Speed Limit Review

Extension of 80 km/h speed zone near the hamlet of Ashmont

1.0 Background

A request to extend the current 80 km/h zone on Highway 28:15 was presented at the recent AAMDC meeting. The current 80 km/h zone is located around a horizontal curve that also contains the main access to the hamlet of Ashmont. The proposal is to lengthen the 80 km/h zone westward from its current end point at km 0.460 to the junction of Highway 36 and Highway 28, which is approximately km 0.000. The current speed gazetting along the roadway can be seen in Figure 1. Current traffic volume along the segment is 2980 vehicles per day, with an average growth rate of 4.3%. The roadway section was analysed based on the development, geometry, TAC (Transportation Association of Canada) speed limit warrant spreadsheet, and collision history.

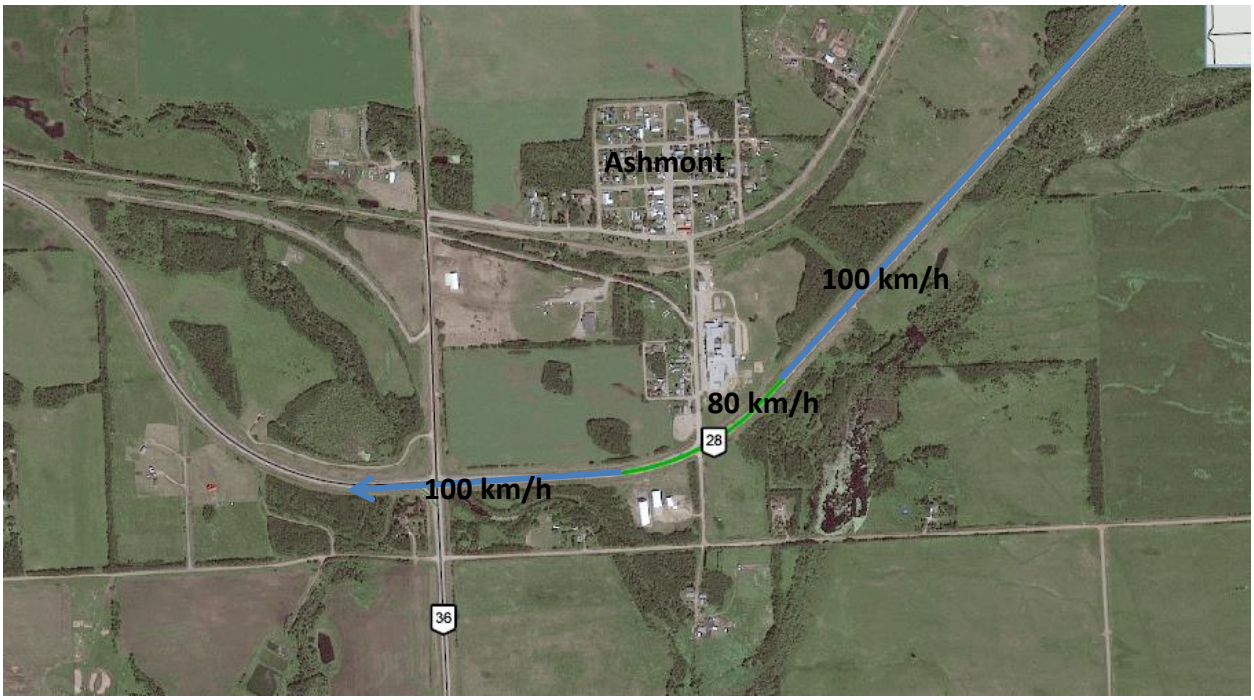

Figure 1: Current speed gazetting on Highway 28

2.0 Analysis of the Proposed Speed Limit Extension

The current 80 km/h zone ends at km 0.460, which is approximately 200 metres west of the main access to the hamlet of Ashmont. At km 0.460, continuing westward, the speed limit increases to 100 km/h, and there is a distinct change in roadway characteristics. The motorist has exited the horizontal curve, and there are no longer sight distance concerns. The vertical geometry is similarly satisfactory; the one

crest curve has a K value of 130 that easily satisfies stopping sight distance. There is also a sag curve along the segment, but it easily provides headlight control with a K value of 134. Finally, the roadway is also primarily flat with two short segments with low grades of 2.2% and 1.3%. Additionally, the area around the segment is notably undeveloped with no accesses to the highway. Due to the geometric and development characteristics of the roadway, a lower speed limit along the segment would likely seem unjustified by drivers, which would result in low compliance. Differential speeds caused by low compliance could also decrease safety.

An analysis was also completed using the TAC speed limit spreadsheet analysis. The results, which can be seen in Appendix A, indicated that a 100 km/h speed zone is the appropriate limit for the segment. The spreadsheet takes into account the segment geometry as well as roadway usage and surface characteristics.

The collision history was also looked at to assess the safety. There have been a total of 7 collisions along this segment in the last five years. Five of the seven collisions were at the intersection, with the remaining two occurring midway along the segment as a result of colliding with an animal. Four of the five collisions that occurred at the intersection in the last five years were angle collisions that were the result of a north or southbound vehicle failing to yield at a stop sign. Though the number of collisions at the intersection was not notably high, an analysis of the intersection was completed to ensure that sight distance concerns were not a contributing factor.

