

Wellspring Community Traffic Impact Analysis

Prepared for:

Town of Castle Rock

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Table of Contents

Introduction	1
Executive Summary.....	2
Proposed Development.....	4
Area Conditions	5
Study Area Land Use	5
Site Accessibility	5
Projected Development Traffic.....	14
Trip Generation	14
Trip Distribution	14
Traffic Analysis	18
Buildout Year (2025) Background Conditions	18
Buildout Year (2025) Total Conditions	24
Horizon Year (2045) Background Conditions	30
Horizon Year (2045) Total Conditions	36
Conclusions and Recommendations.....	42

List of Figures

Figure 1.	Vicinity Map	4
Figure 2.	Wellspring Community Site Plan	5
Figure 3.	Existing Conditions Traffic Volumes (AM Peak Hour)	7
Figure 4.	Existing Conditions Traffic Volumes (PM Peak Hour)	8
Figure 5.	Existing Conditions Daily Traffic.....	9
Figure 6.	Roadway Classification	10
Figure 7.	Existing Conditions Intersection Configurations	11
Figure 8.	Trip Distribution.....	15
Figure 9.	Wellspring Community Project Trips (AM Peak Hour)	16
Figure 10.	Wellspring Community Project Trips (PM Peak Hour)	17
Figure 11.	Wellspring Community Daily Traffic	18
Figure 12.	Buildout (2025) Background Traffic Volumes (AM Peak Hour)	19
Figure 13.	Buildout (2025) Background Traffic Volumes (PM Peak Hour)	20
Figure 14.	Buildout (2025) Background Daily Traffic.....	21
Figure 15.	Buildout (2025) Background Intersection Configurations	22
Figure 16.	Buildout (2025) Total Traffic Volumes (AM Peak Hour)	25
Figure 17.	Buildout (2025) Total Traffic Volumes (PM Peak Hour)	26
Figure 18.	Buildout (2025) Total Daily Traffic Volumes	27
Figure 19.	Buildout (2025) Total Intersection Configurations	28
Figure 20.	Horizon (2045) Background Traffic Volumes (AM Peak Hour)	31
Figure 21.	Horizon (2045) Background Traffic Volumes (PM Peak Hour).....	32
Figure 22.	Horizon (2045) Daily Traffic	33
Figure 23.	Horizon (2045) Intersection Configurations.....	34
Figure 24.	Horizon (2045) Total Traffic Volumes (AM Peak Hour)	37
Figure 25.	Horizon (2045) Total Traffic Volumes (PM Peak Hour)	38
Figure 26.	Horizon (2045) Total Daily Traffic.....	39
Figure 27.	Horizon (2045) Total Intersection Configurations	41

List of Tables

Table 1.	Existing Conditions Intersection Operations.....	12
Table 2.	Existing Conditions Turn Lane Evaluations	13
Table 3.	Trip Generation.....	14
Table 4.	Buildout (2025) Background Intersection Operations	23
Table 5.	Buildout (2025) Background Turn Lane Evaluations	24
Table 6.	Buildout (2025) Total Intersection Operations	29
Table 7.	Buildout (2025) Total Turn Lane Evaluations.....	30
Table 8.	Horizon (2045) Background Intersection Operations.....	35
Table 9.	Horizon (2045) Background Turn Lane Evaluations	36
Table 10.	Horizon (2045) Total Intersection Operations	40
Table 11.	Horizon (2045) Total Turn Lane Evaluations	42

Appendices

Appendix A – Traffic Counts

Appendix B – Existing Conditions Analyses

Appendix C – Buildout Conditions Analyses

Appendix D – Horizon Conditions Analyses

Appendix E – Supporting Documents

Introduction

The Wellspring Community project (Project) is a 2.7-acre development located in the town of Castle Rock. The project consists of the Wellspring Community Center, which operates on weekdays. The proposed uses would include office, shared auditorium, classrooms/studios, outdoor play area and commercial food preparation operated by Wellspring Community. This study is reviewing the weekday community center traffic impacts.

The project will be located at 498 Wolfensberger Road on vacant land and bounded on the north by East Wolfensberger Road. Figure 1 shows the vicinity map of the project.

The purpose of this study is to assess the effects this proposed development will have on the surrounding transportation system.

The report is organized as follows:

- **Introduction** – Describes the purpose and intent of this study.
- **Executive Summary** – Summarizes this report's analysis results, findings and conclusions, and recommendations.
- **Area Conditions** – Describes the study area land uses as well as the existing and future roadway network.
- **Proposed Development** – Describes the proposed development and the location.
- **Projected Traffic** – Identifies the expected number of daily and peak hour trips that will be generated by the Wellspring Community development. The expected external trip distribution is also shown.
- **Traffic Analysis** – Will analyze the existing conditions in the study area as well as buildout year (2025) and horizon year (2045) conditions with and without the project.
- **Findings and Conclusions** – Identifies any deficiencies in the study area roadway network with or without the project and mitigation measures that will alleviate any identified deficiencies.
- **Recommendations** – Provides a summary of the study findings.

Executive Summary

The Wellspring Community project (Project) is a 2.7-acre development located in the town of Castle Rock. The proposed development consists of an office, a shared auditorium, classrooms/studios, an outdoor play area and commercial food preparation operated by Wellspring Community. The traffic impact of Wellspring Community development on the adjacent roadways was assessed during the weekdays based on the Town of Castle Rock Transportation Design Manual.

The intersections listed below were included in this traffic impact study and evaluated based on the Town of Castle Rock and State Highway Accesses Code criteria.

- Red Hawk Drive/Auburn Drive/Wolfensberger Road
- Prairie Hawk Drive/Wolfensberger Road
- Coachline Road/Wolfensberger Road

Our study shows that all the intersections will operate at an acceptable level of service in all scenarios (with or without the project). All turning movements also operate at or above the required LOS in the Town of Castle Rock Transportation Design Manual.

The following improvements are recommended by this study:

Buildout year (2025) with Project:

Wolfensberger Road/Project Access #1 (#1)

- A 160-ft westbound left-turn; including 25-ft of storage and a 135-ft taper length. Project will be responsible for this improvement at project buildout.

Wolfensberger Road/Project Access #2 (#2)

- A 160-ft westbound left-turn; including 25-ft of storage and a 135-ft taper length. Project will be responsible for this improvement at project buildout. Although this improvement is warranted in the buildout year, it will be constructed with the Wolfensberger Road widening project if the widening project occurs before the buildout of the community center.

These improvements are required for buildout conditions. When Wolfensberger Road is widened into a 4-lane roadway, these turn lanes will occur within the median.

Horizon year (2045) without the project:

Wolfensberger Road between Red Hawk Drive and Coachline Road.

Improve to a 4-lane roadway with a median lane. This is planned by the Town of Castle Rock and the Project does not warrant this improvement.

Wolfensberger Road/Red Hawk Drive

Convert to a roundabout. This is planned by the Town of Castle Rock and the Project does not warrant this improvement.

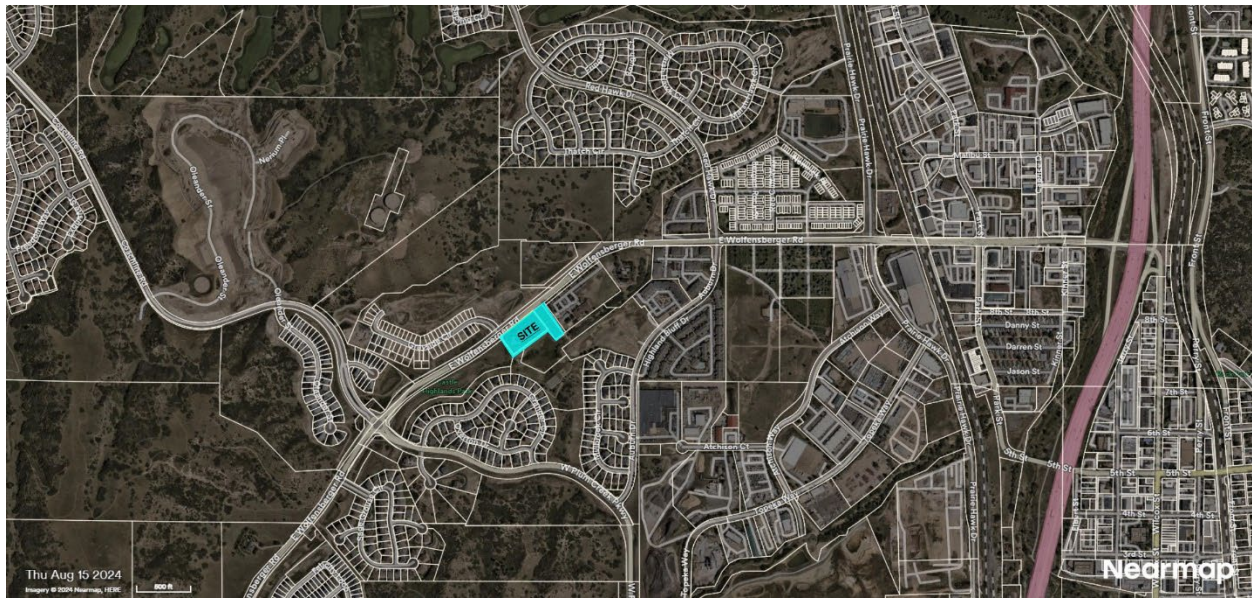
Prairie Hawk Drive in the Vicinity of Wolfensberger Drive

Improve to a 4-lane roadway. This is planned by the Town of Castle Rock and the Project does not warrant this improvement.

The summary of level of service and delay is as follows.

ID	Intersection	AM Peak Hour					PM Peak Hour				
		Existing LOS (DELAY)	Buildout Background LOS (DELAY)	Buildout Total LOS (DELAY)	Horizon Background LOS (DELAY)	Horizon Total LOS (DELAY)	Existing LOS (DELAY)	Buildout Background LOS (DELAY)	Buildout Total LOS (DELAY)	Horizon Background LOS (DELAY)	Horizon Total LOS (DELAY)
1	Wolfensberger Rd/ Access #1			B (13.98)		B (14.04)			C (18.19)		C (17.34)
2	Wolfensberger Rd/ Access #2			B (12.93)		A (9.45)			C (15.71)		A (9.87)
3	Wolfensberger Rd/Red Hawk Dr	C (27.57)	C (27.82)	C (27.95)	A (5.99)	A (6.09)	C (29.5)	C (29.56)	C (29.56)	A (5.14)	A (5.24)
4	Wolfensberger Rd/ Prairie Hawk Dr	C (32.66)	C (29.32)	C (29.35)	C (29.22)	C (29.24)	C (33.35)	C (29.69)	C (29.99)	C (29.21)	C (29.15)
5	Wolfensberger Rd/Coachline Rd	A (4.8)	A (4.91)	A (4.97)	A (5.12)	A (5.17)	A (4.9)	A (5.26)	A (5.26)	A (5.39)	A (5.43)

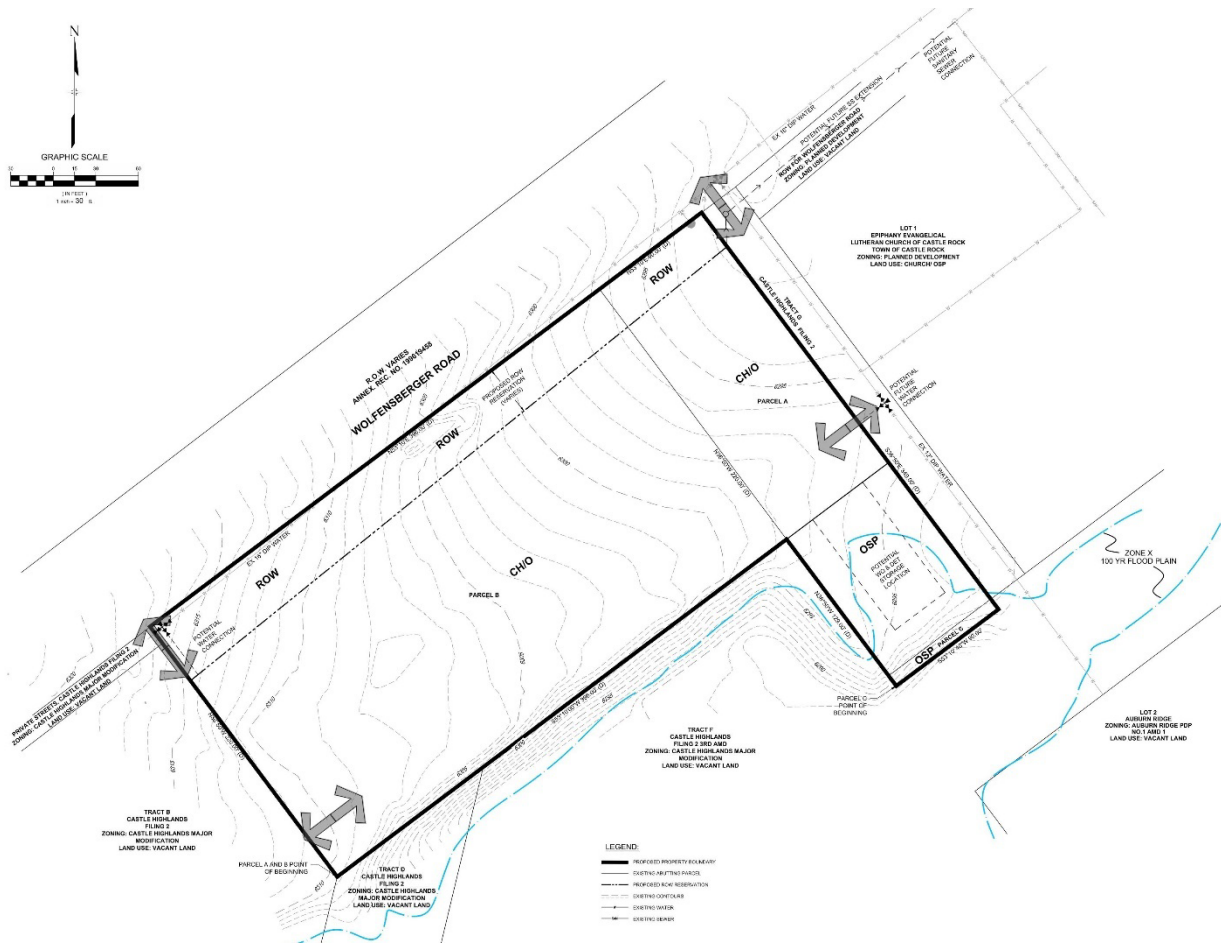
Figure 1. Vicinity Map



Proposed Development

The Project will consist of the Wellspring Community Center. The proposed uses would include office, shared auditorium, classrooms/studios, outdoor play area and commercial food preparation operated by Wellspring Community. The facility is located on the south side of Wolfensberger Road. Figure 2 illustrates the Project site plan.

Figure 2. Wellspring Community Site Plan



Area Conditions

This section describes the existing conditions and the planned level of improvements adjacent to the Wellspring Community development.

Study Area Land Use

The Project will be constructed on vacant land and will be bounded on the north by Wolfensberger Road.

Site Accessibility

The existing roadway system consists of the following transportation facilities:

Wolfensberger Road is an east-west road that lies on the north side of the project. This facility provides one lane in each direction. Opposing directions are separated by a double-yellow line. The speed limit on this road is 45 mph. The town of Castle Rock Transportation Master Plan (TMP) classifies this road as a major arterial.

Prairie Hawk Drive is a north-south road located to the east of the project. This road provides one lane in each direction. Opposing directions are separated by a double-yellow line. Prairie Hawk Drive north of

Wolfensberger provides bicycle lanes, curb, gutter, and sidewalk. An unpaved shoulder is provided on the south leg of the intersection. The speed limit is 45 mph on the north side of Wolfensberger Road and 30 mph on the south side of Wolfensberger Road. The town of Castle Rock TMP classifies this road as a major arterial.

Red Hawk Drive/Auburn Drive is a north-south road east of the project. This road provides one lane in each direction. Opposing directions are separated by a double-yellow line along Auburn Drive and with a striped median along Red Hawk Drive. The speed limit is 30 mph on this roadway. The town of Castle Rock TMP classifies this road as a collector. Sidewalk, bicycle lanes, and curbs are provided on both sides of this roadway.

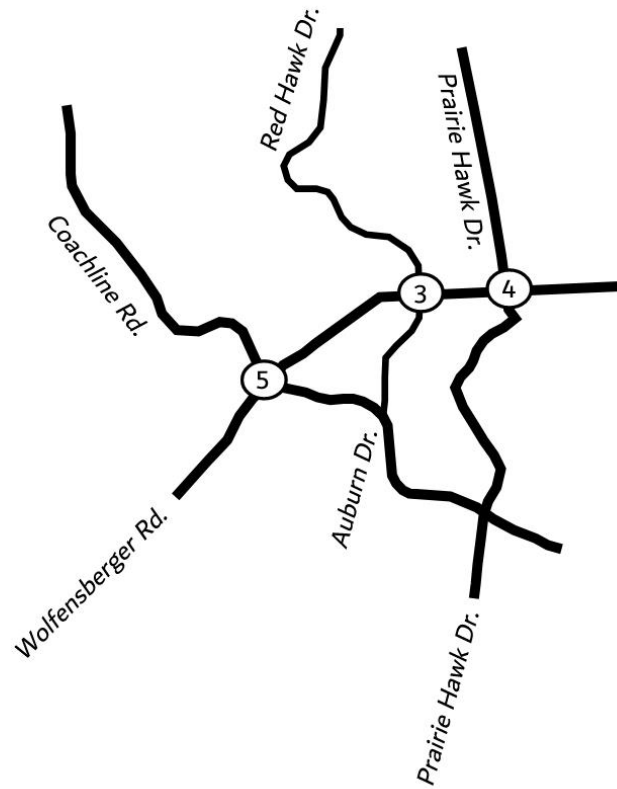
Coachline Road is a north-south road located west of the project. This road provides two lanes in each direction on the north side of Wolfensberger Road and one lane in each direction on the south side of Wolfensberger Road. Coachline Road north of Wolfensberger Road divides the opposite directions with a raised median. The speed limit is 40 mph on this segment. The south side of this intersection is divided by a double-yellow line and the speed limit is 35 mph. This roadway provides paved shoulder lanes in both directions and the south section provides a sidewalk along the east side of the road.

Traffic counts were collected on Wednesday, January 24, 2024. The existing conditions analysis is limited to the following intersections:

- Red Hawk Drive/Auburn Drive/Wolfensberger Road
- Prairie Hawk Drive/Wolfensberger Road
- Coachline Road/Wolfensberger Road

The existing condition AM and PM peak hour volumes at these intersections are shown in Figure 3 and Figure 4 and the daily traffic volumes in the existing conditions are shown in Figure 5.

Figure 3. Existing Conditions Traffic Volumes (AM Peak Hour)



Wolfensberger Rd/Red Hawk Wolfensberger Rd/Prairie Ha Wolfensberger Rd/Coachline

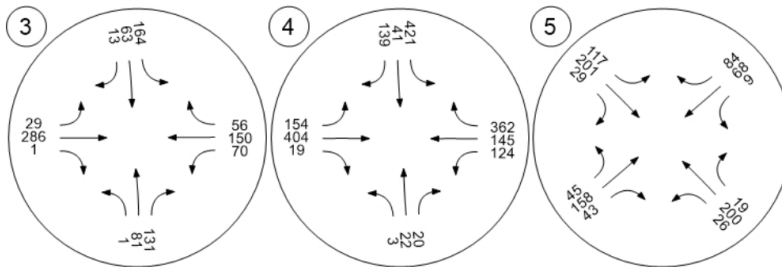
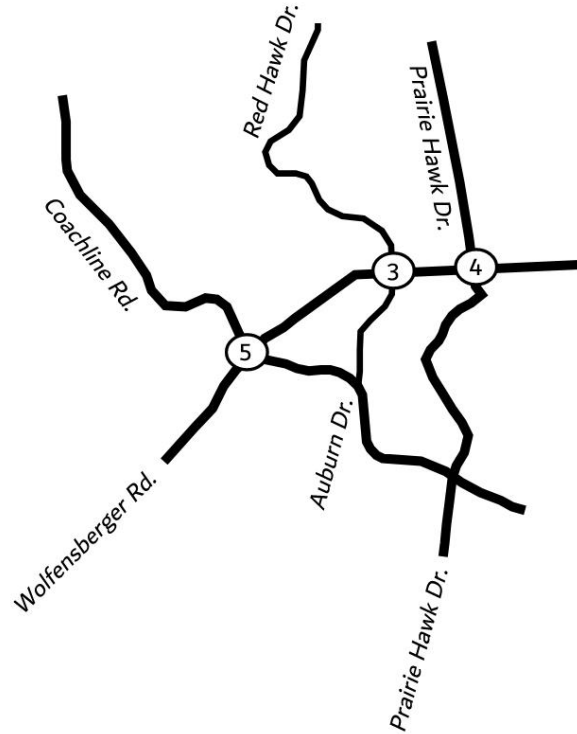
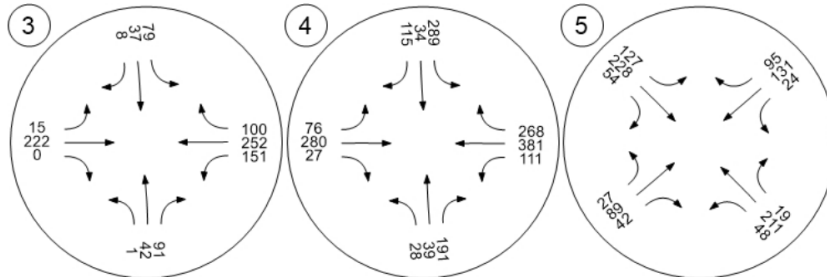


Figure 4. Existing Conditions Traffic Volumes (PM Peak Hour)

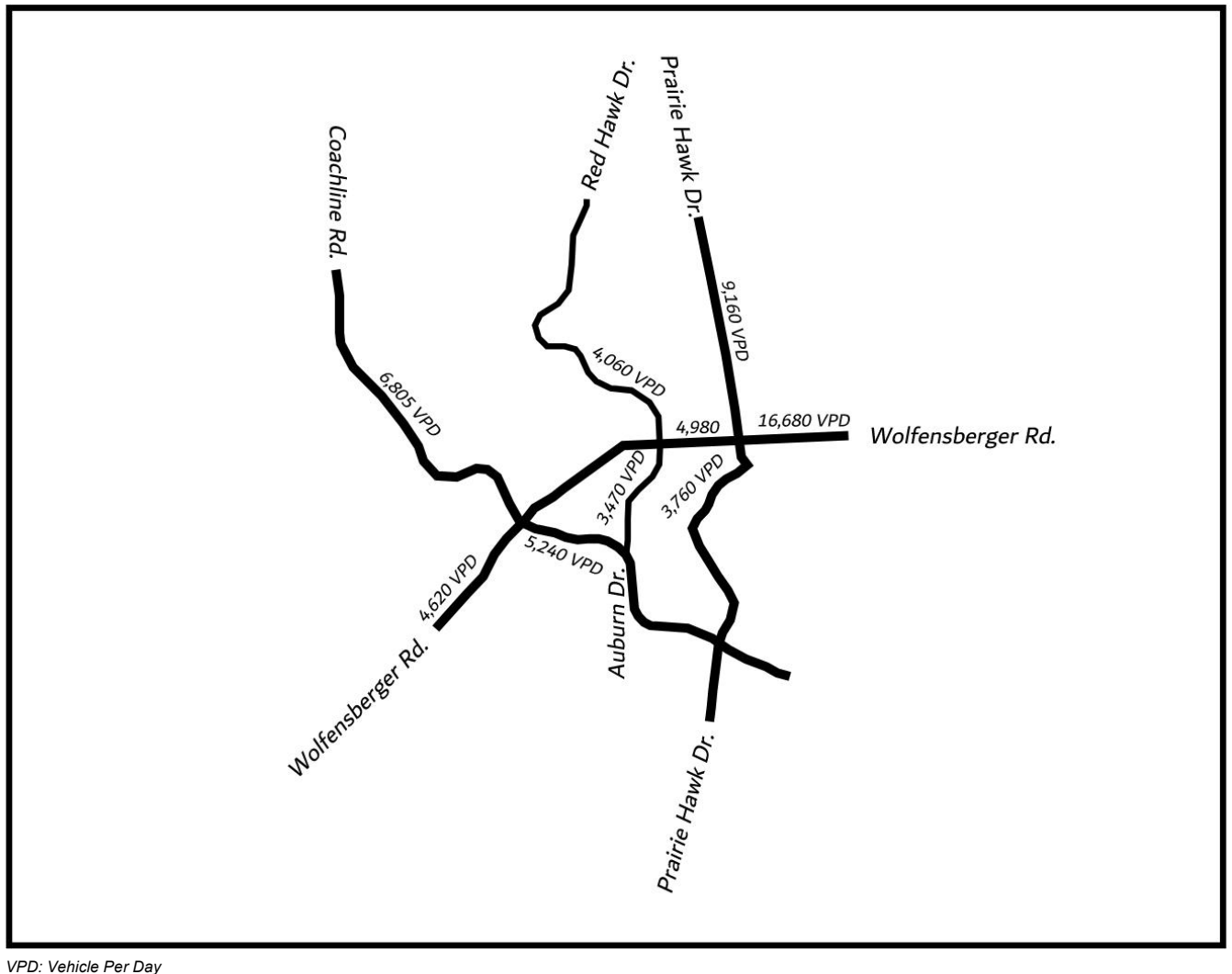


Wolfensberger Rd/Red Hawk Wolfensberger Rd/Prairie Ha Wolfensberger Rd/Coachline



Intersection LOS analysis was performed for the study area intersections and the results are shown in Table 1.

Figure 5. Existing Conditions Daily Traffic



Daily traffic, and peak hour turning movement counts were collected on January 24, 2024. Approximately 10 percent of daily traffic occurs during the AM and PM peak hours each. For more information see Appendix A – Traffic Counts. Figure 6 shows the roadway classifications based on the TMP. The existing intersection configurations are shown in Figure 7.

Figure 6. Roadway Classification

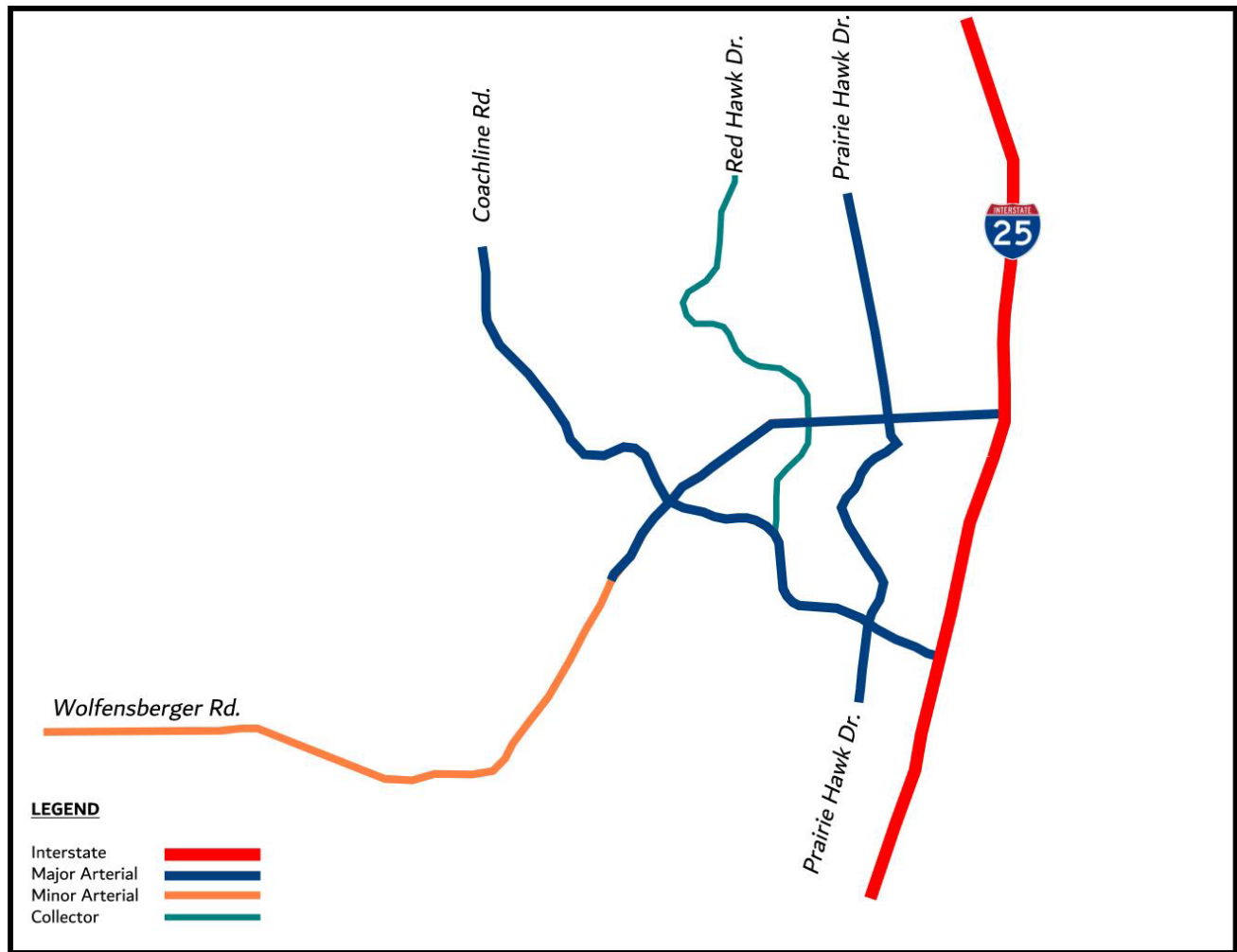


Figure 7. Existing Conditions Intersection Configurations

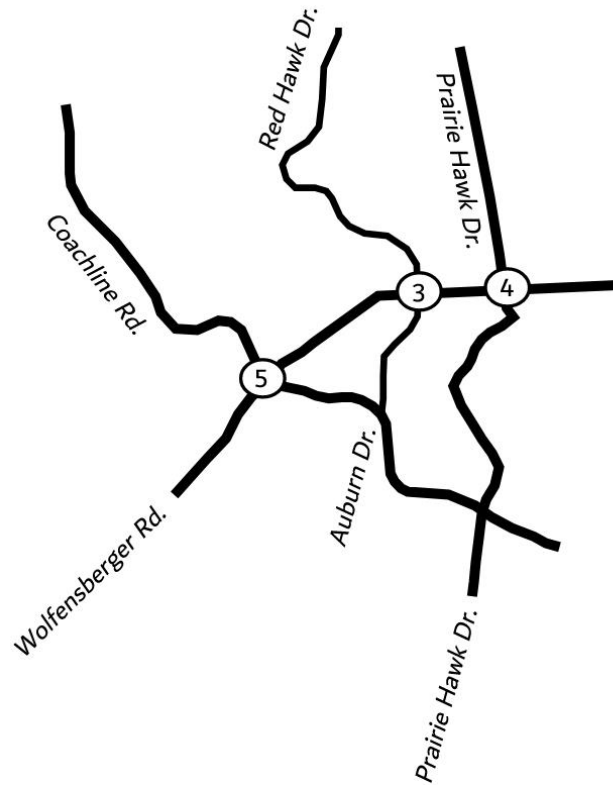
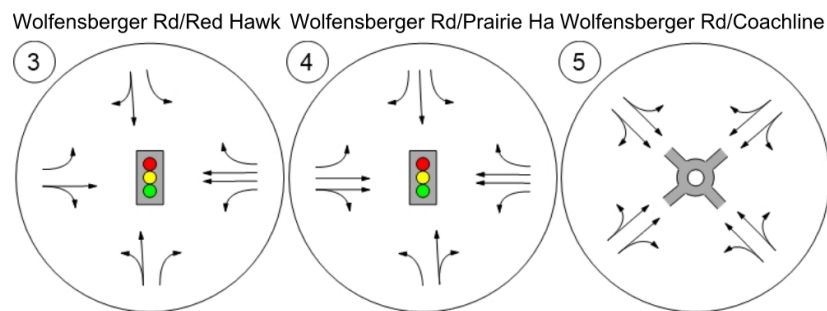


Table 1. Existing Conditions Intersection Operations

Intersection Location	Traffic Control	Existing Traffic			
		Level of Service AM	Delay (sec/veh)	Level of Service PM	Delay (sec/veh)
Wolfensberger Rd/Red Hawk Dr (#3)					
	Signalized				
NBL		A	7.65	A	8.03
NBT		A	7.65	A	8.03
NBR		B	11.37	B	11.85
SBL		B	11.07	B	10.67
SBT		B	11.27	B	11.63
SBR		B	11.27	B	11.63
EBL		C	27.97	C	26.89
EBT		D	45.92	D	39.75
EBR		D	45.92	D	39.75
WBL		C	30.92	C	33.67
WBT		C	34.98	C	33.87
WBR		C	33.68	C	32.31
Entire Intersection Delay (sec/veh)		27.57		29.5	
Entire Intersection LOS		C		C	
Wolfensberger Rd/Prairie Hawk Dr (#4)					
	Signalized				
NBL		A	6.96	A	6.18
NBT		B	10.37	B	10.38
NBR		B	10.37	B	10.38
SBL		B	16.6	A	8.99
SBT		A	9.41	A	8.84
SBR		A	9.89	A	9.08
EBL		D	40.44	D	37.1
EBT		D	50.1	D	49.59
EBR		D	50.17	D	49.73
WBL		D	36.69	D	36.95
WBT		D	40.8	D	48.69
WBR		D	51.73	D	47.49
Intersection Delay (sec/veh)		32.66		33.35	
Intersection LOS		C		C	
Wolfensberger Rd/Plum Creek Pkwy/Coachline Rd (#5)					
	Roundabout				
NBL		A	5.28	A	4.66
NBT		A	5.28	A	4.66
NBR		A	5.28	A	4.66
SBL		A	4.27	A	5.2
SBT		A	4.27	A	5.2
SBR		A	4.27	A	5.2
EBL		A	4.91	A	4.82
EBT		A	4.91	A	4.82
EBR		A	4.91	A	4.82
WBL		A	4.77	A	4.69
WBT		A	4.77	A	4.69
WBR		A	4.77	A	4.69
Intersection Delay (sec/veh)					
Intersection LOS		A		A	
		4.8		4.9	

Table 1 indicates all the intersections operate at an acceptable level of service (LOS). Acceptable operations per the Town of Castle Rock Transportation Design Criteria Manual are defined as any intersection that operates at LOS D or better. It also states that *“no through movement shall operate worse than LOS D, and no left turn movement shall operate worse than LOS E.”* Given all the movements also operate at an acceptable LOS, no mitigation is recommended for the existing conditions.

Turn lane requirements along Wolfensberger Road were evaluated based on the TDM (Table 2.7) and the State Highway Access Code (SHAC), and the results are summarized in Table 2.

Table 2. Existing Conditions Turn Lane Evaluations

ID	Intersection	Movement	# of Lanes	Access Category	Speed Limit (mph)	Turning Vol	Lane Width	Storage (ft)	Taper Length (ft)	Provided (ft)	SHAC (ft)
3	Wolfensberger Rd/Red Hawk Dr	NBR	1	NR-C	30	131	10	131	80	170	210
		SBL	1	NR-C	30	164	10	164	80	280	245
		EBL	1	NR-B	45	29	10	50	135	470	185
		WBL	1	NR-B	45	151	10	151	135	435	285
		WBR	1	NR-B	45	100	10	100	135	Continuous Aux	235
4	Wolfensberger Rd/ Prairie Hawk Dr	NBL	1	NR-B	30	28	10	25	80	245	105
		NBR	1	NR-B	30	191	10	191	80	-	270
		SBL	1	NR-B	45	421	10	421	135	530	555
		SBR	1	NR-B	45	139	10	139	135	470	275
		EBL	1	NR-B	45	139	10	139	135	495	275
		EBR	1	NR-B	45	27	10	25	135	390	160
		WBL	1	NR-B	45	124	10	124	135	210	260
		WBR	1	NR-B	45	362	10	362	135	155	495

*Total turn length is rounded to the nearest 5-ft.

Summary of deficient turn lanes in the existing conditions are listed below.

Wolfensberger Road/Red Hawk Drive (#3)

- A 40-ft extension of northbound right-turn.

Wolfensberger Road/Prairie Hawk Drive (#4)

- A 270-ft northbound right-turn; including 190-ft of storage and an 80-ft taper length.
- A 25-ft extension of southbound left-turn
- A 50-ft extension of westbound left-turn
- A 340-ft extension of westbound right-turn.

These deficiencies are related to the existing conditions, and it is up to the Town of Castle Rock to determine how and if to address them. The Project has no responsibility for these recommended improvements.

Projected Development Traffic

This section documents how much traffic the Project development is expected to generate and how the external site trips will be distributed on the adjacent roadway network.

Trip Generation

The Community Center land use does not directly correlate to any land use with sufficient studies in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition. For this analysis, the developer provided information about the community center uses. It is anticipated that there will be 40 employees and 100 customers during each weekday. The employee trips are all assumed to enter the community center during the AM peak hour and leave the center during the PM peak hour. It was assumed that some of the employees will leave for lunch during the midday period, therefore the daily trips were adjusted to account for this. It was assumed that 25% of the employees will leave during the lunch hour, increasing the number of daily trips from 80 to 100. Customer trips are assumed to be evenly distributed between 8 AM and 4 PM each weekday. In addition to these trips, it is assumed that the existing church to the east of the Community Center will contribute some trips to the AM and PM peak hour volumes to one of the Project's access points (but will not affect daily traffic as these trips are already captured in the existing counts). Table 3 shows the trips that are expected to be generated by Wellspring Community (498 Wolfensberger Road) at buildout, and the adjacent Church located at 550 Wolfensberger Road.

