

TRAFFIC IMPACT STUDY ADDENDUM

For

**Percheron
Colorado Springs, Colorado**

July 2021

Prepared for:

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Table of Contents	Page
I. Introduction	1
Project Overview	1
Study Area Boundaries	1
Site Description	1
Existing and Committed Surface Transportation Network	5
Future Transportation Network	5
II. Existing Traffic Conditions	7
Existing Traffic Analysis Results	9
III. Future Traffic Conditions Without Proposed Development.....	11
Background Traffic Analysis Results – Year 2026	14
Background Traffic Analysis Results – Year 2041	15
IV. Proposed Project Traffic	16
Trip Generation	16
Adjustments to Trip Generation Rates	18
Trip Distribution	19
Trip Assignment	20
V. Future Traffic Conditions With Proposed Developments	23
VI. Project Impacts	26
Peak Hour Intersection Levels of Service	26
Total Traffic Analysis Results Upon Development Build-Out	27
Recommendations	28
VII. Conclusion	30

List of Figures

Page

Figure 1 – Location.....3
 Figure 2 – Site Plan.....4
 Figure 3 – Existing Traffic Volumes.....8
 Figure 4 – Background Traffic Volumes – Year 2026.....12
 Figure 5 – Background Traffic Volumes – Year 2041.....13
 Figure 6 – Distribution and Site Generated Assignment – Year 2026.....21
 Figure 7 – Distribution and Site Generated Assignment – Year 2041.....22
 Figure 8 – Total Traffic Volumes – Year 2026.....24
 Figure 9 – Total Traffic Volumes – Year 2041.....25

List of Tables

Page

Table 1 – Intersection Capacity Analysis Summary – Existing Traffic.....9
 Table 2 – Intersection Capacity Analysis Summary – Background Traffic – Year 2026.....14
 Table 3 – Intersection Capacity Analysis Summary – Background Traffic – Year 2041.....15
 Table 4 – Trip Generation Rates.....17
 Table 5 – Trip Generation Summary.....17
 Table 6 – Trip Generation Summary with Trip Reductions.....19
 Table 7 – Intersection Capacity Analysis Summary – Total Traffic – Year 2026.....26
 Table 8 – Intersection Capacity Analysis Summary – Total Traffic – Year 2041.....27

Appendices

APPENDIX A TRAFFIC COUNT DATA
 APPENDIX B LEVEL OF SERVICE DEFINITIONS
 APPENDIX C CAPACITY WORKSHEETS

I. Introduction

Project Overview

This traffic impact study addendum addresses the capacity, geometric, and control requirements associated with the development entitled Percheron and serves as an update to the previous traffic impact study prepared for the proposed development area entitled Banning Lewis Ranch North¹.

This proposed mixed-use development consists primarily of residential development of varying density with commercial, recreational, and educational supporting land uses. The development is located along Woodmen Road between Mohawk Road and Golden Sage Road in Colorado Springs, Colorado.

Study Area Boundaries

The study area to be examined in this analysis encompasses the Woodmen Road intersections with Mohawk Road and Golden Sage Road, the intersections of Woodmen Frontage Road with Mohawk Road and Golden Sage Road, and proposed site accesses.

Figure 1 illustrates location of the site and study intersections.

Site Description

The proposed development is understood to entail the new construction of numerous residential lots consisting of both single-family detached housing and multi-family townhome housing types with a potential maximum of 3,578 dwelling units including 1,952 single family and 1,626 multi-family units. It is however anticipated that actual residential units will be capped at 2,650. Additionally, the development is anticipated to include the construction of an elementary school with an estimated size of 105,000 square-feet, a high school estimated at 89,000 square feet, approximately 614,200 square-feet of commercial and retail development, a sports field complex including 20 soccer fields and 8 baseball fields with supporting ancillary facilities, a fire station with an estimated size of 26,000 square-feet, and public park sites totaling in approximately 14 acres.

Land for the development is currently vacant and surrounded by a mix of residential, commercial, recreational, educational, and open space land uses.

¹ Master Traffic Impact Study Banning Lewis Ranch North, SM ROCHA LLC, August 2019.

