



## **Memorandum**

To: Rod Nelson, PE – Billings District Administrator

From: Zach Kirkemo, PE – Billings District Traffic Engineer

Thru: Stan Brelin II, PE – Traffic Operations Engineer *SB*

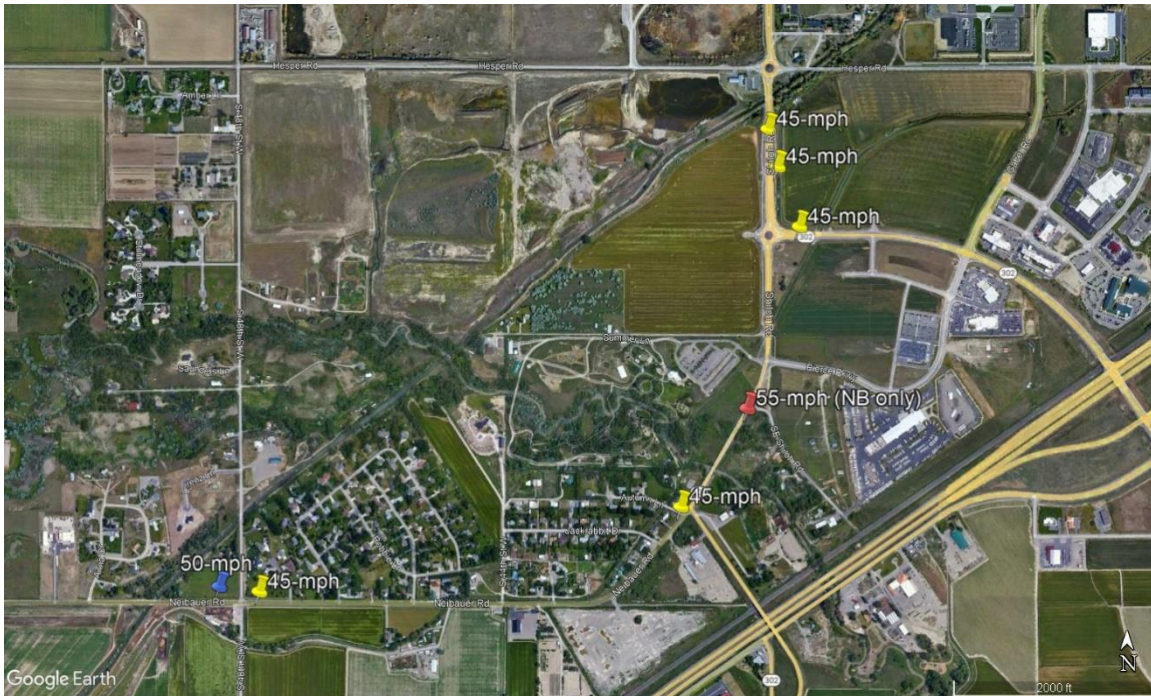
Date: April 12, 2022

Subject: Special Speed Zone Study  
Shiloh Rd / U-1031 from Zoo Dr. to Wise Ln

*Please present the following information to the Billings City Council (Council) and Yellowstone County Commissioners (Commissioners) for review and comment. Inform them we would prefer to receive all comments in writing within 60 days. Additionally, if written comments are not received within 120 days this will be considered concurrence with the findings of this report. Their comments along with the Department's final recommendation will be presented to the Montana Transportation Commission for action.*

### **Introduction**

The Commissioners requested that the Montana Department of Transportation (MDT) review the existing speed limit on Shiloh Rd from Zoo Drive to Wise Lane (including the Shiloh Rd overpass) to determine whether the existing speed limit may be modified. The Commissioners are requesting a 45-mph speed limit for the entire segment. The existing posted speed limit for this section transitions from 45-mph to 55-mph south of Pierce Parkway. See Figure 1 for current speed limit signage.



**Figure 1: Current Speed Limit Sign Layout**

### **Site Characteristics**

The typical section of Shiloh Rd / U-1031 varies within the study area. Between Zoo Dr. and Pierce Parkway, the roadway consists of two 12-foot lanes with a raised median and 8-foot paved shoulders. Between Pierce Parkway and the Canyon Creek bridge, the roadway consists of two 12-foot lanes with 8-foot paved shoulders and includes an auxiliary left-turn lane to enter the zoo at the Pierce Parkway intersection. Between the Canyon Creek bridge and the Shiloh Rd overpass, the roadway consists of two 12-foot lanes with minimal paved shoulders. The Shiloh Rd overpass consists of two 12-foot lanes with 2-foot paved shoulders.

There are no passing zones within the study segment. No rumble strips (either centerline or shoulder) have been installed on Shiloh Rd. There does appear to be an adequate clear zone provided in most locations with recoverable fill slopes or guardrail present where the clear zone is not provided.