Table 3. Trip Generation

ITE Code and Land Use	Size	Units	Wellspring Community								
			Weekday			AM Peak Hour			PM Peak Hour		
			Total	Entering	Exiting	Total	Entering	Exiting	Total	Entering	Exiting
560-Church	13	KSF	Not calculated			3	2	1	9	4	5
Employee	40	Person	100	50	50	40	40	0	40	0	40
Customers	100	Person	200	100	100	22	11	11	22	11	11
Total			300	150	150	65	53	12	71	15	56

Trip Distribution

Figure 8 illustrates the expected external distribution of travel for the site-generated trips. This distribution was determined by reviewing the total trips on the roadway network and the existing traffic patterns. The project trips for both the AM and PM peak hours are shown in Figure 9 and Figure 10 and daily project trips are shown in Figure 11. Adjacent developments either use the trip distribution shown below, such as for the adjacent church, or they use the same counts from the associated TIA for that development. The adjacent church trips for the AM and PM peak hours were routed 100% through the shared access with Wellspring Community because the volumes were so low; this should provide a conservative estimate of traffic operations at the shared access.

Figure 8. Trip Distribution

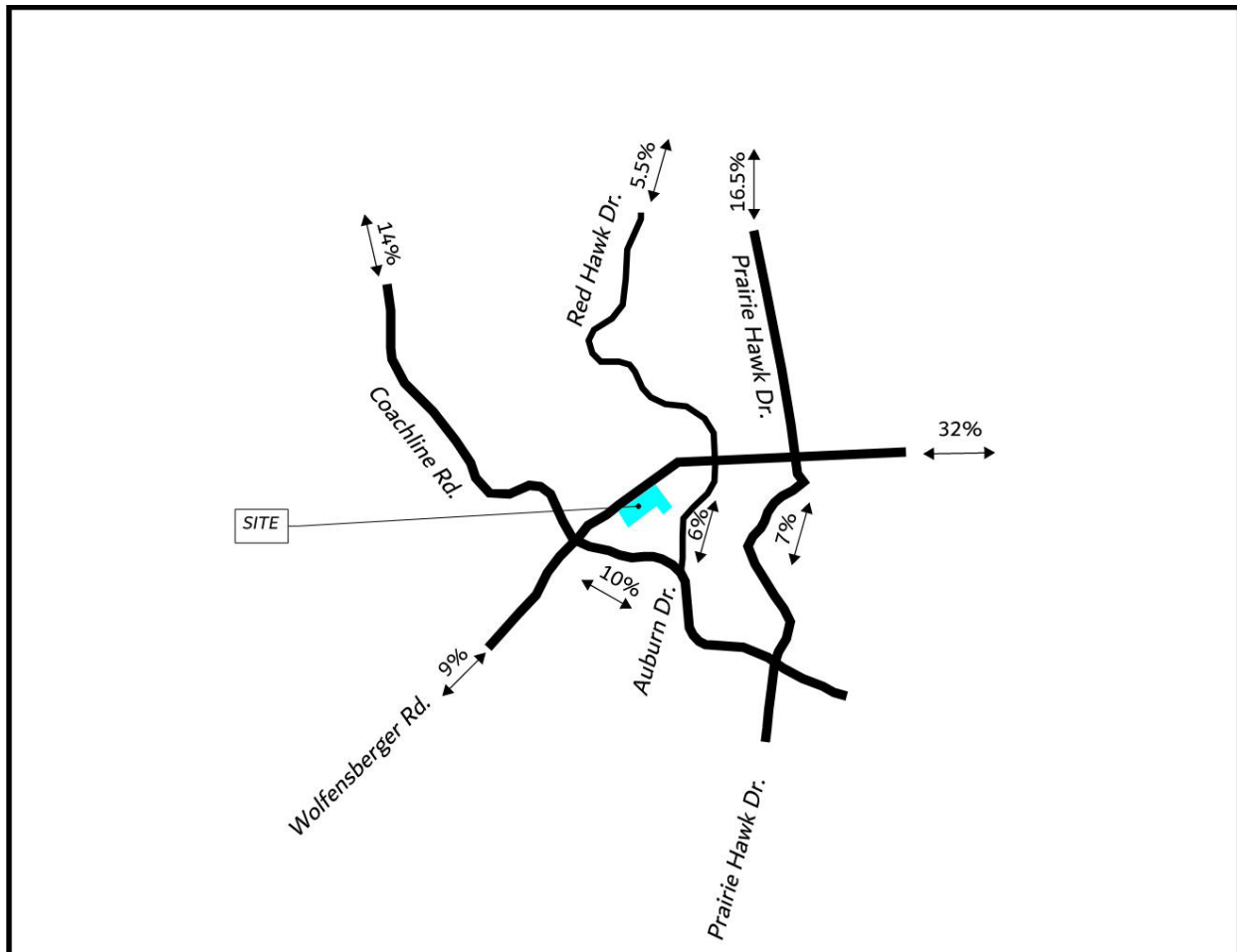
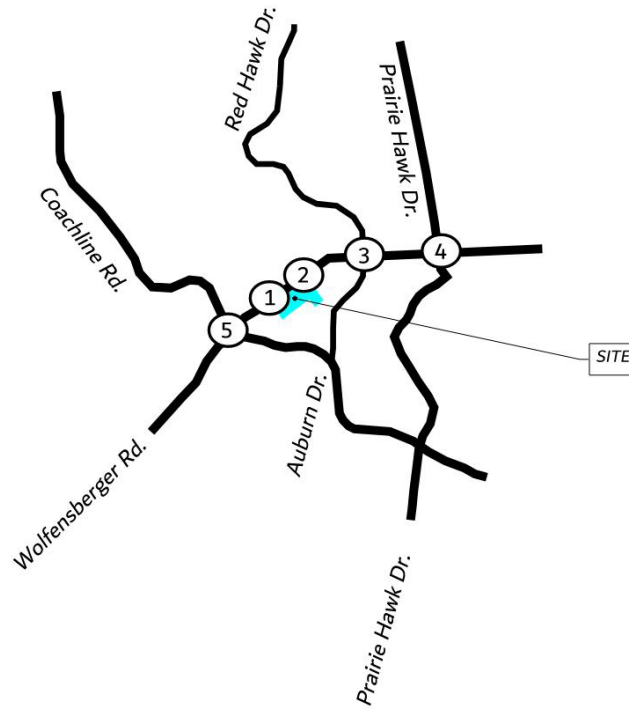
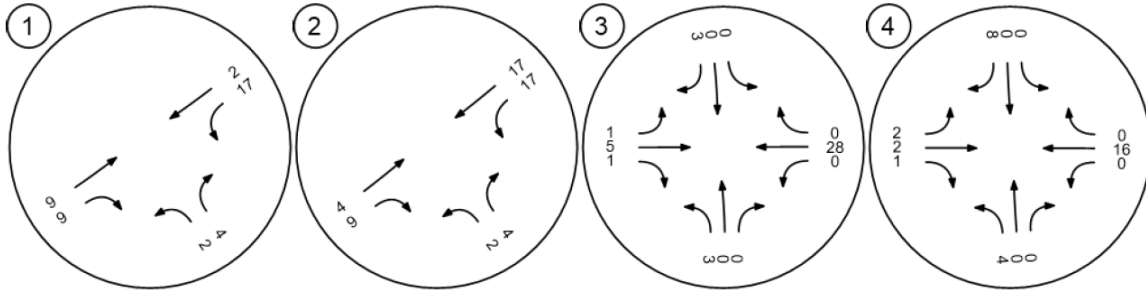


Figure 9. Wellspring Community Project Trips (AM Peak Hour)



Wolfensberger Rd/Project Ac Wolfensberger Rd/Project Ac Wolfensberger Rd/Red Hawk Wolfensberger Rd/Prairie Ha



Wolfensberger Rd/Coachline

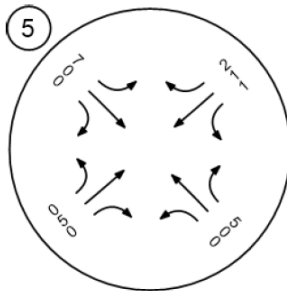
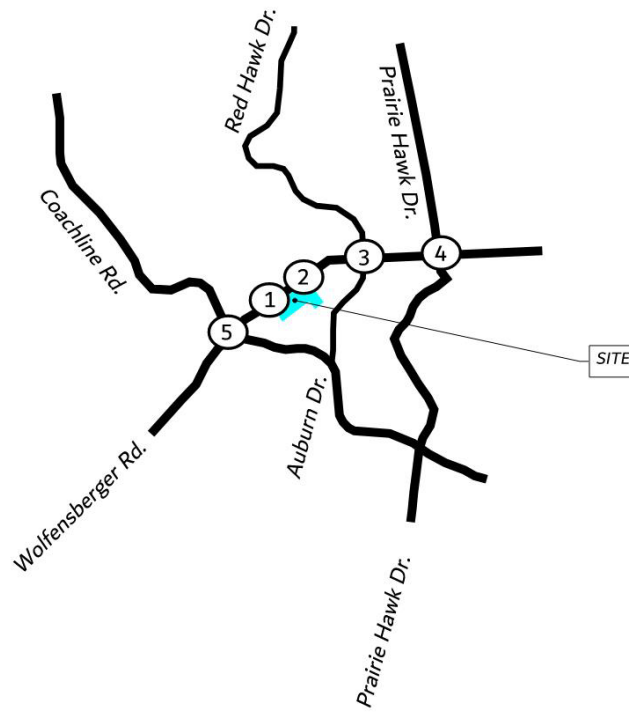
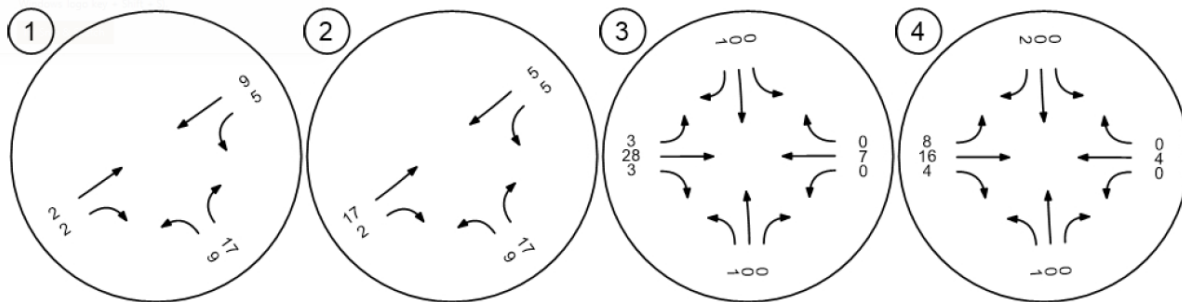


Figure 10. Wellspring Community Project Trips (PM Peak Hour)



Wolfensberger Rd/Project Ac Wolfensberger Rd/Project Ac Wolfensberger Rd/Red Hawk Wolfensberger Rd/Prairie Ha



Wolfensberger Rd/Coachline

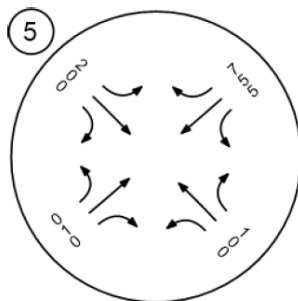
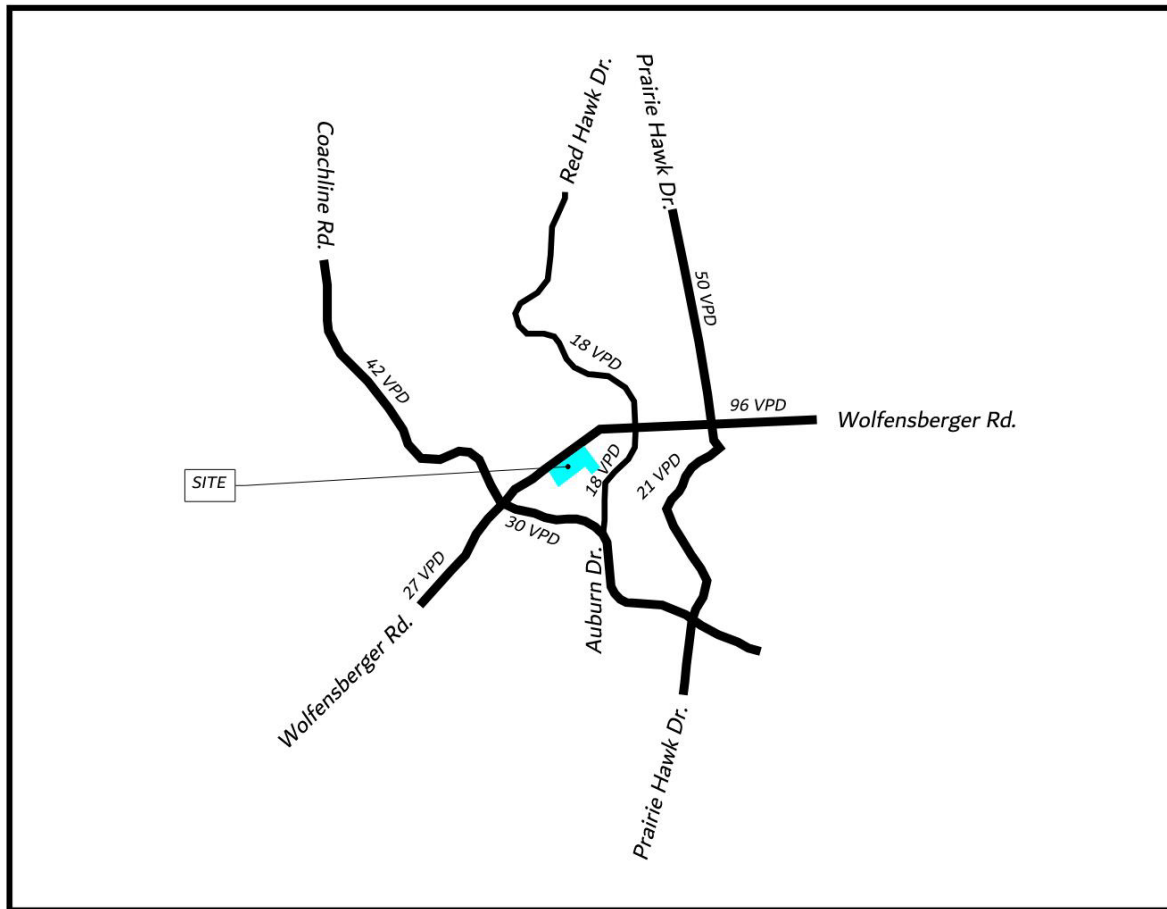


Figure 11. Wellspring Community Daily Traffic



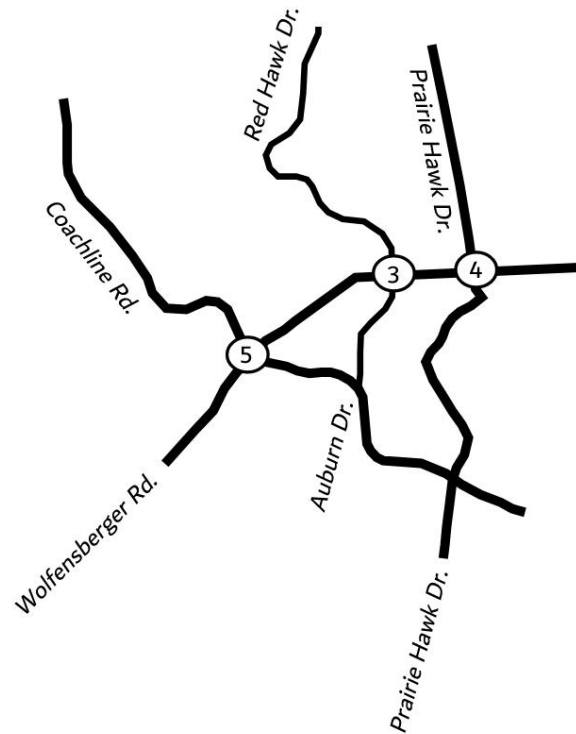
Traffic Analysis

Traffic conditions both with and without the project were analyzed for buildout year (2025) and horizon year (2045) conditions. The CDOT Transportation Data Management System (TDMS) provides historical vehicle counts on roadways throughout the state. The earliest (2005) and latest (2019) available counts on Wolfensberger Road west of Prairie Hawk Drive were used to obtain the traffic growth on this segment. Data showed that this segment experiences a 1.05 percent annual growth. Consequently, the growth factors for the years 2025 (buildout) and 2045 (horizon) were determined to be 1.03, and 1.27, respectively. In addition, traffic generated by the Hillside development (*Hillside at Castle Rock TIA, 2016*), the Brickyard development (*The Brickyard Castle Rock, 2023*), plus the adjacent church were added to the studied network. For more information see Appendix A – Traffic Counts

Buildout Year (2025) Background Conditions

The buildout year traffic volumes without the Project are shown in Figure 12 and Figure 13 and daily traffic volumes are shown in Figure 14.

Figure 12. Buildout (2025) Background Traffic Volumes (AM Peak Hour)



Wolfensberger Rd/Red Hawk Wolfensberger Rd/Prairie Ha Wolfensberger Rd/Coachline

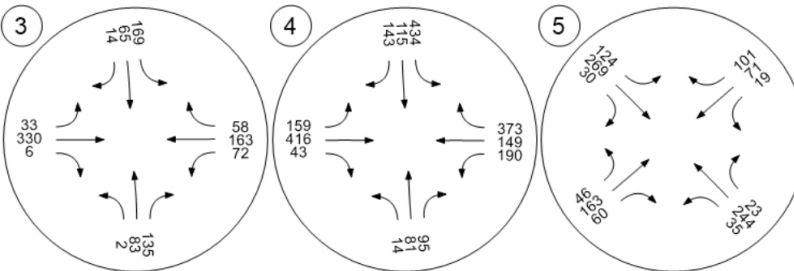
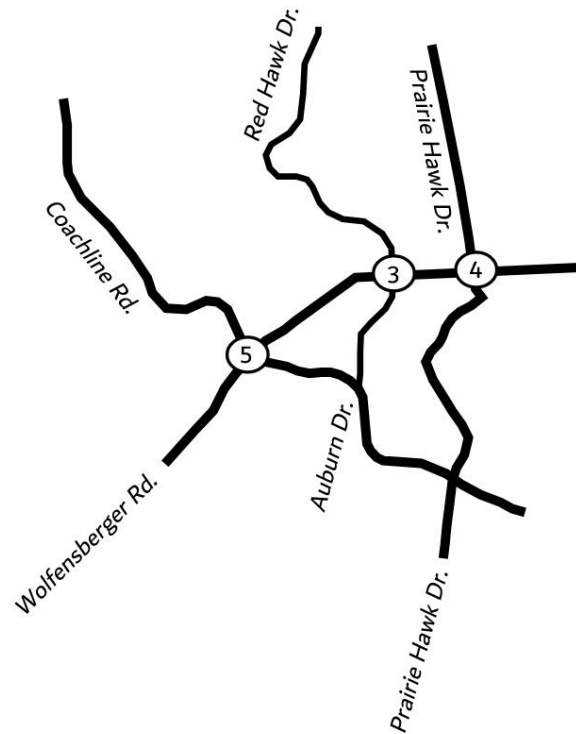


Figure 13. Buildout (2025) Background Traffic Volumes (PM Peak Hour)



Wolfensberger Rd/Red Hawk Wolfensberger Rd/Prairie Ha Wolfensberger Rd/Coachline

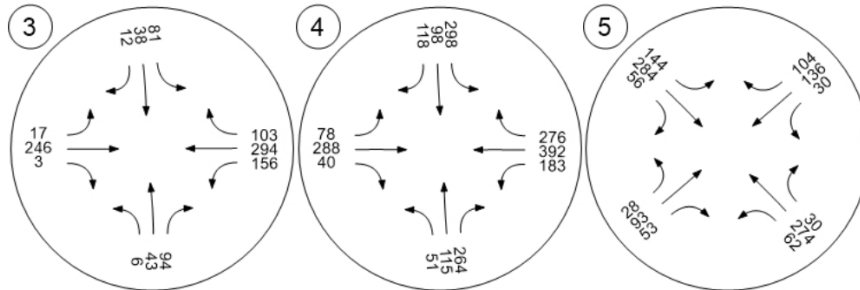


Figure 14. Buildout (2025) Background Daily Traffic

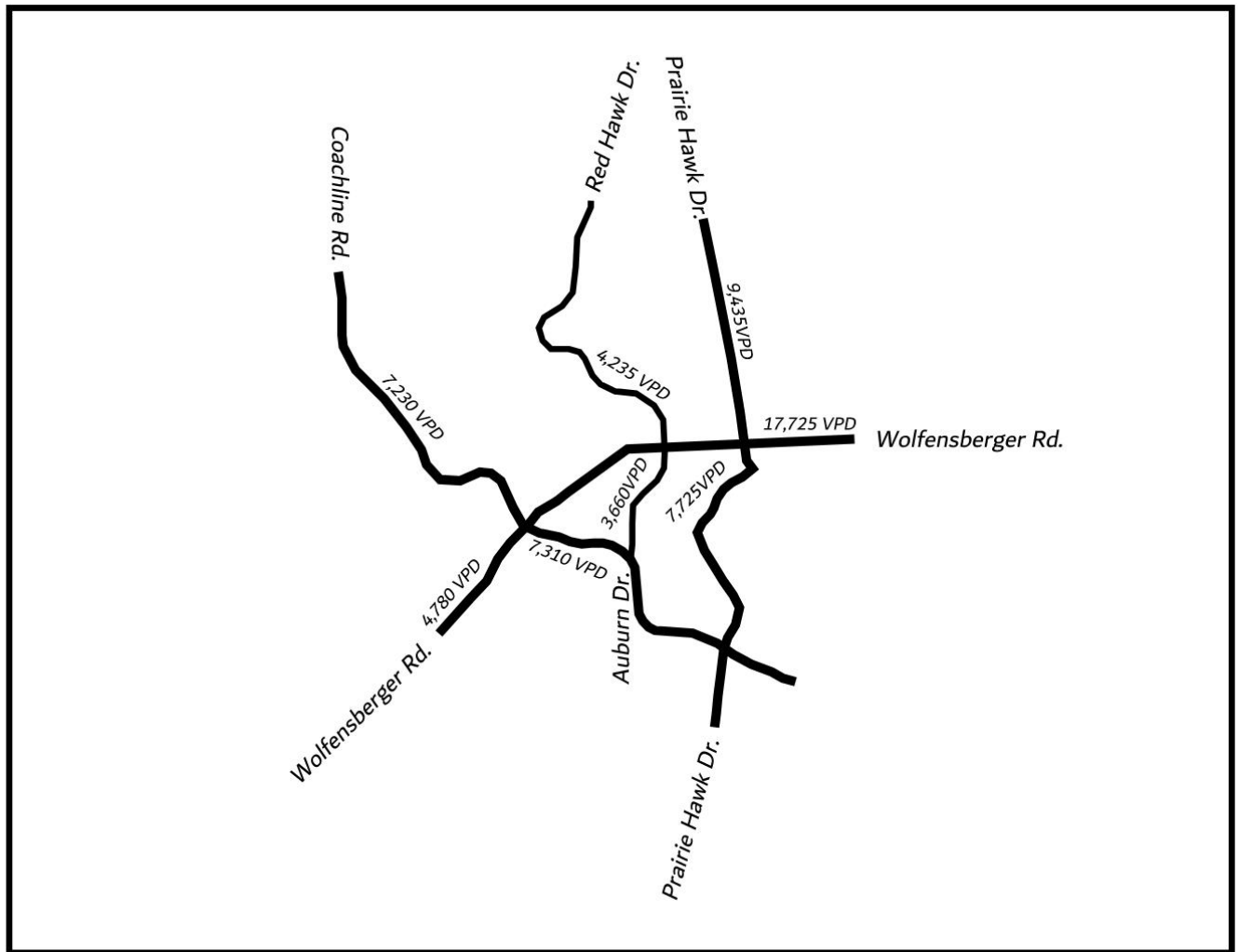
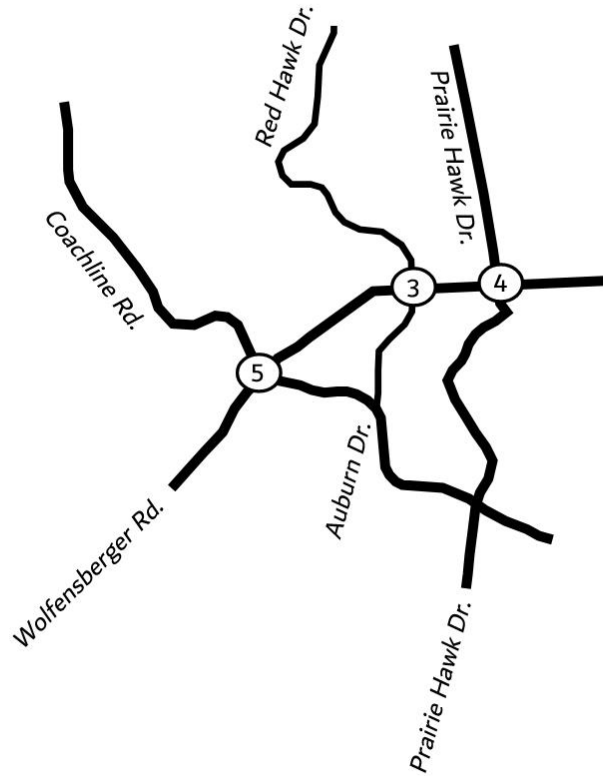


Figure 15. Buildout (2025) Background Intersection Configurations



Wolfensberger Rd/Red Hawk Wolfensberger Rd/Prairie Ha Wolfensberger Rd/Coachline

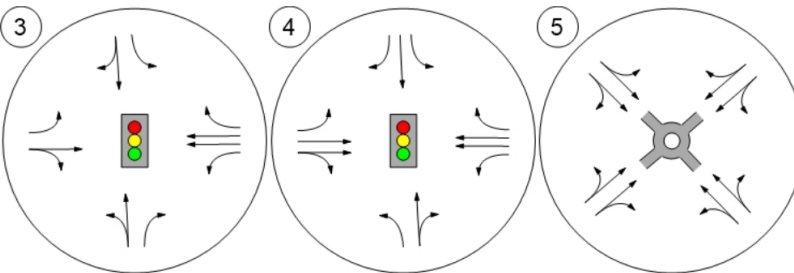


Table 4. Buildout (2025) Background Intersection Operations

Intersection Location	Traffic Control	2025 Background			
		Level of Service	Delay	Level of Service	Delay
		AM	(sec/veh)	PM	(sec/veh)
Wolfensberger Rd/Red Hawk Dr (#3)					
	Signalized				
NBL		A	9.08	A	8.37
NBT		A	9.08	A	8.37
NBR		B	13.1	B	12.2
SBL		B	12.8	B	10.98
SBT		B	13	B	12.08
SBR		B	13	B	12.08
EBL		C	25.48	C	26.37
EBT		D	44.25	D	38.95
EBR		D	44.25	D	38.95
WBL		C	28.36	C	33.3
WBT		C	31.92	C	33.62
WBR		C	30.93	C	31.61
Entire Intersection Delay (sec/veh)		27.82		29.56	
Entire Intersection LOS		C		C	
Wolfensberger Rd/Prairie Hawk Dr (#4)					
	Signalized				
NBL		A	6.96	A	7.63
NBT		B	10.37	B	13.26
NBR		B	10.37	B	13.26
SBL		B	16.6	B	12.81
SBT		B	9.41	B	11.25
SBR		B	9.89	B	11.02
EBL		C	40.44	C	34.11
EBT		D	50.1	D	43.63
EBR		D	50.17	D	43.72
WBL		D	36.69	D	38.73
WBT		D	40.8	D	42.75
WBR		D	51.73	D	41.88
Intersection Delay (sec/veh)		29.32		29.69	
Intersection LOS		C		C	
Wolfensberger Rd/Plum Creek Pkwy/Coachline Rd (#5)					
	Roundabout				
NBL		A	5.16	A	5.09
NBT		A	5.16	A	5.09
NBR		A	5.16	A	5.09
SBL		A	4.55	A	5.47
SBT		A	4.55	A	5.47
SBR		A	4.55	A	5.47
EBL		A	5.46	A	5.15
EBT		A	5.46	A	5.15
EBR		A	5.46	A	5.15
WBL		A	4.52	A	5.17
WBT		A	4.52	A	5.17
WBR		A	4.52	A	5.17
Intersection Delay (sec/veh)		A		A	
Intersection LOS		A		A	
		4.91		5.26	

Turn lane evaluations for the buildout background conditions are summarized in Table 5.

Table 5. Buildout (2025) Background Turn Lane Evaluations

ID	Intersection	Movement	# of Lanes	Access Category	Speed Limit (mph)	Turning Vol	Lane Width	Storage (ft)	Taper Length (ft)	Provided (ft)	SHAC (ft)
3	Wolfensberger Rd/Red Hawk Dr	NBR	1	NR-C	30	135	10	135	80	170	215
		SBL	1	NR-C	30	169	10	169	80	280	250
		EBL	1	NR-B	45	33	10	50	135	470	185
		WBL	1	NR-B	45	156	10	156	135	435	290
		WVBR	1	NR-B	45	103	10	103	135	Continuous Aux	240
4	Wolfensberger Rd/ Prairie Hawk Dr	NBL	1	NR-B	30	51	10	50	80	245	130
		NBR	1	NR-B	30	264	10	264	80	-	345
		SBL	1	NR-B	45	434	10	434	135	530	570
		SBR	1	NR-B	45	143	10	143	135	470	280
		EBL	1	NR-B	45	159	10	159	135	495	295
		EBR	1	NR-B	45	43	10	50	135	390	185
		WBL	1	NR-B	45	190	10	190	135	210	325
		WVBR	1	NR-B	45	373	10	373	135	155	510

Summary of required improvements is listed below.

Wolfensberger Road/Red Hawk Drive (#3)

- A 5-ft extension of northbound right-turn.

Wolfensberger Road/Prairie Hawk Drive (#4)

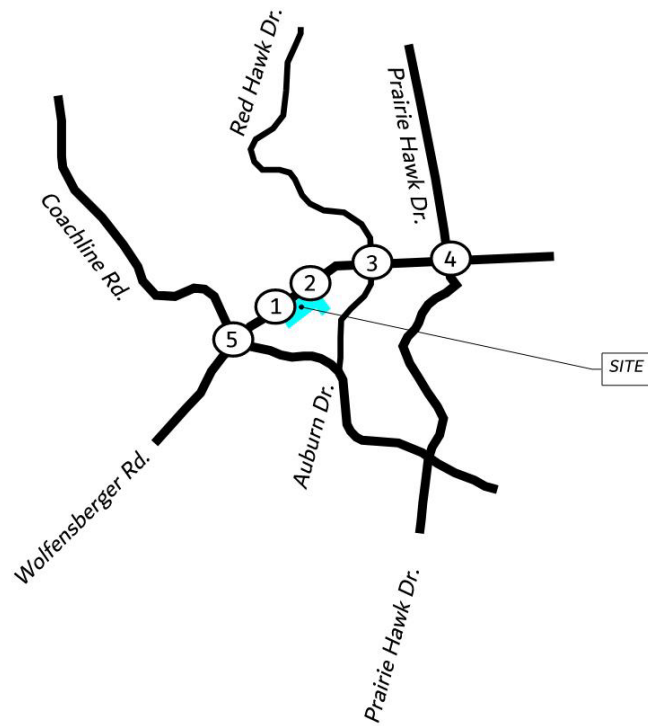
- A 75-ft extension of northbound right-turn.
- A 15-ft extension of southbound left-turn
- A 65-ft extension of westbound left-turn
- A 15-ft extension of westbound right-turn.

The improvements required in the buildout no project condition assume that the required improvements in the existing conditions were previously addressed. Moreover, these improvements would be required regardless of the construction of Wellspring Community and the project has no responsibility towards them.

Buildout Year (2025) Total Conditions

Buildout traffic volumes with the project traffic added are shown in Figure 16 and Figure 17 for AM peak hour and PM peak hour, respectively and daily traffic volumes with the project are shown in Figure 18. In the buildout with project scenario, intersection #1 was aligned with the Hillside access to the north of the development. Additionally, the adjacent church traffic was added to intersection #2.