It is to be noted that the school, commercial, and fire station land use densities are estimated based on a floor area ratio (FAR) of 0.2 in relation to the known acreage allocated to each use and are subject to change. Furthermore, it is understood that the proposed acreage to be allocated towards the High School land use within the scope of this development only accounts for a portion of the overall land anticipated to be used for the high school. Additional acreage is to be provided by adjacent planned developments to the north, however, as this overall area is outside the boundaries of this development, and is yet to be fully defined, it cannot be considered in its entirety at this time. However, this is not anticipated to impact the following analysis given that it is likely the remaining portion of the traffic generated by the high school's northern property would use roadways associated with the northern development area, including roadways that are yet to be constructed, and would not utilize the roadway network to be established within this proposed development area. Therefore, the FAR square-footage estimated for trip generation purposes within this study is believed to be adequate for this initial master level analysis in accounting for high school generated traffic likely to use the immediate roadway network associated with the proposed development.

Proposed access to the development is generally provided at the following locations: full-movement access via Woodmen Frontage Road and Woodmen Road. Additional access to the southern portion of the development may also use Golden Sage Road. It is anticipated that proposed construction of Banning Lewis Parkway between Mohawk Road and Golden Sage Road will also provide centralized access. Details regarding precise access locations for specific parcels internal to the overall development area are not yet fully defined at this time and are subject to change.

For purposes of this study, it is anticipated that development construction would likely be phased with total build-out occurring by end of Year 2041. Specific phasing details are not known at this time, however, in general it is estimated that within a five-year period approximately 1,700 residential dwelling units, 465,000 square-feet of commercial development, and 8 acres of park land will be built. It is also anticipated that the proposed sports field complex may be built within the five-year period. Impacts from this initial phasing are examined under short-term Year 2026 conditions.

A master development plan, as prepared by N.E.S. Inc., is shown on Figure 2. This plan is provided for illustrative purposes.

