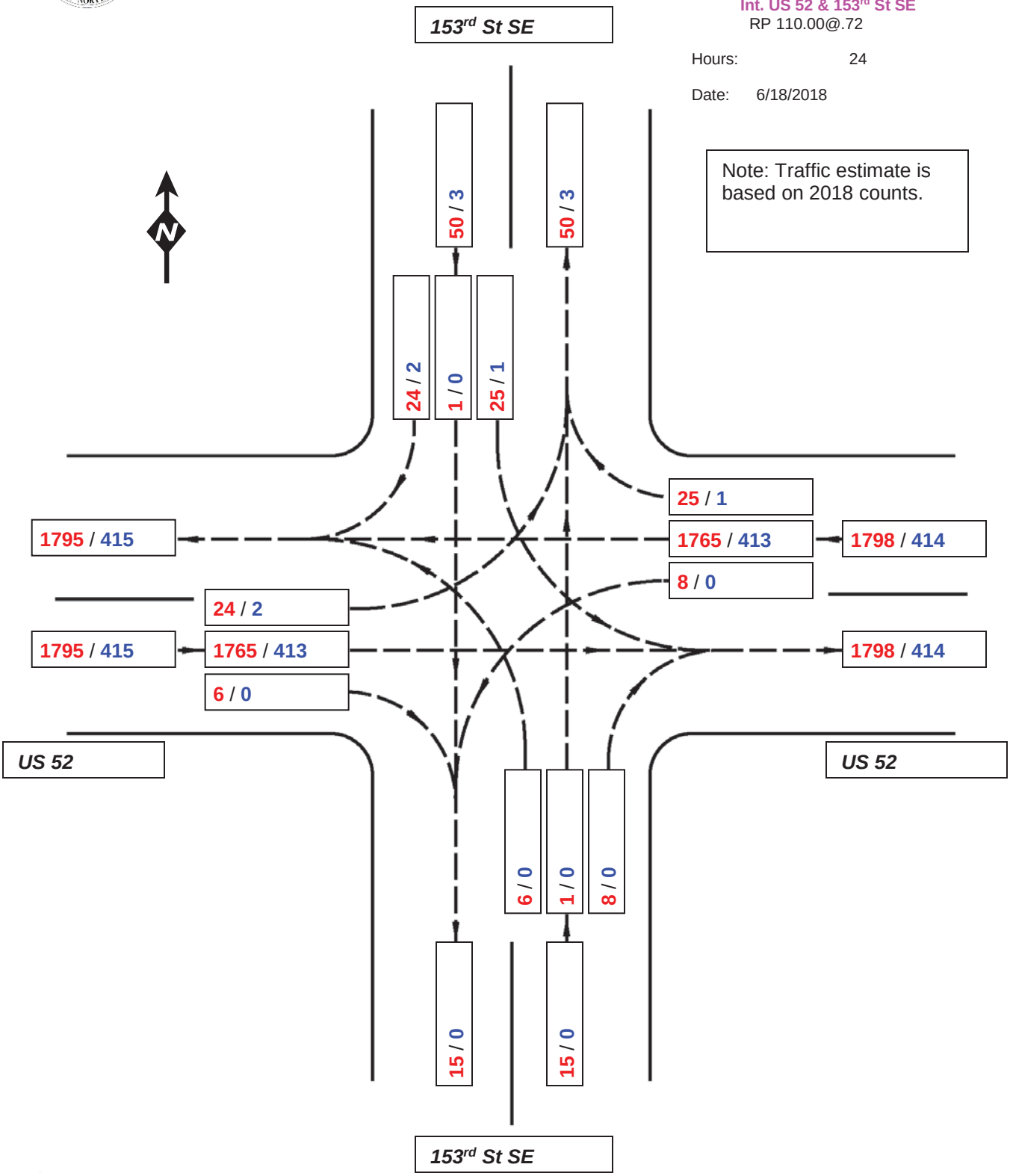
Intersection No: 18

Description
Int. US 52 & 153rd St SE
RP 110.00@.72

Hours: 24

Date: 6/18/2018

Note: Traffic estimate is based on 2018 counts.



LEGEND: AADT / TRUCKS - 2018

Completed by NR

Intersection Traffic Volumes

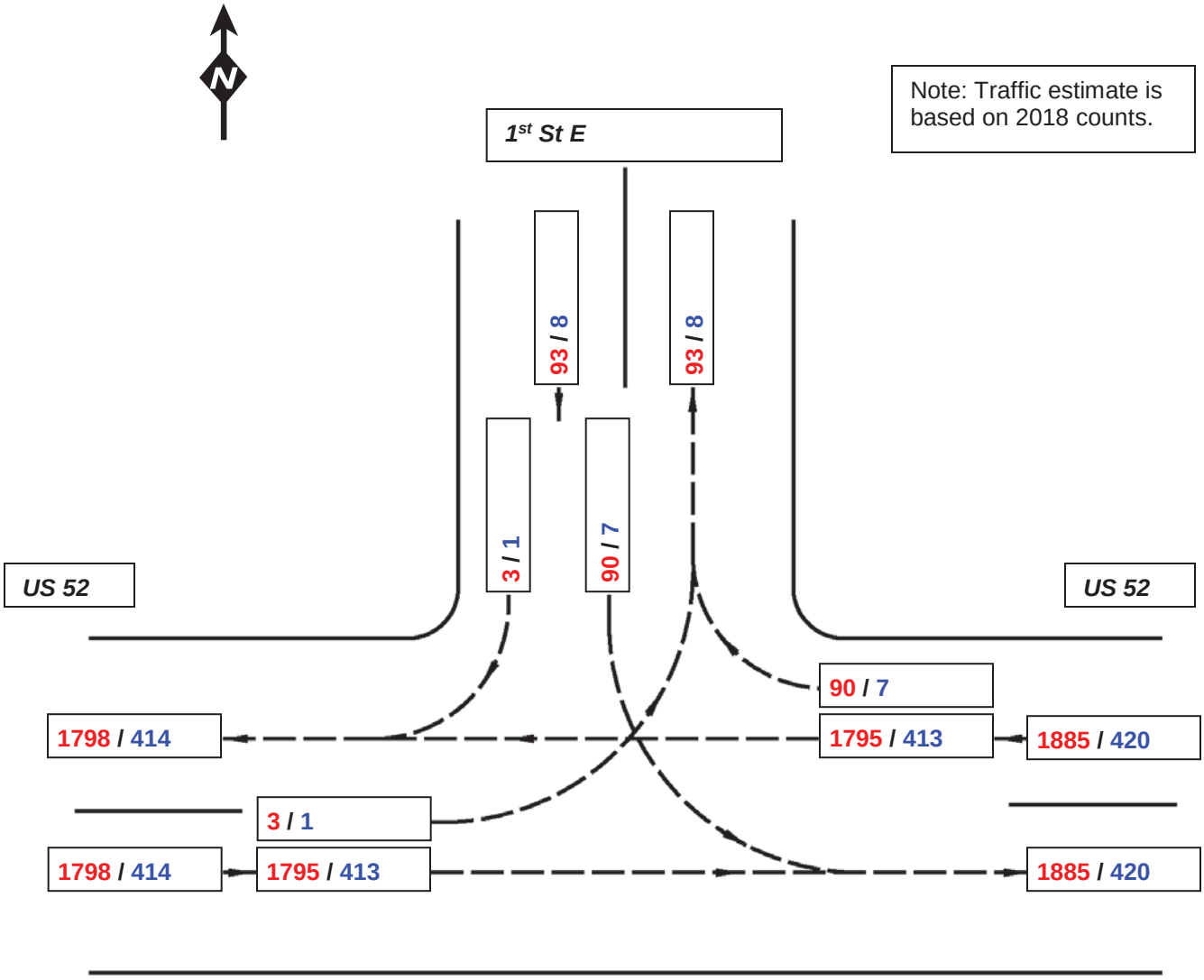
North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

Intersection No. 19

Description
Int. US 52 & 1st St E
RP 111.00@.60 (US 52)

Hours: 24

Date: 6/18/2018



Note: Traffic estimate is based on 2018 counts.

LEGEND: **AADT** / **TRUCKS** - 2018

Completed by NR

Intersection Traffic Volumes

North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

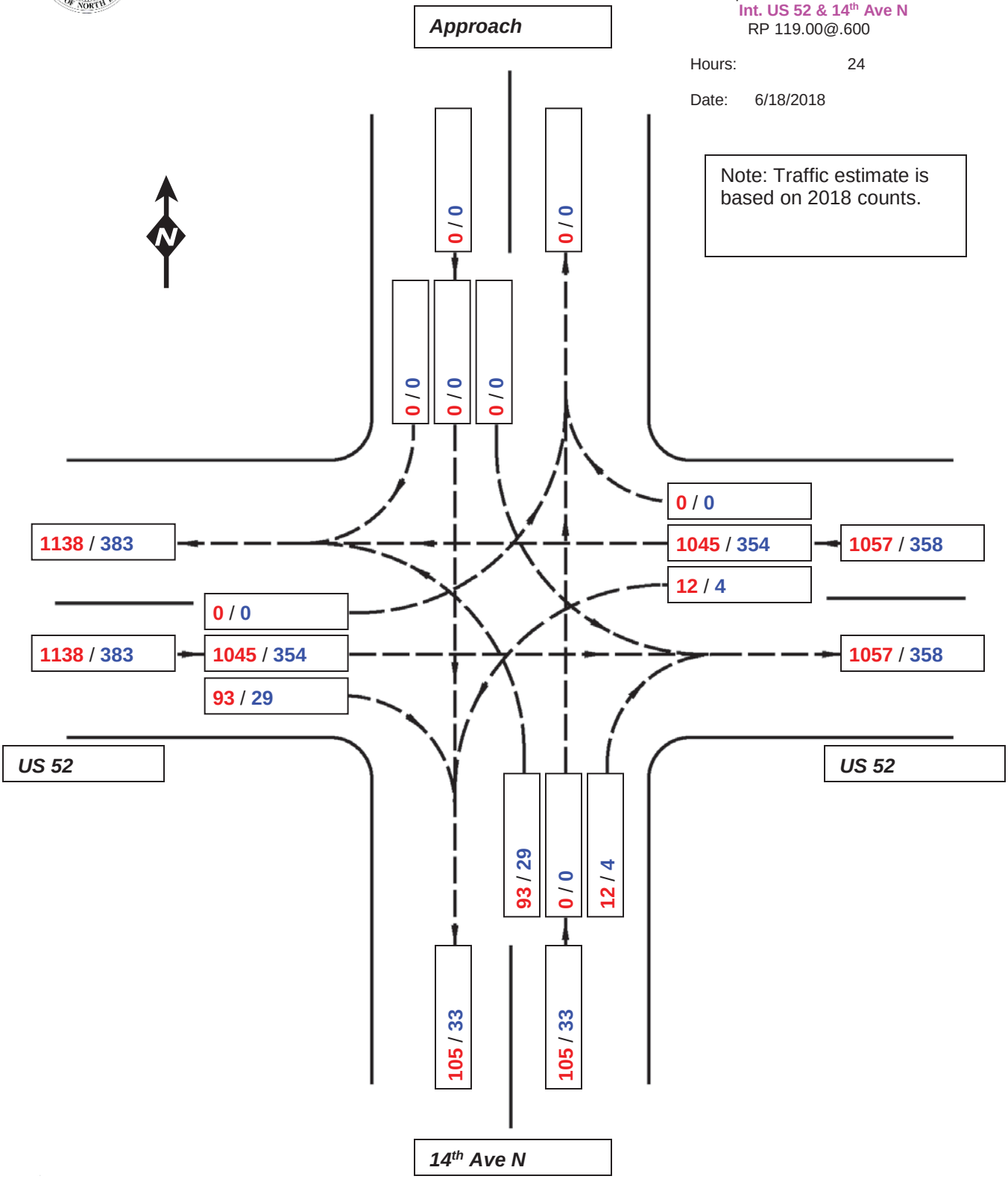
Intersection No: 20

Description
Int. US 52 & 14th Ave N
RP 119.00@.600

Hours: 24

Date: 6/18/2018

Note: Traffic estimate is based on 2018 counts.



LEGEND: AADT / TRUCKS - 2018

Completed by NR

Intersection Traffic Volumes

North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

1117

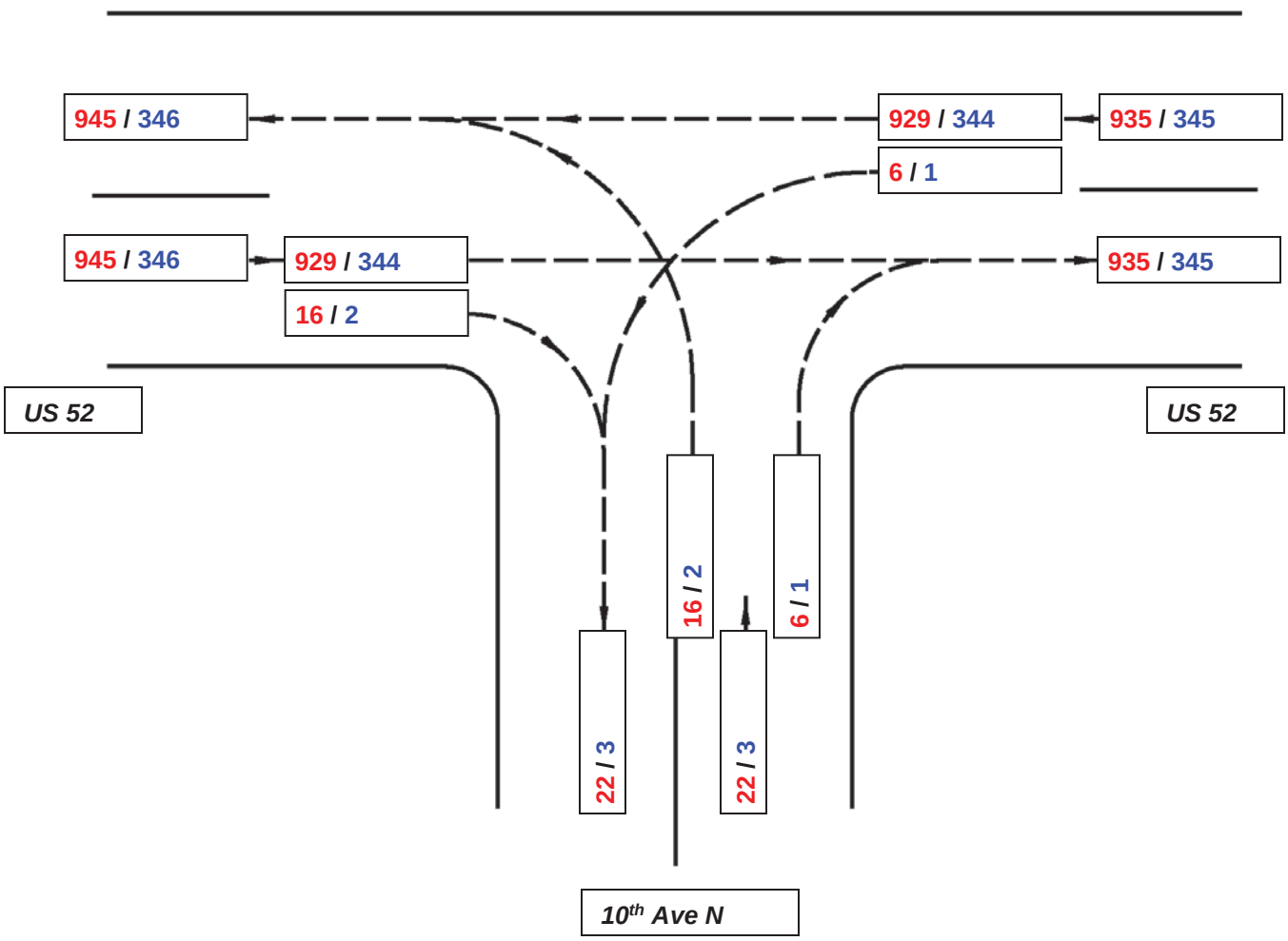
Intersection No. 21

Description
Int. US 52 & 10th Ave N
RP 123.00@.80 (US 52)

Hours 24

Date 6/18/2018

Note: Traffic estimate is based on 2018 counts.



LEGEND: AADT / TRUCKS - 2018

Completed by NR

Intersection Traffic Volumes

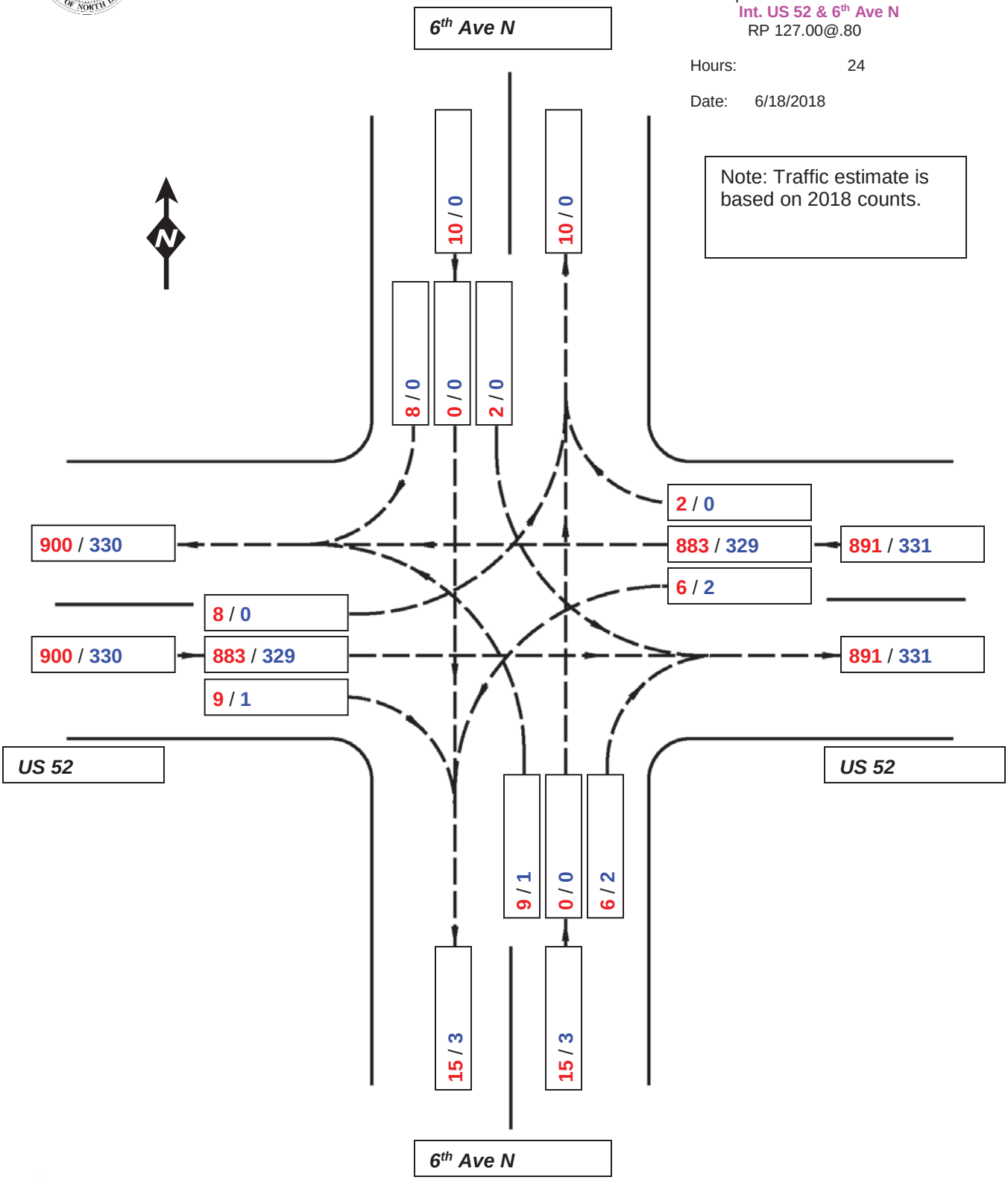
North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

Intersection No: 22

Description
Int. US 52 & 6th Ave N
RP 127.00@.80

Hours: 24

Date: 6/18/2018



Intersection Traffic Volumes

North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

1119

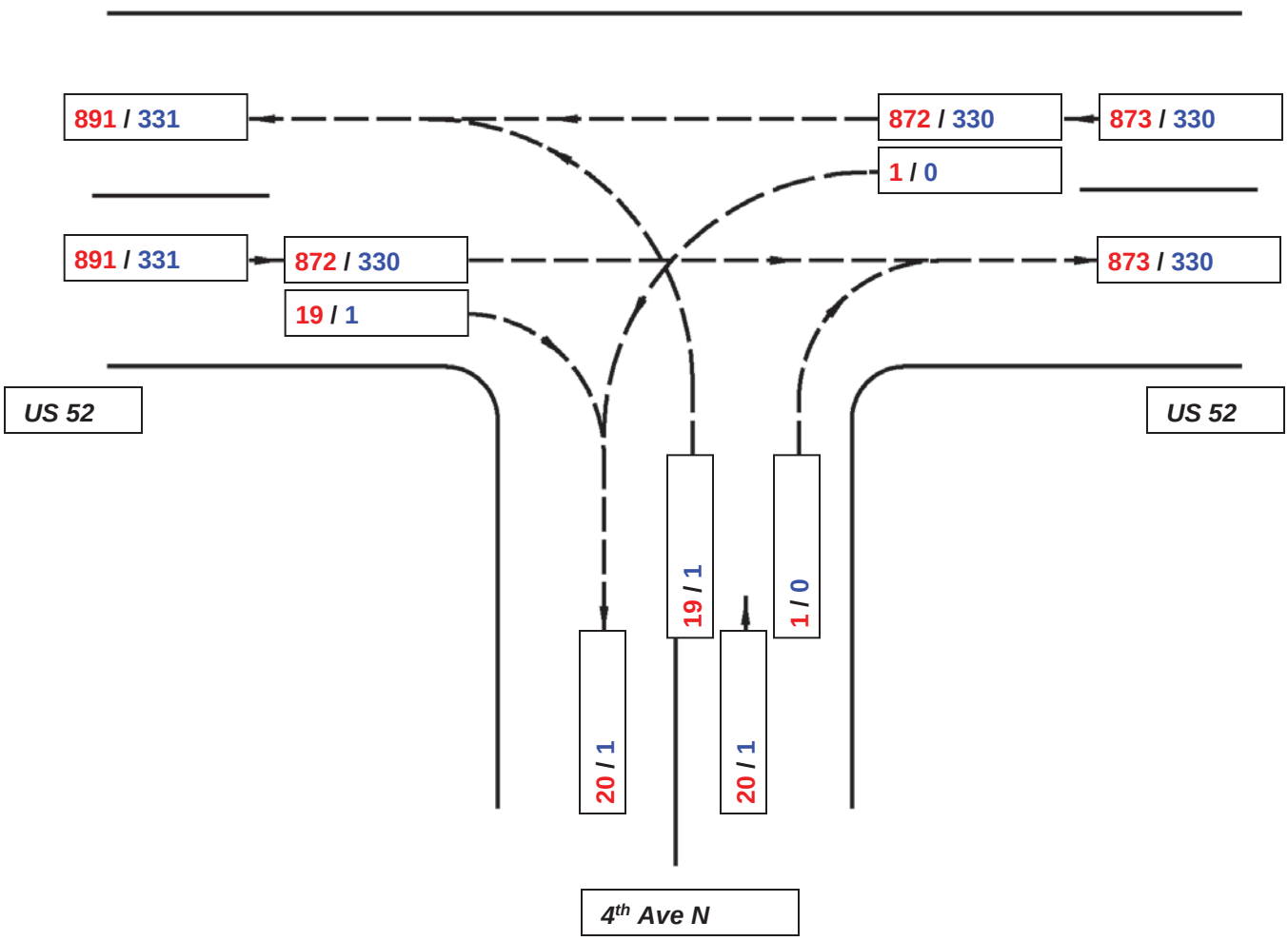
Intersection No. 23

Description
Int. US 52 & 4th Ave N
RP 130.00@.50 (US 52)

Hours 24

Date 6/18/2018

Note: Traffic estimate is based on 2018 counts.



LEGEND: AADT / TRUCKS - 2018

Completed by NR

Intersection Traffic Volumes

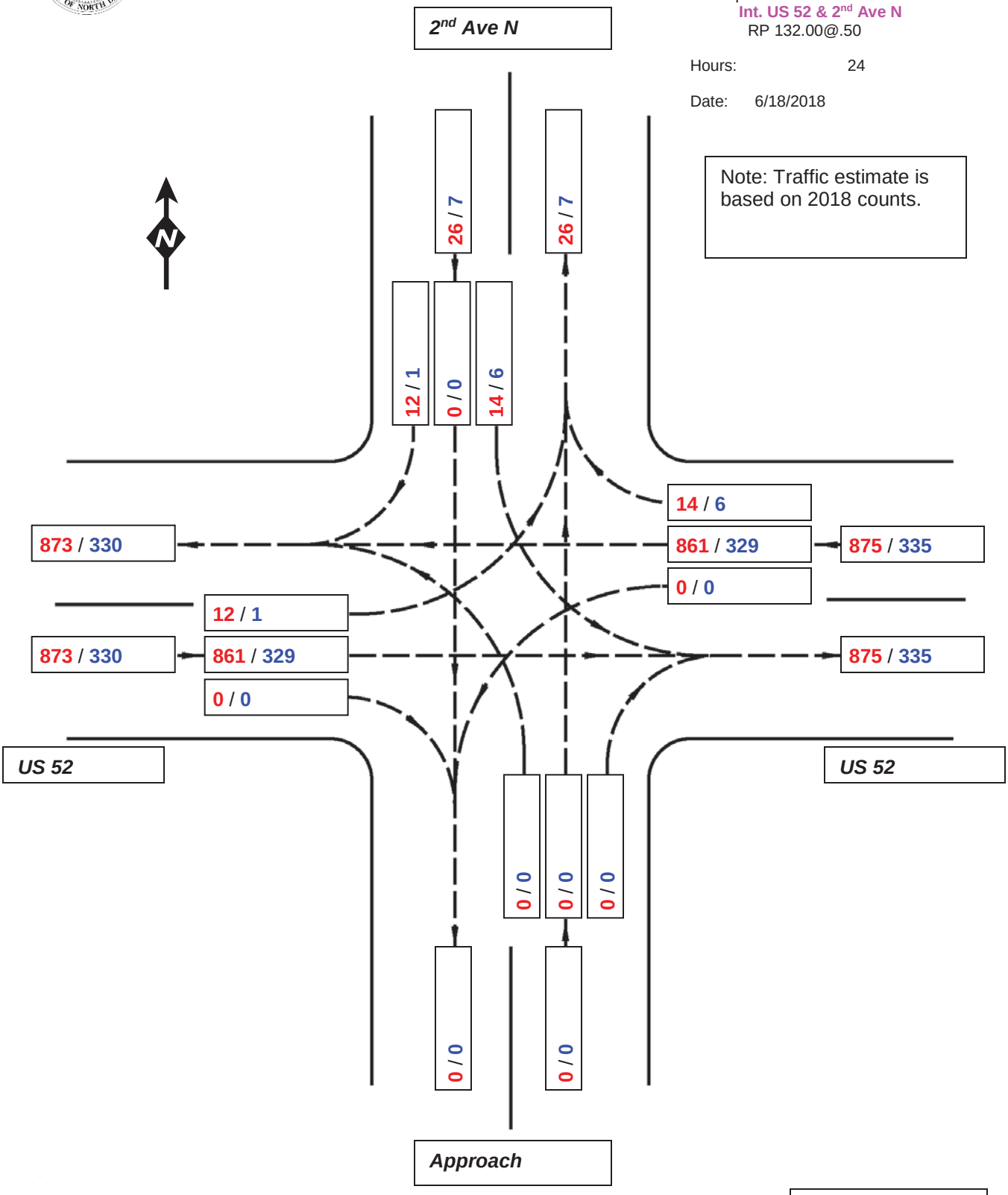
North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

Intersection No: 24

Description
Int. US 52 & 2nd Ave N
RP 132.00@.50

Hours: 24

Date: 6/18/2018



Intersection Traffic Volumes

North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

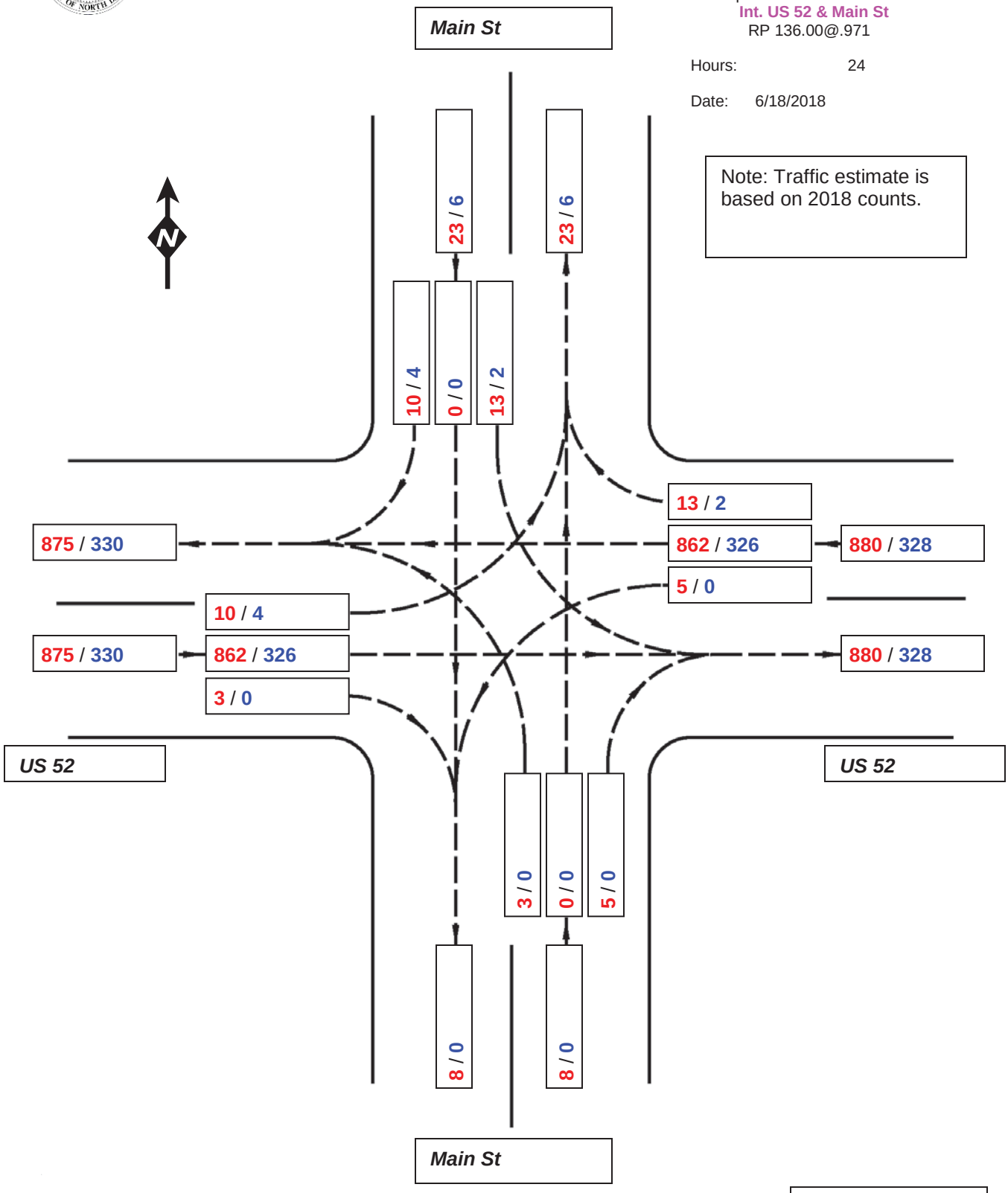
1120

Intersection No: 25

Description
Int. US 52 & Main St
RP 136.00@.971

Hours: 24

Date: 6/18/2018



Intersection Traffic Volumes

North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

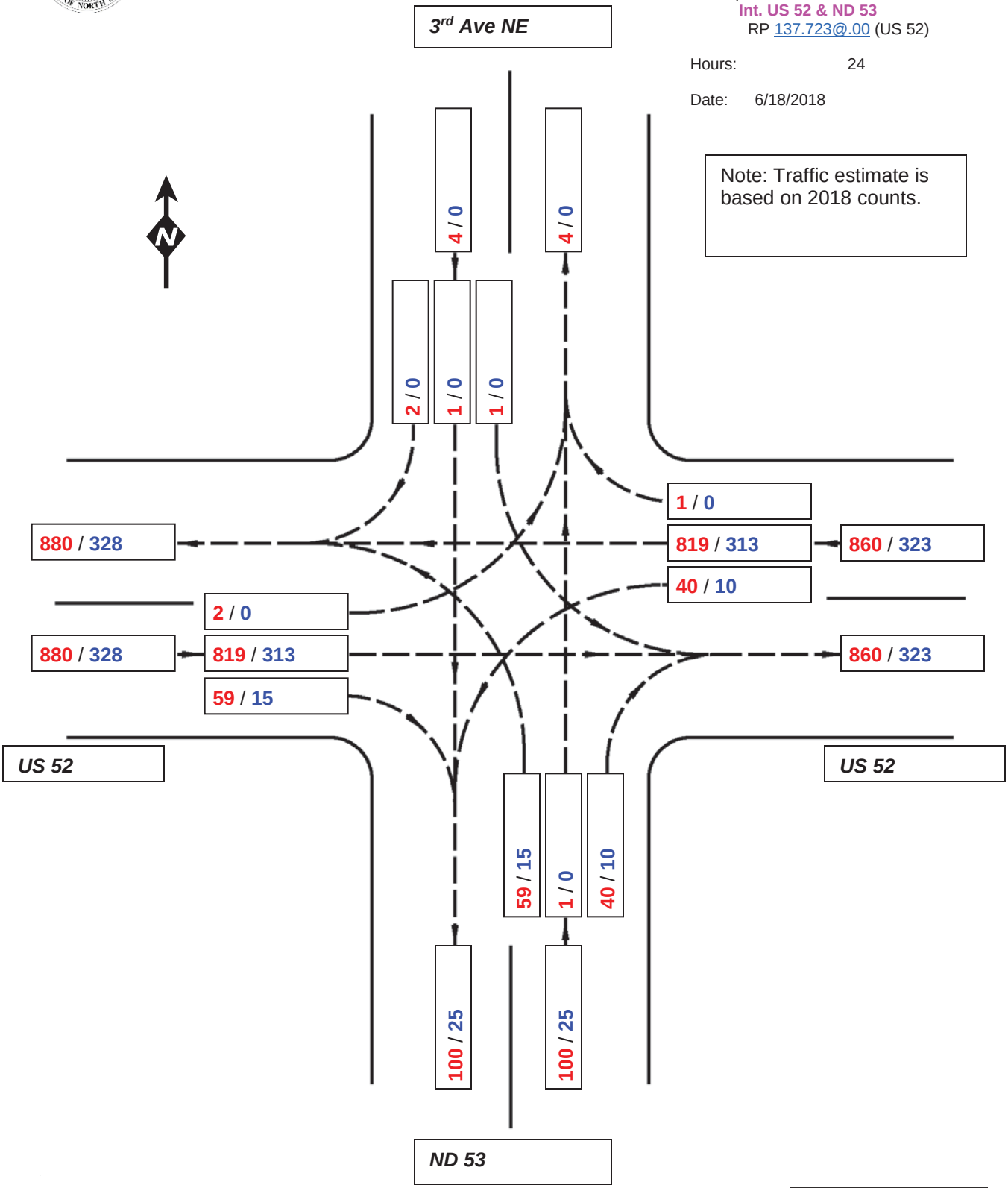
Intersection No: 26

Description
Int. US 52 & ND 53
RP 137.723@.00 (US 52)

Hours: 24

Date: 6/18/2018

Note: Traffic estimate is based on 2018 counts.



LEGEND: AADT / TRUCKS - 2018

Completed by NR

Intersection Traffic Volumes

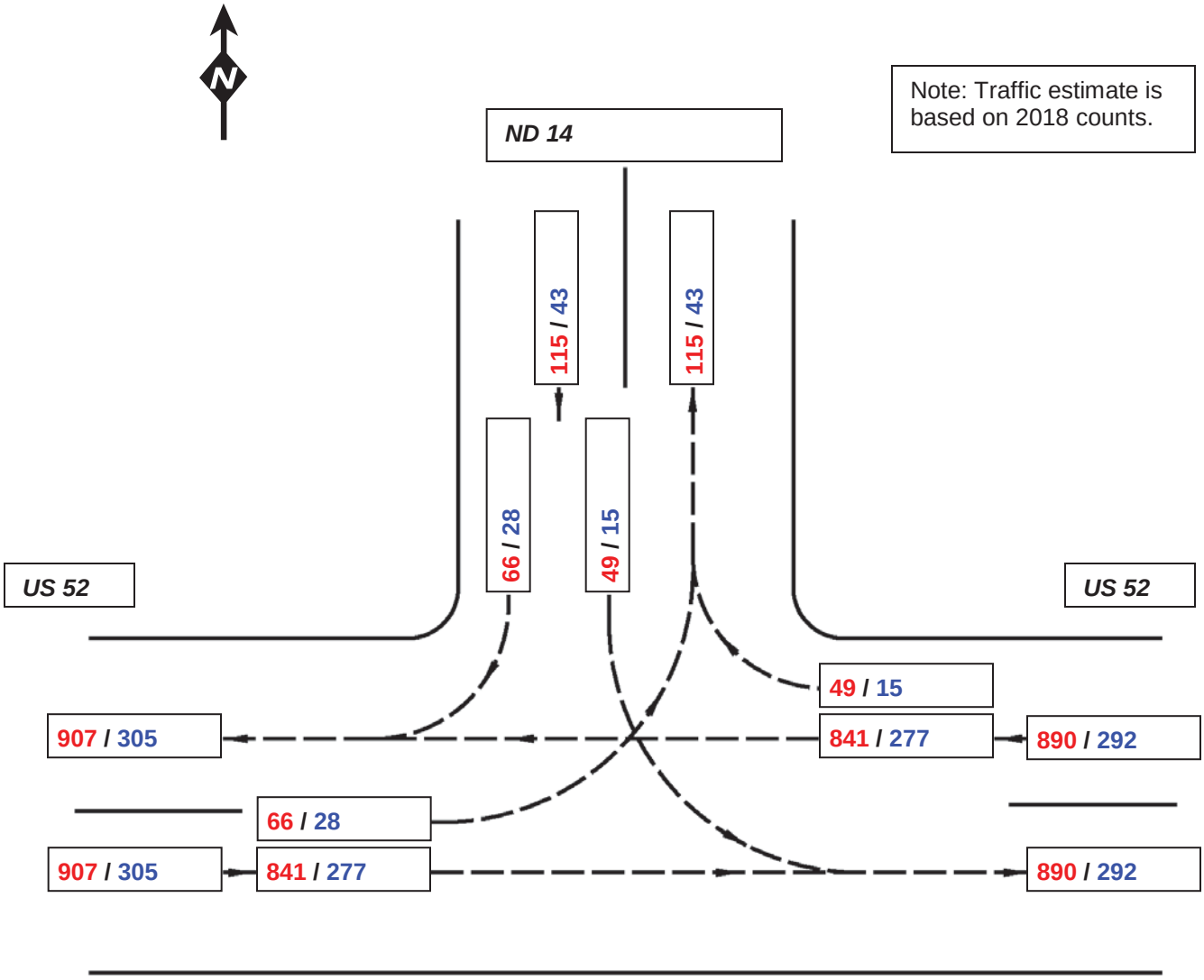
North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

Intersection No. 27

Description
Int. US 52 & ND 14
RP 141.411@.00 (US 52)

Hours: 24

Date: 6/18/2018



LEGEND: **AADT** / **TRUCKS** - 2018

Completed by NR

1121

Intersection Traffic Volumes

North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

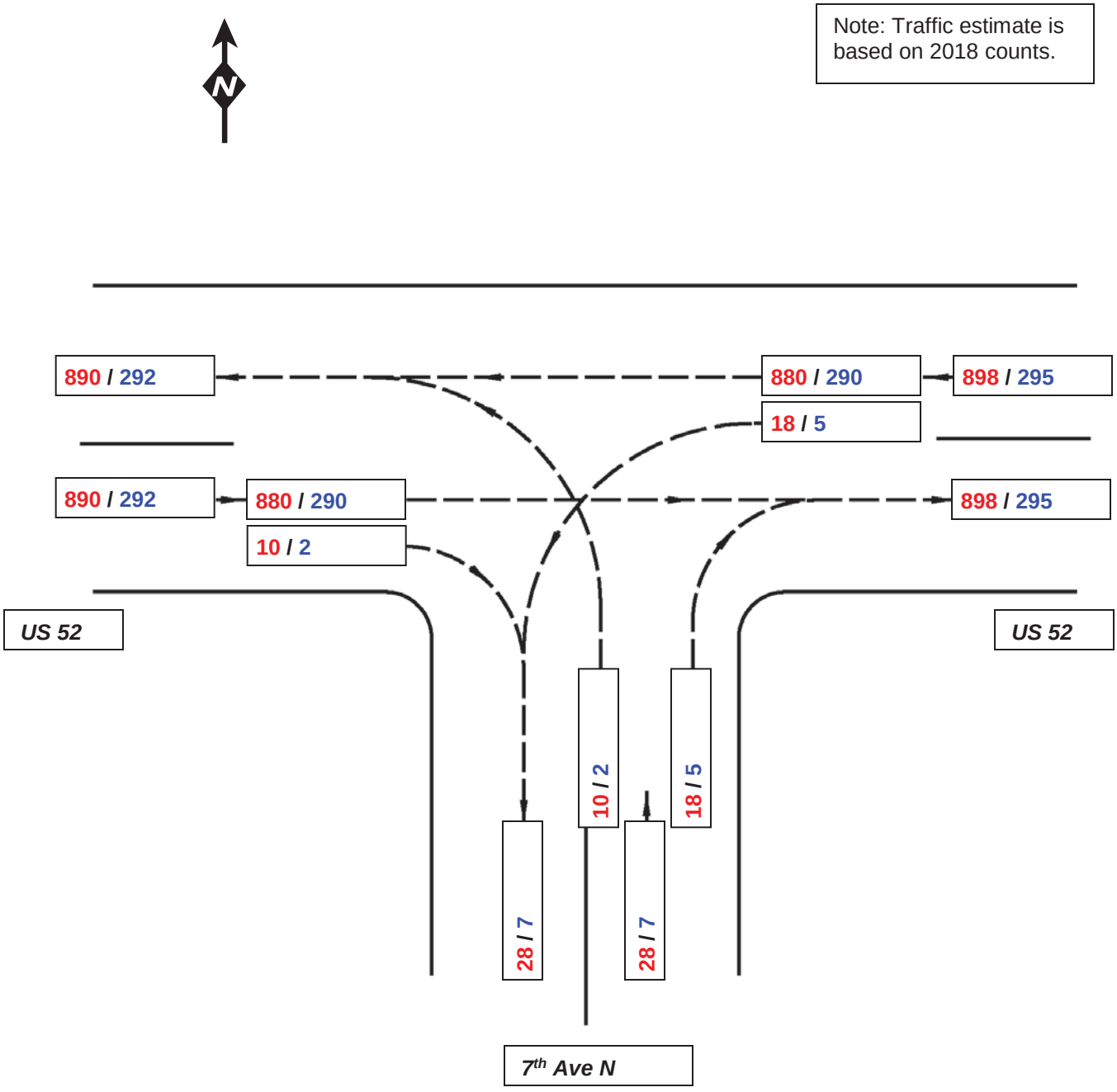
Intersection No. 28

Description
Int. US 52 & 7th Ave N
RP 142.00@.20 (US 52)

Hours 24

Date 6/18/2018

Note: Traffic estimate is based on 2018 counts.



LEGEND: **AADT / TRUCKS** - 2018

Completed by NR

Intersection Traffic Volumes

North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

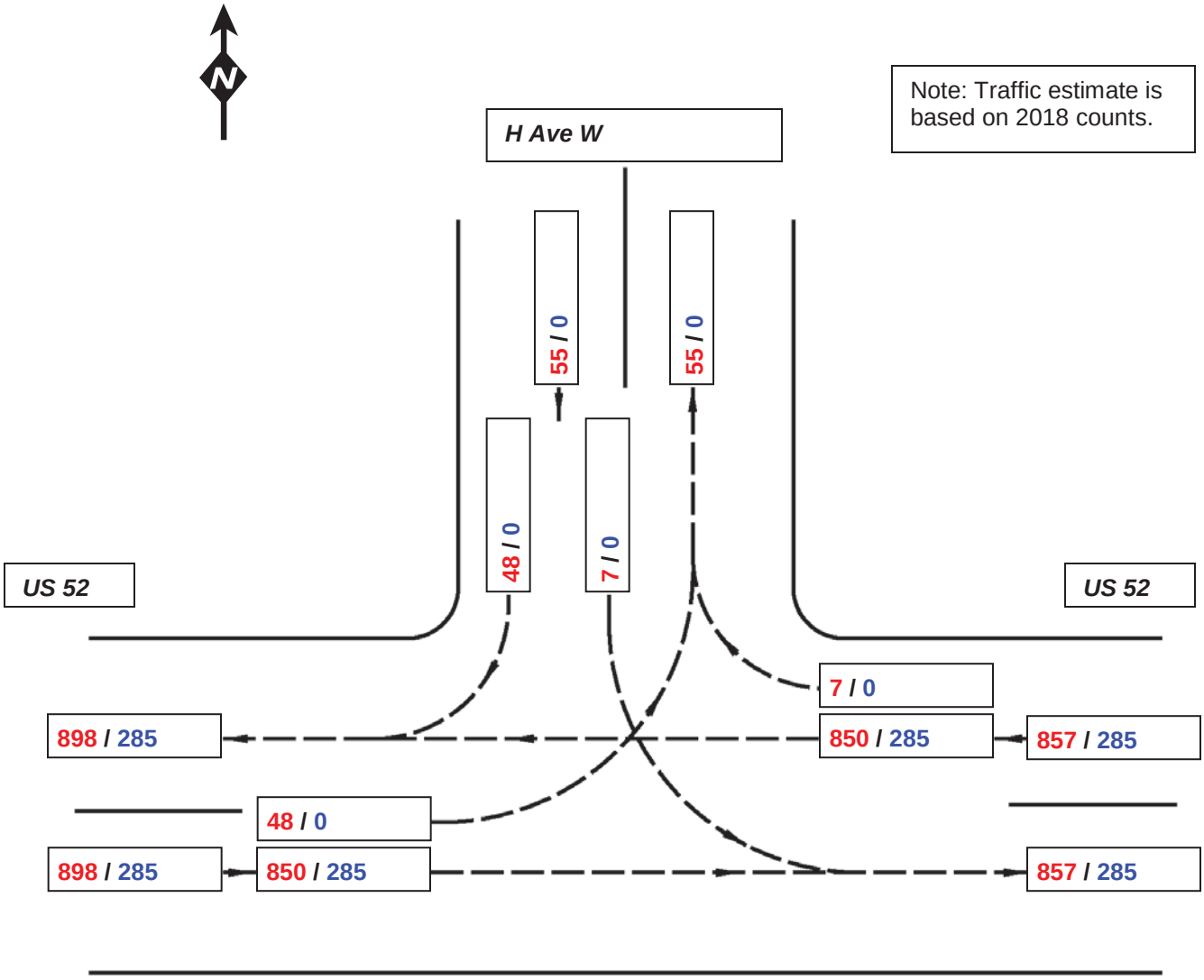
1122

Intersection No. 29

Description
Int. US 52 & H Ave W
RP 150.00@.988 (US 52)

Hours: 24

Date: 6/18/2018



Note: Traffic estimate is based on 2018 counts.

LEGEND: **AADT** / **TRUCKS** - 2018

Completed by NR

Intersection Traffic Volumes

North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

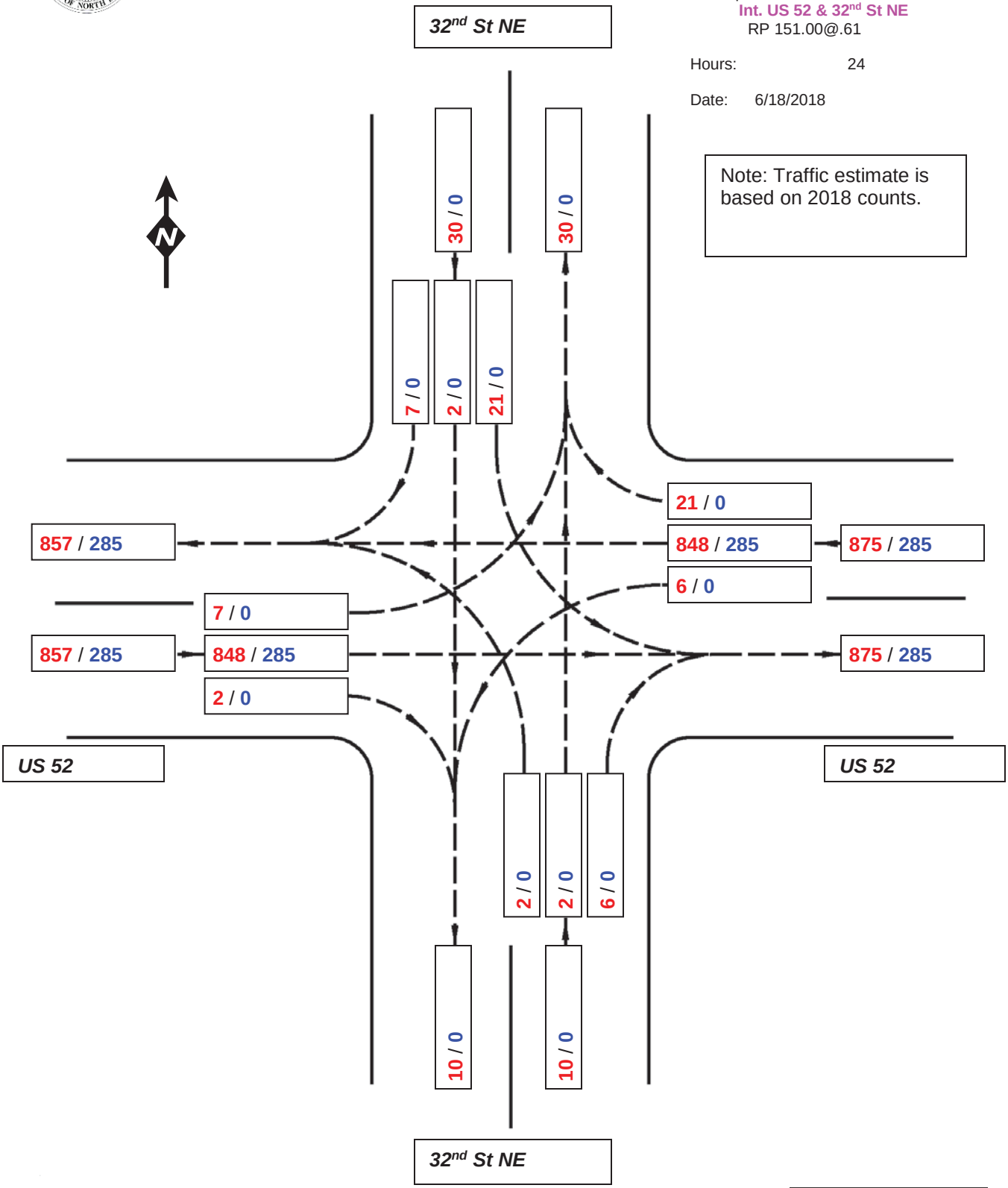
Intersection No: 30

Description
Int. US 52 & 32nd St NE
RP 151.00@.61

Hours: 24

Date: 6/18/2018

Note: Traffic estimate is based on 2018 counts.



LEGEND: AADT / TRUCKS - 2018

Completed by NR

Intersection Traffic Volumes

North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

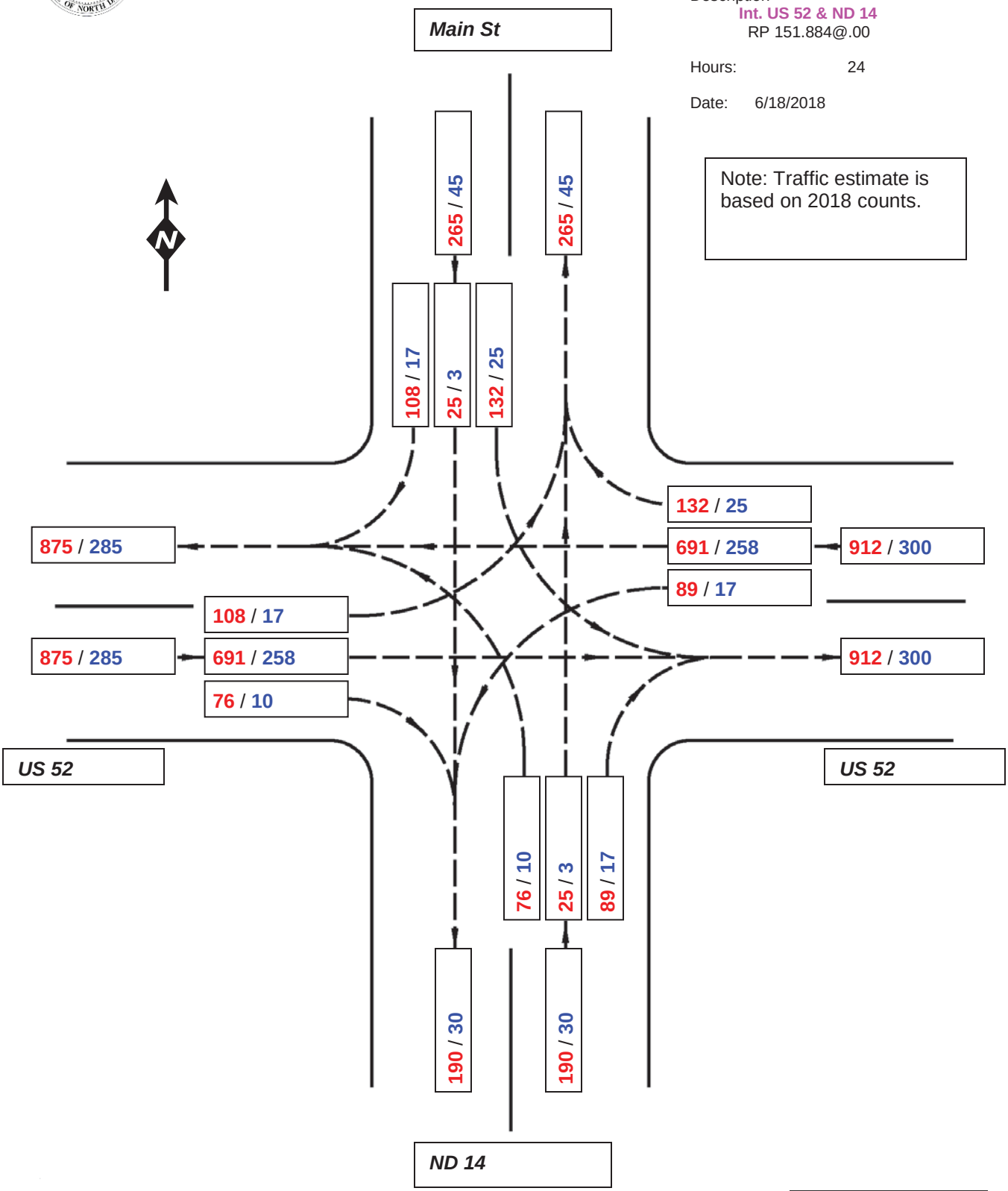
Intersection No: 31

Description
Int. US 52 & ND 14
RP 151.884@.00

Hours: 24

Date: 6/18/2018

Note: Traffic estimate is based on 2018 counts.



LEGEND: AADT / TRUCKS - 2018

Completed by NR

Intersection Traffic Volumes

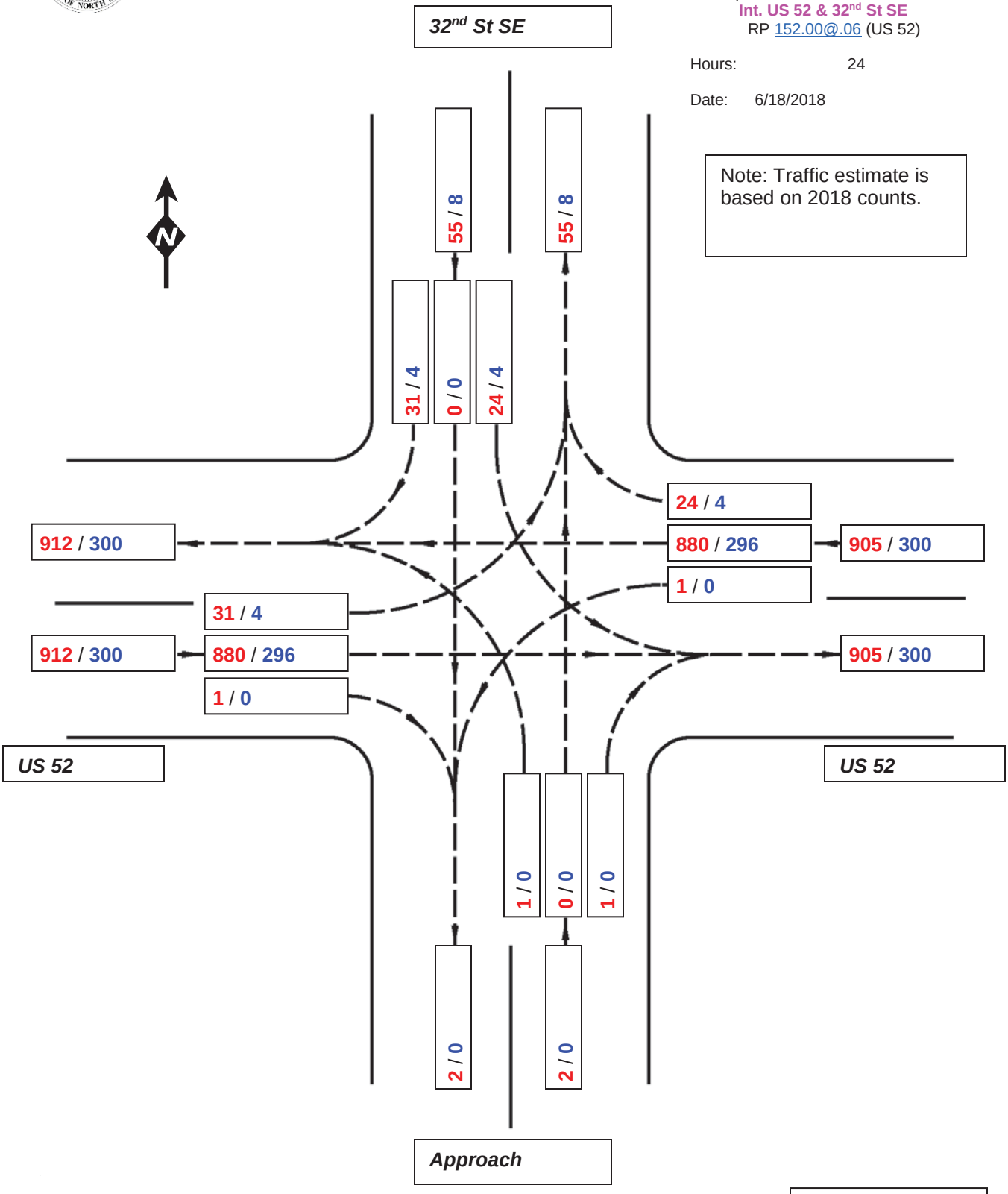
North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

Intersection No: 32

Description
Int. US 52 & 32nd St SE
RP 152.00@.06 (US 52)

Hours: 24

Date: 6/18/2018



Intersection Traffic Volumes

North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

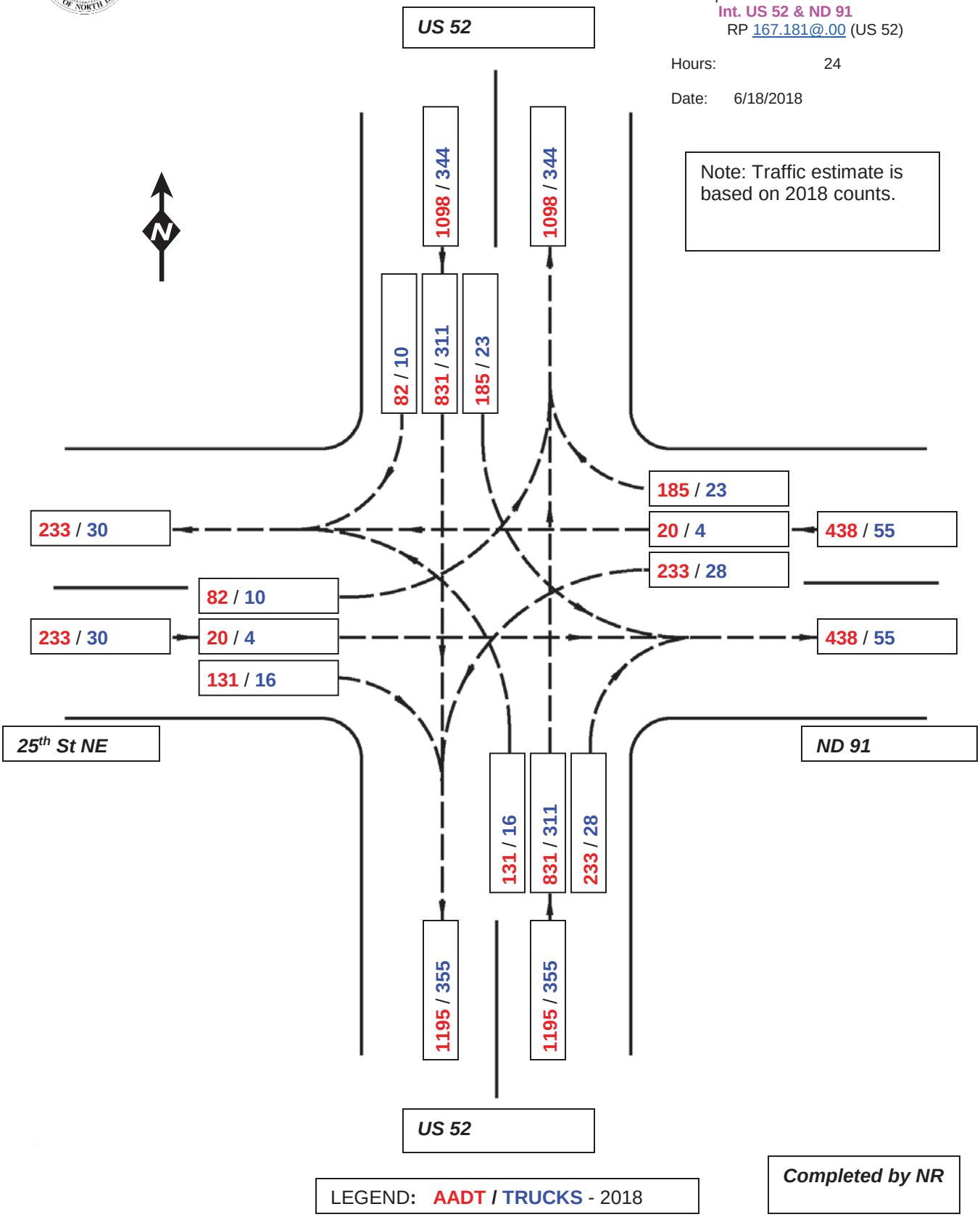
1048

Intersection No: 33

Description
Int. US 52 & ND 91
RP 167.181@.00 (US 52)

Hours: 24

Date: 6/18/2018



1050

Intersection Traffic Volumes

North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

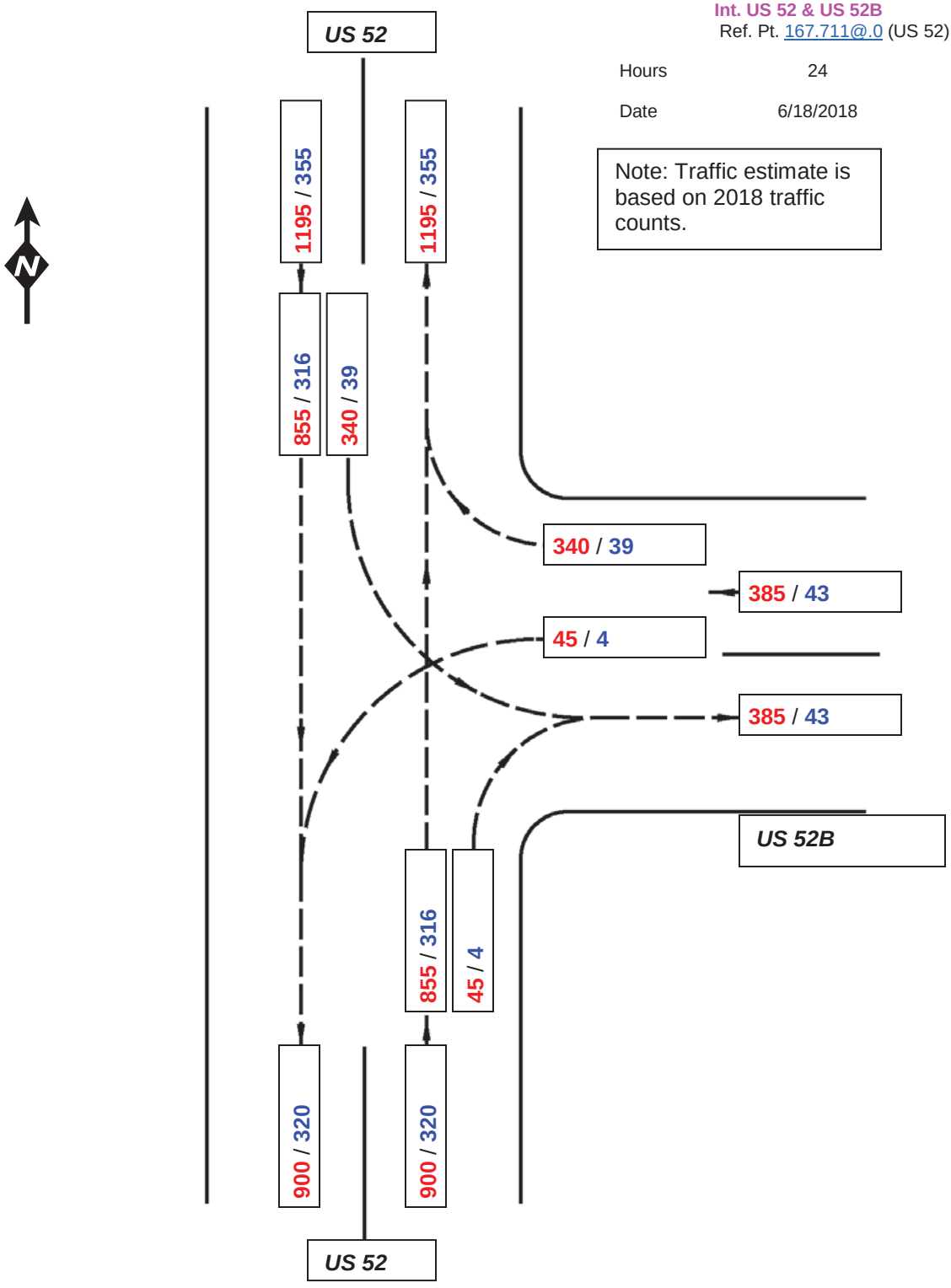
Intersection No. 34

Description
Int. US 52 & US 52B
Ref. Pt. 167.711@.0 (US 52)

Hours 24

Date 6/18/2018

Note: Traffic estimate is based on 2018 traffic counts.



LEGEND: AADT / TRUCKS - 2018

Completed by NR

Intersection Traffic Volumes

North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

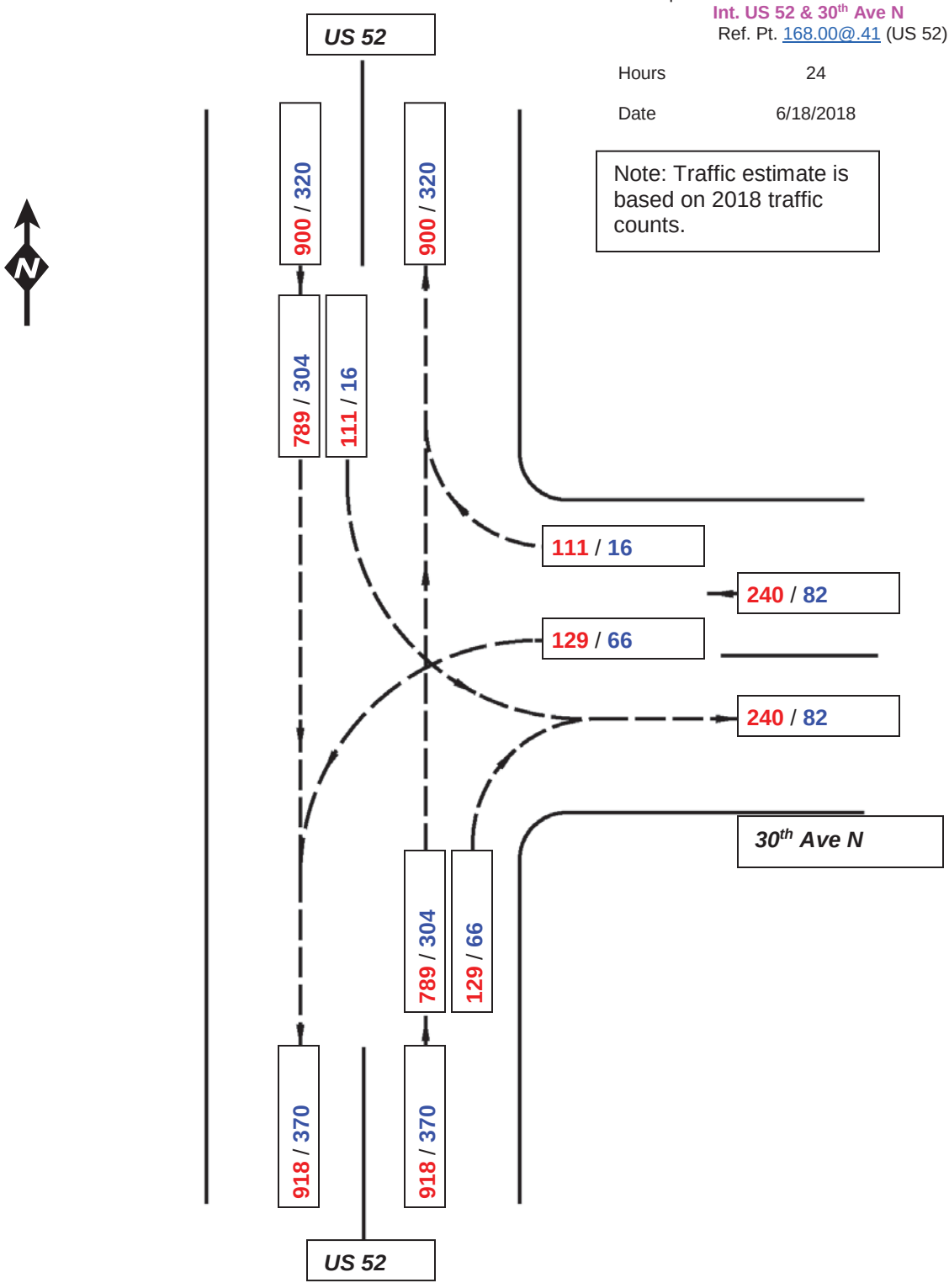
Intersection No. 35

Description
Int. US 52 & 30th Ave N
Ref. Pt. 168.00@.41 (US 52)

Hours 24

Date 6/18/2018

Note: Traffic estimate is based on 2018 traffic counts.



LEGEND: AADT / TRUCKS - 2018

Completed by NR

Intersection Traffic Volumes

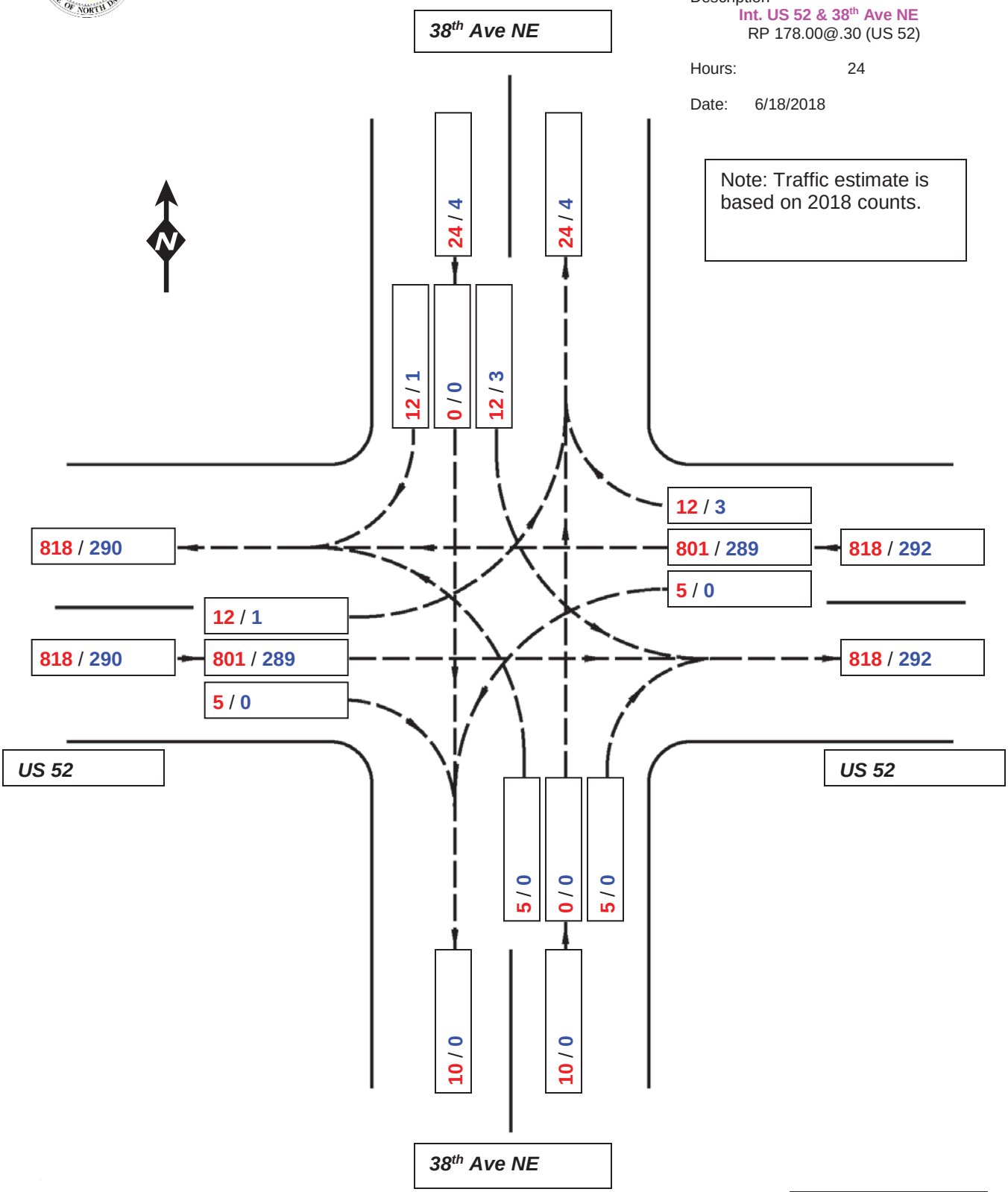
North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

Intersection No: 36

Description
Int. US 52 & 38th Ave NE
RP 178.00@.30 (US 52)

Hours: 24

Date: 6/18/2018



LEGEND: AADT / TRUCKS - 2018

Completed by NR

Intersection Traffic Volumes

North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

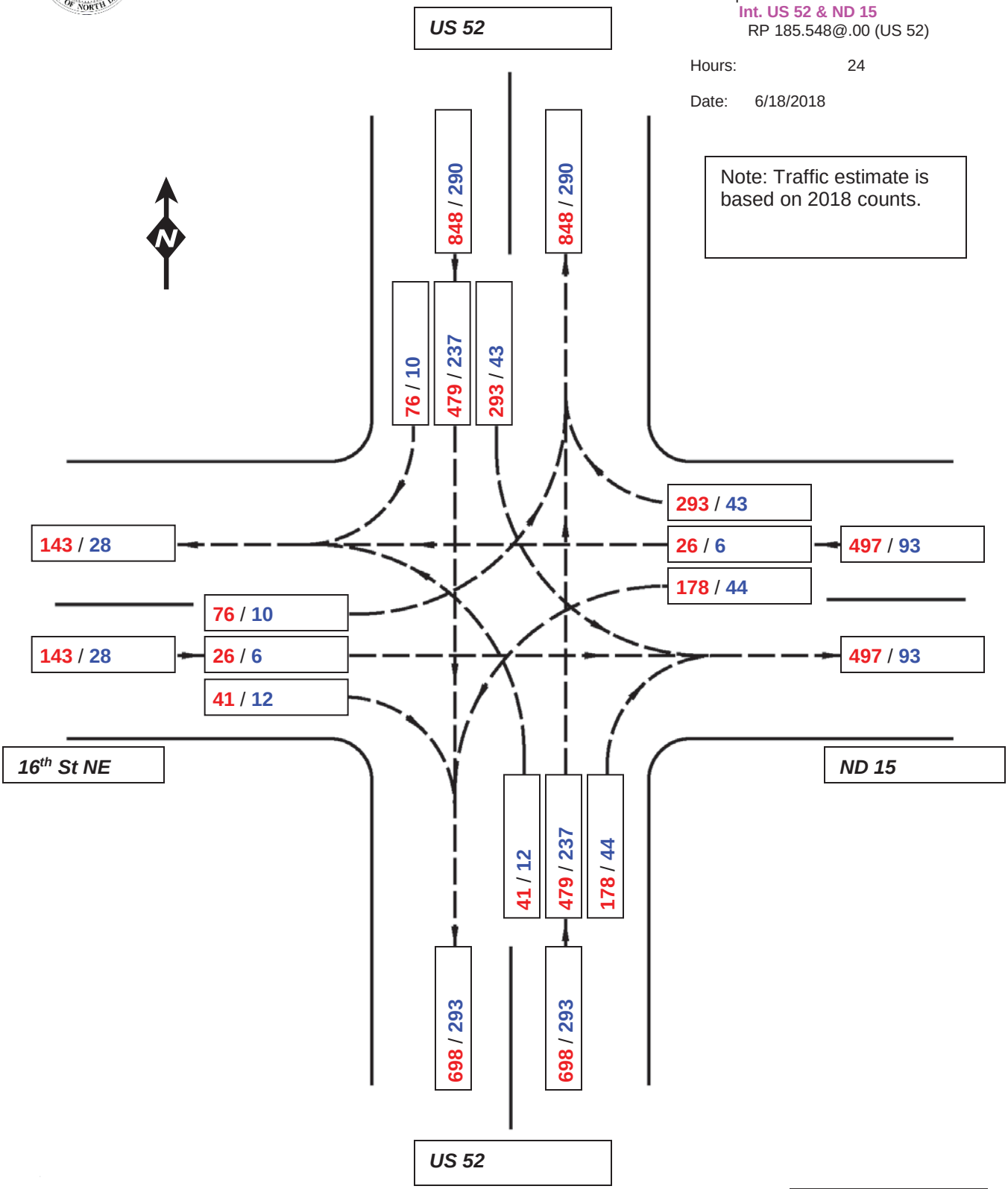
Intersection No: 37

Description
Int. US 52 & ND 15
RP 185.548@.00 (US 52)

Hours: 24

Date: 6/18/2018

Note: Traffic estimate is based on 2018 counts.



