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Traffic Impact Study

MONTANA LIMESTONE RESOURCES, LLC ENVIRONMENTAL ASSESSMENT

Drummond, Granite County, Montana

November 2019

Morrison-Maierle Project No. 6412.001

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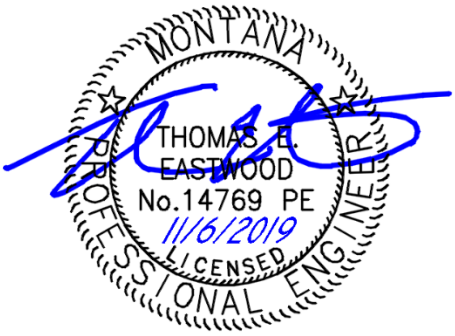

November 2019

Prepared For:

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Montana Department of Environmental Quality
Hard Rock Mining Program
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Morrison-Maierle Project No. 6412.001

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Traffic Impact Study

for

Montana Limestone Resources, LLC Environmental Assessment

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Purpose of Report and Study Objectives

This traffic impact study summarizes the potential impacts from the quarry and plant for the extraction and processing of limestone to produce lime proposed to be located approximately 2.5 miles west-southwest of Drummond, Granite County, Montana. The information presented in this report is intended to evaluate the safety and operational aspects of the area transportation system, providing guidance with respect to its functionality with estimated impacts from the proposed quarry and plant.

Proposed Project

Project Description

As provided in the *Operating Permit Application* for the proposed Montana Limestone Resources Project dated June 2018 as compiled by WESTECH Environmental Services, Inc., the proposed will consist of the following:

- An open pit mine from which 7,000 tons of limestone per week will be extracted. The extraction process consists of drilling and blasting along benches and the loading of the blasted rock with a wheel loader into 30-ton capacity mine haul trucks;
- A crushing and screening plant to reduce the size of the blasted rock to a desired size range for the processing operation;
- The pyro processing of the limestone in a preheater rotary kiln to produce calcium oxide (lime); and
- Storage bins and tractor-trailer loading and shipping facilities to transport the lime.

Project Location

As noted previously, the Montana Limestone Resources Project is to be located in Drummond, Granite County, Montana. As described in the Operating Permit Application, the project area "is located in all or portions of Sections 1 and 2, T10N, R13W; Section 31, T11N,R12W; and Sections 22, 23, 25-28, and 34-36, T11N, R13W, comprising the former Bar-Four-Bar Ranch property totaling 3520 acres (5.5 square miles)." The site location is depicted in Figure 1 on the following page.

Project Horizon

The mine plan included in the Operating Permit Application has identified three end of year (EOY) mining activity periods – Year 1, Year 5, and Year 50. Therefore, this study will assess functionality of the transportation system within the study area at one year following the initial opening of the mine (assumed 2021), five years after (2026), and as well as a sensitivity analysis with 50 years of traffic growth (2071).

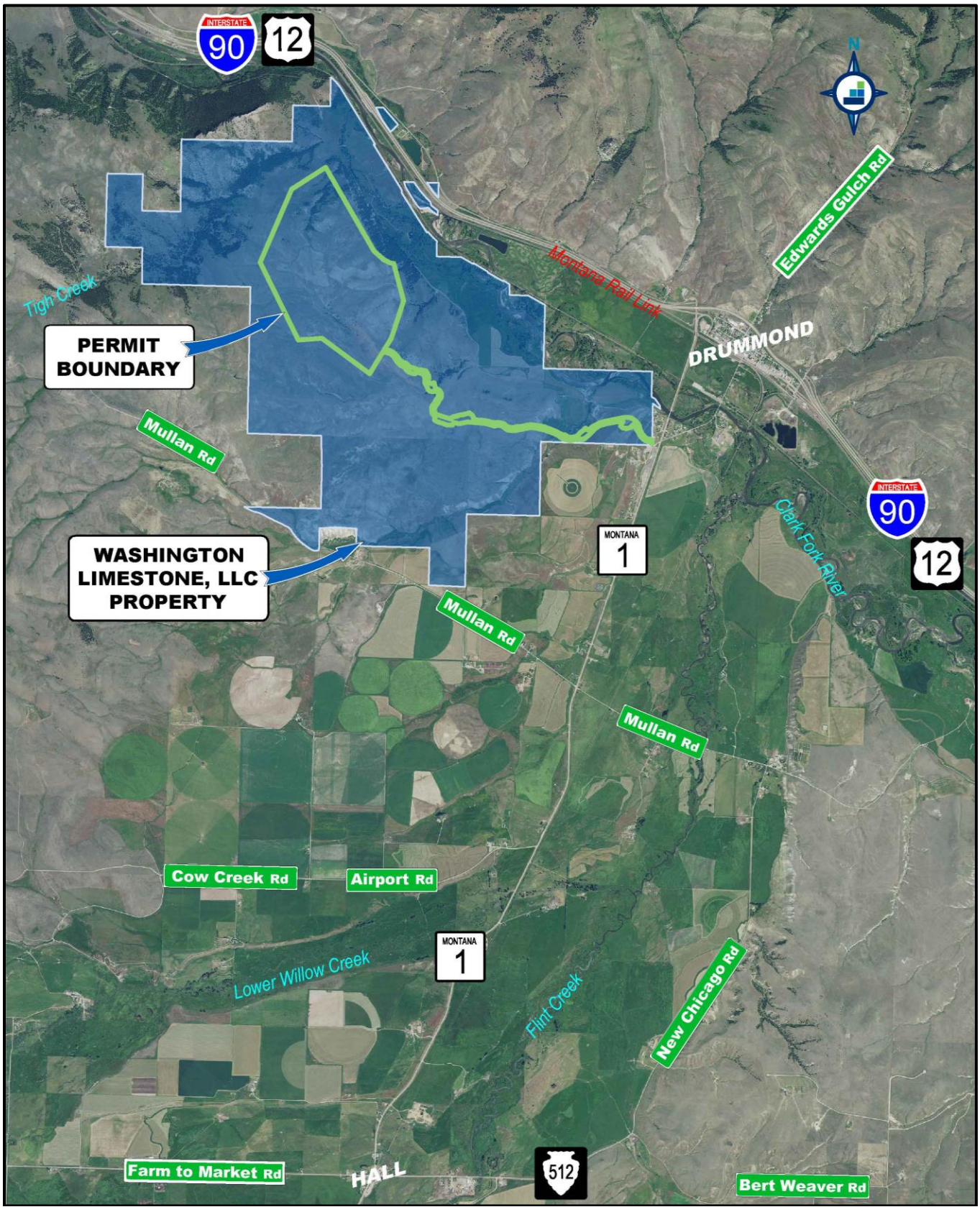

Figure 1: Proposed Mine Location

Existing Area Conditions

Study Area Land Use

Currently, the site of the proposed mine is primarily vacant, agricultural land. There are two houses with outbuildings located within the development property that are associated with ranching activity. The surrounding properties are also primarily agricultural lands with the exception of the Clark Fork River bottom area adjacent to the northern portion of the mine property as well as a mix of existing residential and commercial properties plus a church to the east of the mine property near Montana State Highway 1. The character of development in the area can generally be seen in Figure 1 on the previous page.

Transportation Network

Study Area Roadways

- ❑ Montana State Highway 1

Study Area Intersections

- ❑ Montana State Highway 1 & Old Highway 10A (Mine Access Location)
- ❑ Front Street & Main Street
- ❑ Front Street & Sorensen Lane / I-90 EB On-Ramp / Jens Frontage Road

Montana State Highway 1 & Old Highway 10A (Mine Access Location)

The existing intersection of Montana State Highway 1 (C000019, P-19N) and Old Highway 10A (Mine Access Location) has the characteristics described in the following:

- ❑ Two-Way Stop-Controlled Intersection
  - *Intersection has a skew angle of approximately 45 degrees*
  - *Located near milepost 63 on Montana State Highway 1*
- ❑ Eastbound Approach (From the West) – (1) Left Turn / Through / Right Turn Lane
  - *Existing Available Queue Storage = ±160 ft*
- ❑ Westbound Approach (From the East) – (1) Left Turn / Through / Right Turn Lane
  - *Existing Available Queue Storage = ±150 ft*
- ❑ Northbound Approach (From the South) – (1) Left Turn / Through / Right Turn Lane
  - *Existing Available Queue Storage = ±435 ft*
- ❑ Southbound Approach (From the North) – (1) Left Turn / Through / Right Turn Lane
  - *Existing Available Queue Storage = ±325 ft*
- ❑ Montana State Highway 1 Posted Speed Limit = 55 miles per hour (mph)
- ❑ Sight distance is in excess of 1,500 feet along Montana State Highway 1 to the north and south from the eastbound and westbound approaches to the intersection.

Front Street & Main Street

The intersection of Front Street and Main Street has the characteristics described below:

- ❑ Yield-Controlled, T-Intersection
- ❑ Eastbound Approach (From the West) – (1) Through / Right Turn Lane
  - *Existing Available Queue Storage = ±790 ft*
- ❑ Westbound Approach (From the East) – (1) Through / Left Turn Lane
  - *Existing Available Queue Storage = ±100 ft*
- ❑ Northbound Approach (From the South) – (1) Left / Right Turn Lane
  - *Existing Available Queue Storage = ±30 ft*
  - *There are three, at-grade railroad track crossings south of the intersection, limiting storage of queued vehicles.*
- ❑ Front Street Posted Speed Limit = 30 mph

Front Street & Sorensen Lane / I-90 EB On-Ramp / Jens Frontage Road

The intersection of Front Street and Sorensen Lane / the I-90 Eastbound (EB) On-Ramp / Jens Frontage Road has the characteristics described below:

- ❑ Stop- and Yield-Controlled Intersection
  - *Stop Control on the Northbound, Jens Frontage Road Approach*
  - *Yield Control on the Southbound, Sorensen Lane Approach*
- ❑ Eastbound, Front Street Approach (From the West) – (1) Left Turn / Through / Right Turn Lane
  - *Existing Available Queue Storage = ±280 ft*
- ❑ I-90 EB On-Ramp Located on the East Leg of the Intersection
- ❑ Northbound Approach (From the South) – (1) Left Turn / Through / Right Turn Lane
  - *Existing Available Queue Storage = ±330 ft*
- ❑ Southbound Approach (From the North) – (1) Left Turn / Through / Right Turn Lane
  - *Existing Available Queue Storage = ±435 ft*

Traffic Volumes

Traffic data for the study area roadways were obtained from traffic data collected by the Montana Department of Transportation (MDT) and provided through their Montana Traffic Data map. The compiled roadway traffic data are provided in Appendix B. Intersection turning movement count data for weekday, AM and PM peak hours were developed through modeling of the roadway count data. Additionally, trip generation estimates were developed for the existing residences in the vicinity of the intersection of Montana State Highway 1 and Old Highway 10A to generate a conservative estimate of traffic at that intersection. The estimated current daily traffic data is summarized in Figure 2 on the following page.

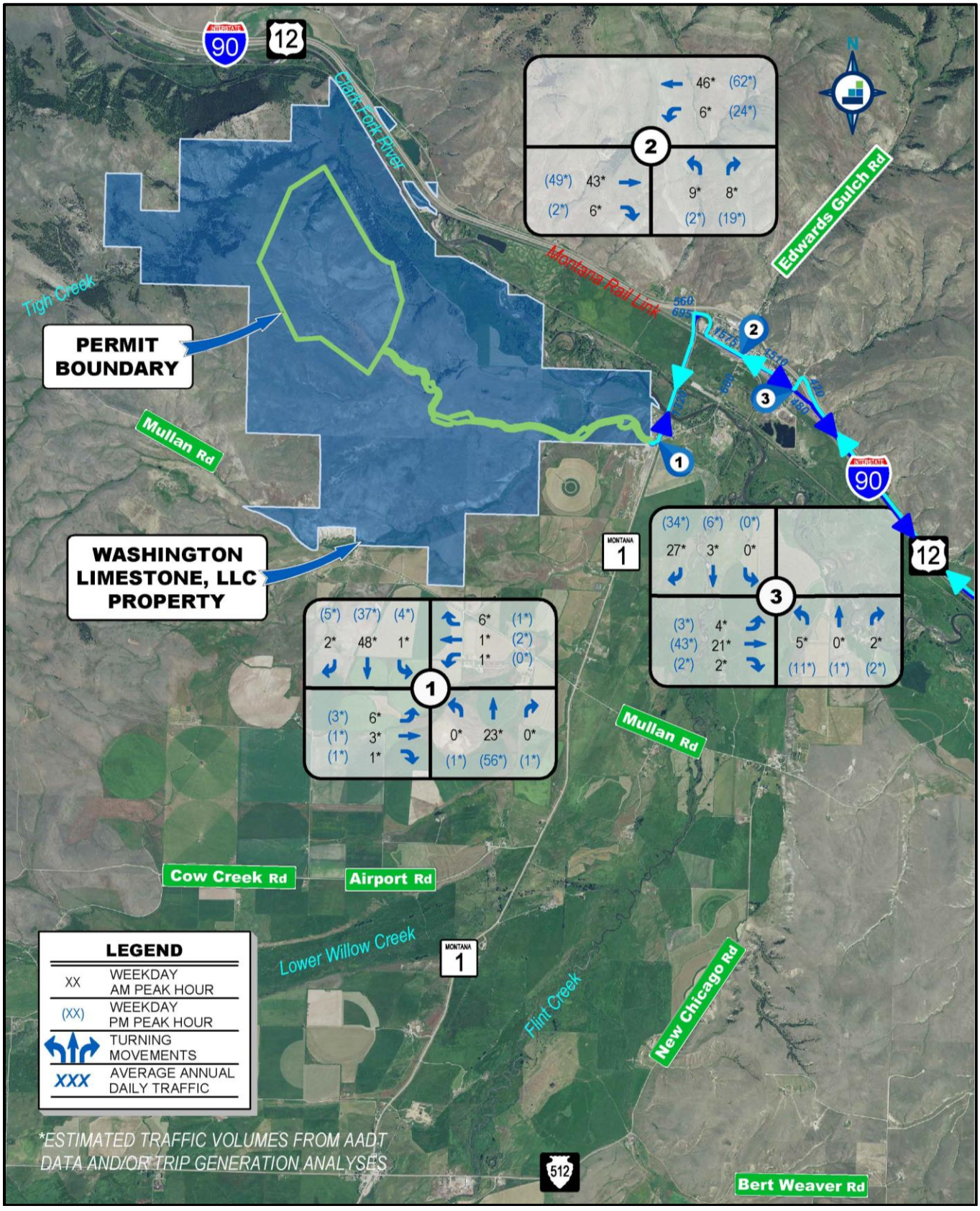

Figure 2: Current Daily Traffic

Projected Traffic

Mine Traffic

Trip Generation

Trip generation is a measure or forecast of the number of trips that begin or end at the development site. This study utilized daily truck trip projections and employment data provided in the *Operating Permit Application* for the Montana Limestone Resources Project to evaluate traffic generated from the proposed project. Daily distributions of truck trips were derived from the *Design Report for the Morgan Family, LLC Gravel Pit: Auxiliary Lane Improvements – Gallatin Gateway, Montana* prepared by Morrison-Maierle in February 2009. Trip generation for the Montana Limestone Resources Project was estimated using the volume of material extracted annually from the mine in thousands of tons. The total estimated trip generation is provided in Table 1 below. Analyses are summarized in Appendix C.

Table 1: Estimated Montana Limestone Resources, LLC (MLR) Quarry Trip Generation Summary

Trip Generation Analysis Time Period	Independent Variable	Units	Enter	Exit	Total
Average Weekday	1,000 Tons of Material Extracted Annually	364	30	30	60
Average Weekday, A.M Peak Hour, One Hour Between 7 and 9 a.m.			10	5	15
Average Weekday, P.M Peak Hour, One Hour Between 4 and 6 p.m.			4	8	12

Trip Distribution

Trip distribution and assignment is the process of identifying the probable destinations, directions, and traffic routes that may be utilized by development related traffic. The estimated traffic generated by the development must be distributed and assigned in order to analyze the impacts on the roadway system and intersections within the study area. Various methods are available for estimating trip distribution, including the analogy, trip distribution model, area of influence, origin-destination (O-D), and surrogate data methods. This study utilizes the O-D method that assumes trips will originate from and are destined to specific locations. For this study, employee trips are estimated to originate from population centers within reasonable proximity of the mine site. The *Operating Permit Application* has initially identified that truck trips are anticipated to be between the mine site and Butte, Montana to the east, utilizing Interstate 90 / United States Highway 12 for their travel route. The estimated trip distribution is shown in Figure 3 on the following page.

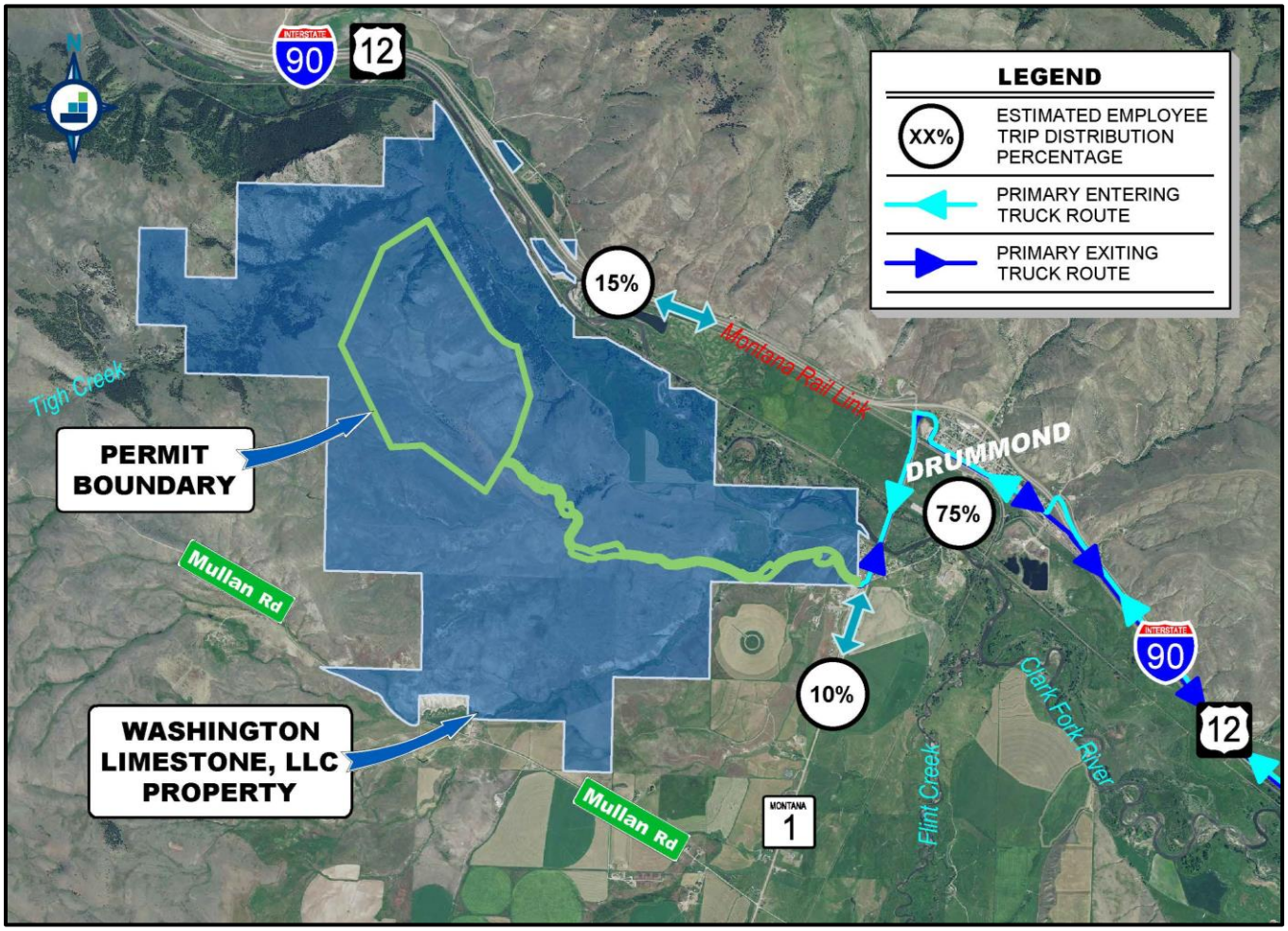

Figure 3: Estimated Trip Distribution

Trip Assignment

The assignment of development related traffic provides the information necessary to determine the level of site related impacts to the area roadway system and intersections. It involves determining the volume of traffic and its movements within the transportation system. At a minimum, trip assignment must also consider route choice, how the existing transportation system functions, and travel times to and from the site. The resulting assignment of traffic from the proposed Montana Limestone Resources Project at the study area intersections is shown in Figure 4 on the following page.

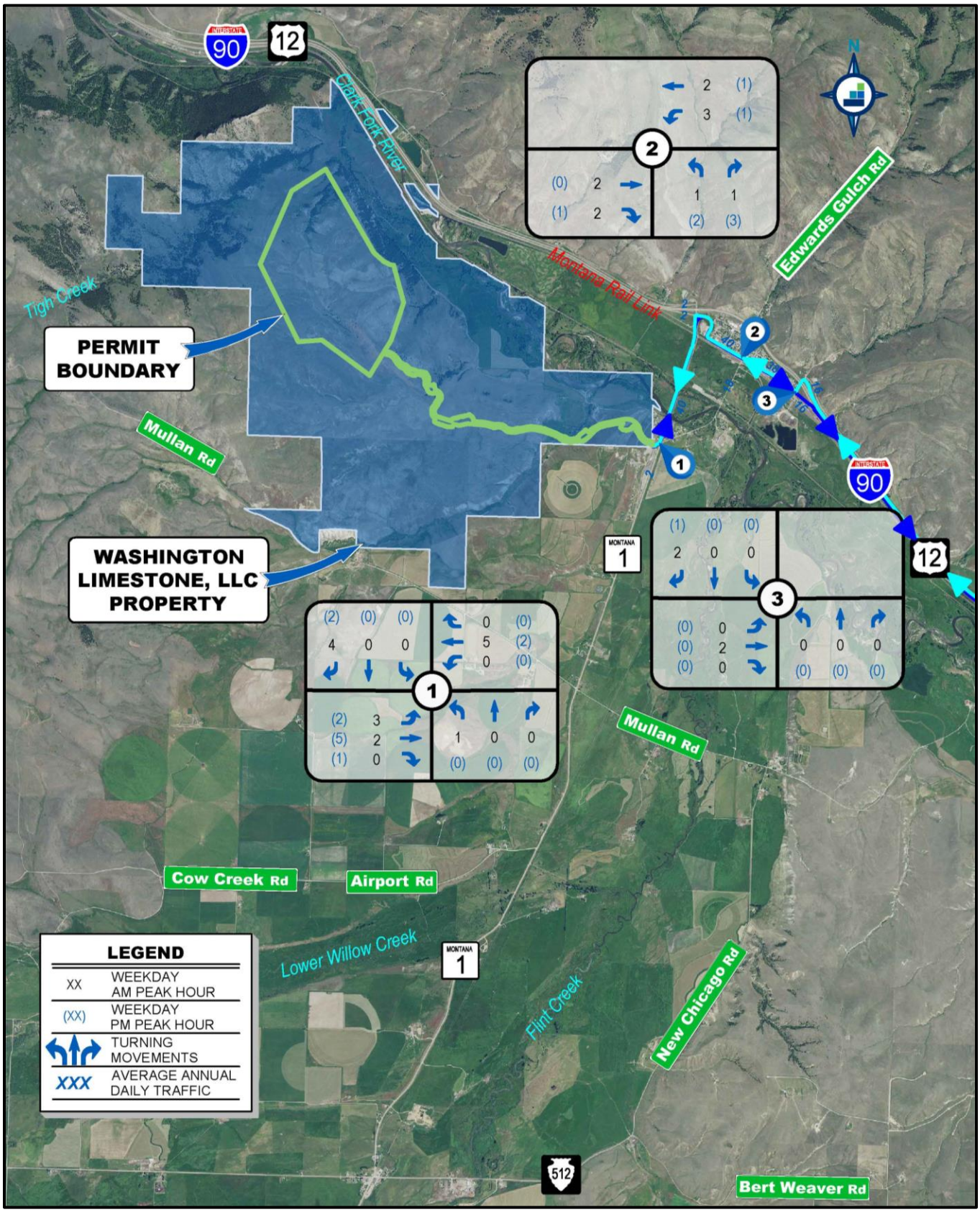

Figure 4: Site Traffic Assignment

Non-Site Traffic

Method of Projection

In order to more accurately reflect the potential impacts from site generated traffic it is necessary to develop an estimate of non-site related traffic growth during the analysis periods. Three primary means are typically used to estimate growth of non-site generated traffic, including the build-up method, the use of transportation plans or models, as well as the trends or growth rate method.

The build-up method takes into account traffic growth due to approved or anticipated to be approved developments in the study area. Transportation plans or models typically provide estimates for traffic volumes for approximately 20 years into the future. The trends or growth rate method involves evaluating the historic traffic growth rates within a study area. The underlying assumption with this method is that historic growth trends will remain approximately the same and continue in the future. Estimated background traffic volumes for the proposed Montana Limestone Resources Project for the years 2021, 2026, and 2071 were established by using the trends or growth rate method. The estimated average annual growth rates (AAGR) used for the growth rate method were as shown in Table 2 below.

