

MEMORANDUM

To: City of Steamboat Springs Development and Engineering Departments

From: Cassie Slade, PE, PTOE

Date: April 11, 2024

Project: Mountain Village Apartments – Steamboat Springs, Colorado

Subject: Trip Generation Letter

The Fox Tuttle Transportation Group has completed a transportation analysis for the proposed redevelopment of the property located in the southwest corner of Walton Creek Road and Village Drive in Steamboat Springs, Colorado. **Figure 1** provides the location of the project site. Currently, the site has a single, multi-story office building which will be converted to housing with eight (8) apartments. The vacant property around the existing building will have new construction that will include two (2) new buildings with 30 new apartments. The Mountain Village Apartments will provide a total of 38 units, with 12 units being designated as workforce. It is understood that the residential project will maintain the existing two (2) accesses on Village Drive with improvements as necessary and an internal connection.

The purpose of this "trip generation memo" is to determine how many trips would be generated by the proposed project and the percentage of increased traffic on Village Drive.

Existing Conditions

Existing traffic volumes were gathered from the Village Drive Townhomes Trip Generation Letter (McDowell Engineering, March 2020). Counts were collected in March 2019 on one weekday and one weekend day at the intersection of Walton Creek Road and Village Drive. To represent increases in traffic, the previous counts were conservatively increased by an annual growth rate of 3%. In addition to the direct growth of the existing traffic, the trips associated with the Village Drive Townhomes that will be across the street were added to the subject intersection. The adjusted existing volumes for Year 2024 are shown on **Figure 1**.

Trip Generation

To estimate the volume of trips associated with the proposed 38 apartments (12 considered workforce), the data contained in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*¹ was applied to the most applicable land use category. The future residents are anticipated to experience new and non-auto trips, which are discussed below:

Primary Trips. These trips are made specifically to visit the site and are considered "new" trips. Primary trips would not have been made if the proposed project did not exist. Therefore, this is the only trip type that increases the total number of trips made on a regional basis.

Non-Auto Trips. Given the proximity to multi-modal facilities and recreational areas, it is anticipated that there will be some non-auto trips that occur externally and internally. For the purpose of this analysis, it was assumed there will be 5% multi-modal travel. This is consistent with assumptions in the *Village Drive Townhomes Trip Generation Letter*. It is likely this is a conservatively low percentage of multi-modal travel this this area in Steamboat has a high frequency of transit and close proximity to multi-use paths.

Table 1 summarizes the estimated total trips for the current site plan for weekday daily and weekday AM and PM peak period.

Table 1. Trip Generation Estimate

Land Use	Size	Unit	Non-Auto Factor	Weekday								Saturday			
				Average Daily				AM Peak Hour				PM Peak Hour			
				Rate	Total	In	Out	Rate	Total	In	Out	Rate	Total	In	Out
#220 - Multifamily Housing (Low-Rise)	26	du	0.95	6.74	166	83	83	0.40	10	2	8	0.51	13	8	5
#223 - Affordable Housing, Income Limits [Workforce]	12	du	0.95	4.81	52	26	26	0.50	6	2	4	0.46	5	3	2
Total New Trips				218	109	109		16	4	12		18	11	7	

Source: ITE Trip Generation 11th Edition, 2021.

It was estimated that the proposed apartments will generate up to 218 vehicle trips per day (vpd) with up to 16 vehicles per hour (vph) in the AM peak hour, up to 18 vph in the PM peak hour, and up to 24 in the Saturday peak hour.

¹ *Trip Generation Manual*. 11th Edition. Institute of Transportation Engineers. Washington, DC. 2021.

Trip Distribution and Assignment

The estimated trip volumes were distributed through the two (2) accesses and the intersection of Village Drive and Walton Creek Road based on existing traffic characteristics, land uses, and traffic patterns in the area. The overall assumed distribution percentages are listed below:

- 50% to/from west Walton Creek Road (towards US 40)
- 10% to/from east Walton Creek Road (towards Mt. Werner Mountain)
- 35% to/from north Village Drive (towards Ski Town)
- 5% to/from south Village Drive (into neighborhood)

These percentages are based on existing traffic volumes at the intersection of Walton Creek Road at Village Drive and based on local and regional destinations. Using these distribution assumptions, the projected site-generated trips from **Table 1** were assigned to the intersection of Walton Creek Road at Village Drive for the weekday AM and PM peak hours. **Figure 1** summarizes the trip assignment and provides the total traffic by adding the project trips to the existing volumes.

Capacity Analysis

The intersection capacity was evaluated using Synchro software (v11) with the *Highway Capacity Manual (HCM)*² methodology to determine review the anticipated delay and queuing at the intersection of Walton Creek Road at Village Drive. The capacity analysis included two scenarios: (1) Existing and (2) Existing plus Project. The calculated Levels of Service (LOS) and the estimated 95th percentile queue lengths are provided on **Table 2**.

Table 2. Peak Hour Intersection Capacity and Queue Summary

Intersections and Lane Groups	2024 Existing									Year 2024 + Project								
	AM Peak			PM Peak			Saturday Peak			AM Peak			PM Peak			Saturday Peak		
	Delay	LOS	95th % Queue	Delay	LOS	95th % Queue	Delay	LOS	95th % Queue	Delay	LOS	95th % Queue	Delay	LOS	95th % Queue	Delay	LOS	95th % Queue
STOP SIGN CONTROL																		
1. Walton Creek Road at Village Drive	12	B		10	A		11	B		14	B		10	B		13	B	
Eastbound Left+Through+Right	8	A	10'	8	A	8'	8	A	10'	8	A	10'	8	A	8'	8	A	10'
Westbound Left+Through+Right	7	A	0'	8	A	0'	8	A	0'	7	A	0'	8	A	0'	8	A	0'
Northbound Left+Through+Right	32	D	93'	29	D	60'	28	D	63'	35	E	110'	31	D	68'	33	D	80'
Southbound Left+Through	18	C	20'	20	C	35'	25	C	53'	19	C	23'	20	C	38'	26	D	58'
Southbound Right	9	A	8'	10	A	15'	10	A	13'	9	A	8'	10	A	15'	10	A	13'

² *Highway Capacity Manual*. Highway Research Board Special Report 209, Transportation Research Board, National Research Council, 6th Edition (2016).

