



# Craftsman Village of the Crossroads At Mountain View Meadows Phases 8-10 Traffic Impact Study Update

Helena, Montana



Prepared For:

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# Craftsman Village of the Crossroads At Mountain View Meadows Phases 8-10 Traffic Impact Study UPDATE Helena, Montana

## A. EXECUTIVE SUMMARY

The Craftsman Village of the Crossroads at Mountain View Meadows Phases 8-10 is a 40-acre residential development located south of US Highway 12/287 in Helena, Montana. The project would consist of 230 single family residential units and would be accessed from Alpine View Drive and Jeannette Rankin Drive. As proposed Craftsman Village of the Crossroads would produce 2,169 new daily trips in the area at full build-out. Craftsman Village of the Crossroads Phases 8-10 will not affect roadway operations in the area. All nearby intersections will continue to function at acceptable levels of service with the proposed development. No roadway modifications are currently recommended with this project.

## B. PROJECT DESCRIPTION

This document studies the possible effects on the surrounding road system from a proposed 40-acre residential development located south of US Highway 12/287 within the City of Helena between Helena and East Helena. The document identifies any traffic mitigation efforts that the development may require. The site is located north of Jeannette Rankin Drive and east of Alice Street.

## C. EXISTING CONDITIONS

The proposed development property currently consists of a 40-acre parcel of undeveloped land located south of US Highway 12/287 and north of Jeannette Rankin Drive adjacent to Mountain View Park and the previous phases of the Craftsman Village of the Crossroads which are nearing completion. The topography in this area consists of rolling hills which slope downward to the east. See **Figure 1** for a location map of the proposed development.

### Adjacent Roadways

**US Highway 12/287** is a four-lane, two-way east/west highway which extends east from Helena. US Highway 12/287 has a five-lane cross-section and the posted speed limit near Crossroads Parkway is 55 MPH which decreases to 45 MPH approximately 0.5 miles west of Crossroads Parkway and at the East. The Highway intersects with Crossroads Parkway at a signalized intersection. Crossroads Parkway has a separated eastbound lane from Highway 287 at the traffic signal. Traffic counts collected in 2021 by Montana Department

of Transportation (MDT) indicate that this section of roadway carries an Average Daily Traffic (ADT) volume of 17,200 vehicles per day (VPD) west of Crossroads Parkway.

**Highway 282** is a two-way north/south highway which extends south from Highway 12/287 in East Helena to an overpass at I-15. Highway 282 has a two-lane rural cross-section with a paved width of 28 feet. Near Runkle Parkway the highway has an extended width accommodating a northbound left-turn lane at the intersection. The posted speed limit near Runkle Parkway is 45 MPH and increases to 60 MPH south of Runkle Parkway. Traffic counts collected in 2021 by MDT indicate that this section of roadway carries an Average Daily Traffic (ADT) volume of 1,900 vehicles per day (VPD) south of Manlove Street.

**Crossroads Parkway** is a north/south, four-lane roadway that extends south from US Highway 12/287 providing residential and commercial access in the area. The road has an urban cross-section with a paved width of 65 feet, which includes left-turn bays at each intersection. The roadway features a central median and has a posted speed limit of 35 MPH. Crossroads Parkway is signal controlled at the intersection with US Highway 12/287.

**Alice Street** is a two-lane road which provides access to developments south of US Highway 12/287. Alice Street starts in an east/west direction at its intersection with Crossroads Parkway and changes to north/south approximately 0.25 miles east of Crossroads Parkway. The street has variable widths (24, 30, 36 and 40 feet) due to bulb outs along its north/south direction. The posted speed limit on Alice Street is 35 MPH. Data collected by Abelin Transportation Services (ATS) in 2022 indicates that the roadway currently carries 2,100 VPD.

**Jeannette Rankin Drive** is an east/west, two-lane residential collector street which intersects Alice Street to provide access to homes and the Mountain View Park. Jeannette Rankin Drive has a paved width of 33 feet and is a thru-street with STOP signs at each intersection. Jeannette Rankin Drive has a STOP sign at its intersection with Alice Street. Data collected by ATS in 2022 indicates that the roadway currently carries say 500 VPD.

**Runkle Parkway** is an east/west, two-lane roadway that extends west from Highway 282 providing residential access in the area. The road has an urban cross-section with a paved width of 42 feet and a posted speed limit of 35 MPH. Runkle Parkway has a central median with designated left-turn lanes at all cross-streets. Runkle Parkway is STOP controlled at the tee-intersection with Highway 282.

**Alpine View Drive** is a north/south, two-lane road which intersects Runkle Parkway to provide access to the developments in the area. The roadway is currently under construction to City of Helena local road standards.

Figure 1- Proposed Development Site



### Traffic Counts

In July 2022 ATS collected traffic data to evaluate current operational characteristics. The data collected includes a peak-hour turning movement count performed at the intersection of Jeannette Rankin Drive and Alice Street and 48-hour traffic counts along Alice Street and Jeannette Ranking Drive. Additional data used for this project was obtained from a February 2021 traffic counting effort by ATS at the intersections of Highway 282 with Runkle Parkway and Alpine View Drive. Based on comments from the City of Helena, ATS provided an additional review of the intersection of US 12/287 and Crossroads Parkway from November 2022. The raw traffic data is included in **Appendix A** of this report.

Raw traffic data is typically adjusted for seasonal variation in accordance with the data collected from MDT's permanent traffic data located on Custer Avenue east of York Road (Station A-079). This count station data indicated that data collected in July 2022 is approximately 116% of the Average Annual Daily Traffic (AADT) in this area. For a conservative result no factorization applied was to the raw data for the analysis of this project.

ATS obtained historic traffic data for US Highway 12 and MT Highway 282 from the MDT. This data is presented in **Table 1**. Based on the available traffic data for these two roadways, traffic volumes in this area have not increased significantly over the past ten years.

**Table 1 - Historic Average Daily Traffic Data (Source: MDT)**

Location	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Hwy 282 S of Manlove St #25-7B-044	--	--	--	--	1,596	1,583	1,917	1,929	1794	1795
Hwy 12/287 W of Wylie Dr #25-7B-019	18,660	17,520	17,920	17,000	16,540	17,099	17,338	17,251	15,733	17,196

Vehicle speed and volume data was also collected along Alice Street during the July count period. This information suggested that the average vehicle speed on Alice Street north of Jeannette Rankin Drive was 30 MPH with an 85<sup>th</sup> percentile speed of 37 MPH for all recorded vehicles. In general, vehicle travel speeds on this section are near or slightly above the posted 35 MPH speed limit.

### Area Crash Data

ATS obtained crash data from the MDT vehicle crash database for the study intersections. The data included all reported crashes which occur on these segments of road over the past five years. The MDT database indicates that 16 crashes have occurred at the intersection of HWY 287 and Crossroads Parkway and two crashes have occurred at the intersection of Runkle Parkway and MT 282. No crashes were reported at the other study intersections over the five-year period. Crash rates for HWY 287/Crossroads Parkway and Runkle Parkway/MT 282 are 0.03 per MVM and 0.4 respectively. These rates are well within typical standards and do not indicate a need for roadway mitigation.

### Additional Projects

Aspen View Condominiums Phase 1 & 2 are currently under construction just north of Runkle Parkway along Alpine View Drive. The projects will include 58 condominium units and would produce 424 VPD from both phases. The projected future traffic from this project is included with the overall analysis for the Craftsman Village development.

The Craftman Village at Mountain View Meadows generally matches the original intent of the residential density in this portion of the development property. Currently Mountain View Meadows has developed 400 of the originally planned 1,055 residential units on the property. The developers plan to amend a portion of the original 2012 Crossroads Preliminary Plat to update and correct the development plans and account for current lot configurations which includes reduction in overall lot density. There are no other MVM planned projects at this time that have not been previously analyzed with the existing preliminary plat regulatory review.

**Level of Service**

Using the data collected for this project, ATS conducted a Level of Service (LOS) analysis at area intersections. This evaluation was conducted in accordance with the procedures outlined in the Transportation Research Board’s *Highway Capacity Manual (HCM) - Special Report 209* and the Highway Capacity Software (HCS) version 8.2. Intersections are graded from A to F representing the average delay that a vehicle entering an intersection can expect. Typically, a LOS of C or better is considered acceptable for peak-hour conditions.

**Table 2** shows the existing 2022 LOS for the AM and PM peak hours without the traffic from the proposed Craftsman Village of the Crossroads Phases 8-10. The LOS calculations are included in **Appendix C**. The table shows that the existing intersections along Alice Street and Runkle Parkway are currently operating within acceptable limits. No intersection modifications are currently needed in this area to improve capacity. ATS also developed a no-build scenario for the study roadways based on a 1.7% traffic growth rate over the next three years. The projected no-build LOS is nearly identical to the existing traffic conditions. The results of this analysis are shown in **Table 3**.

**Table 2 – 2022 Level of Service Summary (Source: ATS)**

Intersection	AM Peak Hour		PM Peak Hour	
	Delay (Sec.)	LOS	Delay (Sec.)	LOS
Highway 287 & Crossroad Parkway	8.7	A	5.5	A
Highway 282 & Runkle Parkway*	10.8	B	9.0	A
Runkle Parkway & Alpine View*	9.0	A	8.7	A
Alice Street & Jeannette Rankin*	9.2	A	9.0	A

\*Northbound/Southbound LOS and Delay or Eastbound/Westbound Side Street LOS and Delay.

**Table 3 – 2025 No-Build Level of Service Summary (Source: ATS)**

Intersection	AM Peak Hour		PM Peak Hour	
	Delay (Sec.)	LOS	Delay (Sec.)	LOS
Highway 287 & Crossroad Parkway	9.3	A	5.7	A
Highway 282 & Runkle Parkway*	11.0	B	9.1	A
Runkle Parkway & Alpine View*	9.0/9.5	A/A	8.8/8.7	A/A
Alice Street & Jeannette Rankin*	9.2	A	9.1	A

\*Northbound/Southbound LOS and Delay or Eastbound/Westbound Side Street LOS and Delay.

The City of Helena also requested reviews of the possible traffic impacts from the proposed project to the intersection of US 12/287 with Elaine Street, Lola Street, North Side Frontage Road Access, Nickle Street, and South Side Frontage Road Access. The Helena LRTP indicates that several of these intersections have existing LOS deficiencies that should be addressed in the future. TSM-21 in the LRTP recommends installation of future traffic signals on US Highway 12 at Lola Street and/or Nicole Street when signal warrants are met. These roadway improvements have not been completed. The development of the Craftman Village at Mountain View Meadows does not directly access any of these roadways and will not directly impact the operations of these intersections other than contributing to the ongoing traffic volume growth along the US 12/287 corridor. The intersections are also not part of the City of Helena major street network and are well over a mile from the proposed development. The traffic impacts from the Craftman Village at these intersections will be minimal. The LRTP does not contain any additional recommended roadway improvements that would apply to the study area.

**D. PROPOSED DEVELOPMENT**

The development currently under consideration for this site includes 40 acres of land located west of the previous phases of the Craftsman Village of the Crossroads development and bordered by Jeannette Rankin Drive and Alpine View Drive. Phases 8-10 of the development would include up to 230 single-family residential properties. The project is planned for the development of 70 lots in phases 8 and 9, and 90 lots in Phase 10. Each phase would take one year to complete from 2023 to 2025. Access to the site would be provided through existing approaches from Jeannette Rankin Drive to the west and Alpine View Drive and a new connection to Alice Street at Alpine View Drive would be constructed with Phase 10. These phases of the project are expected to reach full development by 2025. All roads within the development would be constructed to City the Helena standards and will include boulevard sidewalks. On- and off-street parking will be supplied per City of Design Standards. All new streets will include sidewalks or a bike path according to the City complete streets policy and a 10-foot paved path adjacent to Runkle Parkway and Alice



Street is being developed along Alpine View Drive. This path will continue west from Alice Street along Runkle Parkway. There are currently no public transit stops within the vicinity of Mountain View Meadows. The Craftsman Village of the Crossroads phases 8-10 is shown in **Figure 2**.

**E. TRIP GENERATION AND ASSIGNMENT**

ATS performed a trip generation analysis to determine the anticipated future traffic volumes from the proposed development using the trip generation rates contained in *Trip Generation* (Institute of Transportation Engineers, Eleventh Edition). These rates are the national standard and are based on the most current information available to planners. A vehicle “trip” is defined as any trip that either begins or ends at the development site. ATS determined that the critical traffic impacts on the intersections and roadways would occur during the weekday morning and evening peak hours. According to the ITE trip generation rates, the Craftsman Village of the Crossroads would produce 161 AM peak hour trips, 216 PM peak hour trips, and 2,169 daily trips. See **Table 4** for detailed trip generation information.

**Table 4 - Trip Generation Rates (Source: ATS)**

Single-Family Res. ITE #210	Units	AM Peak Hour Trip Ends per Unit	Total AM Peak Hour Trip Ends	PM Peak Hour Trip Ends per Unit	Total PM Peak Hour Trip Ends	Weekday Trip Ends per Unit	Total Weekday Trip Ends
Phase 8 – 2023	70	0.7	49 (13in/36out)	0.94	66 (42in/24out)	9.43	660
Phase 9 – 2024	70	0.7	49 (13in/36out)	0.94	66 (42in/24out)	9.43	660
Phase 10 - 2025	90	0.7	63 (16in/47out)	0.94	85 (54in/31out)	9.43	849
<b>TOTAL</b>	<b>230</b>		<b>161</b> (42in/119out)		<b>217</b> (138in/79out)		<b>2,169</b>

**F. TRIP DISTRIBUTION**

The traffic distribution and assignment for the proposed subdivision was based upon the existing ADT volumes along the adjacent roadways and the peak-hour turning volumes. It is expected that 75% of the traffic from the proposed development site would use Jeannette Rankin Drive and Alpine View Drive to reach Alice Street and Highway 287 to the west into Helena, 15% would distribute to the south onto Runkle Parkway and Highway 282 to the south, and 10% would distribute north onto Highway 282 towards East Helena. All traffic directing towards Helena from Phases 8 and 9 of the development would use Jeanette Rankin Drive. This traffic will decrease significantly in Phase 10 with the direction connection of Alpine View Drive to Alice Street. Traffic is expected to distribute onto the surrounding road network as shown on **Figure 3**.