Table 2: Estimated Average Annual Traffic Growth Rates

Roadway	Estimated Average Annual Growth Rate (AAGR)		
	2018 – 2021 3-Year AAGR	2021 – 2026 5-Year AAGR	2021 – 2071 50-Year AAGR
Montana State Highway 1	2.85%	1.55%	1.17%
Front Street	0.60%	0.50%	0.40%
Main Street / Old Highway 10A	0.60%	0.50%	0.40%

The projected background traffic volumes are shown in the following figures:

- Figure 5: Estimated 2021 Background Traffic – Page 10
- Figure 6: Estimated 2026 Background Traffic – Page 11
- Figure 7: Estimated 2071 Background Traffic – Page 12

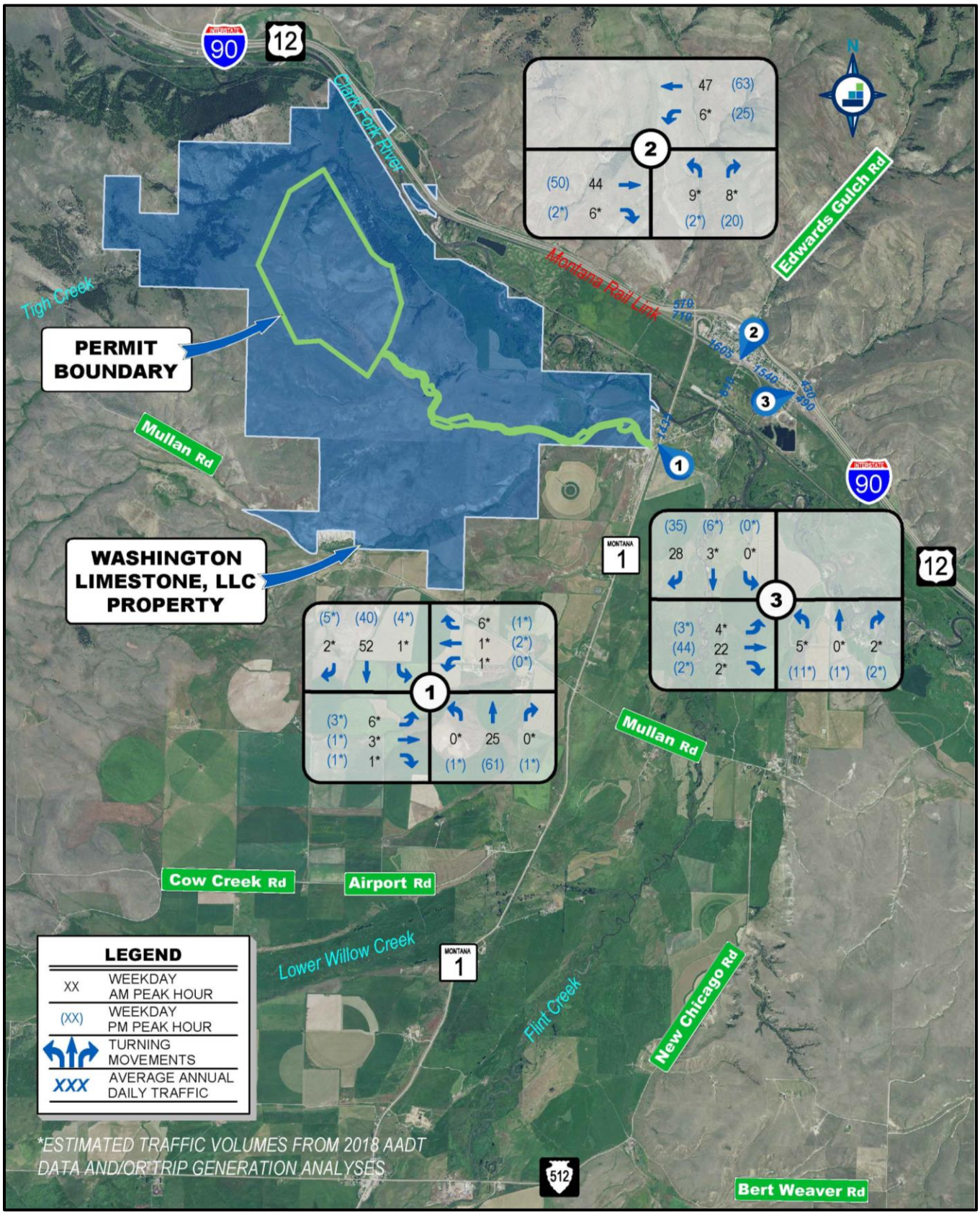

Figure 5: Estimated 2021 Background Traffic

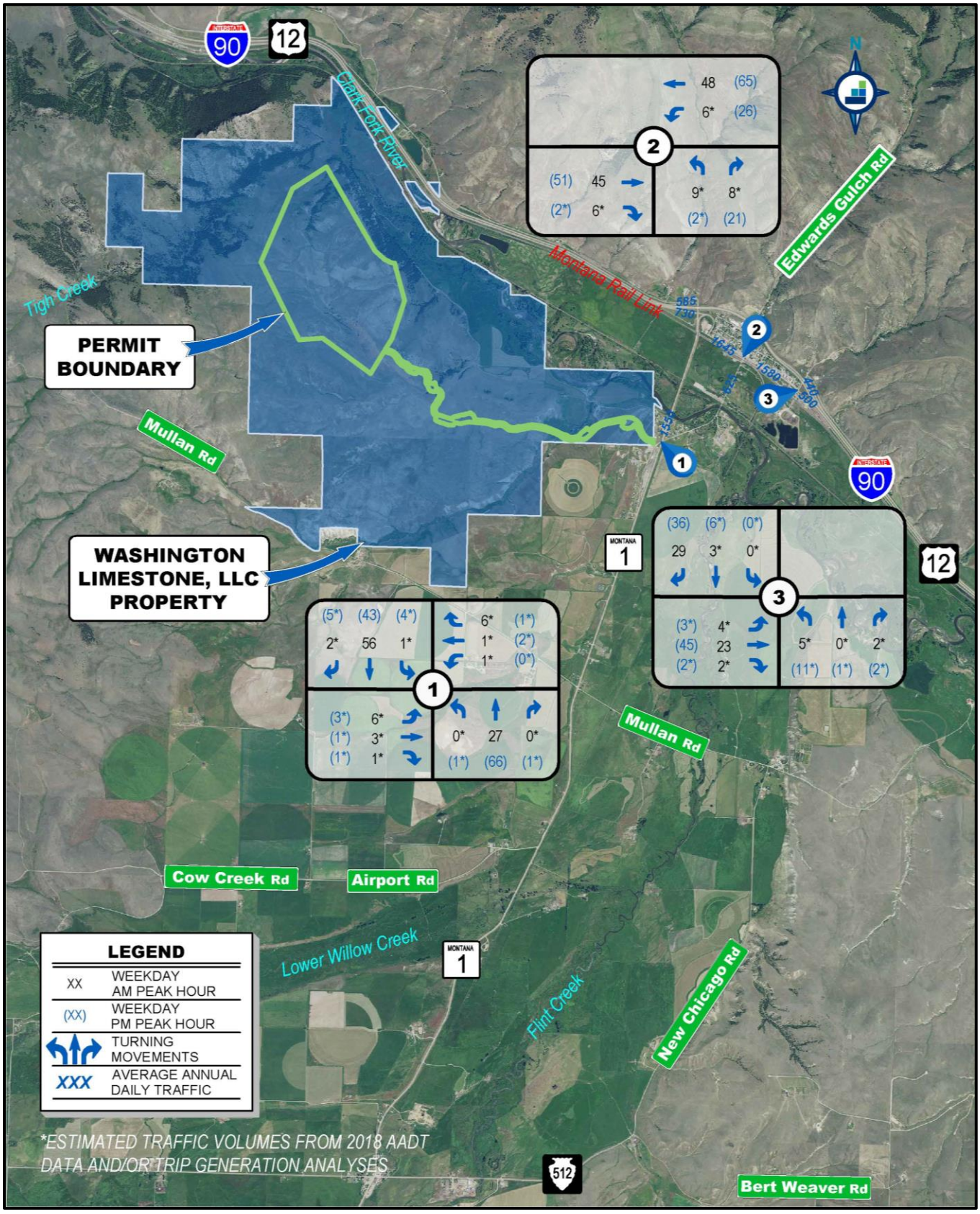

Figure 6: Estimated 2026 Background Traffic

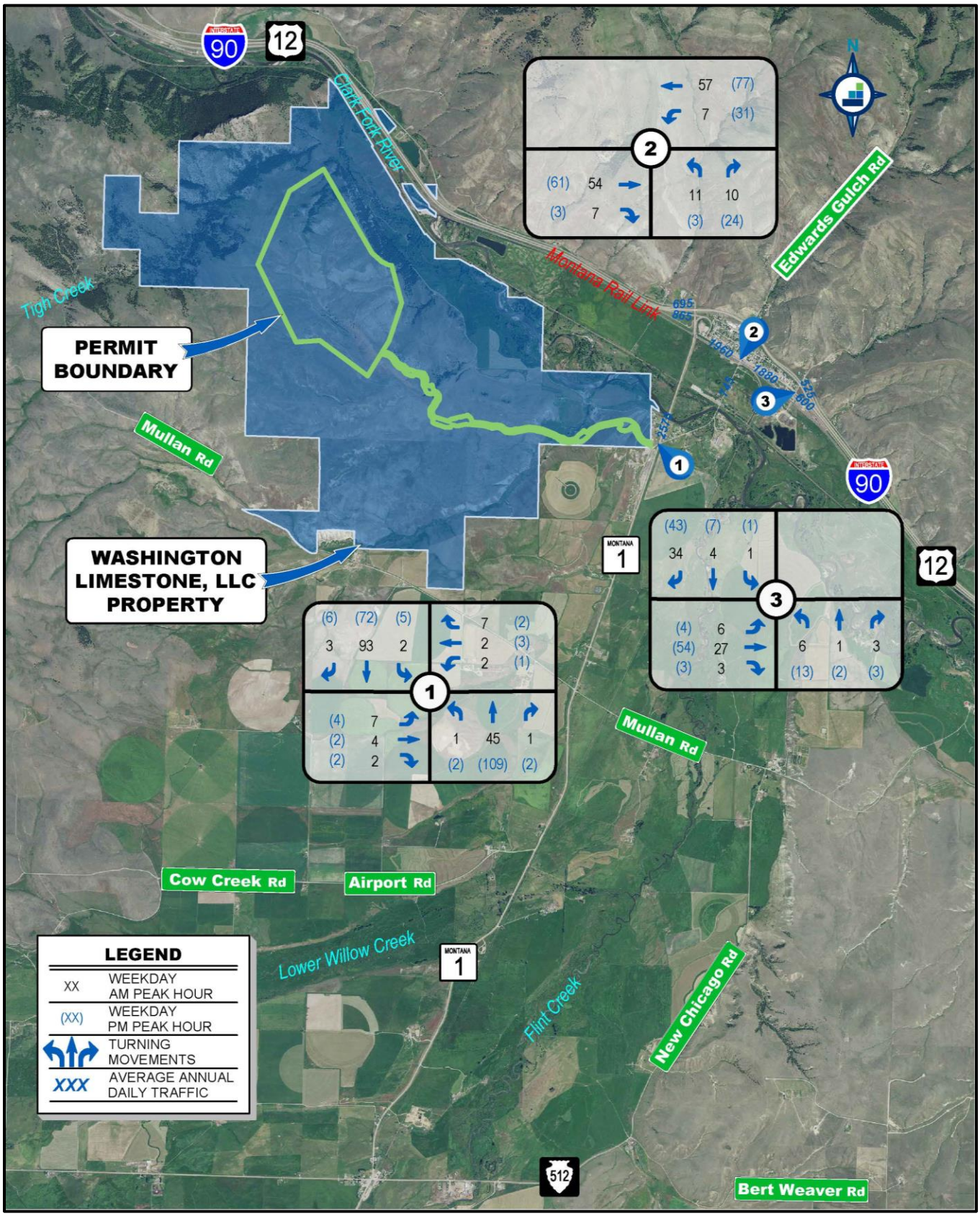

Figure 7: Estimated 2071 Background Traffic

Total Traffic

Vehicular traffic generated from the proposed Montana Limestone Resources Project was combined with the estimated background traffic volumes to establish the estimated total traffic volumes that were used in the impact analyses. The projected total traffic volumes are shown in the following figures:

- Figure 8: Estimated 2021 Total Traffic – Page 14
- Figure 9: Estimated 2026 Total Traffic – Page 15
- Figure 10: Estimated 2071 Total Traffic – Page 16

Transportation Analyses

Methodologies

This section documents the methodologies and assumptions used to conduct the traffic impact analyses for the proposed Montana Limestone Resources Project. Study methodology and analyses are based on ITE's *Recommended Practices for Transportation Impact Analyses for Site Development*. These analyses are used to determine the project's conformance with Granite County and Montana Department of Transportation (MDT) policies and evaluate whether the proposed development's impacts are perceptible to the average driver.

Study Scenarios

This study presents analyses of the following scenarios:

- Existing Conditions
- Estimated 2021 Background Traffic
- Estimated 2021 Total Traffic
- Estimated 2026 Background Traffic
- Estimated 2026 Total Traffic
- Estimated 2071 Background Traffic
- Estimated 2071 Total Traffic

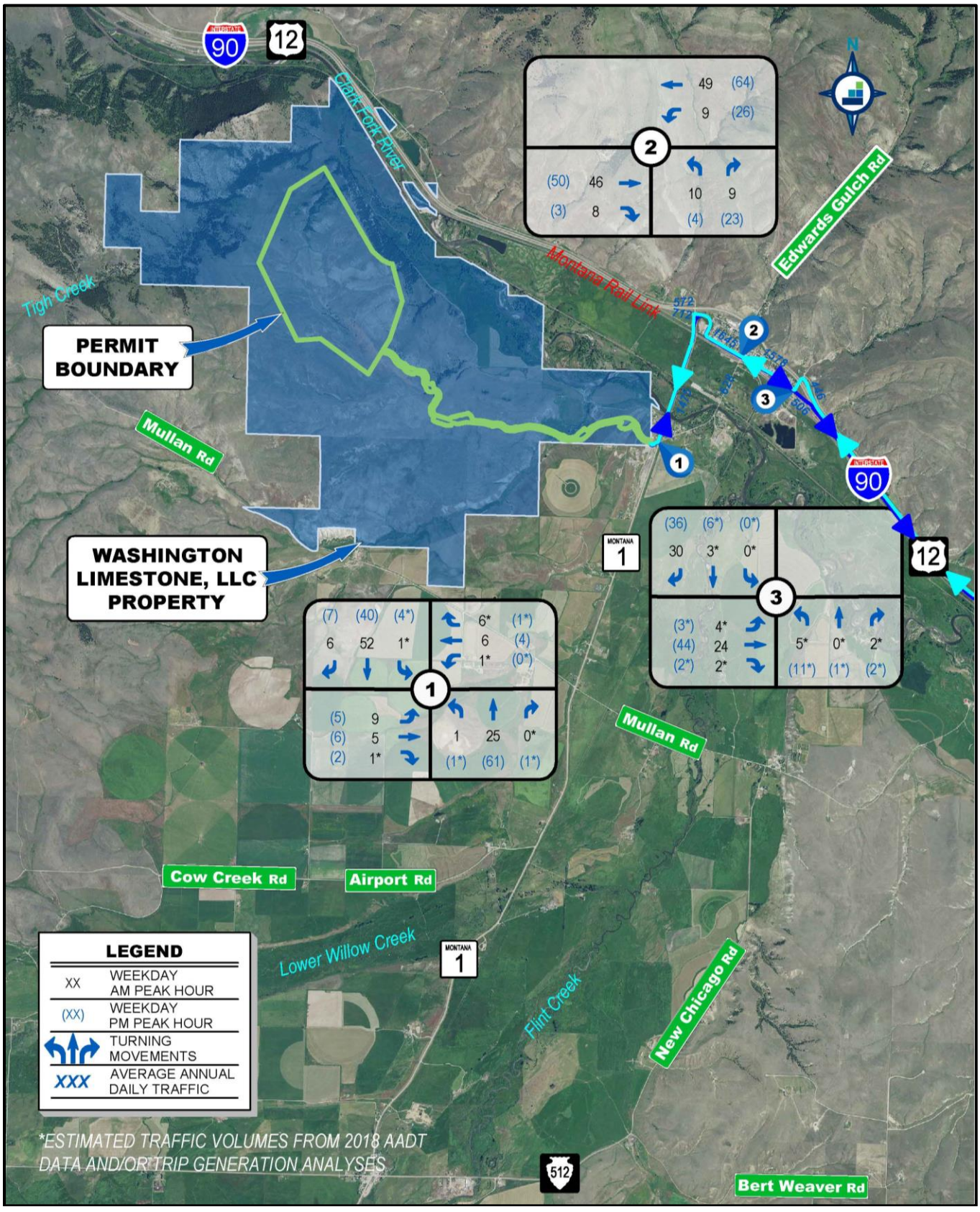

Figure 8: Estimated 2021 Total Traffic

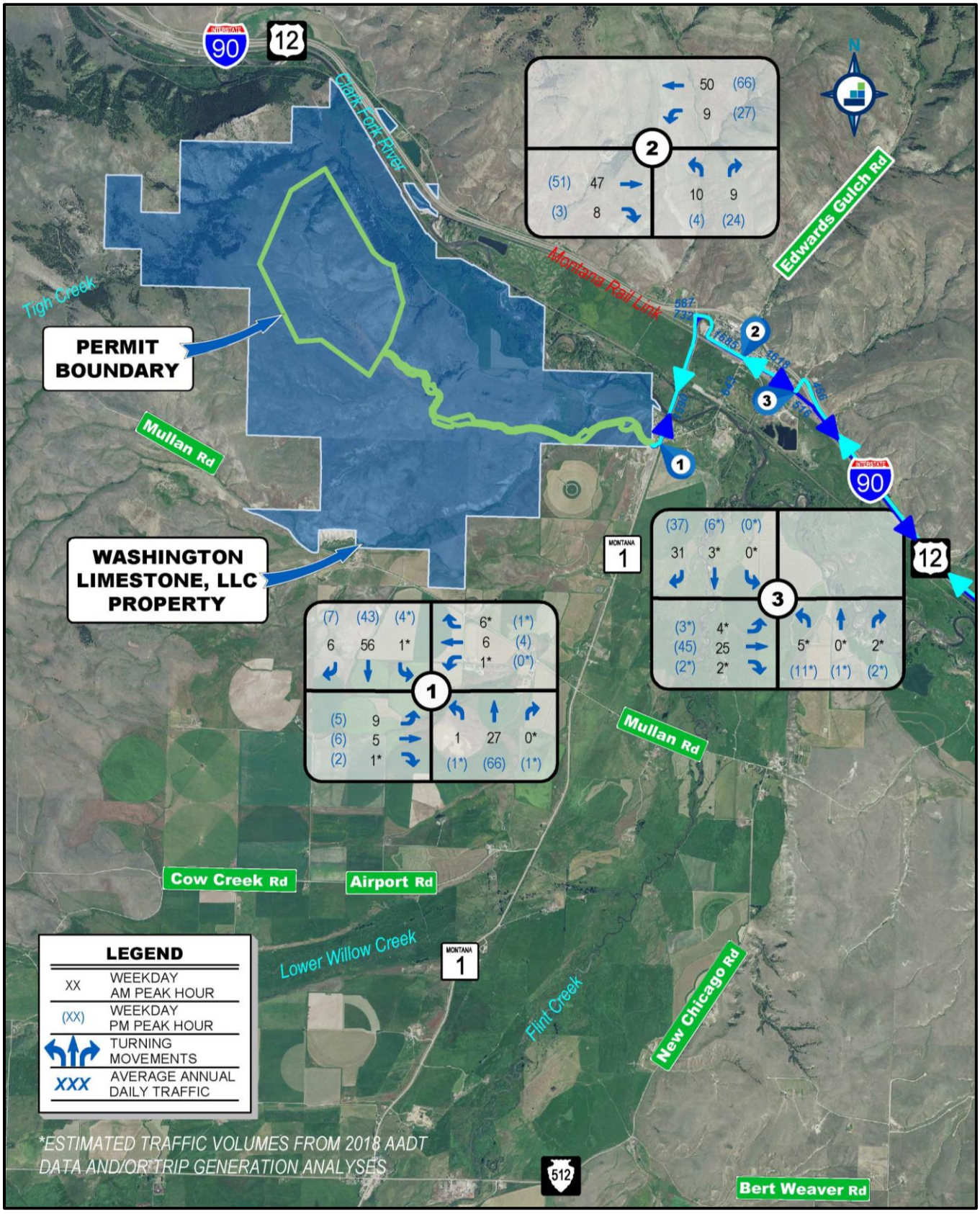

Figure 9: Estimated 2026 Total Traffic

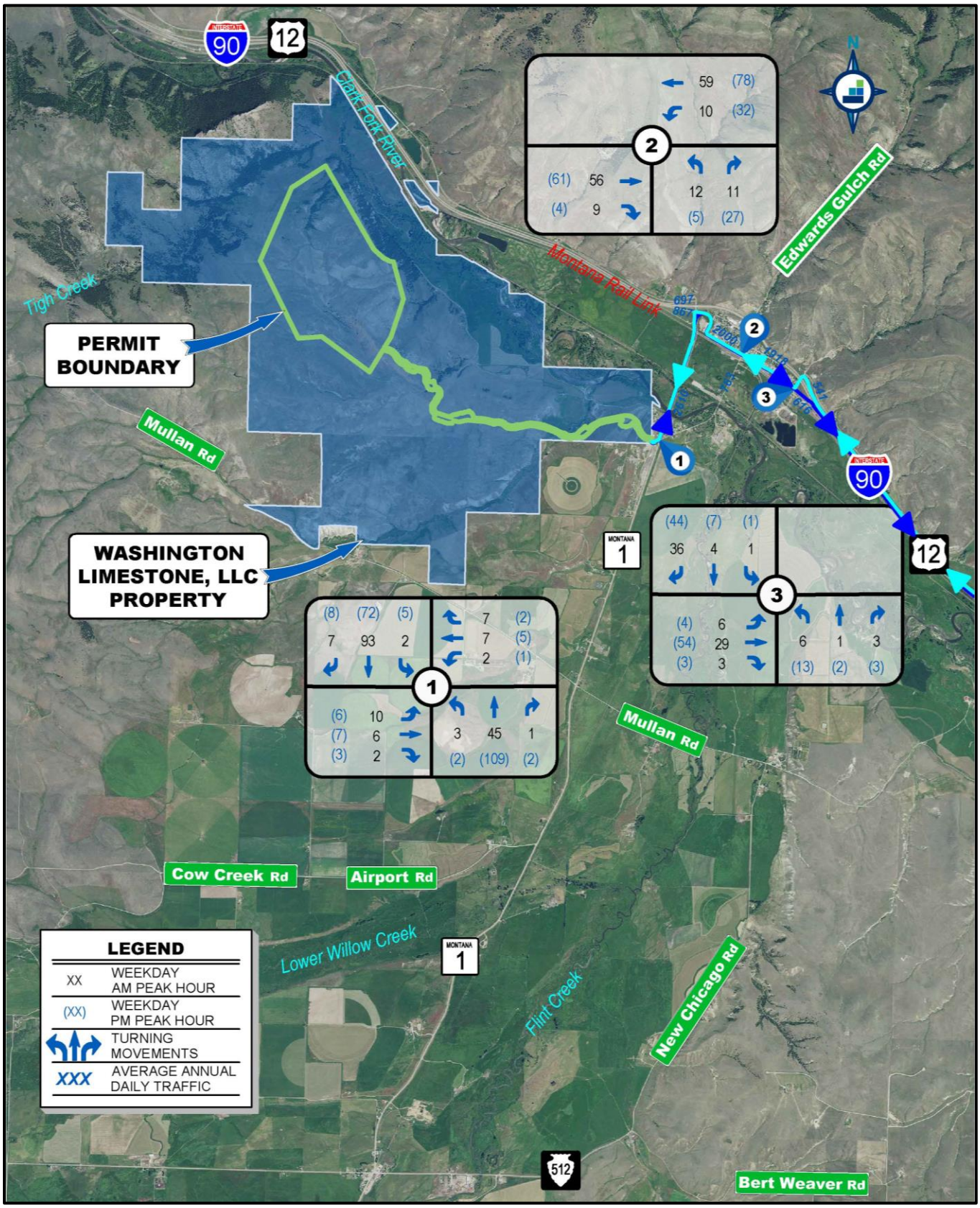

Figure 10: Estimated 2071 Total Traffic

Analysis Methodologies

Transportation system operating conditions are typically described in terms of "level of service". Level of service (LOS) is the performance measure used to evaluate the cumulative effects of such things as travel speed, traffic volumes, roadway and intersection capacity, travel delay, and traffic interruptions. Operating conditions are designated as LOS A through LOS F, which represents the most favorable to the least favorable operating conditions.

Level of service for intersections is determined by control delay, which is defined as the total elapsed time from when a vehicle stops at the end of a queue when it departs from the stop line. The total elapsed time includes the time required for the vehicle to travel from the last- to the first-in-queue position, including deceleration from the free flow speed to the speed of vehicles in the queue. Appendix A lists the delay/LOS criteria listed in the *Highway Capacity Manual, 6th Edition | A Guide for Multimodal Mobility Analysis* (HCM) published by the Transportation Research Board (TRB) for unsignalized intersections.

Two-Way Stop-Controlled (TWSC) Intersections

Two-way stop-controlled (TWSC) intersection capacity and level of service analyses were performed using *HCS TWSC Version 7.4* developed and maintained by the McTrans Center at the University of Florida. Unsignalized intersection analyses are based on Chapter 20 of the HCM. The HCM methodology for evaluating TWSC intersections is based on gap acceptance and conflicting traffic for vehicles stopped on the minor street approaches. The critical gap (or minimum acceptable gap) is defined as the minimum time interval in the major street traffic stream that allows entry for one minor street vehicle. Average control delay and LOS for the "worst approach" are reported. LOS is not defined for the whole intersection.

Capacity & Level of Service Analyses

Study area intersections were analyzed for each study scenario. Detailed results of the analyses (provided in Appendix D) found that each approach at each intersection was found to operate at LOS A for all study scenarios. These findings are shown in Figure 11 on the following page.

Auxiliary Turn Lanes

Traffic from the proposed Montana Limestone Resources Project is not anticipated to comprise a significant volume on the northbound approach at the intersection of Montana State Highway 1 and Old Highway 10A / Main Street. Therefore, the intersection was not evaluated for consideration of installing a northbound left turn lane. By inspection, the southbound right turn volume is not anticipated to meet the minimum 40 vehicles per MDT's *Traffic Engineering Manual* (November 2007) for consideration of an auxiliary right turn lane.

