



December 6, 2016

Eric Griffin
Lewis & Clark County
3402 Cooney Drive
Helena, MT 59601

RE: Wylie Drive Speed Limit Study

Dear Eric,

Per your request Abelin Traffic Services (ATS) has reviewed the existing speed limits on Wylie Drive between the East Helena city limits and York Road. The posted speed limit on this road currently increases from 25 MPH at the East Helena city limits to 55 MPH for most of its length. Lewis & Clark County requested that ATS perform a speed study to determine if the posted speed limits are appropriate for the existing road conditions and if the speed limits could be changed to create more uniform speeds for the route and provide more consistency with other routes in the area.

Existing Conditions

The study roadway begins at the north city limits of East Helena on Wylie Drive (Intersection of Wylie Drive and West Gail Street) and extends north to the intersection of Wylie Drive and York Road. The road is straight except for two curves on Wylie Drive between West Gail Street and Canyon Ferry Road and has a slight upward slope to the north. Wylie Drive does not carry substantial traffic north of York road and officially terminates 1 mile north of the intersection with York Road. The roadside environment consists of a mix of residential and light commercial areas, with a stretch of open land north of West Gail Street. See **Figure 1** for a map of the study roadway.

Through the study area, Wylie Drive has a paved width of 24 to 35 feet on 65 to 105 feet of right-of-way. The road surface is in good condition. The full length of the study roadway has shoulder striping and has no marked passing zones. The section of the roadway from 0.75 miles north of East Helena to 1.5 miles north of East Helena has paved shoulders of roughly 5 feet in width. Visibility on the road is very good and the clear zones have few obstructions. The road currently has 23 public approaches and 65 private approaches.

Historic traffic data for Wylie Drive Avenue was obtained from Lewis & Clark County. The historic data for this location is presented in **Table 1**. The Average Annual Daily Traffic (AADT) data indicates that traffic volumes along North Montana Avenue have remain steady over the past ten years.

Table 1 – Historic Traffic Data

Wylie Drive Location	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
East Helena City Limits	4,591	na	5,630	na	na	5,120	na	4,630	na	na
South of Canyon Ferry Road	4,621	4611	3,933	3,208	4,099	4,795	4,118	3,982	na	4,321
North of Canyon Ferry Road	2,752	2964	2,496	2,592	2,725	2,876	2,439	2,778	na	2,256
South of York Road	882	898	819	795	na	859	801	na	na	696

Crash Data

ATS obtained vehicle crash data for Wylie Drive from the L&C County vehicle crash database. This data indicated that 62 vehicle crashes have occurred along Wylie Drive over the past five years. Of these 62 crashes, 25 were multi-vehicle accidents, and 17 resulted in injuries. Eight of the crashes occurred at the intersection with Canyon Ferry Road. Most of the crashes (53%) occurred in darkened conditions and 15 (24%) occurred on icy or snowy roads. The crash rate on Wylie Drive is 2.8 crashes per million vehicle miles traveled, which is double the State average for collector roadways (approximately 1.3).

Speed Data

In order to analyze vehicle speed data engineers calculate a variety of operational characteristics based on vehicle speed distribution data. The significant data includes average vehicle speed, 85th percentile speed, and pace speeds. **Figure 2** shows a standard vehicle speed distribution with a 45 MPH average speed (red line). The 85th percentile speed is speed at which 85% of traffic travels at or below on the cumulative speed distribution line (purple line). The pace is the 10 MPH increment that has the highest number of observed vehicle speeds.