Figure 16. Buildout (2025) Total Traffic Volumes (AM Peak Hour)



Wolfensberger Rd/Project Ac Wolfensberger Rd/Project Ac Wolfensberger Rd/Red Hawk Wolfensberger Rd/Prairie Ha

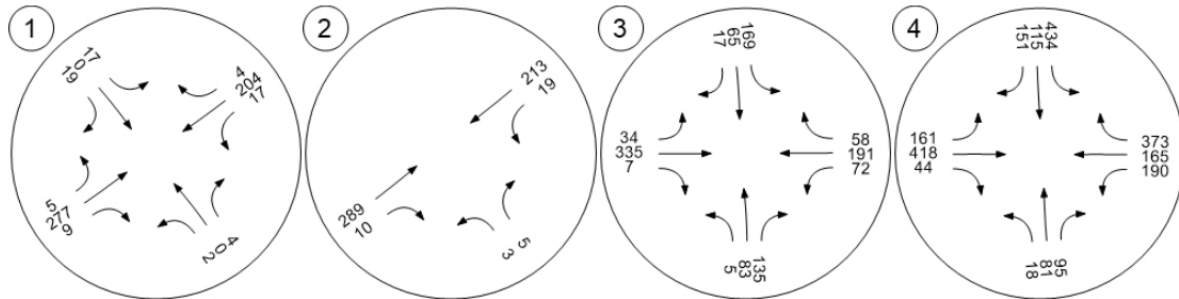
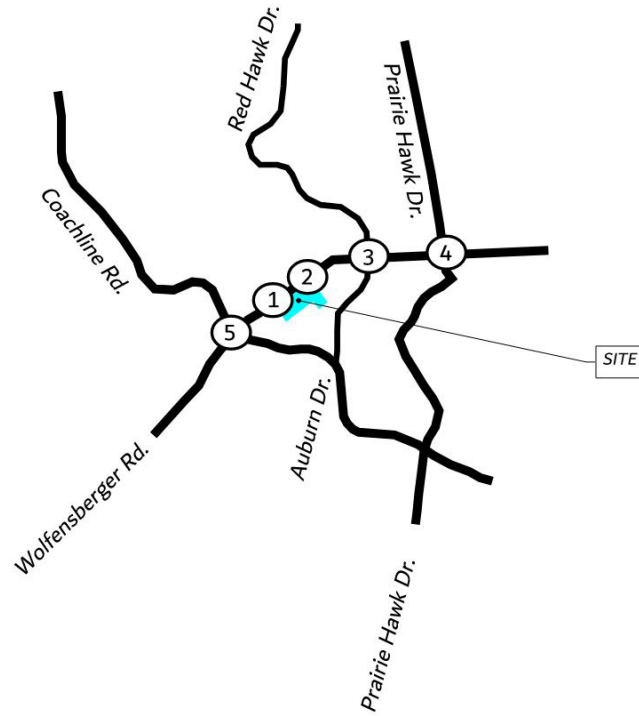
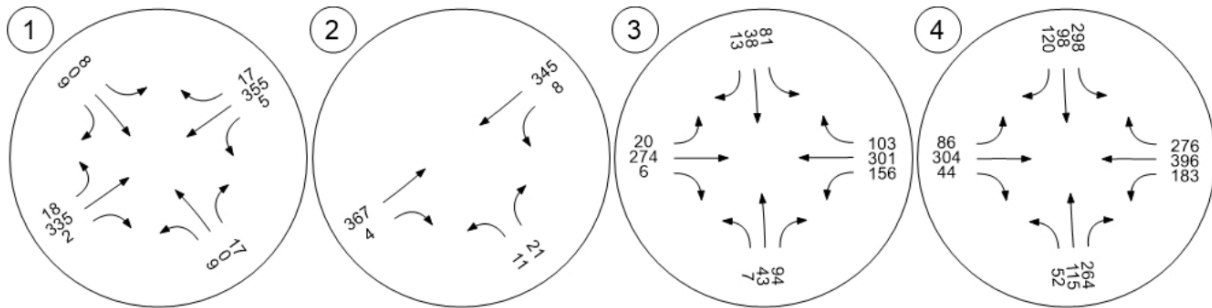


Figure 17. Buildout (2025) Total Traffic Volumes (PM Peak Hour)



Wolfensberger Rd/Project Ac Wolfensberger Rd/Project Ac Wolfensberger Rd/Red Hawk Wolfensberger Rd/Prairie Ha



Wolfensberger Rd/Coachline

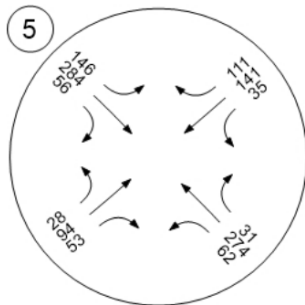
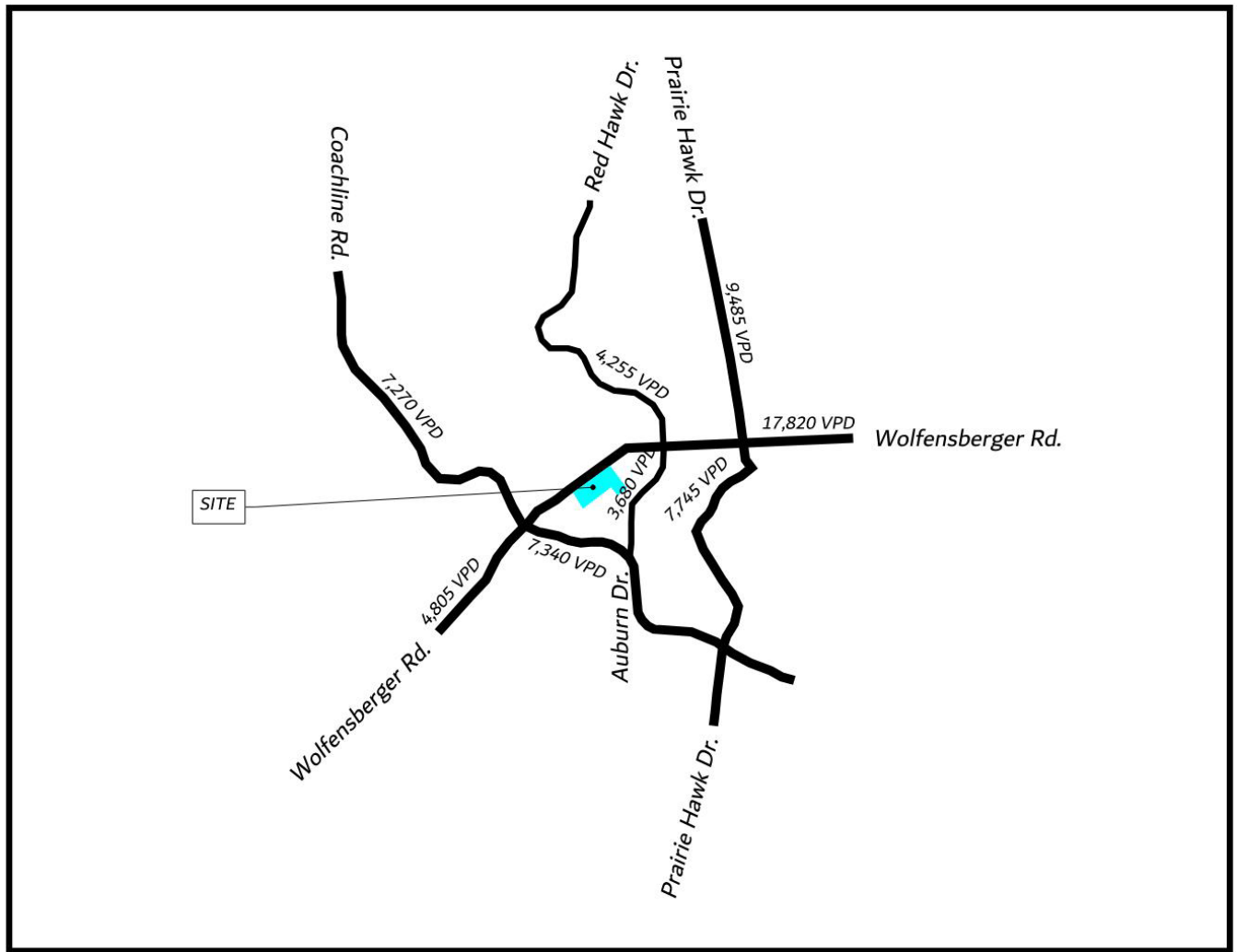
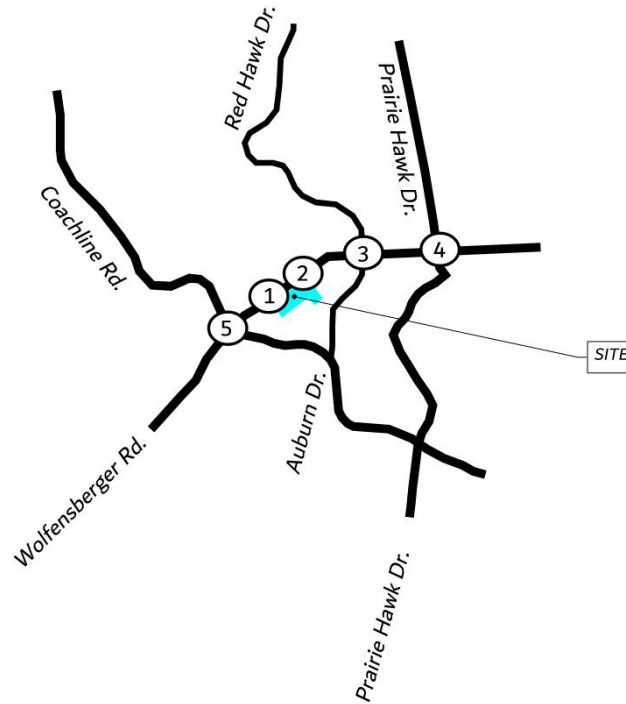


Figure 18. Buildout (2025) Total Daily Traffic Volumes

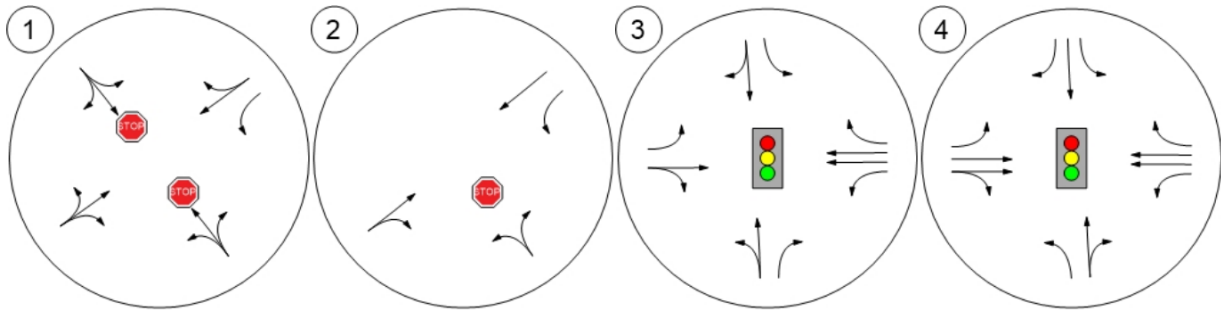


Assumed intersection configurations for the project intersections are shown in Figure 19.

Figure 19. Buildout (2025) Total Intersection Configurations



Wolfensberger Rd/Project Ac Wolfensberger Rd/Project Ac Wolfensberger Rd/Red Hawk Wolfensberger Rd/Prairie Ha



Wolfensberger Rd/Coachline

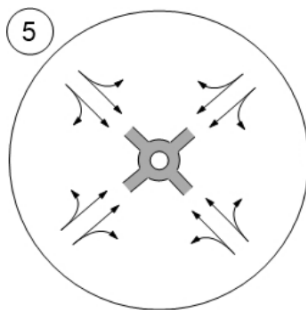


Table 6. Buildout (2025) Total Intersection Operations

2025 Total						2025 Total					
Intersection Location	Traffic Control	Level of Service	Delay	Level of Service	Delay	Intersection Location	Traffic Control	Level of Service	Delay	Level of Service	Delay
		AM	(sec/veh)	PM	(sec/veh)			AM	(sec/veh)	PM	(sec/veh)
Wolfsberger Rd (E-W)/Access No.1 (N-S) (#1)						Wolfsberger Rd/Prairie Hawk Dr (#4)					
Two-Way Stop						Signalized					
NBL		B	13.98	C	18.06	NBL		A	9.47	A	7.91
NBT		B	-	C	-	NBT		B	14.32	B	13.63
NBR		A	9.98	B	10.81	NBR		B	14.32	B	13.63
SBL		B	14.1	C	18.19	SBL		B	18.85	B	13.56
SBT		B	-	C	-	SBT		B	13.21	B	11.61
SBR		A	9.85	B	10.89	SBR		B	12.97	B	11.38
EBL		A	7.69	A	8.14	EBL		C	33.7	C	33.91
EBT		A	-	A	-	EBT		D	40.89	D	43.22
EBR		A	-	A	-	EBR		D	40.91	D	43.31
WBL		A	7.9	A	8.02	WBL		D	35.69	D	37.93
WBT		A	-	A	-	WBT		D	35.4	D	43.19
WBR		A	-	A	-	WBR		D	39.86	D	42.22
Intersection LOS		B		C		Intersection Delay (sec/veh)		29.35		29.99	
Intersection Delay (sec/veh)		13.98		18.19		Intersection LOS		C		C	
Wolfsberger Rd/Access No.2 (#2)						Wolfsberger Rd/Plum Creek Pkwy/Coachline Rd (#5)					
Two-Way Stop						Roundabout					
NBL		B	12.93	C	15.71	NBL		A	5.26	A	5.12
NBR		B	10.07	B	11.08	NBT		A	5.26	A	5.12
EBT		A	-	A	-	NBR		A	5.26	A	5.12
EBR		A	-	A	-	SBL		A	4.59	A	5.55
WBL		A	7.94	A	8.13	SBT		A	4.59	A	5.55
WBT		A	-	A	-	SBR		A	4.59	A	5.55
Intersection Delay (sec/veh)		B		C		EBL		A	5.54	A	5.19
Intersection LOS		12.93		15.71		EBT		A	5.54	A	5.19
Wolfsberger Rd/Red Hawk Dr (#3)						EBR		A	5.54	A	5.19
Signalized						WBL		A	4.54	A	5.26
NBL		A	9.22	A	8.86	WBT		A	4.54	A	5.26
NBT		A	9.22	A	8.86	WBR		A	4.54	A	5.26
NBR		B	13.24	B	12.78	Intersection Delay (sec/veh)		A		A	
SBL		B	12.94	B	11.58	Intersection LOS		4.97		5.26	
SBT		B	13.15	B	12.66						
SBR		B	13.15	B	12.66						
EBL		C	25.34	C	25.52						
EBT		D	44.12	D	38.94						
EBR		D	44.12	D	38.94						
WBL		C	28.22	C	32.49						
WBT		C	32.06	C	32.82						
WBR		C	30.77	C	30.79						
Entire Intersection Delay (sec/veh)		27.95		29.56							
Entire Intersection LOS		C		C							

Turn lane requirements in the buildout year with the addition of the project is summarized in Table 7

Table 7. Buildout (2025) Total Turn Lane Evaluations

ID	Intersection	Movement	# of Lanes	Access Category	Speed Limit (mph)	Turning Vol	Lane Width	Storage (ft)	Taper Length (ft)	Provided (ft)	SHAC (ft)
1	Wolfensberger Rd/Access No.1	WBL	1	NR-B	45	17	10	25	135	-	160
2	Wolfensberger Rd/Access No.2	WBL	1	NR-B	45	19	10	25	135	-	160
3	Wolfensberger Rd/Red Hawk Dr	NBR	1	NR-C	30	135	10	135	80	170	215
		SBL	1	NR-C	30	169	10	169	80	280	250
		EBL	1	NR-B	45	34	10	50	135	470	185
		WBL	1	NR-B	45	156	10	156	135	435	290
		WBR	1	NR-B	45	103	10	103	135	Continuous Aux	240
4	Wolfensberger Rd/ Prairie Hawk Dr	NBL	1	NR-B	30	52	10	50	80	245	130
		NBR	1	NR-B	30	264	10	264	80	-	345
		SBL	1	NR-B	45	434	10	434	135	530	570
		SBR	1	NR-B	45	151	10	151	135	470	285
		EBL	1	NR-B	45	161	10	161	135	495	295
		EBR	1	NR-B	45	44	10	50	135	390	185
		WBL	1	NR-B	45	190	10	190	135	210	325
		WBR	1	NR-B	45	373	10	373	135	155	510

Wolfensberger Road/Project Access #1 (#1)

- A 160-ft westbound left-turn. Included a 25-ft storage and a 135-ft taper length. Project will be responsible for this improvement at project buildout.

Wolfensberger Road/Project Access #2 (#2)

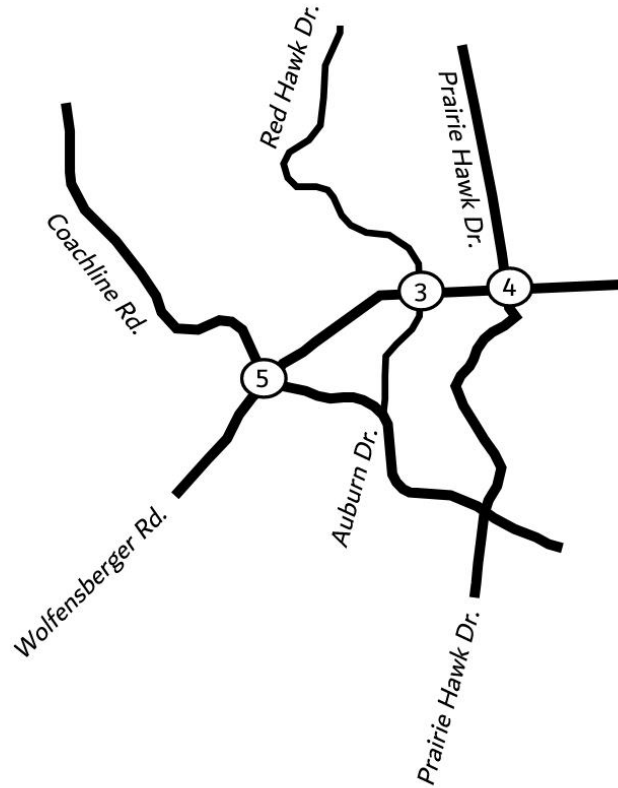
- A 160-ft westbound left-turn. Included a 25-ft storage and a 135-ft taper length. Project will be responsible for this improvement at project buildout.

No additional improvements are required at the intersections of Wolfensberger Road/Redhawk Drive (#3) or Wolfensberger Road/Prairie Hawk Drive (#4). The project will be fully responsible for the turn lanes at the project access points (#1) and (#2).

Horizon Year (2045) Background Conditions

The horizon year traffic volumes without the Wellspring Community project are shown in Figure 20 and Figure 21 and daily traffic volumes are shown in Figure 22. The Hillside and Brickyard developments traffic were added to the background volumes.

Figure 20. Horizon (2045) Background Traffic Volumes (AM Peak Hour)



Wolfensberger Rd/Red Hawk Wolfensberger Rd/Prairie Ha Wolfensberger Rd/Coachline

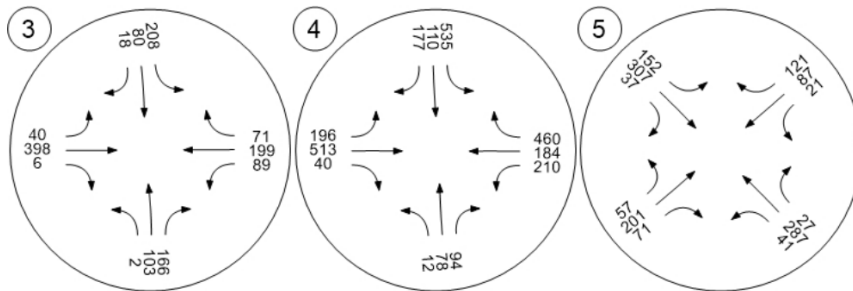
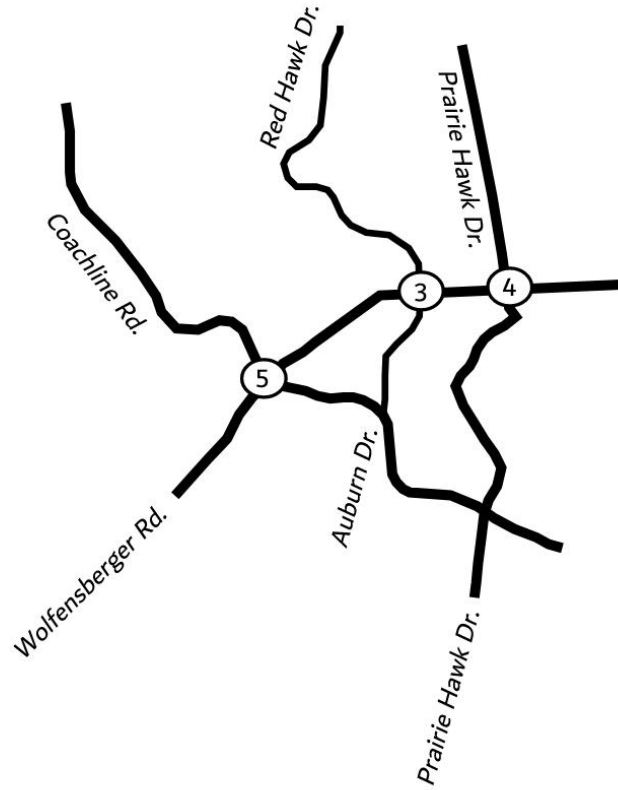


Figure 21. Horizon (2045) Background Traffic Volumes (PM Peak Hour)



Wolfensberger Rd/Red Hawk Wolfensberger Rd/Prairie Ha Wolfensberger Rd/Coachline

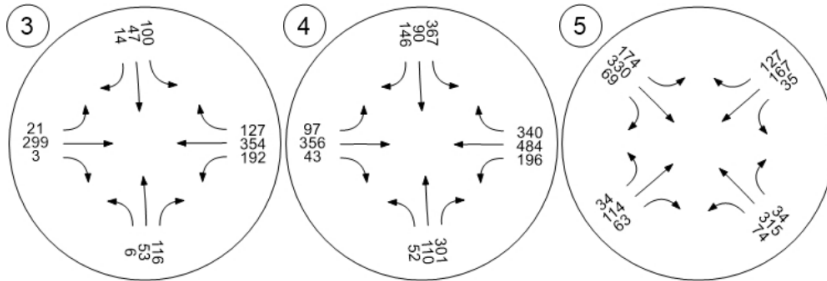
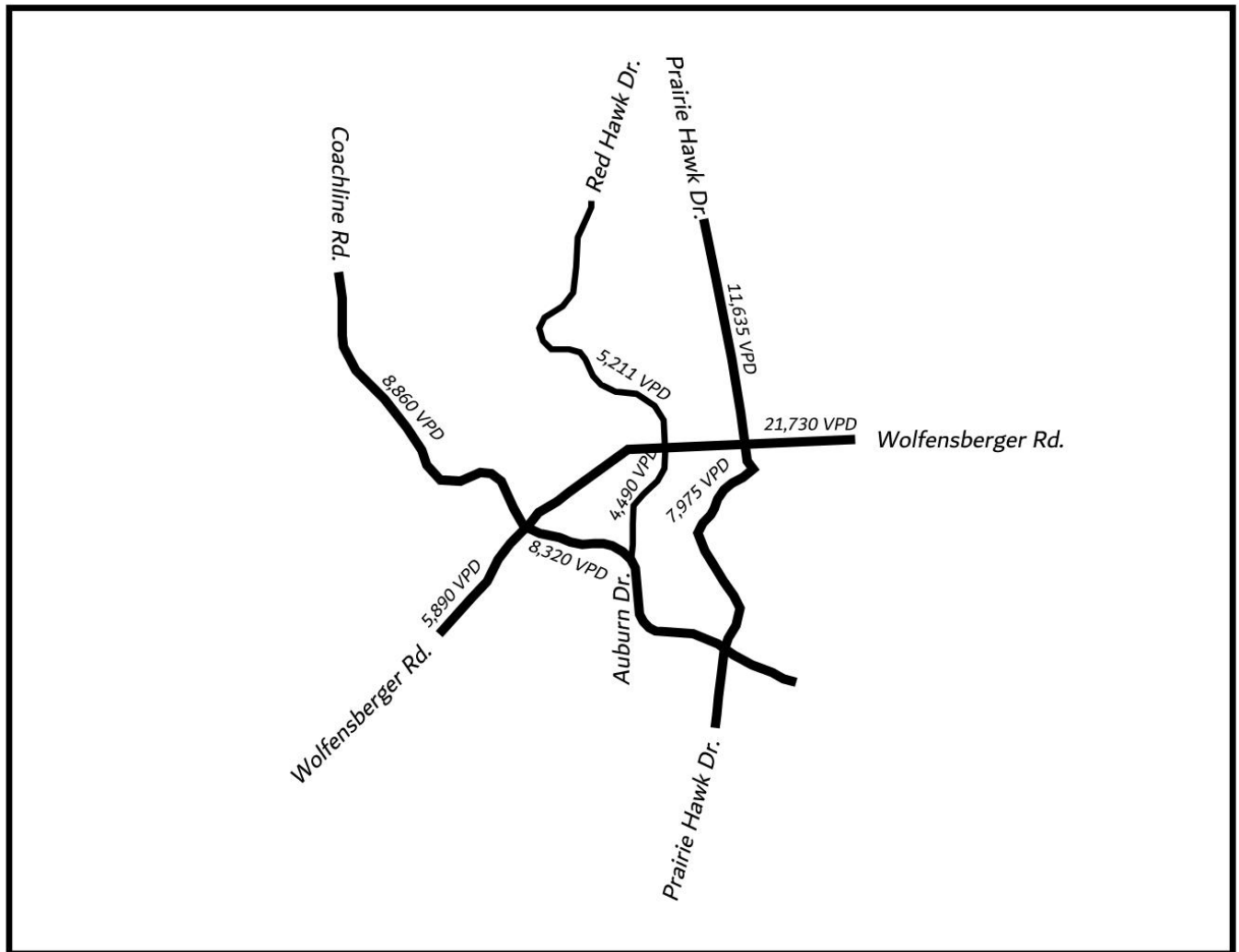
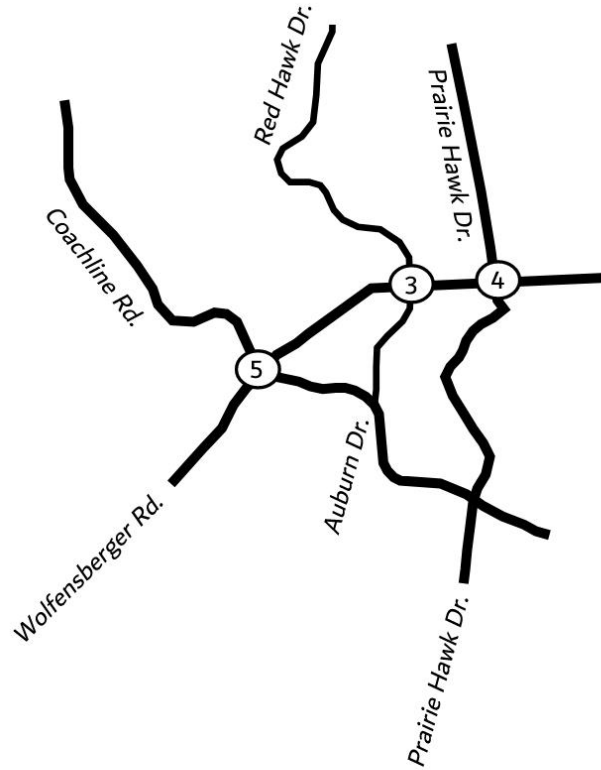


Figure 22. Horizon (2045) Daily Traffic

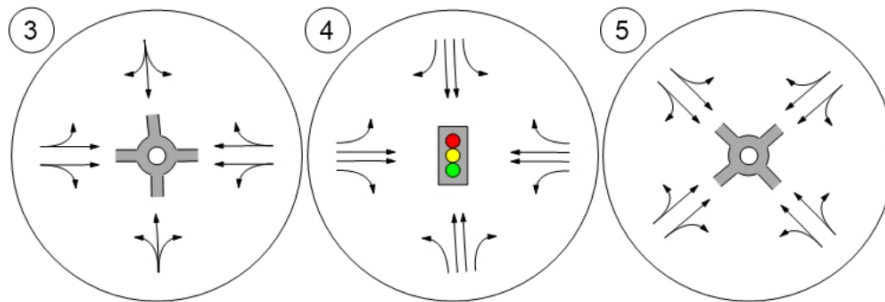


The assumed intersection configurations are shown in Figure 23. These configurations were derived from a combination of the *Town of Castle Rock Master Transportation Plan (2017)*, *Wolfensberger Road Access Control Plan (2007)*, and coordination with the Town of Castle Rock. The operations of the study area intersections in the horizon background (no project) scenario are shown in Table 8.

Figure 23. Horizon (2045) Intersection Configurations



Wolfensberger Rd/Red Hawk Wolfensberger Rd/Prairie Ha Wolfensberger Rd/Coachline



It was assumed that by the year 2045, Wolfensberger Road will be a 4-lane road. The same assumption was also applied to Prairie Hawk Drive north and south of Wolfensberger Drive. The intersection of Wolfensberger Road/Red Hawk Drive was also assumed to be converted to a roundabout per direction provided by Town of Castle Rock staff.

Table 8. Horizon (2045) Background Intersection Operations

		2045 Background			
		Level of	Level of		
Intersection Location	Traffic Control	Service AM	Delay (sec/veh)	Service PM	Delay (sec/veh)
Wolfensberger Rd/Red Hawk Dr (#3)					
Roundabout					
NBL		A	7.27	A	5.01
NBT		A	7.27	A	5.01
NBR		A	7.27	A	5.01
SBL		A	6.81	A	7.16
SBT		A	6.81	A	7.16
SBR		A	6.81	A	7.16
EBL		A	6.26	A	5.29
EBT		A	6.26	A	5.29
EBR		A	6.26	A	5.29
WBL		A	4.01	A	4.63
WBT		A	4.01	A	4.63
WBR		A	4.01	A	4.63
Entire Intersection Delay (sec/veh)		5.99		5.14	
Entire Intersection LOS		A		A	
Wolfensberger Rd/Prairie Hawk Dr (#4)					
Signalized					
NBL		B	12.47	A	9.22
NBT		B	16.93	B	12.92
NBR		B	17.2	B	14.36
SBL		C	27.53	B	14.97
SBT		B	16.03	B	12.76
SBR		B	16.75	B	13.23
EBL		C	31.57	C	34.54
EBT		C	34.94	D	39.95
EBR		C	29.47	D	35.66
WBL		C	32.77	D	36.65
WBT		C	29.28	D	40.24
WBR		C	33.67	D	39.08
Intersection Delay (sec/veh)		29.22		29.21	
Intersection LOS		C		C	
Wolfensberger Rd/Plum Creek Pkwy/Coachline Rd (#5)					
Roundabout					
NBL		A	5.68	A	5.43
NBT		A	5.68	A	5.43
NBR		A	5.68	A	5.43
SBL		A	4.73	A	5.67
SBT		A	4.73	A	5.67
SBR		A	4.73	A	5.67
EBL		A	5.48	A	5.1
EBT		A	5.48	A	5.1
EBR		A	5.48	A	5.1
WBL		A	4.59	A	5.01
WBT		A	4.59	A	5.01
WBR		A	4.59	A	5.17
Intersection Delay (sec/veh)					
Intersection LOS		A		A	
		5.12		5.39	

Turn lane evaluations for the horizon background scenario are shown in Table 9.

Table 9. Horizon (2045) Background Turn Lane Evaluations

ID	Intersection	Movement	# of Lanes	Access Category	Speed Limit (mph)	Turning Vol	Lane Width	Storage (ft)	Taper Length (ft)	Provided (ft)	SHAC (ft)
4	Wolfensberger Rd/ Prairie Hawk Dr	NBL	1	NR-B	30	52	10	50	80	245	130
		NBR	1	NR-B	30	301	10	301	80	-	380
		SBL	1	NR-B	45	535	10	535	135	530	670
		SBR	1	NR-B	45	177	10	177	135	470	310
		EBL	1	NR-B	45	196	10	196	135	495	330
		EBR	1	NR-B	45	43	10	50	135	390	185
		WBL	1	NR-B	45	210	10	210	135	210	345
		WBR	1	NR-B	45	460	10	460	135	155	595

Summary of required improvements with respect to the buildout background conditions is listed below.

Wolfensberger Road/Prairie Hawk Drive (#4)

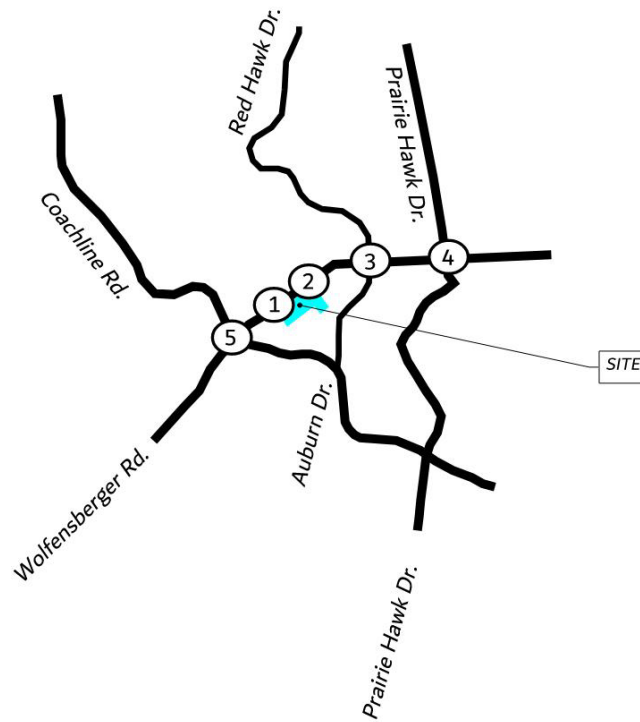
- A 35-ft extension of northbound right-turn.
- A 100-ft extension of southbound left-turn.
- A 20-ft extension of westbound left-turn
- An 85-ft extension of westbound right-turn.

These improvements are warranted without Project traffic, so the Project should not have any responsibility for these improvements. In addition, the improvements required in the horizon no project condition assume that the required improvements in the previous scenarios were previously addressed.

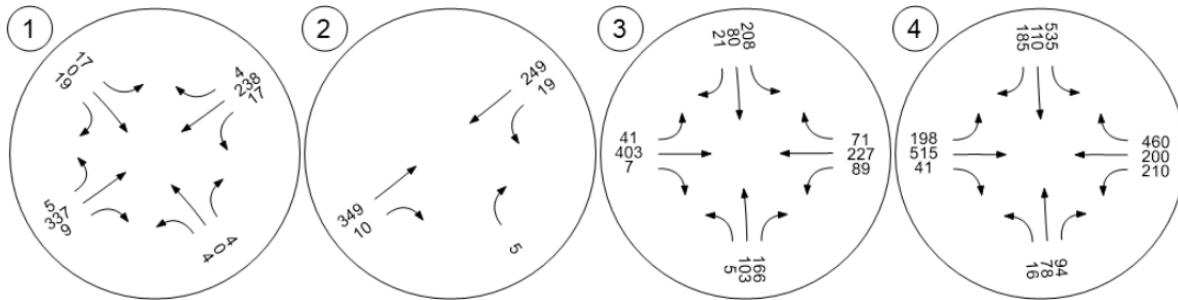
Horizon Year (2045) Total Conditions

When the project traffic is added to the 2045 background traffic, the resulting AM peak hour, PM peak hour and daily traffic volumes are as shown in Figure 24, Figure 25 and Figure 26.

Figure 24. Horizon (2045) Total Traffic Volumes (AM Peak Hour)



Wolfensberger Rd/Project Ac Wolfensberger Rd/Project Ac Wolfensberger Rd/Red Hawk Wolfensberger Rd/Prairie Ha



Wolfensberger Rd/Coachline

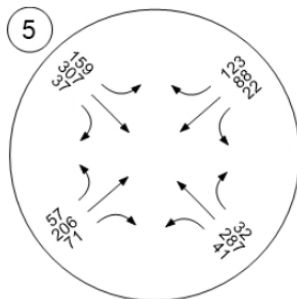
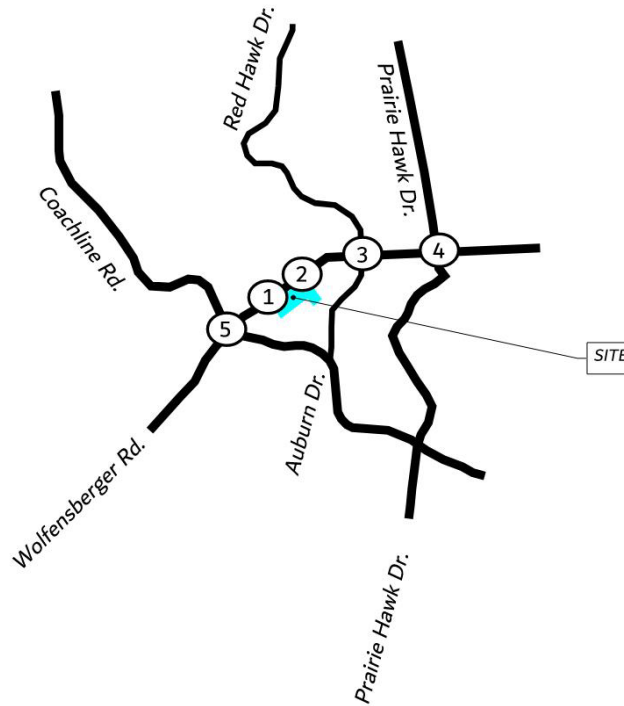
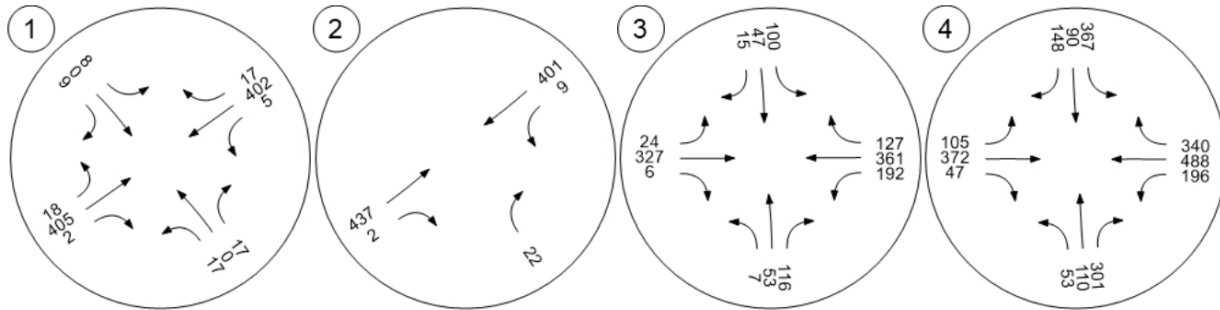


Figure 25. Horizon (2045) Total Traffic Volumes (PM Peak Hour)



Wolfensberger Rd/Project Ac Wolfensberger Rd/Project Ac Wolfensberger Rd/Red Hawk Wolfensberger Rd/Prairie Ha



Wolfensberger Rd/Coachline

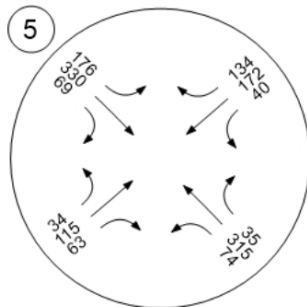
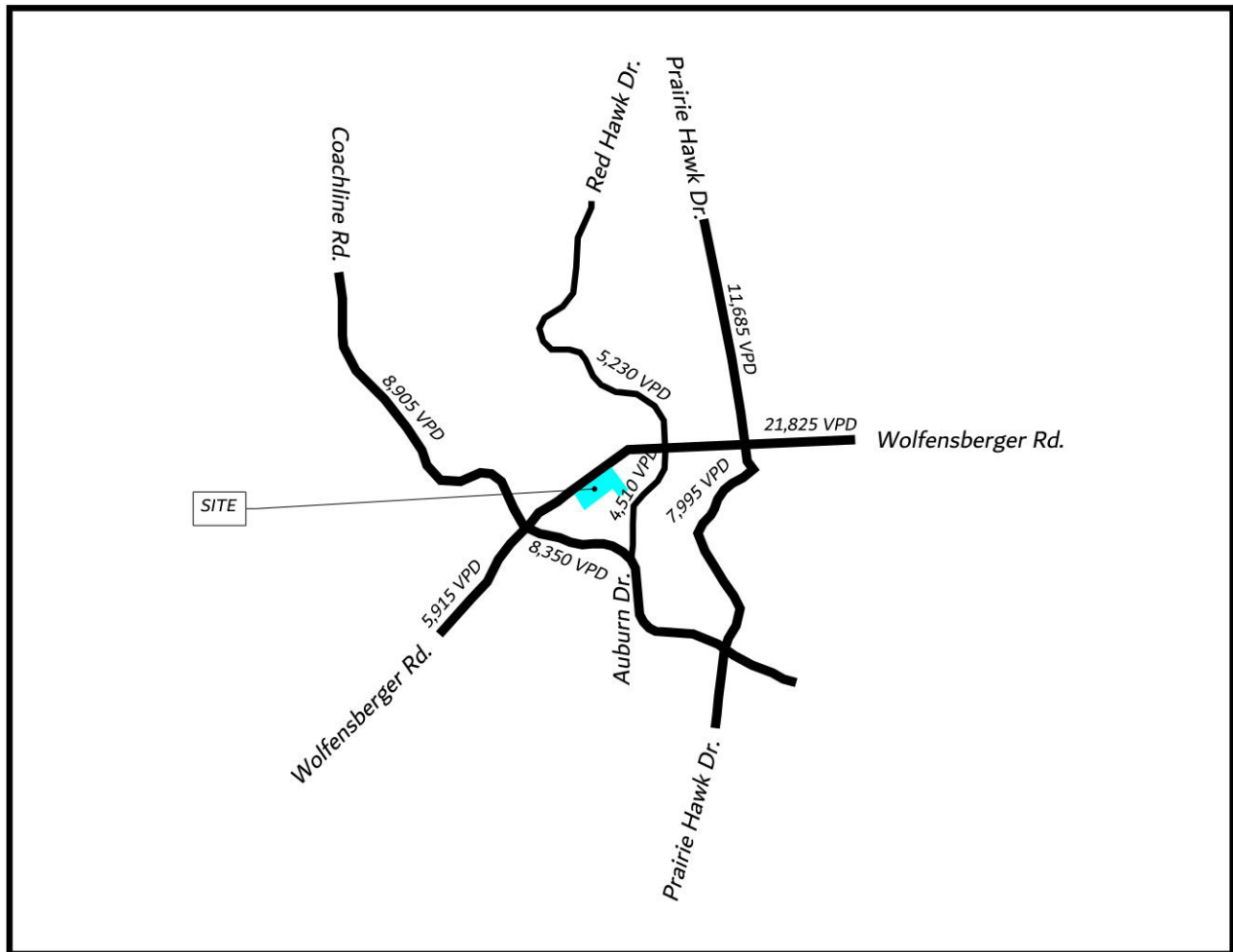


Figure 26. Horizon (2045) Total Daily Traffic



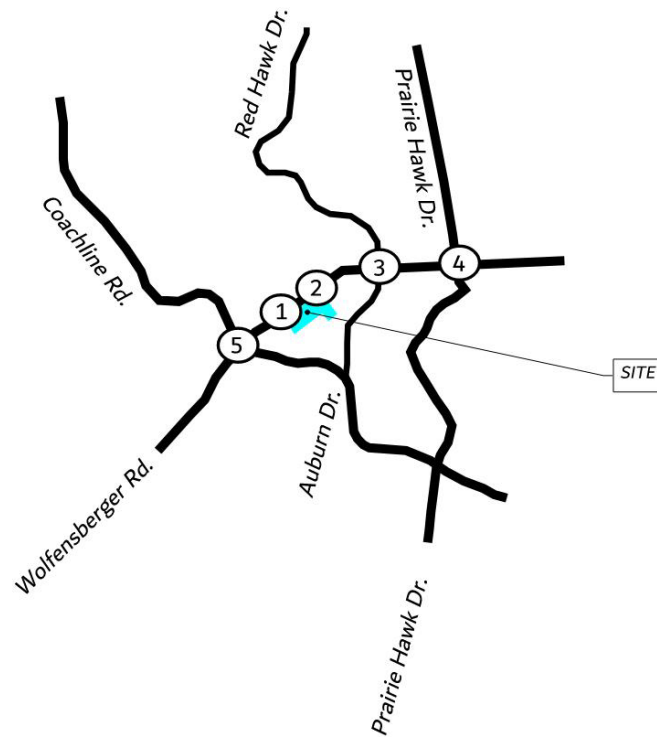
Assumed intersection configurations for the project intersections are shown in Figure 27.