LEGEND: AADT / TRUCKS - 2018

Completed by NR

Intersection Traffic Volumes

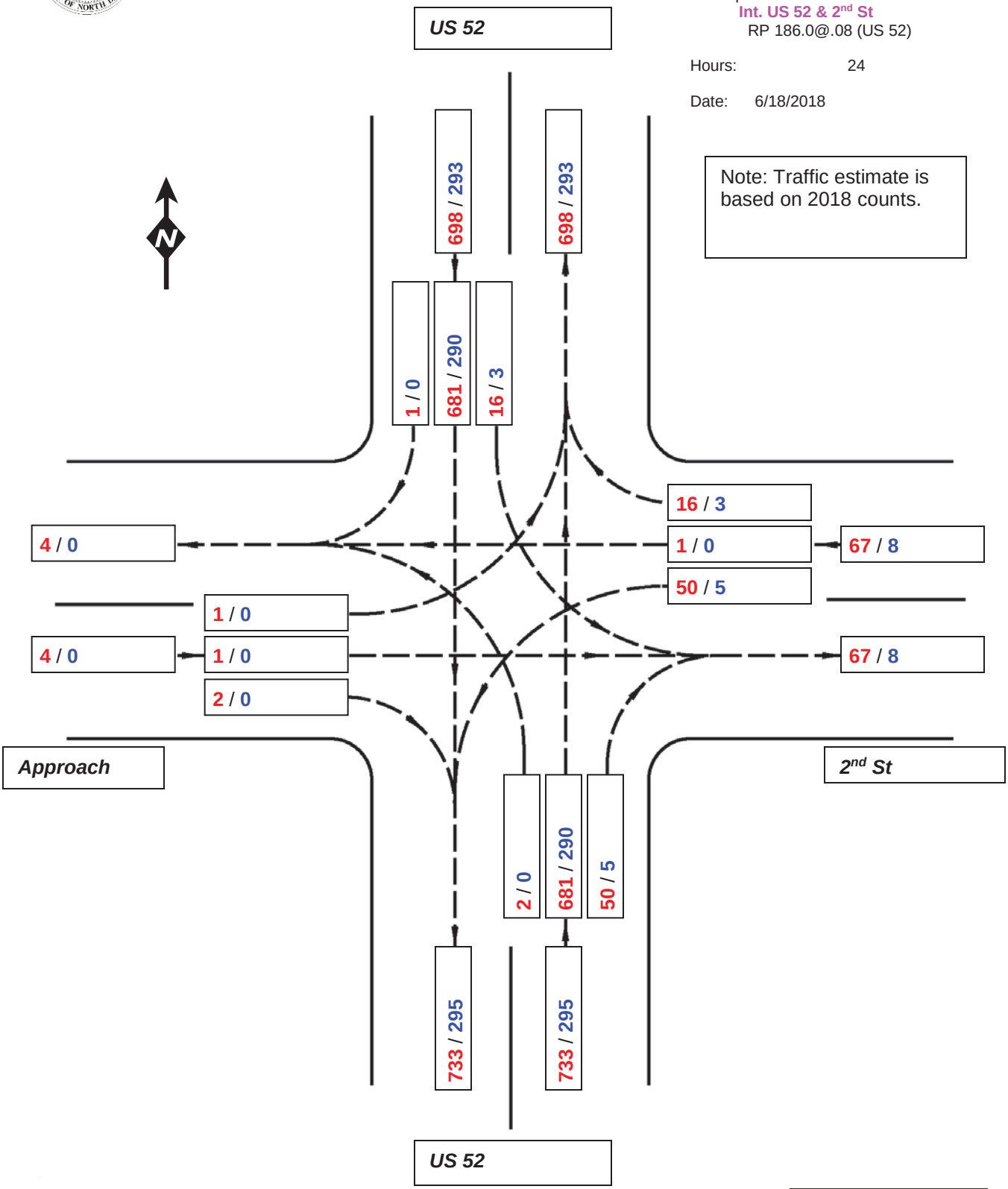
North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

Intersection No: 38

Description
Int. US 52 & 2nd St
RP 186.0@.08 (US 52)

Hours: 24

Date: 6/18/2018



LEGEND: AADT / TRUCKS - 2018

Completed by NR

Intersection Traffic Volumes

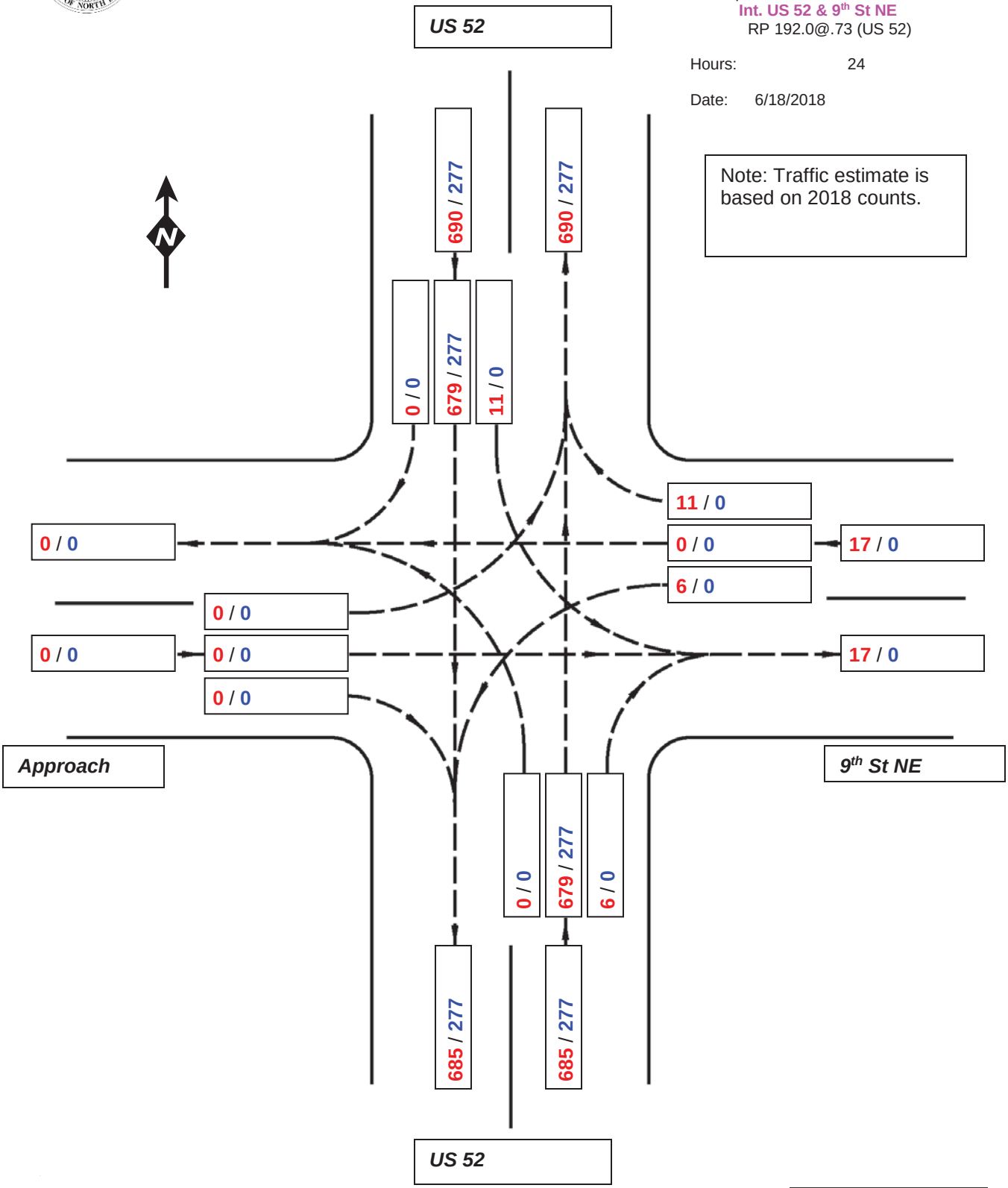
North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

Intersection No: 39

Description
Int. US 52 & 9th St NE
RP 192.0@.73 (US 52)

Hours: 24

Date: 6/18/2018



Intersection Traffic Volumes

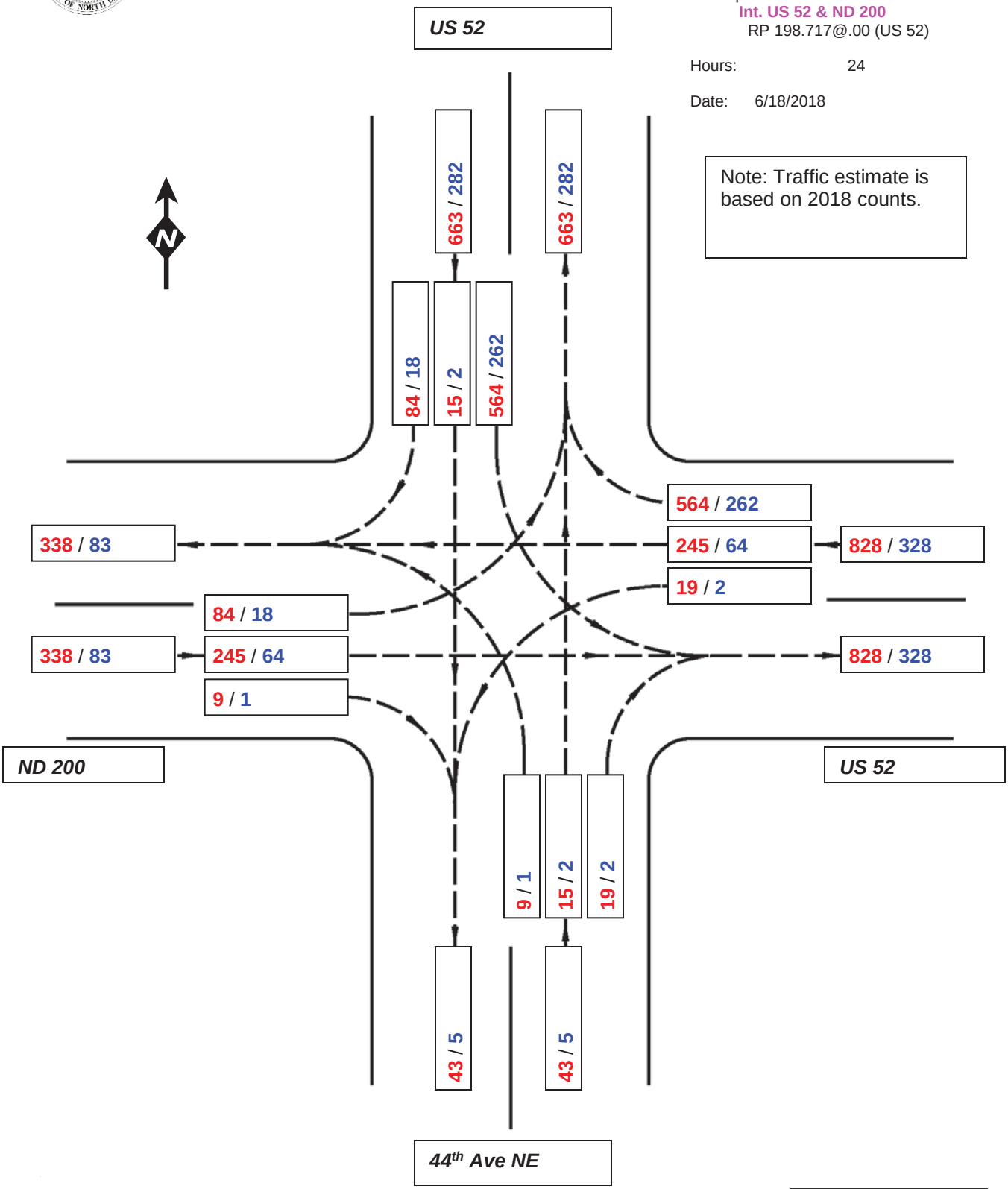
North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

Intersection No: 40

Description
Int. US 52 & ND 200
RP 198.717@.00 (US 52)

Hours: 24

Date: 6/18/2018



LEGEND: AADT / TRUCKS - 2018

Completed by NR

Intersection Traffic Volumes

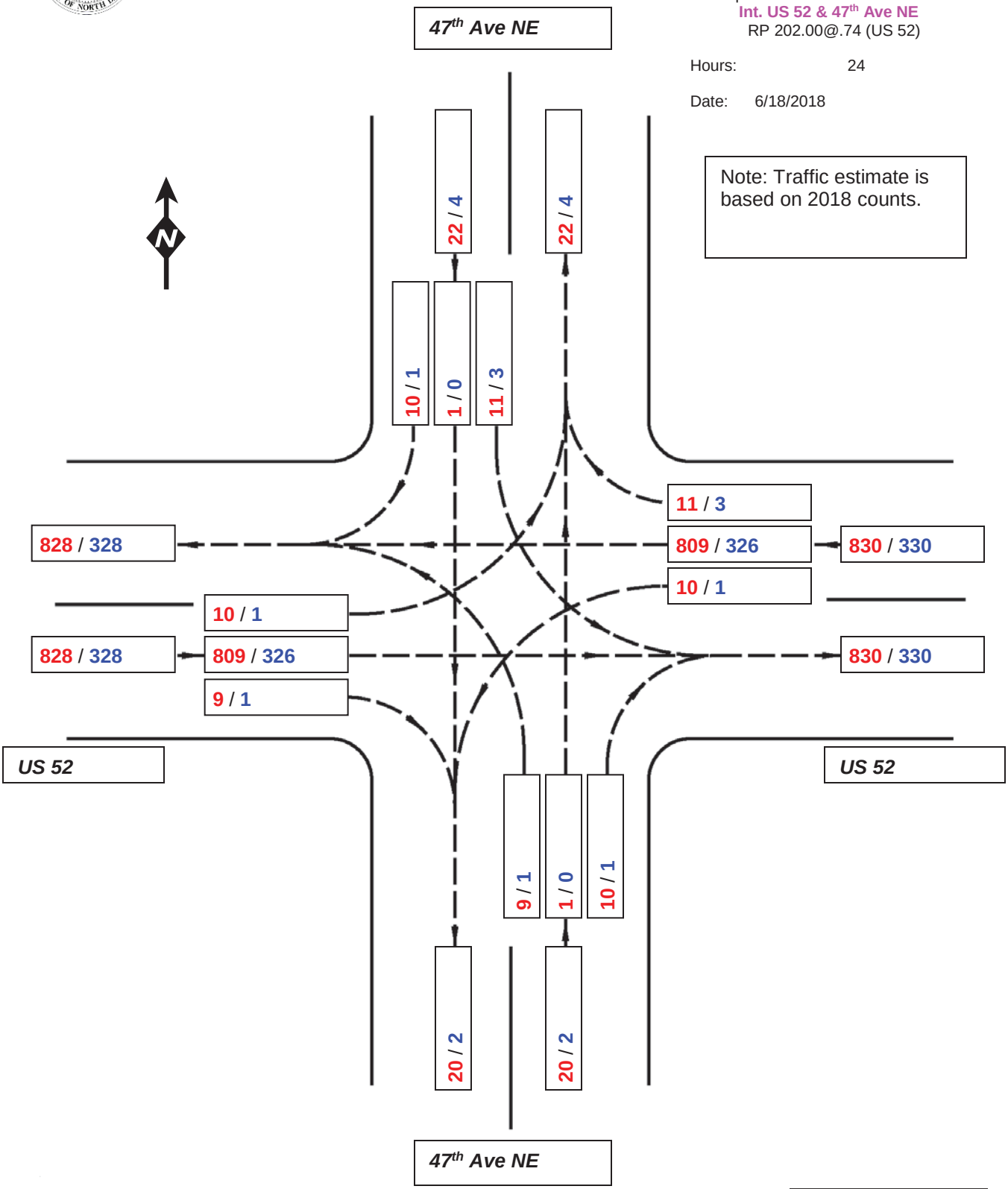
North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

Intersection No: 41

Description
Int. US 52 & 47th Ave NE
RP 202.00@.74 (US 52)

Hours: 24

Date: 6/18/2018



Intersection Traffic Volumes

North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

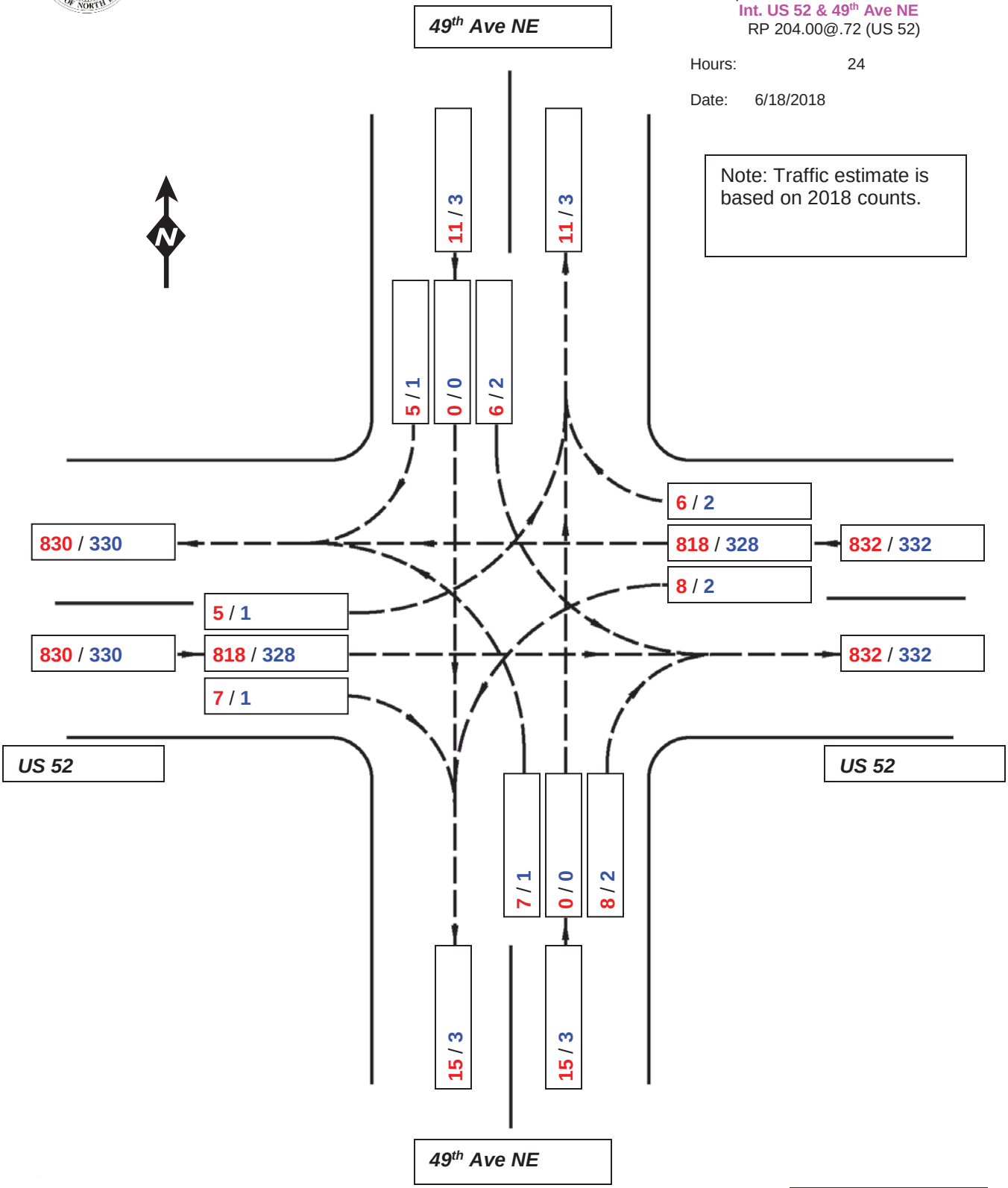
Intersection No: 42

Description
Int. US 52 & 49th Ave NE
RP 204.00@.72 (US 52)

Hours: 24

Date: 6/18/2018

Note: Traffic estimate is based on 2018 counts.



LEGEND: AADT / TRUCKS - 2018

Completed by NR

Intersection Traffic Volumes

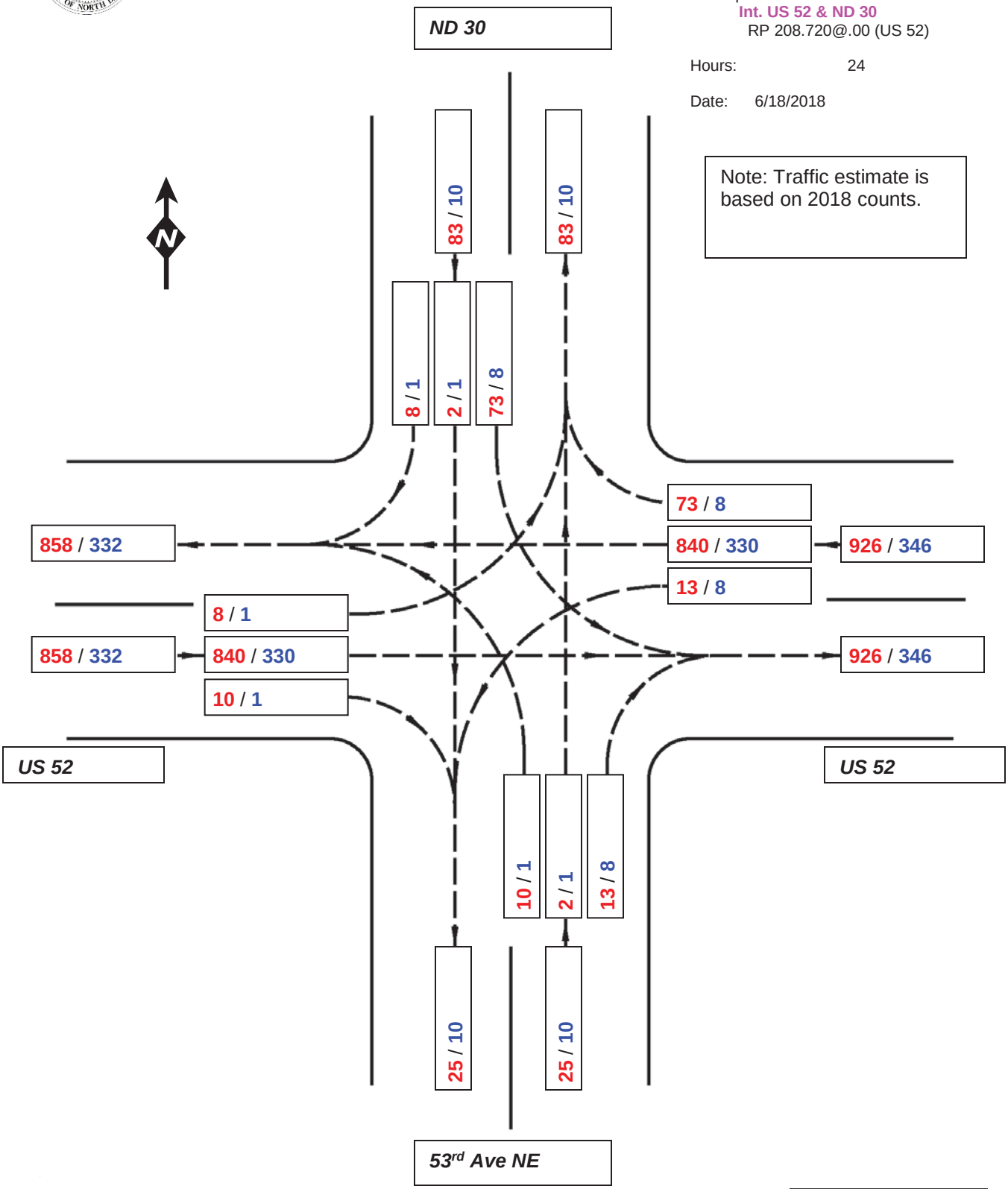
North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

Intersection No: 43

Description
Int. US 52 & ND 30
RP 208.720@.00 (US 52)

Hours: 24

Date: 6/18/2018



Intersection Traffic Volumes

North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

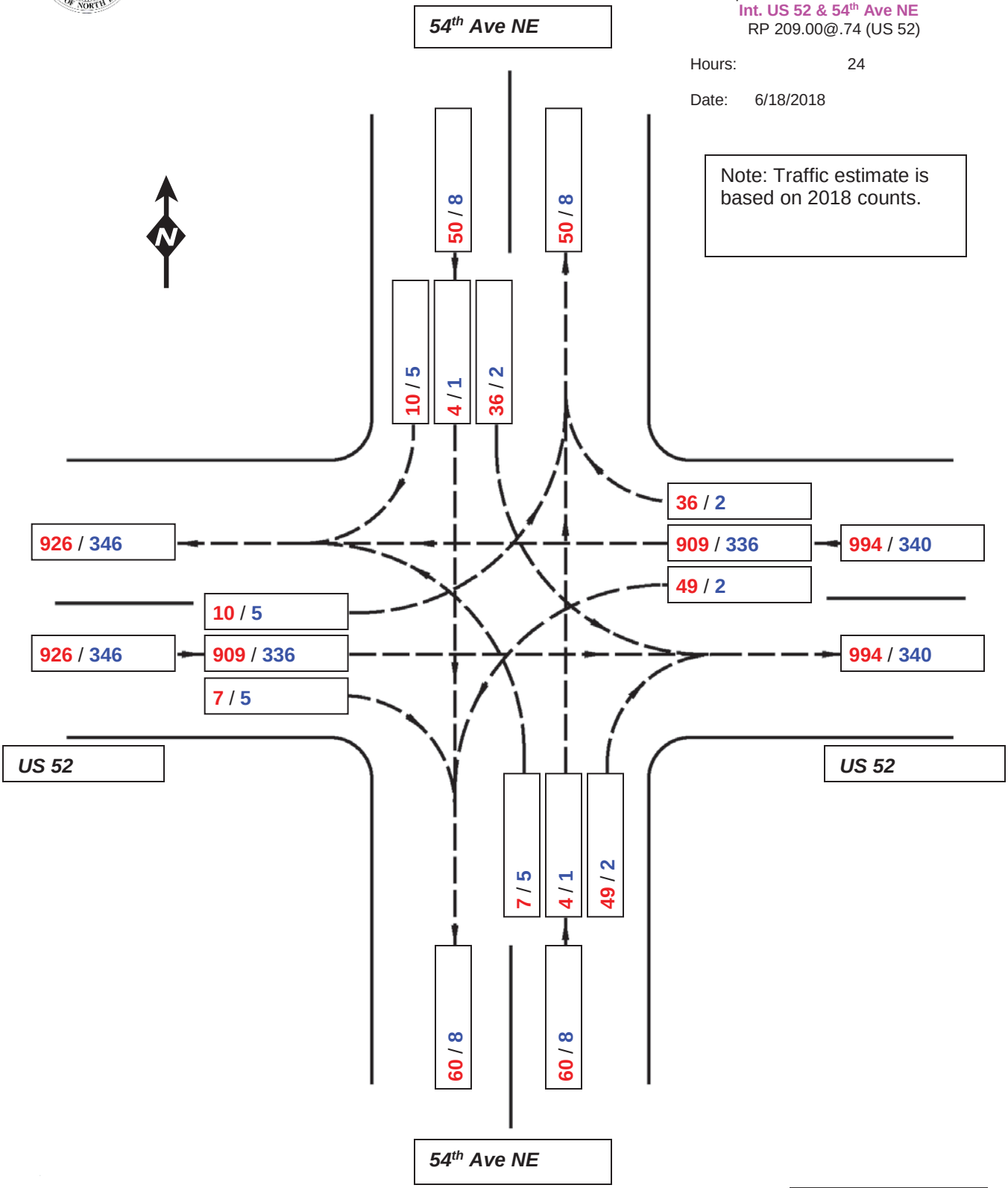
Intersection No: 44

Description
Int. US 52 & 54th Ave NE
RP 209.00@.74 (US 52)

Hours: 24

Date: 6/18/2018

Note: Traffic estimate is based on 2018 counts.



LEGEND: AADT / TRUCKS - 2018

Completed by NR

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMS
Agency/Co.	NDDOT
Date Performed	11/26/2018
Analysis Time Period	
Highway	US 52
From/To	101.683 - 116.858
Jurisdiction	
Analysis Year	2018
Description	

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	21	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	15.2	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	25	%
Up/down	-	%	Access point density	6	/mi

Analysis direction volume, Vd 208 veh/h
Opposing direction volume, Vo 208 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.5	1.5
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.905	0.905
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	261 pc/h	261 pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	70.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.5	mi/h
Free-flow speed, FFSd	68.5	mi/h
Adjustment for no-passing zones, fnp	2.3	mi/h
Average travel speed, ATSd	62.2	mi/h
Percent Free Flow Speed, PFFS	90.8	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.979		0.979	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	241	pc/h	241	pc/h
Base percent time-spent-following,(note-4) BPTSFd	27.0	%		
Adjustment for no-passing zones, fnp	42.8			
Percent time-spent-following, PTSFd	48.4	%		

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.14	
Peak 15-min vehicle-miles of travel, VMT15	898	veh-mi
Peak-hour vehicle-miles of travel, VMT60	3162	veh-mi
Peak 15-min total travel time, TT15	14.4	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	15.2	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	62.2	mi/h
Percent time-spent-following, PTSFd (from above)	48.4	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	236.4
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	11.12
Bicycle LOS	F

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMS
Agency/Co.	NDDOT
Date Performed	11/26/2018
Analysis Time Period	
Highway	US 52
From/To	RP 116.858 - 169.979
Jurisdiction	
Analysis Year	2018
Description	

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	59	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	53.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	16	%
Up/down	-	%	Access point density	3	/mi

Analysis direction volume, Vd	56	veh/h
Opposing direction volume, Vo	56	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.9		1.9	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.653		0.653	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	97	pc/h	97	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	70.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.8	mi/h
Free-flow speed, FFSd	69.3	mi/h
Adjustment for no-passing zones, fnp	1.1	mi/h
Average travel speed, ATSd	66.6	mi/h
Percent Free Flow Speed, PFFS	96.2	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.944		0.944	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	67	pc/h	67	pc/h
Base percent time-spent-following,(note-4) BPTSFd	8.0	%		
Adjustment for no-passing zones, fnp	25.2			
Percent time-spent-following, PTSFd	20.6	%		

Level of Service and Other Performance Measures

Level of service, LOS	A	
Volume to capacity ratio, v/c	0.04	
Peak 15-min vehicle-miles of travel, VMT15	845	veh-mi
Peak-hour vehicle-miles of travel, VMT60	2974	veh-mi
Peak 15-min total travel time, TT15	12.7	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	53.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	66.6	mi/h
Percent time-spent-following, PTSFd (from above)	20.6	
Level of service, LOSd (from above)	A	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	63.6
Effective width of outside lane, We	36.96
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	45.44
Bicycle LOS	F

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMS
Agency/Co.	NDDOT
Date Performed	11/26/2018
Analysis Time Period	
Highway	US 52
From/To	101.683 - 116.858
Jurisdiction	
Analysis Year	2038
Description	

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	23	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	15.2	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	25	%
Up/down	-	%	Access point density	6	/mi

Analysis direction volume, Vd 287 veh/h
Opposing direction volume, Vo 287 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.4	1.4
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.916	0.916
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	356 pc/h	356 pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	70.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.5	mi/h
Free-flow speed, FFSd	68.5	mi/h
Adjustment for no-passing zones, fnp	1.9	mi/h
Average travel speed, ATSd	61.0	mi/h
Percent Free Flow Speed, PFFS	89.1	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.978		0.978	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	334	pc/h	334	pc/h
Base percent time-spent-following,(note-4) BPTSFd	35.9	%		
Adjustment for no-passing zones, fnp	38.8			
Percent time-spent-following, PTSFd	55.3	%		

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.19	
Peak 15-min vehicle-miles of travel, VMT15	1239	veh-mi
Peak-hour vehicle-miles of travel, VMT60	4362	veh-mi
Peak 15-min total travel time, TT15	20.3	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	15.2	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	61.0	mi/h
Percent time-spent-following, PTSFd (from above)	55.3	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	326.1
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	12.59
Bicycle LOS	F

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMS
Agency/Co.	NDDOT
Date Performed	11/26/2018
Analysis Time Period	
Highway	US 52
From/To	RP 116.858 - 169.979
Jurisdiction	
Analysis Year	2038
Description	

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	59	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	53.1	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	16	%
Up/down	-	%	Access point density	3	/mi

Analysis direction volume, Vd 83 veh/h
Opposing direction volume, Vo 83 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.9	1.9
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.653	0.653
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	144 pc/h	144 pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	70.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.8	mi/h
Free-flow speed, FFSd	69.3	mi/h
Adjustment for no-passing zones, fnp	1.6	mi/h
Average travel speed, ATSd	65.4	mi/h
Percent Free Flow Speed, PFFS	94.5	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.944		0.944	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	100	pc/h	100	pc/h
Base percent time-spent-following,(note-4) BPTSFd	11.6	%		
Adjustment for no-passing zones, fnp	0.0			
Percent time-spent-following, PTSFd	11.6	%		

Level of Service and Other Performance Measures

Level of service, LOS	A	
Volume to capacity ratio, v/c	0.06	
Peak 15-min vehicle-miles of travel, VMT15	1252	veh-mi
Peak-hour vehicle-miles of travel, VMT60	4407	veh-mi
Peak 15-min total travel time, TT15	19.1	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	53.1	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	65.4	mi/h
Percent time-spent-following, PTSFd (from above)	11.6	
Level of service, LOSd (from above)	A	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	94.3
Effective width of outside lane, We	34.53
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	46.50
Bicycle LOS	F

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS7 Two-Way Stop-Control Report

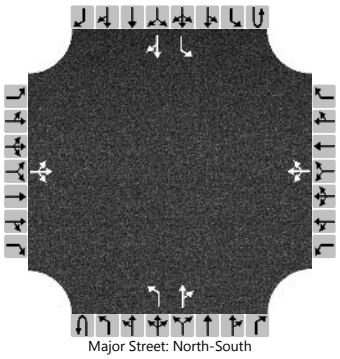
General Information

Analyst	DMS
Agency/Co.	NDDOT
Date Performed	1/24/2019
Analysis Year	2019
Time Analyzed	Peak
Intersection Orientation	North-South
Project Description	

Site Information

Intersection	1048
Jurisdiction	
East/West Street	ND 91
North/South Street	US 52
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	1	1	0	0	1	1	0
Configuration			LTR				LTR			L		TR		L		TR
Volume (veh/h)		8	2	13		23	2	19		13	83	23		19	83	8
Percent Heavy Vehicles (%)		12	20	12		12	20	12		12				12		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.22	6.70	6.32		7.22	6.70	6.32		4.22				4.22		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.61	4.18	3.41		3.61	4.18	3.41		2.31				2.31		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			25				48			14				21		
Capacity, c (veh/h)			764				731			1434				1414		
v/c Ratio			0.03				0.07			0.01				0.01		
95% Queue Length, Q_{95} (veh)			0.1				0.2			0.0				0.0		
Control Delay (s/veh)			9.9				10.3			7.5				7.6		
Level of Service (LOS)			A				B			A				A		
Approach Delay (s/veh)	9.9				10.3				0.8				1.3			
Approach LOS	A				B											

Crash Summary Sheets

Total Crashes: 174 **Location Description:** US 52
Length: 68.317 **Start RP:** 101.683
Sorted By: Longitude **End RP:** 170.000

	M	D	Year
Start Date:	1	1	2013
End Date:	12	31	2017

# of Years: 5.00

Notes: Animal crashes were not included.

Statistics for Total Crashes

Crash Severity

Fatal =	5	3%
InjA =	7	4%
InjB =	30	17%
InjC =	20	11%
PDO =	112	64%
	174	

Day of Week

Monday =	22	13%
Tuesday =	25	14%
Wednesday =	26	15%
Thursday =	27	16%
Friday =	28	16%
Saturday =	33	19%
Sunday =	13	7%
	174	

Surface Conditions

Dry =	102	59%
Wet =	9	5%
Ice / Snow =	61	35%
Other =	2	1%
	174	

Lighting Conditions

Dawn =	4	2%
Daylight =	103	60%
Dusk =	2	1%
Dark =	55	32%
Dark (lighted) =	8	5%
	172	

Under Construction

Yes =	1	1%

Roadway Geometrics

Straight (on level) =	117	67%
Straight (on grade) =	28	16%
Curve (on level) =	15	9%
Curve (on grade) =	10	6%
Hill Crest =	3	2%
Unknown =	1	1%
	174	

Manner of Collision

Angle =	22	13%
Rear End =	26	15%
Left Turn =	5	3%
Sideswipe (same direction) =	10	6%
Single Vehicle =	89	51%
Ped / Bike =	1	1%
Other =	21	12%
	174	

First Harmful Event

Motor Vehicle in Transport =	84	48%
Animal =	0	0%
Jackknife =	4	2%
Ran Off Roadway (not including below crashes) =	50	29%
Guardrail + Concrete Barrier + Bridge Rail =	11	6%
Bridge / Pier / Abutment / Overhead Structure =	0	0%
Poles / Posts / Trees / Overhead Sign Supports =	10	6%

These are only the most popular choices.

Relation to Junction

Non-Junction =	116	67%
Intersection + Intersection-Related =	50	29%
Alley / Driveway Access =	3	2%
Interchange Area + Exit / Entrance Ramp =	1	1%

These are only the most popular choices.

V1 and V2 Configuration*

Passenger Car =	69
PU / Van / Utility =	133
Truck =	53
Bus / Motorhome =	1
Motorcycle + Moped =	1

These are only the most popular choices.

V1 and V2 Directions*

North =	49
South =	42
East =	93
West =	82

D1 and D2 Sex*

Female =	64
Male =	194

D1 and D2 Age*

0-17 =	9	45-54 =	51
18-24 =	47	55-64 =	32
25-34 =	59	65-74 =	14
35-44 =	37	75+ =	8

D1 and D2 Alcohol / Drugs*

Yes (alcohol or drugs present) =	11

D1 and D2 Contr. Factors*

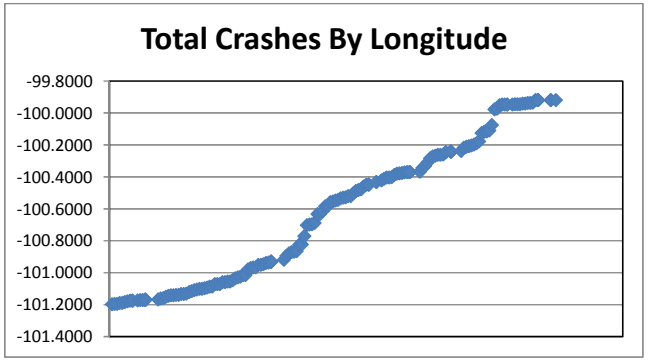
No Clear Factor =	110
Attention Distracted =	2
Weather =	28
Speed =	10
Too Fast for Conditions =	25
Fail to Yield =	17
Improper Backing/Turning =	10

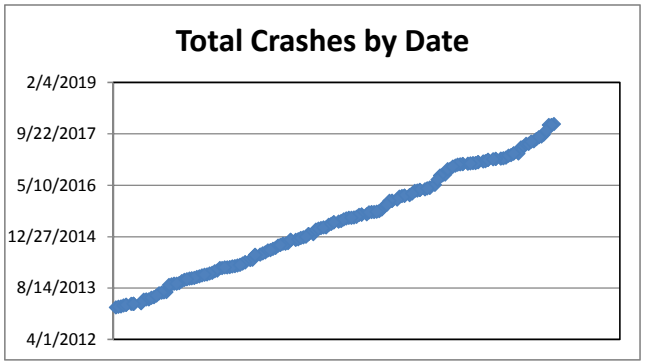
These are only the most popular choices.

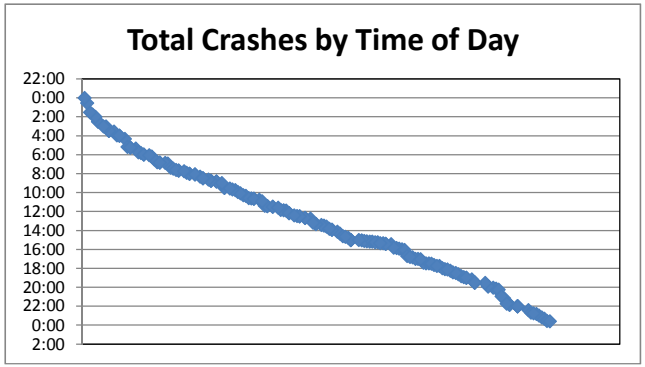
D1 or D2 Ejected*

Yes (partially or fully) =	6

**This info is not available for all units.*







General Summary

Yr	Start Date	End Date	Intersection or Alley / Drvwy	Non-Intersection		Total	AADT (two-way)	Crash Rate
				Single Veh	Mult. Veh			
1	1/1/2013	12/31/2013	9	16	12	37		
2	1/1/2014	12/31/2014	11	17	11	39		
3	1/1/2015	12/31/2015	16	13	7	36		
4	1/1/2016	12/31/2016	12	17	6	35		
5	1/1/2017	12/31/2017	5	13	9	27		
			53	**76**	**45**	**174**		
			30%	**44%**	**26%**			

For Crash Severity: Fatal = Fatility, InjA = Incapacitating Injury, InjB = Non-Incapacitating Injury, InjC = Possible Injury, PDO = Property Damage Only
ADI = Alcohol or Drug Involvment

Crash Summary Sheets

Total Crashes: 174 **Location Description:** US 52
Length: 68.317 **Start RP:** 101.683
Sorted By: Longitude **End RP:** 170.000

	M	D	Year
Start Date:	1	1	2013
End Date:	12	31	2017

# of Years: 5.00

Notes: Animal crashes were not included.

Statistics for Intersection-Related Crashes ONLY

Crash Severity

Fatal =	2	4%
InjA =	4	8%
InjB =	13	25%
InjC =	9	17%
PDO =	25	47%
	53	

Surface Conditions

Dry =	42	79%
Wet =	5	9%
Ice / Snow =	6	11%
Other =	0	0%

Lighting Conditions

Dawn =	2	4%
Daylight =	41	77%
Dusk =	0	0%
Dark =	4	8%
Dark (lighted) =	4	8%

Under Construction

Yes =	0	0%

Relation to Junction

Intersection + Intersection-Related =	50	94%
Alley / Driveway Access =	3	6%

Manner of Collision

Angle =	18	34%
Rear End =	9	17%
Left Turn =	5	9%
Sideswipe (same direction) =	4	8%
Single Vehicle =	13	25%
Ped / Bike =	1	2%
Other =	3	6%

D1 and D2 Contributing Factors*

No Clear Factor =	43
Attention Distracted =	1
Weather =	2
Speed =	1
Too Fast for Conditions =	3
Fail to Yield =	16
Improper Backing / Turning =	10

These are only the most popular choices.

D1 and D2 Alcohol / Drugs Present*

Yes (alcohol or drugs) =	3

V1 and V2 Unit Config.*

Passenger Car =	31
PU / Van / Utility =	45
Truck =	13
Bus / Motorhome =	1
Motorcycle + Moped =	0

These are only the most popular choices.

**This info is not available for all units.*

Statistics for Non-Intersection Crashes ONLY

Multiple Vehicle Crashes ONLY

Crash Severity

Fatal =	2	4%
InjA =	1	2%
InjB =	7	16%
InjC =	4	9%
PDO =	31	69%
	45	

Surface Conditions

Dry =	24	53%
Wet =	2	4%
Ice / Snow =	18	40%
Other =	1	2%

Lighting Conditions

Dawn =	0	0%
Daylight =	26	58%
Dusk =	0	0%
Dark =	16	36%
Dark (lighted) =	3	7%

Road Geometrics

Straight (on level) =	27	60%
Straight (on grade) =	8	18%
Curve (on level) =	5	11%
Curve (on grade) =	3	7%
Hill Crest =	2	4%

Under Construction

Yes =	0	0%

D1 or D2 Ejected*

Yes =	1

Manner of Collision

Angle =	4	9%
Rear End =	17	38%
Left Turn =	0	0%
Sideswipe (same direction) =	6	13%
Head-On + Sideswipe (opp direction) =	15	33%
Other =	3	7%

D1 and D2 Alcohol/Drugs Present*

Yes (alcohol or drugs) =	5

V1 and V2 Unit Config.*

Passenger Car =	22
PU / Van / Utility =	38
Truck =	29
Bus / Motorhome =	0
Motorcycle + Moped =	0

These are only the most popular choices.

Non-Collision with Motor Vehicle (a.k.a. Single Vehicle) Crashes ONLY

Crash Severity

Fatal =	1	1%
InjA =	2	3%
InjB =	10	13%
InjC =	7	9%
PDO =	56	74%
	76	

Surface Conditions

Dry =	36	47%
Wet =	2	3%
Ice / Snow =	37	49%
Other =	1	1%

Lighting Conditions

Dawn =	2	3%
Daylight =	36	47%
Dusk =	2	3%
Dark =	35	46%
Dark (lighted) =	1	1%

Road Geometrics

Straight (on level) =	48	63%
Straight (on grade) =	16	21%
Curve (on level) =	6	8%
Curve (on grade) =	5	7%
Hill Crest =	0	0%

Under Construction

Yes =	1	1%

D1 Ejected*

Yes (partially or fully) =	4	5%

D1 Most Harmful Event*

Motor Vehicle in Transport =	0	0%
Animal =	0	0%
Jackknife =	5	7%
Ran Off Roadway (not including below crashes) =	42	55%
Guardrail + Concrete Barrier + Bridge Rail =	10	13%
Bridge / Pier / Abutment / Overhead Structure =	0	0%
Poles / Posts / Trees / Overhead Sign Supports =	6	8%

These are only the most popular choices.

D1 Alcohol / Drugs Present*

Yes (alcohol or drugs) =	3	4%

V1 Unit Config.*

Passenger Car =	16	21%
PU / Van / Utility =	45	59%
Truck =	10	13%
Bus / Motorhome =	0	0%
Motorcycle + Moped =	1	1%

These are only the most popular choices.

**This info is not available for all units.*

For Crash Severity: Fatal = Fatility, InjA = Incapacitating Injury, InjB = Non-Incapacitating Injury, InjC = Possible Injury, PDO = Property Damage Only
ADI = Alcohol or Drug Involvment

Crash Summary Sheets

Total Crashes: 174 **Location Description:** US 52
Length: 68.317 **Start RP:** 101.683
Sorted By: Longitude **End RP:** 170.000

	M	D	Year
Start Date:	1	1	2013
End Date:	12	31	2017

# of Years: 5.00

Notes: Animal crashes were not included.

23 USC § 409 Documents
NDDOT Reserves All Objections

	Hwy / Ref Pt / Lat. / Long.	Crash # / Date / Day / Time	Severity / Weather / Surf Cond / Lighting	Manner of Coll. / Relation to Jct. / Road Geom. / Under Constr.	Veh #	Age	Sex	Address	Contributing Factors	Ejected	A.D.I.	Unit Config.	Direction of Travel	Traffic Control	Most Harmful Event	Shortened Narrative	Inter. of Crash
1	Hwy 52 RP 101.723 48.166 -101.1966	299917 3/4/2014 Tuesday 7:55 AM	PDO Snow Snow Daylight	Single Veh. Non-junction Straight (on Grade) No	V1 V2	28	F	TURTLE LAKE, ND		N N	N N	Pickup - Van - Utility Pickup - Van - Utility	Northwest Northwest	None None	Parked Motor Vehicle MV in Transport		
2	Hwy 52 RP 101.813 48.1649 -101.1956	1039027 8/26/2017 Saturday 10:17 AM	PDO Clear Dry Daylight	Single Veh. Non-junction Straight (on Grade) No	V1	21	F	MINOT, ND	Fail Keep in Proper Lane	N	N	Passenger Car	North	None	Other Traffic Barrier		
3	Hwy 52 RP 101.833 48.1647 -101.1955	300291 3/6/2014 Thursday 5:50 AM	PDO Cloudy Ice / Snow Dark	Single Veh. Non-junction Straight (on Grade) No	V1	32	M	MONTICELLO, IN	To Fast for Conditions	N	N	Pickup - Van - Utility	East	None	Jackknife		
4	Hwy 52 RP 102.26 48.1603 -101.1894	336878 12/11/2015 Friday 12:30 PM	PDO Snow Snow Daylight	Rear End Non-junction Straight (on Level) No	V1 V2	24 56	F M	VELVA, ND HOPE, ND	Following too Close	N N	N N	Pickup - Van - Utility Pickup - Van - Utility	West West	None None	MV in Transport MV in Transport		
5	Hwy 52 RP 102.28 48.1602 -101.1889	336865 12/11/2015 Friday 12:29 PM	PDO Snow Snow Daylight	Sideswipe (Opp. Dir.) Non-junction Straight (on Level) No	V1 V2	19 22	M M	ANAMOOSE, ND VELVA, ND	Improper Overtaking	N N	N N	Passenger Car Pickup - Van - Utility	West East	None None	MV in Transport Guardrail Face		
6	Hwy 52 RP 102.57 48.1581 -101.1837	1046958 12/28/2017 Thursday 12:45 PM	PDO Clear Dry Daylight	Rear End Non-junction Straight (on Level) No	V1 V2	33 54	M M	KANSAS CITY, MO MINOT, ND	To Fast for Conditions	N N	N N	Pickup - Van - Utility 3+ Axle	North North	None None	MV in Transport MV in Transport		
7	Hwy 52 RP 102.75 48.1568 -101.1802	313607 10/24/2014 Friday 7:55 PM	PDO Clear Dry Dark	Single Veh. Non-junction Straight (on Level) No	V1	24	M	HAWLEY, MN	MV Mechanical Failure	N	N	Pickup - Van - Utility	East	None	Separation of Units		
8	Hwy 52 RP 102.99 48.1551 -101.1758	320092 1/21/2015 Wednesday 8:50 AM	**InjA** Clear Ice / Snow Daylight	Single Veh. Non-junction Straight (on Level) No	V1	46	M	HARVEY, ND	Over Correct/Steering	N	N	Pickup - Van - Utility	North	None	Overturn / Rollover	V1 NB attempting to pass another car, lost control, went into ditch, rolled several times.	
9	Hwy 52 RP 102.99 48.155 -101.1756	337931 1/28/2016 Thursday 11:20 PM	PDO Clear Dry Dark	Single Veh. Non-junction Straight (on Level) No	V1	52	M	VELVA, ND	Fail Keep in Proper Lane	N	Y	Passenger Car	East	None	Guardrail Face		
10	Hwy 52 RP 103 48.155 -101.1756	1010515 4/16/2016 Saturday 1:55 PM	PDO t/Hail/Freezing F Slush Daylight	Single Veh. Non-junction Straight (on Grade) No	V1	77	F	MINOT, ND	To Fast for Conditions	N	N	Passenger Car	East	None	Guardrail Face		

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ADI = Alcohol or Drug Involvment

Crash Summary Sheets

Total Crashes: 174 **Location Description:** US 52
Length: 68.317 **Start RP:** 101.683
Sorted By: Longitude **End RP:** 170.000

	M	D	Year
Start Date:	1	1	2013
End Date:	12	31	2017

# of Years: 5.00

Notes: Animal crashes were not included.

23 USC § 409 Documents NDDOT Reserves All Objections

	Hwy / Ref Pt / Lat. / Long.	Crash # / Date / Day / Time	Severity / Weather / Surf Cond / Lighting	Manner of Coll. / Relation to Jct. / Road Geom. / Under Constr.	Veh #	Age	Sex	Address	Contributing Factors	Ejected	A.D.I.	Unit Config.	Direction of Travel	Traffic Control	Most Harmful Event	Shortened Narrative	Inter. of Crash
11	Hwy 52 RP 103.12 48.1541 -101.1732	1024440 12/20/2016 Tuesday 9:30 AM	InjC Blowing Snow Ice / Snow Daylight	Single Veh. Non-junction Straight (on Level) No	V1	17	F	MINOT, ND	To Fast for Conditions	Y	N	Pickup - Van - Utility	North	None	Overturn / Rollover		
12	Hwy 52 RP 103.25 48.1532 -101.1709	1037786 8/3/2017 Thursday 11:54 AM	PDO Clear Dry Daylight	Rear End Other Cossings Straight (on Level) No	V1 V2	24 66	M M	MINOT, ND REDWOOD MEADOWS, AB		N N	N N	Unknown Heavy Truck Unknown Heavy Truck	South South	Unknown None	MV in Transport MV in Transport		
13	Hwy 52 RP 103.25 48.1532 -101.1708	1016225 8/17/2016 Wednesday 7:10 PM	PDO Clear Dry Daylight	Single Veh. Intersection Related Curve (on Level) No	V1	29	M	VELVA, ND	Other	N	N	Pickup - Van - Utility	South	None	Ditch		
14	Hwy 52 RP 103.3 48.1529 -101.17	299554 2/24/2014 Monday 3:10 PM	PDO Clear Dry Daylight	Left Turn Intersection Straight (on Level) No	V1 V2	63 29	F M	VELVA, ND MINOT, ND	 Failed to Yield	N N	N N	Passenger Car Passenger Car	West East	None None	MV in Transport MV in Transport	V1 WB. V2 made EB left turn did not observe V1 approaching.	US 52 & 79 Ave SE (Ward 16)
15	Hwy 52 RP 103.3 48.1529 -101.17	324042 3/21/2015 Saturday 3:00 PM	InjC Clear Dry Daylight	Rear End Intersection Straight (on Level) No	V1 V2	16 38	M F	ANAMOOSE, ND MINOT, ND	Following too Close	N N	N N	Pickup - Van - Utility Pickup - Van - Utility	East East	Officer/Flagperson None	MV in Transport MV in Transport	V2 EB, slowing down to make a left turn. V1 EB was distracte and did not notice V2 came to a stop.	US 52 & 79 Ave SE (Ward 16)
16	Hwy 52 RP 103.3 48.1529 -101.17	325962 4/20/2015 Monday 6:26 PM	PDO Clear Dry Daylight	Rear End Intersection Straight (on Level) No	V1 V2	26 41	M M	SAWYER, ND MINOT, ND	Improper Evasive Action	N N	Y N	Pickup - Van - Utility Pickup - Van - Utility	East East	None None	MV in Transport MV in Transport	V2 EB stopped with left turn signal activated. V1 came up from behind swerving and crossing into oncoming traffic. V1 struck the rear of V2. D1 arrested for DUI.	US 52 & 79 Ave SE (Ward 16)
17	Hwy 52 RP 103.3 48.1529 -101.17	331265 8/3/2015 Monday 10:40 AM	PDO Clear Dry Daylight	Rear End Intersection Curve (on Grade) No	V1 V2	27 71	F M	SAWYER, ND VOLTAIRE, ND	Improper Evasive Action Other	N N	N N	Pickup - Van - Utility Passenger Car	Northwest Northwest	None None	MV in Transport MV in Transport	V1 following V2 WB. Vehicles ahead slowing to turn onto 79 Ave SE. V1 struck V2 in center rear.	US 52 & 79 Ave SE (Ward 16)
18	Hwy 52 RP 103.3 48.1529 -101.17	1027734 1/25/2017 Wednesday 7:40 AM	InjB Cloudy Ice / Snow Dawn	Rear End Intersection Straight (on Level) No	V1 V2	29 25	M M	MINOT, ND THOMPSON, ND	To Fast for Conditions Weather	N N	N N	Pickup - Van - Utility 2-Axle	East East	None None	MV in Transport MV in Transport	V1 EB at 65 mph, D1 not paying attention to the traffic ahead. V2 stopped in the EB lane waiting to make a left turn. V1 struck the rear of V2.	US 52 & 79 Ave SE (Ward 16)
19	Hwy 52 RP 103.47 48.1516 -101.1669	1024375 12/20/2016 Tuesday 8:00 AM	PDO Clear Ice / Snow Dawn	Single Veh. Non-junction Curve (on Grade) No	V1	70	M	MINOT, ND	To Fast for Conditions	N	N	Pickup - Van - Utility	West	None	Overturn / Rollover		
20	Hwy 52 RP 103.83 48.1476 -101.1615	277224 4/21/2013 Sunday 6:11 AM	PDO Snow Snow Dawn	Single Veh. Non-junction Curve (on Level) No	V1	43	M	KARLSRUHE, ND	Weather	N	N	Pickup - Van - Utility	Northeast	None	Guardrail Face		

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ADI = Alcohol or Drug Involvment

Crash Summary Sheets

Total Crashes: 174 **Location Description:** US 52
Length: 68.317 **Start RP:** 101.683
Sorted By: Longitude **End RP:** 170.000

	M	D	Year
Start Date:	1	1	2013
End Date:	12	31	2017

# of Years: 5.00

Notes: Animal crashes were not included.

	Hwy / Ref Pt / Lat. / Long.	Crash # / Date / Day / Time	Severity / Weather / Surf Cond / Lighting	Manner of Coll. / Relation to Jct. / Road Geom. / Under Constr.	Veh #	Age	Sex	Address	Contributing Factors	Ejected	A.D.I.	Unit Config.	Direction of Travel	Traffic Control	Most Harmful Event	Shortened Narrative	Inter. of Crash
21	Hwy 52 RP 104.06 48.1451 -101.1584	295083 12/26/2013 Thursday 8:19 AM	PDO Cloudy Frost Daylight	Single Veh. Non-junction Straight (on Grade) No	V1	53	M	KARLSRUHE, ND	To Fast for Conditions	N	N	Pickup - Van - Utility	Northwest	None	Overturn / Rollover		
22	Hwy 52 RP 104.52 48.14 -101.1521	1040887 9/16/2017 Saturday 4:51 PM	PDO Clear Dry Daylight	Single Veh. Non-junction Straight (on Grade) No	V1 V2	52 40	F M	TOWNER, ND MINOT, ND		N N	N N	Pickup - Van - Utility Pickup - Van - Utility	East West	None None	Cargo Loss or Shift Cargo Loss or Shift		
23	Hwy 52 RP 105.07 48.1337 -101.1445	1009531 3/17/2016 Thursday 9:50 PM	PDO Snow Snow Dark	Single Veh. Non-junction Straight (on Level) No	V1	51	M	MINOT, ND	To Fast for Conditions	N	N	Passenger Car	North	None	Other Traffic Barrier		
24	Hwy 52 RP 105.34 48.1307 -101.1413	300428 3/14/2014 Friday 3:02 PM	InjC Cloudy Dry Daylight	Single Veh. Non-junction Straight (on Grade) No	V1	21	M	VELVA, ND	Fail Keep in Proper Lane	N	N	Pickup - Van - Utility	Southeast	None	Overturn / Rollover		
25	Hwy 52 RP 105.4 48.1299 -101.1405	1010514 4/16/2016 Saturday 2:20 PM	PDO ɛt/Hail/Freezing F Slush Daylight	Single Veh. Alley/Driveway Straight (on Grade) No	V1	54	M	HARVEY, ND	To Fast for Conditions	N	N	Passenger Car	West	None	Guardrail End		
26	Hwy 52 RP 105.41 48.1296 -101.1402	272373 2/16/2013 Saturday 4:00 PM	PDO Clear Dry Daylight	Rear End Non-junction Straight (on Grade) No	V1 V2	24 46	F M	MESA, WA ADDY, WA	Following too Close	N N	N N	Pickup - Van - Utility Passenger Car	East East	None None	MV in Transport MV in Transport		
27	Hwy 52 RP 105.49 48.1288 -101.1394	316573 11/26/2014 Wednesday 8:45 AM	PDO Cloudy Ice / Snow Daylight	Sideswipe (Opp. Dir.) Non-junction Straight (on Grade) No	V1 V2	41	F	HARVEY, ND	To Fast for Conditions	N	N	Pickup - Van - Utility Pickup - Van - Utility	Northwest Southeast	None None	MV in Transport MV in Transport		
28	Hwy 52 RP 105.98 48.1229 -101.1334	291412 11/29/2013 Friday 5:20 AM	PDO Cloudy Dry Dark	Sideswipe (Same Dir.) Non-junction Straight (on Level) No	V1 V2	21 66	M M	VELVA, ND SAWYER, ND	Other	N N	N N	Pickup - Van - Utility Pickup - Van - Utility	West West	None None	Guardrail Face MV in Transport		
29	Hwy 52 RP 105.99 48.1228 -101.1332	304062 5/15/2014 Thursday 8:03 PM	InjC Clear Dry Dusk	Single Veh. Non-junction Unknown No	V1	19	F	MINOT, ND	Speed	Y	N	Off Highway Vehicle	West	None	Overturn / Rollover		
30	Hwy 52 RP 106.14 48.121 -101.1314	302873 4/23/2014 Wednesday 11:11 PM	PDO Clear Dry Dark	Single Veh. Non-junction Straight (on Level) No	V1	31	F	VELVA, ND	Other	N	N	Pickup - Van - Utility	East	None	Ditch		

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ADI = Alcohol or Drug Involvment

Crash Summary Sheets

Total Crashes: 174 **Location Description:** US 52
Length: 68.317 **Start RP:** 101.683
Sorted By: Longitude **End RP:** 170.000

	M	D	Year
Start Date:	1	1	2013
End Date:	12	31	2017

# of Years: 5.00

Notes: Animal crashes were not included.

	Hwy / Ref Pt / Lat. / Long.	Crash # / Date / Day / Time	Severity / Weather / Surf Cond / Lighting	Manner of Coll. / Relation to Jct. / Road Geom. / Under Constr.	Veh #	Age	Sex	Address	Contributing Factors	Ejected	A.D.I.	Unit Config.	Direction of Travel	Traffic Control	Most Harmful Event	Shortened Narrative	Inter. of Crash
31	Hwy 52 RP 107.02 48.1105 -101.1207	315917 11/25/2014 Tuesday 5:38 PM	PDO Blowing Snow Snow Dark	Sideswipe (Opp. Dir.) Non-junction Straight (on Level) No	V1	41	M	DRAKE, ND	Weather	N	N	Pickup - Van - Utility	North	None	MV in Transport		
					V2	57	M	BIRCHWOOD, WI	Weather	N	N	Truck Tractor	South	None	MV in Transport		
32	Hwy 52 RP 107.49 48.1051 -101.1145	1046403 12/17/2017 Sunday 5:45 AM	InjB Clear Dry Dark	Sideswipe (Opp. Dir.) Non-junction Straight (on Level) No	V1	22	M	MINOT, ND	Fail Keep in Proper Lane	N	N	Passenger Car	North	None	MV in Transport		
					V2	41	M	CALGARY, AB		N	N	2-Axle	South	None	MV in Transport		
33	Hwy 52 RP 107.79 48.1024 -101.1094	304293 5/16/2014 Friday 8:50 AM	InjA Clear Dry Daylight	Single Veh. Non-junction Straight (on Level) No	V1	21	M	BENEDICT, ND	Speed	N	N	Off Highway Vehicle	West	None	Overturn / Rollover	V1 (ATV) WB traveling in the south ditch, came over a driveway and did not see a creek. V1 overturned and landed upside down on top of him in the creek.	
34	Hwy 52 RP 108.03 48.1004 -101.1053	333859 9/17/2015 Thursday 10:45 AM	InjC Cloudy Dry Daylight	Single Veh. Non-junction Straight (on Level) No	V1	22	F	DRAKE, ND	Speed	N	N	Passenger Car	Northwest	None	Overturn / Rollover		
35	Hwy 52 RP 108.22 48.0988 -101.1021	330014 6/28/2015 Sunday 5:01 PM	InjC Clear Dry Daylight	Single Veh. Non-junction Straight (on Level) No	V1	17	F	VELVA, ND	Improper Evasive Action	N	N	Pickup - Van - Utility	West	None	Overturn / Rollover		
36	Hwy 52 RP 108.24 48.0986 -101.1017	1024940 12/28/2016 Wednesday 11:52 AM	InjB Clear Ice / Snow Daylight	Single Veh. Non-junction Straight (on Level) No	V1	25	F	VELVA, ND	To Fast for Conditions	N	N	Pickup - Van - Utility	West	None	Overturn / Rollover		
37	Hwy 52 RP 108.53 48.0962 -101.0965	1033594 5/13/2017 Saturday 10:38 AM	InjB Clear Dry Daylight	Rear End Intersection Related Straight (on Level) No	V1	18	F	VELVA, ND	Following too Close	N	N	Passenger Car	West	None	MV in Transport		US 52 & 125 St SE
					V2	70	F	SAWYER, ND		N	N	Passenger Car	West	None	MV in Transport		
38	Hwy 52 RP 108.65 48.0955 -101.0942	320516 1/20/2015 Tuesday 7:40 AM	PDO Cloudy Ice / Snow Dark	Single Veh. Non-junction Straight (on Level) No	V1	30	F	VOLTAIRE, ND	To Fast for Conditions	N	N	Pickup - Van - Utility	West	None	Guardrail Face		
39	Hwy 52 RP 108.99 48.0937 -101.0872	1036669 7/12/2017 Wednesday 5:28 PM	InjB Clear Dry Daylight	Head On Non-junction Hillcrest No	V1	34	M	WOODBURY, GA	Improper Overtaking	N	N	Pickup - Van - Utility	West	None	MV in Transport		
					V2	23	M	VELVA, ND		N	N	Passenger Car	East	None	MV in Transport		
40	Hwy 52 RP 109.02 48.0936 -101.0867	1025140 12/30/2016 Friday 10:25 PM	PDO Clear Ice / Snow Dark	Single Veh. Non-junction Straight (on Level) No	V1	32	F	SAWYER, ND	To Fast for Conditions	N	N	Pickup - Van - Utility	South	None	Other Traffic Barrier		

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ADI = Alcohol or Drug Involvment

Crash Summary Sheets

Total Crashes: 174 **Location Description:** US 52
Length: 68.317 **Start RP:** 101.683
Sorted By: Longitude **End RP:** 170.000

	M	D	Year
Start Date:	1	1	2013
End Date:	12	31	2017

# of Years: 5.00

Notes: Animal crashes were not included.

	Hwy / Ref Pt / Lat. / Long.	Crash # / Date / Day / Time	Severity / Weather / Surf Cond / Lighting	Manner of Coll. / Relation to Jct. / Road Geom. / Under Constr.	Veh #	Age	Sex	Address	Contributing Factors	Ejected	A.D.I.	Unit Config.	Direction of Travel	Traffic Control	Most Harmful Event	Shortened Narrative	Inter. of Crash
41	Hwy 52 RP 109.78 48.0897 -101.0715	1011689 5/14/2016 Saturday 3:26 PM	PDO Clear Dry Daylight	Single Veh. Non-junction Curve (on Grade) No	V1	56	F	MINOT, ND	Other	N	Y	Pickup - Van - Utility	West	None	Ditch		
42	Hwy 52 RP 109.8 48.0896 -101.0709	295904 1/10/2014 Friday 6:50 AM	PDO Clear Frost Dark	Single Veh. Non-junction Straight (on Grade) No	V1	37	M	LAS VEGAS, NV	To Fast for Conditions	N	N	Pickup - Van - Utility	West	None	Ran Off Roadway		
43	Hwy 52 RP 109.81 48.0895 -101.0705	288691 10/19/2013 Saturday 6:57 AM	InjB Cloudy Dry Dark	Sideswipe (Opp. Dir.) Non-junction Hillcrest No	V1 V2	33 58	M M	VELVA, ND COALDALE, AB	Wrong Way	N N	Y N	Pickup - Van - Utility Truck Tractor	South North	None None	MV in Transport MV in Transport		
44	Hwy 52 RP 110.37 48.0868 -101.0596	1026591 1/12/2017 Thursday 6:53 AM	PDO Blowing Snow Snow Dark	Single Veh. Non-junction Curve (on Grade) No	V1	37	M	MINOT, ND	To Fast for Conditions	N	N	Pickup - Van - Utility	East	None	Other Traffic Barrier		
45	Hwy 52 RP 110.38 48.0868 -101.0594	1026687 1/12/2017 Thursday 1:45 AM	InjC Blowing Snow Snow Dark	Single Veh. Non-junction Curve (on Grade) No	V1	23	M	MINOT, ND	To Fast for Conditions	N	N	Pickup - Van - Utility	East	None	Overturn / Rollover		
46	Hwy 52 RP 110.54 48.0864 -101.0559	281357 6/23/2013 Sunday 8:09 PM	InjB Rain Wet Daylight	Single Veh. Non-junction Straight (on Grade) No	V1	19	M	STANLEY, ND	Other	Y	N	Off Highway Vehicle	West	None	Overturn / Rollover		
47	Hwy 52 RP 110.55 48.0864 -101.0558	1034158 5/21/2017 Sunday 12:40 PM	InjB Clear Dry Daylight	Rear End Intersection Related Curve (on Level) No	V1 V2	34 26	F M	VELVA, ND SAWYER, ND	Following too Close Improper License	N N	N N	Pickup - Van - Utility Pickup - Van - Utility	West West	None None	MV in Transport MV in Transport		
48	Hwy 52 RP 110.99 48.0859 -101.0462	337658 1/20/2016 Wednesday 3:57 AM	PDO og / Smoke / Du Ice / Snow Dark	Single Veh. Non-junction Straight (on Level) No	V1	57	M	VELVA, ND	To Fast for Conditions	N	N	Pickup - Van - Utility	East	None	Guardrail Face		
49	Hwy 52 RP 111.48 48.0854 -101.0357	337825 1/25/2016 Monday 6:49 AM	PDO Cloudy Ice / Snow Dark	Angle Non-junction Straight (on Grade) No	V1 V2	36 23	M M	HARVEY, ND MINOT, ND	Speed	N N	N N	Pickup - Van - Utility Pickup - Van - Utility	North South	None None	MV in Transport MV in Transport		
50	Hwy 52 RP 111.79 48.085 -101.0291	297604 2/1/2014 Saturday 4:21 AM	PDO Clear Dry Dark	Single Veh. Non-junction Straight (on Grade) No	V1	24	M	VELVA, ND	Other	N	N	Pickup - Van - Utility	North	None	Ran Off Roadway		

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Crash Summary Sheets

Total Crashes: 174 **Location Description:** US 52
Length: 68.317 **Start RP:** 101.683
Sorted By: Longitude **End RP:** 170.000

	M	D	Year
Start Date:	1	1	2013
End Date:	12	31	2017

# of Years: 5.00

Notes: Animal crashes were not included.

	Hwy / Ref Pt / Lat. / Long.	Crash # / Date / Day / Time	Severity / Weather / Surf Cond / Lighting	Manner of Coll. / Relation to Jct. / Road Geom. / Under Constr.	Veh #	Age	Sex	Address	Contributing Factors	Ejected	A.D.I.	Unit Config.	Direction of Travel	Traffic Control	Most Harmful Event	Shortened Narrative	Inter. of Crash
51	Hwy 52 RP 112 48.0846 -101.0246	290448 11/15/2013 Friday 6:05 PM	PDO Clear Dry Dark	Single Veh. Non-junction Straight (on Level) No	V1 V2	24 62	M M	MINOT, ND MINOT, ND	Other	N N	N N	Pickup - Van - Utility Pickup - Van - Utility	East West	None None	Cargo Loss or Shift Thrown/Falling Object		
52	Hwy 52 RP 112.52 48.0809 -101.0148	1009400 3/18/2016 Friday 1:30 PM	InjC Clear Dry Daylight	Backing Intersection Related Straight (on Level) No	V1 V2	62 56	F F	VELVA, ND LANSFORD, ND	Following too Close	N N	N N	Pickup - Van - Utility Pickup - Van - Utility	North North	None None	MV in Transport MV in Transport		US 52 & 181 St SE (Ward 25)
53	48.081 -101.0147	275962 3/13/2013 Wednesday 7:30 PM	PDO Clear Ice / Snow Unknown	Single Veh. Intersection Straight (on Level) No	V1	28	M	Drake, ND		N	N	Passenger Car	East	None	Other Object (Not Fixed)		US 52 & 181 St SE (Ward 25)
54	Hwy 52 RP 114.39 48.0676 -100.9788	1030354 2/3/2017 Friday 3:33 AM	InjB Clear Dry Dark (Lighted)	Sideswipe (Opp. Dir.) Non-junction Straight (on Level) No	V1 V2	26 26	M M	VELVA, ND BRECKENRIDGE, MN	Care Required	N N	Y N	Passenger Car 3+ Axle	East West	None None	MV in Transport MV in Transport		
55	Hwy 52 RP 114.83 48.0648 -100.9704	332605 8/25/2015 Tuesday 6:30 AM	PDO Cloudy Dry Dark	Single Veh. Non-junction Straight (on Level) No	V1	28	F	VELVA, ND		N	N	Passenger Car	West	None	Other Object (Not Fixed)		
56	Hwy 52 RP 115.01 48.0638 -100.9675	1021483 11/18/2016 Friday 10:00 PM	InjB Clear Dry Dark	Single Veh. Non-junction Straight (on Level) No	V1	34	M	KIEF, ND	Other	N	N	Passenger Car	South	None	Overturn / Rollover		
57	Hwy 52 RP 115.06 48.0635 -100.9664	307203 7/7/2014 Monday 11:50 AM	PDO Cloudy Dry Daylight	Single Veh. Non-junction Straight (on Level) No	V1 V2	46 25	M M	CARRINGTON, ND DEVILS LAKE, ND	MV Mechanical Failure	N N	N N	Pickup - Van - Utility Truck Tractor	Southeast Northwest	None None	Thrown/Falling Object Thrown/Falling Object		
58	48.0585 -100.9513	282506 7/5/2013 Friday 4:00 AM	Fatal Clear Dry Dark	Head On Non-junction Straight (on Level) No	V1 V2	47 17	M M	OAKES, ND VELVA, ND	Driving Left of Center	N Y	N Y	Truck Tractor Passenger Car	Northwest Southeast	None None	MV in Transport MV in Transport	V1 WB. V2 EB crossed the centerline into the WB lane and struck V1. D2 was ejected from the vehicle.	
59	Hwy 52 RP 115.8 48.0583 -100.9505	308243 7/28/2014 Monday 8:45 AM	InjB Clear Dry Daylight	Sideswipe (Opp. Dir.) Non-junction Curve (on Level) No	V1 V2	23 45	F M	VELVA, ND SASKATOON, SK	Other	N N	Y N	Passenger Car Truck Tractor	Southeast Northwest	None None	MV in Transport MV in Transport		
60	Hwy 52 RP 116.01 48.0576 -100.9479	1010208 4/2/2016 Saturday 3:00 PM	InjB Clear Sand Daylight	Single Veh. Non-junction Straight (on Level) No	V1	51	M	MINOT, ND		N	N	Motorcycle	East	None	Overturn / Rollover		

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ADI = Alcohol or Drug Involvment

Crash Summary Sheets

Total Crashes: 174 **Location Description:** US 52
Length: 68.317 **Start RP:** 101.683
Sorted By: Longitude **End RP:** 170.000

	M	D	Year
Start Date:	1	1	2013
End Date:	12	31	2017

# of Years: 5.00

Notes: Animal crashes were not included.

23 USC § 409 Documents NDDOT Reserves All Objections

	Hwy / Ref Pt / Lat. / Long.	Crash # / Date / Day / Time	Severity / Weather / Surf Cond / Lighting	Manner of Coll. / Relation to Jct. / Road Geom. / Under Constr.	Veh #	Age	Sex	Address	Contributing Factors	Ejected	A.D.I.	Unit Config.	Direction of Travel	Traffic Control	Most Harmful Event	Shortened Narrative	Inter. of Crash
61	Hwy 52 RP 116.44 48.056 -100.9385	310232 8/31/2014 Sunday 10:00 PM	PDO Cloudy Dry Dark (Lighted)	Sideswipe (Same Dir.) Alley/Driveway Straight (on Level) No	V1	57	M	RICHVILLE, MN		N	N	Truck Tractor	West	None	Parked Motor Vehicle		
					V2							Truck Tractor	West	None	MV Tran in Other Rdwy		
62	48.0561 -100.9376	312470 9/10/2014 Wednesday 10:40 PM	PDO Cloudy Dry Dark (Lighted)	Backing Non-junction Straight (on Level) No	V1	20	F	VELVA, ND		N	N	Passenger Car	South	None	MV Tran in Other Rdwy		
					V2							Hit and Run	South	None	MV in Transport		
63	Hwy 41 RP 73.39 48.0548 -100.9303	291843 12/6/2013 Friday 10:00 PM	InjB Cloudy Snow Dark (Lighted)	Angle Intersection Straight (on Level) No	V1	60	M	MINOT, ND	Defective Equipment	N	N	Pickup - Van - Utility	East	None	MV in Transport	V2 stopped facing NB. V1 making EB right turn. As he was making the turn his accelerator got stuck. V1 unable to turn struck V2.	US 52 & ND 41
					V2	18	M	VELVA, ND		N	N	Passenger Car	North	Barricade	MV in Transport		
64	Hwy 52 RP 116.83 48.0548 -100.9303	313289 10/18/2014 Saturday 1:35 PM	PDO Clear Dry Daylight	Angle Intersection Straight (on Level) No	V1	51	M	MINOT, ND		N	N	Pickup - Van - Utility	East	None	MV in Transport	V2 making a NB left turn and was struck by EB V1. D2 stated that he "thought he had enough time" and "actually thought it was a 4-way stop".	US 52 & ND 41
					V2	54	M	AMERY, WI	Failed to Yield	N	N	Passenger Car	North	Stop Sign	MV in Transport		
65	Hwy 52 RP 103.87 48.0548 -100.9303	325784 3/27/2015 Friday 10:20 AM	InjC Clear Wet Daylight	Angle Intersection Straight (on Level) No	V1	51	M	VELVA, ND		N	N	Truck Tractor	West	None	MV in Transport	V1 WB struck NB V2. D2 stated she never saw the semi approaching and that her view was obstructed by her vehicle's pillar.	US 52 & ND 41
					V2	27	F	VELVA, ND	Vision Obstructed	N	N	Passenger Car	North	Stop Sign	MV in Transport		
66	Hwy 52 RP 116.83 48.0548 -100.9303	332250 8/24/2015 Monday 11:25 AM	InjB Clear Dry Daylight	Angle Intersection Straight (on Level) No	V1	54	F	BISMARCK, ND	Failed to Yield	N	N	Pickup - Van - Utility	South	Stop Sign	MV in Transport	V1 SB failed to come to a stop and struck WB V2.	US 52 & ND 41
					V2	34	M	MINOT, ND	Other	N	N	Pickup - Van - Utility	West	None	MV in Transport		
67	Hwy 52 RP 116.83 48.0548 -100.9303	1009740 3/25/2016 Friday 2:47 PM	PDO Cloudy Dry Daylight	Angle Intersection Straight (on Level) No	V1	75	M	BERGEN, ND	Failed to Yield	N	N	Pickup - Van - Utility	South	Stop Sign	MV in Transport	V2 WB at 40 mph. V1 making a SB left turn did not see V2 and struck V2 on the front passenger side.	US 52 & ND 41
					V2	20	M	MINOT, ND		N	N	Passenger Car	West	None	MV in Transport		
68	48.0502 -100.9184	278323 4/27/2013 Saturday 3:30 AM	PDO Clear Dry Dark	Single Veh. Non-junction Straight (on Grade) No	V1	45	M	Minot, ND		N	N	Pickup - Van - Utility	West	None	Tree		
69	Hwy 52 RP 119.08 48.0338 -100.8942	275177 3/5/2013 Tuesday 11:23 AM	InjB Clear Ice / Snow Daylight	Single Veh. Non-junction Straight (on Grade) No	V1	36	M	MINDEN, LA		N	N	Pickup - Van - Utility	West	None	Overturn / Rollover		
70	Hwy 52 RP 2.739 48.0254 -100.8785	299553 2/26/2014 Wednesday 3:25 PM	PDO Clear Dry Daylight	Single Veh. Non-junction Straight (on Level) No	V1	52	F	MINOT, ND	MV Mechanical Failure	N	N	Passenger Car	West	None	Fire / Explosion		

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Crash Summary Sheets

Total Crashes: 174 **Location Description:** US 52
Length: 68.317 **Start RP:** 101.683
Sorted By: Longitude **End RP:** 170.000

	M	D	Year
Start Date:	1	1	2013
End Date:	12	31	2017

# of Years: 5.00

Notes: Animal crashes were not included.

