October 20, 2025

Mr. Dan Sampson
Town Pump, Inc
600 S Main Street
Butte, MT 59701-2534

Reference: Frenchtown Traffic Analysis & Site Accessibility Study
Project No. 24584.01

Dear Dan:

The purpose of this letter is to provide a traffic analysis and site accessibility study for the Town Pump development located in Frenchtown, MT. The proposed site consists of a convenience store and 16 fueling stations. This letter addresses existing and projected traffic operations, crash data analysis, and an evaluation of two proposed site access approaches located along Frenchtown Frontage Road. The first approach is approximately 950-feet west of Demer Street and the second approach is approximately 300-feet southeast of Demer Street. A buildout year of 2026 will be utilized for the purpose of evaluating future intersection conditions.

Existing Site Conditions

Frenchtown Frontage Road (S-574) is an east-west route classified as a major collector by MDT. It starts in the east at Waldo Road in Wye, Montana and ends in the west at 6 Mile Road in Huson, Montana. For its entire length, Frenchtown Frontage Road has a single thru lane in each direction and a posted speed limit of 50-mph. Demer Street is classified by MDT as a local road and stretches approximately one-quarter mile between Frenchtown Frontage Road and Beckwith Street. Demer Street has a single thru lane in each direction and has no posted speed limit. Belker Lane, along the eastern boundary of the project, is an unpaved 20-foot-wide private road easement that has a paved approach that extends approximately 150-feet north of Frenchtown Frontage Road. The intersection of Frenchtown Frontage Road and Demer Street is currently stop-controlled on the south leg (Demer Street). The intersection of Frenchtown Frontage Road and Belker Lane is currently stop-controlled on the north leg (Belker Lane). Figure 1 on page three depicts the study area.

Existing Traffic Volumes

Existing intersection weekday AM and PM peak hour turning movement counts were collected while school was in session for both intersections on Thursday, January 9, 2025. The AM peak hour was found to be from 7:30 to 8:30 AM and the PM peak hour was found to be from 4:30 to 5:30 PM. Additional counts were collected during the summer at the Frenchtown Frontage Road/Demer Street intersection on Thursday,

July 10, and Saturday, July 12, 2025. The weekday AM peak hour was found to be from 7:15 to 8:15 AM, the PM peak hour was found to be from 5:00 to 6:00 PM, and the Saturday peak hour was found to be from 11:00 to 12:00 PM. All counts were adjusted for seasonal variation using MDT seasonal adjustment factors.

Figure 2 on page 4 and Figure 3 on page 5 show the resulting calculated peak hour turning movement volumes during winter and summer. Detailed traffic count data worksheets are included as an attachment.

Existing capacity calculations were performed using PTV Vistro 2023 software, which is based on the Highway Capacity Manual, 7th Edition (Transportation Research Board, 2022). The capacity results show that all approaches at both intersections currently operate at LOS C or better. Table 1 and 2 below show the results of the Existing Conditions (2025) Winter and Summer capacity calculations, and capacity worksheets are included in Appendix B.

Table 1: Existing Conditions (2025) Winter Capacity Calculations Summary

Intersection	Approach	Existing (2025) Winter					
		AM Peak			PM Peak		
		Avg Delay (s/veh)	LOS	95th % Queue (veh)	Avg Delay (s/veh)	LOS	95th % Queue (veh)
Intersection Control		*One-Way Stop-Control (NB)*					
Frenchtown Frontage Road & Demer Street	NB	21.7	C	3	13.5	B	2
	EB	0.0	A	0	0.0	A	0
	WB	3.8	A	1	4.9	A	1
	Intersection	7.0	A	--	7.2	A	--
Intersection Control		*One-Way Stop-Control (SB)*					
Frenchtown Frontage Road & Belker Lane	SB	10.1	B	1	9.0	A	1
	EB	1.8	A	1	0.5	A	1
	WB	0.0	A	0	0.0	A	0
	Intersection	0.9	A	--	0.9	A	--

Table 2: Existing Conditions (2025) Summer Capacity Calculations Summary

Intersection	Approach	Existing (2025) Summer								
		AM Peak			PM Peak			Weekend Peak		
		Avg Delay (s/veh)	LOS	95th % Queue (veh)	Avg Delay (s/veh)	LOS	95th % Queue (veh)	Avg Delay (s/veh)	LOS	95th % Queue (veh)
Intersection Control		*One-Way Stop-Control (NB)*								
Frenchtown Frontage Road & Demer Street	NB	10.0	B	1	11.3	B	2	10.2	B	1
	EB	0.0	A	0	0.0	A	0	0.0	A	0
	WB	6.4	A	1	5.9	A	1	5.4	A	1
	Intersection	4.3	A	--	6.7	A	--	6.1	A	--

Figure 1: Site Layout

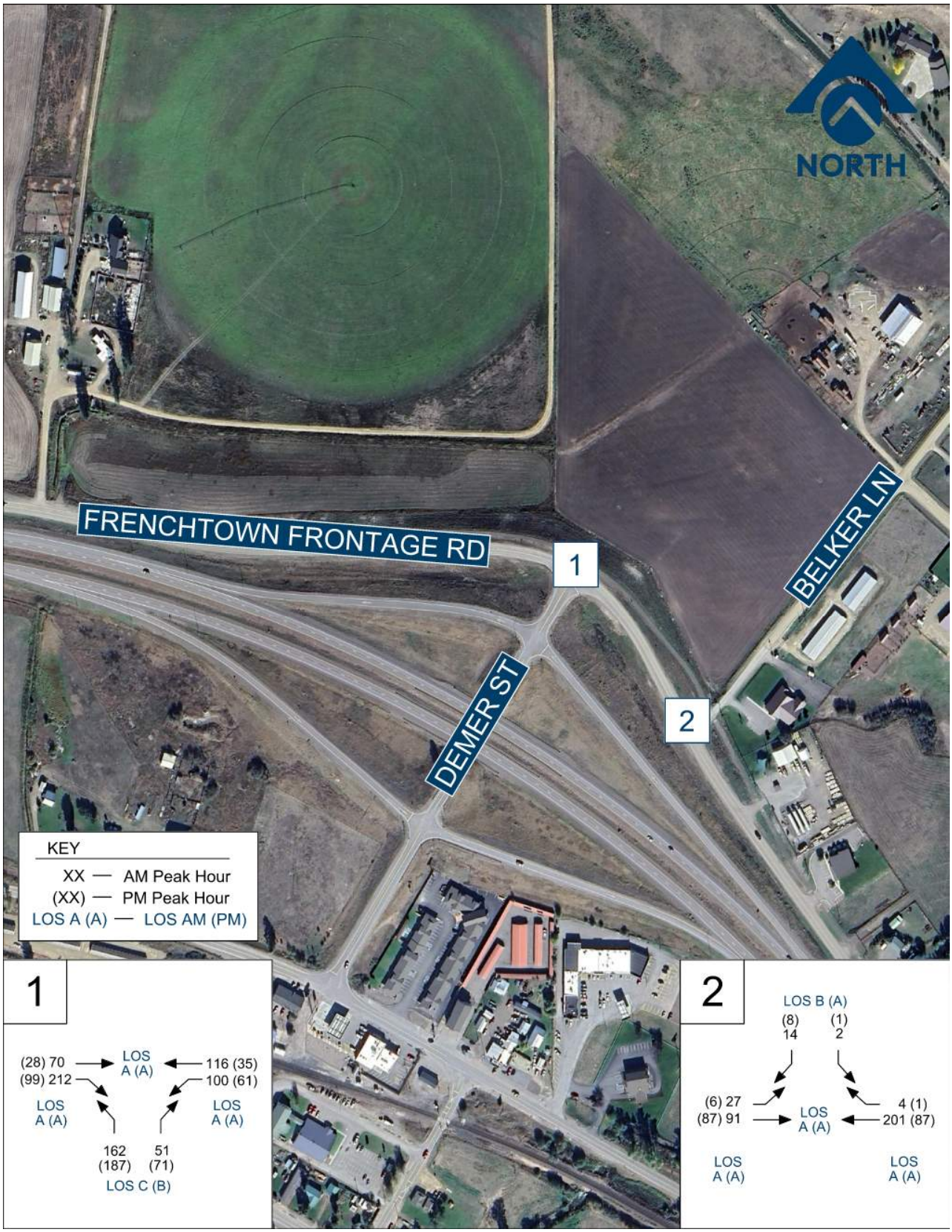


Figure 2: Existing (2025) Winter Vehicle Traffic Count Map

Figure 3: Existing (2025) Summer Vehicle Traffic Count Map

Crash History Analysis

Historical crash data was obtained from the Montana Department of Transportation (MDT) for the five-year period from January 1, 2019, through December 31, 2023, for all study area intersections. Note that no crashes were reported at the Frenchtown Frontage Road/Belker Lane intersection. The crash data was analyzed for the purpose of calculating intersection crash and severity rates and evaluating collision type trends. Tables 3 below and Table 4 on page seven illustrate the results of that analysis.

Intersection crash frequency rates were calculated on the basis of crashes per million vehicles entering (MVE). The MVE metric was estimated based on published historical ADT volumes from the MDT website and 2025 peak hour counts. The crash rate was 1.10 crashes/MVE at the Frenchtown Frontage Road/Demer Street intersection, which had seven reported crashes.

Table 3: Crash History – Frequency and Severity Statistics

Intersection	2019-2023 DEV[1]	Reported Crashes[2]	Crash Type			Crash Data[3]			HSM Predictions[4]	
			PDO	Injury	Fatality	Average Crash Frequency (Crash/Yr)	Crash Rate (Crash/MVE)	Severity Index	Predicted Average Crash Frequency (Crash/Yr)	Predicted Crash Rate (Crash/MVE)
Frenchtown Frontage Rd/Demer St	3481	7	6	1	0	1.40	1.10	1.29	1.32	1.04
Frenchtown Frontage Rd/Belker Ln	1549	0	0	0	0	0.00	0.00	0.00	0.21	0.37

[1] Daily Entering Volume (DEV) estimated from 2025 peak hour counts and 2019-2023 MDT published ADTs
[2] Crashes reported from January 1, 2019 to December 31, 2023
[3] Crash rates expressed as crashes per million vehicles entering (MVE)
[4] Rates calculated using Highway Safety Manual (HSM) 1st Edition predictive methodology

As a means of evaluating the relative significance of the calculated historical crash rates, an expected rate was also calculated using the predictive crash rate formulas in the American Association of State Highway and Transportation Officials (AASHTO) Highway Safety Manual (HSM). The process involves calculating the number of crashes predicted in a year based on traffic demand (AADTs) and various physical and traffic environment-based conditions, such as lane configurations and traffic control. The calculation results in a crashes-per-year prediction. A frequency rate was then back calculated on the basis of MVE for the sake of comparison with the actual historical crash rates. The results of the calculations for this study showed that the historical crash rate was approximately six percent higher than would be predicted at the Frenchtown Frontage Road/Demer Street intersection. The HSM rate predictions and five-year crash totals for each intersection are summarized in Table 3 above.

Severity indices were also calculated for all study area intersections. A severity index gives an indication of relative crash severity for a location based on the number of fatal, injury, and property damage only (PDO) crashes. The severity index was 1.29 at the Frenchtown Frontage Road/Demer Street intersection due to one crash resulting in a suspected minor injury. Severity index calculations are also shown in Table 2.

Collision type was evaluated for the purpose of identifying any significant trends in the crash data. Table 4 below presents the results of that analysis. Right-angle crashes were the most commonly reported collision type, with one left-turn/opposite-direction (LT/OD) and one fixed object crash also reported.

Table 4: Crash History – Collision Type

	Collision Type			
	Right Angle	**LT, OD**	**Fixed Object**	**Total**
Frenchtown Frontage Rd/Demer St	5	1	1	7
Frenchtown Frontage Rd/Belker Ln				0

Right-angle crashes typically occur at unsignalized intersections when drivers stop at a stop sign but then proceed when it is unsafe to do so. Often these crashes are caused by sight distance issues, drivers incorrectly detecting speeds of approaching vehicles, and/or high speeds on the main roadway. The Frenchtown Frontage Road/Demer Street intersection appears to have adequate sight distance, although the curved major approaches may make it difficult to judge gaps from the minor approach. The speed limit on Frenchtown Frontage Road is also high at 50-mph.

Left-turn/opposite-direction (LT/OD) crashes typically occur at unsignalized intersections when a driver performs a left turn while misjudging an appropriate gap in oncoming traffic. It is possible that the curved major approaches may also be an influencing factor in LT/OD crashes.

Fixed object collisions often occur due to alcohol, excessive speeds, inattention, or poor visibility where objects are too close to the roadway. The fixed object crash occurred in the dark on dry roads and involved a vehicle leaving the roadway and striking a ditch or embankment.

In total, three of the seven reported crashes at the Frenchtown Frontage Road/Demer Street intersection occurred with wet, snowy, or icy roadway conditions and two crashes occurred at dawn or in the dark. One crash was reported as a hit-and-run.

Additional crash data was obtained from MDT at the Frenchtown Frontage Road/Demer Street intersection for 2024. It was provided that two crashes were reported at this intersection on the same day in February of 2024, both resulting in property damage only and occurring with ice or frost on the roadway. One crash was a fixed object collision where a vehicle traveling eastbound ran off the roadway and struck a fence before leaving the scene. The other reported crash was a rear-end collision involving two westbound vehicles. No other crashes were reported at this intersection in 2024.

It is important to note that all of the above evaluations of crash causes are speculative, and more detailed information about individual crashes would be needed to determine exact causes for each collision and identify whether any specific trends are present.

Trip Generation & Distribution

The *Trip Generation Manual, 11th Edition*, published by the Institute of Transportation Engineers (ITE), was utilized to estimate trips generated by the proposed 21 vehicle fueling positions and 2,200 square foot casino at the Frenchtown Town Pump site. The rates for Convenience Store/Gas Station (Land Use 945) were used. Table 5 below illustrates the results of the trip generation calculations for the site.

Table 5: Trip Generation Summary

Land Use	Independent Variable		Average Weekday			AM Peak Hour			PM Peak Hour			Saturday Peak Hour		
	Intensity	Units	total	enter	exit	total	enter	exit	total	enter	exit	total	enter	exit
Frenchtown Town Pump	21	Vehicle Fueling Positions	7261	3631	3630	664	332	332	565	283	282	625	306	319
Pass-By Trips** (Avg. Rate = 75%)			5446	2723	2723	498	249	249	424	212	212	469	230	239
Casino	2.2	1000 Sq. Ft.	854	427	427	37	21	16	41	21	20	68	37	31
Total Gross Trips			**8115**	**4058**	**4057**	**701**	**353**	**348**	**606**	**304**	**302**	**693**	**343**	**350**
Total Pass-By Trips			**5446**	**2723**	**2723**	**498**	**249**	**249**	**424**	**212**	**212**	**469**	**230**	**239**
Total New External Trips			**2669**	**1335**	**1334**	**203**	**104**	**99**	**182**	**92**	**90**	**224**	**113**	**111**

(1) Convenience Store/Gas Station - Land Use 945* — Units = Vehicle Fueling Positions
Average Weekday: Average Rate = 345.75 (50% entering/50% exiting)
Peak Hour of the Adjacent Street, One Hour between 7 and 9 AM: Average Rate = 31.60 (50% entering/50% exiting)
Peak Hour of the Adjacent Street, One Hour between 4 and 6 PM: Average Rate = 26.90 (50% entering/50% exiting)
Saturday, Peak Hour of Generator Average Rate = 29.77 (49% entering/51% exiting)

(2) Casino - Land Use 473* — Units = 1000 SF GFA
Average Weekday: Average Rate = 388.18 (50% entering/50% exiting)
Peak Hour of the Adjacent Street, One Hour between 7 and 9 AM: Average Rate = 16.88 (56% entering/44% exiting)
Peak Hour of the Adjacent Street, One Hour between 4 and 6 PM: Average Rate = 22.61 (52% entering/48% exiting)
Saturday, Peak Hour of Generator Average Rate = 30.98 (54% entering/46% exiting)

* *Trip Generation, 11th Edition*, Institute of Transportation Engineers, 2021
** *Trip Generation Handbook, 3rd Edition*, Institute of Transportation Engineers, 2017

Full buildout of the Frenchtown Town Pump is projected to generate a total of 8,115 gross average weekday trips with 701 trips (353 entering/348 exiting) generated

during the AM peak hour, 606 trips (304 entering/302 exiting) generated during the PM peak hour, and 693 trips (343 entering/350 exiting) generated during the Saturday Peak Hour.

Trip generation projections provide an estimate of the total number of trips that would be generated by a proposed development. However, to estimate the net number of new trips made by personal vehicles external to the site, adjustments must often be made to account for internal capture trips, pass-by trips, and trips made by alternate modes. Internal capture trips and trips made by alternate modes are not applicable for this study due to the location of the site and nature of the land use.

Pass-by trips are trips that are made as intermediate stops on the way from a point of origin to a primary trip destination. Pass-by trips are attracted from traffic “passing by” on an adjacent street that offers direct access to that site. Pass-by trips are primarily attracted by commercial type land uses such as restaurants, convenience markets, and gas stations, and were therefore calculated for Frenchtown Town Pump.

With reductions made for pass-by trips, Frenchtown Town Pump is projected to generate a total of 2,669 new external weekday trips with 203 external trips (104 entering/99 exiting) generated during the AM peak hour, 182 external trips (92 entering/90 exiting) generated during the PM peak hour, and 224 external trips (113 entering/111 exiting) generated during the Saturday Peak Hour

Trip distributions were calculated based on the Existing Conditions (2025) Winter and Summer volumes. For both volume scenarios, trips were assigned to the project intersections and new accesses on Frenchtown Frontage Road based on this distribution. The trip distribution scheme for the winter and summer scenarios are shown in Figures 4 and 5 on pages 10 and 11, respectively.

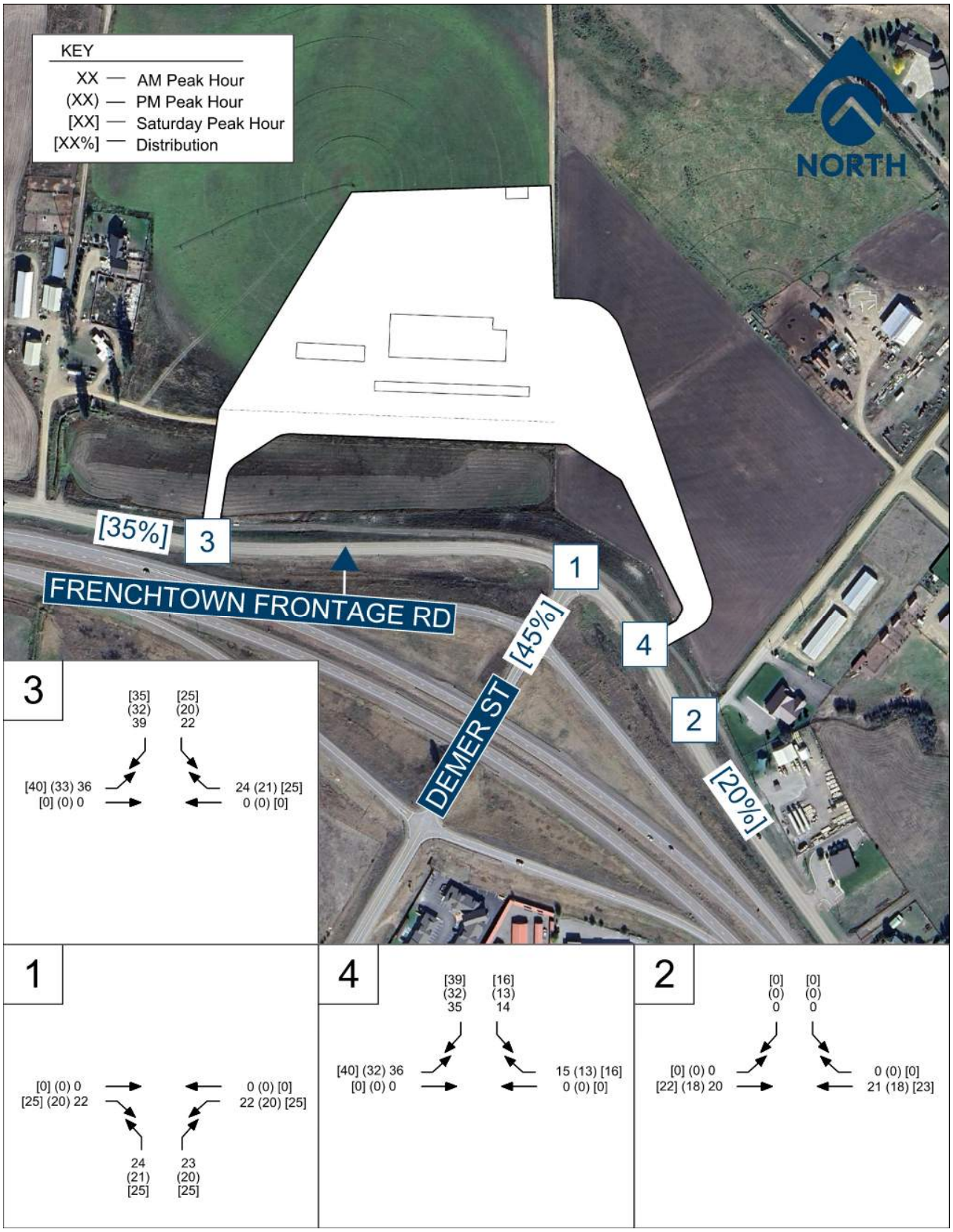


Figure 4: Trip Generation & Distribution

Future Traffic Volumes

For the purposes of calculating future volumes for this analysis, it was assumed that buildout of the Frenchtown Town Pump would be completed by 2026. It was calculated that an average growth rate of 2.0 percent would be appropriate for modeling background growth in the study area. To calculate that growth rate, historical MDT traffic data over the past five years was analyzed at an adjacent I-90 count station. Future (2026) volumes were calculated by applying the growth rate to existing volumes and adding projected trips from the Frenchtown Town Pump.