Figure 2 – Proposed Development

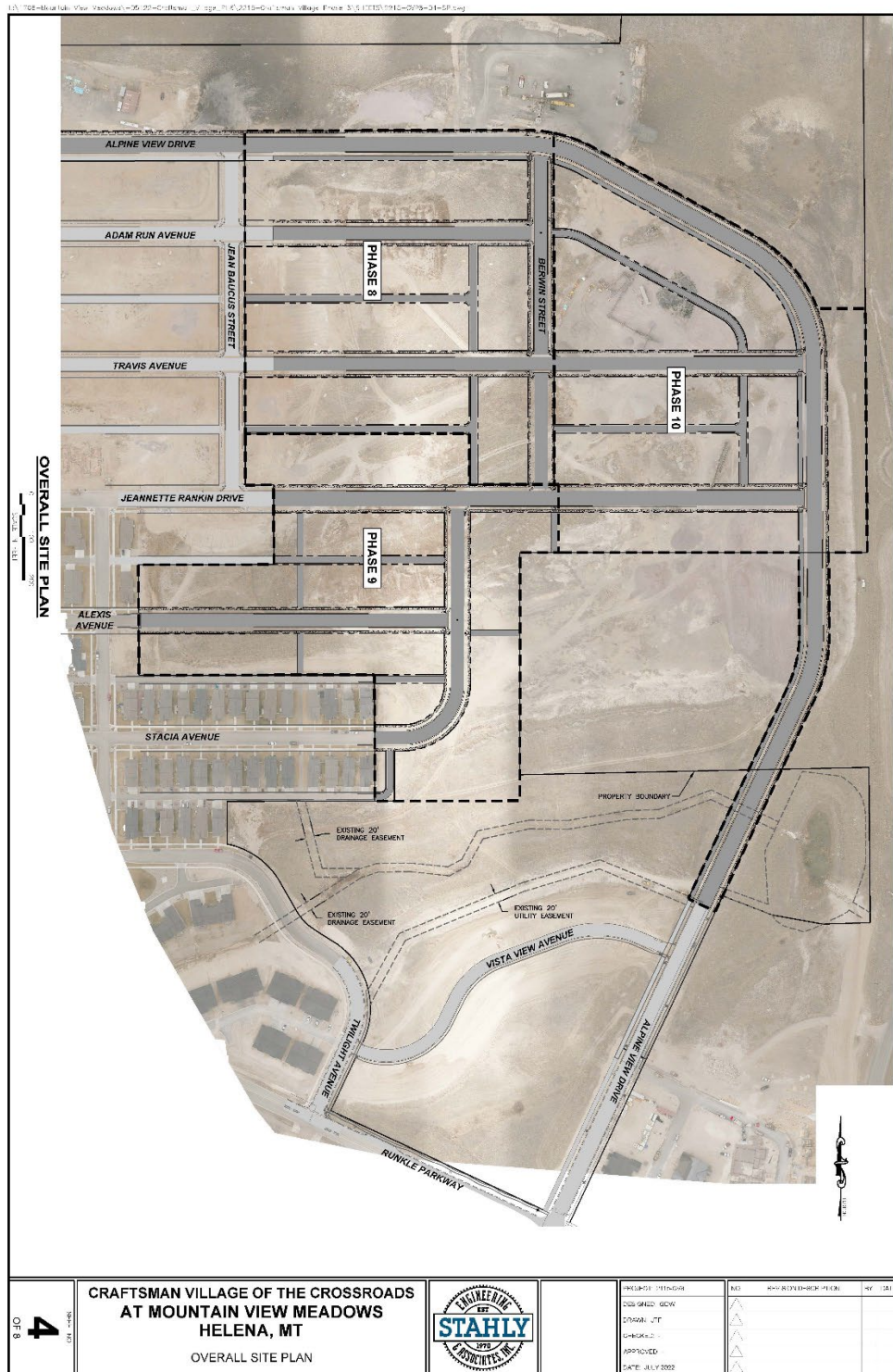
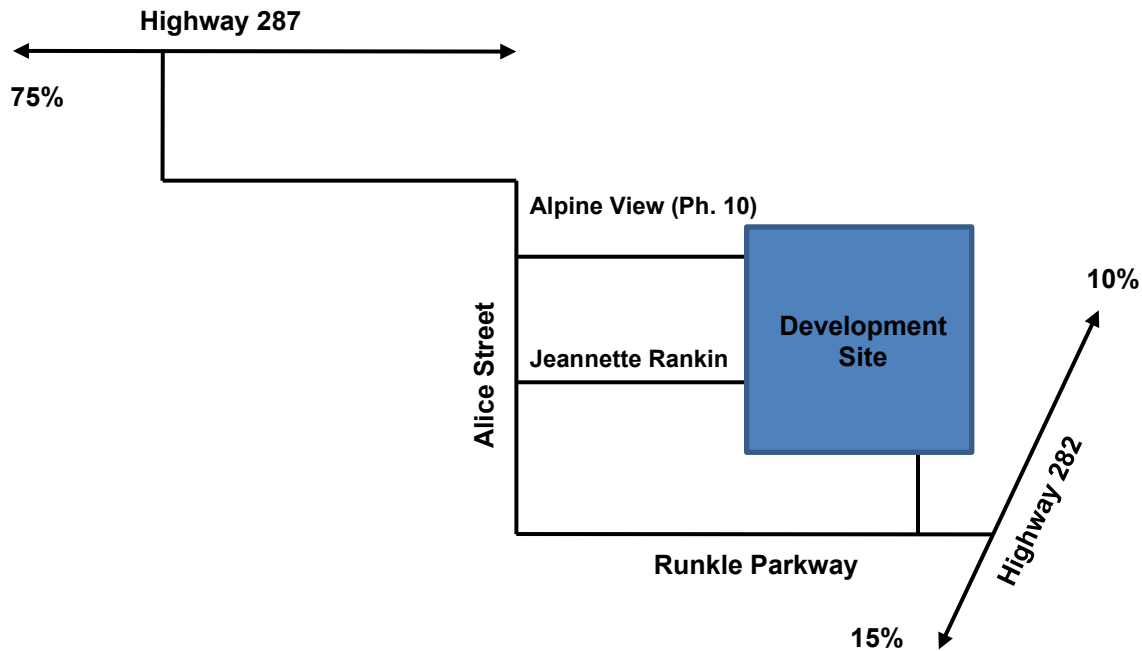


Figure 3 – Trip Distribution



**G. TRAFFIC IMPACTS OUTSIDE OF THE DEVELOPMENT**

Using the trip generation and trip distribution numbers, ATS determined the future Level of Service for the area intersections. The anticipated intersection LOS with the Craftsman Village of the Crossroads Phases 8-10 is shown in **Tables 5**. These calculations are based on the projected model volumes included in **Appendix B** of this report and includes the projected traffic from the 58 units from the Aspen View Condominiums Phases 1&2 currently under construction.

**Table 5** indicates that the construction of the Craftsman Village of the Crossroads Phases 8-10 will have little effect on the traffic conditions within the area. All area intersections will continue to function at LOS B or better at full build-out and no additional mitigation measures will be needed to improve intersection capacity. Both the intersections of Twilight Avenue and Alpine View Drive with Runkle Parkway have existing center left-turn lanes which will provide reserve operational capacity for these intersections well into the future. Based on the existing and projected traffic volumes along Alice Street, no additional turning lanes would be required at the intersections with Alpine View Drive or Jeannette Rankin Drive.

Total traffic volumes on Alice Street and Crossroads Parkway will increase by 1,600 VPD to a total of 3,700 VPD which is well within the capacity of a collector roadway. Traffic volume along the southern portion of Alpine View Drive will increase by approximately 500 VPD. The project will initially increase traffic volumes along Jeannette Rankin Drive (collector roadway) by

approximately 1,000 VPD with Phases 8 & 9 which will increase the total traffic along Jeannette Rankin Drive to 1,500 VPD. With the connection of Alpine View Drive to Alice Street with Phase 10 of the project, traffic volumes along Jeannette Rankin Drive will decrease to approximately 800 VPD.

**Table 5 –Level of Service Summary  
With the Craftsman Village of the Crossroads Phases 8-10 (Source: ATS)**

Intersection	AM Peak Hour		PM Peak Hour	
	Delay (Sec.)	LOS	Delay (Sec.)	LOS
Highway 287 & Crossroad Parkway	12.7	B	11.5	B
Highway 282 & Runkle Parkway	11.4	B	9.7	A
Runkle Parkway & Alpine View*	9.1/9.8	A/A	8.9/8.9	A/A
Alice Street & Alpine View	9.6	A	9.5	A
Alice Street & Jeannette Rankin	9.4	A	9.3	A

\*Northbound/Southbound LOS and Delay.

ATS used the HCS data to identify the average and maximum vehicle queuing lengths that can be expected at the study intersections with the development of the Craftsman Village. Under the existing roadway configuration, northbound vehicles queue at the Highway 287/Crossroads Parkway intersection will be in the range of 200 to 300 feet which are below the provided turn lane length (320 feet). The other turn lanes including the intersection of MT 282 with Runkle Parkway will have an average vehicle queue length of less than one vehicle.

**H. IMPACT SUMMARY & RECOMMENDATIONS**

As proposed Craftsman Village of the Crossroads would produce 2,169 new daily trips in the area at full build-out. Craftsman Village of the Crossroads Phases 8-10 will not affect roadway operations in the area. All nearby intersections will continue to function at acceptable levels of service with the proposed development. No roadway modifications are currently recommended with this project.

# **APPENDIX A**

## **Traffic Data**

Turning Movement Count

All Vehicles

Location MountainView

Date 7-19 PM and 7-20 AM

	Northbound				Southbound				Eastbound				Westbound				TOTAL	
	Left	Thr	Right	Peds	Left	Thr	Right	Peds	Left	Thr	Right	Peds	Left	Thr	Right	Peds		
7:00 - 7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 - 7:30	0	13	0	0	5	4	0	0	0	0	0	0	0	0	7	0	0	29
7:30 - 7:45	0	18	0	0	5	6	0	0	0	0	0	0	1	0	6	0	0	36
7:45 - 8:00	0	20	4	0	9	7	0	0	0	0	0	0	2	0	8	0	0	50
8:00 - 8:15	0	15	0	0	5	6	0	0	0	0	0	0	1	0	3	0	0	30
8:15 - 8:30	0	13	1	0	9	3	0	0	0	0	0	0	0	0	8	0	0	34
8:30 - 8:45	0	15	1	0	9	11	0	0	0	0	0	0	0	0	3	0	0	39
8:45 - 9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 - 9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 - 9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 - 10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 - 10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 - 10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 - 10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 - 11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 - 11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 - 11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 - 11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 - 12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 - 12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 - 12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 - 12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 - 1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 - 1:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 - 1:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 - 1:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 - 2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 - 2:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 - 2:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 - 2:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 - 3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 - 3:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 - 3:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 - 3:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 - 4:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 - 4:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 - 4:30	0	11	0	0	2	18	0	0	0	0	0	0	0	0	5	0	0	36
4:30 - 4:45	0	14	2	0	2	16	0	0	0	0	0	0	0	0	9	0	0	43
4:45 - 5:00	0	11	0	0	1	11	0	0	0	0	0	0	0	0	5	0	0	28
5:00 - 5:15	0	17	1	0	9	13	0	0	0	0	0	0	0	0	8	0	0	48
5:15 - 5:30	0	13	0	0	9	14	0	0	0	0	0	0	2	0	14	0	0	52
5:30 - 5:45	0	10	0	0	7	21	0	0	0	0	0	0	0	0	3	0	0	41
5:45 - 6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 - 6:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 - 6:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 - 6:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 - 7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	170	9	0	72	130	0	0	0	0	0	0	6	0	79	0	0	466



# Abelin Traffic Services

130 S. Howie Street  
Helena, MT 59601

File Name : RunkleAlpineTMC  
Site Code : 00000000  
Start Date : 2/24/2021  
Page No : 1

## Groups Printed- Unshifted - Bank 1 - Bank 2

Start Time	ALPINE VEIW Southbound					RUNKLE Westbound					ALPINE VEIW Northbound					RUNKLE Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
*** BREAK ***																					
07:30 AM	0	0	0	0	0	0	1	1	0	2	1	1	1	0	3	0	10	0	0	10	15
07:45 AM	0	0	0	0	0	0	4	0	0	4	3	0	1	0	4	0	21	0	0	21	29
Total	0	0	0	0	0	0	5	1	0	6	4	1	2	0	7	0	31	0	0	31	44
08:00 AM	0	0	0	0	0	0	8	0	0	8	1	0	0	0	1	0	15	0	0	15	24
08:15 AM	0	0	0	0	0	0	4	1	0	5	1	0	1	0	2	6	8	0	0	14	21
*** BREAK ***																					
Total	0	0	0	0	0	0	12	1	0	13	2	0	1	0	3	6	23	0	0	29	45
*** BREAK ***																					
04:30 PM	0	0	0	0	0	0	5	1	0	6	2	0	1	2	5	0	6	0	0	6	17
04:45 PM	0	0	0	0	0	0	13	2	1	16	1	0	0	0	1	1	9	0	1	11	28
Total	0	0	0	0	0	0	18	3	1	22	3	0	1	2	6	1	15	0	1	17	45
05:00 PM	0	0	0	0	0	0	15	3	0	18	2	0	1	0	3	0	3	2	0	5	26
05:15 PM	0	0	0	0	0	0	12	2	0	14	0	0	0	0	0	0	4	0	0	4	18
*** BREAK ***																					
Grand Total	0	0	0	0	0	0	62	10	1	73	11	1	5	2	19	7	76	2	1	86	178
Apprch %	0	0	0	0	0	0	84.9	13.7	1.4		57.9	5.3	26.3	10.5		8.1	88.4	2.3	1.2		
Total %	0	0	0	0	0	0	34.8	5.6	0.6	41	6.2	0.6	2.8	1.1	10.7	3.9	42.7	1.1	0.6	48.3	
Unshifted	0	0	0	0	0	0	62	10	1	73	11	1	5	2	19	7	76	2	1	86	178
% Unshifted	0	0	0	0	0	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Turning Movement Count