	Hwy / Ref Pt / Lat. / Long.	Crash # / Date / Day / Time	Severity / Weather / Surf Cond / Lighting	Manner of Coll. / Relation to Jct. / Road Geom. / Under Constr.	Veh #	Age	Sex	Address	Contributing Factors	Ejected	A.D.I.	Unit Config.	Direction of Travel	Traffic Control	Most Harmful Event	Shortened Narrative	Inter. of Crash
71	Hwy 52 RP 2.839 48.0212 -100.8698	320293 1/20/2015 Tuesday 5:10 AM	PDO Cloudy Ice / Snow Dark	Single Veh. Non-junction Curve (on Level) No	V1	20	F	VELVA, ND	To Fast for Conditions	N	N	Passenger Car	East	None	Highway Traffic Sign Post		
72	Hwy 52 RP 2.869 48.0211 -100.8692	312939 10/19/2014 Sunday 7:30 PM	PDO Clear Dry Dark	Backing Railroad Crossing Curve (on Grade) No	V1 V2	49 60	M M	CRASOBY, ND ROCKY FACE, GA		N N	N N	Truck Tractor Truck Tractor	East East	RR Signals with RR Signals with	MV in Transport MV in Transport		
73	Hwy 52 RP 3.059 48.0206 -100.8652	335008 10/19/2015 Monday 2:08 PM	PDO Clear Dry Daylight	Single Veh. Railroad Crossing Straight (on Level) No	V1 V2	 54	 M	 MOORETON, ND	Other	 N	 N	Hit and Run Pickup - Van - Utility	West East	RR Signals with RR Signals with	Other Object (Not Fixed) Other Object (Not Fixed)		
74	Hwy 52 RP 122.63 48.0165 -100.8243	1035589 6/16/2017 Friday 6:15 PM	PDO Clear Dry Daylight	Rear End Non-junction Straight (on Level) No	V1 V2	21 28	M M	WILLISTON, ND DRAKE, ND	Speed Speed	N N	N N	Passenger Car Pickup - Van - Utility	East East	None None	MV in Transport MV in Transport		
75	Hwy 52 RP 122.69 48.0163 -100.8229	308472 7/19/2014 Saturday 3:55 PM	PDO Clear Dry Daylight	Rear End Non-junction Straight (on Level) No	V1 V2	21 25	F M	ESMOND, ND BISMARCK, ND	Following too Close	N N	N N	Passenger Car Pickup - Van - Utility	East East	None None	MV in Transport MV in Transport		
76	Hwy 52 RP 125.17 48.0102 -100.7705	303854 4/23/2014 Wednesday 1:55 PM	PDO Rain Wet Daylight	Single Veh. Non-junction Straight (on Level) No	V1	37	M	NEWPORT, MI	Weather	N	N	Truck Tractor	West	None	Separation of Units		
77	Hwy 52 RP 128.38 48.0009 -100.703	287631 9/24/2013 Tuesday 2:36 PM	PDO Clear Dry Daylight	Sideswipe (Same Dir.) Non-junction Straight (on Level) No	V1 V2	45 47	M M	DRAKE, ND MINOT, ND	Improper Overtaking	N N	N N	Truck Tractor Passenger Car	East East	None None	MV in Transport MV in Transport		
78	 47.9999 -100.6984	286971 9/20/2013 Friday 1:25 PM	PDO Clear Dry Daylight	Single Veh. Non-junction Straight (on Level) No	V1	57	M	RAY, ND	Defective Equipment	N	N	Pickup - Van - Utility	West	None	Ran Off Roadway		
79	Hwy 52 RP 128.75 47.9989 -100.6956	1023197 12/1/2016 Thursday 8:38 AM	PDO Cloudy Ice / Snow Daylight	Single Veh. Non-junction Straight (on Level) No	V1	43	M	SURREY, BC	Over Correct/Steering	N	N	Unknown Heavy Truck	West	None	Overturn / Rollover		
80	Hwy 52 RP 129.08 47.997 -100.6891	1016612 8/22/2016 Monday 1:20 PM	InjB Clear Dry Daylight	Single Veh. Non-junction Straight (on Level) No	V1	58	M	HARVEY, ND		N	N	Pickup - Van - Utility	West	None	Immersion		

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Crash Summary Sheets

Total Crashes: 174 **Location Description:** US 52
Length: 68.317 **Start RP:** 101.683
Sorted By: Longitude **End RP:** 170.000

	M	D	Year
Start Date:	1	1	2013
End Date:	12	31	2017

# of Years: 5.00

Notes: Animal crashes were not included.

23 USC § 409 Documents NDDOT Reserves All Objections

	Hwy / Ref Pt / Lat. / Long.	Crash # / Date / Day / Time	Severity / Weather / Surf Cond / Lighting	Manner of Coll. / Relation to Jct. / Road Geom. / Under Constr.	Veh #	Age	Sex	Address	Contributing Factors	Ejected	A.D.I.	Unit Config.	Direction of Travel	Traffic Control	Most Harmful Event	Shortened Narrative	Inter. of Crash
81	Hwy 52 RP 132.07 47.9775 -100.6322	316406 11/25/2014 Tuesday 8:15 PM	PDO Blowing Snow Ice / Snow Dark	Sideswipe (Opp. Dir.) Non-junction Straight (on Grade) No	V1	21	M	DRAKE, ND	Weather	N	N	Pickup - Van - Utility	West	None	MV in Transport		
					V2	45	M	HARRIS, MN	Weather	N	N	Passenger Car	East	None	MV in Transport		
82	Hwy 52 RP 132.07 47.9774 -100.6321	297245 1/26/2014 Sunday 12:10 PM	PDO Blowing Snow Snow Daylight	Rear End Non-junction Curve (on Grade) No	V1	28	M	LAS VEGAS, NV	Weather	N	N	3+ Axle	East	None	MV in Transport		
					V2	40	F	RUGBY, ND		N	N	Pickup - Van - Utility	East	None	MV in Transport		
83	Hwy 52 RP 133 47.9711 -100.6139	331169 7/29/2015 Wednesday 3:30 AM	PDO Clear Dry Dark	Single Veh. Non-junction Straight (on Level) No	V1	44	M	MINOT, ND	Vision Obstructed	N	N	Passenger Car	West	Warning Signs	Other Object (Not Fixed)		
84	47.9634 -100.5849	301931 3/21/2014 Friday 9:57 AM	PDO Cloudy Ice / Snow Daylight	Single Veh. Non-junction Straight (on Level) No	V1	34	M		To Fast for Conditions	N	N	Truck Tractor	Southeast	None	Other Fixed Object		
85	Hwy 52 RP 134.59 47.9628 -100.5826	1016061 8/11/2016 Thursday 11:34 PM	PDO Clear Dry Dark	Sideswipe (Same Dir.) Intersection Straight (on Level) No	V1	26	M	TALKEETNA, AK	Improper Overtaking	N	N	Pickup - Van - Utility	East	None	MV in Transport		US 52 & Center Ave
					V2	21	M	MINOT, ND		N	N	Pickup - Van - Utility	East	None	MV in Transport		
86	Hwy 52 RP 136 47.9558 -100.5579	273192 2/7/2013 Thursday 6:00 AM	PDO Snow Snow Dark	Rear End Non-junction Straight (on Grade) No	V1	29	M	Princeton, MN	Weather	N	N	Passenger Car	West	None	MV in Transport		
					V2	33	M	Fargo, ND		N	N	Truck Tractor	West	None			
87	Hwy 52 RP 136.01 47.955 -100.5545	1027971 1/28/2017 Saturday 9:50 PM	PDO Cloudy Ice / Snow Dark	Single Veh. Non-junction Straight (on Level) No	V1	71	M	CONSTANTINE, MI	Weather	N	N	Pickup - Van - Utility	West	None	Overturn / Rollover		
88	Hwy 52 RP 136.3 47.9534 -100.5486	1027483 1/21/2017 Saturday 7:23 AM	PDO og / Smoke / Du Ice / Snow Daylight	Single Veh. Non-junction Straight (on Level) No	V1	33	F	DONNYBROOK, ND	To Fast for Conditions	N	N	Pickup - Van - Utility	East	None	Overturn / Rollover		
89	Hwy 52 RP 136.48 47.9524 -100.545	1027488 1/21/2017 Saturday 7:28 AM	PDO Unkown Ice / Snow Dark	Rear End Non-junction Straight (on Level) No	V1	62	M	BAIRD, TX	Following too Close	N	N	Truck Tractor	East	None	Parked Motor Vehicle		
					V2	27	M	VELVA, ND		N	N	Pickup - Van - Utility	East	None	MV in Transport		
90	Hwy 52 RP 122 47.9491 -100.5346	1007369 2/4/2016 Thursday 5:15 AM	PDO Snow Snow Dark	Single Veh. Non-junction Straight (on Level) No	V1	20	M	POUND, WI	Weather	N	N	Pickup - Van - Utility	West	None	Other Fixed Object		

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ADI = Alcohol or Drug Involvment

Crash Summary Sheets

Total Crashes: 174 **Location Description:** US 52
Length: 68.317 **Start RP:** 101.683
Sorted By: Longitude **End RP:** 170.000

	M	D	Year
Start Date:	1	1	2013
End Date:	12	31	2017

# of Years: 5.00

Notes: Animal crashes were not included.

	Hwy / Ref Pt / Lat. / Long.	Crash # / Date / Day / Time	Severity / Weather / Surf Cond / Lighting	Manner of Coll. / Relation to Jct. / Road Geom. / Under Constr.	Veh #	Age	Sex	Address	Contributing Factors	Ejected	A.D.I.	Unit Config.	Direction of Travel	Traffic Control	Most Harmful Event	Shortened Narrative	Inter. of Crash
91	Hwy 52 RP 137 47.9481 -100.5294	1009681 3/25/2016 Friday 6:00 AM	PDO Blowing Snow Ice / Snow Dark	Single Veh. Non-junction Straight (on Level) No	V1	39	M	ANAMOOSE, ND	Weather	N	N	Pickup - Van - Utility	West	None	Overturn / Rollover		
92	Hwy 52 RP 137 47.9476 -100.5283	273666 2/14/2013 Thursday 6:03 AM	PDO Blowing Snow Snow Dark (Lighted)	Angle Non-junction Straight (on Level) No	V1 V2	54 35	M M	Maxbass, ND Anamoose, ND	Weather Weather	N N	N N	Truck Tractor Pickup - Van - Utility	East West	None None	MV in Transport		
93	Hwy 52 RP 137.65 47.9457 -100.5208	1013765 7/2/2016 Saturday 3:52 PM	InjA Clear Dry Daylight	Rear End Intersection Related Straight (on Level) No	V1 V2	23 53	M F	MARTIN, ND DRAKE, ND	Following too Close			Pickup - Van - Utility Passenger Car	West West	None None	MV in Transport MV in Transport	V1 WB, V2 WB, V3 EB. V2 slowed to make a left turn and was struck by V1. V2 was propelled across the centerline and collided head on with V3.	US 52 & ND 53
94	Hwy 52 RP 137.5 47.9454 -100.5198	300425 3/13/2014 Thursday 10:35 AM	InjB Clear Dry Daylight	Rear End Intersection Related Straight (on Level) No	V1 V2	19 40	F M	VELVA, ND DEVILS LAKE, ND	Attn Distracted-Inside	N N	N N	Passenger Car Pickup - Van - Utility	West West	None None	MV in Transport MV in Transport		US 52 & ND 53
95	Hwy 52 RP 138.6 47.9408 -100.5028	1023159 12/6/2016 Tuesday 3:08 PM	PDO Snow Snow Daylight	Rear End Non-junction Straight (on Level) No	V1 V2	25 63	M M	MOSSYROCK, WA CAROL CITY, FL	Weather Weather	N N	N N	3+ Axle Pickup - Van - Utility	East East	None None	MV in Transport MV in Transport		
96	Hwy 52 RP 139.34 47.9366 -100.4876	274484 3/13/2013 Wednesday 9:45 AM	PDO Clear Ice / Snow Daylight	Single Veh. Non-junction Straight (on Level) No	V1	28	M	FORT SMITH, AR	To Fast for Conditions	N	N	Pickup - Van - Utility	East	None	Overturn / Rollover		
97	Hwy 52 RP 139.63 47.9349 -100.4816	318148 12/20/2014 Saturday 9:50 PM	PDO t/Hail/Freezing F Ice / Snow Dark	Angle Non-junction Straight (on Level) No	V1 V2	19 23	M M	HARVEY, ND ST. CLOUD, MN	Failed to Yield To Fast for Conditions	N N	N N	Passenger Car Pickup - Van - Utility	East East	None None	MV in Transport MV in Transport		
98	Hwy 52 RP 139.81 47.9339 -100.4781	1030015 2/28/2017 Tuesday 8:05 AM	Fatal Clear Ice / Snow Daylight	Head On Non-junction Straight (on Level) No	V1 V2	31 32	M M	GRANVILLE, ND MINOT, ND	Fail Keep in Proper Lane	N N	N N	Pickup - Van - Utility Truck Tractor	East West	None None	MV in Transport MV in Transport	V1 EB crossed the centerline and struck WB V2 head on.	
99	Hwy 52 RP 140.76 47.9289 -100.4595	1045819 12/18/2017 Monday 3:06 PM	PDO Cloudy Wet Daylight	Other Non-junction Straight (on Level) No	V1 V2	58 59	M M	DUNSEITH, ND HARWOOD, ND		N N	N N	Truck Tractor Pickup - Van - Utility	West East	None None	MV in Transport MV in Transport		
100	Hwy 52 RP 83.936 47.9266 -100.4501	316813 12/1/2014 Monday 3:01 AM	PDO Clear Dry Dark	Single Veh. Non-junction Straight (on Level) No	V1	23	M	MINOT, ND	Animal in Roadway	N	N	Passenger Car	West	None	Highway Traffic Sign Post		

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Crash Summary Sheets

Total Crashes: 174 **Location Description:** US 52
Length: 68.317 **Start RP:** 101.683
Sorted By: Longitude **End RP:** 170.000

	M	D	Year
Start Date:	1	1	2013
End Date:	12	31	2017

# of Years: 5.00

Notes: Animal crashes were not included.

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	Hwy / Ref Pt / Lat. / Long.	Crash # / Date / Day / Time	Severity / Weather / Surf Cond / Lighting	Manner of Coll. / Relation to Jct. / Road Geom. / Under Constr.	Veh #	Age	Sex	Address	Contributing Factors	Ejected	A.D.I.	Unit Config.	Direction of Travel	Traffic Control	Most Harmful Event	Shortened Narrative	Inter. of Crash
101	Hwy 52 RP 141.37 47.9259 -100.4472	287131 9/30/2013 Monday 5:45 PM	InjB Cloudy Dry Daylight	Backing Intersection Straight (on Level) No	V1 V2	34 51	M M	PIEDMONT, MO GRANTS PASS, OR	 Improper Backing/Turning	N N	N Y	Truck Tractor Pickup - Van - Utility	Northwest Southwest	None Stop Sign	MV in Transport MV in Transport		US 52 & ND 14 (W Jct)
102	Hwy 14 RP 83.796 47.9258 -100.4472	307216 7/2/2014 Wednesday 2:30 AM	PDO Clear Dry Dark	Single Veh. Intersection Straight (on Level) No	V1	51	M	HOUSTON, TX	Disregard Traffic Signs	N	N	Passenger Car	South	Stop Sign	Immersion	V1 SB failed to stop at the stop sign and landed in 1 ft deep water on the south side of the intersection.	US 52 & ND 14 (W Jct)
103	Hwy 52 RP 141.37 47.9258 -100.4472	308004 7/2/2014 Wednesday 2:30 AM	Fatal Clear Dry Dark	Ped / Bike Intersection Straight (on Level) No	V1 V2	54 51	M M	CHEYENNE, WY HOUSTON, TX	 	N N	N Y	Truck Tractor Pedestrian	Northwest North	None None	Pedestrian MV in Transport	D2 was involved in an earlier crash (307216), D2 trying to flag down a passing veh for help on the north side of the road where the fog line would be and was struck by WB V1.	US 52 & ND 14 (W Jct)
104	Hwy 52 RP 142.15 47.9219 -100.4312	327781 5/23/2015 Saturday 1:20 PM	InjB Clear Dry Daylight	Rear End Intersection Straight (on Level) No	V1 V2	32 24	M M	KENMARE, ND MINOT, ND	Improper Evasive Action 	N N	N N	Passenger Car Pickup - Van - Utility	East East	None None	MV in Transport MV in Transport		US 52 & 7 Ave NE
105	Hwy 52 RP 142.15 47.9219 -100.4312	328524 5/29/2015 Friday 3:50 PM	InjB Clear Dry Daylight	Angle Intersection Straight (on Grade) No	V1 V2	48 70	M M	PERRY, MI TURTLE LAKE, ND	 Improper Turn	N Y	N N	Truck Tractor Pickup - Van - Utility	West South	None None	MV in Transport MV in Transport		US 52 & 7 Ave NE
106	Hwy 52 RP 142.63 47.92 -100.4212	1030795 3/15/2017 Wednesday 2:00 AM	PDO Cloudy Ice / Snow Dark	Single Veh. Non-junction Straight (on Level) No	V1	44	F	MITCHELL, MB	Weather	N	N	Pickup - Van - Utility	West	None	Overturn / Rollover		
107	Hwy 52 RP 143.01 47.92 -100.4113	1027209 1/17/2017 Tuesday 9:10 PM	PDO Clear Ice / Snow Dark	Single Veh. Non-junction Straight (on Level) No	V1	18	M	TOWNER, ND	Weather	N	N	Pickup - Van - Utility	West	None	Overturn / Rollover		
108	47.9199 -100.4043	279392 5/17/2013 Friday 11:30 AM	InjC Cloudy Dry Daylight	Rear End Non-junction Straight (on Level) No	V1 V2	37 47	M M	JAMESTOWN, ND CALGARY, AB	Attn Distracted-Outside 	N N	N N	Pickup - Van - Utility Pickup - Van - Utility	Southeast Southeast	None None	MV in Transport MV in Transport		
109	Hwy 52 RP 143.39 47.9199 -100.4029	1038803 8/22/2017 Tuesday 12:40 PM	PDO Clear Dry Daylight	Single Veh. Railroad Crossing Straight (on Level) No	V1	54	M	FORRESTON, IL	Defective Equipment	N	N	3+ Axle	East	RR Signals with	Overturn / Rollover		
110	Hwy 52 RP 143.41 47.9199 -100.4025	317654 12/13/2014 Saturday 6:50 PM	PDO Clear Dry Dark	Single Veh. Non-junction Straight (on Level) No	V1	19	M	DRAKE, ND	MV Mechanical Failure	N	N	3+ Axle	East	None	Overturn / Rollover		

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Crash Summary Sheets

Total Crashes: 174 **Location Description:** US 52
Length: 68.317 **Start RP:** 101.683
Sorted By: Longitude **End RP:** 170.000

	M	D	Year
Start Date:	1	1	2013
End Date:	12	31	2017

# of Years: 5.00

Notes: Animal crashes were not included.

	Hwy / Ref Pt / Lat. / Long.	Crash # / Date / Day / Time	Severity / Weather / Surf Cond / Lighting	Manner of Coll. / Relation to Jct. / Road Geom. / Under Constr.	Veh #	Age	Sex	Address	Contributing Factors	Ejected	A.D.I.	Unit Config.	Direction of Travel	Traffic Control	Most Harmful Event	Shortened Narrative	Inter. of Crash
111	Hwy 52 RP 144.26 47.9199 -100.3868	1022187 12/1/2016 Thursday 11:25 AM	PDO Cloudy Wet Daylight	Rear End Non-junction Straight (on Level) No	V1 V2	40 59	M M	SAINT MICHAEL, MN WILLISTON, ND	Careless/Reckless Driving	N N	N N	Pickup - Van - Utility Pickup - Van - Utility	East East	None None	MV in Transport MV in Transport		
112	Hwy 52 RP 144.62 47.9199 -100.379	1020322 10/17/2016 Monday 5:24 PM	Fatal Cloudy Dry Daylight	Left Turn Alley/Driveway Straight (on Level) No	V1 V2	76 73	M F	MINOT, ND DRAKE, ND	 Failed to Yield	N N	N N	Passenger Car Passenger Car	West East	None None	MV in Transport MV in Transport	V2 making a EB left onto a private drive and was struck by WB V1.	
113	Hwy 52 RP 144.64 47.9199 -100.3786	323578 3/4/2015 Wednesday 7:00 PM	PDO Clear Dry Dark	Sideswipe (Same Dir.) Non-junction Straight (on Level) No	V1 V2	27 30	F M	KIEF, ND DRAKE, ND	Driving Left of Center Driving Left of Center	N N	N N	Pickup - Van - Utility Pickup - Van - Utility	West West	None None	Ran Off Roadway MV Tran in Other Rdwy		
114	Hwy 52 RP 144.77 47.9199 -100.3757	292069 11/16/2013 Saturday 3:00 PM	PDO Cloudy Dry Daylight	Single Veh. Non-junction Straight (on Level) No	V1	24	M	DRAKE, ND	Left Crash Scene	N	N	Pickup - Van - Utility	West	None	Highway Traffic Sign Post		
115	Hwy 52 RP 144.94 47.9198 -100.3721	286970 9/12/2013 Thursday 6:38 PM	PDO Clear Dry Daylight	Single Veh. Non-junction Straight (on Level) No	V1		M	DRAKE, ND	D.U.I. (Alcohol)	N	N	Pickup - Van - Utility	West	None	Highway Traffic Sign Post		
116	Hwy 52 RP 145.01 47.9196 -100.3707	329556 6/22/2015 Monday 3:21 PM	PDO Clear Dry Daylight	Sideswipe (Same Dir.) Intersection Curve (on Level) No	V1 V2	80 53	M M	DRAKE, ND REEDS SPRING, MO	Failed to Yield	N N	N N	Pickup - Van - Utility Truck Tractor	East East	Stop Sign None	MV in Transport MV in Transport	V1 made SB left and struck EB V2. D1 stated he did not see V2.	10 Ave NE Lake St
117	Hwy 52 RP 145 47.9197 -100.3706	278170 4/25/2013 Thursday 7:36 AM	InjA Clear Dry Dawn	Left Turn Intersection Straight (on Level) No	V1 V2	15 31	F M	ANAMOOSE, ND ANAMOOSE, ND	Improper Turn	N N	N N	Pickup - Van - Utility Passenger Car	East West	None None	MV in Transport MV in Transport	V1 made an EB left and struck WB V2. D1 stated that the rising sun temporarily blinded her.	10 Ave NE Lake St
118	47.9197 -100.3706	1010243 4/9/2016 Saturday 5:29 PM	PDO Clear Dry Daylight	Single Veh. Intersection Related Straight (on Level) No	V1	46	F	ANAMOOSE, ND	Improper Turn	N	N	Passenger Car	North	None	Highway Traffic Sign Post	V1 made a EB left and struck the stop sign post.	10 Ave NE Lake St
119	47.9196 -100.3706	337791 1/28/2016 Thursday 11:30 AM	PDO Cloudy Wet Daylight	Single Veh. Intersection Straight (on Level) No	V1	35	M	BISRMARCK, ND	Improper Turn	N	N	Pickup - Van - Utility	North	None	Highway Traffic Sign Post	V1 made an EB left and ran over the stop sign. D1 stated he was looking at the train that was going by.	10 Ave NE Lake St
120	Hwy 52 RP 145.01 47.9196 -100.3706	1029555 2/20/2017 Monday 6:55 PM	InjB Clear Dry Dark (Lighted)	Left Turn Intersection Related Straight (on Level) No	V1 V2	44 44	M F	MITCHELL, SD DRAKE, ND	 Improper Turn	N N	N N	Passenger Car Pickup - Van - Utility	West East	None None	MV in Transport MV in Transport	V1 WB at 55 mph. V2 made EB left and was struck by V1.	10 Ave NE Lake St

For Crash Severity: Fatal = Fatility, InjA = Incapacitating Injury, InjB = Non-Incapacitating Injury, InjC = Possible Injury, PDO = Property Damage Only
ADI = Alcohol or Drug Involvment

Crash Summary Sheets

Total Crashes: 174 **Location Description:** US 52
Length: 68.317 **Start RP:** 101.683
Sorted By: Longitude **End RP:** 170.000

	M	D	Year
Start Date:	1	1	2013
End Date:	12	31	2017

# of Years: 5.00

Notes: Animal crashes were not included.

	Hwy / Ref Pt / Lat. / Long.	Crash # / Date / Day / Time	Severity / Weather / Surf Cond / Lighting	Manner of Coll. / Relation to Jct. / Road Geom. / Under Constr.	Veh #	Age	Sex	Address	Contributing Factors	Ejected	A.D.I.	Unit Config.	Direction of Travel	Traffic Control	Most Harmful Event	Shortened Narrative	Inter. of Crash
121	Hwy 52 RP 145.12 47.9192 -100.3685	331319 7/29/2015 Wednesday 5:15 AM	PDO Clear Dry Dark	Single Veh. Non-junction Straight (on Grade) Yes Under Constr.	V1	56	M	DRAKE, ND		N	N	Pickup - Van - Utility	East	None	Other Object (Not Fixed)		
122	Hwy 52 RP 146 47.9154 -100.3429	274115 2/25/2013 Monday 3:00 AM	InjB Clear Ice / Snow Dark	Single Veh. Non-junction Curve (on Level) No	V1	21	M	Minot Afb, ND	To Fast for Conditions	N	N	Pickup - Van - Utility	West	None	Overturn / Rollover		
123	Hwy 52 RP 146.92 47.913 -100.3307	293111 12/16/2013 Monday 8:58 PM	PDO Blowing Snow Ice / Snow Dark	Sideswipe (Opp. Dir.) Non-junction Straight (on Level) No	V1 V2	29 57	M M	ANAMOOSE, ND BLOOMINGTON GROVE, TX	D.U.I. (Alcohol)	N N	Y N	Passenger Car Pickup - Van - Utility	West East	None None	MV Tran in Other Rdwy MV Tran in Other Rdwy		
124	Hwy 52 RP 147.95 47.9074 -100.3092	274544 3/12/2013 Tuesday 7:55 PM	PDO Clear Ice / Snow Dark	Single Veh. Non-junction Straight (on Level) No	V1	57	M	ANAMOOSE, ND		N	N	Pickup - Van - Utility	Southeast	None	Jackknife		
125	Hwy 52 RP 149.3 47.9002 -100.283	281843 7/2/2013 Tuesday 5:00 PM	PDO Clear Dry Daylight	Rear End Non-junction Curve (on Level) No	V1 V2	37 46	F M	DRAKE, ND WAYNESBORO, MS		N N	N N	Passenger Car Passenger Car	West West	None None	MV in Transport MV in Transport		
126	Hwy 52 RP 149.99 47.8936 -100.2721	331168 7/28/2015 Tuesday 7:00 PM	PDO Severe Wind Dry Daylight	Single Veh. Non-junction Straight (on Level) No	V1	38	M	BATTLEFORD', SK	Weather	N	N	Pickup - Van - Utility	West	None	Overturn / Rollover		
127	47.8908 -100.2675	282766 7/1/2013 Monday 8:00 AM	PDO Clear Dry Daylight	Sideswipe (Same Dir.) Non-junction Straight (on Grade) No	V1 V2	33 54	M M	Waconia, MN Olivia, MN		N N	N N	Truck Tractor Truck Tractor	Northwest Northwest	Warning Signs Warning Signs	MV in Transport		
128	47.8876 -100.2624	274507 3/5/2013 Tuesday 9:30 AM	PDO Clear Snow Daylight	Single Veh. Intersection Related Straight (on Grade) No	V1	43	F	ANAMOOSE, ND	Weather	N	N	Pickup - Van - Utility	South	Stop Sign	Highway Traffic Sign Post		US 52 & 15 Ave NE
129	Hwy 52 RP 150.62 47.8873 -100.2623	329993 7/2/2015 Thursday 7:33 PM	InjC Clear Dry Daylight	Angle Intersection Straight (on Level) No	V1 V2	12 18	F F	ANAMOOSE, ND ANAMOOSE, ND	Failed to Yield	N N	N N	Pickup - Van - Utility Passenger Car	North West	Stop Sign None	MV Tran in Other Rdwy MV Tran in Other Rdwy		US 52 & 15 Ave NE
130	Hwy 52 RP 150.8 47.8855 -100.2596	1024960 11/29/2016 Tuesday 10:05 AM	PDO Blowing Snow Ice / Snow Daylight	Sideswipe (Same Dir.) Non-junction Straight (on Grade) No	V1 V2	27 42	F M	KIEF, ND HUMBOLT, SK	Other Weather	N N	N N	Pickup - Van - Utility Truck Tractor	South South	None None	MV in Transport MV in Transport		

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ADI = Alcohol or Drug Involvment

Crash Summary Sheets

Total Crashes: 174 **Location Description:** US 52
Length: 68.317 **Start RP:** 101.683
Sorted By: Longitude **End RP:** 170.000

	M	D	Year
Start Date:	1	1	2013
End Date:	12	31	2017

# of Years: 5.00

Notes: Animal crashes were not included.

	Hwy / Ref Pt / Lat. / Long.	Crash # / Date / Day / Time	Severity / Weather / Surf Cond / Lighting	Manner of Coll. / Relation to Jct. / Road Geom. / Under Constr.	Veh #	Age	Sex	Address	Contributing Factors	Ejected	A.D.I.	Unit Config.	Direction of Travel	Traffic Control	Most Harmful Event	Shortened Narrative	Inter. of Crash
131	Hwy 52 RP 73.543 47.8782 -100.2457	312061 9/30/2014 Tuesday 3:25 PM	PDO Cloudy Wet Daylight	Angle Intersection Curve (on Grade) No	V1	83	M	DRAKE, ND	Improper Turn	N	N	Passenger Car	South	None	MV in Transport		US 52 & 32 St NE
					V2	16	F	ANAMOOSE, ND		N	N	Passenger Car	East	None	MV in Transport		
132	47.8782 -100.2457	337099 12/24/2015 Thursday 10:40 AM	InjC Cloudy Snow Daylight	Single Veh. Intersection Straight (on Level) No	V1	74	M	ANAMOOSE, ND	Speed	N	N	Pickup - Van - Utility	North	None	Overturn / Rollover		US 52 & 32 St NE
133	Hwy 14 RP 21.289 47.8772 -100.2411	302412 4/8/2014 Tuesday 7:45 AM	PDO Clear Dry Daylight	Backing Intersection Related Straight (on Level) No	V1	62	F	DRAKE, ND	Improper Backing/Turning	N	N	Pickup - Van - Utility	South	Stop Sign	MV in Transport		US 52 & ND 14
					V2	50	F	HARVEY, ND		N	N	Passenger Car	South	Stop Sign	MV in Transport		
134	Hwy 52 RP 151.83 47.8772 -100.2411	329288 6/13/2015 Saturday 9:40 AM	InjC Cloudy Dry Daylight	Angle Intersection Straight (on Grade) No	V1	38	M	ETOBICOKE, ON		N	N	Truck Tractor	West	None	MV in Transport		US 52 & ND 14
					V2	62	M	ELGIN, ND	Failed to Yield	N	N	Pickup - Van - Utility	North	Stop Sign	Overturn / Rollover		
135	Hwy 14 RP 73.26 47.8772 -100.2411	1019570 10/15/2016 Saturday 4:04 PM	PDO Clear Dry Daylight	Single Veh. Intersection Straight (on Level) No	V1	69	M	MULVANE, KS	To Fast for Conditions	N	N	Farm Equipment	East	None	Overturn / Rollover		US 52 & ND 14
136	Hwy 14 RP 73.26 47.8772 -100.2411	1035406 6/17/2017 Saturday 5:30 PM	InjB Clear Dry Daylight	Angle Intersection Straight (on Level) No	V1	35	M	BISMARCK, ND	Failed to Yield	N	N	Pickup - Van - Utility	South	Stop Sign	MV in Transport		US 52 & ND 14
					V2	71	M	WING, ND		N	N	Pickup - Van - Utility	East	None	MV in Transport		
137	Hwy 52 RP 152.014 47.8766 -100.2384	1042110 10/21/2017 Saturday 11:00 PM	InjB Clear Dry Dark	Single Veh. Non-junction Curve (on Level) No	V1	48	M	PICKERING, ON		N	N	Truck Tractor	West	None	Jackknife		
138	Hwy 52 RP 153.01 47.8723 -100.2177	302124 3/28/2014 Friday 10:49 PM	InjB Clear Dry Dark	Sideswipe (Opp. Dir.) Non-junction Curve (on Level) No	V1	53	M	GRANGER, IN	Driving Left of Center	N	N	Pickup - Van - Utility	East	None	MV in Transport		
					V2	55	M	GRAND PRAIRE, TX		N	N	3+ Axle	West	None	MV in Transport		
139	Hwy 52 RP 153.32 47.8709 -100.2112	1030788 3/14/2017 Tuesday 9:45 PM	PDO Cloudy Ice / Snow Dark	Single Veh. Non-junction Curve (on Grade) No	V1	35	M	GRAND ISLAND, NE	Weather	N	N	Truck Tractor	East	None	Jackknife		
140	Hwy 52 RP 153.53 47.8697 -100.207	1023177 12/11/2016 Sunday 4:43 PM	InjB Clear Ice / Snow Dusk	Single Veh. Non-junction Curve (on Level) No	V1	30	F	MEMPHIS, TN	Weather	N	N	Passenger Car	East	None	Overturn / Rollover		

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ADI = Alcohol or Drug Involvment

Crash Summary Sheets

Total Crashes: 174 **Location Description:** US 52
Length: 68.317 **Start RP:** 101.683
Sorted By: Longitude **End RP:** 170.000

	M	D	Year
Start Date:	1	1	2013
End Date:	12	31	2017

# of Years: 5.00

Notes: Animal crashes were not included.

	Hwy / Ref Pt / Lat. / Long.	Crash # / Date / Day / Time	Severity / Weather / Surf Cond / Lighting	Manner of Coll. / Relation to Jct. / Road Geom. / Under Constr.	Veh # / Age / Sex	Address	Contributing Factors	Ejected	A.D.I.	Unit Config.	Direction of Travel	Traffic Control	Most Harmful Event	Shortened Narrative	Inter. of Crash
141	Hwy 52 RP 153.69 47.8685 -100.2041	329837 7/8/2015 Wednesday 9:00 AM	PDO Clear Dry Daylight	Sideswipe (Opp. Dir.) Non-junction Curve (on Grade) No	V1 48 M V2 29 M	MINOT, ND FARGO, ND		N N	N N	Truck Tractor Pickup - Van - Utility	East West	None None	MV in Transport MV in Transport		
142	Hwy 52 RP 154.11 47.8645 -100.1969	295681 1/3/2014 Friday 1:11 PM	PDO Cloudy Ice / Snow Daylight	Single Veh. Non-junction Straight (on Grade) No	V1 54 M	WACONIA, MN	Other	N	N	Truck Tractor	Southeast	None	Jackknife		
143	Hwy 52 RP 154.58 47.8601 -100.1889	324229 3/15/2015 Sunday 4:00 AM	Fatal Unkown Dry Dark	Single Veh. Non-junction Straight (on Level) No	V1 48 M	ANAMOOSE, ND	Other	Y	Y	Pickup - Van - Utility	West	None	Overturn / Rollover	V1 WB lost control, slid sideways into north ditch, rolled. D1 was partially ejected. D1 was not wearing a seat belt.	
144	Hwy 52 RP 155.5 47.8533 -100.1767	276308 3/19/2013 Tuesday 10:00 PM	PDO Unkown Ice / Snow Dark	Single Veh. Non-junction Straight (on Level) No	V1 28 M	Anamoose, ND	Left Crash Scene	N	N	Passenger Car	East	None	Overturn / Rollover		
145	Hwy 52 RP 158.2 47.8309 -100.1252	290539 11/20/2013 Wednesday 7:30 PM	PDO Snow Snow Dark	Single Veh. Non-junction Straight (on Level) No	V1 43 M	BRISTOL, IN	Weather	N	N	Pickup - Van - Utility	East	None	Highway Traffic Sign Post		
146	Hwy 52 RP 158.48 47.8286 -100.1182	338126 2/21/2016 Sunday 8:05 AM	PDO Cloudy Ice / Snow Daylight	Sideswipe (Same Dir.) Non-junction Straight (on Level) No	V1 21 M V2 60 M	MCCOMB, MS SIOUX FALLS, SD	Speed Speed	N N	N N	Passenger Car Truck Tractor	Southeast Southeast	No Passing Zone Passing Zone	Ran Off Roadway Ran Off Roadway		
147	Hwy 52 RP 158.61 47.8277 -100.1156	318619 12/26/2014 Friday 11:35 PM	InjC Unkown Dry Dark (Lighted)	Single Veh. Non-junction Straight (on Level) No	V1 46 M	MOUNTAIN HOME, AR	Speed	N	N	Passenger Car	East	None	Other Fixed Object		
148	Hwy 52 RP 159 47.8254 -100.1091	312864 10/6/2014 Monday 1:32 AM	InjC Unkown Oil Dark	Rear End Non-junction Straight (on Level) No	V1 32 M V2 53 M	HARVEY, ND MINOT, ND	Careless/Reckless Driving	N N	N N	Passenger Car 2-Axle	West West	None None	Fire / Explosion MV in Transport		
149	Hwy 52 RP 160.79 47.8155 -100.0747	274325 3/13/2013 Wednesday 8:30 AM	PDO Clear Dry Daylight	Single Veh. Non-junction Straight (on Level) No	V1 63 M	MARTIN, ND		N	N	Pickup - Van - Utility	East	None	Thrown/Falling Object		
150	Hwy 52 RP 165.73 47.7866 -99.9768	1030775 3/14/2017 Tuesday 3:11 PM	PDO Clear Slush Daylight	Single Veh. Non-junction Straight (on Level) No	V1 26 M	WILLISTON, ND	Fail Keep in Proper Lane	N	N	Passenger Car	East	None	Ditch		

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ADI = Alcohol or Drug Involvment

Crash Summary Sheets

Total Crashes: 174 **Location Description:** US 52
Length: 68.317 **Start RP:** 101.683
Sorted By: Longitude **End RP:** 170.000

	M	D	Year
Start Date:	1	1	2013
End Date:	12	31	2017

# of Years: 5.00

Notes: Animal crashes were not included.

	Hwy / Ref Pt / Lat. / Long.	Crash # / Date / Day / Time	Severity / Weather / Surf Cond / Lighting	Manner of Coll. / Relation to Jct. / Road Geom. / Under Constr.	Veh #	Age	Sex	Address	Contributing Factors	Ejected	A.D.I.	Unit Config.	Direction of Travel	Traffic Control	Most Harmful Event	Shortened Narrative	Inter. of Crash
151		327462 5/17/2015	InjC ɛt/Hail/Freezing F	Angle Non-junction	V1	24	M	PEORIA, IL	Weather	N	N	Passenger Car	West	None	MV in Transport		
	47.7853 -99.9725	Sunday 7:30 PM	Slush Daylight	Straight (on Level) No	V2	68	M	HALIAFX, NS	Weather	N	N	Unknown Heavy Truck	East	None	MV in Transport		
152		279292 5/11/2013	PDO Clear	Single Veh. Non-junction	V1	23	M	Harvey, ND		N	N	Pickup - Van - Utility	East	None	Ditch		
	47.778 -99.9515	Saturday 12:33 AM	Dry Dark	Straight (on Level) No													
153	Hwy 52 RP 167.32	1024382 12/13/2016	PDO Blowing Snow	Rear End Non-junction	V1	29	M	JAMESTOWN, ND	To Fast for Conditions	N	N	2-Axle	East	None	MV in Transport		
	47.7761 -99.9475	Tuesday 12:10 PM	Ice / Snow Daylight	Curve (on Level) No	V2	39	M	MINOT, ND	Weather	N	N	Passenger Car	East	None	MV in Transport		
154	Hwy 52 RP 0.01	302024 3/3/2014	PDO Unkown	Angle Intersection Related	V1	49	M	WILLISTON, ND		N	N	Pickup - Van - Utility	West	Stop Sign	MV in Transport	V1 WB. V2 NB pulled out onto US 52 and struck trailer of V1.	US 52 & ND 91
	47.7753 -99.9464	Monday 12:30 PM	Dry Daylight	Curve (on Level) No	V2			BOWDON, ND				Pickup - Van - Utility	North	Stop Sign	MV in Transport		
155	Hwy 52 RP 167.4	1002279 9/3/2015	InjC Clear	Angle Intersection	V1	38	M	HARVEY, ND	Failed to Yield	N	N	Pickup - Van - Utility	East	Stop Sign	MV in Transport	V2 NB on US 52 slowing to make a turn. V1 EB entered the intersection and was struck by V1.	US 52 & ND 91
	47.7751 -99.9463	Thursday 9:35 AM	Dry Daylight	Straight (on Level) No	V2	60	F	HARVEY, ND		N	N	Pickup - Van - Utility	North	None	MV in Transport		
156	Hwy 52 RP 167.4	1004847 12/9/2015	**InjA** Clear	Angle Intersection	V1	24	F	HARVEY, ND	Failed to Yield	N	N	Passenger Car	East	Stop Sign	MV in Transport	V1 EB stopped at stop sign, then began to cross US 52 did not see NB V2. V2 was NB beginning to slow down to turn into gas station beyond the intersection.	US 52 & ND 91
	47.7751 -99.9463	Wednesday 10:55 AM	Dry Daylight	Straight (on Level) No	V2	59	M	SELZ, ND		N	N	2-Axle	North	None	MV in Transport		
157	Hwy 52 RP 0.01	324650 3/26/2015	PDO Clear	Single Veh. Interchange	V1	26	M	ANAMOOSE, ND	Other	N	N	3+ Axle	East	None	Overturn / Rollover	V1 was hauling a track digger with pole auger attachment attached to a trailer. As V1 made SB left the trailer tipped crashing the digger into the south ditch.	US 52 & ND 91
	47.7751 -99.9462	Thursday 3:01 PM	Dry Daylight	Curve (on Level) No													
158	Hwy 52 RP 167.331	1021820 11/26/2016	PDO Clear	Angle Intersection	V1		U			N	N	Hit and Run	East	Yield Sign	MV in Transport	V1 on slip ramp made a left turn onto US 52B and struck WB V2.	US 52 & US 52B
	47.7732 -99.9448	Saturday 3:15 PM	Dry Daylight	Straight (on Level) No	V2	32	F	REGINA, SK		N	N	Pickup - Van - Utility	North	None	MV in Transport		
159	Hwy 52 RP 0.25	326796 5/1/2015	**InjA** Clear	Head On Non-junction	V1	25	M	PLAZA, ND	Driving Left of Center	N	N	Pickup - Van - Utility	Northwest	None	MV in Transport	V1 WB crossed the centerline and entered the EB left turn lane and struck EB V2 head on.	
	47.7718 -99.9443	Friday 8:30 AM	Dry Daylight	Curve (on Level) No	V2	38	M	HENDERSON, NV		N	N	Truck Tractor	Southeast	None	MV in Transport		
160	Hwy 52 RP 168.052	1002120 8/21/2015	InjC Clear	Rear End Non-junction	V1	16	M	HARVEY, ND	Care Required	N	N	Pickup - Van - Utility	East	None	MV in Transport	V2 slowing slowed down to wave at people. V1 also waving at the people and rear ended V2.	
	47.7676 -99.9441	Friday 10:45 PM	Dry Dark	Straight (on Level) No	V2	17	M	HURDSFIELD, ND	Other	N	N	Pickup - Van - Utility	East	None	MV in Transport		

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ADI = Alcohol or Drug Involvment

Crash Summary Sheets

Total Crashes: 174 **Location Description:** US 52
Length: 68.317 **Start RP:** 101.683
Sorted By: Longitude **End RP:** 170.000

	M	D	Year
Start Date:	1	1	2013
End Date:	12	31	2017

# of Years: 5.00

Notes: Animal crashes were not included.

23 USC § 409 Documents NDDOT Reserves All Objections

	Hwy / Ref Pt / Lat. / Long.	Crash # / Date / Day / Time	Severity / Weather / Surf Cond / Lighting	Manner of Coll. / Relation to Jct. / Road Geom. / Under Constr.	Veh #	Age	Sex	Address	Contributing Factors	Ejected	A.D.I.	Unit Config.	Direction of Travel	Traffic Control	Most Harmful Event	Shortened Narrative	Inter. of Crash
161	Hwy 52 RP 168.41 47.7614 -99.9412	1021314 11/9/2016 Wednesday 3:14 PM	InjB Clear Dry Daylight	Left Turn Intersection Hillcrest No	V1 V2	94 23	M F	HARVEY, ND MILWAUKEE, WI	Failed to Yield	N N	N N	Pickup - Van - Utility Passenger Car	South North	None None	Overturn / Rollover MV in Transport	V1 making SB left onto US 52 from Elm Ave. V2 going WB was struck as V1 pulled out into the intersection.	US 52 & Elm Ave
162	 47.7607 -99.9407	1002164 8/26/2015 Wednesday 12:00 AM	PDO Unkown Dry Unknown	Single Veh. Intersection Related Straight (on Level) No	V1		U			N	N	Hit and Run	North	Stop Sign	Highway Traffic Sign Post	Stop sign struck by an unknown vehicle.	US 52 & 24 St NE
163	Hwy 52 RP 168.79 47.7567 -99.9371	1023056 12/10/2016 Saturday 6:00 PM	PDO Cloudy Ice / Snow Dark	Single Veh. Non-junction Straight (on Grade) No	V1	35	F	MINOT, ND	Careless/Reckless Driving	N	N	Passenger Car	North	None	Bridge Rail	V1 struck bridge guard rails.	
164	Hwy 52 RP 168.82 47.7563 -99.9368	1036452 7/8/2017 Saturday 12:24 PM	InjB Clear Dry Daylight	Single Veh. Non-junction Straight (on Grade) No	V1 V2	59 75	M F	WILLISTON, ND AMITY, AR		N N	N N	Pickup - Van - Utility Pickup - Van - Utility	East North	None None	Other Non-Collision Cargo Loss or Shift	SB V2's trailer lost its left rear tire. The tire then struck V1.	
165	Hwy 52 RP 168.91 47.7551 -99.9358	289396 11/2/2013 Saturday 4:49 PM	InjB Clear Dry Daylight	Rear End Non-junction Straight (on Grade) No	V1 V2	50 52	F F	MINOT, ND HARVEY, ND	Care Required	N N	N N	Passenger Car Pickup - Van - Utility	Northwest Northwest	None None	MV in Transport MV in Transport	V2 NW at 20 mph. V1 NW at 60-65mph going down the hill tried to stop but could not and rear ended V2.	
166	Hwy 52 RP 170 47.7461 -99.9197	281068 6/1/2013 Saturday 11:35 AM	PDO Clear Dry Daylight	Single Veh. Intersection Straight (on Level) No	V1 V2	28 51	M F	WASILLA, AK BEULAH, ND	Over Correct/Steering Disregard Traffic Signs	N N	N N	Pickup - Van - Utility Pickup - Van - Utility	West North	None Stop Sign	Ran Off Roadway MV in Transport	V1 WB swerved due to V2 NB pulling into the intersection, V1 went into the ditch.	US 52 & ND 3 (E Jct)
167	Hwy 52 RP 73.323 47.7459 -99.9196	287280 9/26/2013 Thursday 6:50 AM	InjB Rain Wet Dark	Angle Intersection Straight (on Level) No	V1 V2	66 64	M M	HARVEY, ND HARVEY, ND	 Failed to Yield	N N	N N	Passenger Car Bus	East South	Flashing Beacon Stop Sign	MV in Transport MV in Transport	V1 EB at 50 mph struck a SB bus (V2).	US 52 & ND 3 (E Jct)
168	Hwy 52 RP 73.323 47.7459 -99.9196	290452 11/7/2013 Thursday 2:40 PM	**InjA** Clear Dry Daylight	Sideswipe (Same Dir.) Intersection Straight (on Level) No	V1 V2	54 21	M F	RUSO, ND FARGO, ND	Improper Overtaking Improper Turn	N N	N N	Truck Tractor Passenger Car	East East	Flashing Beacon Flashing Beacon	MV in Transport MV in Transport	V2 EB had turn signal on to turn right, then D2 decided to go left to go to the gas station. V1 EB following behind began to pass and struck V2.	US 52 & ND 3 (E Jct)
169	Hwy 52 RP 73.323 47.7459 -99.9196	293901 12/20/2013 Friday 1:50 PM	InjC Clear Dry Daylight	Angle Intersection Straight (on Level) No	V1 V2	29 66	F F	FARGO, ND VALLEY CITY, ND	 Failed to Yield	N N	N N	Passenger Car Passenger Car	West South	Flashing Beacon Stop Sign	MV in Transport MV in Transport	V2 stopped at stop sign facing south then pulled out into traffic. V1 tried to stop but could not avoid a colliding with V2.	US 52 & ND 3 (E Jct)
170	Hwy 3 RP 157.37 47.7459 -99.9196	309062 8/14/2014 Thursday 5:44 PM	PDO Clear Dry Daylight	Single Veh. Intersection Related Straight (on Level) No	V1	75	M	HARVEY, ND	Improper Turn	N	N	Pickup - Van - Utility	West	None	Highway Traffic Sign Post	V1 made WB left struck the stop sign between the NB and SB lanes.	US 52 & ND 3 (E Jct)

For Crash Severity: Fatal = Fatility, InjA = Incapacitating Injury, InjB = Non-Incapacitating Injury, InjC = Possible Injury, PDO = Property Damage Only
ADI = Alcohol or Drug Involvment

Crash Summary Sheets

Total Crashes: 174 **Location Description:** US 52
Length: 68.317 **Start RP:** 101.683
Sorted By: Longitude **End RP:** 170.000

	M	D	Year
Start Date:	1	1	2013
End Date:	12	31	2017

# of Years: 5.00

Notes: Animal crashes were not included.

23 USC § 409 Documents NDDOT Reserves All Objections

	Hwy / Ref Pt / Lat. / Long.	Crash # / Date / Day / Time	Severity / Weather / Surf Cond / Lighting	Manner of Coll. / Relation to Jct. / Road Geom. / Under Constr.	Veh # / Age / Sex	Address	Contributing Factors	Ejected	A.D.I.	Unit Config.	Direction of Travel	Traffic Control	Most Harmful Event	Shortened Narrative	Inter. of Crash
171	Hwy 52 RP 73.323 47.7459 -99.9196	309117 8/18/2014 Monday 3:20 PM	PDO Clear Dry Daylight	Angle Intersection Straight (on Level) No	V1 60 M V2 28 M	HARVEY, ND SUMTER, SC	Failed to Yield	N N	N N	3+ Axle Truck Tractor	South West	Stop Sign None	MV in Transport MV in Transport	V2 WB behind another semi making a WB right. V1 began to proceed to go south after stopping at the stop sign. V1 did not see V2.	US 52 & ND 3 (E Jct)
172	Hwy 52 RP 169.989 47.746 -99.9195	329980 6/29/2015 Monday 6:30 PM	PDO Clear Dry Daylight	Single Veh. Intersection Straight (on Level) No	V1 54 F	BISMARCK, ND		N	N	Pickup - Van - Utility	East	None	Highway Traffic Sign Post	V1 EB turned left too soon and struck the stop sign. Officer observation: this sign has been struck multiple times--should be marked better.	US 52 & ND 3 (E Jct)
173	Hwy 52 RP 169.989 47.746 -99.9195	335835 11/4/2015 Wednesday 5:02 PM	InjC Cloudy Wet Dark (Lighted)	Angle Intersection Straight (on Level) No	V1 49 M V2 39 M	BISMARCK, ND REEDS, MO	Failed to Yield	N N	N N	Passenger Car Pickup - Van - Utility	South East	Stop Sign None	MV in Transport MV Tran in Other Rdwy	V1 SB failed to yield at the stop sign and was struck by EB V2.	US 52 & ND 3 (E Jct)
174	Hwy 52 RP 73.323 47.746 -99.9191	327032 5/17/2015 Sunday 6:08 PM	PDO t/Hail/Freezing F Slush Daylight	Single Veh. Non-junction Straight (on Level) No	V1 33 M	BURLINGTON, VT	Weather	N	N	Truck Tractor	South	Flashing Beacon	Ditch	V1 went off the west side of the roadway into the ditch.	NEAR US 52 & ND 3 (E Jct)
175															
176															
177															
178															
179															
180															

For Crash Severity: Fatal = Fatility, InjA = Incapacitating Injury, InjB = Non-Incapacitating Injury, InjC = Possible Injury, PDO = Property Damage Only
ADI = Alcohol or Drug Involvment

US 52 / Ward 19 S

Project Info

PCN	
Ref#	4347
HSIP #	
Study Date	12/18/2018

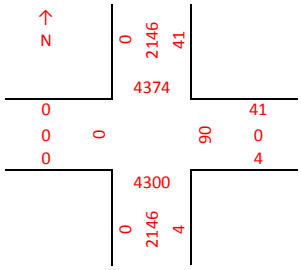
1107

Intersection Info

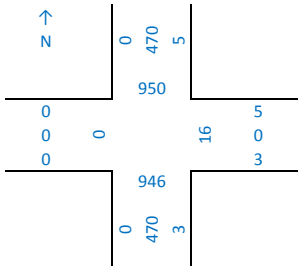
	Major Road	Minor Road
Reference Points	104.300	
Speed Limits (mph)	65	35
Select Major Road Directions	North-South	
Intersection/Junction Traffic Control	Stop on Minor Road	
Major Road a Divided Highway?	No	
Terrain	Level	

E_T = 1.5

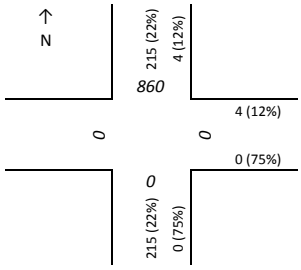
2018 AADTs

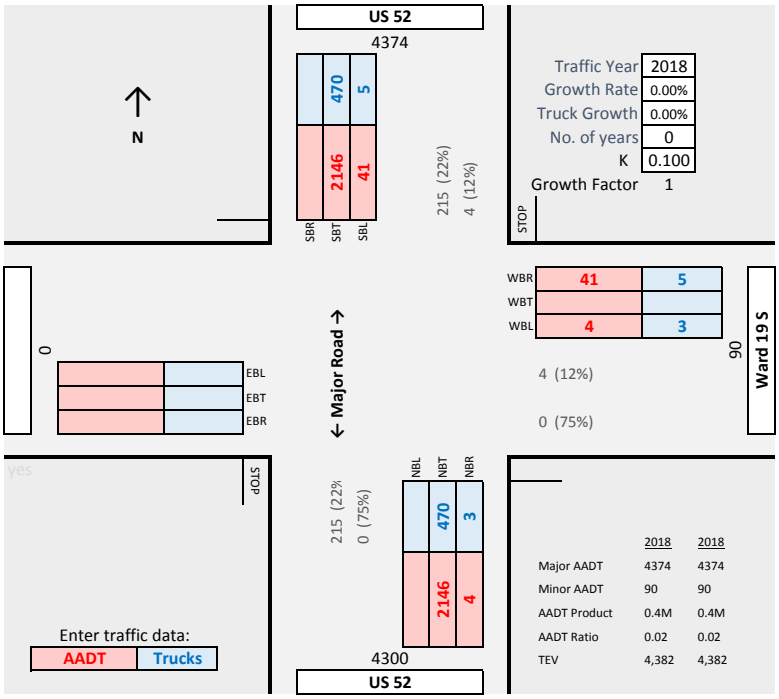


2018 TAADTs



2018 Truck %



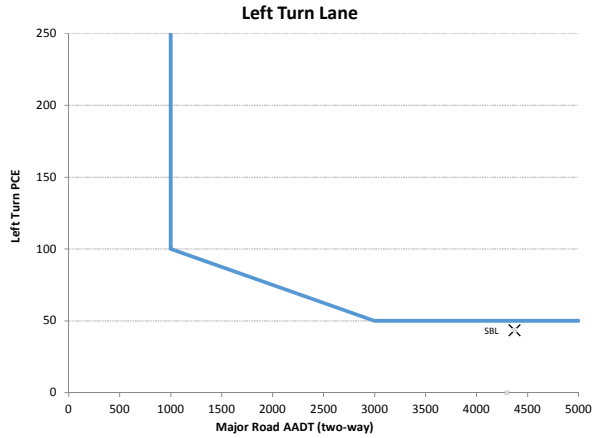


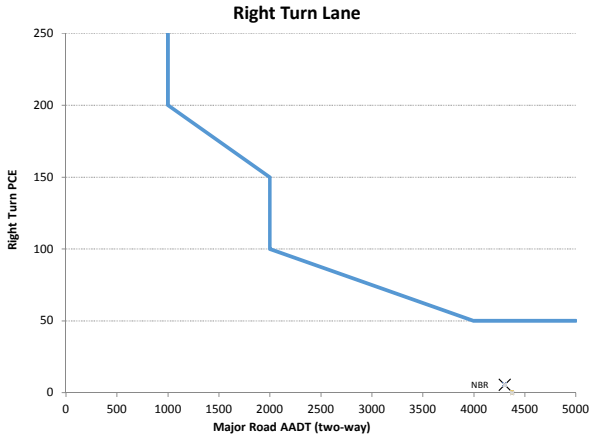
LEFT Turn Lane Volume Criteria (1.A)

SBL	NBL
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{LT} = 41	V_{LT} = 0
P_T = 0.12	P_T =
PCE = 44	PCE =
AADT = 4374	AADT = 4300
Met? No	Met?

RIGHT Turn Lane Volume Criteria (1.A)

SBR	NBR
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{RT} = 0	V_{RT} = 4
P_T =	P_T = 0.75
PCE =	PCE = 6
AADT = 4374	AADT = 4300
Met?	Met? No





US 52 / 135 Ave SE

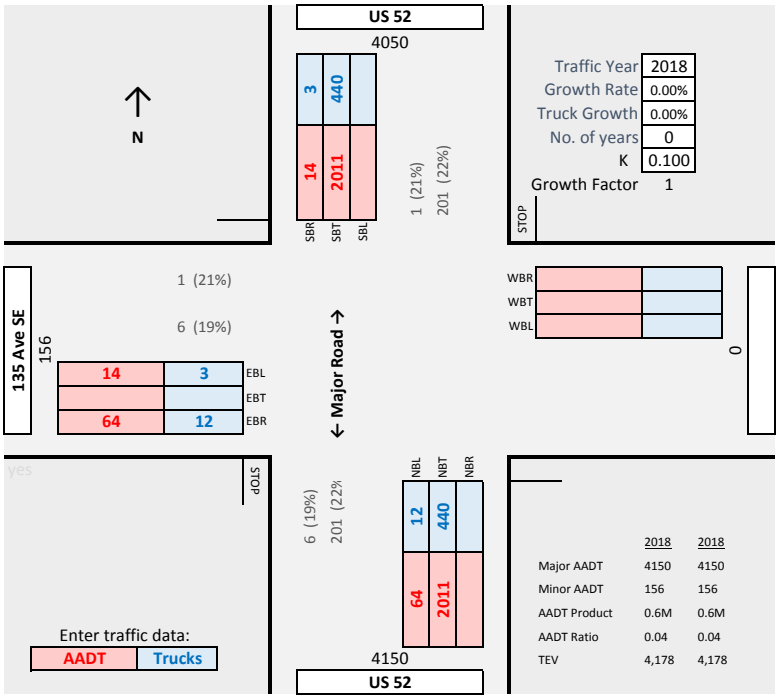
Project Info

PCN	
Ref#	4347
HSIP #	
Study Date	1/4/2019

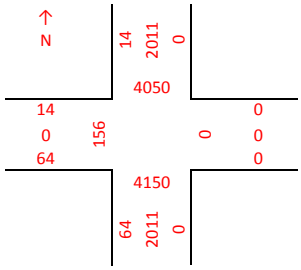
1108

Intersection Info

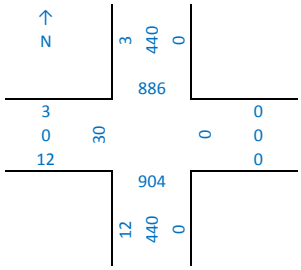
	Major Road	Minor Road	
Reference Points	108.000		
Speed Limits (mph)	65	55	Y
Select Major Road Directions	North-South		
Intersection/Junction Traffic Control	Stop on Minor Road		Y
Major Road a Divided Highway?	No		
Terrain	Level		E_T= 1.5



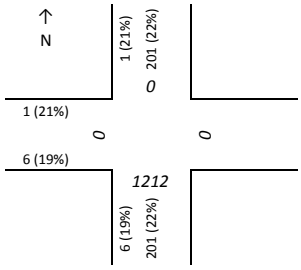
2018 AADTs



2018 TAADTs



2018 Truck %

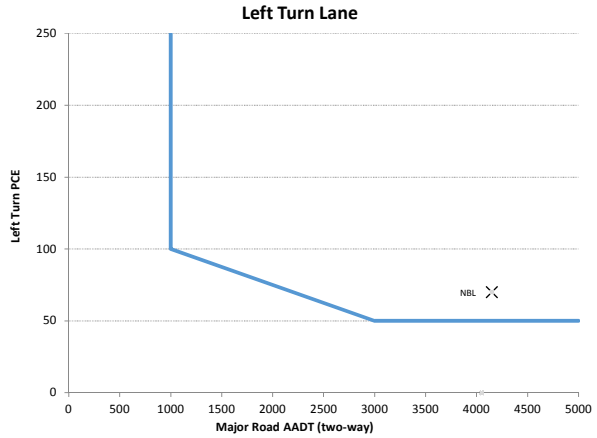


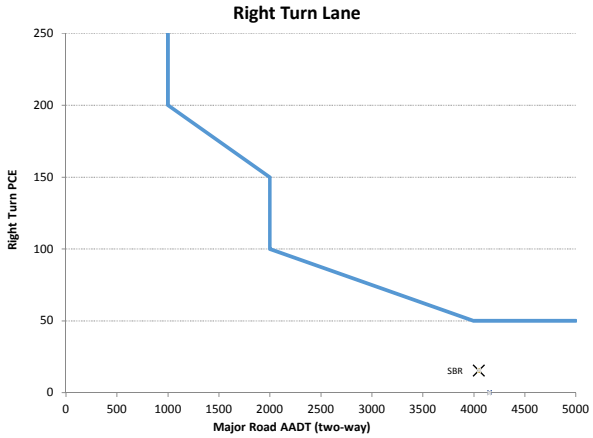
LEFT Turn Lane Volume Criteria (1.A)

SBL	NBL
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{LT} = 0	V_{LT} = 64
P_T =	P_T = 0.19
PCE =	PCE = 70
AADT = 4050	AADT = 4150
Met?	Met? Yes

RIGHT Turn Lane Volume Criteria (1.A)

SBR	NBR
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{RT} = 14	V_{RT} = 0
P_T = 0.21	P_T =
PCE = 16	PCE =
AADT = 4050	AADT = 4150
Met? No	Met?





US 52 / Central Ave

Project Info

PCN	
Ref#	4347
HSIP #	
Study Date	1/4/2019

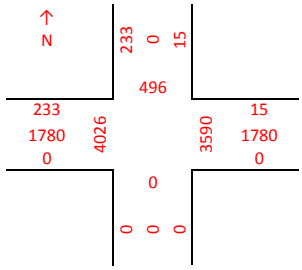
1110

Intersection Info US 52 Central Ave

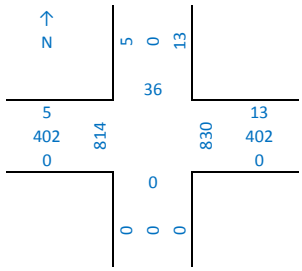
	Major Road	Minor Road	
Reference Points	109.800		
Speed Limits (mph)	65	35	Y
Select Major Road Directions	East-West		
Intersection/Junction Traffic Control	Stop on Minor Road		Y
Major Road a Divided Highway?	No		
Terrain	Level		

E_T= 1.5

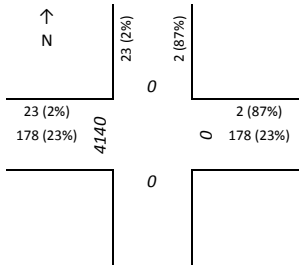
2018 AADTs

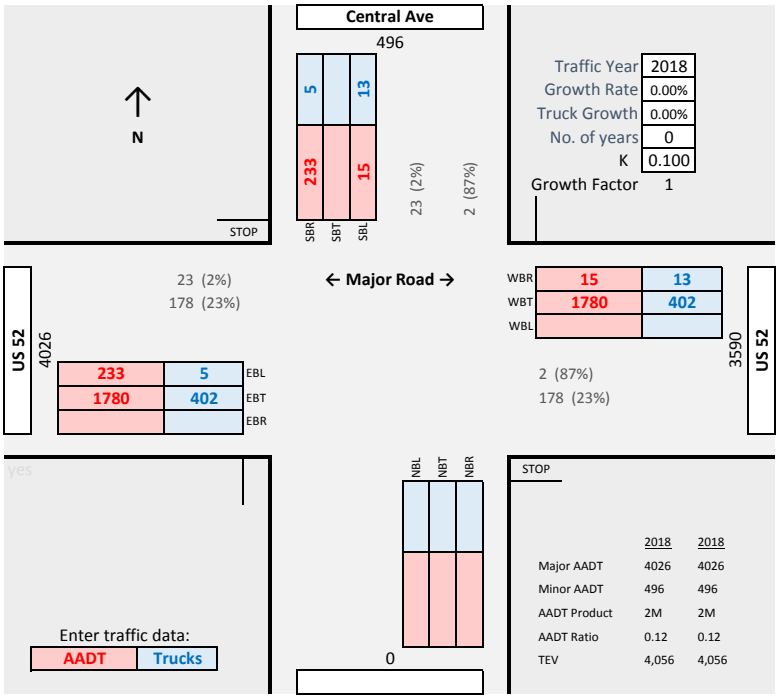


2018 TAADTs



2018 Truck %





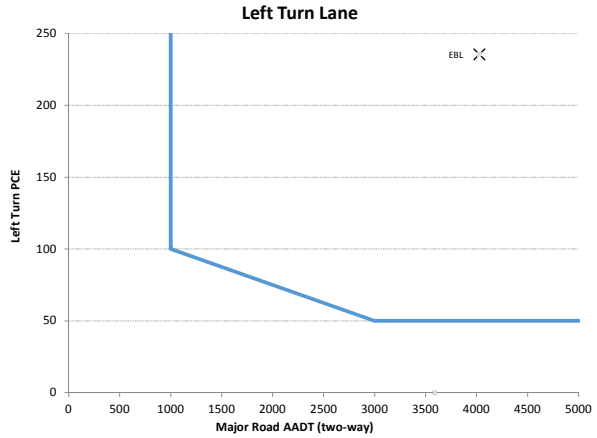
	2018	2018
Major AADT	4026	4026
Minor AADT	496	496
AADT Product	2M	2M
AADT Ratio	0.12	0.12
TEV	4,056	4,056

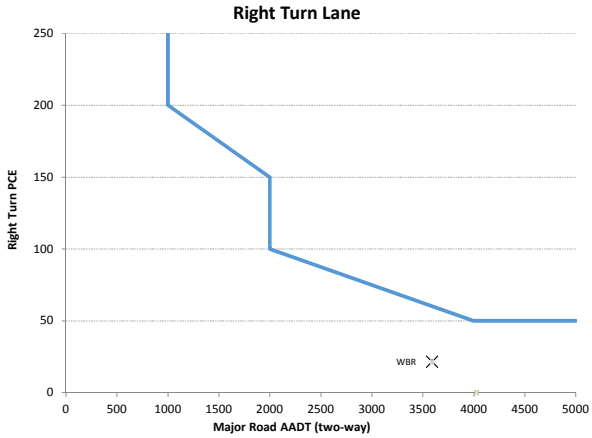
LEFT Turn Lane Volume Criteria (1.A)

EBL	WBL
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{LT} = 233	V_{LT} = 0
P_T = 0.02	P_T =
PCE = 236	PCE =
AADT = 4026	AADT = 3590
Met? Yes	Met?

RIGHT Turn Lane Volume Criteria (1.A)

EBR	WBR
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{RT} = 0	V_{RT} = 15
P_T =	P_T = 0.87
PCE =	PCE = 22
AADT = 4026	AADT = 3590
Met?	Met? No





US 52 / 153 St SE

Project Info

PCN	
Ref#	4347
HSIP #	
Study Date	1/4/2019

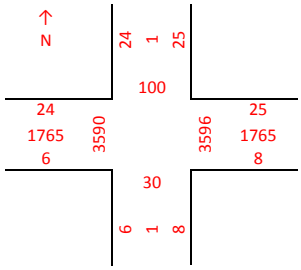
1111

Intersection Info

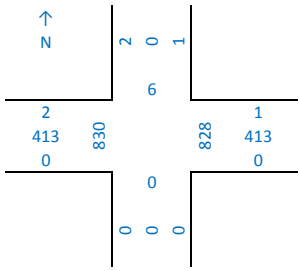
	Major Road	Minor Road
Reference Points	110.700	
Speed Limits (mph)	65	25
Select Major Road Directions	East-West	
Intersection/Junction Traffic Control	Stop on Minor Road	
Major Road a Divided Highway?	No	
Terrain	Level	

E_T = 1.5

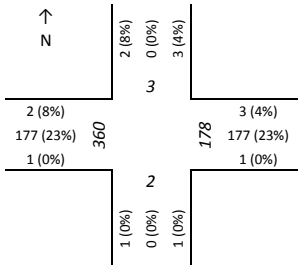
2018 AADTs

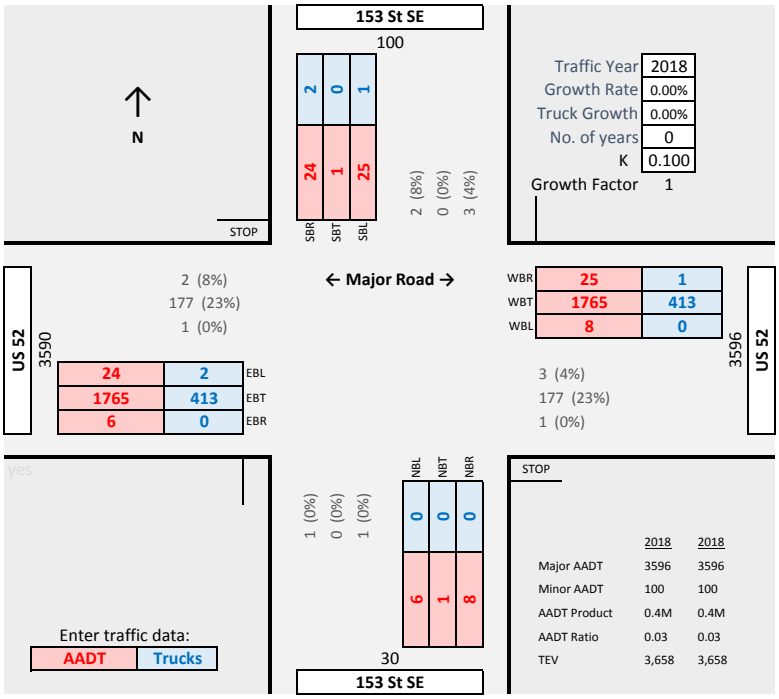


2018 TAADTs



2018 Truck %



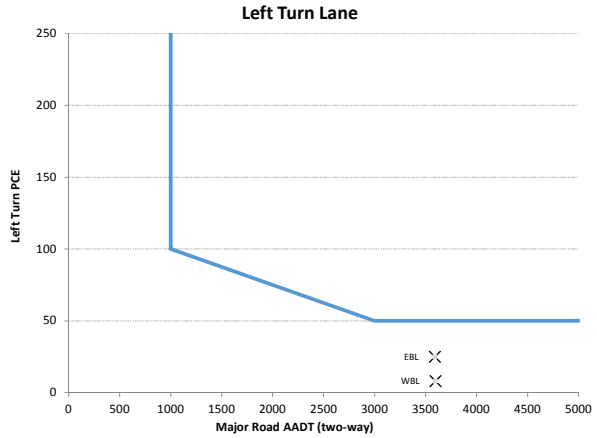


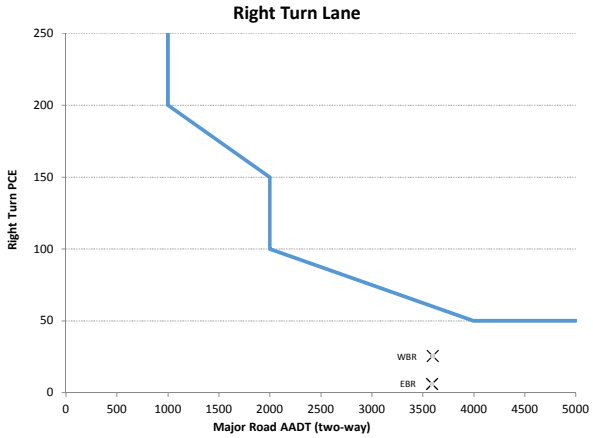
LEFT Turn Lane Volume Criteria (1.A)

EBL	WBL
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{LT} = 24	V_{LT} = 8
P_T = 0.08	P_T = 0.00
PCE = 25	PCE = 8
AADT = 3590	AADT = 3596
Met? No	Met? No

RIGHT Turn Lane Volume Criteria (1.A)

EBR	WBR
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{RT} = 6	V_{RT} = 25
P_T = 0.00	P_T = 0.04
PCE = 6	PCE = 26
AADT = 3590	AADT = 3596
Met? No	Met? No





US 52 / 1 St E

Project Info

PCN	
Ref#	4347
HSIP #	
Study Date	1/7/2019

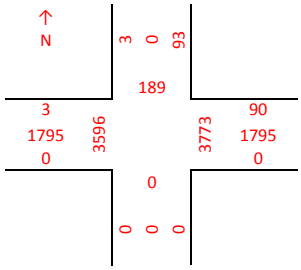
1112

Intersection Info

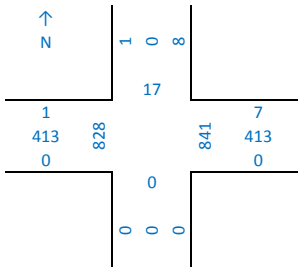
	Major Road	Minor Road
Reference Points	110.700	
Speed Limits (mph)	65	25
Select Major Road Directions	East-West	
Intersection/Junction Traffic Control	Stop on Minor Road	
Major Road a Divided Highway?	No	
Terrain	Level	

E_T = 1.5

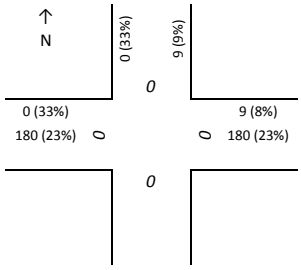
2018 AADTs

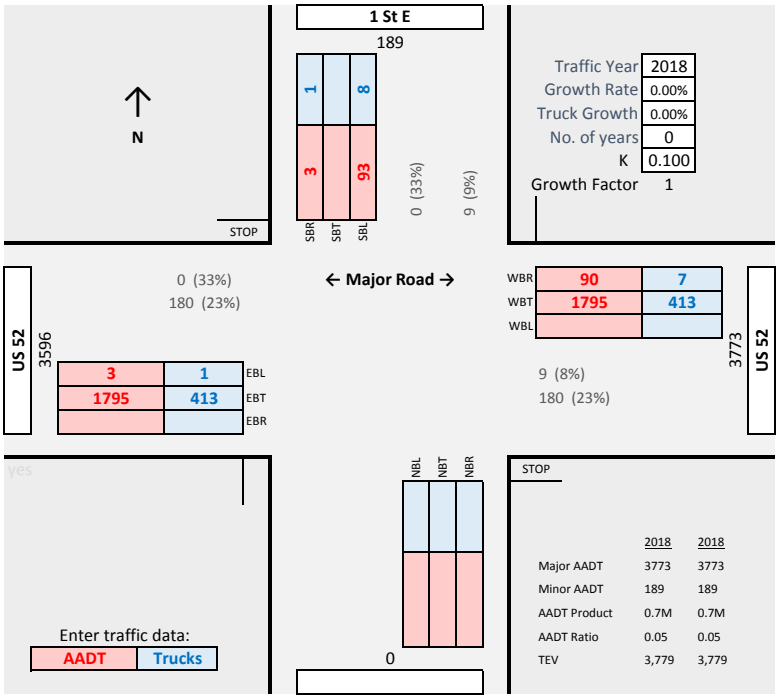


2018 TAADTs



2018 Truck %



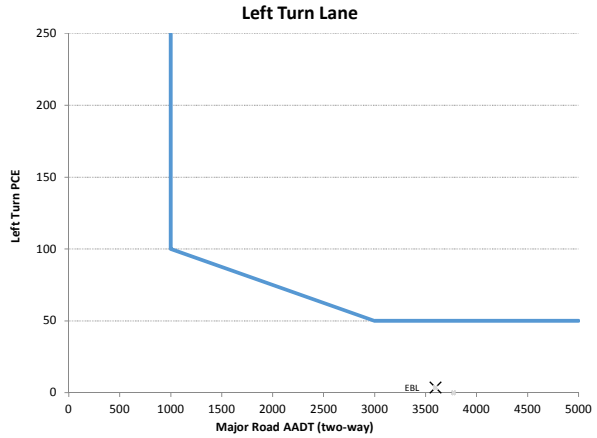


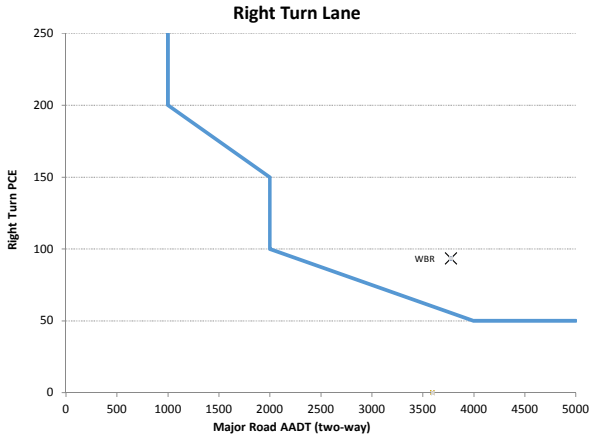
LEFT Turn Lane Volume Criteria (1.A)

EBL	WBL
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{LT} = 3	V_{LT} = 0
P_T = 0.33	P_T =
PCE = 4	PCE =
AADT = 3596	AADT = 3773
Met? No	Met?