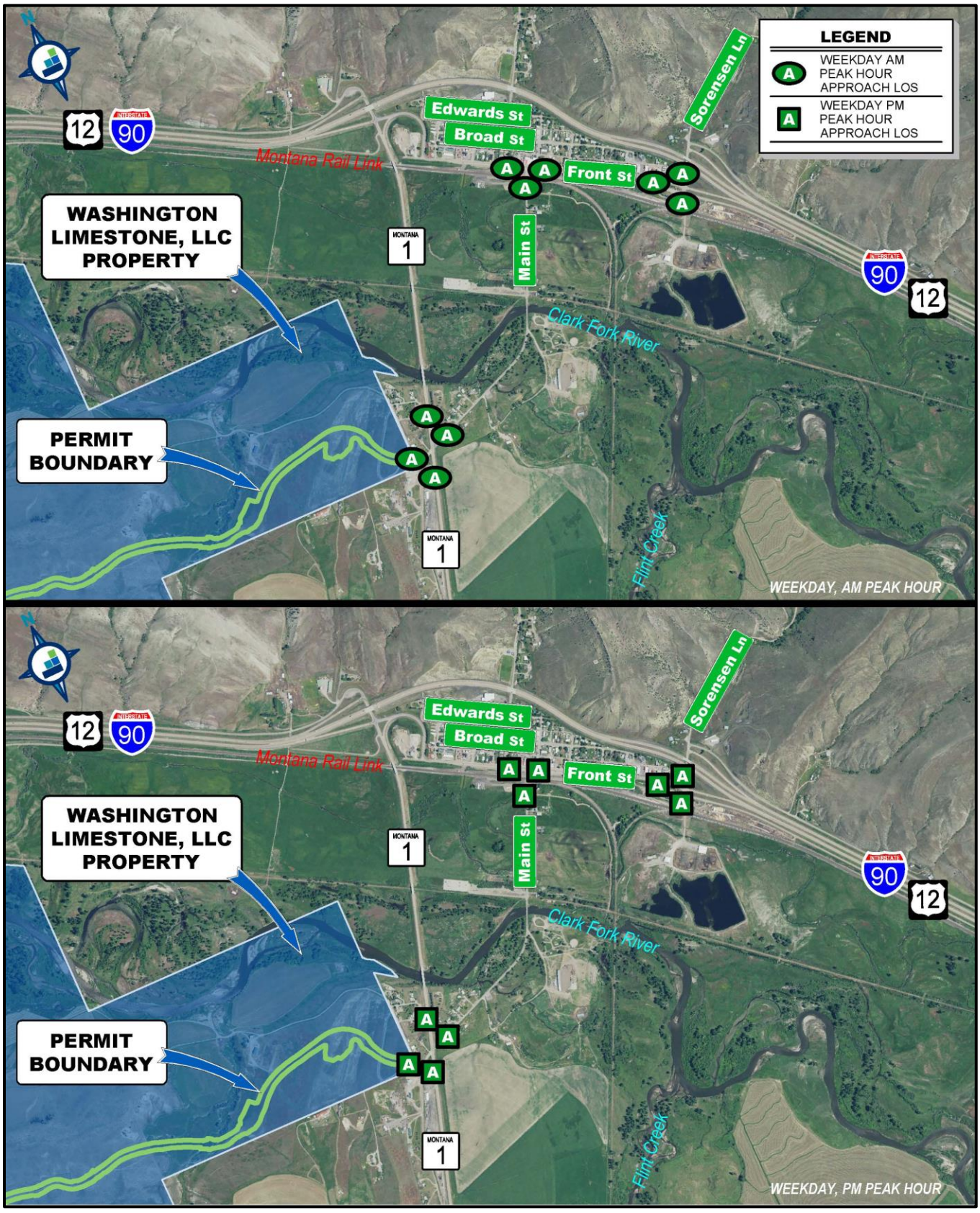

Figure 11: Traffic Operations Summary

Findings

Traffic Operations

Capacity and level of service analyses show that all of the intersections evaluated as a part of this study are projected to operate at LOS A on all approaches for existing conditions as well as through the year 2071 with the inclusion of traffic from the proposed Montana Limestone Resources Project.

Site Accessibility

Adequate sight distance exists at the proposed mine site access to Montana State Highway 1 and the intersection is projected to have favorable traffic operations. Additionally, the intersection is not projected to warrant installation of auxiliary turn lanes based on current or projected traffic volumes.

Conclusions & Recommendations

Analysis of trip generation estimates and traffic operations reveal that the proposed Montana Limestone Resources Project will have minimal impact on the area transportation system. Based on the analyses included herein, no additional improvements were identified that would be necessary with its development.

Site Access to Montana State Highway 1

- ❑ The proposed site access to Montana State Highway 1 is not projected to warrant installation of left or right auxiliary turn lanes based on current or projected traffic volumes and the analyses included as a part of this study.
- ❑ Adequate sight distance exists at the proposed site access to Montana State Highway 1 in excess of 1,500 feet in both the northbound and southbound directions.
- ❑ For design and construction permitting through the Montana Department of Transportation, approach radii for the access design to Montana State Highway 1 should be evaluated to accommodate the appropriate truck design vehicle entering and exiting the mine site to and from the highway to insure there is adequate surfacing width to accommodate the traveled wheelpath of the design vehicle.
- ❑ All traffic control improvements (signage, pavement markings, etc.) included as part of the project should be installed in accordance with Granite County, Montana Department of Transportation, and the *Manual on Uniform Traffic Control Devices* standards.

References

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2. Crane Transportation Group. (December 2001). Master Traffic Impact Report for the Continuation or Expansion of Activities at Blue Rock and Canyon Rock Quarries in Forestville. San Francisco, CA: Leonard Charles & Associates.
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APPENDIX A

LEVEL OF SERVICE CONCEPTS, ANALYSIS METHODOLOGIES, & STANDARDS OF SIGNIFICANCE

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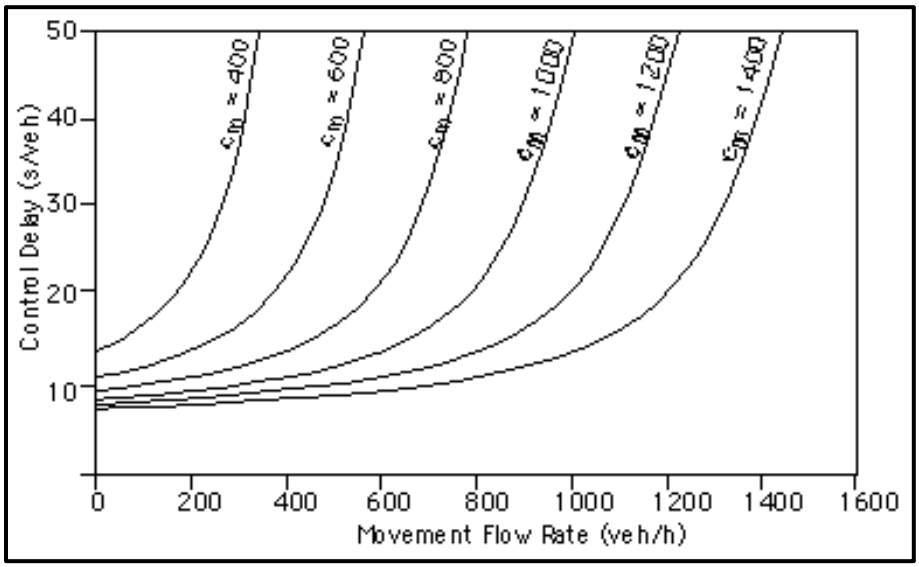
Unsignalized Intersection Level of Service

The method presented in the *Highway Capacity Manual, 6th Edition | A Guide for Multimodal Mobility Analysis* (HCM) published by the Transportation Research Board (TRB) for evaluating unsignalized, stop controlled intersections is based on the average total delay for each impeded movement. As used here, total delay is defined as the total elapsed time from when a vehicle stops at the end of a queue until the vehicle departs from the stop line. This time includes the time required for the vehicle to travel from the last-in-queue to the first-in-queue position. The average total delay for any particular minor movement is a function of the service rate or capacity of the approach and the degree of saturation. The resulting delay is used to determine the level of service as shown in Table A-1 below.

Table A-1: Level of Service Criteria for Stop-Controlled Intersections

Average Control Delay	Level of Service (LOS) Characteristics
≤ 10 seconds	LOS A – Little or no delay
10.1 – 15.0 seconds	LOS B – Short traffic delay
15.1 – 25.0 seconds	LOS C – Average traffic delay
25.1 – 35.0 seconds	LOS D – Long traffic delays
35.1 – 50.0 seconds	LOS E – Very long traffic delays
> 50.1 seconds	LOS F – When the demand exceeds the capacity of the lane, extreme delays will be encountered and queuing may cause severe congestion to the intersection.

Source: *Highway Capacity Manual, 6th Edition | A Guide for Multimodal Mobility Analysis* (Transportation Research Board, 2016)



Source: Exhibit 17-20. *Highway Capacity Manual 2000*, Pg. 17-24 (Transportation Research Board, 2000)

Figure A-1: Control Delay and Flow Rate

APPENDIX B

TRAFFIC COUNT DATA

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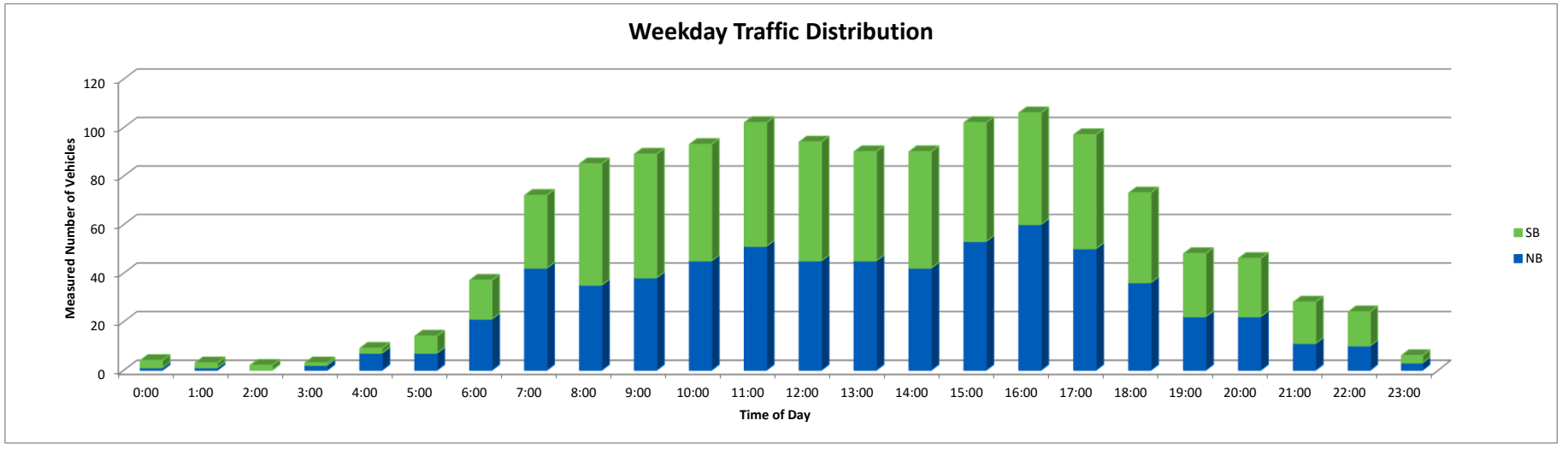
TRAFFIC VOLUME COUNT SUMMARY

Roadway:	Montana Highway 1
Count Location ID:	20-1-015
Count Location:	Reference Post 063+0.064 | +/- 0.08 Miles North of Lorensen Ln / Main St Latitude: N 46°39'35.86" | Longitude: W 113°09'28.08"
Dates Performed:	Monday, June 25, 2018 thru Wednesday, June 27, 2018
Road Classification:	Rural Minor Arterial (RMA)

Time	7:00	7:15	7:30	7:45	8:00	8:15	8:30	8:45	Total	Peak Hour	PHF
NB	9	11	8	15	8	12	6	9	78	35	0.84
SB	10	9	7	5	13	14	12	12	82	51	
Time	**4:00**	**4:15**	**4:30**	**4:45**	**5:00**	**5:15**	**5:30**	**5:45**	**Total**	**Peak Hour**	**PHF**
NB	15	13	16	16	14	13	14	9	110	60	0.91
SB	12	13	10	11	10	10	15	12	93	46	

Daily Factor =>	6/25/2018 Monday 0.856		6/26/2018 Tuesday 0.852		6/27/2018 Wednesday 0.815		6/28/2018 Thursday 0.809		6/29/2018 Friday 0.782		6/30/2018 Saturday 0.945		7/1/2018 Sunday 0.979		Weekday Average		Weekday TOTAL	% of Weekday Total	Weekend Average		Weekend TOTAL	% of Weekend Total
Hour Begin	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB			NB	SB		
0:00			0	4	2	1									*1*	*3*	*4*	*0.30%*				*0.00%*
1:00			1	3	0	0									*1*	*2*	*3*	*0.23%*				*0.00%*
2:00			0	3	0	1									*0*	*2*	*2*	*0.15%*				*0.00%*
3:00			2	1	2	0									*2*	*1*	*3*	*0.23%*				*0.00%*
4:00			5	2	8	1									*7*	*2*	*9*	*0.68%*				*0.00%*
5:00			8	4	5	10									*7*	*7*	*14*	*1.06%*				*0.00%*
6:00			17	17	24	15									*21*	*16*	*37*	*2.81%*				*0.00%*
7:00			43	34	40	25									*42*	*30*	*72*	*5.47%*				*0.00%*
8:00			30	55	39	44									*35*	*50*	*85*	*6.45%*				*0.00%*
9:00			36	50	39	51									*38*	*51*	*89*	*6.76%*				*0.00%*
10:00			49	51	41	45									*45*	*48*	*93*	*7.06%*				*0.00%*
11:00			45	43	56	58									*51*	*51*	*102*	*7.74%*				*0.00%*
12:00			46	51	43	46									*45*	*49*	*94*	*7.14%*				*0.00%*
13:00			43	42	47	47									*45*	*45*	*90*	*6.83%*				*0.00%*
14:00			34	53	49	42									*42*	*48*	*90*	*6.83%*				*0.00%*
15:00			55	41	51	57									*53*	*49*	*102*	*7.74%*				*0.00%*
16:00	55	44	65	48											*60*	*46*	*106*	*8.05%*				*0.00%*
17:00	53	49	47	45											*50*	*47*	*97*	*7.37%*				*0.00%*
18:00	37	39	35	35											*36*	*37*	*73*	*5.54%*				*0.00%*
19:00	22	24	22	28											*22*	*26*	*48*	*3.64%*				*0.00%*
20:00	21	27	22	20											*22*	*24*	*46*	*3.49%*				*0.00%*
21:00	8	19	13	14											*11*	*17*	*28*	*2.13%*				*0.00%*
22:00	13	13	6	14											*10*	*14*	*24*	*1.82%*				*0.00%*
23:00	4	3	1	3											*3*	*3*	*6*	*0.46%*				*0.00%*
TOTAL	**213**	**218**	**625**	**661**	**446**	**443**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**649**	**668**	**1,317**	**100.00%**	**0**	**0**	**0**	**0.00%**
	431		**1,286**		**889**		**0**		**0**		**0**		**0**		**1,317**		**1,317**	**100.00%**	**0**		**0**	**0.00%**

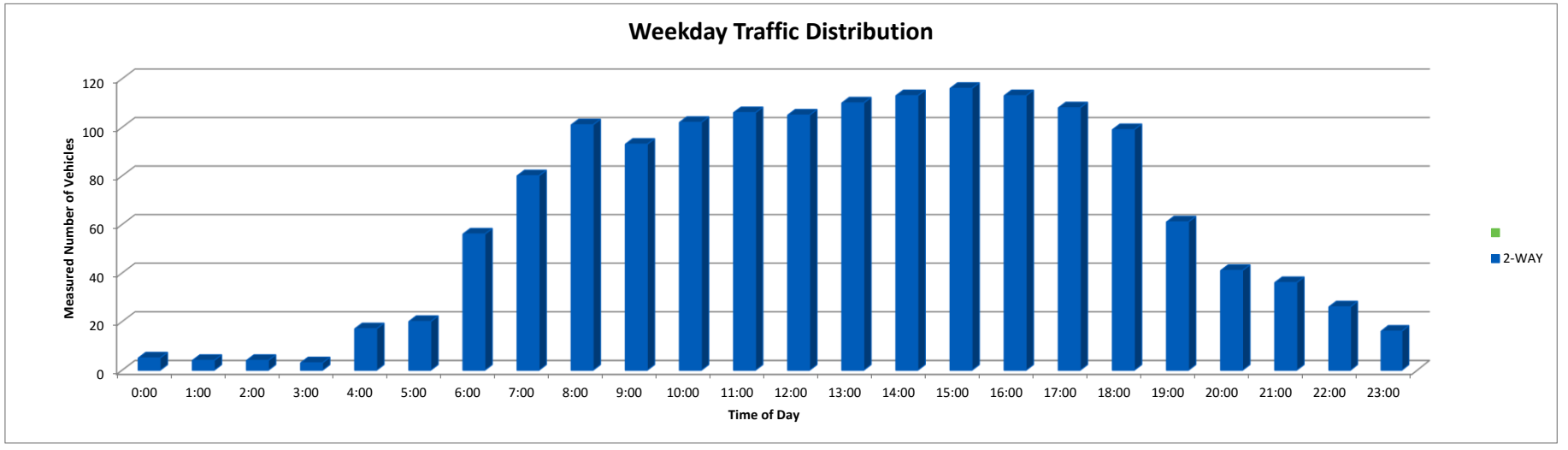


TRAFFIC VOLUME COUNT SUMMARY

Roadway:	Front Street
Count Location ID:	20-1-010
Count Location:	Northwest of 2nd Street Latitude: N 46°40'12.70" | Longitude: W 113°09'05.12"
Dates Performed:	Monday, June 25, 2018 thru Wednesday, June 27, 2018
Road Classification:	MDT Classification - 4

Time	7:00	7:15	7:30	7:45	8:00	8:15	8:30	8:45	Total	Peak Hour	PHF
2-WAY	20	21	17	24	43	22	17	24	188	106	0.62
Time	**4:00**	**4:15**	**4:30**	**4:45**	**5:00**	**5:15**	**5:30**	**5:45**	**Total**	**Peak Hour**	**PHF**
2-WAY	29	27	29	27	30	25	24	29	220	113	0.93

Daily Factor =>	6/25/2018 Monday 0.732	6/26/2018 Tuesday 0.741	6/27/2018 Wednesday 0.678	6/28/2018 Thursday 0.659	6/29/2018 Friday 0.609	6/30/2018 Saturday 0.659	7/1/2018 Sunday 0.655	Weekday Average	Weekday TOTAL	% of Weekday Total	Weekend Average	Weekend TOTAL	% of Weekend Total
Hour Begin	2-WAY	2-WAY	2-WAY	2-WAY	2-WAY	2-WAY	2-WAY	2-WAY			2-WAY		
0:00		6	4					*5*	*5*	*0.33%*			*0.00%*
1:00		4	3					*4*	*4*	*0.26%*			*0.00%*
2:00		7	1					*4*	*4*	*0.26%*			*0.00%*
3:00		5	1					*3*	*3*	*0.20%*			*0.00%*
4:00		19	15					*17*	*17*	*1.11%*			*0.00%*
5:00		20	19					*20*	*20*	*1.30%*			*0.00%*
6:00		59	52					*56*	*56*	*3.65%*			*0.00%*
7:00		87	73					*80*	*80*	*5.21%*			*0.00%*
8:00		98	104					*101*	*101*	*6.58%*			*0.00%*
9:00		108	77					*93*	*93*	*6.06%*			*0.00%*
10:00		105	99					*102*	*102*	*6.64%*			*0.00%*
11:00		113	98					*106*	*106*	*6.91%*			*0.00%*
12:00		116	93					*105*	*105*	*6.84%*			*0.00%*
13:00		118	102					*110*	*110*	*7.17%*			*0.00%*
14:00		111	115					*113*	*113*	*7.36%*			*0.00%*
15:00	119	113						*116*	*116*	*7.56%*			*0.00%*
16:00	99	127						*113*	*113*	*7.36%*			*0.00%*
17:00	98	118						*108*	*108*	*7.04%*			*0.00%*
18:00	100	97						*99*	*99*	*6.45%*			*0.00%*
19:00	57	64						*61*	*61*	*3.97%*			*0.00%*
20:00	37	44						*41*	*41*	*2.67%*			*0.00%*
21:00	40	32						*36*	*36*	*2.35%*			*0.00%*
22:00	31	20						*26*	*26*	*1.69%*			*0.00%*
23:00	18	13						*16*	*16*	*1.04%*			*0.00%*
TOTAL	**599**	**1,604**	**856**	**0**	**0**	**0**	**0**	**1,535**	**1,535**	**100.00%**	**0**	**0**	**0.00%**
	599	**1,604**	**856**	**0**	**0**	**0**	**0**	**1,535**	**1,535**	**100.00%**	**0**	**0**	**0.00%**



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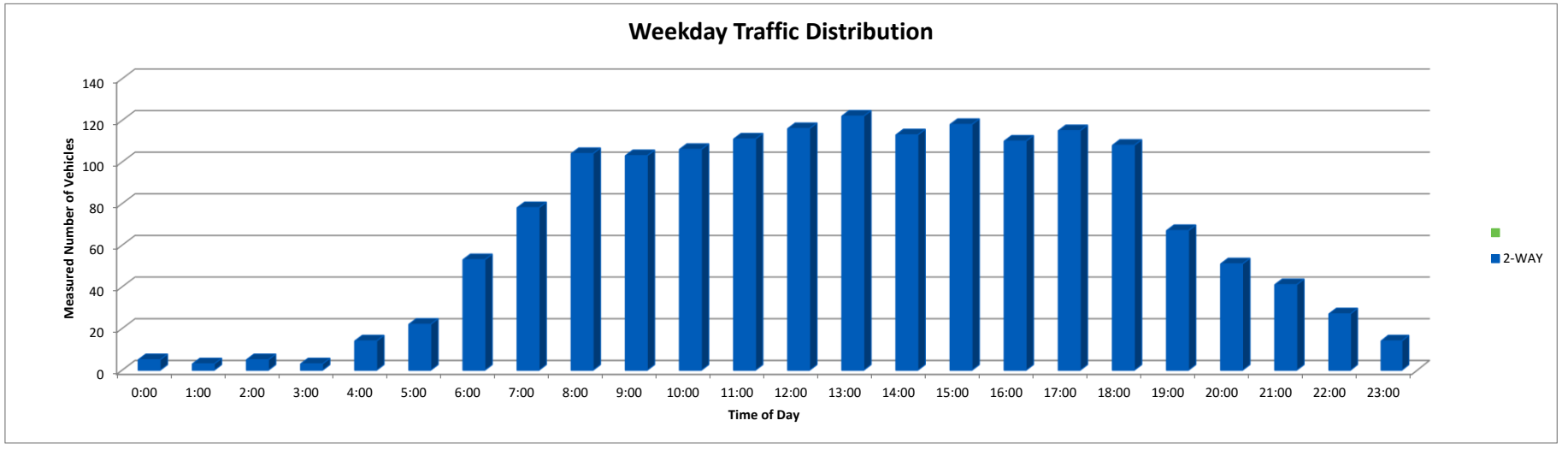
TRAFFIC VOLUME COUNT SUMMARY

Roadway:	West Front Street
Count Location ID:	20-1-011
Count Location:	Between 1st Street & North Main Street Latitude: N 46°40'04.68" | Longitude: W 113°08'54.06"
Dates Performed:	Monday, June 25, 2018 thru Wednesday, June 27, 2018
Road Classification:	MDT Classification - 4

Time	7:00	7:15	7:30	7:45	8:00	8:15	8:30	8:45	Total	Peak Hour	PHF
2-WAY	19	18	21	24	41	23	18	26	190	109	0.66
Time	**4:00**	**4:15**	**4:30**	**4:45**	**5:00**	**5:15**	**5:30**	**5:45**	**Total**	**Peak Hour**	**PHF**
2-WAY	26	27	27	29	32	26	27	29	223	115	0.90

Hour Begin	6/25/2018 Monday Daily Factor => 0.732 2-WAY	6/26/2018 Tuesday 0.741 2-WAY	6/27/2018 Wednesday 0.678 2-WAY	6/28/2018 Thursday 0.659 2-WAY	6/29/2018 Friday 0.609 2-WAY	6/30/2018 Saturday 0.659 2-WAY	7/1/2018 Sunday 0.655 2-WAY	Weekday Average 2-WAY	Weekday TOTAL	% of Weekday Total	Weekend Average 2-WAY	Weekend TOTAL	% of Weekend Total
0:00		7	3					*5*	*5*	*0.31%*			*0.00%*
1:00		2	3					*3*	*3*	*0.19%*			*0.00%*
2:00		9	1					*5*	*5*	*0.31%*			*0.00%*
3:00		4	1					*3*	*3*	*0.19%*			*0.00%*
4:00		13	14					*14*	*14*	*0.87%*			*0.00%*
5:00		24	19					*22*	*22*	*1.37%*			*0.00%*
6:00		56	49					*53*	*53*	*3.29%*			*0.00%*
7:00		88	68					*78*	*78*	*4.85%*			*0.00%*
8:00		101	106					*104*	*104*	*6.46%*			*0.00%*
9:00		116	89					*103*	*103*	*6.40%*			*0.00%*
10:00		117	94					*106*	*106*	*6.59%*			*0.00%*
11:00		120	102					*111*	*111*	*6.90%*			*0.00%*
12:00		137	94					*116*	*116*	*7.21%*			*0.00%*
13:00		130	114					*122*	*122*	*7.58%*			*0.00%*
14:00		105	120					*113*	*113*	*7.02%*			*0.00%*
15:00	106	129						*118*	*118*	*7.33%*			*0.00%*
16:00	93	127						*110*	*110*	*6.84%*			*0.00%*
17:00	99	131						*115*	*115*	*7.15%*			*0.00%*
18:00	107	109						*108*	*108*	*6.71%*			*0.00%*
19:00	70	64						*67*	*67*	*4.16%*			*0.00%*
20:00	46	56						*51*	*51*	*3.17%*			*0.00%*
21:00	41	41						*41*	*41*	*2.55%*			*0.00%*
22:00	29	24						*27*	*27*	*1.68%*			*0.00%*
23:00	16	11						*14*	*14*	*0.87%*			*0.00%*
TOTAL	**607**	**1,721**	**877**	**0**	**0**	**0**	**0**	**1,609**	**1,609**	**100.00%**	**0**	**0**	**0.00%**
	607	**1,721**	**877**	**0**	**0**	**0**	**0**	**1,609**	**1,609**	**100.00%**	**0**	**0**	**0.00%**

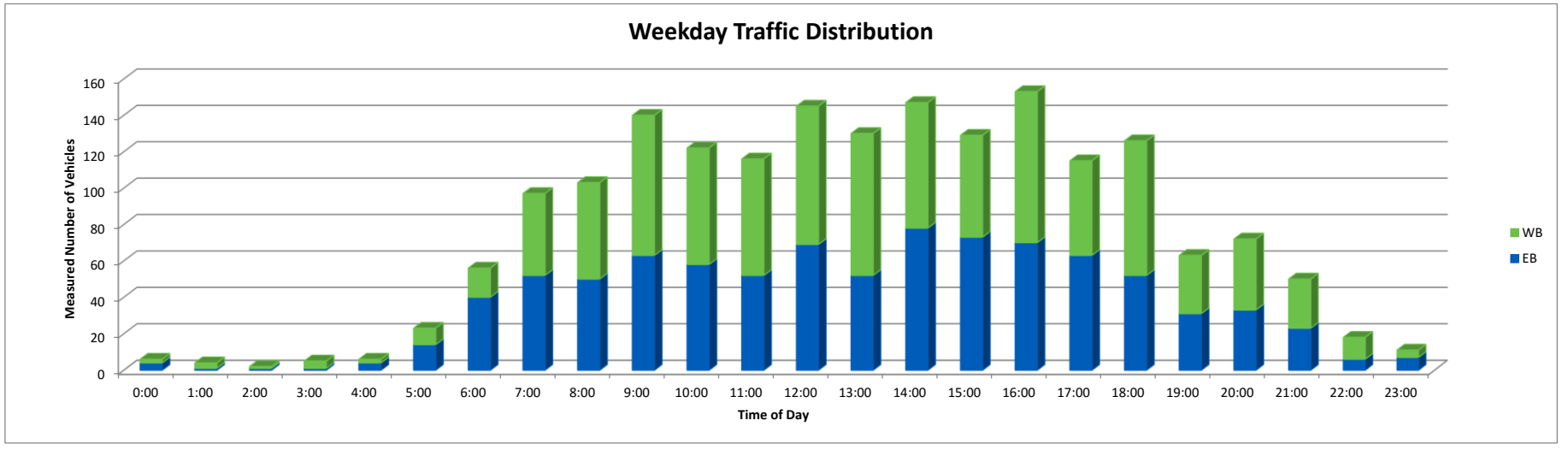


TRAFFIC VOLUME COUNT SUMMARY

Roadway:	East Front Street
Count Location ID:	20-1-012
Count Location:	Between A Street & B Street Latitude: N 46°40'00.54" | Longitude: W 113°08'42.92"
Dates Performed:	Monday, June 26, 2017 thru Tuesday, June 27, 2017
Road Classification:	MDT Classification - 4