All Vehicles

Location Highway 287 & Crossroads Parkway

Date 11/3/2022

	Northbound				Southbound				Eastbound				Westbound				TOTAL
	Left	Thr	Right	Peds	Left	Thr	Right	Peds	Left	Thr	Right	Peds	Left	Thr	Right	Peds	
7:00 - 7:15	21	0	2	0	2	1	0	0	0	82	7	0	4	238	6	0	363
7:15 - 7:30	27	1	1	0	5	0	0	0	2	78	9	0	0	201	0	0	324
7:30 - 7:45	39	0	4	0	5	0	1	0	2	107	22	0	4	345	4	0	533
7:45 - 8:00	29	1	0	0	7	1	2	0	1	102	17	0	7	275	3	0	445
8:00 - 8:15	16	0	1	0	4	2	4	0	0	89	15	0	2	249	1	0	383
8:15 - 8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 - 8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 - 9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 - 9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 - 9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 - 10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 - 10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 - 10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 - 10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 - 11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 - 11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 - 11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 - 11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 - 12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 - 12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 - 12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 - 12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 - 1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 - 1:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 - 1:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 - 1:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 - 2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 - 2:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 - 2:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 - 2:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 - 3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 - 3:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 - 3:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 - 3:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 - 4:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 - 4:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 - 4:30	23	2	4	0	7	1	0	0	1	245	25	0	2	139	4	0	453
4:30 - 4:45	23	0	7	0	8	1	1	0	2	242	14	0	4	140	2	0	444
4:45 - 5:00	25	0	4	0	8	0	2	0	2	260	17	0	2	130	1	0	451
5:00 - 5:15	24	0	2	0	13	0	4	0	0	268	26	0	2	131	3	0	473
5:15 - 5:30	21	1	1	0	10	0	1	0	1	310	22	0	2	152	3	0	524
5:30 - 5:45	19	0	1	0	5	1	2	0	0	274	20	0	2	129	2	0	455
5:45 - 6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 - 6:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 - 6:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 - 6:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 - 7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	267	5	27	0	74	7	17	0	11	2057	194	0	31	2129	29	0	4848

For Project: AliceStreet Helena  
 Project Notes:  
 Location/Name: Merged  
 Report Generated: 8/3/2022 09:06  
 Speed Intervals: 1 MPH  
 Time Intervals: Instant  
 Traffic Report From: 7/19/2022 10:00:00 through 7/21/2022 11:59:59  
 85th Percentile Speed: 37 MPH  
 85th Percentile Vehicles: 3703  
 Max Speed: 67 MPH on 7/19/2022 17:26:37  
 Total Vehicles: 4357  
 AADT: 2091

## Volumes - weekly counts

Time	5 Day	7 Day
Average Daily	1452	1452
AM Peak 07:00	186	186
PM Peak 12:00	196	196

## Speed

Speed Limit: 35  
 85th Percentile Speed: 37  
 50th Percentile Speed: 31  
 10 MPH Pace Interval: 28.0 MPH to 38.0 MPH  
 Average Speed: 29.54

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Count over limit	N/A	324	502	174	N/A	N/A	N/A
% over limit	N/A	22.7	23.2	22.7	N/A	N/A	N/A
Avg Speeder	N/A	38.5	38.6	38.6	N/A	N/A	N/A

## Class Counts

	Number	%
VEH_SM	101	2.3
VEH_MED	4107	94.3
VEH_LG	149	3.4
[VEH_SM=motorcycle, VEH_MED = sedan, VEH_LG = truck]		

Merged Weekly Counts  
AliceStreet Helena

from Tue-Jul-19-2022-10-00-AM to Thu-Jul-21-2022-11-59-AM

	7/18/2022	to	7/24/2022							
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Week	Weekend	Week Day 85%
Hour	7/18/2022	7/19/2022	7/20/2022	7/21/2022	7/22/2022	7/23/2022	7/24/2022	Day Avg	Avg	Avg Speed
0 - 1	*	*	4	3	*	*	*	3.5	0	33.5
1 - 2	*	*	2	1	*	*	*	1.5	0	31.5
2 - 3	*	*	1	2	*	*	*	1.5	0	32
3 - 4	*	*	5	4	*	*	*	4.5	0	36
4 - 5	*	*	4	4	*	*	*	4	0	30
5 - 6	*	*	36	38	*	*	*	37	0	35.9
6 - 7	*	*	71	51	*	*	*	61	0	37.25
7 - 8	*	*	191	182	*	*	*	186.5	0	36.3
8 - 9	*	*	164	137	*	*	*	150.5	0	36.2
9 - 10	*	*	116	113	*	*	*	114.5	0	36.65
10 - 11	*	18	151	109	*	*	*	92.67	0	35.13
11 - 12	*	165	149	122	*	*	*	145.33	0	36.37
12 - 13	*	177	215	*	*	*	*	196	0	36.35
13 - 14	*	127	160	*	*	*	*	143.5	0	36.7
14 - 15	*	112	122	*	*	*	*	117	0	36.7
15 - 16	*	148	115	*	*	*	*	131.5	0	35.75
16 - 17	*	158	189	*	*	*	*	173.5	0	36.75
17 - 18	*	221	166	*	*	*	*	193.5	0	36.95
18 - 19	*	90	91	*	*	*	*	90.5	0	37.3
19 - 20	*	81	65	*	*	*	*	73	0	37.65
20 - 21	*	72	45	*	*	*	*	58.5	0	36.5
21 - 22	*	39	61	*	*	*	*	50	0	35.5
22 - 23	*	21	29	*	*	*	*	25	0	35
23 - 24	*	1	9	*	*	*	*	5	0	32.5
Totals	0	1430	2161	766	0	0	0			
% of Total	0%	32.82%	49.6%	17.58%	0%	0%	0%			

For Project: Jeannette Rankin Helena  
 Project Notes:  
 Location/Name: Merged  
 Report Generated: 8/3/2022 09:12  
 Speed Intervals: 1 MPH  
 Time Intervals: Instant  
 Traffic Report From: 7/19/2022 10:00:00 through 7/21/2022 11:59:59  
 85th Percentile Speed: 28 MPH  
 85th Percentile Vehicles: 839  
 Max Speed: 43 MPH on 7/20/2022 11:29:54  
 Total Vehicles: 987  
 AADT: 473

## Volumes - weekly counts

Time	5 Day	7 Day
Average Daily	329	329
AM Peak	48	48
PM Peak	51	51

## Speed

Speed Limit: 35  
 85th Percentile Speed: 28  
 50th Percentile Speed: 23  
 10 MPH Pace Interval: 18.0 MPH to 28.0 MPH  
 Average Speed: 23.04

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Count over limit	N/A	3	10	5	N/A	N/A	N/A
% over limit	N/A	0.9	2.1	2.7	N/A	N/A	N/A
Avg Speeder	N/A	38.0	38.4	40.6	N/A	N/A	N/A

## Class Counts

	Number	%
VEH_SM	70	7.1
VEH_MED	883	89.5
VEH_LG	34	3.4
[VEH_SM=motorcycle, VEH_MED = sedan, VEH_LG = truck]		

Merged Weekly Counts  
 Jeannette Rankin Helena

from Tue-Jul-19-2022-10-00-AM to Thu-Jul-21-2022-11-59-AM

	7/18/2022	to	7/24/2022							
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Week	Weekend	Week Day 85%
Hour	7/18/2022	7/19/2022	7/20/2022	7/21/2022	7/22/2022	7/23/2022	7/24/2022	Day Avg	Avg	Avg Speed
0 - 1	*	*	1	0	*	*	*	0.5	0	21
1 - 2	*	*	0	0	*	*	*	0	0	0
2 - 3	*	*	0	0	*	*	*	0	0	0
3 - 4	*	*	0	1	*	*	*	0.5	0	23
4 - 5	*	*	1	1	*	*	*	1	0	20.5
5 - 6	*	*	8	8	*	*	*	8	0	30
6 - 7	*	*	15	12	*	*	*	13.5	0	27.5
7 - 8	*	*	45	47	*	*	*	46	0	28.6
8 - 9	*	*	51	45	*	*	*	48	0	28.5
9 - 10	*	*	21	24	*	*	*	22.5	0	27
10 - 11	*	9	27	24	*	*	*	20	0	26.33
11 - 12	*	51	38	21	*	*	*	36.67	0	25.93
12 - 13	*	48	54	*	*	*	*	51	0	27.1
13 - 14	*	32	42	*	*	*	*	37	0	26.75
14 - 15	*	18	25	*	*	*	*	21.5	0	25.75
15 - 16	*	31	28	*	*	*	*	29.5	0	28.75
16 - 17	*	31	40	*	*	*	*	35.5	0	28.5
17 - 18	*	48	24	*	*	*	*	36	0	27.1
18 - 19	*	11	20	*	*	*	*	15.5	0	29.75
19 - 20	*	15	10	*	*	*	*	12.5	0	29
20 - 21	*	13	10	*	*	*	*	11.5	0	27
21 - 22	*	10	14	*	*	*	*	12	0	28
22 - 23	*	4	7	*	*	*	*	5.5	0	25.75
23 - 24	*	0	2	*	*	*	*	1	0	24
Totals	0	321	483	183	0	0	0			
% of Total	0%	32.52%	48.94%	18.54%	0%	0%	0%			

# **APPENDIX B**

## **Traffic Model**

**Craftsman Village Phases 8-10**

Seasonal Factor 1.08

Crossroads Parkway

Traffic Model Existing 2022 AM Peak Hour (15 Min x 4)

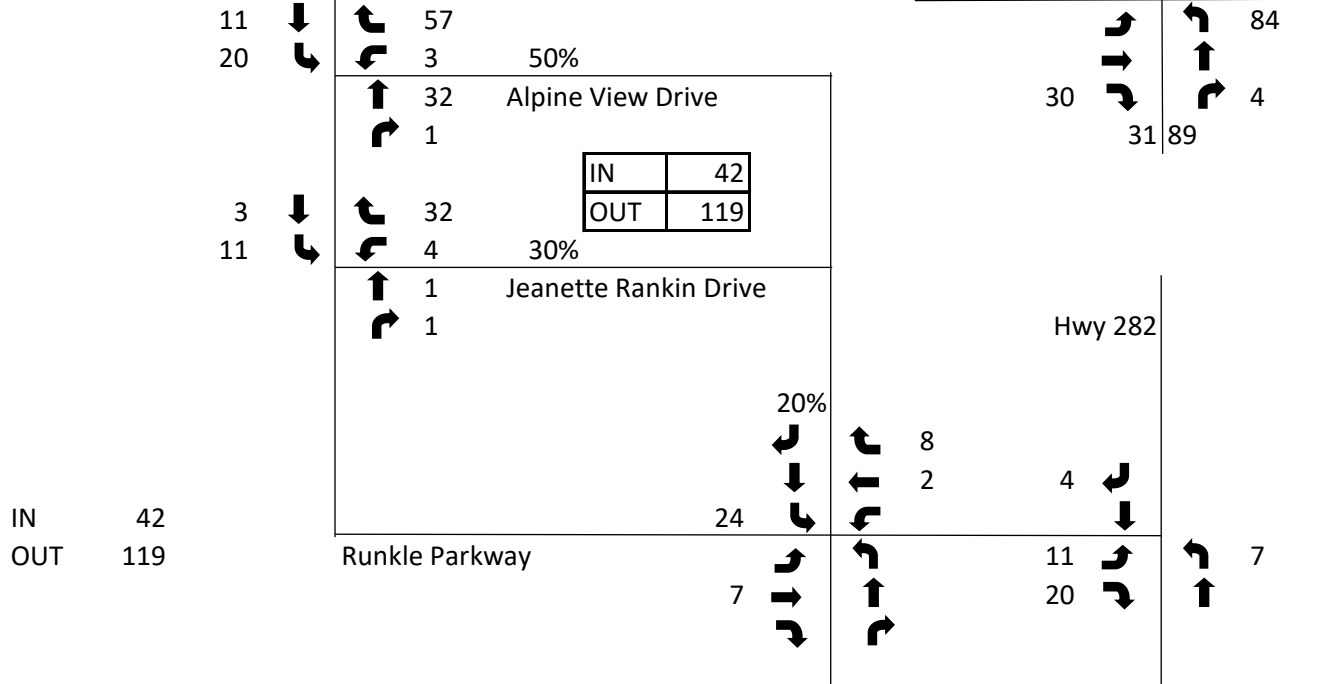
Alice Street				HWY 287		Crossroads Parkway	
		<b>0.0 A</b>				<b>8.7 A</b>	
64	↓	↗	0	4	↘	↖	17
0	↘	↖	0	0	↓	↑	1490
		↑	112	Alpine View Drive			
		↘	0				
<b>9.2 A</b>							
28	↓	↗	32	Hwy 282			
36	↘	↖	8				
		↑	80	Jeanette Rankin Drive			
		↘	16				
				<b>9.0 A</b>			
		0	↘	0	↖	0	
		0	↓	17	↑	13	<b>10.8 B</b>
		0	↘	4	↖	199	
Runkle Parkway		0	↘	4	↖	43	↖
		91	↓	0	↘	60	↑
		4	↘	13	↖		99