RIGHT Turn Lane Volume Criteria (1.A)

EBR	WBR
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{RT} = 0	V_{RT} = 90
P_T =	P_T = 0.08
PCE =	PCE = 94
AADT = 3596	AADT = 3773
Met?	Met? Yes





US 52 / 14 Ave N

Project Info

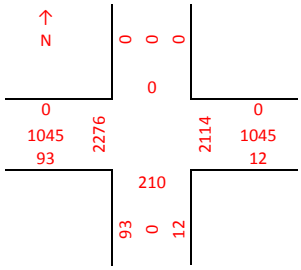
PCN	
Ref#	4347
HSIP #	
Study Date	1/7/2019

1114

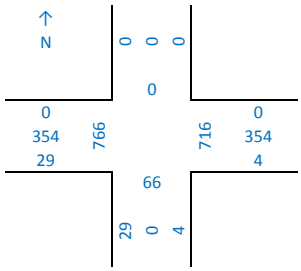
Intersection Info

	Major Road	Minor Road	
Reference Points	119.600		
Speed Limits (mph)	65	25	Y
Select Major Road Directions	East-West		
Intersection/Junction Traffic Control	Stop on Minor Road		Y
Major Road a Divided Highway?	No		
Terrain	Level		E_T= 1.5

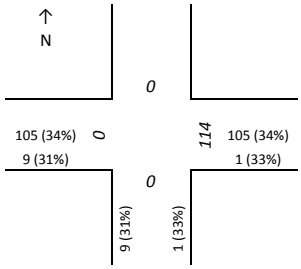
2018 AADTs



2018 TAADTs



2018 Truck %



	2018	2018
Major AADT	2276	2276
Minor AADT	210	210
AADT Product	0.5M	0.5M
AADT Ratio	0.09	0.09
TEV	2,300	2,300

Enter traffic data:

AADT	Trucks

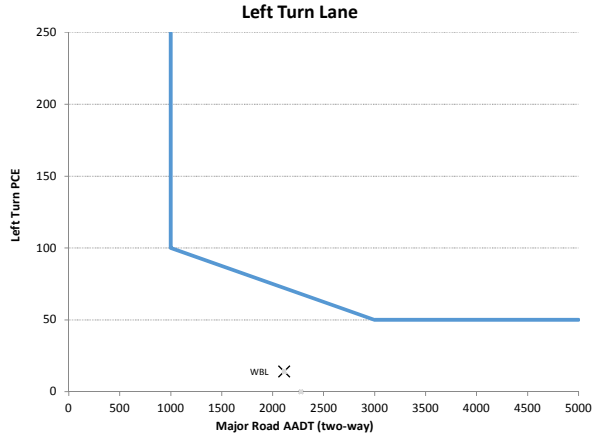
LEFT Turn Lane Volume Criteria (1.A)

EBL	WBL
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{LT} = 0	V_{LT} = 12
P_T =	P_T = 0.33
PCE =	PCE = 14
AADT = 2276	AADT = 2114
Met?	Met? No

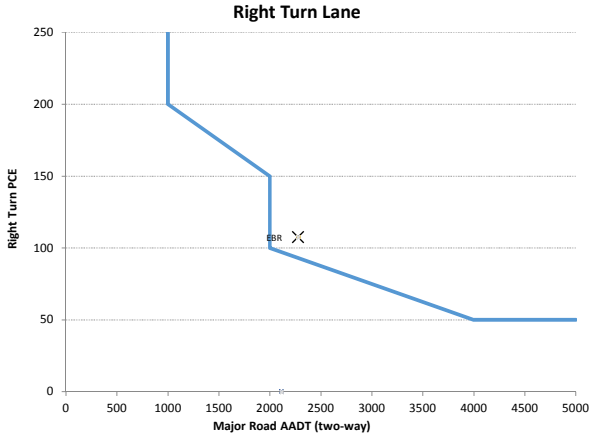
RIGHT Turn Lane Volume Criteria (1.A)

EBR	WBR
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{RT} = 93	V_{RT} = 0
P_T = 0.31	P_T =
PCE = 108	PCE =
AADT = 2276	AADT = 2114
Met? Yes	Met?

Left Turn Lane



Right Turn Lane



US 52 / 10 Ave N

Project Info

PCN	
Ref#	4347
HSIP #	
Study Date	1/7/2019

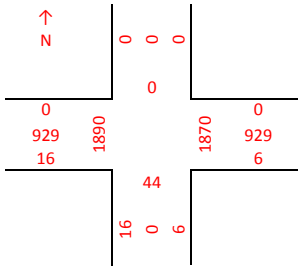
1117

Intersection Info

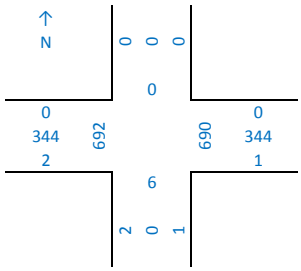
	Major Road	Minor Road	
Reference Points	123.800		
Speed Limits (mph)	65	55	Y
Select Major Road Directions	East-West		
Intersection/Junction Traffic Control	Stop on Minor Road		Y
Major Road a Divided Highway?	No		
Terrain	Level		

E_T= 1.5

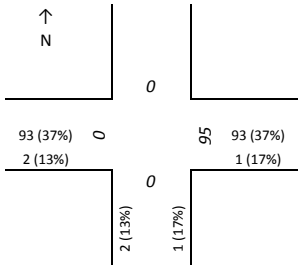
2018 AADTs

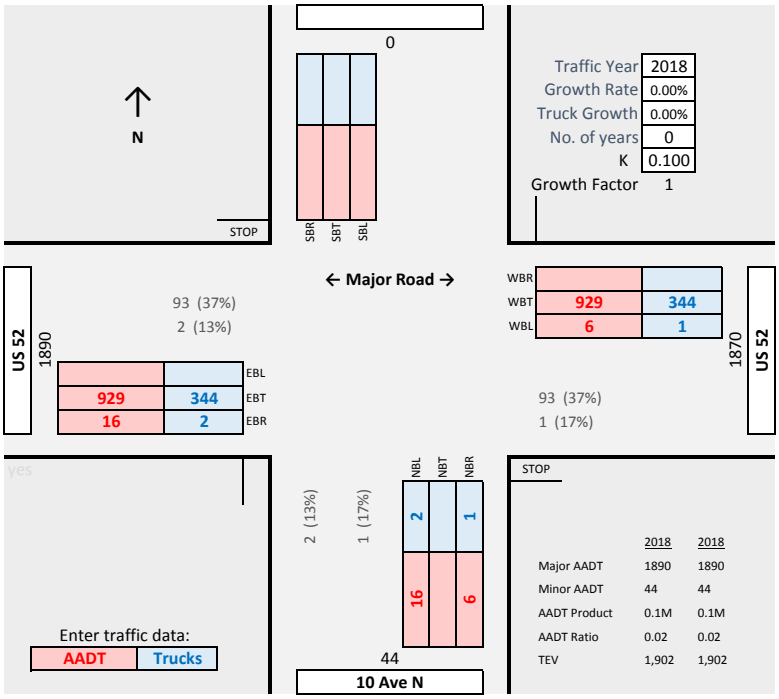


2018 TAADTs



2018 Truck %



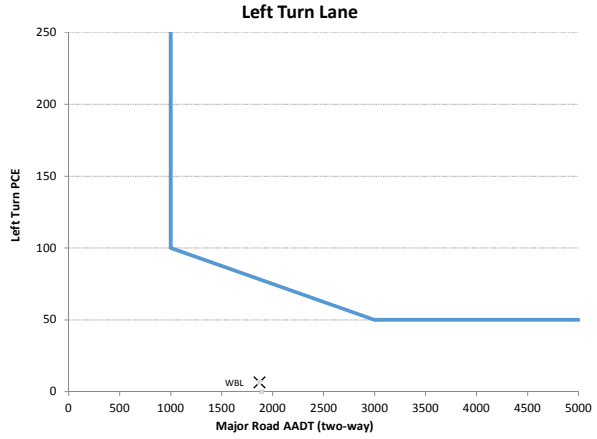


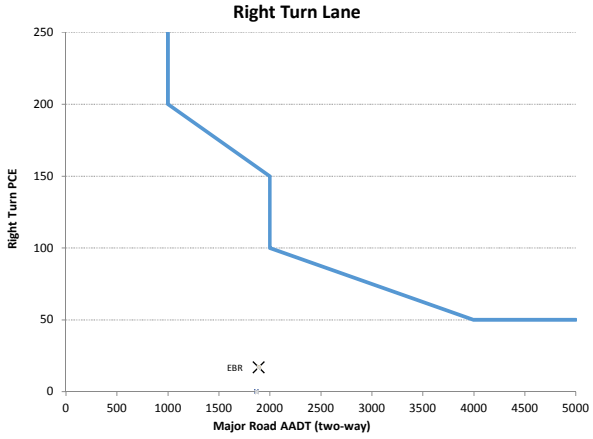
LEFT Turn Lane Volume Criteria (1.A)

EBL	WBL
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{LT} = 0	V_{LT} = 6
P_T =	P_T = 0.17
PCE =	PCE = 7
AADT = 1890	AADT = 1870
Met?	Met? No

RIGHT Turn Lane Volume Criteria (1.A)

EBR	WBR
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{RT} = 16	V_{RT} = 0
P_T = 0.13	P_T =
PCE = 17	PCE =
AADT = 1890	AADT = 1870
Met? No	Met?





US 52 / 6 Ave N

Project Info

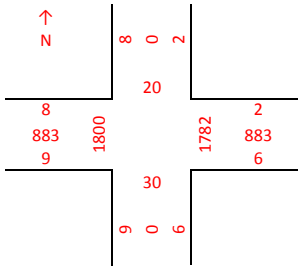
PCN	
Ref#	4347
HSIP #	
Study Date	1/7/2019

1118

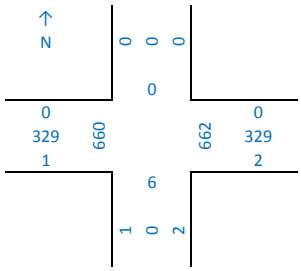
Intersection Info

	Major Road	Minor Road	
Reference Points	127.800		
Speed Limits (mph)	65	25	Y
Select Major Road Directions	East-West		
Intersection/Junction Traffic Control	Stop on Minor Road		Y
Major Road a Divided Highway?	No		
Terrain	Level		E_T= 1.5

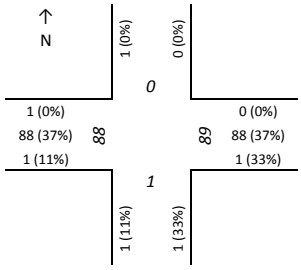
2018 AADTs

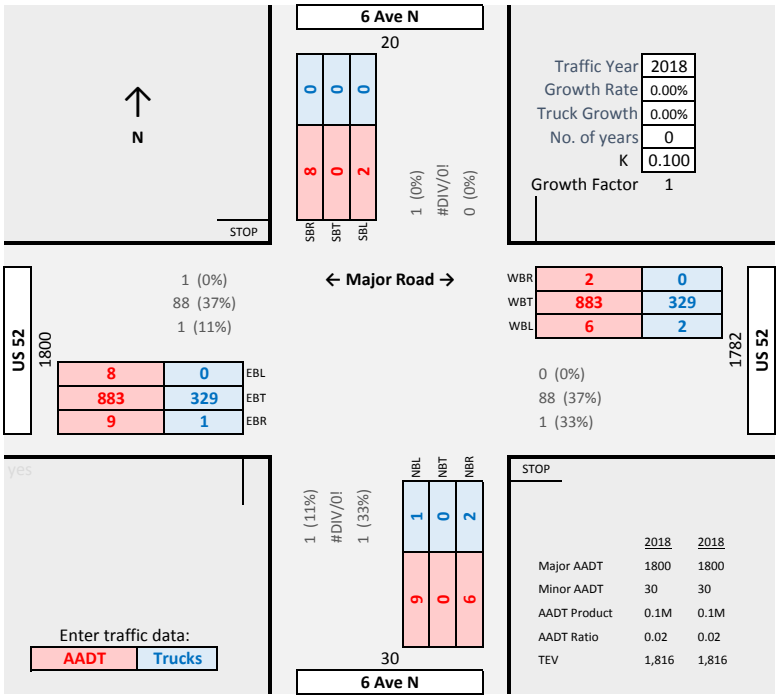


2018 TAADTs



2018 Truck %



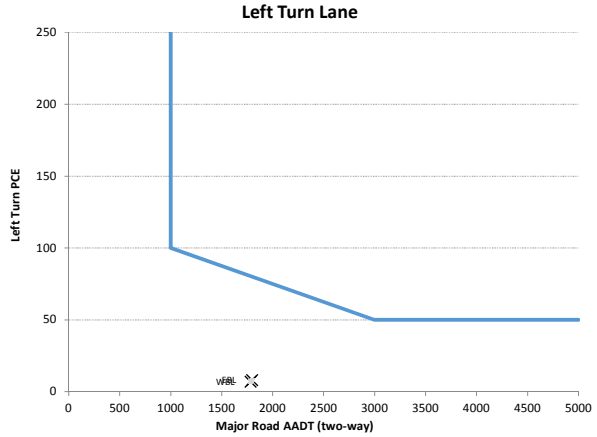


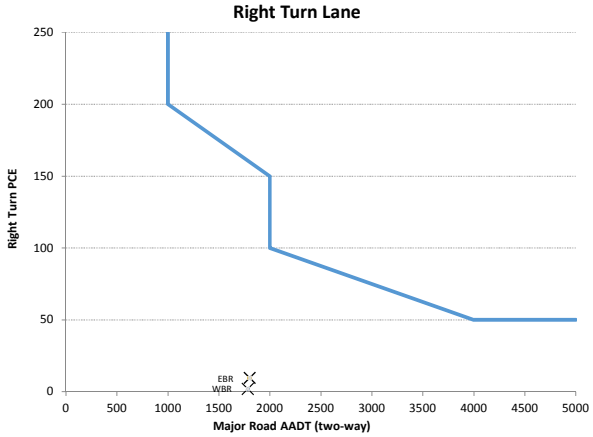
LEFT Turn Lane Volume Criteria (1.A)

EBL	WBL
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{LT} = 8	V_{LT} = 6
P_T = 0.00	P_T = 0.33
PCE = 8	PCE = 7
AADT = 1800	AADT = 1782
Met? No	Met? No

RIGHT Turn Lane Volume Criteria (1.A)

EBR	WBR
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{RT} = 9	V_{RT} = 2
P_T = 0.11	P_T = 0.00
PCE = 10	PCE = 2
AADT = 1800	AADT = 1782
Met? No	Met? No





US 52 / 4 Ave N

Project Info

PCN	
Ref#	4347
HSIP #	
Study Date	1/9/2019

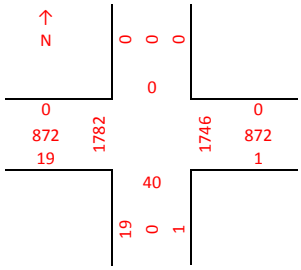
1119

Intersection Info

	Major Road	Minor Road
Reference Points	130.500	
Speed Limits (mph)	65	50
Select Major Road Directions	East-West	
Intersection/Junction Traffic Control	Stop on Minor Road	
Major Road a Divided Highway?	No	
Terrain	Level	

E_T = 1.5

2018 AADTs



Traffic Year	2018
Growth Rate	0.00%
Truck Growth	0.00%
No. of years	0
K	0.100
Growth Factor	1

← Major Road →

WBR		
WBT	872	330
WBL	1	0

		EBL
872	330	EBT
19	1	EBR

US 52 1782 — 87 (38%), 2 (5%) — 87 (38%), 0 (0%) — 1746 US 52

	1	0
19		1

NBL NBT NBR — 2 (5%) — 0 (0%) — 40 — 4 Ave N

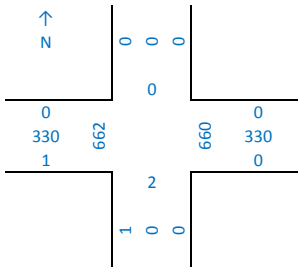
Enter traffic data:

AADT	Trucks

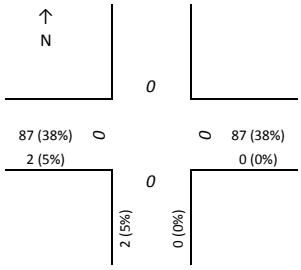
STOP

	2018	2018
Major AADT	1782	1782
Minor AADT	40	40
AADT Product	0.1M	0.1M
AADT Ratio	0.02	0.02
TEV	1,784	1,784

2018 TAADTs



2018 Truck %



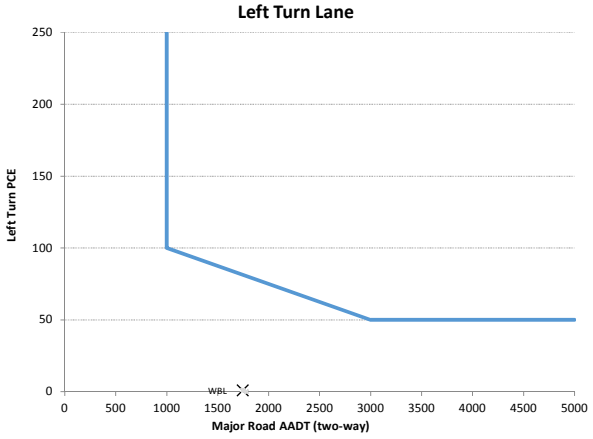
LEFT Turn Lane Volume Criteria (1.A)

EBL	WBL
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{LT} = 0	V_{LT} = 1
P_T =	P_T = 0.00
PCE =	PCE = 1
AADT = 1782	AADT = 1746
Met?	Met? No

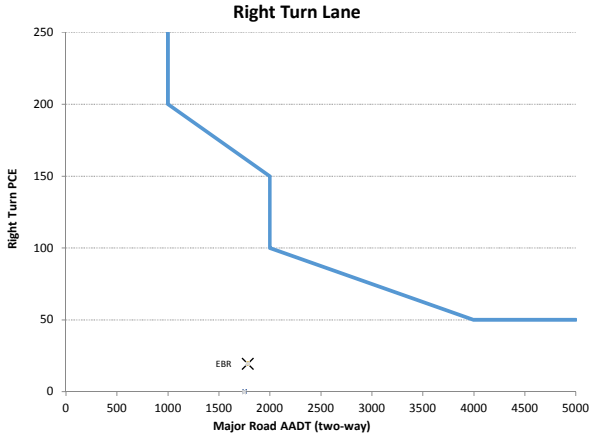
RIGHT Turn Lane Volume Criteria (1.A)

EBR	WBR
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{RT} = 19	V_{RT} = 0
P_T = 0.05	P_T =
PCE = 20	PCE =
AADT = 1782	AADT = 1746
Met? No	Met?

Left Turn Lane



Right Turn Lane



US 52 / 2 Ave N

Project Info

PCN	
Ref#	4347
HSIP #	
Study Date	1/14/2019

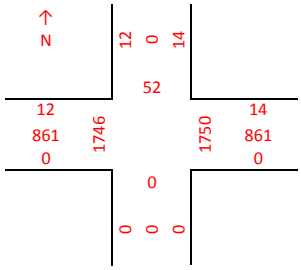
631

Intersection Info

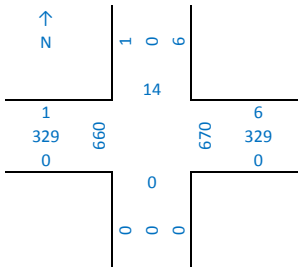
	Major Road	Minor Road
Reference Points	132.500	
Speed Limits (mph)	65	40
Select Major Road Directions	East-West	
Intersection/Junction Traffic Control	Stop on Minor Road	
Major Road a Divided Highway?	No	
Terrain	Level	

E_T = 1.5

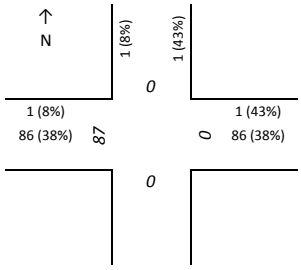
2018 AADTs

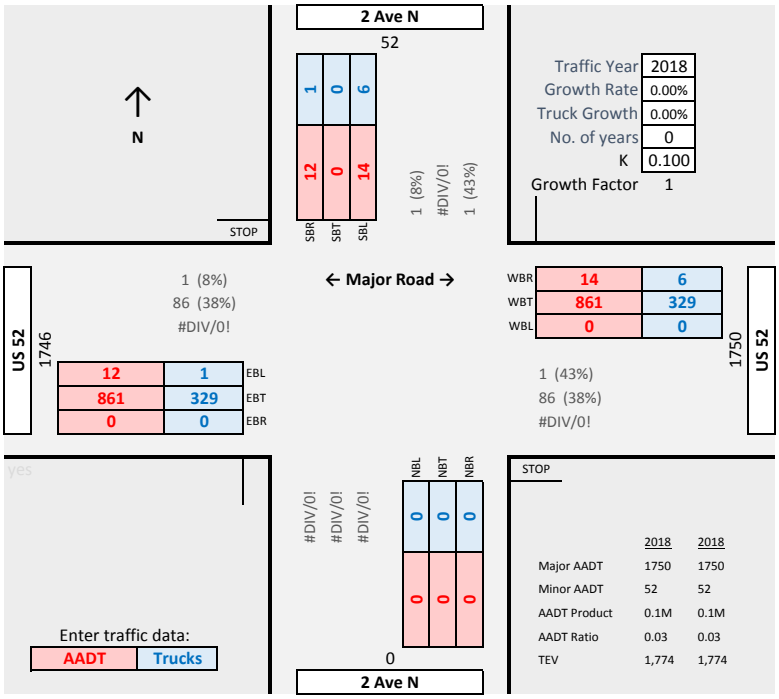


2018 TAADTs



2018 Truck %



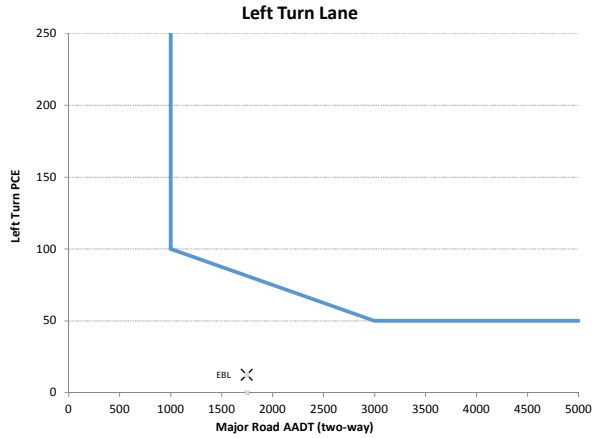


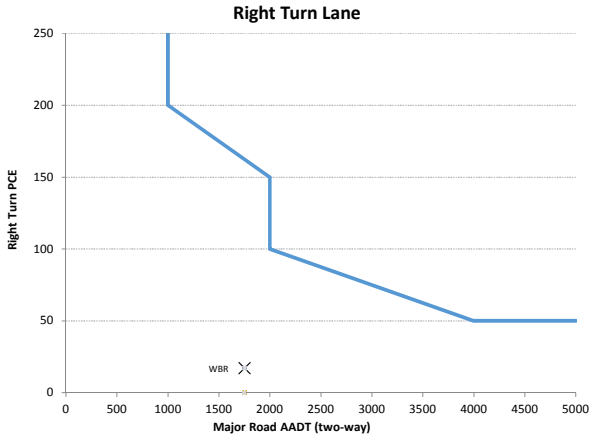
LEFT Turn Lane Volume Criteria (1.A)

EBL	WBL
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{LT} = 12	V_{LT} = 0
P_T = 0.08	P_T =
PCE = 13	PCE =
AADT = 1746	AADT = 1750
Met? No	Met?

RIGHT Turn Lane Volume Criteria (1.A)

EBR	WBR
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{RT} = 0	V_{RT} = 14
P_T =	P_T = 0.43
PCE =	PCE = 17
AADT = 1746	AADT = 1750
Met?	Met? No





US 52 / Main St

Project Info

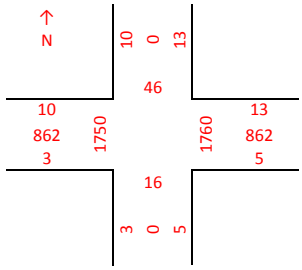
PCN	
Ref#	4347
HSIP #	
Study Date	1/14/2019

1120

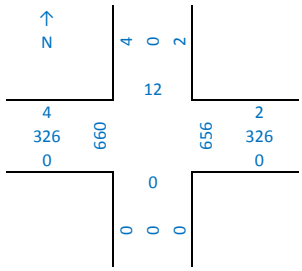
Intersection Info

	Major Road	Minor Road	
Reference Points	137.000		
Speed Limits (mph)	65	25	Y
Select Major Road Directions	East-West		
Intersection/Junction Traffic Control	Stop on Minor Road		Y
Major Road a Divided Highway?	No		
Terrain	Level		E_T= 1.5

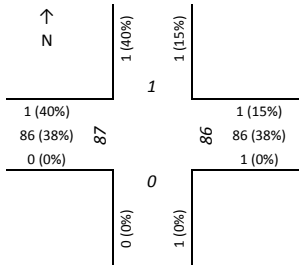
2018 AADTs

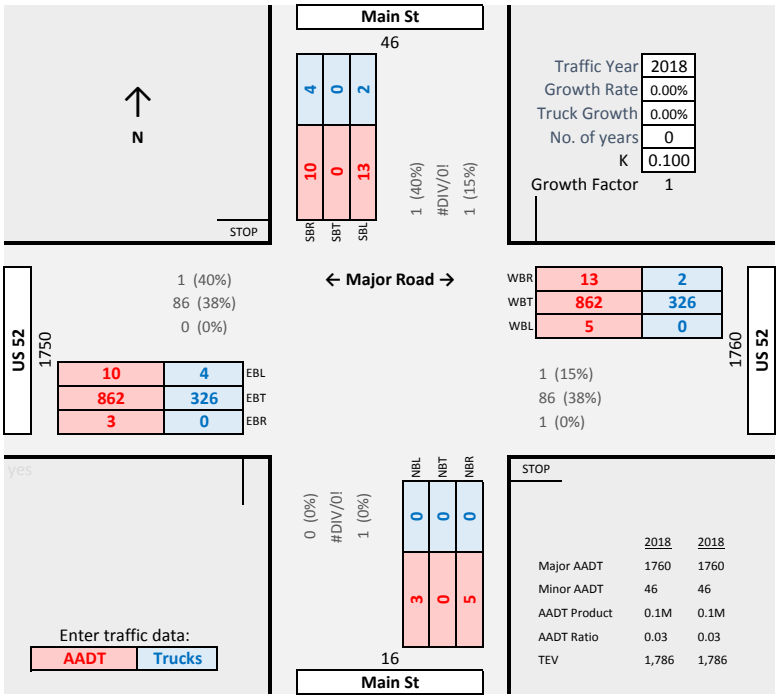


2018 TAADTs



2018 Truck %



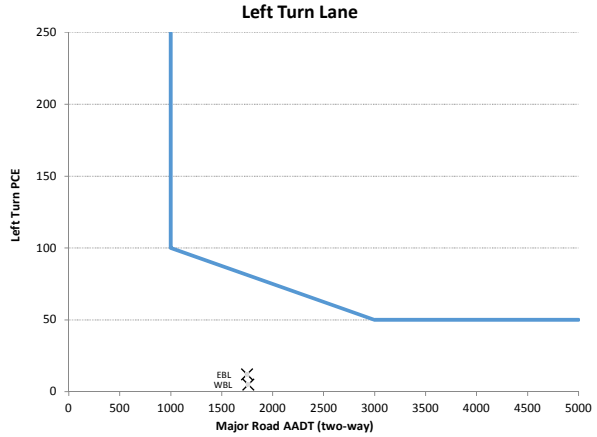


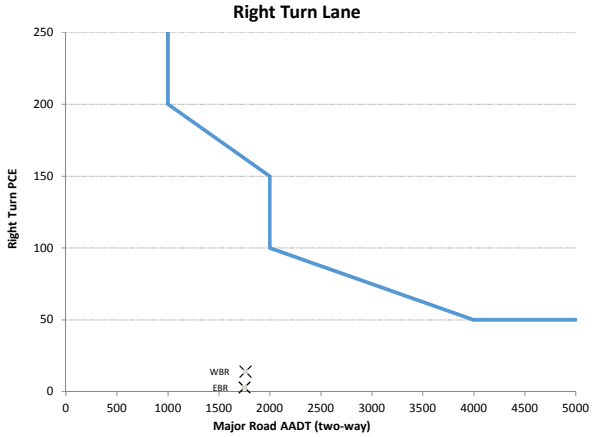
LEFT Turn Lane Volume Criteria (1.A)

EBL	WBL
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{LT} = 10	V_{LT} = 5
P_T = 0.40	P_T = 0.00
PCE = 12	PCE = 5
AADT = 1750	AADT = 1760
Met? No	Met? No

RIGHT Turn Lane Volume Criteria (1.A)

EBR	WBR
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{RT} = 3	V_{RT} = 13
P_T = 0.00	P_T = 0.15
PCE = 3	PCE = 14
AADT = 1750	AADT = 1760
Met? No	Met? No





US 52 / 3 Ave NE – ND 53

Project Info

PCN	
Ref#	4347
HSIP #	
Study Date	1/14/2019

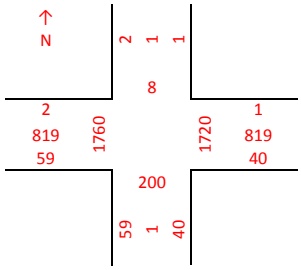
60

Intersection Info

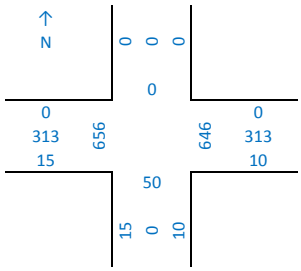
	Major Road	Minor Road
Reference Points	137.700	
Speed Limits (mph)	65	65
Select Major Road Directions	East-West	
Intersection/Junction Traffic Control	Stop on Minor Road	
Major Road a Divided Highway?	No	
Terrain	Level	

E_T= 1.5

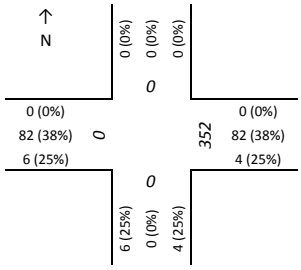
2018 AADTs

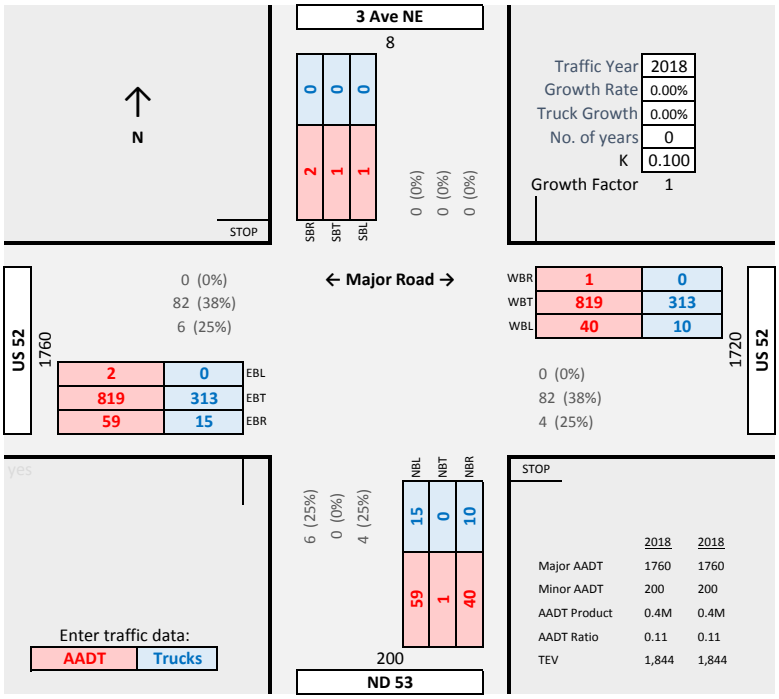


2018 TAADTs



2018 Truck %



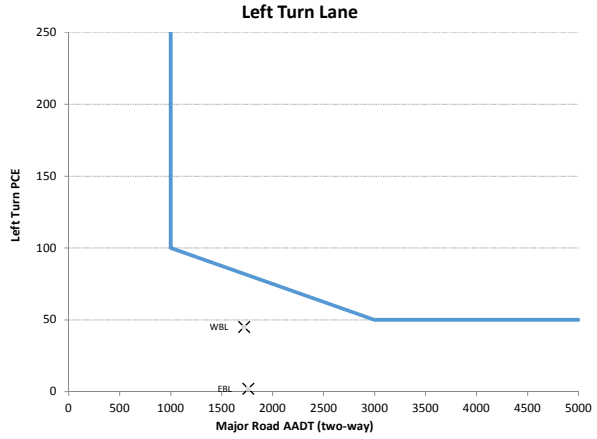


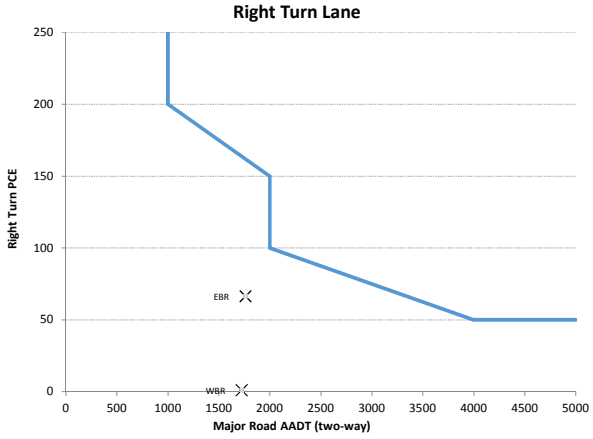
LEFT Turn Lane Volume Criteria (1.A)

EBL	WBL
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{LT} = 2	V_{LT} = 40
P_T = 0.00	P_T = 0.25
PCE = 2	PCE = 45
AADT = 1760	AADT = 1720
Met? No	Met? No

RIGHT Turn Lane Volume Criteria (1.A)

EBR	WBR
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{RT} = 59	V_{RT} = 1
P_T = 0.25	P_T = 0.00
PCE = 67	PCE = 1
AADT = 1760	AADT = 1720
Met? No	Met? No





US 52 / ND 14

Project Info

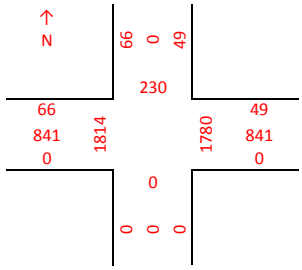
PCN	
Ref#	4347
HSIP #	
Study Date	1/14/2019

61

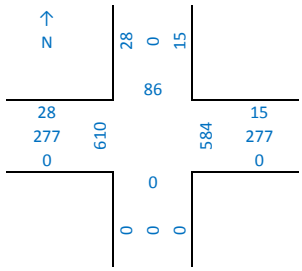
Intersection Info

	Major Road	Minor Road	
Reference Points	141.400		
Speed Limits (mph)	65	65	Y
Select Major Road Directions	East-West		
Intersection/Junction Traffic Control	Stop on Minor Road		Y
Major Road a Divided Highway?	No		
Terrain	Level		E_T= 1.5

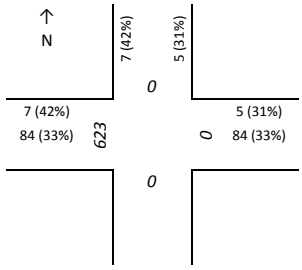
2018 AADTs

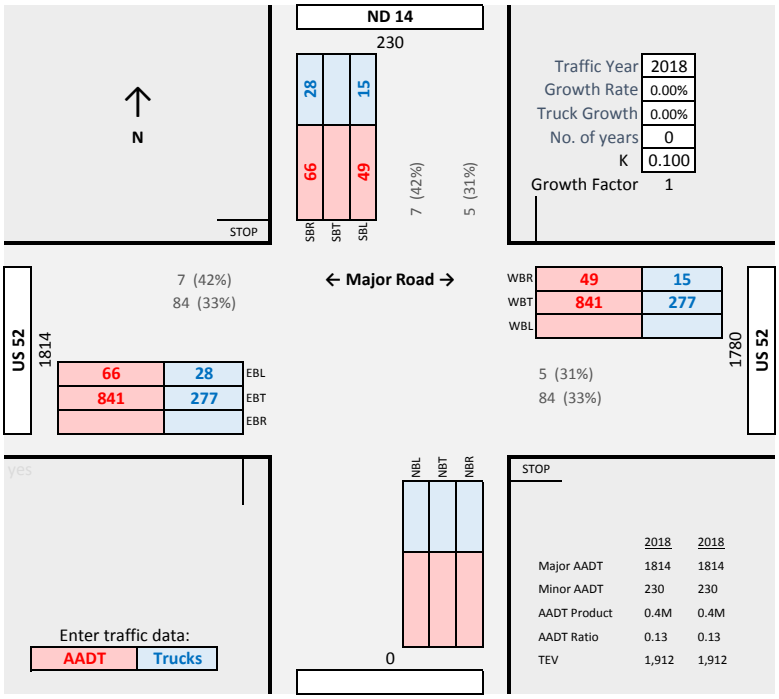


2018 TAADTs



2018 Truck %



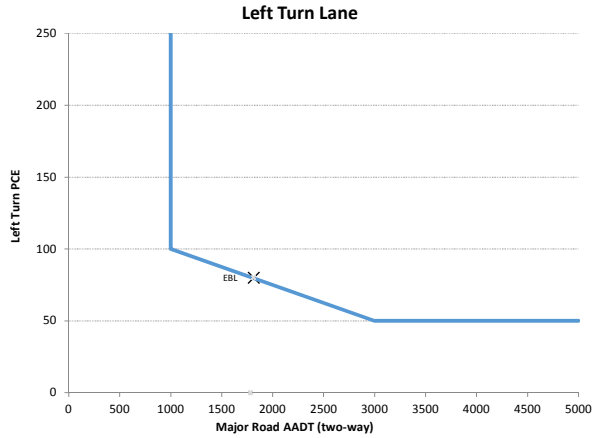


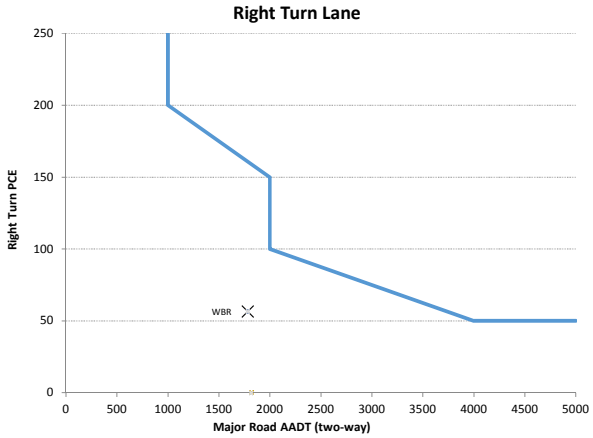
LEFT Turn Lane Volume Criteria (1.A)

EBL	WBL
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{LT} = 66	V_{LT} = 0
P_T = 0.42	P_T =
PCE = 80	PCE =
AADT = 1814	AADT = 1780
Met? Yes	Met?

RIGHT Turn Lane Volume Criteria (1.A)

EBR	WBR
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{RT} = 0	V_{RT} = 49
P_T =	P_T = 0.31
PCE =	PCE = 57
AADT = 1814	AADT = 1780
Met?	Met? No





US 52 / 7 Ave N

Project Info

PCN	
Ref#	4347
HSIP #	
Study Date	1/14/2019

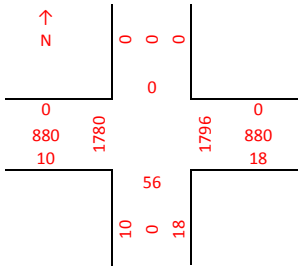
1121

Intersection Info

	Major Road	Minor Road
Reference Points	142.200	
Speed Limits (mph)	65	50
Select Major Road Directions	East-West	
Intersection/Junction Traffic Control	Stop on Minor Road	
Major Road a Divided Highway?	No	
Terrain	Level	

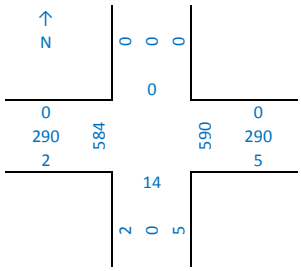
E_T = 1.5

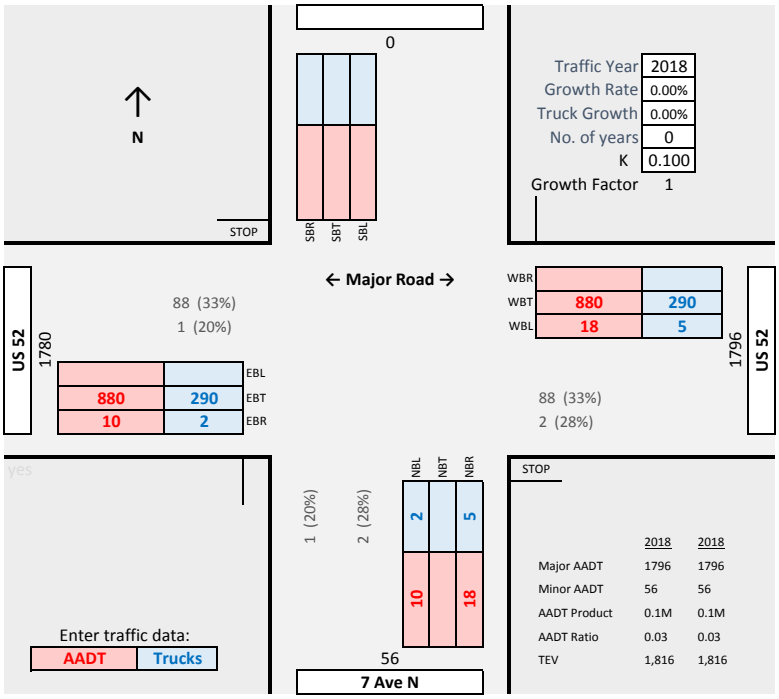
2018 AADTs



Traffic Year	2018
Growth Rate	0.00%
Truck Growth	0.00%
No. of years	0
K	0.100
Growth Factor	1

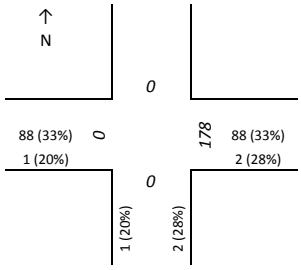
2018 TAADTs





	2018	2018
Major AADT	1796	1796
Minor AADT	56	56
AADT Product	0.1M	0.1M
AADT Ratio	0.03	0.03
TEV	1,816	1,816

2018 Truck %

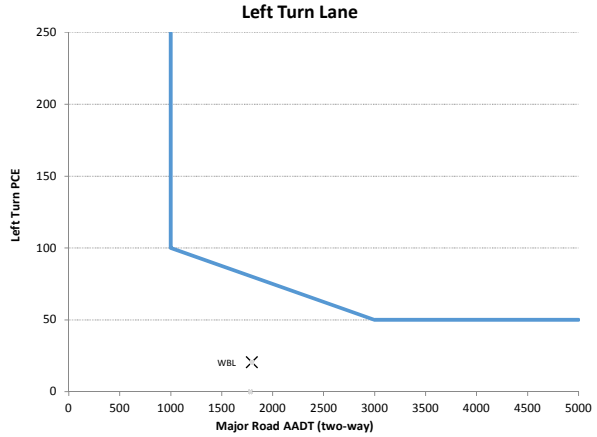


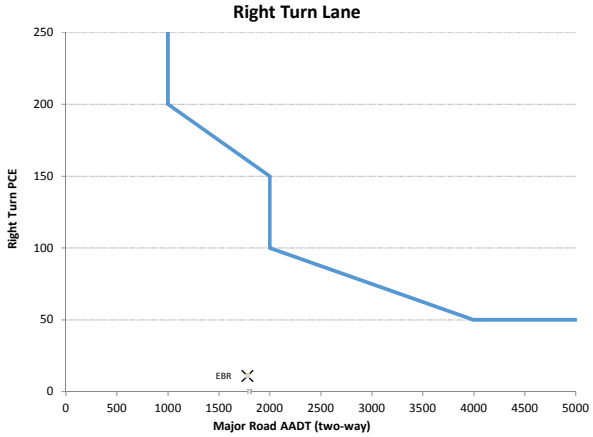
LEFT Turn Lane Volume Criteria (1.A)

EBL	WBL
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{LT} = 0	V_{LT} = 18
P_T =	P_T = 0.28
PCE =	PCE = 21
AADT = 1780	AADT = 1796
Met?	Met? No

RIGHT Turn Lane Volume Criteria (1.A)

EBR	WBR
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{RT} = 10	V_{RT} = 0
P_T = 0.20	P_T =
PCE = 11	PCE =
AADT = 1780	AADT = 1796
Met? No	Met?





US 52 / H Ave W

Project Info

PCN	
Ref#	4347
HSIP #	
Study Date	1/14/2019

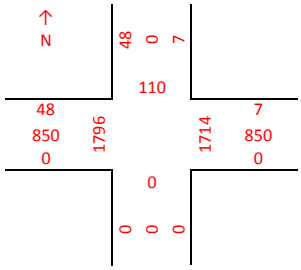
1122

Intersection Info

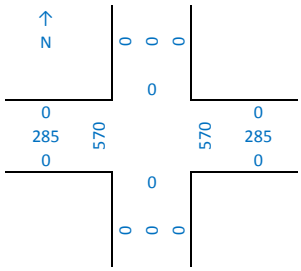
	Major Road	Minor Road
Reference Points	151.000	
Speed Limits (mph)	65	40
Select Major Road Directions	East-West	
Intersection/Junction Traffic Control	Stop on Minor Road	
Major Road a Divided Highway?	No	
Terrain	Level	

E_T = 1.5

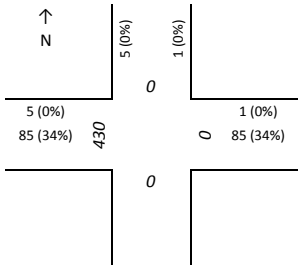
2018 AADTs

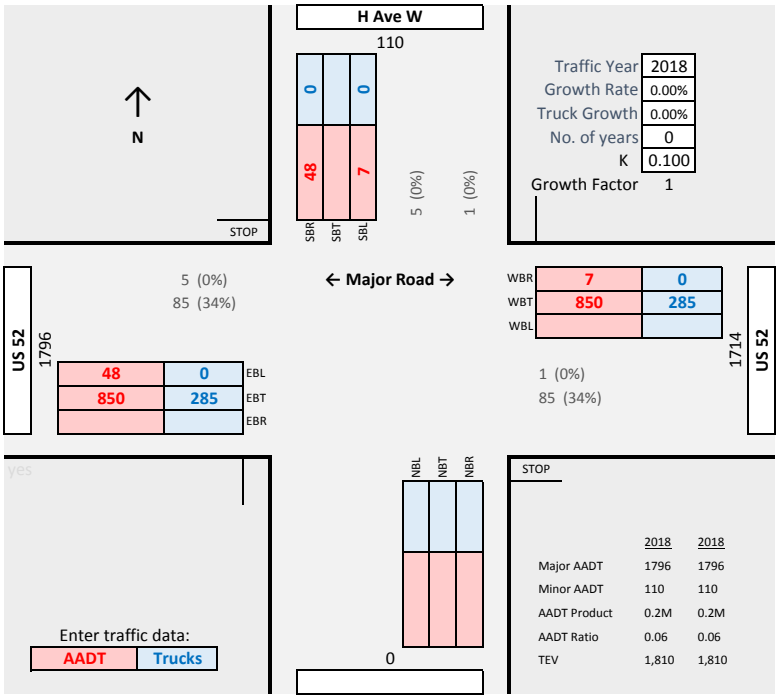


2018 TAADTs



2018 Truck %



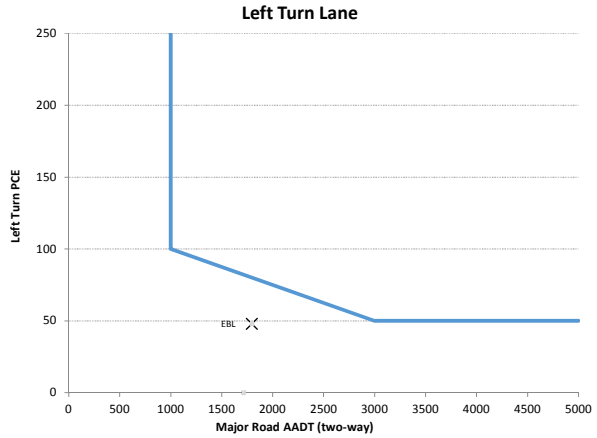


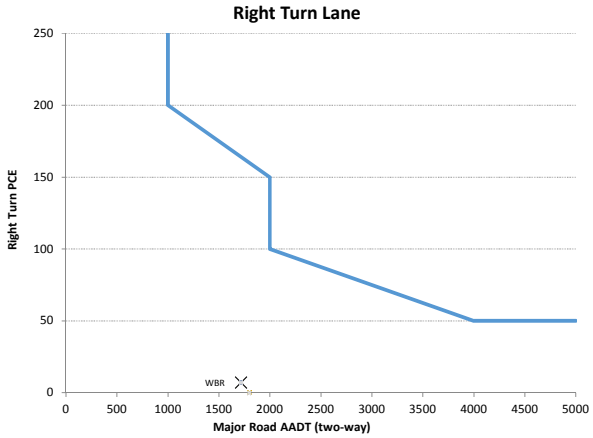
LEFT Turn Lane Volume Criteria (1.A)

EBL	WBL
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{LT} = 48	V_{LT} = 0
P_T = 0.00	P_T =
PCE = 48	PCE =
AADT = 1796	AADT = 1714
Met? No	Met?

RIGHT Turn Lane Volume Criteria (1.A)

EBR	WBR
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{RT} = 0	V_{RT} = 7
P_T =	P_T = 0.00
PCE =	PCE = 7
AADT = 1796	AADT = 1714
Met?	Met? No





US 52 / 32 St NE

Project Info

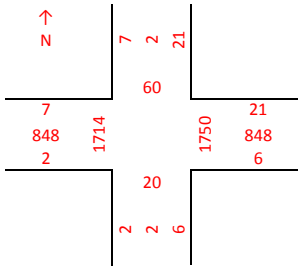
PCN	
Ref#	4347
HSIP #	
Study Date	1/14/2019

1123

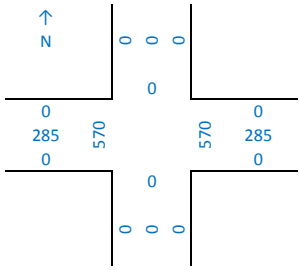
Intersection Info

	Major Road	Minor Road	
Reference Points	151.610		
Speed Limits (mph)	65	25	Y
Select Major Road Directions	East-West		
Intersection/Junction Traffic Control	Stop on Minor Road		Y
Major Road a Divided Highway?	No		
Terrain	Level		E_T= 1.5

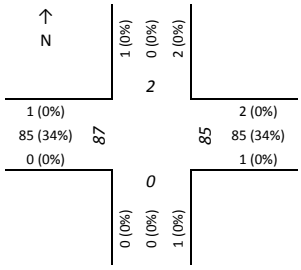
2018 AADTs



2018 TAADTs



2018 Truck %



N

STOP

32 St NE

60

SBR	SBT	SBL
0	0	0
7	2	21

1 (0%) 0 (0%) 2 (0%)

Traffic Year	2018
Growth Rate	0.00%
Truck Growth	0.00%
No. of years	0
K	0.100
Growth Factor	1

US 52 1714

1 (0%)
85 (34%)
0 (0%)

7	0	EBL
848	285	EBT
2	0	EBR

← Major Road →

WBR	21	0
WBT	848	285
WBL	6	0

1750 **US 52**

2 (0%)
85 (34%)
1 (0%)

yes

0 (0%) 0 (0%) 1 (0%)

NBL	NBT	NBR
0	0	0
2	2	6

20

32 St NE

STOP

	2018	2018
Major AADT	1750	1750
Minor AADT	60	60
AADT Product	0.1M	0.1M
AADT Ratio	0.03	0.03
TEV	1,772	1,772

Enter traffic data:

AADT	Trucks

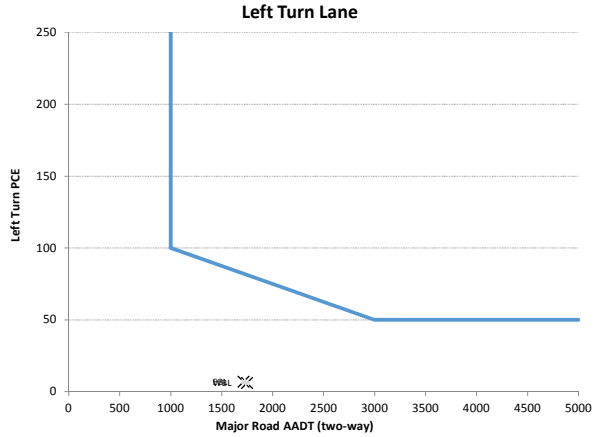
LEFT Turn Lane Volume Criteria (1.A)

EBL	WBL
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{LT} = 7	V_{LT} = 6
P_T = 0.00	P_T = 0.00
PCE = 7	PCE = 6
AADT = 1714	AADT = 1750
Met? No	Met? No

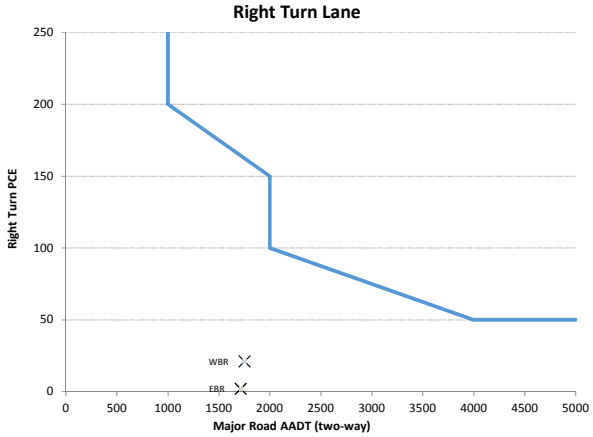
RIGHT Turn Lane Volume Criteria (1.A)

EBR	WBR
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{RT} = 2	V_{RT} = 21
P_T = 0.00	P_T = 0.00
PCE = 2	PCE = 21
AADT = 1714	AADT = 1750
Met? No	Met? No

Left Turn Lane



Right Turn Lane



US 52 / Main St – ND 14

Project Info

PCN	
Ref#	4347
HSIP #	
Study Date	1/14/2019

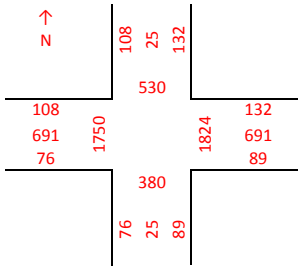
62

Intersection Info

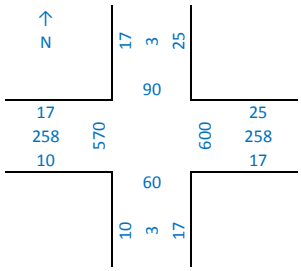
	Major Road	Minor Road
Reference Points	151.900	
Speed Limits (mph)	65	65
Select Major Road Directions	East-West	
Intersection/Junction Traffic Control	Stop on Minor Road	
Major Road a Divided Highway?	No	
Terrain	Level	

E_T= 1.5

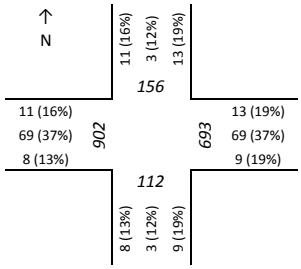
2018 AADTs

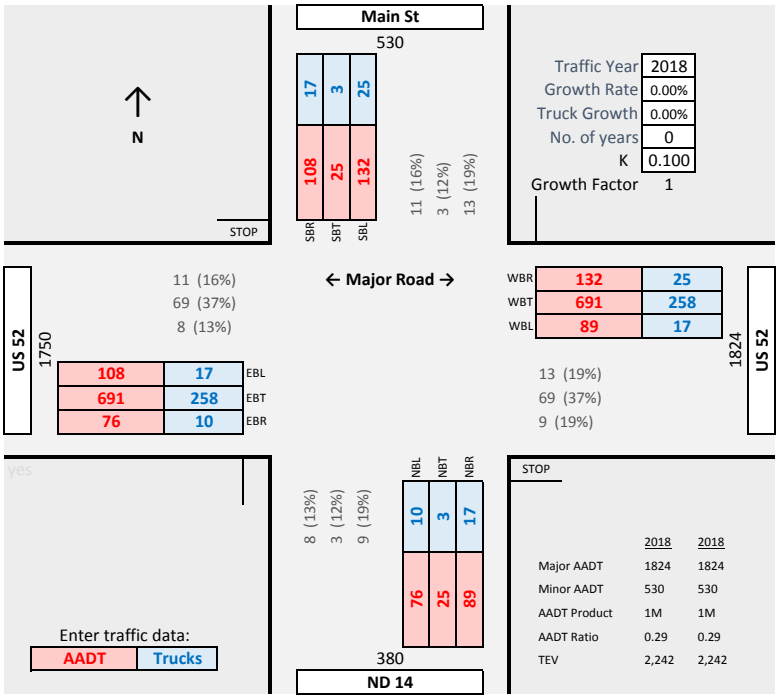


2018 TAADTs



2018 Truck %





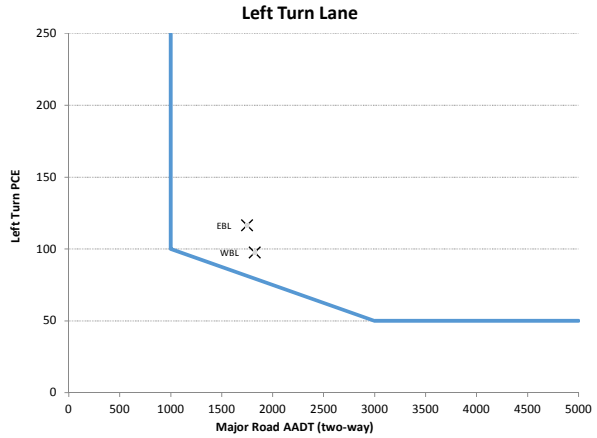
	2018	2018
Major AADT	1824	1824
Minor AADT	530	530
AADT Product	1M	1M
AADT Ratio	0.29	0.29
TEV	2,242	2,242

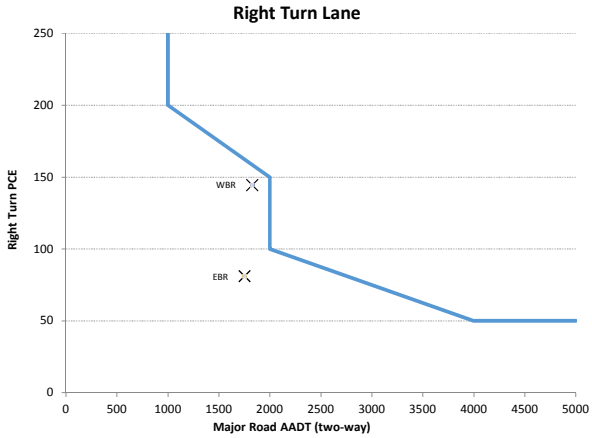
LEFT Turn Lane Volume Criteria (1.A)

EBL	WBL
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{LT} = 108	V_{LT} = 89
P_T = 0.16	P_T = 0.19
PCE = 117	PCE = 98
AADT = 1750	AADT = 1824
Met? Yes	Met? Yes

RIGHT Turn Lane Volume Criteria (1.A)

EBR	WBR
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{RT} = 76	V_{RT} = 132
P_T = 0.13	P_T = 0.19
PCE = 81	PCE = 145
AADT = 1750	AADT = 1824
Met? No	Met? No





US 52 / 32 St SE

Project Info

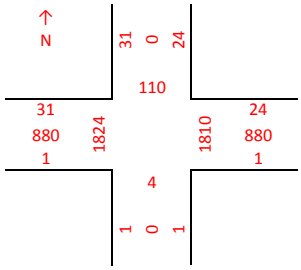
PCN	
Ref#	4347
HSIP #	
Study Date	1/14/2019

1124

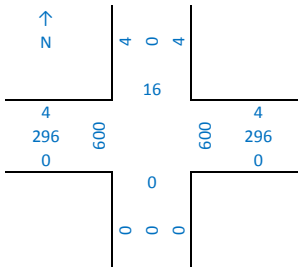
Intersection Info

	Major Road	Minor Road	
Reference Points	152.060		
Speed Limits (mph)	65	25	Y
Select Major Road Directions	East-West		
Intersection/Junction Traffic Control	Stop on Minor Road		Y
Major Road a Divided Highway?	No		
Terrain	Level		E_T= 1.5

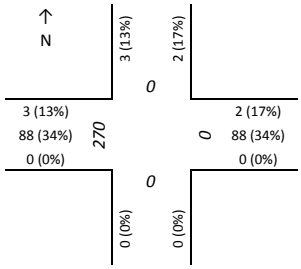
2018 AADTs

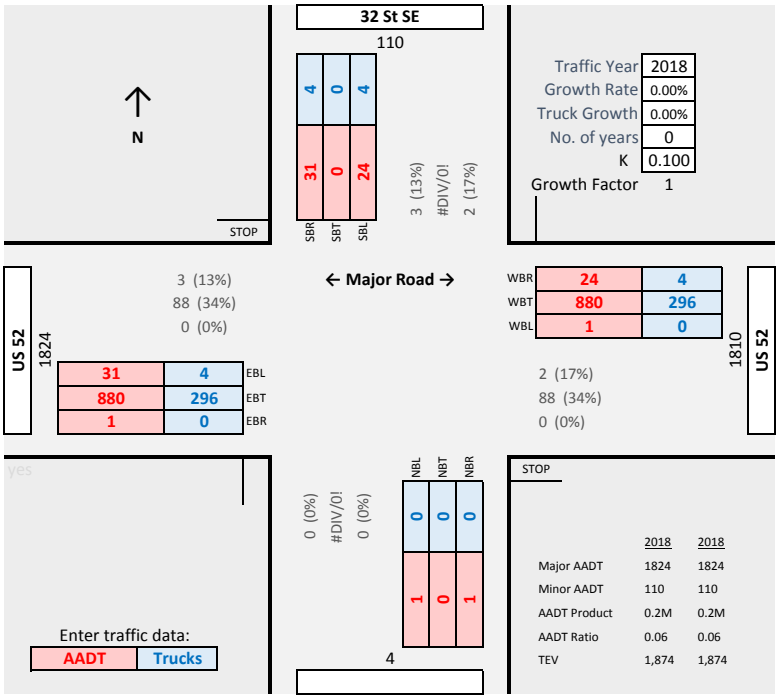


2018 TAADTs



2018 Truck %



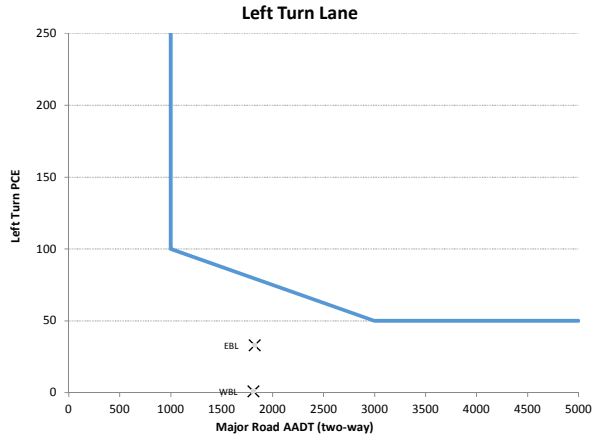


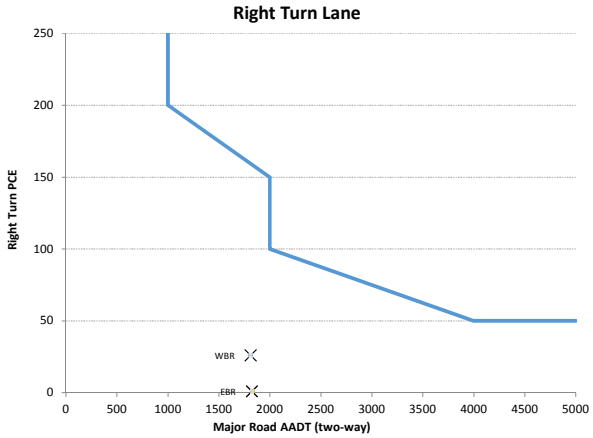
LEFT Turn Lane Volume Criteria (1.A)

EBL	WBL
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{LT} = 31	V_{LT} = 1
P_T = 0.13	P_T = 0.00
PCE = 33	PCE = 1
AADT = 1824	AADT = 1810
Met? No	Met? No

RIGHT Turn Lane Volume Criteria (1.A)

EBR	WBR
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{RT} = 1	V_{RT} = 24
P_T = 0.00	P_T = 0.17
PCE = 1	PCE = 26
AADT = 1824	AADT = 1810
Met? No	Met? No





US 52 / 25 St NE – ND 91

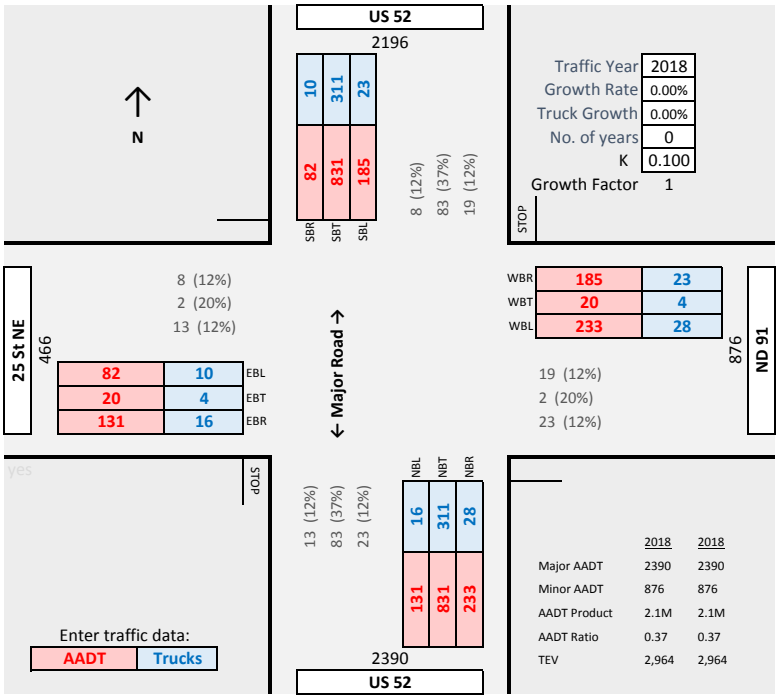
Project Info

PCN	
Ref#	4347
HSIP #	
Study Date	1/14/2019

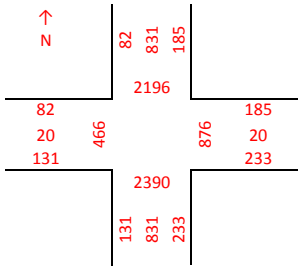
1048

Intersection Info

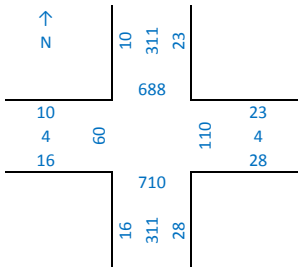
	Major Road	Minor Road	
Reference Points	167.400		
Speed Limits (mph)	55	25	Y
Select Major Road Directions	North-South		
Intersection/Junction Traffic Control	Stop on Minor Road		Y
Major Road a Divided Highway?	No		
Terrain	Level		E_T= 1.5



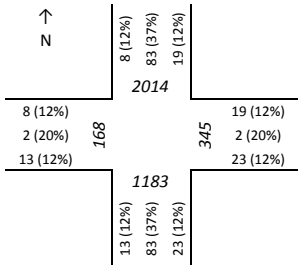
2018 AADTs



2018 TAADTs



2018 Truck %

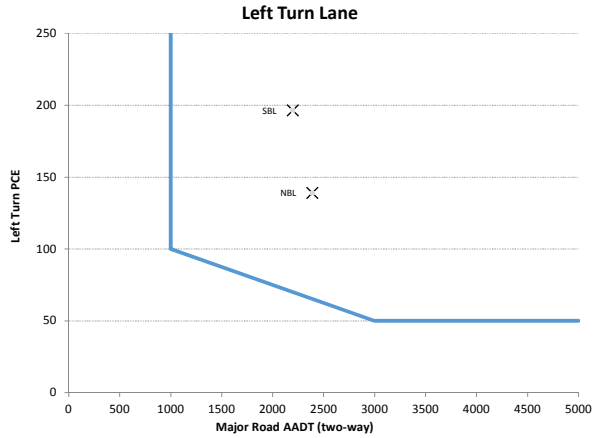


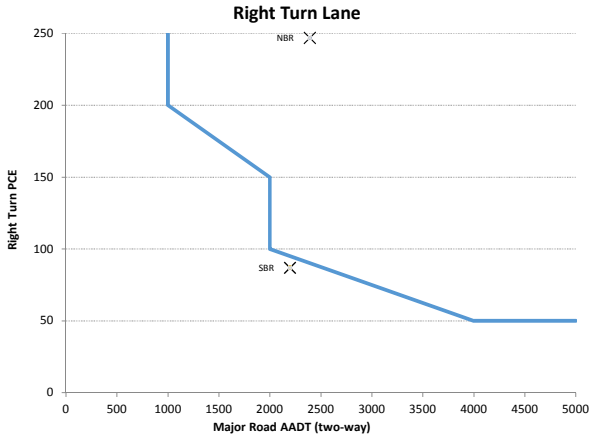
LEFT Turn Lane Volume Criteria (1.A)

SBL	NBL
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{LT} = 185	V_{LT} = 131
P_T = 0.12	P_T = 0.12
PCE = 197	PCE = 139
AADT = 2196	AADT = 2390
Met? Yes	Met? Yes

RIGHT Turn Lane Volume Criteria (1.A)

SBR	NBR
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{RT} = 82	V_{RT} = 233
P_T = 0.12	P_T = 0.12
PCE = 87	PCE = 247
AADT = 2196	AADT = 2390
Met? No	Met? Yes





US 52 / US 52B

Project Info

PCN	
Ref#	4347
HSIP #	
Study Date	1/14/2019

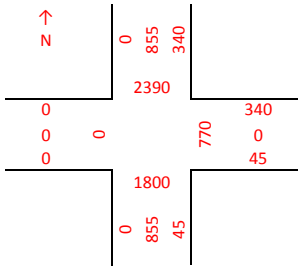
1050

Intersection Info

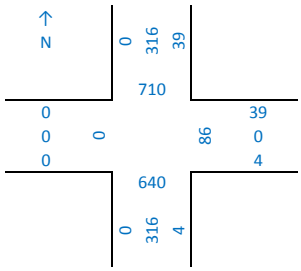
	Major Road	Minor Road
Reference Points	167.700	
Speed Limits (mph)	55	25
Select Major Road Directions	North-South	
Intersection/Junction Traffic Control	Stop on Minor Road	
Major Road a Divided Highway?	No	
Terrain	Level	

E_T = 1.5

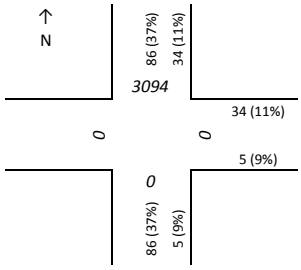
2018 AADTs

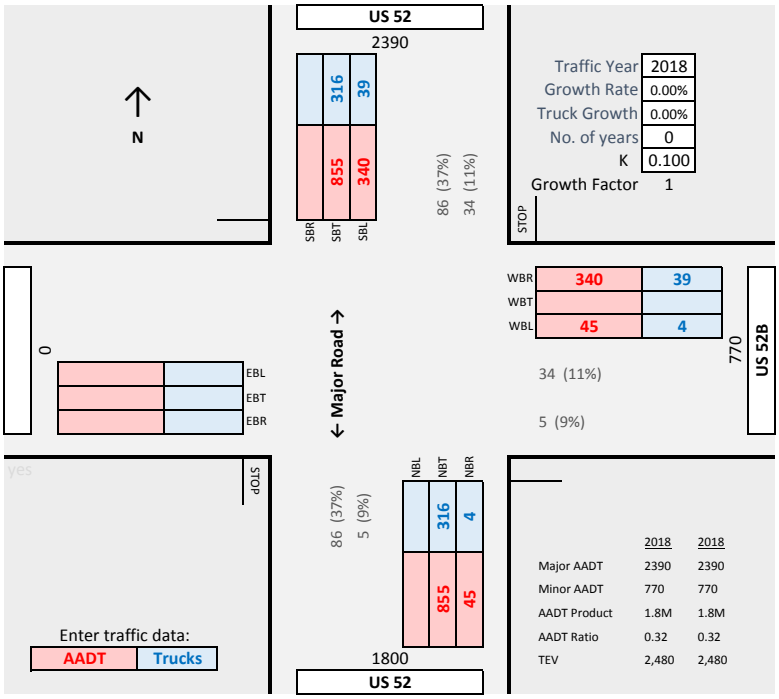


2018 TAADTs



2018 Truck %





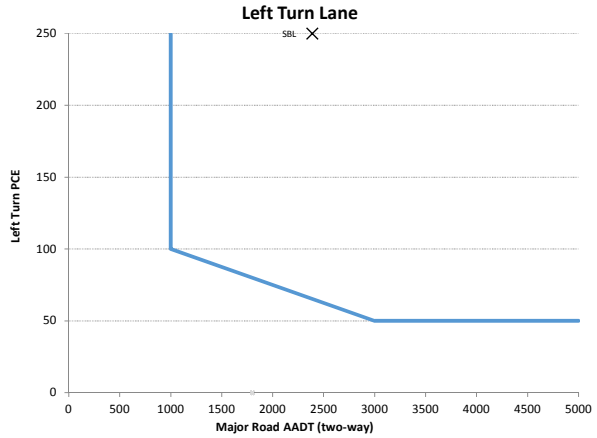
	2018	2018
Major AADT	2390	2390
Minor AADT	770	770
AADT Product	1.8M	1.8M
AADT Ratio	0.32	0.32
TEV	2,480	2,480

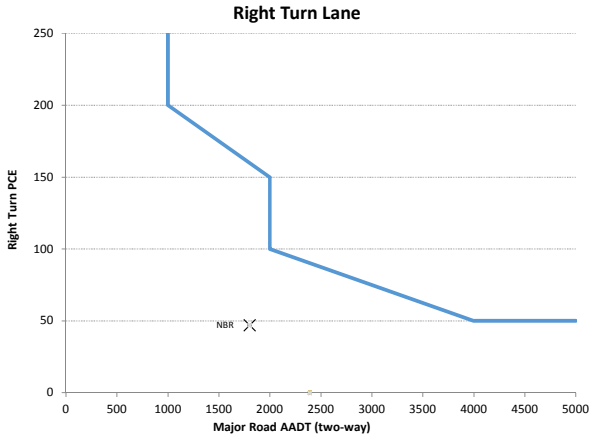
LEFT Turn Lane Volume Criteria (1.A)

SBL	NBL
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{LT} = 340	V_{LT} = 0
P_T = 0.11	P_T =
PCE = 360	PCE =
AADT = 2390	AADT = 1800
Met? Yes	Met?