Figure 1 - Vicinity Map

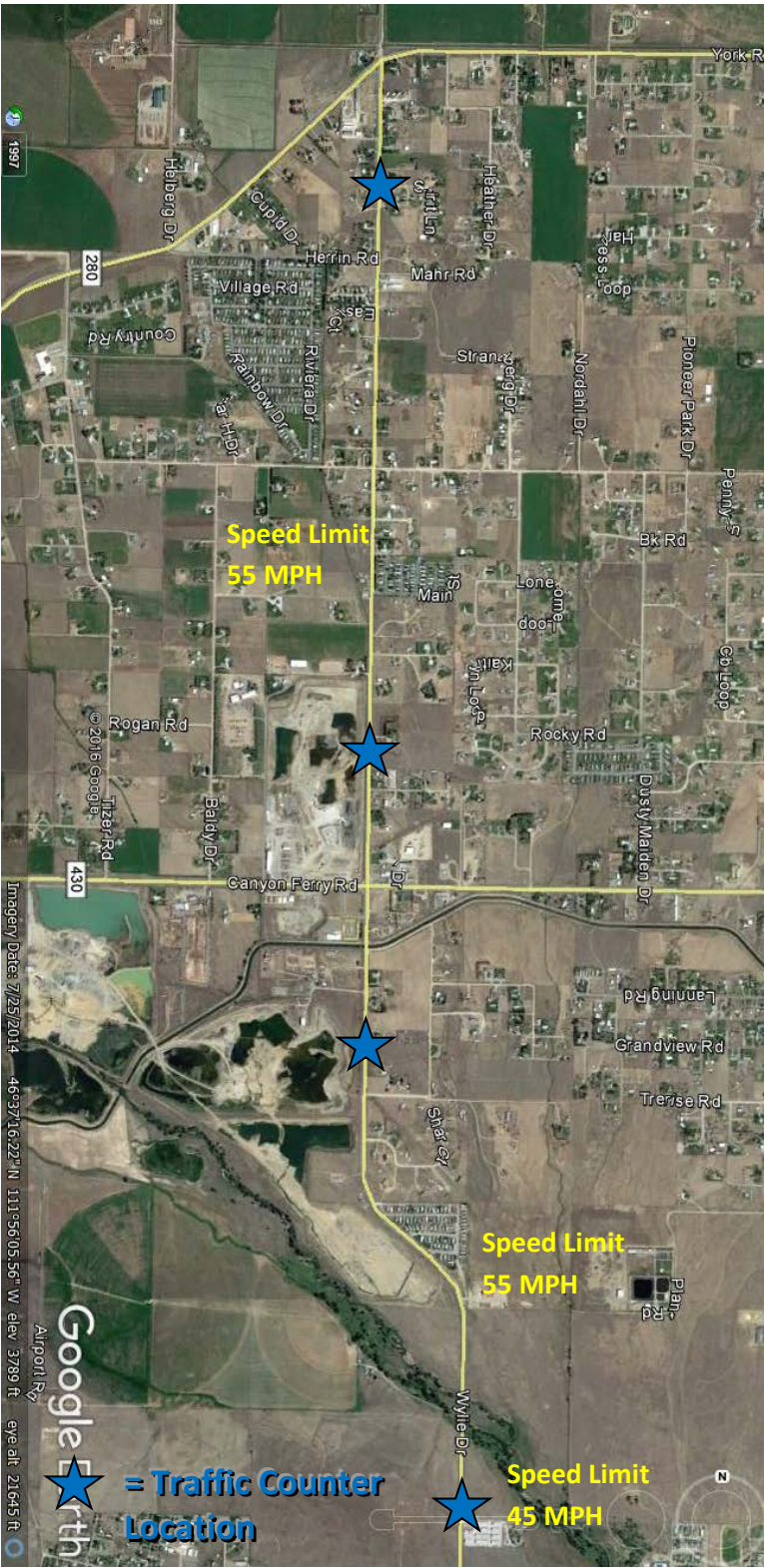