Time	7:00	7:15	7:30	7:45	8:00	8:15	8:30	8:45	Total	Peak Hour	PHF
EB	22	8	8	13	12	11	13	14	101	50	0.89
WB	15	9	8	13	14	13	11	15	98	53	
Time	**4:00**	**4:15**	**4:30**	**4:45**	**5:00**	**5:15**	**5:30**	**5:45**	**Total**	**Peak Hour**	**PHF**
EB	20	18	19	13	17	14	13	20	134	70	0.89
WB	19	20	23	20	14	17	10	12	135	83	

	6/26/2017 Monday		6/27/2017 Tuesday		6/28/2017 Wednesday		6/29/2017 Thursday		6/30/2017 Friday		7/1/2017 Saturday		7/2/2017 Sunday		Weekday Average		Weekday	% of Weekday	Weekend Average		Weekend	% of Weekend
Daily Factor =>	0.680		0.708		0.709		0.673		0.633		0.675		0.597									
Hour Begin	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	TOTAL	Total	EB	WB	TOTAL	Total
0:00			4	2											*4*	*2*	*6*	*0.33%*				*0.00%*
1:00			1	3											*1*	*3*	*4*	*0.22%*				*0.00%*
2:00			1	1											*1*	*1*	*2*	*0.11%*				*0.00%*
3:00			1	4											*1*	*4*	*5*	*0.27%*				*0.00%*
4:00			4	2											*4*	*2*	*6*	*0.33%*				*0.00%*
5:00			14	9											*14*	*9*	*23*	*1.25%*				*0.00%*
6:00			40	16											*40*	*16*	*56*	*3.05%*				*0.00%*
7:00			52	45											*52*	*45*	*97*	*5.27%*				*0.00%*
8:00			50	53											*50*	*53*	*103*	*5.60%*				*0.00%*
9:00			63	77											*63*	*77*	*140*	*7.61%*				*0.00%*
10:00			58	64											*58*	*64*	*122*	*6.63%*				*0.00%*
11:00			52	64											*52*	*64*	*116*	*6.31%*				*0.00%*
12:00			69	76											*69*	*76*	*145*	*7.88%*				*0.00%*
13:00			52	78											*52*	*78*	*130*	*7.07%*				*0.00%*
14:00	78	69													*78*	*69*	*147*	*7.99%*				*0.00%*
15:00	73	56													*73*	*56*	*129*	*7.01%*				*0.00%*
16:00	70	83													*70*	*83*	*153*	*8.32%*				*0.00%*
17:00	63	52													*63*	*52*	*115*	*6.25%*				*0.00%*
18:00	52	74													*52*	*74*	*126*	*6.85%*				*0.00%*
19:00	31	32													*31*	*32*	*63*	*3.43%*				*0.00%*
20:00	33	39													*33*	*39*	*72*	*3.92%*				*0.00%*
21:00	23	27													*23*	*27*	*50*	*2.72%*				*0.00%*
22:00	6	12													*6*	*12*	*18*	*0.98%*				*0.00%*
23:00	7	4													*7*	*4*	*11*	*0.60%*				*0.00%*
TOTAL	**436**	**448**	**461**	**494**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**897**	**942**	**1,839**	**100.00%**	**0**	**0**	**0**	**0.00%**
	884		**955**		**0**		**0**		**0**		**0**		**0**		**1,839**		**1,839**	**100.00%**	**0**		**0**	**0.00%**



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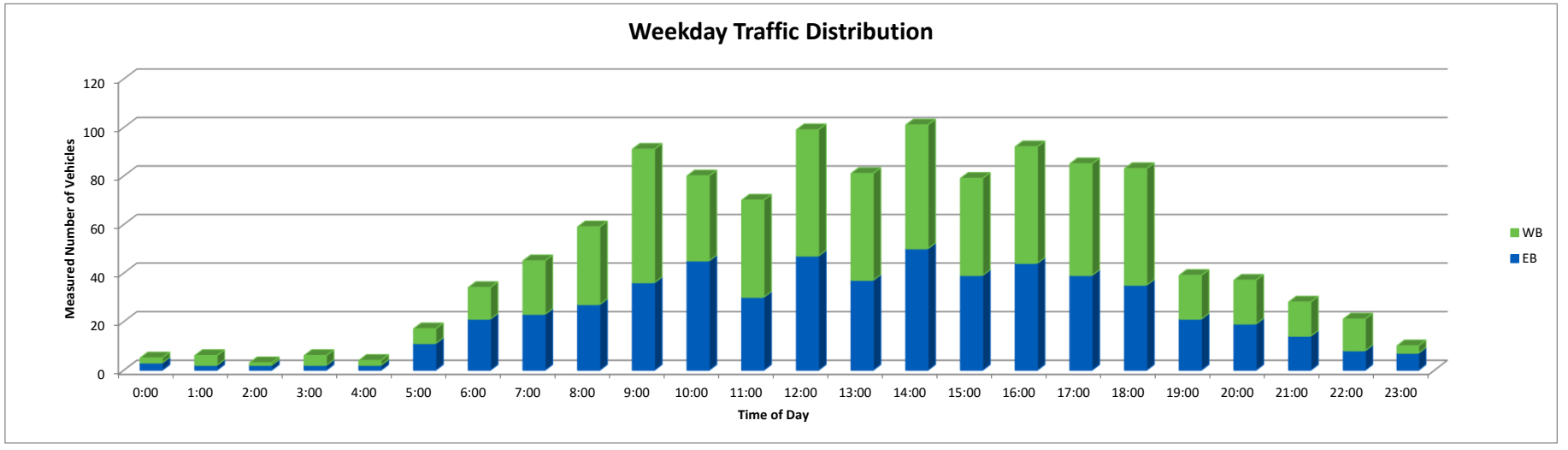
TRAFFIC VOLUME COUNT SUMMARY

Roadway:	East Front Street
Count Location ID:	20-1-013
Count Location:	West of S-271 Latitude: N 46°39'53.46" | Longitude: W 113°08'25.05"
Dates Performed:	Monday, June 26, 2017 thru Tuesday, June 27, 2017
Road Classification:	MDT Classification - 4

Time	7:00	7:15	7:30	7:45	8:00	8:15	8:30	8:45	Total	Peak Hour	PHF
EB	7	6	5	5	6	6	8	7	50	27	0.83
WB	6	4	5	7	5	8	8	10	53	32	
Time	**4:00**	**4:15**	**4:30**	**4:45**	**5:00**	**5:15**	**5:30**	**5:45**	**Total**	**Peak Hour**	**PHF**
EB	16	14	7	7	12	11	10	7	84	44	0.69
WB	8	18	10	13	11	12	10	13	95	48	

	6/26/2017 Monday		6/27/2017 Tuesday		6/28/2017 Wednesday		6/29/2017 Thursday		6/30/2017 Friday		7/1/2017 Saturday		7/2/2017 Sunday		Weekday Average		Weekday	% of Weekday	Weekend Average		Weekend	% of Weekend
Daily Factor =>	0.680		0.708		0.709		0.673		0.633		0.675		0.597									
Hour Begin	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	TOTAL	Total	EB	WB	TOTAL	Total
0:00			3	2											*3*	*2*	*5*	*0.43%*				*0.00%*
1:00			2	4											*2*	*4*	*6*	*0.51%*				*0.00%*
2:00			2	1											*2*	*1*	*3*	*0.26%*				*0.00%*
3:00			2	4											*2*	*4*	*6*	*0.51%*				*0.00%*
4:00			2	2											*2*	*2*	*4*	*0.34%*				*0.00%*
5:00			11	6											*11*	*6*	*17*	*1.45%*				*0.00%*
6:00			21	13											*21*	*13*	*34*	*2.89%*				*0.00%*
7:00			23	22											*23*	*22*	*45*	*3.83%*				*0.00%*
8:00			27	32											*27*	*32*	*59*	*5.02%*				*0.00%*
9:00			36	55											*36*	*55*	*91*	*7.74%*				*0.00%*
10:00			45	35											*45*	*35*	*80*	*6.81%*				*0.00%*
11:00			30	40											*30*	*40*	*70*	*5.96%*				*0.00%*
12:00			47	52											*47*	*52*	*99*	*8.43%*				*0.00%*
13:00	37	44													*37*	*44*	*81*	*6.89%*				*0.00%*
14:00	50	51													*50*	*51*	*101*	*8.60%*				*0.00%*
15:00	39	40													*39*	*40*	*79*	*6.72%*				*0.00%*
16:00	44	48													*44*	*48*	*92*	*7.83%*				*0.00%*
17:00	39	46													*39*	*46*	*85*	*7.23%*				*0.00%*
18:00	35	48													*35*	*48*	*83*	*7.06%*				*0.00%*
19:00	21	18													*21*	*18*	*39*	*3.32%*				*0.00%*
20:00	19	18													*19*	*18*	*37*	*3.15%*				*0.00%*
21:00	14	14													*14*	*14*	*28*	*2.38%*				*0.00%*
22:00	8	13													*8*	*13*	*21*	*1.79%*				*0.00%*
23:00	7	3													*7*	*3*	*10*	*0.85%*				*0.00%*
TOTAL	**313**	**343**	**251**	**268**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**564**	**611**	**1,175**	**100.00%**	**0**	**0**	**0**	**0.00%**
	656		**519**		**0**		**0**		**0**		**0**		**0**		**1,175**		**1,175**	**100.00%**	**0**		**0**	**0.00%**



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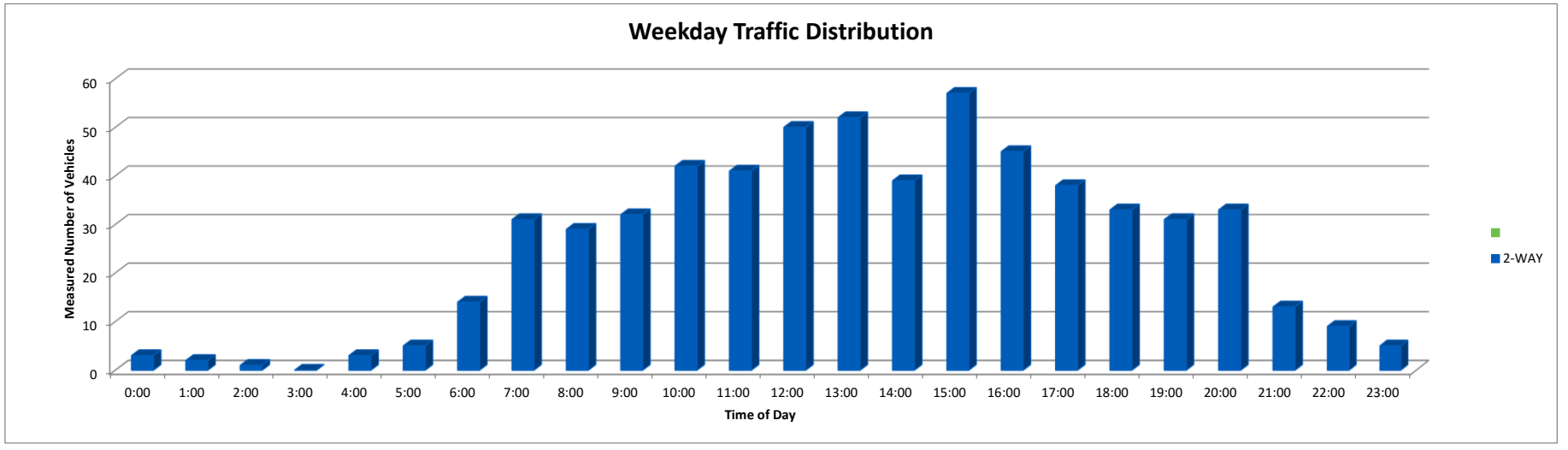
TRAFFIC VOLUME COUNT SUMMARY

Roadway:	Main Street
Count Location ID:	20-1-016
Count Location:	At Burlington Northern Santa Fe Railroad Tracks Latitude: N 46°39'59.70" | Longitude: W 113°08'50.42"
Dates Performed:	Monday, June 25, 2018 thru Tuesday, June 26, 2018
Road Classification:	Urban Collector

Time	7:00	7:15	7:30	7:45	8:00	8:15	8:30	8:45	Total	Peak Hour	PHF
2-WAY	9	6	8	9	6	6	9	9	62	32	0.89
Time	**4:00**	**4:15**	**4:30**	**4:45**	**5:00**	**5:15**	**5:30**	**5:45**	**Total**	**Peak Hour**	**PHF**
2-WAY	10	11	13	11	14	8	5	11	83	49	0.89

Hour Begin	6/25/2018 Monday	6/26/2018 Tuesday	6/27/2018 Wednesday	6/28/2018 Thursday	6/29/2018 Friday	6/30/2018 Saturday	7/1/2018 Sunday	Weekday Average	Weekday TOTAL	% of Weekday Total	Weekend Average	Weekend TOTAL	% of Weekend Total
Daily Factor =>	0.885	0.853	0.817	0.856	0.811	1.009	1.108						
	2-WAY	2-WAY	2-WAY	2-WAY	2-WAY	2-WAY	2-WAY	2-WAY			2-WAY		
0:00		3	2					*3*	*3*	*0.49%*			*0.00%*
1:00		1	2					*2*	*2*	*0.33%*			*0.00%*
2:00		1	0					*1*	*1*	*0.16%*			*0.00%*
3:00		0	0					*0*	*0*	*0.00%*			*0.00%*
4:00		3	2					*3*	*3*	*0.49%*			*0.00%*
5:00		5	4					*5*	*5*	*0.82%*			*0.00%*
6:00		14	13					*14*	*14*	*2.30%*			*0.00%*
7:00		33	29					*31*	*31*	*5.10%*			*0.00%*
8:00		20	38					*29*	*29*	*4.77%*			*0.00%*
9:00		38	26					*32*	*32*	*5.26%*			*0.00%*
10:00		44	40					*42*	*42*	*6.91%*			*0.00%*
11:00		50	31					*41*	*41*	*6.74%*			*0.00%*
12:00		49	50					*50*	*50*	*8.22%*			*0.00%*
13:00		54	50					*52*	*52*	*8.55%*			*0.00%*
14:00		45	32					*39*	*39*	*6.41%*			*0.00%*
15:00	48	65						*57*	*57*	*9.38%*			*0.00%*
16:00	48	41						*45*	*45*	*7.40%*			*0.00%*
17:00	41	34						*38*	*38*	*6.25%*			*0.00%*
18:00	27	38						*33*	*33*	*5.43%*			*0.00%*
19:00	35	26						*31*	*31*	*5.10%*			*0.00%*
20:00	35	30						*33*	*33*	*5.43%*			*0.00%*
21:00	15	10						*13*	*13*	*2.14%*			*0.00%*
22:00	11	7						*9*	*9*	*1.48%*			*0.00%*
23:00	1	8						*5*	*5*	*0.82%*			*0.00%*
TOTAL	**261**	**619**	**319**	**0**	**0**	**0**	**0**	**608**	**608**	**100.00%**	**0**	**0**	**0.00%**
	261	**619**	**319**	**0**	**0**	**0**	**0**	**608**	**608**	**100.00%**	**0**	**0**	**0.00%**



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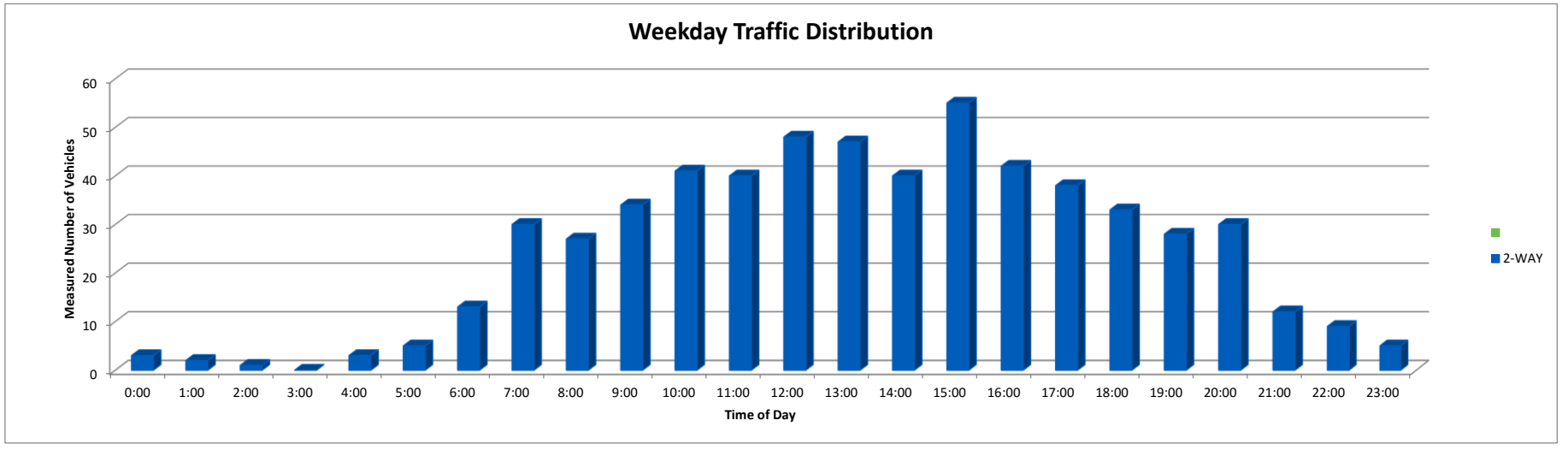
TRAFFIC VOLUME COUNT SUMMARY

Roadway:	Main Street
Count Location ID:	20-1-017
Count Location:	North of the Clark Fork River Latitude: N 46°39'35.86" | Longitude: W 113°09'28.08"
Dates Performed:	Monday, June 25, 2018 thru Wednesday, June 27, 2018
Road Classification:	Urban Collector

Time	7:00	7:15	7:30	7:45	8:00	8:15	8:30	8:45	Total	Peak Hour	PHF
2-WAY	6	8	7	9	5	7	9	6	57	31	0.82
Time	**4:00**	**4:15**	**4:30**	**4:45**	**5:00**	**5:15**	**5:30**	**5:45**	**Total**	**Peak Hour**	**PHF**
2-WAY	9	10	12	11	13	8	8	10	81	46	0.88

Daily Factor =>	6/25/2018 Monday 0.885	6/26/2018 Tuesday 0.853	6/27/2018 Wednesday 0.817	6/28/2018 Thursday 0.856	6/29/2018 Friday 0.811	6/30/2018 Saturday 1.009	7/1/2018 Sunday 1.108	Weekday Average	Weekday TOTAL	% of Weekday Total	Weekend Average	Weekend TOTAL	% of Weekend Total
Hour Begin	2-WAY	2-WAY	2-WAY	2-WAY	2-WAY	2-WAY	2-WAY	2-WAY			2-WAY		
0:00		3	2					*3*	*3*	*0.51%*			*0.00%*
1:00		1	2					*2*	*2*	*0.34%*			*0.00%*
2:00		1	0					*1*	*1*	*0.17%*			*0.00%*
3:00		0	0					*0*	*0*	*0.00%*			*0.00%*
4:00		3	2					*3*	*3*	*0.51%*			*0.00%*
5:00		5	4					*5*	*5*	*0.85%*			*0.00%*
6:00		14	11					*13*	*13*	*2.22%*			*0.00%*
7:00		31	28					*30*	*30*	*5.12%*			*0.00%*
8:00		18	36					*27*	*27*	*4.61%*			*0.00%*
9:00		39	29					*34*	*34*	*5.80%*			*0.00%*
10:00		43	38					*41*	*41*	*7.00%*			*0.00%*
11:00		47	32					*40*	*40*	*6.83%*			*0.00%*
12:00		49	47					*48*	*48*	*8.19%*			*0.00%*
13:00		46	47					*47*	*47*	*8.02%*			*0.00%*
14:00		46	33					*40*	*40*	*6.83%*			*0.00%*
15:00	48	62						*55*	*55*	*9.39%*			*0.00%*
16:00	45	38						*42*	*42*	*7.17%*			*0.00%*
17:00	42	33						*38*	*38*	*6.48%*			*0.00%*
18:00	27	38						*33*	*33*	*5.63%*			*0.00%*
19:00	32	24						*28*	*28*	*4.78%*			*0.00%*
20:00	31	28						*30*	*30*	*5.12%*			*0.00%*
21:00	16	8						*12*	*12*	*2.05%*			*0.00%*
22:00	11	7						*9*	*9*	*1.54%*			*0.00%*
23:00	2	7						*5*	*5*	*0.85%*			*0.00%*
TOTAL	**254**	**591**	**311**	**0**	**0**	**0**	**0**	**586**	**586**	**100.00%**	**0**	**0**	**0.00%**
	254	**591**	**311**	**0**	**0**	**0**	**0**	**586**	**586**	**100.00%**	**0**	**0**	**0.00%**



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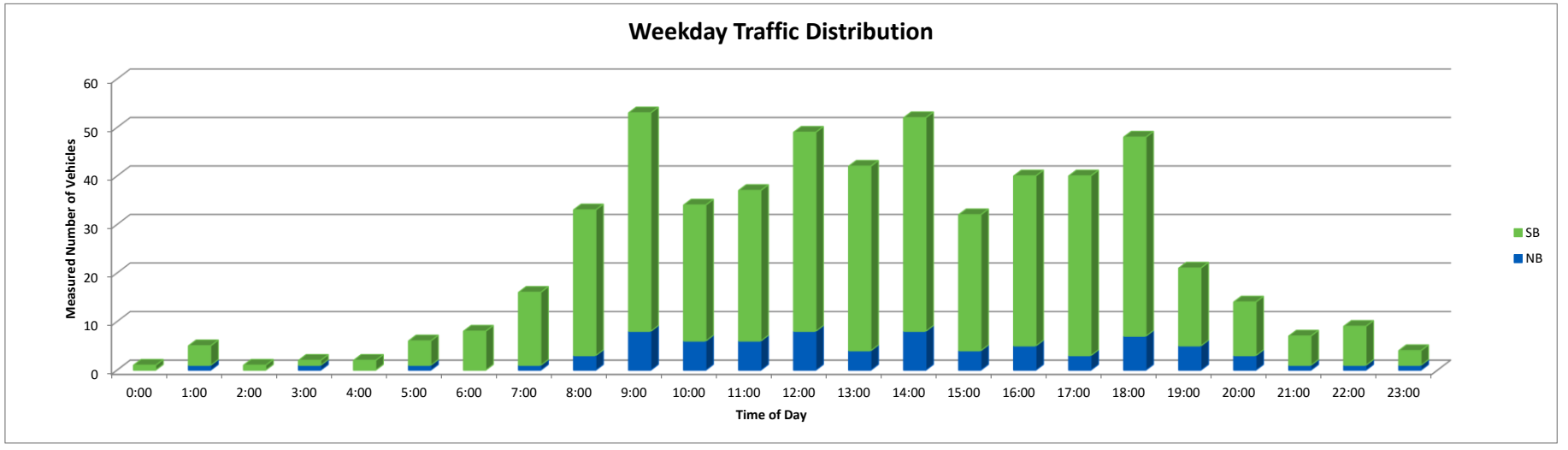
TRAFFIC VOLUME COUNT SUMMARY

Roadway:	Sorensen Lane
Count Location ID:	20-1-024
Count Location:	Business Route 15 Between East Drummond Interchange & I-90 Latitude: N 46°39'52.58" | Longitude: W 113°08'19.21"
Dates Performed:	Monday, June 26, 2017 thru Tuesday, June 27, 2017
Road Classification:	MDT Classification - 4

Time	7:00	7:15	7:30	7:45	8:00	8:15	8:30	8:45	Total	Peak Hour	PHF
NB	0	1	1	0	1	0	0	2	5	3	0.62
SB	4	4	4	4	5	6	8	11	46	30	
Time	**4:00**	**4:15**	**4:30**	**4:45**	**5:00**	**5:15**	**5:30**	**5:45**	**Total**	**Peak Hour**	**PHF**
NB	1	3	0	1	0	0	3	0	8	4	0.56
SB	5	15	5	10	7	12	8	11	73	37	

	6/26/2017 Monday		6/27/2017 Tuesday		6/28/2017 Wednesday		6/29/2017 Thursday		6/30/2017 Friday		7/1/2017 Saturday		7/2/2017 Sunday		Weekday Average		Weekday	% of Weekday	Weekend Average		Weekend	% of Weekend
Daily Factor =>	0.680		0.708		0.709		0.673		0.633		0.675		0.597									
Hour Begin	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	TOTAL	Total	NB	SB	TOTAL	Total
0:00			0	1											*0*	*1*	*1*	*0.18%*				*0.00%*
1:00			1	4											*1*	*4*	*5*	*0.90%*				*0.00%*
2:00			0	1											*0*	*1*	*1*	*0.18%*				*0.00%*
3:00			1	1											*1*	*1*	*2*	*0.36%*				*0.00%*
4:00			0	2											*0*	*2*	*2*	*0.36%*				*0.00%*
5:00			1	5											*1*	*5*	*6*	*1.08%*				*0.00%*
6:00			0	8											*0*	*8*	*8*	*1.44%*				*0.00%*
7:00			1	15											*1*	*15*	*16*	*2.88%*				*0.00%*
8:00			3	30											*3*	*30*	*33*	*5.94%*				*0.00%*
9:00			8	45											*8*	*45*	*53*	*9.53%*				*0.00%*
10:00			6	28											*6*	*28*	*34*	*6.12%*				*0.00%*
11:00			6	31											*6*	*31*	*37*	*6.65%*				*0.00%*
12:00			8	41											*8*	*41*	*49*	*8.81%*				*0.00%*
13:00	4	38													*4*	*38*	*42*	*7.55%*				*0.00%*
14:00	8	44													*8*	*44*	*52*	*9.35%*				*0.00%*
15:00	4	28													*4*	*28*	*32*	*5.76%*				*0.00%*
16:00	5	35													*5*	*35*	*40*	*7.19%*				*0.00%*
17:00	3	37													*3*	*37*	*40*	*7.19%*				*0.00%*
18:00	7	41													*7*	*41*	*48*	*8.63%*				*0.00%*
19:00	5	16													*5*	*16*	*21*	*3.78%*				*0.00%*
20:00	3	11													*3*	*11*	*14*	*2.52%*				*0.00%*
21:00	1	6													*1*	*6*	*7*	*1.26%*				*0.00%*
22:00	1	8													*1*	*8*	*9*	*1.62%*				*0.00%*
23:00	1	3													*1*	*3*	*4*	*0.72%*				*0.00%*
TOTAL	**42**	**267**	**35**	**212**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**77**	**479**	**556**	**100.00%**	**0**	**0**	**0**	**0.00%**
	309		**247**		**0**		**0**		**0**		**0**		**0**		**556**		**556**	**100.00%**	**0**		**0**	**0.00%**