Analysis of the intersections and roadways for horizon total conditions with the volumes and configurations shown above results in the operations shown in Table 10

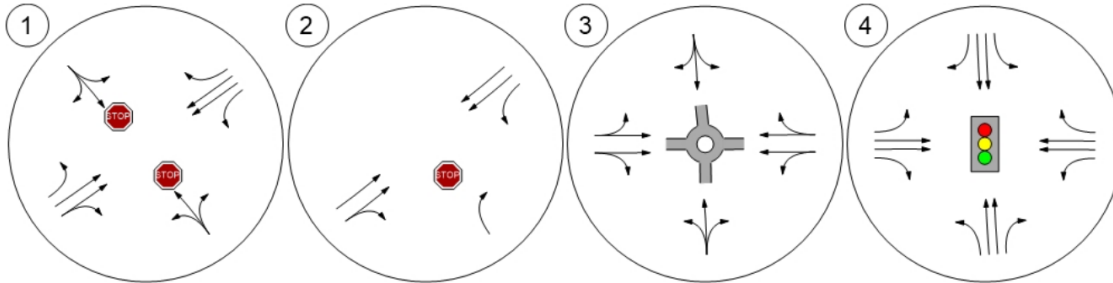
Table 10. Horizon (2045) Total Intersection Operations

2045 Total						2045 Total					
Intersection Location	Traffic Control	Level of Service	Delay	Level of Service	Delay	Intersection Location	Traffic Control	Level of Service	Delay	Level of Service	Delay
		AM	(sec/veh)	PM	(sec/veh)			AM	(sec/veh)	PM	(sec/veh)
Wolfensberger Rd/Access No.1 (#1)						Wolfensberger Rd/Prairie Hawk Dr (#4)					
Two-Way Stop						Signalized					
NBL		B	14.04	C	17.34	NBL		B	12.56	A	9.54
NBT		B	-	C	-	NBT		B	17	B	13.3
NBR		A	9.48	B	10.31	NBR		B	17.27	B	14.78
SBL		B	13.36	C	17.05	SBL		C	27.71	B	15.5
SBT		C	-	C	-	SBT		B	16.22	B	13.16
SBR		A	9.41	A	9.93	SBR		B	17.02	B	13.66
EBL		A	7.78	A	8.33	EBL		C	31.98	C	34.9
EBT		A	-	A	-	EBT		C	34.85	D	39.47
EBR		A	-	A	-	EBR		C	29.38	D	35.09
WBL		A	8.1	A	8.24	WBL		C	32.66	D	36.09
WBT		A	-	A	-	WBT		C	29.35	D	39.5
WBR		A	-	A	-	WBR		C	33.55	D	38.3
Intersection LOS		B		C		Intersection Delay (sec/veh)		29.24		29.15	
Intersection Delay (sec/veh)		14.04		17.34		Intersection LOS		C		C	
Wolfensberger Rd (E-W)/Access No.2 (N-S) (#2)						Wolfensberger Rd/Plum Creek Pkwy/Coachline Rd (#5)					
Two-Way Stop						Roundabout					
NBR		A	9.45	A	9.87	NBL		A	5.74	A	5.45
EBT		A	-	A	-	NBT		A	5.74	A	5.45
EBR		A	-	A	-	NBR		A	5.74	A	5.45
WBL		A	8.5	A	8.36	SBL		A	4.77	A	5.75
WBT		A	-	A	-	SBT		A	4.77	A	5.75
WBR		A	-	A	-	SBR		A	4.77	A	5.75
Intersection LOS		A		A		EBL		A	5.57	A	5.14
Intersection Delay (sec/veh)		9.45		9.87		EBT		A	5.57	A	5.14
Wolfensberger Rd/Red Hawk Dr (#3)						Wolfensberger Rd/Plum Creek Pkwy/Coachline Rd (#5)					
Roundabout						Roundabout					
NBL		A	7.34	A	5.17	NBL		A	5.74	A	5.45
NBT		A	7.34	A	5.17	NBT		A	5.74	A	5.45
NBR		A	7.34	A	5.17	NBR		A	5.74	A	5.45
SBL		A	7.11	A	7.22	SBL		A	4.77	A	5.75
SBT		A	7.11	A	7.22	SBT		A	4.77	A	5.75
SBR		A	7.11	A	7.22	SBR		A	4.77	A	5.75
EBL		A	6.3	A	5.45	EBL		A	5.57	A	5.14
EBT		A	6.3	A	5.45	EBT		A	5.57	A	5.14
EBR		A	6.3	A	5.45	EBR		A	5.57	A	5.14
WBL		A	4.13	A	4.67	WBL		A	4.6	A	5.08
WBT		A	4.13	A	4.67	WBT		A	4.6	A	5.08
WBR		A	4.13	A	4.67	WBR		A	4.54	A	5.08
Entire Intersection Delay (sec/veh)		6.09		5.24		Intersection Delay (sec/veh)		4.6			
Entire Intersection LOS		A		A		Intersection LOS		A		A	
		A		A				5.17		5.43	

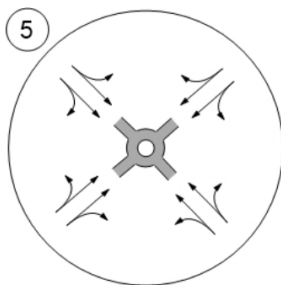
Figure 27. Horizon (2045) Total Intersection Configurations



Wolfensberger Rd/Project Ac Wolfensberger Rd/Project Ac Wolfensberger Rd/Red Hawk Wolfensberger Rd/Prairie Ha



Wolfensberger Rd/Coachline



Turn lane evaluations for the horizon year with the addition of the project are summarized below:

Table 11. Horizon (2045) Total Turn Lane Evaluations

ID	Intersection	Movement	# of Lanes	Access Category	Speed Limit (mph)	Turning Vol	Lane Width	Storage (ft)	Taper Length (ft)	Provided (ft)	SHAC (ft)
1	Wolfensberger Rd/Access No.1	WBL	1	NR-B	45	17	10	25	135	-	160
2	Wolfensberger Rd/Access No.2	WBL	1	NR-B	45	19	10	25	135	-	160
4	Wolfensberger Rd/ Prairie Hawk Dr	NBL	1	NR-B	30	53	10	50	80	245	130
		NBR	1	NR-B	30	301	10	301	80	-	380
		SBL	1	NR-B	45	553	10	553	135	530	690
		SBR	1	NR-B	45	185	10	185	135	470	320
		EBL	1	NR-B	45	198	10	198	135	495	335
		EBR	1	NR-B	45	47	10	50	135	390	185
		WBL	1	NR-B	45	210	10	210	135	210	345
		WBR	1	NR-B	45	460	10	460	135	155	595

The improvements required in the horizon total scenario assume that the required improvements in the previous scenario were previously addressed.

Conclusions and Recommendations

In this study, the traffic impacts of the Wellspring Community development on the adjacent roadways were assessed. All the intersections will operate at an acceptable level of service in both the buildout year and the horizon year with or without the project. All turning movements also operate at or above the required LOS in the TDM. Summary of the findings are listed below:

Wolfensberger Road/Project Access #1 (#1)

- A 160-ft westbound left-turn. Included a 25-ft storage and a 135-ft taper length. Project will be responsible for this improvement at project buildout.

Wolfensberger Road/Project Access #2 (#2)

- A 160-ft westbound left-turn. Included a 25-ft storage and a 135-ft taper length. Project will be responsible for this improvement at project buildout.

These improvements are required for the buildout conditions. When Wolfensberger Road is widened into a 4-lane roadway, the turn lanes occur within the median.

Appendix A – Traffic Counts

Site Code: 4
Station ID: 4
COACHLINE RD W.O. WOLFENSBERGER RD

Start Time	24-Jan-24 Wed	EB	WB							Total
12:00 AM		3	10							13
01:00		0	1							1
02:00		0	2							2
03:00		3	2							5
04:00		7	3							10
05:00		35	8							43
06:00		105	53							158
07:00		294	290							584
08:00		330	250							580
09:00		266	164							430
10:00		171	129							300
11:00		132	169							301
12:00 PM		201	190							391
01:00		178	164							342
02:00		179	206							385
03:00		338	370							708
04:00		409	333							742
05:00		275	343							618
06:00		230	251							481
07:00		101	170							271
08:00		87	141							228
09:00		55	76							131
10:00		16	38							54
11:00		13	15							28
Total		3428	3378							6806
Percent		50.4%	49.6%							
AM Peak	-	08:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	330	290	-	-	-	-	-	-	584
PM Peak	-	16:00	15:00	-	-	-	-	-	-	16:00
Vol.	-	409	370	-	-	-	-	-	-	742
Grand Total		3428	3378							6806
Percent		50.4%	49.6%							
ADT		ADT 6,806	AADT 6,806							

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Site Code: 5
 Station ID: 5
 WOLFENSBERGER RD S.O. COACHLINE RD

Start Time	24-Jan-24 Wed	NB	SB							Total
12:00 AM		3	5							8
01:00		2	1							3
02:00		1	1							2
03:00		3	2							5
04:00		14	2							16
05:00		47	3							50
06:00		108	25							133
07:00		248	89							337
08:00		197	131							328
09:00		183	112							295
10:00		156	132							288
11:00		165	144							309
12:00 PM		163	159							322
01:00		144	154							298
02:00		153	159							312
03:00		165	232							397
04:00		158	230							388
05:00		178	264							442
06:00		110	163							273
07:00		57	107							164
08:00		23	95							118
09:00		24	61							85
10:00		7	26							33
11:00		3	11							14
Total		2312	2308							4620
Percent		50.0%	50.0%							
AM Peak	-	07:00	11:00	-	-	-	-	-	-	07:00
Vol.	-	248	144	-	-	-	-	-	-	337
PM Peak	-	17:00	17:00	-	-	-	-	-	-	17:00
Vol.	-	178	264	-	-	-	-	-	-	442
Grand Total		2312	2308							4620
Percent		50.0%	50.0%							
ADT		ADT 4,620	AADT 4,620							

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Page 1

Site Code: 6
Station ID: 6

PLUM CREEK PKWY E.O. WOLFENSBERGER RD

Start Time	24-Jan-24 Wed	EB	WB							Total
12:00 AM		2	5							7
01:00		0	0							0
02:00		0	3							3
03:00		2	2							4
04:00		5	3							8
05:00		25	12							37
06:00		86	37							123
07:00		222	210							432
08:00		226	177							403
09:00		194	122							316
10:00		139	105							244
11:00		118	153							271
12:00 PM		151	168							319
01:00		147	112							259
02:00		143	170							313
03:00		286	242							528
04:00		296	278							574
05:00		197	310							507
06:00		181	195							376
07:00		77	114							191
08:00		66	104							170
09:00		34	60							94
10:00		16	26							42
11:00		7	11							18
Total		2620	2619							5239
Percent		50.0%	50.0%							
AM Peak	-	08:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	226	210	-	-	-	-	-	-	432
PM Peak	-	16:00	17:00	-	-	-	-	-	-	16:00
Vol.	-	296	310	-	-	-	-	-	-	574
Grand Total		2620	2619							5239
Percent		50.0%	50.0%							
ADT		ADT 5,239	AADT 5,239							

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Site Code: 7
Station ID: 7

PRAIRIE HAWK DR N.O. WOLFENSBERGER RD

Start Time	24-Jan-24	NB	SB							Total
12:00 AM		6	9							15
01:00		5	5							10
02:00		7	1							8
03:00		1	2							3
04:00		14	11							25
05:00		43	46							89
06:00		133	102							235
07:00		555	552							1107
08:00		281	312							593
09:00		254	277							531
10:00		243	242							485
11:00		257	258							515
12:00 PM		302	310							612
01:00		252	269							521
02:00		318	257							575
03:00		417	698							1115
04:00		350	445							795
05:00		368	355							723
06:00		230	248							478
07:00		162	125							287
08:00		118	116							234
09:00		56	73							129
10:00		16	32							48
11:00		15	10							25
Total		4403	4755							9158
Percent		48.1%	51.9%							
AM Peak	-	07:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	555	552	-	-	-	-	-	-	1107
PM Peak	-	15:00	15:00	-	-	-	-	-	-	15:00
Vol.	-	417	698	-	-	-	-	-	-	1115
Grand Total		4403	4755							9158
Percent		48.1%	51.9%							
ADT		ADT 9,158	AADT 9,158							

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Site Code: 8
Station ID: 8

PRAIRIE HAWK DR S.O. WOLFENSBERGER RD

Start Time	24-Jan-24	NB	SB								Total
12:00 AM		2	5								7
01:00		2	0								2
02:00		3	0								3
03:00		0	2								2
04:00		0	20								20
05:00		2	30								32
06:00		16	106								122
07:00		34	162								196
08:00		61	158								219
09:00		85	144								229
10:00		103	116								219
11:00		155	129								284
12:00 PM		167	194								361
01:00		148	140								288
02:00		111	102								213
03:00		247	119								366
04:00		239	156								395
05:00		210	129								339
06:00		130	59								189
07:00		68	50								118
08:00		65	22								87
09:00		42	12								54
10:00		5	3								8
11:00		3	4								7
Total		1898	1862								3760
Percent		50.5%	49.5%								
AM Peak	-	11:00	07:00	-	-	-	-	-	-	11:00	
Vol.	-	155	162	-	-	-	-	-	-	284	
PM Peak	-	15:00	12:00	-	-	-	-	-	-	16:00	
Vol.	-	247	194	-	-	-	-	-	-	395	
Grand Total		1898	1862								3760
Percent		50.5%	49.5%								
ADT		ADT 3,760	AADT 3,760								

Site Code: 9
 Station ID: 9
 WOLFENSBERGER RD E.O. PRAIRIE HAWK DR

Start Time	24-Jan-24 Wed	EB	WB							Total
12:00 AM		17	28							45
01:00		9	12							21
02:00		6	9							15
03:00		11	6							17
04:00		34	26							60
05:00		150	62							212
06:00		310	204							514
07:00		774	585							1359
08:00		669	493							1162
09:00		562	467							1029
10:00		474	399							873
11:00		539	452							991
12:00 PM		589	586							1175
01:00		504	503							1007
02:00		459	548							1007
03:00		903	734							1637
04:00		772	727							1499
05:00		647	767							1414
06:00		506	555							1061
07:00		234	371							605
08:00		186	274							460
09:00		133	159							292
10:00		48	104							152
11:00		24	50							74
Total		8560	8121							16681
Percent		51.3%	48.7%							
AM Peak	-	07:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	774	585	-	-	-	-	-	-	1359
PM Peak	-	15:00	17:00	-	-	-	-	-	-	15:00
Vol.	-	903	767	-	-	-	-	-	-	1637
Grand Total		8560	8121							16681
Percent		51.3%	48.7%							
ADT		ADT 16,681	AADT 16,681							



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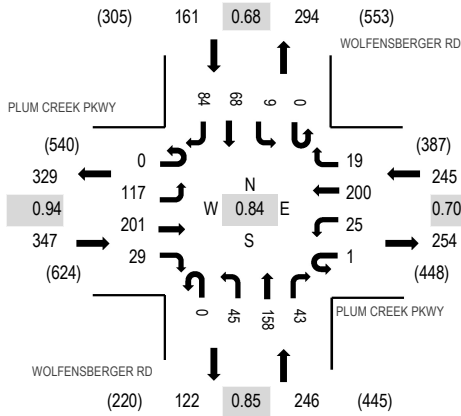
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Date: Wednesday, January 24, 2024

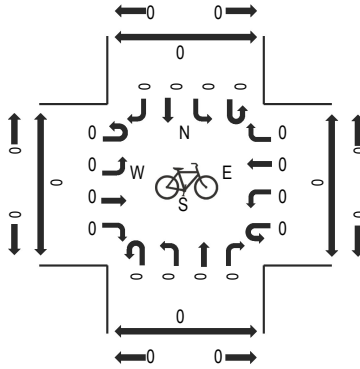
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Peak 15-Minutes: 07:45 AM - 08:00 AM

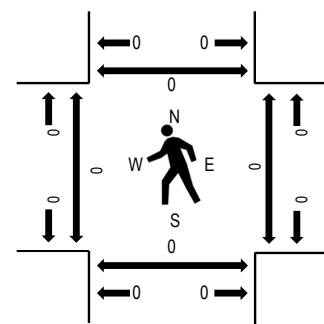
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	PLUM CREEK PKWY				PLUM CREEK PKWY				WOLFENSBERGER RD				WOLFENSBERGER RD				Total	Rolling Hour	Pedestrian Crossings			
	Eastbound				Westbound				Northbound				Southbound						West	East	South	North
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right						
7:00 AM	0	12	24	3	0	1	9	5	0	5	39	7	0	0	6	5	116	881	0	1	0	0
7:15 AM	0	22	36	5	0	4	42	6	0	17	46	6	0	1	9	10	204	999	0	0	0	0
7:30 AM	0	26	59	9	1	5	45	4	0	15	47	11	0	1	15	24	262	986	0	0	0	0
7:45 AM	0	35	57	6	0	7	75	6	0	8	32	15	0	4	19	35	299	925	0	0	0	0
8:00 AM	0	34	49	9	0	9	38	3	0	5	33	11	0	3	25	15	234	880	0	0	0	0
8:15 AM	0	33	47	4	1	7	26	3	0	3	34	5	0	1	14	13	191		0	0	0	0
8:30 AM	0	24	42	8	0	7	28	3	0	7	34	8	0	1	19	20	201		0	0	0	0
8:45 AM	0	30	45	5	0	3	43	6	0	9	36	12	0	1	21	43	254		0	0	0	0
Count Total	0	216	359	49	2	43	306	36	0	69	301	75	0	12	128	165	1,761		0	1	0	0
Peak Hour	0	117	201	29	1	25	200	19	0	45	158	43	0	9	68	84	999		0	0	0	0



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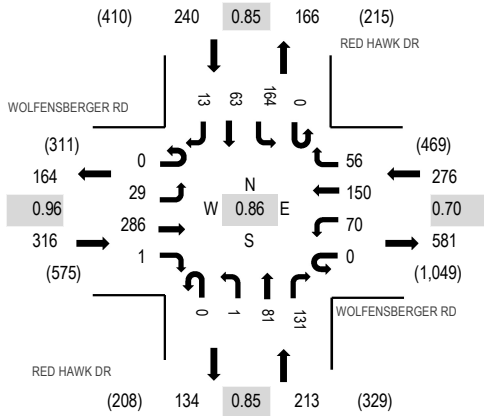
Location: 2 RED HAWK DR & WOLFENSBERGER RD AM

Date: Wednesday, January 24, 2024

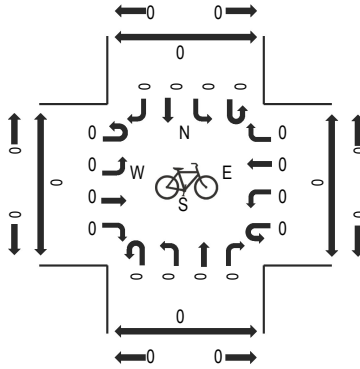
Peak Hour: 07:15 AM - 08:15 AM

Peak 15-Minutes: 07:45 AM - 08:00 AM

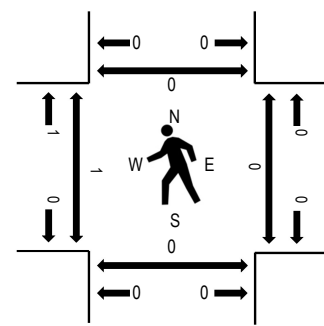
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	WOLFENSBERGER RD Eastbound				WOLFENSBERGER RD Westbound				RED HAWK DR Northbound				RED HAWK DR Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	1	58	0	0	8	9	1	0	0	3	32	0	31	3	2	148	968	0	1	0	0
7:15 AM	0	5	73	1	0	11	17	9	0	0	5	48	0	42	5	2	218	1,045	0	0	0	0
7:30 AM	0	10	68	0	0	23	43	20	0	0	25	38	0	52	17	2	298	1,012	0	0	0	0
7:45 AM	0	8	69	0	0	25	55	21	0	1	33	26	0	35	27	4	304	904	0	0	0	0
8:00 AM	0	6	76	0	0	11	35	6	0	0	18	19	0	35	14	5	225	815	1	0	0	0
8:15 AM	0	1	66	1	0	11	25	9	0	0	2	20	0	32	12	6	185		0	0	1	0
8:30 AM	0	3	62	0	0	10	40	10	0	0	5	20	0	31	6	3	190		1	0	0	0
8:45 AM	0	1	65	1	0	15	45	10	0	4	3	27	0	24	7	13	215		0	0	0	0
Count Total	0	35	537	3	0	114	269	86	0	5	94	230	0	282	91	37	1,783		2	1	1	0
Peak Hour	0	29	286	1	0	70	150	56	0	1	81	131	0	164	63	13	1,045		1	0	0	0



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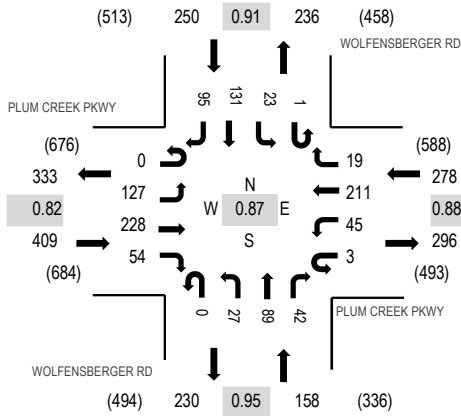
Location: 1 WOLFENSBERGER RD & PLUM CREEK PKWY PM

Date: Wednesday, January 24, 2024

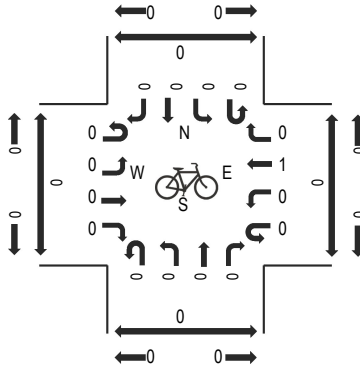
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Peak 15-Minutes: 04:00 PM - 04:15 PM

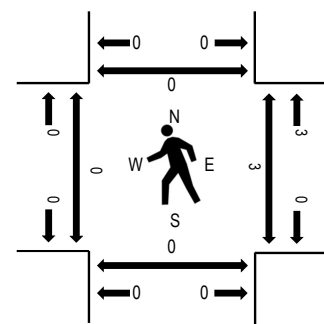
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	PLUM CREEK PKWY Eastbound				PLUM CREEK PKWY Westbound				WOLFENSBERGER RD Northbound				WOLFENSBERGER RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	43	68	14	0	12	65	1	0	6	22	8	0	9	42	25	315	1,095	0	1	0	0
4:15 PM	0	38	54	14	0	13	45	6	0	5	26	9	0	8	33	25	276	1,069	0	0	0	0
4:30 PM	0	24	49	20	2	9	54	4	0	7	16	11	1	4	26	27	254	1,046	0	2	0	0
4:45 PM	0	22	57	6	1	11	47	8	0	9	25	14	0	2	30	18	250	1,057	0	0	0	0
5:00 PM	0	22	38	17	0	23	67	2	0	10	27	11	0	4	35	33	289	1,026	0	0	0	0
5:15 PM	0	29	40	8	0	29	42	9	0	6	21	13	0	5	30	21	253		0	0	0	0
5:30 PM	0	30	24	10	0	29	50	5	0	8	28	10	0	3	40	28	265		0	0	0	0
5:45 PM	0	20	32	5	0	11	37	6	0	8	23	13	0	4	27	33	219		0	0	0	0
Count Total	0	228	362	94	3	137	407	41	0	59	188	89	1	39	263	210	2,121		0	3	0	0
Peak Hour	0	127	228	54	3	45	211	19	0	27	89	42	1	23	131	95	1,095		0	3	0	0



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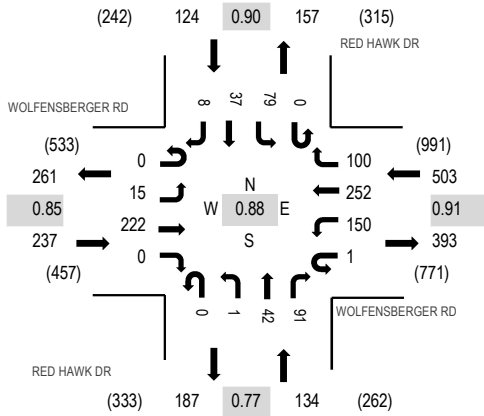
Location: 2 RED HAWK DR & WOLFENSBERGER RD PM

Date: Wednesday, January 24, 2024

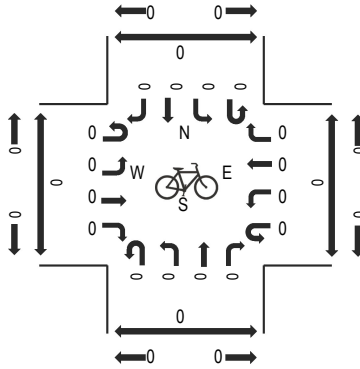
Peak Hour: 04:45 PM - 05:45 PM

Peak 15-Minutes: 05:30 PM - 05:45 PM

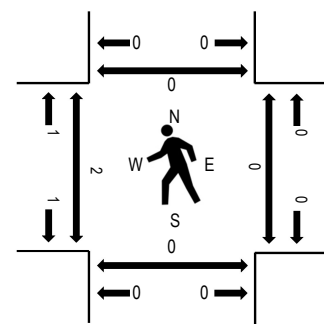
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	WOLFENSBERGER RD Eastbound				WOLFENSBERGER RD Westbound				RED HAWK DR Northbound				RED HAWK DR Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	7	51	0	0	30	67	25	0	0	15	20	0	16	7	4	242	964	0	0	0	0
4:15 PM	0	6	65	0	1	24	71	27	0	0	4	20	0	27	6	2	253	948	0	0	0	0
4:30 PM	0	2	41	0	0	41	59	26	0	0	8	26	0	24	5	1	233	946	0	0	0	0
4:45 PM	0	5	55	0	0	43	49	20	0	0	4	27	0	22	9	2	236	998	0	0	0	0
5:00 PM	0	1	46	0	1	35	65	25	0	1	13	11	0	17	8	3	226	988	1	0	0	0
5:15 PM	0	3	57	0	0	39	58	28	0	0	11	22	0	20	12	1	251		0	0	0	0
5:30 PM	0	6	64	0	0	33	80	27	0	0	14	31	0	20	8	2	285		1	0	0	0
5:45 PM	0	2	46	0	0	25	67	25	0	0	11	24	0	17	8	1	226		0	0	0	0
Count Total	0	32	425	0	2	270	516	203	0	1	80	181	0	163	63	16	1,952		2	0	0	0
Peak Hour	0	15	222	0	1	150	252	100	0	1	42	91	0	79	37	8	998		2	0	0	0



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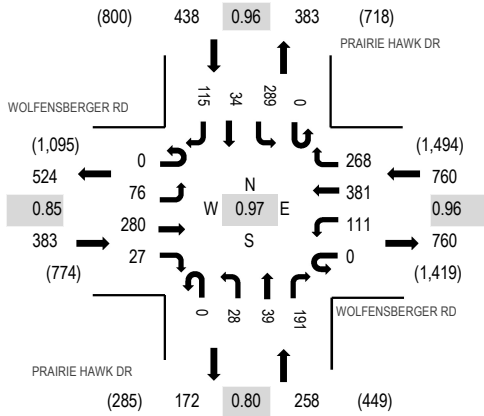
Location: 3 PRAIRIE HAWK DR & WOLFENSBERGER RD PM

Date: Wednesday, January 24, 2024

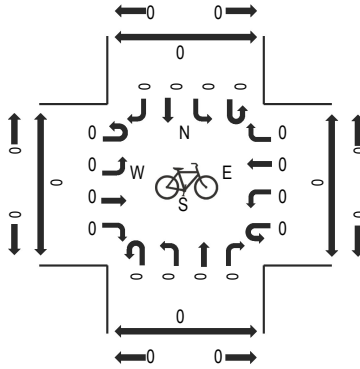
Peak Hour: 04:15 PM - 05:15 PM

Peak 15-Minutes: 04:15 PM - 04:30 PM

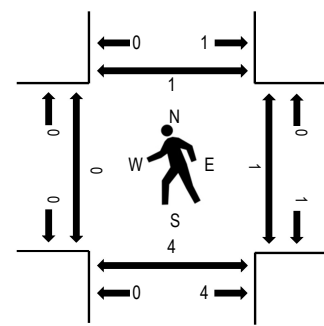
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	WOLFENSBERGER RD				WOLFENSBERGER RD				PRAIRIE HAWK DR				PRAIRIE HAWK DR				Total	Rolling Hour	Pedestrian Crossings			
	Eastbound				Westbound				Northbound				Southbound						West	East	South	North
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right						
4:00 PM	0	18	70	1	0	15	104	48	0	3	6	53	0	70	3	36	427	1,803	0	0	0	0
4:15 PM	0	18	85	8	0	32	99	63	0	4	5	43	0	76	11	29	473	1,839	0	1	0	1
4:30 PM	0	16	72	6	0	29	99	64	0	11	11	51	0	80	6	26	471	1,798	0	0	3	0
4:45 PM	0	25	64	9	0	28	78	68	0	6	8	38	0	70	8	30	432	1,759	0	0	0	0
5:00 PM	0	17	59	4	0	22	105	73	0	7	15	59	0	63	9	30	463	1,714	0	0	1	0
5:15 PM	0	23	72	5	0	13	110	65	0	4	11	30	0	64	5	30	432		0	0	0	1
5:30 PM	0	20	88	7	0	17	117	50	0	7	5	29	1	51	12	28	432		0	0	0	1
5:45 PM	0	15	64	8	0	22	109	64	0	4	9	30	0	38	5	19	387		0	0	0	0
Count Total	0	152	574	48	0	178	821	495	0	46	70	333	1	512	59	228	3,517		0	1	4	3
Peak Hour	0	76	280	27	0	111	381	268	0	28	39	191	0	289	34	115	1,839		0	1	4	1

Appendix B – Existing Conditions Analyses

Table of Contents

Intersection Level Of Service Report	2
Intersection 3: Wolfensberger Rd/Red Hawk Dr/Auburn Dr	2
Intersection 4: Wolfensberger Rd/Prairie Hawk Dr	7
Intersection 5: Wolfensberger Rd/Coachline Rd/Plum Creek Pkwy	12

Intersection Level Of Service Report**Intersection 3: Wolfensberger Rd/Red Hawk Dr/Auburn Dr**

Control Type:	Signalized	Delay (sec / veh):	27.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.351

Intersection Setup

Name	Auburn Dr			Red Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	130.00	220.00	100.00	100.00	170.00	100.00	100.00	360.00	100.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	250.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Auburn Dr			Red Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	1	81	131	164	63	13	29	286	1	70	150	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	66	0	0	7	0	0	1	0	0	28
Total Hourly Volume [veh/h]	1	81	65	164	63	6	29	286	0	70	150	28
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.9600	0.9600	0.9600	0.7000	0.7000	0.7000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	24	19	48	19	2	8	74	0	25	54	10
Total Analysis Volume [veh/h]	1	95	76	193	74	7	30	298	0	100	214	40
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	8	0	3	8	0	3	5	0	3	5	0
Maximum Green [s]	8	25	0	15	25	0	20	25	0	20	30	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Split [s]	8	41	0	8	41	0	8	43	0	8	43	0
Vehicle Extension [s]	1.0	2.5	0.0	1.0	2.5	0.0	2.0	2.5	0.0	2.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	17	0	0	18	0	0	18	0	0	19	0
Delayed Vehicle Green [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
Minimum Recall	Yes	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	0.00	4.00	0.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	62	54	62	54	26	18	26	19	19
g / C, Green / Cycle	0.62	0.54	0.62	0.54	0.26	0.18	0.26	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.05	0.05	0.16	0.04	0.02	0.16	0.08	0.06	0.03
s, saturation flow rate [veh/h]	1851	1589	1214	1842	1249	1870	1244	3560	1589
c, Capacity [veh/h]	1215	857	765	993	377	337	266	682	304
d1, Uniform Delay [s]	7.64	11.17	10.27	11.11	27.94	40.01	30.27	34.79	33.54
k, delay calibration	0.04	0.50	0.50	0.50	0.04	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	0.20	0.79	0.16	0.03	5.92	0.65	0.19	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.08	0.09	0.25	0.08	0.08	0.89	0.38	0.31	0.13
d, Delay for Lane Group [s/veh]	7.65	11.37	11.07	11.27	27.97	45.92	30.92	34.98	33.68
Lane Group LOS	A	B	B	B	C	D	C	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.78	0.84	2.21	0.88	0.52	7.37	1.85	2.17	0.79
50th-Percentile Queue Length [ft/ln]	19.51	20.99	55.18	22.09	13.05	184.18	46.21	54.25	19.69
95th-Percentile Queue Length [veh/ln]	1.40	1.51	3.97	1.59	0.94	11.82	3.33	3.91	1.42
95th-Percentile Queue Length [ft/ln]	35.12	37.77	99.32	39.76	23.49	295.47	83.17	97.65	35.45

Movement, Approach, & Intersection Results

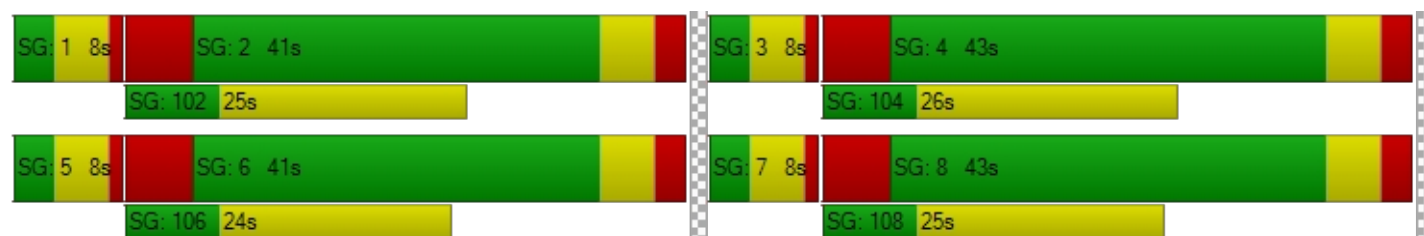
d_M, Delay for Movement [s/veh]	7.65	7.65	11.37	11.07	11.27	11.27	27.97	45.92	45.92	30.92	34.98	33.68
Movement LOS	A	A	B	B	B	B	C	D	D	C	C	C
d_A, Approach Delay [s/veh]	9.30			11.13			44.28			33.69		
Approach LOS	A			B			D			C		
d_I, Intersection Delay [s/veh]	27.57											
Intersection LOS	C											
Intersection V/C	0.351											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.62			39.62			39.62			39.62		
I_p,int, Pedestrian LOS Score for Intersection	2.202			2.118			2.478			2.916		
Crosswalk LOS	B			B			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	860			600			640			640		
d_b, Bicycle Delay [s]	16.25			24.51			23.13			23.13		
I_b,int, Bicycle LOS Score for Intersection	1.952			2.023			2.102			1.875		
Bicycle LOS	A			B			B			A		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Wolfensberger Rd/Prairie Hawk Dr

Control Type:	Signalized	Delay (sec / veh):	32.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.312