The analysis indicated that the northbound approach currently has the highest delay of the intersection in the AM peak hour with an average of 32 seconds of delay per vehicle and the 95th percentile queue estimated to extend 93 feet (about four vehicles). With the added trip volumes, this approach was shown to experience an additional 3.6 seconds of delay and 17 feet of queue (one vehicle or less) in the AM peak hour.

During the evening and weekend peak hours, the side-street movements were estimated to operate at LOS C or LOS D with the 95th percentile queues up to three (3) vehicles. The addition of the Mountain Village Apartment trips slightly increases the delay on the northbound approach; estimated to increase by up to two (2) seconds in the PM peak hour and up to four (4) seconds in the Saturday peak hour.

Per the *Village Drive Townhomes Trip Generation Letter*, an all-way stop was not recommended at the intersection of Walton Creek Road and Village Drive due to the steep grades on Walton Creek Road in the westbound direction. Based on a high-level evaluation, the intersection volumes will likely not meet thresholds to warrant a signal.

Change in Intersection Traffic Volumes

The Mountain Village Apartments will add between 2.1% and 3.4% vehicles depending on the peak hour. **Table 3** summarizes the comparison of trips associated with the project and the total traffic in Year 2024 [existing + Village Drive Townhomes + Mountain Village Apartments].

Table 3. Increase in Intersection Traffic Volumes

	AM	PM	SAT
Total	624	754	703
Trips	16	16	24
Percent	2.6%	2.1%	3.4%

Conclusions

The Mountain Village Apartments project proposes to redevelop and construct 38 apartments located in Steamboat Springs, CO. In summary, the Mountain Village Apartments have minimal impact on the existing traffic conditions at the intersection of Walton Creek Road and Village Drive. Access will be planned to be provided with the two (2) existing full-movement, side-street stop-control accesses on Village Drive. The project is anticipated to generate up to 218 weekday daily trips and up to 24 trips in peak hours. **It is anticipated that the existing roadway network and intersections can accommodate the project trips without the need for additional analysis or mitigation measures.** If intersection improvements are needed at Walton Creek Road and Village Drive, this project contribution requirement would be up to 3.4%.

Mountain Village Apartments

Trip Generation Memo

April 11, 2024

Hopefully, the contents of this memorandum are helpful. If you have any questions, please give me a call.

Sincerely,

FOX TUTTLE TRANSPORTATION GROUP, LLC



Cassie Slade, P.E., PTOE
Principal



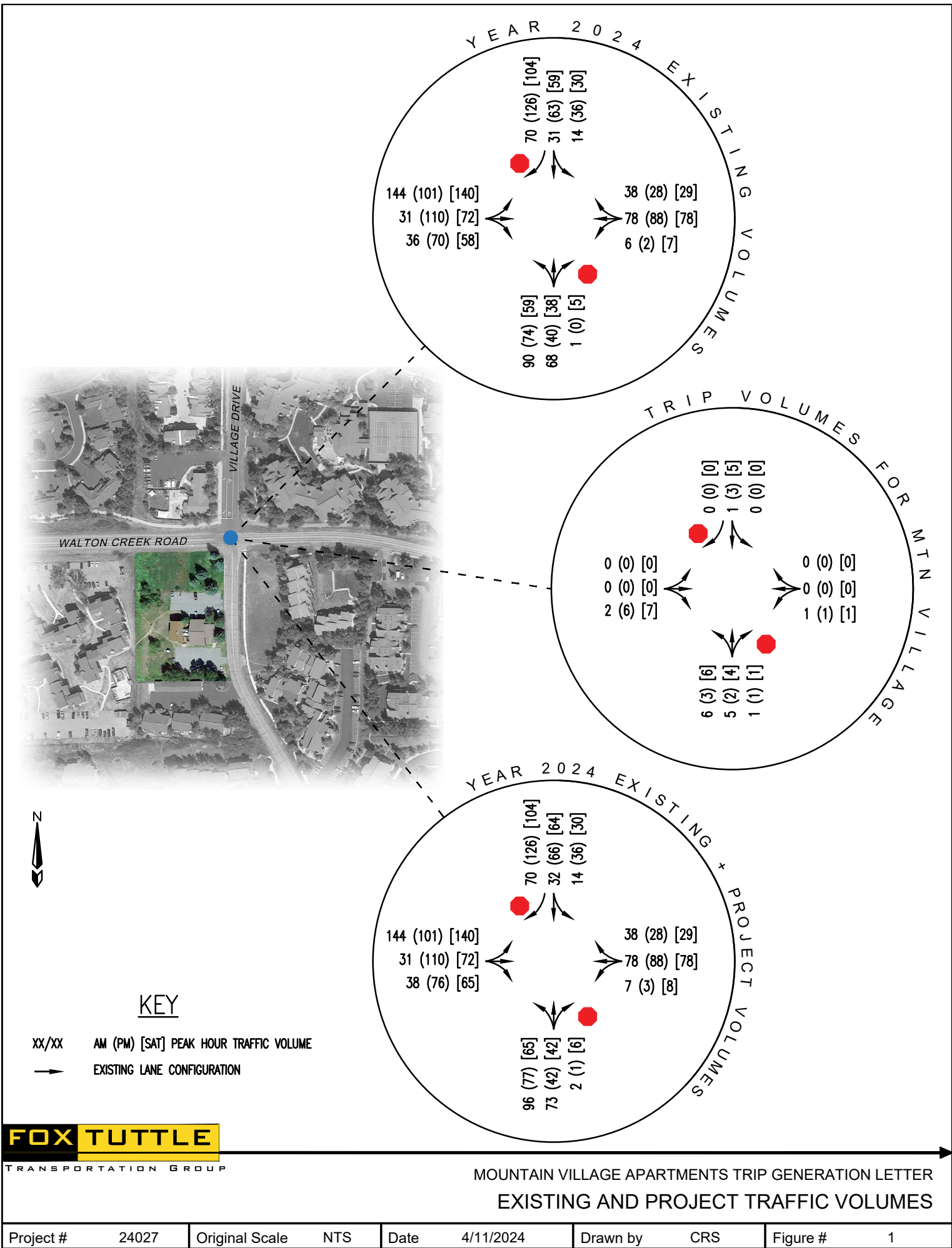
Attachments:

Figure 1 – Existing and Project Volumes

Traffic Scoping Form

Traffic Counts

Intersection Capacity Analysis Worksheets



CITY OF STEAMBOAT SPRINGS ENGINEERING STANDARDS
Attachment A
TRAFFIC IMPACT STUDY – SCOPE APPROVAL FORM

Prior to starting a traffic impact study, a Scope Approval Form must be submitted for review and signed by the City Public Works Director. It shall be included in every traffic study submittal as Attachment A. This Scope Approval Form is for City requirements only. Consultants must contact CDOT to determine requirements related to access permits and work in CDOT right-of-way.