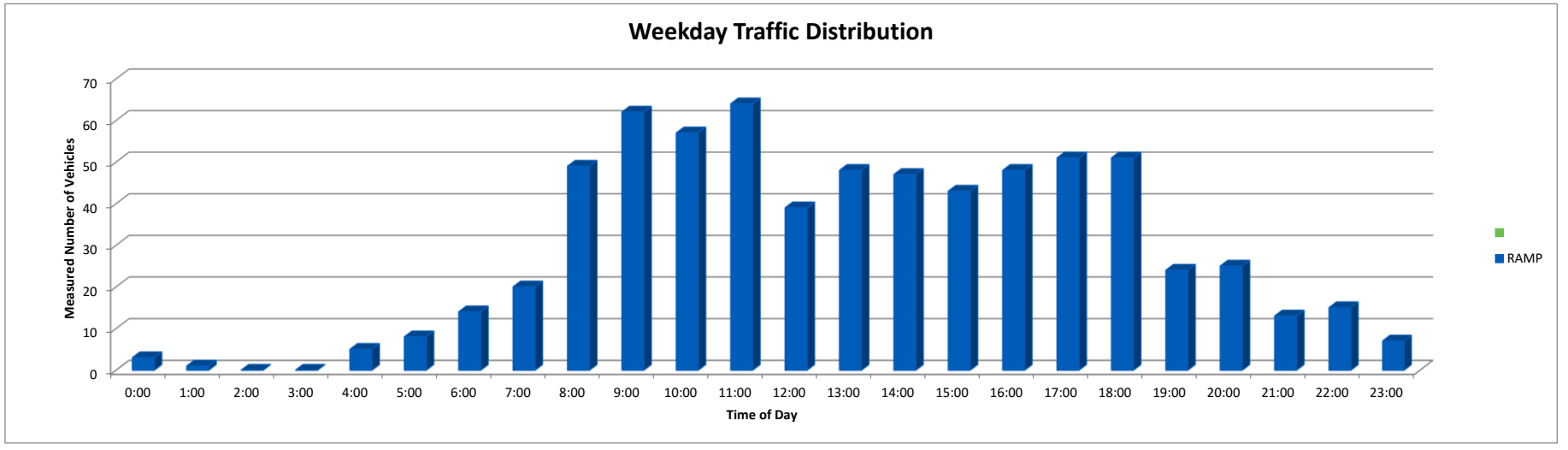


TRAFFIC VOLUME COUNT SUMMARY

Roadway:	I-90 EB Off-Ramp
Count Location ID:	20-1-032
Count Location:	R090E153OFA - Drummond / Phillipsburg Latitude: N 46°40'18.36" | Longitude: W 113°09'22.23"
Dates Performed:	Tuesday, June 26, 2018 thru Wednesday, June 27, 2018
Road Classification:	MDT Classification - 1

Time	7:00	7:15	7:30	7:45	8:00	8:15	8:30	8:45	Total	Peak Hour	PHF
RAMP	8	6	4	4	25	7	11	11	76	54	0.54
Time	**4:00**	**4:15**	**4:30**	**4:45**	**5:00**	**5:15**	**5:30**	**5:45**	**Total**	**Peak Hour**	**PHF**
RAMP	9	12	18	8	18	10	11	12	98	56	0.77

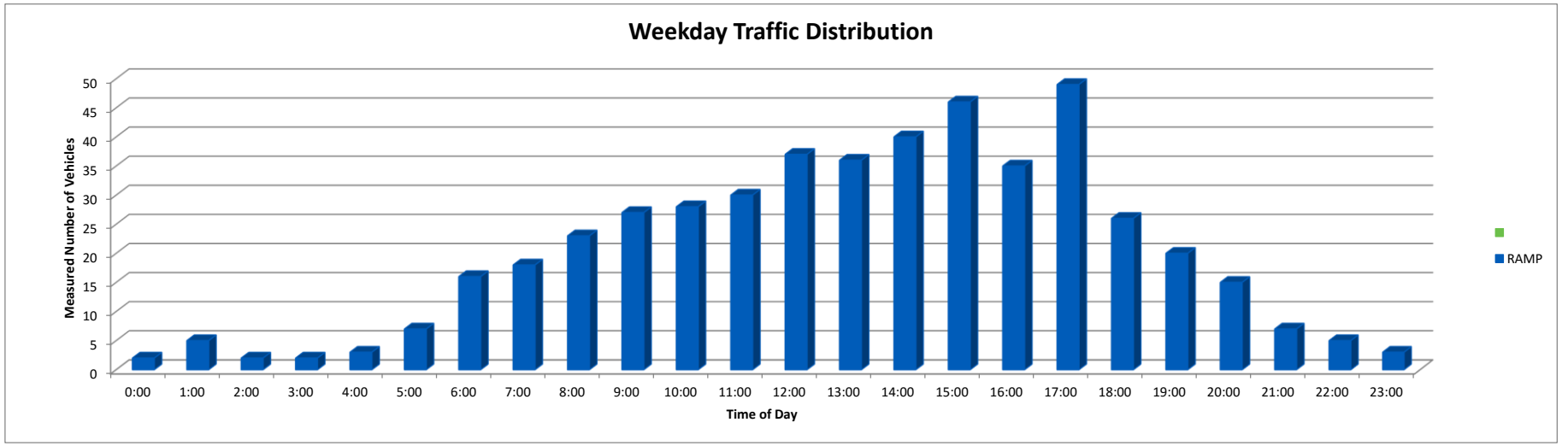
Daily Factor =>	6/25/2018 Monday 0.732	6/26/2018 Tuesday 0.741	6/27/2018 Wednesday 0.678	6/28/2018 Thursday 0.659	6/29/2018 Friday 0.609	6/30/2018 Saturday 0.659	7/1/2018 Sunday 0.476	Weekday Average	Weekday TOTAL	% of Weekday Total	Weekend Average	Weekend TOTAL	% of Weekend Total
Hour Begin	RAMP	RAMP	RAMP	RAMP	RAMP	RAMP	RAMP	RAMP			RAMP		
0:00			3					*3*	*3*	*0.43%*			*0.00%*
1:00			1					*1*	*1*	*0.14%*			*0.00%*
2:00			0					*0*	*0*	*0.00%*			*0.00%*
3:00			0					*0*	*0*	*0.00%*			*0.00%*
4:00			5					*5*	*5*	*0.72%*			*0.00%*
5:00			8					*8*	*8*	*1.15%*			*0.00%*
6:00			14					*14*	*14*	*2.02%*			*0.00%*
7:00			20					*20*	*20*	*2.88%*			*0.00%*
8:00			49					*49*	*49*	*7.06%*			*0.00%*
9:00			62					*62*	*62*	*8.93%*			*0.00%*
10:00			57					*57*	*57*	*8.21%*			*0.00%*
11:00			64					*64*	*64*	*9.22%*			*0.00%*
12:00			39					*39*	*39*	*5.62%*			*0.00%*
13:00			48					*48*	*48*	*6.92%*			*0.00%*
14:00			47					*47*	*47*	*6.77%*			*0.00%*
15:00		43						*43*	*43*	*6.20%*			*0.00%*
16:00		48						*48*	*48*	*6.92%*			*0.00%*
17:00		51						*51*	*51*	*7.35%*			*0.00%*
18:00		51						*51*	*51*	*7.35%*			*0.00%*
19:00		24						*24*	*24*	*3.46%*			*0.00%*
20:00		25						*25*	*25*	*3.60%*			*0.00%*
21:00		13						*13*	*13*	*1.87%*			*0.00%*
22:00		15						*15*	*15*	*2.16%*			*0.00%*
23:00		7						*7*	*7*	*1.01%*			*0.00%*
TOTAL	**0**	**277**	**417**	**0**	**0**	**0**	**0**	**694**	**694**	**100.00%**	**0**	**0**	**0.00%**
	0	**277**	**417**	**0**	**0**	**0**	**0**	**694**	**694**	**100.00%**	**0**	**0**	**0.00%**



TRAFFIC VOLUME COUNT SUMMARY

Roadway:	I-90 Eastbound On-Ramp - Drummond
Count Location ID:	20-1-035
Count Location:	R090E154ONA - Drummond / Phillipsburg Latitude: N 46°39'46.25" | Longitude: W 113°08'12.32"
Dates Performed:	Thursday, September 11, 2014 thru Friday, September 12, 2014
Road Classification:	MDT Classification - 1

Daily Factor =>	9/8/2014 Monday 0.910	9/9/2014 Tuesday 0.910	9/10/2014 Wednesday 0.910	9/11/2014 Thursday 0.910	9/12/2014 Friday 0.910	9/13/2014 Saturday 0.920	9/14/2014 Sunday 0.860	Weekday Average	Weekday TOTAL	% of Weekday Total	Weekend Average	Weekend TOTAL	% of Weekend Total
Hour Begin	RAMP	RAMP	RAMP	RAMP	RAMP	RAMP	RAMP	RAMP			RAMP		
0:00				2				2	2	0.41%			0.00%
1:00				5				5	5	1.04%			0.00%
2:00				2				2	2	0.41%			0.00%
3:00				2				2	2	0.41%			0.00%
4:00				3				3	3	0.62%			0.00%
5:00				7				7	7	1.45%			0.00%
6:00				16				16	16	3.32%			0.00%
7:00				18				18	18	3.73%			0.00%
8:00				23				23	23	4.77%			0.00%
9:00				27				27	27	5.60%			0.00%
10:00				28				28	28	5.81%			0.00%
11:00				30				30	30	6.22%			0.00%
12:00				37				37	37	7.68%			0.00%
13:00				36				36	36	7.47%			0.00%
14:00				40				40	40	8.30%			0.00%
15:00				46				46	46	9.54%			0.00%
16:00				35				35	35	7.26%			0.00%
17:00				49				49	49	10.17%			0.00%
18:00				26				26	26	5.39%			0.00%
19:00				20				20	20	4.15%			0.00%
20:00				15				15	15	3.11%			0.00%
21:00				7				7	7	1.45%			0.00%
22:00				5				5	5	1.04%			0.00%
23:00				3				3	3	0.62%			0.00%
TOTAL	0	0	0	482	0	0	0	482	482	100.00%	0	0	0.00%
	0	0	0	482	0	0	0	482	482	100.00%	0	0	0.00%

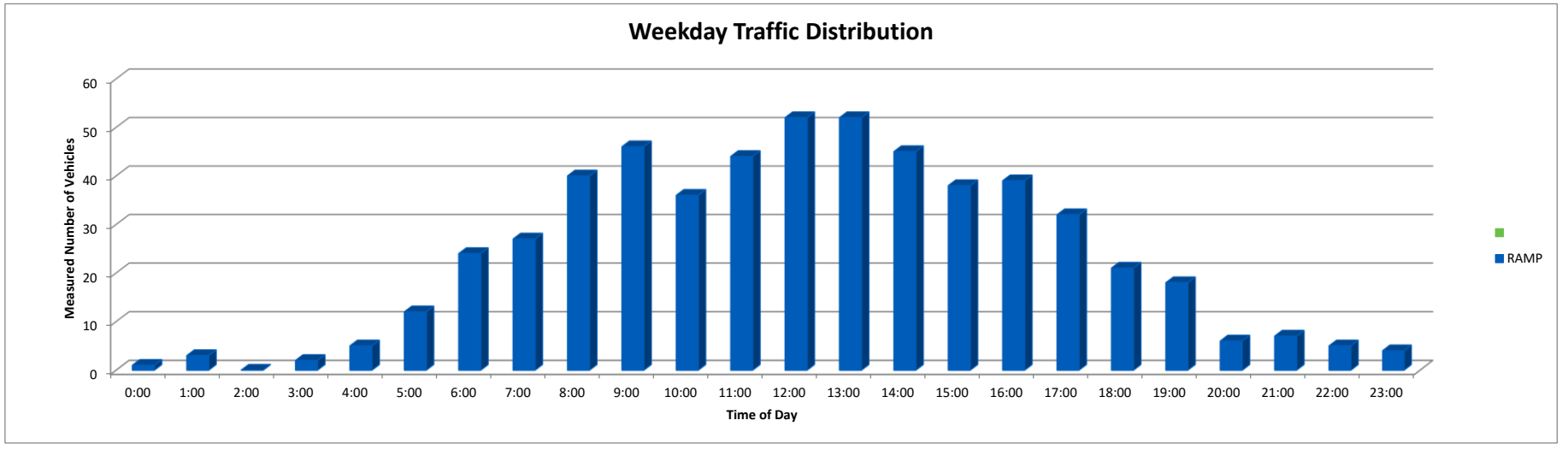


TRAFFIC VOLUME COUNT SUMMARY

Roadway:	I-90 WB On-Ramp
Count Location ID:	20-1-033
Count Location:	R090W153ONA - Drummond / Phillipsburg Latitude: N 46°40'20.27" | Longitude: W 113°09'23.61"
Dates Performed:	Monday, October 29, 2018 thru Wednesday, October 31, 2018
Road Classification:	MDT Classification - 1

Time	7:00	7:15	7:30	7:45	8:00	8:15	8:30	8:45	Total	Peak Hour	PHF
RAMP	7	5	5	10	8	11	13	7	66	43	0.82
Time	**4:00**	**4:15**	**4:30**	**4:45**	**5:00**	**5:15**	**5:30**	**5:45**	**Total**	**Peak Hour**	**PHF**
RAMP	13	9	9	9	7	7	11	7	72	40	0.74

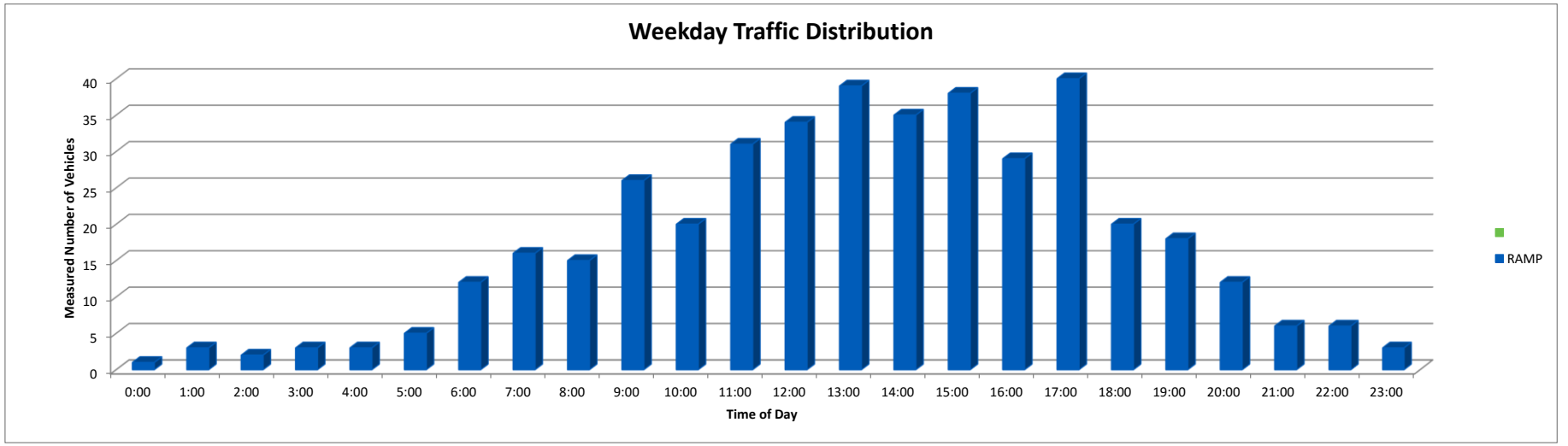
Daily Factor =>	10/29/2018 Monday 0.896	10/30/2018 Tuesday 0.870	10/31/2018 Wednesday 0.871	11/1/2018 Thursday 0.977	11/2/2018 Friday 0.981	11/3/2018 Saturday 1.327	11/4/2018 Sunday 1.454	Weekday Average	Weekday TOTAL	% of Weekday Total	Weekend Average	Weekend TOTAL	% of Weekend Total
Hour Begin	RAMP	RAMP	RAMP	RAMP	RAMP	RAMP	RAMP	RAMP			RAMP		
0:00		1	1					*1*	*1*	*0.18%*			*0.00%*
1:00		5	0					*3*	*3*	*0.54%*			*0.00%*
2:00		0	0					*0*	*0*	*0.00%*			*0.00%*
3:00		0	3					*2*	*2*	*0.36%*			*0.00%*
4:00		3	6					*5*	*5*	*0.89%*			*0.00%*
5:00		12	11					*12*	*12*	*2.15%*			*0.00%*
6:00		21	26					*24*	*24*	*4.29%*			*0.00%*
7:00		29	25					*27*	*27*	*4.83%*			*0.00%*
8:00		41	39					*40*	*40*	*7.16%*			*0.00%*
9:00		51	40					*46*	*46*	*8.23%*			*0.00%*
10:00		37	34					*36*	*36*	*6.44%*			*0.00%*
11:00		50	37					*44*	*44*	*7.87%*			*0.00%*
12:00		40	63					*52*	*52*	*9.30%*			*0.00%*
13:00		47	57					*52*	*52*	*9.30%*			*0.00%*
14:00		50	40					*45*	*45*	*8.05%*			*0.00%*
15:00		43	32					*38*	*38*	*6.80%*			*0.00%*
16:00		50	28					*39*	*39*	*6.98%*			*0.00%*
17:00		40	23					*32*	*32*	*5.72%*			*0.00%*
18:00		26	15					*21*	*21*	*3.76%*			*0.00%*
19:00		22	13					*18*	*18*	*3.22%*			*0.00%*
20:00		8	3					*6*	*6*	*1.07%*			*0.00%*
21:00		8	5					*7*	*7*	*1.25%*			*0.00%*
22:00		7	3					*5*	*5*	*0.89%*			*0.00%*
23:00	2	5						*4*	*4*	*0.72%*			*0.00%*
TOTAL	**2**	**596**	**504**	**0**	**0**	**0**	**0**	**559**	**559**	**100.00%**	**0**	**0**	**0.00%**
	2	**596**	**504**	**0**	**0**	**0**	**0**	**559**	**559**	**100.00%**	**0**	**0**	**0.00%**



TRAFFIC VOLUME COUNT SUMMARY

Roadway:	I-90 Westbound Off-Ramp - Drummond
Count Location ID:	20-1-034
Count Location:	R090W154OFA - Drummond / Phillipsburg Latitude: N 46°39'49.86" | Longitude: W 113°08'11.95"
Dates Performed:	Thursday, September 11, 2014 thru Friday, September 12, 2014
Road Classification:	MDT Classification - 1

Daily Factor =>	9/8/2014 Monday 0.910	9/9/2014 Tuesday 0.910	9/10/2014 Wednesday 0.910	9/11/2014 Thursday 0.910	9/12/2014 Friday 0.910	9/13/2014 Saturday 0.920	9/14/2014 Sunday 0.860	Weekday Average	Weekday TOTAL	% of Weekday Total	Weekend Average	Weekend TOTAL	% of Weekend Total
Hour Begin	RAMP	RAMP	RAMP	RAMP	RAMP	RAMP	RAMP	RAMP			RAMP		
0:00				1				*1*	*1*	*0.24%*			*0.00%*
1:00				3				*3*	*3*	*0.72%*			*0.00%*
2:00				2				*2*	*2*	*0.48%*			*0.00%*
3:00				3				*3*	*3*	*0.72%*			*0.00%*
4:00				3				*3*	*3*	*0.72%*			*0.00%*
5:00				5				*5*	*5*	*1.20%*			*0.00%*
6:00				12				*12*	*12*	*2.88%*			*0.00%*
7:00				16				*16*	*16*	*3.84%*			*0.00%*
8:00				15				*15*	*15*	*3.60%*			*0.00%*
9:00				26				*26*	*26*	*6.24%*			*0.00%*
10:00				20				*20*	*20*	*4.80%*			*0.00%*
11:00				31				*31*	*31*	*7.43%*			*0.00%*
12:00				34				*34*	*34*	*8.15%*			*0.00%*
13:00				39				*39*	*39*	*9.35%*			*0.00%*
14:00				35				*35*	*35*	*8.39%*			*0.00%*
15:00				38				*38*	*38*	*9.11%*			*0.00%*
16:00				29				*29*	*29*	*6.95%*			*0.00%*
17:00				40				*40*	*40*	*9.59%*			*0.00%*
18:00				20				*20*	*20*	*4.80%*			*0.00%*
19:00				18				*18*	*18*	*4.32%*			*0.00%*
20:00				12				*12*	*12*	*2.88%*			*0.00%*
21:00				6				*6*	*6*	*1.44%*			*0.00%*
22:00				6				*6*	*6*	*1.44%*			*0.00%*
23:00				3				*3*	*3*	*0.72%*			*0.00%*
TOTAL	0	0	0	417	0	0	0	417	417	100.00%	0	0	0.00%
	0	0	0	417	0	0	0	417	417	100.00%	0	0	0.00%

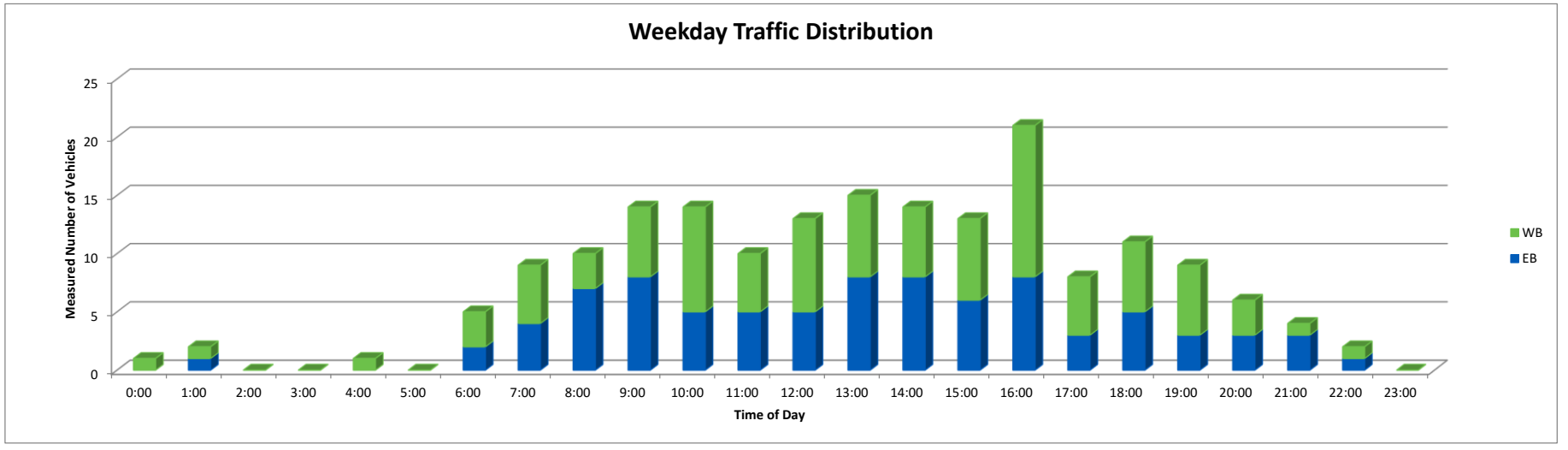


TRAFFIC VOLUME COUNT SUMMARY

Roadway:	I-90 Frontage Road
Count Location ID:	20-1-014
Count Location:	Route 271 Southeast of Sorensen Lane Latitude: N 46°39'39.71" | Longitude: W 113°08'05.06"
Dates Performed:	Wednesday, June 28, 2017 thru Thursday, June 29, 2017
Road Classification:	MDT Classification - 5

Time	7:00	7:15	7:30	7:45	8:00	8:15	8:30	8:45	Total	Peak Hour	PHF
EB	0	3	0	1	1	1	4	2	12	5	0.47
WB	0	1	2	2	2	1	0	1	9	7	
Time	**4:00**	**4:15**	**4:30**	**4:45**	**5:00**	**5:15**	**5:30**	**5:45**	**Total**	**Peak Hour**	**PHF**
EB	1	1	4	3	1	1	2	0	13	9	0.59
WB	5	1	4	3	2	1	0	3	19	13	

Daily Factor =>	6/26/2017 Monday 0.668		6/27/2017 Tuesday 0.705		6/28/2017 Wednesday 0.643		6/29/2017 Thursday 0.651		6/30/2017 Friday 0.562		7/1/2017 Saturday 0.477		7/2/2017 Sunday 0.463		Weekday Average		Weekday TOTAL	% of Weekday Total	Weekend Average		Weekend TOTAL	% of Weekend Total
Hour Begin	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB			EB	WB		
0:00							0	1							*0*	*1*	*1*	*0.55%*				*0.00%*
1:00							1	1							*1*	*1*	*2*	*1.10%*				*0.00%*
2:00							0	0							*0*	*0*	*0*	*0.00%*				*0.00%*
3:00							0	0							*0*	*0*	*0*	*0.00%*				*0.00%*
4:00							0	1							*0*	*1*	*1*	*0.55%*				*0.00%*
5:00							0	0							*0*	*0*	*0*	*0.00%*				*0.00%*
6:00							2	3							*2*	*3*	*5*	*2.75%*				*0.00%*
7:00					4	5									*4*	*5*	*9*	*4.95%*				*0.00%*
8:00					7	3									*7*	*3*	*10*	*5.49%*				*0.00%*
9:00					8	6									*8*	*6*	*14*	*7.69%*				*0.00%*
10:00					5	9									*5*	*9*	*14*	*7.69%*				*0.00%*
11:00					5	5									*5*	*5*	*10*	*5.49%*				*0.00%*
12:00					5	8									*5*	*8*	*13*	*7.14%*				*0.00%*
13:00					8	7									*8*	*7*	*15*	*8.24%*				*0.00%*
14:00					8	6									*8*	*6*	*14*	*7.69%*				*0.00%*
15:00					6	7									*6*	*7*	*13*	*7.14%*				*0.00%*
16:00					8	13									*8*	*13*	*21*	*11.54%*				*0.00%*
17:00					3	5									*3*	*5*	*8*	*4.40%*				*0.00%*
18:00					5	6									*5*	*6*	*11*	*6.04%*				*0.00%*
19:00					3	6									*3*	*6*	*9*	*4.95%*				*0.00%*
20:00					3	3									*3*	*3*	*6*	*3.30%*				*0.00%*
21:00					3	1									*3*	*1*	*4*	*2.20%*				*0.00%*
22:00					1	1									*1*	*1*	*2*	*1.10%*				*0.00%*
23:00					0	0									*0*	*0*	*0*	*0.00%*				*0.00%*
TOTAL	0	0	0	0	82	91	3	6	0	0	0	0	0	0	85	97	182	100.00%	0	0	0	0.00%
	0		0		173		9		0		0		0		182		182	100.00%	0		0	0.00%