Table 6: Future (2026) Winter Capacity Calculations Summary

Intersection	Approach	Future (2026) Winter					
		AM Peak			PM Peak		
		Avg Delay (s/veh)	LOS	95th % Queue (veh)	Avg Delay (s/veh)	LOS	95th % Queue (veh)
Intersection Control		*One-Way Stop-Control (NB)*					
Frenchtown Frontage Road & Demer Street	NB	33.7	D	6	16.4	C	3
	EB	0.0	A	0	0.0	A	0
	WB	4.2	A	1	5.4	A	1
	Intersection	11.0	B	--	8.6	A	--
Intersection Control		*One-Way Stop-Control (SB)*					
Frenchtown Frontage Road & Belker Lane	SB	10.4	B	1	9.2	A	1
	EB	1.6	A	1	0.4	A	1
	WB	0.0	A	0	0.0	A	0
	Intersection	0.8	A	--	0.8	A	--
Intersection Control		*One-Way Stop-Control (SB)*					
Frenchtown Frontage Road & West Site Access	SB	12.5	B	1	10.9	B	1
	EB	0.9	A	1	1.6	A	1
	WB	0.0	A	0	0.0	A	0
	Intersection	1.5	A	--	1.8	A	--
Intersection Control		*One-Way Stop-Control (SB)*					
Frenchtown Frontage Road & East Site Access	SB	10.8	B	1	9.7	A	1
	EB	1.2	A	1	1.3	A	1
	WB	0.0	A	0	0.0	A	0
	Intersection	1.5	A	--	1.9	A	--

Intersection capacity calculations were performed for the Future (2026) Winter scenario based on the AM and PM peak hour traffic volume projections. These projections are presented in Figure 6 on page 13. Peak hour factors (PHFs) for the design year were assumed to not change from the Existing (2025) Winter scenario, because of the short buildout timeline of approximately one year. Table 6 above shows the results of the Future (2026) Winter capacity calculations.

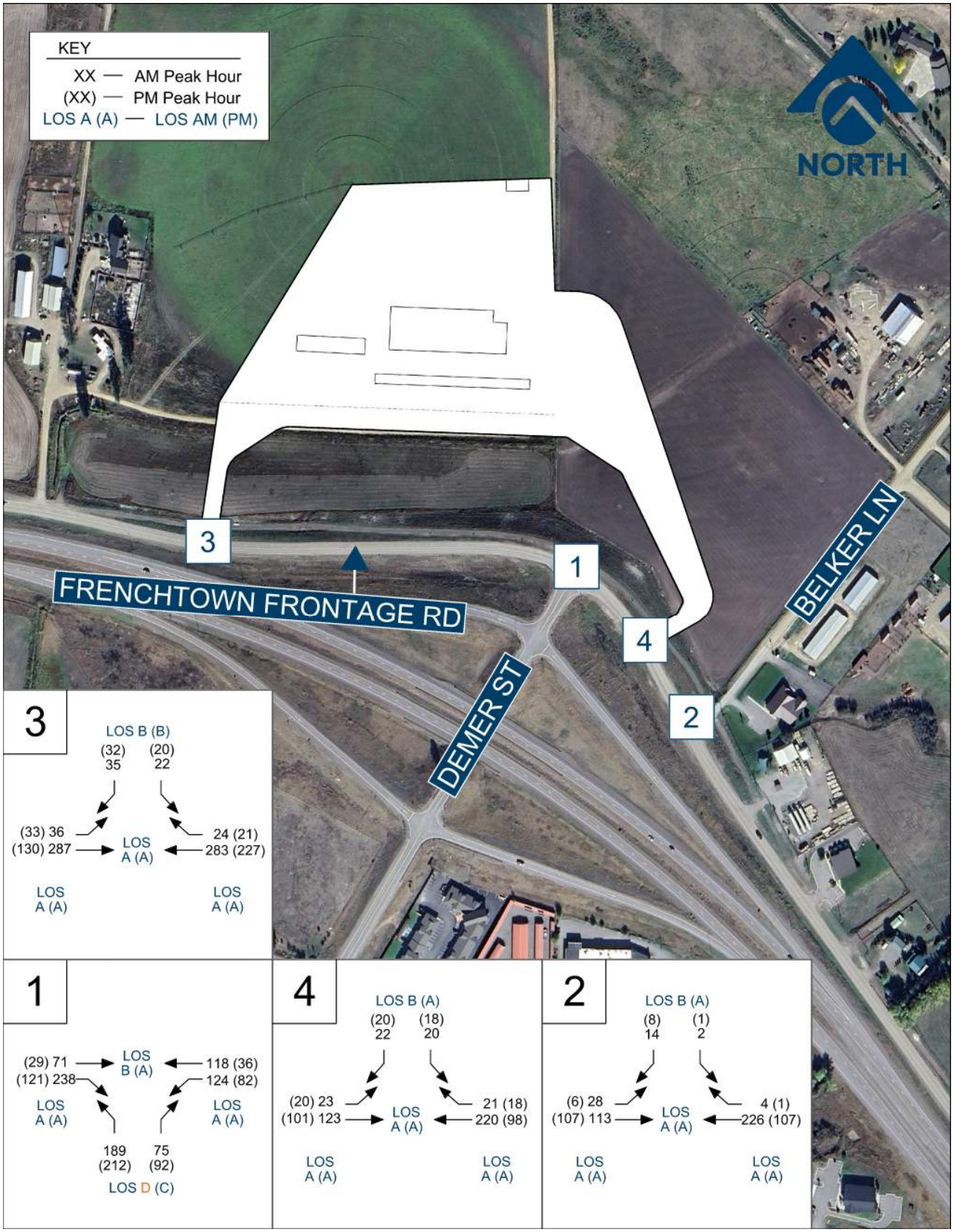


Figure 5: Future (2026) Winter Vehicle Traffic Count Map

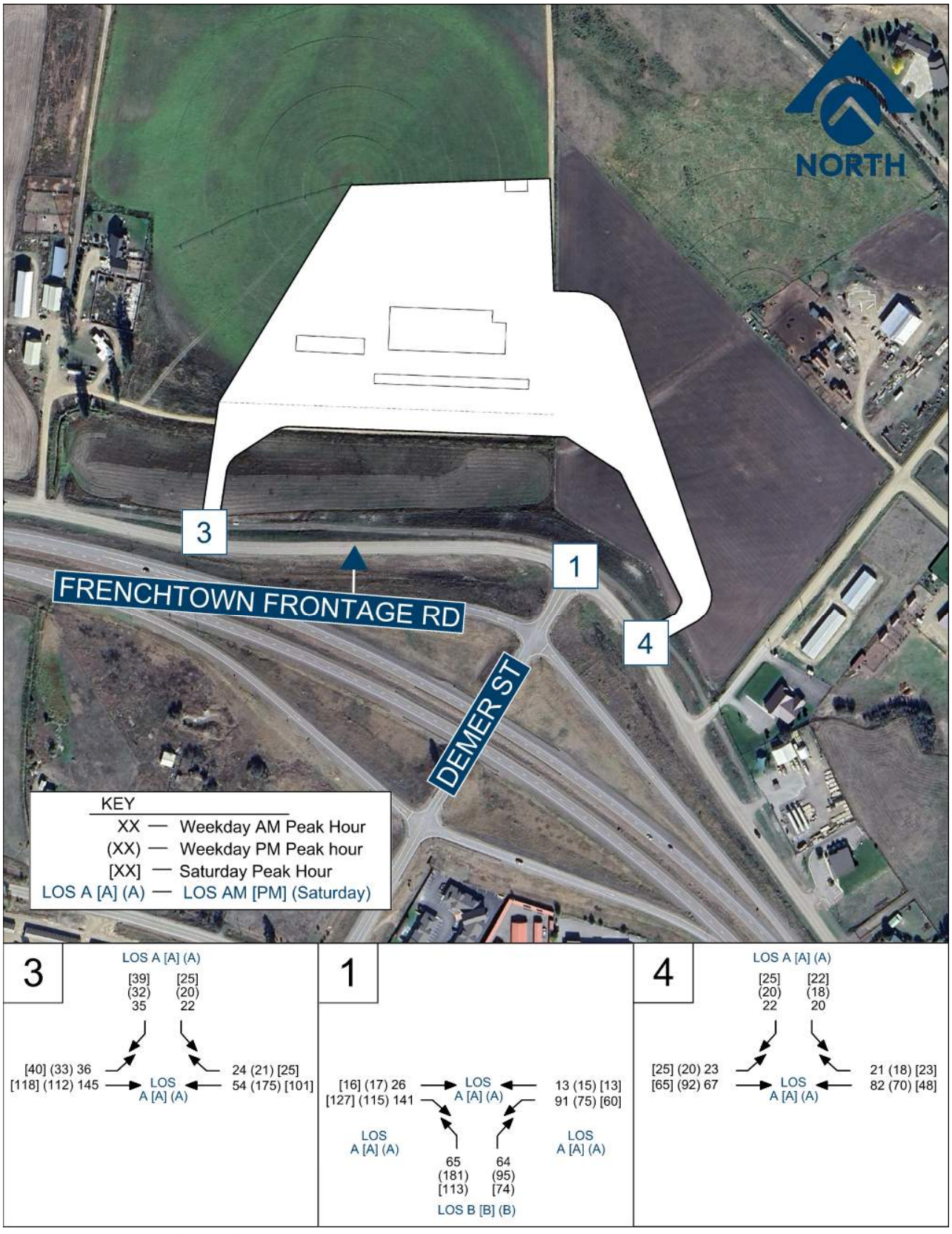


Figure 6: Future (2026) Summer Vehicle Traffic Count Map

Intersection capacity calculations were performed for the Future (2026) Summer scenario based on the AM, PM, and Saturday peak hour traffic volume projections. These projections are presented in Figure 7 on page 14. Peak hour factors (PHFs) for the design year were assumed to not change from the Existing (2025) Summer scenario, because of the short buildout timeline of approximately one year. Table 7 below shows the results of the Future (2026) capacity calculations.

Table 7: Future (2026) Summer Capacity Calculations Summary

Intersection	Approach	Future (2026) Summer								
		AM Peak			PM Peak			Saturday Peak		
		Avg Delay (s/veh)	LOS	95th % Queue (veh)	Avg Delay (s/veh)	LOS	95th % Queue (veh)	Avg Delay (s/veh)	LOS	95th % Queue (veh)
Intersection Control		*One-Way Stop-Control (NB)*								
Frenchtown Frontage Road & Demer Street	NB	10.9	B	1	12.5	B	2	11.3	B	2
	EB	0.0	A	0	0.0	A	0	0.0	A	0
	WB	6.8	A	1	6.4	A	1	6.2	A	1
	Intersection	5.2	A	--	7.4	A	--	7.1	A	--
Intersection Control		*One-Way Stop-Control (SB)*								
Frenchtown Frontage Road & West Site Access	SB	9.6	A	1	10.4	B	1	10.0	A	1
	EB	1.5	A	1	1.8	A	1	1.9	A	1
	WB	0.0	A	0	0.0	A	0	0.0	A	0
	Intersection	2.6	A	--	2.0	A	--	2.7	A	--
Intersection Control		*One-Way Stop-Control (SB)*								
Frenchtown Frontage Road & East Site Access	SB	9.5	A	1	9.4	A	1	9.3	A	1
	EB	1.9	A	1	1.3	A	1	2.0	A	1
	WB	0.0	A	0	0.0	A	0	0.0	A	0
	Intersection	2.4	A	--	2.2	A	--	3.0	A	--

Mitigation Analysis

A variety of potential mitigation alternatives were evaluated to address existing concerns and/or projected impacts for study area streets and intersections. The traffic counts completed while Winter was in session rather than summer due to volume and delay values being significantly larger. The following sections provide details on that analysis.

Auxiliary right- and left-turn lane warrants were evaluated based on the methodology outlined by the MDT Traffic Engineering Manual (November 2007) for the Existing Conditions (2025) Winter and Future (2026) Winter analysis scenarios. It was found that both an eastbound right-turn lane and a westbound left-turn lane are warranted at the Frenchtown Frontage Road/Demer Street intersection with current AM peak hour volumes. An eastbound left-turn lane is projected to be warranted at the

Frenchtown Frontage Road/West Site Access intersection in the Future (2026) Winter scenario. Turn lane warrant worksheets can be found in Attachment D.

A multi-way stop control warrant analysis was performed for the Frenchtown Frontage Road/Demer Street intersection. Warrant D (8-Hour Volume) is not currently met or projected to be met as only three hours for Existing Conditions (2025) and six hours for Future (2026) met the volume requirements. There were 5 crashes in a 36-month period susceptible to correction by the installation of all-way stop control, so the crash history does meet Warrant A. Sight distance appears to be adequate, so Warrant B is not met. Warrant E addresses other factors influencing the need for multi-way stop-control such as a need to control left-turn conflicts, improve operations at an intersection of two similar streets, or to support pedestrian/bicycle movements. This warrant is considered met because an all-way stop would address left-turn conflicts and improve operational characteristics of two intersecting collector streets. If multi-way stop-control was installed, capacity is projected to improve to LOS C or better on all approaches in both scenarios.

Traffic signal warrants were evaluated at the Frontage Road/Demer Street intersection using criteria outlined in the MUTCD. The MUTCD presents several warrants that can be considered based on traffic volumes, Winter crossing, crash history, and others. It was found that the Four-Hour Vehicular Volume and Peak Hour warrants are projected to be met at this intersection in 2026. Traffic signal warrant worksheets can be found in Appendix D.

Future (2026) Winter intersection capacity calculations were evaluated with various improvements for the Frenchtown Frontage Road/Demer Street intersection. Improved capacity calculations for the Future (2026) Winter scenario can be found in Table 8 on the following page and the calculation worksheets are in Appendix E.

Frenchtown Frontage Road/Demer Street: The addition of separate northbound left- and right-turn lanes is projected to increase capacity to LOS C or better on all approaches during both peak hours. The benefit of separated northbound turn lanes may already be realized due to the width and curvature of the existing approach. Installation of the warranted eastbound right-turn lane and westbound left-turn lane is also projected to increase capacity to LOS C or better on all approaches during both peak hours. If the intersection was two-way stop controlled on the east and west legs, all approaches are projected to operate at LOS C or better during both peak hours. When modeled with all-way stop control, all approaches are projected to operate at

LOS B or better during both peak hours. A signal is projected to operate at LOS C or better on all approaches with increased queuing compared to other alternatives.

Table 8: Future (2026) School with Improvements Capacity Calculations Summary

Intersection	Approach	Future (2026) Winter with Improvements					
		AM Peak			PM Peak		
		Avg Delay (s/veh)	LOS	95th % Queue (veh)	Avg Delay (s/veh)	LOS	95th % Queue (veh)
Intersection Control		*One-Way Stop Control (NB), NB LT- & RT-Turn Lanes*					
Frenchtown Frontage Road & Demer Street	NB	24.8	C	4	13.8	B	2
	EB	0.0	A	0	0.0	A	0
	WB	4.3	A	1	5.5	A	1
	Intersection	8.5	A	--	7.6	A	--
Intersection Control		*One-Way Stop Control (NB), EB RT- & WB LT-Turn Lanes*					
Frenchtown Frontage Road & Demer Street	NB	22.3	C	4	14.3	B	3
	EB	0.0	A	0	0.0	A	0
	WB	4.5	A	1	5.5	A	1
	Intersection	7.9	A	--	7.8	A	--
Intersection Control		*Two-Way Stop Control (EB/WB)*					
Frenchtown Frontage Road & Demer Street	NB	0.0	A	0	0.0	A	0
	EB	1.9	A	1	1.6	A	1
	WB	22.0	C	5	13.8	B	2
	Intersection	8.8	A	--	4.2	A	--
Intersection Control		*All-Way Stop Control*					
Frenchtown Frontage Road & Demer Street	NB	12.6	B	3	10.9	B	2
	EB	11.8	B	3	8.9	A	1
	WB	14.1	B	4	9.8	A	2
	Intersection	12.9	B	--	10.0	B	--
Intersection Control		*Signalized*					
Frenchtown Frontage Road & Demer Street	NB	21.0	C	4	12.2	B	3
	EB	10.6	B	3	15.3	B	2
	WB	20.3	C	5	21.4	C	3
	Intersection	17.1	B	--	15.6	B	--

Conclusions and Recommendations

The preceding analysis has shown that the Frenchtown Town Pump will generate a moderate volume of new traffic demand for study area streets and intersections. Upon completion of the Frenchtown Town Pump, it is estimated that approximately 2,669 net new external trips could be generated daily.

The construction of the Frenchtown Town Pump is not projected to have a significant impact on safety or operations at existing study area intersections. Both proposed

site access intersections are projected to operate at LOS B or better on all approaches. All study area intersections are projected to operate at LOS C or better during both the AM and PM peak hours, except for the northbound approach at the Frenchtown Frontage Road/Demer Street intersection, which operates at LOS D the AM peak of the Future (2026) Winter scenario. 95th percentile queuing is projected to be minimal at all intersection approaches.

Improvements recommended based on existing conditions within the study area:

- Installation of an eastbound right-turn lane and westbound left-turn lane at the Frenchtown Frontage Road/Demer Street intersection based on Existing (2025) Winter warrants.
- Reduced speed limits along Frenchtown Frontage Road can improve safety by allowing for smaller stopping distances and lessened crash severities. The existing speed limit could be identified as a key factor for 6 of the 9 crashes at the Frenchtown Frontage Road/Demer street intersection due to drivers incorrectly assessing time gaps.

Improvements recommended upon construction of the Frenchtown Town Pump:

- Any of the improvement alternatives at the Frenchtown Frontage Road/Demer Street intersection would improve the substandard approach LOS projected in the Future (2026) Winter scenario.
- An eastbound left-turn lane should be installed at the Frenchtown Frontage Road/West Site Access intersection based on Future (2026) Winter warrants. This turn lane would not be warranted if the speed limit on Frenchtown Frontage Road was decreased to 45-mph or lower.
- The existing stop control configuration could be maintained at the Frenchtown Frontage Road/Demer Street intersection, but separate northbound lanes could be installed. This would help reduce northbound queue lengths but only slightly decrease the northbound AM Peak hour, Wintertime delay value under the LOS D threshold.
- Two-way stop control could be implemented on the east and west legs of the Frenchtown Frontage Road/Demer Street intersection. This would completely eliminate northbound queues and reduce operating speeds along Frenchtown Frontage Road without altering speed limits.
- A multi-way stop control could be installed at the Frenchtown Frontage Road/Demer Street intersection to balance approach delay, reduce susceptible crashes, and decrease northbound queues backing up to the interstate ramps. A multi-way stop control would have the same benefit as decreased operating

speeds described for the two-way stop control alternative. A multi-way stop control is the only alternative that achieves LOS B or better on all approaches.

- Traffic signal warrants should be monitored at the Frenchtown Frontage Road/Demer Street intersection as traffic volumes increase and capacity deteriorates, with consideration given to installation of a traffic signal at such time that warrants are met.

Please feel free to contact me at 406.922.4306 or jstaszcuk@sanbell.com if you have any questions or would like to discuss this further.

Sincerely,

Joey Staszcuk, PE, PTOE, RSP1
Associate Principal | Community Transportation Studio Manager

KRK/SG
Enc.