Project Information

Project Name:	Village Drive Apartments
Project Location:	Lots 1 and 2, Mountain Office Park Subdivision NW Corner of Village Drive and Walton Creek Road
Developer Name/ Contact Number:	Sunscope, LLC. (817)-881-6608
Traffic Engineer Name/ Contact Number:	Four Points Surveying and Engineering - Walter Magill Fox Tuttle Transportation Group, Cassie Slade (303)-652-3571

Study Parameters

Type of Study Required: ☒ Trip Generation Letter ☐ Long-term Traffic Study
 ☐ Short-term Traffic Study ☐ Trip Evaluation Letter

Traffic Counts

☐ Winter Zone ☐ Summer Zone
☐ Counts w/in last 2 years are available
☐ New counts will be collected on _____
☒ Existing counts will be estimated based on: 2019 counts increased by 3% a year
☒ Future counts will be estimated based on a 3% growth rate.

Peak Hours Analyzed

☐ AM Peak Hour ☐ PM peak hour ☒ Other _____

Trip Generation Rates

☒ From ITE ☐ Other (cite) _____
☐ No passby or mode split (typical)
☐ Passby or mode split (describe) _____

Trip Distribution – Attach sketch A-1

Study Parameters

List of Study Area Intersections

1.	Village Drive and Walton Creek Road	
2.		
3.		
4.		
5.		
6.		
7.		

Key Analysis items

- ☒ Peak Hour LOS at study intersections
- ☐ % Site contribution to signal at _____
- ☐ Auxiliary lane evaluation at ___study area intersections_____
- ☐ Traffic signal warrants at _____
- ☐ Queuing Analysis at _____
- ☐ Other_ped, bike, and transit facility analysis

Approvals

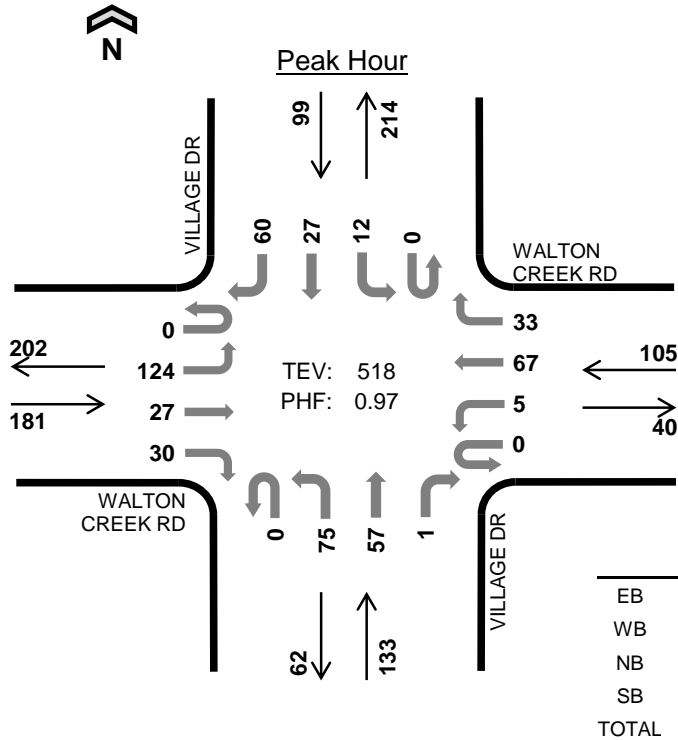
Walter Magill	3-19-2024	970-819-1161
Prepared By:	Date	Phone
(insert traffic engineer name, firm)		

Approved By:

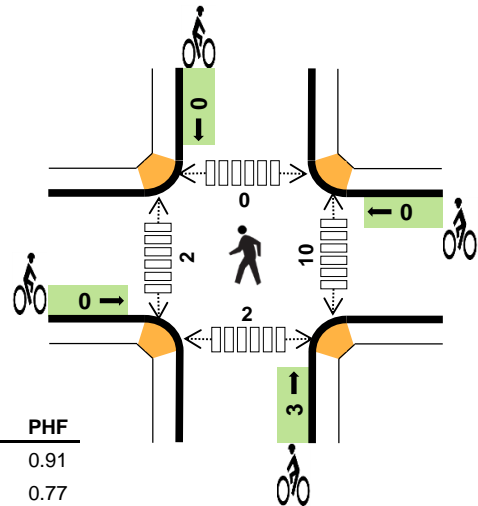
Ben Beall	Date	Phone
City Engineer		

Traffic Study: Approved scope missing?

VILLAGE DR WALTON CREEK RD



Date: Thu, Mar 14, 2019
Count Period: 7:00 AM to 11:00 AM
Peak Hour: 7:45 AM to 8:45 AM