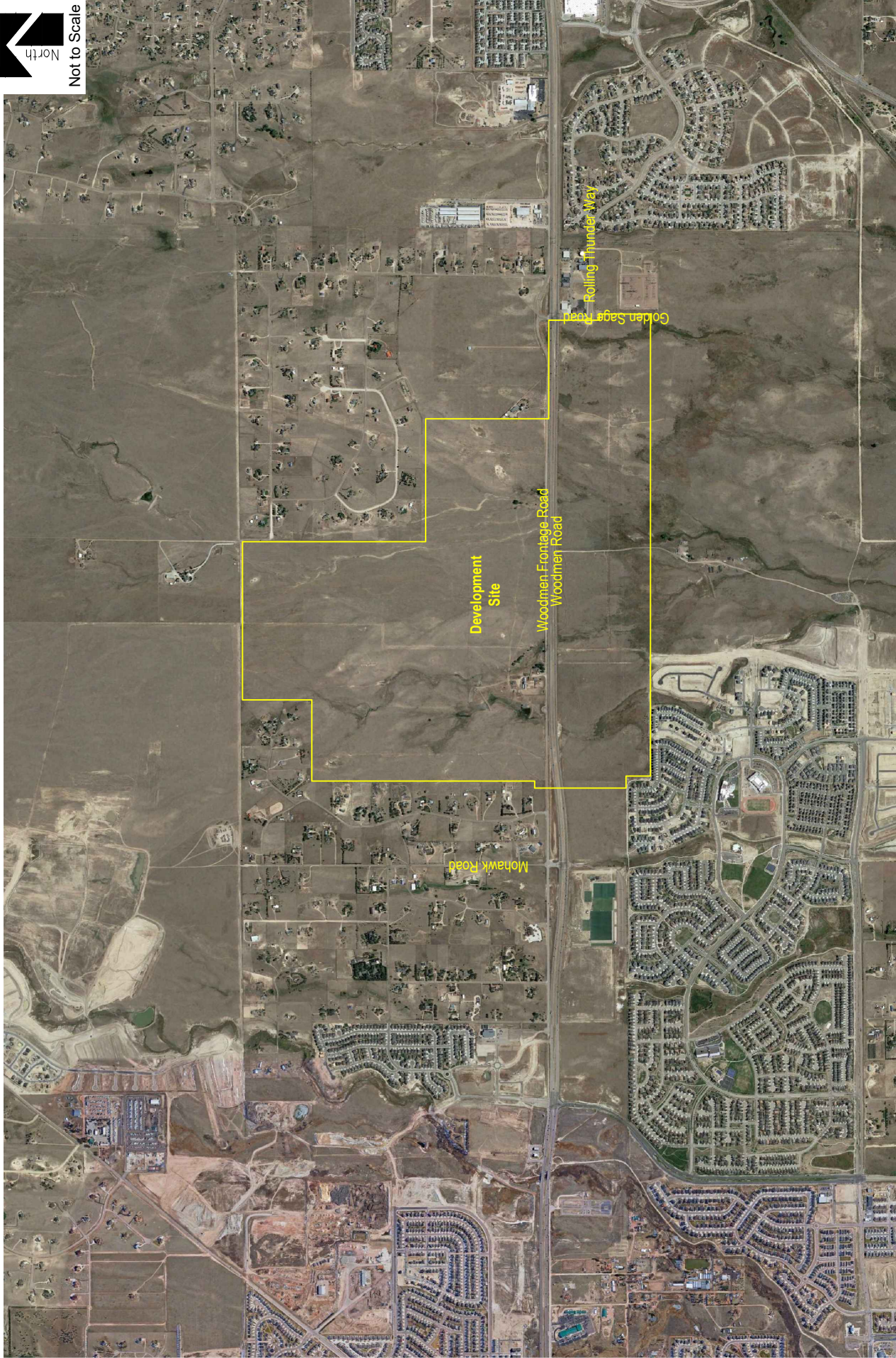


Figure 1
SITE LOCATION

PERCHERON
Traffic Impact Study Addendum

SM ROCHA, LLC
Traffic and Transportation Consultants



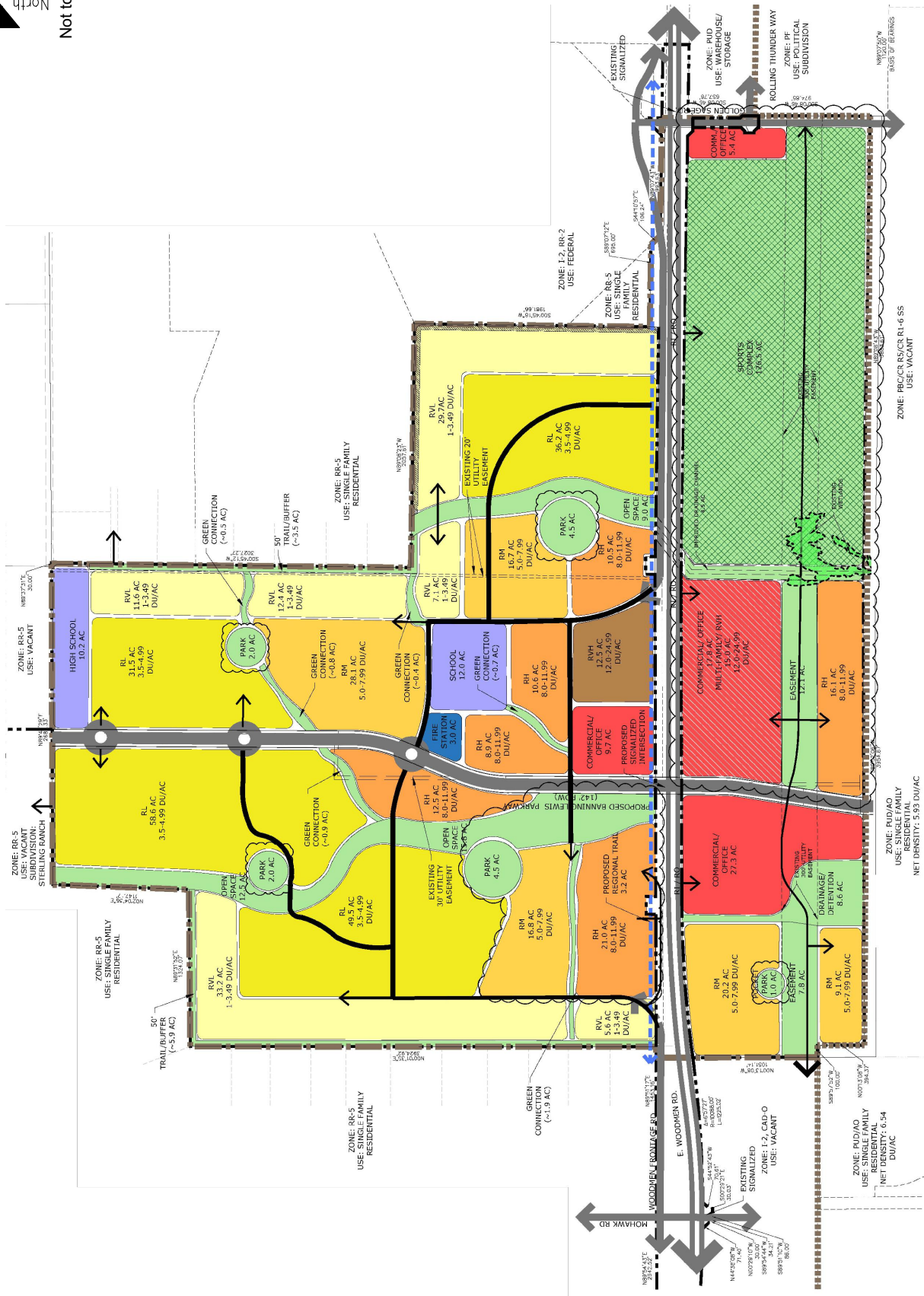


Figure 2
SITE PLAN
July 2021
Page 4



Existing and Committed Surface Transportation Network

Within the study area, Woodmen Road and Woodmen Frontage Road are the primary roadways that will accommodate traffic to and from the proposed development. The secondary roadways include Mohawk Road and Golden Sage Road. A brief description of each roadway is provided below:

Woodmen Road is an east-west arterial roadway having four through lanes (two lanes in each direction) with exclusive turn lanes at the intersections within the study area. Woodmen Road provides a posted speed limit of 55 MPH.

Woodmen Frontage Road is an east-west frontage roadway having two through lanes (one lane in each direction) with shared turn lanes at the intersections within the study area. Woodmen Frontage Road provides a posted speed limit of 35 MPH.

Mohawk Road is a north-south collector roadway having two through lanes (one lane in each direction) with a combination of shared and exclusive turn lanes at the intersections within the study area. Mohawk Road provides a posted speed limit of 30 MPH.