RIGHT Turn Lane Volume Criteria (1.A)

SBR	NBR
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{RT} = 0	V_{RT} = 45
P_T =	P_T = 0.09
PCE =	PCE = 47
AADT = 2390	AADT = 1800
Met?	Met? No





US 52 / 30 Ave N

Project Info

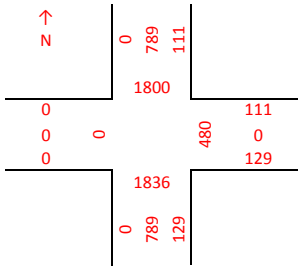
PCN	
Ref#	4347
HSIP #	
Study Date	1/14/2019

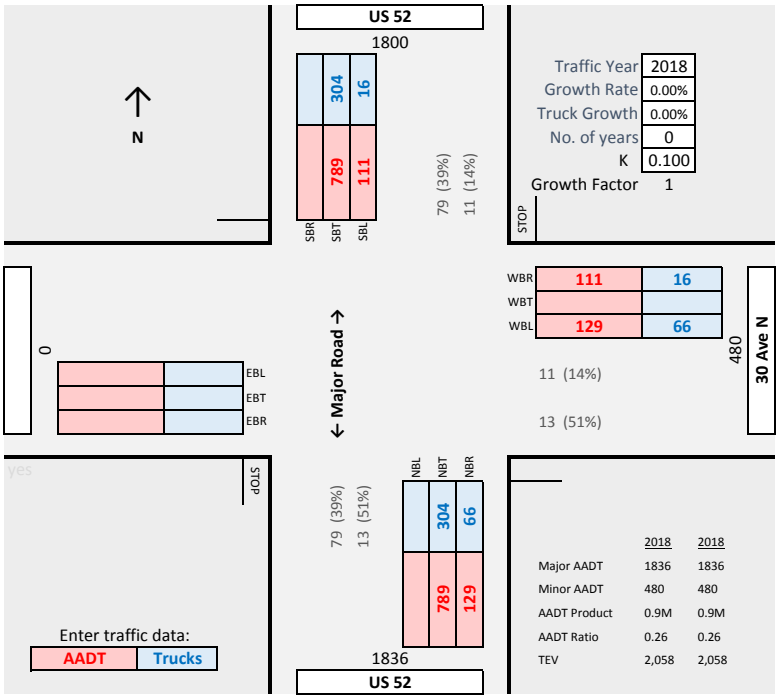
1125

Intersection Info

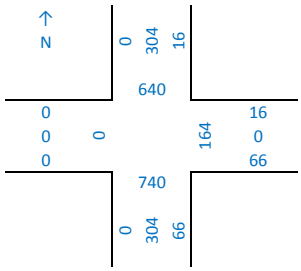
	Major Road	Minor Road	
Reference Points	168.500		
Speed Limits (mph)	55	25	Y
Select Major Road Directions	North-South		
Intersection/Junction Traffic Control	Stop on Minor Road		Y
Major Road a Divided Highway?	No		
Terrain	Level		E_T= 1.5

2018 AADTs

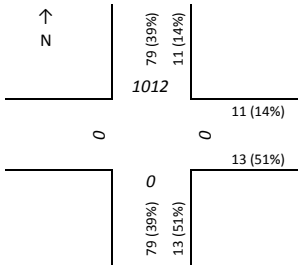




2018 TAADTs



2018 Truck %

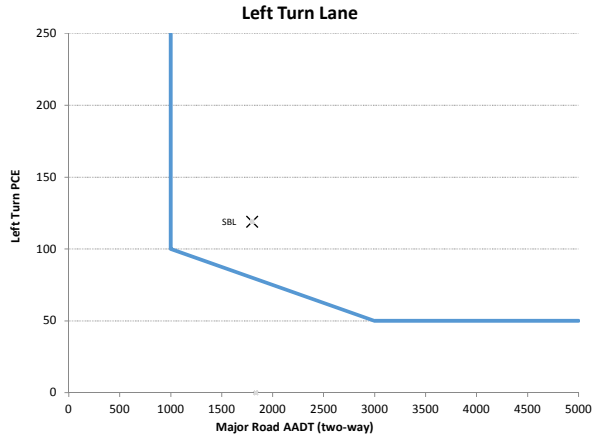


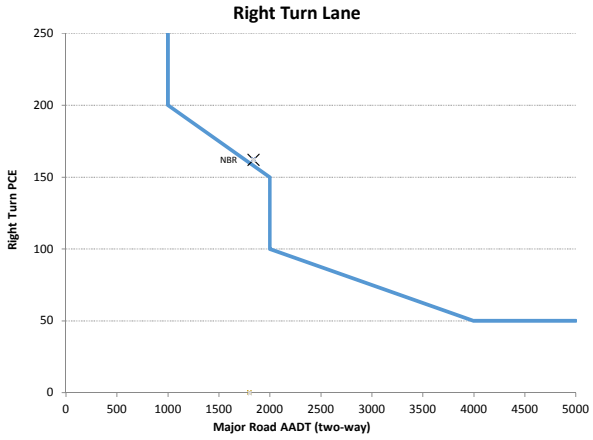
LEFT Turn Lane Volume Criteria (1.A)

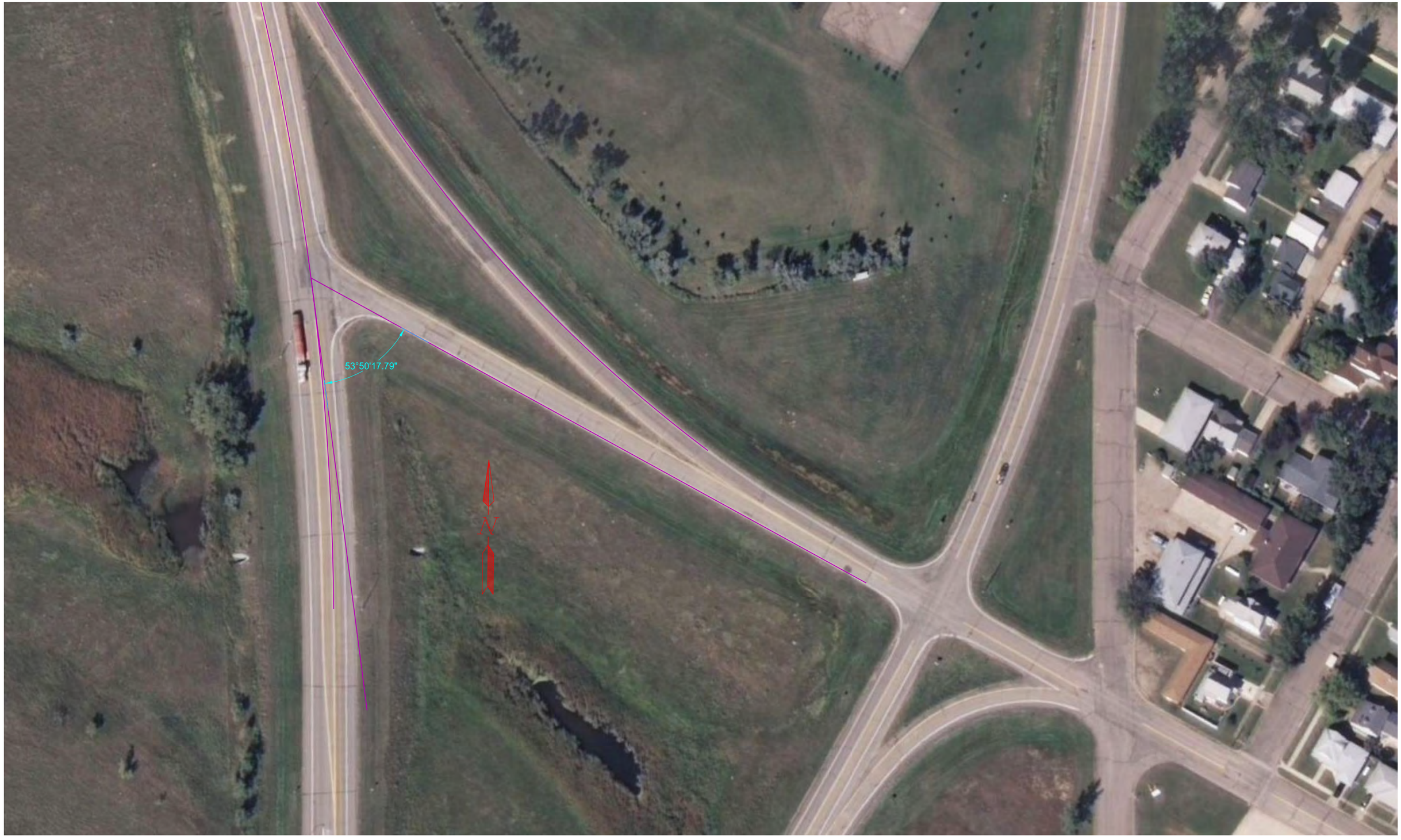
SBL	NBL
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{LT} = 111	V_{LT} = 0
P_T = 0.14	P_T =
PCE = 119	PCE =
AADT = 1800	AADT = 1836
Met? Yes	Met?

RIGHT Turn Lane Volume Criteria (1.A)

SBR	NBR
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{RT} = 0	V_{RT} = 129
P_T =	P_T = 0.51
PCE =	PCE = 162
AADT = 1800	AADT = 1836
Met?	Met? Yes






53°50'17.79"
N


300'
320'
N


PLAN A
Elm Ave
Hwy 52


PLAN B

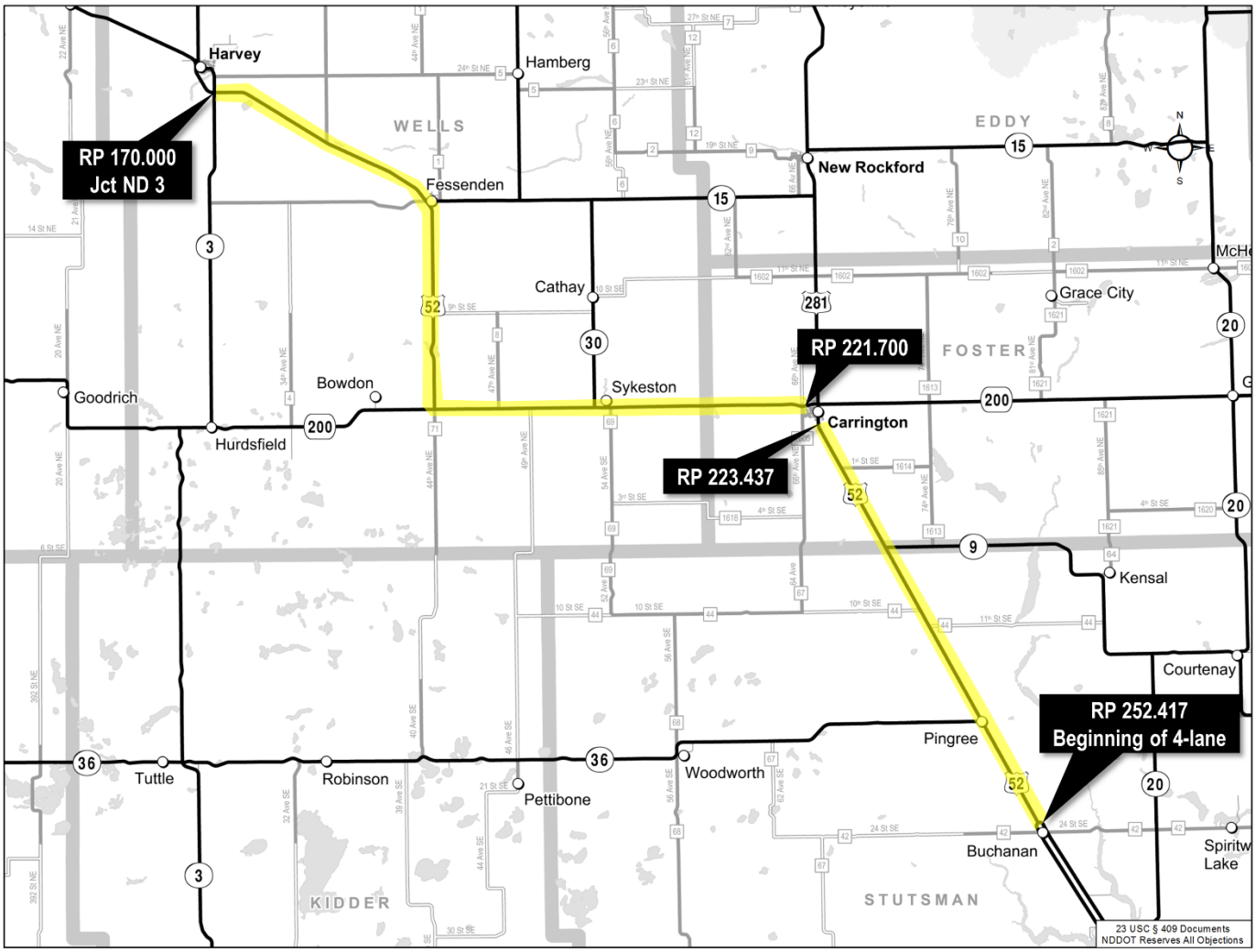

PLAN C

#4347

This document was originally issued and sealed by DONOVAN M SLAG Registration Number PE 5647 on 6/21/2019 and the original document is stored at the North Dakota Department of Transportation

TRAFFIC OPERATIONS STUDY

US 52
Harvey (ND 3) to Beginning of 4-lane (Buchanan)
RP 170.000 to 221.700 &
RP 223.437 to 252.417



Prepared By:
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
PROGRAMMING DIVISION
TRAFFIC OPERATIONS SECTION

June 2019

TABLE OF CONTENTS

TRAFFIC OPERATIONS STUDY
US 52
Beginning of 2-lane to Harvey (ND 3)

INTRODUCTION

The traffic control recommendations in this study are based on:

- The 2009 Manual on Uniform Traffic Control Devices (MUTCD), FHWA
- A Policy on Geometric Design of Highways and Streets, AASHTO, 2018
- The Highway Capacity Manual 6th Edition, TRB, 2016
- Highway Safety Manual, 1st Edition, AASHTO, 2010
- Lighting Warrant Policy, NDDOT, 2015
- NDDOT Traffic Operations Manual, November 2018

BACKGROUND

The study area is US 52 from Harvey at ND 3 to the beginning point of the 4-lane section (near Buchanan). This study excludes US 52 in the Carrington area. The purpose of this study is to evaluate the need for turn lanes at the study intersections and to evaluate the two-lane highway segment capacity to determine the possible need for passing-lanes.

The study intersections were determined based on:

- US 52 intersections where the minor road is paved and there are no existing turn lanes
- Where US 52 posted speed is greater than 50 mph
- Input from the Minot, Devils Lake and Valley City District Engineers

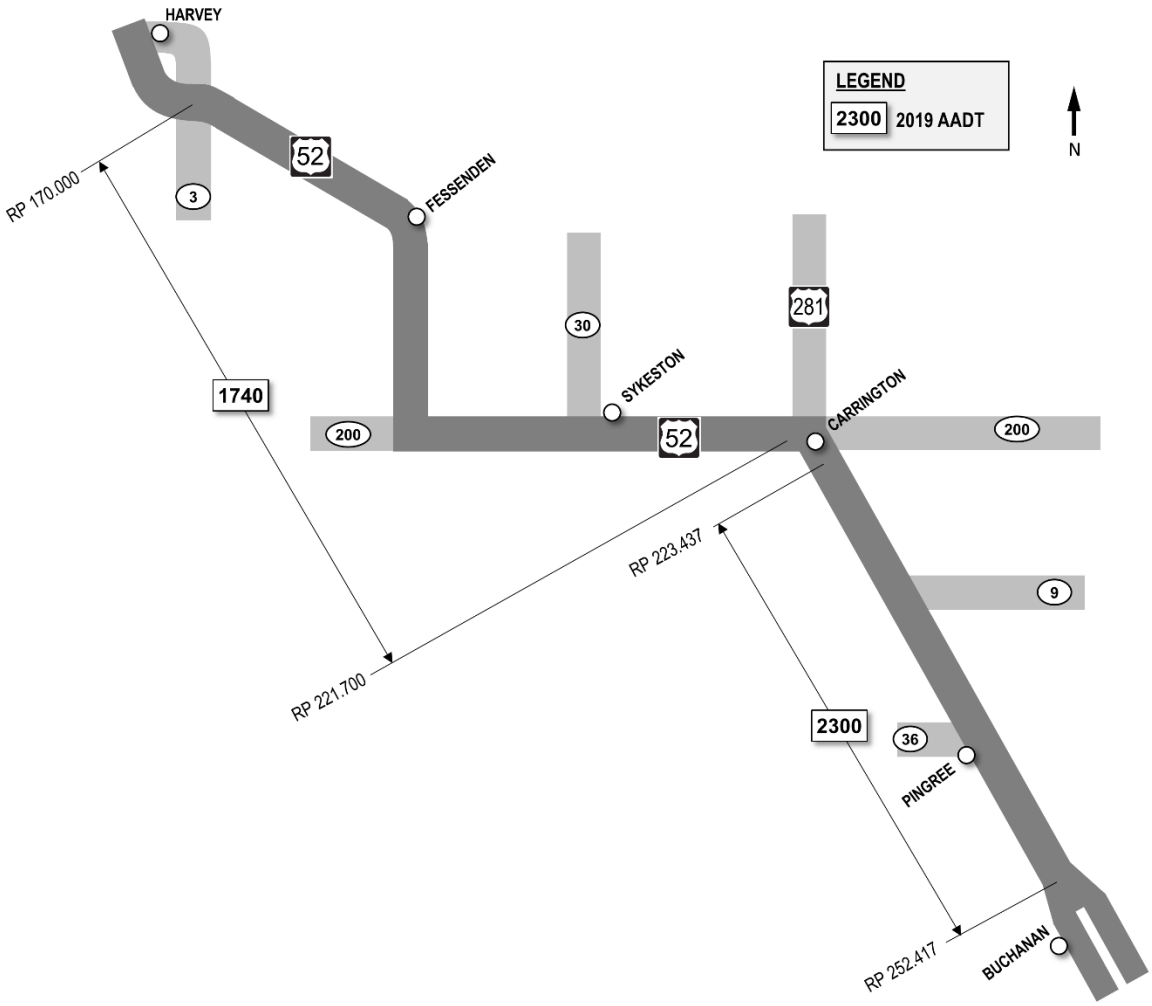
For this study, the intersection capacity analysis was done only at US 52 – ND 200 / US 52 – 43 Ave NE. This intersection had the highest traffic volume with a calculated LOS A (see page 10), therefore it is assumed the remaining study intersections can also expect LOS A.

Study Intersections		Traffic Control	Lighting
#638	US 52 / 38 Ave NE (Wells 4)	Two-way Stop	None
#65	US 52 / ND 15	Two-way Stop	Destination
#1126	US 52 / 2 St	Two-way Stop	None
#526	US 52 / 9 St NE	Two-way Stop	None
#66	US 52 – ND 200 / US 52 – 43 Ave NE	Two-way Stop*	Destination
#1052	US 52 / 47 Ave NE (Wells 8)	Two-way Stop	None
#529	US 52 / 49 Ave NE	Two-way Stop	None
#67	US 52 / ND 30	Two-way Stop	Destination
#530	US 52 / 54 Ave NE (Wells 69)	Two-way Stop	Destination
#535	US 52 / 1 St SE (Foster 1614)	Two-way Stop	None
#69	US 52 / ND 9	Two-way Stop	None
#536	US 52 / 10 St SE (Stutsman 44)	Two-way Stop	None
#537	US 52 / 11 St SE (Stutsman 44)	Two-way Stop	None

*Stop sign mounted flashing beacons

Highway	Functional Classification	Performance Classification	Speed Limit
US 52	Principal Arterial Rural	Rural Interregional Corridor	65 mph

TRAFFIC DATA



Traffic data was acquired from the Roadway Data Section in June 2018. The current and projected AADTs are summarized below. Note the high percentage of trucks, this is due to the low volume of passenger vehicles. Traffic volume details are in appendix A. The peak hour is assumed to be 10% of the total AADT with a 50/50 directional distribution. Segment capacity worksheets are in appendix B.

RP 170.000 to RP 221.700				
Year	**Passenger**	**Trucks**	**Total AADT**	**LOS**
2019	1110	630 (36.2%)	**1740**	**A**
2039	1500	855 (36.3%)	**2355**	**A**

RP 223.437 to RP 252.417				
Year	**Passenger**	**Trucks**	**Total AADT**	**LOS**
2019	1505	795 (34.6%)	**2300**	**A**
2039	2035	1075 (34.6%)	**3110**	**B**

NDDOT guidance is to meet or exceed an overall LOS D for under 20-year projected automobile traffic[1]. The existing roadway cross section meets LOS guidelines for all 4 segments. Therefore, passing-lanes are not needed based on this capacity analysis.

Reference:

1. NDDOT, *"Traffic Operations Manual"*, November 2018. Page 11

CRASH HISTORY

Location Description	US 52 – RP 170.000 to 221.700 & RP 223.437 to 252.417
Crash Time Period	January 1, 2013 through December 31, 2017

Crash Severity	
Fatal	1
Incapacitating Injury	7
Non-incapacitating Injury	23
Possible Injury	12
Property Damage Only	95
Total	**138**

Manner of Collision	
Angle	3
Rear End	25
Left Turn	0
Sideswipe	9
Single Vehicle	82
Ped/Bike	0
Other	19
Total	**138**

Surface Conditions	
Dry	57
Wet, ice, snow, frost, other	81
Total	**138**

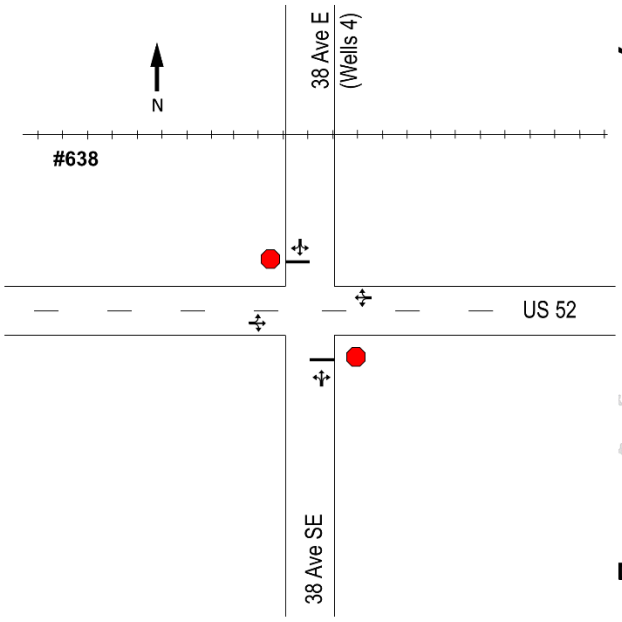
- There were a couple of crashes that occurred at the Sykeston Rest Area turnoff (RP 208.83) that involved vehicles slowing to make an EB left. These crashes occurred in 2013 and 2014. This would meet the crash criteria for installation of a left turn lane. However, this rest area was closed in 2016. There have been no reported crashes at this location since then. If this rest area is re-opened, it is recommended to evaluate the need for an EB left turn lane here.
- The 1 fatal crash was a head on collision where a SB vehicle went into the oncoming lane and was struck by a NB semi. This crash happened about 4 miles north of Pingree. Alcohol was a factor for the driver of the SB vehicle.
- Contributing factors for fatal & injury crashes (K,A,B,C) were typically: weather, too fast for conditions, improper overtaking, following too close, careless/reckless driving, and attention distracted.
- Out of all the crashes, 56% occurred during wet or ice/snow surface conditions.
- With 4 reported crashes, the study intersection that had the most crashes was US 52 – ND 200 / US 52 – 43 Ave NE.

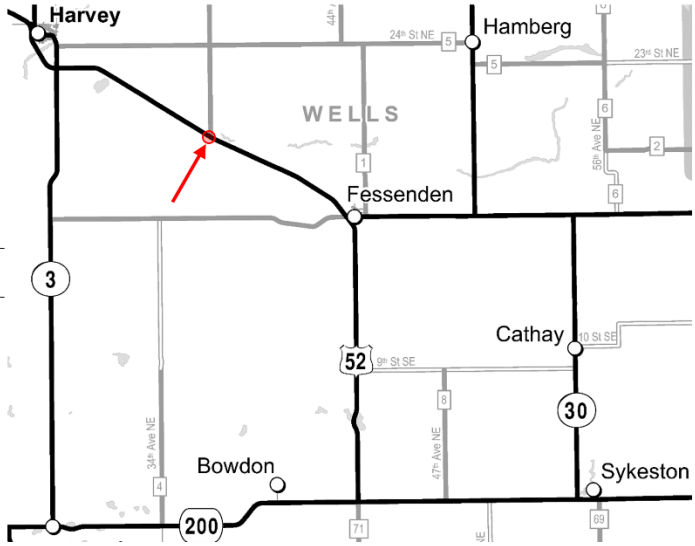
See appendix C for details on the crash data. A crash modification factor (CMF) for a passing-lane is 0.75[1].

Reference:

1. AASHTO, *"Highway Safety Manual"*, 2010. Table 16-7

INTERSECTION #638: US 52 / 38 Ave NE (Wells 4) RP 178.30





Intersection-related Crashes

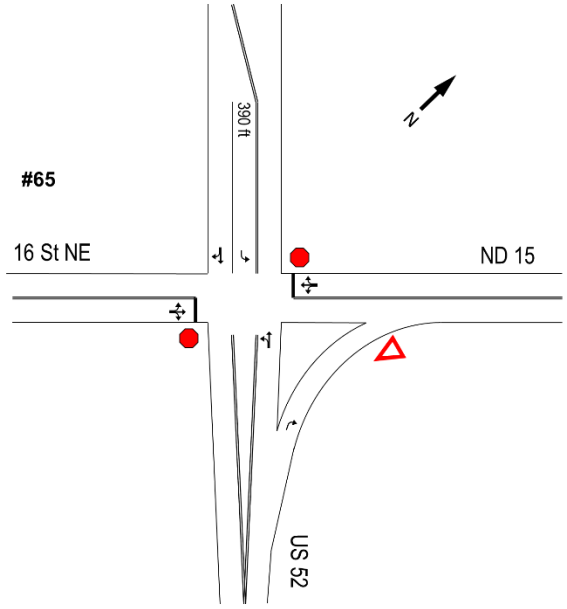
There were no reported crashes at this intersection.

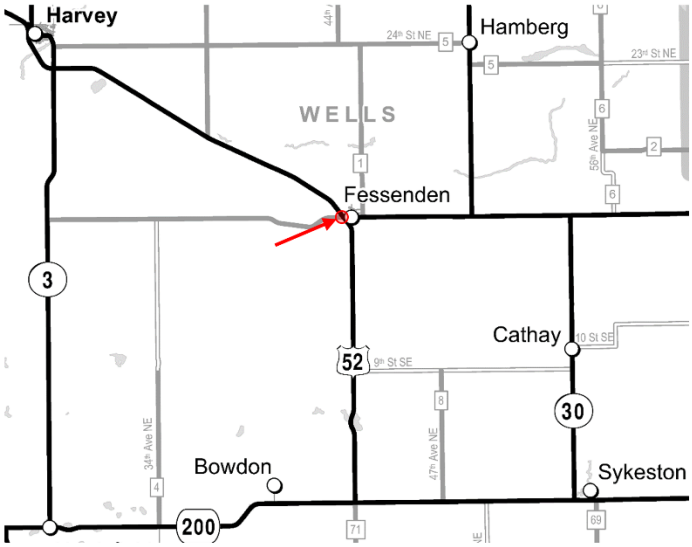
Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
EB to NB Left	No	No	N/A
WB to SB Left	No	No	N/A
EB to SB Right	No	No	N/A
WB to NB Right	No	No	N/A

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	No – cross product is 0.1 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	No
6F	Local government pays 50% and maintains	No

Destination lighting is not warranted.

INTERSECTION #65: US 52 / ND 15 — RP 185.60





Intersection-related Crashes

There were no reported crashes at this intersection.

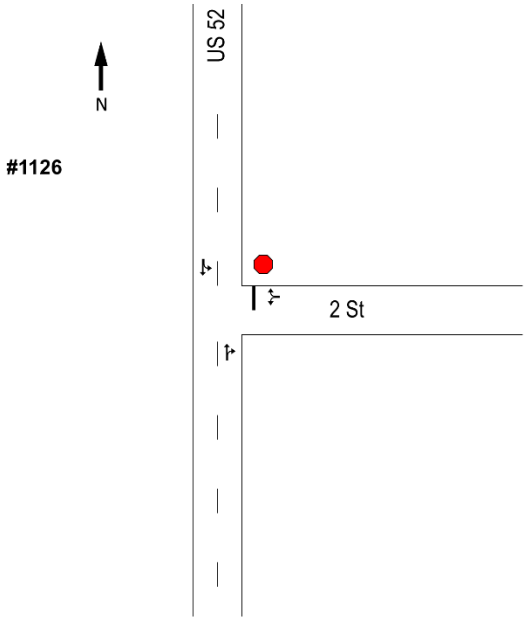
Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
SB to EB Left	Yes	Yes	No – should be 435 ft
NB to WB Left	No	No	N/A
SB to WB Right	No	No	N/A
NB to EB Right	Yes	Yes	Yes

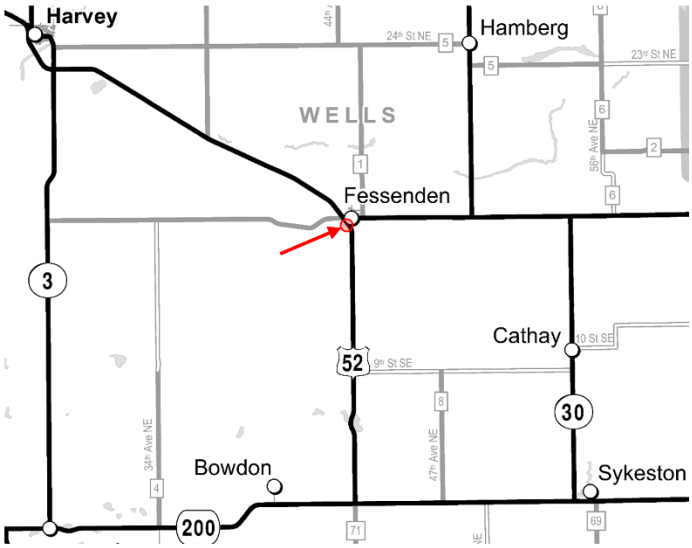
A SB left turn lane and a NB right turn lane are warranted.

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	No – cross product is 1.7 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	Yes
6F	Local government pays 50% and maintains	No

Destination lighting is warranted.

INTERSECTION #1126: US 52 / 2 St — RP 186.080





Intersection-related Crashes

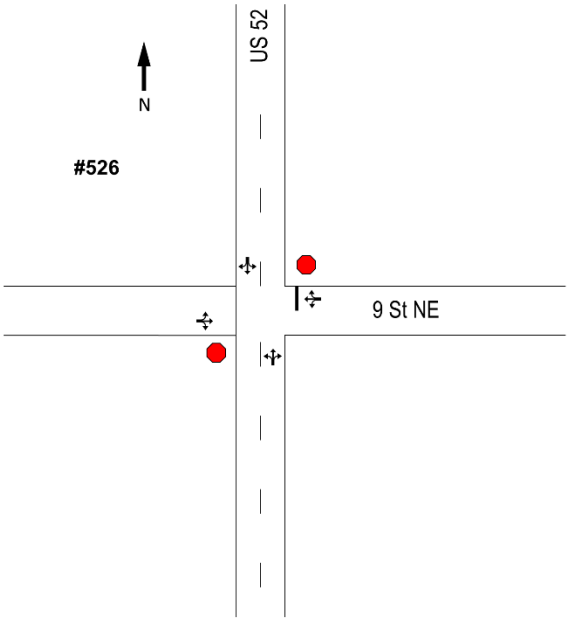
There were no reported crashes at this intersection.

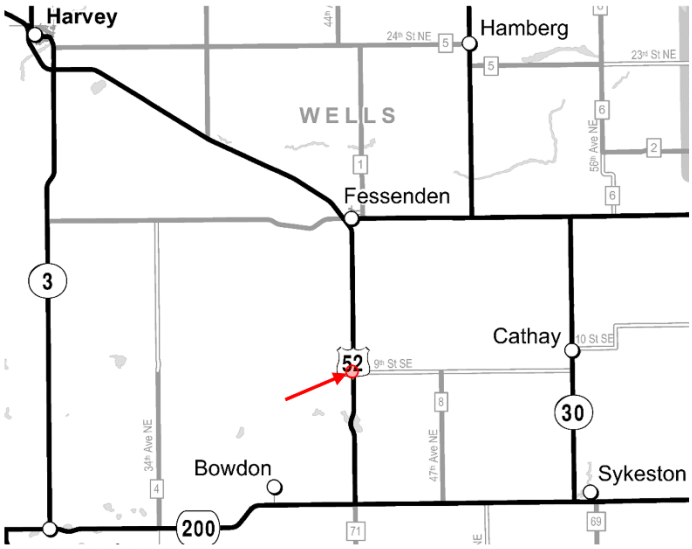
Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
SB to EB Left	No	No	N/A
NB to WB Left	No	No	N/A
SB to WB Right	No	No	N/A
NB to EB Right	No	No	N/A

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	No – cross product is 0.2 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	No
6F	Local government pays 50% and maintains	No

Destination lighting is not warranted.

INTERSECTION #526: US 52 / 9 St NE — RP 192.730





Intersection-related Crashes

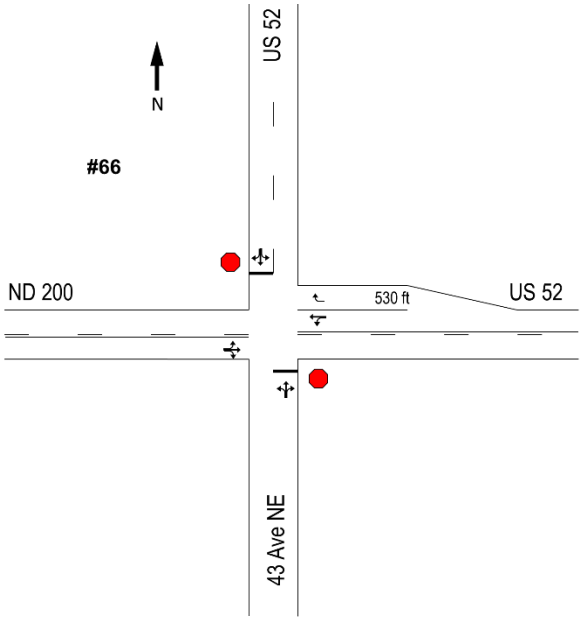
There were no reported crashes at this intersection.

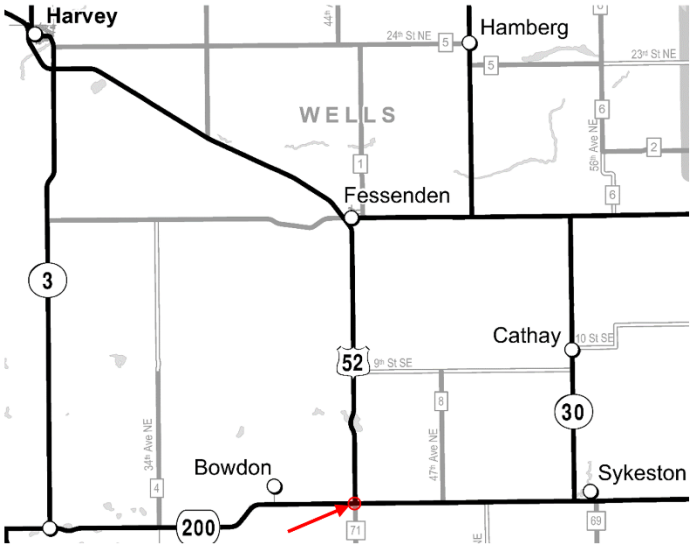
Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
SB to EB Left	No	No	N/A
NB to WB Left	No	No	N/A
SB to WB Right	No	No	N/A
NB to EB Right	No	No	N/A

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	No – cross product is 0.0 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	No
6F	Local government pays 50% and maintains	No

Destination lighting is not warranted.

INTERSECTION #66: US 52 – ND 200 / US 52 – 43 Ave NE RP 198.720





This intersection was evaluated with SHE-3-052(045)198 (PCN 20287, HSIP 321502) with a proposal to reconfigure the roadways so that US 52 traffic would be free-flow. The project did not move forward based on a January 2014 decision document.

Intersection-related Crashes

There were 4 reported crashes at this intersection. One crash was a sideswipe where an EB vehicle passed another vehicle trying to make an EB left turn. One crash was backing. The two other crashes were vehicles making WB right turns that slid into the stopped vehicle facing SB at the stop sign.

Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
EB to NB Left	No	No	N/A
WB to SB Left	No	No	N/A
EB to SB Right	No	No	N/A
WB to NB Right	Yes	Yes	Yes

A WB right turn lane is warranted.

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	Yes – cross product is 2.2 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	Yes
6F	Local government pays 50% and maintains	No

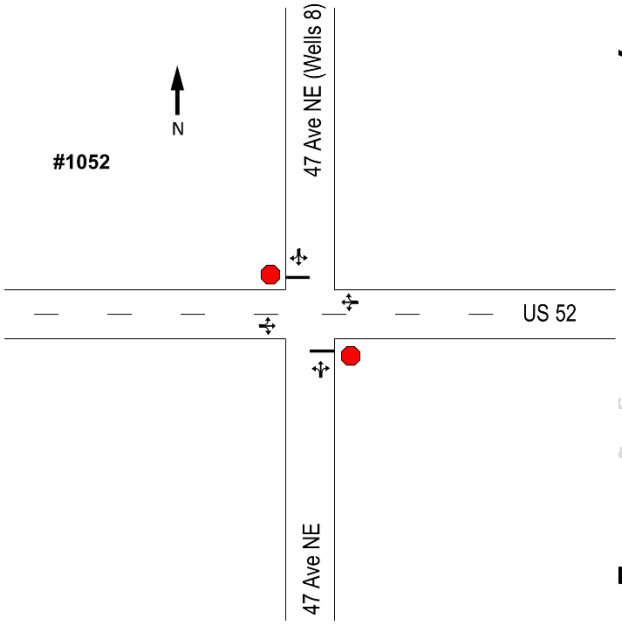
Destination lighting is warranted.

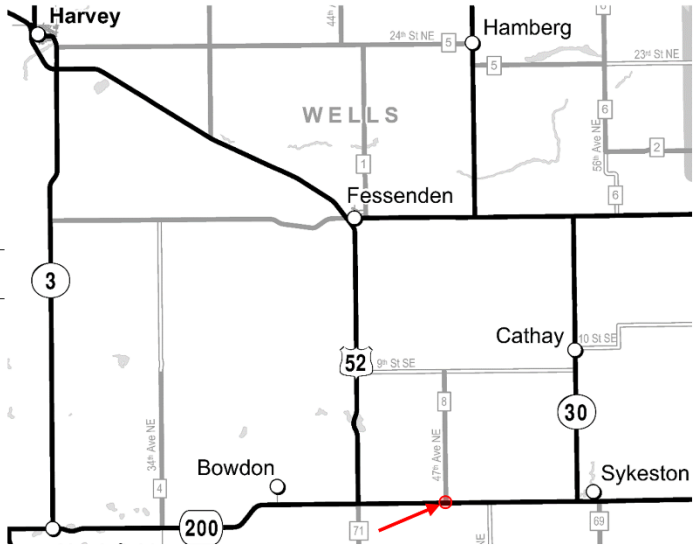
Capacity analysis – EXISTING GEOMETRY Peak Hour

Approach	2018 LOS	2018 Delay (sec)
Eastbound:	A*	2
Westbound:	A*	1
Northbound:	A	9
Southbound:	A	10
Intersection	**A***	**4**

*Equivalent LOS shown, mainline approaches and the overall intersection LOS are not calculated for TWSC intersections.

INTERSECTION #1052: US 52 / 47 Ave NE (Wells 8) RP 202.740





Intersection-related Crashes

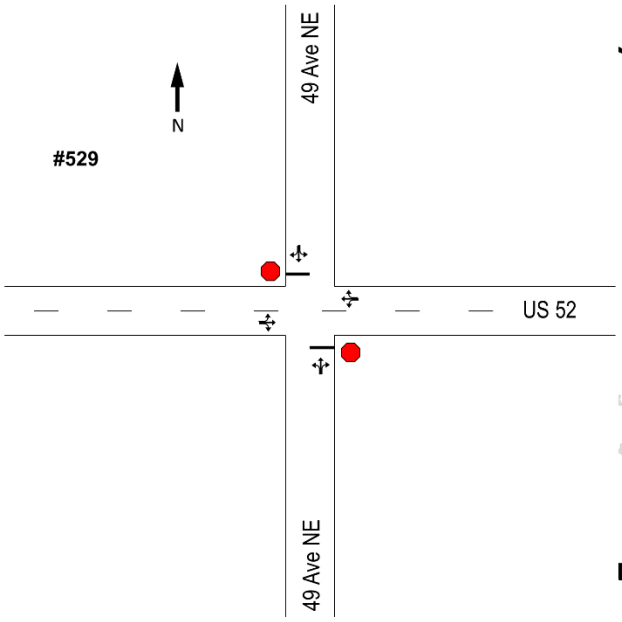
There were no reported crashes at this intersection.

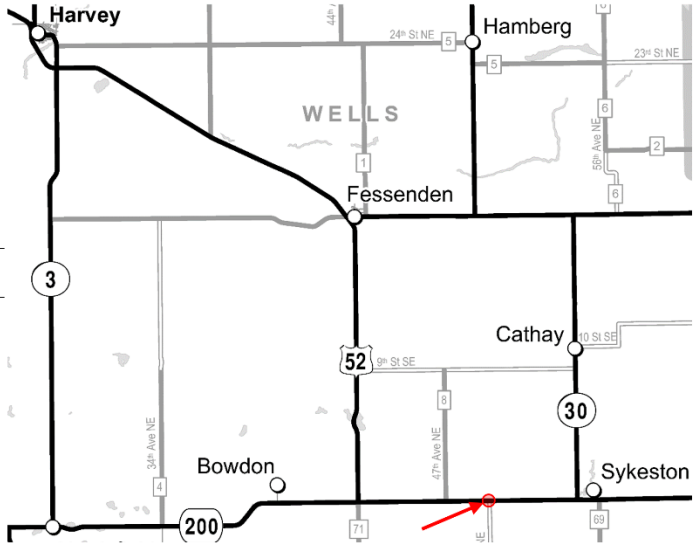
Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
EB to NB Left	No	No	N/A
WB to SB Left	No	No	N/A
EB to SB Right	No	No	N/A
WB to NB Right	No	No	N/A

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	No – cross product is 0.1 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	No
6F	Local government pays 50% and maintains	No

Destination lighting is not warranted.

INTERSECTION #529: US 52 / 49 Ave NE — RP 204.720





Intersection-related Crashes

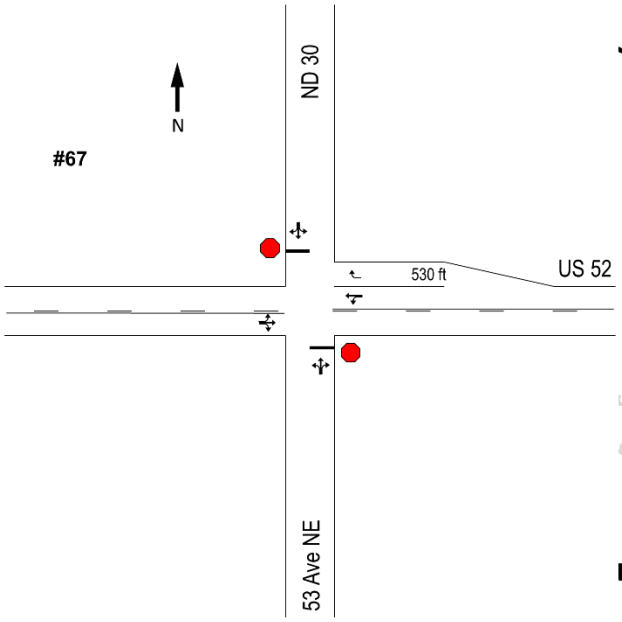
There were no reported crashes at this intersection.

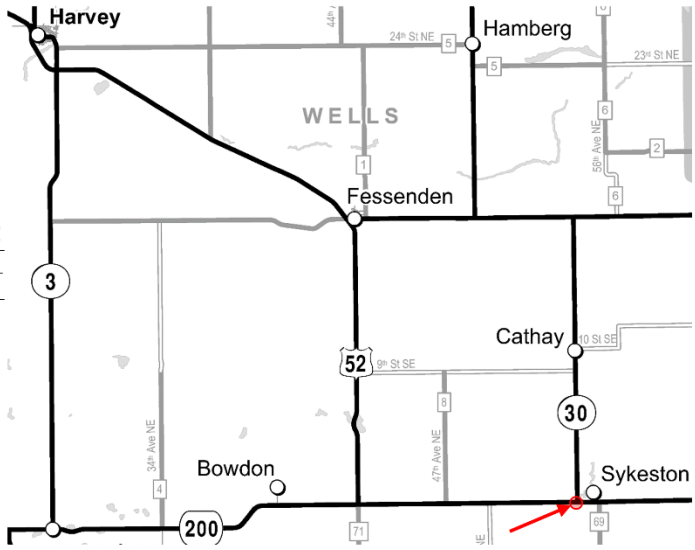
Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
EB to NB Left	No	No	N/A
WB to SB Left	No	No	N/A
EB to SB Right	No	No	N/A
WB to NB Right	No	No	N/A

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	No – cross product is 0.0 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	No
6F	Local government pays 50% and maintains	No

Destination lighting is not warranted.

INTERSECTION #67: US 52 / ND 30 RP 208.720





Intersection-related Crashes

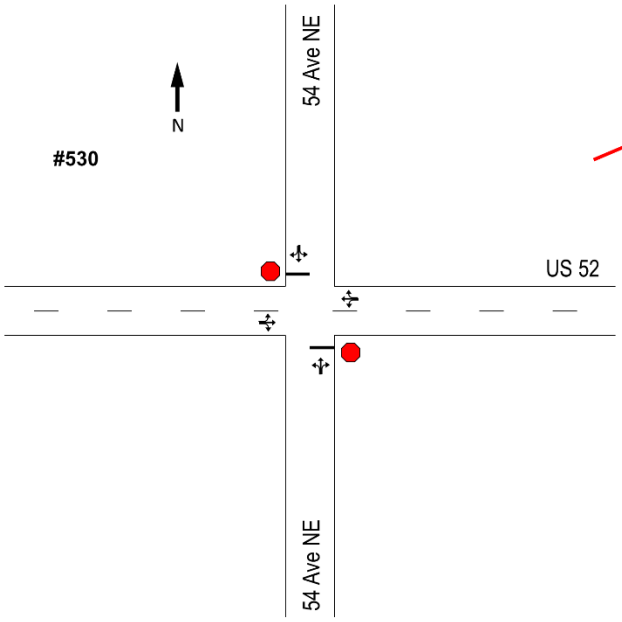
There were no reported crashes at this intersection.

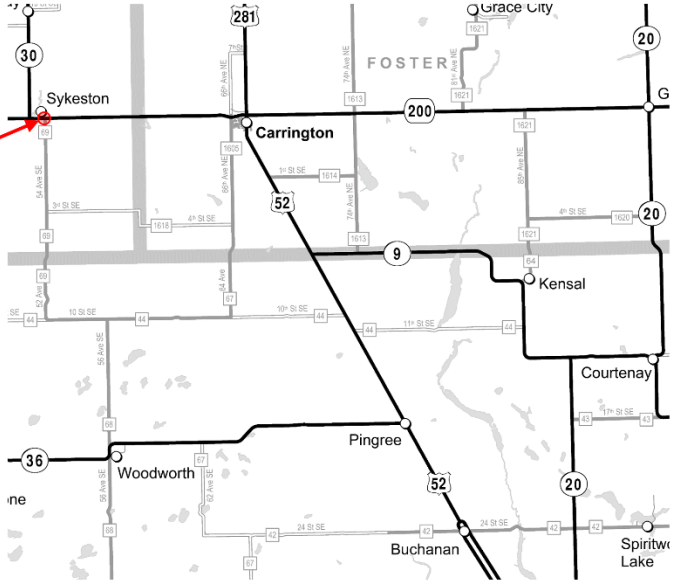
Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
EB to NB Left	No	No	N/A
WB to SB Left	No	No	N/A
EB to SB Right	No	No	N/A
WB to NB Right	Yes	No	Yes

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	No – cross product is 0.3 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	Yes
6F	Local government pays 50% and maintains	No

Destination lighting is warranted.

INTERSECTION #530: US 52 / 54 Ave NE (Wells 69) RP 209.740





Intersection-related Crashes

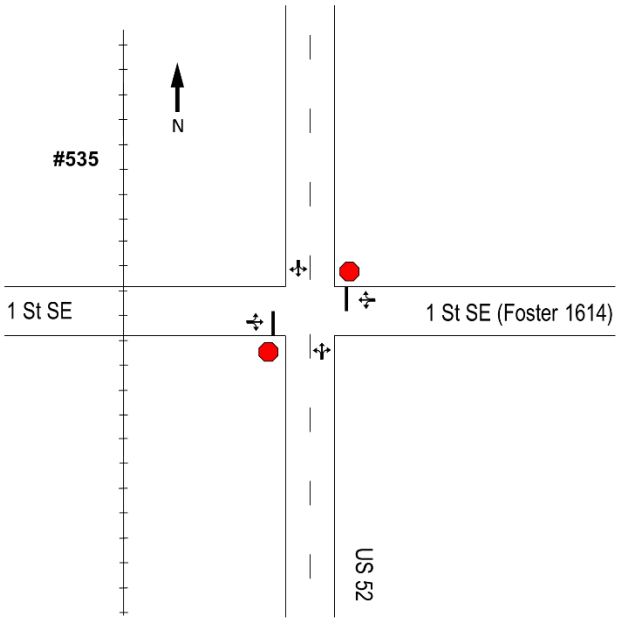
There were no reported crashes at this intersection.

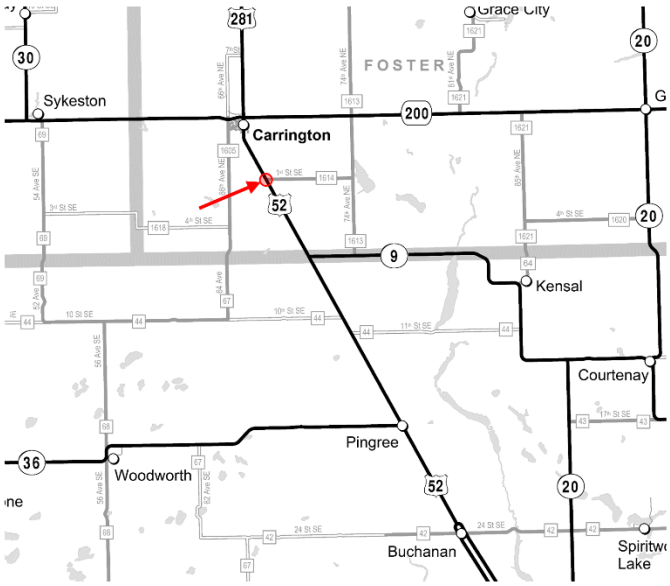
Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
EB to NB Left	No	No	N/A
WB to SB Left	No	No	N/A
EB to SB Right	No	No	N/A
WB to NB Right	No	No	N/A

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	No – cross product is 0.2 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	Yes
6F	Local government pays 50% and maintains	No

Destination lighting is warranted.

INTERSECTION #535: US 52 / 1 St SE (Foster 1614) RP 226.760





Intersection-related Crashes

There were no reported crashes at this intersection.

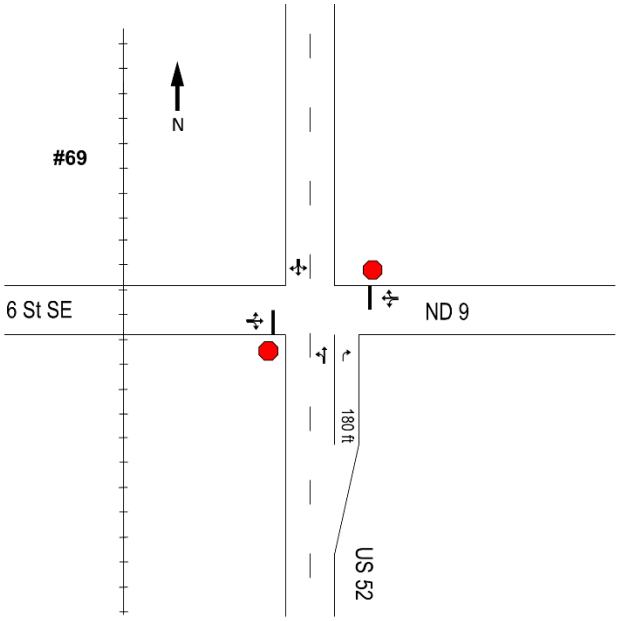
Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
SB to EB Left	No	No*	N/A
NB to WB Left	No	No	N/A
SB to WB Right	No	No	N/A
NB to EB Right	No	No	N/A

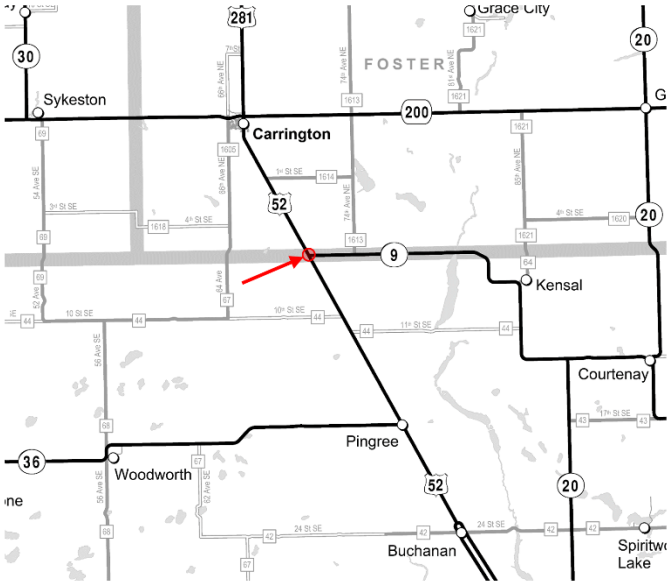
*A SB left may meet criteria in 2023 based on a 1.5% traffic growth per year.

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	No – cross product is 0.3 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	No
6F	Local government pays 50% and maintains	No

Destination lighting is not warranted.

INTERSECTION #69: US 52 / ND 9 — RP 232.410





Intersection-related Crashes

There were no reported crashes at this intersection.

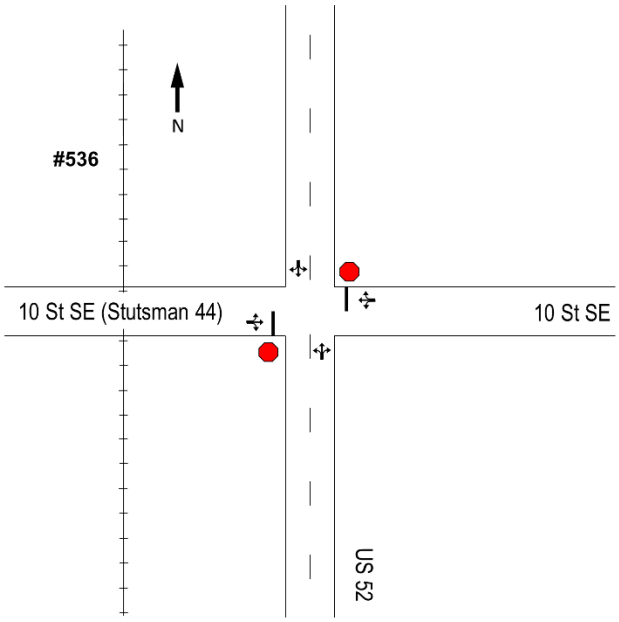
Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
SB to EB Left	No	Yes	N/A – should be 630 ft
NB to WB Left	No	No	N/A
SB to WB Right	No	No	N/A
NB to EB Right	Yes	No	No – should be 530 ft

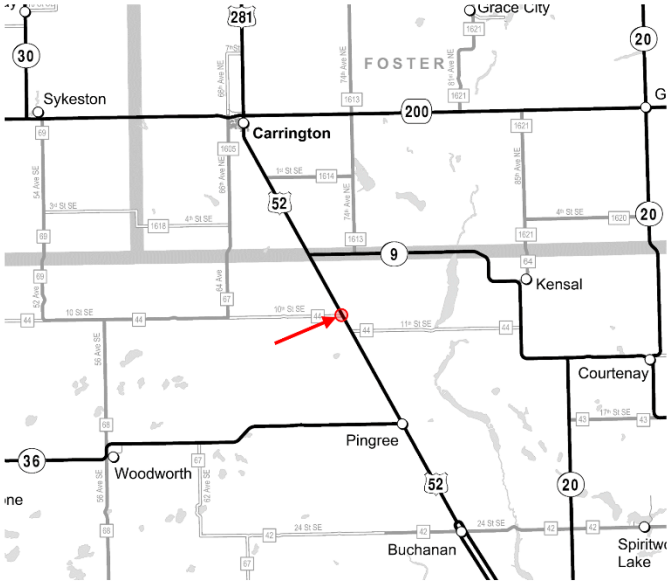
A SB left turn lane is warranted.

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	No – cross product is 0.7 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	No
6F	Local government pays 50% and maintains	No

Destination lighting is not warranted.

INTERSECTION #536: US 52 / 10 St SE (Stutsman 44) RP 236.910





Intersection-related Crashes

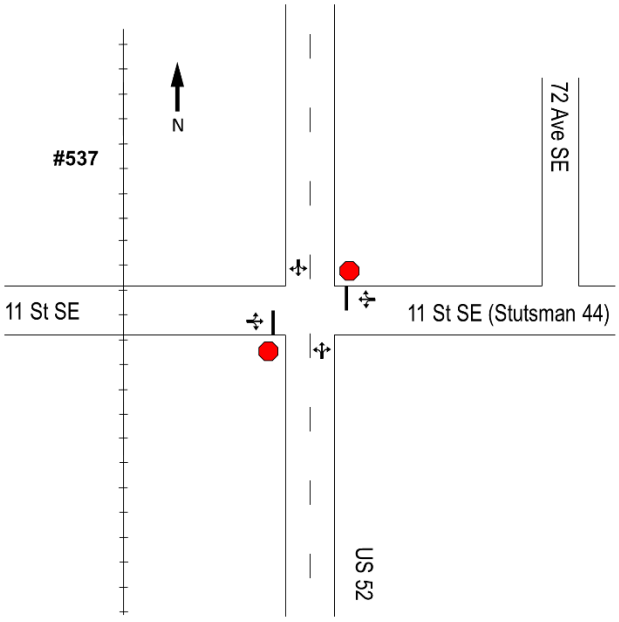
There were no reported crashes at this intersection.

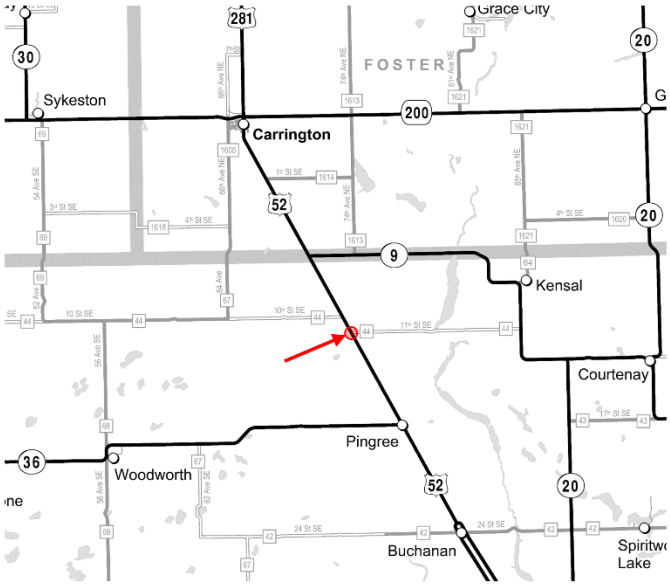
Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
SB to EB Left	No	No	N/A
NB to WB Left	No	No	N/A
SB to WB Right	No	No	N/A
NB to EB Right	No	No	N/A

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	No – cross product is 0.1 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	No
6F	Local government pays 50% and maintains	No

Destination lighting is not warranted.

INTERSECTION #537: US 52 / 11 St SE (Stutsman 44) RP 238.040





Intersection-related Crashes

There were no reported crashes at this intersection.

Major Road Turn Lane	Existing?	Criteria 1.A Met?	Meets current design standards?
SB to EB Left	No	No	N/A
NB to WB Left	No	No	N/A
SB to WB Right	No	No	N/A
NB to EB Right	No	Yes	N/A – should be 530 ft

A NB right turn lane is warranted.

Destination Lighting Warrant		Met?
6A	Recommended in HSIP or LRSP	No
6B	AADT cross product ≥ 2,000,000	No – cross product is 0.8 million
6C	Overhead flashing beacon is removed	No
6D	Engineering judgment	No
6E	Existing destination lighting present	No
6F	Local government pays 50% and maintains	No

Destination lighting is not warranted.

SUMMARY

Turn Lane Warrants

Intersection	Warranted	Page reference
US 52 / ND 15	SB left*, NB right*	7
US 52 – ND 200 / US 52 – 43 Ave NE	WB right*	10
US 52 / 1 St SE (Foster 1614)	See note below	15
US 52 / ND 9: SB left	SB left	16
US 52 / 11 St SE (Stutsman 44)	NB right	18

*Existing turn lane in place—may not meet current standards.

The intersection of US 52 / 1 St SE (Foster 1614) does not warrant a turn lane based on the current traffic volumes. However, a SB left may meet criteria in 2023 assuming a 1.5% per year growth in traffic volumes.

Lighting Warrants:

Intersection	Lighting Warranted	Page reference
US 52 / ND 15	Destination*	7
US 52 – ND 200 / US 52 – 43 Ave NE	Destination*	10
US 52 / ND 30	Destination*	13
US 52 / 54 Ave NE (Wells 69)	Destination*	14

*Existing lighting already in place.

ESTIMATE OF CURRENT AND FUTURE TRAFFIC
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
(PLANNING DIV. TRAFFIC INFO. SECTION)

RECNO: 11563

DATE PRINTED OR REPRINTED: 04/15/2019 PROJECT NO:

DATE PREPARED: 04/15/2019 COUNTY: WELLS ROUTE ID: 0

HIGHWAY NO: 52 HWY SUFFIX: HWY DIRECTION: E

REF PT: 170.000 OFFSET: .0000 LENGTH: 82.4115

PASSENGER EXPANSION FACTOR: 1.35 TRUCK EXPANSION FACTOR: 1.35

TRAFFIC'S ANNUAL % OF GROWTH: 1.5 ESAL'S ANNUAL % OF GROWTH: 1.5

LOCATION: RP 170.00 TO RP 221.70

* * * * * * * * * * * * * * * * * * * *
* ALL AADT'S & ESALS, ARE AT THE HIGHEST POINT OF THE PROJECT SEGMENT *

	YEAR	PASS	TRUCKS	TOTAL	30TH MAX HR	E.S.A.L.'S FLEX	RIGID
CURRENT	2019	1,110	630	1,740	175	605	995
FORECAST	2039	1,500	855	2,355	240	825	1,355

* * * * * * * * * * * * * * * * * * * *

PAVEMENT EQUIVALENCY FACTORS: FLEXIBLE AT SN4 RIGID AT 9 INCHES

WAS CLASS WIM DATA AVAILABLE FOR THIS PARTICULAR LOCATION? N

IS THIS A REVISED ESTIMATE? N SUPERCEDES EST. OF

REQUESTED BY: DONOVAN SLAG- PROGRAMMING

* * * * * * * * REMARKS! * * * * * * * *

TRAFFIC FORECAST ESTIMATE IS BASED ON 2018 TRAFFIC COUNTS.
TRAFFIC FOR BOTH DIRECTIONS.
COMPLETED BY NR.

TRAFFIC BASED ON VMT FOR SEGMENT

ESTIMATE OF CURRENT AND FUTURE TRAFFIC
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
(PLANNING DIV. TRAFFIC INFO. SECTION)

RECNO: 11566

DATE PRINTED OR REPRINTED: 04/15/2019 PROJECT NO:

DATE PREPARED: 04/15/2019 COUNTY: FOSTER ROUTE ID: 0

HIGHWAY NO: 52 HWY SUFFIX: HWY DIRECTION: E

REF PT: 170.000 OFFSET: .0000 LENGTH: 82.4115

PASSENGER EXPANSION FACTOR: 1.35 TRUCK EXPANSION FACTOR: 1.35

TRAFFIC'S ANNUAL % OF GROWTH: 1.5 ESAL'S ANNUAL % OF GROWTH: 1.5

LOCATION: RP 223.437 TO RP 252.417

* * * * * * * * * * * * * * * * * * * *
* ALL AADT'S & ESALS, ARE AT THE HIGHEST POINT OF THE PROJECT SEGMENT *

	YEAR	PASS	TRUCKS	TOTAL	30TH MAX HR	E.S.A.L.'S FLEX	RIGID
CURRENT	2019	1,505	795	2,300	230	765	1,260
FORECAST	2039	2,035	1,075	3,110	315	1,035	1,700

* * * * * * * * * * * * * * * * * * * *

PAVEMENT EQUIVALENCY FACTORS: FLEXIBLE AT SN4 RIGID AT 9 INCHES

WAS CLASS WIM DATA AVAILABLE FOR THIS PARTICULAR LOCATION? N

IS THIS A REVISED ESTIMATE? N SUPERCEDES EST. OF

REQUESTED BY: DONOVAN SLAG- PROGRAMMING

* * * * * * * * REMARKS! * * * * * * * *

TRAFFIC FORECAST ESTIMATE IS BASED ON 2018 TRAFFIC COUNTS.
TRAFFIC FOR BOTH DIRECTIONS.
COMPLETED BY NR.

TRAFFIC BASED ON VMT FOR SEGMENT

Intersection Traffic Volumes

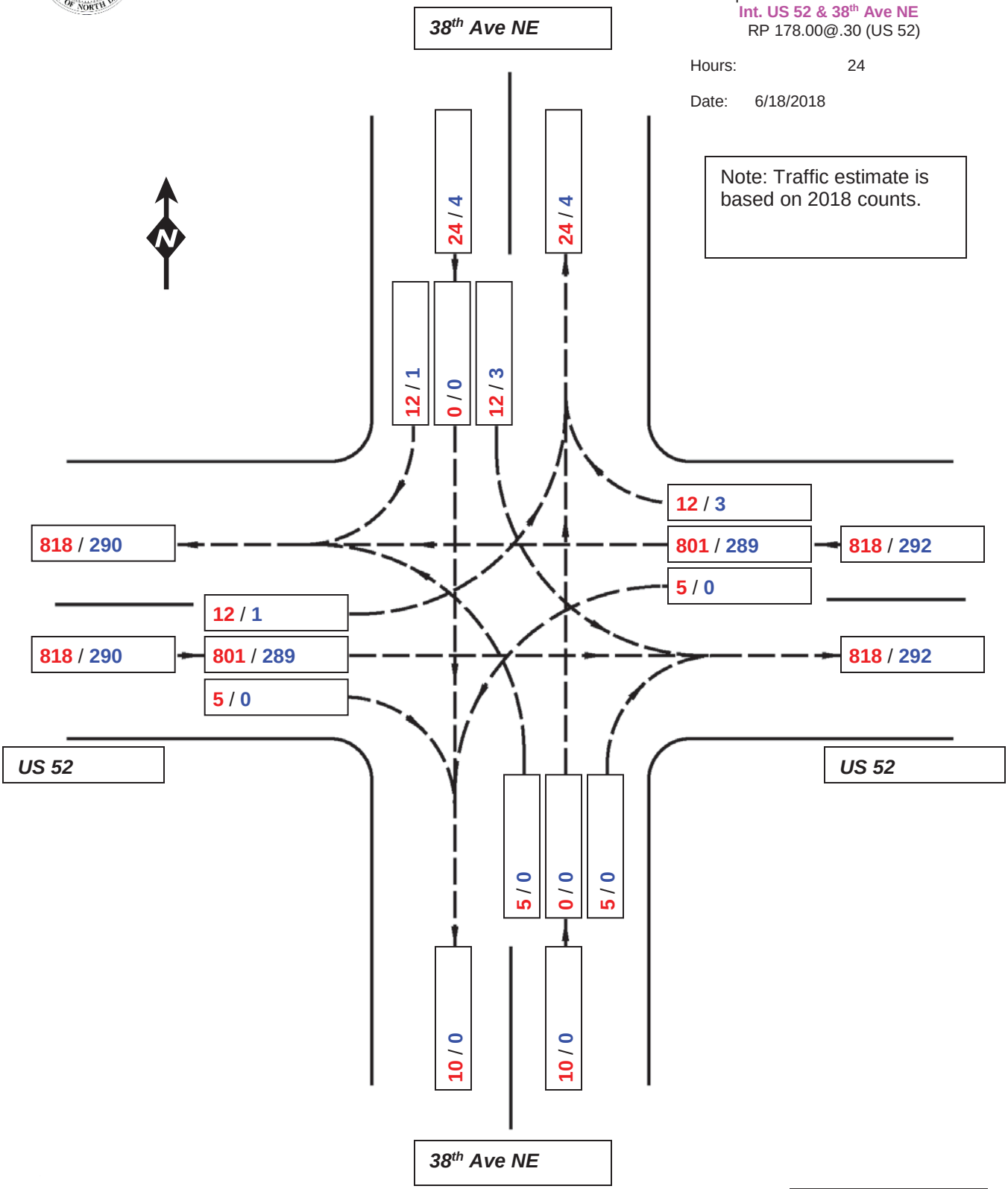
North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

Intersection No: 36

Description
Int. US 52 & 38th Ave NE
RP 178.00@.30 (US 52)

Hours: 24

Date: 6/18/2018



Intersection Traffic Volumes

North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

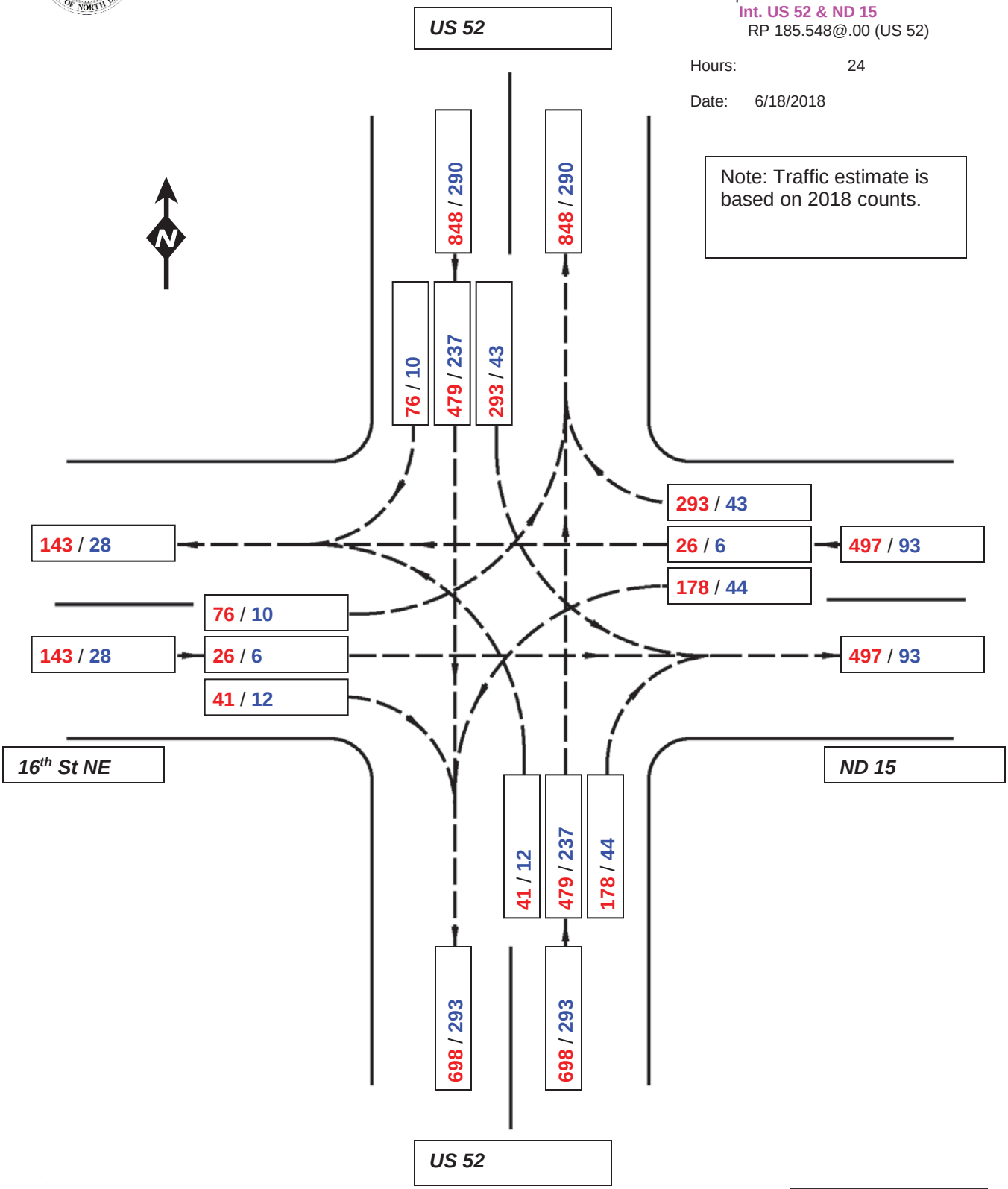
Intersection No: 37

Description
Int. US 52 & ND 15
RP 185.548@.00 (US 52)

Hours: 24

Date: 6/18/2018

Note: Traffic estimate is based on 2018 counts.



LEGEND: AADT / TRUCKS - 2018

Completed by NR

Intersection Traffic Volumes

North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

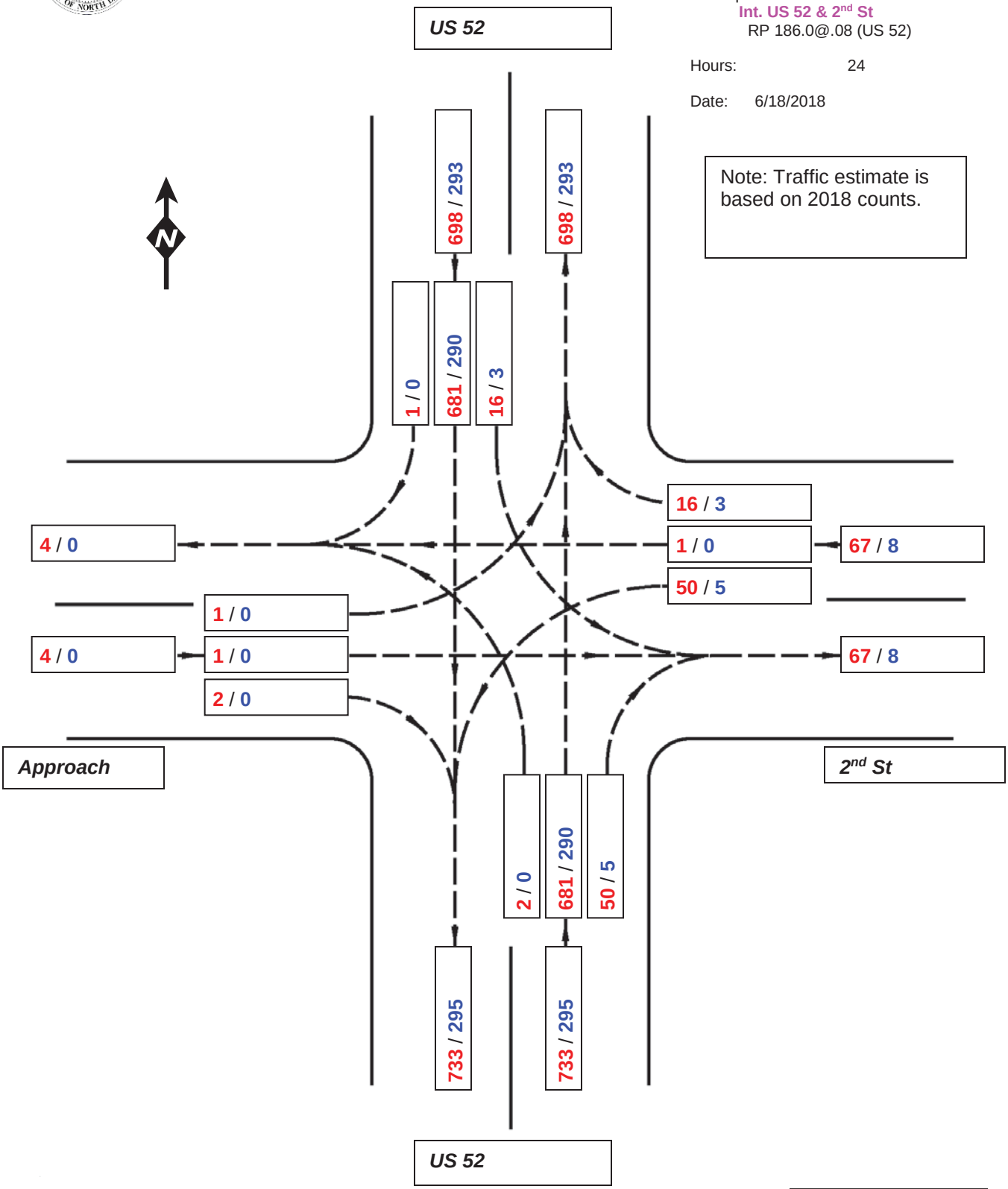
Intersection No: 38

Description
Int. US 52 & 2nd St
RP 186.0@.08 (US 52)

Hours: 24

Date: 6/18/2018

Note: Traffic estimate is based on 2018 counts.