Appendix A. Traffic Volume Data
Appendix B. Capacity Calculations – Existing Conditions (2025)
Appendix C. Capacity Calculations – Future (2026)
Appendix D. Warrants
Appendix E. Capacity Calculations – Future (2026) Improved

P:24584_Frenchtown_Town_Pump_Letter_10.20.2025

TRAFFIC COUNT DATA

APPENDIX A

Intelligent Infrastructure.
Enduring Communities.

sanbell

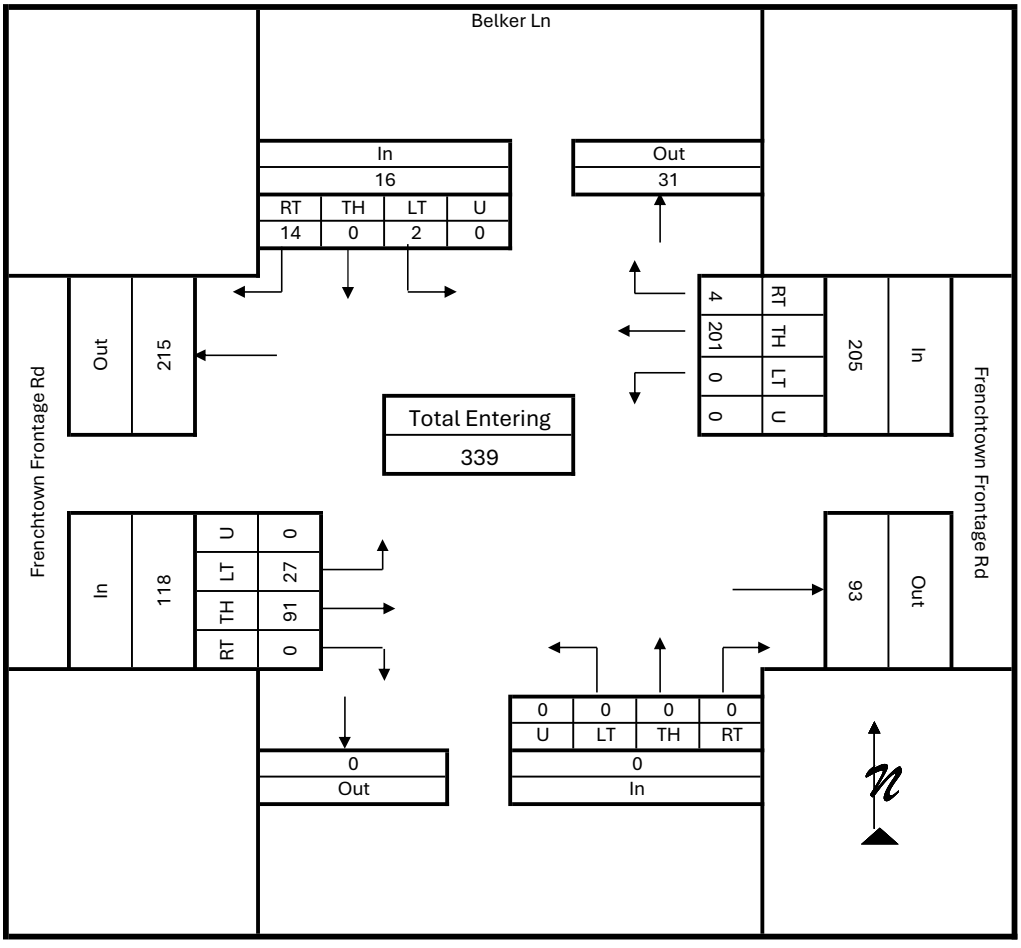
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	Jeremy Herring	Intersection:	Frenchtown Frontage Road & Belker Lane
Agency/Company:	Sanbell		
Date Performed:	Thursday, January 9, 2025	Jurisdiction:	Missoula County/MDT
Count Time Period:	AM Peak Hour (7:30 - 8:30 AM)		
Project Number:	24584.01	Project Description:	Frenchtown Town Pump
North/South Street:	Belker Ln	East/West Street:	Frenchtown Frontage Rd

Vehicle Volumes and Adjustments

	Belker Ln Southbound					Northbound					Frenchtown Frontage Rd Eastbound					Frenchtown Frontage Rd Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		0.98	0.98	0.98	0.98		0.98	0.98	0.98	0.98		
7:30 AM	3	0	1	0	4	0	0	0	0	0	0	14	2	0	16	0	44	0	0	44	64
7:45 AM	4	0	0	0	4	0	0	0	0	0	0	22	8	0	30	2	71	0	0	73	107
8:00 AM	5	0	1	0	6	0	0	0	0	0	0	32	7	0	39	1	60	0	0	61	106
8:15 AM	2	0	0	0	2	0	0	0	0	0	0	23	10	0	33	1	26	0	0	27	62
Grand Total	14	0	2	0	16	0	0	0	0	0	0	91	27	0	118	4	201	0	0	205	339
Medium Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.8	0.0	3.5	0.0	0.0	3.4	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.8	0.0	3.5	0.0	0.0	3.4	
Total %	4.1	0.0	0.6	0.0	4.7	0.0	0.0	0.0	0.0	0.0	0.0	26.8	8.0	0.0	34.8	1.2	59.3	0.0	0.0	60.5	100.0
PHF	1.00	1.00	1.00			1.00	1.00	1.00			1.00	1.00	1.00			0.70	0.70	0.70			0.79



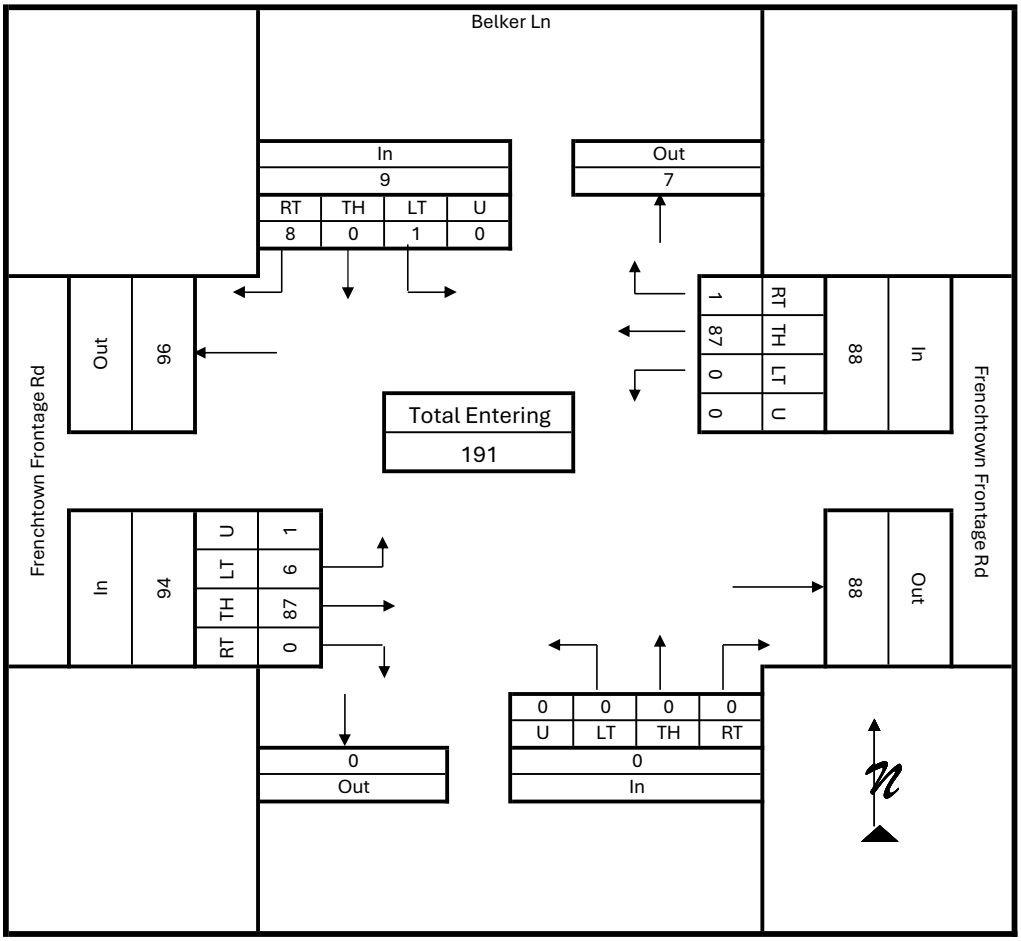
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	Jeremy Herring	Intersection:	Frenchtown Frontage Road & Belker Lane
Agency/Company:	Sanbell		
Date Performed:	Thursday, January 9, 2025	Jurisdiction:	Missoula County/MDT
Count Time Period:	PM Peak Hour (4:30 - 5:30 PM)		
Project Number:	24584.01	Project Description:	Frenchtown Town Pump
North/South Street:	Belker Ln	East/West Street:	Frenchtown Frontage Rd

Vehicle Volumes and Adjustments

	Belker Ln Southbound					Northbound					Frenchtown Frontage Rd Eastbound					Frenchtown Frontage Rd Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		0.98	0.98	0.98	0.98		0.98	0.98	0.98	0.98		
4:30 PM	2	0	0	0	2	0	0	0	0	0	0	18	3	0	21	0	22	0	0	22	45
4:45 PM	1	0	0	0	1	0	0	0	0	0	0	21	1	1	23	0	20	0	0	20	44
5:00 PM	1	0	0	0	1	0	0	0	0	0	0	19	2	0	21	1	15	0	0	16	38
5:15 PM	4	0	1	0	5	0	0	0	0	0	0	29	0	0	29	0	30	0	0	30	64
Grand Total	8	0	1	0	9	0	0	0	0	0	0	87	6	1	94	1	87	0	0	88	191
Medium Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	1.1	0.0	1.1	0.0	0.0	1.1	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	1.1	0.0	1.1	0.0	0.0	1.1	
Total %	4.2	0.0	0.5	0.0	4.7	0.0	0.0	0.0	0.0	0.0	0.0	45.5	3.1	0.5	49.2	0.5	45.5	0.0	0.0	46.1	100.0
PHF	0.45	0.45	0.45			1.00	1.00	1.00			0.79	0.79	0.79			0.73	0.73	0.73			0.73



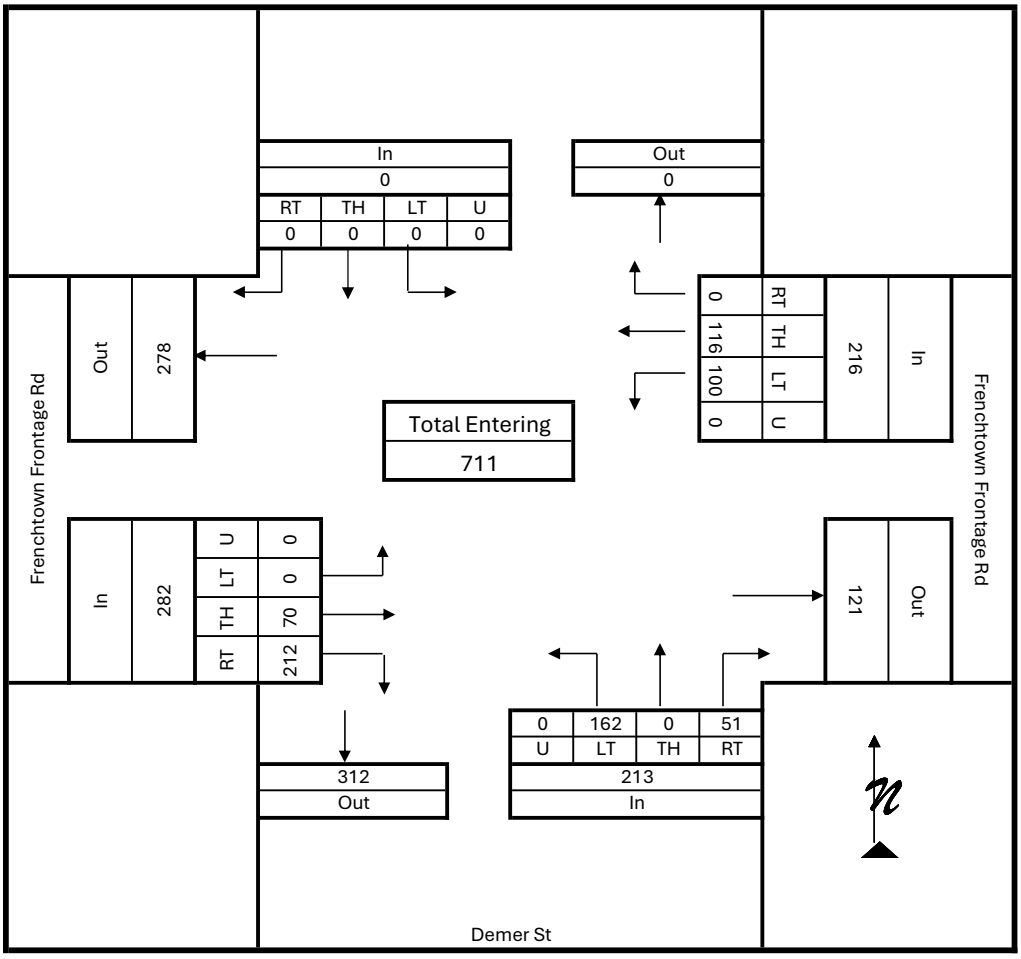
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	Jeremy Herring	Intersection:	Frenchtown Frontage Road & Demer Street
Agency/Company:	Sanbell		
Date Performed:	Thursday, January 9, 2025	Jurisdiction:	Missoula County/MDT
Count Time Period:	AM Peak Hour (7:30 - 8:30 AM)		
Project Number:	24584.01	Project Description:	Frenchtown Town Pump
North/South Street:	Demer St	East/West Street:	Frenchtown Frontage Rd

Vehicle Volumes and Adjustments

	Southbound					Demer St Northbound					Frenchtown Frontage Rd Eastbound					Frenchtown Frontage Rd Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		0.98	0.98	0.98	0.98		0.98	0.98	0.98	0.98		
7:30 AM	0	0	0	0	0	4	0	38	0	42	52	13	0	0	65	0	14	31	0	45	152
7:45 AM	0	0	0	0	0	12	0	43	0	55	62	17	0	0	79	0	36	41	0	77	211
8:00 AM	0	0	0	0	0	21	0	68	0	89	40	18	0	0	58	0	51	14	0	65	212
8:15 AM	0	0	0	0	0	14	0	13	0	27	58	22	0	0	80	0	15	14	0	29	136
Grand Total	0	0	0	0	0	51	0	162	0	213	212	70	0	0	282	0	116	100	0	216	711
Medium Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9	0.0	3.8	4.7	0.0	0.0	0.0	3.5	0.0	0.0	7.0	0.0	3.2	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	
Total Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9	0.0	3.8	5.2	0.0	0.0	0.0	3.9	0.0	0.0	7.0	0.0	3.2	
Total %	0.0	0.0	0.0	0.0	0.0	7.2	0.0	22.8	0.0	30.0	29.8	9.8	0.0	0.0	39.7	0.0	16.3	14.1	0.0	30.4	100.0
PHF	1.00	1.00	1.00			0.97	0.97	0.97			0.89	0.89	0.89			0.70	0.70	0.70			0.84



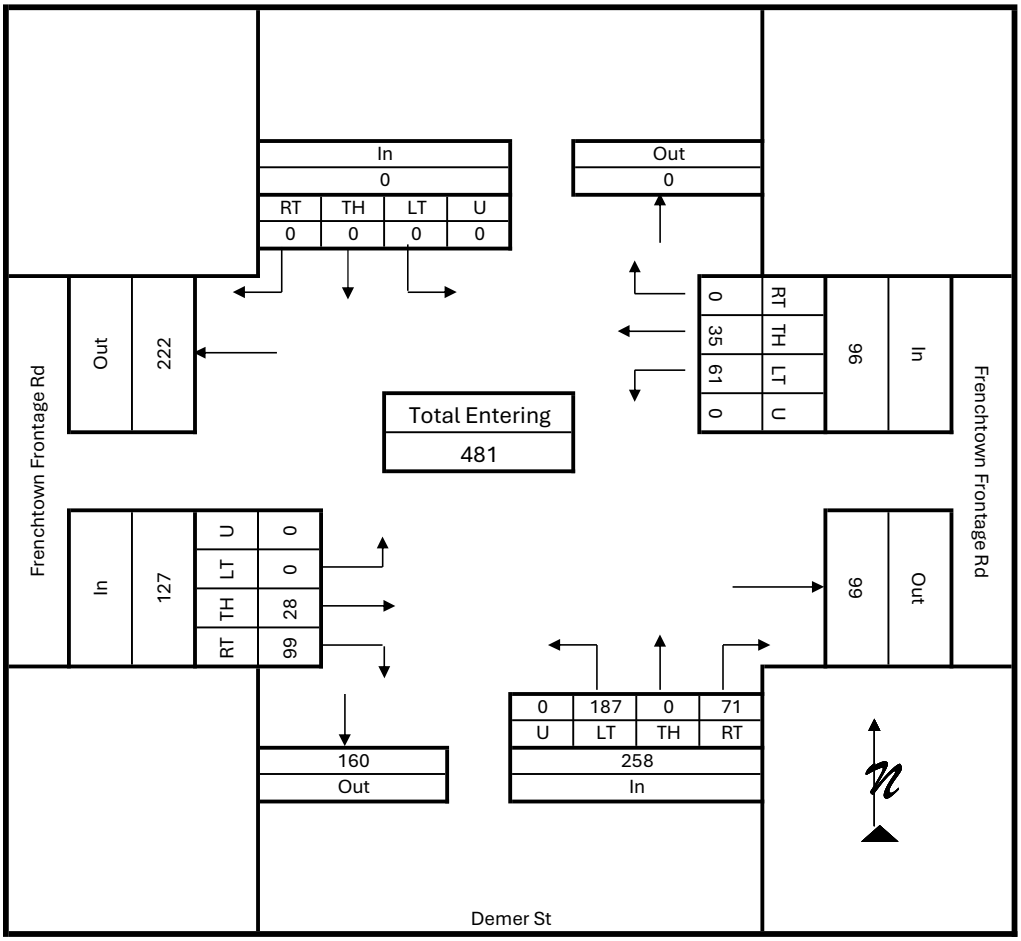
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	Jeremy Herring	Intersection:	Frenchtown Frontage Road & Demer Street
Agency/Company:	Sanbell		
Date Performed:	Thursday, January 9, 2025	Jurisdiction:	Missoula County/MDT
Count Time Period:	PM Peak Hour (4:30 - 5:30 PM)		
Project Number:	24584.01	Project Description:	Frenchtown Town Pump
North/South Street:	Demer St	East/West Street:	Frenchtown Frontage Rd

Vehicle Volumes and Adjustments

	Southbound					Demer St Northbound					Frenchtown Frontage Rd Eastbound					Frenchtown Frontage Rd Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		0.98	0.98	0.98	0.98		0.98	0.98	0.98	0.98		
4:30 PM	0	0	0	0	0	16	0	43	0	59	23	6	0	0	29	0	5	19	0	24	112
4:45 PM	0	0	0	0	0	23	0	45	0	68	20	4	0	0	24	0	8	13	0	21	113
5:00 PM	0	0	0	0	0	14	0	53	0	67	24	6	0	0	30	0	9	7	0	16	113
5:15 PM	0	0	0	0	0	18	0	46	0	64	32	12	0	0	44	0	13	22	0	35	143
Grand Total	0	0	0	0	0	71	0	187	0	258	99	28	0	0	127	0	35	61	0	96	481
Medium Truck %	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0	0.0	0.8	3.0	0.0	0.0	0.0	2.4	0.0	0.0	1.6	0.0	1.0	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Truck %	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0	0.0	0.8	3.0	0.0	0.0	0.0	2.4	0.0	0.0	1.6	0.0	1.0	
Total %	0.0	0.0	0.0	0.0	0.0	14.8	0.0	38.9	0.0	53.6	20.6	5.8	0.0	0.0	26.4	0.0	7.3	12.7	0.0	20.0	100.0
PHF	1.00	1.00	1.00			1.00	1.00	1.00			0.72	0.72	0.72			0.67	0.67	0.67			0.84



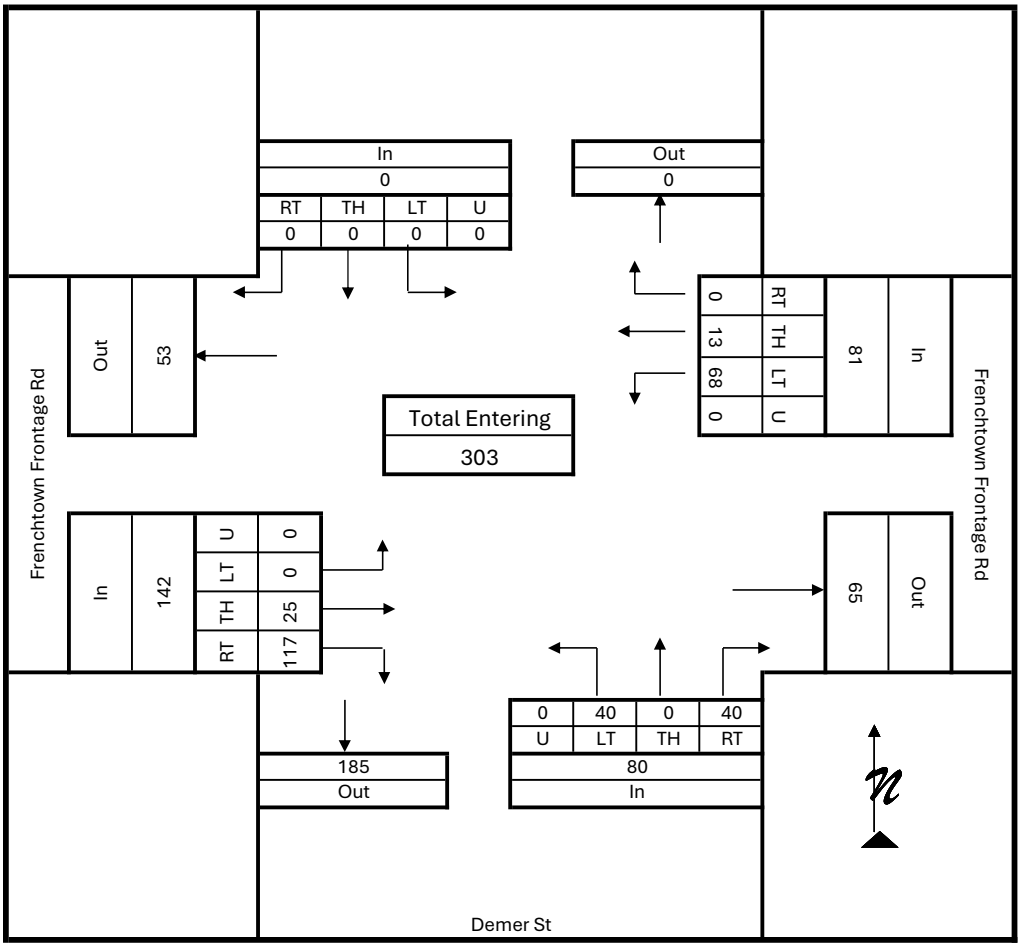
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	Kyler DeWitt	Intersection:	Frenchtown Frontage Road & Demer Street
Agency/Company:	Sanbell		
Date Performed:	Thursday, July 10, 2025	Jurisdiction:	Missoula County/MDT
Count Time Period:	AM Peak Hour (7:15 - 8:15 AM)		
Project Number:	24584.01	Project Description:	Frenchtown Town Pump
North/South Street:	Demer St	East/West Street:	Frenchtown Frontage Rd