Four-Hour Count Summaries

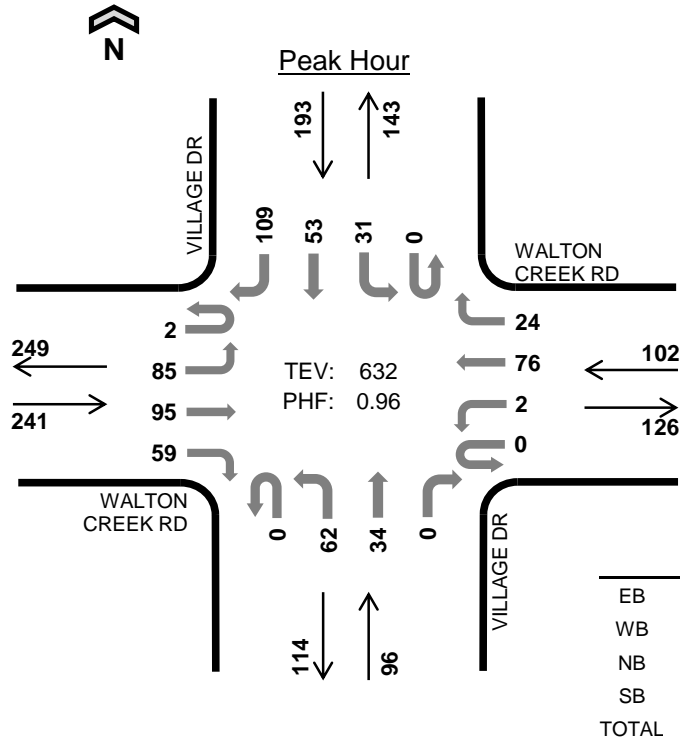
Interval Start	WALTON CREEK RD				WALTON CREEK RD				VILLAGE DR				VILLAGE DR				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:45 AM	0	33	4	8	0	1	25	8	0	17	16	0	0	1	8	12	133	0
8:00 AM	0	34	9	7	0	1	16	5	0	24	13	1	0	2	4	13	129	0
8:15 AM	0	29	5	7	0	0	13	12	0	17	15	0	0	3	5	16	122	0
8:30 AM	0	28	9	8	0	3	13	8	0	17	13	0	0	6	10	19	134	518
Peak Hour	0	124	27	30	0	5	67	33	0	75	57	1	0	12	27	60	518	0

Note: For all three-hour count summary, see next page.

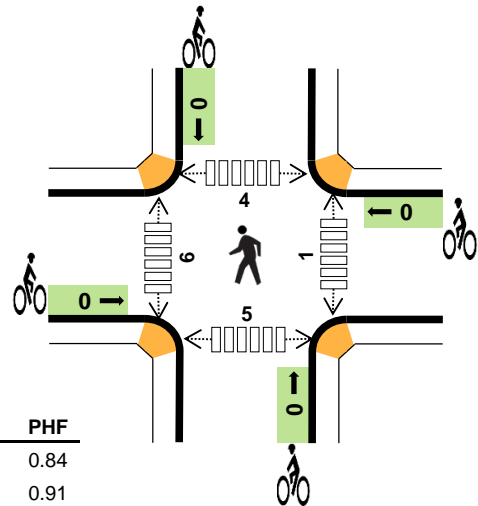
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:45 AM	2	2	0	3	7	0	0	1	0	1	2	1	0	2	5
8:00 AM	3	3	0	1	7	0	0	1	0	1	3	0	0	0	3
8:15 AM	3	4	0	3	10	0	0	1	0	1	5	1	0	0	6
8:30 AM	4	2	2	7	15	0	0	0	0	0	0	0	0	0	0
Peak Hour	12	11	2	14	39	0	0	3	0	3	10	2	0	2	14

Four-Hour Count Summaries																		
Interval Start	WALTON CREEK RD				WALTON CREEK RD				VILLAGE DR				VILLAGE DR				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	15	6	11	0	0	8	1	0	4	8	0	0	3	3	6	65	0
7:15 AM	0	17	7	5	0	0	10	7	0	8	6	0	0	0	4	5	69	0
7:30 AM	0	28	9	2	0	2	16	4	0	12	12	1	0	2	6	8	102	0
7:45 AM	0	33	4	8	0	1	25	8	0	17	16	0	0	1	8	12	133	369
8:00 AM	0	34	9	7	0	1	16	5	0	24	13	1	0	2	4	13	129	433
8:15 AM	0	29	5	7	0	0	13	12	0	17	15	0	0	3	5	16	122	486
8:30 AM	0	28	9	8	0	3	13	8	0	17	13	0	0	6	10	19	134	518
8:45 AM	0	29	6	9	0	0	24	4	0	15	12	1	0	5	4	19	128	513
9:00 AM	0	23	15	7	0	0	15	8	0	16	11	0	0	5	11	20	131	515
9:15 AM	0	21	4	6	0	1	10	6	0	15	3	1	0	6	5	20	98	491
9:30 AM	0	13	8	6	0	0	16	3	0	12	8	0	0	4	4	10	84	441
9:45 AM	0	24	10	8	0	0	16	9	0	16	9	2	0	3	4	24	125	438
10:00 AM	0	23	12	10	0	2	13	7	0	14	10	0	0	2	3	19	115	422
10:15 AM	0	10	11	9	0	0	13	2	0	19	11	0	0	7	11	12	105	429
10:30 AM	0	13	16	10	0	1	13	7	0	12	4	4	0	3	9	9	101	446
10:45 AM	0	13	11	12	0	2	19	5	0	12	11	2	0	6	6	13	112	433
Count Total	0	353	142	125	0	13	240	96	0	230	162	12	0	58	97	225	1,753	0
Peak Hour	0	124	27	30	0	5	67	33	0	75	57	1	0	12	27	60	518	0
Note: Four-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.																		
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)					Total		
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total			
7:00 AM	2	1	0	1	4	0	0	0	0	0	1	0	1	0	2			
7:15 AM	4	3	0	1	8	0	0	0	0	0	1	0	0	0	1			
7:30 AM	3	3	1	4	11	0	0	2	0	2	2	0	0	0	2			
7:45 AM	2	2	0	3	7	0	0	1	0	1	2	1	0	2	5			
8:00 AM	3	3	0	1	7	0	0	1	0	1	3	0	0	0	3			
8:15 AM	3	4	0	3	10	0	0	1	0	1	5	1	0	0	6			
8:30 AM	4	2	2	7	15	0	0	0	0	0	0	0	0	0	0			
8:45 AM	4	3	1	3	11	0	0	0	0	0	2	1	0	0	3			
9:00 AM	4	3	1	3	11	0	0	0	1	1	3	0	0	0	3			
9:15 AM	0	2	0	8	10	0	0	1	0	1	0	0	0	0	0			
9:30 AM	4	1	0	3	8	0	0	0	0	0	1	0	3	0	4			
9:45 AM	2	3	1	2	8	0	0	0	0	0	0	0	0	0	0			
10:00 AM	4	2	0	2	8	0	0	0	0	0	1	0	0	1	2			
10:15 AM	4	2	0	7	13	0	0	0	1	1	2	0	0	0	2			
10:30 AM	3	3	1	4	11	0	0	0	0	0	3	2	0	1	6			
10:45 AM	4	2	1	2	9	0	0	0	1	1	2	1	0	0	3			
Count Total	50	39	8	54	151	0	0	6	3	9	28	6	4	4	42			
Peak Hour	12	11	2	14	39	0	0	3	0	3	10	2	0	2	14			