Intersection Setup

Name	Prairie Hawk Dr			Prairie Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	55.00	100.00	100.00	330.00	100.00	330.00	310.00	100.00	310.00	120.00	100.00	120.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
Speed [mph]	30.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Prairie Hawk Dr			Prairie Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	3	22	20	421	41	139	154	404	19	124	145	362
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	10	0	0	70	0	0	10	0	0	181
Total Hourly Volume [veh/h]	3	22	10	421	41	69	154	404	9	124	145	181
Peak Hour Factor	0.8000	0.8000	0.8000	0.6400	0.6400	0.6400	0.9000	0.9000	0.9000	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	7	3	164	16	27	43	112	3	37	44	55
Total Analysis Volume [veh/h]	4	28	13	658	64	108	171	449	10	149	175	218
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	1.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	8	0	3	8	0	3	8	0	5	8	0
Maximum Green [s]	30	26	0	10	26	0	10	30	0	30	28	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Split [s]	8	43	0	8	43	0	9	49	0	10	50	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	8	0
Pedestrian Clearance [s]	0	20	0	0	19	0	0	25	0	0	26	0
Delayed Vehicle Green [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	71	63	71	66	66	27	17	17	27	18	18
g / C, Green / Cycle	0.65	0.57	0.65	0.60	0.60	0.24	0.15	0.15	0.24	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.00	0.02	0.47	0.03	0.07	0.14	0.12	0.12	0.13	0.05	0.14
s, saturation flow rate [veh/h]	1240	1771	1401	1870	1589	1196	1870	1856	1187	3560	1589
c, Capacity [veh/h]	874	1014	984	1114	947	352	288	285	279	582	260
d1, Uniform Delay [s]	6.95	10.29	13.00	9.31	9.64	35.72	44.96	44.97	35.11	40.51	44.64
k, delay calibration	0.04	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.07	3.60	0.10	0.24	4.72	5.14	5.20	1.58	0.29	7.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.04	0.67	0.06	0.11	0.49	0.80	0.80	0.53	0.30	0.84
d, Delay for Lane Group [s/veh]	6.96	10.37	16.60	9.41	9.89	40.44	50.10	50.17	36.69	40.80	51.73
Lane Group LOS	A	B	B	A	A	D	D	D	D	D	D
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.03	0.45	8.56	0.61	1.08	4.20	6.33	6.29	3.33	2.07	6.13
50th-Percentile Queue Length [ft/ln]	0.80	11.19	213.95	15.27	26.98	104.92	158.22	157.28	83.32	51.76	153.31
95th-Percentile Queue Length [veh/ln]	0.06	0.81	13.36	1.10	1.94	7.55	10.45	10.40	6.00	3.73	10.19
95th-Percentile Queue Length [ft/ln]	1.44	20.15	333.90	27.49	48.57	188.86	261.36	260.12	149.98	93.17	254.84

Movement, Approach, & Intersection Results

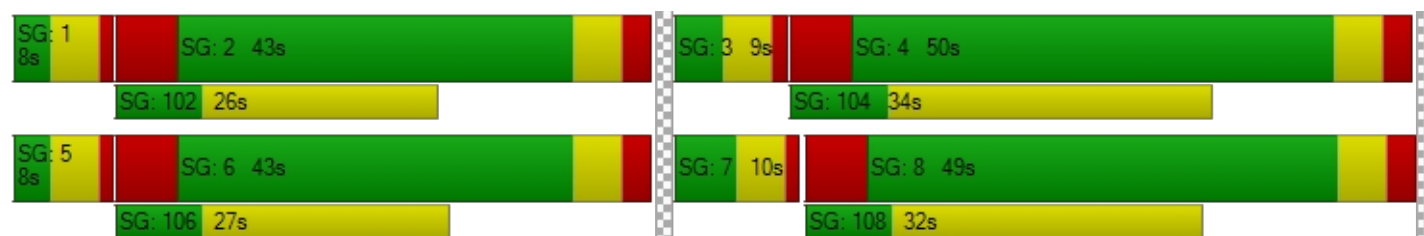
d_M, Delay for Movement [s/veh]	6.96	10.37	10.37	16.60	9.41	9.89	40.44	50.14	50.17	36.69	40.80	51.73
Movement LOS	A	B	B	B	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	10.06			15.17			47.51			44.07		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	32.66											
Intersection LOS	C											
Intersection V/C	0.312											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			12.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.58			43.68			44.58			44.58		
I_p,int, Pedestrian LOS Score for Intersection	2.094			2.831			2.696			3.873		
Crosswalk LOS	B			C			B			D		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	582			582			691			709		
d_b, Bicycle Delay [s]	27.68			27.68			23.59			22.94		
I_b,int, Bicycle LOS Score for Intersection	1.650			3.045			2.088			2.156		
Bicycle LOS	A			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: Wolfensberger Rd/Coachline Rd/Plum Creek Pkwy

Control Type:	Roundabout	Delay (sec / veh):	4.8
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Plum Creek Pkwy			Coachline Rd			Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐			⇐⇐			⇐⇐			⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	175.00
Speed [mph]	30.00			40.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Plum Creek Pkwy			Coachline Rd			Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	26	200	19	117	201	29	45	158	43	9	68	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	26	200	19	117	201	29	45	158	43	9	68	84
Peak Hour Factor	0.7000	0.7000	0.7000	0.9400	0.9400	0.9400	0.8500	0.8500	0.8500	0.6800	0.6800	0.6800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	71	7	31	53	8	13	46	13	3	25	31
Total Analysis Volume [veh/h]	37	286	27	124	214	31	53	186	51	13	100	124
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	370			153			358			384		
Exiting Flow Rate [veh/h]	284			472			171			344		
Demand Flow Rate [veh/h]	26	200	19	117	201	29	45	158	43	9	68	84
Adjusted Demand Flow Rate [veh/h]	37	286	27	124	214	31	53	186	51	13	100	124

Lanes

Override Calculated Critical Headway	No	No	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Override Calculated Follow-Up Time	No	No	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00
B (coefficient)	0.00091	0.00091	0.00091	0.00091	0.00091	0.00091	0.00091	0.00091
HV Adjustment Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	168	190	177	200	140	157	116	127
Capacity of Entry and Bypass Lanes [veh/h]	1014	1014	1236	1236	1026	1026	1002	1002
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	994	994	1212	1212	1006	1006	983	983
X, volume / capacity	0.17	0.19	0.14	0.16	0.14	0.15	0.12	0.13

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.59	0.68	0.50	0.58	0.47	0.54	0.39	0.43
95th-Percentile Queue Length [ft]	14.79	17.09	12.49	14.38	11.72	13.47	9.72	10.80
Approach Delay [s/veh]	5.28		4.27		4.91		4.77	
Approach LOS	A		A		A		A	
Intersection Delay [s/veh]	4.80							
Intersection LOS	A							

Table of Contents

Intersection Level Of Service Report	2
Intersection 3: Wolfensberger Rd/Red Hawk Dr/Auburn Dr	2
Intersection 4: Wolfensberger Rd/Prairie Hawk Dr	7
Intersection 5: Wolfensberger Rd/Coachline Rd/Plum Creek Pkwy	12

Intersection Level Of Service Report**Intersection 3: Wolfensberger Rd/Red Hawk Dr/Auburn Dr**

Control Type:	Signalized	Delay (sec / veh):	29.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.287

Intersection Setup

Name	Auburn Dr			Red Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	130.00	220.00	100.00	100.00	170.00	100.00	100.00	360.00	100.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	250.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Auburn Dr			Red Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	1	42	91	79	37	8	15	222	0	151	252	100
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	46	0	0	4	0	0	0	0	0	50
Total Hourly Volume [veh/h]	1	42	45	79	37	4	15	222	0	151	252	50
Peak Hour Factor	0.7700	0.7700	0.7700	0.9000	0.9000	0.9000	0.8500	0.8500	0.8500	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	14	15	22	10	1	4	65	0	41	69	14
Total Analysis Volume [veh/h]	1	55	58	88	41	4	18	261	0	166	277	55
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	61.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	8	0	3	8	0	3	5	0	3	5	0
Maximum Green [s]	8	25	0	15	25	0	20	25	0	20	25	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Split [s]	8	41	0	8	41	0	8	43	0	8	43	0
Vehicle Extension [s]	1.0	2.5	0.0	1.0	2.5	0.0	2.0	2.5	0.0	2.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	17	0	0	18	0	0	18	0	0	19	0
Delayed Vehicle Green [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
Minimum Recall	Yes	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	0.00	4.00	0.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	61	53	61	53	27	19	27	21	21
g / C, Green / Cycle	0.61	0.52	0.61	0.53	0.27	0.19	0.27	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.03	0.04	0.07	0.02	0.02	0.14	0.13	0.08	0.03
s, saturation flow rate [veh/h]	1864	1589	1279	1841	1161	1870	1264	3560	1589
c, Capacity [veh/h]	1201	835	801	967	349	363	300	756	337
d1, Uniform Delay [s]	8.02	11.69	10.39	11.54	26.87	37.74	32.48	33.65	32.14
k, delay calibration	0.04	0.50	0.50	0.50	0.04	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	0.16	0.28	0.09	0.02	2.00	1.19	0.22	0.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.07	0.11	0.05	0.05	0.72	0.55	0.37	0.16
d, Delay for Lane Group [s/veh]	8.03	11.85	10.67	11.63	26.89	39.75	33.67	33.87	32.31
Lane Group LOS	A	B	B	B	C	D	C	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.47	0.66	0.98	0.50	0.30	5.91	3.13	2.77	1.06
50th-Percentile Queue Length [ft/ln]	11.72	16.45	24.42	12.50	7.59	147.65	78.35	69.29	26.45
95th-Percentile Queue Length [veh/ln]	0.84	1.18	1.76	0.90	0.55	9.89	5.64	4.99	1.90
95th-Percentile Queue Length [ft/ln]	21.09	29.61	43.95	22.50	13.66	247.29	141.02	124.72	47.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.03	8.03	11.85	10.67	11.63	11.63	26.89	39.75	39.75	33.67	33.87	32.31
Movement LOS	A	A	B	B	B	B	C	D	D	C	C	C
d_A, Approach Delay [s/veh]	9.97			10.99			38.92			33.63		
Approach LOS	A			B			D			C		
d_I, Intersection Delay [s/veh]	29.50											
Intersection LOS	C											
Intersection V/C	0.287											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.180			2.059			2.422			2.794		
Crosswalk LOS	B			B			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	860			600			640			640		
d_b, Bicycle Delay [s]	16.25			24.50			23.12			23.12		
I_b,int, Bicycle LOS Score for Intersection	1.824			1.786			2.020			2.012		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Wolfensberger Rd/Prairie Hawk Dr

Control Type:	Signalized	Delay (sec / veh):	33.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.320

Intersection Setup

Name	Prairie Hawk Dr			Prairie Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	55.00	100.00	100.00	330.00	100.00	330.00	310.00	100.00	310.00	120.00	100.00	120.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
Speed [mph]	30.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Prairie Hawk Dr			Prairie Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	28	39	191	289	34	115	76	280	27	111	381	268
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	96	0	0	58	0	0	14	0	0	134
Total Hourly Volume [veh/h]	28	39	95	289	34	57	76	280	13	111	381	134
Peak Hour Factor	0.8000	0.8000	0.8000	0.9600	0.9600	0.9600	0.8500	0.8500	0.8500	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	12	30	75	9	15	22	82	4	29	99	35
Total Analysis Volume [veh/h]	35	49	119	301	35	59	89	329	15	116	397	140
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	18.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	8	0	3	8	0	3	8	0	5	8	0
Maximum Green [s]	30	26	0	10	26	0	10	30	0	30	28	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Split [s]	8	43	0	8	43	0	9	49	0	10	50	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	8	0
Pedestrian Clearance [s]	0	20	0	0	19	0	0	25	0	0	26	0
Delayed Vehicle Green [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	74	66	74	67	67	24	14	14	24	15	15
g / C, Green / Cycle	0.67	0.60	0.67	0.61	0.61	0.22	0.13	0.13	0.22	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.03	0.10	0.24	0.02	0.04	0.08	0.09	0.09	0.09	0.11	0.09
s, saturation flow rate [veh/h]	1335	1662	1263	1870	1589	1130	1870	1841	1283	3560	1589
c, Capacity [veh/h]	973	990	882	1130	960	259	244	241	293	500	223
d1, Uniform Delay [s]	6.18	10.01	7.93	8.79	8.96	35.70	45.84	45.87	36.08	45.78	44.61
k, delay calibration	0.04	0.50	0.50	0.50	0.50	0.19	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	0.37	1.05	0.05	0.12	1.40	3.74	3.86	0.87	2.91	2.88
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.04	0.17	0.34	0.03	0.06	0.34	0.71	0.71	0.40	0.79	0.63
d, Delay for Lane Group [s/veh]	6.18	10.38	8.99	8.84	9.08	37.10	49.59	49.73	36.95	48.69	47.49
Lane Group LOS	A	B	A	A	A	D	D	D	D	D	D
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.26	1.87	2.63	0.32	0.55	2.02	4.68	4.64	2.61	5.33	3.70
50th-Percentile Queue Length [ft/ln]	6.49	46.74	65.77	7.98	13.84	50.42	117.06	116.04	65.21	133.25	92.56
95th-Percentile Queue Length [veh/ln]	0.47	3.37	4.74	0.57	1.00	3.63	8.23	8.17	4.69	9.12	6.66
95th-Percentile Queue Length [ft/ln]	11.69	84.13	118.39	14.37	24.92	90.75	205.78	204.37	117.37	227.90	166.61

Movement, Approach, & Intersection Results

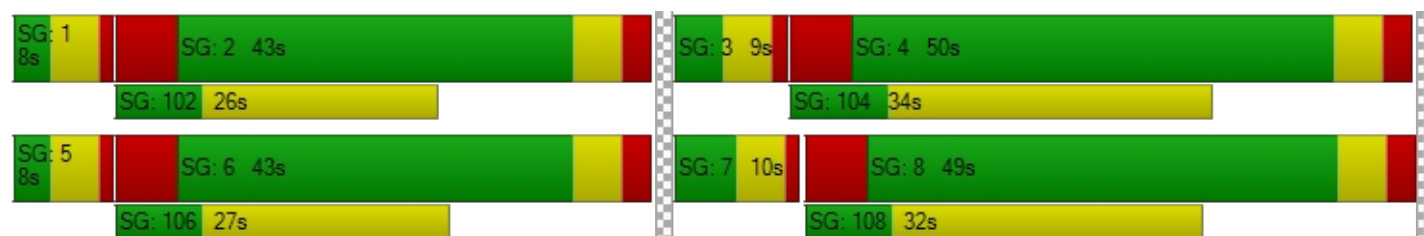
d_M, Delay for Movement [s/veh]	6.18	10.38	10.38	8.99	8.84	9.08	37.10	49.65	49.73	36.95	48.69	47.49
Movement LOS	A	B	B	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	9.66			8.99			47.08			46.35		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	33.35											
Intersection LOS	C											
Intersection V/C	0.320											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			12.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.58			43.68			44.58			44.58		
I_p,int, Pedestrian LOS Score for Intersection	2.267			2.559			2.729			3.270		
Crosswalk LOS	B			B			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	582			582			691			709		
d_b, Bicycle Delay [s]	27.68			27.68			23.59			22.94		
I_b,int, Bicycle LOS Score for Intersection	2.053			2.307			1.928			2.209		
Bicycle LOS	B			B			A			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: Wolfensberger Rd/Coachline Rd/Plum Creek Pkwy

Control Type:
Analysis Method:
Analysis Period:

Roundabout
HCM 7th Edition
15 minutes

Delay (sec / veh):
Level Of Service:

4.9
A

Intersection Setup

Name	Plum Creek Pkwy			Coachline Rd			Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	175.00
Speed [mph]	30.00			40.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Plum Creek Pkwy			Coachline Rd			Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	48	211	19	127	228	54	27	89	42	24	131	95
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	48	211	19	127	228	54	27	89	42	24	131	95
Peak Hour Factor	0.8800	0.8800	0.8800	0.8200	0.8200	0.8200	0.9500	0.9500	0.9500	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	60	5	39	70	16	7	23	11	7	36	26
Total Analysis Volume [veh/h]	55	240	22	155	278	66	28	94	44	26	144	104
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	283			230			468			329		
Exiting Flow Rate [veh/h]	355			379			270			276		
Demand Flow Rate [veh/h]	48	211	19	127	228	54	27	89	42	24	131	95
Adjusted Demand Flow Rate [veh/h]	55	240	22	155	278	66	28	94	44	26	144	104

Lanes

Override Calculated Critical Headway	No	No	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Override Calculated Follow-Up Time	No	No	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00
B (coefficient)	0.00091	0.00091	0.00091	0.00091	0.00091	0.00091	0.00091	0.00091
HV Adjustment Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	152	172	240	270	80	90	132	149
Capacity of Entry and Bypass Lanes [veh/h]	1099	1099	1153	1153	928	928	1053	1053
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1077	1077	1130	1130	910	910	1032	1032
X, volume / capacity	0.14	0.16	0.21	0.23	0.09	0.10	0.12	0.14

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.48	0.55	0.78	0.91	0.28	0.32	0.43	0.49
95th-Percentile Queue Length [ft]	12.00	13.80	19.51	22.73	7.02	8.01	10.66	12.23
Approach Delay [s/veh]	4.66		5.20		4.82		4.69	
Approach LOS	A		A		A		A	
Intersection Delay [s/veh]	4.90							
Intersection LOS	A							

Appendix C – Buildout Conditions Analyses

Table of Contents

Intersection Level Of Service Report	2
Intersection 3: Wolfensberger Rd/Red Hawk Dr/Auburn Dr	2
Intersection 4: Wolfensberger Rd/Prairie Hawk Dr	7
Intersection 5: Wolfensberger Rd/Coachline Rd/Plum Creek Pkwy	12

Intersection Level Of Service Report
Intersection 3: Wolfensberger Rd/Red Hawk Dr/Auburn Dr

Control Type:	Signalized	Delay (sec / veh):	27.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.365

Intersection Setup

Name	Auburn Dr			Red Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	130.00	220.00	100.00	100.00	170.00	100.00	100.00	360.00	100.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	250.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Auburn Dr			Red Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	1	81	131	164	63	13	29	286	1	70	150	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	1	0	0	0	0	1	3	35	5	0	8	0
Right Turn on Red Volume [veh/h]	0	0	68	0	0	7	0	0	3	0	0	29
Total Hourly Volume [veh/h]	2	83	67	169	65	7	33	330	3	72	163	29
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	23	18	46	18	2	9	90	1	20	44	8
Total Analysis Volume [veh/h]	2	90	73	184	71	8	36	359	3	78	177	32
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	8	0	3	8	0	3	5	0	3	5	0
Maximum Green [s]	8	25	0	15	25	0	20	25	0	20	30	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Split [s]	8	41	0	8	41	0	8	43	0	8	43	0
Vehicle Extension [s]	1.0	2.5	0.0	1.0	2.5	0.0	2.0	2.5	0.0	2.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	17	0	0	18	0	0	18	0	0	19	0
Delayed Vehicle Green [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
Minimum Recall	Yes	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	0.00	4.00	0.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	59	51	59	51	29	21	29	22	22
g / C, Green / Cycle	0.59	0.51	0.59	0.51	0.29	0.21	0.29	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.05	0.05	0.15	0.04	0.03	0.19	0.07	0.05	0.02
s, saturation flow rate [veh/h]	1836	1589	1223	1837	1281	1867	1176	3560	1589
c, Capacity [veh/h]	1136	802	727	927	439	400	263	793	354
d1, Uniform Delay [s]	9.07	12.87	11.96	12.82	25.45	38.29	27.90	31.81	30.85
k, delay calibration	0.04	0.50	0.50	0.50	0.04	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	0.22	0.84	0.18	0.03	5.96	0.46	0.10	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.08	0.09	0.25	0.09	0.08	0.90	0.30	0.22	0.09
d, Delay for Lane Group [s/veh]	9.08	13.10	12.80	13.00	25.48	44.25	28.36	31.92	30.93
Lane Group LOS	A	B	B	B	C	D	C	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.84	0.88	2.29	0.94	0.59	8.86	1.34	1.69	0.60
50th-Percentile Queue Length [ft/ln]	20.98	22.03	57.21	23.58	14.82	221.61	33.54	42.29	14.93
95th-Percentile Queue Length [veh/ln]	1.51	1.59	4.12	1.70	1.07	13.75	2.41	3.04	1.07
95th-Percentile Queue Length [ft/ln]	37.76	39.66	102.99	42.44	26.67	343.68	60.37	76.11	26.87

Movement, Approach, & Intersection Results

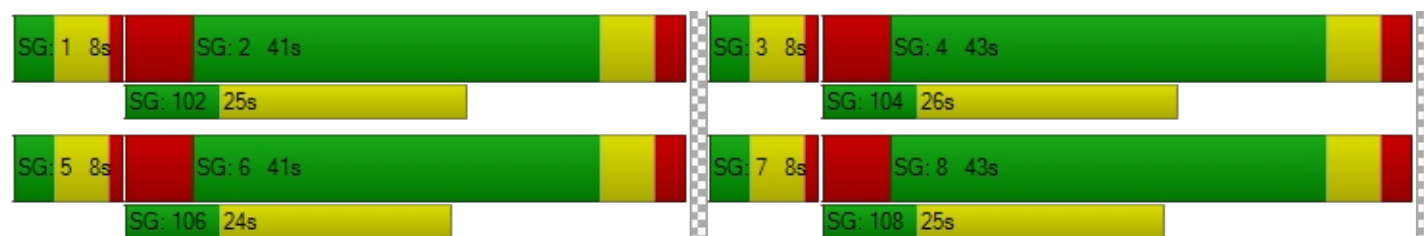
d_M, Delay for Movement [s/veh]	9.08	9.08	13.10	12.80	13.00	13.00	25.48	44.25	44.25	28.36	31.92	30.93
Movement LOS	A	A	B	B	B	B	C	D	D	C	C	C
d_A, Approach Delay [s/veh]	10.86			12.86			42.55			30.84		
Approach LOS	B			B			D			C		
d_I, Intersection Delay [s/veh]	27.82											
Intersection LOS	C											
Intersection V/C	0.365											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.62			39.62			39.62			39.62		
I_p,int, Pedestrian LOS Score for Intersection	2.194			2.116			2.489			2.900		
Crosswalk LOS	B			B			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	860			600			640			640		
d_b, Bicycle Delay [s]	16.25			24.51			23.13			23.13		
I_b,int, Bicycle LOS Score for Intersection	1.944			2.005			2.221			1.820		
Bicycle LOS	A			B			B			A		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Wolfensberger Rd/Prairie Hawk Dr

Control Type:	Signalized	Delay (sec / veh):	29.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.370

Intersection Setup

Name	Prairie Hawk Dr			Prairie Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	55.00	100.00	100.00	330.00	100.00	330.00	310.00	100.00	310.00	120.00	100.00	120.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
Speed [mph]	30.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Prairie Hawk Dr			Prairie Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	3	22	20	421	41	139	154	404	19	124	145	362
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	11	58	74	0	73	0	0	0	23	62	0	0
Right Turn on Red Volume [veh/h]	0	0	48	0	0	72	0	0	22	0	0	187
Total Hourly Volume [veh/h]	14	81	47	434	115	71	159	416	21	190	149	186
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	22	13	118	31	19	43	113	6	52	40	51
Total Analysis Volume [veh/h]	15	88	51	472	125	77	173	452	23	207	162	202
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	1.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	8	0	3	8	0	3	8	0	5	8	0
Maximum Green [s]	30	26	0	10	26	0	10	30	0	30	28	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Split [s]	8	43	0	8	43	0	9	49	0	10	50	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	8	0
Pedestrian Clearance [s]	0	20	0	0	19	0	0	25	0	0	26	0
Delayed Vehicle Green [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	65	57	65	59	59	33	23	23	33	24	24
g / C, Green / Cycle	0.59	0.52	0.59	0.54	0.54	0.30	0.21	0.21	0.30	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.01	0.08	0.36	0.07	0.05	0.15	0.13	0.13	0.18	0.05	0.13
s, saturation flow rate [veh/h]	1218	1756	1299	1870	1589	1179	1870	1838	1128	3560	1589
c, Capacity [veh/h]	774	909	809	1000	850	417	392	385	333	779	348
d1, Uniform Delay [s]	9.38	13.90	15.68	12.75	12.51	30.43	39.40	39.41	33.88	35.17	38.46
k, delay calibration	0.04	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.36	3.07	0.26	0.21	3.02	1.54	1.57	1.90	0.13	1.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.02	0.15	0.58	0.12	0.09	0.41	0.61	0.61	0.62	0.21	0.58
d, Delay for Lane Group [s/veh]	9.39	14.26	18.74	13.01	12.72	33.45	40.94	40.99	35.78	35.30	40.00
Lane Group LOS	A	B	B	B	B	C	D	D	D	D	D
Critical Lane Group	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.15	1.88	6.43	1.50	0.91	3.81	5.88	5.80	4.40	1.76	4.90
50th-Percentile Queue Length [ft/ln]	3.66	46.96	160.84	37.42	22.77	95.18	147.03	144.94	110.04	43.94	122.55
95th-Percentile Queue Length [veh/ln]	0.26	3.38	10.59	2.69	1.64	6.85	9.86	9.75	7.84	3.16	8.53
95th-Percentile Queue Length [ft/ln]	6.59	84.53	264.84	67.35	40.99	171.32	246.46	243.66	196.05	79.08	213.33

Movement, Approach, & Intersection Results

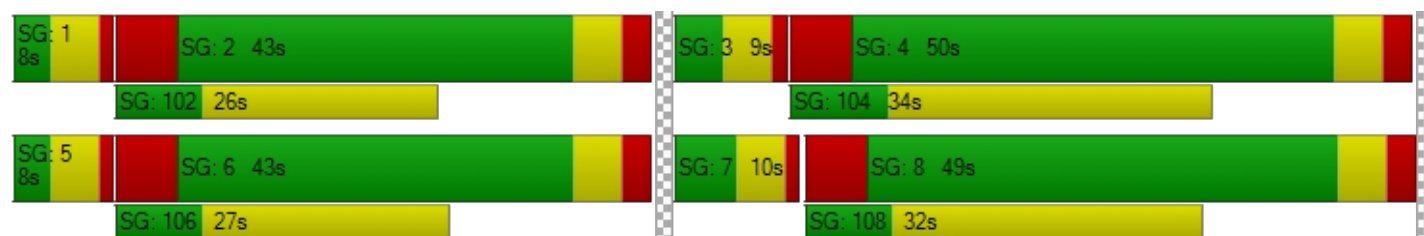
d_M, Delay for Movement [s/veh]	9.39	14.26	14.26	18.74	13.01	12.72	33.45	40.96	40.99	35.78	35.30	40.00
Movement LOS	A	B	B	B	B	B	C	D	D	D	D	D
d_A, Approach Delay [s/veh]	13.78			16.99			38.96			37.14		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	29.32											
Intersection LOS	C											
Intersection V/C	0.370											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			12.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			43.66			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersection	2.273			2.811			2.721			3.601		
Crosswalk LOS	B			C			B			D		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	582			582			691			709		
d_b, Bicycle Delay [s]	27.66			27.66			23.56			22.91		
I_b,int, Bicycle LOS Score for Intersection	1.893			2.791			2.112			2.185		
Bicycle LOS	A			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: Wolfensberger Rd/Coachline Rd/Plum Creek Pkwy

Control Type:
Analysis Method:
Analysis Period:

Roundabout
HCM 7th Edition
15 minutes

Delay (sec / veh):
Level Of Service:

4.9
A

Intersection Setup

Name	Plum Creek Pkwy			Coachline Rd			Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	175.00
Speed [mph]	30.00			40.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Plum Creek Pkwy			Coachline Rd			Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	26	200	19	117	201	29	45	158	43	9	68	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	8	38	3	3	62	0	0	0	16	10	1	14
Total Hourly Volume [veh/h]	35	244	23	124	269	30	46	163	60	19	71	101
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	66	6	34	73	8	13	44	16	5	19	27
Total Analysis Volume [veh/h]	38	265	25	135	292	33	50	177	65	21	77	110
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	369			139			457			360		
Exiting Flow Rate [veh/h]	386			434			151			344		
Demand Flow Rate [veh/h]	35	244	23	124	269	30	46	163	60	19	71	101
Adjusted Demand Flow Rate [veh/h]	38	265	25	135	292	33	50	177	65	21	77	110

Lanes

Override Calculated Critical Headway	No	No	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Override Calculated Follow-Up Time	No	No	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00
B (coefficient)	0.00091	0.00091	0.00091	0.00091	0.00091	0.00091	0.00091	0.00091
HV Adjustment Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	158	178	221	249	140	158	100	113
Capacity of Entry and Bypass Lanes [veh/h]	1015	1015	1252	1252	937	937	1024	1024
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	995	995	1228	1228	919	919	1004	1004
X, volume / capacity	0.15	0.17	0.18	0.20	0.15	0.17	0.10	0.11

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.55	0.63	0.64	0.74	0.52	0.60	0.32	0.37
95th-Percentile Queue Length [ft]	13.68	15.78	15.96	18.49	13.10	15.10	8.10	9.21
Approach Delay [s/veh]	5.16		4.55		5.46		4.52	
Approach LOS	A		A		A		A	
Intersection Delay [s/veh]	4.91							
Intersection LOS	A							

Table of Contents

Intersection Level Of Service Report	2
Intersection 3: Wolfensberger Rd/Red Hawk Dr/Auburn Dr	2
Intersection 4: Wolfensberger Rd/Prairie Hawk Dr	7
Intersection 5: Wolfensberger Rd/Coachline Rd/Plum Creek Pkwy	12

Intersection Level Of Service Report**Intersection 3: Wolfensberger Rd/Red Hawk Dr/Auburn Dr**

Control Type:	Signalized	Delay (sec / veh):	29.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.286

Intersection Setup

Name	Auburn Dr			Red Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	130.00	220.00	100.00	100.00	170.00	100.00	100.00	360.00	100.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	250.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Auburn Dr			Red Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	1	42	91	79	37	8	15	222	0	151	252	100
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	5	0	0	0	0	4	2	17	3	0	34	0
Right Turn on Red Volume [veh/h]	0	0	47	0	0	6	0	0	2	0	0	52
Total Hourly Volume [veh/h]	6	43	47	81	38	6	17	246	1	156	294	51
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	12	13	22	10	2	5	67	0	42	80	14
Total Analysis Volume [veh/h]	7	47	51	88	41	7	18	267	1	170	320	55
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	61.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	8	0	3	8	0	3	5	0	3	5	0
Maximum Green [s]	8	25	0	15	25	0	20	25	0	20	25	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Split [s]	8	41	0	8	41	0	8	43	0	8	43	0
Vehicle Extension [s]	1.0	2.5	0.0	1.0	2.5	0.0	2.0	2.5	0.0	2.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	17	0	0	18	0	0	18	0	0	19	0
Delayed Vehicle Green [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
Minimum Recall	Yes	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	0.00	4.00	0.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	60	52	60	52	28	20	28	22	22
g / C, Green / Cycle	0.60	0.52	0.60	0.52	0.28	0.20	0.28	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.03	0.03	0.07	0.03	0.02	0.14	0.14	0.09	0.03
s, saturation flow rate [veh/h]	1781	1589	1297	1823	1123	1869	1254	3560	1589
c, Capacity [veh/h]	1139	822	814	943	340	378	305	786	351
d1, Uniform Delay [s]	8.36	12.06	10.71	11.98	26.34	37.13	32.12	33.37	31.46
k, delay calibration	0.04	0.50	0.50	0.50	0.04	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	0.14	0.27	0.10	0.02	1.82	1.18	0.25	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.06	0.11	0.05	0.05	0.71	0.56	0.41	0.16
d, Delay for Lane Group [s/veh]	8.37	12.20	10.98	12.08	26.37	38.95	33.30	33.62	31.61
Lane Group LOS	A	B	B	B	C	D	C	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.46	0.59	0.98	0.55	0.30	6.01	3.18	3.21	1.05
50th-Percentile Queue Length [ft/ln]	11.59	14.69	24.52	13.64	7.50	150.22	79.39	80.18	26.13
95th-Percentile Queue Length [veh/ln]	0.83	1.06	1.77	0.98	0.54	10.03	5.72	5.77	1.88
95th-Percentile Queue Length [ft/ln]	20.86	26.44	44.13	24.55	13.49	250.72	142.91	144.33	47.04

Movement, Approach, & Intersection Results

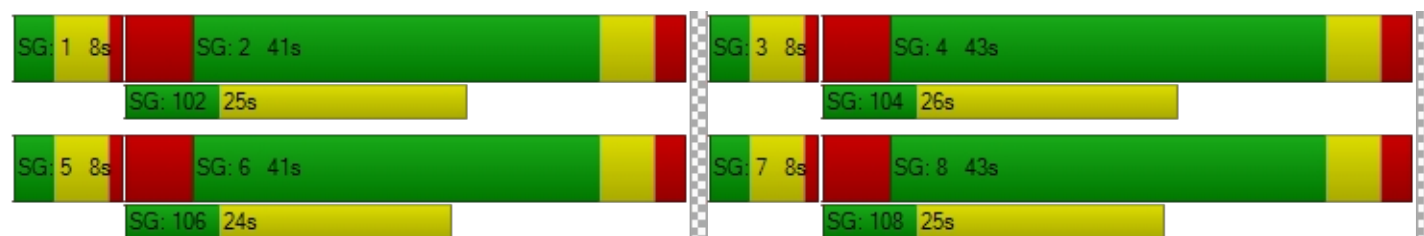
d_M, Delay for Movement [s/veh]	8.37	8.37	12.20	10.98	12.08	12.08	26.37	38.95	38.95	33.30	33.62	31.61
Movement LOS	A	A	B	B	B	B	C	D	D	C	C	C
d_A, Approach Delay [s/veh]	10.23			11.37			38.16			33.32		
Approach LOS	B			B			D			C		
d_I, Intersection Delay [s/veh]	29.56											
Intersection LOS	C											
Intersection V/C	0.286											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.185			2.062			2.445			2.811		
Crosswalk LOS	B			B			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	860			600			640			640		
d_b, Bicycle Delay [s]	16.25			24.50			23.12			23.12		
I_b,int, Bicycle LOS Score for Intersection	1.810			1.794			2.035			2.052		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Wolfensberger Rd/Prairie Hawk Dr

Control Type:	Signalized	Delay (sec / veh):	29.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.412

Intersection Setup

Name	Prairie Hawk Dr			Prairie Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	55.00	100.00	100.00	330.00	100.00	330.00	310.00	100.00	310.00	120.00	100.00	120.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
Speed [mph]	30.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Prairie Hawk Dr			Prairie Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	28	39	191	289	34	115	76	280	27	111	381	268
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	22	75	67	0	63	0	0	0	12	69	0	0
Right Turn on Red Volume [veh/h]	0	0	132	0	0	59	0	0	20	0	0	138
Total Hourly Volume [veh/h]	51	115	132	298	98	59	78	288	20	183	392	138
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	31	36	81	27	16	21	78	5	50	107	38
Total Analysis Volume [veh/h]	55	125	143	324	107	64	85	313	22	199	426	150
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	18.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	8	0	3	8	0	3	8	0	5	8	0
Maximum Green [s]	30	26	0	10	26	0	10	30	0	30	28	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Split [s]	8	43	0	8	43	0	8	49	0	10	51	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	8	0
Pedestrian Clearance [s]	0	20	0	0	19	0	0	25	0	0	26	0
Delayed Vehicle Green [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	70	62	70	62	62	28	18	18	28	20	20
g / C, Green / Cycle	0.64	0.56	0.64	0.57	0.57	0.26	0.16	0.16	0.26	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.04	0.16	0.28	0.06	0.04	0.08	0.09	0.09	0.16	0.12	0.09
s, saturation flow rate [veh/h]	1260	1709	1169	1870	1589	1038	1870	1827	1254	3560	1589
c, Capacity [veh/h]	869	960	754	1056	898	268	309	302	327	654	292
d1, Uniform Delay [s]	7.61	12.53	11.03	11.06	10.86	32.75	42.13	42.16	36.90	41.64	40.48
k, delay calibration	0.04	0.50	0.50	0.50	0.50	0.22	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	0.72	1.79	0.19	0.15	1.36	1.50	1.56	1.83	1.10	1.40
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.06	0.28	0.43	0.10	0.07	0.32	0.55	0.55	0.61	0.65	0.51
d, Delay for Lane Group [s/veh]	7.63	13.26	12.81	11.25	11.02	34.11	43.63	43.72	38.73	42.75	41.88
Lane Group LOS	A	B	B	B	B	C	D	D	D	D	D
Critical Lane Group	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.47	3.53	3.38	1.16	0.69	1.83	4.25	4.19	4.51	5.33	3.70
50th-Percentile Queue Length [ft/ln]	11.79	88.13	84.39	28.96	17.15	45.84	106.18	104.70	112.87	133.37	92.42
95th-Percentile Queue Length [veh/ln]	0.85	6.35	6.08	2.09	1.23	3.30	7.63	7.54	8.00	9.12	6.65
95th-Percentile Queue Length [ft/ln]	21.22	158.63	151.91	52.13	30.87	82.51	190.67	188.47	199.99	228.06	166.35

Movement, Approach, & Intersection Results

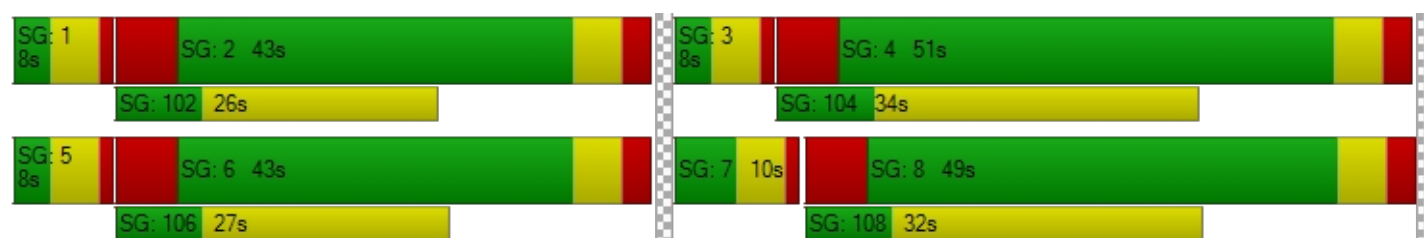
d_M, Delay for Movement [s/veh]	7.63	13.26	13.26	12.81	11.25	11.02	34.11	43.67	43.72	38.73	42.75	41.88
Movement LOS	A	B	B	B	B	B	C	D	D	D	D	D
d_A, Approach Delay [s/veh]	12.30			12.24			41.74			41.55		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	29.69											
Intersection LOS	C											
Intersection V/C	0.412											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			12.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.56			43.66			44.56			44.56		
I_p,int, Pedestrian LOS Score for Intersection	2.451			2.633			2.763			3.331		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	582			582			691			727		
d_b, Bicycle Delay [s]	27.66			27.66			23.57			22.28		
I_b,int, Bicycle LOS Score for Intersection	2.310			2.474			1.923			2.313		
Bicycle LOS	B			B			A			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: Wolfensberger Rd/Coachline Rd/Plum Creek Pkwy