Vehicle Volumes and Adjustments

	Southbound					Demer St Northbound					Frenchtown Frontage Rd Eastbound					Frenchtown Frontage Rd Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		0.92	0.92	0.92	0.92		0.92	0.92	0.92	0.92		
7:15 AM	0	0	0	0	0	11	0	8	0	19	31	7	0	0	38	0	4	18	0	22	79
7:30 AM	0	0	0	0	0	8	0	10	0	18	31	6	0	0	37	0	2	23	0	25	80
7:45 AM	0	0	0	0	0	8	0	10	0	18	26	6	0	0	32	0	4	11	0	15	65
8:00 AM	0	0	0	0	0	13	0	12	0	25	29	6	0	0	35	0	3	16	0	19	79
Grand Total	0	0	0	0	0	40	0	40	0	80	117	25	0	0	142	0	13	68	0	81	303
Medium Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.5	0.0	3.8	0.9	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	2.5	0.9	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	
Total Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.5	0.0	6.3	1.7	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	
Total %	0.0	0.0	0.0	0.0	0.0	13.2	0.0	13.2	0.0	26.4	38.6	8.3	0.0	0.0	46.9	0.0	4.3	22.4	0.0	26.7	100.0
PHF	1.00	1.00	1.00			1.00	1.00	1.00			0.92	0.92	0.92			0.91	0.91	0.91			0.94



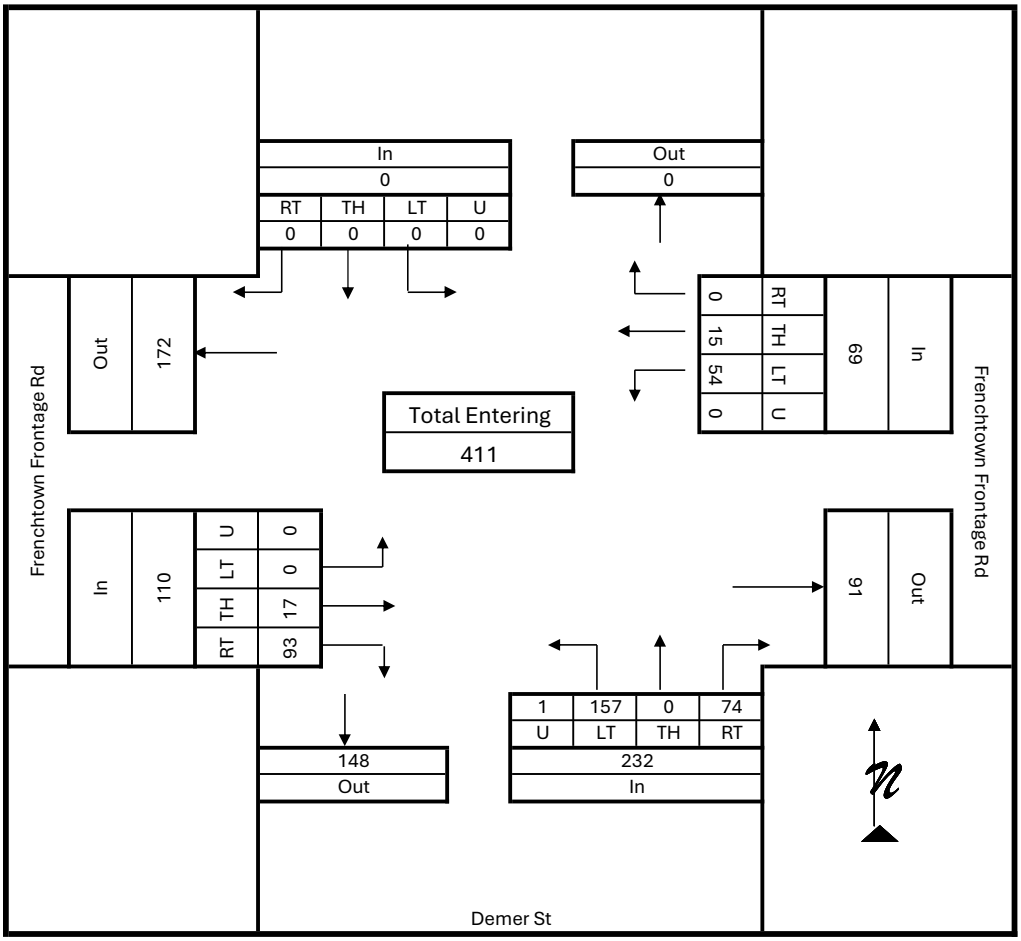
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	Kyler DeWitt	Intersection:	Frenchtown Frontage Road & Demer Street
Agency/Company:	Sanbell		
Date Performed:	Thursday, July 10, 2025	Jurisdiction:	Missoula County/MDT
Count Time Period:	PM Peak Hour (5:00 - 6:00 PM)		
Project Number:	24584.01	Project Description:	Frenchtown Town Pump
North/South Street:	Demer St	East/West Street:	Frenchtown Frontage Rd

Vehicle Volumes and Adjustments

	Southbound					Demer St Northbound					Frenchtown Frontage Rd Eastbound					Frenchtown Frontage Rd Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		0.92	0.92	0.92	0.92		0.92	0.92	0.92	0.92		
5:00 PM	0	0	0	0	0	23	0	39	0	62	11	5	0	0	16	0	2	12	0	14	92
5:15 PM	0	0	0	0	0	24	0	37	0	61	27	2	0	0	29	0	6	10	0	16	106
5:30 PM	0	0	0	0	0	15	0	43	1	59	32	6	0	0	38	0	3	12	0	15	112
5:45 PM	0	0	0	0	0	12	0	38	0	50	23	4	0	0	27	0	4	20	0	24	101
Grand Total	0	0	0	0	0	74	0	157	1	232	93	17	0	0	110	0	15	54	0	69	411
Medium Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.4	1.1	5.9	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.4	1.1	5.9	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	
Total %	0.0	0.0	0.0	0.0	0.0	18.0	0.0	38.2	0.2	56.4	22.6	4.1	0.0	0.0	26.8	0.0	3.6	13.1	0.0	16.8	100.0
PHF	1.00	1.00	1.00			0.98	0.98	0.98			0.72	0.72	0.72			1.00	1.00	1.00			0.92



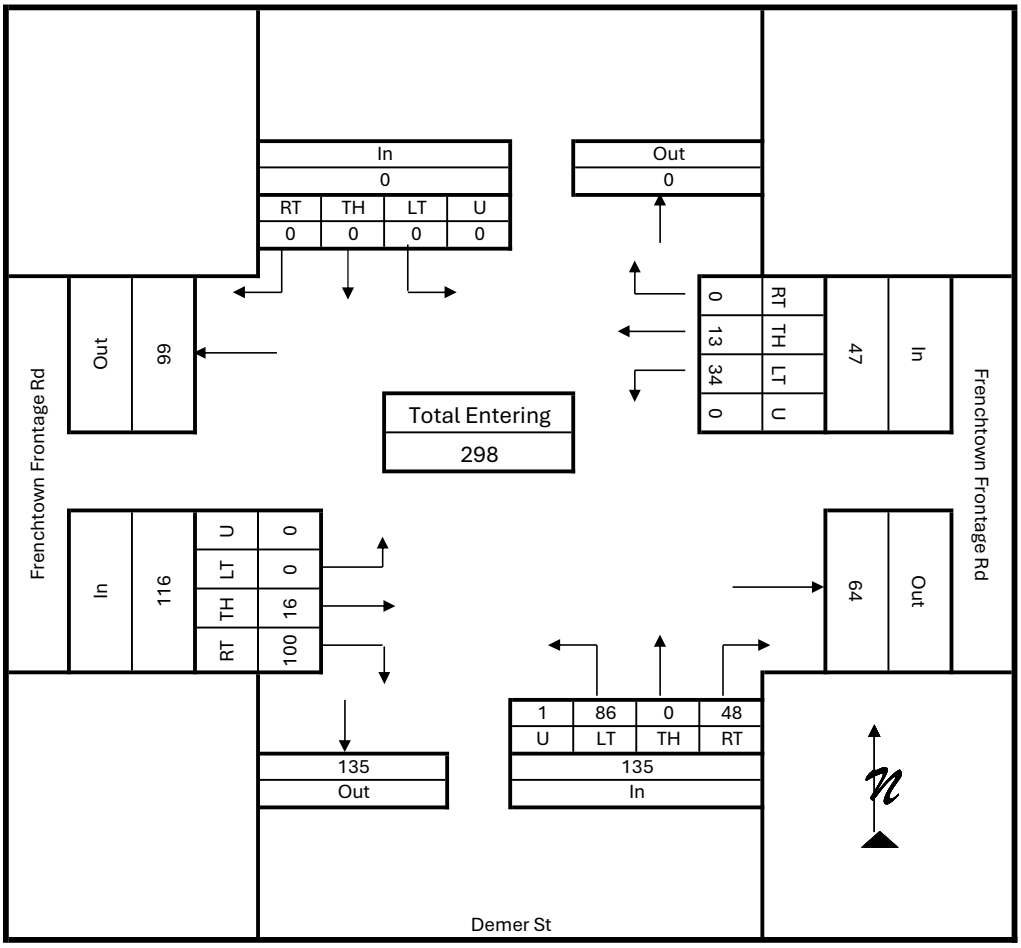
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

General Information

Counted By:	Kyler DeWitt	Intersection:	Frenchtown Frontage Road & Belker Lane
Agency/Company:	Sanbell		
Date Performed:	Saturday, July 12, 2025	Jurisdiction:	Missoula County/MDT
Count Time Period:	Noon Peak Hour (11:00 AM - 12:00 PM)		
Project Number:	24584.01	Project Description:	Frenchtown Town Pump
North/South Street:	Demer St	East/West Street:	Frenchtown Frontage Rd

Vehicle Volumes and Adjustments

	Southbound					Demer St Northbound					Frenchtown Frontage Rd Eastbound					Frenchtown Frontage Rd Westbound					Int.
Start Time	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Right	Thru	Left	U-turn	Total	Total
Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00		
11:00 AM	0	0	0	0	0	9	0	14	1	24	24	5	0	0	29	0	7	9	0	16	69
11:15 AM	0	0	0	0	0	16	0	16	0	32	24	4	0	0	28	0	2	6	0	8	68
11:30 AM	0	0	0	0	0	10	0	23	0	33	28	5	0	0	33	0	2	10	0	12	78
11:45 AM	0	0	0	0	0	13	0	33	0	46	24	2	0	0	26	0	2	9	0	11	83
Grand Total	0	0	0	0	0	48	0	86	1	135	100	16	0	0	116	0	13	34	0	47	298
Medium Truck %	0.0	0.0	0.0	0.0	0.0	4.2	0.0	0.0	0.0	1.5	1.0	0.0	0.0	0.0	0.9	0.0	7.7	0.0	0.0	2.1	
Heavy Truck %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Truck %	0.0	0.0	0.0	0.0	0.0	4.2	0.0	0.0	0.0	1.5	1.0	0.0	0.0	0.0	0.9	0.0	7.7	0.0	0.0	2.1	
Total %	0.0	0.0	0.0	0.0	0.0	16.1	0.0	28.9	0.3	45.3	33.6	5.4	0.0	0.0	38.9	0.0	4.4	11.4	0.0	15.8	100.0
PHF	1.00	1.00	1.00			0.73	0.73	0.73			1.12	1.12	1.12			1.00	1.00	1.00			0.90



CAPACITY CALCULATIONS – EXISTING CONDITIONS (2025)

APPENDIX B

Intelligent Infrastructure.
Enduring Communities.

sanbell

Intersection	Approach	Existing (2025) School					
		AM Peak			PM Peak		
		Avg Delay (s/veh)	LOS	95th % Queue (veh)	Avg Delay (s/veh)	LOS	95th % Queue (veh)
Intersection Control		*One-Way Stop-Control (NB)*					
Frenchtown Frontage Road & Demer Street	NB	21.7	C	3	13.5	B	2
	EB	0.0	A	0	0.0	A	0
	WB	3.8	A	1	4.9	A	1
	Intersection	7.0	A	--	7.2	A	--
Intersection Control		*One-Way Stop-Control (SB)*					
Frenchtown Frontage Road & Belker Lane	SB	10.1	B	1	9.0	A	1
	EB	1.8	A	1	0.5	A	1
	WB	0.0	A	0	0.0	A	0
	Intersection	0.9	A	--	0.9	A	--

Intersection Level Of Service Report
Intersection 1: Frenchtown Frontage Rd & Demer St

Control Type:	Two-way stop	Delay (sec / veh):	23.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.447

Intersection Setup

Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Base Volume Input [veh/h]	162	51	70	212	100	116
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.90	0.00	0.00	5.20	7.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	162	51	70	212	100	116
Peak Hour Factor	0.9700	0.9700	0.8900	0.8900	0.7000	0.7000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	13	20	60	36	41
Total Analysis Volume [veh/h]	167	53	79	238	143	166
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.45	0.06	0.00	0.00	0.12	0.00
d_M, Delay for Movement [s/veh]	22.98	17.59	0.00	0.00	8.13	0.00
Movement LOS	C	C	A	A	A	A
95th-Percentile Queue Length [veh/ln]	2.82	2.82	0.00	0.00	0.26	0.26
95th-Percentile Queue Length [ft/ln]	70.42	70.42	0.00	0.00	6.46	6.46
d_A, Approach Delay [s/veh]	21.68		0.00		3.76	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	7.01					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 2: Frenchtown Frontage Rd & Belker Ln

Control Type:	Two-way stop	Delay (sec / veh):	11.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	Belker Lane		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Belker Lane		Frenchtown Frontage Road		Frenchtown Frontage Road	
Base Volume Input [veh/h]	2	14	27	91	201	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	1.10	3.50	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	14	27	91	201	4
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	0.7000	0.7000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	4	7	23	72	1
Total Analysis Volume [veh/h]	2	14	27	91	287	6
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.02	0.02	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.44	9.89	7.84	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.07	0.07	0.05	0.05	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.69	1.69	1.14	1.14	0.00	0.00
d_A, Approach Delay [s/veh]	10.08		1.79		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.87					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 1: Frenchtown Frontage Rd & Demer St

Control Type:	Two-way stop	Delay (sec / veh):	14.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.304

Intersection Setup

Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Base Volume Input [veh/h]	187	71	28	99	61	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.80	0.00	3.80	1.60	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	187	71	28	99	61	35
Peak Hour Factor	1.0000	1.0000	0.7200	0.7200	0.6700	0.6700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	18	10	34	23	13
Total Analysis Volume [veh/h]	187	71	39	138	91	52
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.30	0.08	0.00	0.00	0.06	0.00
d_M, Delay for Movement [s/veh]	14.07	12.02	0.00	0.00	7.68	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.78	1.78	0.00	0.00	0.16	0.16
95th-Percentile Queue Length [ft/ln]	44.41	44.41	0.00	0.00	3.99	3.99
d_A, Approach Delay [s/veh]	13.50		0.00		4.88	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	7.24					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 2: Frenchtown Frontage Rd & Belker Ln

Control Type:	Two-way stop	Delay (sec / veh):	9.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name	Belker Lane		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Belker Lane		Frenchtown Frontage Road		Frenchtown Frontage Road	
Base Volume Input [veh/h]	1	8	6	87	87	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	1.10	1.10	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	8	6	87	87	1
Peak Hour Factor	0.4500	0.4500	0.7900	0.7900	0.7300	0.7300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	4	2	28	30	0
Total Analysis Volume [veh/h]	2	18	8	110	119	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.02	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.93	8.93	7.44	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.07	0.07	0.01	0.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.68	1.68	0.33	0.33	0.00	0.00
d_A, Approach Delay [s/veh]	9.03		0.50		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.93					
Intersection LOS	A					

Intersection	Approach	Existing (2025) Summer								
		AM Peak			PM Peak			Saturday Peak		
		Avg Delay (s/veh)	LOS	95th % Queue (veh)	Avg Delay (s/veh)	LOS	95th % Queue (veh)	Avg Delay (s/veh)	LOS	95th % Queue (veh)
Intersection Control		*One-Way Stop-Control (NB)*								
Frenchtown Frontage Road & Demer Street	NB	10.0	B	1	11.3	B	2	10.2	B	1
	EB	0.0	A	0	0.0	A	0	0.0	A	0
	WB	6.4	A	1	5.9	A	1	5.4	A	1
	Intersection	4.3	A	--	6.7	A	--	6.1	A	--

Intersection Level Of Service Report
Intersection 1: Frenchtown Frontage Rd & Demer St

Control Type:	Two-way stop	Delay (sec / veh):	10.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.059

Intersection Setup

Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Base Volume Input [veh/h]	40	40	25	117	68	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	12.50	0.00	0.00	1.70	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	40	40	25	117	68	13
Peak Hour Factor	1.0000	1.0000	0.9200	0.9200	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	10	7	32	19	4
Total Analysis Volume [veh/h]	40	40	27	127	75	14
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.04	0.00	0.00	0.05	0.00
d_M, Delay for Movement [s/veh]	10.84	9.20	0.00	0.00	7.60	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.33	0.33	0.00	0.00	0.14	0.14
95th-Percentile Queue Length [ft/ln]	8.34	8.34	0.00	0.00	3.47	3.47
d_A, Approach Delay [s/veh]	10.02		0.00		6.40	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	4.25					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 1: Frenchtown Frontage Rd & Demer St

Control Type:	Two-way stop	Delay (sec / veh):	11.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.213

Intersection Setup

Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Base Volume Input [veh/h]	157	74	17	93	54	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.60	0.00	5.90	1.10	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	157	74	17	93	54	15
Peak Hour Factor	0.9800	0.9800	0.7200	0.7200	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	19	6	32	14	4
Total Analysis Volume [veh/h]	160	76	24	129	54	15
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.21	0.08	0.00	0.00	0.04	0.00
d_M, Delay for Movement [s/veh]	11.61	10.51	0.00	0.00	7.56	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.21	1.21	0.00	0.00	0.09	0.09
95th-Percentile Queue Length [ft/ln]	30.29	30.29	0.00	0.00	2.32	2.32
d_A, Approach Delay [s/veh]	11.25		0.00		5.92	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	6.69					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 1: Frenchtown Frontage Rd & Demer St

Control Type:	Two-way stop	Delay (sec / veh):	10.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.144

Intersection Setup

Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Base Volume Input [veh/h]	86	48	16	100	34	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	4.20	0.00	1.00	0.00	7.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	86	48	16	100	34	13
Peak Hour Factor	0.7300	0.7300	1.0000	1.0000	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	16	4	25	9	4
Total Analysis Volume [veh/h]	118	66	16	100	37	14
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.07	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	10.48	9.72	0.00	0.00	7.47	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.79	0.79	0.00	0.00	0.06	0.06
95th-Percentile Queue Length [ft/ln]	19.79	19.79	0.00	0.00	1.57	1.57
d_A, Approach Delay [s/veh]	10.21		0.00		5.42	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	6.14					
Intersection LOS	B					

CAPACITY CALCULATIONS – FUTURE (2026)

APPENDIX C

Intelligent Infrastructure.
Enduring Communities.

sanbell

Intersection	Approach	Future (2026) Winter					
		AM Peak			PM Peak		
		Avg Delay (s/veh)	LOS	95th % Queue (veh)	Avg Delay (s/veh)	LOS	95th % Queue (veh)
Intersection Control		*One-Way Stop-Control (NB)*					
Frenchtown Frontage Road & Demer Street	NB	33.7	D	6	16.4	C	3
	EB	0.0	A	0	0.0	A	0
	WB	4.2	A	1	5.4	A	1
	Intersection	11.0	B	--	8.6	A	--
Intersection Control		*One-Way Stop-Control (SB)*					
Frenchtown Frontage Road & Belker Lane	SB	10.4	B	1	9.2	A	1
	EB	1.6	A	1	0.4	A	1
	WB	0.0	A	0	0.0	A	0
	Intersection	0.8	A	--	0.8	A	--
Intersection Control		*One-Way Stop-Control (SB)*					
Frenchtown Frontage Road & West Site Access	SB	12.5	B	1	10.9	B	1
	EB	0.9	A	1	1.6	A	1
	WB	0.0	A	0	0.0	A	0
	Intersection	1.5	A	--	1.8	A	--
Intersection Control		*One-Way Stop-Control (SB)*					
Frenchtown Frontage Road & East Site Access	SB	10.8	B	1	9.7	A	1
	EB	1.2	A	1	1.3	A	1
	WB	0.0	A	0	0.0	A	0
	Intersection	1.5	A	--	1.9	A	--

Intersection Level Of Service Report
Intersection 1: Frenchtown Frontage Rd & Demer St

Control Type:	Two-way stop	Delay (sec / veh):	35.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.612