Golden Sage Road is a north-south roadway having two through lanes (one lane in each direction) with a combination of shared and exclusive turn lanes at the intersections within the study area. Golden Sage Road is unclassified in City's comprehensive plan². However, per City standards³ and the roadway's estimated ROW width, Golden Sage Road is assumed to be classified as a collector roadway with a posted speed limit of 35 MPH.

The study intersections of Woodmen Road with Mohawk Road and Golden Sage Road are signalized. All other study intersections operate under a stop-controlled condition. A stop-controlled intersection is defined as a roadway intersection where vehicle rights-of-way are controlled by one or more "STOP" signs.

Future Transportation Network

It is anticipated that with this development proposed Banning Lewis Parkway will be constructed and will ultimately serve as the primary roadway to accommodate traffic to and from the proposed development area. A brief description of this roadway is provided below:

Banning Lewis Parkway is envisioned as a future north-south arterial roadway having at least four through lanes (two lanes in each direction) with exclusive turn lanes at the intersections within the study area. It is anticipated that Banning Lewis Parkway would provide a posted speed limit of 55 to 65 MPH.

² Comprehensive Plan: Annual Report, City of Colorado Springs, 2004-2005.

³ Engineering Criteria Manual, City of Colorado Springs, July 2010.

Banning Lewis Parkway is anticipated to intersect Woodmen Road between the Woodmen Road intersections with Mohawk Road and Golden Sage Road. The proposed intersection is anticipated to operate as a signalized intersection.