3.0 Analysis of the Intersection of Highway 28 and Highway 36

As the collisions at the intersection had similar causes, an analysis of the approaches was completed. At the intersection, there is a stop control for northbound and southbound traffic on Highway 36. The stop signs on Highway 36, which can be seen in Figure 1, are oversized and have a red flashing light mounted over the sign to provide drivers with additional warning. The signs are also preceded by an “Stop Ahead” warning sign (WB-1) and “Stop Ahead” pavement markings; even further back, an “Important Intersection Ahead” warning sign is applied and an information sign announcing the junction. For the vehicles approaching on Highway 28, there is an “Important Intersection Ahead” sign as well as an information sign to indicate that there is a junction with Highway 36.

Figure 1: View for NB vehicles on Highway 36 at the intersection. The stop sign is oversized and has a flashing red beacon mounted to the top.

For southbound vehicles on Highway 36, the roadway is flat with no obstructions in sight distance. Northbound vehicles approach the intersection from a vertical crest curve; however, the "Important Intersection Ahead" is provided prior to the curve and there is still over 400 metres of sight distance once the vehicle exits the curve. Finally, the northbound vehicles may also have their vision obscured because there is a right-turn lane at the intersection; as can be seen in Figure 2, a vehicle sitting in the right turn lane can block the stop sign. However, the stopped vehicle in the right turn lane as well as the advance warnings should still provide adequate warning to drivers in the through lane.

Figure 2: View for Northbound Vehicles on Highway 36 Approaching Highway 28

For the vehicles approaching on Highway 28, the stopping sight distance is also adequate. As both eastbound and westbound vehicles approach this intersection, they are exiting a horizontal curve. From the westbound perspective, there is over 400 meters of sight distance. For eastbound vehicles, there is more than 200 meters, which is sufficient for a speed of 100 km/h. The eastbound sight distance can be seen in Figure 3. Since the signage and signage placement provided as well as the stopping sight distance from all approaches is adequate, there are no changes required at the intersection.

Figure 3: View for EB vehicles on Highway 28 approaching the intersection

4.0 Conclusions and Recommendations

Based on the road characteristics, the surrounding developments, and the intersection design, the 80 km/h zone should not be extended to the junction of Highway 28 and 36. This segment of roadway has limited development and has no accesses. Additionally, the road is flat with adequate sight distance as vehicles approach the intersection. The collision history does not indicate serious safety problems along the segment or at the intersection. The TAC speed limit spreadsheet similarly indicates that the roadway segment should have a speed limit of 100 km/h. As a lower speed limit is not justified, reducing the speed limit would create compliance problems, which would result in safety issues.

Appendix A

Automated Speed Limit Guidelines

FORM A - Automated Speed Limit Guidelines Spreadsheet

Version: 10-Apr-09

Name of Corridor:	Highway 28:15 west of Ashmont				
Segment Evaluated:	km 0.000 (Intersection with Highway 36)	to	km 0.460		
Geographic Region:	County of St. Paul No. 19				
Road Agency:	Alberta Transportation				
Road Classification:	Highway	Length of Corridor:	500	m	
Urban / Rural:	Rural	Design Speed: (Required for Freeway, Expressway, Highway)	110	km/h	
Divided / Undivided:	Undivided	Current Posted Speed: (For information only)	100	km/h	
Major / Minor:	Major	Prevailing Speed: (85th Percentile - for information only)		km/h	
# Through Lanes Per Direction:	1 lane	Policy: (Maximum Posted Speed)	100	km/h	

		RISK	Score
A1	GEOMETRY (Horizontal)	Lower	3
A2	GEOMETRY (Vertical)	Lower	3
A3	AVERAGE LANE WIDTH	Medium	10
B	ROADSIDE HAZARDS	Lower	4
C1	PEDESTRIAN EXPOSURE	Lower	1
C2	CYCLIST EXPOSURE	Medium	2
D	PAVEMENT SURFACE	Lower	2
E1	NUMBER OF INTERSECTIONS WITH PUBLIC ROADS	*Number of Occurrences*	0
	STOP controlled intersection	0	
	Signalized intersection	0	
	Roundabout or traffic circle	0	
	Crosswalk	0	
	Active, at-grade railroad crossing	0	
	Sidestreet STOP-controlled or lane	0	
E2	NUMBER OF INTERSECTIONS WITH PRIVATE ACCESS	*Number of Occurrences*	0
	Left turn movements permitted	0	
	Right-in / Right-out only		
E3	NUMBER OF INTERCHANGES	*Number of Occurrences*	0
	Number of interchanges along corridor	0	
F	ON-STREET PARKING	Lower	1

Calculate Total Risk Score

Total Risk Score: 26

Posted Speed Limit (km/h):

As determined by road characteristics: 100

As determined by policy: 100

The recommended posted speed limit may be checked against the prevailing speeds of the roadway and the road's safety performance.

Comments: