

## MEMO

TO: Justin Schlosser, Traffic Operations Engineer

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DATE: September 20, 2023

SUBJECT: I-94, RP 59 to 65, Speed Limit Study

### INTRODUCTION

The Dickinson District received a request to reduce the speed limit on I-94 between exits 59 and 64. Figure 1 shows the speed study location. Recommendations in this study are based on:

- The NDDOT Traffic Operations Speed Zone Engineering Study
- The FHWA speed limit setting program, USLIMITS2
- NCHRP Speed Limit Setting program, SLS-Tool
- Highway Capacity Software, HCS2022

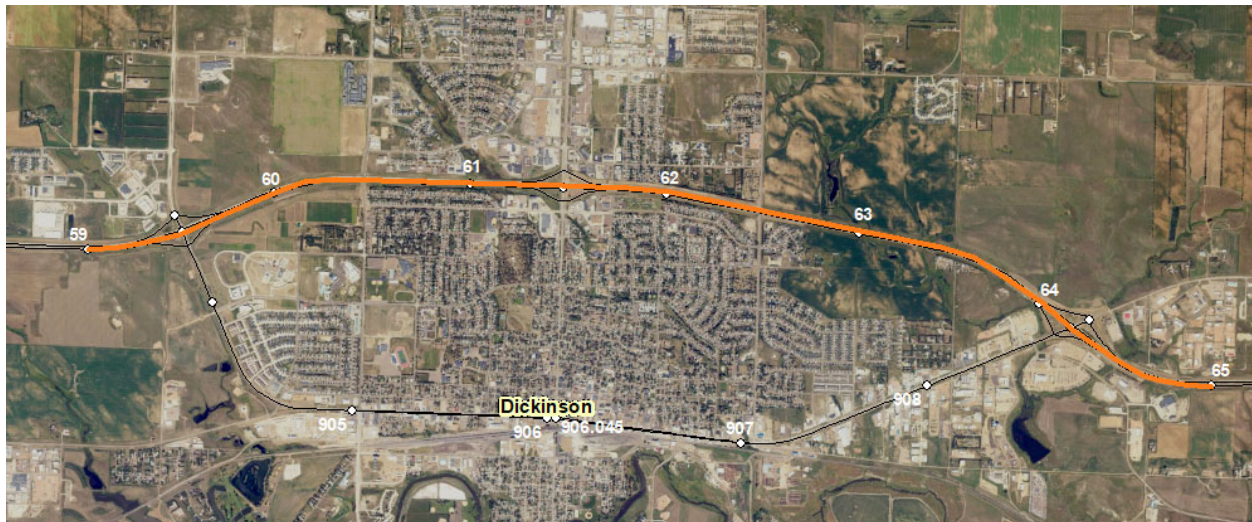


Figure 1 –Study Location

### EXISTING CONDITIONS

Functional Classification: Urban Interstate

Performance Classification: Urban Interstate

Speed Limit: 75 MPH

2022 AADTs: EB – 3925 (26% trks)

WB – 4081 (25% trks)

23 USC § 407 Documents  
NDDOT Reserves All Objections

## CRASH HISTORY

A total of 50 crashes were reported in the past 5-yr period from 8-1-2018 to 7-31-2023. Crashes have increased in the last two years from prior years. The crash summary sheets are in attachment 1.

No fatal crashes or incapacitating injuries were reported; 44 were property damage only, 4 non-incapacitating injuries, and 2 were possible injuries. Table 1 shows the crash types by year. It should be noted crashes during years 2 and 3 may be lower due to COVID.

<b>Table 1 - I-94 Crash Type Summary, RP 59 to 65, 8-1-18 to 7-31-23</b>						
<b>Year</b>		<b>Rear End</b>	<b>Sideswipe Same Dir</b>	<b>Sideswipe Opp Dir</b>	<b>Single Vehicle</b>	<b>Total</b>
1	2018-2019	2	3		7	12
2	2019-2020	1	1	1	2	5
3	2020-2021				4	4
4	2021-2022	3	3		6	12
5	2022-2023		4		13	17
<b>SubTotals</b>		<b>6</b>	<b>11</b>	<b>1</b>	<b>32</b>	<b>50</b>

Speed was listed as a contributing factor in 1 crash and too fast for conditions was listed as a contributing factor in 10 crashes. Wet and ice/snow surface conditions were a factor in 23 of the total crashes. Because total crashes per year are relatively low and the majority of those occurred on adverse surface conditions, a speed reduction is not supported based on the crash data.

