

Metcalfe Drive Speed Study

Introduction

The Town of Williston requested the Chittenden County Regional Planning Commission (CCRPC) staff to evaluate the existing speed limit of 25 mph for existing traffic and land use conditions on Metcalfe Drive between Harte Circle and Coyote Lane between Mountain Road and Harvey Road. In order for a Legislative Body to determine a safe and reasonable speed on town highways, a traffic engineering investigation (speed study) is required by the Vermont Statutes Annotated Title 23, § 1007. This document provides supporting findings that were used to develop recommendations for validating existing speed limit for Metcalfe Drive.

Existing Conditions

Metcalfe Drive is paved and classified by the state as a Class III Town Highway. CCRPC staff installed an Automatic Traffic Recorder (ATR) on Metcalfe Drive to collect traffic volume and speed data. Speed and volume data were collected between July 11, 2017 and July 17, 2017. Figure 1 shows the study area and ATR location.



Figure 1: Study Area and ATR Location

Findings of Windshield Survey

A windshield reconnaissance survey was conducted in both travel directions on Metcalfe Drive to identify safety related issues, roadway characteristics, sight distance and roadside safety hazards. The following is a list of findings from the windshield survey:

1. The roadway width is 30 ft from curb to curb.
2. The posted speed limit is 25 mph in the study area.
3. Driveways and mailboxes are located along the roadway section.

4. A separated 5 ft wide sidewalk with buffer zone (green strip) is located on northside of Metcalf Drive.
5. On-street temporary parking is allowed on both sides of the road.
6. Travel lanes and shoulders are not marked.

Speed Data Analysis

The 85th percentile speed associated with the traffic counts for eastbound direction was observed as 29 mph and for westbound was observed as 32 mph, whereas the posted speed limit is 25 mph. This indicates that 85 percent of drivers are comfortable driving at an operating speed 32 mph or less along the study corridor.

A widely used metric in setting speed limits is the 85th percentile speed. This is defined as the speed in which 85% of motorists are traveling at or below. Based on the best available evidence and previous research, speed limits set using the 85th percentile speed data are not only acceptable by the majority of motorists, but also fall within the speed range where crash risk is lowest¹. The Manual on Uniform Traffic Control Devices (MUTCD), which is adopted as the standard for all traffic control devices in Vermont (Title 23 V.S.A. Section 1025), recommends setting speed limits within 5 mph of the 85th percentile speed while taking into consideration other factors such as roadway characteristics, shoulder condition, grade, the speed pace, land uses, development setbacks, parking, crash history, and bicycle/pedestrian activity.

Pedestrian Activity and Crash History Factor

As mentioned above, other factors are considered in determining a safe and reasonable speed limit. No crashes were reported between 2012 and 2016 along Metcalf Drive between Harte Cir. and Coyote Ln. Based on research work in other states², the prevailing speeds may be reduced by 5 percent when the total pedestrian traffic on road exceeds 10 people per hour for any three hours within any eight-hour period.

Motorists' speeds are not affected with pedestrians using a separated sidewalk, therefore pedestrian volume is not factored in the speed study analysis.

¹ Synthesis of Speed Zoning Practice, FHWA-RD-85-096, Technical Summary.

² https://safety.fhwa.dot.gov/speedmgt/ref_mats/fhwasa1304/resources2/22%20-%20Policy%20on%20Establishing%20and%20Posting%20Speed%20Limits%20on%20the%20State%20Highway%20System.pdf

Table 1: Technical Summary

| | |
|------------------------------------|---|
| Municipality: | Town of Williston |
| Road Name: | Metcalf Drive |
| Location: | Between Harte Circle and Coyote Lane |
| Recommended Speed Limit: | 25 mph |
| Evaluation By: | Sai Sarepalli, P.E. Transportation Planning Engineer |
| Final Report Document Date: | 11/28/2017 |

| | |
|---|---|
| 85th Percentile Speed (mph): | ATR Location 29 MPH : Eastbound 32 MPH : Westbound |
| 10 mph Pace Speed (mph) & Percentage in the range | ATR Location 21-30 MPH: Eastbound (54.5%) 26-35 MPH: Westbound (48.6 %) |
| Average Test Car Speed (mph) | 25 MPH |
| Safe Speed at Curves and/or Intersections: | 25 MPH |
| Safety problem related to speed: | Motorists may pose safety hazard driving at excessive speeds when vehicles temporarily parked on the street |
| Average Daily Traffic (Vehicles per Day) | ATR Location: 144 ADT (07/11/17 – 07/17/17) |
| Town Highway and Functional Classification | Class III Town Highway – Local Road |
| Road Surface | Paved |
| Road Width | 30 ft. from curb to curb |
| Shoulder Surface | Shoulders are not marked |
| Shoulder Width | 0 ft |
| Parking | Temporary on-street parking |
| Pedestrian/Bicycles | No marked bike lanes Separated 5 ft. wide sidewalk along north side of road |
| Adjacent Land use | Residential |

Conclusion and Recommendations

Metcalf Drive along the study area is located in a residential development with wide curves and at flat grade. As per the observed bidirectional 85th percentile speed data, majority of drivers are traveling at or below 31 mph speed. While considering the roadway characteristics, residential development and land use, crash history, separated sidewalk for pedestrians, **it is recommended to continue to maintain a 25 mph speed limit for the study area.**

It is recommended the Town consider implementing traffic calming measures such as chicanes, rain gardens with curb extensions, speed humps and speed feedback radar signs on poles at appropriate locations to warn and slow motorists traveling on Metcalf Drive. See samples of traffic calming pictures in Appendix A.

Appendix A – Sample Pictures for Traffic Calming measures



Sample picture of Pavement Marking Chicane



Sample picture of Rain Gardens with curb extensions
Photo Courtesy: <https://Brooklyncountrylane.wordpress.com>



Sample picture of Speed Hump

Photo Courtesy: <https://safety.fhwa.dot.gov>



Sample picture of Speed Feedback Radar Sign

Photo Courtesy: www.radarsign.com