VILLAGE DR WALTON CREEK RD



Date: Thu, Mar 14, 2019
Count Period: 3:00 PM to 7:00 PM
Peak Hour: 4:45 PM to 5:45 PM



	HV %:	PHF
EB	3.7%	0.84
WB	5.9%	0.91
NB	1.0%	0.92
SB	7.8%	0.86
TOTAL	4.9%	0.96

Four-Hour Count Summaries

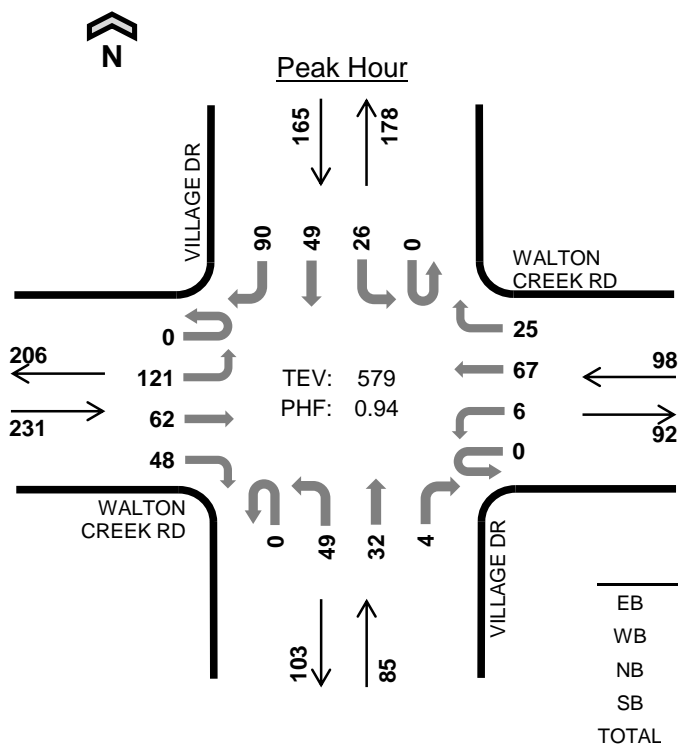
Interval Start	WALTON CREEK RD				WALTON CREEK RD				VILLAGE DR				VILLAGE DR				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:45 PM	0	22	18	14	0	0	20	8	0	18	8	0	0	10	8	27	153	0
5:00 PM	0	17	25	11	0	0	14	7	0	14	6	0	0	9	14	33	150	0
5:15 PM	1	24	20	17	0	1	21	6	0	16	10	0	0	4	16	28	164	0
5:30 PM	1	22	32	17	0	1	21	3	0	14	10	0	0	8	15	21	165	632
Peak Hour	2	85	95	59	0	2	76	24	0	62	34	0	0	31	53	109	632	0

Note: For all three-hour count summary, see next page.

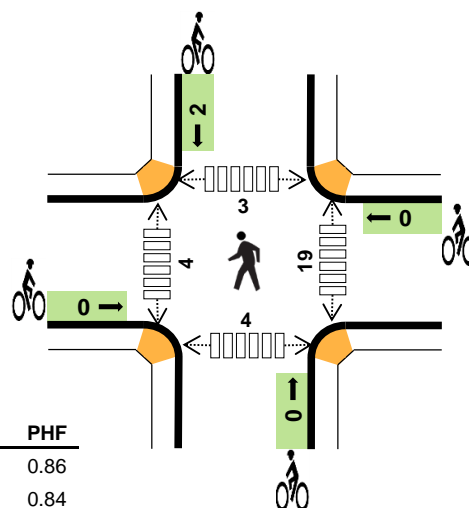
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:45 PM	3	1	0	5	9	0	0	0	0	0	1	1	2	0	4
5:00 PM	2	2	1	4	9	0	0	0	0	0	0	4	0	3	7
5:15 PM	2	2	0	2	6	0	0	0	0	0	0	1	2	2	5
5:30 PM	2	1	0	4	7	0	0	0	0	0	0	0	0	0	0
Peak Hour	9	6	1	15	31	0	0	0	0	0	1	6	4	5	16