Traffic Model Existing 2022 PM Peak Hour (15 Min x 4)

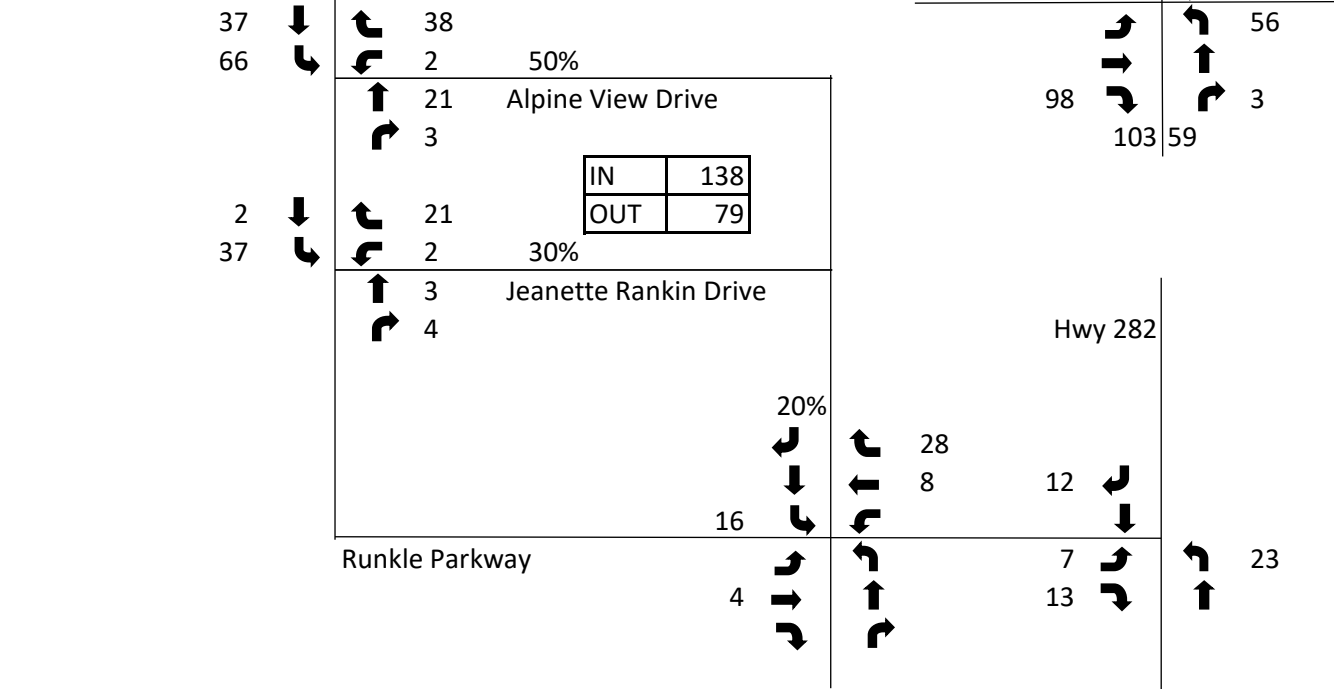
Alice Street				HWY 287		Crossroads Parkway	
		<b>0.0 A</b>				<b>5.5 A</b>	
92	↓	↗	0	4	↘	↖	13
0	↘	↖	0	0	↓	↑	657
		↑	108	Alpine View Drive			
		↘	0				
<b>9.0 A</b>							
56	↓	↗	56	Hwy 282			
36	↘	↖	8				
		↑	52	Jeanette Rankin Drive			
		↘	4				
				<b>8.7 A</b>			
		0	↘	0	↖	0	
		0	↓	65	↑	13	<b>9.0 A</b>
		0	↘	13	↖	30	
Runkle Parkway		0	↘	4	↖	4	↖
		13	↓	0	↘	30	↑
		9	↘	9	↖		181

**Craftsman Village Phases 8-10**

Traffic Model  
 Site Generated Traffic  
 AM Peak Hour



Traffic Model  
 Site Generated Traffic  
 PM Peak Hour

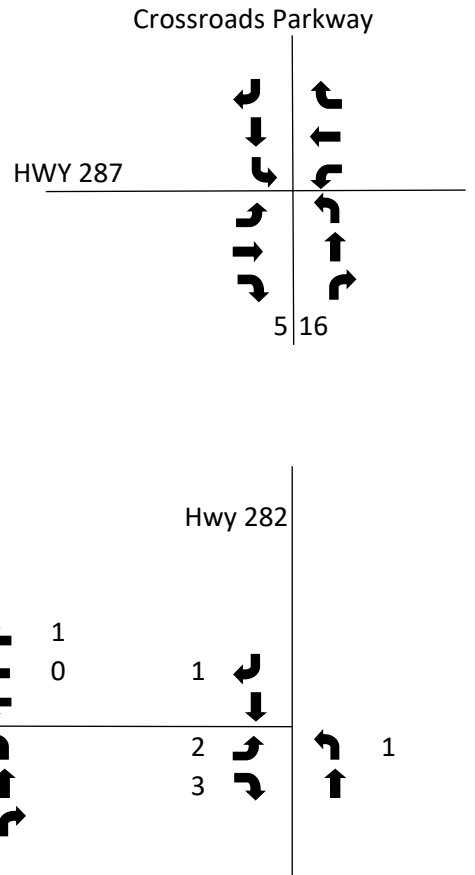
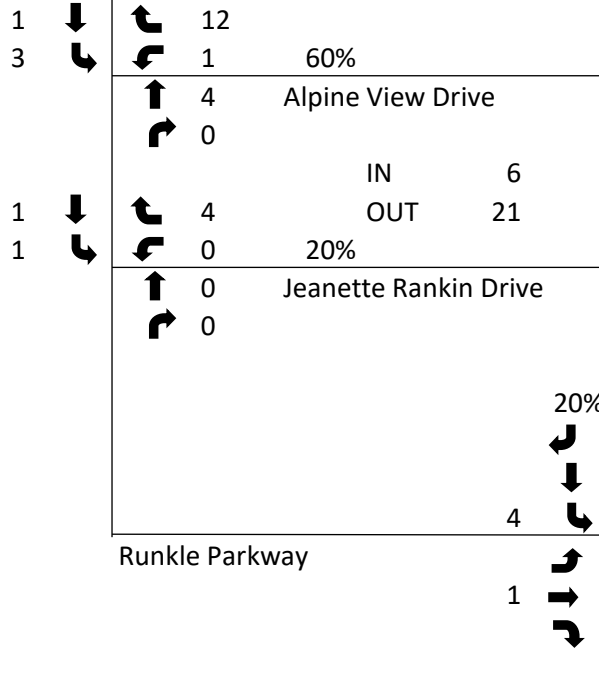




**Craftsman Village Phases 8-10**

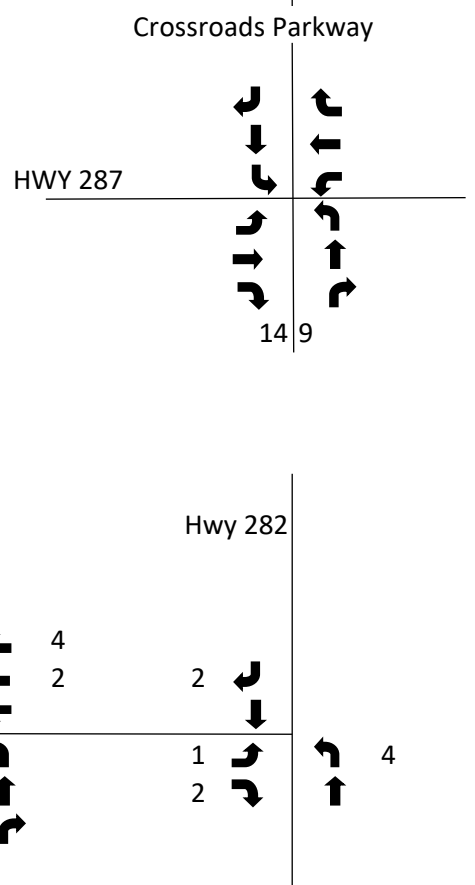
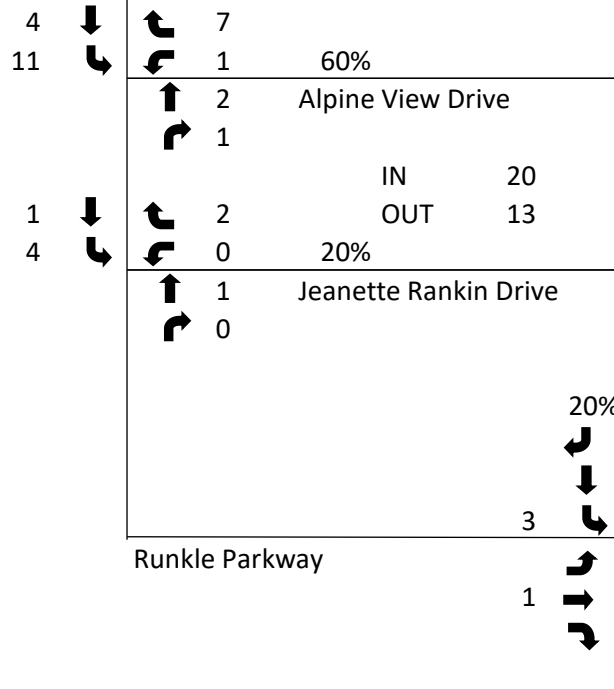
Traffic Model  
Aspen View Traffic  
AM Peak Hour

Alice Street



Traffic Model  
Aspen View Traffic  
PM Peak Hour

Alice Street



**Craftsman Village Phases 8-10**

Background Growth

1.05

Crossroads Parkway

Traffic Model  
NO BUILD TRAFFIC  
AM Peak Hour  
2025

Alice Street

68  
3



**9.1 A**

12  
1

121  
0

Alpine View Drive

**9.2 A**

30  
39



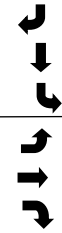
37  
9

84  
17

Jeanette Rankin Drive

HWY 287

5  
0  
23  
9  
485  
100



**9.3 A**  
18  
1565  
18  
177  
5  
18

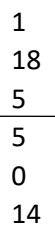
Hwy 282

**9.0/9.5 A/A**

0  
0  
4  
0  
96  
5



1  
18  
5  
5  
0  
14



14  
209

**11.0 B**

5  
104

Runkle Parkway

Crossroads Parkway

Traffic Model  
NO BUILD TRAFFIC  
PM Peak Hour  
2025

Alice Street

100  
11



**9.1 A**

7  
1

116  
1

Alpine View Drive

**9.1 A**

60  
41



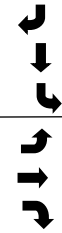
61  
9

56  
5

Jeanette Rankin Drive

HWY 287

5  
0  
45  
5  
1406  
100



**5.7 A**  
14  
689  
9  
95  
5  
5

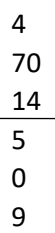
Hwy 282

**8.8/8.7 A/A**

0  
0  
3  
0  
15  
9



4  
70  
14  
5  
0  
9



15  
32

**9.1 A**

72  
191

Runkle Parkway

**Craftsman Village Phases 8-10**

Background Growth 1.05

Crossroads Parkway **12.7 B**

Traffic Model Alice Street

Total Projected Traffic

AM Peak Hour

2025

80  
23

**9.6 A**  
68  
4

**9.4 A**

33  
50

154 Alpine View Drive  
1  
70  
12

85 Jeanette Rankin Drive  
18

0  
0  
28  
0  
103  
5

HWY 287  
23  
9  
485  
130

18  
1565  
20  
261  
5  
23

**9.1/9.8 A/A**

10  
21  
5  
5  
0  
86

Hwy 282

**11.4 B**

18  
209  
58  
86

Runkle Parkway

Crossroads Parkway **11.5 B**

Traffic Model Alice Street

Total Projected Traffic

PM Peak Hour

2025

137  
76

**9.5 A**  
45  
3

**9.3 A**

62  
79

137 Alpine View Drive  
5  
82  
11

59 Jeanette Rankin Drive  
9

0  
0  
18  
0  
19  
9

HWY 287  
45  
5  
1406  
197

14  
689  
14  
151  
5  
7

**8.9/8.9 A/A**

32  
77  
14  
5  
13  
0  
47  
9

Hwy 282

**9.7 A**

28  
32  
95  
191

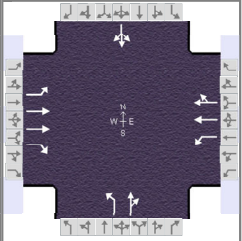
Runkle Parkway

# **APPENDIX C**

## **LOS Calculations**

# HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	ATS			Duration, h	0.250
Analyst	RLA	Analysis Date	Nov 3, 2022	Area Type	Other
Jurisdiction	MDT	Time Period	Existing AM Peak	PHF	1.00
Urban Street	HWY 287	Analysis Year	2022	Analysis Period	1 > 7:00
Intersection	Crossroads Parkwy	File Name	HWY287AM.xus		
Project Description	MVM				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand ( v ), veh/h	9	462	95	17	1490	17	168	4	17	22	0	4

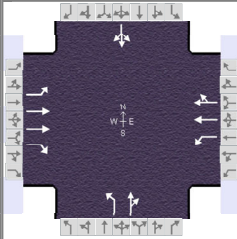
Signal Information																		
Cycle, s	90.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	On	Green	69.0	11.0	0.0	0.0	0.0	0.0	1		2		3		4	
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	5		6		7		8	
				Red	1.0	1.0	0.0	0.0	0.0	0.0								