LEGEND: AADT / TRUCKS - 2018

Completed by NR

Intersection Traffic Volumes

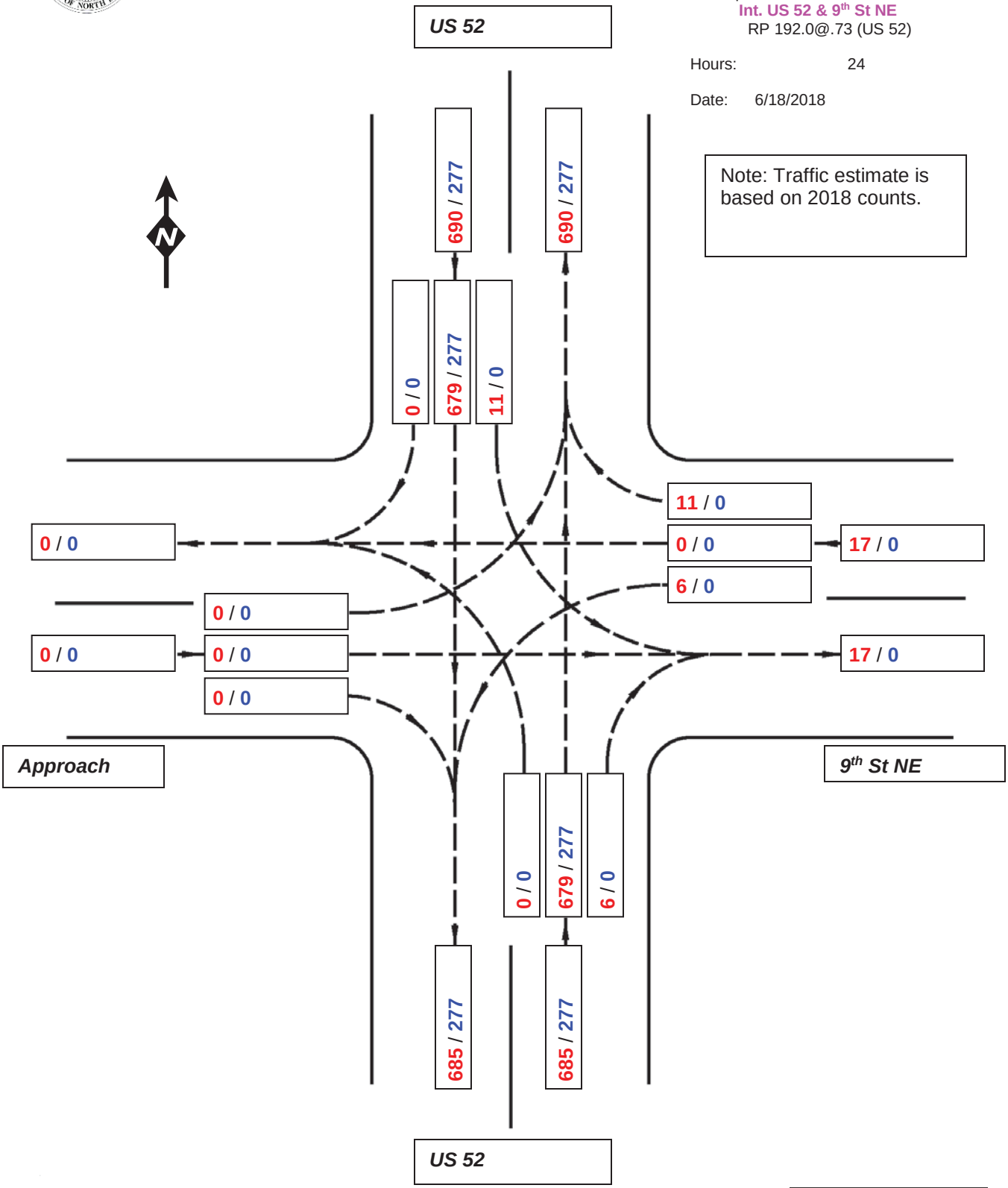
North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

Intersection No: 39

Description
Int. US 52 & 9th St NE
RP 192.0@.73 (US 52)

Hours: 24

Date: 6/18/2018



Intersection Traffic Volumes

North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

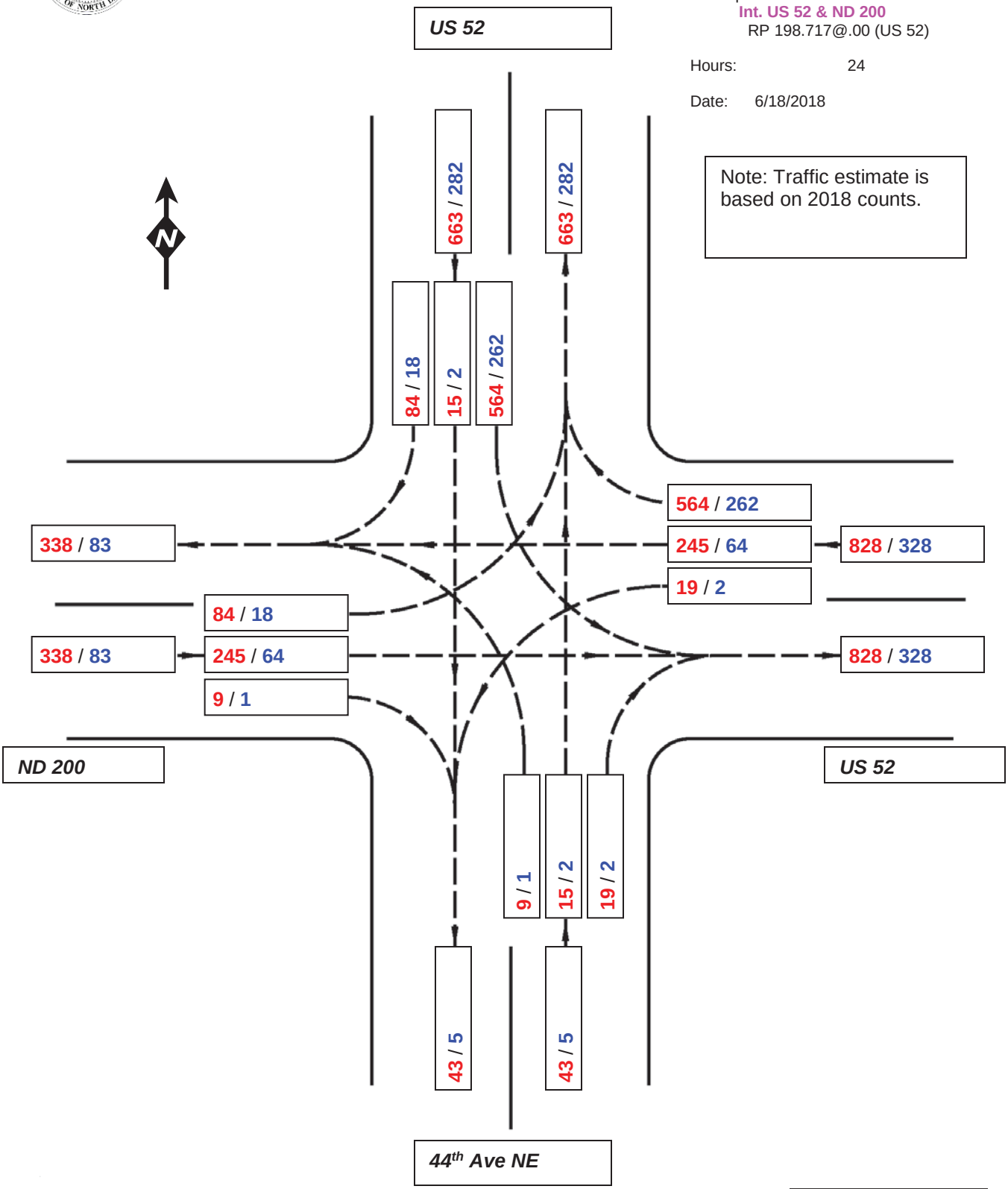
66

Intersection No: 40

Description
Int. US 52 & ND 200
RP 198.717@.00 (US 52)

Hours: 24

Date: 6/18/2018



Intersection Traffic Volumes

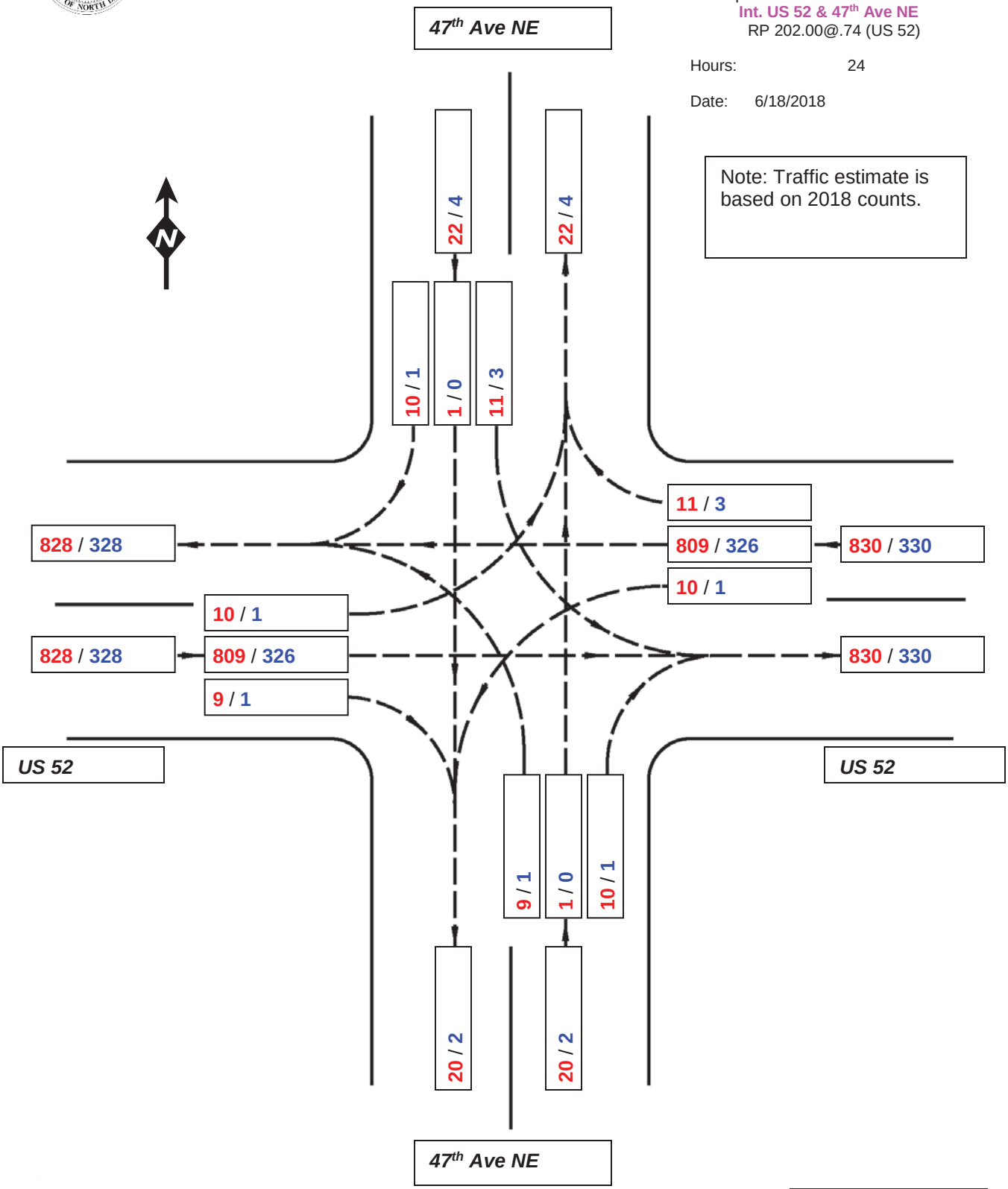
North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

Intersection No: 41

Description
Int. US 52 & 47th Ave NE
RP 202.00@.74 (US 52)

Hours: 24

Date: 6/18/2018



Intersection Traffic Volumes

North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

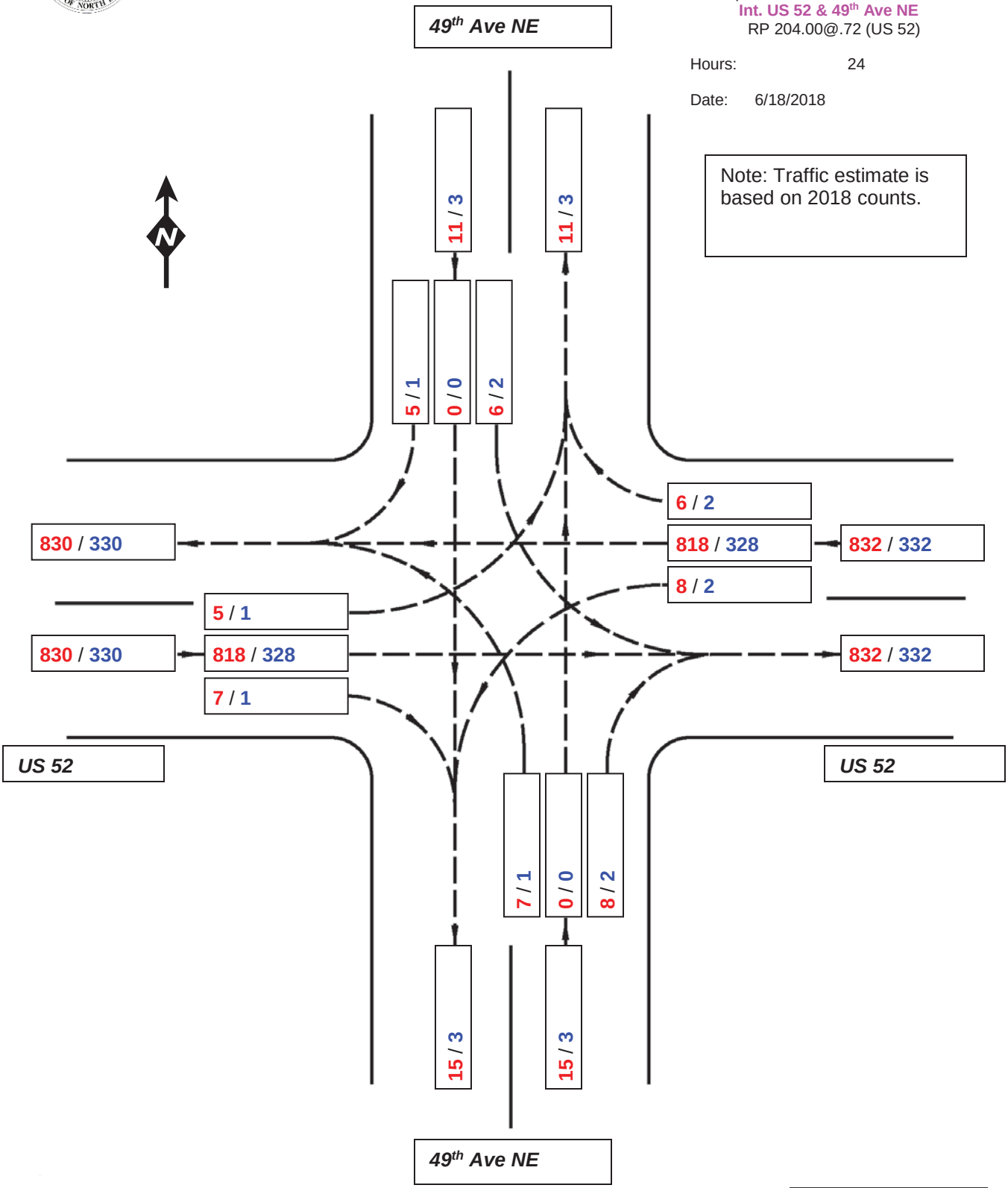
Intersection No: 42

Description
Int. US 52 & 49th Ave NE
RP 204.00@.72 (US 52)

Hours: 24

Date: 6/18/2018

Note: Traffic estimate is based on 2018 counts.



LEGEND: AADT / TRUCKS - 2018

Completed by NR

Intersection Traffic Volumes

North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

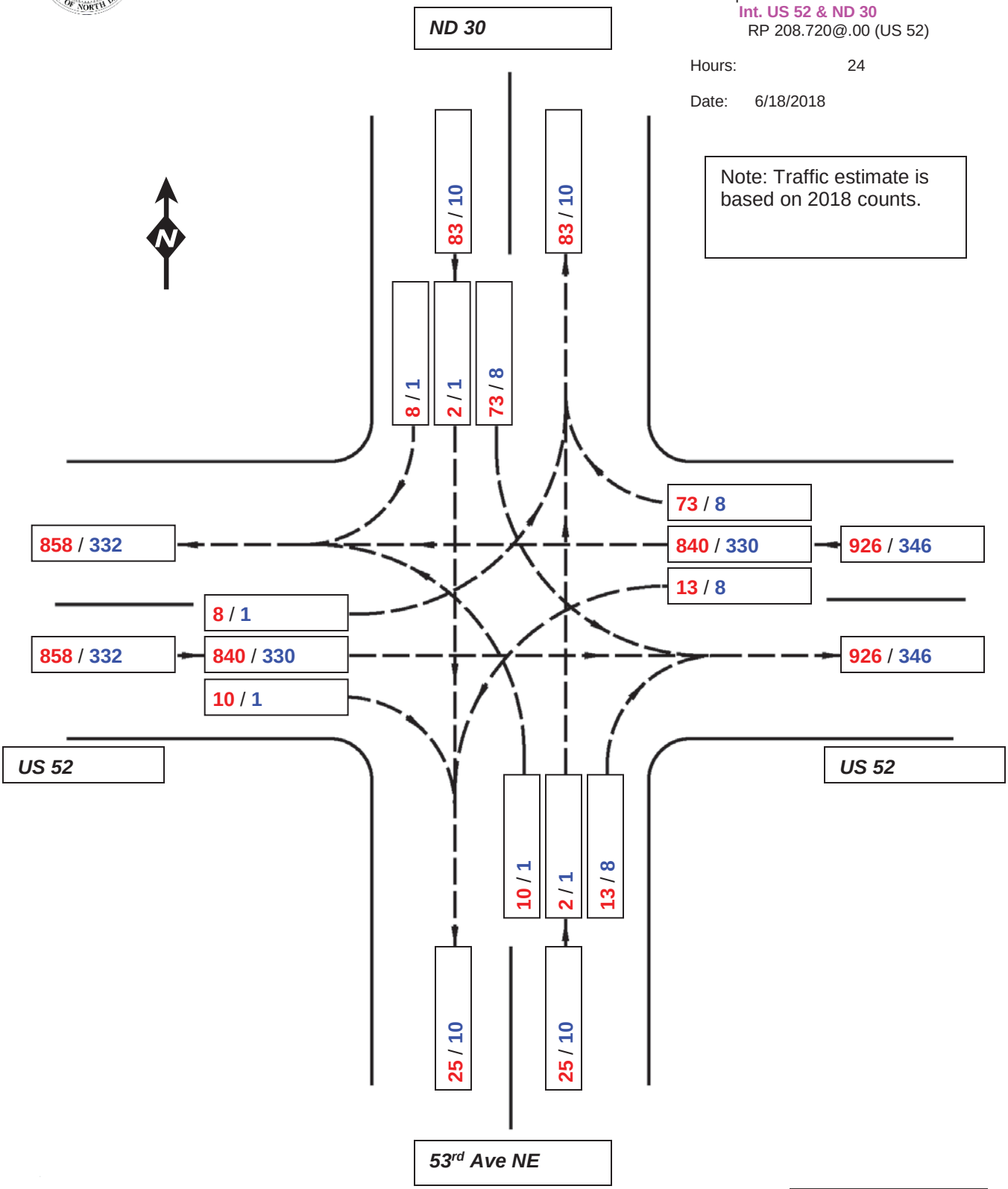
67

Intersection No: 43

Description
Int. US 52 & ND 30
RP 208.720@.00 (US 52)

Hours: 24

Date: 6/18/2018



Intersection Traffic Volumes

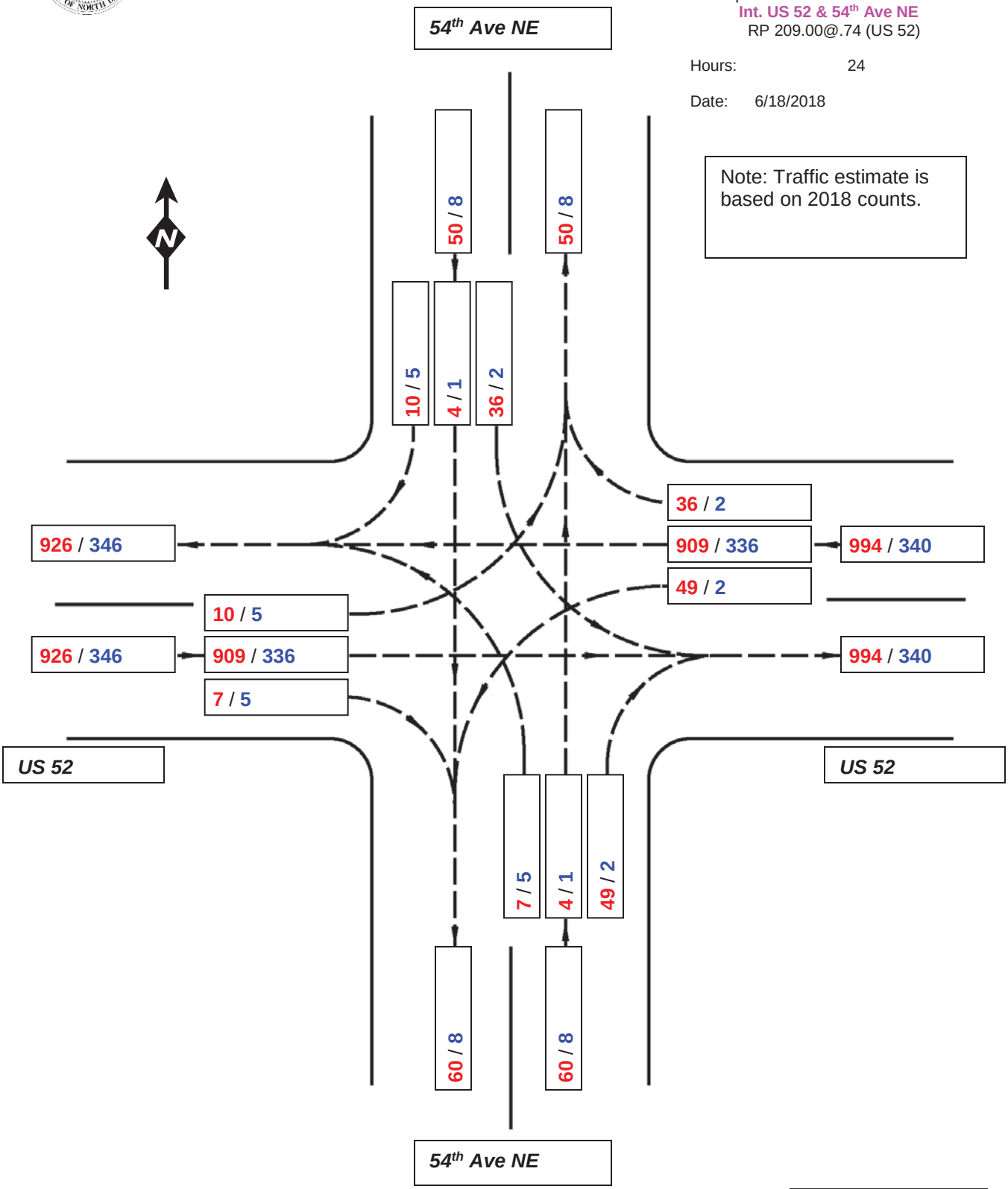
North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

Intersection No: 44

Description
Int. US 52 & 54th Ave NE
RP 209.00@.74 (US 52)

Hours: 24

Date: 6/18/2018



Intersection Traffic Volumes

North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

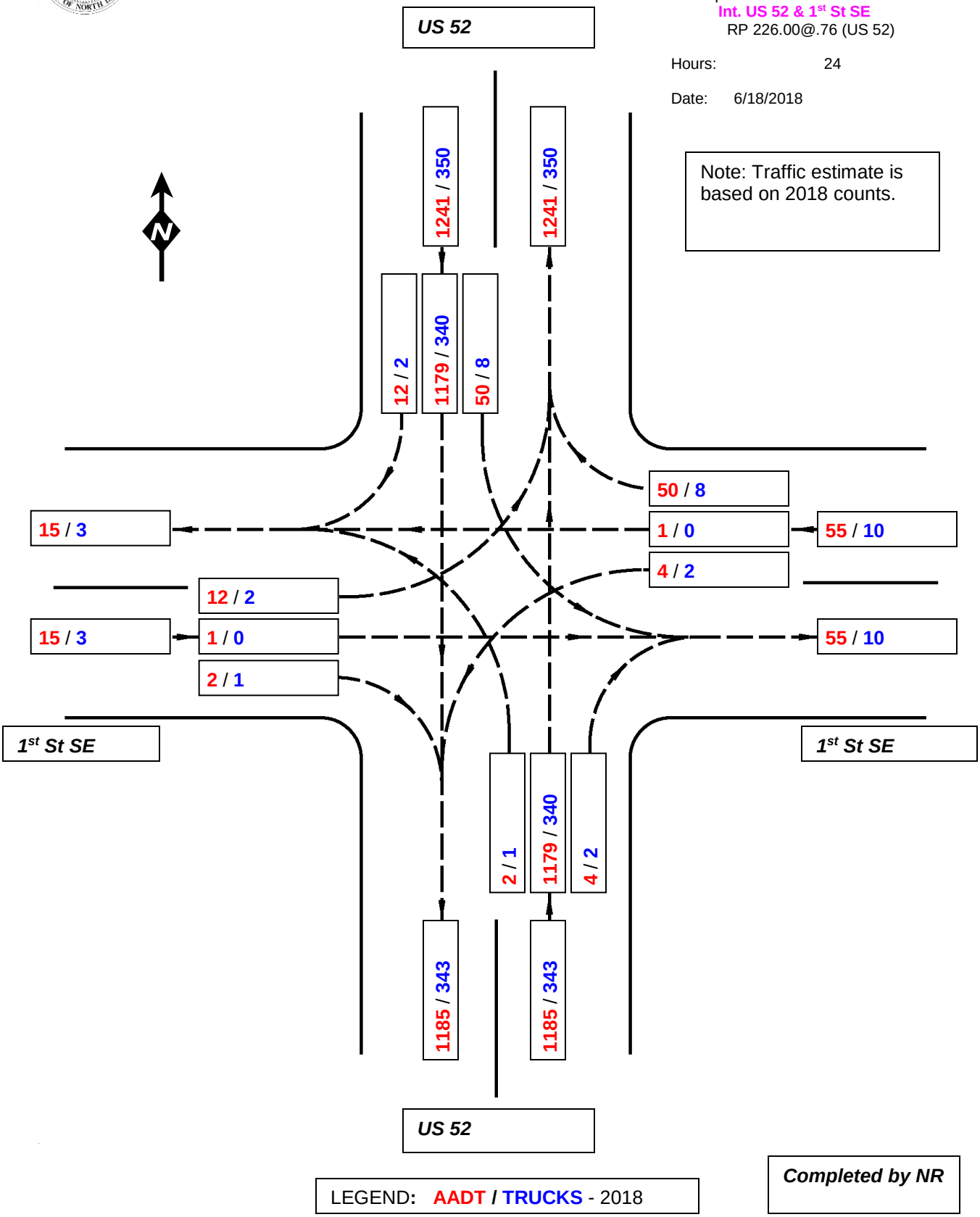
535

Intersection No: 45

Description
Int. US 52 & 1st St SE
RP 226.00@.76 (US 52)

Hours: 24

Date: 6/18/2018



Intersection Traffic Volumes

North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

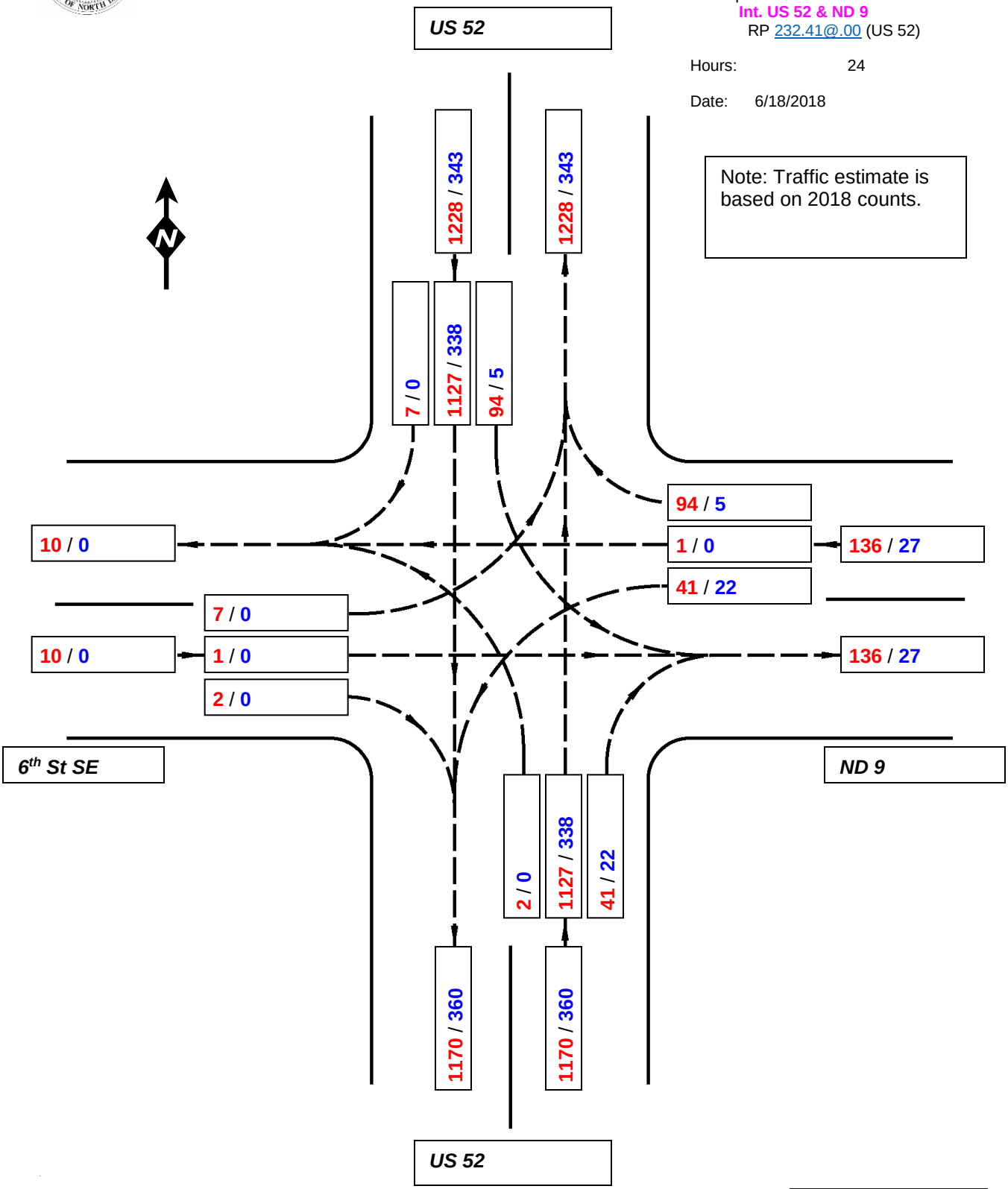
Intersection No: 46

Description
Int. US 52 & ND 9
RP 232.41@.00 (US 52)

Hours: 24

Date: 6/18/2018

Note: Traffic estimate is based on 2018 counts.



LEGEND: AADT / TRUCKS - 2018

Completed by NR

Intersection Traffic Volumes

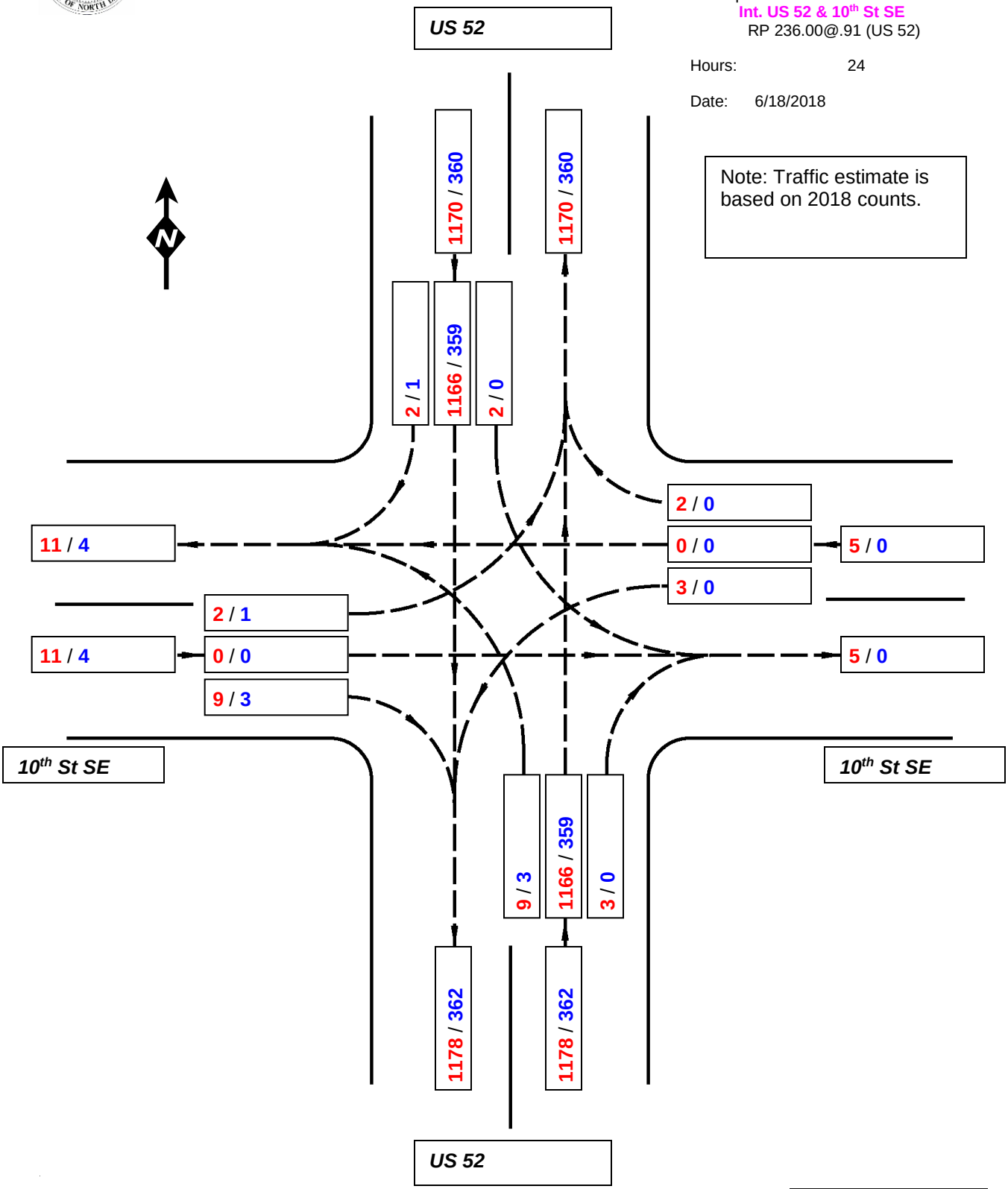
North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

Intersection No: 47

Description
Int. US 52 & 10th St SE
RP 236.00@.91 (US 52)

Hours: 24

Date: 6/18/2018



LEGEND: AADT / TRUCKS - 2018

Completed by NR

Intersection Traffic Volumes

North Dakota Department of Transportation
SFN 7921 (Rev. 4-85)

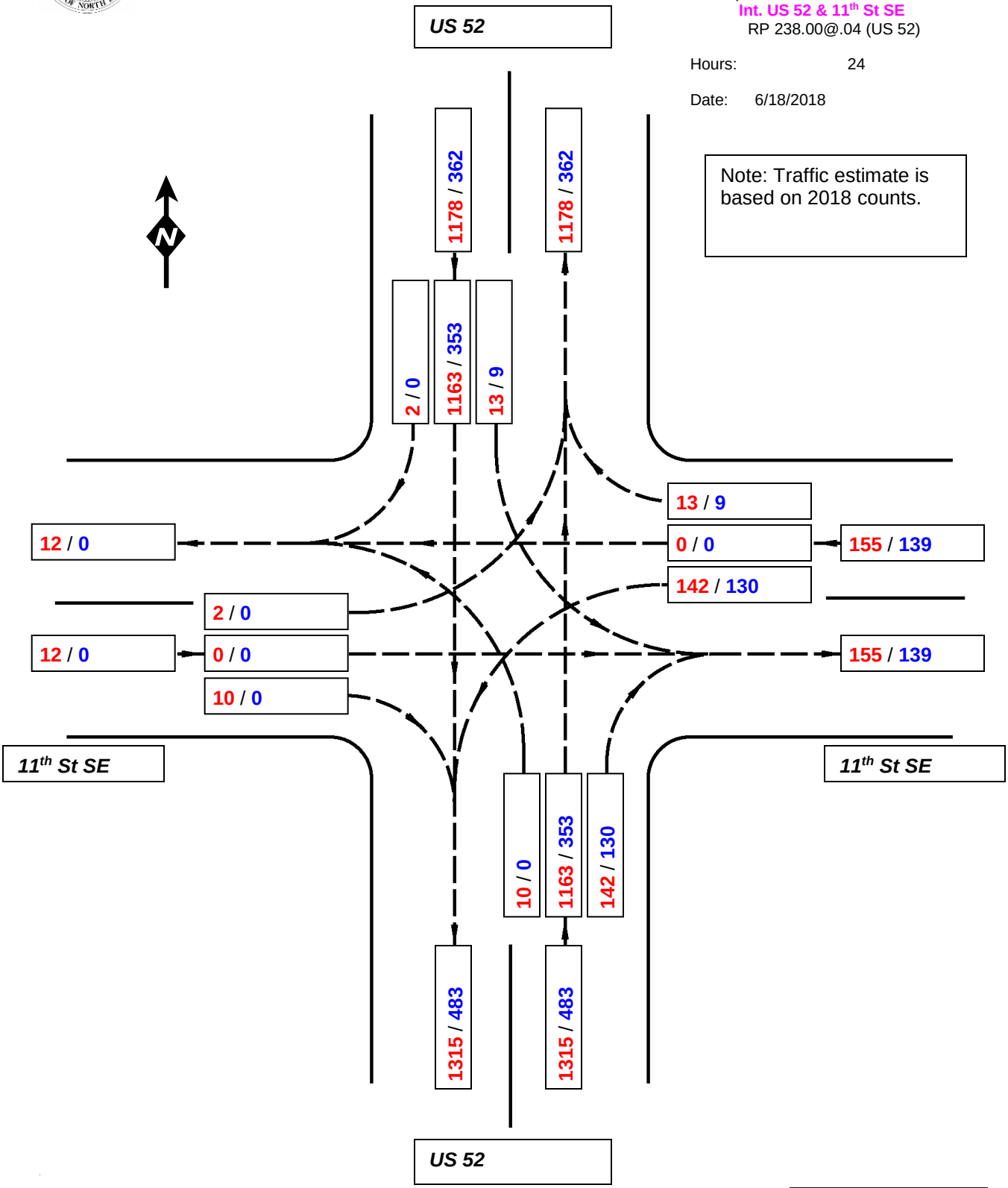
Intersection No: 48

Description
Int. US 52 & 11th St SE
RP 238.00@.04 (US 52)

Hours: 24

Date: 6/18/2018

Note: Traffic estimate is based on 2018 counts.



LEGEND: AADT / TRUCKS - 2018

Completed by NR

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMS
Agency/Co.	NDDOT
Date Performed	4/16/2019
Analysis Time Period	
Highway	US 52
From/To	RP 170.000-221.700
Jurisdiction	
Analysis Year	2019
Description	

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	36	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	51.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	8	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd 87 veh/h
Opposing direction volume, Vo 87 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.9		1.9	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.755		0.755	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	131	pc/h	131	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	70.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	69.0	mi/h
Adjustment for no-passing zones, fnp	1.4	mi/h
Average travel speed, ATSd	65.5	mi/h
Percent Free Flow Speed, PFFS	95.0	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	0.965		0.965	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	102	pc/h	102	pc/h
Base percent time-spent-following,(note-4) BPTSFd	11.8	%		
Adjustment for no-passing zones, fnp	17.3			
Percent time-spent-following, PTSFd	20.5	%		

Level of Service and Other Performance Measures

Level of service, LOS	A	
Volume to capacity ratio, v/c	0.06	
Peak 15-min vehicle-miles of travel, VMT15	1278	veh-mi
Peak-hour vehicle-miles of travel, VMT60	4498	veh-mi
Peak 15-min total travel time, TT15	19.5	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	51.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	65.5	mi/h
Percent time-spent-following, PTSFd (from above)	20.5	
Level of service, LOSd (from above)	A	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	98.9
Effective width of outside lane, We	34.17
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	19.53
Bicycle LOS	F

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMS
Agency/Co.	NDDOT
Date Performed	4/16/2019
Analysis Time Period	
Highway	US 52
From/To	RP 170.000-221.700
Jurisdiction	
Analysis Year	2039
Description	

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	36	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	51.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	8	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd 118 veh/h
Opposing direction volume, Vo 118 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.8		1.8	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.776		0.776	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	173	pc/h	173	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	70.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	69.0	mi/h
Adjustment for no-passing zones, fnp	1.9	mi/h
Average travel speed, ATSd	64.4	mi/h
Percent Free Flow Speed, PFFS	93.4	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.965	0.965
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	139 pc/h	139 pc/h
Base percent time-spent-following,(note-4) BPTSFd	15.7 %	
Adjustment for no-passing zones, fnp	20.6	
Percent time-spent-following, PTSFd	26.0 %	

Level of Service and Other Performance Measures

Level of service, LOS	A	
Volume to capacity ratio, v/c	0.08	
Peak 15-min vehicle-miles of travel, VMT15	1733	veh-mi
Peak-hour vehicle-miles of travel, VMT60	6101	veh-mi
Peak 15-min total travel time, TT15	26.9	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	51.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	64.4	mi/h
Percent time-spent-following, PTSFd (from above)	26.0	
Level of service, LOSd (from above)	A	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	134.1
Effective width of outside lane, We	31.38
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	20.60
Bicycle LOS	F

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMS
Agency/Co.	NDDOT
Date Performed	4/16/2019
Analysis Time Period	
Highway	US 52
From/To	RP 223.437 - 252.417
Jurisdiction	
Analysis Year	2019
Description	

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	35	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	29.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	14	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd 115 veh/h
Opposing direction volume, Vo 115 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.8		1.8	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.781		0.781	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	167	pc/h	167	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	70.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	69.0	mi/h
Adjustment for no-passing zones, fnp	1.8	mi/h
Average travel speed, ATSd	64.6	mi/h
Percent Free Flow Speed, PFFS	93.6	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.966	0.966
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	135 pc/h	135 pc/h
Base percent time-spent-following,(note-4) BPTSFd	15.3 %	
Adjustment for no-passing zones, fnp	26.8	
Percent time-spent-following, PTSFd	28.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	A	
Volume to capacity ratio, v/c	0.08	
Peak 15-min vehicle-miles of travel, VMT15	947	veh-mi
Peak-hour vehicle-miles of travel, VMT60	3335	veh-mi
Peak 15-min total travel time, TT15	14.7	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	29.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	64.6	mi/h
Percent time-spent-following, PTSFd (from above)	28.7	
Level of service, LOSd (from above)	A	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	130.7
Effective width of outside lane, We	31.65
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	19.57
Bicycle LOS	F

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMS
Agency/Co.	NDDOT
Date Performed	4/16/2019
Analysis Time Period	
Highway	US 52
From/To	RP 223.437 - 252.417
Jurisdiction	
Analysis Year	2039
Description	

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	35	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	29.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	14	%
Up/down	-	%	Access point density	4	/mi

Analysis direction volume, Vd 156 veh/h
Opposing direction volume, Vo 156 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.6		1.6	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.826		0.826	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	215	pc/h	215	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	70.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	1.0	mi/h
Free-flow speed, FFSd	69.0	mi/h
Adjustment for no-passing zones, fnp	2.2	mi/h
Average travel speed, ATSd	63.5	mi/h
Percent Free Flow Speed, PFFS	92.0	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.966	0.966
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	183 pc/h	183 pc/h
Base percent time-spent-following,(note-4) BPTSFd	20.0 %	
Adjustment for no-passing zones, fnp	31.8	
Percent time-spent-following, PTSFd	35.9 %	

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.10	
Peak 15-min vehicle-miles of travel, VMT15	1285	veh-mi
Peak-hour vehicle-miles of travel, VMT60	4524	veh-mi
Peak 15-min total travel time, TT15	20.2	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	29.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	63.5	mi/h
Percent time-spent-following, PTSFd (from above)	35.9	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	177.3
Effective width of outside lane, We	27.96
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	20.82
Bicycle LOS	F

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS7 Two-Way Stop-Control Report

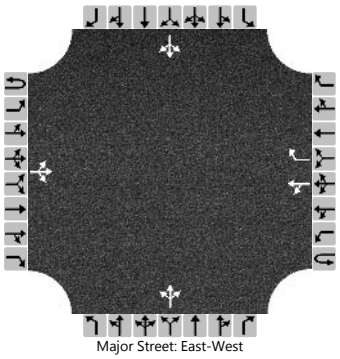
General Information

Analyst	DMS
Agency/Co.	NDDOT
Date Performed	4/15/2019
Analysis Year	2019
Time Analyzed	Peak
Intersection Orientation	East-West
Project Description	Ref 4347

Site Information

Intersection	66
Jurisdiction	
East/West Street	ND 200 - US 52
North/South Street	US 52
Peak Hour Factor	0.88
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	1		0	1	0		0	1	0
Configuration			LTR			LT		R			LTR				LTR	
Volume (veh/h)		8	25	1		2	25	56		1	2	2		56	2	8
Percent Heavy Vehicles (%)		21				11				11	13	11		46	13	21
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized						No										
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.31				4.21				7.21	6.63	6.31		7.56	6.63	6.41
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.39				2.30				3.60	4.12	3.40		3.91	4.12	3.49

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		9				2					6				75	
Capacity, c (veh/h)		1391				1527					841				819	
v/c Ratio		0.01				0.00					0.01				0.09	
95% Queue Length, Q_{95} (veh)		0.0				0.0					0.0				0.3	
Control Delay (s/veh)		7.6				7.4					9.3				9.8	
Level of Service (LOS)		A				A					A				A	
Approach Delay (s/veh)	1.8				0.2				9.3				9.8			
Approach LOS									A				A			

Rural Segment Crash Summary Sheets

Total Crashes: 138 **Location Description:** US 52, Harvey-Buchanan (excludes Carrington)
Length: 82.417 **Start RP:** 170.000
Sorted By: Longitude **End RP:** 252.417

	M	D	Year
Start Date:	1	1	2013
End Date:	12	31	2017

# of Years: 5.00

Notes: Animal crashes were not included.

Statistics for Total Crashes

Crash Severity

Fatal =	1	1%
InjA =	7	5%
InjB =	23	17%
InjC =	12	9%
PDO =	95	69%
	138	

Day of Week

Monday =	26	19%
Tuesday =	23	17%
Wednesday =	17	12%
Thursday =	24	17%
Friday =	15	11%
Saturday =	15	11%
Sunday =	18	13%
	138	

Surface Conditions

Dry =	57	41%
Wet =	6	4%
Ice / Snow =	72	52%
Other =	3	2%
	138	

Lighting Conditions

Dawn =	0	0%
Daylight =	91	66%
Dusk =	10	7%
Dark =	35	25%
Dark (lighted) =	2	1%
Unknown =	0	
	138	

Under Construction

Yes =	1	1%

D1 and D2 Contr. Factors*

Attention Distracted =	1
Weather =	51
Speed =	4
Too Fast for Conditions =	21
Fail to Yield =	3
Improper Backing/Turning =	3

These are only the most popular choices.

Roadway Geometrics

Straight (on level) =	115	83%
Straight (on grade) =	11	8%
Curve (on level) =	8	6%
Curve (on grade) =	2	1%
Hill Crest =	2	1%
Unknown =	0	0%
	138	

Manner of Collision

Angle =	3	2%
Rear End =	25	18%
Left Turn =	0	0%
Sideswipe (same direction) =	9	7%
Single Vehicle =	82	59%
Ped / Bike =	0	0%
Other =	19	14%
	138	

First Harmful Event

Motor Vehicle in Transport =	55	40%
Animal =	0	0%
Jackknife =	16	12%
Ran Off Roadway (not including below crashes) =	50	36%
Guardrail + Concrete Barrier + Bridge Rail =	1	1%
Bridge / Pier / Abutment / Overhead Structure =	0	0%
Poles / Posts / Trees / Overhead Sign Supports =	2	1%

These are only the most popular choices.

Relation to Junction

Non-Junction =	114	83%
Intersection + Intersection-Related =	17	12%
Alley / Driveway Access =	2	1%
Interchange Area + Exit / Entrance Ramp =	1	1%

These are only the most popular choices.

D1 or D2 Ejected*

Yes (partially or fully) = 3

**This info is not available for all units.*

V1 and V2 Configuration*

Passenger Car =	44
PU / Van / Utility =	81
Truck =	59
Bus / Motorhome =	0
Motorcycle + Moped =	3

These are only the most popular choices.

V1 and V2 Directions*

North =	59
South =	46
East =	41
West =	49

D1 and D2 Sex*

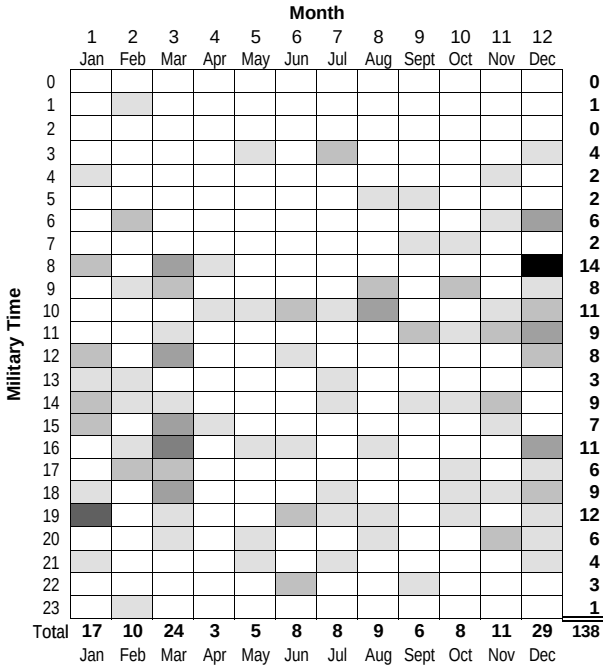
Female =	34
Male =	154

D1 and D2 Age*

0-17 =	7	45-54 =	38
18-24 =	34	55-64 =	22
25-34 =	33	65-74 =	13
35-44 =	37	75+ =	4

D1 and D2 Alcohol / Drugs*

Yes (alcohol or drugs present) = 7



General Summary

Yr	Start Date	End Date	Intersection (or Alley / Drvwy)	Non-Intersection		Total	AADT (two-way)	Crash Rate
				Single Veh	Mult. Veh			
1	1/1/2013	12/31/2013	8	25	9	42		
2	1/1/2014	12/31/2014	2	18	15	35		
3	1/1/2015	12/31/2015	3	14	8	25		
4	1/1/2016	12/31/2016	2	12	5	19		
5	1/1/2017	12/31/2017	4	10	3	17		
			19	**79**	**40**	**138**		
			14%	**57%**	**29%**			

Rural Segment Crash Summary Sheets

Total Crashes: 138 **Location Description:** US 52, Harvey-Buchanan (excludes Carrington)
Length: 82.417 **Start RP:** 170.000
Sorted By: Longitude **End RP:** 252.417

	M	D	Year
Start Date:	1	1	2013
End Date:	12	31	2017

# of Years: 5.00

Notes: Animal crashes were not included.

23 USC § 409 Documents
NDDOT Reserves All Objections

Statistics for Intersection-Related Crashes ONLY

Crash Severity

Fatal =	0	0%
InjA =	2	11%
InjB =	2	11%
InjC =	1	5%
PDO =	14	74%
	19	

Surface Conditions

Dry =	11	58%
Wet =	1	5%
Ice / Snow =	7	37%
Other =	0	0%

Lighting Conditions

Dawn =	0	0%
Daylight =	16	84%
Dusk =	2	11%
Dark =	1	5%
Dark (lighted) =	0	0%

Under Construction

Yes =	0	0%

Relation to Junction

Intersection + Intersection-Related =	17	89%
Alley / Driveway Access =	2	11%

Manner of Collision

Angle =	3	16%
Rear End =	5	26%
Left Turn =	0	0%
Sideswipe (same direction) =	3	16%
Single Vehicle =	3	16%
Ped / Bike =	0	0%
Other =	5	26%

D1 and D2 Contributing Factors*

Attention Distracted =	0
Weather =	5
Speed =	2
Too Fast for Conditions =	1
Fail to Yield =	2
Improper Backing / Turning =	2

These are only the most popular choices.

D1 and D2 Alcohol / Drugs Present*

Yes (alcohol or drugs) =	0

V1 and V2 Unit Config.*

Passenger Car =	13
PU / Van / Utility =	12
Truck =	9
Bus / Motorhome =	0
Motorcycle + Moped =	0

These are only the most popular choices.

**This info is not available for all units.*

Statistics for Non-Intersection Crashes ONLY

Multiple Vehicle Crashes ONLY

Crash Severity

Fatal =	1	3%
InjA =	4	10%
InjB =	8	20%
InjC =	4	10%
PDO =	23	58%
	40	

Surface Conditions

Dry =	24	60%
Wet =	1	3%
Ice / Snow =	14	35%
Other =	1	3%

Lighting Conditions

Dawn =	0	0%
Daylight =	31	78%
Dusk =	2	5%
Dark =	7	18%
Dark (lighted) =	0	0%

Road Geometrics

Straight (on level) =	37	93%
Straight (on grade) =	3	8%
Curve (on level) =	0	0%
Curve (on grade) =	0	0%
Hill Crest =	0	0%

Under Construction

Yes =	0	0%

D1 or D2 Ejected*

Yes =	0

Manner of Collision

Angle =	0	0%
Rear End =	20	50%
Left Turn =	0	0%
Sideswipe (same direction) =	6	15%
Head-On + Sideswipe (opp direction) =	13	33%
Other =	0	0%

D1 and D2 Alcohol/Drugs Present*

Yes (alcohol or drugs) =	4

V1 and V2 Unit Config.*

Passenger Car =	19
PU / Van / Utility =	30
Truck =	26
Bus / Motorhome =	0
Motorcycle + Moped =	0

These are only the most popular choices.

Non-Collision with Motor Vehicle (a.k.a. Single Vehicle) Crashes ONLY

Crash Severity

Fatal =	0	0%
InjA =	1	1%
InjB =	13	16%
InjC =	7	9%
PDO =	58	73%
	79	

Surface Conditions

Dry =	22	28%
Wet =	4	5%
Ice / Snow =	51	65%
Other =	2	3%

Lighting Conditions

Dawn =	0	0%
Daylight =	44	56%
Dusk =	6	8%
Dark =	27	34%
Dark (lighted) =	2	3%

Road Geometrics

Straight (on level) =	62	78%
Straight (on grade) =	8	10%
Curve (on level) =	5	6%
Curve (on grade) =	2	3%
Hill Crest =	2	3%

Under Construction

Yes =	1	1%

D1 Ejected*

Yes (partially or fully) =	3	4%

D1 Most Harmful Event*

Motor Vehicle in Transport =	0	0%
Animal =	0	0%
Jackknife =	16	20%
Ran Off Roadway (not including below crashes) =	49	62%
Guardrail + Concrete Barrier + Bridge Rail =	1	1%
Bridge / Pier / Abutment / Overhead Structure =	0	0%
Poles / Posts / Trees / Overhead Sign Supports =	0	0%

These are only the most popular choices.

D1 Alcohol / Drugs Present*

Yes (alcohol or drugs) =	2	3%

V1 Unit Config.*

Passenger Car =	12	15%
PU / Van / Utility =	39	49%
Truck =	24	30%
Bus / Motorhome =	0	0%
Motorcycle + Moped =	3	4%

These are only the most popular choices.

**This info is not available for all units.*

Total Crashes: 138 (Sorted by Longitude)
Location: US 52, Harvey-Buchanan (excludes Carrington)
Reference Points: 170-252.417
Start - End Date: 1/1/2013 - 12/31/2017 (5 Years)

23 USC § 409 Documents
NDDOT Reserves All Objections

LEGEND
- ▶ *Fatal*
- ▶ *Incapacitating Injury*
- ▶ *Non-Incapacitating Injury*
- ▷ *Possible Injury*
- ♦ *Wet surface*
- ❄ *Snow, Ice, Slush, Frost*
- ▲ *Crash related to work zone*
- ① *Unit number*

1. Contributing Factor
** = alcohol or drugs involved*

2. Most Harmful Event
For single vehicle crashes, the most harmful event is shown in parentheses in the "Type of Collision" column

Crash No. Hwy RP	Crash Severity Date Day Surface Conditions (Weather) Lighting & Time Road Geometrics / Relation to Jct	Type of Collision	① AGE SEX CITY STATE Unit Configuration Movement (traffic control) Contributing Factor[1] Most Harmful Event[2]	Shortened Narrative	Name of Intersection
1031745 52 170.14	PDO 03/06/17 Monday Snow (Bl Snow) ❄ Daylight 4:30 PM Straight (on Level) / Alley/Driveway	Head on	① 47M FESSENDEN ND Pickup - Van - Utility EB Going Straight Wrong Way ② 52M HARVEY ND Pickup - Van - Utility WB Going Straight Weather		Driveway
296433 52 170.48	PDO 01/16/14 Thursday Dry (Bl Snow) Daylight 8:45 AM Straight (on Level) / Non-junction	Rear End	① 54M WINKLER MB Truck Tractor SB Going Straight Weather ② 70M WINCHESTER CA Pickup - Van - Utility SB Going Straight Weather		
1028264 ▷ 52 171.49	Possible Injury 02/01/17 Wednesday Ice / Snow (Bl Snow) ❄ Daylight 4:16 PM Straight (on Level) / Non-junction	Single Veh (Overturn / Rollover)	① 23F FESSENDEN ND Pickup - Van - Utility EB Going Straight Over Correct/Steering		
305802 52 171.95	PDO 06/13/14 Friday Dry (Cloudy) Daylight 12:30 PM Curve (on Level) / Non-junction	Single Veh (Other Non-Collision)	① 20M CLARE MI Motorcycle NB Going Straight Other		
291168 52 73.323	PDO 12/02/13 Monday Ice / Snow (Snow) ❄ Daylight 11:45 AM Curve (on Level) / Non-junction	Single Veh (Overturn / Rollover)	① 52M COLUMBUS GA Pickup - Van - Utility NB Going Straight To Fast for Conditions		
1024116 52 172.04	PDO 12/12/16 Monday Ice / Snow (Clear) ❄ Dark 7:10 PM Straight (on Level) / Non-junction	Single Veh (Ditch)	① 55M SHERWOOD PARK AB Truck Tractor EB Going Straight Fail Keep in Proper Lane		
327117 52 174	PDO 05/18/15 Monday Dry (Clear) Daylight 10:30 AM Straight (on Level) / Non-junction	Single Veh (Jackknife)	① 35M SASKATOON SK Truck Tractor SB Going Straight Improper Evasive Action		
310241 52 175.07	PDO 08/27/14 Wednesday Dry (Clear) Daylight 10:57 AM Straight (on Level) / Non-junction	Sideswipe (Same Dir.)	① 37M HOUSTON TX Truck Tractor WB Going Straight Improper Overtaking ② 33M NEW ROCKFORD ND Truck Tractor WB Going Straight		
316574 ▶ 52 175.86	Non-incapacitating injury 12/04/14 Thursday Dry (Clear) Daylight 12:00 PM Straight (on Level) / Non-junction	Rear End	① 58M MINOT ND Truck Tractor SB Going Straight ② 38F ONION LAKE SK Pickup - Van - Utility SB Going Straight		
317054 52 175.99	PDO 12/04/14 Thursday Dry (Clear) Daylight 11:50 AM Straight (on Level) / Non-junction	Single Veh (Ditch)	① 33M HOPKINS MN Truck Tractor WB Going Straight Improper Evasive Action		

Crash Summary Sheets

Total Crashes: 138 (Sorted by Longitude)
Location: US 52, Harvey-Buchanan (excludes Carrington)
Reference Points: 170-252.417
Start - End Date: 1/1/2013 - 12/31/2017 (5 Years)

23 USC § 409 Documents
NDDOT Reserves All Objections

LEGEND
▶ *Fatal*
▶ *Incapacitating Injury*
▶ *Non-Incapacitating Injury*
▷ *Possible Injury*
♦ *Wet surface*
❄ *Snow, Ice, Slush, Frost*
▲ *Crash related to work zone*
① *Unit number*

1. Contributing Factor
** = alcohol or drugs involved*

2. Most Harmful Event
For single vehicle crashes, the most harmful event is shown in parentheses in the "Type of Collision" column

Crash No. / Hwy / RP	Crash Severity / Date Day / Surface Conditions (Weather) / Lighting & Time / Road Geometrics / Relation to Jct	Type of Collision	① AGE SEX CITY STATE / Unit Configuration / Movement (traffic control) / Contributing Factor[1] / Most Harmful Event[2]		Shortened Narrative	Name of Intersection
313938 52 176	▶ Incapacitating Injury 10/25/14 Saturday Dry (Clear) Daylight 9:10 AM Straight (on Level) / Intersection	Rear End	① 74M NEW ROCKFORD ND Passenger Car NB Going Straight (Oth) Following too Close	② 61M MADDOCK ND Truck Tractor NB Waiting to Turn Left (Oth) Other	V2 waiting for traffic to clear before making a NB left turn. V1 NB rear ended V2.	36 Ave NE
1007355 52 177.35	▶ Incapacitating Injury 02/02/16 Tuesday Dry (Clear) Dark 6:10 AM Straight (on Level) / Non-junction	Sideswipe (Opp. Dir.)	① 25M JAMESTOWN ND Passenger Car EB Going Straight Wrong Way	② 48M ROCHELLE IL Truck Tractor WB Going Straight	V1 EB went into the WB lane and struck the semi's driver's side. V1 came to rest in the south ditch.	
301894 52 177.91	▶ Non-incapacitating injury 04/09/14 Wednesday Dry (Clear) Daylight 10:40 AM Straight (on Level) / Non-junction	Single Veh (Overturn / Rollover)	① 36M HARVEY ND Passenger Car NB Going Straight Attn Distracted-Inside			
274849 52 181.84	PDO 03/03/13 Sunday Dry (Bl Snow) Dusk 6:00 PM Straight (on Level) / Non-junction	Single Veh (Ran Off Roadway)	① 47M JAMESTOWN ND Pickup - Van - Utility SB Going Straight Other			
317349 52 181.99	▶ Incapacitating Injury 12/07/14 Sunday Ice / Snow (Clear) ❄ Daylight 8:43 AM Straight (on Level) / Non-junction	Head on	① 35M BAXTER MN Pickup - Van - Utility EB Going Straight Careless/Reckless Driving*	② 70M SPRUCE HOME SK Truck Tractor WB Going Straight	V1 lost control on ice and entered the WB lane of US 52 and struck V2. V1 was separated in half, both halfs came to rest in the south ditch of US 52.	
1021738 52 182.56	PDO 11/11/16 Friday Ice / Snow (Fog) ❄ Dark 4:15 AM Curve (on Level) / Non-junction	Single Veh (Ran off roadway)	① 33M MINOT ND Passenger Car WB Going Straight Weather			
292653	PDO 12/02/13 Monday Snow (Bl Snow) ❄ Dusk 6:50 PM Curve (on Level) / Intersection	Single Veh (Overturn / Rollover)	① 44M CLANE OF Passenger Car SB Going Straight			42 Ave NE
328919	▶ Non-incapacitating injury 06/10/15 Wednesday Dry (Clear) Daylight 4:13 PM Straight (on Level) / Intersection	Angle	① 41F FESSENDEN ND Pickup - Van - Utility SB Going Straight Improper Overtaking	② 45M FESSENDEN ND Farm Equipment EB Turning Left		Private Driveway
270480 52 185.618	PDO 01/28/13 Monday Dry (Clear) Dark 7:25 PM Straight (on Level) / Ramp	Single Veh (Ran Off Roadway)	① 51M ST PETERSBURG FL Truck Tractor NB Going Straight Other			ND 15
315417 52 185.788	PDO 11/23/14 Sunday Dry (Bl Snow) Daylight 3:45 PM Straight (on Level) / Non-junction	Rear End	① 19M NEW ROCKFORD ND Pickup - Van - Utility WB Going Straight (Stop) Attn Distracted-Outside	② 21F NEW ROCKFORD ND Passenger Car WB Stopped (Stop)		

Crash Summary Sheets

Total Crashes: 138 (Sorted by Longitude)
Location: US 52, Harvey-Buchanan (excludes Carrington)
Reference Points: 170-252.417
Start - End Date: 1/1/2013 - 12/31/2017 (5 Years)

23 USC § 409 Documents
NDDOT Reserves All Objections

LEGEND
- ▶ *Fatal*
- ▶ *Incapacitating Injury*
- ▶ *Non-Incapacitating Injury*
- ▷ *Possible Injury*
- ♦ *Wet surface*
- ❄ *Snow, Ice, Slush, Frost*
- ▲ *Crash related to work zone*
- ① *Unit number*

1. Contributing Factor
* = alcohol or drugs involved

2. Most Harmful Event
For single vehicle crashes, the most harmful event is shown in parentheses in the "Type of Collision" column

Crash No. Hwy RP	Crash Severity Date Day Surface Conditions (Weather) Lighting & Time Road Geometrics / Relation to Jct	Type of Collision	① AGE SEX CITY STATE Unit Configuration Movement (traffic control) Contributing Factor[1] Most Harmful Event[2]	Shortened Narrative	Name of Intersection
277848 52 195.02	PDO 04/12/13 Friday Ice / Snow (Snow) ❄ Daylight 8:20 AM Curve (on Level) / Non-junction	Single Veh (Other Object (Not Fixed))	① 17F BOWDON ND Pickup - Van - Utility NB Negotiating Curve Weather		
269266 52 185.948	PDO 01/08/13 Tuesday Ice / Snow (Cloudy) ❄ Daylight 1:10 PM Straight (on Level) / Non-junction	Rear End	① 29M CHICAGO IL Truck Tractor WB Going Straight Following too Close ② 43M ST CLAIR MO Truck Tractor WB Slowing/Stopping		Cenex
317634	PDO 12/15/14 Monday Ice / Snow (Cloudy) ❄ Daylight 8:30 AM Straight (on Level) / Non-junction	Single Veh (Overturn / Rollover)	① 23M FARGO ND Pickup - Van - Utility WB Going Straight Weather		
285733 200 268.58	PDO 09/07/13 Saturday Dry (Cloudy) Daylight 2:25 PM Straight (on Level) / Intersection	Sideswipe (Same Dir.)	① 65F GOODRICH ND Passenger Car EB Going Straight Improper Overtaking ② 47M PARK RAPIES MN Passenger Car EB Turning Left		US 52 / ND 200
320087 52 194.16	PDO 01/23/15 Friday Ice / Snow (Bl Snow) ❄ Dark 4:45 AM Straight (on Level) / Non-junction	Single Veh (Overturn / Rollover)	① 39M WINNIPEG MB Truck Tractor NB Going Straight Weather		
295186 52 194.01	PDO 01/03/14 Friday Ice / Snow (Rain) ❄ Daylight 3:00 PM Straight (on Level) / Non-junction	Single Veh (Jackknife)	① 56M SHAWNEE OK Pickup - Van - Utility SB Going Straight Weather		
322993 52 193.98	PDO 03/02/15 Monday Dry (Bl Snow) Daylight 2:15 PM Straight (on Level) / Non-junction	Sideswipe (Opp. Dir.)	① 29M WINKLER MB Truck Tractor NB Going Straight MV Tran in Other Rdwy ② 51M ROXTON TX Truck Tractor SB Stopped Other MV Tran in Other Rdwy		
293100 52 193.02	PDO 12/16/13 Monday Ice / Snow (Bl Snow) ❄ Dark 9:45 PM Straight (on Grade) / Non-junction	Single Veh (Jackknife)	① 32M WOODSTOCK GA Pickup - Van - Utility NB Going Straight Weather		
317633 52 192.96	PDO 12/15/14 Monday Ice / Snow (Frozen Prcp) ❄ Dark 3:00 AM Straight (on Level) / Non-junction	Single Veh (Jackknife)	① 35M BEAVERTON OR Truck Tractor WB Going Straight Weather		
1004361 ▶ 52 189.82	Non-incapacitating injury 12/01/15 Tuesday Snow (Snow) ❄ Daylight 6:50 AM Straight (on Level) / Non-junction	Rear End	① 56M NEW ROCKFORD ND Pickup - Van - Utility SB Going Straight Weather Parked MV ② Pickup - Van - Utility SB Driverless (Stopped) Weather Parked MV		

Total Crashes: 138 (Sorted by Longitude)
Location: US 52, Harvey-Buchanan (excludes Carrington)
Reference Points: 170-252.417
Start - End Date: 1/1/2013 - 12/31/2017 (5 Years)

LEGEND
▶ *Fatal*
▶ *Incapacitating Injury*
▶ *Non-Incapacitating Injury*
▷ *Possible Injury*
♦ *Wet surface*
❄ *Snow, Ice, Slush, Frost*
▲ *Crash related to work zone*
① *Unit number*

1. Contributing Factor
* = alcohol or drugs involved

2. Most Harmful Event
For single vehicle crashes, the most harmful event is shown in parentheses in the "Type of Collision" column

Crash No. / Hwy / RP	Crash Severity / Date Day / Surface Conditions (Weather) / Lighting & Time / Road Geometrics / Relation to Jct	Type of Collision	① AGE SEX CITY STATE / Unit Configuration / Movement (traffic control) / Contributing Factor[1] / Most Harmful Event[2]	Shortened Narrative	Name of Intersection
1004878 52 191.68	PDO 12/11/15 Friday Ice / Snow (Bl Snow) ❄ Dusk 4:55 PM Straight (on Level) / Non-junction	Single Veh (Ran off roadway)	① 71M BUTTE DES MORTS WI Pickup - Van - Utility NB Turning Left To Fast for Conditions		
295644 52 192.29	PDO 01/05/14 Sunday Ice / Snow (Bl Snow) ❄ Daylight 12:07 PM Straight (on Level) / Non-junction	Single Veh (Jackknife)	① 45M PASADENA TX Truck Tractor NB Going Straight To Fast for Conditions		
1022755 52 197.1	PDO 11/30/16 Wednesday Ice / Snow (Frozen Prcp) ❄ Dark 6:30 AM Straight (on Level) / Non-junction	Single Veh (Jackknife)	① 47M SURREY BC 2-Axle SB Turning Left Other		
1030814 52 196.55	PDO 03/06/17 Monday Ice / Snow (Frozen Prcp) ❄ Daylight 4:00 PM Straight (on Level) / Non-junction	Single Veh (Ditch)	① 57M WINNIPEG MB Unknown Heavy Truck NB Going Straight Weather		
290438 52 196.98	PDO 11/08/13 Friday Dry (Severe Wind) Dusk 6:30 PM Straight (on Level) / Non-junction	Sideswipe (Same Dir.)	① 73M GRAND ISLAND NE Truck Tractor NB Going Straight Improper Overtaking ② 46M BOWDON ND Farm Equipment NB Going Straight		
1034123 ▶ 52 196.47	Non-incapacitating injury 05/21/17 Sunday Dry (Clear) Daylight 4:23 PM Straight (on Level) / Non-junction	Single Veh (Overturn / Rollover)	① 51F BOWDON ND EJECTED Off Highway Vehicle NB Other Action on Roadway		
290439 52 198.32	PDO 11/18/13 Monday Dry (Severe Wind) Dark 8:30 PM Straight (on Level) / Non-junction	Single Veh (Overturn / Rollover)	① 53M LINCOLN ND Truck Tractor NB Going Straight		
269045 52	PDO 01/08/13 Tuesday Dry (Severe Wind) Dark(L) 9:15 PM Straight (on Level) / Non-junction	Single Veh (Post)	① 47M WARSAW IN Pickup - Van - Utility NB Going Straight Weather		
1030865 52 198.74	PDO 03/08/17 Wednesday Dry (Clear) Dusk 6:24 PM Straight (on Level) / Intersection	Backing	① 37M SASKATOON SK 2-Axle SB Going Straight (Stop) Improper Backing/Turning ② 3+ Axle SB Backing (Stop) Parked MV		US 52 / ND 200
272209 52	PDO 02/04/13 Monday Ice / Snow (Bl Snow) ❄ Daylight 2:00 PM Straight (on Level) / Intersection	Other	① 20M MINOT AFB ND Passenger Car WB Turning Right Weather ② 58M CARRINGTON ND Passenger Car SB Turning Right (Stop) Weather	V1 making WB right turn on icy roadway and struck SB V2.	US 52 / ND 200

Total Crashes: 138 (Sorted by Longitude)
Location: US 52, Harvey-Buchanan (excludes Carrington)
Reference Points: 170-252.417
Start - End Date: 1/1/2013 - 12/31/2017 (5 Years)

LEGEND
▶ *Fatal*
▶ *Incapacitating Injury*
▶ *Non-Incapacitating Injury*
▷ *Possible Injury*
♦ *Wet surface*
❄ *Snow, Ice, Slush, Frost*
▲ *Crash related to work zone*
① *Unit number*

1. Contributing Factor
* = alcohol or drugs involved

2. Most Harmful Event
For single vehicle crashes, the most harmful event is shown in parentheses in the "Type of Collision" column

Crash No. / Hwy / RP	Crash Severity / Date Day / Surface Conditions (Weather) / Lighting & Time / Road Geometrics / Relation to Jct		Type of Collision	① AGE SEX CITY STATE / Unit Configuration / Movement (traffic control) / Contributing Factor[1] / Most Harmful Event[2]		Shortened Narrative	Name of Intersection
292293 52 198.76	PDO 12/01/13 Sunday Ice / Snow (Frozen Prcp) Daylight 4:00 PM Straight (on Level) / Intersection	❄	Other	① 20F BOWBELLS ND Pickup - Van - Utility WB Turning Right (Beacon) Weather	② 50F FARGO ND Passenger Car SB Stopped (Stop) Other	V1 making WB right turn, lost control and slid into V2.	US 52 / ND 200
307995 52 199.13	PDO 07/29/14 Tuesday Dry (Clear) Daylight 10:31 AM Straight (on Level) / Non-junction		Rear End	① 28M CARRINGTON ND Passenger Car WB Going Straight (Signal) MV Mechanical Failure	② 29M JAMESTOWN ND Passenger Car WB Going Straight (Signal)		
274156 52 200.67	▷ Possible Injury 03/12/13 Tuesday Ice / Snow (Clear) Daylight 5:35 PM Straight (on Level) / Non-junction	❄	Single Veh (Ran off roadway)	① 34F GOODRICH ND Passenger Car EB Going Straight Weather			
319214 52 200.8	PDO 01/06/15 Tuesday Dry (Clear) Daylight 3:50 PM Straight (on Grade) / Non-junction		Single Veh (Ran Off Roadway)	① 40M DES MOINES IA Pickup - Van - Utility EB Going Straight Fail Keep in Proper Lane*			
328920 52 201	PDO 06/16/15 Tuesday Wet (Rain) Daylight 10:37 AM Straight (on Level) / Non-junction	♦	Single Veh (Jackknife)	① 54M WAHPETON ND Truck Tractor WB Going Straight Improper Evasive Action			
329289 52 201.01	PDO 06/16/15 Tuesday Wet (Rain) Daylight 10:30 AM Straight (on Level) / Non-junction	♦	Rear End	① 22F BISMARCK ND Pickup - Van - Utility WB Going Straight Improper Evasive Action	② 26M BISMARCK ND Unknown Heavy Truck WB Going Straight		
271657 52 201.5	PDO 02/04/13 Monday Ice / Snow (Bl Snow) Daylight 5:15 PM Hillcrest / Non-junction	❄	Single Veh (Overturn / Rollover)	① 21M MINOT ND Pickup - Van - Utility WB Going Straight Speed			
274510 52 202.12	PDO 03/07/13 Thursday Ice / Snow (Clear) Dusk 5:45 PM Hillcrest / Non-junction	❄	Single Veh (Overturn / Rollover)	① 15F BOWDON ND Pickup - Van - Utility EB Going Straight Weather			
294332 52 203.38	▷ Possible Injury 12/27/13 Friday Frost (Clear) Daylight 8:42 AM Straight (on Level) / Non-junction	❄	Single Veh (Overturn / Rollover)	① 47M BOWDON ND Pickup - Van - Utility EB Going Straight To Fast for Conditions			
274509 52 203.44	PDO 03/07/13 Thursday Ice / Snow (Clear) Daylight 4:00 PM Straight (on Level) / Non-junction	❄	Single Veh (Overturn / Rollover)	① 38M MINOT ND Pickup - Van - Utility WB Passing Weather			

Total Crashes: 138 (Sorted by Longitude)
Location: US 52, Harvey-Buchanan (excludes Carrington)
Reference Points: 170-252.417
Start - End Date: 1/1/2013 - 12/31/2017 (5 Years)

LEGEND
▶ *Fatal*
▶ *Incapacitating Injury*
▶ *Non-Incapacitating Injury*
▷ *Possible Injury*
♦ *Wet surface*
❄ *Snow, Ice, Slush, Frost*
▲ *Crash related to work zone*
① *Unit number*

1. Contributing Factor
* = alcohol or drugs involved

2. Most Harmful Event
For single vehicle crashes, the most harmful event is shown in parentheses in the "Type of Collision" column

Crash No. / Hwy / RP	Crash Severity / Date Day / Surface Conditions (Weather) / Lighting & Time / Road Geometrics / Relation to Jct	Type of Collision	① AGE SEX CITY STATE / Unit Configuration / Movement (traffic control) / Contributing Factor[1] / Most Harmful Event[2]	Shortened Narrative	Name of Intersection
274523	PDO 03/12/13 Tuesday Ice / Snow (Clear) ❄ Daylight 7:10 PM Straight (on Level) / Non-junction	Single Veh (Jackknife)	① 35M NAPLES FL Truck Tractor WB Going Straight To Fast for Conditions		
1024393 52 203.98	PDO 12/14/16 Wednesday Snow (Bl Snow) ❄ Daylight 10:55 AM Straight (on Level) / Non-junction	Single Veh (Overturn / Rollover)	① 43M DEVILS LAKE ND Pickup - Van - Utility EB Going Straight Weather		
296296 52 203.99	PDO 01/13/14 Monday Dry (Clear) Dusk 6:30 PM Straight (on Level) / Non-junction	Single Veh (Other Object (Not Fixed))	① 40M HARVEY ND Passenger Car WB Going Straight Improper License		
274154 52 204.16	PDO 03/12/13 Tuesday Ice / Snow (Cloudy) ❄ Daylight 12:14 PM Straight (on Level) / Non-junction	Single Veh (Jackknife)	① 43M CEADAR SPRINGS MI Truck Tractor EB Going Straight Weather		
1023675 52 204.2	PDO 12/15/16 Thursday Ice / Snow (Snow) ❄ Dark 6:50 AM Straight (on Level) / Non-junction	Single Veh (Overturn / Rollover)	① 25M BATESVILLE MS Pickup - Van - Utility EB Going Straight Weather		
319708 ▷ 52 204.23	Possible Injury 01/08/15 Thursday Snow (Bl Snow) ❄ Daylight 2:55 PM Straight (on Level) / Non-junction	Rear End	① 24M BERTHOLD ND Passenger Car WB Going Straight Vision Obstructed ② 72M MCCLUSKY ND Passenger Car WB Going Straight Vision Obstructed		
297517 52 206.3	PDO 01/26/14 Sunday Snow (Bl Snow) ❄ Daylight 12:40 PM Straight (on Level) / Non-junction	Rear End	① 29M MOORHEAD MN Passenger Car WB Going Straight Weather ② Hit and Run WB Going Straight		
274153 52 207.65	PDO 03/12/13 Tuesday Ice / Snow (Cloudy) ❄ Daylight 11:32 AM Straight (on Level) / Non-junction	Single Veh (Jackknife)	① 52M ALAMO TX Truck Tractor EB Going Straight Weather		
1028214 52 207.66	PDO 01/31/17 Tuesday Ice / Snow (Snow) ❄ Dark 7:34 PM Straight (on Level) / Other Cossings	Single Veh (Overturn / Rollover)	① 53M SYKESTON ND Pickup - Van - Utility WB Other Action on Roadway Weather		
307327 ▷ 52 208.814	Possible Injury 07/17/14 Thursday Dry (Clear) Daylight 6:00 PM Straight (on Level) / Non-junction	Sideswipe (Same Dir.)	① 51F WORTHINGTON MN Pickup - Van - Utility EB Passing Improper Overtaking ② 35M FARGO ND Pickup - Van - Utility EB Turning Left	V2 waiting to make EB left, V1 EB passed and struck V2 on the driver's side door.	Sykeston Rest Area

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Start - End Date: 1/1/2013 - 12/31/2017 (5 Years)

LEGEND
▶ *Fatal*
▶ *Incapacitating Injury*
▶ *Non-Incapacitating Injury*
▷ *Possible Injury*
♦ *Wet surface*
❄ *Snow, Ice, Slush, Frost*
▲ *Crash related to work zone*
① *Unit number*