Four-Hour Count Summaries																		
Interval Start	WALTON CREEK RD				WALTON CREEK RD				VILLAGE DR				VILLAGE DR				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
3:00 PM	0	21	18	12	0	1	12	5	0	13	4	3	0	4	15	18	126	0
3:15 PM	0	17	19	13	0	2	11	5	0	11	7	0	0	9	12	19	125	0
3:30 PM	0	21	19	7	0	0	13	8	0	13	11	0	0	6	10	20	128	0
3:45 PM	0	21	17	12	0	0	18	5	0	18	6	0	0	7	15	27	146	525
4:00 PM	0	20	19	13	0	0	14	5	0	14	10	1	0	11	12	30	149	548
4:15 PM	0	25	24	21	0	0	11	7	0	15	7	0	0	5	15	25	155	578
4:30 PM	0	23	16	17	0	0	18	8	0	9	7	1	0	7	17	27	150	600
4:45 PM	0	22	18	14	0	0	20	8	0	18	8	0	0	10	8	27	153	607
5:00 PM	0	17	25	11	0	0	14	7	0	14	6	0	0	9	14	33	150	608
5:15 PM	1	24	20	17	0	1	21	6	0	16	10	0	0	4	16	28	164	617
5:30 PM	1	22	32	17	0	1	21	3	0	14	10	0	0	8	15	21	165	632
5:45 PM	0	21	21	20	0	1	14	4	0	11	10	3	0	4	11	23	143	622
6:00 PM	0	19	20	15	0	1	18	2	0	18	6	0	0	4	14	29	146	618
6:15 PM	0	16	20	17	0	0	12	6	0	14	6	0	0	5	14	10	120	574
6:30 PM	0	18	23	8	0	0	12	5	0	8	6	0	0	7	6	14	107	516
6:45 PM	0	14	18	13	0	1	11	1	0	10	5	0	0	5	16	16	110	483
Count Total	2	321	329	227	0	8	240	85	0	216	119	8	0	105	210	367	2,237	0
Peak Hour	2	85	95	59	0	2	76	24	0	62	34	0	0	31	53	109	632	0
Note: Four-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.																		
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)					Total		
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South				
3:00 PM	4	3	0	3	10	0	0	0	1	1	1	1	0	0	2			
3:15 PM	2	2	0	4	8	0	0	0	2	2	2	5	0	0	7			
3:30 PM	1	4	0	3	8	0	0	0	1	1	2	1	0	0	3			
3:45 PM	2	4	0	9	15	0	0	0	1	1	3	3	1	0	7			
4:00 PM	6	1	1	2	10	0	0	0	0	0	0	0	0	1	1			
4:15 PM	2	4	0	4	10	0	0	0	1	1	2	0	0	0	2			
4:30 PM	2	3	1	4	10	0	0	0	0	0	2	1	2	0	5			
4:45 PM	3	1	0	5	9	0	0	0	0	0	1	1	2	0	4			
5:00 PM	2	2	1	4	9	0	0	0	0	0	0	4	0	3	7			
5:15 PM	2	2	0	2	6	0	0	0	0	0	0	1	2	2	5			
5:30 PM	2	1	0	4	7	0	0	0	0	0	0	0	0	0	0			
5:45 PM	7	3	0	4	14	0	0	0	1	1	0	0	0	0	0			
6:00 PM	3	3	0	0	6	0	0	0	0	0	0	0	0	0	0			
6:15 PM	2	0	0	1	3	0	0	0	0	0	5	0	2	0	7			
6:30 PM	6	3	0	2	11	0	0	0	0	0	0	1	0	3	4			
6:45 PM	1	1	0	3	5	0	0	0	0	0	4	3	1	0	8			
Count Total	47	37	3	54	141	0	0	0	7	7	22	21	10	9	62			
Peak Hour	9	6	1	15	31	0	0	0	0	0	1	6	4	5	16			

VILLAGE DR WALTON CREEK RD



Date: Sat, Mar 16, 2019
Count Period: 11:00 AM to 3:00 PM
Peak Hour: 2:00 PM to 3:00 PM



	HV %:	PHF
EB	6.9%	0.86
WB	8.2%	0.84
NB	2.4%	0.89
SB	13.3%	0.83
TOTAL	8.3%	0.94

Four-Hour Count Summaries

Interval Start	WALTON CREEK RD				WALTON CREEK RD				VILLAGE DR				VILLAGE DR				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	33	7	5	0	2	13	7	0	14	7	1	0	13	8	29	139	0
2:15 PM	0	27	17	16	0	2	18	6	0	10	14	0	0	6	16	22	154	0
2:30 PM	0	29	16	14	0	0	15	6	0	12	6	2	0	3	13	19	135	0
2:45 PM	0	32	22	13	0	2	21	6	0	13	5	1	0	4	12	20	151	579
Peak Hour	0	121	62	48	0	6	67	25	0	49	32	4	0	26	49	90	579	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	3	3	1	8	15	0	0	0	0	0	6	0	0	2	8
2:15 PM	2	3	0	6	11	0	0	0	2	2	5	1	0	0	6
2:30 PM	5	1	1	4	11	0	0	0	0	0	2	2	3	0	7
2:45 PM	6	1	0	4	11	0	0	0	0	0	6	1	0	2	9
Peak Hour	16	8	2	22	48	0	0	0	2	2	19	4	3	4	30

Four-Hour Count Summaries																		
Interval Start	WALTON CREEK RD				WALTON CREEK RD				VILLAGE DR				VILLAGE DR				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
11:00 AM	0	25	14	13	0	0	11	4	0	11	10	1	0	1	6	21	117	0
11:15 AM	0	17	17	3	0	1	9	9	0	13	15	1	0	4	10	19	118	0
11:30 AM	0	14	18	16	0	1	15	5	0	14	11	0	0	5	3	12	114	0
11:45 AM	0	24	10	11	0	1	21	7	0	15	9	1	0	3	10	12	124	473
12:00 PM	0	21	23	17	0	2	11	6	0	11	7	0	0	4	9	15	126	482
12:15 PM	0	23	14	14	0	0	14	5	0	10	10	1	0	9	11	11	122	486
12:30 PM	0	17	13	12	0	1	14	4	0	13	12	1	1	4	6	17	115	487
12:45 PM	0	16	18	6	0	1	18	5	0	15	9	0	0	4	10	15	117	480
1:00 PM	0	17	13	10	0	1	14	8	0	7	8	2	0	4	8	12	104	458
1:15 PM	0	17	21	11	0	0	15	6	0	13	5	2	0	7	10	17	124	460
1:30 PM	0	24	13	14	0	1	13	3	0	12	6	1	0	5	15	13	120	465
1:45 PM	0	25	19	8	0	1	16	9	0	15	7	1	0	1	15	15	132	480
2:00 PM	0	33	7	5	0	2	13	7	0	14	7	1	0	13	8	29	139	515
2:15 PM	0	27	17	16	0	2	18	6	0	10	14	0	0	6	16	22	154	545
2:30 PM	0	29	16	14	0	0	15	6	0	12	6	2	0	3	13	19	135	560
2:45 PM	0	32	22	13	0	2	21	6	0	13	5	1	0	4	12	20	151	579
Count Total	0	361	255	183	0	16	238	96	0	198	141	15	1	77	162	269	2,012	0
Peak Hour	0	121	62	48	0	6	67	25	0	49	32	4	0	26	49	90	579	0
Note: Four-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.																		
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)					Total		
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South				
11:00 AM	4	2	1	3	10	0	0	0	0	0	11	0	4	2	17			
11:15 AM	2	1	0	4	7	0	0	0	0	0	2	1	0	0	3			
11:30 AM	3	1	0	3	7	0	0	0	0	0	3	0	1	0	4			
11:45 AM	1	1	0	2	4	0	0	0	0	0	1	0	1	0	2			
12:00 PM	5	1	0	2	8	0	0	0	0	0	4	2	0	0	6			
12:15 PM	5	3	0	4	12	0	0	0	0	0	2	0	0	0	2			
12:30 PM	1	1	0	3	5	0	1	0	0	1	5	1	1	0	7			
12:45 PM	2	1	0	2	5	0	0	1	0	1	7	0	1	0	8			
1:00 PM	2	1	0	2	5	0	0	1	0	1	4	3	1	0	8			
1:15 PM	3	3	0	4	10	1	0	0	0	1	0	0	0	0	0			
1:30 PM	3	1	0	3	7	0	0	2	0	2	4	0	0	0	4			
1:45 PM	3	2	0	2	7	0	0	0	0	0	3	0	1	0	4			
2:00 PM	3	3	1	8	15	0	0	0	0	0	6	0	0	2	8			
2:15 PM	2	3	0	6	11	0	0	0	2	2	5	1	0	0	6			
2:30 PM	5	1	1	4	11	0	0	0	0	0	2	2	3	0	7			
2:45 PM	6	1	0	4	11	0	0	0	0	0	6	1	0	2	9			
Count Total	50	26	3	56	135	1	1	4	2	8	65	11	13	6	95			
Peak Hour	16	8	2	22	48	0	0	0	2	2	19	4	3	4	30			