U-1031 is classified as a Minor Arterial and is an Urban Route. This section was originally constructed in 1956 and most recently reconstructed in 2011.

A 2020 average annual daily traffic (AADT) of approximately 3,300 vehicles per day was estimated on this section of Shiloh Rd. This is consistent with the most recent five years with the AADT which has varied from 3,100 to 3,500 vpd.

On the Shiloh Rd overpass, a 2020 AADT of approximately 1,980 vpd was recorded. This recorded volume represents a slight reduction from previous years which may be impacted by the ongoing pandemic.

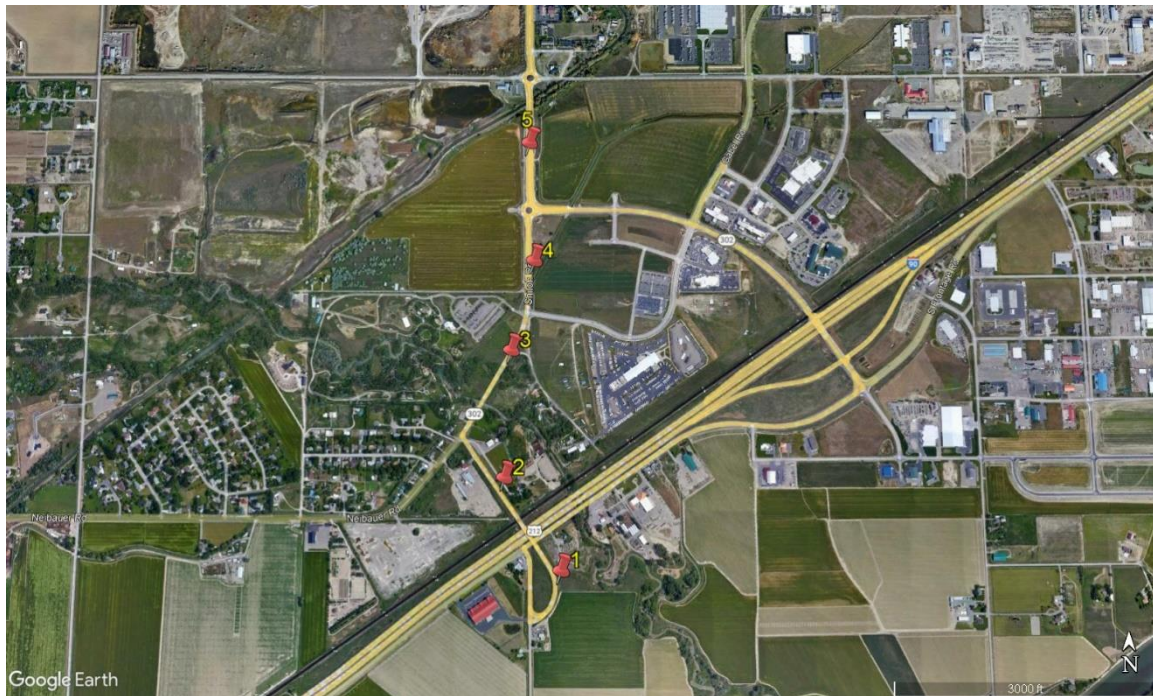
Adjacent land use primarily includes farmland within the city limits transitioning to rural residential housing and highway commercial uses (including the zoo) outside the city limits.

### **Travel Speeds**

Vehicular travel speeds were sampled directionally at seven locations to develop a speed profile along the portion of U-1031 (including the Shiloh Rd overpass) within the study area. Table 1 contains a summary of the speed data collected November 2021 through March 2022. The summary includes:

- 50<sup>th</sup> percentile (the speed at which 50% of sampled vehicles were travelling at or below),
- 85<sup>th</sup> percentile (the speed at which 85% of sampled vehicles were travelling at or below),
- Pace (10-mph range the largest proportion of vehicles were recorded) including the proportion of vehicles travelling at a speed within the pace.

A map showing the locations is provided in Figure 2.



**Figure 2: Speed Data Collection Locations**

**Table 1: Shiloh Rd Speed Data Collection Summary**

Station ID	Location	Direction	Posted Speed Limit	50 <sup>th</sup> Percentile (mph)	85 <sup>th</sup> Percentile (mph)	Pace of Traffic Stream (mph) and Percentage
1	RP 5.28 Overpass 500' northeast of Wise Ln	NB	55	36.0	41.0	30-40 (74%)
		SB		37.0	41.0	31-41 (81%)
2	RP 5.05 Overpass 800' south of Neibauer Rd	NB	55	42.0	48.0	37-47 (66%)
		SB		42.0	48.0	35-45 (65%)
3	RP 4.70 1,000' east of Shiloh Rd overpass	NB	55	52.1	58.3	45-55 (56%)
		SB		48.5	54.3	45-55 (65%)
4	RP 4.50 500' (150 m) north of Pierce Parkway	NB	55	46.1	52.4	41-51 (55%)
		SB		43.3	49.2	40-50 (63%)
5	RP 4.16 700' (215 m) north of Zoo Drive	NB	45	41.0	45.0	35-45 (74%)
		SB		44.0	48.0	38-48 (76%)