Control Type:
Analysis Method:
Analysis Period:

Roundabout
HCM 7th Edition
15 minutes

Delay (sec / veh):
Level Of Service:

5.3
A

Intersection Setup

Name	Plum Creek Pkwy			Coachline Rd			Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐			⇐⇐			⇐⇐			⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	175.00
Speed [mph]	30.00			40.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Plum Creek Pkwy			Coachline Rd			Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	48	211	19	127	228	54	27	89	42	24	131	95
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	13	57	10	13	49	0	0	1	10	5	1	6
Total Hourly Volume [veh/h]	62	274	30	144	284	56	28	93	53	30	136	104
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	74	8	39	77	15	8	25	14	8	37	28
Total Analysis Volume [veh/h]	67	298	33	157	309	61	30	101	58	33	148	113
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	294			253			509			403		
Exiting Flow Rate [veh/h]	408			450			282			297		
Demand Flow Rate [veh/h]	62	274	30	144	284	56	28	93	53	30	136	104
Adjusted Demand Flow Rate [veh/h]	67	298	33	157	309	61	30	101	58	33	148	113

Lanes

Override Calculated Critical Headway	No	No	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Override Calculated Follow-Up Time	No	No	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00
B (coefficient)	0.00091	0.00091	0.00091	0.00091	0.00091	0.00091	0.00091	0.00091
HV Adjustment Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	191	216	253	285	91	103	141	159
Capacity of Entry and Bypass Lanes [veh/h]	1087	1087	1129	1129	894	894	985	985
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1066	1066	1106	1106	877	877	965	965
X, volume / capacity	0.18	0.20	0.22	0.25	0.10	0.11	0.14	0.16

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.64	0.74	0.86	1.00	0.34	0.39	0.50	0.57
95th-Percentile Queue Length [ft]	15.88	18.38	21.47	25.10	8.43	9.64	12.48	14.36
Approach Delay [s/veh]	5.09		5.47		5.15		5.17	
Approach LOS	A		A		A		A	
Intersection Delay [s/veh]	5.26							
Intersection LOS	A							

Table of Contents

Intersection Level Of Service Report	2
Intersection 1: Wolfensberger Rd/Project Access #1	2
Intersection 2: Wolfensberger Rd/Project Access #2	4
Intersection 3: Wolfensberger Rd/Red Hawk Dr/Auburn Dr	6
Intersection 4: Wolfensberger Rd/Prairie Hawk Dr	11
Intersection 5: Wolfensberger Rd/Coachline Rd/Plum Creek Pkwy	16
Signal Warrants Report	18
Intersection 1: Wolfensberger Rd/Project Access #1	18
Intersection 2: Wolfensberger Rd/Project Access #2	20

Intersection Level Of Service Report
Intersection 1: Wolfensberger Rd/Project Access #1

Control Type:	Two-way stop	Delay (sec / veh):	14.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.041

Intersection Setup

Name	Wolfensberger Rd			Wolfensberger Rd			Project Access #1					
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Wolfensberger Rd			Wolfensberger Rd			Project Access #1					
Base Volume Input [veh/h]	0	253	0	0	164	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0300	1.0300	1.0300	1.0300	1.0000	1.0300	1.0000	1.0300	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	9	17	2	0	2	0	4	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	5	7	0	0	33	4	0	0	0	17	0	19
Total Hourly Volume [veh/h]	5	277	9	17	204	4	2	0	4	17	0	19
Peak Hour Factor	1.0000	0.9200	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	75	2	5	55	1	1	0	1	4	0	5
Total Analysis Volume [veh/h]	5	301	10	18	222	4	2	0	4	17	0	19
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.04	0.00	0.02
d_M, Delay for Movement [s/veh]	7.69	0.00	0.00	7.90	0.00	0.00	13.98	13.68	9.97	14.10	14.09	9.85
Movement LOS	A	A	A	A	A	A	B	B	A	B	B	A
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.03	0.03	0.03	0.03	0.03	0.03	0.21	0.21	0.21
95th-Percentile Queue Length [ft/ln]	0.21	0.21	0.21	0.76	0.76	0.76	0.79	0.79	0.79	5.13	5.13	5.13
d_A, Approach Delay [s/veh]	0.12			0.58			11.31			11.86		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	1.12											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 2: Wolfensberger Rd/Project Access #2

Control Type:	Two-way stop	Delay (sec / veh):	12.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.007

Intersection Setup

Name	Wolfensberger Rd		Wolfensberger Rd		Project Access #2	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Wolfensberger Rd		Wolfensberger Rd		Project Access #2	
Base Volume Input [veh/h]	253	0	0	164	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	9	17	17	2	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	24	1	2	27	1	1
Total Hourly Volume [veh/h]	289	10	19	213	3	5
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	79	3	5	58	1	1
Total Analysis Volume [veh/h]	314	11	21	232	3	5
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.02	0.00	0.01	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	7.94	0.00	12.93	10.07
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.04	0.04	0.04	0.04
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.89	0.89	1.02	1.02
d_A, Approach Delay [s/veh]	0.00		0.66		11.14	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.44					
Intersection LOS	B					

Intersection Level Of Service Report**Intersection 3: Wolfensberger Rd/Red Hawk Dr/Auburn Dr**

Control Type:	Signalized	Delay (sec / veh):	28.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.367

Intersection Setup

Name	Auburn Dr			Red Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	130.00	220.00	100.00	100.00	170.00	100.00	100.00	360.00	100.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	250.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Auburn Dr			Red Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	1	81	131	164	63	13	29	286	1	70	150	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	0	0	0	0	3	1	5	1	0	28	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	1	0	0	0	0	1	3	35	5	0	8	0
Right Turn on Red Volume [veh/h]	0	0	68	0	0	9	0	0	4	0	0	29
Total Hourly Volume [veh/h]	5	83	67	169	65	8	34	335	3	72	191	29
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	23	18	46	18	2	9	91	1	20	52	8
Total Analysis Volume [veh/h]	5	90	73	184	71	9	37	364	3	78	208	32
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	8	0	3	8	0	3	5	0	3	5	0
Maximum Green [s]	8	25	0	15	25	0	20	25	0	20	30	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Split [s]	8	41	0	8	41	0	8	43	0	8	43	0
Vehicle Extension [s]	1.0	2.5	0.0	1.0	2.5	0.0	2.0	2.5	0.0	2.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	17	0	0	18	0	0	18	0	0	19	0
Delayed Vehicle Green [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
Minimum Recall	Yes	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	0.00	4.00	0.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	58	50	58	50	30	22	30	22	22
g / C, Green / Cycle	0.58	0.50	0.58	0.50	0.30	0.22	0.30	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.05	0.05	0.15	0.04	0.03	0.20	0.07	0.06	0.02
s, saturation flow rate [veh/h]	1799	1589	1223	1834	1254	1867	1171	3560	1589
c, Capacity [veh/h]	1103	798	725	921	428	405	263	800	357
d1, Uniform Delay [s]	9.21	13.01	12.10	12.97	25.31	38.16	27.76	31.93	30.69
k, delay calibration	0.04	0.50	0.50	0.50	0.04	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	0.23	0.84	0.19	0.03	5.96	0.46	0.13	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.09	0.09	0.25	0.09	0.09	0.91	0.30	0.26	0.09
d, Delay for Lane Group [s/veh]	9.22	13.24	12.94	13.15	25.34	44.12	28.22	32.06	30.77
Lane Group LOS	A	B	B	B	C	D	C	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.88	0.89	2.30	0.96	0.61	8.98	1.34	2.00	0.60
50th-Percentile Queue Length [ft/ln]	21.89	22.18	57.57	24.06	15.17	224.50	33.39	50.00	14.88
95th-Percentile Queue Length [veh/ln]	1.58	1.60	4.15	1.73	1.09	13.89	2.40	3.60	1.07
95th-Percentile Queue Length [ft/ln]	39.40	39.93	103.63	43.30	27.31	347.36	60.10	90.00	26.78

Movement, Approach, & Intersection Results

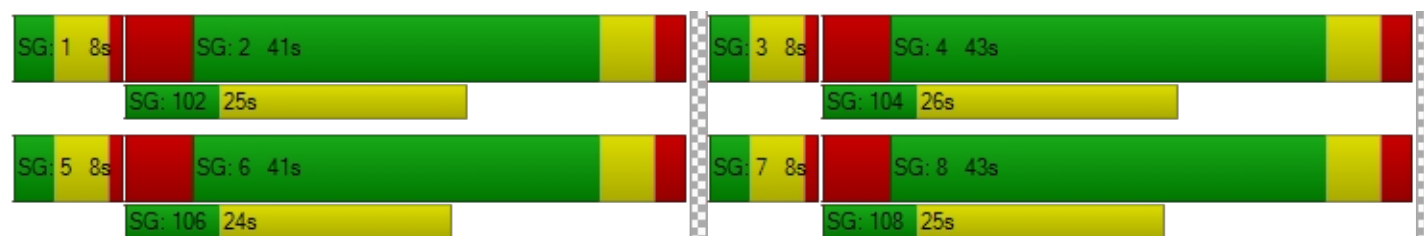
d_M, Delay for Movement [s/veh]	9.22	9.22	13.24	12.94	13.15	13.15	25.34	44.12	44.12	28.22	32.06	30.77
Movement LOS	A	A	B	B	B	B	C	D	D	C	C	C
d_A, Approach Delay [s/veh]	10.97			13.01			42.40			30.99		
Approach LOS	B			B			D			C		
d_I, Intersection Delay [s/veh]	27.95											
Intersection LOS	C											
Intersection V/C	0.367											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.62			39.62			39.62			39.62		
I_p,int, Pedestrian LOS Score for Intersection	2.195			2.121			2.510			2.911		
Crosswalk LOS	B			B			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	860			600			640			640		
d_b, Bicycle Delay [s]	16.25			24.51			23.13			23.13		
I_b,int, Bicycle LOS Score for Intersection	1.949			2.010			2.233			1.846		
Bicycle LOS	A			B			B			A		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Wolfensberger Rd/Prairie Hawk Dr

Control Type:	Signalized	Delay (sec / veh):	29.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.371

Intersection Setup

Name	Prairie Hawk Dr			Prairie Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	55.00	100.00	100.00	330.00	100.00	330.00	310.00	100.00	310.00	120.00	100.00	120.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
Speed [mph]	30.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Prairie Hawk Dr			Prairie Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	3	22	20	421	41	139	154	404	19	124	145	362
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	0	0	0	0	8	2	2	1	0	16	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	11	58	74	0	73	0	0	0	23	62	0	0
Right Turn on Red Volume [veh/h]	0	0	48	0	0	76	0	0	22	0	0	187
Total Hourly Volume [veh/h]	18	81	47	434	115	75	161	418	22	190	165	186
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	22	13	118	31	20	44	114	6	52	45	51
Total Analysis Volume [veh/h]	20	88	51	472	125	82	175	454	24	207	179	202
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	1.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	8	0	3	8	0	3	8	0	5	8	0
Maximum Green [s]	30	26	0	10	26	0	10	30	0	30	28	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Split [s]	8	43	0	8	43	0	9	49	0	10	50	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	8	0
Pedestrian Clearance [s]	0	20	0	0	19	0	0	25	0	0	26	0
Delayed Vehicle Green [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	65	57	65	58	58	33	23	23	33	24	24
g / C, Green / Cycle	0.59	0.52	0.59	0.53	0.53	0.30	0.21	0.21	0.30	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.02	0.08	0.36	0.07	0.05	0.15	0.13	0.13	0.18	0.05	0.13
s, saturation flow rate [veh/h]	1216	1756	1299	1870	1589	1166	1870	1837	1125	3560	1589
c, Capacity [veh/h]	771	907	807	993	844	411	394	387	333	783	349
d1, Uniform Delay [s]	9.46	13.96	15.77	12.95	12.74	30.50	39.33	39.34	33.80	35.25	38.35
k, delay calibration	0.04	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.36	3.09	0.26	0.23	3.20	1.54	1.57	1.90	0.15	1.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.03	0.15	0.58	0.13	0.10	0.43	0.61	0.61	0.62	0.23	0.58
d, Delay for Lane Group [s/veh]	9.47	14.32	18.85	13.21	12.97	33.70	40.87	40.91	35.69	35.40	39.86
Lane Group LOS	A	B	B	B	B	C	D	D	D	D	D
Critical Lane Group	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.20	1.88	6.46	1.51	0.98	3.86	5.92	5.83	4.39	1.95	4.89
50th-Percentile Queue Length [ft/ln]	4.91	47.10	161.48	37.80	24.58	96.51	147.89	145.70	109.83	48.71	122.31
95th-Percentile Queue Length [veh/ln]	0.35	3.39	10.63	2.72	1.77	6.95	9.90	9.79	7.83	3.51	8.52
95th-Percentile Queue Length [ft/ln]	8.84	84.78	265.68	68.04	44.24	173.72	247.61	244.68	195.76	87.69	213.00

Movement, Approach, & Intersection Results

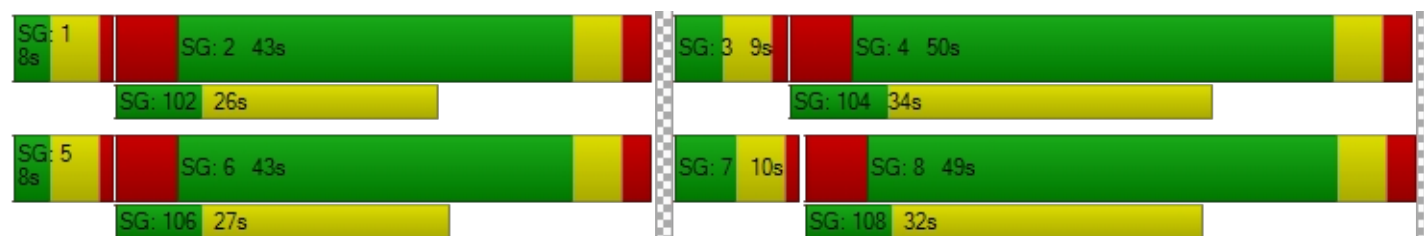
d_M, Delay for Movement [s/veh]	9.47	14.32	14.32	18.85	13.21	12.97	33.70	40.89	40.91	35.69	35.40	39.86
Movement LOS	A	B	B	B	B	B	C	D	D	D	D	D
d_A, Approach Delay [s/veh]	13.71			17.10			38.96			37.03		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	29.35											
Intersection LOS	C											
Intersection V/C	0.371											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			12.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			43.66			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersection	2.276			2.822			2.733			3.606		
Crosswalk LOS	B			C			B			D		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	582			582			691			709		
d_b, Bicycle Delay [s]	27.66			27.66			23.56			22.91		
I_b,int, Bicycle LOS Score for Intersection	1.901			2.805			2.116			2.199		
Bicycle LOS	A			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: Wolfensberger Rd/Coachline Rd/Plum Creek Pkwy

Control Type:	Roundabout	Delay (sec / veh):	5.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Plum Creek Pkwy			Coachline Rd			Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	175.00
Speed [mph]	30.00			40.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Plum Creek Pkwy			Coachline Rd			Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	26	200	19	117	201	29	45	158	43	9	68	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	5	7	0	0	0	5	0	1	1	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	8	38	3	3	62	0	0	0	16	10	1	14
Total Hourly Volume [veh/h]	35	244	28	131	269	30	46	168	60	20	72	103
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	66	8	36	73	8	13	46	16	5	20	28
Total Analysis Volume [veh/h]	38	265	30	142	292	33	50	183	65	22	78	112
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	383			141			465			360		
Exiting Flow Rate [veh/h]	387			436			152			362		
Demand Flow Rate [veh/h]	35	244	28	131	269	30	46	168	60	20	72	103
Adjusted Demand Flow Rate [veh/h]	38	265	30	142	292	33	50	183	65	22	78	112

Lanes

Override Calculated Critical Headway	No	No	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Override Calculated Follow-Up Time	No	No	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00
B (coefficient)	0.00091	0.00091	0.00091	0.00091	0.00091	0.00091	0.00091	0.00091
HV Adjustment Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	160	181	224	253	143	162	102	115
Capacity of Entry and Bypass Lanes [veh/h]	1003	1003	1250	1250	930	930	1024	1024
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	983	983	1225	1225	912	912	1004	1004
X, volume / capacity	0.16	0.18	0.18	0.20	0.15	0.17	0.10	0.11

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.57	0.65	0.65	0.76	0.54	0.62	0.33	0.38
95th-Percentile Queue Length [ft]	14.13	16.31	16.29	18.88	13.54	15.61	8.28	9.39
Approach Delay [s/veh]	5.26		4.59		5.54		4.54	
Approach LOS	A		A		A		A	
Intersection Delay [s/veh]	4.97							
Intersection LOS	A							

Signal Warrants Report For Intersection 1: Wolfensberger Rd/Project Access #1

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	NE, SW
Minor Approaches	SE, NW
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	NE	SW	SE	NW
1	225	291	6	36
2	218	282	6	35
3	214	276	6	34
4	200	259	5	32
5	178	230	5	28
6	176	227	5	28
7	173	224	5	28
8	158	204	4	25
9	155	201	4	25
10	153	198	4	24
11	133	172	4	21
12	124	160	3	20
13	122	157	3	19
14	90	116	2	14
15	90	116	2	14
16	63	81	2	10
17	36	47	1	6
18	36	47	1	6
19	20	26	1	3
20	11	15	0	2
21	7	9	0	1
22	2	3	0	0
23	2	3	0	0
24	2	3	0	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	516	1	36	No	No	No	No	No	No	No	No	No	No
2	1	500	1	35	No	No	No	No	No	No	No	No	No	No
3	1	490	1	34	No	No	No	No	No	No	No	No	No	No
4	1	459	1	32	No	No	No	No	No	No	No	No	No	No
5	1	408	1	28	No	No	No	No	No	No	No	No	No	No
6	1	403	1	28	No	No	No	No	No	No	No	No	No	No
7	1	397	1	28	No	No	No	No	No	No	No	No	No	No
8	1	362	1	25	No	No	No	No	No	No	No	No	No	No
9	1	356	1	25	No	No	No	No	No	No	No	No	No	No
10	1	351	1	24	No	No	No	No	No	No	No	No	No	No
11	1	305	1	21	No	No	No	No	No	No	No	No	No	No
12	1	284	1	20	No	No	No	No	No	No	No	No	No	No
13	1	279	1	19	No	No	No	No	No	No	No	No	No	No
14	1	206	1	14	No	No	No	No	No	No	No	No	No	No
15	1	206	1	14	No	No	No	No	No	No	No	No	No	No
16	1	144	1	10	No	No	No	No	No	No	No	No	No	No
17	1	83	1	6	No	No	No	No	No	No	No	No	No	No
18	1	83	1	6	No	No	No	No	No	No	No	No	No	No
19	1	46	1	3	No	No	No	No	No	No	No	No	No	No
20	1	26	1	2	No	No	No	No	No	No	No	No	No	No
21	1	16	1	1	No	No	No	No	No	No	No	No	No	No
22	1	5	1	0	No	No	No	No	No	No	No	No	No	No
23	1	5	1	0	No	No	No	No	No	No	No	No	No	No
24	1	5	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	SE	NW
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.3	11.9
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:01	0:07
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	6	36
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	558	558
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
Warrant Met for Intersection	No	

Signal Warrants Report For Intersection 2: Wolfensberger Rd/Project Access #2

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	NE, SW
Minor Approaches	SE
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	NE	SW	SE
1	232	299	8
2	225	290	8
3	220	284	8
4	206	266	7
5	183	236	6
6	181	233	6
7	179	230	6
8	162	209	6
9	160	206	6
10	158	203	5
11	137	176	5
12	128	164	4
13	125	161	4
14	93	120	3
15	93	120	3
16	65	84	2
17	37	48	1
18	37	48	1
19	21	27	1
20	12	15	0
21	7	9	0
22	2	3	0
23	2	3	0
24	2	3	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	531	1	8	No	No	No	No	No	No	No	No	No	No
2	1	515	1	8	No	No	No	No	No	No	No	No	No	No
3	1	504	1	8	No	No	No	No	No	No	No	No	No	No
4	1	472	1	7	No	No	No	No	No	No	No	No	No	No
5	1	419	1	6	No	No	No	No	No	No	No	No	No	No
6	1	414	1	6	No	No	No	No	No	No	No	No	No	No
7	1	409	1	6	No	No	No	No	No	No	No	No	No	No
8	1	371	1	6	No	No	No	No	No	No	No	No	No	No
9	1	366	1	6	No	No	No	No	No	No	No	No	No	No
10	1	361	1	5	No	No	No	No	No	No	No	No	No	No
11	1	313	1	5	No	No	No	No	No	No	No	No	No	No
12	1	292	1	4	No	No	No	No	No	No	No	No	No	No
13	1	286	1	4	No	No	No	No	No	No	No	No	No	No
14	1	213	1	3	No	No	No	No	No	No	No	No	No	No
15	1	213	1	3	No	No	No	No	No	No	No	No	No	No
16	1	149	1	2	No	No	No	No	No	No	No	No	No	No
17	1	85	1	1	No	No	No	No	No	No	No	No	No	No
18	1	85	1	1	No	No	No	No	No	No	No	No	No	No
19	1	48	1	1	No	No	No	No	No	No	No	No	No	No
20	1	27	1	0	No	No	No	No	No	No	No	No	No	No
21	1	16	1	0	No	No	No	No	No	No	No	No	No	No
22	1	5	1	0	No	No	No	No	No	No	No	No	No	No
23	1	5	1	0	No	No	No	No	No	No	No	No	No	No
24	1	5	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	SE
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.1
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:01
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	8
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	539
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	No

Table of Contents

Intersection Level Of Service Report	2
Intersection 1: Wolfensberger Rd/Project Access #1	2
Intersection 2: Wolfensberger Rd/Project Access #2	4
Intersection 3: Wolfensberger Rd/Red Hawk Dr/Auburn Dr	6
Intersection 4: Wolfensberger Rd/Prairie Hawk Dr	11
Intersection 5: Wolfensberger Rd/Coachline Rd/Plum Creek Pkwy	16
Signal Warrants Report	18
Intersection 1: Wolfensberger Rd/Project Access #1	18
Intersection 2: Wolfensberger Rd/Project Access #2	20

Intersection Level Of Service Report
Intersection 1: Wolfensberger Rd/Project Access #1

Control Type:	Two-way stop	Delay (sec / veh):	18.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.028

Intersection Setup

Name	Wolfensberger Rd			Wolfensberger Rd			Project Access #1					
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Wolfensberger Rd			Wolfensberger Rd			Project Access #1					
Base Volume Input [veh/h]	0	294	0	0	261	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0300	1.0300	1.0300	1.0300	1.0000	1.0300	1.0000	1.0300	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	2	5	9	0	9	0	17	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	18	30	0	0	77	17	0	0	0	8	0	9
Total Hourly Volume [veh/h]	18	335	2	5	355	17	9	0	17	8	0	9
Peak Hour Factor	1.0000	0.9200	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	91	1	1	96	4	2	0	5	2	0	2
Total Analysis Volume [veh/h]	18	364	2	5	386	17	10	0	18	8	0	9
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.03	0.03	0.00	0.01
d_M, Delay for Movement [s/veh]	8.14	0.00	0.00	8.02	0.00	0.00	18.06	17.34	10.81	18.19	17.10	10.89
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.03	0.03	0.03	0.01	0.01	0.01	0.20	0.20	0.20	0.13	0.13	0.13
95th-Percentile Queue Length [ft/ln]	0.76	0.76	0.76	0.21	0.21	0.21	4.88	4.88	4.88	3.29	3.29	3.29
d_A, Approach Delay [s/veh]	0.38			0.10			13.40			14.33		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	0.96											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 2: Wolfensberger Rd/Project Access #2

Control Type:	Two-way stop	Delay (sec / veh):	15.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.034

Intersection Setup

Name	Project Access #2		Wolfensberger Rd		Wolfensberger Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Project Access #2		Wolfensberger Rd		Wolfensberger Rd	
Base Volume Input [veh/h]	0	0	294	0	0	261
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	9	17	17	2	5	5
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	2	4	47	2	3	71
Total Hourly Volume [veh/h]	11	21	367	4	8	345
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	6	100	1	2	94
Total Analysis Volume [veh/h]	12	23	399	4	9	375
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.04	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	15.71	11.08	0.00	0.00	8.13	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.22	0.22	0.00	0.00	0.02	0.02
95th-Percentile Queue Length [ft/ln]	5.57	5.57	0.00	0.00	0.38	0.38
d_A, Approach Delay [s/veh]	12.67		0.00		0.19	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.63					
Intersection LOS	C					

Intersection Level Of Service Report**Intersection 3: Wolfensberger Rd/Red Hawk Dr/Auburn Dr**

Control Type:	Signalized	Delay (sec / veh):	29.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.302

Intersection Setup

Name	Auburn Dr			Red Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	130.00	220.00	100.00	100.00	170.00	100.00	100.00	360.00	100.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	250.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Auburn Dr			Red Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	1	42	91	79	37	8	15	222	0	151	252	100
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	0	0	0	0	1	3	28	3	0	7	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	5	0	0	0	0	4	2	17	3	0	34	0
Right Turn on Red Volume [veh/h]	0	0	47	0	0	7	0	0	3	0	0	52
Total Hourly Volume [veh/h]	7	43	47	81	38	6	20	274	3	156	301	51
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	12	13	22	10	2	5	74	1	42	82	14
Total Analysis Volume [veh/h]	8	47	51	88	41	7	22	298	3	170	327	55
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	61.0
Offset Reference	Beginning of First Yellow
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	8	0	3	8	0	3	5	0	3	5	0
Maximum Green [s]	8	25	0	15	25	0	20	25	0	20	25	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Split [s]	8	41	0	8	41	0	8	43	0	8	43	0
Vehicle Extension [s]	1.0	2.5	0.0	1.0	2.5	0.0	2.0	2.5	0.0	2.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	17	0	0	18	0	0	18	0	0	19	0
Delayed Vehicle Green [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
Minimum Recall	Yes	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	0.00	4.00	0.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	59	51	59	51	29	21	29	23	23
g / C, Green / Cycle	0.59	0.51	0.59	0.51	0.29	0.21	0.29	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.03	0.03	0.07	0.03	0.02	0.16	0.14	0.09	0.03
s, saturation flow rate [veh/h]	1759	1589	1297	1823	1117	1867	1221	3560	1589
c, Capacity [veh/h]	1097	804	788	922	361	400	307	821	367
d1, Uniform Delay [s]	8.85	12.63	11.29	12.55	25.50	36.79	31.32	32.59	30.65
k, delay calibration	0.04	0.50	0.50	0.50	0.04	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	0.15	0.29	0.11	0.03	2.15	1.16	0.23	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.06	0.11	0.05	0.06	0.75	0.55	0.40	0.15
d, Delay for Lane Group [s/veh]	8.86	12.78	11.58	12.66	25.52	38.94	32.49	32.82	30.79
Lane Group LOS	A	B	B	B	C	D	C	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.49	0.60	1.02	0.56	0.36	6.80	3.12	3.23	1.03
50th-Percentile Queue Length [ft/ln]	12.25	15.12	25.41	14.04	9.00	169.90	77.89	80.87	25.74
95th-Percentile Queue Length [veh/ln]	0.88	1.09	1.83	1.01	0.65	11.07	5.61	5.82	1.85
95th-Percentile Queue Length [ft/ln]	22.05	27.21	45.73	25.27	16.21	276.79	140.20	145.57	46.32

Movement, Approach, & Intersection Results

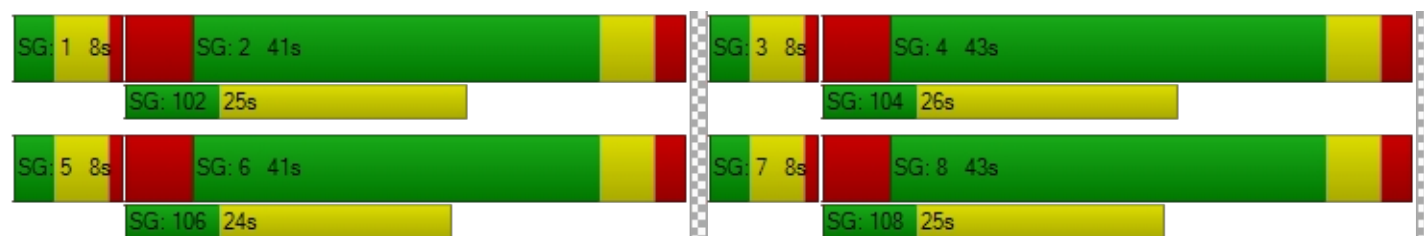
d_M, Delay for Movement [s/veh]	8.86	8.86	12.78	11.58	12.66	12.66	25.52	38.94	38.94	32.49	32.82	30.79
Movement LOS	A	A	B	B	B	B	C	D	D	C	C	C
d_A, Approach Delay [s/veh]	10.75			11.96			38.02			32.51		
Approach LOS	B			B			D			C		
d_I, Intersection Delay [s/veh]	29.54											
Intersection LOS	C											
Intersection V/C	0.302											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersectio	2.189			2.066			2.465			2.822		
Crosswalk LOS	B			B			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	860			600			640			640		
d_b, Bicycle Delay [s]	16.25			24.50			23.12			23.12		
I_b,int, Bicycle LOS Score for Intersection	1.812			1.796			2.098			2.058		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Wolfensberger Rd/Prairie Hawk Dr

Control Type:	Signalized	Delay (sec / veh):	30.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.416

Intersection Setup

Name	Prairie Hawk Dr			Prairie Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	55.00	100.00	100.00	330.00	100.00	330.00	310.00	100.00	310.00	120.00	100.00	120.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
Speed [mph]	30.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Prairie Hawk Dr			Prairie Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	28	39	191	289	34	115	76	280	27	111	381	268
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	0	0	0	0	2	8	16	4	0	4	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	22	75	67	0	63	0	0	0	12	69	0	0
Right Turn on Red Volume [veh/h]	0	0	132	0	0	60	0	0	22	0	0	138
Total Hourly Volume [veh/h]	52	115	132	298	98	60	86	304	22	183	396	138
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	31	36	81	27	16	23	83	6	50	108	38
Total Analysis Volume [veh/h]	57	125	143	324	107	65	93	330	24	199	430	150
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	18.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	8	0	3	8	0	3	8	0	5	8	0
Maximum Green [s]	30	26	0	10	26	0	10	30	0	30	28	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Split [s]	8	43	0	8	43	0	9	49	0	10	50	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	8	0
Pedestrian Clearance [s]	0	20	0	0	19	0	0	25	0	0	26	0
Delayed Vehicle Green [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	69	61	69	61	61	29	19	19	29	20	20
g / C, Green / Cycle	0.63	0.56	0.63	0.56	0.56	0.26	0.17	0.17	0.26	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.05	0.16	0.28	0.06	0.04	0.09	0.10	0.10	0.16	0.12	0.09
s, saturation flow rate [veh/h]	1260	1709	1169	1870	1589	1063	1870	1826	1236	3560	1589
c, Capacity [veh/h]	855	949	739	1043	886	285	321	314	333	644	287
d1, Uniform Delay [s]	7.90	12.88	11.67	11.42	11.22	32.31	41.72	41.75	36.22	41.98	40.76
k, delay calibration	0.04	0.50	0.50	0.50	0.50	0.26	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	0.74	1.89	0.20	0.16	1.59	1.51	1.57	1.71	1.21	1.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.07	0.28	0.44	0.10	0.07	0.33	0.56	0.56	0.60	0.67	0.52
d, Delay for Lane Group [s/veh]	7.91	13.63	13.56	11.61	11.38	33.91	43.22	43.31	37.93	43.19	42.22
Lane Group LOS	A	B	B	B	B	C	D	D	D	D	D
Critical Lane Group	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.50	3.59	3.47	1.19	0.71	2.01	4.47	4.40	4.46	5.42	3.71
50th-Percentile Queue Length [ft/ln]	12.53	89.81	86.75	29.63	17.83	50.26	111.80	110.11	111.52	135.38	92.80
95th-Percentile Queue Length [veh/ln]	0.90	6.47	6.25	2.13	1.28	3.62	7.94	7.85	7.92	9.23	6.68
95th-Percentile Queue Length [ft/ln]	22.55	161.66	156.14	53.34	32.10	90.46	198.51	196.16	198.11	230.79	167.04

Movement, Approach, & Intersection Results

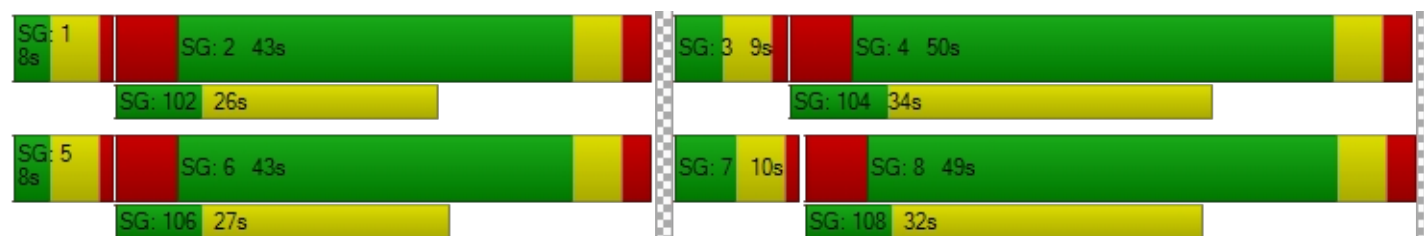
d_M, Delay for Movement [s/veh]	7.91	13.63	13.63	13.56	11.61	11.38	33.91	43.26	43.31	37.93	43.19	42.22
Movement LOS	A	B	B	B	B	B	C	D	D	D	D	D
d_A, Approach Delay [s/veh]	12.63			12.85			41.32			41.66		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	29.99											
Intersection LOS	C											
Intersection V/C	0.416											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			12.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			43.65			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersection	2.454			2.640			2.775			3.335		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	582			582			691			709		
d_b, Bicycle Delay [s]	27.65			27.65			23.56			22.91		
I_b,int, Bicycle LOS Score for Intersection	2.314			2.477			1.947			2.316		
Bicycle LOS	B			B			A			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: Wolfensberger Rd/Coachline Rd/Plum Creek Pkwy

Control Type:
Analysis Method:
Analysis Period:

Roundabout
HCM 7th Edition
15 minutes

Delay (sec / veh):
Level Of Service:

5.3
A

Intersection Setup

Name	Plum Creek Pkwy			Coachline Rd			Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐			⇐⇐			⇐⇐			⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00	175.00
Speed [mph]	30.00			40.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Plum Creek Pkwy			Coachline Rd			Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	48	211	19	127	228	54	27	89	42	24	131	95
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	1	2	0	0	0	1	0	5	5	7
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	13	57	10	13	49	0	0	1	10	5	1	6
Total Hourly Volume [veh/h]	62	274	31	146	284	56	28	94	53	35	141	111
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	74	8	40	77	15	8	26	14	10	38	30
Total Analysis Volume [veh/h]	67	298	34	159	309	61	30	102	58	38	153	121
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	297			263			516			403		
Exiting Flow Rate [veh/h]	413			458			287			301		
Demand Flow Rate [veh/h]	62	274	31	146	284	56	28	94	53	35	141	111
Adjusted Demand Flow Rate [veh/h]	67	298	34	159	309	61	30	102	58	38	153	121

Lanes

Override Calculated Critical Headway	No	No	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Override Calculated Follow-Up Time	No	No	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00
B (coefficient)	0.00091	0.00091	0.00091	0.00091	0.00091	0.00091	0.00091	0.00091
HV Adjustment Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	192	216	254	286	92	103	150	169
Capacity of Entry and Bypass Lanes [veh/h]	1084	1084	1118	1118	888	888	985	985
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1063	1063	1096	1096	871	871	965	965
X, volume / capacity	0.18	0.20	0.23	0.26	0.10	0.12	0.15	0.17

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.64	0.74	0.87	1.02	0.34	0.39	0.53	0.62
95th-Percentile Queue Length [ft]	15.98	18.50	21.83	25.54	8.54	9.77	13.37	15.42
Approach Delay [s/veh]	5.12		5.55		5.19		5.26	
Approach LOS	A		A		A		A	
Intersection Delay [s/veh]	5.32							
Intersection LOS	A							