Intersection Setup

Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Base Volume Input [veh/h]	189	75	71	238	124	118
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.90	0.00	0.00	5.20	7.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	189	75	71	238	124	118
Peak Hour Factor	0.9700	0.9700	0.8900	0.8900	0.7000	0.7000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	19	20	67	44	42
Total Analysis Volume [veh/h]	195	77	80	267	177	169
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.61	0.09	0.00	0.00	0.15	0.00
d_M, Delay for Movement [s/veh]	35.67	28.71	0.00	0.00	8.26	0.00
Movement LOS	E	D	A	A	A	A
95th-Percentile Queue Length [veh/ln]	5.23	5.23	0.00	0.00	0.33	0.33
95th-Percentile Queue Length [ft/ln]	130.73	130.73	0.00	0.00	8.17	8.17
d_A, Approach Delay [s/veh]	33.70		0.00		4.22	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	11.01					
Intersection LOS	E					

Intersection Level Of Service Report
Intersection 2: Frenchtown Frontage Rd & Belker Ln

Control Type:	Two-way stop	Delay (sec / veh):	12.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	Belker Lane		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Belker Lane		Frenchtown Frontage Road		Frenchtown Frontage Road	
Base Volume Input [veh/h]	2	14	28	113	226	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	1.10	1.10	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	14	28	113	226	4
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	0.7000	0.7000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	4	7	28	81	1
Total Analysis Volume [veh/h]	2	14	28	113	323	6
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.02	0.02	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.99	10.13	7.93	0.00	0.00	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.07	0.07	0.05	0.05	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.78	1.78	1.18	1.18	0.00	0.00
d_A, Approach Delay [s/veh]	10.36		1.57		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.80					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 9: Frontage Road & West Access

Control Type:	Two-way stop	Delay (sec / veh):	15.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.062

Intersection Setup

Name	West Access		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	West Access		Frenchtown Frontage Road		Frenchtown Frontage Road	
Base Volume Input [veh/h]	22	35	36	287	283	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	35	36	287	283	24
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	10	10	78	77	7
Total Analysis Volume [veh/h]	24	38	39	312	308	26
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.05	0.03	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	15.16	10.83	7.96	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.39	0.39	0.07	0.07	0.00	0.00
95th-Percentile Queue Length [ft/ln]	9.63	9.63	1.66	1.66	0.00	0.00
d_A, Approach Delay [s/veh]	12.50		0.88		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.45					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 10: Frontage Road & East Access

Control Type:	Two-way stop	Delay (sec / veh):	11.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.039

Intersection Setup

Name	East Access		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	East Access		Frenchtown Frontage Road		Frenchtown Frontage Road	
Base Volume Input [veh/h]	20	22	23	123	220	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	22	23	123	220	21
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	6	6	33	60	6
Total Analysis Volume [veh/h]	22	24	25	134	239	23
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.03	0.02	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.71	9.94	7.77	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.22	0.22	0.04	0.04	0.00	0.00
95th-Percentile Queue Length [ft/ln]	5.53	5.53	1.06	1.06	0.00	0.00
d_A, Approach Delay [s/veh]	10.78		1.22		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.48					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 1: Frenchtown Frontage Rd & Demer St

Control Type:	Two-way stop	Delay (sec / veh):	17.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.394

Intersection Setup

Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Base Volume Input [veh/h]	212	92	29	121	82	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.80	0.00	3.00	1.60	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	212	92	29	121	82	36
Peak Hour Factor	1.0000	1.0000	0.7200	0.7200	0.6700	0.6700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	53	23	10	42	31	13
Total Analysis Volume [veh/h]	212	92	40	168	122	54
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.39	0.10	0.00	0.00	0.09	0.00
d_M, Delay for Movement [s/veh]	17.26	14.46	0.00	0.00	7.78	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	2.73	2.73	0.00	0.00	0.22	0.22
95th-Percentile Queue Length [ft/ln]	68.37	68.37	0.00	0.00	5.45	5.45
d_A, Approach Delay [s/veh]	16.42		0.00		5.39	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	8.63					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 2: Frenchtown Frontage Rd & Belker Ln

Control Type:	Two-way stop	Delay (sec / veh):	10.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name	Belker Lane		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Belker Lane		Frenchtown Frontage Road		Frenchtown Frontage Road	
Base Volume Input [veh/h]	1	8	6	107	107	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	1.10	1.10	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	8	6	107	107	1
Peak Hour Factor	0.4500	0.4500	0.7900	0.7900	0.7300	0.7300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	4	2	34	37	0
Total Analysis Volume [veh/h]	2	18	8	135	147	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.02	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.29	9.07	7.50	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.07	0.07	0.01	0.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.75	1.75	0.33	0.33	0.00	0.00
d_A, Approach Delay [s/veh]	9.20		0.42		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.78					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 9: Frontage Road & West Access

Control Type:	Two-way stop	Delay (sec / veh):	12.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.041

Intersection Setup

Name	West Access		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	West Access		Frenchtown Frontage Road		Frenchtown Frontage Road	
Base Volume Input [veh/h]	20	32	33	130	227	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	32	33	130	227	21
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	9	9	35	62	6
Total Analysis Volume [veh/h]	22	35	36	141	247	23
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.04	0.03	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	12.20	10.09	7.80	0.00	0.00	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.28	0.28	0.06	0.06	0.00	0.00
95th-Percentile Queue Length [ft/ln]	6.98	6.98	1.53	1.53	0.00	0.00
d_A, Approach Delay [s/veh]	10.90		1.59		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.79					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 10: Frontage Road & East Access

Control Type:	Two-way stop	Delay (sec / veh):	10.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.028

Intersection Setup

Name	East Access		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	East Access		Frenchtown Frontage Road		Frenchtown Frontage Road	
Base Volume Input [veh/h]	18	20	20	101	98	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	20	20	101	98	18
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	5	5	27	27	5
Total Analysis Volume [veh/h]	20	22	22	110	107	20
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.02	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.30	9.07	7.47	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.16	0.16	0.04	0.04	0.00	0.00
95th-Percentile Queue Length [ft/ln]	4.07	4.07	0.93	0.93	0.00	0.00
d_A, Approach Delay [s/veh]	9.66		1.25		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.89					
Intersection LOS	B					

Intersection	Approach	Future (2026) Summer								
		AM Peak			PM Peak			Saturday Peak		
		Avg Delay (s/veh)	LOS	95th % Queue (veh)	Avg Delay (s/veh)	LOS	95th % Queue (veh)	Avg Delay (s/veh)	LOS	95th % Queue (veh)
Intersection Control		*One-Way Stop-Control (NB)*								
Frenchtown Frontage Road & Demer Street	NB	10.9	B	1	12.5	B	2	11.3	B	2
	EB	0.0	A	0	0.0	A	0	0.0	A	0
	WB	6.8	A	1	6.4	A	1	6.2	A	1
	Intersection	5.2	A	--	7.4	A	--	7.1	A	--
Intersection Control		*One-Way Stop-Control (SB)*								
Frenchtown Frontage Road & West Site Access	SB	9.6	A	1	10.4	B	1	10.0	A	1
	EB	1.5	A	1	1.8	A	1	1.9	A	1
	WB	0.0	A	0	0.0	A	0	0.0	A	0
	Intersection	2.6	A	--	2.0	A	--	2.7	A	--
Intersection Control		*One-Way Stop-Control (SB)*								
Frenchtown Frontage Road & East Site Access	SB	9.5	A	1	9.4	A	1	9.3	A	1
	EB	1.9	A	1	1.3	A	1	2.0	A	1
	WB	0.0	A	0	0.0	A	0	0.0	A	0
	Intersection	2.4	A	--	2.2	A	--	3.0	A	--

Intersection Level Of Service Report
Intersection 1: Frenchtown Frontage Rd & Demer St

Control Type:	Two-way stop	Delay (sec / veh):	12.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.107

Intersection Setup

Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Base Volume Input [veh/h]	65	64	26	141	91	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	12.50	0.00	0.00	1.70	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	65	64	26	141	91	13
Peak Hour Factor	1.0000	1.0000	0.9200	0.9200	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	16	7	38	25	4
Total Analysis Volume [veh/h]	65	64	28	153	100	14
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.07	0.00	0.00	0.07	0.00
d_M, Delay for Movement [s/veh]	11.95	9.79	0.00	0.00	7.71	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.63	0.63	0.00	0.00	0.20	0.20
95th-Percentile Queue Length [ft/ln]	15.68	15.68	0.00	0.00	5.02	5.02
d_A, Approach Delay [s/veh]	10.88		0.00		6.76	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	5.13					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 9: Frontage Road & West Access

Control Type:	Two-way stop	Delay (sec / veh):	10.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.036

Intersection Setup

Name	West Access		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	West Access		Frenchtown Frontage Road		Frenchtown Frontage Road	
Base Volume Input [veh/h]	22	35	36	145	54	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	35	36	145	54	24
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	10	10	39	15	7
Total Analysis Volume [veh/h]	24	38	39	158	59	26
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.04	0.03	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.72	8.96	7.41	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.24	0.24	0.07	0.07	0.00	0.00
95th-Percentile Queue Length [ft/ln]	5.98	5.98	1.66	1.66	0.00	0.00
d_A, Approach Delay [s/veh]	9.64		1.47		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.58					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 10: Frontage Road & East Access

Control Type:	Two-way stop	Delay (sec / veh):	10.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.029

Intersection Setup

Name	East Access		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	East Access		Frenchtown Frontage Road		Frenchtown Frontage Road	
Base Volume Input [veh/h]	20	22	23	67	82	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	22	23	67	82	21
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	6	6	18	22	6
Total Analysis Volume [veh/h]	22	24	25	73	89	23
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.02	0.02	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.01	8.99	7.44	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.17	0.17	0.04	0.04	0.00	0.00
95th-Percentile Queue Length [ft/ln]	4.28	4.28	1.06	1.06	0.00	0.00
d_A, Approach Delay [s/veh]	9.48		1.90		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.43					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 1: Frenchtown Frontage Rd & Demer St

Control Type:	Two-way stop	Delay (sec / veh):	13.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.270

Intersection Setup

Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Base Volume Input [veh/h]	181	95	17	115	75	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.60	0.00	5.90	1.10	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	181	95	17	115	75	15
Peak Hour Factor	0.9800	0.9800	0.7200	0.7200	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	46	24	6	40	19	4
Total Analysis Volume [veh/h]	185	97	24	160	75	15
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.27	0.10	0.00	0.00	0.05	0.00
d_M, Delay for Movement [s/veh]	13.04	11.55	0.00	0.00	7.67	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.73	1.73	0.00	0.00	0.14	0.14
95th-Percentile Queue Length [ft/ln]	43.14	43.14	0.00	0.00	3.53	3.53
d_A, Approach Delay [s/veh]	12.53		0.00		6.39	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	7.39					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 9: Frontage Road & West Access

Control Type:	Two-way stop	Delay (sec / veh):	11.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.037

Intersection Setup

Name	West Access		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	West Access		Frenchtown Frontage Road		Frenchtown Frontage Road	
Base Volume Input [veh/h]	20	32	33	112	175	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	32	33	112	175	21
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	9	9	30	48	6
Total Analysis Volume [veh/h]	22	35	36	122	190	23
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.04	0.03	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.46	9.68	7.67	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.25	0.25	0.06	0.06	0.00	0.00
95th-Percentile Queue Length [ft/ln]	6.36	6.36	1.53	1.53	0.00	0.00
d_A, Approach Delay [s/veh]	10.37		1.75		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	2.03					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 10: Frontage Road & East Access

Control Type:	Two-way stop	Delay (sec / veh):	10.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.027

Intersection Setup

Name	East Access		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	East Access		Frenchtown Frontage Road		Frenchtown Frontage Road	
Base Volume Input [veh/h]	18	20	20	92	70	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	20	20	92	70	18
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	5	5	25	19	5
Total Analysis Volume [veh/h]	20	22	22	100	76	20
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.02	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.01	8.90	7.41	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.15	0.15	0.04	0.04	0.00	0.00
95th-Percentile Queue Length [ft/ln]	3.87	3.87	0.93	0.93	0.00	0.00
d_A, Approach Delay [s/veh]	9.43		1.34		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.15					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 1: Frenchtown Frontage Rd & Demer St

Control Type:	Two-way stop	Delay (sec / veh):	11.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.207

Intersection Setup

Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Base Volume Input [veh/h]	113	74	16	127	60	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	4.20	0.00	1.00	0.00	7.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	113	74	16	127	60	13
Peak Hour Factor	0.7300	0.7300	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	25	4	32	15	3
Total Analysis Volume [veh/h]	155	101	16	127	60	13
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.21	0.10	0.00	0.00	0.04	0.00
d_M, Delay for Movement [s/veh]	11.77	10.65	0.00	0.00	7.55	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.33	1.33	0.00	0.00	0.11	0.11
95th-Percentile Queue Length [ft/ln]	33.21	33.21	0.00	0.00	2.66	2.66
d_A, Approach Delay [s/veh]	11.33		0.00		6.21	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	7.11					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 9: Frontage Road & West Access

Control Type:	Two-way stop	Delay (sec / veh):	11.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.042

Intersection Setup

Name	West Access		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	West Access		Frenchtown Frontage Road		Frenchtown Frontage Road	
Base Volume Input [veh/h]	25	39	40	118	101	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	25	39	40	118	101	25
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	11	11	32	27	7
Total Analysis Volume [veh/h]	27	42	43	128	110	27
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.05	0.03	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.05	9.29	7.52	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.29	0.29	0.07	0.07	0.00	0.00
95th-Percentile Queue Length [ft/ln]	7.14	7.14	1.83	1.83	0.00	0.00
d_A, Approach Delay [s/veh]	9.98		1.89		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.68					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 10: Frontage Road & East Access

Control Type:	Two-way stop	Delay (sec / veh):	9.8
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.030

Intersection Setup

Name	East Access		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	East Access		Frenchtown Frontage Road		Frenchtown Frontage Road	
Base Volume Input [veh/h]	22	25	25	65	48	23
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	25	25	65	48	23
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	7	7	18	13	6
Total Analysis Volume [veh/h]	24	27	27	71	52	25
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.03	0.02	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.81	8.83	7.38	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.18	0.18	0.05	0.05	0.00	0.00
95th-Percentile Queue Length [ft/ln]	4.55	4.55	1.14	1.14	0.00	0.00
d_A, Approach Delay [s/veh]	9.29		2.03		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.98					
Intersection LOS	A					

AUXILIARY TURN LANE, MULTI-WAY STOP CONTROL AND TRAFFIC SIGNAL WARRANTS

APPENDIX D

Intelligent Infrastructure.
Enduring Communities.

sanbell

TURN LANE WARRANTS		Frenchtown Frontage Rd & Demer St		Frenchtown Frontage Rd & West Site Access		Frenchtown Frontage Rd & East Site Access	
		AM	PM	AM	PM	AM	PM
Existing 2025 School	NB Right-Turn Lane						
	NB Left-Turn Lane						
	SB Right-Turn Lane						
	SB Left-Turn Lane						
	EB Right-Turn Lane	YES	NO				
	EB Left-Turn Lane						
	WB Right-Turn Lane						
	WB Left-Turn Lane	YES	NO				
Future 2026 School	NB Right-Turn Lane						
	NB Left-Turn Lane						
	SB Right-Turn Lane						
	SB Left-Turn Lane						
	EB Right-Turn Lane	YES	YES				
	EB Left-Turn Lane			YES	NO	NO	NO
	WB Right-Turn Lane			NO	NO	NO	NO
	WB Left-Turn Lane	YES	NO				

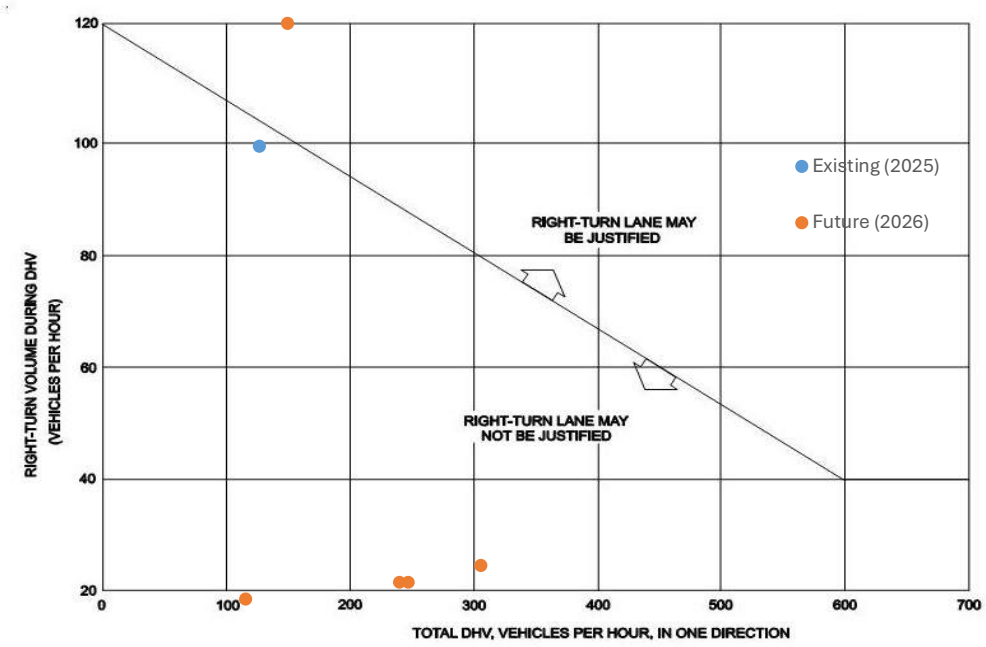
Existing Traffic Volumes (2025) - Right-Turn Lanes at Unsignalized Intersections on 2-Lane Highways

Approach	Time	Total DHV (veh/hr)	Right-Turn Volume During DHV (veh/hr, one direction)	Required Right-Turn Volume for Warranted Lane	Warranted Right-Turn Lane? (Y/N)	Speed Limit at Approach	Adjustment
Frenchtown Frontage Rd & Demer Street EB	AM weekday	282	212	82	Y	50	0
	PM weekday	127	99	103	N	50	0

Future Traffic Volumes (2026) - Right-Turn Lanes at Unsignalized Intersections on 2-Lane Highways

Approach	Time	Total DHV (veh/hr)	Right-Turn Volume During DHV (veh/hr, one direction)	Required Right-Turn Volume for Warranted Lane	Warranted Right-Turn Lane? (Y/N)	Speed Limit at Approach	Adjustment
Frenchtown Frontage Rd & Demer Street EB	AM weekday	309	238	79	Y	50	0
	PM weekday	150	121	100	Y	50	0
Frenchtown Frontage Rd & West Access WB	AM weekday	307	24	79	N	50	0
	PM weekday	248	21	87	N	50	0
Frenchtown Frontage Rd & East Access WB	AM weekday	241	21	88	N	50	0
	PM weekday	116	18	105	N	50	0

Guidelines for Right-Turn Lanes at Unsignalized Intersections on 2-Lane Highways (Figure 28.4A)



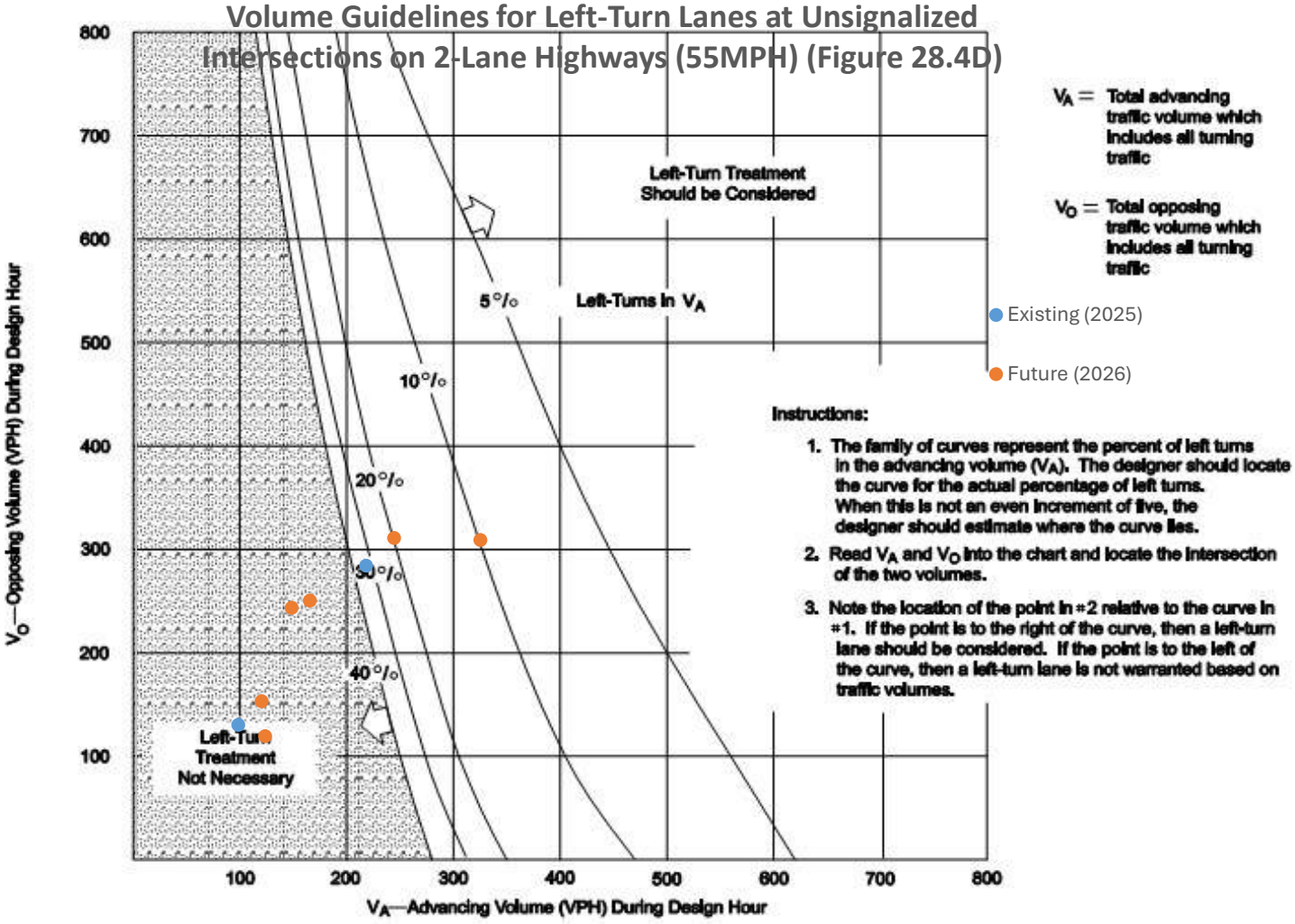
Existing Traffic Volumes (2025) - Left-Turn Lanes at Unsignalized Intersections on 2-Lane Highways