**Crash and Citation Data**

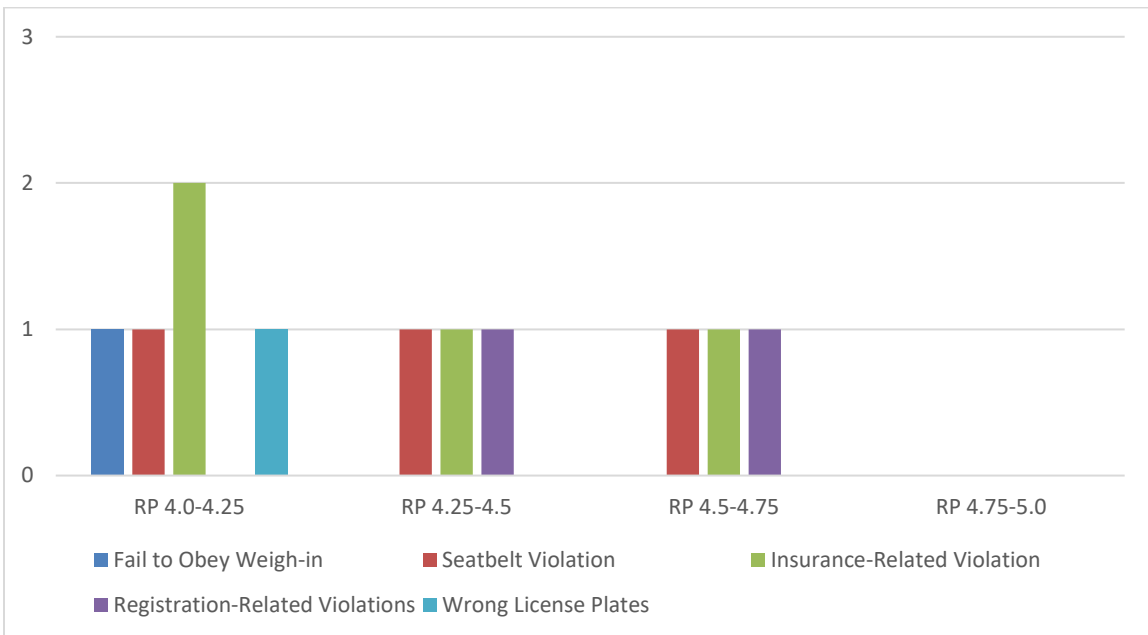
Crash data was reviewed for a 3-year period from January 1<sup>st</sup>, 2018, through December 31<sup>st</sup>, 2020 between RP 4.0 and 5.0 (between Hesper Rd and Wise Lane). Four crashes were reported within the study area including one roll over, two sideswipe - same direction, and one fixed object.

No fatal or serious injury crashes were reported. There was one suspected minor injury, one possible injury, and two property-damage only (PDO) crashes. Speeding was not reported as a contributing factor for any of these crashes.

Law enforcement citation data was also reviewed during the same period on the same section of Shiloh Rd. There were 11 citations issued during this period as shown in Table 2. None of the citations were speeding-related. A chart summarizing the locations of citations is provided in Figure 3.

**Table 2: Citation Summary**

Violation	Count
Seatbelt Violation	3
Operating Without Insurance	3
Operating with Expired Registration	1
Driving with Suspended License	1
Fail to Carry Proof of Insurance	1
Fail to Obey to be Weighed	1
License Plates Assigned to Another Vehicle	1
Total	11



**Figure 3: Citation Location Summary**

### **Conclusions and Recommendations**

The speed samples show the measured 85<sup>th</sup> percentile speeds are at or below the current posted speed limit in most locations within the study area. The data also shows a significant change in travel speed in the 45-mph zones compared to the 55-mph zones. Reducing the 55-mph speed limit to 50-mph could be considered due to the limited shoulder widths and existing travel speeds.

However, changing the existing 55-mph speed zone to a 45-mph speed zone would be more appropriate by introducing a consistent speed limit along the entire Shiloh Rd corridor from Wise Lane to Zoo Drive entering the City of Billings.

**To create a consistent speed zone along the Shiloh Rd corridor, it is recommended the speed limit be set at 45-mph between Zoo Drive (Straight-Line Station 10+40) and Wise Lane (Straight-Line Station 100+00), a total distance of approximately 1.0 mile.**

copies:           David Relph, PE – MDT Traffic Investigations  
                      Gabe Priebe, PE – MDT Traffic and Safety Engineer