1. Contributing Factor
** = alcohol or drugs involved*

2. Most Harmful Event
For single vehicle crashes, the most harmful event is shown in parentheses in the "Type of Collision" column

Crash No. / Hwy / RP	Crash Severity / Date Day / Surface Conditions (Weather) / Lighting & Time / Road Geometrics / Relation to Jct	Type of Collision	① AGE SEX CITY STATE / Unit Configuration / Movement (traffic control) / Contributing Factor[1] / Most Harmful Event[2]		Shortened Narrative	Name of Intersection
284190 52 88.394	▶ Non-incapacitating injury 08/12/13 Monday Dry (Clear) Daylight 9:49 AM Straight (on Level) / Non-junction	Rear End	① 19M LESTER PRAIRIE MN Pickup - Van - Utility EB Going Straight Attn Distracted-Inside	② 49F CRAIG MO Passenger Car EB Going Straight	V2 slowing down to turn left into the rest area. Driver 1 looked down or looked in rear view mirror, V1 could not stop in time and rear ended V2.	Sykeston Rest Area
1043390 52 209.59	PDO 11/09/17 Thursday Snow (Clear) ❄ Daylight 11:30 AM Straight (on Level) / Alley/Driveway	Backing	① 58M CASSLETON ND Single Unit Truck NB Backing Improper Backing/Turning	② Pickup - Van - Utility NB Driverless (Stopped) Parked MV		Sykeston Cemetery Driveway
330842	PDO 07/10/15 Friday Dry (Clear) Daylight 1:34 PM Straight (on Level) / Non-junction	Rear End	① 20M FARGO ND Passenger Car EB Going Straight Careless/Reckless Driving	② 50F CARRINGTON ND Passenger Car EB Going Straight		
1037621 52 210.19	PDO 07/31/17 Monday Dry (Clear) Daylight 2:07 PM Straight (on Level) / Non-junction	Sideswipe (Opp. Dir.)	① 50M BIXBY OK Pickup - Van - Utility EB Going Straight Other	② 29M GLENFIELD ND Pickup - Van - Utility WB Going Straight		
304425 52 210.9	PDO 05/20/14 Tuesday Dry (Clear) Dark 3:00 AM Straight (on Level) / Non-junction	Single Veh (Post)	① 27M SYKESTON ND Pickup - Van - Utility WB Going Straight Care Required			
274508 52 211.44	PDO 03/05/13 Tuesday Ice / Snow (Clear) ❄ Dark(L) 6:00 PM Straight (on Grade) / Non-junction	Single Veh (Jackknife)	① 26M PITTSBURGH PA Truck Tractor EB Passing Weather			
331682	▶ Incapacitating Injury 08/10/15 Monday Dry (Clear) Daylight 9:10 AM Straight (on Level) / Intersection	Rear End	① 40M CATHAY ND Pickup - Van - Utility EB Going Straight Failed to Yield	② 70M SYKESTON ND Pickup - Van - Utility EB Turning Left	V2 stopped waiting to make an EB left turn onto 56 Ave NE. V1 rear ended V2.	56 Ave NE
321177 52 212	▷ Possible Injury 01/22/15 Thursday Ice / Snow (Cloudy) ❄ Dark 7:20 PM Straight (on Level) / Non-junction	Single Veh (Overturn / Rollover)	① 38F ESMOND ND Passenger Car WB Going Straight Weather			
320085	PDO 01/22/15 Thursday Ice / Snow (Severe Wind) ❄ Dark 7:15 PM Straight (on Level) / Non-junction	Single Veh (Jackknife)	① 56M YPSILANTI MI Truck Tractor WB Going Straight Weather			
320086 52 212.33	PDO 01/22/15 Thursday Ice / Snow (Severe Wind) ❄ Dark 7:15 PM Straight (on Level) / Non-junction	Single Veh (Jackknife)	① 60M BALTIMORE ON Pickup - Van - Utility WB Going Straight Weather			

Crash Summary Sheets

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23 USC § 409 Documents
NDDOT Reserves All Objections

LEGEND
- ▶ *Fatal*
- ▶ *Incapacitating Injury*
- ▶ *Non-Incapacitating Injury*
- ▷ *Possible Injury*
- ♦ *Wet surface*
- ❄ *Snow, Ice, Slush, Frost*
- ▲ *Crash related to work zone*
- ① *Unit number*

1. Contributing Factor
* = alcohol or drugs involved

2. Most Harmful Event
For single vehicle crashes, the most harmful event is shown in parentheses in the "Type of Collision" column

Crash No. Hwy RP	Crash Severity Date Day Surface Conditions (Weather) Lighting & Time Road Geometrics / Relation to Jct	Type of Collision	① AGE SEX CITY STATE Unit Configuration Movement (traffic control) Contributing Factor[1] Most Harmful Event[2]	Shortened Narrative	Name of Intersection
276789 52 213.08	PDO 04/15/13 Monday Ice / Snow (Bl Snow) ❄ Daylight 3:40 PM Straight (on Level) / Non-junction	Single Veh (Jackknife)	① 36M JACKSONVILLE BEACH FL Truck Tractor EB Going Straight To Fast for Conditions		
273653 52 215.12	PDO 03/05/13 Tuesday Ice / Snow (Clear) ❄ Daylight 4:30 PM Straight (on Level) / Non-junction	Single Veh (Overturn / Rollover)	① 49M JAMESTOWN ND Pickup - Van - Utility EB Going Straight To Fast for Conditions		
317335 ▷ 52 216.33	Possible Injury 12/15/14 Monday Ice / Snow (Frozen Prcp) ❄ Daylight 11:18 AM Straight (on Grade) / Non-junction	Single Veh (Jackknife)	① 31M LOVELAND CO Truck Tractor EB Going Straight Weather		
1042999 ▶ 52 216.33	Non-incapacitating injury 11/04/17 Saturday Ice / Snow (Snow) ❄ Daylight 11:58 AM Straight (on Grade) / Non-junction	Single Veh (Overturn / Rollover)	① 21F ABERDEEN SD EJECTED Pickup - Van - Utility WB Going Straight To Fast for Conditions		
300771 52 216.89	PDO 03/21/14 Friday Ice / Snow (Bl Snow) ❄ Daylight 9:45 AM Straight (on Level) / Non-junction	Single Veh (Ran Off Roadway)	① 43F SHEYENNE ND Pickup - Van - Utility WB Going Straight To Fast for Conditions		
293295 ▶ 52 216.91	Non-incapacitating injury 12/16/13 Monday Snow (Bl Snow) ❄ Dark 8:40 PM Straight (on Level) / Non-junction	Sideswipe (Opp. Dir.)	① 27M ROCK SPRINGS WY Pickup - Van - Utility EB Going Straight Weather* ② 52M MENOMONIE WI 3+ Axle WB Going Straight Weather		
1020342 52 217.7	PDO 10/29/16 Saturday Dry (Clear) Daylight 11:30 AM Straight (on Level) / Non-junction	Sideswipe (Same Dir.)	① 58M HOLMEN WI Truck Tractor WB Going Straight ② 25M CARRINGTON ND Single Unit Truck WB Turning Left Failed to Yield		
275432 52 218.17	PDO 03/07/13 Thursday Ice / Snow (Unkown) ❄ Dark 8:30 PM Straight (on Level) / Non-junction	Single Veh (Ran off roadway)	① 37M DELTONA FL 2-Axle WB Going Straight (Stop) Weather		
273463 ▶ 52 218.7	Non-incapacitating injury 02/24/13 Sunday Dry (Clear) Daylight 5:13 PM Straight (on Level) / Intersection	Rear End	① 20M SYKESTON ND Passenger Car WB Going Straight Attn Distracted-Inside ② 19F CARRINGTON ND Passenger Car WB Turning Right		63 Ave NE
1030184 ▶ 52 219.76	Non-incapacitating injury 03/04/17 Saturday Wet (Clear) ♦ Daylight 12:00 PM Straight (on Level) / Non-junction	Single Veh (Ditch)	① 33M CUTLER BAY FL Truck Tractor EB Other Action on Roadway Over Correct/Steering		

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LEGEND
- ▶ *Fatal*
- ▶ *Incapacitating Injury*
- ▶ *Non-Incapacitating Injury*
- ▷ *Possible Injury*
- ♦ *Wet surface*
- ❄ *Snow, Ice, Slush, Frost*
- ▲ *Crash related to work zone*
- ① *Unit number*

1. Contributing Factor
** = alcohol or drugs involved*

2. Most Harmful Event
For single vehicle crashes, the most harmful event is shown in parentheses in the "Type of Collision" column

Crash No. / Hwy / RP	Crash Severity / Date Day / Surface Conditions (Weather) / Lighting & Time / Road Geometrics / Relation to Jct	Type of Collision	① AGE SEX CITY STATE / Unit Configuration / Movement (traffic control) / Contributing Factor[1] / Most Harmful Event[2]	Shortened Narrative	Name of Intersection
1035631	Non-incapacitating injury 06/18/17 Sunday Dry (Cloudy) Daylight 7:15 PM Straight (on Level) / Non-junction	Rear End	① 65M SAINT-LAURENT QC Truck Tractor EB Going Straight Following too Close ② 56F CARRINGTON ND Pickup - Van - Utility EB Slowing/Stopping D.U.I. (Alcohol)*		
1035682 52 220.54	PDO 06/18/17 Sunday Mud Dirt Gravel (Unkown) Dark 10:00 PM Straight (on Level) / Non-junction	Single Veh (Other Object (Not Fixed))	① 34M CARRINGTON ND Pickup - Van - Utility EB Going Straight		
1019391	Non-incapacitating injury 10/12/16 Wednesday Mud Dirt Gravel (Clear) Dark 7:15 PM Straight (on Level) / Interchange	Single Veh (Overturn / Rollover)	① 49M CARRINGTON ND EJECTED Hit and Run WB Turning Left Improper Turn		
1035649 52 221	PDO 06/18/17 Sunday Dry (Cloudy) Dark 10:00 PM Straight (on Level) / Non-junction	Single Veh (Other Object (Not Fixed))	① 19M CARRIGTON ND Passenger Car EB Going Straight		
274545 52 221.1	Non-incapacitating injury 03/13/13 Wednesday Ice / Snow (Clear) ❄ Daylight 12:05 PM Curve (on Level) / Non-junction	Single Veh (Overturn / Rollover)	① 28M PRAGUE OK Pickup - Van - Utility WB Negotiating Curve To Fast for Conditions		
275430 52 221.56	PDO 03/12/13 Tuesday Ice / Snow (Bl Snow) ❄ Daylight 8:00 AM Curve (on Grade) / Non-junction	Single Veh (Ran off roadway)	① 53M MORRICE MI Pickup - Van - Utility WB Going Straight (Stop) Weather		
1020237 52 221.7	PDO 10/28/16 Friday Dry (Clear) Daylight 9:10 AM Curve (on Level) / Intersection	Sideswipe (Same Dir.)	① 55F ROSEMOUNT MN Passenger Car WB Passing Improper Overtaking ② 38M CAVALIER ND Unknown Heavy Truck WB Turning Right		66 Ave NE
309496 52 221.7	PDO 08/07/14 Thursday Dry (Clear) Daylight 10:15 AM Curve (on Level) / Intersection	Single Veh (Luminaire / Light Support)	① 22F STAPLES MN Passenger Car EB Going Straight Attn Distracted-Inside		66 Ave NE
293174 52 221.93	PDO 12/17/13 Tuesday Ice / Snow (Bl Snow) ❄ Daylight 8:45 AM Straight (on Level) / Railroad Crossing	Rear End	① 17M CARRINGTON ND Passenger Car EB Going Straight Weather ② 32M ALEXANDRIA MN 3+ Axle EB Stopped Parked MV		
332795 52 221.96	PDO 09/03/15 Thursday Dry (Cloudy) Daylight 11:00 AM Straight (on Level) / Railroad Crossing	Sideswipe (Same Dir.)	① 27M LITTLE FALLS MN Pickup - Van - Utility EB Going Straight (Oth) Following too Close ② 35M BECKEMEYER IL Truck Tractor EB Going Straight (RR)		

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LEGEND
- ▶ *Fatal*
- ▶ *Incapacitating Injury*
- ▶ *Non-Incapacitating Injury*
- ▷ *Possible Injury*
- ♦ *Wet surface*
- ❄ *Snow, Ice, Slush, Frost*
- ▲ *Crash related to work zone*
- ① *Unit number*

1. Contributing Factor
** = alcohol or drugs involved*

2. Most Harmful Event
For single vehicle crashes, the most harmful event is shown in parentheses in the "Type of Collision" column

Crash No. Hwy RP	Crash Severity Date Day Surface Conditions (Weather) Lighting & Time Road Geometrics / Relation to Jct	Type of Collision	① AGE SEX CITY STATE Unit Configuration Movement (traffic control) Contributing Factor[1] Most Harmful Event[2]	Shortened Narrative	Name of Intersection
1016636 52 222.09	PDO 08/16/16 Tuesday Dry (Clear) Daylight 10:30 AM Straight (on Level) / Non-junction	Single Veh (Guardrail Face) ▲	① 26M FINLEY ND Farm Equipment WB Going Straight (Signal)		
326834 52 223.71	PDO 05/17/15 Sunday Slush (Frozen Prcp) ❄ Dusk 8:30 PM Curve (on Grade) / Non-junction	Single Veh (Ran off roadway)	① 19F MADDOCK ND Passenger Car NB Going Straight To Fast for Conditions		
1028208 52 223.99	▶ Non-incapacitating injury 02/01/17 Wednesday Ice / Snow (Clear) ❄ Daylight 1:12 PM Straight (on Level) / Non-junction	Single Veh (Overturn / Rollover)	① 81F JAMESTOWN ND Pickup - Van - Utility NB Going Straight To Fast for Conditions		
317533 52 224.36	PDO 12/20/14 Saturday Ice / Snow (Fog) ❄ Daylight 8:50 AM Straight (on Level) / Non-junction	Rear End	① 35F FORT TOTTEN ND Pickup - Van - Utility SB Passing Weather ② 39M ORLANDO FL 3+ Axle SB Going Straight Weather		
288337	PDO 10/05/13 Saturday Wet (Rain) ♦ Daylight 2:23 PM Straight (on Level) / Intersection	Sideswipe (Same Dir.)	① 17F CARRINGTON ND Passenger Car SB U-Turn MV Mechanical Failure ② 53M BISMARCK ND Passenger Car SB Going Straight MV Tran in Other Rdwy		1 St NE
336168 52 224.6	▶ Non-incapacitating injury 11/20/15 Friday Dry (Clear) Daylight 2:55 PM Straight (on Level) / Non-junction	Sideswipe (Opp. Dir.)	① 21M MINOT ND Emergency Vehicle SB Wrong Side of Road Careless/Reckless Driving Ran Off Roadway ② 19M MINOT ND Pickup - Van - Utility NB Slowing/Stopping Other Ditch		
1023561 52 224.76	PDO 12/07/16 Wednesday Snow (Snow) ❄ Daylight 12:01 PM Straight (on Level) / Non-junction	Backing	① 46M CARRINGTON ND Construction Equipment SB Backing Weather ② Pickup - Van - Utility NB Driverless (Stopped) Weather Parked MV		
317679 52 225.85	▶ Non-incapacitating injury 12/20/14 Saturday Frost (Fog) ❄ Daylight 9:15 AM Straight (on Level) / Non-junction	Rear End	① 19M LOON LAKE WA Passenger Car NB Going Straight Weather ② 58M CARRINGTON ND Pickup - Van - Utility NB Going Straight		
273248 52 226.27	PDO 03/04/13 Monday Ice / Snow (Bl Snow) ❄ Daylight 8:40 AM Straight (on Level) / Intersection	Rear End	① 30M DEVILS LAKE ND Pickup - Van - Utility SB Going Straight Speed ② 26M WILLISTON ND Pickup - Van - Utility SB Turning Left Weather		1 St SE #535
307841 52 226.59	▶ Non-incapacitating injury 07/21/14 Monday Wet (Severe Wind) ♦ Daylight 7:30 PM Straight (on Level) / Non-junction	Single Veh (Overturn / Rollover)	① 71M CLIMAX MN Truck Tractor NB Stopped Weather		

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LEGEND
- ▶ *Fatal*
- ▶ *Incapacitating Injury*
- ▶ *Non-Incapacitating Injury*
- ▷ *Possible Injury*
- ♦ *Wet surface*
- ❄ *Snow, Ice, Slush, Frost*
- ▲ *Crash related to work zone*
- ① *Unit number*

1. Contributing Factor
** = alcohol or drugs involved*

2. Most Harmful Event
For single vehicle crashes, the most harmful event is shown in parentheses in the "Type of Collision" column

Crash No. Hwy RP	Crash Severity Date Day Surface Conditions (Weather) Lighting & Time Road Geometrics / Relation to Jct	Type of Collision	① AGE SEX CITY STATE Unit Configuration Movement (traffic control) Contributing Factor[1] Most Harmful Event[2]	Shortened Narrative	Name of Intersection
273247 52 229	PDO 02/18/13 Monday Snow (Bl Snow) ❄ Dark 1:30 AM Straight (on Level) / Non-junction	Single Veh (Jackknife)	① 66M MAIDEN NC Pickup - Van - Utility NB Going Straight Weather		
1016774 ▶ 52 230.3	Non-incapacitating injury 08/27/16 Saturday Dry (Clear) Dark 5:40 AM Straight (on Level) / Non-junction	Rear End	① 23M JAMESTOWN ND Unknown Heavy Truck NB Going Straight Careless/Reckless Driving ② 76M JAMESTOWN ND Passenger Car NB Going Straight		
308097 ▷ 52 231.75	Possible Injury 08/02/14 Saturday Wet (Rain) ♦ Daylight 4:20 PM Straight (on Level) / Non-junction	Single Veh (Ran off roadway)	① 40F CARRINGTON ND Passenger Car SB Going Straight		
322401 52 231.9	PDO 02/17/15 Tuesday Dry (Clear) Dark 11:30 PM Straight (on Level) / Non-junction	Single Veh (Separation of Units)	① 43M BRAINERD MN 3+ Axle SB Going Straight Fail Keep in Proper Lane		
336288 52 0.41	PDO 11/30/15 Monday Snow (Bl Snow) ❄ Dark 8:15 PM Straight (on Level) / Intersection	Single Veh (Mail Box)	① 36F FARGO ND Pickup - Van - Utility SB Going Straight To Fast for Conditions		Private Driveway
326738 ▷ 52 0.46	Possible Injury 05/07/15 Thursday Dry (Clear) Dark 9:30 PM Straight (on Level) / Non-junction	Single Veh (Ditch)	① 28M CARRINGTON ND Passenger Car NB Swerving Fail Keep in Proper Lane*		
295680 52 0.57	PDO 01/12/14 Sunday Ice / Snow (Cloudy) ❄ Daylight 8:27 AM Straight (on Level) / Non-junction	Single Veh (Overturn / Rollover)	① 36M NAPLES FL Truck Tractor NB Passing To Fast for Conditions		
273652 52 234.99	PDO 03/05/13 Tuesday Dry (Clear) Daylight 3:35 PM Straight (on Grade) / Non-junction	Sideswipe (Opp. Dir.)	① 21M PINGREE ND Pickup - Van - Utility SB Going Straight Fail Keep in Proper Lane ② 64M NORFOLK NE Truck Tractor NB Going Straight		
320000 ▷ 52 235.24	Possible Injury 12/23/14 Tuesday Ice / Snow (Cloudy) ❄ Dark 6:06 AM Straight (on Level) / Non-junction	Sideswipe (Opp. Dir.)	① Hit and Run NB Going Straight Weather ② NEW ROCKFORD ND Passenger Car SB Going Straight		
300004 ▶ 52 236.76	Non-incapacitating injury 03/06/14 Thursday Slush (Cloudy) ❄ Daylight 9:25 AM Straight (on Level) / Non-junction	Single Veh (Overturn / Rollover)	① 32M NEW IBERIA LA Pickup - Van - Utility NB Going Straight To Fast for Conditions		

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LEGEND
- ▶ *Fatal*
- ▶ *Incapacitating Injury*
- ▶ *Non-Incapacitating Injury*
- ▷ *Possible Injury*
- ♦ *Wet surface*
- ❄ *Snow, Ice, Slush, Frost*
- ▲ *Crash related to work zone*
- ① *Unit number*

1. Contributing Factor
* = alcohol or drugs involved

2. Most Harmful Event
For single vehicle crashes, the most harmful event is shown in parentheses in the "Type of Collision" column

Crash No. Hwy RP	Crash Severity Date Day Surface Conditions (Weather) Lighting & Time Road Geometrics / Relation to Jct	Type of Collision	① AGE SEX CITY STATE Unit Configuration Movement (traffic control) Contributing Factor[1] Most Harmful Event[2]	Shortened Narrative	Name of Intersection
338136 52 237.67	▶ Non-incapacitating injury 02/18/16 Thursday Ice / Snow (Fog) ❄ Dark 6:50 AM Straight (on Level) / Non-junction	Single Veh (Overturn / Rollover)	① 24M MINOT ND Pickup - Van - Utility SB Going Straight To Fast for Conditions		
286726 52 238.99	PDO 09/12/13 Thursday Dry (Cloudy) Daylight 11:59 AM Straight (on Level) / Non-junction	Rear End	① 79M HARVEY ND Pickup - Van - Utility SB Going Straight Following too Close ② 57F CARRINGTON ND Pickup - Van - Utility SB Slowing/Stopping		
328536 52 239.21	PDO 06/11/15 Thursday Dry (Clear) Daylight 7:35 PM Straight (on Level) / Non-junction	Single Veh (Fire / Explosion)	① 45M HARVEY ND Passenger Car NB Going Straight MV Mechanical Failure		
299909 52 239.74	PDO 03/05/14 Wednesday Ice / Snow (Bl Snow) ❄ Daylight 3:55 PM Straight (on Grade) / Non-junction	Single Veh (Overturn / Rollover)	① 47M HARVEY ND Pickup - Van - Utility NB Going Straight Weather		
315961 52 239.99	PDO 11/26/14 Wednesday Ice / Snow (Bl Snow) ❄ Daylight 10:14 AM Straight (on Grade) / Non-junction	Sideswipe (Opp. Dir.)	① 70M EARL GREY SK Pickup - Van - Utility NB Going Straight Weather ② 36M CARRINGTON ND Passenger Car SB Going Straight Weather		
1041616 52 240.3	PDO 10/12/17 Thursday Dry (Clear) Daylight 5:00 PM Straight (on Level) / Intersection	Angle	① 18M BUCHANAN ND Pickup - Van - Utility SB Going Straight Speed Ran Off Roadway ② 18M SILVER LAKE KS Unknown Heavy Truck WB Turning Right	V1 SB traveling above the posted speed limit. V2 making SB right turn. V1 unable to stop in time, went into the ditch and struck V2.	13 St SE
330029 52 240.72	▶ Fatal 07/03/15 Friday Dry (Cloudy) Dark 3:08 AM Straight (on Level) / Non-junction	Head on	① 24M NEW ROCKFORD ND Pickup - Van - Utility SB Wrong Side of Road Drove left of center* ② 56M ADRIAN ND Truck Tractor NB Going Straight	V1 SB at 65 mph. V2 NB at 65 mph. V1 crossed centerline and collided with V2.	
287132 52 240.73	▶ Incapacitating Injury 09/21/13 Saturday Dry (Fog) Daylight 7:57 AM Straight (on Level) / Non-junction	Sideswipe (Opp. Dir.)	① 23M CITRUS HEIGHTS CA 3+ Axle NB Passing Improper Overtaking Other Non-Collision ② 62M NEW ROCKFORD ND Pickup - Van - Utility SB Going Straight Weather	V1 NB at 55 mph passing another NB vehicle. V1 went into the SB lane and struck SB V2. Dense fog in the area at the time of this crash.	
271610 52 240.99	PDO 02/09/13 Saturday Ice / Snow (Frozen Prcp) ❄ Daylight 9:10 AM Straight (on Grade) / Non-junction	Single Veh (Ran Off Roadway)	① 50M WARROAD MN Pickup - Van - Utility NB Going Straight To Fast for Conditions		
330000 52 241.01	PDO 07/03/15 Friday Dry (Unkown) Dark 3:15 AM Straight (on Grade) / Non-junction	Single Veh (Other Object (Not Fixed))	① 44M LITTLE FALLS MN Truck Tractor SB Going Straight Other		

Total Crashes: 138 (Sorted by Longitude)
Location: US 52, Harvey-Buchanan (excludes Carrington)
Reference Points: 170-252.417
Start - End Date: 1/1/2013 - 12/31/2017 (5 Years)

LEGEND
▶ *Fatal*
▶ *Incapacitating Injury*
▶ *Non-Incapacitating Injury*
▷ *Possible Injury*
♦ *Wet surface*
❄ *Snow, Ice, Slush, Frost*
▲ *Crash related to work zone*
① *Unit number*

1. Contributing Factor
** = alcohol or drugs involved*

2. Most Harmful Event
For single vehicle crashes, the most harmful event is shown in parentheses in the "Type of Collision" column

Crash No. / Hwy / RP	Crash Severity / Date Day / Surface Conditions (Weather) / Lighting & Time / Road Geometrics / Relation to Jct	Type of Collision	① AGE SEX CITY STATE / Unit Configuration / Movement (traffic control) / Contributing Factor[1] / Most Harmful Event[2]	Shortened Narrative	Name of Intersection
332912	▶ Incapacitating Injury 09/06/15 Sunday Dry (Clear) Dark 10:40 PM Straight (on Level) / Non-junction	Single Veh (Ran Off Roadway)	① 75F PINGREE ND Pickup - Van - Utility NB Going Straight Fail Keep in Proper Lane	V1 NB drifted into the ditch and then hit an approach, landed on its passenger side.	
317321 52 90.724	PDO 12/14/14 Sunday Ice / Snow (Fog) ❄ Daylight 8:45 AM Straight (on Level) / Non-junction	Single Veh (Ran Off Roadway)	① 48F BRANTFORD ON Pickup - Van - Utility NB Going Straight Weather		
295085 52 90.624	▶ Non-incapacitating injury 01/03/14 Friday Ice / Snow (Rain) ❄ Daylight 2:45 PM Straight (on Level) / Non-junction	Single Veh (Overturn / Rollover)	① 39M MINOT ND Pickup - Van - Utility NB Going Straight To Fast for Conditions		
1009819 52 244.82	PDO 03/19/16 Saturday Dry (Clear) Daylight 3:30 PM Straight (on Level) / Non-junction	Single Veh (Post)	① 55M SYKESTON ND Pickup - Van - Utility NB Going Straight Fail Keep in Proper Lane		
309329 52 245.46	▶ Incapacitating Injury 08/20/14 Wednesday Dry (Clear) Dusk 8:52 PM Straight (on Level) / Non-junction	Head on	① 16M JAMESTOWN ND Passenger Car SB Changing Lanes (Oth) Improper Overtaking ② 30M MOORHEAD MN 3+ Axle NB Going Straight (Oth)	V1 SB behind stopped vehicle who was waiting to make a SB left into "The 281 Stop". V1 moved into the NB lane to pass the stopped vehicle and collided with NB V2.	
317981 52 246.15	PDO 12/22/14 Monday Snow (Snow) ❄ Dark 5:44 PM Straight (on Level) / Non-junction	Sideswipe (Same Dir.)	① 20F WEST FARGO ND Passenger Car NB Passing To Fast for Conditions ② 54F CARRINGTON ND Passenger Car NB Going Straight Weather		
313610 52 246.48	PDO 10/22/14 Wednesday Dry (Clear) Dark 7:05 AM Straight (on Grade) / Non-junction	Rear End	① 32M GARY TX Pickup - Van - Utility NB Going Straight Speed ② 59M Passenger Car NB Going Straight No Insurance		
1025169 52 247.02	PDO 12/31/16 Saturday Ice / Snow (Bl Snow) ❄ Daylight 10:45 AM Straight (on Level) / Non-junction	Single Veh (Cargo Loss or Shift)	① 70M LISBON ND Pickup - Van - Utility NB Going Straight Fail Keep in Proper Lane		
1017185	▶ Non-incapacitating injury 09/03/16 Saturday Dry (Clear) Dark 5:34 AM Straight (on Level) / Non-junction	Single Veh (Other Non-Collision)	① 25M WEST FARGO ND Pickup - Van - Utility NB Other Action on Roadway		
1045614 52 248.38	PDO 12/14/17 Thursday Ice / Snow (Cloudy) ❄ Daylight 8:20 AM Straight (on Level) / Non-junction	Single Veh (Overturn / Rollover)	① 16M BUCHANAN ND Pickup - Van - Utility NB Going Straight Other		

Crash Summary Sheets

Total Crashes: 138 (Sorted by Longitude)
Location: US 52, Harvey-Buchanan (excludes Carrington)
Reference Points: 170-252.417
Start - End Date: 1/1/2013 - 12/31/2017 (5 Years)

23 USC § 409 Documents
NDDOT Reserves All Objections

LEGEND
- ▶ *Fatal*
- ▶ *Incapacitating Injury*
- ▶ *Non-Incapacitating Injury*
- ▷ *Possible Injury*
- ♦ *Wet surface*
- ❄ *Snow, Ice, Slush, Frost*
- ▲ *Crash related to work zone*
- ① *Unit number*

1. Contributing Factor
* = alcohol or drugs involved

2. Most Harmful Event
For single vehicle crashes, the most harmful event is shown in parentheses in the "Type of Collision" column

Crash No. / Hwy / RP	Crash Severity / Date Day / Surface Conditions (Weather) / Lighting & Time / Road Geometrics / Relation to Jct	Type of Collision	① AGE SEX CITY STATE / Unit Configuration / Movement (traffic control) / Contributing Factor[1] / Most Harmful Event[2]		Shortened Narrative	Name of Intersection
1045617 ▷ 52 248.42	Possible Injury 12/14/17 Thursday Ice / Snow (Cloudy) ❄ Daylight 8:20 AM Straight (on Level) / Non-junction	Sideswipe (Opp. Dir.)	① 33M CARRINGTON ND Pickup - Van - Utility SB Going Straight	② 37M TIFFIN OH Truck Tractor NB Going Straight Fail Keep in Proper Lane		
291378 52 248.98	PDO 12/01/13 Sunday Ice / Snow (Frozen Prcp) ❄ Dark 6:00 PM Straight (on Level) / Non-junction	Single Veh (Ran Off Roadway)	① 23F FARGO ND Passenger Car SB Going Straight To Fast for Conditions			
1020476 ▷ 52 249.94	Possible Injury 11/01/16 Tuesday Dry (Clear) Daylight 2:00 PM Straight (on Level) / Intersection	Rear End	① 36M FARGO ND Unknown Heavy Truck NB Going Straight Following too Close	② 38M NEW ROCKFORD ND Pickup - Van - Utility NB Going Straight		21 1/2 St SE
275781	PDO 03/28/13 Thursday Dry (Fog) Daylight 8:40 AM Straight (on Level) / Intersection	Angle	① 23M ONAKA SD 3+ Axle EB Turning Left (Stop) Failed to Yield	② 48M FERTILE MN 3+ Axle SB Going Straight		20 St NE
291377 52 250.96	PDO 12/01/13 Sunday Ice / Snow (Frozen Prcp) ❄ Dark 4:30 PM Straight (on Level) / Non-junction	Single Veh (Ran Off Roadway)	① 19M WILLISTON ND Pickup - Van - Utility SB Going Straight To Fast for Conditions			
1015843 52 252.04	PDO 08/10/16 Wednesday Dry (Clear) Daylight 7:45 PM Straight (on Level) / Non-junction	Rear End	① 20M ABILENE KS Pickup - Van - Utility NB Going Straight Careless/Reckless Driving	② 19M ABILENE KS Pickup - Van - Utility NB Going Straight Care Required		
1014119 ▶ 52 252.12	Non-incapacitating injury 07/03/16 Sunday Dry (Cloudy) Dusk 9:30 PM Straight (on Level) / Non-junction	Single Veh (Ran off roadway)	① 16M WEST FARGO ND Passenger Car SB Passing Improper Overtaking	② 61M HARVEY ND Motorcycle NB Going Straight *	V1 SB passing another SB vehicle. V2 NB laid his bike over and took to the ditch to avoid a collision with V1. V1 returned to scene to check on V2 and phoned in the incident.	
288551 52 252.45	PDO 10/16/13 Wednesday Oil (Clear) Daylight 6:28 PM Straight (on Level) / Non-junction	Rear End	① 59M ALEXANDRIA MN Pickup - Van - Utility SB Going Straight Defective Equipment MV Tran in Other Rdwy	② 49M LETHBRIDGE AB Truck Tractor SB Going Straight MV Tran in Other Rdwy		

US 52 / 38 Ave E

Project Info

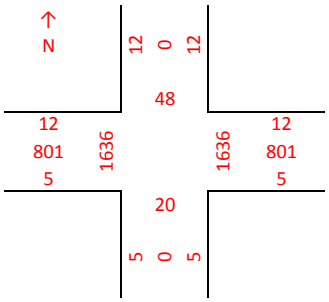
PCN	
Ref#	4347
HSIP #	
Study Date	4/10/2019

638

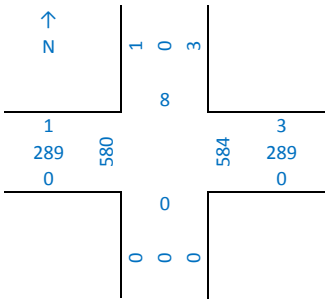
Intersection Info

	Major Road	Minor Road	
Reference Points	178.300		
Speed Limits (mph)	65	55	Y
Select Major Road Directions	East-West		
Intersection/Junction Traffic Control	Stop on Minor Road		Y
Major Road a Divided Highway?	No		
Terrain	Level		E_T= 1.5

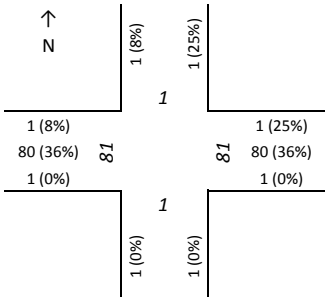
2018 AADTs

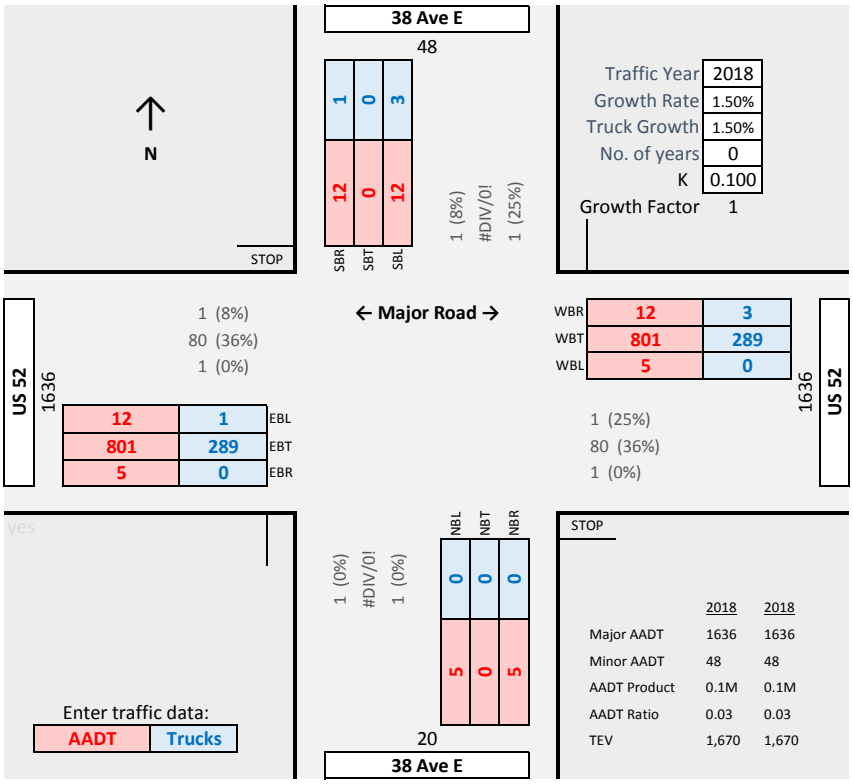


2018 TAADTs



2018 Truck %



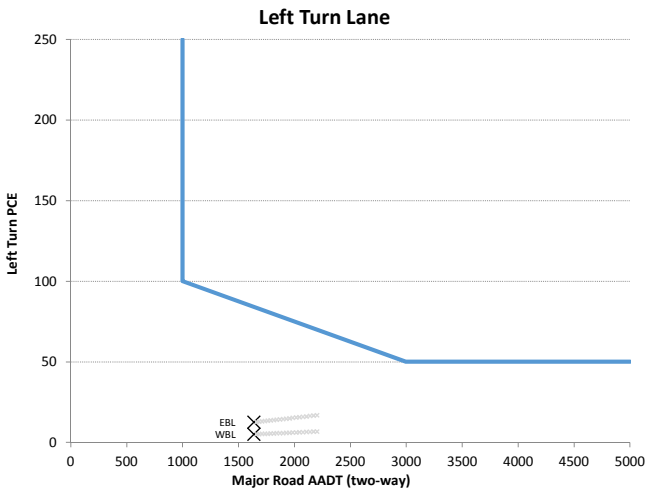


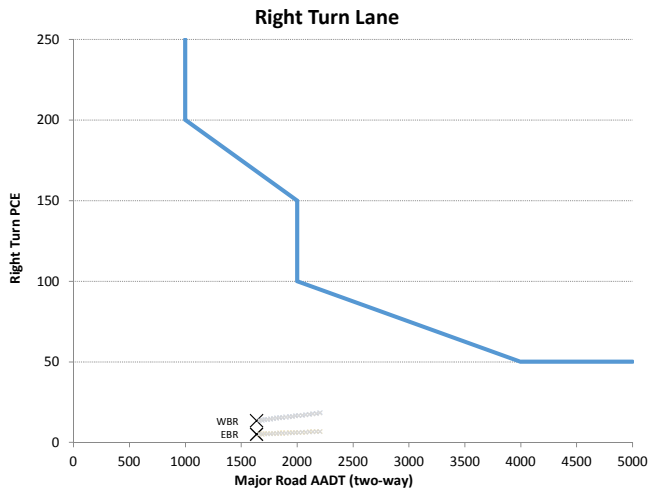
LEFT Turn Lane Volume Criteria (1.A)

EBL	WBL
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{LT} = 12	V_{LT} = 5
P_T = 0.08	P_T = 0.00
PCE = 13	PCE = 5
AADT = 1636	AADT = 1636
Met? No	Met? No

RIGHT Turn Lane Volume Criteria (1.A)

EBR	WBR
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{RT} = 5	V_{RT} = 12
P_T = 0.00	P_T = 0.25
PCE = 5	PCE = 14
AADT = 1636	AADT = 1636
Met? No	Met? No





US 52 / 16 St NE – ND 15

Project Info

PCN	
Ref#	4347
HSIP #	
Study Date	4/10/2019

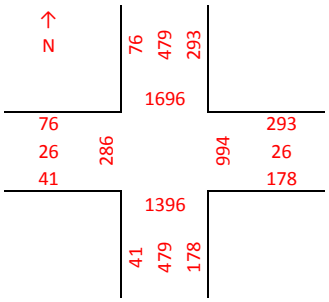
65

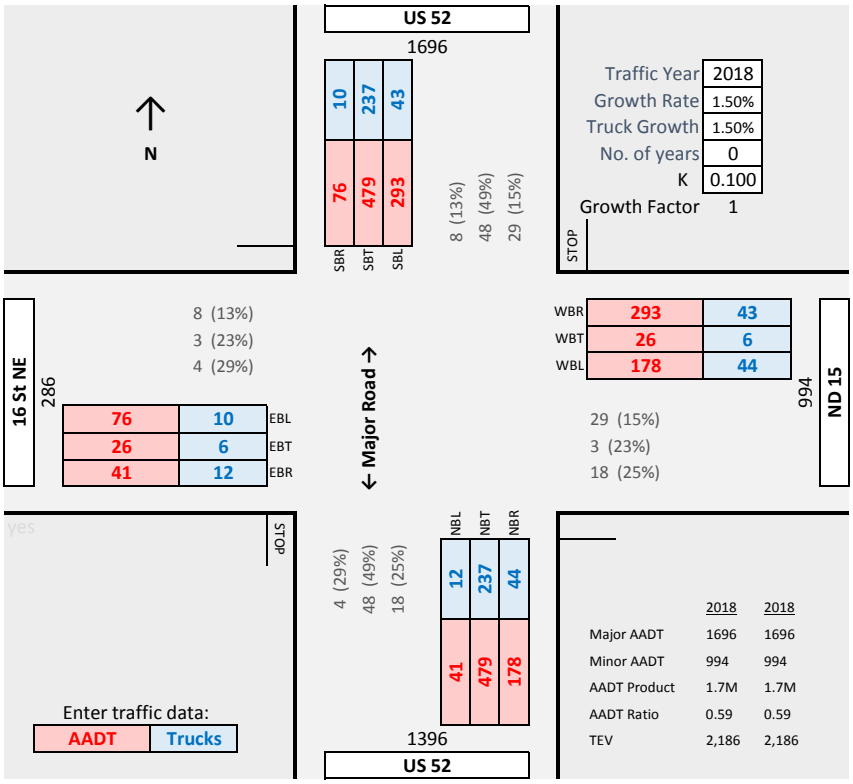
Intersection Info

	Major Road	Minor Road
Reference Points	185.600	
Speed Limits (mph)	55	25
Select Major Road Directions	North-South	
Intersection/Junction Traffic Control	Stop on Minor Road	
Major Road a Divided Highway?	No	
Terrain	Level	

E_T= 1.5

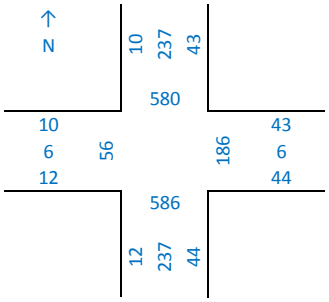
2018 AADTs



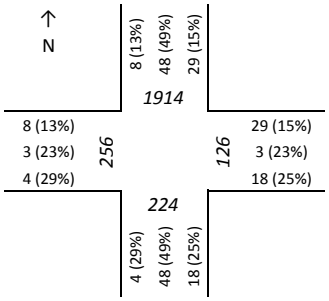


	2018	2018
Major AADT	1696	1696
Minor AADT	994	994
AADT Product	1.7M	1.7M
AADT Ratio	0.59	0.59
TEV	2,186	2,186

2018 TAADTs



2018 Truck %

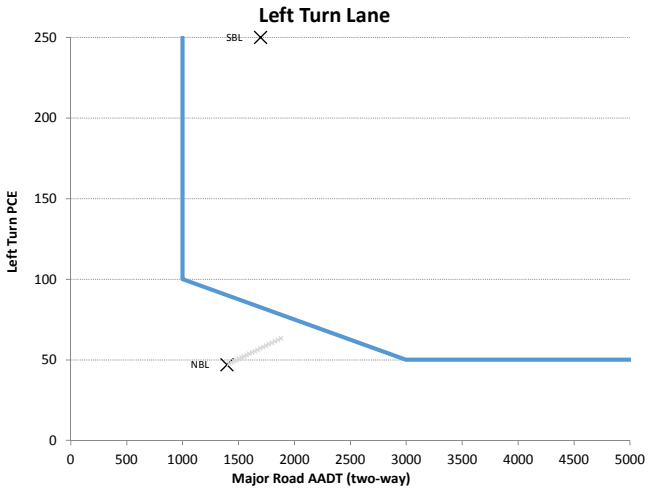


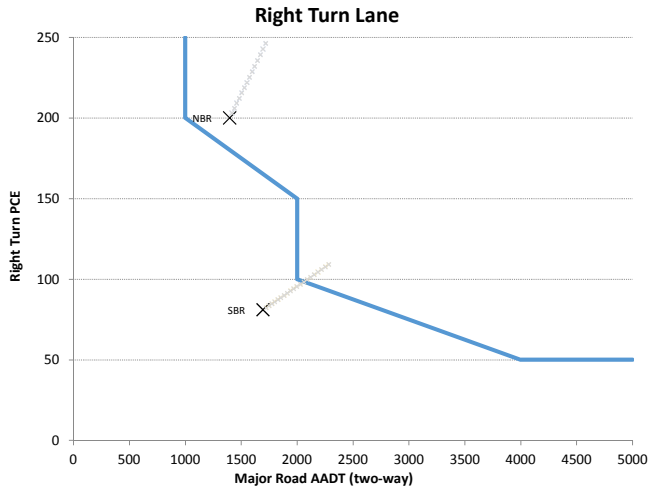
LEFT Turn Lane Volume Criteria (1.A)

SBL	NBL
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{LT} = 293	V_{LT} = 41
P_T = 0.15	P_T = 0.29
PCE = 315	PCE = 47
AADT = 1696	AADT = 1396
Met? Yes	Met? No

RIGHT Turn Lane Volume Criteria (1.A)

SBR	NBR
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{RT} = 76	V_{RT} = 178
P_T = 0.13	P_T = 0.25
PCE = 81	PCE = 200
AADT = 1696	AADT = 1396
Met? No	Met? Yes
(may be met in 2032)	





US 52 / 2 St

Project Info

PCN	
Ref#	4347
HSIP #	
Study Date	4/10/2019

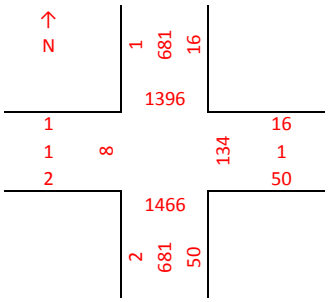
1126

Intersection Info

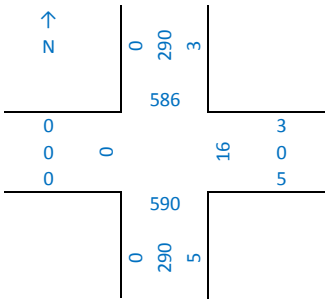
US 52 2 St

	Major Road	Minor Road	
Reference Points	186.080		
Speed Limits (mph)	65	40	Y
Select Major Road Directions	North-South		
Intersection/Junction Traffic Control	Stop on Minor Road		Y
Major Road a Divided Highway?	No		
Terrain	Level		E_T= 1.5

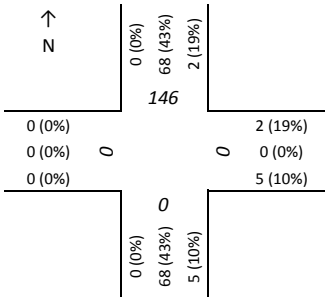
2018 AADTs

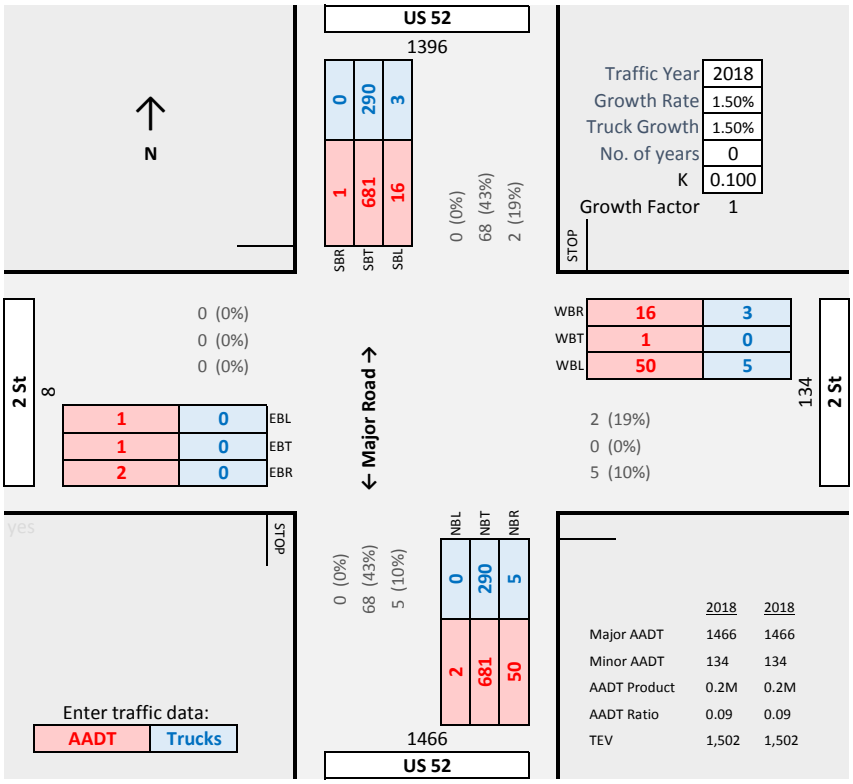


2018 TAADTs



2018 Truck %



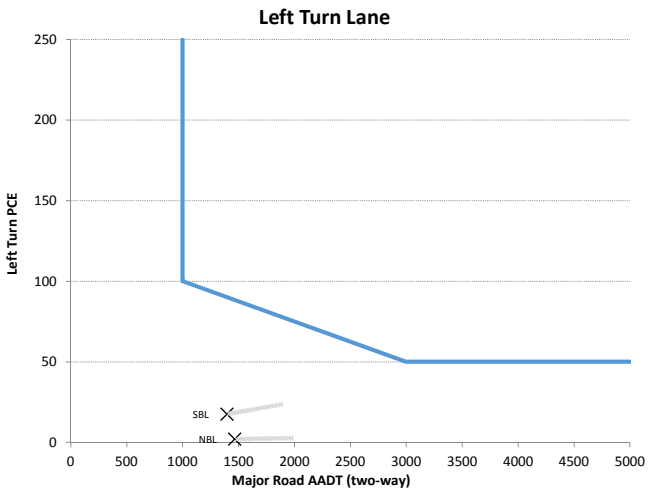


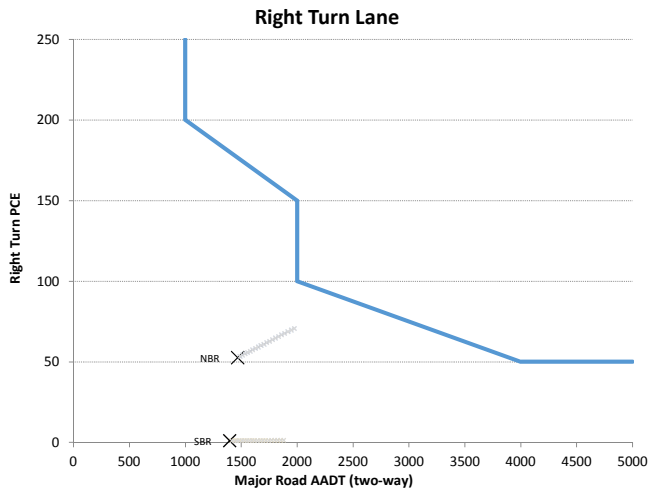
LEFT Turn Lane Volume Criteria (1.A)

SBL	NBL
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{LT} = 16	V_{LT} = 2
P_T = 0.19	P_T = 0.00
PCE = 18	PCE = 2
AADT = 1396	AADT = 1466
Met? No	Met? No

RIGHT Turn Lane Volume Criteria (1.A)

SBR	NBR
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{RT} = 1	V_{RT} = 50
P_T = 0.00	P_T = 0.10
PCE = 1	PCE = 53
AADT = 1396	AADT = 1466
Met? No	Met? No





US 52 / 9 St NE

Project Info

PCN	
Ref#	4347
HSIP #	
Study Date	4/10/2019

526

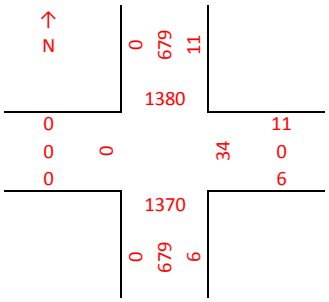
Intersection Info

US 52 9 St NE

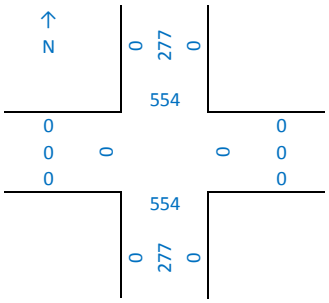
	Major Road	Minor Road
Reference Points	192.730	
Speed Limits (mph)	65	55
Select Major Road Directions	North-South	
Intersection/Junction Traffic Control	Stop on Minor Road	
Major Road a Divided Highway?	No	
Terrain	Level	

E_T= 1.5

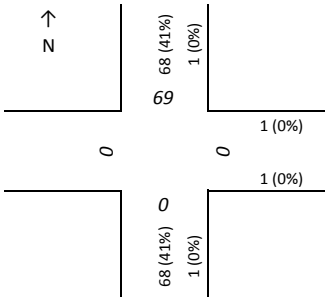
2018 AADTs

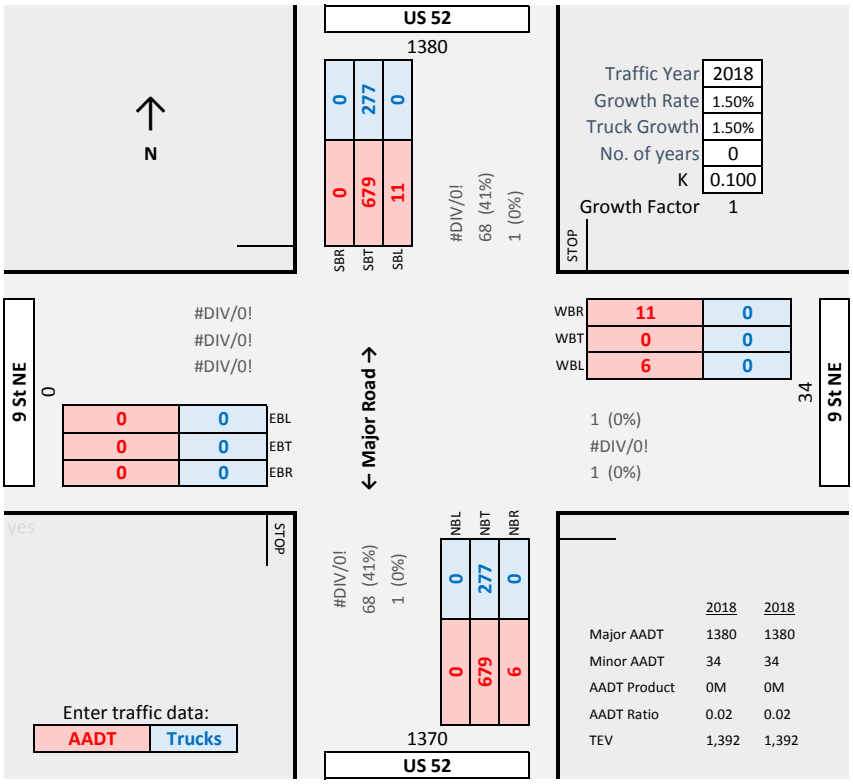


2018 TAADTs



2018 Truck %



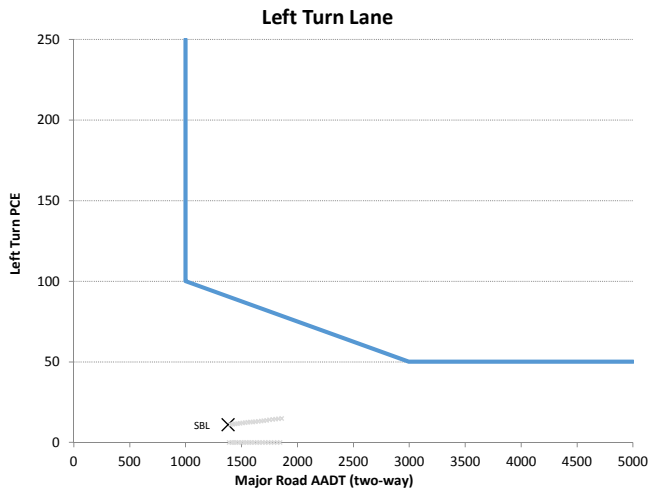


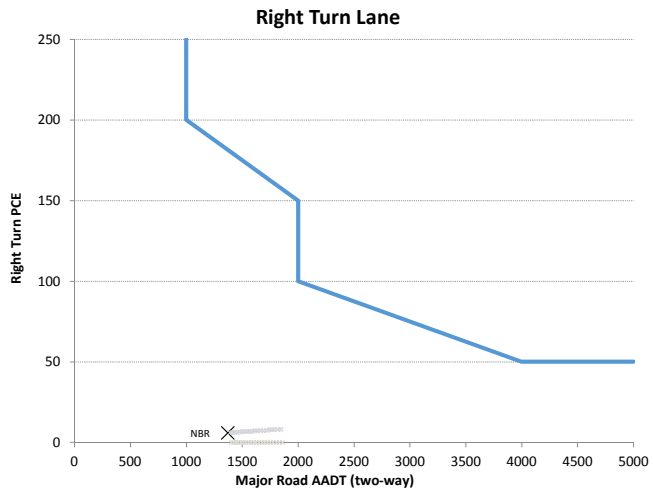
LEFT Turn Lane Volume Criteria (1.A)

SBL	NBL
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{LT} = 11	V_{LT} = 0
P_T = 0.00	P_T =
PCE = 11	PCE =
AADT = 1380	AADT = 1370
Met? No	Met?

RIGHT Turn Lane Volume Criteria (1.A)

SBR	NBR
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{RT} = 0	V_{RT} = 6
P_T =	P_T = 0.00
PCE =	PCE = 6
AADT = 1380	AADT = 1370
Met?	Met? No





ND 200 – US 52 / US 52 – 43 Ave NE

Project Info

PCN	
Ref#	4347
HSIP #	
Study Date	4/10/2019

66

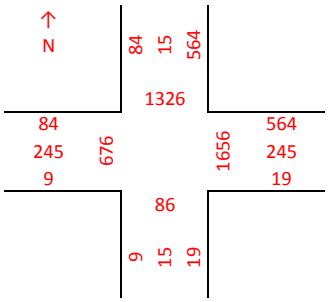
Intersection Info

ND 200 – US 52S 52 – 43 Ave N

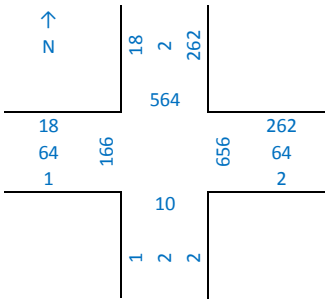
	Major Road	Minor Road
Reference Points	198.720	
Speed Limits (mph)	65	65
Select Major Road Directions	East-West	
Intersection/Junction Traffic Control	Stop on Minor Road	
Major Road a Divided Highway?	No	
Terrain	Level	

E_T= 1.5

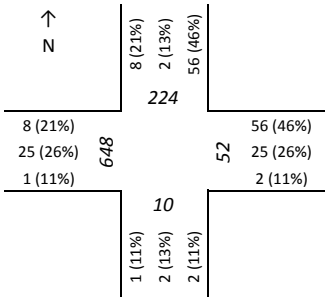
2018 AADTs

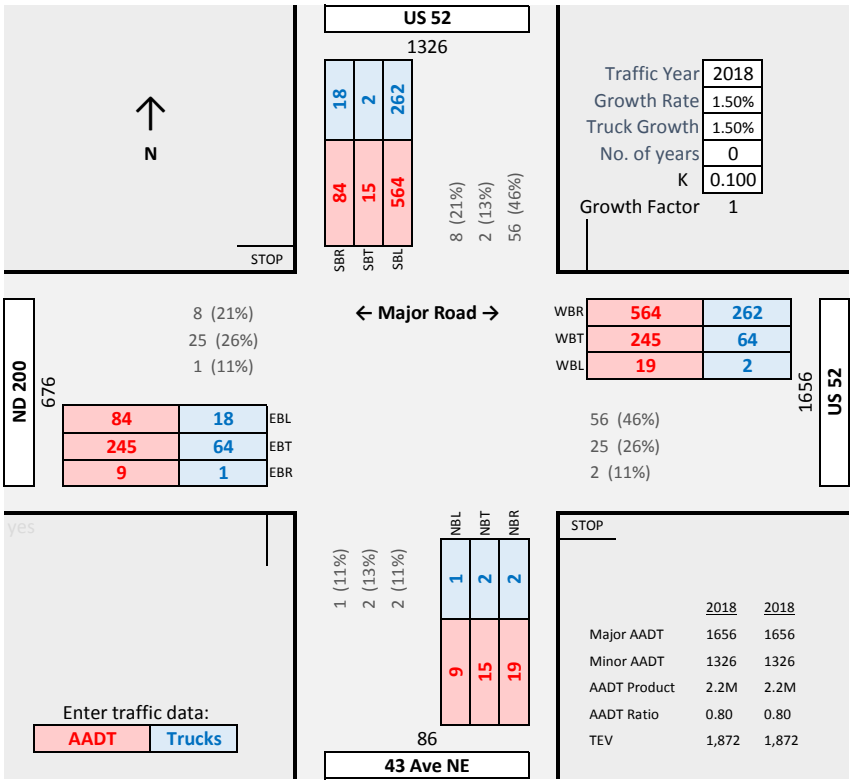


2018 TAADTs



2018 Truck %





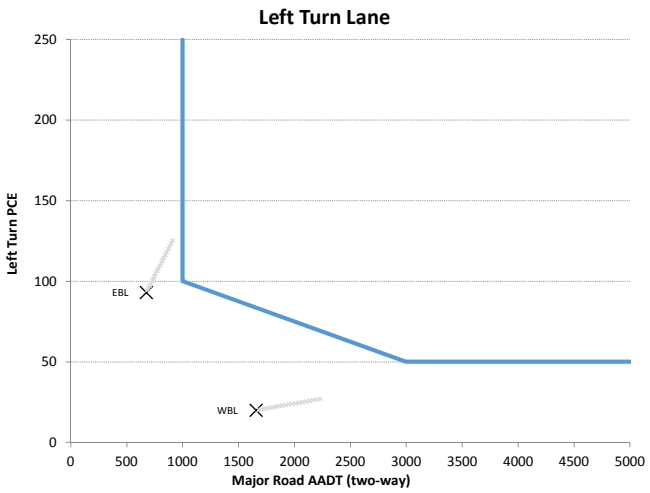
	2018	2018
Major AADT	1656	1656
Minor AADT	1326	1326
AADT Product	2.2M	2.2M
AADT Ratio	0.80	0.80
TEV	1,872	1,872

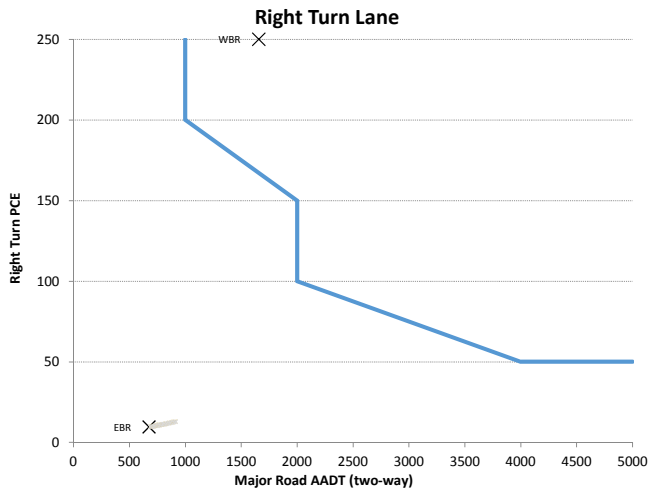
LEFT Turn Lane Volume Criteria (1.A)

EBL	WBL
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{LT} = 84	V_{LT} = 19
P_T = 0.21	P_T = 0.11
PCE = 93	PCE = 20
AADT = 676	AADT = 1656
Met? No	Met? No

RIGHT Turn Lane Volume Criteria (1.A)

EBR	WBR
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{RT} = 9	V_{RT} = 564
P_T = 0.11	P_T = 0.46
PCE = 10	PCE = 695
AADT = 676	AADT = 1656
Met? No	Met? Yes





US 52 / 47 Ave NE

Project Info

PCN	
Ref#	4347
HSIP #	
Study Date	4/10/2019

1052

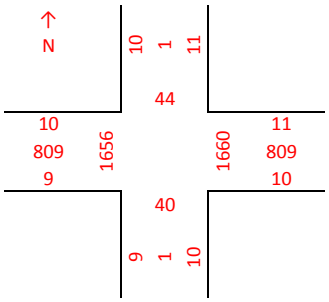
Intersection Info

US 52 47 Ave NE

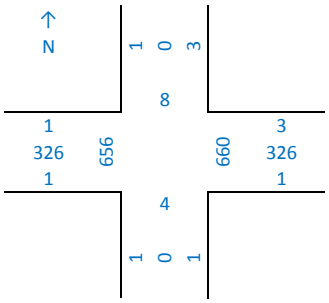
	Major Road	Minor Road
Reference Points	202.740	
Speed Limits (mph)	65	55
Select Major Road Directions	East-West	
Intersection/Junction Traffic Control	Stop on Minor Road	
Major Road a Divided Highway?	No	
Terrain	Level	

E_T= 1.5

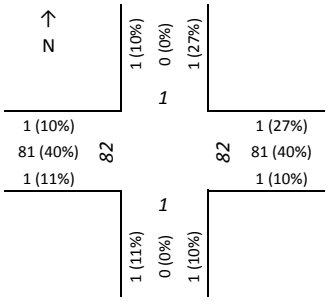
2018 AADTs

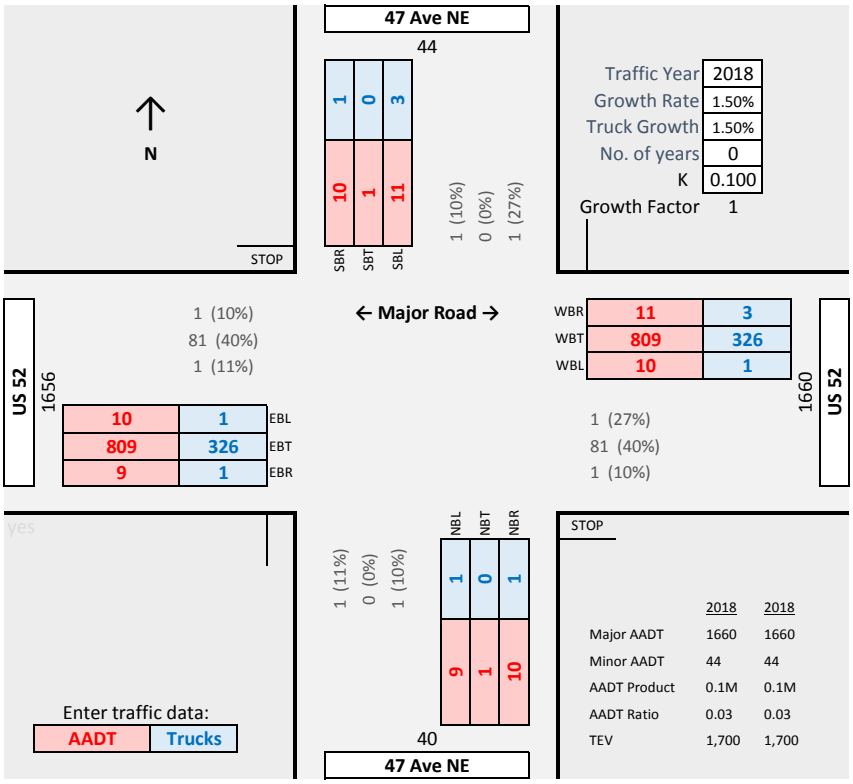


2018 TAADTs



2018 Truck %



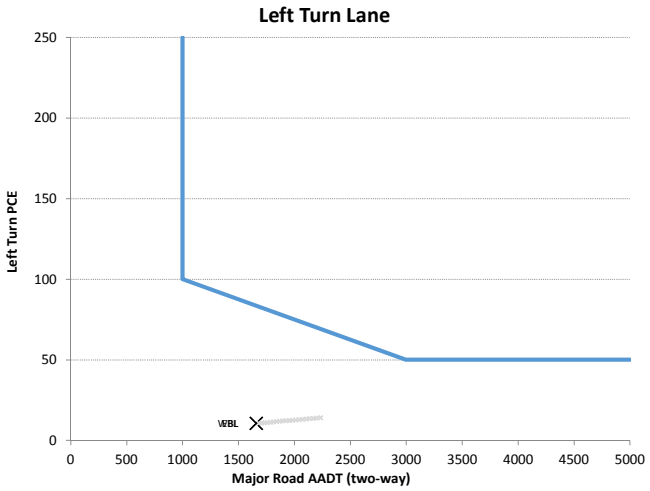


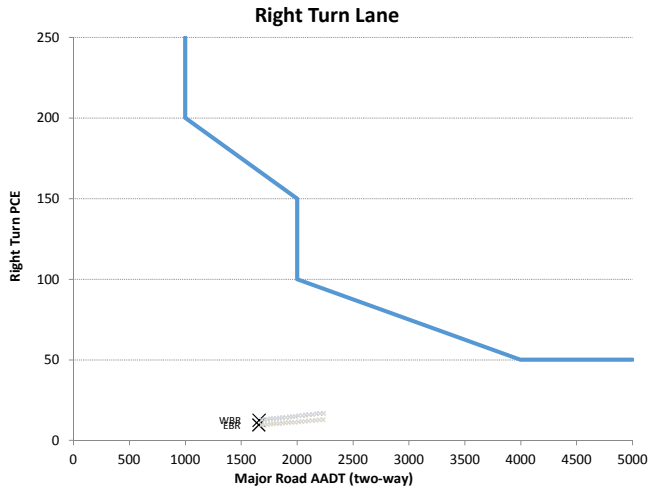
LEFT Turn Lane Volume Criteria (1.A)

EBL	WBL
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{LT} = 10	V_{LT} = 10
P_T = 0.10	P_T = 0.10
PCE = 11	PCE = 11
AADT = 1656	AADT = 1660
Met? No	Met? No

RIGHT Turn Lane Volume Criteria (1.A)

EBR	WBR
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{RT} = 9	V_{RT} = 11
P_T = 0.11	P_T = 0.27
PCE = 10	PCE = 13
AADT = 1656	AADT = 1660
Met? No	Met? No





US 52 / 49 Ave NE

Project Info

PCN	
Ref#	4347
HSIP #	
Study Date	4/10/2019

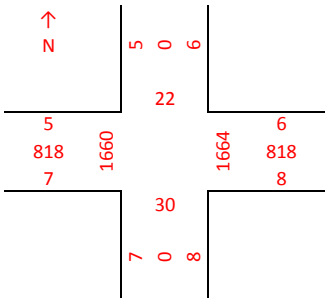
529

Intersection Info

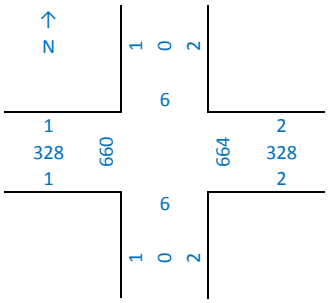
US 52 49 Ave NE

	Major Road	Minor Road	
Reference Points	204.720		
Speed Limits (mph)	65	55	Y
Select Major Road Directions	East-West		
Intersection/Junction Traffic Control	Stop on Minor Road		Y
Major Road a Divided Highway?	No		
Terrain	Level		E_T= 1.5

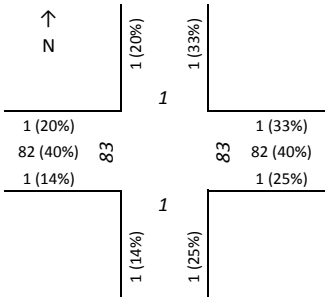
2018 AADTs

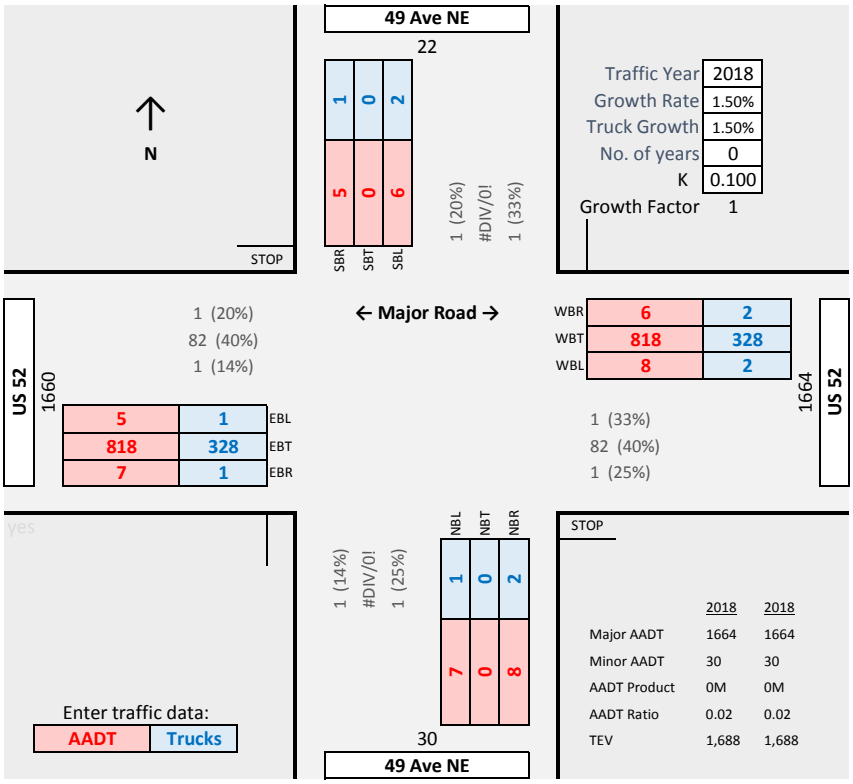


2018 TAADTs



2018 Truck %



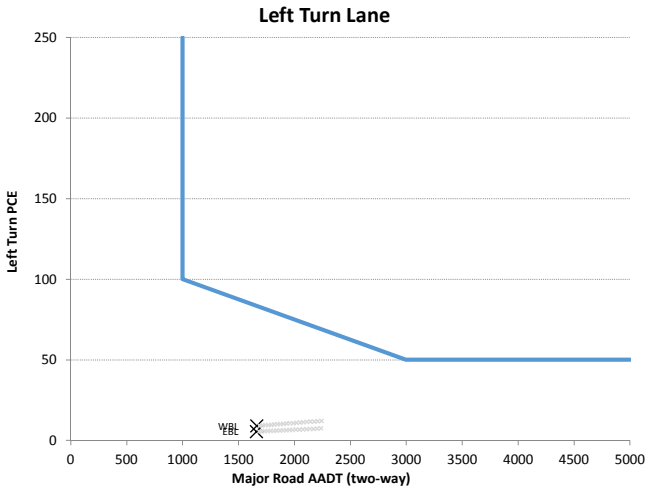


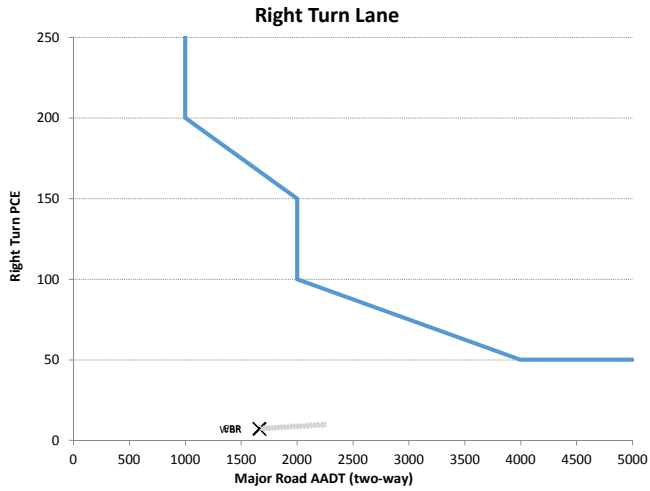
LEFT Turn Lane Volume Criteria (1.A)

EBL	WBL
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{LT} = 5	V_{LT} = 8
P_T = 0.20	P_T = 0.25
PCE = 6	PCE = 9
AADT = 1660	AADT = 1664
Met? No	Met? No

RIGHT Turn Lane Volume Criteria (1.A)

EBR	WBR
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{RT} = 7	V_{RT} = 6
P_T = 0.14	P_T = 0.33
PCE = 8	PCE = 7
AADT = 1660	AADT = 1664
Met? No	Met? No





Project Info

PCN	
Ref#	4347
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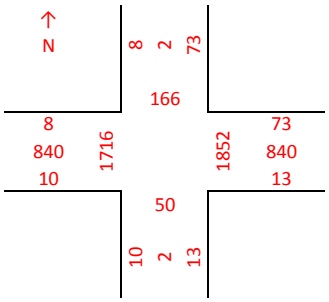
67

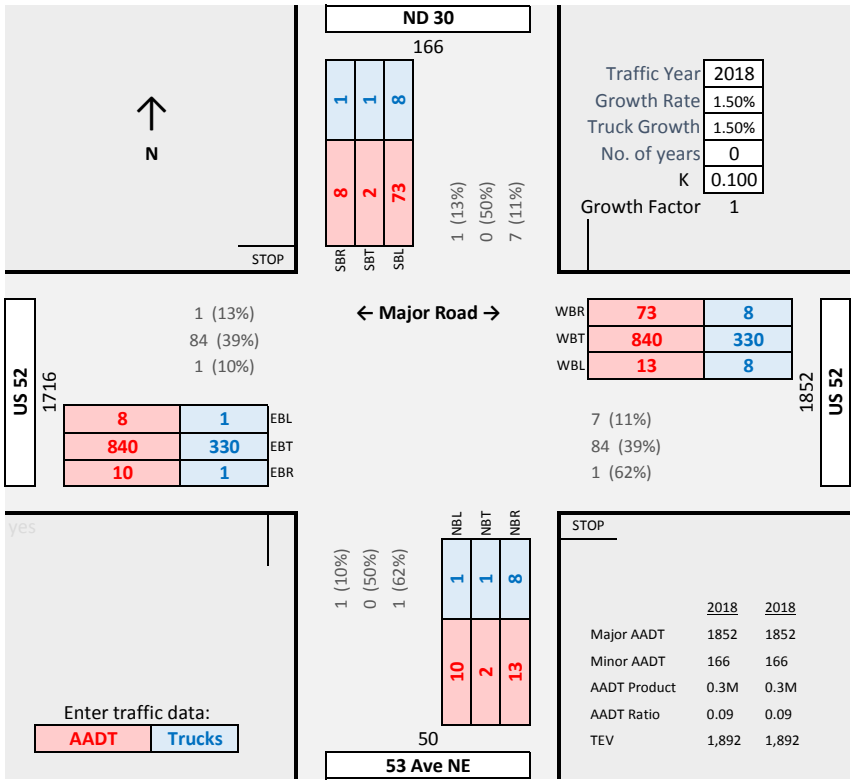
Intersection Info

	Major Road	Minor Road
Reference Points	208.720	
Speed Limits (mph)	65	65
Select Major Road Directions	East-West	
Intersection/Junction Traffic Control	Stop on Minor Road	
Major Road a Divided Highway?	No	
Terrain	Level	