## SPEED STUDY RESULTS

Speed data was collected for a 24-hr period on September 5<sup>th</sup> through September 6<sup>th</sup>, 2023, by NDDOT Traffic Data Section with Automatic Traffic Recorders (ATRs). The results show 85% of travel speeds exceed the posted speed limit. Motorists travel at speeds they feel comfortable driving at for the environment. While some motorists will obey a lower speed limit, others will feel it is unreasonable for the conditions and will not. Studies have found crashes are likely to increase with an increase in speed variances, therefore, a speed reduction is not recommended.

The Speed Zone Engineering Study and verification documents from the speed limits setting programs, FHWA USLIMITS 2 and NCHRP Speed Setting Tool (SLS Tool), are in attachment 2. The results are shown below.

From RP	To RP	85 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile
59.5	61.5	82 MPH	76 MPH
61.5	64.204	81 MPH	76 MPH

USLIMITS2 Results – 75 MPH

SLS-Tool Results – 75 MPH

23 USC § 407 Documents  
NDDOT Reserves All Objections

## TRAFFIC VOLUMES

Traffic volumes from 2022 were used on I-94 mainline and 2020 volumes on the exit and entrance ramps. Refer to figure 2. Balanced volume diagrams for each direction are shown on page 3 of the capacity analysis sheets in attachment 3.

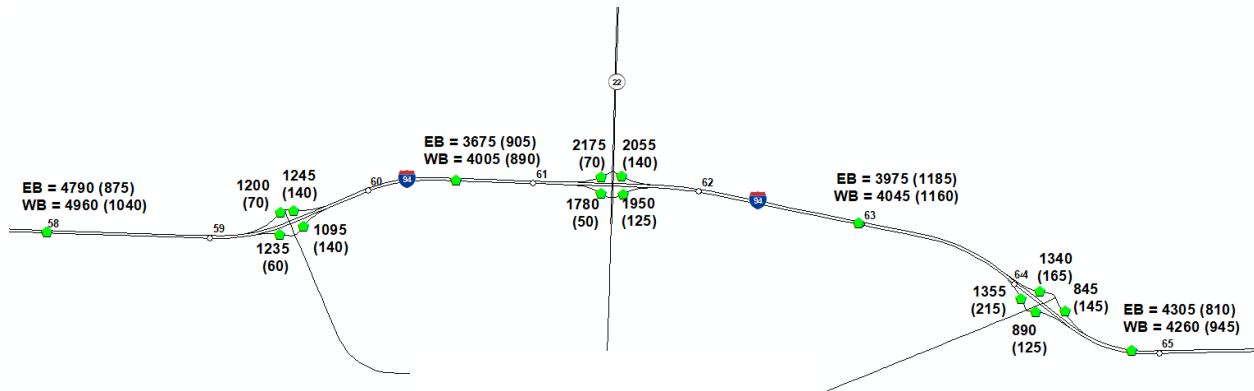


Figure 2 – Traffic Volumes

## CAPACITY ANALYSIS

Capacity segment analysis for eastbound and westbound traffic was performed to determine the Level of Service (LOS) of demand flow rates and the free flow speeds from the speed study. Table 2 shows the LOS criteria for merge/diverge segments.

The results of the capacity analysis show the segment operates at LOS A in both directions indicating the merging and diverging movements do not restrict the flow of traffic. The detailed analysis print-outs are in attachment 3.

**Table 2 - LOS Criteria for Freeway Merge and Diverge Segments**

LOS	Density
A	≤10
B	>10-20
C	>20-28
D	>28-35
E	>35
F	Demand exceeds capacity

## RECOMMENDATIONS

Based on the following factors in this study, a speed reduction is not supported and therefore is not recommended:

- Crash data
- Current 85<sup>th</sup> percentile speeds
- Roadway classification
- Capacity Analysis