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		6.0		6.0		8.0
Phase Duration, s		74.0		74.0		16.0		16.0
Change Period, ( Y+R <sub>c</sub> ), s		5.0		5.0		5.0		5.0
Max Allow Headway ( MAH ), s		0.0		0.0		3.1		3.1
Queue Clearance Time ( g <sub>s</sub> ), s						13.0		4.0
Green Extension Time ( g <sub>e</sub> ), s		0.0		0.0		0.0		0.2
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		0.02

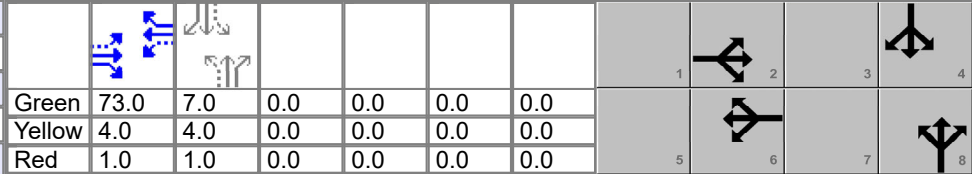
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate ( v ), veh/h	9	462	95	17	755	752	168	21			26	
Adjusted Saturation Flow Rate ( s ), veh/h/ln	367	1809	1675	983	1900	1892	1492	1658			1423	
Queue Service Time ( g <sub>s</sub> ), s	0.9	3.1	1.3	0.4	13.8	13.9	9.0	1.0			0.9	
Cycle Queue Clearance Time ( g <sub>c</sub> ), s	14.7	3.1	1.3	3.5	13.8	13.9	11.0	1.0			2.0	
Green Ratio ( g/C )	0.77	0.77	0.77	0.77	0.77	0.77	0.12	0.12			0.12	
Capacity ( c ), veh/h	305	2773	1284	800	1457	1451	230	203			248	
Volume-to-Capacity Ratio ( X )	0.030	0.167	0.074	0.021	0.518	0.519	0.730	0.104			0.105	
Back of Queue ( Q ), ft/ln ( 95 th percentile)	3.4	34.6	14	3.3	176.8	176.5	192.5	18.2			22.8	
Back of Queue ( Q ), veh/ln ( 95 th percentile)	0.1	1.4	0.6	0.1	7.1	7.1	7.7	0.7			0.9	
Queue Storage Ratio ( RQ ) ( 95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00	
Uniform Delay ( d <sub>1</sub> ), s/veh	6.9	2.8	2.6	3.3	4.1	4.1	41.0	35.1			35.6	
Incremental Delay ( d <sub>2</sub> ), s/veh	0.2	0.1	0.1	0.0	1.3	1.3	9.9	0.1			0.1	
Initial Queue Delay ( d <sub>3</sub> ), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Control Delay ( d ), s/veh	7.1	2.9	2.7	3.3	5.4	5.4	50.8	35.2			35.7	
Level of Service ( LOS )	A	A	A	A	A	A	D	D			D	
Approach Delay, s/veh / LOS	3.0		A	5.4		A	49.1		D	35.7		D
Intersection Delay, s/veh / LOS	8.7						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.83	B	1.61	B	2.30	B	2.45	B
Bicycle LOS Score / LOS	0.95	A	1.74	B	0.80	A	0.53	A

## HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ATS			Duration, h	0.250	
Analyst	RLA	Analysis Date	Nov 3, 2022	Area Type	Other	
Jurisdiction	MDT	Time Period	Existing PM Peak	PHF	1.00	
Urban Street	HWY 287	Analysis Year	2022	Analysis Period	1 > 7:00	
Intersection	Crossroads Parkway	File Name	HWY287PM.xus			
Project Description	MVM					

Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand ( $v$ ), veh/h	4	1339	95	9	657	13	91	4	4	43	0	4

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
Green	73.0	7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		6.0		6.0		8.0
Phase Duration, s		78.0		78.0		12.0		12.0
Change Period, ( $Y+R_c$ ), s		5.0		5.0		5.0		5.0
Max Allow Headway ( $MAH$ ), s		0.0		0.0		3.1		3.1
Queue Clearance Time ( $g_s$ ), s						9.0		4.8
Green Extension Time ( $g_e$ ), s		0.0		0.0		0.0		0.0
Phase Call Probability						0.97		0.97
Max Out Probability						1.00		1.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate ( $v$ ), veh/h	4	1339	95	9	336	334	91	8			47	
Adjusted Saturation Flow Rate ( $s$ ), veh/h/ln	811	1809	1675	431	1900	1887	1492	1743			1471	
Queue Service Time ( $g_s$ ), s	0.1	10.0	1.0	0.6	3.7	3.7	4.2	0.4			2.4	
Cycle Queue Clearance Time ( $g_c$ ), s	3.8	10.0	1.0	10.6	3.7	3.7	7.0	0.4			2.8	
Green Ratio ( $g/C$ )	0.81	0.81	0.81	0.81	0.81	0.81	0.08	0.08			0.08	
Capacity ( $c$ ), veh/h	705	2934	1358	382	1541	1530	149	136			191	
Volume-to-Capacity Ratio ( $X$ )	0.006	0.456	0.070	0.024	0.218	0.218	0.610	0.059			0.246	
Back of Queue ( $Q$ ), ft/ln ( 95 th percentile)	0.6	86.4	8.9	2.4	35.7	35.5	99.2	7.3			44.2	
Back of Queue ( $Q$ ), veh/ln ( 95 th percentile)	0.0	3.5	0.4	0.1	1.4	1.4	4.0	0.3			1.8	
Queue Storage Ratio ( $RQ$ ) ( 95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00	
Uniform Delay ( $d_1$ ), s/veh	2.4	2.5	1.7	4.1	2.0	2.0	43.4	38.4			39.6	
Incremental Delay ( $d_2$ ), s/veh	0.0	0.5	0.1	0.1	0.3	0.3	5.2	0.1			0.2	
Initial Queue Delay ( $d_3$ ), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Control Delay ( $d$ ), s/veh	2.4	3.1	1.8	4.2	2.3	2.3	48.6	38.5			39.9	
Level of Service (LOS)	A	A	A	A	A	A	D	D			D	
Approach Delay, s/veh / LOS	3.0		A	2.3		A	47.8		D		39.9	
Intersection Delay, s/veh / LOS	5.5						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.82	B	1.59	B	2.30	B	2.46	B
Bicycle LOS Score / LOS	1.67	B	1.05	A	0.65	A	0.57	A

# HCS Two-Way Stop-Control Report

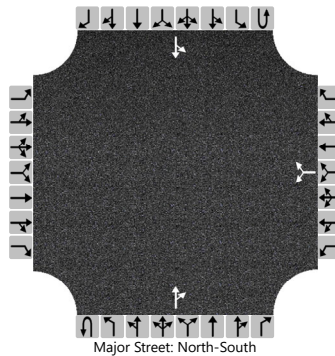
## General Information

Analyst	RLA
Agency/Co.	ATS
Date Performed	8/2/2022
Analysis Year	2022
Time Analyzed	AM peak existing
Intersection Orientation	North-South
Project Description	Mountain View

## Site Information

Intersection	Alice and Alpine View
Jurisdiction	Lewis and Clark
East/West Street	Alpine View
North/South Street	Alice
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						0		0			112	0		0		64
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2								4.1	
Critical Headway (sec)						6.43		6.23								4.13	
Base Follow-Up Headway (sec)						3.5		3.3								2.2	
Follow-Up Headway (sec)						3.53		3.33								2.23	

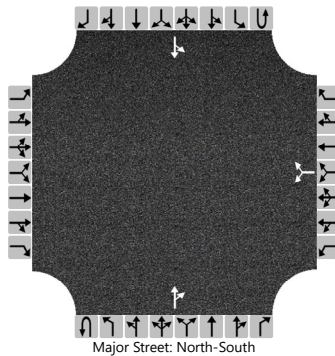
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						0										0	
Capacity, c (veh/h)						0										1459	
v/c Ratio																0.00	
95% Queue Length, Q <sub>95</sub> (veh)																0.0	
Control Delay (s/veh)																7.5	0.0
Level of Service (LOS)																A	A
Approach Delay (s/veh)													0.0				
Approach LOS													A				

# HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	RLA	Intersection	Alice and Alpine View				
Agency/Co.	ATS	Jurisdiction	Lewis and Clark				
Date Performed	8/2/2022	East/West Street	Alpine View				
Analysis Year	2022	North/South Street	Alice				
Time Analyzed	PM peak existing	Peak Hour Factor	0.92				
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25				
Project Description	Mountain View						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						0		0			108	0		0		92
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2								4.1	
Critical Headway (sec)						6.43		6.23								4.13	
Base Follow-Up Headway (sec)						3.5		3.3								2.2	
Follow-Up Headway (sec)						3.53		3.33								2.23	

## Delay, Queue Length, and Level of Service

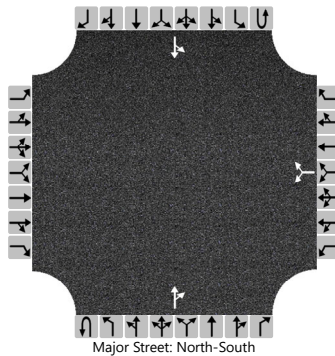
Flow Rate, v (veh/h)						0										0	
Capacity, c (veh/h)						0										1465	
v/c Ratio																0.00	
95% Queue Length, Q <sub>95</sub> (veh)																0.0	
Control Delay (s/veh)																7.5	0.0
Level of Service (LOS)																A	A
Approach Delay (s/veh)	0.0																
Approach LOS	A																



# HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	RLA			Intersection	Alice and Rankin		
Agency/Co.	ATS			Jurisdiction	Lewis and Clark		
Date Performed	8/2/2022			East/West Street	Jeannette Rankin		
Analysis Year	2022			North/South Street	Alice		
Time Analyzed	AM peak existing			Peak Hour Factor	0.92		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Mountain View						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						8		32			80	16		36	28	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2							4.1		
Critical Headway (sec)						6.43		6.23							4.13		
Base Follow-Up Headway (sec)						3.5		3.3							2.2		
Follow-Up Headway (sec)						3.53		3.33							2.23		

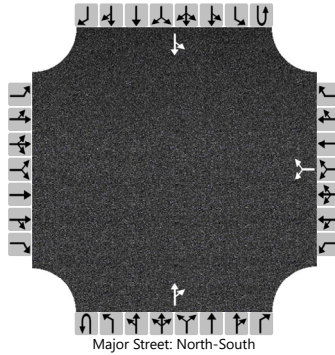
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						43									39		
Capacity, c (veh/h)						911									1481		
v/c Ratio						0.05									0.03		
95% Queue Length, Q <sub>95</sub> (veh)						0.2									0.1		
Control Delay (s/veh)						9.2									7.5	0.2	
Level of Service (LOS)						A									A	A	
Approach Delay (s/veh)					9.2								4.3				
Approach LOS					A								A				

# HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	RLA			Intersection	Alice and Rankin		
Agency/Co.	ATS			Jurisdiction	Lewis and Clark		
Date Performed	8/2/2022			East/West Street	Jeannette Rankin		
Analysis Year	2022			North/South Street	Alice		
Time Analyzed	PM peak existing			Peak Hour Factor	0.92		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Mountain View						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						8		56			52	4		36	56	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2							4.1		
Critical Headway (sec)						6.43		6.23							4.13		
Base Follow-Up Headway (sec)						3.5		3.3							2.2		
Follow-Up Headway (sec)						3.53		3.33							2.23		

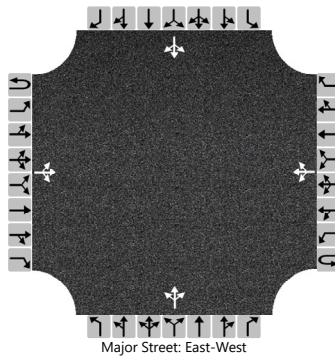
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						70									39		
Capacity, c (veh/h)						967									1536		
v/c Ratio						0.07									0.03		
95% Queue Length, Q <sub>95</sub> (veh)						0.2									0.1		
Control Delay (s/veh)						9.0									7.4	0.2	
Level of Service (LOS)						A									A	A	
Approach Delay (s/veh)					9.0								3.0				
Approach LOS					A								A				

# HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	RLA			Intersection	Rundle and Alpine View		
Agency/Co.	ATS			Jurisdiction	Lewis and Clark		
Date Performed	8/2/2022			East/West Street	Rundle		
Analysis Year	2022			North/South Street	Alpine		
Time Analyzed	AM peak existing			Peak Hour Factor	0.92		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	Mountain View						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12	
Priority																	
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0	
Configuration			LTR				LTR				LTR				LTR		
Volume (veh/h)		0	91	4		4	17	0		4	0	13		0	0	0	
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3	
Proportion Time Blocked																	
Percent Grade (%)										0				0			
Right Turn Channelized																	
Median Type   Storage	Undivided																

## Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

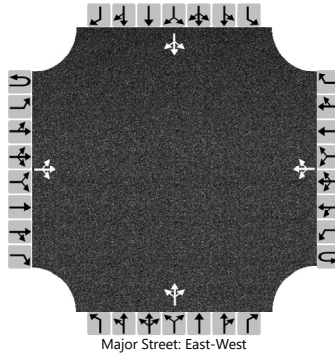
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0				4					18					0
Capacity, c (veh/h)		1592				1482					923					0
v/c Ratio		0.00				0.00					0.02					
95% Queue Length, Q <sub>95</sub> (veh)		0.0				0.0					0.1					
Control Delay (s/veh)		7.3	0.0	0.0		7.4	0.0	0.0			9.0					
Level of Service (LOS)		A	A	A		A	A	A			A					
Approach Delay (s/veh)		0.0				1.4				9.0						
Approach LOS		A				A				A						

# HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	RLA			Intersection	Rundle and Alpine View		
Agency/Co.	ATS			Jurisdiction	Lewis and Clark		
Date Performed	8/2/2022			East/West Street	Rundle		
Analysis Year	2022			North/South Street	Alpine		
Time Analyzed	PM peak existing			Peak Hour Factor	0.92		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	Mountain View						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		0	13	9		13	65	0		4	0	9		0	0	0
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

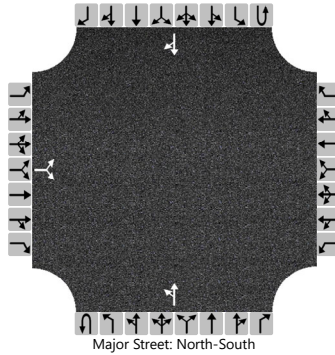
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0				14					14					0
Capacity, c (veh/h)		1523				1584					982					0
v/c Ratio		0.00				0.01					0.01					
95% Queue Length, Q <sub>95</sub> (veh)		0.0				0.0					0.0					
Control Delay (s/veh)		7.4	0.0	0.0		7.3	0.1	0.1			8.7					
Level of Service (LOS)		A	A	A		A	A	A			A					
Approach Delay (s/veh)		0.0				1.3				8.7						
Approach LOS		A				A				A						

# HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	RLA			Intersection	Rundle and Hwy 282		
Agency/Co.	ATS			Jurisdiction	Lewis and Clark		
Date Performed	8/2/2022			East/West Street	Rundle		
Analysis Year	2022			North/South Street	Hwy 282		
Time Analyzed	AM peak existing			Peak Hour Factor	0.92		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Mountain View						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		43		60						4	99				199	13
Percent Heavy Vehicles (%)		3		3						3						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.43		6.23						4.13						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.53		3.33						2.23						

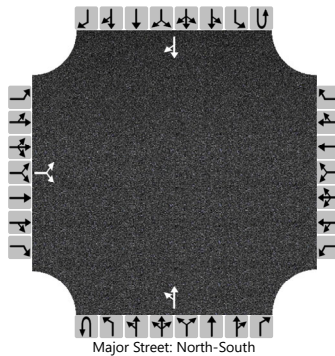
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			112							4						
Capacity, c (veh/h)			737							1332						
v/c Ratio			0.15							0.00						
95% Queue Length, Q <sub>95</sub> (veh)			0.5							0.0						
Control Delay (s/veh)			10.8							7.7	0.0					
Level of Service (LOS)			B							A	A					
Approach Delay (s/veh)	10.8								0.3							
Approach LOS	B								A							

# HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	RLA			Intersection	Rundle and Hwy 282		
Agency/Co.	ATS			Jurisdiction	Lewis and Clark		
Date Performed	8/2/2022			East/West Street	Rundle		
Analysis Year	2022			North/South Street	Hwy 282		
Time Analyzed	PM peak existing			Peak Hour Factor	0.92		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Mountain View						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		4		30						65	181				30	13
Percent Heavy Vehicles (%)		3		3						3						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized																
Median Type   Storage	Undivided															

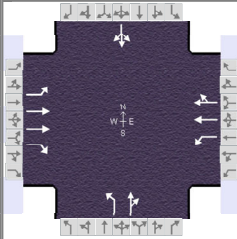
## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.43		6.23						4.13						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.53		3.33						2.23						

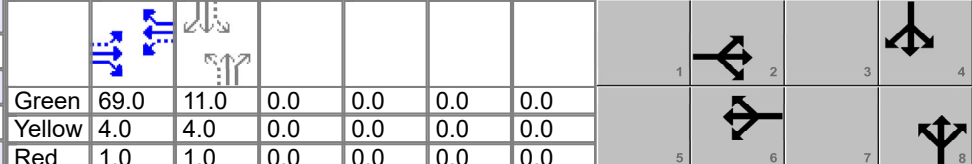
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			37							71						
Capacity, c (veh/h)			946							1554						
v/c Ratio			0.04							0.05						
95% Queue Length, Q <sub>95</sub> (veh)			0.1							0.1						
Control Delay (s/veh)			9.0							7.4	0.4					
Level of Service (LOS)			A							A	A					
Approach Delay (s/veh)	9.0								2.2							
Approach LOS	A								A							

## HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ATS			Duration, h	0.250	
Analyst	RLA	Analysis Date	Nov 3, 2022	Area Type	Other	
Jurisdiction	MDT	Time Period	No Build AM Peak	PHF	1.00	
Urban Street	HWY 287	Analysis Year	2025	Analysis Period	1 > 7:00	
Intersection	Crossroads Parkway	File Name	HWY287AMnobuild.xus			
Project Description	MVM					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand ( $v$ ), veh/h	9	485	100	18	1565	18	177	5	18	23	0	5

Signal Information												
Cycle, s	90.0	Reference Phase	2	Green	69.0	11.0	0.0	0.0	0.0	0.0	0.0	0.0
Offset, s	0	Reference Point	End	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Red	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On									

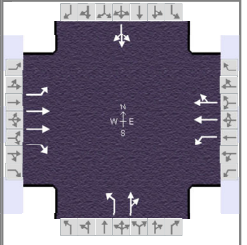
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		6.0		6.0		8.0
Phase Duration, s		74.0		74.0		16.0		16.0
Change Period, ( $Y+R_c$ ), s		5.0		5.0		5.0		5.0
Max Allow Headway ( $MAH$ ), s		0.0		0.0		3.1		3.1
Queue Clearance Time ( $g_s$ ), s						13.0		4.1
Green Extension Time ( $g_e$ ), s		0.0		0.0		0.0		0.2
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		0.02

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate ( $v$ ), veh/h	9	485	100	18	792	791	177	23			28	
Adjusted Saturation Flow Rate ( $s$ ), veh/h/ln	341	1809	1675	962	1900	1892	1491	1665			1425	
Queue Service Time ( $g_s$ ), s	1.0	3.3	1.3	0.5	15.0	15.1	8.9	1.1			1.0	
Cycle Queue Clearance Time ( $g_c$ ), s	16.0	3.3	1.3	3.7	15.0	15.1	11.0	1.1			2.1	
Green Ratio ( $g/C$ )	0.77	0.77	0.77	0.77	0.77	0.77	0.12	0.12			0.12	
Capacity ( $c$ ), veh/h	285	2773	1284	783	1457	1451	228	204			247	
Volume-to-Capacity Ratio ( $X$ )	0.032	0.175	0.078	0.023	0.544	0.545	0.776	0.113			0.113	
Back of Queue ( $Q$ ), ft/ln ( 95 th percentile)	3.6	36.6	14.9	3.5	192.2	191.9	208.6	20			24.6	
Back of Queue ( $Q$ ), veh/ln ( 95 th percentile)	0.1	1.5	0.6	0.1	7.7	7.7	8.3	0.8			1.0	
Queue Storage Ratio ( $RQ$ ) ( 95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00	
Uniform Delay ( $d_1$ ), s/veh	7.4	2.8	2.6	3.3	4.2	4.2	41.3	35.2			35.6	
Incremental Delay ( $d_2$ ), s/veh	0.2	0.1	0.1	0.1	1.5	1.5	14.1	0.1			0.1	
Initial Queue Delay ( $d_3$ ), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Control Delay ( $d$ ), s/veh	7.6	3.0	2.7	3.4	5.7	5.7	55.4	35.2			35.7	
Level of Service (LOS)	A	A	A	A	A	A	E	D			D	
Approach Delay, s/veh / LOS	3.0		A	5.6		A	53.1		D	35.7		D
Intersection Delay, s/veh / LOS	9.3						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.83	B	1.61	B	2.30	B	2.45	B
Bicycle LOS Score / LOS	0.98	A	1.81	B	0.82	A	0.53	A

## HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	ATS			Duration, h	0.250
Analyst	RLA	Analysis Date	Nov 3, 2022	Area Type	Other
Jurisdiction	MDT	Time Period	No Build PM Peak	PHF	1.00
Urban Street	HWY 287	Analysis Year	2025	Analysis Period	1 > 7:00
Intersection	Crossroads Parkwy	File Name	HWY287PMnobuild.xus		
Project Description	MVM				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand ( $v$ ), veh/h	5	1406	100	9	689	14	95	5	5	45	0	5

Signal Information																		
Cycle, s	90.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	On	Green	73.0	7.0	0.0	0.0	0.0	0.0	1		2		3		4	
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	5		6		7		8	
				Red	1.0	1.0	0.0	0.0	0.0	0.0								

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		6.0		6.0		8.0
Phase Duration, s		78.0		78.0		12.0		12.0
Change Period, ( $Y+R_c$ ), s		5.0		5.0		5.0		5.0
Max Allow Headway ( $MAH$ ), s		0.0		0.0		3.1		3.1
Queue Clearance Time ( $g_s$ ), s						9.0		5.1
Green Extension Time ( $g_e$ ), s		0.0		0.0		0.0		0.0
Phase Call Probability						0.98		0.98
Max Out Probability						1.00		1.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate ( $v$ ), veh/h	5	1406	100	9	353	350	95	10			50	
Adjusted Saturation Flow Rate ( $s$ ), veh/h/ln	786	1809	1675	405	1900	1886	1491	1743			1460	
Queue Service Time ( $g_s$ ), s	0.1	10.8	1.1	0.6	3.9	3.9	3.9	0.5			2.6	
Cycle Queue Clearance Time ( $g_c$ ), s	4.0	10.8	1.1	11.4	3.9	3.9	7.0	0.5			3.1	
Green Ratio ( $g/C$ )	0.81	0.81	0.81	0.81	0.81	0.81	0.08	0.08			0.08	
Capacity ( $c$ ), veh/h	684	2934	1358	360	1541	1530	145	136			190	
Volume-to-Capacity Ratio ( $X$ )	0.007	0.479	0.074	0.025	0.229	0.229	0.654	0.074			0.264	
Back of Queue ( $Q$ ), ft/ln ( 95 th percentile)	0.8	92.9	9.4	2.5	38	37.8	108.1	9.2			47.1	
Back of Queue ( $Q$ ), veh/ln ( 95 th percentile)	0.0	3.7	0.4	0.1	1.5	1.5	4.3	0.4			1.9	
Queue Storage Ratio ( $RQ$ ) ( 95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00	
Uniform Delay ( $d_1$ ), s/veh	2.4	2.6	1.7	4.4	2.0	2.0	43.6	38.5			39.8	
Incremental Delay ( $d_2$ ), s/veh	0.0	0.6	0.1	0.1	0.3	0.3	8.1	0.1			0.3	
Initial Queue Delay ( $d_3$ ), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Control Delay ( $d$ ), s/veh	2.5	3.2	1.8	4.5	2.3	2.3	51.7	38.6			40.0	
Level of Service (LOS)	A	A	A	A	A	A	D	D			D	
Approach Delay, s/veh / LOS	3.1		A	2.3		A	50.5		D	40.0		D
Intersection Delay, s/veh / LOS	5.7						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.82	B	1.59	B	2.30	B	2.46	B
Bicycle LOS Score / LOS	1.73	B	1.08	A	0.66	A	0.57	A



# HCS Two-Way Stop-Control Report

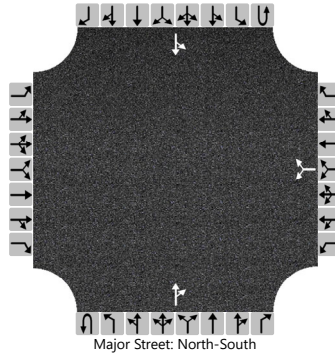
## General Information

Analyst	RLA
Agency/Co.	ATS
Date Performed	8/2/2022
Analysis Year	2025
Time Analyzed	AM Peak No Build
Intersection Orientation	North-South
Project Description	Mountain View

## Site Information

Intersection	Alice and Alpine View
Jurisdiction	Lewis and Clark
East/West Street	Alpine View
North/South Street	Alice
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						1		13			121	0		3	68	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2							4.1		
Critical Headway (sec)						6.43		6.23							4.13		
Base Follow-Up Headway (sec)						3.5		3.3							2.2		
Follow-Up Headway (sec)						3.53		3.33							2.23		

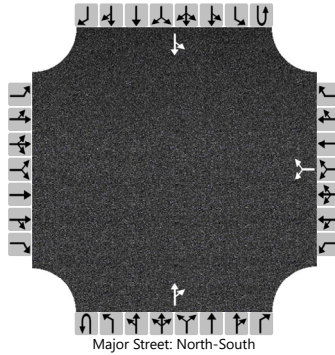
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						15								3		
Capacity, c (veh/h)						903								1447		
v/c Ratio						0.02								0.00		
95% Queue Length, Q <sub>95</sub> (veh)						0.1								0.0		
Control Delay (s/veh)						9.1								7.5	0.0	
Level of Service (LOS)						A								A	A	
Approach Delay (s/veh)					9.1								0.3			
Approach LOS					A								A			

# HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	RLA			Intersection	Alice and Alpine View		
Agency/Co.	ATS			Jurisdiction	Lewis and Clark		
Date Performed	8/2/2022			East/West Street	Alpine View		
Analysis Year	2025			North/South Street	Alice		
Time Analyzed	PM Peak No Build			Peak Hour Factor	0.92		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Mountain View						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						1		7			116	1		11	100	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2							4.1		
Critical Headway (sec)						6.43		6.23							4.13		
Base Follow-Up Headway (sec)						3.5		3.3							2.2		
Follow-Up Headway (sec)						3.53		3.33							2.23		