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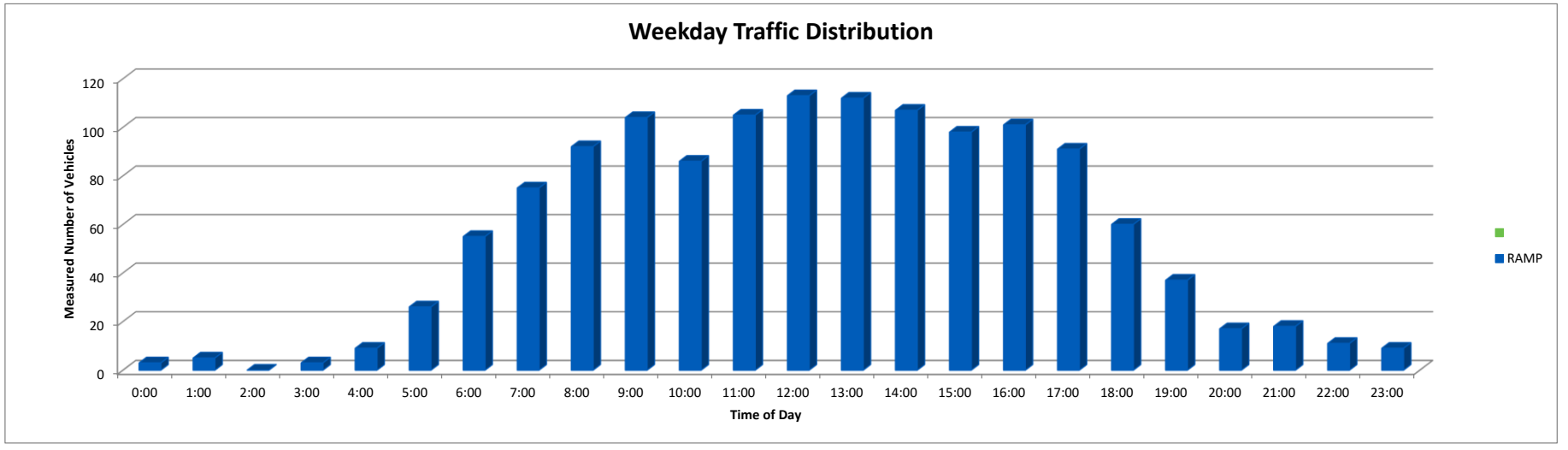
TRAFFIC VOLUME COUNT SUMMARY

Roadway:	Frontage Road
Count Location ID:	20-1-022
Count Location:	West Drummond Interchange - North of I-90 Latitude: N 46°40'20.30" | Longitude: W 113°09'13.26"
Dates Performed:	Monday, October 29, 2018 thru Wednesday, October 31, 2018
Road Classification:	Rural Major Collector

Time	7:00	7:15	7:30	7:45	8:00	8:15	8:30	8:45	Total	Peak Hour	PHF
RAMP	17	13	20	25	19	30	27	17	168	100	0.85
Time	**4:00**	**4:15**	**4:30**	**4:45**	**5:00**	**5:15**	**5:30**	**5:45**	**Total**	**Peak Hour**	**PHF**
RAMP	31	22	23	28	28	22	24	18	196	104	0.83

Daily Factor =>	10/29/2018 Monday 0.896	10/30/2018 Tuesday 0.870	10/31/2018 Wednesday 0.871	11/1/2018 Thursday 0.977	11/2/2018 Friday 0.981	11/3/2018 Saturday 1.327	11/4/2018 Sunday 1.454	Weekday Average	Weekday TOTAL	% of Weekday Total	Weekend Average	Weekend TOTAL	% of Weekend Total
Hour Begin	RAMP	RAMP	RAMP	RAMP	RAMP	RAMP	RAMP	RAMP			RAMP		
0:00		2	3					*3*	*3*	*0.22%*			*0.00%*
1:00		10	0					*5*	*5*	*0.37%*			*0.00%*
2:00		0	0					*0*	*0*	*0.00%*			*0.00%*
3:00		0	5					*3*	*3*	*0.22%*			*0.00%*
4:00		6	11					*9*	*9*	*0.67%*			*0.00%*
5:00		28	24					*26*	*26*	*1.94%*			*0.00%*
6:00		50	60					*55*	*55*	*4.11%*			*0.00%*
7:00		78	71					*75*	*75*	*5.61%*			*0.00%*
8:00		90	94					*92*	*92*	*6.88%*			*0.00%*
9:00		119	88					*104*	*104*	*7.78%*			*0.00%*
10:00		88	83					*86*	*86*	*6.43%*			*0.00%*
11:00		119	90					*105*	*105*	*7.85%*			*0.00%*
12:00		97	129					*113*	*113*	*8.45%*			*0.00%*
13:00		101	123					*112*	*112*	*8.38%*			*0.00%*
14:00		123	91					*107*	*107*	*8.00%*			*0.00%*
15:00		111	84					*98*	*98*	*7.33%*			*0.00%*
16:00		124	78					*101*	*101*	*7.55%*			*0.00%*
17:00		103	78					*91*	*91*	*6.81%*			*0.00%*
18:00		76	44					*60*	*60*	*4.49%*			*0.00%*
19:00		43	31					*37*	*37*	*2.77%*			*0.00%*
20:00		18	15					*17*	*17*	*1.27%*			*0.00%*
21:00		20	16					*18*	*18*	*1.35%*			*0.00%*
22:00		12	9					*11*	*11*	*0.82%*			*0.00%*
23:00	10	8						*9*	*9*	*0.67%*			*0.00%*
TOTAL	**10**	**1,426**	**1,227**	**0**	**0**	**0**	**0**	**1,337**	**1,337**	**100.00%**	**0**	**0**	**0.00%**
	10	**1,426**	**1,227**	**0**	**0**	**0**	**0**	**1,337**	**1,337**	**100.00%**	**0**	**0**	**0.00%**



APPENDIX C

TRIP GENERATION DATA

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Estimated Truck Trip Generation

Montana Limestone Resources, LLC (MLR) Quarry - Granite County, Montana

Daily Truck Trips		
Projected daily truck trip data was provided by Montana Limestone Resources. *Tons of material hauled is based on 30 tons per truck.*	17.17 Trucks Entering	
	17.17 Trucks Exiting	515 Tons of Material Hauled
Weekly Truck Trips		
Weekly truck trips are based on the daily truck trips operating six (6) days per week. *Tons of material extracted data is from the Montana Limestone Resources Operating Permit Application dated September 2017.*	103 Trucks Entering	7,000 Tons of Material Extracted
	103 Trucks Exiting	3,090 Tons of Material Hauled
Monthly Truck Trips		
Monthly truck trips are based on an average of 4.33 weeks per month in a year.	446 Trucks Entering	30,333 Tons of Material Extracted
	446 Trucks Exiting	13,390 Tons of Material Hauled
Yearly Truck Trips		
Monthly truck trips are based on 12 months in a year.	5,356 Trucks Entering	364,000 Tons of Material Extracted
	5,356 Trucks Exiting	160,680 Tons of Material Hauled
Average Daily Truck Trip Generation Rate		
Average Daily Truck Trip Generation Rate per 1,000 Tons of Material Extracted Annually	0.09 Trips per 1,000 TN	34 Estimated Average Daily Truck Trips

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Estimated Truck Trip Weekday Distributions

Montana Limestone Resources, LLC (MLR) Quarry - Granite County, Montana

Truck trip distribution data has been adapted from the *Design Report for the Morgan Family, LLC Gravel Pit: Auxiliary Lane Improvements - Gallatin Gateway, Montana* prepared by Morrison-Maierle, Inc. dated February 2009.

Hour Beginning	Blue Rock Quarry Sonoma County, California						Canyon Rock Quarry Sonoma County, California						Knife River Gravel Pit Gallatin County, Montana					
	Entering		Exiting		Total		Entering		Exiting		Total		Entering		Exiting		Total	
	Truck Trips	% of Total	Truck Trips	% of Total	Truck Trips	% of Total	Truck Trips	% of Total	Truck Trips	% of Total	Truck Trips	% of Total	Truck Trips	% of Total	Truck Trips	% of Total	Truck Trips	% of Total
6:00 AM	1	3%	0	0%	1	1%	2	1%	0	0%	2	0%	43	7%	40	6%	83	7%
7:00 AM	4	10%	4	10%	8	10%	21	9%	23	10%	44	10%	42	7%	50	8%	92	7%
8:00 AM	6	15%	4	10%	10	13%	25	11%	25	11%	50	11%	49	8%	34	5%	83	7%
9:00 AM	8	21%	4	10%	12	15%	27	12%	25	11%	52	11%	38	6%	45	7%	83	7%
10:00 AM	3	8%	8	21%	11	14%	27	12%	29	13%	56	12%	57	9%	54	9%	111	9%
11:00 AM	6	15%	5	13%	11	14%	27	12%	23	10%	50	11%	40	7%	59	9%	99	8%
12:00 PM	8	21%	4	10%	12	15%	23	10%	23	10%	46	10%	53	9%	65	10%	118	10%
1:00 PM	3	8%	6	15%	9	12%	25	11%	27	12%	52	11%	71	12%	59	9%	130	11%
2:00 PM	0	0%	1	3%	1	1%	23	10%	25	11%	48	11%	60	10%	83	13%	143	12%
3:00 PM	0	0%	3	8%	3	4%	18	8%	18	8%	36	8%	62	10%	69	11%	131	11%
4:00 PM	0	0%	0	0%	0	0%	9	4%	9	4%	18	4%	51	8%	43	7%	94	8%
5:00 PM	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	35	6%	25	4%	60	5%

Hour Beginning	Average Daily Truck Trip Distributions		
	Entering % of Daily Distribution	Exiting % of Daily Distribution	Total % of Daily Distribution
6:00 AM	4%	2%	3%
7:00 AM	9%	9%	9%
8:00 AM	12%	9%	10%
9:00 AM	13%	9%	11%
10:00 AM	10%	14%	12%
11:00 AM	11%	11%	11%
12:00 PM	13%	10%	12%
1:00 PM	10%	12%	11%
2:00 PM	7%	9%	8%
3:00 PM	6%	9%	7%
4:00 PM	4%	4%	4%
5:00 PM	2%	1%	2%

Weekday, Peak Period Truck Trip Characteristics

Weekday, AM Peak Period, One Hour Between 7:00 - 9:00 a.m.	**=**	**10%**	**Entering =**	**53%**
			Exiting =	**47%**
Weekday, Midday Peak Period, One Hour Between 10:00 a.m. - 2:00 p.m.	**=**	**11%**	**Entering =**	**48%**
			Exiting =	**52%**
Weekday, PM Peak Period, One Hour Between 4:00 - 6:00 p.m.	**=**	**3%**	**Entering =**	**55%**
			Exiting =	**45%**

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Estimated Employee Trip Generation

Montana Limestone Resources, LLC (MLR) Quarry - Granite County, Montana

Employee data has been adapted from the *Operating Permit Application*
Montana Limestone Resources Project - Granite County, Montana dated September 2017.

Employee Data		
Description	**Number of Employees**	**Distribution**
Weekday - Day Shift	10	56%
Weekday - Evening Shift	4	22%
Weekday - Night Shift	4	22%
Total Number of Employees Per Day =	**18**	**100%**

Employee Trip Characteristics	
Estimated Number of Employees Per Vehicle =	1.3
Estimated Number of Vehicles Per Day =	13.8
Estimated Number of Trips Per Vehicle =	2.0

Employee Weekday Trip Characteristics		
Description	**Trips**	**Distribution**
Estimated Total Average Weekday Trip Ends =	28	100%
Estimated Total Average Weekday Entering Trips =	14	50%
Estimated Total Average Weekday Exiting Trips =	14	50%
Estimated Average Weekday Trips Per Employee =	**1.54**	

Employee Weekday, AM Peak Hour Trip Characteristics		
Description	**Trips**	**Distribution**
Estimated Total Average Weekday, AM Peak Hour Trip Ends =	11	100%
Estimated Total Average Weekday, AM Peak Hour Entering Trips =	8	73%
Estimated Total Average Weekday, AM Peak Hour Exiting Trips =	3	27%
Estimated Average Weekday, AM Peak Hour Trips Per Employee =	**0.60**	

Employee Weekday, AM Peak Hour Trip Characteristics		
Description	**Trips**	**Distribution**
Estimated Total Average Weekday, PM Peak Hour Trip Ends =	11	100%
Estimated Total Average Weekday, PM Peak Hour Entering Trips =	3	27%
Estimated Total Average Weekday, PM Peak Hour Exiting Trips =	8	73%
Estimated Average Weekday, PM Peak Hour Trips Per Employee =	**0.60**	

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MONTANA LIMESTONE RESOURCES, LLC (MLR) QUARRY - GRANITE COUNTY, MONTANA

ESTIMATED TOTAL TRIP GENERATION

Description of Proposed Land Use	Independent Variable	Projected Units	Average Weekday Trips			Weekday, AM Peak Hour Trips			Weekday, PM Peak Hour Trips		
			Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
[1]Quarry	1,000 Tons of Material Extracted Annually	364	30	30	60	10	5	15	4	8	12

[1]Quarry | *Independent Variable: 1000 Tons of Material Extracted Annually* | *Setting Location: Rural*

Average Vehicle Trip Ends On a:	Average Trip Generation Rate Equation:	Directional Distribution:	Coefficient of Determination:
Weekday	T = 0.09(X) + 27.69 T = Average Vehicle Trip Ends X = Independent Variable Units	50% Entering | 50% Exiting	R^2 = ****
Average Vehicle Trip Ends On a: Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	Average Trip Generation Rate Equation: T = 0.009(X) + 10.77 T = Average Vehicle Trip Ends X = Independent Variable Units	Directional Distribution: 67% Entering | 33% Exiting	Coefficient of Determination: R^2 = ****
Average Vehicle Trip Ends On a: Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	Average Trip Generation Rate Equation: T = 0.003(X) + 10.77 T = Average Vehicle Trip Ends X = Independent Variable Units	Directional Distribution: 33% Entering | 67% Exiting	Coefficient of Determination: R^2 = ****

RESIDENCES WEST OF MT 1 ON OLD HIGHWAY 10A | ESTIMATED TRIP GENERATION

Land Use Description	Independent Variable	Units	Average Weekday Trips			Weekday, AM Peak Hour Trips			Weekday, PM Peak Hour Trips		
			Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
Single-Family Detached Housing[1]	Dwelling Units	11	69	69	138	3	10	13	8	4	12
Total Units		**11**	**69**	**69**	**138**	**3**	**10**	**13**	**8**	**4**	**12**
			Total Estimated Weekday Trips								

[1]Single-Family Detached Housing - ITE Land Use Code 210 | *Independent Variable: Dwelling Units* | *Setting Location: General Urban / Suburban*

Average Vehicle Trip Ends On a:	Fitted Curve Trip Generation Rate Equation:	Directional Distribution:	Coefficient of Determination:
Weekday	Ln(T) = 0.92 Ln(X) + 2.71 T = Average Vehicle Trip Ends X = Independent Variable Units	50% Entering 50% Exiting	R^2 = 0.95
Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	T = 0.71(X) + 4.80 T = Average Vehicle Trip Ends X = Independent Variable Units	25% Entering 75% Exiting	R^2 = 0.89
Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	Ln(T) = 0.96 Ln(X) + 0.20 T = Average Vehicle Trip Ends X = Independent Variable Units	63% Entering 37% Exiting	R^2 = 0.92

[1] *Source: Trip Generation Manual, 10th Edition - Volume 2: Data - Part 1 , Institute of Transportation Engineers (Washington, DC), September 2017*

RESIDENCES EAST OF MT 1 ON OLD HIGHWAY 10A | ESTIMATED TRIP GENERATION

Land Use Description	Independent Variable	Units	Average Weekday Trips Enter	Exit	Total	Weekday, AM Peak Hour Trips Enter	Exit	Total	Weekday, PM Peak Hour Trips Enter	Exit	Total
Single-Family Detached Housing[1]	Dwelling Units	7	46	46	92	2	8	10	6	2	8
Total Units		**7**	**46**	**46**	**92**	**2**	**8**	**10**	**6**	**2**	**8**
			Total Estimated Weekday Trips								

[1]Single-Family Detached Housing - ITE Land Use Code 210 | *Independent Variable: Dwelling Units* | *Setting Location: General Urban / Suburban*

Average Vehicle Trip Ends On a:	Fitted Curve Trip Generation Rate Equation:	Directional Distribution:	Coefficient of Determination:
Weekday	Ln(T) = 0.92 Ln(X) + 2.71 T = Average Vehicle Trip Ends X = Independent Variable Units	50% Entering 50% Exiting	R^2 = 0.95
Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	T = 0.71(X) + 4.80 T = Average Vehicle Trip Ends X = Independent Variable Units	25% Entering 75% Exiting	R^2 = 0.89
Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	Ln(T) = 0.96 Ln(X) + 0.20 T = Average Vehicle Trip Ends X = Independent Variable Units	63% Entering 37% Exiting	R^2 = 0.92

[1] *Source: Trip Generation Manual, 10th Edition - Volume 2: Data - Part 1 , Institute of Transportation Engineers (Washington, DC), September 2017*

APPENDIX D

CAPACITY & LEVEL OF SERVICE ANALYSES

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APPENDIX D-1

2019 EXISTING CONDITIONS

HCS7 Two-Way Stop-Control Report

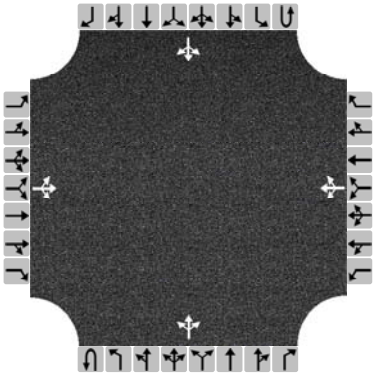
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2019
Time Analyzed	Weekday, AM Peak Hour
Intersection Orientation	North-South
Project Description	MLR EA TIS - Existing Conditions

Site Information

Intersection	MT 1 & Old Highway 10A
Jurisdiction	MDT
East/West Street	Old Highway 10A
North/South Street	Montana State Highway 1
Peak Hour Factor	0.84
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	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	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume, V (veh/h)		6	3	1		1	1	6		0	23	0		1	48	2
Percent Heavy Vehicles (%)		5	5	5		5	5	5		5				5		
Proportion Time Blocked																
Percent Grade (%)		-3				3										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		6.55	5.95	5.95		7.75	7.15	6.55		4.15				4.15		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.54	4.04	3.34		3.54	4.04	3.34		2.24				2.24		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			12				10			0				1		
Capacity, c (veh/h)			875				1386			1528				1571		
v/c Ratio			0.01				0.01			0.00				0.00		
95% Queue Length, Q_{95} (veh)			0.0				0.0			0.0				0.0		
Control Delay (s/veh)			9.2				7.6			7.4				7.3		
Level of Service, LOS			A				A			A				A		
Approach Delay (s/veh)		9.2				7.6				0.0				0.1		
Approach LOS		A				A										

HCS7 Two-Way Stop-Control Report

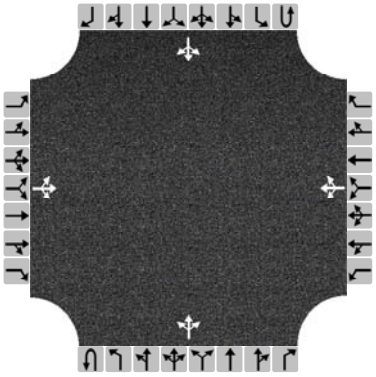
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2019
Time Analyzed	Weekday, PM Peak Hour
Intersection Orientation	North-South
Project Description	MLR EA TIS - Existing Conditions

Site Information

Intersection	MT 1 & Old Highway 10A
Jurisdiction	MDT
East/West Street	Old Highway 10A
North/South Street	Montana State Highway 1
Peak Hour Factor	0.91
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	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	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume, V (veh/h)		3	1	1		0	2	1		1	56	1		4	37	5
Percent Heavy Vehicles (%)		5	5	5		5	5	5		5				5		
Proportion Time Blocked																
Percent Grade (%)		-3				3										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		6.55	5.95	5.95		7.75	7.15	6.55		4.15				4.15		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.54	4.04	3.34		3.54	4.04	3.34		2.24				2.24		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			5				3			1				4		
Capacity, c (veh/h)			873				1123			1546				1524		
v/c Ratio			0.01				0.00			0.00				0.00		
95% Queue Length, Q_{95} (veh)			0.0				0.0			0.0				0.0		
Control Delay (s/veh)			9.2				8.2			7.3				7.4		
Level of Service, LOS			A				A			A				A		
Approach Delay (s/veh)		9.2				8.2				0.1				0.7		
Approach LOS		A				A										

HCS7 Two-Way Stop-Control Report

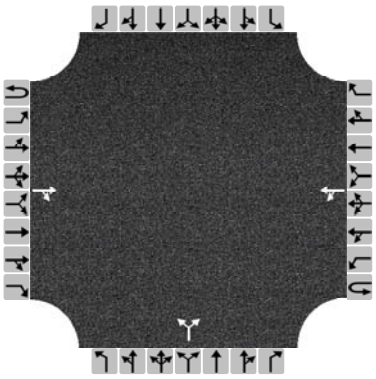
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2019
Time Analyzed	Weekday, AM Peak Hour
Intersection Orientation	East-West
Project Description	MLR EA TIS - Existing Conditions

Site Information

Intersection	Front St & Main St
Jurisdiction	MDT
East/West Street	Front Street
North/South Street	Main St / Old Highway 10A
Peak Hour Factor	0.80
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume, V (veh/h)			43	6		6	46			9		8				
Percent Heavy Vehicles (%)						10				10		10				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				No				No		
Median Type/Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.20				6.50		6.30				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.29				3.59		3.39				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						8					21					
Capacity, c (veh/h)						1493					1589					
v/c Ratio						0.01					0.01					
95% Queue Length, Q_{95} (veh)						0.0					0.0					
Control Delay (s/veh)						7.4					7.3					
Level of Service, LOS						A					A					
Approach Delay (s/veh)						0.9				7.3						
Approach LOS										A						

HCS7 Two-Way Stop-Control Report

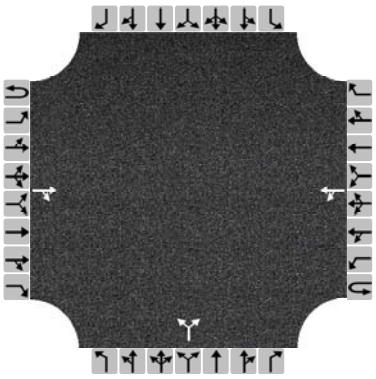
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2019
Time Analyzed	Weekday, PM Peak Hour
Intersection Orientation	East-West
Project Description	MLR EA TIS - Existing Conditions

Site Information

Intersection	Front St & Main St
Jurisdiction	MDT
East/West Street	Front Street
North/South Street	Main St / Old Highway 10A
Peak Hour Factor	0.80
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume, V (veh/h)			49	2		24	62			2		19				
Percent Heavy Vehicles (%)						10				10		10				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				No				No		
Median Type/Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.20				6.50		6.30				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.29				3.59		3.39				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						30					26					
Capacity, c (veh/h)						1489					1084					
v/c Ratio						0.02					0.02					
95% Queue Length, Q_{95} (veh)						0.1					0.1					
Control Delay (s/veh)						7.5					8.4					
Level of Service, LOS						A					A					
Approach Delay (s/veh)						2.2				8.4						
Approach LOS										A						

HCS7 Two-Way Stop-Control Report

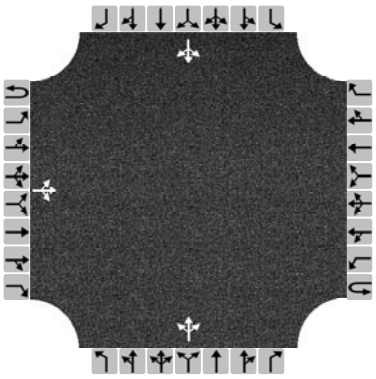
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2019
Time Analyzed	Weekday, AM Peak Hour
Intersection Orientation	East-West
Project Description	MLR EA TIS - Existing Conditions

Site Information

Intersection	Front St & Sorensen Ln
Jurisdiction	MDT
East/West Street	Front Street
North/South Street	Sorensen Ln / I-90 EB OR
Peak Hour Factor	0.83
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	0	0		0	1	0		0	1	0
Configuration			LTR								LTR				LTR	
Volume, V (veh/h)		4	21	2						5	0	2		0	3	27
Percent Heavy Vehicles (%)		10								10	10	10		10	10	10
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1								7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.20								6.50	6.60	6.30		6.50	6.60	6.30
Base Follow-Up Headway (sec)		2.2								3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.29								3.59	4.09	3.39		3.59	4.09	3.39

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		5									8				36	
Capacity, c (veh/h)		1572									1009				1180	
v/c Ratio		0.00									0.01				0.03	
95% Queue Length, Q_{95} (veh)		0.0									0.0				0.1	
Control Delay (s/veh)		7.3									8.6				8.1	
Level of Service, LOS		A									A				A	
Approach Delay (s/veh)	1.1								8.6				8.1			
Approach LOS									A				A			

HCS7 Two-Way Stop-Control Report

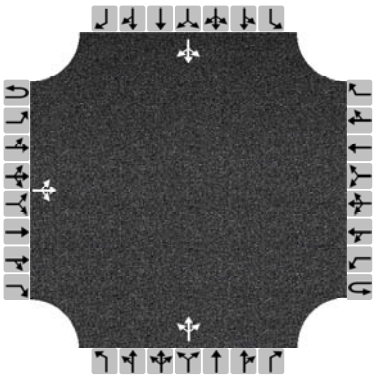
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2019
Time Analyzed	Weekday, PM Peak Hour
Intersection Orientation	East-West
Project Description	MLR EA TIS - Existing Conditions

Site Information

Intersection	Front St & Sorensen Ln
Jurisdiction	MDT
East/West Street	Front Street
North/South Street	Sorensen Ln / I-90 EB OR
Peak Hour Factor	0.69
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	0	0		0	1	0		0	1	0
Configuration			LTR								LTR				LTR	
Volume, V (veh/h)		3	43	2						11	1	2		0	6	34
Percent Heavy Vehicles (%)		10								10	10	10		10	10	10
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1								7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.20								6.50	6.60	6.30		6.50	6.60	6.30
Base Follow-Up Headway (sec)		2.2								3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.29								3.59	4.09	3.39		3.59	4.09	3.39

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		4									20				58	
Capacity, c (veh/h)		1572									982				1249	
v/c Ratio		0.00									0.02				0.05	
95% Queue Length, Q_{95} (veh)		0.0									0.1				0.1	
Control Delay (s/veh)		7.3									8.7				8.0	
Level of Service, LOS		A									A				A	
Approach Delay (s/veh)	0.5								8.7				8.0			
Approach LOS									A				A			