Approach	Time	Va = Total advancing traffic volume	Val = Total left-turn volume in advancing traffic	Percent left-turns in Va	Vo = Total opposing traffic volume	Warranted Left-Turn Lane? (Y/N)	Speed Limit at Approach
Frenchtown Frontage Rd & Demer Street WB	AM weekday	216	100	46.3%	282	Y	50
	PM weekday	96	61	63.5%	127	N	50

Future Traffic Volumes (2026) - Left-Turn Lanes at Unsignalized Intersections on 2-Lane Highways

Approach	Time	Va = Total advancing traffic volume	Val = Total left-turn volume in advancing traffic	Percent left-turns in Va	Vo = Total opposing traffic volume	Warranted Left-Turn Lane? (Y/N)	Speed Limit at Approach
Frenchtown Frontage Rd & Demer Street WB	AM weekday	242	124	51.2%	309	Y	50
	PM weekday	118	82	69.5%	150	N	50
Frenchtown Frontage Rd & West Access EB	AM weekday	323	36	11.1%	307	Y	50
	PM weekday	163	33	20.2%	248	N	50
Frenchtown Frontage Rd & East Access EB	AM weekday	146	23	15.8%	241	N	50
	PM weekday	121	20	16.5%	116	N	50

Volume Guidelines for Left-Turn Lanes at Unsignalized Intersections on 2-Lane Highways (55MPH) (Figure 28.4D)



All-Way Stop Application

Warrants A-C, E

General Information

Agency/Company:	Sanbell
Date:	1/9/2025
Project Number:	24584.01
Project Description:	Frenchtown Town Pump
Jurisdiction:	Missoula County/MDT
Major Street Speed Limit:	50 mph
Major Street (Approach Lanes):	Frenchtown Frontage Road (1 lane)
Minor Street (Approach Lanes):	Demer Street (1 lane)
Analysis Year/Case:	Existing (2025)

Warrant A: Crash Experience

Four-Leg Intersection:
Have there been five or more reported crashes in a 12-month period or six or more reported crashes in a 36-month period that were of a type susceptible to correction by the installation of all-way stop control?

N/A

Three-Leg Intersection:
Have there been four or more reported crashes in a 12-month period or five or more reported crashes in a 36-month period that were of a type susceptible to correction by the installation of all-way stop control?

Yes

Warrant A Satisfied? **Yes**

Warrant B: Sight Distance

Is the sight distance on the minor-road approaches controlled by a STOP sign not adequate for a vehicle to turn onto or cross the major (uncontrolled) road? **No**

Warrant B Satisfied? **No**

Warrant C: Transition to Signal Control or Transition to Yield Control at a Circular Intersection

Is an interim measure needed to control traffic while arrangements are being made for the installation of a traffic control signal at the intersection or for the installation of yield control at a circular intersection?

No

Warrant C Satisfied? **No**

Warrant E: Other Factors

Is all-way stop control needed due to other factors not addressed in the other all-way stop control warrants? Such other factors may include, but are not limited to, the following:

A. The need to control left-turn conflicts.
B. An intersection of two residential neighborhood collector (through) streets of similar design and operating characteristics where all-way stop control would improve traffic operational characteristics of the intersection.
C. Where pedestrian and/or bicyclist movements support the installation of all-way stop control.

Yes

Warrant E Satisfied? **Yes**

All-Way Stop Application

Warrants A-C, E

General Information

Agency/Company:	Sanbell
Date:	1/9/2025
Project Number:	24584.01
Project Description:	Frenchtown Town Pump
Jurisdiction:	Missoula County/MDT
Major Street Speed Limit:	50 mph
Major Street (Approach Lanes):	Frenchtown Frontage Road (1 lane)
Minor Street (Approach Lanes):	Demer Street (1 lane)
Analysis Year/Case:	Future (2035)

Warrant A: Crash Experience

Four-Leg Intersection:
Have there been five or more reported crashes in a 12-month period or six or more reported crashes in a 36-month period that were of a type susceptible to correction by the installation of all-way stop control?

N/A

Three-Leg Intersection:
Have there been four or more reported crashes in a 12-month period or five or more reported crashes in a 36-month period that were of a type susceptible to correction by the installation of all-way stop control?

Yes

Warrant A Satisfied? **Yes**

Warrant B: Sight Distance

Is the sight distance on the minor-road approaches controlled by a STOP sign not adequate for a vehicle to turn onto or cross the major (uncontrolled) road? **No**

Warrant B Satisfied? **No**

Warrant C: Transition to Signal Control or Transition to Yield Control at a Circular Intersection

Is an interim measure needed to control traffic while arrangements are being made for the installation of a traffic control signal at the intersection or for the installation of yield control at a circular intersection?

No

Warrant C Satisfied? **No**

Warrant E: Other Factors

Is all-way stop control needed due to other factors not addressed in the other all-way stop control warrants? Such other factors may include, but are not limited to, the following:

A. The need to control left-turn conflicts.
B. An intersection of two residential neighborhood collector (through) streets of similar design and operating characteristics where all-way stop control would improve traffic operational characteristics of the intersection.
C. Where pedestrian and/or bicyclist movements support the installation of all-way stop control.

Yes

Warrant E Satisfied? **Yes**

All-Way Stop Application

Warrant D: 8-Hour Volume (Vehicles, Pedestrians, Bicycles)

General Information

Agency/Company:	Sanbell
Date:	1/9/2025
Project Number:	24584.01
Project Description:	Frenchtown Town Pump
Jurisdiction:	Missoula County/MDT
Major Street Speed Limit:	50 mph
Major Street (Approach Lanes):	Frenchtown Frontage Road (1 lane)
Minor Street (Approach Lanes):	Demer Street (1 lane)
Analysis Year/Case:	Existing (2025)

Hour Begin	Major Street Total (Both Approaches)	Minor Street Total (Both Aproaches)	Major Street Pedestrian/ Bicycle Total	Minor Street Pedestrian/ Bicycle Total	Combined Entering Major Street	Combined Entering Minor Street
0:00	0	8	0	0	0	8
1:00	2	6	0	0	2	6
2:00	5	3	0	0	5	3
3:00	5	2	0	0	5	2
4:00	18	1	0	0	18	1
5:00	51	6	0	0	51	6
6:00	144	32	0	0	144	32
7:00	382	134	0	0	382	134
8:00	324	161	0	0	324	161
9:00	155	80	0	0	155	80
10:00	141	112	0	0	141	112
11:00	239	140	0	0	239	140
12:00	130	120	0	0	130	120
13:00	146	109	0	0	146	109
14:00	155	114	0	0	155	114
15:00	281	212	0	0	281	212
16:00	186	232	0	0	186	232
17:00	202	248	0	0	202	248
18:00	109	165	0	0	109	165
19:00	75	105	0	0	75	105
20:00	159	78	0	0	159	78
21:00	26	44	0	0	26	44
22:00	9	24	0	0	9	24
23:00	8	7	0	0	8	7
TOTAL	**2952**	**2143**	**0**	**0**	**2952**	**2143**

D	Major Street Total > 300 and Minor Street Total > 200 for 8 hours?	**N/A**
	If 85th-percentile approach speed of major street traffic exceeds 40 mph: Major Street Total > 210 and Minor Street Total > 140 for 8 hours?	**No (3 hrs)**
	All-Way Stop Control Warrant D Satisfied?	**No**

All-Way Stop Application

Warrant D: 8-Hour Volume (Vehicles, Pedestrians, Bicycles)

General Information

Agency/Company:	Sanbell
Date:	1/9/2025
Project Number:	24584.01
Project Description:	Frenchtown Town Pump
Jurisdiction:	Missoula County/MDT
Major Street Speed Limit:	50 mph
Major Street (Approach Lanes):	Frenchtown Frontage Road (1 lane)
Minor Street (Approach Lanes):	Demer Street (1 lane)
Analysis Year/Case:	Future (2035)

Hour Begin	Major Street Total (Both Approaches)	Minor Street Total (Both Aproaches)	Major Street Pedestrian/ Bicycle Total	Minor Street Pedestrian/ Bicycle Total	Combined Entering Major Street	Combined Entering Minor Street
0:00	0	10	0	0	0	10
1:00	2	7	0	0	2	7
2:00	5	4	0	0	5	4
3:00	5	2	0	0	5	2
4:00	20	1	0	0	20	1
5:00	58	7	0	0	58	7
6:00	163	39	0	0	163	39
7:00	434	162	0	0	434	162
8:00	368	194	0	0	368	194
9:00	175	96	0	0	175	96
10:00	160	135	0	0	160	135
11:00	270	169	0	0	270	169
12:00	148	145	0	0	148	145
13:00	165	131	0	0	165	131
14:00	176	137	0	0	176	137
15:00	318	256	0	0	318	256
16:00	212	280	0	0	212	280
17:00	230	299	0	0	230	299
18:00	124	199	0	0	124	199
19:00	85	127	0	0	85	127
20:00	178	94	0	0	178	94
21:00	30	53	0	0	30	53
22:00	11	29	0	0	11	29
23:00	9	8	0	0	9	8
TOTAL	**3346**	**2584**	**0**	**0**	**3346**	**2584**

D	Major Street Total > 300 and Minor Street Total > 200 for 8 hours?	**N/A**
	If 85th-percentile approach speed of major street traffic exceeds 40 mph: Major Street Total > 210 and Minor Street Total > 140 for 8 hours?	**No (6 hrs)**
	All-Way Stop Control Warrant D Satisfied?	**No**

TRAFFIC SIGNAL WARRANTS		Existing Volumes (2025)	Future Volumes (2026)
		Frenchtown Frontage Rd & Demer Street	Frenchtown Frontage Rd & Demer Street
1. Eight-Hour Vehicular Volume		x	x
2. Four-Hour Vehicular Volume		x	✓
3. Peak Hour		x	✓
4. Pedestrian Volume		--	--
5. School Crossing		--	--
6. Coordinated Signal System		--	--
7. Crash History		x	x
8. Roadway Network		x	x
9. Intersection Near a Grade Crossing		--	--
Signals Warranted	**Yes**		✓
	No	**x**	

Warrant 1: Eight-Hour Vehicular Volume

General Information

Agency/Company:	Sanbell
Date:	1/9/2025
Project Number:	24584.01
Project Description:	Frenchtown Town Pump
Jurisdiction:	Missoula County/MDT
Major Street Speed Limit:	50 mph
Major Street (Approach Lanes):	Frenchtown Frontage Road (1 lane)
Minor Street (Approach Lanes):	Demer Street (1 lane)
Analysis Year/Case:	Existing (2025)

Hour Begin	Avg. Entering Volume				Major Street Total (Both Approaches)	Higher Volume Minor Approach
	NB	SB	EB	WB		
0:00	8	0	0	0	0	8
1:00	6	0	0	2	2	6
2:00	3	0	3	2	5	3
3:00	2	0	4	1	5	2
4:00	1	0	12	6	18	1
5:00	6	0	32	18	50	6
6:00	32	0	91	50	141	32
7:00	134	0	211	164	374	134
8:00	161	0	186	131	318	161
9:00	80	0	98	54	152	80
10:00	112	0	89	49	138	112
11:00	140	0	169	66	234	140
12:00	120	0	71	57	127	120
13:00	109	0	90	53	143	109
14:00	114	0	79	73	152	114
15:00	212	0	206	70	275	212
16:00	232	0	89	93	182	232
17:00	248	0	117	81	198	248
18:00	165	0	55	52	107	165
19:00	105	0	51	23	74	105
20:00	78	0	140	16	156	78
21:00	44	0	9	17	25	44
22:00	24	0	5	4	9	24
23:00	7	0	6	2	8	7
TOTAL	**2143**	**0**	**1812**	**1081**	**2893**	**2143**

		Hrs
Condition A - Minimum Vehicular Volume (70% Columns):		
Major Street Total > 350 and Higher Minor Street Total > 105 for 8 hours?	**No**	**1**
Condition B - Interruption of Continuous Traffic (70% Columns):		
Major Street Total > 525 and Higher Minor Street Total > 53 for 8 hours?	**No**	**0**
Combination of Conditions A & B (56% Columns):		
Major Street Total > 280 and Higher Minor Street Total > 84 for 8 hours?	**No**	**2**
Major Street Total > 420 and Higher Minor Street Total > 42 for 8 hours?	**No**	**0**
Warrant 1 Satisfied?	**No**	

Warrant 1: Eight-Hour Vehicular Volume

General Information

Agency/Company:	Sanbell
Date:	1/9/2025
Project Number:	24584.01
Project Description:	Frenchtown Town Pump
Jurisdiction:	Missoula County/MDT
Major Street Speed Limit:	50 mph
Major Street (Approach Lanes):	Frenchtown Frontage Road (1 lane)
Minor Street (Approach Lanes):	Demer Street (1 lane)
Analysis Year/Case:	Future (2026)

Hour Begin	Avg. Entering Volume				Major Street Total (Both Approaches)	Higher Volume Minor Approach
	NB	SB	EB	WB		
0:00	10	0	0	0	0	10
1:00	7	0	0	2	2	7
2:00	4	0	3	2	5	4
3:00	2	0	4	1	5	2
4:00	1	0	13	7	20	1
5:00	7	0	37	21	58	7
6:00	39	0	104	59	163	39
7:00	162	0	241	193	434	162
8:00	194	0	213	155	368	194
9:00	96	0	112	63	175	96
10:00	135	0	102	58	160	135
11:00	169	0	193	77	270	169
12:00	145	0	81	67	148	145
13:00	131	0	103	62	165	131
14:00	137	0	91	85	176	137
15:00	256	0	236	82	318	256
16:00	280	0	102	110	212	280
17:00	299	0	134	96	230	299
18:00	199	0	63	61	124	199
19:00	127	0	58	27	85	127
20:00	94	0	160	18	178	94
21:00	53	0	10	20	30	53
22:00	29	0	6	5	11	29
23:00	8	0	7	2	9	8
TOTAL	**2584**	**0**	**2073**	**1273**	**3346**	**2584**

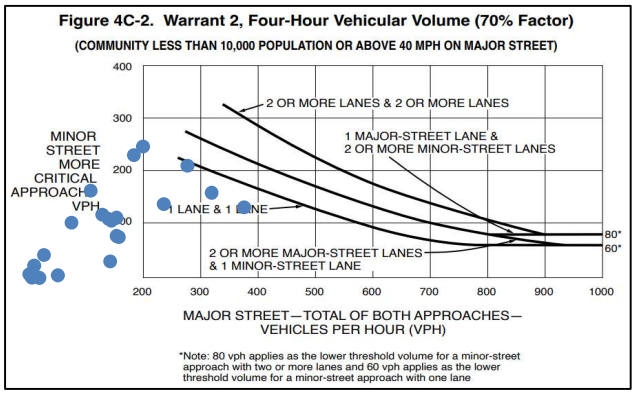
		Hrs
Condition A - Minimum Vehicular Volume (70% Columns):		
Major Street Total > 350 and Higher Minor Street Total > 105 for 8 hours?	**No**	**2**
Condition B - Interruption of Continuous Traffic (70% Columns):		
Major Street Total > 525 and Higher Minor Street Total > 53 for 8 hours?	**No**	**0**
Combination of Conditions A & B (56% Columns):		
Major Street Total > 280 and Higher Minor Street Total > 84 for 8 hours?	**No**	**3**
Major Street Total > 420 and Higher Minor Street Total > 42 for 8 hours?	**No**	**1**
Warrant 1 Satisfied?	**No**	

Warrant 2: Four-Hour Vehicular Volume

General Information

Agency/Company:	Sanbell
Date:	1/9/2025
Project Number:	24584.01
Project Description:	Frenchtown Town Pump
Jurisdiction:	Missoula County/MDT
Major Street Speed Limit:	50 mph
Major Street (Approach Lanes):	Frenchtown Frontage Road (1 lane)
Minor Street (Approach Lanes):	Demer Street (1 lane)
Analysis Year/Case:	Existing (2025)

Hour Begin	Avg. Entering Volume				Major Street Total (Both Approaches)	Higher Volume Minor Approach
	NB	SB	EB	WB		
0:00	8	0	0	0	0	8
1:00	6	0	0	2	2	6
2:00	3	0	3	2	5	3
3:00	2	0	4	1	5	2
4:00	1	0	12	6	18	1
5:00	6	0	32	18	50	6
6:00	32	0	91	50	141	32
7:00	134	0	211	164	374	134
8:00	161	0	186	131	318	161
9:00	80	0	98	54	152	80
10:00	112	0	89	49	138	112
11:00	140	0	169	66	234	140
12:00	120	0	71	57	127	120
13:00	109	0	90	53	143	109
14:00	114	0	79	73	152	114
15:00	212	0	206	70	275	212
16:00	232	0	89	93	182	232
17:00	248	0	117	81	198	248
18:00	165	0	55	52	107	165
19:00	105	0	51	23	74	105
20:00	78	0	140	16	156	78
21:00	44	0	9	17	25	44
22:00	24	0	5	4	9	24
23:00	7	0	6	2	8	7
TOTAL	**2143**	**0**	**1812**	**1081**	**2893**	**2143**



Meets warrant criteria on graph for minimum of 4 hours (70% thresholds)? **No (0 hrs)**

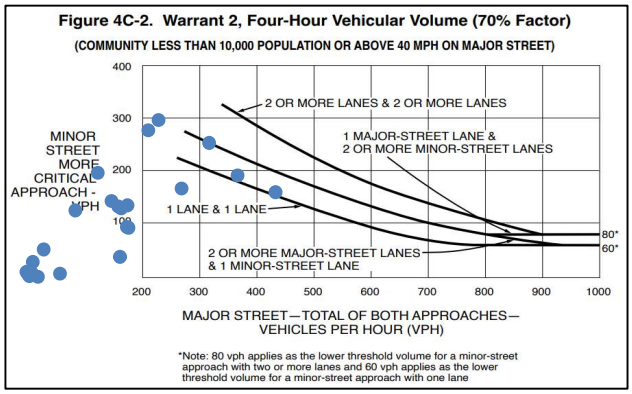
Warrant 2 Satisfied? **No**

Warrant 2: Four-Hour Vehicular Volume

General Information

Agency/Company:	Sanbell
Date:	1/9/2025
Project Number:	24584.01
Project Description:	Frenchtown Town Pump
Jurisdiction:	Missoula County/MDT
Major Street Speed Limit:	50 mph
Major Street (Approach Lanes):	Frenchtown Frontage Road (1 lane)
Minor Street (Approach Lanes):	Demer Street (1 lane)
Analysis Year/Case:	Future (2026)

Hour Begin	Avg. Entering Volume				Major Street Total (Both Approaches)	Higher Volume Minor Approach
	NB	SB	EB	WB		
0:00	10	0	0	0	0	10
1:00	7	0	0	2	2	7
2:00	4	0	3	2	5	4
3:00	2	0	4	1	5	2
4:00	1	0	13	7	20	1
5:00	7	0	37	21	58	7
6:00	39	0	104	59	163	39
7:00	162	0	241	193	434	162
8:00	194	0	213	155	368	194
9:00	96	0	112	63	175	96
10:00	135	0	102	58	160	135
11:00	169	0	193	77	270	169
12:00	145	0	81	67	148	145
13:00	131	0	103	62	165	131
14:00	137	0	91	85	176	137
15:00	256	0	236	82	318	256
16:00	280	0	102	110	212	280
17:00	299	0	134	96	230	299
18:00	199	0	63	61	124	199
19:00	127	0	58	27	85	127
20:00	94	0	160	18	178	94
21:00	53	0	10	20	30	53
22:00	29	0	6	5	11	29
23:00	8	0	7	2	9	8
TOTAL	**2584**	**0**	**2073**	**1273**	**3346**	**2584**



Meets warrant criteria on graph for minimum of 4 hours (100% thresholds)? **Yes (5 hrs)**

Warrant 2 Satisfied? **Yes**

Warrant 3: Peak Hour

General Information

Agency/Company:	Sanbell
Date:	1/9/2025
Project Number:	24584.01
Project Description:	Frenchtown Town Pump
Jurisdiction:	Missoula County/MDT
Major Street Speed Limit:	50 mph
Major Street (Approach Lanes):	Frenchtown Frontage Road (1 lane)
Minor Street (Approach Lanes):	Demer Street (1 lane)
Analysis Year/Case:	Existing (2025)