Intersection												
Int Delay, s/veh	12.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↗
Traffic Vol, veh/h	144	31	36	6	78	38	90	68	1	14	31	70
Future Vol, veh/h	144	31	36	6	78	38	90	68	1	14	31	70
Conflicting Peds, #/hr	0	0	2	2	0	0	2	0	10	10	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	75	94	42	67	69	78	89	25	50	68	79
Heavy Vehicles, %	2	7	2	2	11	2	2	2	2	2	14	2
Mvmt Flow	158	41	38	14	116	55	115	76	4	28	46	89

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	171	0	0	81	0	0	619	577	72	598	569	146
Stage 1	-	-	-	-	-	-	378	378	-	172	172	-
Stage 2	-	-	-	-	-	-	241	199	-	426	397	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.64	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.64	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.64	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.126	3.318
Pot Cap-1 Maneuver	1406	-	-	1517	-	-	401	427	990	414	416	901
Stage 1	-	-	-	-	-	-	644	615	-	830	734	-
Stage 2	-	-	-	-	-	-	762	736	-	606	583	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1406	-	-	1514	-	-	294	372	979	312	362	899
Mov Cap-2 Maneuver	-	-	-	-	-	-	294	372	-	312	362	-
Stage 1	-	-	-	-	-	-	567	541	-	732	727	-
Stage 2	-	-	-	-	-	-	636	729	-	453	513	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	5.2	0.6	31.5	13.5
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	325	1406	-	-	1514	-	-	341	899
HCM Lane V/C Ratio	0.602	0.113	-	-	0.009	-	-	0.216	0.099
HCM Control Delay (s)	31.5	7.9	0	-	7.4	0	-	18.4	9.4
HCM Lane LOS	D	A	A	-	A	A	-	C	A
HCM 95th %tile Q(veh)	3.7	0.4	-	-	0	-	-	0.8	0.3

Intersection												
Int Delay, s/veh	9.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↗
Traffic Vol, veh/h	101	110	70	2	88	28	74	40	0	36	63	126
Future Vol, veh/h	101	110	70	2	88	28	74	40	0	36	63	126
Conflicting Peds, #/hr	4	0	5	5	0	4	6	0	1	1	0	6
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	74	87	50	91	75	86	85	25	78	83	83
Heavy Vehicles, %	2	4	2	2	6	2	2	1	2	2	8	2
Mvmt Flow	113	149	80	4	97	37	86	47	0	46	76	152

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	138	0	0	234	0	0	664	566	195	568	588	126
Stage 1	-	-	-	-	-	-	420	420	-	128	128	-
Stage 2	-	-	-	-	-	-	244	146	-	440	460	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.51	6.22	7.12	6.58	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.51	-	6.12	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.51	-	6.12	5.58	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.009	3.318	3.518	4.072	3.318
Pot Cap-1 Maneuver	1446	-	-	1333	-	-	374	435	846	434	413	924
Stage 1	-	-	-	-	-	-	611	591	-	876	779	-
Stage 2	-	-	-	-	-	-	760	778	-	596	556	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1440	-	-	1327	-	-	242	391	841	365	371	915
Mov Cap-2 Maneuver	-	-	-	-	-	-	242	391	-	365	371	-
Stage 1	-	-	-	-	-	-	553	534	-	794	774	-
Stage 2	-	-	-	-	-	-	567	773	-	494	503	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.6	0.2	29	14.1
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	280	1440	-	-	1327	-	-	369	915
HCM Lane V/C Ratio	0.475	0.079	-	-	0.003	-	-	0.331	0.166
HCM Control Delay (s)	29	7.7	0	-	7.7	0	-	19.5	9.7
HCM Lane LOS	D	A	A	-	A	A	-	C	A
HCM 95th %tile Q(veh)	2.4	0.3	-	-	0	-	-	1.4	0.6

Intersection												
Int Delay, s/veh	11.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↗
Traffic Vol, veh/h	140	72	58	7	78	29	59	38	5	30	59	104
Future Vol, veh/h	140	72	58	7	78	29	59	38	5	30	59	104
Conflicting Peds, #/hr	3	0	4	4	0	3	4	0	19	19	0	4
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	71	75	75	80	89	88	57	50	50	77	78
Heavy Vehicles, %	2	7	2	2	8	2	2	2	2	2	13	2
Mvmt Flow	152	101	77	9	98	33	67	67	10	60	77	133

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	134	0	0	182	0	0	690	600	163	637	622	122
Stage 1	-	-	-	-	-	-	448	448	-	136	136	-
Stage 2	-	-	-	-	-	-	242	152	-	501	486	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.63	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.63	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.63	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.117	3.318
Pot Cap-1 Maneuver	1451	-	-	1393	-	-	359	415	882	390	389	929
Stage 1	-	-	-	-	-	-	590	573	-	867	763	-
Stage 2	-	-	-	-	-	-	762	772	-	552	533	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1447	-	-	1388	-	-	229	361	863	294	338	923
Mov Cap-2 Maneuver	-	-	-	-	-	-	229	361	-	294	338	-
Stage 1	-	-	-	-	-	-	519	503	-	762	755	-
Stage 2	-	-	-	-	-	-	579	764	-	410	468	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.6	0.5	28.4	17.2
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	294	1447	-	-	1388	-	-	317	923
HCM Lane V/C Ratio	0.489	0.105	-	-	0.007	-	-	0.431	0.144
HCM Control Delay (s)	28.4	7.8	0	-	7.6	0	-	24.7	9.6
HCM Lane LOS	D	A	A	-	A	A	-	C	A
HCM 95th %tile Q(veh)	2.5	0.4	-	-	0	-	-	2.1	0.5