Signal Warrants Report For Intersection 1: Wolfensberger Rd/Project Access #1

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	NE, SW
Minor Approaches	SE, NW
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	NE	SW	SE	NW
1	377	355	26	17
2	366	344	25	16
3	358	337	25	16
4	336	316	23	15
5	298	280	21	13
6	294	277	20	13
7	290	273	20	13
8	264	248	18	12
9	260	245	18	12
10	256	241	18	12
11	222	209	15	10
12	207	195	14	9
13	204	192	14	9
14	151	142	10	7
15	151	142	10	7
16	106	99	7	5
17	60	57	4	3
18	60	57	4	3
19	34	32	2	2
20	19	18	1	1
21	11	11	1	1
22	4	4	0	0
23	4	4	0	0
24	4	4	0	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	732	1	26	No	No	No	No	No	No	No	No	No	No
2	1	710	1	25	No	No	No	No	No	No	No	No	No	No
3	1	695	1	25	No	No	No	No	No	No	No	No	No	No
4	1	652	1	23	No	No	No	No	No	No	No	No	No	No
5	1	578	1	21	No	No	No	No	No	No	No	No	No	No
6	1	571	1	20	No	No	No	No	No	No	No	No	No	No
7	1	563	1	20	No	No	No	No	No	No	No	No	No	No
8	1	512	1	18	No	No	No	No	No	No	No	No	No	No
9	1	505	1	18	No	No	No	No	No	No	No	No	No	No
10	1	497	1	18	No	No	No	No	No	No	No	No	No	No
11	1	431	1	15	No	No	No	No	No	No	No	No	No	No
12	1	402	1	14	No	No	No	No	No	No	No	No	No	No
13	1	396	1	14	No	No	No	No	No	No	No	No	No	No
14	1	293	1	10	No	No	No	No	No	No	No	No	No	No
15	1	293	1	10	No	No	No	No	No	No	No	No	No	No
16	1	205	1	7	No	No	No	No	No	No	No	No	No	No
17	1	117	1	4	No	No	No	No	No	No	No	No	No	No
18	1	117	1	4	No	No	No	No	No	No	No	No	No	No
19	1	66	1	2	No	No	No	No	No	No	No	No	No	No
20	1	37	1	1	No	No	No	No	No	No	No	No	No	No
21	1	22	1	1	No	No	No	No	No	No	No	No	No	No
22	1	8	1	0	No	No	No	No	No	No	No	No	No	No
23	1	8	1	0	No	No	No	No	No	No	No	No	No	No
24	1	8	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	SE	NW
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.4	14.3
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:05	0:04
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	26	17
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	775	775
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
Warrant Met for Intersection	No	

Signal Warrants Report For Intersection 2: Wolfensberger Rd/Project Access #2

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	353	371	32
2	342	360	31
3	335	352	30
4	314	330	28
5	279	293	25
6	275	289	25
7	272	286	25
8	247	260	22
9	244	256	22
10	240	252	22
11	208	219	19
12	194	204	18
13	191	200	17
14	141	148	13
15	141	148	13
16	99	104	9
17	56	59	5
18	56	59	5
19	32	33	3
20	18	19	2
21	11	11	1
22	4	4	0
23	4	4	0
24	4	4	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	1	724	1	32	No	No	No	No	No	No	No	No	No	No
2	1	702	1	31	No	No	No	No	No	No	No	No	No	No
3	1	687	1	30	No	No	No	No	No	No	No	No	No	No
4	1	644	1	28	No	No	No	No	No	No	No	No	No	No
5	1	572	1	25	No	No	No	No	No	No	No	No	No	No
6	1	564	1	25	No	No	No	No	No	No	No	No	No	No
7	1	558	1	25	No	No	No	No	No	No	No	No	No	No
8	1	507	1	22	No	No	No	No	No	No	No	No	No	No
9	1	500	1	22	No	No	No	No	No	No	No	No	No	No
10	1	492	1	22	No	No	No	No	No	No	No	No	No	No
11	1	427	1	19	No	No	No	No	No	No	No	No	No	No
12	1	398	1	18	No	No	No	No	No	No	No	No	No	No
13	1	391	1	17	No	No	No	No	No	No	No	No	No	No
14	1	289	1	13	No	No	No	No	No	No	No	No	No	No
15	1	289	1	13	No	No	No	No	No	No	No	No	No	No
16	1	203	1	9	No	No	No	No	No	No	No	No	No	No
17	1	115	1	5	No	No	No	No	No	No	No	No	No	No
18	1	115	1	5	No	No	No	No	No	No	No	No	No	No
19	1	65	1	3	No	No	No	No	No	No	No	No	No	No
20	1	37	1	2	No	No	No	No	No	No	No	No	No	No
21	1	22	1	1	No	No	No	No	No	No	No	No	No	No
22	1	8	1	0	No	No	No	No	No	No	No	No	No	No
23	1	8	1	0	No	No	No	No	No	No	No	No	No	No
24	1	8	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	12.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:06
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	32
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	756
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	No

Appendix D – Horizon Conditions Analyses

Table of Contents

Intersection Level Of Service Report	2
Intersection 3: Wolfensberger Rd/Red Hawk Dr/Auburn Dr	2
Intersection 4: Wolfensberger Rd/Prairie Hawk Dr	4
Intersection 5: Wolfensberger Rd/Coachline Rd/Plum Creek Pkwy	9

Intersection Level Of Service Report
Intersection 3: Wolfensberger Rd/Red Hawk Dr/Auburn Dr

Control Type:	Roundabout	Delay (sec / veh):	6.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Auburn Dr			Red Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Auburn Dr			Red Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	1	81	131	164	63	13	29	286	1	70	150	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	1	0	0	0	0	1	3	35	5	0	8	0
Total Hourly Volume [veh/h]	2	103	166	208	80	18	40	398	6	89	199	71
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	28	45	57	22	5	11	108	2	24	54	19
Total Analysis Volume [veh/h]	2	112	180	226	87	20	43	433	7	97	216	77
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	716			321			418			160		
Exiting Flow Rate [veh/h]	188			158			222			672		
Demand Flow Rate [veh/h]	2	103	166	208	80	18	40	398	6	89	199	71
Adjusted Demand Flow Rate [veh/h]	2	112	180	226	87	20	43	433	7	97	216	77

Lanes

Override Calculated Critical Headway	No	No	No	No	No	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Override Calculated Follow-Up Time	No	No	No	No	No	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1420.00	1380.00	1420.00	1420.00	1420.00	1380.00	1420.00	1420.00	1420.00	1380.00
B (coefficient)	0.00102	0.00085	0.00102	0.00085	0.00091	0.00091	0.00102	0.00091	0.00091	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	117	0	320	0	229	258	0	151	170	0	0
Capacity of Entry and Bypass Lanes [veh/h]	665	802	995	1176	971	971	1140	1228	1228	1175	1175
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	652	787	975	1153	952	952	1118	1204	1204	1152	1152
X, volume / capacity	0.17	0.23	0.32	0.02	0.24	0.27	0.01	0.12	0.14	0.07	0.07

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.63	0.88	1.40	0.05	0.91	1.07	0.02	0.42	0.48	0.21
95th-Percentile Queue Length [ft]	15.75	22.01	34.88	1.32	22.83	26.73	0.47	10.41	11.95	5.37
Approach Delay [s/veh]	7.27		6.81		6.26			4.01		
Approach LOS	A		A		A			A		
Intersection Delay [s/veh]	5.99									
Intersection LOS	A									

Intersection Level Of Service Report
Intersection 4: Wolfensberger Rd/Prairie Hawk Dr

Control Type:	Signalized	Delay (sec / veh):	29.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.352

Intersection Setup

Name	Prairie Hawk Dr			Prairie Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	55.00	100.00	100.00	330.00	100.00	330.00	310.00	100.00	100.00	120.00	100.00	120.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Prairie Hawk Dr			Prairie Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	3	22	20	421	41	139	154	404	19	124	145	362
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	8	50	69	0	58	0	0	0	16	53	0	0
Right Turn on Red Volume [veh/h]	0	0	47	0	0	89	0	0	20	0	0	230
Total Hourly Volume [veh/h]	12	78	47	535	110	88	196	513	20	210	184	230
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	21	13	145	30	24	53	139	5	57	50	63
Total Analysis Volume [veh/h]	13	85	51	582	120	96	213	558	22	228	200	250
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	1.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	8	0	3	8	0	3	8	0	5	8	0
Maximum Green [s]	30	26	0	10	26	0	10	30	0	30	28	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Split [s]	8	43	0	8	43	0	8	49	0	10	51	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	8	0
Pedestrian Clearance [s]	0	20	0	0	19	0	0	25	0	0	26	0
Delayed Vehicle Green [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	58	50	50	58	52	52	40	30	30	40	32	32
g / C, Green / Cycle	0.53	0.45	0.45	0.53	0.47	0.47	0.37	0.27	0.27	0.37	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.01	0.02	0.03	0.44	0.03	0.06	0.20	0.16	0.01	0.22	0.06	0.16
s, saturation flow rate [veh/h]	1208	3560	1589	1308	3560	1589	1066	3560	1589	1024	3560	1589
c, Capacity [veh/h]	724	1613	720	784	1677	748	436	975	435	345	1041	465
d1, Uniform Delay [s]	12.47	16.87	17.01	21.24	15.94	16.40	27.68	34.41	29.42	30.58	29.20	32.70
k, delay calibration	0.04	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.06	0.19	6.29	0.08	0.35	3.89	0.53	0.05	2.19	0.09	0.97
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.02	0.05	0.07	0.74	0.07	0.13	0.49	0.57	0.05	0.66	0.19	0.54
d, Delay for Lane Group [s/veh]	12.47	16.93	17.20	27.53	16.03	16.75	31.57	34.94	29.47	32.77	29.28	33.67
Lane Group LOS	B	B	B	C	B	B	C	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.15	0.62	0.77	10.82	0.80	1.36	4.36	6.31	0.43	4.41	1.95	5.55
50th-Percentile Queue Length [ft/ln]	3.82	15.41	19.18	270.54	20.05	34.03	108.90	157.67	10.65	110.21	48.75	138.73
95th-Percentile Queue Length [veh/ln]	0.28	1.11	1.38	16.22	1.44	2.45	7.78	10.43	0.77	7.85	3.51	9.41
95th-Percentile Queue Length [ft/ln]	6.88	27.74	34.53	405.42	36.09	61.26	194.47	260.63	19.18	196.30	87.75	235.32

Movement, Approach, & Intersection Results

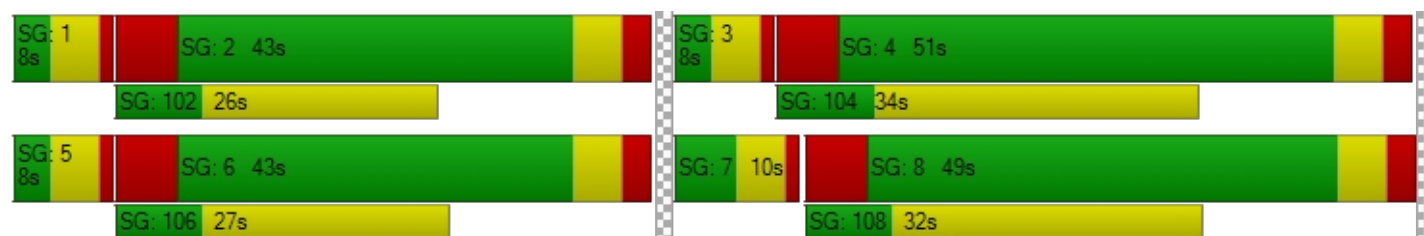
d_M, Delay for Movement [s/veh]	12.47	16.93	17.20	27.53	16.03	16.75	31.57	34.94	29.47	32.77	29.28	33.67
Movement LOS	B	B	B	C	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	16.63			24.50			33.88			32.07		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	29.22											
Intersection LOS	C											
Intersection V/C	0.352											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			12.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.56			43.67			44.56			44.56		
I_p,int, Pedestrian LOS Score for Intersection	2.719			3.113			2.762			3.898		
Crosswalk LOS	B			C			C			D		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	582			582			691			727		
d_b, Bicycle Delay [s]	27.67			27.67			23.58			22.28		
I_b,int, Bicycle LOS Score for Intersection	1.721			2.291			2.230			2.309		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: Wolfensberger Rd/Coachline Rd/Plum Creek Pkwy

Control Type:
Analysis Method:
Analysis Period:

Roundabout
HCM 7th Edition
15 minutes

Delay (sec / veh):
Level Of Service:

5.1
A

Intersection Setup

Name	Plum Creek Pkwy			Coachline Rd			Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐			⇐⇐			⇐⇐			⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			40.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Plum Creek Pkwy			Coachline Rd			Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	26	200	19	117	201	29	45	158	43	9	68	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	8	33	3	3	52	0	0	0	16	10	1	14
Total Hourly Volume [veh/h]	41	287	27	152	307	37	57	201	71	21	87	121
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	78	7	41	83	10	15	55	19	6	24	33
Total Analysis Volume [veh/h]	45	312	29	165	334	40	62	218	77	23	95	132
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	454			166			532			427		
Exiting Flow Rate [veh/h]	364			381			143			391		
Demand Flow Rate [veh/h]	41	287	27	152	307	37	57	201	71	21	87	121
Adjusted Demand Flow Rate [veh/h]	45	312	29	165	334	40	62	218	77	23	95	132

Lanes

Override Calculated Critical Headway	No	No	No	No	No	No	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Override Calculated Follow-Up Time	No	No	No	No	No	No	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00
B (coefficient)	0.00091	0.00091	0.00085	0.00091	0.00091	0.00085	0.00091	0.00091	0.00085	0.00091	0.00091	0.00085
HV Adjustment Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	172	193	0	240	270	0	135	152	0	57	64	0
Capacity of Entry and Bypass Lanes [veh/h]	940	940	1019	1221	1221	1258	875	875	1042	963	963	1027
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	922	922	999	1197	1197	1234	858	858	1022	944	944	1007
X, volume / capacity	0.18	0.21	0.03	0.20	0.22	0.03	0.15	0.17	0.08	0.06	0.07	0.13

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.66	0.77	0.09	0.73	0.84	0.10	0.54	0.62	0.24	0.19	0.21	0.45
95th-Percentile Queue Length [ft]	16.59	19.23	2.24	18.17	21.12	2.51	13.52	15.59	6.10	4.68	5.31	11.27
Approach Delay [s/veh]	5.68			4.73			5.48			4.59		
Approach LOS	A			A			A			A		
Intersection Delay [s/veh]	5.12											
Intersection LOS	A											

Table of Contents

Intersection Level Of Service Report	2
Intersection 3: Wolfensberger Rd/Red Hawk Dr/Auburn Dr	2
Intersection 4: Wolfensberger Rd/Prairie Hawk Dr	4
Intersection 5: Wolfensberger Rd/Coachline Rd/Plum Creek Pkwy	9

Intersection Level Of Service Report
Intersection 3: Wolfensberger Rd/Red Hawk Dr/Auburn Dr

Control Type:	Roundabout	Delay (sec / veh):	5.1
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Auburn Dr			Red Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⬆			⬆			⬆			⬆		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Auburn Dr			Red Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	1	42	91	79	37	8	15	222	0	151	252	100
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	5	0	0	0	0	4	2	17	3	0	34	0
Total Hourly Volume [veh/h]	6	53	116	100	47	14	21	299	3	192	354	127
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	14	32	27	13	4	6	81	1	52	96	35
Total Analysis Volume [veh/h]	7	58	126	109	51	15	23	325	3	209	385	138
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	466			613			376			90		
Exiting Flow Rate [veh/h]	265			83			400			443		
Demand Flow Rate [veh/h]	6	53	116	100	47	14	21	299	3	192	354	127
Adjusted Demand Flow Rate [veh/h]	7	58	126	109	51	15	23	325	3	209	385	138

Lanes

Override Calculated Critical Headway	No	No	No	No	No	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Override Calculated Follow-Up Time	No	No	No	No	No	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1420.00	1380.00	1420.00	1420.00	1420.00	1380.00	1420.00	1420.00	1380.00	1380.00
B (coefficient)	0.00102	0.00085	0.00102	0.00085	0.00091	0.00091	0.00102	0.00091	0.00091	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	67	0	164	0	167	189	0	285	322	0	0
Capacity of Entry and Bypass Lanes [veh/h]	858	975	739	1011	1009	1009	1053	1309	1309	1269	1269
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	841	956	724	992	989	989	1033	1283	1283	1244	1244
X, volume / capacity	0.08	0.13	0.22	0.02	0.17	0.19	0.00	0.22	0.25	0.11	0.11

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.25	0.45	0.84	0.05	0.59	0.68	0.01	0.83	0.97	0.37
95th-Percentile Queue Length [ft]	6.27	11.34	21.03	1.15	14.79	17.09	0.22	20.72	24.19	9.34
Approach Delay [s/veh]	5.01		7.16		5.29			4.63		
Approach LOS	A		A		A			A		
Intersection Delay [s/veh]	5.14									
Intersection LOS	A									

Intersection Level Of Service Report
Intersection 4: Wolfensberger Rd/Prairie Hawk Dr

Control Type:	Signalized	Delay (sec / veh):	29.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.375

Intersection Setup

Name	Prairie Hawk Dr			Prairie Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	55.00	100.00	100.00	330.00	100.00	330.00	310.00	100.00	100.00	120.00	100.00	120.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Prairie Hawk Dr			Prairie Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	28	39	191	289	34	115	76	280	27	111	381	268
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	16	60	58	0	47	0	0	0	9	55	0	0
Right Turn on Red Volume [veh/h]	0	0	151	0	0	73	0	0	22	0	0	170
Total Hourly Volume [veh/h]	52	110	150	367	90	73	97	356	21	196	484	170
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	30	41	100	24	20	26	97	6	53	132	46
Total Analysis Volume [veh/h]	57	120	163	399	98	79	105	387	23	213	526	185
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	18.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	8	0	3	8	0	3	8	0	5	8	0
Maximum Green [s]	30	26	0	10	26	0	10	30	0	30	28	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Split [s]	8	43	0	8	43	0	8	49	0	10	51	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	8	0
Pedestrian Clearance [s]	0	20	0	0	19	0	0	25	0	0	26	0
Delayed Vehicle Green [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	66	58	58	66	58	58	32	22	22	32	24	24
g / C, Green / Cycle	0.60	0.52	0.52	0.60	0.53	0.53	0.29	0.20	0.20	0.29	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.05	0.03	0.10	0.34	0.03	0.05	0.11	0.11	0.01	0.18	0.15	0.12
s, saturation flow rate [veh/h]	1258	3560	1589	1159	3560	1589	933	3560	1589	1176	3560	1589
c, Capacity [veh/h]	840	1869	834	779	1873	836	266	719	321	340	785	350
d1, Uniform Delay [s]	9.20	12.85	13.84	12.57	12.71	13.00	30.52	39.32	35.56	34.74	39.24	37.85
k, delay calibration	0.04	0.50	0.50	0.50	0.50	0.50	0.46	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	0.07	0.52	2.40	0.05	0.22	3.98	0.63	0.09	1.91	1.00	1.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.07	0.06	0.20	0.51	0.05	0.09	0.40	0.54	0.07	0.63	0.67	0.53
d, Delay for Lane Group [s/veh]	9.22	12.92	14.36	14.97	12.76	13.23	34.50	39.95	35.66	36.65	40.24	39.08
Lane Group LOS	A	B	B	B	B	B	C	D	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.56	0.74	2.23	5.01	0.56	0.96	2.33	4.63	0.50	4.60	6.43	4.41
50th-Percentile Queue Length [ft/ln]	13.93	18.49	55.86	125.21	14.10	23.99	58.30	115.81	12.49	114.96	160.78	110.24
95th-Percentile Queue Length [veh/ln]	1.00	1.33	4.02	8.68	1.01	1.73	4.20	8.16	0.90	8.12	10.59	7.85
95th-Percentile Queue Length [ft/ln]	25.07	33.28	100.55	216.96	25.37	43.18	104.94	204.05	22.48	202.88	264.76	196.34

Movement, Approach, & Intersection Results

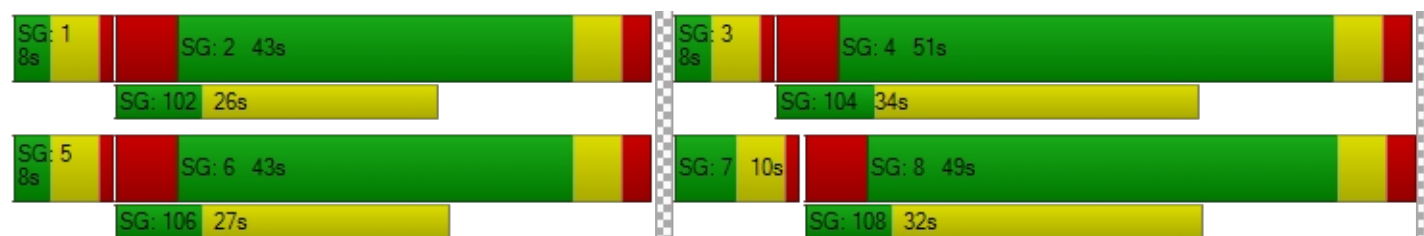
d_M, Delay for Movement [s/veh]	9.22	12.92	14.36	14.97	12.76	13.23	34.50	39.95	35.66	36.65	40.24	39.08
Movement LOS	A	B	B	B	B	B	C	D	D	D	D	D
d_A, Approach Delay [s/veh]	12.99			14.35			38.65			39.18		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	29.21											
Intersection LOS	C											
Intersection V/C	0.375											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			12.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.56			43.67			44.56			44.56		
I_p,int, Pedestrian LOS Score for Intersection	2.887			2.901			2.813			3.563		
Crosswalk LOS	C			C			C			D		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	582			582			691			727		
d_b, Bicycle Delay [s]	27.67			27.67			23.58			22.28		
I_b,int, Bicycle LOS Score for Intersection	1.965			2.095			2.003			2.462		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: Wolfensberger Rd/Coachline Rd/Plum Creek Pkwy

Control Type:
Analysis Method:
Analysis Period:

Roundabout
HCM 7th Edition
15 minutes

Delay (sec / veh):
Level Of Service:

5.4
A

Intersection Setup

Name	Plum Creek Pkwy			Coachline Rd			Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐			⇐⇐			⇐⇐			⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			40.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Plum Creek Pkwy			Coachline Rd			Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	48	211	19	127	228	54	27	89	42	24	131	95
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	13	47	10	13	40	0	0	1	10	5	1	6
Total Hourly Volume [veh/h]	74	315	34	174	330	69	34	114	63	35	167	127
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	86	9	47	90	19	9	31	17	10	45	35
Total Analysis Volume [veh/h]	80	342	37	189	359	75	37	124	68	38	182	138
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	357			306			598			468		
Exiting Flow Rate [veh/h]	405			387			267			319		
Demand Flow Rate [veh/h]	74	315	34	174	330	69	34	114	63	35	167	127
Adjusted Demand Flow Rate [veh/h]	80	342	37	189	359	75	37	124	68	38	182	138

Lanes

Override Calculated Critical Headway	No	No	No	No	No	No	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Override Calculated Follow-Up Time	No	No	No	No	No	No	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00
B (coefficient)	0.00091	0.00091	0.00085	0.00091	0.00091	0.00085	0.00091	0.00091	0.00085	0.00091	0.00091	0.00085
HV Adjustment Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	203	229	0	263	297	0	78	88	0	106	119	0
Capacity of Entry and Bypass Lanes [veh/h]	1027	1027	1083	1075	1075	1132	825	825	1007	928	928	1023
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1007	1007	1062	1054	1054	1110	809	809	987	910	910	1003
X, volume / capacity	0.20	0.22	0.03	0.24	0.28	0.07	0.09	0.11	0.07	0.11	0.13	0.14

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.73	0.85	0.11	0.96	1.13	0.22	0.31	0.35	0.22	0.38	0.44	0.48
95th-Percentile Queue Length [ft]	18.29	21.26	2.71	24.03	28.20	5.43	7.72	8.82	5.54	9.59	10.98	11.92
Approach Delay [s/veh]	5.43			5.67			5.10			5.01		
Approach LOS	A			A			A			A		
Intersection Delay [s/veh]	5.39											
Intersection LOS	A											

Table of Contents

Intersection Level Of Service Report	2
Intersection 1: Wolfensberger Rd/Project Access #1	2
Intersection 2: Wolfensberger Rd/Project Access #2	4
Intersection 3: Wolfensberger Rd/Red Hawk Dr/Auburn Dr	6
Intersection 4: Wolfensberger Rd/Prairie Hawk Dr	8
Intersection 5: Wolfensberger Rd/Coachline Rd/Plum Creek Pkwy	13
Signal Warrants Report	15
Intersection 1: Wolfensberger Rd/Project Access #1	15
Intersection 2: Wolfensberger Rd/Project Access #2	17

Intersection Level Of Service Report
Intersection 1: Wolfensberger Rd/Project Access #1

Control Type:	Two-way stop	Delay (sec / veh):	14.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.010

Intersection Setup

Name	Project Access #1						Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			TTL			TTL		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	2	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	25.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Project Access #1						Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	253	0	0	164	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2700	1.0000	1.2700	1.0000	1.0000	1.0000	1.0000	1.2700	1.2700	1.2700	1.2700	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	0	4	0	0	0	0	9	9	17	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	17	0	19	5	7	0	0	30	4
Total Hourly Volume [veh/h]	4	0	4	17	0	19	5	337	9	17	238	4
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	0	1	5	0	5	1	92	2	5	65	1
Total Analysis Volume [veh/h]	4	0	4	18	0	21	5	366	10	18	259	4
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.04	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.00
d_M, Delay for Movement [s/veh]	14.04	14.98	9.48	13.36	15.28	9.41	7.78	0.00	0.00	8.10	0.00	0.00
Movement LOS	B	B	A	B	C	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.05	0.05	0.05	0.20	0.20	0.20	0.01	0.00	0.00	0.05	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.13	1.13	1.13	5.05	5.05	5.05	0.29	0.00	0.00	1.16	0.00	0.00
d_A, Approach Delay [s/veh]	11.76			11.24			0.10			0.52		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	1.01											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 2: Wolfensberger Rd/Project Access #2

Control Type:	Two-way stop	Delay (sec / veh):	9.5
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.006

Intersection Setup

Name	Project Access #2		Wolfensberger Rd		Wolfensberger Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Project Access #2		Wolfensberger Rd		Wolfensberger Rd	
Base Volume Input [veh/h]	0	0	253	0	0	164
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	4	9	17	17
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	1	24	1	2	24
Total Hourly Volume [veh/h]	0	5	349	10	19	249
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	1	95	3	5	68
Total Analysis Volume [veh/h]	0	5	379	11	21	271
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	9.45	0.00	0.00	8.15	0.00
Movement LOS		A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.02	0.00	0.00	0.06	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.46	0.00	0.00	1.38	0.00
d_A, Approach Delay [s/veh]	9.45		0.00		0.59	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.32					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 3: Wolfensberger Rd/Red Hawk Dr/Auburn Dr

Control Type:	Roundabout	Delay (sec / veh):	6.1
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Auburn Dr			Red Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⬆			⬆			⬆			⬆		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Auburn Dr			Red Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	1	81	131	164	63	13	29	286	1	70	150	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	0	0	0	0	3	1	5	1	0	28	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	1	0	0	0	0	1	3	35	5	0	8	0
Total Hourly Volume [veh/h]	5	103	166	208	80	21	41	403	7	89	227	71
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	28	45	57	22	6	11	110	2	24	62	19
Total Analysis Volume [veh/h]	5	112	180	226	87	23	45	438	8	97	247	77
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	723			356			418			165		
Exiting Flow Rate [veh/h]	188			160			257			677		
Demand Flow Rate [veh/h]	5	103	166	208	80	21	41	403	7	89	227	71
Adjusted Demand Flow Rate [veh/h]	5	112	180	226	87	23	45	438	8	97	247	77

Lanes

Override Calculated Critical Headway	No	No	No	No	No	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Override Calculated Follow-Up Time	No	No	No	No	No	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1420.00	1380.00	1420.00	1420.00	1420.00	1380.00	1420.00	1420.00	1420.00	1380.00
B (coefficient)	0.00102	0.00085	0.00102	0.00085	0.00091	0.00091	0.00102	0.00091	0.00091	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	120	0	320	0	232	262	0	165	186	0	0
Capacity of Entry and Bypass Lanes [veh/h]	660	799	960	1142	971	971	1140	1222	1222	1173	1173
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	648	783	941	1119	952	952	1118	1198	1198	1150	1150
X, volume / capacity	0.18	0.23	0.33	0.02	0.24	0.27	0.01	0.13	0.15	0.07	0.07

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.66	0.89	1.47	0.06	0.93	1.09	0.02	0.47	0.54	0.22
95th-Percentile Queue Length [ft]	16.39	22.13	36.69	1.57	23.26	27.26	0.54	11.66	13.41	5.38
Approach Delay [s/veh]	7.34		7.11		6.30			4.13		
Approach LOS	A		A		A			A		
Intersection Delay [s/veh]	6.09									
Intersection LOS	A									

Intersection Level Of Service Report
Intersection 4: Wolfensberger Rd/Prairie Hawk Dr

Control Type:	Signalized	Delay (sec / veh):	29.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.353

Intersection Setup

Name	Prairie Hawk Dr			Prairie Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	55.00	100.00	100.00	330.00	100.00	330.00	310.00	100.00	100.00	120.00	100.00	120.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Prairie Hawk Dr			Prairie Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	3	22	20	421	41	139	154	404	19	124	145	362
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	0	0	0	0	8	2	2	1	0	16	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	8	50	69	0	58	0	0	0	16	53	0	0
Right Turn on Red Volume [veh/h]	0	0	47	0	0	93	0	0	21	0	0	230
Total Hourly Volume [veh/h]	16	78	47	535	110	92	198	515	20	210	200	230
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	21	13	145	30	25	54	140	5	57	54	63
Total Analysis Volume [veh/h]	17	85	51	582	120	100	215	560	22	228	217	250
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	1.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	8	0	3	8	0	3	8	0	5	8	0
Maximum Green [s]	30	26	0	10	26	0	10	30	0	30	28	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Split [s]	8	43	0	8	43	0	8	49	0	10	51	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	8	0
Pedestrian Clearance [s]	0	20	0	0	19	0	0	25	0	0	26	0
Delayed Vehicle Green [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	58	50	50	58	51	51	40	30	30	40	32	32
g / C, Green / Cycle	0.52	0.45	0.45	0.52	0.47	0.47	0.37	0.28	0.28	0.37	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.01	0.02	0.03	0.44	0.03	0.06	0.20	0.16	0.01	0.22	0.06	0.16
s, saturation flow rate [veh/h]	1207	3560	1589	1308	3560	1589	1053	3560	1589	1022	3560	1589
c, Capacity [veh/h]	722	1609	718	782	1665	743	429	979	437	345	1045	467
d1, Uniform Delay [s]	12.56	16.94	17.08	21.36	16.14	16.64	27.86	34.32	29.33	30.47	29.25	32.59
k, delay calibration	0.04	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.06	0.19	6.35	0.08	0.38	4.13	0.53	0.05	2.19	0.10	0.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.02	0.05	0.07	0.74	0.07	0.13	0.50	0.57	0.05	0.66	0.21	0.54
d, Delay for Lane Group [s/veh]	12.56	17.00	17.27	27.71	16.22	17.02	31.98	34.85	29.38	32.66	29.35	33.55
Lane Group LOS	B	B	B	C	B	B	C	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.20	0.62	0.77	10.85	0.81	1.43	4.41	6.32	0.43	4.40	2.12	5.54
50th-Percentile Queue Length [ft/ln]	5.02	15.44	19.22	271.34	20.19	35.81	110.33	158.12	10.64	110.06	53.10	138.52
95th-Percentile Queue Length [veh/ln]	0.36	1.11	1.38	16.26	1.45	2.58	7.86	10.45	0.77	7.84	3.82	9.40
95th-Percentile Queue Length [ft/ln]	9.03	27.79	34.59	406.41	36.34	64.45	196.46	261.24	19.15	196.09	95.57	235.03

Movement, Approach, & Intersection Results

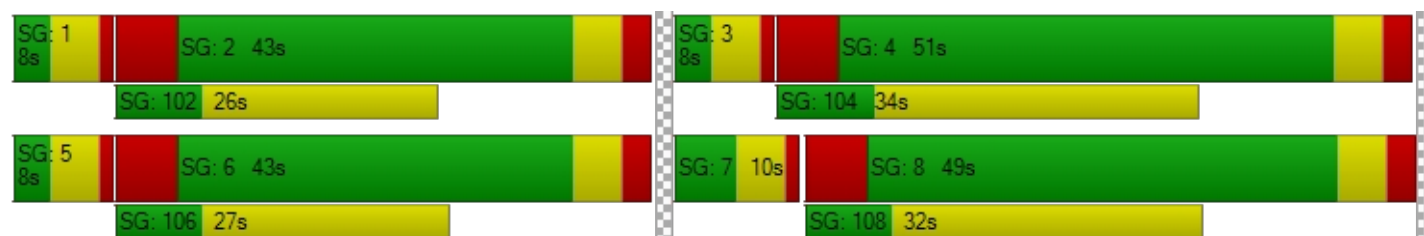
d_M, Delay for Movement [s/veh]	12.56	17.00	17.27	27.71	16.22	17.02	31.98	34.85	29.38	32.66	29.35	33.55
Movement LOS	B	B	B	C	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	16.60			24.66			33.93			31.95		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	29.24											
Intersection LOS	C											
Intersection V/C	0.353											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			12.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.56			43.67			44.56			44.56		
I_p,int, Pedestrian LOS Score for Intersection	2.720			3.124			2.774			3.902		
Crosswalk LOS	B			C			C			D		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	582			582			691			727		
d_b, Bicycle Delay [s]	27.67			27.67			23.58			22.28		
I_b,int, Bicycle LOS Score for Intersection	1.725			2.298			2.234			2.323		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: Wolfensberger Rd/Coachline Rd/Plum Creek Pkwy

Control Type:
Analysis Method:
Analysis Period:

Roundabout
HCM 7th Edition
15 minutes

Delay (sec / veh):
Level Of Service:

5.2
A

Intersection Setup

Name	Plum Creek Pkwy			Coachline Rd			Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			40.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Plum Creek Pkwy			Coachline Rd			Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	26	200	19	117	201	29	45	158	43	9	68	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	5	7	0	0	0	5	0	1	1	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	8	33	3	3	52	0	0	0	16	10	1	14
Total Hourly Volume [veh/h]	41	287	32	159	307	37	57	206	71	22	88	123
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	78	9	43	83	10	15	56	19	6	24	33
Total Analysis Volume [veh/h]	45	312	35	173	334	40	62	224	77	24	96	134
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	468			168			542			427		
Exiting Flow Rate [veh/h]	365			381			144			405		
Demand Flow Rate [veh/h]	41	287	32	159	307	37	57	206	71	22	88	123
Adjusted Demand Flow Rate [veh/h]	45	312	35	173	334	40	62	224	77	24	96	134

Lanes

Override Calculated Critical Headway	No	No	No	No	No	No	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Override Calculated Follow-Up Time	No	No	No	No	No	No	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00
B (coefficient)	0.00091	0.00091	0.00085	0.00091	0.00091	0.00085	0.00091	0.00091	0.00085	0.00091	0.00091	0.00085
HV Adjustment Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	172	193	0	244	275	0	138	155	0	58	65	0
Capacity of Entry and Bypass Lanes [veh/h]	928	928	1007	1219	1219	1257	868	868	1042	963	963	1027
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	910	910	987	1195	1195	1232	851	851	1021	944	944	1007
X, volume / capacity	0.18	0.21	0.04	0.20	0.22	0.03	0.16	0.18	0.08	0.06	0.07	0.13

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.67	0.78	0.11	0.74	0.86	0.10	0.56	0.65	0.24	0.19	0.22	0.46
95th-Percentile Queue Length [ft]	16.85	19.54	2.76	18.58	21.61	2.52	13.99	16.15	6.11	4.76	5.41	11.47
Approach Delay [s/veh]	5.74			4.77			5.57			4.60		
Approach LOS	A			A			A			A		
Intersection Delay [s/veh]	5.17											
Intersection LOS	A											

Signal Warrants Report For Intersection 1: Wolfensberger Rd/Project Access #1

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	259	351	8	36
2	251	340	8	35
3	246	333	8	34
4	231	312	7	32
5	205	277	6	28
6	202	274	6	28
7	199	270	6	28
8	181	246	6	25
9	179	242	6	25
10	176	239	5	24
11	153	207	5	21
12	142	193	4	20
13	140	190	4	19
14	104	140	3	14
15	104	140	3	14
16	73	98	2	10
17	41	56	1	6
18	41	56	1	6
19	23	32	1	3
20	13	18	0	2
21	8	11	0	1
22	3	4	0	0
23	3	4	0	0
24	3	4	0	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	4	610	1	36	No	No	No	No	No	No	No	No	No	No
2	4	591	1	35	No	No	No	No	No	No	No	No	No	No
3	4	579	1	34	No	No	No	No	No	No	No	No	No	No
4	4	543	1	32	No	No	No	No	No	No	No	No	No	No
5	4	482	1	28	No	No	No	No	No	No	No	No	No	No
6	4	476	1	28	No	No	No	No	No	No	No	No	No	No
7	4	469	1	28	No	No	No	No	No	No	No	No	No	No
8	4	427	1	25	No	No	No	No	No	No	No	No	No	No
9	4	421	1	25	No	No	No	No	No	No	No	No	No	No
10	4	415	1	24	No	No	No	No	No	No	No	No	No	No
11	4	360	1	21	No	No	No	No	No	No	No	No	No	No
12	4	335	1	20	No	No	No	No	No	No	No	No	No	No
13	4	330	1	19	No	No	No	No	No	No	No	No	No	No
14	4	244	1	14	No	No	No	No	No	No	No	No	No	No
15	4	244	1	14	No	No	No	No	No	No	No	No	No	No
16	4	171	1	10	No	No	No	No	No	No	No	No	No	No
17	4	97	1	6	No	No	No	No	No	No	No	No	No	No
18	4	97	1	6	No	No	No	No	No	No	No	No	No	No
19	4	55	1	3	No	No	No	No	No	No	No	No	No	No
20	4	31	1	2	No	No	No	No	No	No	No	No	No	No
21	4	19	1	1	No	No	No	No	No	No	No	No	No	No
22	4	7	1	0	No	No	No	No	No	No	No	No	No	No
23	4	7	1	0	No	No	No	No	No	No	No	No	No	No
24	4	7	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.8	11.2
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:01	0:06
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	8	36
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	654	654
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
Warrant Met for Intersection	No	