AM Peak Hour	**7:30 - 8:30 AM**
High Minor Total Stopped Time Delay (hrs)	**1.28**
Total Volume of Major Approaches (vehs)	**498**
High Minor Approach Volume (vehs)	**213**
Total Entering Volume (vehs)	**711**

PM Peak Hour	**4:30 - 5:30 PM**
High Minor Total Stopped Time Delay (hrs)	**0.97**
Total Volume of Major Approaches (vehs)	**223**
High Minor Approach Volume (vehs)	**258**
Total Entering Volume (vehs)	**481**

Category A: Peak Period: AM

Total stopped time delay for minor approach > 4 veh-hrs?	**No (1.28)**
High minor approach volume > 100 for peak hour?	**Yes (213)**
Total entering volume > 650 for peak hour?	**Yes (711)**
Category A warrant satisfied?	**No**

Category B:

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane

Meets warrant criteria on graph for minimum of one hour (70% thresholds)?	**No**
Warrant 3 Satisfied?	**No**

Warrant 3: Peak Hour

General Information

Agency/Company:	Sanbell
Date:	1/9/2025
Project Number:	24584.01
Project Description:	Frenchtown Town Pump
Jurisdiction:	Missoula County/MDT
Major Street Speed Limit:	50 mph
Major Street (Approach Lanes):	Frenchtown Frontage Road (1 lane)
Minor Street (Approach Lanes):	Demer Street (1 lane)
Analysis Year/Case:	Future (2026)

AM Peak Hour	**7:30 - 8:30 AM**
High Minor Total Stopped Time Delay (hrs)	**2.37**
Total Volume of Major Approaches (vehs)	**551**
High Minor Approach Volume (vehs)	**264**
Total Entering Volume (vehs)	**815**

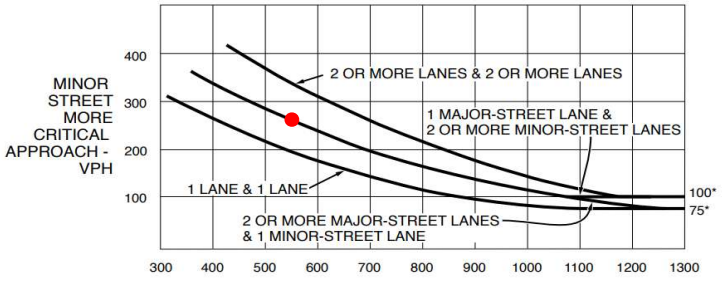
PM Peak Hour	**4:30 - 5:30 PM**
High Minor Total Stopped Time Delay (hrs)	**1.37**
Total Volume of Major Approaches (vehs)	**268**
High Minor Approach Volume (vehs)	**304**
Total Entering Volume (vehs)	**572**

Category A: Peak Period: AM

Total stopped time delay for minor approach > 4 veh-hrs?	**No (2.37)**
High minor approach volume > 100 for peak hour?	**Yes (264)**
Total entering volume > 650 for peak hour?	**Yes (815)**
Category A warrant satisfied?	**No**

Category B:

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane

Meets warrant criteria on graph for minimum of one hour (70% thresholds)?	**Yes**
Warrant 3 Satisfied?	**Yes**

Warrant 4: Pedestrian Volume

General Information

Agency/Company:	Sanbell
Date:	1/9/2025
Project Number:	24584.01
Project Description:	Frenchtown Town Pump
Jurisdiction:	Missoula County/MDT
Major Street Speed Limit:	50 mph
Major Street (Approach Lanes):	Frenchtown Frontage Road (1 lane)
Minor Street (Approach Lanes):	Demer Street (1 lane)
Analysis Year/Case:	Existing (2025)

This warrant is intended for application where the traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street.

Hour Begin	Major Street Total Traffic	Pedestrian Volume Crossing Major Street
0:00	0	0
1:00	2	0
2:00	5	0
3:00	5	0
4:00	18	0
5:00	50	0
6:00	141	0
7:00	374	0
8:00	318	0
9:00	152	0
10:00	138	0
11:00	234	0
12:00	127	0
13:00	143	0
14:00	152	0
15:00	275	0
16:00	182	0
17:00	198	0
18:00	107	0
19:00	74	0
20:00	156	0
21:00	25	0
22:00	9	0
23:00	8	0
TOTAL	**2,893**	**0**

Figure 4C-7. Warrant 4, Pedestrian Four-Hour Volume (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)

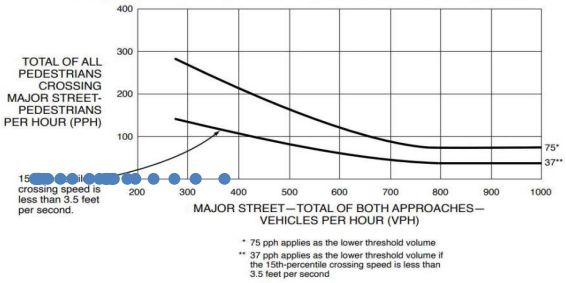
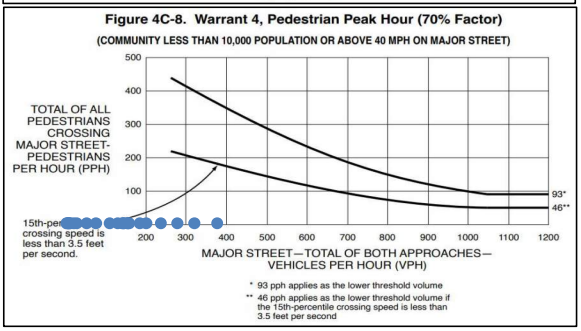


Figure 4C-8. Warrant 4, Pedestrian Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



For each of any 4 hours of an average day, do the plotted points representing the vehicles per hour on the major street and the corresponding pedestrians per hour crossing the major street fall above the curve in Figure 4C-5? **No**

For 1 hour of an average day, does the plotted point representing vehicles per hour on the major street and the corresponding pedestrians per hour crossing the major street fall above the curve in Figure 4C-6? **No**

Warrant 4 Satisfied? **N/A**

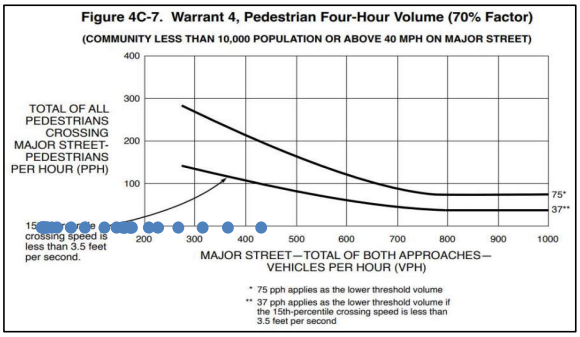
Warrant 4: Pedestrian Volume

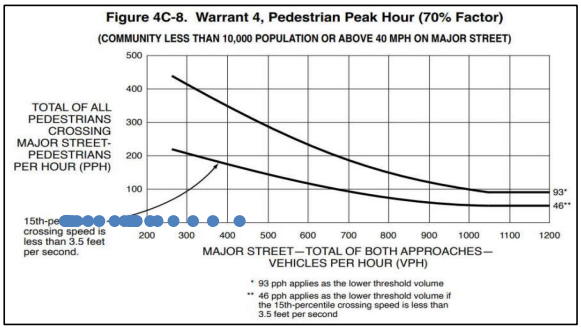
General Information

Agency/Company:	Sanbell
Date:	1/9/2025
Project Number:	24584.01
Project Description:	Frenchtown Town Pump
Jurisdiction:	Missoula County/MDT
Major Street Speed Limit:	50 mph
Major Street (Approach Lanes):	Frenchtown Frontage Road (1 lane)
Minor Street (Approach Lanes):	Demer Street (1 lane)
Analysis Year/Case:	Future (2026)

This warrant is intended for application where the traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street.

Hour Begin	Major Street Total Traffic	Pedestrian Volume Crossing Major Street
0:00	0	0
1:00	2	0
2:00	5	0
3:00	5	0
4:00	20	0
5:00	58	0
6:00	163	0
7:00	434	0
8:00	368	0
9:00	175	0
10:00	160	0
11:00	270	0
12:00	148	0
13:00	165	0
14:00	176	0
15:00	318	0
16:00	212	0
17:00	230	0
18:00	124	0
19:00	85	0
20:00	178	0
21:00	30	0
22:00	11	0
23:00	9	0
TOTAL	**3,346**	**0**





For each of any 4 hours of an average day, do the plotted points representing the vehicles per hour on the major street and the corresponding pedestrians per hour crossing the major street fall above the curve in Figure 4C-5? **No**

For 1 hour of an average day, does the plotted point representing vehicles per hour on the major street and the corresponding pedestrians per hour crossing the major street fall above the curve in Figure 4C-6? **No**

Warrant 4 Satisfied? **N/A**

General Information	
Agency/Company:	Sanbell
Date:	1/9/2025
Project Number:	24584.01
Project Description:	Frenchtown Town Pump
Jurisdiction:	Missoula County/MDT
Major Street Speed Limit:	50 mph
Major Street (Approach Lanes):	Frenchtown Frontage Road (1 lane)
Minor Street (Approach Lanes):	Demer Street (1 lane)
Analysis Year/Case:	Existing (2025)

Warrant 5: School Crossing

This warrant is intended for application where the fact that school children (elementary through high school students) cross the major street is the principle reason to consider installing a traffic signal. This warrant shall not be applied at locations where the distance to the nearest traffic control signal along the major street is less than 300 feet, unless it can be shown that the proposed traffic signal would not restrict the progressive movement of traffic.

Is the number of adequate gaps in the major crossing traffic steam during the primary crossing period less than the number of minutes in that crossing period? **N/A**

Do 20 or more students cross at this location during the highest crossing hour? **No**

Warrant 5 Satisfied? **N/A**

Warrant 6: Coordinated Signal System

This warrant is intended for application where installation of a traffic signal would help to provide proper platooning of vehicles and therefore provide progressive movement in a coordinated signal system.

Are any adjacent traffic signals located so far away that they do not provide a necessary degree of platooning and/or progressive operation? **No**

Warrant 6 Satisfied? **N/A**

Warrant 7: Crash Experience

This warrant is intended for application where the severity and frequency of crashes are the principal reasons to consider installing a traffic control signal

Have adequate trials of alternatives failed to reduce the crash frequency? **N/A**

Have at least one of the following conditions apply to the reported crash history:

1. Do the number of reported angle crashes and pedestrian crashes within a 1-year period equal or exceed the threshold number in Table 4C-4 for total angle crashes and pedestrian crashes?
2. Do the number of reported fatal-and-injury angle crashes and pedestrian crashes within a 1-year period equal or exceed the threshold number in Table 4C-4 for total fatal-and-injury angle crashes and pedestrian crashes?
3. Do the number of reported angle crashes and pedestrian crashes within a 3-year period equal or exceed the threshold number in Table 4C-5 for total angle crashes and pedestrian crashes?
4. Do the number of reported fatal-and-injury angle crashes and pedestrian crashes within a 3-year period equal or exceed the threshold number in Table 4C-5 for total fatal-and-injury angle crashes and pedestrian crashes?

No

Is Condition A criterion met for 80% columns of Warrant 1 met? **No**

Is Condition B criterion met for 80% columns of Warrant 1 met? **No**

Are observed pedestrian volumes equal to or greater than 80% of what is required for Warrant 4? **N/a**

Warrant 7 Satisfied? **No**

General Information	
Agency/Company:	Sanbell
Date:	1/9/2025
Project Number:	24584.01
Project Description:	Frenchtown Town Pump
Jurisdiction:	Missoula County/MDT
Major Street Speed Limit:	50 mph
Major Street (Approach Lanes):	Frenchtown Frontage Road (1 lane)
Minor Street (Approach Lanes):	Demer Street (1 lane)
Analysis Year/Case:	Future (2026)

Warrant 5: School Crossing

This warrant is intended for application where the fact that school children (elementary through high school students) cross the major street is the principle reason to consider installing a traffic signal. This warrant shall not be applied at locations where the distance to the nearest traffic control signal along the major street is less than 300 feet, unless it can be shown that the proposed traffic signal would not restrict the progressive movement of traffic.

Is the number of adequate gaps in the major crossing traffic steam during the primary crossing period less than the number of minutes in that crossing period? **N/A**

Do 20 or more students cross at this location during the highest crossing hour? **No**

Warrant 5 Satisfied? **N/A**

Warrant 6: Coordinated Signal System

This warrant is intended for application where installation of a traffic signal would help to provide proper platooning of vehicles and therefore provide progressive movement in a coordinated signal system.

Are any adjacent traffic signals located so far away that they do not provide a necessary degree of platooning and/or progressive operation? **No**

Warrant 6 Satisfied? **N/A**

Warrant 7: Crash Experience

This warrant is intended for application where the severity and frequency of crashes are the principal reasons to consider installing a traffic control signal

Have adequate trials of alternatives failed to reduce the crash frequency? **N/A**

Have at least one of the following conditions apply to the reported crash history:

1. Do the number of reported angle crashes and pedestrian crashes within a 1-year period equal or exceed the threshold number in Table 4C-2 for total angle crashes and pedestrian crashes?
2. Do the number of reported fatal-and-injury angle crashes and pedestrian crashes within a 1-year period equal or exceed the threshold number in Table 4C-2 for total fatal-and-injury angle crashes and pedestrian crashes?
3. Do the number of reported angle crashes and pedestrian crashes within a 3-year period equal or exceed the threshold number in Table 4C-3 for total angle crashes and pedestrian crashes?
4. Do the number of reported fatal-and-injury angle crashes and pedestrian crashes within a 3-year period equal or exceed the threshold number in Table 4C-3 for total fatal-and-injury angle crashes and pedestrian crashes?

No

Is Condition A criterion met for 80% columns of Warrant 1 met? **No**

Is Condition B criterion met for 80% columns of Warrant 1 met? **No**

Are observed pedestrian volumes equal to or greater than 80% of what is required for Warrant 4? **No**

Warrant 7 Satisfied? **N/A**

General Information

Agency/Company:	Sanbell
Date:	1/9/2025
Project Number:	24584.01
Project Description:	Frenchtown Town Pump
Jurisdiction:	Missoula County/MDT
Major Street Speed Limit:	50 mph
Major Street (Approach Lanes):	Frenchtown Frontage Road (1 lane)
Minor Street (Approach Lanes):	Demer Street (1 lane)
Analysis Year/Case:	Existing (2025)

Warrant 8: Roadway Network

This warrant is intended for application where installation of a traffic signal could be justified in order to encourage concentration and organization of traffic flow on a roadway network

Do two or more of the intersecting routes at this location have at least one of the following characteristics:

A. It is part of the street or highway system that serves as the principal roadway network for through traffic flow; or
B. It includes rural or suburban highways outside, entering, or traversing a City; or
C. It appears as a major route on an official plan.

No

Does this intersection have an existing or immediately projected total entering volume of a least 1000 vehicles during a weekday typical peak hour and have a 5-year projected traffic volume that meets one or more of Warrants 1, 2, and 3 during an average weekday? **No**

Does this intersection have an existing or immediately projected total entering volume of at least 1000 vph for each of any 5 hours of a Saturday or Sunday? **N/A**

Warrant 8 Satisfied? **No**

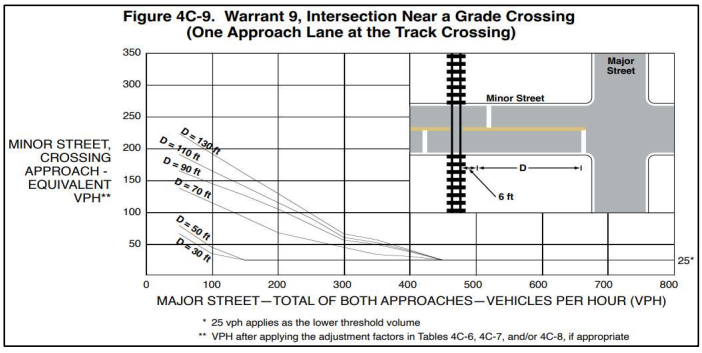
Warrant 9: Intersection Near a Grade Crossing

This warrant is intended for application where none of the conditions described in the other eight traffic signal warrants are met, but the proximity to the intersection of a grade crossing on an intersection approach controlled by a STOP or YIELD sign is the principal reason to consider installing a traffic signal.

Does a grade crossing exist on an approach controlled by a STOP or YIELD sign whereby the center of the track nearest to the intersection is within 140 feet of the stop or yield line?

No

Figure 4C-9. Warrant 9, Intersection Near a Grade Crossing (One Approach Lane at the Track Crossing)



During the highest traffic volume hour during which the rail traffic uses the crossing, does the plotted point representing vehicles per hour on the major street and the corresponding vehicles per hour on the minor-street approach that crosses the track fall above the applicable curve in Figure 4C-9 or 4C-10 (whichever is applicable) for the existing combination of approach lanes over the track and the distance D, which is the clear storage distance? **N/A**

Warrant 9 Satisfied? **N/A**

General Information

Agency/Company:	Sanbell
Date:	1/9/2025
Project Number:	24584.01
Project Description:	Frenchtown Town Pump
Jurisdiction:	Missoula County/MDT
Major Street Speed Limit:	50 mph
Major Street (Approach Lanes):	Frenchtown Frontage Road (1 lane)
Minor Street (Approach Lanes):	Demer Street (1 lane)
Analysis Year/Case:	Future (2026)

Warrant 8: Roadway Network

This warrant is intended for application where installation of a traffic signal could be justified in order to encourage concentration and organization of traffic flow on a roadway network

Do two or more of the intersecting routes at this location have at least one of the following characteristics:

A. It is part of the street or highway system that serves as the principal roadway network for through traffic flow; or
B. It includes rural or suburban highways outside, entering, or traversing a City; or
C. It appears as a major route on an official plan.

No

Does this intersection have an existing or immediately projected total entering volume of a least 1000 vehicles during a weekday typical peak hour and have a 5-year projected traffic volume that meets one or more of Warrants 1, 2, and 3 during an average weekday? **No**

Does this intersection have an existing or immediately projected total entering volume of at least 1000 vph for each of any 5 hours of a Saturday or Sunday? **N/A**

Warrant 8 Satisfied? **No**

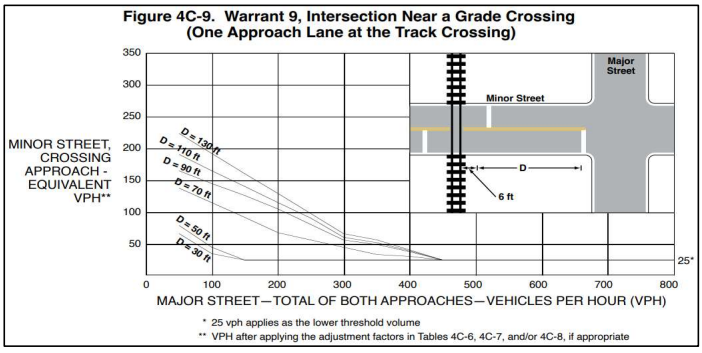
Warrant 9: Intersection Near a Grade Crossing

This warrant is intended for application where none of the conditions described in the other eight traffic signal warrants are met, but the proximity to the intersection of a grade crossing on an intersection approach controlled by a STOP or YIELD sign is the principal reason to consider installing a traffic signal.

Does a grade crossing exist on an approach controlled by a STOP or YIELD sign whereby the center of the track nearest to the intersection is within 140 feet of the stop or yield line?