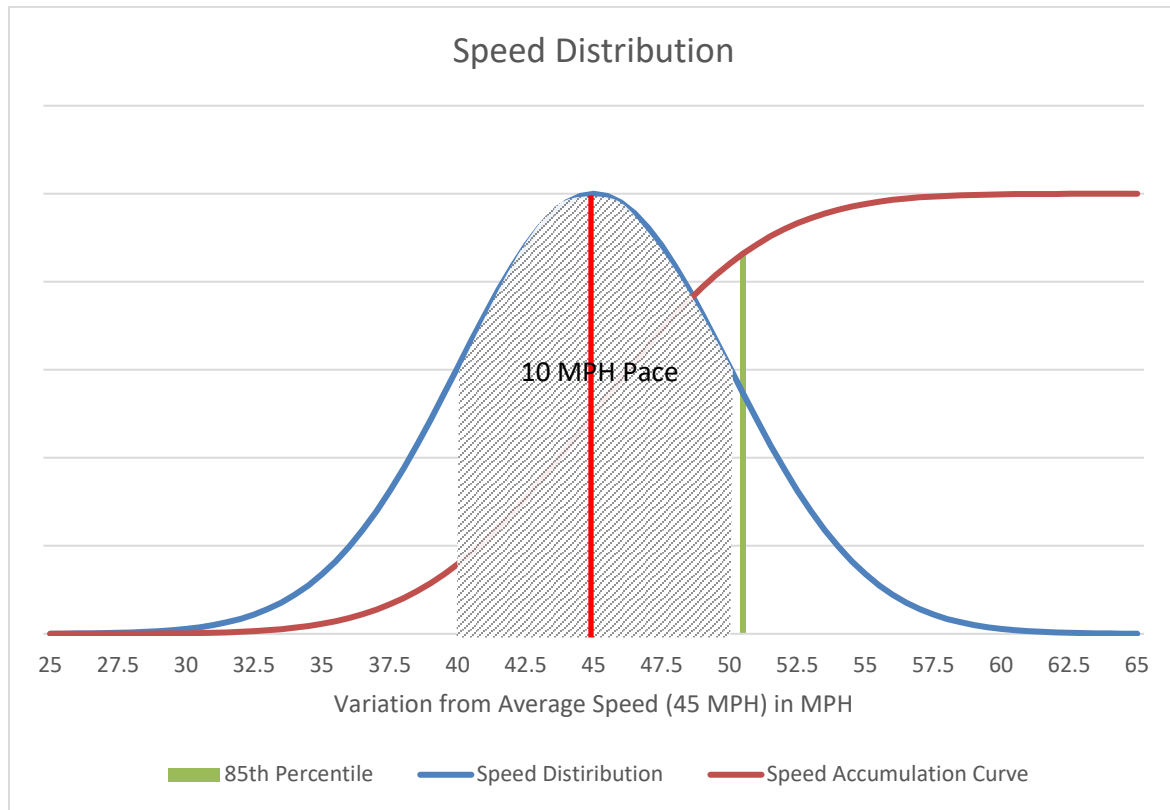