No specific improvements for the above-described roadways are known at this time. The existing study area roadways appear to be built to their ultimate cross-sections, assuming a no-build scenario. It is however anticipated that the proposed development will be the driving factor in determining additional roadway improvements which are anticipated upon build-out. It is noted that regional improvements related to this development area, including the construction of Banning Lewis Parkway, will provide additional routes which may cause traffic patterns to vary significantly from existing conditions. Banning Lewis Parkway is understood to provide connections to proposed Briargate Parkway, a future east-west arterial roadway north of the proposed development, serving as an extension from the existing Briargate Parkway to the west. Banning Lewis Parkway will also provide future connections to the south with routes to US 24 and Marksheffel Road. It is assumed that these roadways will be constructed, at least in part, in relation to this development and adjacent planned development areas for the purpose of determining future traffic distribution patterns. However exact details regarding construction timeframes and roadway designs are unknown at this time and can only be assumed.

II. Existing Traffic Conditions

Morning (AM) and afternoon (PM) peak hour traffic counts were previously collected at the intersections of Woodmen Road with Mohawk Road and Golden Sage Road, and the intersection of Woodmen Frontage Road with Mohawk Road and Golden Sage Road. Average daily (24-hour) traffic volumes were collected on Woodmen Road and Woodmen Frontage Road. Peak hour and 24-hour traffic volumes were referenced from the previous Banning Lewis Ranch Master Traffic Impact Study. Referenced counts were collected in April 2019, with AM peak hour counts being collected during the period of 7:00 AM to 9:00 AM, and PM peak hour counts being collected during the period of 4:00 PM to 6:00 PM.

In order to more accurately represent current existing traffic volumes, referenced count data was growth for two years to Year 2021 using an assumed annual growth rate of two percent. This annual growth rate is considered typical and is consistent with regional growth projections and the level of in-fill development within the area. These counts are shown on Figure 3.

Traffic count data is included for reference in Appendix A.

Existing signal timing parameters for the Woodmen Road intersections were assumed based on typical signal timing cycle lengths, splits, and existing signal configurations, and were used throughout this study to the best extent possible in order to provide for a conservative analysis and remain consistent with typical signal coordination plans.