Intersection												
Int Delay, s/veh	13.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↗
Traffic Vol, veh/h	144	31	38	7	78	38	96	73	2	14	32	70
Future Vol, veh/h	144	31	38	7	78	38	96	73	2	14	32	70
Conflicting Peds, #/hr	0	0	2	2	0	0	2	0	10	10	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	75	94	42	67	69	78	89	25	50	68	79
Heavy Vehicles, %	2	7	2	2	11	2	2	2	2	2	14	2
Mvmt Flow	158	41	40	17	116	55	123	82	8	28	47	89

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	171	0	0	83	0	0	627	584	73	610	577	146
Stage 1	-	-	-	-	-	-	379	379	-	178	178	-
Stage 2	-	-	-	-	-	-	248	205	-	432	399	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.64	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.64	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.64	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.126	3.318
Pot Cap-1 Maneuver	1406	-	-	1514	-	-	396	423	989	407	411	901
Stage 1	-	-	-	-	-	-	643	615	-	824	730	-
Stage 2	-	-	-	-	-	-	756	732	-	602	582	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1406	-	-	1511	-	-	289	368	978	300	357	899
Mov Cap-2 Maneuver	-	-	-	-	-	-	289	368	-	300	357	-
Stage 1	-	-	-	-	-	-	566	541	-	727	721	-
Stage 2	-	-	-	-	-	-	628	722	-	443	512	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	5.2	0.7	35.1	13.8
HCM LOS			E	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	324	1406	-	-	1511	-	-	333	899
HCM Lane V/C Ratio	0.658	0.113	-	-	0.011	-	-	0.225	0.099
HCM Control Delay (s)	35.1	7.9	0	-	7.4	0	-	18.9	9.4
HCM Lane LOS	E	A	A	-	A	A	-	C	A
HCM 95th %tile Q(veh)	4.4	0.4	-	-	0	-	-	0.9	0.3

Intersection												
Int Delay, s/veh	10.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↗
Traffic Vol, veh/h	101	110	76	3	88	28	77	42	1	36	66	126
Future Vol, veh/h	101	110	76	3	88	28	77	42	1	36	66	126
Conflicting Peds, #/hr	4	0	5	5	0	4	6	0	1	1	0	6
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	74	87	50	91	75	86	85	25	78	83	83
Heavy Vehicles, %	2	4	2	2	6	2	2	1	2	2	8	2
Mvmt Flow	113	149	87	6	97	37	90	49	4	46	80	152

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	138	0	0	241	0	0	674	574	199	578	599	126
Stage 1	-	-	-	-	-	-	424	424	-	132	132	-
Stage 2	-	-	-	-	-	-	250	150	-	446	467	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.51	6.22	7.12	6.58	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.51	-	6.12	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.51	-	6.12	5.58	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.009	3.318	3.518	4.072	3.318
Pot Cap-1 Maneuver	1446	-	-	1326	-	-	368	430	842	427	407	924
Stage 1	-	-	-	-	-	-	608	589	-	871	776	-
Stage 2	-	-	-	-	-	-	754	775	-	591	552	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1440	-	-	1320	-	-	235	385	837	354	365	915
Mov Cap-2 Maneuver	-	-	-	-	-	-	235	385	-	354	365	-
Stage 1	-	-	-	-	-	-	550	532	-	789	769	-
Stage 2	-	-	-	-	-	-	558	768	-	485	499	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.5	0.3	30.9	14.5
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	278	1440	-	-	1320	-	-	361	915
HCM Lane V/C Ratio	0.514	0.079	-	-	0.005	-	-	0.348	0.166
HCM Control Delay (s)	30.9	7.7	0	-	7.7	0	-	20.2	9.7
HCM Lane LOS	D	A	A	-	A	A	-	C	A
HCM 95th %tile Q(veh)	2.7	0.3	-	-	0	-	-	1.5	0.6

Intersection												
Int Delay, s/veh	12.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↗
Traffic Vol, veh/h	140	72	65	8	78	29	65	42	6	30	64	104
Future Vol, veh/h	140	72	65	8	78	29	65	42	6	30	64	104
Conflicting Peds, #/hr	3	0	4	4	0	3	4	0	19	19	0	4
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	71	75	75	80	89	88	57	50	50	77	78
Heavy Vehicles, %	2	7	2	2	8	2	2	2	2	2	13	2
Mvmt Flow	152	101	87	11	98	33	74	74	12	60	83	133

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	134	0	0	192	0	0	702	609	168	651	636	122
Stage 1	-	-	-	-	-	-	453	453	-	140	140	-
Stage 2	-	-	-	-	-	-	249	156	-	511	496	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.63	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.63	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.63	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.117	3.318
Pot Cap-1 Maneuver	1451	-	-	1381	-	-	353	410	876	382	381	929
Stage 1	-	-	-	-	-	-	586	570	-	863	760	-
Stage 2	-	-	-	-	-	-	755	769	-	545	527	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1447	-	-	1376	-	-	219	355	857	281	330	923
Mov Cap-2 Maneuver	-	-	-	-	-	-	219	355	-	281	330	-
Stage 1	-	-	-	-	-	-	515	500	-	758	751	-
Stage 2	-	-	-	-	-	-	567	760	-	396	462	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.5	0.6	32.6	18.3
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	285	1447	-	-	1376	-	-	308	923
HCM Lane V/C Ratio	0.56	0.105	-	-	0.008	-	-	0.465	0.144
HCM Control Delay (s)	32.6	7.8	0	-	7.6	0	-	26.4	9.6
HCM Lane LOS	D	A	A	-	A	A	-	D	A
HCM 95th %tile Q(veh)	3.2	0.4	-	-	0	-	-	2.3	0.5