E_T= 1.5

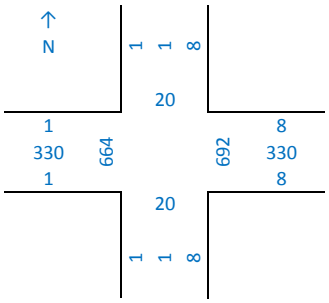
2018 AADTs



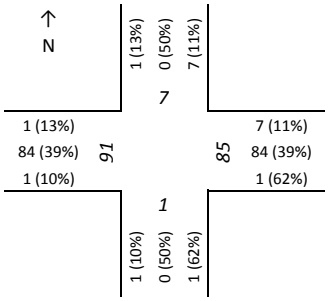


	2018	2018
Major AADT	1852	1852
Minor AADT	166	166
AADT Product	0.3M	0.3M
AADT Ratio	0.09	0.09
TEV	1,892	1,892

2018 TAADTs



2018 Truck %

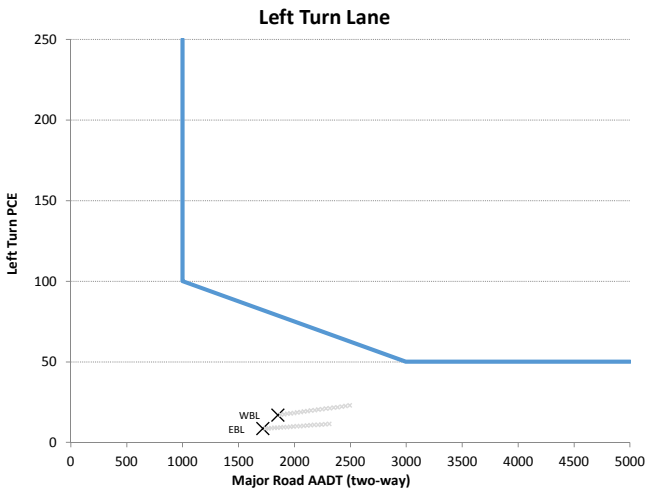


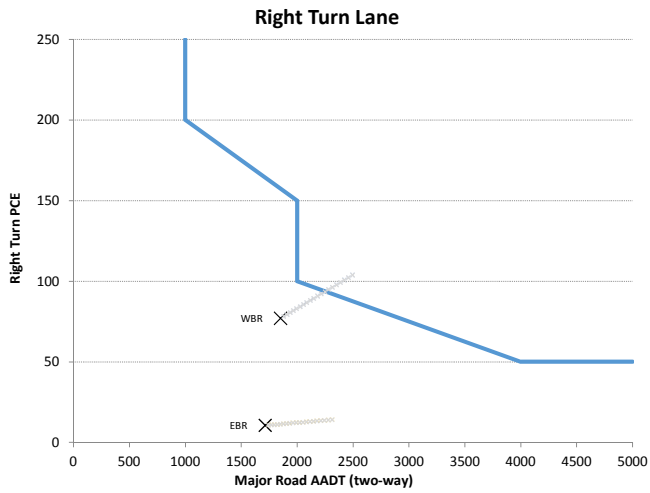
LEFT Turn Lane Volume Criteria (1.A)

EBL	WBL
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{LT} = 8	V_{LT} = 13
P_T = 0.13	P_T = 0.62
PCE = 9	PCE = 17
AADT = 1716	AADT = 1852
Met? No	Met? No

RIGHT Turn Lane Volume Criteria (1.A)

EBR	WBR
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{RT} = 10	V_{RT} = 73
P_T = 0.10	P_T = 0.11
PCE = 11	PCE = 77
AADT = 1716	AADT = 1852
Met? No	Met? No
	(may be met in 2032)





US 52 / 54 Ave NE

Project Info

PCN	
Ref#	4347
HSIP #	
Study Date	4/10/2019

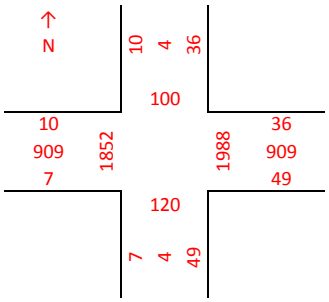
530

Intersection Info

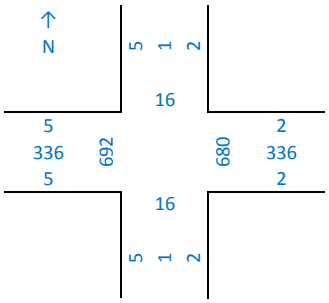
US 52 54 Ave NE

	Major Road	Minor Road	
Reference Points	209.740		
Speed Limits (mph)	65	55	Y
Select Major Road Directions	East-West		
Intersection/Junction Traffic Control	Stop on Minor Road		Y
Major Road a Divided Highway?	No		
Terrain	Level		E_T= 1.5

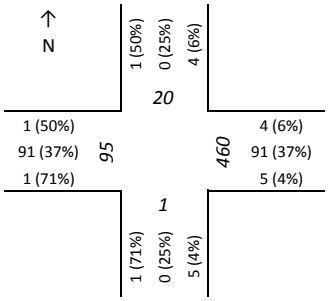
2018 AADTs

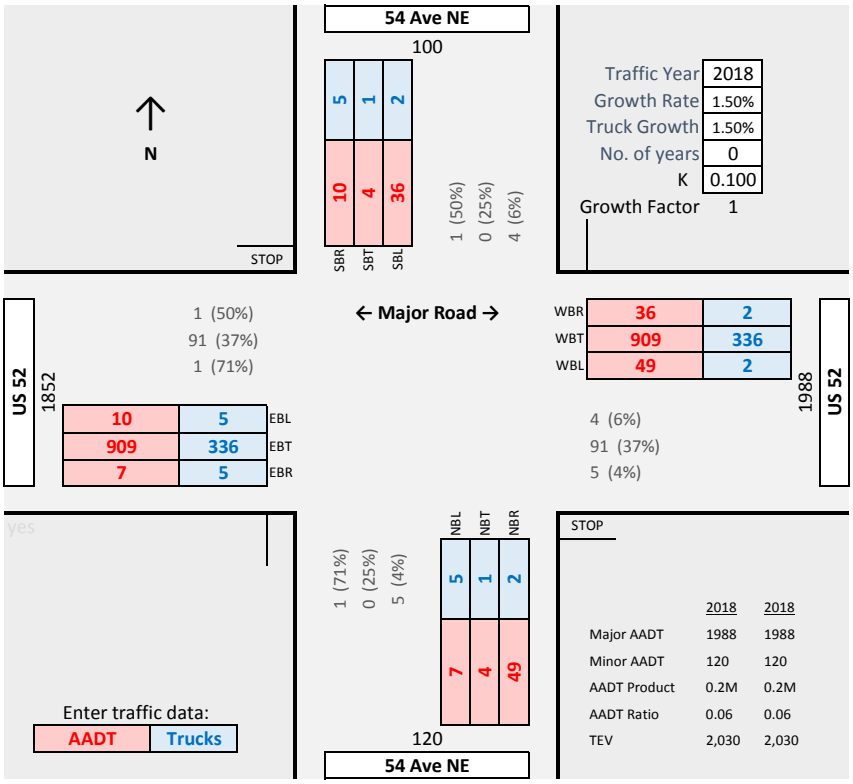


2018 TAADTs



2018 Truck %



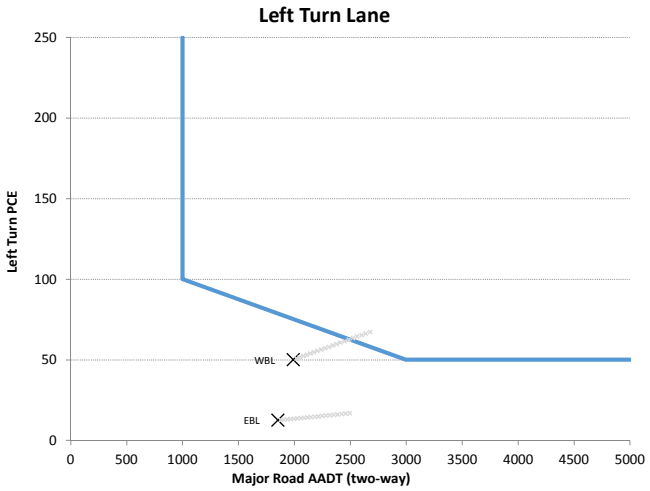


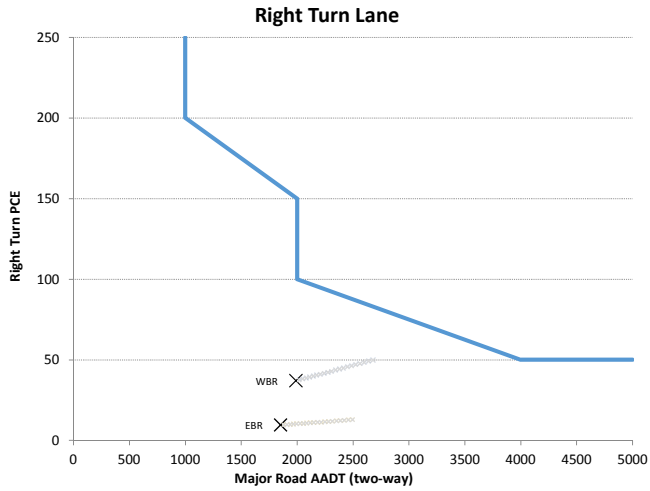
LEFT Turn Lane Volume Criteria (1.A)

EBL	WBL
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{LT} = 10	V_{LT} = 49
P_T = 0.50	P_T = 0.04
PCE = 13	PCE = 50
AADT = 1852	AADT = 1988
Met? No	Met? No
	(may be met in 2034)

RIGHT Turn Lane Volume Criteria (1.A)

EBR	WBR
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{RT} = 7	V_{RT} = 36
P_T = 0.71	P_T = 0.06
PCE = 10	PCE = 37
AADT = 1852	AADT = 1988
Met? No	Met? No





US 52 / 1 St SE

Project Info

PCN	
Ref#	4347
HSIP #	
Study Date	4/10/2019

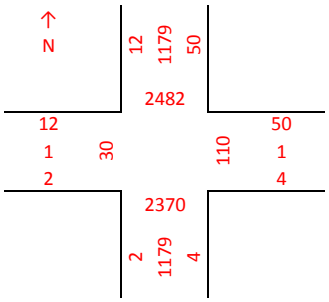
535

Intersection Info

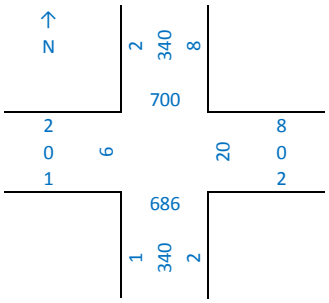
US 52 1 St SE

	Major Road	Minor Road	
Reference Points	226.760		
Speed Limits (mph)	65	55	Y
Select Major Road Directions	North-South		
Intersection/Junction Traffic Control	Stop on Minor Road		Y
Major Road a Divided Highway?	No		
Terrain	Level		E_T= 1.5

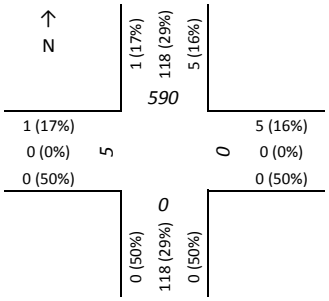
2018 AADTs

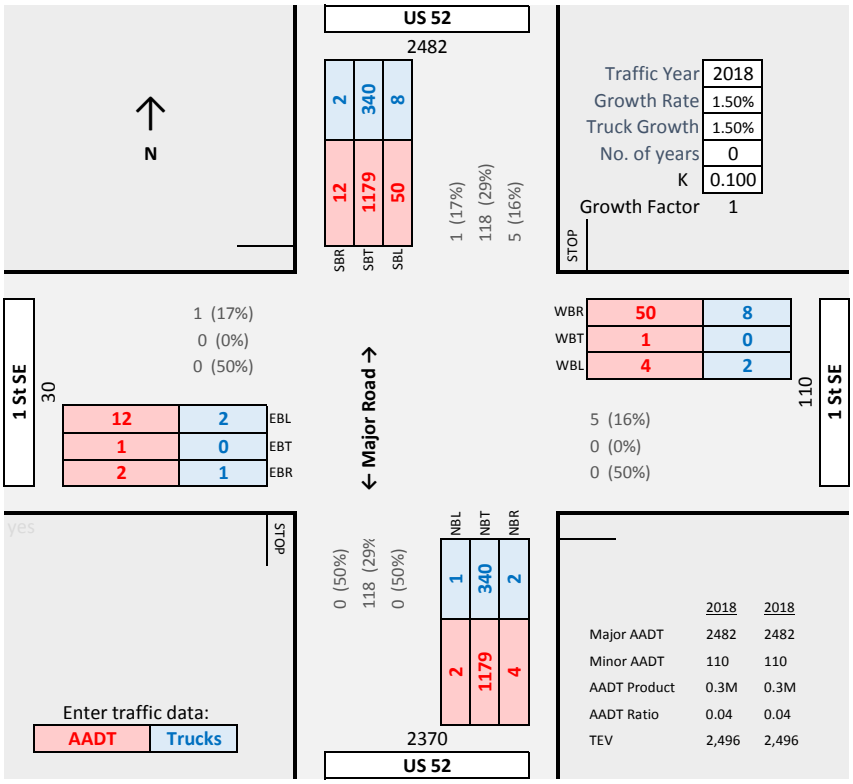


2018 TAADTs



2018 Truck %



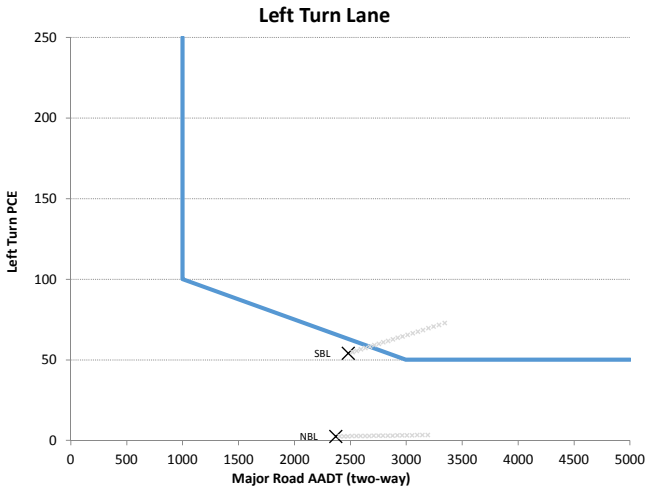


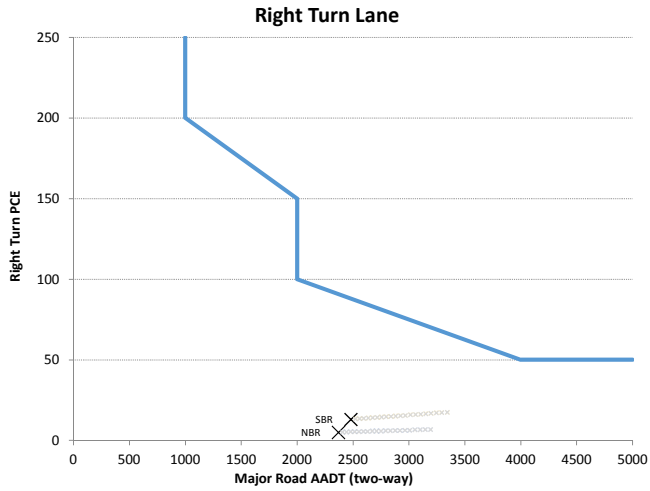
LEFT Turn Lane Volume Criteria (1.A)

SBL	NBL
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{LT} = 50	V_{LT} = 2
P_T = 0.16	P_T = 0.50
PCE = 54	PCE = 3
AADT = 2482	AADT = 2370
Met? No	Met? No
(may be met in 2023)	

RIGHT Turn Lane Volume Criteria (1.A)

SBR	NBR
PCE = $V_{LT}(1+P_T(E_T-1))$	PCE = $V_{LT}(1+P_T(E_T-1))$
V_{RT} = 12	V_{RT} = 4
P_T = 0.17	P_T = 0.50
PCE = 13	PCE = 5
AADT = 2482	AADT = 2370
Met? No	Met? No





US 52 / 6 St SE – ND 9

Project Info

PCN	
Ref#	4347
HSIP #	
Study Date	4/10/2019

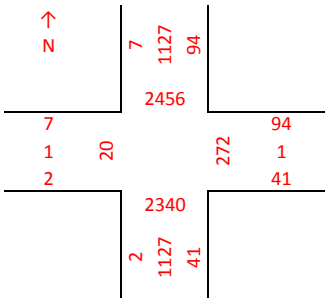
69

Intersection Info

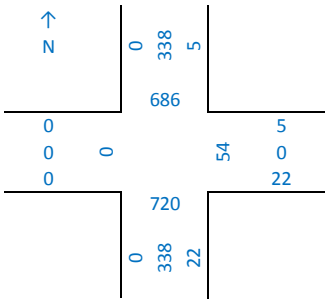
US 52 6 St SE – ND 9

	Major Road	Minor Road	
Reference Points	232.410		
Speed Limits (mph)	65	65	Y
Select Major Road Directions	North-South		
Intersection/Junction Traffic Control	Stop on Minor Road		Y
Major Road a Divided Highway?	No		
Terrain	Level		E_T= 1.5

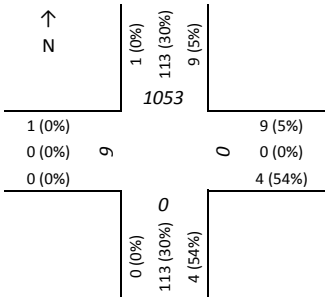
2018 AADTs

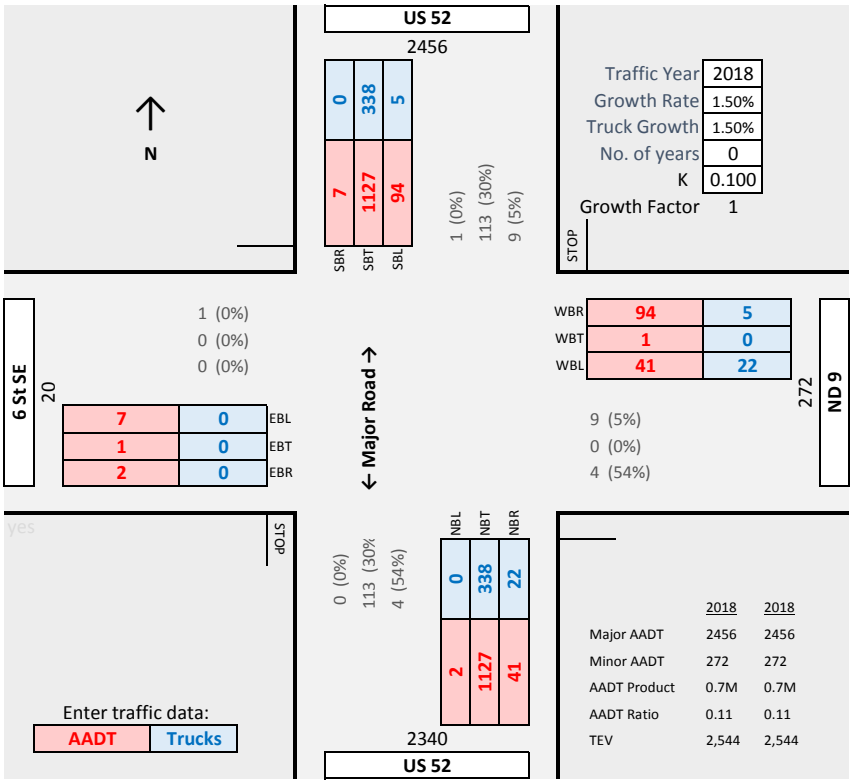


2018 TAADTs



2018 Truck %



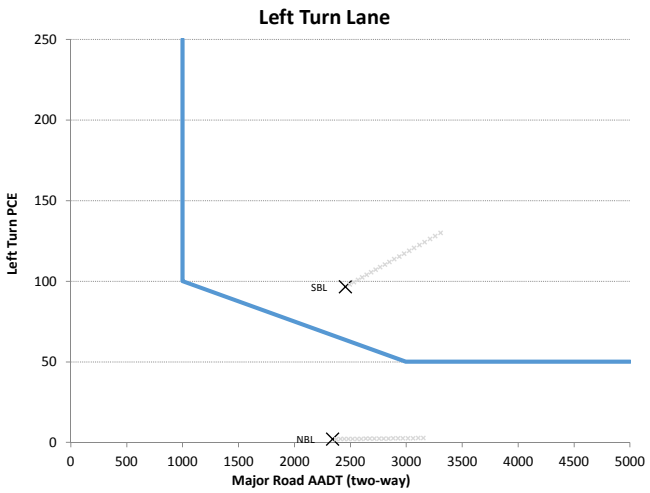


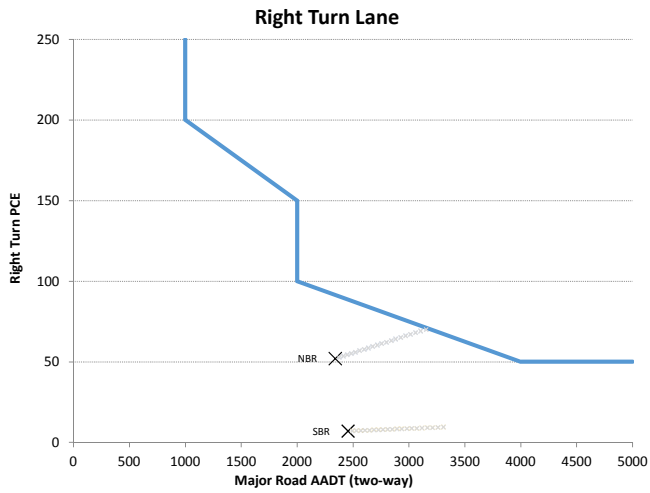
LEFT Turn Lane Volume Criteria (1.A)

SBL	NBL
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{LT} = 94	V_{LT} = 2
P_T = 0.05	P_T = 0.00
PCE = 97	PCE = 2
AADT = 2456	AADT = 2340
Met? Yes	Met? No

RIGHT Turn Lane Volume Criteria (1.A)

SBR	NBR
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{RT} = 7	V_{RT} = 41
P_T = 0.00	P_T = 0.54
PCE = 7	PCE = 52
AADT = 2456	AADT = 2340
Met? No	Met? No





US 52 / 10 St SE

Project Info

PCN	
Ref#	4347
HSIP #	
Study Date	4/10/2019

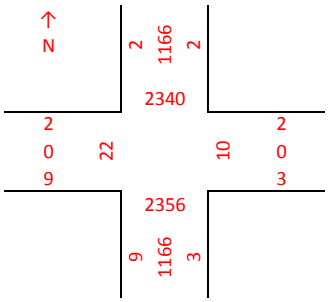
536

Intersection Info

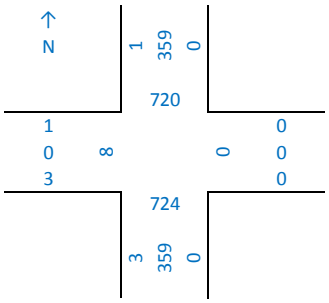
	Major Road	Minor Road
Reference Points	236.910	
Speed Limits (mph)	65	55
Select Major Road Directions	North-South	
Intersection/Junction Traffic Control	Stop on Minor Road	
Major Road a Divided Highway?	No	
Terrain	Level	

E_T= 1.5

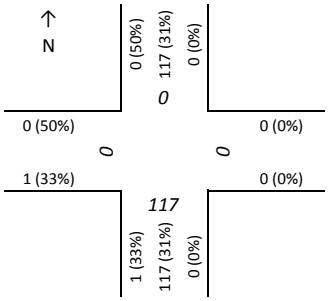
2018 AADTs

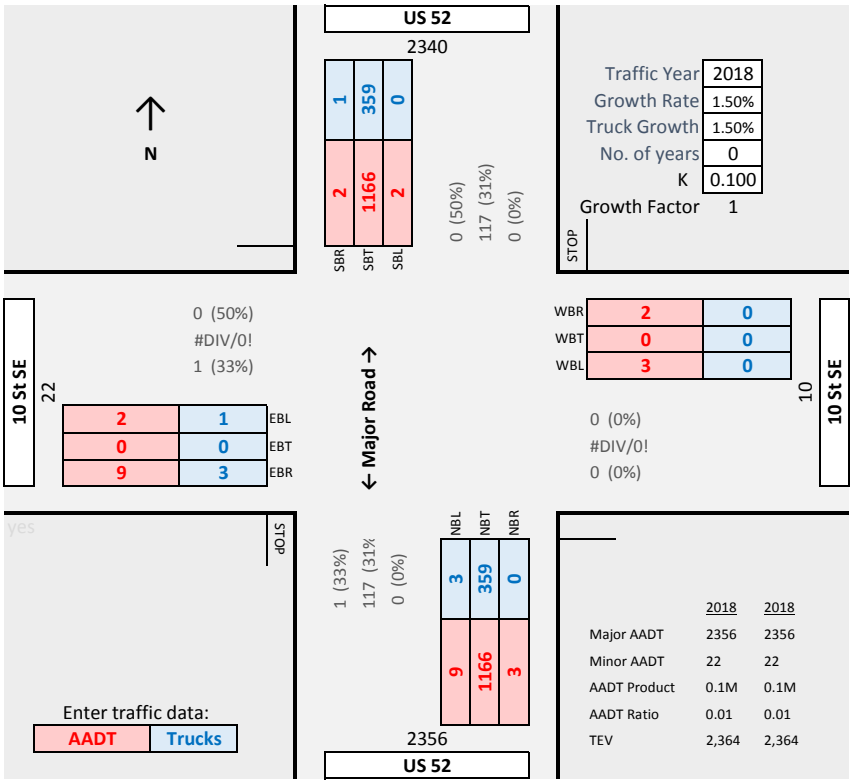


2018 TAADTs



2018 Truck %



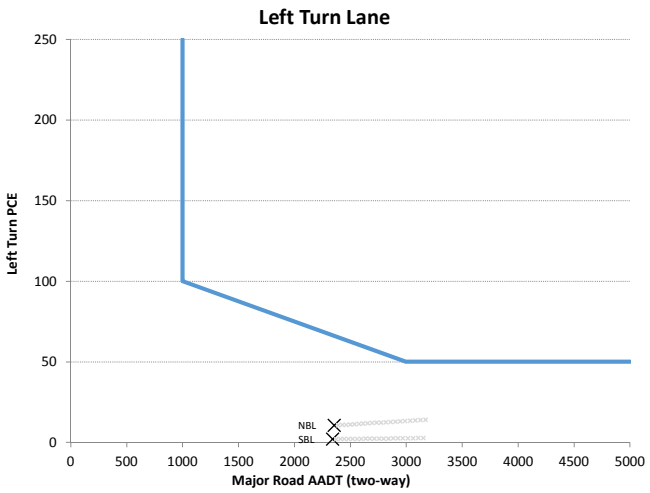


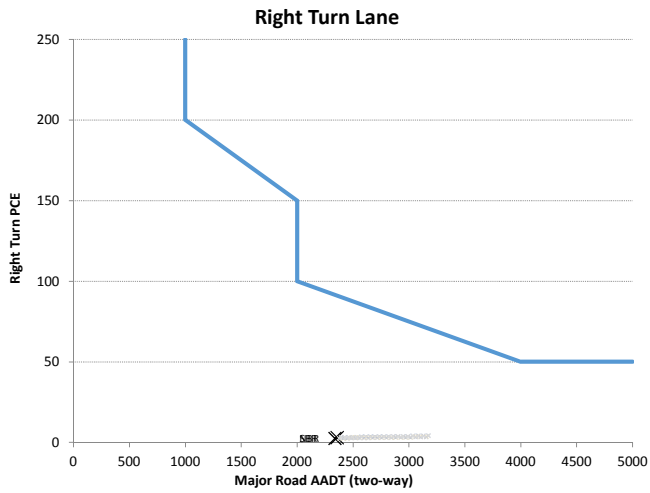
LEFT Turn Lane Volume Criteria (1.A)

SBL	NBL
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{LT} = 2	V_{LT} = 9
P_T = 0.00	P_T = 0.33
PCE = 2	PCE = 11
AADT = 2340	AADT = 2356
Met? No	Met? No

RIGHT Turn Lane Volume Criteria (1.A)

SBR	NBR
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{RT} = 2	V_{RT} = 3
P_T = 0.50	P_T = 0.00
PCE = 3	PCE = 3
AADT = 2340	AADT = 2356
Met? No	Met? No





Project Info

PCN	
Ref#	4347
HSIP #	
Study Date	4/10/2019

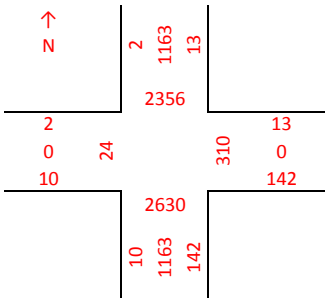
537

Intersection Info

	Major Road	Minor Road
Reference Points	238.040	
Speed Limits (mph)	65	55
Select Major Road Directions	North-South	
Intersection/Junction Traffic Control	Stop on Minor Road	
Major Road a Divided Highway?	No	
Terrain	Level	

E_T= 1.5

2018 AADTs



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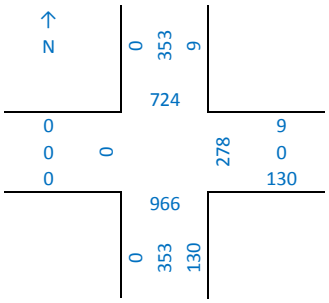
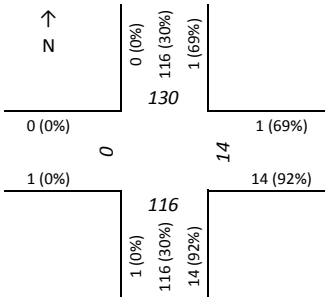
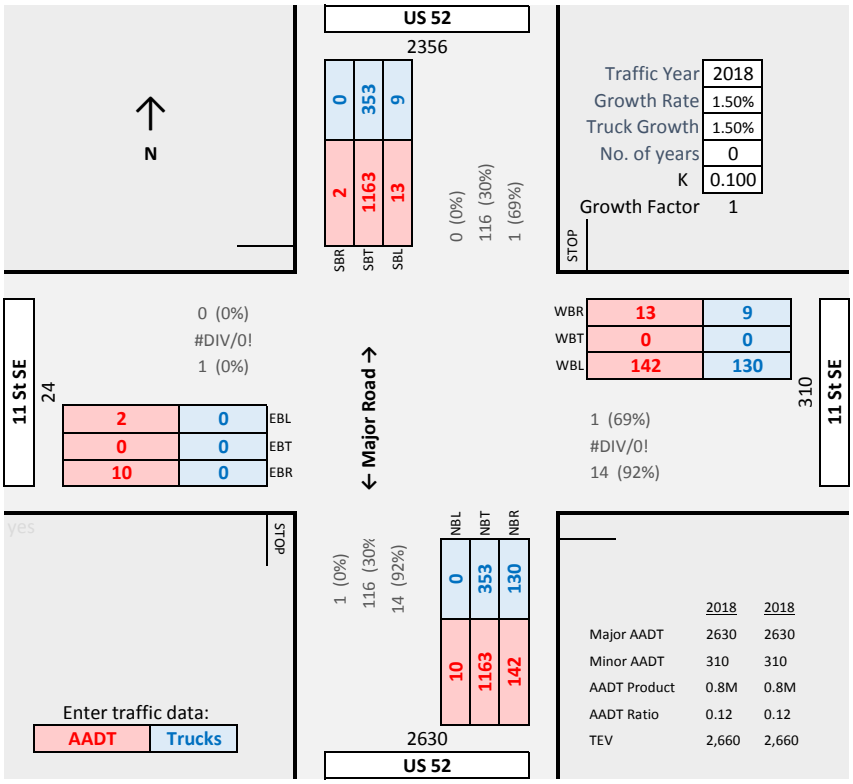


2018 Truck %



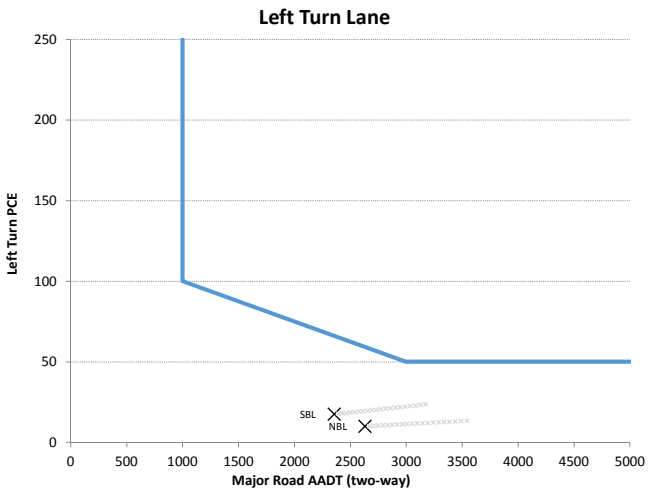


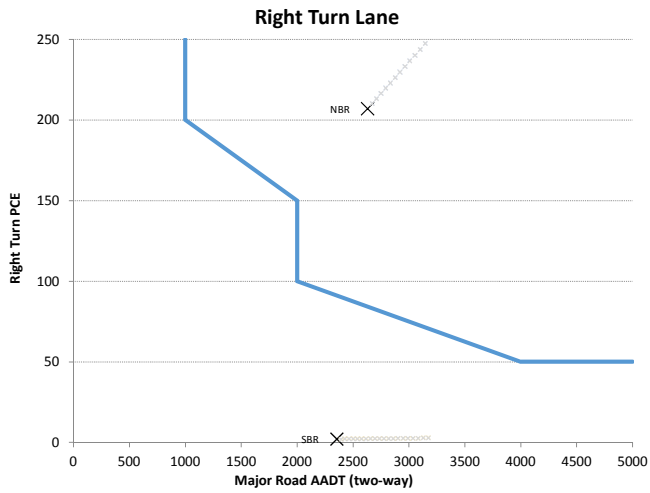
LEFT Turn Lane Volume Criteria (1.A)

SBL	NBL
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{LT} = 13	V_{LT} = 10
P_T = 0.69	P_T = 0.00
PCE = 18	PCE = 10
AADT = 2356	AADT = 2630
Met? No	Met? No

RIGHT Turn Lane Volume Criteria (1.A)

SBR	NBR
$PCE = V_{LT}(1+P_T(E_T-1))$	$PCE = V_{LT}(1+P_T(E_T-1))$
V_{RT} = 2	V_{RT} = 142
P_T = 0.00	P_T = 0.92
PCE = 2	PCE = 207
AADT = 2356	AADT = 2630
Met? No	Met? Yes





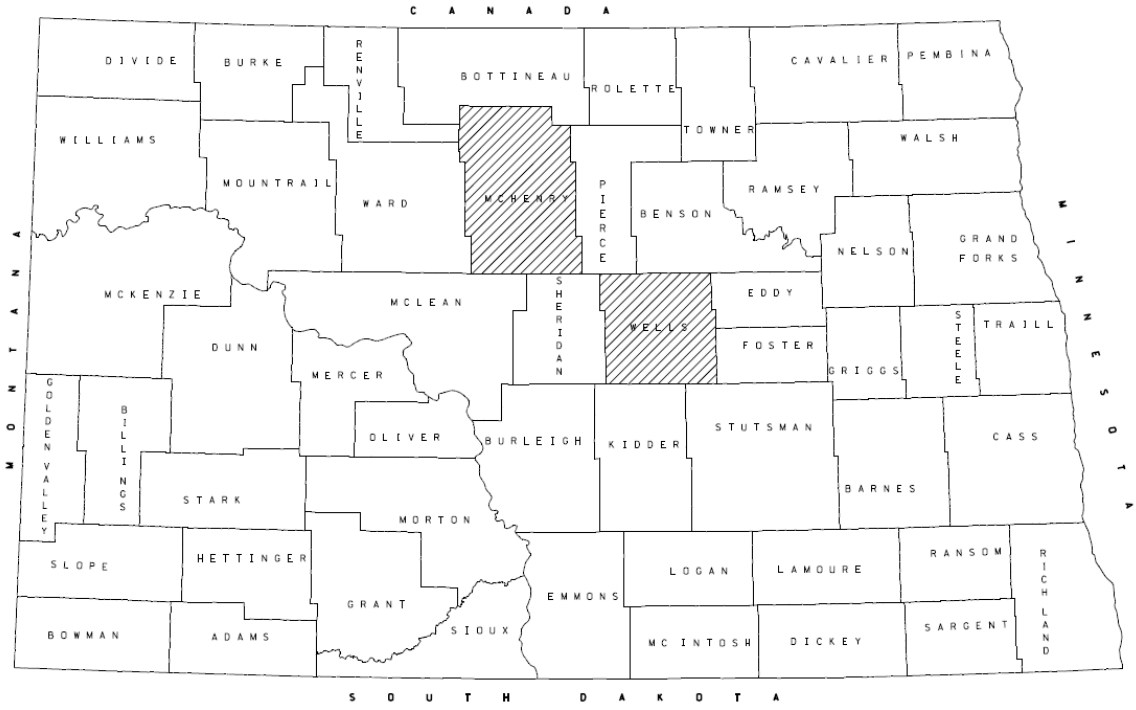
LINEAR SOILS SURVEY AND RECOMMENDATIONS

Project NO. NH-4-052(104)141

PCN 23641

County Wells & Mchenry

HWY 52, RP 141.0 to 185.548



PREPARED BY: Riley McAdoo-Roesler

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION MATERIAL AND RESEARCH DIVISION

November 2023

NH-4-052(104)141

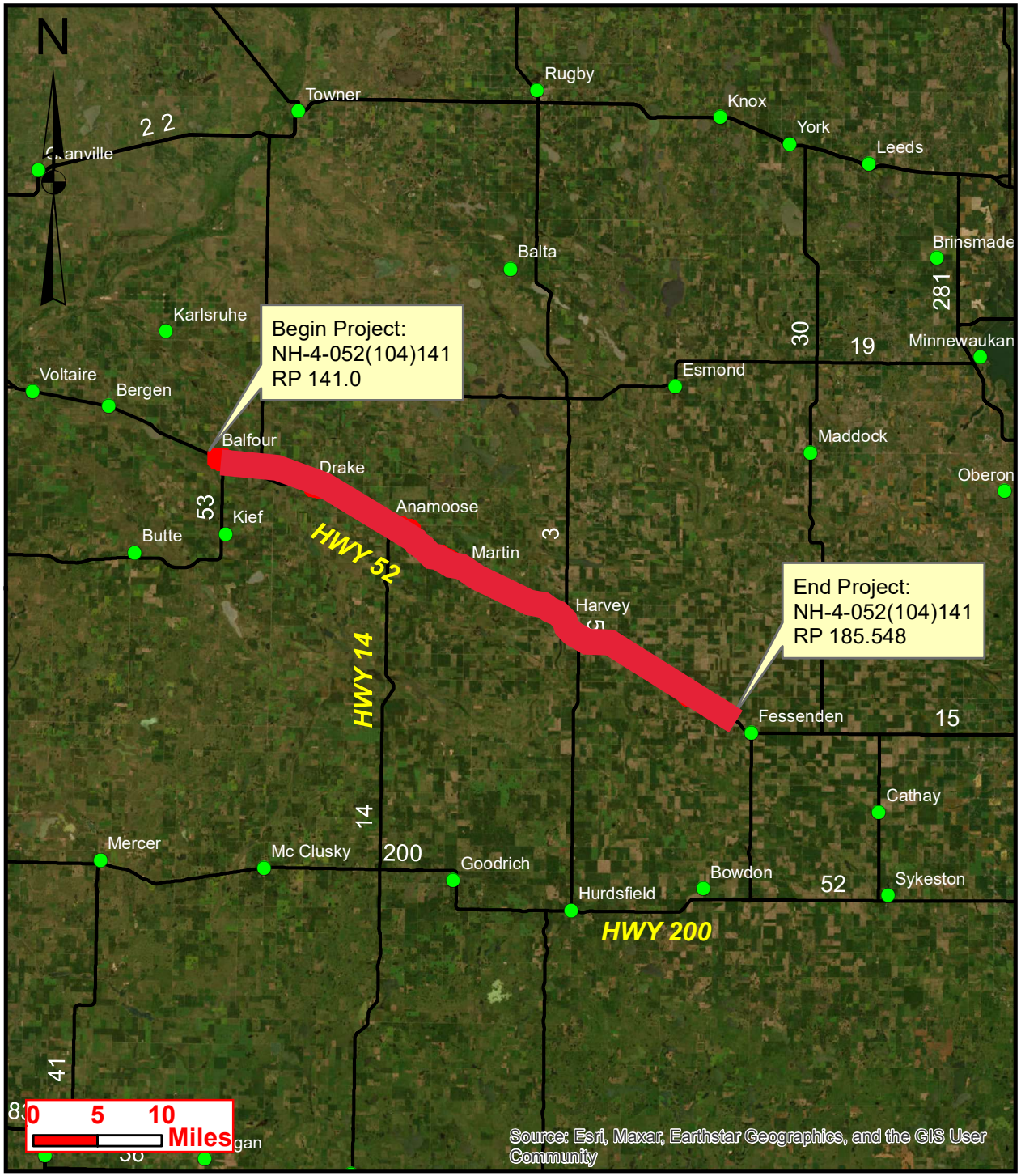
Near JCT 53 to Near Fessenden

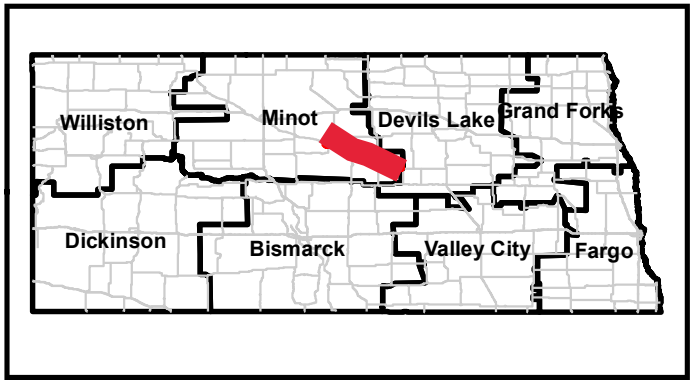
CERTIFICATION

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 Jared J. Loegering, Registration number PE-10931 on 11/30/2023 and the original document is stored at the North Dakota Department of Transportation.

Project Location

Project: NH-4-052(104)141
PCN: 23641
Scope: Minor Rehabilitation, Overlay
Location:RP 141.0 to RP 185.548





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Introduction

Location: HWY 52, Near JCT 53 to Near Fessenden
Reference Points: 141.0 to 185.548
Project Length: 44.1387 Miles
Proposed Project Scope: Minor Rehabilitation, Overlay
Investigation Scope: Identified Maintenance Areas

Maintenance Review

Date of Maintenance Review: 12/12/2022
Materials and Research Person Conducting the Review: Brent Flaa
Maintenance Person Conducting Review: Vince Sabbe

Table 1 - Identified Maintenance Areas

Location RP + Feet	Distress Identified	Maintenance Comments	Drilling Required
145+0565 to 167+4224	Rutting	-	NO
145+0565 to 167+4224	Transv. Cracks	-	NO
137+1540 to 137+4224	Bituminous patch	Scoping report calls out a subcut at this location, through intersection, both sides	YES
145+0866 to 145+1344	Bituminous patch	Multiple patches like this throughout project	YES
145+2440 to 145+2840	Bituminous patch	Scoping report calls out a subcut at this location, Blade Patch	YES
145+3101 to 145+3696	Bituminous patch	Scoping report calls out a subcut at this location, Starts WB only and moved to both lanes	YES
146+2218 to 146+3432	Bituminous patch	Around Curve, EB only for final 150 ft	YES
150+4382 to 150+4594	Bituminous patch	Blade Patch	YES

151+1278 to 151+3034	Bituminous patch	Multiple patches, east patch is surrounded by cattails	YES
152+3464 to 152+4118	Bituminous patch	Blade Patch	YES
153+1531 to 153+1742	Bituminous patch	Blade Patch	YES
153+3432 to 153+3749	Bituminous patch	Blade Patch	YES
156+3062 to 156+4066	Bituminous patch	Scoping report calls out a subcut at this location, primally WB lane	YES
157+0000 to 157+0589	Bituminous patch	East end is WB only, more rutting then other patches, cut/fill transistion	YES
157+0950 to 157+1214	Bituminous patch	Small misc.	YES
157+1848 to 157+2059	Bituminous patch	Misc. patch	YES
157+2990 to 157+3901	Bituminous patch	Big Patch	YES
157+3960 to 157+4382	Bituminous patch	Switches lanes. Uneven.	YES
157+4699 to 157+5544	Bituminous patch	Starting at west end it is WB only, then both, then finishes EB only	YES
180+0845 to 180+2534	Bituminous patch	Scoping report calls out a subcut at this location, Rutting leading into patch from west	YES
182+4858 to 183+1320	Bituminous patch	Scoping report calls out a subcut at this location, Rutting lanes likely pushing up center.	YES

Summary of Soil Investigation

The soil investigation was completed on 05/31/2023. The investigation consisted of 77 borings.

Table 2 - Boring Locations Summary

Boring Location	Pavement Distress	Justification for Boring	Boring Depth	Boring Locations/Comments
137+1540 to 137+4224	Bituminous patch	Identified Maintenance Area	5 Feet	Conduct 5 borings in the identified area and one boring on each side approximately 100' away. A total of 7 borings.
145+0866 to 145+1344	Bituminous patch	Identified Maintenance Area	5 Feet	Conduct 2 borings in the identified area and one boring on each side approximately 100' away. A total of 4 borings.
145+2440 to 145+2840	Bituminous patch	Identified Maintenance Area	5 Feet	Conduct 2 borings in the identified area and one boring on each side approximately 100' away. A total of 4 borings.
145+3101 to 145+3696	Bituminous patch	Identified Maintenance Area	5 Feet	Conduct 2 borings in the identified area and one boring on each side approximately 100' away. A total of 4 borings.
146+2218 to 146+3432	Bituminous patch	Identified Maintenance Area	5 Feet	Conduct 3 borings in the identified area and one boring on each side approximately 100' away. A total of 5 borings.
150+4382 to 150+4594	Bituminous patch	Identified Maintenance Area	5 Feet	Conduct 1 borings in the identified area and one boring on each side approximately 100' away. A total of 3 borings.
151+1278 to 151+3034	Bituminous patch	Identified Maintenance Area	5 Feet	Conduct 4 borings in the identified area and one boring on each side approximately 100' away. A total of 6 borings.
152+3464 to 152+4118	Bituminous patch	Identified Maintenance Area	5 Feet	Conduct 1 borings in the identified area and one boring on each side approximately 100' away. A total of 3 borings.
153+1531 to 153+1742	Bituminous patch	Identified Maintenance Area	5 Feet	Conduct 1 borings in the identified area and one boring on each side approximately 100' away. A total of 3 borings.

153+3432 to 153+3749	Bituminous patch	Identified Maintenance Area	5 Feet	Conduct 1 borings in the identified area and one boring on each side approximately 100' away. A total of 3 borings.
156+3062 to 156+4066	Bituminous patch	Identified Maintenance Area	5 Feet	Conduct 3 borings in the identified area and one boring on each side approximately 100' away. A total of 5 borings.
157+0000 to 157+0589	Bituminous patch	Identified Maintenance Area	5 Feet	Conduct 2 borings in the identified area and one boring on each side approximately 100' away. A total of 4 borings.
157+0950 to 157+1214	Bituminous patch	Identified Maintenance Area	5 Feet	Conduct 1 borings in the identified area and one boring on each side approximately 100' away. A total of 3 borings.
157+1848 to 157+2059	Bituminous patch	Identified Maintenance Area	5 Feet	Conduct 1 borings in the identified area and one boring on each side approximately 100' away. A total of 3 borings.
157+2990 to 157+3901	Bituminous patch	Identified Maintenance Area	5 Feet	Conduct 2 borings in the identified area and one boring on each side approximately 100' away. A total of 4 borings.
157+3960 to 157+4382	Bituminous patch	Identified Maintenance Area	5 Feet	Conduct 2 borings in the identified area and one boring on each side approximately 100' away. A total of 4 borings.
157+4699 to 157+5544	Bituminous patch	Identified Maintenance Area	5 Feet	Conduct 3 borings in the identified area and one boring on each side approximately 100' away. A total of 5 borings.
180+0845 to 180+2534	Bituminous patch	Identified Maintenance Area	5 Feet	Conduct 4 borings in the identified area and one boring on each side approximately 100' away. A total of 6 borings.
182+4858 to 183+1320	Bituminous patch	Identified Maintenance Area	5 Feet	Conduct 4 borings in the identified area and one boring on each side approximately 100' away. A total of 6 borings.

Map of the boring locations are shown in Appendix C. The lab results and included in Appendix E.

Summary of Soil Analysis

Soil Sample Distribution

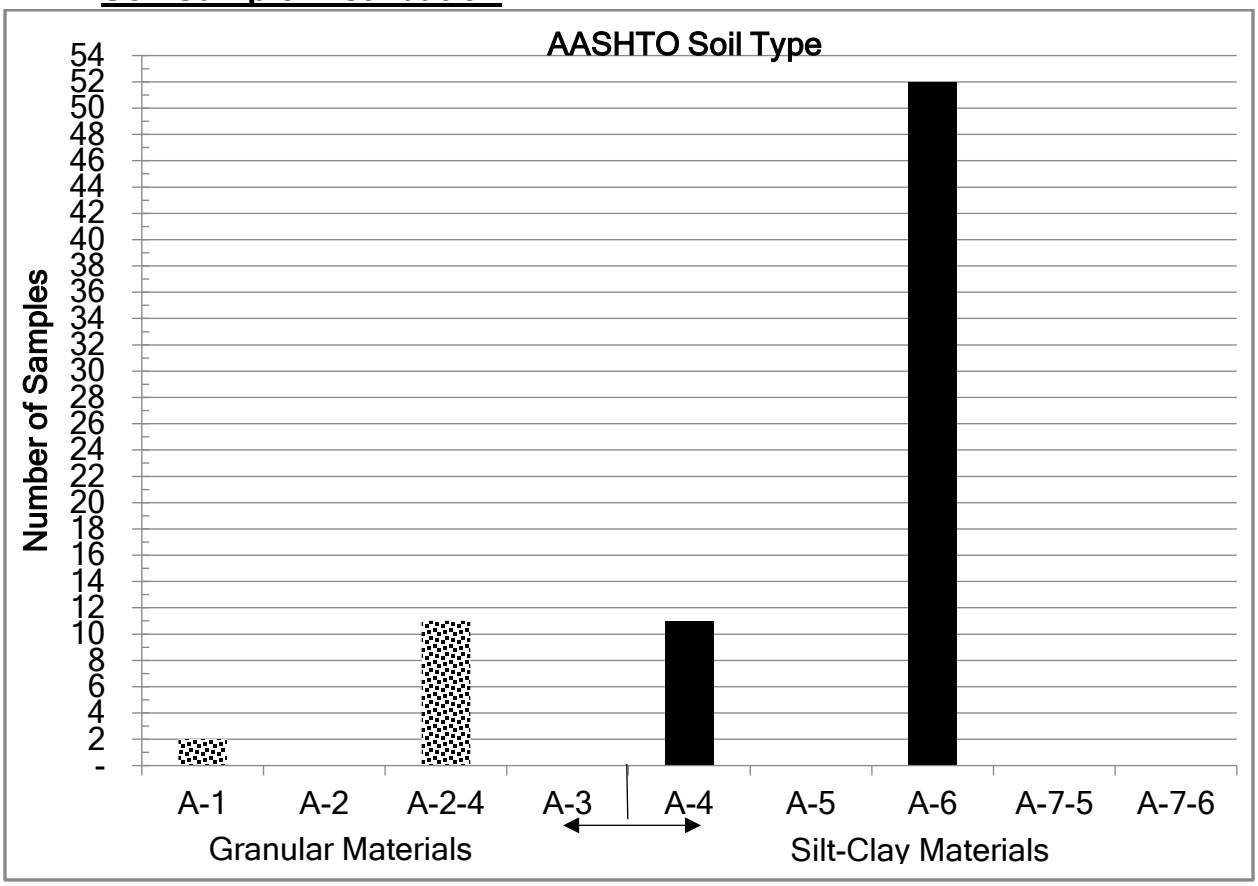


Figure 1 - Soil Sample Distribution

Design Recommendations

Project Limits – 137+3817 to 183+0000: The project limits fall within a geologic area of collapsed glacial sediment. The soils found this project our typical of glacial till include Sand, silts, and clays. The soils within the project are primarily sandy lean clay. The condition of these soils does not indicate subgrade mitigation is required or recommended.

Identified Maintenance Area – 137+1540 to 137+4224: The soils within the identified maintenance area are sandy lean clays**.** There is not a change in soil type, geology or water content that would indicate that the subgrade is causing the roadway distress at this location. The scoping report calls out this location as a protentional subcut. However, the condition of the subgrade does not indicate that it is causing the issue at this maintenance area. Therefore, it is recommended to conduct a pavement repair section from RP+feet 137+1490 to 137+4275. See table 4 for pavement repair sections.

Identified Maintenance Area – 145+0866 to 145+1344: The soils within the identified maintenance area are clayey sand. There is not a change in soil type, geology or water content that would indicate that the subgrade is causing the roadway distress at this location. No subgrade mitigation is recommended.

Identified Maintenance Area – 145+2440 to 145+2840: The soils within the identified maintenance area are clayey sand. There is not a change in soil type, geology or water content that would indicate that the subgrade is causing the roadway distress at this location. The scoping report calls out this location as a protentional subcut. However, the condition of the subgrade does not indicate that it is causing the issue at this maintenance area. Therefore, it is recommended to conduct a pavement repair section from RP+feet 145+2390 to 145+2890. See table 4 for pavement repair sections.

Identified Maintenance Area – 145+3101 to 145+3696: The soils within the identified maintenance area are sandy lean clays. There is not a change in soil type, geology or water content that would indicate that the subgrade is causing the roadway distress at this location. The scoping report calls out this location as a protentional subcut. However, the condition of the subgrade does not indicate that it is causing the issue at this maintenance area. Therefore, it is recommended to conduct a pavement repair section from RP+feet 145+3050 to 145+3750. See table 4 for pavement repair sections.

Identified Maintenance Area – 146+2218 to 146+3432: The soils within the identified maintenance area are sandy lean clays. There is not a change in soil type, geology or water content that would indicate that the subgrade is causing the roadway distress at this location. No subgrade mitigation is recommended.

Identified Maintenance Area – 150+4382 to 150+4594: The soils within the identified maintenance area are sandy lean clay. There is not a change in soil type, geology or water content that would indicate that the subgrade is causing the roadway distress at this location. No subgrade mitigation is recommended.

Identified Maintenance Area – 151+1278 to 151+3034: The soils within the identified maintenance area are silt/clayey sand. There is not a change in soil type, geology or water content that would indicate that the subgrade is causing the roadway distress at this location. No subgrade mitigation is recommended.

Identified Maintenance Area – 152+3464 to 152+4118: The soils within the identified maintenance area are clayey sand. There is not a change in soil type, geology or water content that would indicate that the subgrade is causing the roadway distress at this location. No subgrade mitigation is recommended.

Identified Maintenance Area – 153+1531 to 153+1742: The soils within the identified maintenance area are clayey sand. There is not a change in soil type, geology or water content that would indicate that the subgrade is causing the roadway distress at this location. No subgrade mitigation is recommended.

Identified Maintenance Area – 153+3432 to 153+3749: The soils within the identified maintenance area are sandy lean clay. There is not a change in soil type, geology or water content that would indicate that the subgrade is causing the roadway distress at this location. No subgrade mitigation is recommended.

Identified Maintenance Area – 156+3062 to 156+4066: The soils within the identified maintenance area are silty, clayey sand. There is not a change in soil type, geology or water content that would indicate that the subgrade is causing the roadway distress at this location. The scoping report calls out this location as a protentional subcut. However, the condition of the subgrade does not indicate that it is causing the issue at this maintenance area. Therefore, it is recommended to conduct a pavement repair section from RP+feet 156+3010 to 156+4120. See table 4 for pavement repair sections.

Identified Maintenance Area – 157+0000 to 157+0589: The soils within the identified maintenance area are sandy lean clay. This maintenance area occurs in a cut/fill transition which likely correlates to the change in soil type and the substandard performance of the pavement through this area. Based on the change in soil type it is recommended to perform a subcut from RP+feet 156+5180 to 157+0700 at a depth of 36”. See table 3 for subcut specifications.

Identified Maintenance Area – 157+0950 to 157+1214: The soils within the identified maintenance area are silty, clayey sand with gravel. There is not a change in soil type, geology or water content that would indicate that the subgrade is causing the roadway distress at this location. No subgrade mitigation is recommended.

Identified Maintenance Area – 157+1848 to 157+2059: The soils within the identified maintenance area are clayey sand with an elevated moisture content. There is a change in water content from the surrounding soils that would indicate that the subgrade is causing the roadway distress at this location. Therefore, it is recommended to perform a subcut from RP+feet 157+1800 to 157+2110 at a depth of 36". See table 3 for subcut specifications.

Identified Maintenance Area – 157+2990 to 157+3901: The soils within the identified maintenance area are clayey sand. There is not a change in soil type, geology or water content that would indicate that the subgrade is causing the roadway distress at this location. No subgrade mitigation is recommended.

Identified Maintenance Area – 157+3960 to 157+4382: The soils within the identified maintenance area are sandy lean clay. There is not a change in soil type, geology or water content that would indicate that the subgrade is causing the roadway distress at this location. No subgrade mitigation is recommended.

Identified Maintenance Area – 157+4699 to 157+5544: The soils within the identified maintenance area are sandy lean clay. There is not a change in soil type, geology or water content that would indicate that the subgrade is causing the roadway distress at this location. No subgrade mitigation is recommended.

Identified Maintenance Area – 180+0845 to 180+2534: The soils within the identified maintenance area are clayey sand. There is not a change in soil type, geology or water content that would indicate that the subgrade is causing the roadway distress at this location. The scoping report calls out this location as a protentional subcut. However, the condition of the subgrade does not indicate that it is causing the issue at this maintenance area. Therefore, it is recommended to conduct a pavement repair section from RP+feet 180+0800 to 180+2580. See table 4 for pavement repair sections.

Identified Maintenance Area – 182+4858 to183+1320: The soils within the identified maintenance area are sandy lean clay. There is not a change in soil type, geology or water content that would indicate that the subgrade is causing the roadway distress at this location. The scoping report calls out this location as a protentional subcut. However, the condition of the subgrade does not indicate that it is causing the issue at this maintenance area. Therefore, it is recommended to conduct a pavement repair section from RP+feet 182+4800 to 183+1370. See table 4 for pavement repair sections.

Design Information

Pipe Replacement: None

Compaction Method: T-180

Subgrade Prep: None

Subcut Recommendations:

Location RP + Feet	Length	Depth
156+5180 to 157+0700	800’	36”
157+1800 to 157+2110	310’	36”

Table 3 - Subcut Recommendations

Calculate the subcut quantity based on the lengths and depths as shown in Table 3 above and adhere to the guidelines stated below.

Remarks: Subcut from the top of proposed pavement. Replace the removed material with Class 5 aggregate and line the excavation with Geosynthetic Geogrid (Type G) in accordance with NDDOT Specification 709. Do not scarify the bottom of the subcut.

Pavement Repair Section:

Location RP + Feet	Length
145+2390 to 145+2890	500’
145+3050 to 145+3750	700’
137+1540 to 137+4275	3035’
156+3010 to 156+4120	1110’
180+0800 to 180+2580	1780’
182+4800 to 183+1370	1850’

Table 4 – Pavement Repair Section

Remarks: It is recommended to repair the distress areas according to the pavement design recommendation. See NDDOT Filenet for pavement recommendations. Line the excavation with Geosynthetic Geogrid (Type G) in accordance with NDDOT Specification 709. Do not scarify the bottom.

Drainage: None

Plan Notes

None

The recommendations in this report are based on the scope specified in the Introduction. If the scope of work, vertical profile or horizontal alignment is changed, in either the conceptual phase or the design phase, the Geotechnical Engineer must be notified as soon as possible to ensure that there is adequate geotechnical information addressing these areas.

APPENDIX A

SOIL CLASSIFICATION

AASHTO Classification System

Table 5.1. AASHTO Classification System

General Classification	*Granular materials (35% or less passing No. 200 Sieve (0.075 mm)*							*Silt-clay Materials More than 35% passing No. 200 Sieve (0.075 mm)*			
Group Classification	*A—1*		*A—3*	*A—2*				*A—4*	*A—5*	*A—6*	*A—7*
	A—1—a	*A—1—b*		*A—2—4*	*A—2—5*	*A—2—6*	*A—2—7*				*A—7—5 A—7—6*
(*a*) Sieve Analysis: Percent Passing											
(*i*) 2.00 mm (No. 10)	50 max										
(*ii*) 0.425 mm (No. 40)	30 max	50 max	51 min								
(*iii*) 0.075 mm (No. 200)	15 max	25 max	10 max	35 max	35 max	35 max	35 max	36 min	36 min	36 min	36 min
(*b*) Characteristics of fraction passing 0.425 mm (No. 40)											
(*i*) Liquid limit				40 max	41 min	40 max	41 min	40 max	41 min	40 max	41 min
(*ii*) Plasticity index	6 max		N.P.	10 max	10 max	11 min	11 min	10 max	10 max	11 min	11 min*
(*c*) Usual types of significant Constituent materials	Stone Fragments Gravel and sand		Fine Sand	Silty or Clayey Gravel Sand				Silty Soils		Clayey Soils	
(*d*) General rating as subgrade.	Excellent to Good							Fair to Poor			

* If plasticity index is equal to or less than (liquid Limit—30), the soil is A—7—5 (*i.e.* PL > 30%)
If plasticity index is greater than (Liquid Limit—30), the soil is A—7—6 (*i.e.* PL < 30%)

Unified Soil Classification System, USCS

Table 5.2 Unified Soil Classification System (Based on Material Passing 76.2-mm Sieve)

Criteria for assigning group symbols				Group symbol
Coarse-grained soils More than 50% of retained on No. 200 sieve	Gravels More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels Less than 5% fines[a]	$C_u \geq 4$ and $1 \leq C_c \leq 3$[c]	GW
			$C_u < 4$ and/or $1 > C_c > 3$[c]	GP
		Gravels with Fines More than 12% fines[a,d]	$PI < 4$ or plots below "A" line (Figure 5.3)	GM
			$PI > 7$ and plots on or above "A" line (Figure 5.3)	GC
	Sands 50% or more of coarse fraction passes No. 4 sieve	Clean Sands Less than 5% fines[b]	$C_u \geq 6$ and $1 \leq C_c \leq 3$[c]	SW
			$C_u < 6$ and/or $1 > C_c > 3$[c]	SP
		Sands with Fines More than 12% fines[b,d]	$PI < 4$ or plots below "A" line (Figure 5.3)	SM
			$PI > 7$ and plots on or above "A" line (Figure 5.3)	SC
Fine-grained soils 50% or more passes No. 200 sieve	Silts and clays Liquid limit less than 50	Inorganic	$PI > 7$ and plots on or above "A" line (Figure 5.3)[e]	CL
			$PI < 4$ or plots below "A" line (Figure 5.3)[e]	ML
		Organic	$\frac{\text{Liquid limit — oven dried}}{\text{Liquid limit — not dried}} < 0.75$; see Figure 5.3; OL zone	OL
	Silts and clays Liquid limit 50 or more	Inorganic	PI plots on or above "A" line (Figure 5.3)	CH
			PI plots below "A" line (Figure 5.3)	MH
		Organic	$\frac{\text{Liquid limit — oven dried}}{\text{Liquid limit — not dried}} < 0.75$; see Figure 5.3; OH zone	OH
Highly Organic Soils	Primarily organic matter, dark in color, and organic odor			Pt

[a] Gravels with 5 to 12% fine require dual symbols: GW-GM, GW-GC, GP-GM, GP-GC.

[b] Sands with 5 to 12% fines require dual symbols: SW-SM, SW-SC, SP-SM, SP-SC.

[c] $C_u = \frac{D_{60}}{D_{10}}$; $C_c = \frac{(D_{30})^2}{D_{60} \times D_{10}}$

[d] If $4 \leq PI \leq 7$ and plots in the hatched area in Figure 5.3, use dual symbol GC-GM or SC-SM.

[e] If $4 \leq PI \leq 7$ and plots in the hatched area in Figure 5.3, use dual symbol CL-ML.

Plasticity Chart :

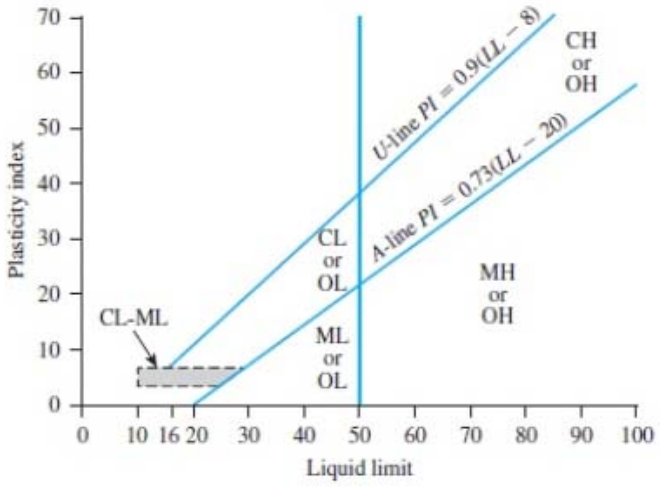


Table 7-12. Frost susceptibility classification of soils (NCHRP 1-37A).

Frost Group	Degree of Frost Susceptibility	Type of Soil	Percentage Finer than 0.075 mm (# 200) by wt.	Typical Soil Classification
F1	Negligible to low	Gravelly soils	3-10	GC, GP, GC-GM, GP-GM
F2	Low to medium	Gravelly soils	10-20	GM, GC-GM, GP-GM
		Sands	3-15	SW, SP, SM, SW-SM, SP-SM
F3	High	Gravelly Soils	Greater than 20	GM-GC
		Sands, except very fine silty sands	Greater than 15	SM, SC
		Clays PI>12	—	CL, CH
F4	Very high	All Silts	—	ML-MH
		Very Fine Silty Sands	Greater than 15	SM
		Clays PI<12	—	CL, CL-ML
		Varied clays and other fine grained, banded sediments	—	CL, ML, SM, CH

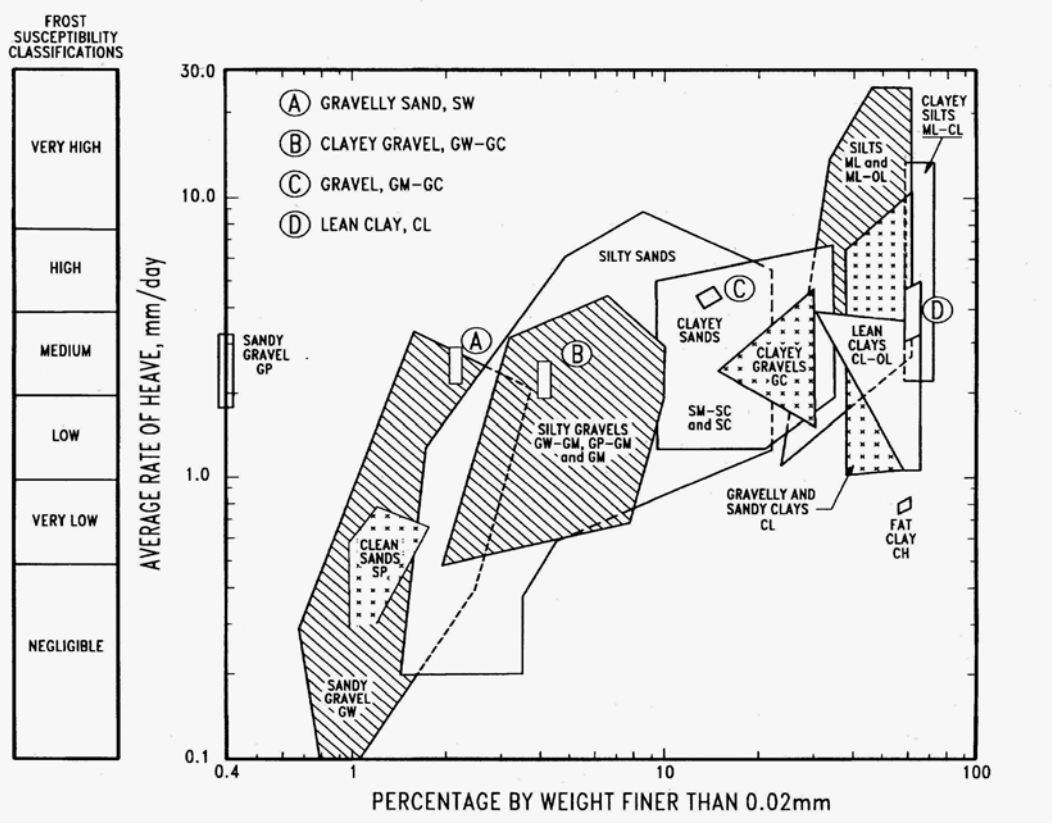


Figure 7-20. Average rate of heave versus % fines for natural soil gradations (Kaplar, 1974).

Frost Depth Map

*Values shown are in meters

APPENDIX B

MAINTENANCE REVIEW AND SUBSURFACE INVESTIGATION SCOPE

PAVEMENT EVALUATION LOG FOR LINEAR SOIL SURVEY

North Dakota Department of Transportation, Materials & Research

SFN 60472 (6-2017)

Project Number	PCN	Date of Survey
NH-4-052(104)137	23641	12/12/2022

Section Maintenance Contact	Completed By
Vince Sabbe	Brent Flaa

Highway Reference Points	Surface Types
137+3817 to 183+0000	Asphalt

Location	Pavement Distress	Description	Maintenance Comment	Picture Number	Drilling Required
137+1540 to 137+4224	Bituminous Patch	Through intersection both sides.	Scoping report calls out a subcut at this location	1-3	Yes
145+0866 to 145+1344	Bituminous Patch	Dal says we will see multiple patches like this throughout the project	NA	4	Yes
145+2440 to 145+2840	Bituminous Patch	Blade Patch	Scoping report calls out a subcut at this location	5	Yes
145+3101 to 145+3696	Bituminous Patch	Starts westbound only and moves to both lanes.	Scoping report calls out a subcut at this location	6-8	Yes
146+2218 to 146+3432	Bituminous Patch	Around curve. Eastbound only for final 150 ft	NA	9-11	Yes
150+4382 to 150+4594	Bituminous Patch	Blade Patch	NA	12	Yes
151+1278 to 151+3034	Bituminous Patch	Multiple patches,East patch is surrounded by cattails	NA	13-15	Yes
152+3464 to 152+4118	Bituminous Patch	Blade Patch	NA	16	Yes
153+1531 to 153+1742	Bituminous Patch	Blade Patch	NA	NA	Yes

Comments

PAVEMENT EVALUATION LOG FOR LINEAR SOIL SURVEY

North Dakota Department of Transportation, Materials & Research
SFN 60472 (6-2017)

Project Number	PCN	Date of Survey
NH-4-052(104)137	23641	12/12/2022

Section Maintenance Contact	Completed By
Vince Sabbe	Brent Flaa

Highway Reference Points	Surface Types
137+3817 to 183+0000	Asphalt

Location	Pavement Distress	Description	Maintenance Comment	Picture Number	Drilling Required
153+3432 to 153+3749	Bituminous Patch	Blade Patch	NA	NA	Yes
156+3062 to 156+4066	Bituminous Patch	West end is westbound lane only. East end is westbound only.	Scoping report calls out a subcut at this location	17-18	Yes
157+0000 to 157+0589	Bituminous Patch	East end is West bound only, More rutting then other patches Cut fill transition	NA	19-21	Yes
157+0950 to 157+1214	Bituminous Patch	Small Misc	NA	NA	Yes
157+1848 to 157+2059	Bituminous Patch	Misc Patch	NA	NA	Yes
157+2990 to 157+3901	Bituminous Patch	Big Patch	NA	22	Yes
157+3960 to 157+4382	Bituminous Patch	Switches lanes. Uneven lanes	NA	23-24	Yes
157+4699 to 157+5544	Bituminous Patch	Starting at west end it is west bound only then both and finishes east bound only	NA	25-26	Yes
180+0845 to 180+2534	Bituminous Patch	Rutting leading into patch from west	Scoping report calls out a subcut at this location	27-29	Yes

Comments

PAVEMENT EVALUATION LOG FOR LINEAR SOIL SURVEY

North Dakota Department of Transportation, Materials & Research

SFN 60472 (6-2017)

Project Number	PCN	Date of Survey
NH-4-052(104)137	23641	12/12/2022

Section Maintenance Contact	Completed By
Vince Sabbe	Brent Flaa

Highway Reference Points	Surface Types
137+3817 to 183+0000	Asphalt

Location	Pavement Distress	Description	Maintenance Comment	Picture Number	Drilling Required
182+4858 to 183+1320	Bituminous Patch	Rutting lanes likely pushing up in center. Center of lane possibly ground down from snowplow blade	Scoping report calls out a subcut at this location	30-34	Yes
145+0565 to 167+4224	Rutting	Whole project varying in depth.		NA	No
145+0565 to 167+4224	Transv. Cracks	Scattered throughout project.		NA	No

Comments

1
137+4224

2
137+4224

3
137+4224

4
145+0866 to 145+1344

5
145+2640

6
145+3101 to 145+3696

7
145+3101 to 145+3696

8
145+3101 to 145+3696

9
146+2218 to 146+3432

10
146+2218 to 146+3432

11
146+2218 to 146+3432

12
150+4382 to 150+4594

13
151+1278 to 151+3034

14
151+1278 to 151+3034

15
151+1278 to 151+3034

16
152+3464 to 152+4118

17
156+3062 to 156+4066

18
156+3062 to 156+4066

19
157+0000 to 157+0589

20
157+0000 to 157+0589

21
157+0000 to 157+0589

22
157+2990 to 157+3901

23
157+3960 to 157+4382

24
157+3960 to 157+4382

25
157+4699 to 157+ 1.05

26
157+4699 to 157+ 1.05

27
180+0845 to 180+2534

28
180+0845 to 180+2534

29
180+0845 to 180+2534

30
182+4858 to 183+1320

31
182+4858 to 183+1320

32
182+4858 to 183+1320

33
182+4858 to 183+1320

34
182+4858 to 183+1320

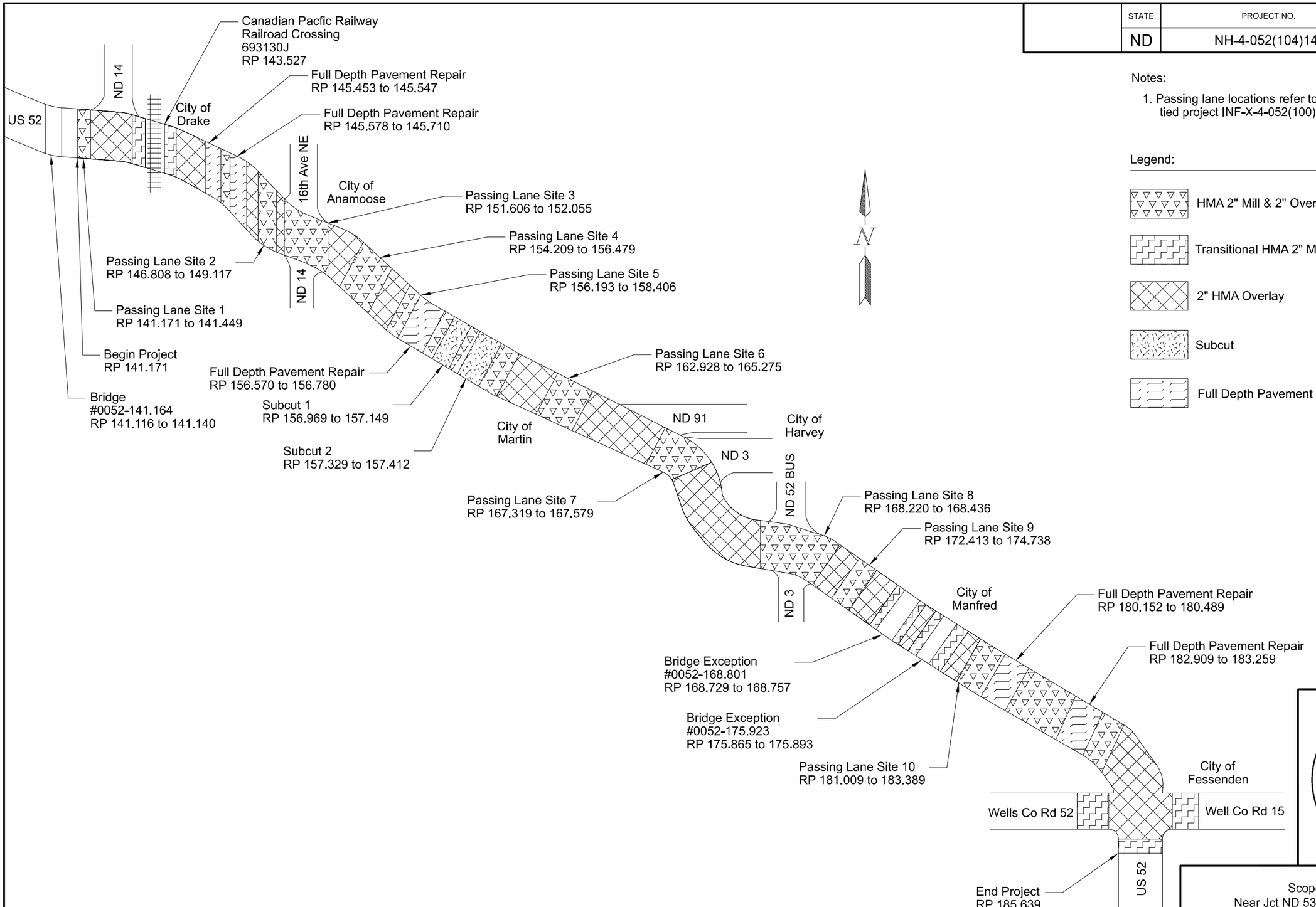
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-4-052(104)141	4	1

Notes:

1. Passing lane locations refer to tied project INF-X-4-052(100)140

Legend:

- HMA 2" Mill & 2" Overlay
- Transitional HMA 2" Mill & 2" Overlay
- 2" HMA Overlay
- Subcut
- Full Depth Pavement Repair



REGISTERED PROFESSIONAL ENGINEER
ERIC M. MERCK
PE-28798
DATE 12/15/23
NORTH DAKOTA

Scope of Work
Near Jct ND 53 to Near Fessenden
US 52

McHenry, Pierce, Sheridan & Wells County, ND