Morrison Maierle

engineers ▪ surveyors ▪ planners ▪ scientists

APPENDIX D-2

ESTIMATED 2021 BACKGROUND TRAFFIC

HCS7 Two-Way Stop-Control Report

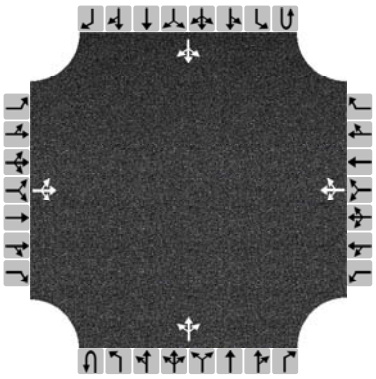
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2021
Time Analyzed	Weekday, AM Peak Hour
Intersection Orientation	North-South
Project Description	MLR EA TIS - Background Traffic

Site Information

Intersection	MT 1 & Old Highway 10A
Jurisdiction	MDT
East/West Street	Old Highway 10A
North/South Street	Montana State Highway 1
Peak Hour Factor	0.84
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	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	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume, V (veh/h)		6	3	1		1	1	6		0	25	0		1	52	2
Percent Heavy Vehicles (%)		5	5	5		5	5	5		5				5		
Proportion Time Blocked																
Percent Grade (%)		-3				3										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			12				10			0				1		
Capacity, c (veh/h)			867				1380			1523				1567		
v/c Ratio			0.01				0.01			0.00				0.00		
95% Queue Length, Q_{95} (veh)			0.0				0.0			0.0				0.0		
Control Delay (s/veh)			9.2				7.6			7.4				7.3		
Level of Service, LOS			A				A			A				A		
Approach Delay (s/veh)		9.2				7.6				0.0				0.1		
Approach LOS		A				A										

HCS7 Two-Way Stop-Control Report

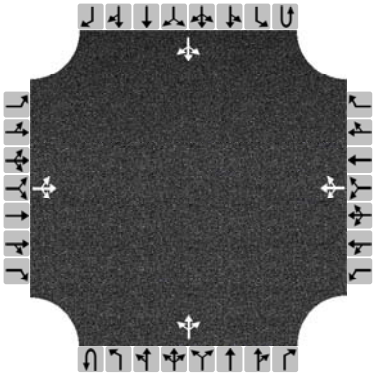
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2021
Time Analyzed	Weekday, PM Peak Hour
Intersection Orientation	North-South
Project Description	MLR EA TIS - Background Traffic

Site Information

Intersection	MT 1 & Old Highway 10A
Jurisdiction	MDT
East/West Street	Old Highway 10A
North/South Street	Montana State Highway 1
Peak Hour Factor	0.91
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	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	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume, V (veh/h)		3	1	1		0	2	1		1	61	1		4	40	5
Percent Heavy Vehicles (%)		5	5	5		5	5	5		5				5		
Proportion Time Blocked																
Percent Grade (%)		-3				3										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			5				3			1				4		
Capacity, c (veh/h)			864				1109			1542				1518		
v/c Ratio			0.01				0.00			0.00				0.00		
95% Queue Length, Q_{95} (veh)			0.0				0.0			0.0				0.0		
Control Delay (s/veh)			9.2				8.3			7.3				7.4		
Level of Service, LOS			A				A			A				A		
Approach Delay (s/veh)		9.2				8.3				0.1				0.6		
Approach LOS		A				A										

HCS7 Two-Way Stop-Control Report

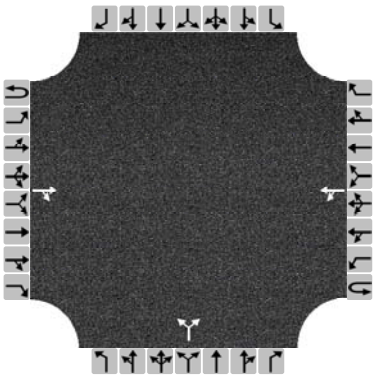
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2021
Time Analyzed	Weekday, AM Peak Hour
Intersection Orientation	East-West
Project Description	MLR EA TIS - Background Traffic

Site Information

Intersection	Front St & Main St
Jurisdiction	MDT
East/West Street	Front Street
North/South Street	Main St / Old Highway 10A
Peak Hour Factor	0.80
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume, V (veh/h)			44	6		6	47			9		8				
Percent Heavy Vehicles (%)						10				10		10				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				No				No		
Median Type/Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						8					21					
Capacity, c (veh/h)						1492					1585					
v/c Ratio						0.01					0.01					
95% Queue Length, Q_{95} (veh)						0.0					0.0					
Control Delay (s/veh)						7.4					7.3					
Level of Service, LOS						A					A					
Approach Delay (s/veh)						0.9					7.3					
Approach LOS											A					

HCS7 Two-Way Stop-Control Report

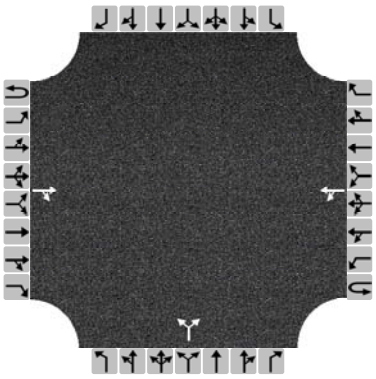
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2021
Time Analyzed	Weekday, PM Peak Hour
Intersection Orientation	East-West
Project Description	MLR EA TIS - Background Traffic

Site Information

Intersection	Front St & Main St
Jurisdiction	MDT
East/West Street	Front Street
North/South Street	Main St / Old Highway 10A
Peak Hour Factor	0.80
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume, V (veh/h)			50	2		25	63			2		20				
Percent Heavy Vehicles (%)						10				10		10				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						31					28					
Capacity, c (veh/h)						1488					1076					
v/c Ratio						0.02					0.03					
95% Queue Length, Q_{95} (veh)						0.1					0.1					
Control Delay (s/veh)						7.5					8.4					
Level of Service, LOS						A					A					
Approach Delay (s/veh)						2.2					8.4					
Approach LOS											A					

HCS7 Two-Way Stop-Control Report

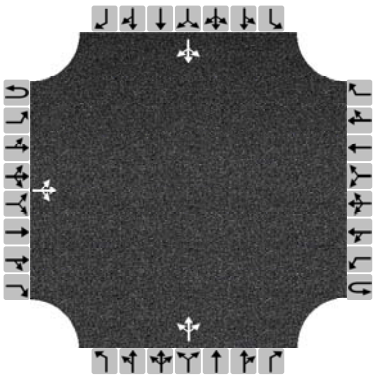
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2021
Time Analyzed	Weekday, AM Peak Hour
Intersection Orientation	East-West
Project Description	MLR EA TIS - Background Traffic

Site Information

Intersection	Front St & Sorensen Ln
Jurisdiction	MDT
East/West Street	Front Street
North/South Street	Sorensen Ln / I-90 EB OR
Peak Hour Factor	0.83
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	0	0		0	1	0		0	1	0
Configuration			LTR								LTR				LTR	
Volume, V (veh/h)		4	22	2						5	0	2		0	3	28
Percent Heavy Vehicles (%)		10								10	10	10		10	10	10
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		5									8				37	
Capacity, c (veh/h)		1572									1009				1176	
v/c Ratio		0.00									0.01				0.03	
95% Queue Length, Q_{95} (veh)		0.0									0.0				0.1	
Control Delay (s/veh)		7.3									8.6				8.2	
Level of Service, LOS		A									A				A	
Approach Delay (s/veh)	1.1								8.6				8.2			
Approach LOS									A				A			

HCS7 Two-Way Stop-Control Report

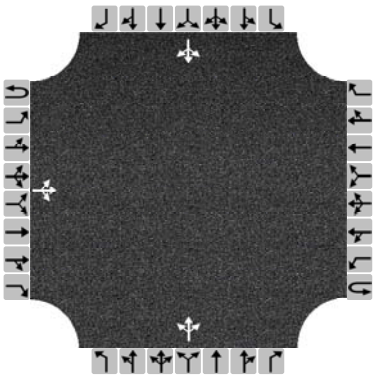
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2021
Time Analyzed	Weekday, PM Peak Hour
Intersection Orientation	East-West
Project Description	MLR EA TIS - Background Traffic

Site Information

Intersection	Front St & Sorensen Ln
Jurisdiction	MDT
East/West Street	Front Street
North/South Street	Sorensen Ln / I-90 EB OR
Peak Hour Factor	0.69
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	0	0		0	1	0		0	1	0
Configuration			LTR								LTR				LTR	
Volume, V (veh/h)		3	44	2						11	1	2		0	6	35
Percent Heavy Vehicles (%)		10								10	10	10		10	10	10
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		4									20				59	
Capacity, c (veh/h)		1572									981				1244	
v/c Ratio		0.00									0.02				0.05	
95% Queue Length, Q_{95} (veh)		0.0									0.1				0.2	
Control Delay (s/veh)		7.3									8.7				8.0	
Level of Service, LOS		A									A				A	
Approach Delay (s/veh)	0.5								8.7				8.0			
Approach LOS									A				A			

Morrison Maierle

engineers ▪ surveyors ▪ planners ▪ scientists

APPENDIX D-3

ESTIMATED 2021 TOTAL TRAFFIC

HCS7 Two-Way Stop-Control Report

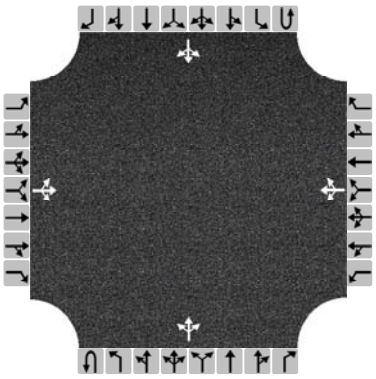
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2021
Time Analyzed	Weekday, AM Peak Hour
Intersection Orientation	North-South
Project Description	MLR EA TIS - Total Traffic

Site Information

Intersection	MT 1 & Old Highway 10A
Jurisdiction	MDT
East/West Street	Old Highway 10A
North/South Street	Montana State Highway 1
Peak Hour Factor	0.84
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	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	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume, V (veh/h)		9	5	1		1	6	6		1	25	0		1	52	6
Percent Heavy Vehicles (%)		5	5	5		5	5	5		5				5		
Proportion Time Blocked																
Percent Grade (%)		-3				3										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			18				15			1				1		
Capacity, c (veh/h)			851				1444			1517				1567		
v/c Ratio			0.02				0.01			0.00				0.00		
95% Queue Length, Q_{95} (veh)			0.1				0.0			0.0				0.0		
Control Delay (s/veh)			9.3				7.5			7.4				7.3		
Level of Service, LOS			A				A			A				A		
Approach Delay (s/veh)		9.3				7.5				0.3				0.1		
Approach LOS		A				A										

HCS7 Two-Way Stop-Control Report

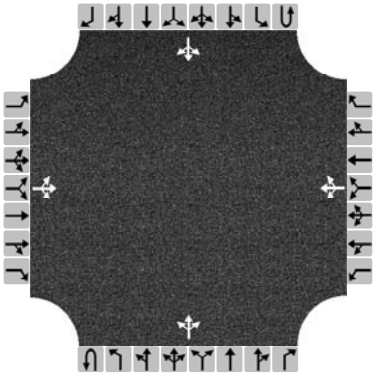
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2021
Time Analyzed	Weekday, PM Peak Hour
Intersection Orientation	North-South
Project Description	MLR EA TIS - Total Traffic

Site Information

Intersection	MT 1 & Old Highway 10A
Jurisdiction	MDT
East/West Street	Old Highway 10A
North/South Street	Montana State Highway 1
Peak Hour Factor	0.91
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	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	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume, V (veh/h)		5	6	2		0	4	1		1	61	1		4	40	7
Percent Heavy Vehicles (%)		5	5	5		5	5	5		5				5		
Proportion Time Blocked																
Percent Grade (%)		-3				3										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			14				5			1				4		
Capacity, c (veh/h)			832				921			1538				1518		
v/c Ratio			0.02				0.01			0.00				0.00		
95% Queue Length, Q_{95} (veh)			0.1				0.0			0.0				0.0		
Control Delay (s/veh)			9.4				8.9			7.3				7.4		
Level of Service, LOS			A				A			A				A		
Approach Delay (s/veh)		9.4				8.9				0.1				0.6		
Approach LOS		A				A										

HCS7 Two-Way Stop-Control Report

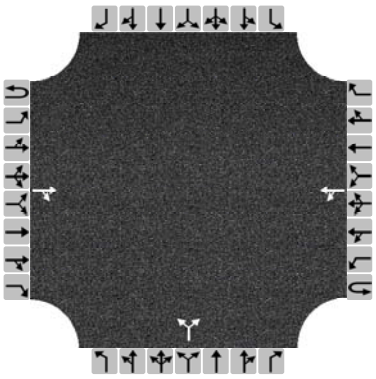
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2021
Time Analyzed	Weekday, AM Peak Hour
Intersection Orientation	East-West
Project Description	MLR EA TIS - Total Traffic

Site Information

Intersection	Front St & Main St
Jurisdiction	MDT
East/West Street	Front Street
North/South Street	Main St / Old Highway 10A
Peak Hour Factor	0.80
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume, V (veh/h)			46	8		9	49			10		9				
Percent Heavy Vehicles (%)						10				10		10				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				No				No		
Median Type/Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						11					24					
Capacity, c (veh/h)						1484					1561					
v/c Ratio						0.01					0.02					
95% Queue Length, Q_{95} (veh)						0.0					0.0					
Control Delay (s/veh)						7.4					7.3					
Level of Service, LOS						A					A					
Approach Delay (s/veh)						1.2					7.3					
Approach LOS											A					

HCS7 Two-Way Stop-Control Report

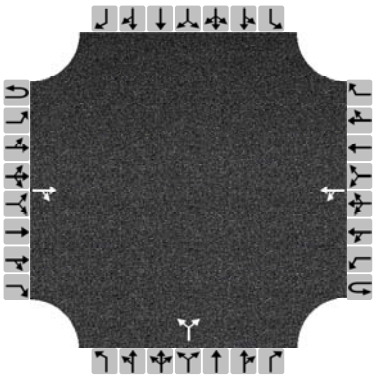
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2021
Time Analyzed	Weekday, PM Peak Hour
Intersection Orientation	East-West
Project Description	MLR EA TIS - Total Traffic

Site Information

Intersection	Front St & Main St
Jurisdiction	MDT
East/West Street	Front Street
North/South Street	Main St / Old Highway 10A
Peak Hour Factor	0.80
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume, V (veh/h)			50	3		26	64			4		23				
Percent Heavy Vehicles (%)						10				10		10				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				No				No		
Median Type/Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						33					34					
Capacity, c (veh/h)						1486					1149					
v/c Ratio						0.02					0.03					
95% Queue Length, Q_{95} (veh)						0.1					0.1					
Control Delay (s/veh)						7.5					8.2					
Level of Service, LOS						A					A					
Approach Delay (s/veh)						2.3					8.2					
Approach LOS											A					

HCS7 Two-Way Stop-Control Report

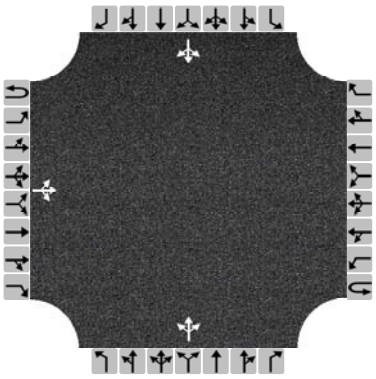
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2021
Time Analyzed	Weekday, AM Peak Hour
Intersection Orientation	East-West
Project Description	MLR EA TIS - Total Traffic

Site Information

Intersection	Front St & Sorensen Ln
Jurisdiction	MDT
East/West Street	Front Street
North/South Street	Sorensen Ln / I-90 EB OR
Peak Hour Factor	0.83
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	0	0		0	1	0		0	1	0
Configuration			LTR								LTR				LTR	
Volume, V (veh/h)		4	24	2						5	0	2		0	3	30
Percent Heavy Vehicles (%)		10								10	10	10		10	10	10
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		5									8				40	
Capacity, c (veh/h)		1572									1008				1168	
v/c Ratio		0.00									0.01				0.03	
95% Queue Length, Q_{95} (veh)		0.0									0.0				0.1	
Control Delay (s/veh)		7.3									8.6				8.2	
Level of Service, LOS		A									A				A	
Approach Delay (s/veh)	1.0								8.6				8.2			
Approach LOS									A				A			

HCS7 Two-Way Stop-Control Report

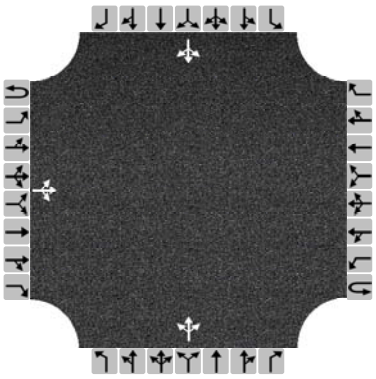
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2021
Time Analyzed	Weekday, PM Peak Hour
Intersection Orientation	East-West
Project Description	MLR EA TIS - Total Traffic

Site Information

Intersection	Front St & Sorensen Ln
Jurisdiction	MDT
East/West Street	Front Street
North/South Street	Sorensen Ln / I-90 EB OR
Peak Hour Factor	0.69
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	0	0		0	1	0		0	1	0
Configuration			LTR								LTR				LTR	
Volume, V (veh/h)		3	44	2						11	1	2		0	6	36
Percent Heavy Vehicles (%)		10								10	10	10		10	10	10
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		4									20				61	
Capacity, c (veh/h)		1572									981				1239	
v/c Ratio		0.00									0.02				0.05	
95% Queue Length, Q_{95} (veh)		0.0									0.1				0.2	
Control Delay (s/veh)		7.3									8.7				8.1	
Level of Service, LOS		A									A				A	
Approach Delay (s/veh)	0.5								8.7				8.1			
Approach LOS									A				A			

Morrison Maierle

engineers ▪ surveyors ▪ planners ▪ scientists

APPENDIX D-4

ESTIMATED 2026 BACKGROUND TRAFFIC

HCS7 Two-Way Stop-Control Report

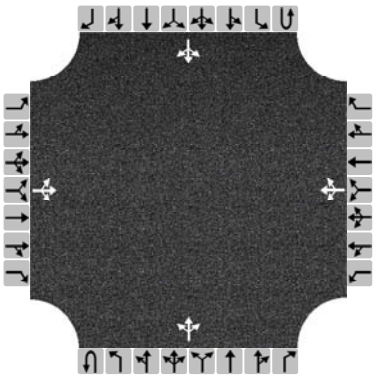
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2026
Time Analyzed	Weekday, AM Peak Hour
Intersection Orientation	North-South
Project Description	MLR EA TIS - Background Traffic

Site Information

Intersection	MT 1 & Old Highway 10A
Jurisdiction	MDT
East/West Street	Old Highway 10A
North/South Street	Montana State Highway 1
Peak Hour Factor	0.84
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	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	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume, V (veh/h)		6	3	1		1	1	6		0	27	0		1	56	2
Percent Heavy Vehicles (%)		5	5	5		5	5	5		5				5		
Proportion Time Blocked																
Percent Grade (%)		-3				3										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			12				10			0				1		
Capacity, c (veh/h)			859				1376			1517				1565		
v/c Ratio			0.01				0.01			0.00				0.00		
95% Queue Length, Q_{95} (veh)			0.0				0.0			0.0				0.0		
Control Delay (s/veh)			9.2				7.6			7.4				7.3		
Level of Service, LOS			A				A			A				A		
Approach Delay (s/veh)		9.2				7.6				0.0				0.1		
Approach LOS		A				A										

HCS7 Two-Way Stop-Control Report

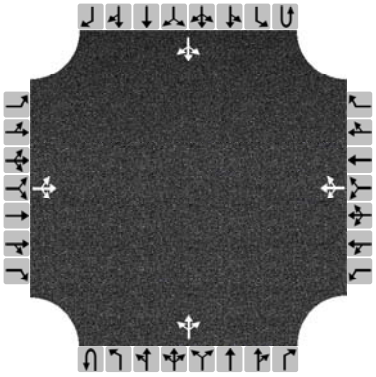
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2026
Time Analyzed	Weekday, PM Peak Hour
Intersection Orientation	North-South
Project Description	MLR EA TIS - Background Traffic

Site Information

Intersection	MT 1 & Old Highway 10A
Jurisdiction	MDT
East/West Street	Old Highway 10A
North/South Street	Montana State Highway 1
Peak Hour Factor	0.91
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	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	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume, V (veh/h)		3	1	1		0	2	1		1	66	1		4	43	5
Percent Heavy Vehicles (%)		5	5	5		5	5	5		5				5		
Proportion Time Blocked																
Percent Grade (%)		-3				3										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			5				3			1				4		
Capacity, c (veh/h)			855				1095			1537				1510		
v/c Ratio			0.01				0.00			0.00				0.00		
95% Queue Length, Q_{95} (veh)			0.0				0.0			0.0				0.0		
Control Delay (s/veh)			9.2				8.3			7.3				7.4		
Level of Service, LOS			A				A			A				A		
Approach Delay (s/veh)		9.2				8.3				0.1				0.6		
Approach LOS		A				A										

HCS7 Two-Way Stop-Control Report

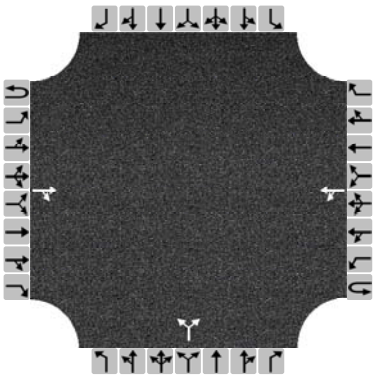
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2026
Time Analyzed	Weekday, AM Peak Hour
Intersection Orientation	East-West
Project Description	MLR EA TIS - Background Traffic

Site Information

Intersection	Front St & Main St
Jurisdiction	MDT
East/West Street	Front Street
North/South Street	Main St / Old Highway 10A
Peak Hour Factor	0.80
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume, V (veh/h)			45	6		6	48			9		8				
Percent Heavy Vehicles (%)						10				10		10				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				No				No		
Median Type/Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						8					21					
Capacity, c (veh/h)						1489					1579					
v/c Ratio						0.01					0.01					
95% Queue Length, Q_{95} (veh)						0.0					0.0					
Control Delay (s/veh)						7.4					7.3					
Level of Service, LOS						A					A					
Approach Delay (s/veh)						0.9					7.3					
Approach LOS											A					

HCS7 Two-Way Stop-Control Report

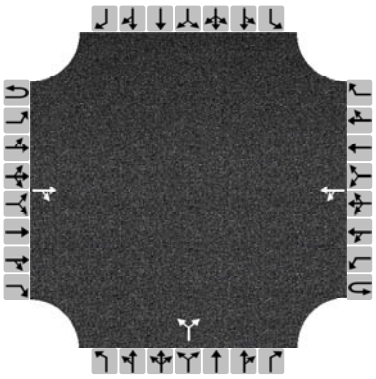
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2026
Time Analyzed	Weekday, PM Peak Hour
Intersection Orientation	East-West
Project Description	MLR EA TIS - Background Traffic

Site Information

Intersection	Front St & Main St
Jurisdiction	MDT
East/West Street	Front Street
North/South Street	Main St / Old Highway 10A
Peak Hour Factor	0.80
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume, V (veh/h)			51	2		26	65			2		21				
Percent Heavy Vehicles (%)						10				10		10				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				No				No		
Median Type/Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						33					29					
Capacity, c (veh/h)						1486					1070					
v/c Ratio						0.02					0.03					
95% Queue Length, Q_{95} (veh)						0.1					0.1					
Control Delay (s/veh)						7.5					8.5					
Level of Service, LOS						A					A					
Approach Delay (s/veh)						2.3					8.5					
Approach LOS											A					

HCS7 Two-Way Stop-Control Report

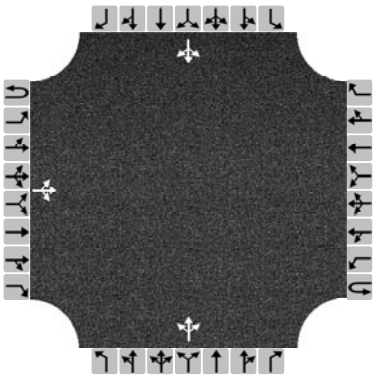
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2026
Time Analyzed	Weekday, AM Peak Hour
Intersection Orientation	East-West
Project Description	MLR EA TIS - Background Traffic

Site Information

Intersection	Front St & Sorensen Ln
Jurisdiction	MDT
East/West Street	Front Street
North/South Street	Sorensen Ln / I-90 EB OR
Peak Hour Factor	0.83
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	0	0		0	1	0		0	1	0
Configuration			LTR								LTR				LTR	
Volume, V (veh/h)		4	23	2						5	0	2		0	3	29
Percent Heavy Vehicles (%)		10								10	10	10		10	10	10
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		5									8				39	
Capacity, c (veh/h)		1572									1009				1172	
v/c Ratio		0.00									0.01				0.03	
95% Queue Length, Q_{95} (veh)		0.0									0.0				0.1	
Control Delay (s/veh)		7.3									8.6				8.2	
Level of Service, LOS		A									A				A	
Approach Delay (s/veh)	1.0								8.6				8.2			
Approach LOS									A				A			

HCS7 Two-Way Stop-Control Report

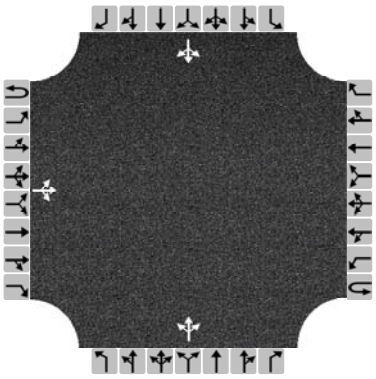
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2026
Time Analyzed	Weekday, PM Peak Hour
Intersection Orientation	East-West
Project Description	MLR EA TIS - Background Traffic

Site Information

Intersection	Front St & Sorensen Ln
Jurisdiction	MDT
East/West Street	Front Street
North/South Street	Sorensen Ln / I-90 EB OR
Peak Hour Factor	0.69
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	0	0		0	1	0		0	1	0
Configuration			LTR								LTR				LTR	
Volume, V (veh/h)		3	45	2						11	1	2		0	6	36
Percent Heavy Vehicles (%)		10								10	10	10		10	10	10
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		4									20				61	
Capacity, c (veh/h)		1572									981				1239	
v/c Ratio		0.00									0.02				0.05	
95% Queue Length, Q_{95} (veh)		0.0									0.1				0.2	
Control Delay (s/veh)		7.3									8.7				8.1	
Level of Service, LOS		A									A				A	
Approach Delay (s/veh)	0.5								8.7				8.1			
Approach LOS									A				A			