Figure 2 – Standard Speed Profile



Vehicle speed data was collected at four locations along Wylie Drive from August 10th to the 12th and August 15th to the 17th of 2016. The sites were located just north of West Gail Street (Station 1), south of Canyon Ferry Road (Station 2), north of Canyon Ferry Road (Station 3), and south of York Road (Station 4). The weather conditions during the traffic study were warm and dry with very good driving conditions throughout the data collection period. The data was collected continuously for 48 hour periods using Diamond Unicorn Limited traffic counters to record the individual speed data from every vehicle using the road. The results of the data collection are shown in **Table 2**. A detailed roadway characteristics and speed data table is included in the appendix.

TABLE 2 – Vehicle Speed Data

	Station 1	Station 2	Station 3	Station 4
Average Speed (MPH)	36.5	42.5	45.9	41.3
85% Percentile Speed (MPH)	42.0	49.0	52.9	48.8
10 MPH Pace Speeds (MPH)	30 – 40	40 – 50	40 – 50	40 – 50
Percent in Pace	65%	60%	57%	55%
Observed Daily Traffic (VPD)	4,833	4,321	2,256	696
Percent Trucks	7.4%	7.0%	3.4%	3.7%

The speed data indicates that the vehicle speeds along Wylie Drive are fairly consistent. The most commonly used road operations characteristic for posting a speed limit is at or near the 85th percentile speed. However, it is reasonable to set a posted speed limit below the 85th percentile speeds if the road conditions and roadside environment are inconsistent with the observed vehicle speeds. Station 1 was near east Helena and had lower observed speeds. The 85th percentile speeds at the other three count locations varied from 49 to 53 MPH. The 10 MPH pace speeds (the 10 MPH range in which the most road users are driving) were 30 – 40 MPH for Station 1 and 40 – 50 MPH at all other stations. The lower speeds at Station 1 are most likely due to a combination of the lower speed limits in that area and the proximity to East Helena. In general it is desirable to have the majority of traffic on a roadway traveling within or around the 10 MPH pace. This decreases the variability in vehicle speeds and decreases vehicle conflicts.

The traffic data for Wylie Drive suggests that the speed limit should be lowered. The 85th percentile speeds on the road ranged from 2-6 MPH below the posted speed limit of 55 MPH. Considering the high density of public and private driveway approaches and the higher than average vehicle crash rate along the section, a lower posted speed limit is justified.

Recommendations

It is recommended that the posted speed limit on Wylie Drive be lowered from 55 MPH to 45 MPH. This change would bring the road in line with the speed limits on other similar roads within the County and would be within the 10 MPH pace speeds observed on the road. The speed data supports dropping the existing 55 MPH speed limit as most drivers are currently traveling under the posted speed limit. The high number of driveway approaches and the relatively high crash rate along the section also justify the lower speed limit. The existing stepped down speed limits into East Helena (45 MPH to 25 MPH) should remain. If you have any questions about these results please feel free to call me at 406-459-1443

Sincerely,

A handwritten signature in black ink, appearing to read 'Bob Abelin', written in a cursive style.

Bob Abelin, P.E.
Abelin Traffic Services, Inc.

Wylie Drive

Section Number	Length	Start	End	From	To	Speed Limit	Avg. Speed	85% Speed	Pace	% in Pace	Road Width
1	0.2	0.0	0.2	Hwy 12	Gail	25					27.0
2	0.2	0.2	0.4	Gail	45 Speed Limit	35	36.5	42.6	30-40	65%	27.0
3	0.2	0.4	0.5	45 Speed Limit	55 Speed Limit	45					27.0
4	0.2	0.5	0.7	55 Speed Limit	Begin Curves	55					27.0
5	0.8	0.7	1.5	Begin curves	End curves	55					34.4
6	0.4	1.5	1.9	Elkview	Canal	55	42.5	49	40-50	60%	26.0
7	0.3	1.9	2.2	Canal	Guardrail End (CFR)	55					Variable
8	0.8	2.2	3.0	Guardrail End	Howard	55	45.9	52.9	40-50	57%	27.5
9	0.5	3.0	3.5	Howard	Herrin	55					27.5
10	0.5	3.5	4.0	Herrin	York	55	41.3	48.8	40-50	55%	27.5

Section Number	NB Lane	SB Lane	Road Condition	Roadside Environment	Alignment	ROW Width	Total App.	Approach Density	Percent Trucks	ADT Volume
1	12.5	12.8	Good	East – Residential	Curves at U.S. 12	65	5	25.0		4833
2	12.5	12.8	Good	Open Land w/Commercial	Straight	65	1	5.3	7.4%	4833
3	12.5	12.8	Good	Open Land	Straight	65	0	0.0		4833
4	12.5	12.8	Good	Open Land	Straight	65	1	5.0		4833
5	12.0	11.7	Good	Residential/Commercial	Two Curves BB 55	105	8	10.5		4833
6	11.8	11.6	Good	Open Land	Straight	105	10	27.0	7.0%	4321
7	12.0	12.0	Good	Sparse Commercial	Straight	105	8	25.8		4321
8	11.7	12.0	Good	Residential/Commercial	Straight	65	23	27.7	3.4%	2256
9	11.7	12.0	Good	Residential/Commercial	Straight	65	17	33.3		2256
10	11.7	12.0	Good	Residential/Commercial	Straight	80	15	31.3	3.7%	696

Avg. 19.1