Not to Scale

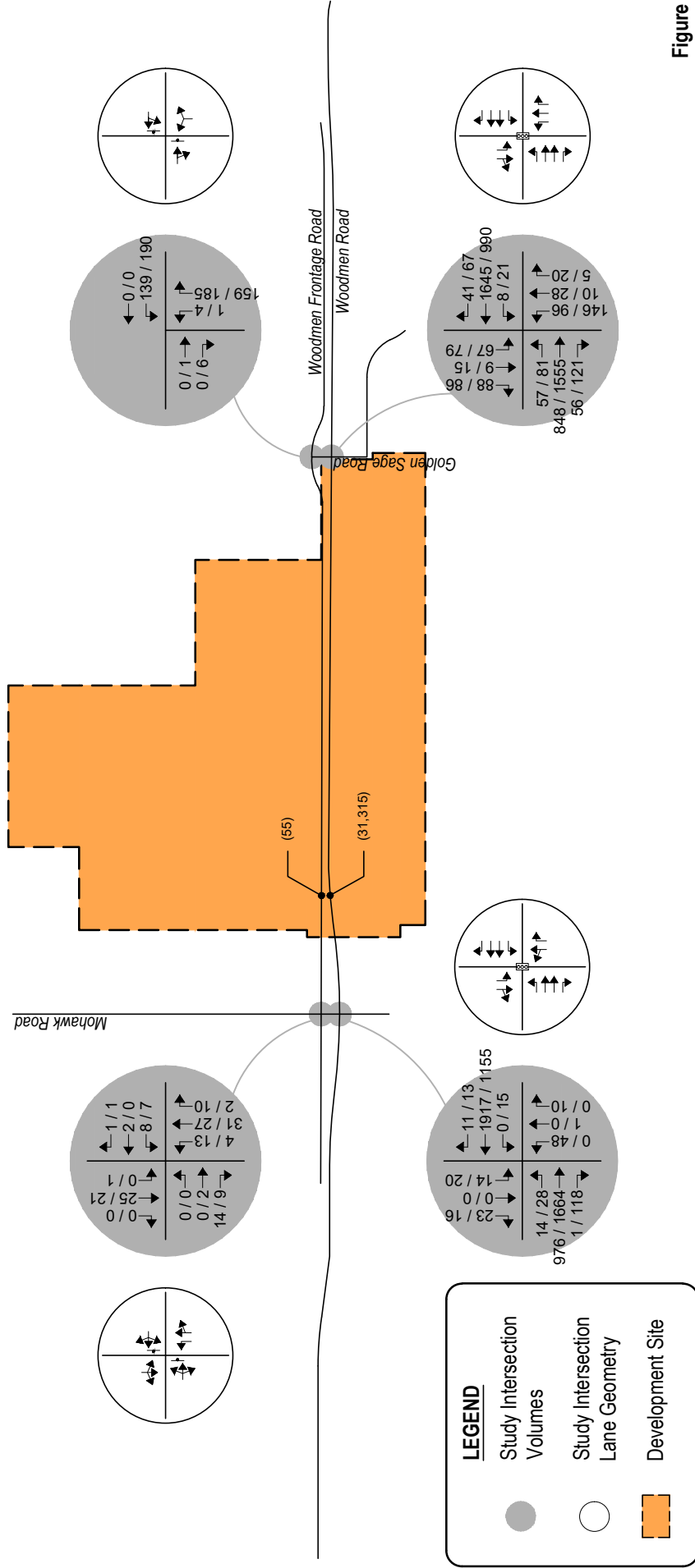


Figure 3
EXISTING TRAFFIC
 Volumes & Intersection Geometry
 AM / PM Peak Hour
 (ADT) : Average Daily Traffic



The Signalized and Unsignalized Intersection Analysis techniques, as published in the Highway Capacity Manual (HCM) by the Transportation Research Board and as incorporated into the SYNCHRO computer program, were used to analyze the study intersections for existing traffic conditions. These nationally accepted techniques allow for the determination of intersection level of service (LOS) based on the congestion and delay of each traffic movement.

Level of service is a method of measurement used by transportation professionals to quantify a driver's perception of travel conditions that include travel time, number of stops, and total amount of stopped delay experienced on a roadway network. The HCM categorizes level of service into a range from "A" which indicates little, if any, vehicle delay, to "F" which indicates a level of operation considered unacceptable to most drivers. These levels of service grades with brief descriptions of the operating condition, for unsignalized and signalized intersections, are included for reference in Appendix B and have been used throughout this study.

The level of service analyses results for existing conditions are summarized in Table 1.

Intersection capacity worksheets developed for this study are provided in Appendix C.

Table 1 – Intersection Capacity Analysis Summary – Existing Traffic

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
Woodmen Road / Mohawk Road (Signalized)	B (12.8)	B (17.1)
Woodmen Road / Golden Sage Road (Signalized)	B (19.2)	B (16.5)
Woodmen Frontage Road / Mohawk Road (Stop-Controlled)		
Eastbound Left, Through and Right	A	A
Westbound Left, Through and Right	A	A
Northbound Left	A	A
Southbound Left, Through and Right	A	A
Woodmen Frontage Rd / Golden Sage Rd (Stop-Controlled)		
Eastbound Through and Right	A	A
Westbound Left and Through	A	A
Northbound Left and Right	A	A

Key: Signalized Intersection: Level of Service (Control Delay in sec/veh)
Stop-Controlled Intersection: Level of Service

Existing Traffic Analysis Results

Under existing conditions, operational analysis shows that the signalized intersection of Woodmen Road with Mohawk Road has overall operations at LOS B during both the morning and afternoon peak traffic hours.

The signalized intersection of Woodmen Road with Golden Sage Road has overall operations at LOS B during both the morning and afternoon peak traffic hours.

The unsignalized intersection of Woodmen Frontage Road with Mohawk Road has turning movement operations at LOS A during both the morning and afternoon peak traffic hours.

The unsignalized intersection of Woodmen Frontage Road with Golden Sage Road has turning movement operations at LOS A during both the morning and afternoon peak traffic hours.

III. Future Traffic Conditions Without Proposed Development

Background traffic is the traffic projected to be on area roadways without consideration of the proposed development. Background traffic includes traffic generated by development of vacant parcels in the area. As example, it is anticipated that vacant parcels to the north and south of the proposed development may develop within the course of development construction resulting in additional traffic volumes using the roadway network through the proposed development area.

To account for projected increases in background traffic for Years 2026 and 2041, a compounded annual growth rate of approximately two percent was applied to existing traffic volumes. This annual growth rate is considered typical and is consistent with regional growth projections and the level of in-fill development expected within the area. The use of background traffic projections provides for a conservative analysis.