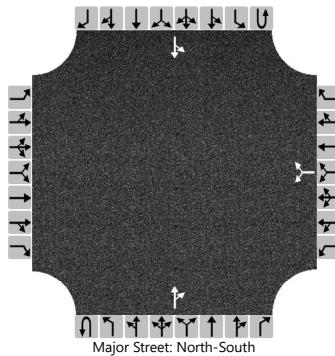
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						9								12		
Capacity, c (veh/h)						890								1453		
v/c Ratio						0.01								0.01		
95% Queue Length, Q <sub>95</sub> (veh)						0.0								0.0		
Control Delay (s/veh)						9.1								7.5	0.1	
Level of Service (LOS)						A								A	A	
Approach Delay (s/veh)					9.1								0.8			
Approach LOS					A								A			

# HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	RLA			Intersection	Alice and Rankin		
Agency/Co.	ATS			Jurisdiction	Lewis and Clark		
Date Performed	8/2/2022			East/West Street	Jeannette Rankin		
Analysis Year	2025			North/South Street	Alice		
Time Analyzed	AM Peak No Build			Peak Hour Factor	0.92		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Mountain View						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						9		37			84	17		39	30	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2							4.1		
Critical Headway (sec)						6.43		6.23							4.13		
Base Follow-Up Headway (sec)						3.5		3.3							2.2		
Follow-Up Headway (sec)						3.53		3.33							2.23		

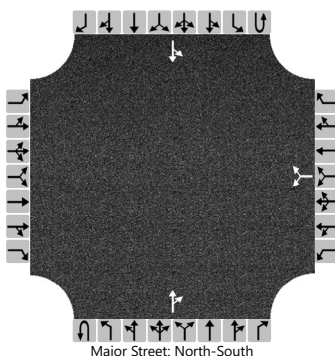
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						50									42		
Capacity, c (veh/h)						903									1474		
v/c Ratio						0.06									0.03		
95% Queue Length, Q <sub>95</sub> (veh)						0.2									0.1		
Control Delay (s/veh)						9.2									7.5	0.2	
Level of Service (LOS)						A									A	A	
Approach Delay (s/veh)					9.2								4.3				
Approach LOS					A								A				

# HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	RLA	Intersection	Alice and Rankin				
Agency/Co.	ATS	Jurisdiction	Lewis and Clark				
Date Performed	8/2/2022	East/West Street	Jeannette Rankin				
Analysis Year	2025	North/South Street	Alice				
Time Analyzed	PM Peak No Build	Peak Hour Factor	0.92				
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25				
Project Description	Mountain View						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes	0	0	0		0	1	0		0	0	1	0	0	0	1	0
Configuration							LR					TR			LT	
Volume (veh/h)						9		61			59	5		41	60	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.43		6.23						4.13		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

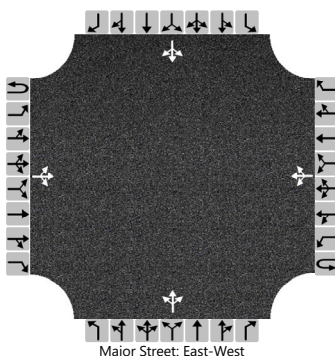
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						76								45		
Capacity, c (veh/h)						952								1525		
v/c Ratio						0.08								0.03		
95% Queue Length, Q <sub>95</sub> (veh)						0.3								0.1		
Control Delay (s/veh)						9.1								7.4	0.2	
Level of Service (LOS)						A								A	A	
Approach Delay (s/veh)					9.1								3.2			
Approach LOS					A								A			

# HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	RLA			Intersection	Rundle and Alpine View		
Agency/Co.	ATS			Jurisdiction	Lewis and Clark		
Date Performed	8/2/2022			East/West Street	Rundle		
Analysis Year	2025			North/South Street	Alpine		
Time Analyzed	AM Peak No Build			Peak Hour Factor	0.92		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	Mountain View						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		0	96	5		5	18	1		5	0	14		4	0	0
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

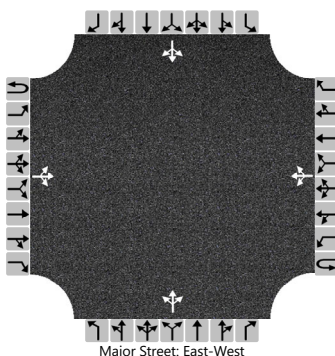
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0				5					21					4
Capacity, c (veh/h)		1589				1474					910					805
v/c Ratio		0.00				0.00					0.02					0.01
95% Queue Length, Q <sub>95</sub> (veh)		0.0				0.0					0.1					0.0
Control Delay (s/veh)		7.3	0.0	0.0		7.5	0.0	0.0			9.0					9.5
Level of Service (LOS)		A	A	A		A	A	A			A					A
Approach Delay (s/veh)		0.0				1.6				9.0				9.5		
Approach LOS		A				A				A				A		

# HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	RLA			Intersection	Rundle and Alpine View		
Agency/Co.	ATS			Jurisdiction	Lewis and Clark		
Date Performed	8/2/2022			East/West Street	Rundle		
Analysis Year	2025			North/South Street	Alpine		
Time Analyzed	PM Peak No Build			Peak Hour Factor	0.92		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	Mountain View						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		0	15	9		14	70	4		4	0	9		0	0	3
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

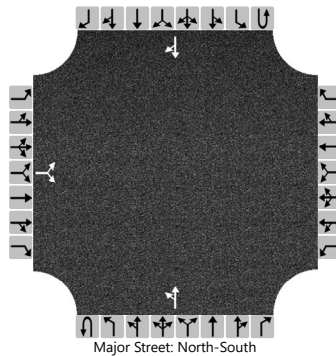
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0				15					14					3
Capacity, c (veh/h)		1511				1582					972					980
v/c Ratio		0.00				0.01					0.01					0.00
95% Queue Length, Q <sub>95</sub> (veh)		0.0				0.0					0.0					0.0
Control Delay (s/veh)		7.4	0.0	0.0		7.3	0.1	0.1			8.8					8.7
Level of Service (LOS)		A	A	A		A	A	A			A					A
Approach Delay (s/veh)		0.0				1.2				8.8				8.7		
Approach LOS		A				A				A				A		

# HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	RLA			Intersection	Rundle and Hwy 282		
Agency/Co.	ATS			Jurisdiction	Lewis and Clark		
Date Performed	8/2/2022			East/West Street	Rundle		
Analysis Year	2025			North/South Street	Hwy 282		
Time Analyzed	AM Peak No Build			Peak Hour Factor	0.92		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Mountain View						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		47		67						5	104				209	14
Percent Heavy Vehicles (%)		3		3						3						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.43		6.23						4.13						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.53		3.33						2.23						

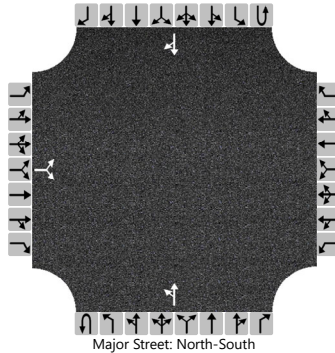
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			124							5						
Capacity, c (veh/h)			723							1318						
v/c Ratio			0.17							0.00						
95% Queue Length, Q <sub>95</sub> (veh)			0.6							0.0						
Control Delay (s/veh)			11.0							7.7	0.0					
Level of Service (LOS)			B							A	A					
Approach Delay (s/veh)	11.0								0.4							
Approach LOS	B								A							

# HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	RLA			Intersection	Rundle and Hwy 282		
Agency/Co.	ATS			Jurisdiction	Lewis and Clark		
Date Performed	8/2/2022			East/West Street	Rundle		
Analysis Year	2025			North/South Street	Hwy 282		
Time Analyzed	PM Peak No Build			Peak Hour Factor	0.92		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Mountain View						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		6		34						72	191				32	15
Percent Heavy Vehicles (%)		3		3						3						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

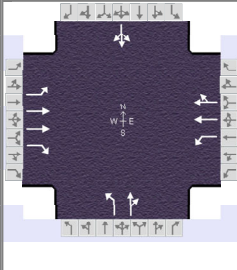
Base Critical Headway (sec)		7.1		6.2							4.1					
Critical Headway (sec)		6.43		6.23							4.13					
Base Follow-Up Headway (sec)		3.5		3.3							2.2					
Follow-Up Headway (sec)		3.53		3.33							2.23					

## Delay, Queue Length, and Level of Service

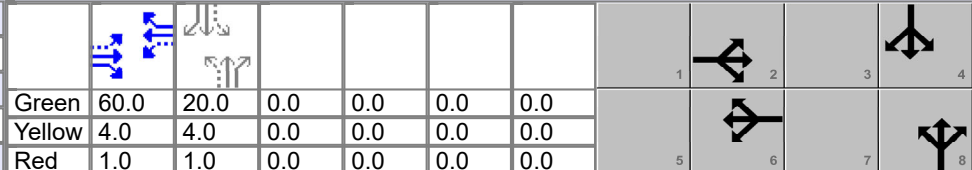
Flow Rate, v (veh/h)			43								78					
Capacity, c (veh/h)			913								1549					
v/c Ratio			0.05								0.05					
95% Queue Length, Q <sub>95</sub> (veh)			0.1								0.2					
Control Delay (s/veh)			9.1								7.4	0.4				
Level of Service (LOS)			A								A	A				
Approach Delay (s/veh)	9.1								2.3							
Approach LOS	A								A							



## HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ATS			Duration, h	0.250	
Analyst	RLA	Analysis Date	Nov 3, 2022	Area Type	Other	
Jurisdiction	MDT	Time Period	AM Peak With Dev.	PHF	1.00	
Urban Street	HWY 287	Analysis Year	2025	Analysis Period	1 > 7:00	
Intersection	Crossroads Parkwy	File Name	HWY287AMwith.xus			
Project Description	MVM					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand ( $v$ ), veh/h	9	485	130	20	1565	18	261	5	23	23	0	5

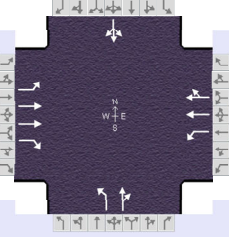
Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
		Green	60.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Red	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		6.0		6.0		8.0
Phase Duration, s		65.0		65.0		25.0		25.0
Change Period, ( $Y+R_c$ ), s		5.0		5.0		5.0		5.0
Max Allow Headway ( $MAH$ ), s		0.0		0.0		3.1		3.1
Queue Clearance Time ( $g_s$ ), s						19.5		4.0
Green Extension Time ( $g_e$ ), s		0.0		0.0		0.4		0.5
Phase Call Probability						1.00		1.00
Max Out Probability						0.01		0.00

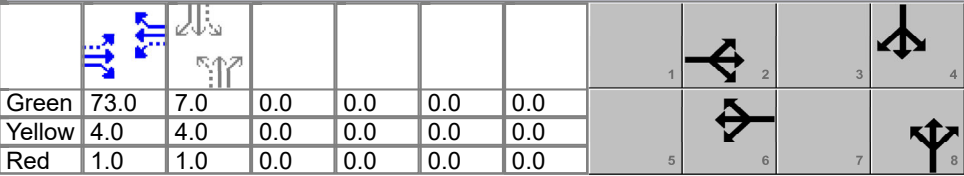
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate ( $v$ ), veh/h	9	485	130	20	792	791	261	28			28	
Adjusted Saturation Flow Rate ( $s$ ), veh/h/ln	341	1809	1675	962	1900	1892	1491	1655			1447	
Queue Service Time ( $g_s$ ), s	1.4	4.7	2.5	0.7	21.6	21.7	15.3	1.2			0.8	
Cycle Queue Clearance Time ( $g_c$ ), s	23.1	4.7	2.5	5.4	21.6	21.7	17.5	1.2			2.0	
Green Ratio ( $g/C$ )	0.67	0.67	0.67	0.67	0.67	0.67	0.22	0.22			0.22	
Capacity ( $c$ ), veh/h	225	2403	1112	669	1262	1257	378	372			398	
Volume-to-Capacity Ratio ( $X$ )	0.040	0.202	0.117	0.030	0.628	0.629	0.690	0.075			0.070	
Back of Queue ( $Q$ ), ft/ln ( 95 th percentile)	5.6	69.5	36.6	6.7	316.9	317.2	231.4	21			21.2	
Back of Queue ( $Q$ ), veh/ln ( 95 th percentile)	0.2	2.8	1.5	0.3	12.7	12.7	9.3	0.8			0.8	
Queue Storage Ratio ( $RQ$ ) ( 95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00	
Uniform Delay ( $d_1$ ), s/veh	15.4	5.9	5.5	6.9	8.7	8.7	34.9	27.5			27.9	
Incremental Delay ( $d_2$ ), s/veh	0.3	0.2	0.2	0.1	2.4	2.4	0.8	0.0			0.0	
Initial Queue Delay ( $d_3$ ), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Control Delay ( $d$ ), s/veh	15.7	6.0	5.7	7.0	11.1	11.1	35.7	27.6			27.9	
Level of Service ( LOS )	B	A	A	A	B	B	D	C			C	
Approach Delay, s/veh / LOS	6.1	A		11.0	B		35.0	C		27.9	C	
Intersection Delay, s/veh / LOS	12.7						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.86	B	1.64	B	2.29	B	2.44	B
Bicycle LOS Score / LOS	1.00	A	1.81	B	0.96	A	0.53	A

## HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ATS			Duration, h	0.250	
Analyst	RLA	Analysis Date	Nov 3, 2022	Area Type	Other	
Jurisdiction	MDT	Time Period	PM Peak With Dev.	PHF	1.00	
Urban Street	HWY 287	Analysis Year	2025	Analysis Period	1 > 7:00	
Intersection	Crossroads Parkway	File Name	HWY287PMwith.xus			
Project Description	MVM					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand ( v ), veh/h	5	1406	197	14	689	14	151	5	7	45	0	5

Signal Information														
Cycle, s	90.0	Reference Phase	2	Green	73.0	7.0	0.0	0.0	0.0	0.0	1	2	3	4
Offset, s	0	Reference Point	End	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	On	Red	1.0	1.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On											