No

Figure 4C-9. Warrant 9, Intersection Near a Grade Crossing (One Approach Lane at the Track Crossing)



During the highest traffic volume hour during which the rail traffic uses the crossing, does the plotted point representing vehicles per hour on the major street and the corresponding vehicles per hour on the minor-street approach that crosses the track fall above the applicable curve in Figure 4C-9 or 4C-10 (whichever is applicable) for the existing combination of approach lanes over the track and the distance D, which is the clear storage distance? **N/A**

Warrant 9 Satisfied? **N/A**

CAPACITY CALCULATIONS – FUTURE (2026) IMPROVED

APPENDIX E

Intelligent Infrastructure.
Enduring Communities.

sanbell

Intersection	Approach	Future (2026) Winter with Improvements					
		AM Peak			PM Peak		
		Avg Delay (s/veh)	LOS	95th % Queue (veh)	Avg Delay (s/veh)	LOS	95th % Queue (veh)
Intersection Control		*One-Way Stop Control (NB), NB LT- & RT-Turn Lanes*					
Frenchtown Frontage Road & Demer Street	NB	24.8	C	4	13.8	B	2
	EB	0.0	A	0	0.0	A	0
	WB	4.3	A	1	5.5	A	1
	Intersection	8.5	A	--	7.6	A	--
Intersection Control		*One-Way Stop Control (NB), EB RT- & WB LT-Turn Lanes*					
Frenchtown Frontage Road & Demer Street	NB	22.3	C	4	14.3	B	3
	EB	0.0	A	0	0.0	A	0
	WB	4.5	A	1	5.5	A	1
	Intersection	7.9	A	--	7.8	A	--
Intersection Control		*Two-Way Stop Control (EB/WB)*					
Frenchtown Frontage Road & Demer Street	NB	0.0	A	0	0.0	A	0
	EB	1.9	A	1	1.6	A	1
	WB	22.0	C	5	13.8	B	2
	Intersection	8.8	A	--	4.2	A	--
Intersection Control		*All-Way Stop Control*					
Frenchtown Frontage Road & Demer Street	NB	12.6	B	3	10.9	B	2
	EB	11.8	B	3	8.9	A	1
	WB	14.1	B	4	9.8	A	2
	Intersection	12.9	B	--	10.0	B	--
Intersection Control		*Signalized*					
Frenchtown Frontage Road & Demer Street	NB	21.0	C	4	12.2	B	3
	EB	10.6	B	3	15.3	B	2
	WB	20.3	C	5	21.4	C	3
	Intersection	17.1	B	--	15.6	B	--

Unmitigated

Number	1					
Intersection	Frenchtown Frontage Rd & Demer St					
Control Type	Two-way stop					
Analysis Method	HCM 7th Edition					
Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Base Volume Input [veh/h]	189	75	71	238	124	118
Total Analysis Volume [veh/h]	195	77	80	267	177	169

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Capacity Analysis

Calculated Rank	3	2	1	1	2	1
v_c, Conflicting Flow Rate	737	214	0	0	347	0
v_c, Stage 1	214	214	0	0	347	0
v_c, Stage 2	523	0	0	0	0	0
c_p,x, Potential Capacity [veh/h]	382	832	0	0	1185	0
c_p,x, Stage 1 [veh/h]	815	1201	0	0	1759	0
c_p,x, Stage 2 [veh/h]	589	1091	0	0	1591	0
c_m,x, Movement Capacity [veh/h]	319	832	100000	100000	1185	100000
c_m,x, Stage 1 [veh/h]	0	0	0	0	0	0
c_m,x, Stage 2 [veh/h]	0	0	0	0	0	0
c_T, Total Capacity [veh/h]	319	832	100000	100000	1185	100000

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.61	0.09	0.00	0.00	0.15	0.00
d_M, Delay for Movement [s/veh]	35.67	28.71	0.00	0.00	8.26	0.00
Movement LOS	E	D	A	A	A	A
Critical Movement	Yes	No	No	No	No	No
95th-Percentile Queue Length [veh/ln]	5.23	5.23	0.00	0.00	0.33	0.33
95th-Percentile Queue Length [ft/ln]	130.73	130.73	0.00	0.00	8.17	8.17
d_A, Approach Delay [s/veh]	33.70		0.00		4.22	
Approach LOS	D		A		A	
V/C_I, Worst Movement V/C Ratio	0.61					
d_I, Worst Movement Control Delay [s/veh]	35.67					
d_I, Intersection Delay [s/veh]	11.01					
Intersection LOS	E					

Option 1: NB Turn-Lanes

Number	1					
Intersection	Frenchtown Frontage Rd & Demer St					
Control Type	Two-way stop					
Analysis Method	HCM 7th Edition					
Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Base Volume Input [veh/h]	178	81	71	229	129	118
Total Analysis Volume [veh/h]	184	84	80	257	184	169

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane						
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Capacity Analysis

Calculated Rank	3	2	1	1	2	1
v_c, Conflicting Flow Rate	746	209	0	0	337	0
v_c, Stage 1	209	209	0	0	337	0
v_c, Stage 2	537	0	0	0	0	0
c_p,x, Potential Capacity [veh/h]	377	837	0	0	1195	0
c_p,x, Stage 1 [veh/h]	819	1198	0	0	1754	0
c_p,x, Stage 2 [veh/h]	580	1091	0	0	1591	0
c_m,x, Movement Capacity [veh/h]	313	837	100000	100000	1195	100000
c_m,x, Stage 1 [veh/h]	0	0	0	0	0	0
c_m,x, Stage 2 [veh/h]	0	0	0	0	0	0
c_T, Total Capacity [veh/h]	313	837	100000	100000	1195	100000

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.59	0.10	0.00	0.00	0.15	0.00
d_M, Delay for Movement [s/veh]	31.66	9.78	0.00	0.00	8.24	0.00
Movement LOS	D	A	A	A	A	A
Critical Movement	Yes	No	No	No	No	No
95th-Percentile Queue Length [veh/ln]	3.51	0.33	0.00	0.00	0.34	0.34
95th-Percentile Queue Length [ft/ln]	87.83	8.34	0.00	0.00	8.53	8.53
d_A, Approach Delay [s/veh]	24.81		0.00		4.30	
Approach LOS	C		A		A	
V/C_I, Worst Movement V/C Ratio	0.59					
d_I, Worst Movement Control Delay [s/veh]	31.66					
d_I, Intersection Delay [s/veh]	8.52					
Intersection LOS	D					

Option 2: All-Way Stop Control

Number	1					
Intersection	Frenchtown Frontage Rd & Demer St					
Control Type	All-way stop					
Analysis Method	HCM 7th Edition					
Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Base Volume Input [veh/h]	178	81	71	229	129	118
Total Analysis Volume [veh/h]	184	84	80	257	184	169

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	640	742	674

Movement, Approach, & Intersection Results

Average Lane Delay [s/veh]	12.62	11.82	14.07
95th-Percentile Queue Length [veh]	2.07	2.38	3.07
95th-Percentile Queue Length [ft]	51.76	59.56	76.67
Approach Delay [s/veh]	12.62	11.82	14.07
Approach LOS	B	B	B
Intersection Delay [s/veh]	12.87		
Intersection LOS	B		

Option 3: Warranted Turn lanes

Number	1					
Intersection	Frenchtown Frontage Rd & Demer St					
Control Type	Two-way stop					
Analysis Method	HCM 7th Edition					
Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Base Volume Input [veh/h]	178	81	71	229	129	118
Total Analysis Volume [veh/h]	184	84	80	257	184	169

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Capacity Analysis

Calculated Rank	3	2	1	1	2	1
v_c, Conflicting Flow Rate	617	80	0	0	337	0
v_c, Stage 1	80	80	0	0	337	0
v_c, Stage 2	537	0	0	0	0	0
c_p,x, Potential Capacity [veh/h]	449	986	0	0	1195	0
c_p,x, Stage 1 [veh/h]	936	1131	0	0	1754	0
c_p,x, Stage 2 [veh/h]	580	1091	0	0	1591	0
c_m,x, Movement Capacity [veh/h]	380	986	100000	100000	1195	100000
c_m,x, Stage 1 [veh/h]	0	0	0	0	0	0
c_m,x, Stage 2 [veh/h]	0	0	0	0	0	0
c_T, Total Capacity [veh/h]	380	986	100000	100000	1195	100000

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.48	0.09	0.00	0.00	0.15	0.00
d_M, Delay for Movement [s/veh]	24.14	18.31	0.00	0.00	8.56	0.00
Movement LOS	C	C	A	A	A	A
Critical Movement	Yes	No	No	No	No	No
95th-Percentile Queue Length [veh/ln]	3.49	3.49	0.00	0.00	0.54	0.00
95th-Percentile Queue Length [ft/ln]	87.31	87.31	0.00	0.00	13.59	0.00
d_A, Approach Delay [s/veh]	22.31		0.00		4.46	
Approach LOS	C		A		A	
V/C_I, Worst Movement V/C Ratio	0.48					
d_I, Worst Movement Control Delay [s/veh]	24.14					
d_I, Intersection Delay [s/veh]	7.89					
Intersection LOS	C					

Option 4: Signalized

Number	1					
Intersection	Frenchtown Frontage Rd & Demer St					
Control Type	Signalized					
Analysis Method	HCM 7th Edition					
Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Base Volume Input [veh/h]	178	81	71	229	129	118
Total Analysis Volume [veh/h]	184	84	80	257	184	169

Intersection Settings

Cycle Length [s]	60					
Active Pattern	Pattern 1					
Coordination Type	Time of Day Pattern Coordinated					
Actuation Type	Fixed time					
Lost time [s]	0.00					
Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	3	0	2	0	0	6
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	10	0	0	10
Maximum Green [s]	19	0	33	0	0	33
Amber [s]	3.0	0.0	3.0	0.0	0.0	3.0
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0
Split [s]	24	0	36	0	0	36
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	7	0	7	0	0	7
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0
Minimum Recall	No		No			No
Maximum Recall	No		No			No
Pedestrian Recall	No		No			No
Pedestrian Signal Group	0					
Pedestrian Walk [s]	0					
Pedestrian Clearance [s]	0					

Lane Group Calculations

g / C, Green / Cycle	0.33	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.19	0.24	0.41
so, Base Saturation Flow per Lane [pc/h/ln]	1750	1750	1750
Arrival type	3	3	3
s, saturation flow rate [veh/h]	1445	1388	863
c, Capacity [veh/h]	482	740	552
X, volume / capacity	0.56	0.46	0.64
d, Delay for Lane Group [s/veh]	20.95	10.64	20.28

Lane Group LOS	C	B	C
Critical Lane Group	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	3.32	2.59	4.06
50th-Percentile Queue Length [ft/ln]	82.98	64.80	101.57
95th-Percentile Queue Length [veh/ln]	5.97	4.67	7.31
95th-Percentile Queue Length [ft/ln]	149.37	116.65	182.83

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	20.95	20.95	10.64	10.64	20.28	20.28
Movement LOS	C	C	B	B	C	C
Critical Movement	Yes	No	No	No	No	No
d_A, Approach Delay [s/veh]	20.95		10.64		20.28	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	17.08					
Intersection LOS	B					
Intersection V/C	0.594					

Option 5: Two-Way Stop Control

Number	1					
Intersection	Frenchtown Frontage Rd & Demer St					
Control Type	Two-way stop					
Analysis Method	HCM 7th Edition					
Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Base Volume Input [veh/h]	178	81	71	229	129	118
Total Analysis Volume [veh/h]	184	84	80	257	184	169

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Capacity Analysis

Calculated Rank	1	1	2	1	3	2
v_c, Conflicting Flow Rate	0	0	226	0	563	226
v_c, Stage 1	0	0	226	0	563	226
v_c, Stage 2	0	0	226	0	563	226
c_p,x, Potential Capacity [veh/h]	0	0	1354	0	479	677
c_p,x, Stage 1 [veh/h]	0	0	1752	0	560	721
c_p,x, Stage 2 [veh/h]	0	0	1752	0	560	721
c_m,x, Movement Capacity [veh/h]	100000	100000	1354	100000	478	677

c_m,x, Stage 1 [veh/h]	0	0	0	0	0	0
c_m,x, Stage 2 [veh/h]	0	0	0	0	0	0
c_T, Total Capacity [veh/h]	100000	100000	1354	100000	478	677

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.06	0.00	0.38	0.25
d_M, Delay for Movement [s/veh]	0.00	0.00	7.82	0.00	23.09	20.88
Movement LOS	A	A	A	A	C	C
Critical Movement	No	No	No	No	Yes	No
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.99	0.99	4.43	4.43
95th-Percentile Queue Length [ft/ln]	0.00	0.00	24.65	24.65	110.86	110.86
d_A, Approach Delay [s/veh]	0.00		1.86		22.03	
Approach LOS	A		A		C	
V/C_I, Worst Movement V/C Ratio	0.38					
d_I, Worst Movement Control Delay [s/veh]	23.09					
d_I, Intersection Delay [s/veh]	8.77					
Intersection LOS	C					

Unmitigated

Number	1					
Intersection	Frenchtown Frontage Rd & Demer St					
Control Type	Two-way stop					
Analysis Method	HCM 7th Edition					
Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Base Volume Input [veh/h]	212	92	29	121	82	36
Total Analysis Volume [veh/h]	212	92	40	168	122	54

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Capacity Analysis

Calculated Rank	3	2	1	1	2	1
v_c, Conflicting Flow Rate	422	124	0	0	208	0
v_c, Stage 1	124	124	0	0	208	0
v_c, Stage 2	298	0	0	0	0	0
c_p,x, Potential Capacity [veh/h]	592	925	0	0	1365	0
c_p,x, Stage 1 [veh/h]	907	1145	0	0	1730	0
c_p,x, Stage 2 [veh/h]	758	1083	0	0	1626	0
c_m,x, Movement Capacity [veh/h]	538	925	100000	100000	1365	100000
c_m,x, Stage 1 [veh/h]	0	0	0	0	0	0
c_m,x, Stage 2 [veh/h]	0	0	0	0	0	0
c_T, Total Capacity [veh/h]	538	925	100000	100000	1365	100000

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.39	0.10	0.00	0.00	0.09	0.00
d_M, Delay for Movement [s/veh]	17.26	14.46	0.00	0.00	7.78	0.00
Movement LOS	C	B	A	A	A	A
Critical Movement	Yes	No	No	No	No	No
95th-Percentile Queue Length [veh/ln]	2.73	2.73	0.00	0.00	0.22	0.22
95th-Percentile Queue Length [ft/ln]	68.37	68.37	0.00	0.00	5.45	5.45
d_A, Approach Delay [s/veh]	16.42		0.00		5.39	
Approach LOS	C		A		A	
V/C_I, Worst Movement V/C Ratio	0.39					
d_I, Worst Movement Control Delay [s/veh]	17.26					
d_I, Intersection Delay [s/veh]	8.63					
Intersection LOS	C					

Option 1: NB Turn-Lanes

Number	1					
Intersection	Frenchtown Frontage Rd & Demer St					
Control Type	Two-way stop					
Analysis Method	HCM 7th Edition					
Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Base Volume Input [veh/h]	203	97	29	113	86	36
Total Analysis Volume [veh/h]	203	97	40	157	128	54

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane						
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Capacity Analysis

Calculated Rank	3	2	1	1	2	1
v_c, Conflicting Flow Rate	429	119	0	0	197	0
v_c, Stage 1	119	119	0	0	197	0
v_c, Stage 2	310	0	0	0	0	0
c_p,x, Potential Capacity [veh/h]	587	931	0	0	1378	0
c_p,x, Stage 1 [veh/h]	912	1142	0	0	1725	0
c_p,x, Stage 2 [veh/h]	748	1083	0	0	1626	0
c_m,x, Movement Capacity [veh/h]	531	931	100000	100000	1378	100000
c_m,x, Stage 1 [veh/h]	0	0	0	0	0	0
c_m,x, Stage 2 [veh/h]	0	0	0	0	0	0
c_T, Total Capacity [veh/h]	531	931	100000	100000	1378	100000

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.38	0.10	0.00	0.00	0.09	0.00
d_M, Delay for Movement [s/veh]	15.92	9.32	0.00	0.00	7.77	0.00
Movement LOS	C	A	A	A	A	A
Critical Movement	Yes	No	No	No	No	No
95th-Percentile Queue Length [veh/ln]	1.78	0.35	0.00	0.00	0.23	0.23
95th-Percentile Queue Length [ft/ln]	44.50	8.69	0.00	0.00	5.74	5.74
d_A, Approach Delay [s/veh]	13.78		0.00		5.46	
Approach LOS	B		A		A	
V/C_I, Worst Movement V/C Ratio	0.38					
d_I, Worst Movement Control Delay [s/veh]	15.92					
d_I, Intersection Delay [s/veh]	7.55					
Intersection LOS	C					

Option 2: All-Way Stop Control

Number	1					
Intersection	Frenchtown Frontage Rd & Demer St					
Control Type	All-way stop					
Analysis Method	HCM 7th Edition					
Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Base Volume Input [veh/h]	203	97	29	113	86	36
Total Analysis Volume [veh/h]	203	97	40	157	128	54

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	755	803	709

Movement, Approach, & Intersection Results

Average Lane Delay [s/veh]	10.88	8.94	9.82
95th-Percentile Queue Length [veh]	1.92	0.96	1.02
95th-Percentile Queue Length [ft]	47.89	24.09	25.50
Approach Delay [s/veh]	10.88	8.94	9.82
Approach LOS	B	A	A
Intersection Delay [s/veh]	10.03		
Intersection LOS	B		

Option 3: Warranted Turn Lanes

Number	1					
Intersection	Frenchtown Frontage Rd & Demer St					
Control Type	Two-way stop					
Analysis Method	HCM 7th Edition					
Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Base Volume Input [veh/h]	203	97	29	113	86	36
Total Analysis Volume [veh/h]	203	97	40	157	128	54

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Capacity Analysis

Calculated Rank	3	2	1	1	2	1
v_c, Conflicting Flow Rate	350	40	0	0	197	0
v_c, Stage 1	40	40	0	0	197	0
v_c, Stage 2	310	0	0	0	0	0
c_p,x, Potential Capacity [veh/h]	651	1029	0	0	1378	0
c_p,x, Stage 1 [veh/h]	988	1102	0	0	1725	0
c_p,x, Stage 2 [veh/h]	748	1083	0	0	1626	0
c_m,x, Movement Capacity [veh/h]	591	1029	100000	100000	1378	100000
c_m,x, Stage 1 [veh/h]	0	0	0	0	0	0
c_m,x, Stage 2 [veh/h]	0	0	0	0	0	0
c_T, Total Capacity [veh/h]	591	1029	100000	100000	1378	100000

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.34	0.09	0.00	0.00	0.09	0.00
d_M, Delay for Movement [s/veh]	15.12	12.53	0.00	0.00	7.88	0.00
Movement LOS	C	B	A	A	A	A
Critical Movement	Yes	No	No	No	No	No
95th-Percentile Queue Length [veh/ln]	2.23	2.23	0.00	0.00	0.31	0.00
95th-Percentile Queue Length [ft/ln]	55.83	55.83	0.00	0.00	7.66	0.00
d_A, Approach Delay [s/veh]	14.28		0.00		5.54	
Approach LOS	B		A		A	
V/C_I, Worst Movement V/C Ratio	0.34					
d_I, Worst Movement Control Delay [s/veh]	15.12					
d_I, Intersection Delay [s/veh]	7.80					
Intersection LOS	C					

Option 4: Signalized

Number	1					
Intersection	Frenchtown Frontage Rd & Demer St					
Control Type	Signalized					
Analysis Method	HCM 7th Edition					
Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Base Volume Input [veh/h]	203	97	29	113	86	36
Total Analysis Volume [veh/h]	203	97	40	157	128	54

Intersection Settings

Cycle Length [s]	60					
Active Pattern	Pattern 1					
Coordination Type	Time of Day Pattern Coordinated					
Actuation Type	Fixed time					
Lost time [s]	0.00					
Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	3	0	2	0	0	6
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	10	0	0	10
Maximum Green [s]	114	0	98	0	0	98
Amber [s]	3.0	0.0	3.0	0.0	0.0	3.0
All red [s]	1.0	0.0	1.0	0.0	0.0	1.0
Split [s]	33	0	27	0	0	27
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	7	0	7	0	0	7
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	0.0	2.0
Minimum Recall	No		No			No
Maximum Recall	No		No			No
Pedestrian Recall	No		No			No
Pedestrian Signal Group	0					
Pedestrian Walk [s]	0					
Pedestrian Clearance [s]	0					

Lane Group Calculations

g / C, Green / Cycle	0.48	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.21	0.14	0.22
so, Base Saturation Flow per Lane [pc/h/ln]	1750	1750	1750
Arrival type	3	3	3
s, saturation flow rate [veh/h]	1412	1381	829
c, Capacity [veh/h]	682	529	420
X, volume / capacity	0.44	0.37	0.43
d, Delay for Lane Group [s/veh]	12.22	15.31	21.44

Lane Group LOS	B	B	C
Critical Lane Group	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.57	1.99	2.19
50th-Percentile Queue Length [ft/ln]	64.27	49.83	54.76
95th-Percentile Queue Length [veh/ln]	4.63	3.59	3.94
95th-Percentile Queue Length [ft/ln]	115.68	89.70	98.57

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.22	12.22	15.31	15.31	21.44	21.44
Movement LOS	B	B	B	B	C	C
Critical Movement	No	No	No	No	Yes	No
d_A, Approach Delay [s/veh]	12.22		15.31		21.44	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	15.59					
Intersection LOS	B					
Intersection V/C	0.432					

Option 5: Two-Way Stop Control

Number	1					
Intersection	Frenchtown Frontage Rd & Demer St					
Control Type	Two-way stop					
Analysis Method	HCM 7th Edition					
Name	Demer Street		Frenchtown Frontage Road		Frenchtown Frontage Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Base Volume Input [veh/h]	203	97	29	113	86	36
Total Analysis Volume [veh/h]	203	97	40	157	128	54

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Capacity Analysis

Calculated Rank	1	1	2	1	3	2
v_c, Conflicting Flow Rate	0	0	252	0	449	252
v_c, Stage 1	0	0	252	0	449	252
v_c, Stage 2	0	0	252	0	449	252
c_p,x, Potential Capacity [veh/h]	0	0	1326	0	569	655
c_p,x, Stage 1 [veh/h]	0	0	1765	0	644	702
c_p,x, Stage 2 [veh/h]	0	0	1765	0	644	702
c_m,x, Movement Capacity [veh/h]	100000	100000	1326	100000	568	655

c_m,x, Stage 1 [veh/h]	0	0	0	0	0	0
c_m,x, Stage 2 [veh/h]	0	0	0	0	0	0
c_T, Total Capacity [veh/h]	100000	100000	1326	100000	568	655

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.03	0.00	0.23	0.08
d_M, Delay for Movement [s/veh]	0.00	0.00	7.80	0.00	14.03	13.18
Movement LOS	A	A	A	A	B	B
Critical Movement	No	No	No	No	Yes	No
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.52	0.52	1.30	1.30
95th-Percentile Queue Length [ft/ln]	0.00	0.00	13.04	13.04	32.55	32.55
d_A, Approach Delay [s/veh]	0.00		1.58		13.78	
Approach LOS	A		A		B	
V/C_I, Worst Movement V/C Ratio	0.23					
d_I, Worst Movement Control Delay [s/veh]	14.03					
d_I, Intersection Delay [s/veh]	4.15					
Intersection LOS	B					