Morrison Maierle

engineers ▪ surveyors ▪ planners ▪ scientists

APPENDIX D-5

ESTIMATED 2026 TOTAL TRAFFIC

HCS7 Two-Way Stop-Control Report

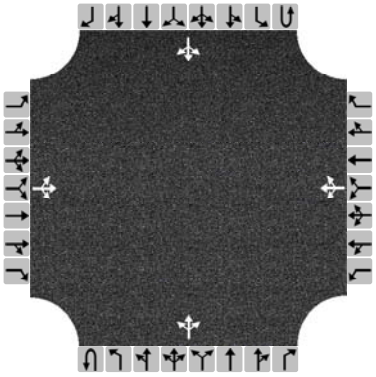
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2026
Time Analyzed	Weekday, AM Peak Hour
Intersection Orientation	North-South
Project Description	MLR EA TIS - Total Traffic

Site Information

Intersection	MT 1 & Old Highway 10A
Jurisdiction	MDT
East/West Street	Old Highway 10A
North/South Street	Montana State Highway 1
Peak Hour Factor	0.84
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	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	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume, V (veh/h)		9	5	1		1	6	6		1	27	0		1	56	6
Percent Heavy Vehicles (%)		5	5	5		5	5	5		5				5		
Proportion Time Blocked																
Percent Grade (%)		-3				3										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			18				15			1				1		
Capacity, c (veh/h)			843				1429			1510				1565		
v/c Ratio			0.02				0.01			0.00				0.00		
95% Queue Length, Q_{95} (veh)			0.1				0.0			0.0				0.0		
Control Delay (s/veh)			9.4				7.5			7.4				7.3		
Level of Service, LOS			A				A			A				A		
Approach Delay (s/veh)		9.4				7.5				0.3				0.1		
Approach LOS		A				A										

HCS7 Two-Way Stop-Control Report

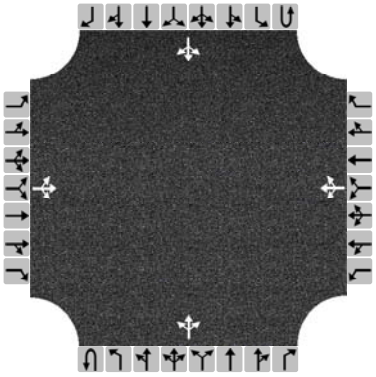
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2026
Time Analyzed	Weekday, PM Peak Hour
Intersection Orientation	North-South
Project Description	MLR EA TIS - Total Traffic

Site Information

Intersection	MT 1 & Old Highway 10A
Jurisdiction	MDT
East/West Street	Old Highway 10A
North/South Street	Montana State Highway 1
Peak Hour Factor	0.91
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	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	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume, V (veh/h)		5	6	2		0	4	1		1	66	1		4	43	7
Percent Heavy Vehicles (%)		5	5	5		5	5	5		5				5		
Proportion Time Blocked																
Percent Grade (%)		-3				3										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			14				5			1				4		
Capacity, c (veh/h)			824				909			1535				1510		
v/c Ratio			0.02				0.01			0.00				0.00		
95% Queue Length, Q_{95} (veh)			0.1				0.0			0.0				0.0		
Control Delay (s/veh)			9.4				9.0			7.3				7.4		
Level of Service, LOS			A				A			A				A		
Approach Delay (s/veh)		9.4				9.0				0.1				0.6		
Approach LOS		A				A										

HCS7 Two-Way Stop-Control Report

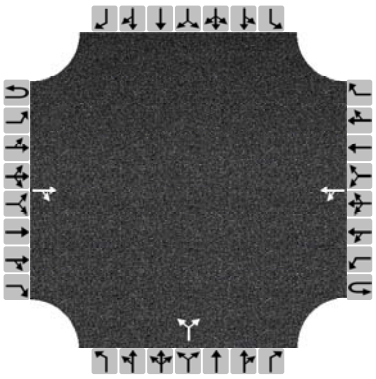
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2026
Time Analyzed	Weekday, AM Peak Hour
Intersection Orientation	East-West
Project Description	MLR EA TIS - Total Traffic

Site Information

Intersection	Front St & Main St
Jurisdiction	MDT
East/West Street	Front Street
North/South Street	Main St / Old Highway 10A
Peak Hour Factor	0.80
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume, V (veh/h)			47	8		9	50			10		9				
Percent Heavy Vehicles (%)						10				10		10				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				No				No		
Median Type/Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						11					24					
Capacity, c (veh/h)						1483					1555					
v/c Ratio						0.01					0.02					
95% Queue Length, Q_{95} (veh)						0.0					0.0					
Control Delay (s/veh)						7.4					7.4					
Level of Service, LOS						A					A					
Approach Delay (s/veh)						1.2					7.4					
Approach LOS											A					

HCS7 Two-Way Stop-Control Report

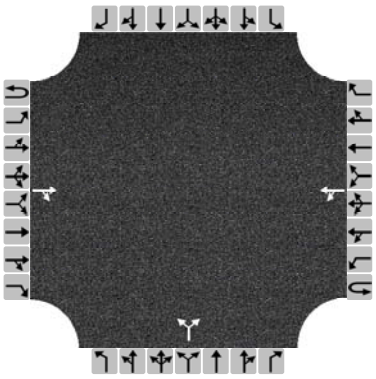
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2026
Time Analyzed	Weekday, PM Peak Hour
Intersection Orientation	East-West
Project Description	MLR EA TIS - Total Traffic

Site Information

Intersection	Front St & Main St
Jurisdiction	MDT
East/West Street	Front Street
North/South Street	Main St / Old Highway 10A
Peak Hour Factor	0.80
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume, V (veh/h)			51	3		27	66			4		24				
Percent Heavy Vehicles (%)						10				10		10				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						34					35					
Capacity, c (veh/h)						1484					1139					
v/c Ratio						0.02					0.03					
95% Queue Length, Q_{95} (veh)						0.1					0.1					
Control Delay (s/veh)						7.5					8.3					
Level of Service, LOS						A					A					
Approach Delay (s/veh)						2.3					8.3					
Approach LOS											A					

HCS7 Two-Way Stop-Control Report

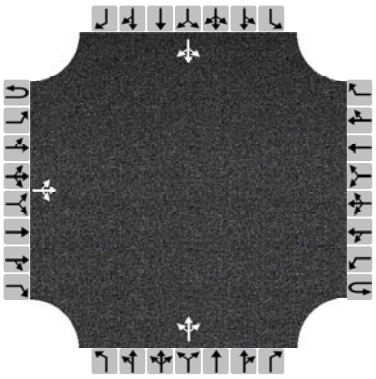
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2026
Time Analyzed	Weekday, AM Peak Hour
Intersection Orientation	East-West
Project Description	MLR EA TIS - Total Traffic

Site Information

Intersection	Front St & Sorensen Ln
Jurisdiction	MDT
East/West Street	Front Street
North/South Street	Sorensen Ln / I-90 EB OR
Peak Hour Factor	0.83
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	0	0		0	1	0		0	1	0
Configuration			LTR								LTR				LTR	
Volume, V (veh/h)		4	25	2						5	0	2		0	3	31
Percent Heavy Vehicles (%)		10								10	10	10		10	10	10
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		5									8				41	
Capacity, c (veh/h)		1572									1008				1165	
v/c Ratio		0.00									0.01				0.04	
95% Queue Length, Q_{95} (veh)		0.0									0.0				0.1	
Control Delay (s/veh)		7.3									8.6				8.2	
Level of Service, LOS		A									A				A	
Approach Delay (s/veh)	1.0								8.6				8.2			
Approach LOS									A				A			

HCS7 Two-Way Stop-Control Report

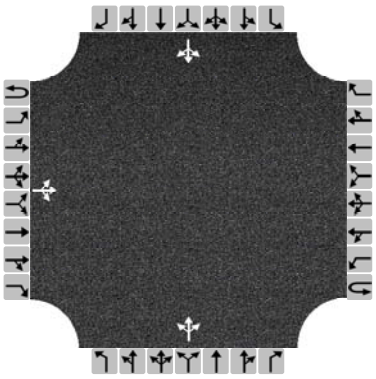
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2026
Time Analyzed	Weekday, PM Peak Hour
Intersection Orientation	East-West
Project Description	MLR EA TIS - Total Traffic

Site Information

Intersection	Front St & Sorensen Ln
Jurisdiction	MDT
East/West Street	Front Street
North/South Street	Sorensen Ln / I-90 EB OR
Peak Hour Factor	0.69
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	0	0		0	1	0		0	1	0
Configuration			LTR								LTR				LTR	
Volume, V (veh/h)		3	45	2						11	1	2		0	6	37
Percent Heavy Vehicles (%)		10								10	10	10		10	10	10
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		4									20				62	
Capacity, c (veh/h)		1572									981				1234	
v/c Ratio		0.00									0.02				0.05	
95% Queue Length, Q_{95} (veh)		0.0									0.1				0.2	
Control Delay (s/veh)		7.3									8.7				8.1	
Level of Service, LOS		A									A				A	
Approach Delay (s/veh)	0.5								8.7				8.1			
Approach LOS									A				A			

Morrison Maierle

engineers ▪ surveyors ▪ planners ▪ scientists

APPENDIX D-6

ESTIMATED 2071 BACKGROUND TRAFFIC

HCS7 Two-Way Stop-Control Report

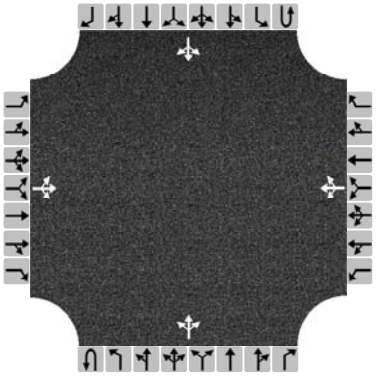
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2071
Time Analyzed	Weekday, AM Peak Hour
Intersection Orientation	North-South
Project Description	MLR EA TIS - Background Traffic

Site Information

Intersection	MT 1 & Old Highway 10A
Jurisdiction	MDT
East/West Street	Old Highway 10A
North/South Street	Montana State Highway 1
Peak Hour Factor	0.84
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	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	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume, V (veh/h)		7	4	2		2	2	7		1	45	1		2	93	3
Percent Heavy Vehicles (%)		5	5	5		5	5	5		5				5		
Proportion Time Blocked																
Percent Grade (%)		-3				3										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			15				13			1				2		
Capacity, c (veh/h)			791				1574			1460				1535		
v/c Ratio			0.02				0.01			0.00				0.00		
95% Queue Length, Q_{95} (veh)			0.1				0.0			0.0				0.0		
Control Delay (s/veh)			9.6				7.3			7.5				7.3		
Level of Service, LOS			A				A			A				A		
Approach Delay (s/veh)		9.6				7.3				0.2				0.2		
Approach LOS		A				A										

HCS7 Two-Way Stop-Control Report

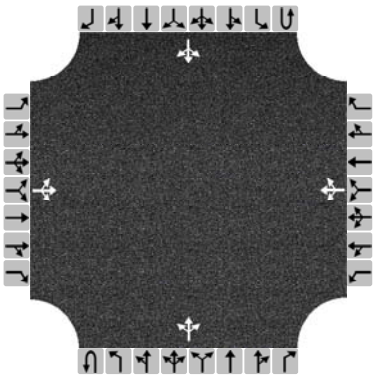
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2071
Time Analyzed	Weekday, PM Peak Hour
Intersection Orientation	North-South
Project Description	MLR EA TIS - Background Traffic

Site Information

Intersection	MT 1 & Old Highway 10A
Jurisdiction	MDT
East/West Street	Old Highway 10A
North/South Street	Montana State Highway 1
Peak Hour Factor	0.91
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	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	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume, V (veh/h)		4	2	2		1	3	2		2	109	2		5	72	6
Percent Heavy Vehicles (%)		5	5	5		5	5	5		5				5		
Proportion Time Blocked																
Percent Grade (%)		-3				3										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			9				7			2				5		
Capacity, c (veh/h)			780				985			1495				1450		
v/c Ratio			0.01				0.01			0.00				0.00		
95% Queue Length, Q_{95} (veh)			0.0				0.0			0.0				0.0		
Control Delay (s/veh)			9.7				8.7			7.4				7.5		
Level of Service, LOS			A				A			A				A		
Approach Delay (s/veh)		9.7				8.7				0.1				0.5		
Approach LOS		A				A										

HCS7 Two-Way Stop-Control Report

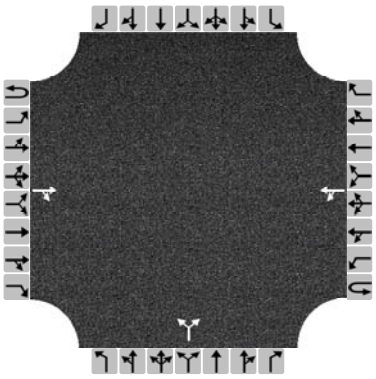
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2071
Time Analyzed	Weekday, AM Peak Hour
Intersection Orientation	East-West
Project Description	MLR EA TIS - Background Traffic

Site Information

Intersection	Front St & Main St
Jurisdiction	MDT
East/West Street	Front Street
North/South Street	Main St / Old Highway 10A
Peak Hour Factor	0.80
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume, V (veh/h)			54	7		7	57			11		10				
Percent Heavy Vehicles (%)						10				10		10				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				No				No		
Median Type/Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						9					26					
Capacity, c (veh/h)						1474					1540					
v/c Ratio						0.01					0.02					
95% Queue Length, Q_{95} (veh)						0.0					0.1					
Control Delay (s/veh)						7.5					7.4					
Level of Service, LOS						A					A					
Approach Delay (s/veh)						0.9					7.4					
Approach LOS											A					

HCS7 Two-Way Stop-Control Report

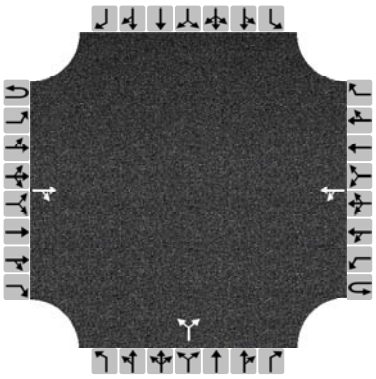
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2071
Time Analyzed	Weekday, PM Peak Hour
Intersection Orientation	East-West
Project Description	MLR EA TIS - Background Traffic

Site Information

Intersection	Front St & Main St
Jurisdiction	MDT
East/West Street	Front Street
North/South Street	Main St / Old Highway 10A
Peak Hour Factor	0.80
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume, V (veh/h)			61	3		31	77			3		24				
Percent Heavy Vehicles (%)						10				10		10				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				No				No		
Median Type/Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						39					34					
Capacity, c (veh/h)						1469					1081					
v/c Ratio						0.03					0.03					
95% Queue Length, Q_{95} (veh)						0.1					0.1					
Control Delay (s/veh)						7.5					8.4					
Level of Service, LOS						A					A					
Approach Delay (s/veh)						2.3					8.4					
Approach LOS											A					

HCS7 Two-Way Stop-Control Report

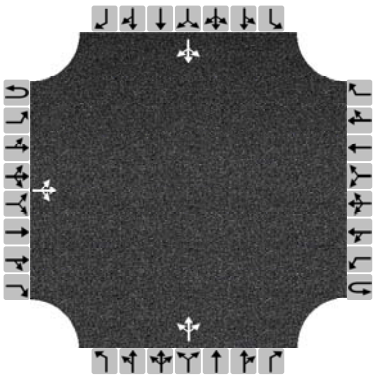
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2071
Time Analyzed	Weekday, AM Peak Hour
Intersection Orientation	East-West
Project Description	MLR EA TIS - Background Traffic

Site Information

Intersection	Front St & Sorensen Ln
Jurisdiction	MDT
East/West Street	Front Street
North/South Street	Sorensen Ln / I-90 EB OR
Peak Hour Factor	0.83
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	0	0		0	1	0		0	1	0
Configuration			LTR								LTR				LTR	
Volume, V (veh/h)		6	27	3						6	1	3		1	4	34
Percent Heavy Vehicles (%)		10								10	10	10		10	10	10
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		7									12				47	
Capacity, c (veh/h)		1572									985				1218	
v/c Ratio		0.00									0.01				0.04	
95% Queue Length, Q_{95} (veh)		0.0									0.0				0.1	
Control Delay (s/veh)		7.3									8.7				8.1	
Level of Service, LOS		A									A				A	
Approach Delay (s/veh)	1.2								8.7				8.1			
Approach LOS									A				A			

HCS7 Two-Way Stop-Control Report

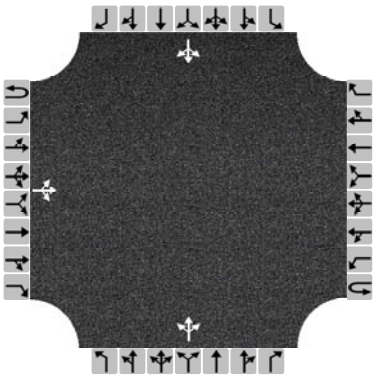
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2071
Time Analyzed	Weekday, PM Peak Hour
Intersection Orientation	East-West
Project Description	MLR EA TIS - Background Traffic

Site Information

Intersection	Front St & Sorensen Ln
Jurisdiction	MDT
East/West Street	Front Street
North/South Street	Sorensen Ln / I-90 EB OR
Peak Hour Factor	0.69
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	0	0		0	1	0		0	1	0
Configuration			LTR								LTR				LTR	
Volume, V (veh/h)		4	54	3						13	2	3		1	7	43
Percent Heavy Vehicles (%)		10								10	10	10		10	10	10
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		6									26				74	
Capacity, c (veh/h)		1572									965				1260	
v/c Ratio		0.00									0.03				0.06	
95% Queue Length, Q_{95} (veh)		0.0									0.1				0.2	
Control Delay (s/veh)		7.3									8.8				8.0	
Level of Service, LOS		A									A				A	
Approach Delay (s/veh)	0.5								8.8				8.0			
Approach LOS									A				A			

Morrison Maierle

engineers ▪ surveyors ▪ planners ▪ scientists

APPENDIX D-7

ESTIMATED 2071 TOTAL TRAFFIC

HCS7 Two-Way Stop-Control Report

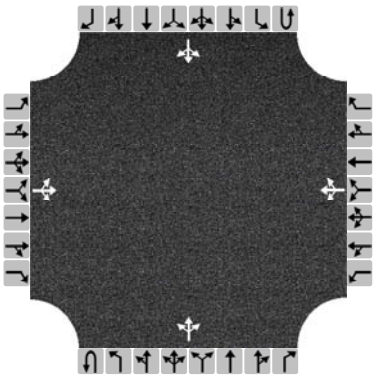
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2071
Time Analyzed	Weekday, AM Peak Hour
Intersection Orientation	North-South
Project Description	MLR EA TIS - Total Traffic

Site Information

Intersection	MT 1 & Old Highway 10A
Jurisdiction	MDT
East/West Street	Old Highway 10A
North/South Street	Montana State Highway 1
Peak Hour Factor	0.84
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	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	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume, V (veh/h)		10	6	2		2	7	7		3	45	1		2	93	7
Percent Heavy Vehicles (%)		5	5	5		5	5	5		5				5		
Proportion Time Blocked																
Percent Grade (%)		-3				3										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			21				19			4				2		
Capacity, c (veh/h)			772				1230			1454				1535		
v/c Ratio			0.03				0.02			0.00				0.00		
95% Queue Length, Q_{95} (veh)			0.1				0.0			0.0				0.0		
Control Delay (s/veh)			9.8				8.0			7.5				7.3		
Level of Service, LOS			A				A			A				A		
Approach Delay (s/veh)		9.8				8.0				0.5				0.2		
Approach LOS		A				A										

HCS7 Two-Way Stop-Control Report

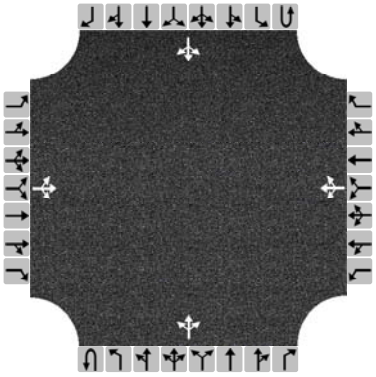
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2071
Time Analyzed	Weekday, PM Peak Hour
Intersection Orientation	North-South
Project Description	MLR EA TIS - Total Traffic

Site Information

Intersection	MT 1 & Old Highway 10A
Jurisdiction	MDT
East/West Street	Old Highway 10A
North/South Street	Montana State Highway 1
Peak Hour Factor	0.91
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	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	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume, V (veh/h)		6	7	3		1	5	2		2	109	2		5	72	8
Percent Heavy Vehicles (%)		5	5	5		5	5	5		5				5		
Proportion Time Blocked																
Percent Grade (%)		-3				3										
Right Turn Channelized		No				No				No				No		
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			18				9			2				5		
Capacity, c (veh/h)			754				866			1492				1450		
v/c Ratio			0.02				0.01			0.00				0.00		
95% Queue Length, Q_{95} (veh)			0.1				0.0			0.0				0.0		
Control Delay (s/veh)			9.9				9.2			7.4				7.5		
Level of Service, LOS			A				A			A				A		
Approach Delay (s/veh)		9.9				9.2				0.1				0.5		
Approach LOS		A				A										

HCS7 Two-Way Stop-Control Report

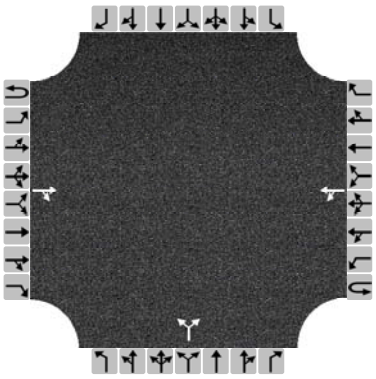
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2071
Time Analyzed	Weekday, AM Peak Hour
Intersection Orientation	East-West
Project Description	MLR EA TIS - Total Traffic

Site Information

Intersection	Front St & Main St
Jurisdiction	MDT
East/West Street	Front Street
North/South Street	Main St / Old Highway 10A
Peak Hour Factor	0.80
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume, V (veh/h)			56	9		10	59			12		11				
Percent Heavy Vehicles (%)						10				10		10				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				No				No		
Median Type/Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						13					29					
Capacity, c (veh/h)						1468					1516					
v/c Ratio						0.01					0.02					
95% Queue Length, Q_{95} (veh)						0.0					0.1					
Control Delay (s/veh)						7.5					7.4					
Level of Service, LOS						A					A					
Approach Delay (s/veh)						1.1					7.4					
Approach LOS											A					

HCS7 Two-Way Stop-Control Report

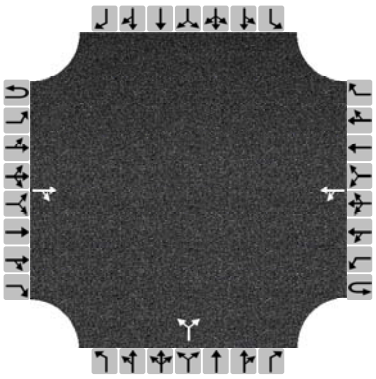
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2071
Time Analyzed	Weekday, PM Peak Hour
Intersection Orientation	East-West
Project Description	MLR EA TIS - Total Traffic

Site Information

Intersection	Front St & Main St
Jurisdiction	MDT
East/West Street	Front Street
North/South Street	Main St / Old Highway 10A
Peak Hour Factor	0.80
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume, V (veh/h)			61	4		32	78			5		27				
Percent Heavy Vehicles (%)						10				10		10				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No				No				No				No		
Median Type/Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						40					40					
Capacity, c (veh/h)						1468					1137					
v/c Ratio						0.03					0.04					
95% Queue Length, Q_{95} (veh)						0.1					0.1					
Control Delay (s/veh)						7.5					8.3					
Level of Service, LOS						A					A					
Approach Delay (s/veh)						2.3					8.3					
Approach LOS											A					

HCS7 Two-Way Stop-Control Report

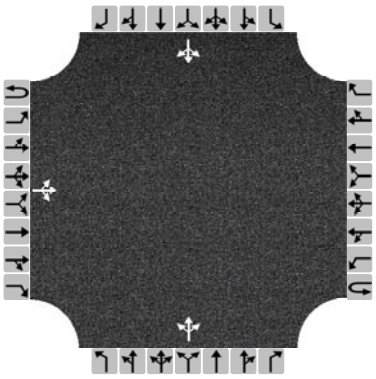
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2071
Time Analyzed	Weekday, AM Peak Hour
Intersection Orientation	East-West
Project Description	MLR EA TIS - Total Traffic

Site Information

Intersection	Front St & Sorensen Ln
Jurisdiction	MDT
East/West Street	Front Street
North/South Street	Sorensen Ln / I-90 EB OR
Peak Hour Factor	0.83
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	0	0		0	1	0		0	1	0
Configuration			LTR								LTR				LTR	
Volume, V (veh/h)		6	29	3						6	1	3		1	4	36
Percent Heavy Vehicles (%)		10								10	10	10		10	10	10
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		7									12				49	
Capacity, c (veh/h)		1572									984				1209	
v/c Ratio		0.00									0.01				0.04	
95% Queue Length, Q_{95} (veh)		0.0									0.0				0.1	
Control Delay (s/veh)		7.3									8.7				8.1	
Level of Service, LOS		A									A				A	
Approach Delay (s/veh)	1.2								8.7				8.1			
Approach LOS									A				A			

HCS7 Two-Way Stop-Control Report

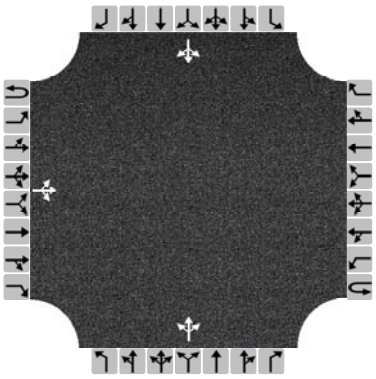
General Information

Analyst	T. Eastwood
Agency/Co.	Morrison-Maierle
Date Performed	6/27/2019
Analysis Year	2071
Time Analyzed	Weekday, PM Peak Hour
Intersection Orientation	East-West
Project Description	MLR EA TIS - Total Traffic

Site Information

Intersection	Front St & Sorensen Ln
Jurisdiction	MDT
East/West Street	Front Street
North/South Street	Sorensen Ln / I-90 EB OR
Peak Hour Factor	0.69
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	0	0		0	1	0		0	1	0
Configuration			LTR								LTR				LTR	
Volume, V (veh/h)		4	54	3						13	2	3		1	7	44
Percent Heavy Vehicles (%)		10								10	10	10		10	10	10
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		6									26				75	
Capacity, c (veh/h)		1572									965				1255	
v/c Ratio		0.00									0.03				0.06	
95% Queue Length, Q_{95} (veh)		0.0									0.1				0.2	
Control Delay (s/veh)		7.3									8.8				8.1	
Level of Service, LOS		A									A				A	
Approach Delay (s/veh)	0.5								8.8				8.1			
Approach LOS									A				A			

Morrison Maierle

engineers ▪ surveyors ▪ planners ▪ scientists

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