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		6.0		6.0		8.0
Phase Duration, s		78.0		78.0		12.0		12.0
Change Period, ( Y+R <sub>c</sub> ), s		5.0		5.0		5.0		5.0
Max Allow Headway ( MAH ), s		0.0		0.0		3.1		3.1
Queue Clearance Time ( g <sub>s</sub> ), s						9.0		5.2
Green Extension Time ( g <sub>e</sub> ), s		0.0		0.0		0.0		0.1
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		1.00

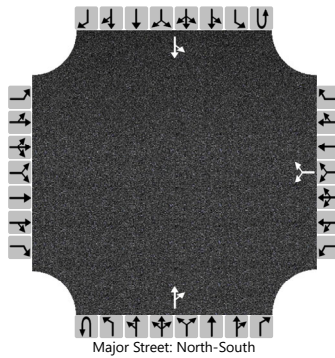
Movement Group Results	EB			WB			NB			SB														
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14												
Adjusted Flow Rate ( v ), veh/h	5	1406	197	14	353	350	151	12			50													
Adjusted Saturation Flow Rate ( s ), veh/h/ln	786	1809	1675	405	1900	1886	1491	1719			1435													
Queue Service Time ( g <sub>s</sub> ), s	0.1	10.8	2.3	1.0	3.9	3.9	3.8	0.6			2.6													
Cycle Queue Clearance Time ( g <sub>c</sub> ), s	4.0	10.8	2.3	11.8	3.9	3.9	7.0	0.6			3.2													
Green Ratio ( g/C )	0.81	0.81	0.81	0.81	0.81	0.81	0.08	0.08			0.08													
Capacity ( c ), veh/h	684	2934	1358	360	1541	1530	143	134			188													
Volume-to-Capacity Ratio ( X )	0.007	0.479	0.145	0.039	0.229	0.229	1.053	0.090			0.266													
Back of Queue ( Q ), ft/ln ( 95 th percentile)	0.8	92.9	19.8	3.9	38	37.8	279.1	11			47.2													
Back of Queue ( Q ), veh/ln ( 95 th percentile)	0.0	3.7	0.8	0.2	1.5	1.5	11.2	0.4			1.9													
Queue Storage Ratio ( RQ ) ( 95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00													
Uniform Delay ( d <sub>1</sub> ), s/veh	2.4	2.6	1.8	4.4	2.0	2.0	44.2	38.5			39.8													
Incremental Delay ( d <sub>2</sub> ), s/veh	0.0	0.6	0.2	0.2	0.3	0.3	89.9	0.1			0.3													
Initial Queue Delay ( d <sub>3</sub> ), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0													
Control Delay ( d ), s/veh	2.5	3.2	2.0	4.7	2.3	2.3	134.1	38.6			40.1													
Level of Service ( LOS )	A	A	A	A	A	A	F	D			D													
Approach Delay, s/veh / LOS	3.0			A			2.4			A			127.0			F			40.1			D		
Intersection Delay, s/veh / LOS	11.5												B											

Multimodal Results	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	1.82		B	1.59		B	2.30		B	2.46		B
Bicycle LOS Score / LOS	1.81		B	1.08		A	0.76		A	0.57		A

# HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	RLA			Intersection	Alice and Alpine View		
Agency/Co.	ATS			Jurisdiction	Lewis and Clark		
Date Performed	8/2/2022			East/West Street	Alpine View		
Analysis Year	2025			North/South Street	Alice		
Time Analyzed	AM Peak With Dev.			Peak Hour Factor	0.92		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Mountain View						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						4		68			154	1		23	80	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2							4.1		
Critical Headway (sec)						6.43		6.23							4.13		
Base Follow-Up Headway (sec)						3.5		3.3							2.2		
Follow-Up Headway (sec)						3.53		3.33							2.23		

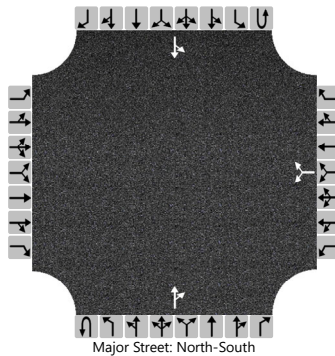
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						78								25		
Capacity, c (veh/h)						859								1403		
v/c Ratio						0.09								0.02		
95% Queue Length, Q <sub>95</sub> (veh)						0.3								0.1		
Control Delay (s/veh)						9.6								7.6	0.1	
Level of Service (LOS)						A								A	A	
Approach Delay (s/veh)					9.6								1.8			
Approach LOS					A								A			

# HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	RLA			Intersection	Alice and Alpine View		
Agency/Co.	ATS			Jurisdiction	Lewis and Clark		
Date Performed	8/2/2022			East/West Street	Alpine View		
Analysis Year	2025			North/South Street	Alice		
Time Analyzed	PM Peak With Dev.			Peak Hour Factor	0.92		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Mountain View						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						3		45			137	5		76	137	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2							4.1		
Critical Headway (sec)						6.43		6.23							4.13		
Base Follow-Up Headway (sec)						3.5		3.3							2.2		
Follow-Up Headway (sec)						3.53		3.33							2.23		

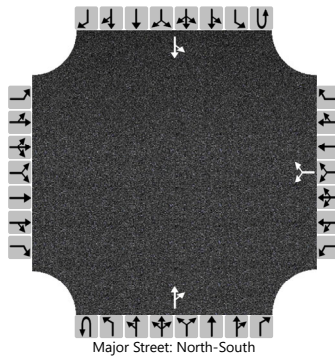
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						52									83		
Capacity, c (veh/h)						854									1420		
v/c Ratio						0.06									0.06		
95% Queue Length, Q <sub>95</sub> (veh)						0.2									0.2		
Control Delay (s/veh)						9.5									7.7	0.5	
Level of Service (LOS)						A									A	A	
Approach Delay (s/veh)					9.5								3.1				
Approach LOS					A								A				

# HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	RLA			Intersection	Alice and Rankin		
Agency/Co.	ATS			Jurisdiction	Lewis and Clark		
Date Performed	8/2/2022			East/West Street	Jeannette Rankin		
Analysis Year	2025			North/South Street	Alice		
Time Analyzed	AM peak projected			Peak Hour Factor	0.92		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Mountain View						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						12		70			85	18		50	33	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2							4.1		
Critical Headway (sec)						6.43		6.23							4.13		
Base Follow-Up Headway (sec)						3.5		3.3							2.2		
Follow-Up Headway (sec)						3.53		3.33							2.23		

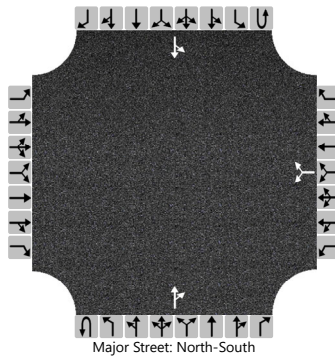
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						89									54		
Capacity, c (veh/h)						906									1471		
v/c Ratio						0.10									0.04		
95% Queue Length, Q <sub>95</sub> (veh)						0.3									0.1		
Control Delay (s/veh)						9.4									7.5	0.3	
Level of Service (LOS)						A									A	A	
Approach Delay (s/veh)					9.4								4.7				
Approach LOS					A								A				

# HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	RLA			Intersection	Alice and Rankin		
Agency/Co.	ATS			Jurisdiction	Lewis and Clark		
Date Performed	8/2/2022			East/West Street	Jeannette Rankin		
Analysis Year	2025			North/South Street	Alice		
Time Analyzed	PM peak projected			Peak Hour Factor	0.92		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Mountain View						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						11		82			59	9		79	62	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2							4.1		
Critical Headway (sec)						6.43		6.23							4.13		
Base Follow-Up Headway (sec)						3.5		3.3							2.2		
Follow-Up Headway (sec)						3.53		3.33							2.23		

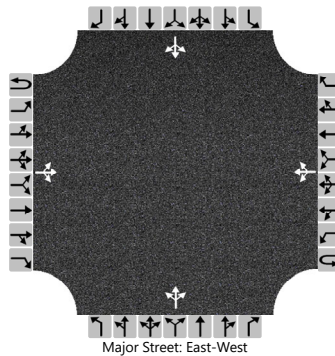
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						101									86		
Capacity, c (veh/h)						931									1519		
v/c Ratio						0.11									0.06		
95% Queue Length, Q <sub>95</sub> (veh)						0.4									0.2		
Control Delay (s/veh)						9.3									7.5	0.4	
Level of Service (LOS)						A									A	A	
Approach Delay (s/veh)					9.3								4.4				
Approach LOS					A								A				

# HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	RLA			Intersection	Rundle and Alpine View		
Agency/Co.	ATS			Jurisdiction	Lewis and Clark		
Date Performed	8/2/2022			East/West Street	Rundle		
Analysis Year	2025			North/South Street	Alpine		
Time Analyzed	AM peak projected			Peak Hour Factor	0.92		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	Mountain View						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		0	103	5		5	21	10		5	0	14		28	0	0
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

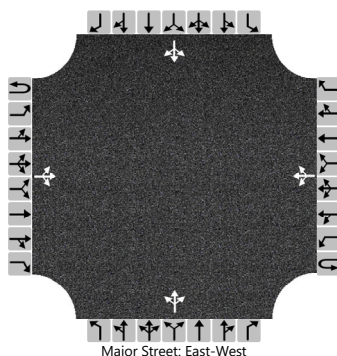
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0				5					21					30
Capacity, c (veh/h)		1571				1465					898					786
v/c Ratio		0.00				0.00					0.02					0.04
95% Queue Length, Q <sub>95</sub> (veh)		0.0				0.0					0.1					0.1
Control Delay (s/veh)		7.3	0.0	0.0		7.5	0.0	0.0			9.1					9.8
Level of Service (LOS)		A	A	A		A	A	A			A					A
Approach Delay (s/veh)		0.0				1.1				9.1				9.8		
Approach LOS		A				A				A				A		

# HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	RLA			Intersection	Rundle and Alpine View		
Agency/Co.	ATS			Jurisdiction	Lewis and Clark		
Date Performed	8/2/2022			East/West Street	Rundle		
Analysis Year	2025			North/South Street	Alpine		
Time Analyzed	PM peak projected			Peak Hour Factor	0.92		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	Mountain View						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		0	19	9		14	77	32		5	0	9		0	0	18
Percent Heavy Vehicles (%)		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.13				7.13	6.53	6.23		7.13	6.53	6.23
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.23				3.53	4.03	3.33		3.53	4.03	3.33

## Delay, Queue Length, and Level of Service

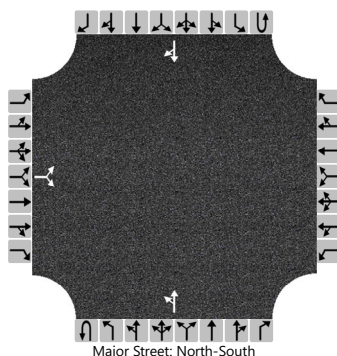
Flow Rate, v (veh/h)		0				15					15					20
Capacity, c (veh/h)		1463				1576					928					951
v/c Ratio		0.00				0.01					0.02					0.02
95% Queue Length, Q <sub>95</sub> (veh)		0.0				0.0					0.0					0.1
Control Delay (s/veh)		7.5	0.0	0.0		7.3	0.1	0.1			8.9					8.9
Level of Service (LOS)		A	A	A		A	A	A			A					A
Approach Delay (s/veh)		0.0				0.9				8.9				8.9		
Approach LOS		A				A				A				A		



# HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	RLA			Intersection	Rundle and Hwy 282		
Agency/Co.	ATS			Jurisdiction	Lewis and Clark		
Date Performed	8/2/2022			East/West Street	Rundle		
Analysis Year	2025			North/South Street	Hwy 282		
Time Analyzed	AM peak projected			Peak Hour Factor	0.92		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Mountain View						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		58		86						12	104				209	18
Percent Heavy Vehicles (%)		3		3						3						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2									4.1				
Critical Headway (sec)		6.43		6.23									4.13				
Base Follow-Up Headway (sec)		3.5		3.3									2.2				
Follow-Up Headway (sec)		3.53		3.33									2.23				

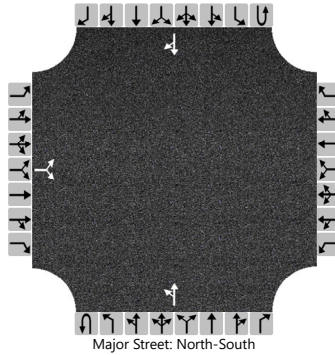
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			157										13				
Capacity, c (veh/h)			714										1313				
v/c Ratio			0.22										0.01				
95% Queue Length, Q <sub>95</sub> (veh)			0.8										0.0				
Control Delay (s/veh)			11.4										7.8	0.1			
Level of Service (LOS)			B										A	A			
Approach Delay (s/veh)	11.4								0.9								
Approach LOS	B								A								

# HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	RLA			Intersection	Rundle and Hwy 282		
Agency/Co.	ATS			Jurisdiction	Lewis and Clark		
Date Performed	8/2/2022			East/West Street	Rundle		
Analysis Year	2025			North/South Street	Hwy 282		
Time Analyzed	PM peak projected			Peak Hour Factor	0.92		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Mountain View						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		13		47						95	191				32	28
Percent Heavy Vehicles (%)		3		3						3						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.43		6.23						4.13						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.53		3.33						2.23						

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			65							103						
Capacity, c (veh/h)			837							1530						
v/c Ratio			0.08							0.07						
95% Queue Length, Q <sub>95</sub> (veh)			0.3							0.2						
Control Delay (s/veh)			9.7							7.5	0.6					
Level of Service (LOS)			A							A	A					
Approach Delay (s/veh)	9.7								2.9							
Approach LOS	A								A							