Signal Warrants Report For Intersection 2: Wolfensberger Rd/Project Access #2

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	268	359	5
2	260	348	5
3	255	341	5
4	239	320	4
5	212	284	4
6	209	280	4
7	206	276	4
8	188	251	4
9	185	248	3
10	182	244	3
11	158	212	3
12	147	197	3
13	145	194	3
14	107	144	2
15	107	144	2
16	75	101	1
17	43	57	1
18	43	57	1
19	24	32	0
20	13	18	0
21	8	11	0
22	3	4	0
23	3	4	0
24	3	4	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	4	627	1	5	No	No	No	No	No	No	No	No	No	No
2	4	608	1	5	No	No	No	No	No	No	No	No	No	No
3	4	596	1	5	No	No	No	No	No	No	No	No	No	No
4	4	559	1	4	No	No	No	No	No	No	No	No	No	No
5	4	496	1	4	No	No	No	No	No	No	No	No	No	No
6	4	489	1	4	No	No	No	No	No	No	No	No	No	No
7	4	482	1	4	No	No	No	No	No	No	No	No	No	No
8	4	439	1	4	No	No	No	No	No	No	No	No	No	No
9	4	433	1	3	No	No	No	No	No	No	No	No	No	No
10	4	426	1	3	No	No	No	No	No	No	No	No	No	No
11	4	370	1	3	No	No	No	No	No	No	No	No	No	No
12	4	344	1	3	No	No	No	No	No	No	No	No	No	No
13	4	339	1	3	No	No	No	No	No	No	No	No	No	No
14	4	251	1	2	No	No	No	No	No	No	No	No	No	No
15	4	251	1	2	No	No	No	No	No	No	No	No	No	No
16	4	176	1	1	No	No	No	No	No	No	No	No	No	No
17	4	100	1	1	No	No	No	No	No	No	No	No	No	No
18	4	100	1	1	No	No	No	No	No	No	No	No	No	No
19	4	56	1	0	No	No	No	No	No	No	No	No	No	No
20	4	31	1	0	No	No	No	No	No	No	No	No	No	No
21	4	19	1	0	No	No	No	No	No	No	No	No	No	No
22	4	7	1	0	No	No	No	No	No	No	No	No	No	No
23	4	7	1	0	No	No	No	No	No	No	No	No	No	No
24	4	7	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.5
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:00
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	5
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	632
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	No

Table of Contents

Intersection Level Of Service Report	2
Intersection 1: Wolfensberger Rd/Project Access #1	2
Intersection 2: Wolfensberger Rd/Project Access #2	4
Intersection 3: Wolfensberger Rd/Red Hawk Dr/Auburn Dr	6
Intersection 4: Wolfensberger Rd/Prairie Hawk Dr	8
Intersection 5: Wolfensberger Rd/Coachline Rd/Plum Creek Pkwy	13
Signal Warrants Report	15
Intersection 1: Wolfensberger Rd/Project Access #1	15
Intersection 2: Wolfensberger Rd/Project Access #2	17

Intersection Level Of Service Report
Intersection 1: Wolfensberger Rd/Project Access #1

Control Type:	Two-way stop	Delay (sec / veh):	17.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.058

Intersection Setup

Name	Project Access #1						Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	25.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Project Access #1						Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	294	0	0	261	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2700	1.0000	1.2700	1.0000	1.0000	1.0000	1.0000	1.2700	1.2700	1.2700	1.2700	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	17	0	17	0	0	0	0	2	2	5	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	8	0	9	18	30	0	0	71	17
Total Hourly Volume [veh/h]	17	0	17	8	0	9	18	405	2	5	402	17
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	0	5	2	0	2	5	110	1	1	109	5
Total Analysis Volume [veh/h]	18	0	18	9	0	10	20	440	2	5	437	18
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.00	0.02	0.03	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	17.34	19.88	10.31	17.05	19.19	9.93	8.33	0.00	0.00	8.24	0.00	0.00
Movement LOS	C	C	B	C	C	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.26	0.26	0.26	0.13	0.13	0.13	0.06	0.00	0.00	0.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	6.59	6.59	6.59	3.28	3.28	3.28	1.39	0.00	0.00	0.34	0.00	0.00
d_A, Approach Delay [s/veh]	13.83			13.30			0.36			0.09		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	0.98											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 2: Wolfensberger Rd/Project Access #2

Control Type:	Two-way stop	Delay (sec / veh):	9.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.031

Intersection Setup

Name	Project Access #2		Wolfensberger Rd		Wolfensberger Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Project Access #2		Wolfensberger Rd		Wolfensberger Rd	
Base Volume Input [veh/h]	0	0	294	0	0	261
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	17	17	2	5	5
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	5	47	0	4	65
Total Hourly Volume [veh/h]	0	22	437	2	9	401
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	6	119	1	2	109
Total Analysis Volume [veh/h]	0	24	475	2	10	436
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.03	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	9.87	0.00	0.00	8.36	0.00
Movement LOS		A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.10	0.00	0.00	0.03	0.00
95th-Percentile Queue Length [ft/ln]	0.00	2.43	0.00	0.00	0.70	0.00
d_A, Approach Delay [s/veh]	9.87		0.00		0.19	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.34					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 3: Wolfensberger Rd/Red Hawk Dr/Auburn Dr

Control Type:
Analysis Method:
Analysis Period:

Roundabout
HCM 7th Edition
15 minutes

Delay (sec / veh):
Level Of Service:

5.2
A

Intersection Setup

Name	Auburn Dr			Red Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Auburn Dr			Red Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	1	42	91	79	37	8	15	222	0	151	252	100
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	0	0	0	0	1	3	28	3	0	7	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	5	0	0	0	0	4	2	17	3	0	34	0
Total Hourly Volume [veh/h]	7	53	116	100	47	15	24	327	6	192	361	127
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	14	32	27	13	4	7	89	2	52	98	35
Total Analysis Volume [veh/h]	8	58	126	109	51	16	26	355	7	209	392	138
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	500			621			376			94		
Exiting Flow Rate [veh/h]	265			86			408			473		
Demand Flow Rate [veh/h]	7	53	116	100	47	15	24	327	6	192	361	127
Adjusted Demand Flow Rate [veh/h]	8	58	126	109	51	16	26	355	7	209	392	138

Lanes

Override Calculated Critical Headway	No	No	No	No	No	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Override Calculated Follow-Up Time	No	No	No	No	No	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1420.00	1380.00	1420.00	1420.00	1420.00	1380.00	1420.00	1420.00	1380.00	1380.00
B (coefficient)	0.00102	0.00085	0.00102	0.00085	0.00091	0.00091	0.00102	0.00091	0.00091	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	68	0	164	0	183	206	0	289	325	0	0
Capacity of Entry and Bypass Lanes [veh/h]	829	950	733	1004	1009	1009	1053	1304	1304	1265	1265
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	813	932	718	985	989	989	1033	1279	1279	1240	1240
X, volume / capacity	0.08	0.14	0.22	0.02	0.18	0.20	0.01	0.22	0.25	0.11	0.11

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.26	0.47	0.85	0.05	0.66	0.76	0.02	0.85	0.99	0.37
95th-Percentile Queue Length [ft]	6.61	11.68	21.25	1.24	16.49	19.11	0.51	21.13	24.69	9.37
Approach Delay [s/veh]	5.17		7.22		5.45			4.67		
Approach LOS	A		A		A			A		
Intersection Delay [s/veh]	5.24									
Intersection LOS	A									

Intersection Level Of Service Report
Intersection 4: Wolfensberger Rd/Prairie Hawk Dr

Control Type:	Signalized	Delay (sec / veh):	29.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.380

Intersection Setup

Name	Prairie Hawk Dr			Prairie Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	55.00	100.00	100.00	330.00	100.00	330.00	310.00	100.00	100.00	120.00	100.00	120.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			45.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Prairie Hawk Dr			Prairie Hawk Dr			Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	28	39	191	289	34	115	76	280	27	111	381	268
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	0	0	0	0	2	8	16	4	0	4	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	16	60	58	0	47	0	0	0	9	55	0	0
Right Turn on Red Volume [veh/h]	0	0	151	0	0	74	0	0	24	0	0	170
Total Hourly Volume [veh/h]	53	110	150	367	90	74	105	372	23	196	488	170
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	30	41	100	24	20	29	101	6	53	133	46
Total Analysis Volume [veh/h]	58	120	163	399	98	80	114	404	25	213	530	185
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	18.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	3	8	0	3	8	0	3	8	0	5	8	0
Maximum Green [s]	30	26	0	10	26	0	10	30	0	30	28	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Split [s]	8	43	0	8	43	0	8	49	0	10	51	0
Vehicle Extension [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	8	0
Pedestrian Clearance [s]	0	20	0	0	19	0	0	25	0	0	26	0
Delayed Vehicle Green [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	65	57	57	65	57	57	33	23	23	33	25	25
g / C, Green / Cycle	0.59	0.52	0.52	0.59	0.52	0.52	0.30	0.21	0.21	0.30	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.05	0.03	0.10	0.34	0.03	0.05	0.12	0.11	0.02	0.18	0.15	0.12
s, saturation flow rate [veh/h]	1259	3560	1589	1159	3560	1589	926	3560	1589	1159	3560	1589
c, Capacity [veh/h]	831	1844	823	771	1847	824	270	744	332	340	809	361
d1, Uniform Delay [s]	9.53	13.23	14.24	13.03	13.11	13.42	30.13	38.85	34.99	34.20	38.60	37.18
k, delay calibration	0.04	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	0.07	0.54	2.47	0.05	0.23	4.77	0.62	0.10	1.89	0.91	1.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.07	0.07	0.20	0.52	0.05	0.10	0.42	0.54	0.08	0.63	0.65	0.51
d, Delay for Lane Group [s/veh]	9.54	13.30	14.78	15.50	13.16	13.66	34.90	39.47	35.09	36.09	39.50	38.30
Lane Group LOS	A	B	B	B	B	B	C	D	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.58	0.75	2.27	5.11	0.57	0.99	2.56	4.82	0.54	4.55	6.42	4.36
50th-Percentile Queue Length [ft/ln]	14.46	18.79	56.76	127.86	14.36	24.76	63.99	120.44	13.47	113.81	160.57	109.08
95th-Percentile Queue Length [veh/ln]	1.04	1.35	4.09	8.82	1.03	1.78	4.61	8.42	0.97	8.05	10.58	7.79
95th-Percentile Queue Length [ft/ln]	26.03	33.81	102.16	220.58	25.84	44.57	115.18	210.43	24.24	201.29	264.47	194.72

Movement, Approach, & Intersection Results

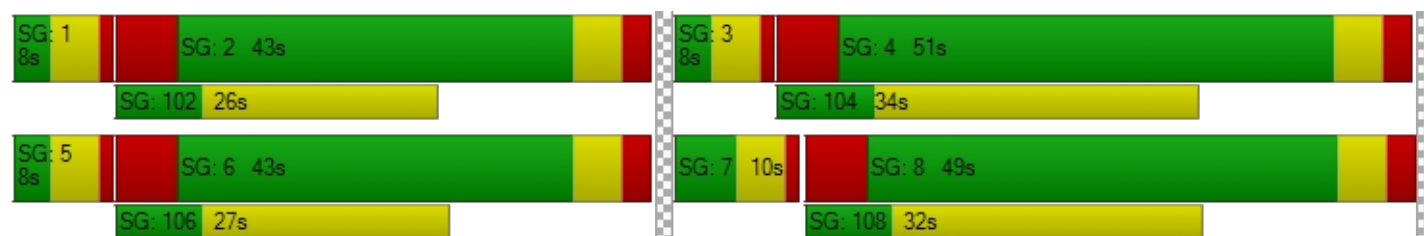
d_M, Delay for Movement [s/veh]	9.54	13.30	14.78	15.50	13.16	13.66	34.90	39.47	35.09	36.09	39.50	38.30
Movement LOS	A	B	B	B	B	B	C	D	D	D	D	D
d_A, Approach Delay [s/veh]	13.37			14.85			38.31			38.48		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	29.15											
Intersection LOS	C											
Intersection V/C	0.380											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			12.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.56			43.67			44.56			44.56		
I_p,int, Pedestrian LOS Score for Intersection	2.887			2.909			2.825			3.567		
Crosswalk LOS	C			C			C			D		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	582			582			691			727		
d_b, Bicycle Delay [s]	27.67			27.67			23.58			22.28		
I_b,int, Bicycle LOS Score for Intersection	1.966			2.097			2.027			2.465		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: Wolfensberger Rd/Coachline Rd/Plum Creek Pkwy

Control Type:
Analysis Method:
Analysis Period:

Roundabout
HCM 7th Edition
15 minutes

Delay (sec / veh):
Level Of Service:

5.4
A

Intersection Setup

Name	Plum Creek Pkwy			Coachline Rd			Wolfensberger Rd			Wolfensberger Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐			⇐⇐			⇐⇐			⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			40.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Plum Creek Pkwy			Coachline Rd			Wolfensberger Rd			Wolfensberger Rd		
Base Volume Input [veh/h]	48	211	19	127	228	54	27	89	42	24	131	95
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700	1.2700
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	1	2	0	0	0	1	0	5	5	7
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	13	47	10	13	40	0	0	1	10	5	1	6
Total Hourly Volume [veh/h]	74	315	35	176	330	69	34	115	63	40	172	134
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	86	10	48	90	19	9	31	17	11	47	36
Total Analysis Volume [veh/h]	80	342	38	191	359	75	37	125	68	43	187	146
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	360			316			605			468		
Exiting Flow Rate [veh/h]	410			387			272			322		
Demand Flow Rate [veh/h]	74	315	35	176	330	69	34	115	63	40	172	134
Adjusted Demand Flow Rate [veh/h]	80	342	38	191	359	75	37	125	68	43	187	146

Lanes

Override Calculated Critical Headway	No	No	No	No	No	No	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Override Calculated Follow-Up Time	No	No	No	No	No	No	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00	1420.00
B (coefficient)	0.00091	0.00091	0.00085	0.00091	0.00091	0.00085	0.00091	0.00091	0.00085	0.00091	0.00091	0.00085
HV Adjustment Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	203	229	0	264	298	0	78	88	0	111	125	0
Capacity of Entry and Bypass Lanes [veh/h]	1024	1024	1080	1065	1065	1127	819	819	1003	928	928	1023
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1004	1004	1059	1045	1045	1105	803	803	983	910	910	1003
X, volume / capacity	0.20	0.22	0.04	0.25	0.28	0.07	0.09	0.11	0.07	0.12	0.13	0.15

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.73	0.85	0.11	0.98	1.15	0.22	0.31	0.36	0.22	0.40	0.46	0.51
95th-Percentile Queue Length [ft]	18.35	21.33	2.79	24.44	28.70	5.45	7.83	8.95	5.57	10.08	11.56	12.73
Approach Delay [s/veh]	5.45			5.75			5.14			5.08		
Approach LOS	A			A			A			A		
Intersection Delay [s/veh]	5.43											
Intersection LOS	A											

Signal Warrants Report For Intersection 1: Wolfensberger Rd/Project Access #1

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	424	425	34	17
2	411	412	33	16
3	403	404	32	16
4	377	378	30	15
5	335	336	27	13
6	331	332	27	13
7	326	327	26	13
8	297	298	24	12
9	293	293	23	12
10	288	289	23	12
11	250	251	20	10
12	233	234	19	9
13	229	230	18	9
14	170	170	14	7
15	170	170	14	7
16	119	119	10	5
17	68	68	5	3
18	68	68	5	3
19	38	38	3	2
20	21	21	2	1
21	13	13	1	1
22	4	4	0	0
23	4	4	0	0
24	4	4	0	0

Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	4	849	1	34	No	No	No	No	No	No	No	No	No	No
2	4	823	1	33	No	No	No	No	No	No	No	No	No	No
3	4	807	1	32	No	No	No	No	No	No	No	No	No	No
4	4	755	1	30	No	No	No	No	No	No	No	No	No	No
5	4	671	1	27	No	No	No	No	No	No	No	No	No	No
6	4	663	1	27	No	No	No	No	No	No	No	No	No	No
7	4	653	1	26	No	No	No	No	No	No	No	No	No	No
8	4	595	1	24	No	No	No	No	No	No	No	No	No	No
9	4	586	1	23	No	No	No	No	No	No	No	No	No	No
10	4	577	1	23	No	No	No	No	No	No	No	No	No	No
11	4	501	1	20	No	No	No	No	No	No	No	No	No	No
12	4	467	1	19	No	No	No	No	No	No	No	No	No	No
13	4	459	1	18	No	No	No	No	No	No	No	No	No	No
14	4	340	1	14	No	No	No	No	No	No	No	No	No	No
15	4	340	1	14	No	No	No	No	No	No	No	No	No	No
16	4	238	1	10	No	No	No	No	No	No	No	No	No	No
17	4	136	1	5	No	No	No	No	No	No	No	No	No	No
18	4	136	1	5	No	No	No	No	No	No	No	No	No	No
19	4	76	1	3	No	No	No	No	No	No	No	No	No	No
20	4	42	1	2	No	No	No	No	No	No	No	No	No	No
21	4	26	1	1	No	No	No	No	No	No	No	No	No	No
22	4	8	1	0	No	No	No	No	No	No	No	No	No	No
23	4	8	1	0	No	No	No	No	No	No	No	No	No	No
24	4	8	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.8	13.3
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:07	0:03
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	34	17
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	900	900
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	No	

Signal Warrants Report For Intersection 2: Wolfensberger Rd/Project Access #2

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	410	439	22
2	398	426	21
3	390	417	21
4	365	391	20
5	324	347	17
6	320	342	17
7	316	338	17
8	287	307	15
9	283	303	15
10	279	299	15
11	242	259	13
12	226	241	12
13	221	237	12
14	164	176	9
15	164	176	9
16	115	123	6
17	66	70	4
18	66	70	4
19	37	40	2
20	21	22	1
21	12	13	1
22	4	4	0
23	4	4	0
24	4	4	0

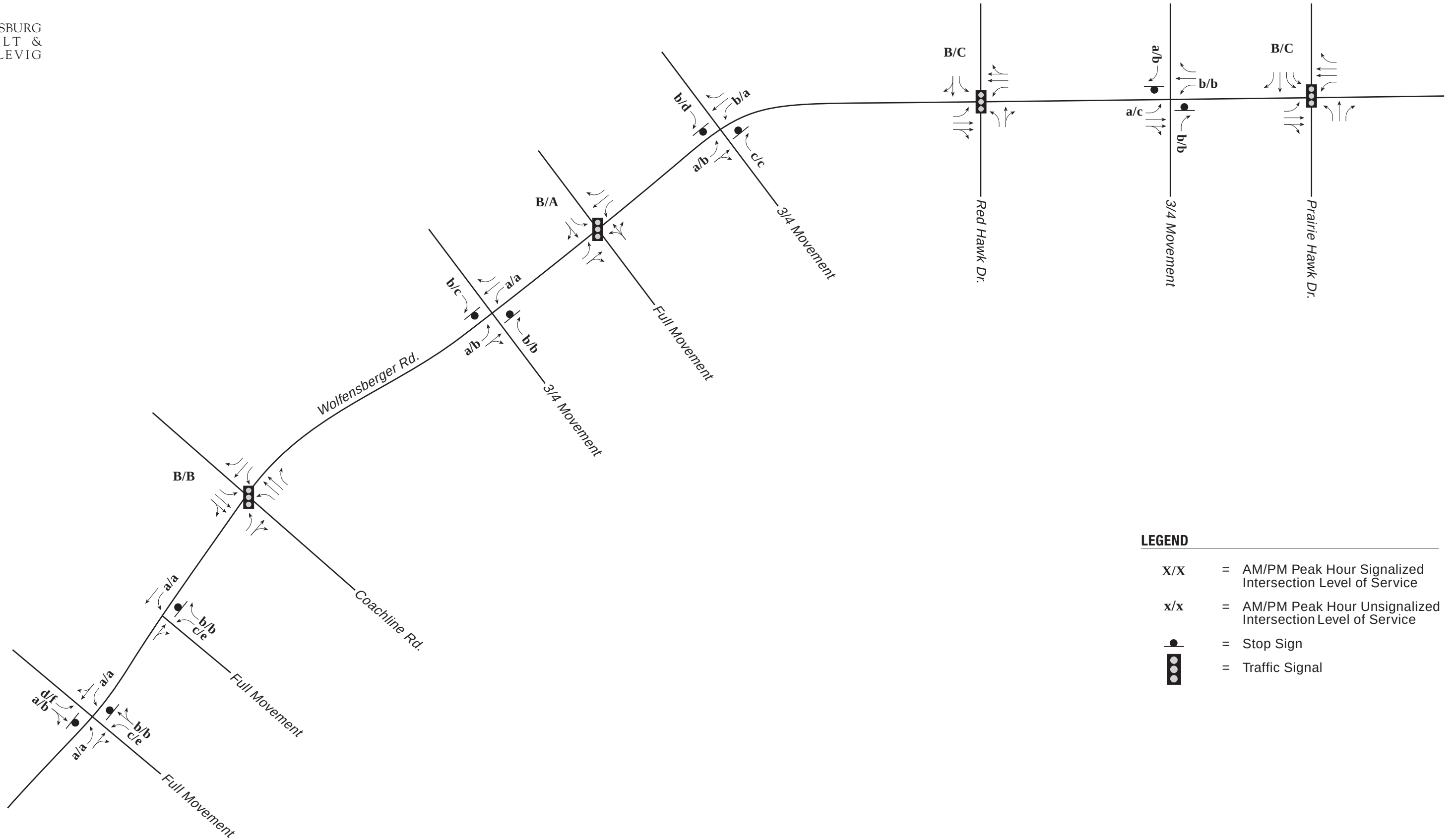
Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	4	849	1	22	No	No	No	No	No	No	No	No	No	No
2	4	824	1	21	No	No	No	No	No	No	No	No	No	No
3	4	807	1	21	No	No	No	No	No	No	No	No	No	No
4	4	756	1	20	No	No	No	No	No	No	No	No	No	No
5	4	671	1	17	No	No	No	No	No	No	No	No	No	No
6	4	662	1	17	No	No	No	No	No	No	No	No	No	No
7	4	654	1	17	No	No	No	No	No	No	No	No	No	No
8	4	594	1	15	No	No	No	No	No	No	No	No	No	No
9	4	586	1	15	No	No	No	No	No	No	No	No	No	No
10	4	578	1	15	No	No	No	No	No	No	No	No	No	No
11	4	501	1	13	No	No	No	No	No	No	No	No	No	No
12	4	467	1	12	No	No	No	No	No	No	No	No	No	No
13	4	458	1	12	No	No	No	No	No	No	No	No	No	No
14	4	340	1	9	No	No	No	No	No	No	No	No	No	No
15	4	340	1	9	No	No	No	No	No	No	No	No	No	No
16	4	238	1	6	No	No	No	No	No	No	No	No	No	No
17	4	136	1	4	No	No	No	No	No	No	No	No	No	No
18	4	136	1	4	No	No	No	No	No	No	No	No	No	No
19	4	77	1	2	No	No	No	No	No	No	No	No	No	No
20	4	43	1	1	No	No	No	No	No	No	No	No	No	No
21	4	25	1	1	No	No	No	No	No	No	No	No	No	No
22	4	8	1	0	No	No	No	No	No	No	No	No	No	No
23	4	8	1	0	No	No	No	No	No	No	No	No	No	No
24	4	8	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.9
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:03
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	22
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	871
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	No

Appendix E – Supporting Documents



LEGEND

- X/X = AM/PM Peak Hour Signalized Intersection Level of Service
- x/x = AM/PM Peak Hour Unsignalized Intersection Level of Service
- = Stop Sign
- ⬆ = Traffic Signal

Figure 8

Year 2030 Lane Configuration
and Levels of Service



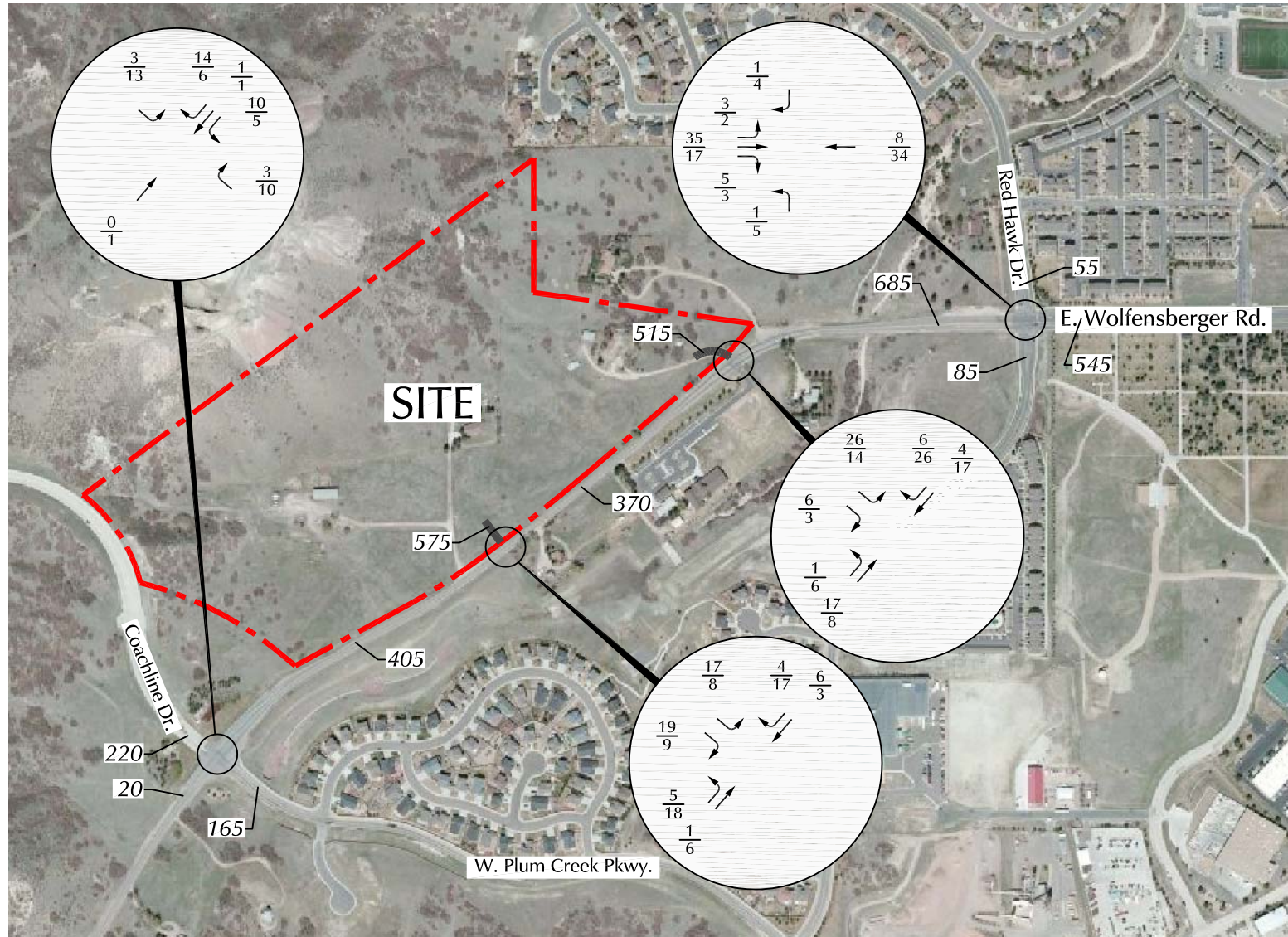
North

Executive Summary



Table i – Roadway Improvement Projects

Project ID No.	Horizon	Roadway	Segment	New Lanes and Functional Classification	Responsibility	Planning Level Cost Estimate
Projects Included in Base Assumptions						
1	By 2022	Crystal Valley Pkwy*	Widen from Idylwood Rd to Frontage Rd	4 lane Major Arterial	Under Construction	NA****
2	By 2022	Fifth St	Complete climbing lane and sidepath along south side of street from Gilbert Street to Founders Pkwy	3 lane Major Arterial	Town CIP	\$6,000,000
3	By 2022	Founders Pkwy**	Widen from Woodlands Blvd to Crowfoot Valley Rd (Note: widening is part of the Founders Pkwy and Crowfoot Valley Rd intersection improvement project)	6 lane Major Arterial	Town CIP/TIP	\$3,500,000
4	By 2022	Lanterns Development	Build development roads	2 lane Collector	Developer Responsibility	NA****
5	By 2022	Plum Creek Pkwy	Widen from Gilbert Street to Ridge Rd	4 lane Major Arterial	Town CIP	\$3,100,000
6	By 2022	Prairie Hawk Dr*	Widen from Meadows Blvd to Melting Snow	4 lane Major Arterial	Developer Responsibility	NA****
7	By 2022	Ridge Rd**	Widen from Plum Creek Pkwy to Fifth St	4 lane Major Arterial	Town CIP	\$4,000,000
8	By 2022	Wolfensberger Rd	Widen from MAC Entrance (west of Coachline) to Prairie Hawk Dr	4 lane Major Arterial	Town CIP	\$7,600,000
9	By 2030	Plum Creek Pkwy	Widen from Wolfensberger Rd to I-25	4 lane Major Arterial	Shared Town and Developer Responsibility	\$6,330,000
10	By 2030	Pine Canyon/ Pioneer Ranch Developments	Build connection from Woodlands Blvd to Front St	4 lane Major Arterial	Developer Responsibility	NA****
11	By 2030	Pine Canyon Development	Build connection from Founders Pkwy to Woodlands Blvd	2 lane Collector	Developer Responsibility	NA****
12	By 2030	Pine Canyon/ Pioneer Ranch Developments	Build Woodlands Blvd Connection	4 lane Major Arterial	Developer Responsibility	NA****
13	By 2030	Pioneer Ranch Development	Build connection from Founders Pkwy to Woodlands Blvd	2 lane Collector	Developer Responsibility	NA****



Approximate Scale
Scale: 1"=600'

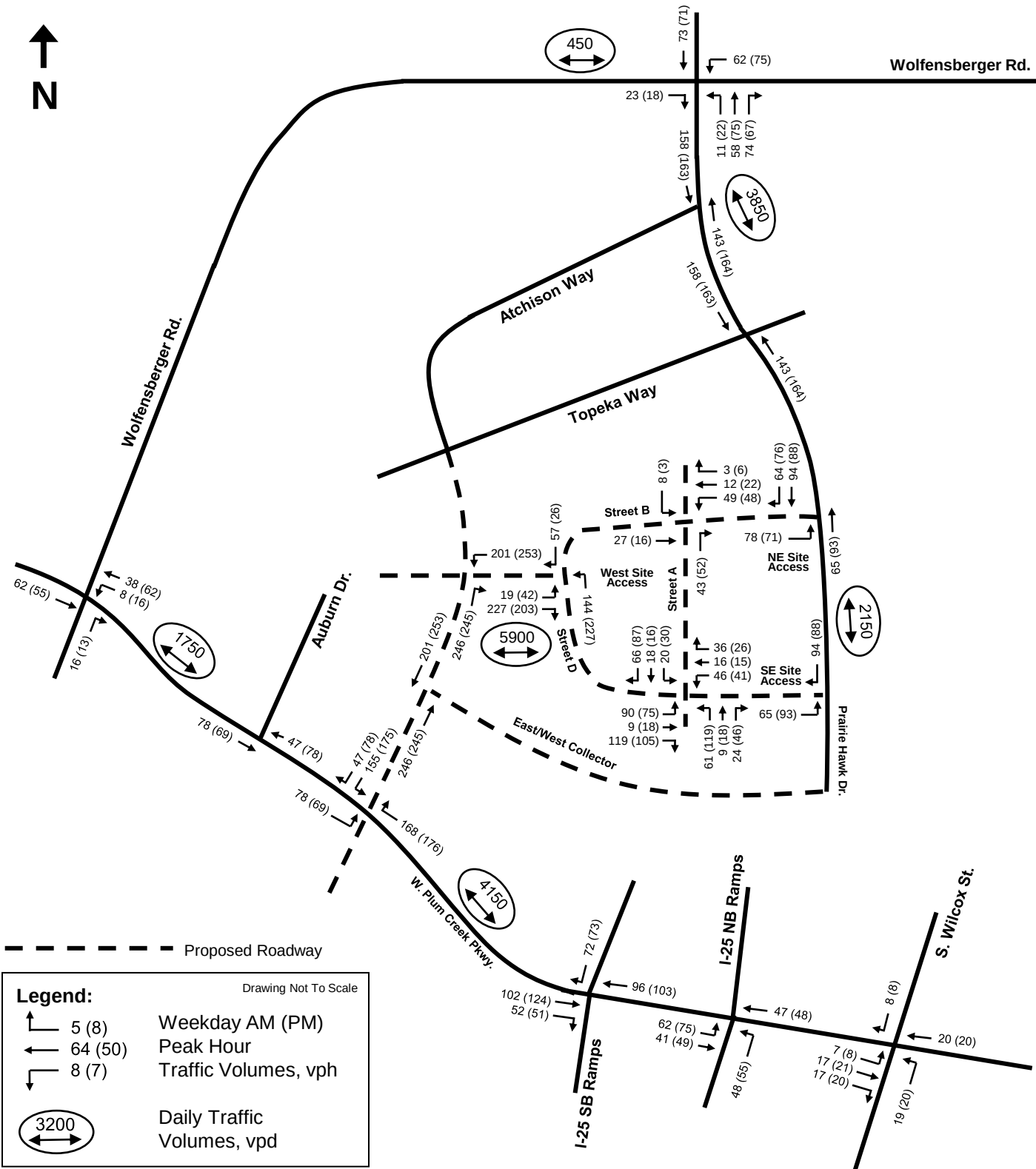
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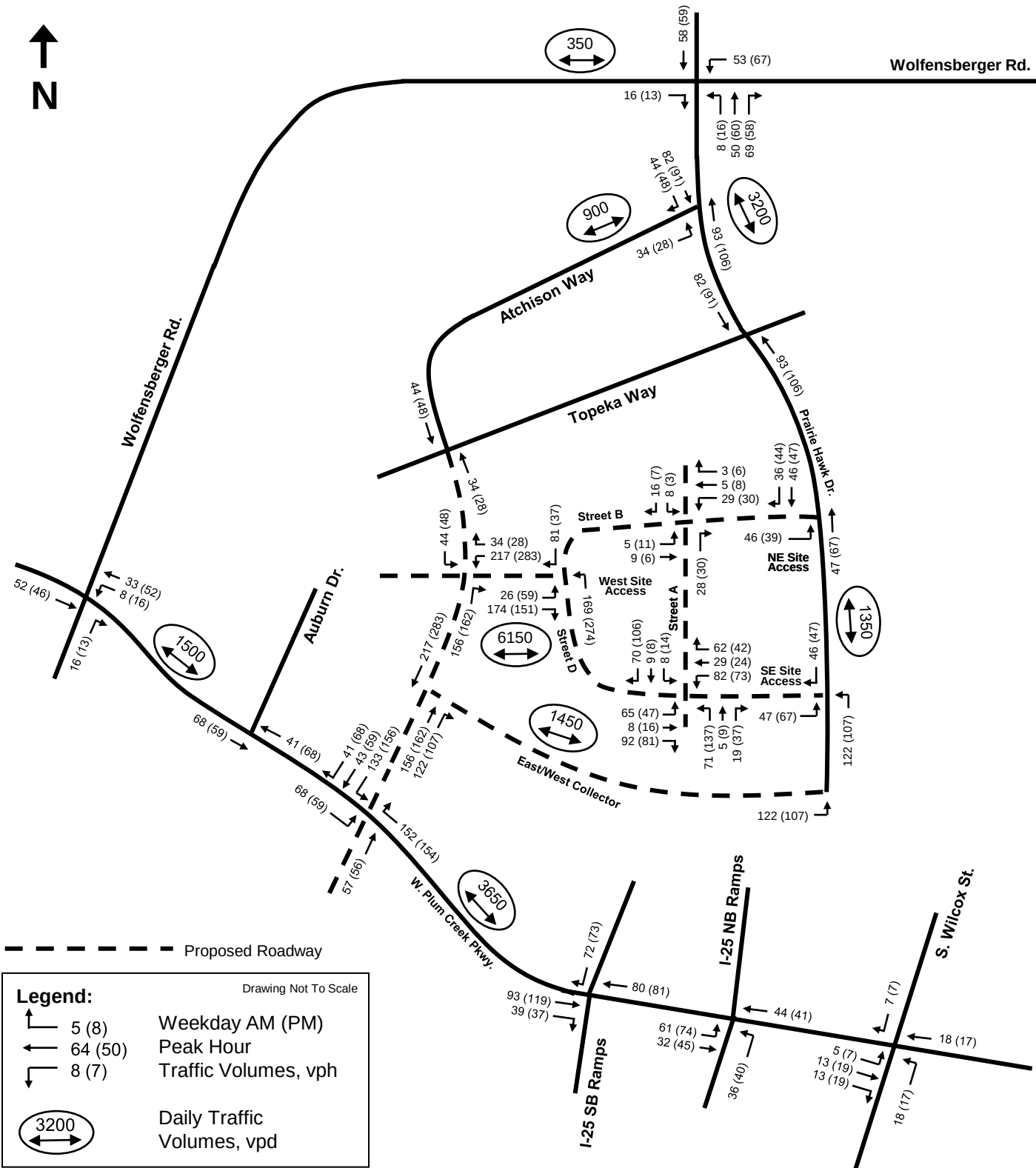
$\frac{26}{35}$ = AM Peak Hour Traffic
 = PM Peak Hour Traffic
 2,500 = Average Daily Traffic

Assignment of Site-Generated Traffic

Hillside at Castle Rock (LSC #150770)

Figure 7





Site Generated Trip Assignment: 2045 (Long-Term) Analysis Horizon