Pursuant to the non-committed area roadway improvements discussed in Section I, Year 2026 and Year 2041 background traffic conditions assume no roadway improvements to accommodate regional transportation demands. Year 2041 assumes existing signal timing parameters for the Woodmen Road intersections with optimized intersection splits in effort to better long-term intersection performance. This assumption provides for a conservative analysis.

Projected background traffic volumes and intersection geometry for Years 2026 and 2041 are shown on Figure 4 and Figure 5, respectively.

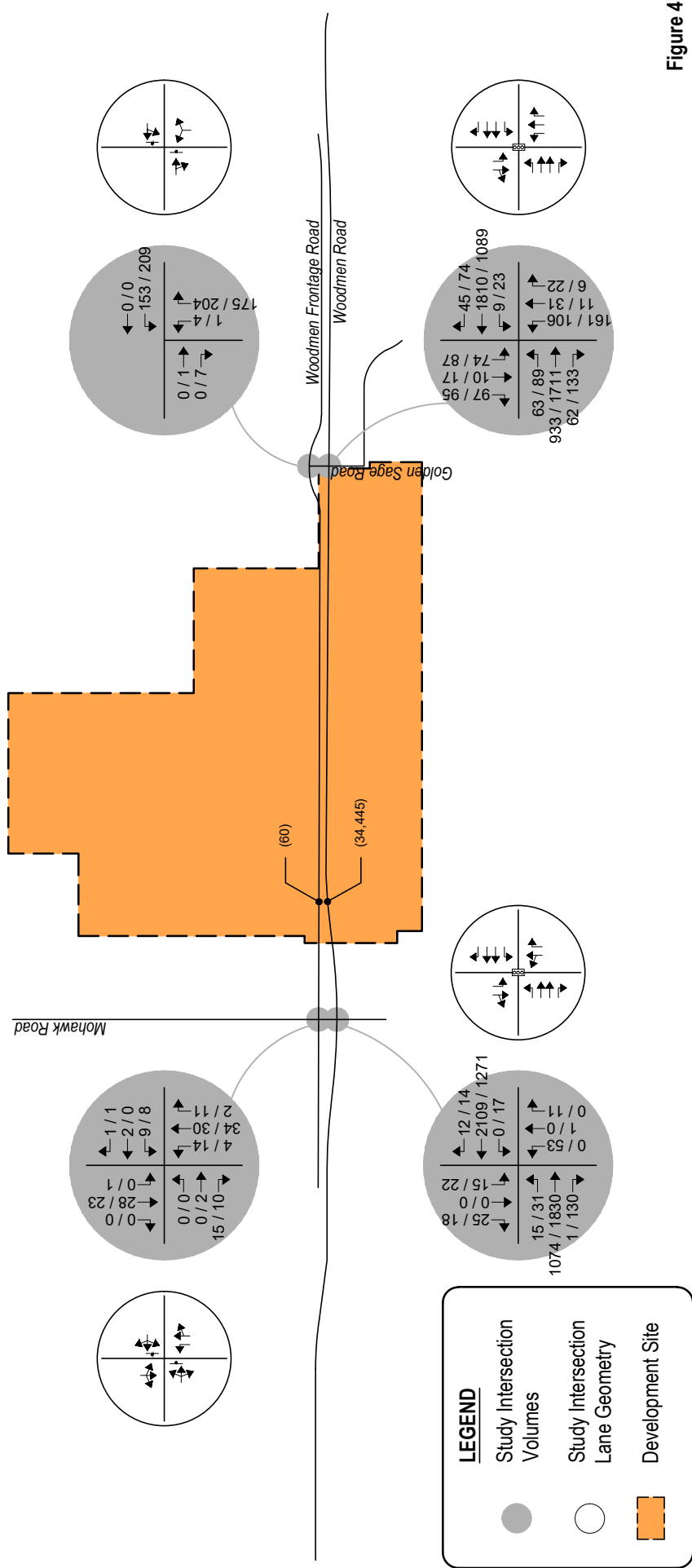


Figure 4
BACKGROUND TRAFFIC - YEAR 2026
Volumes & Intersection Geometry
AM / PM Peak Hour
(ADT) : Average Daily Traffic

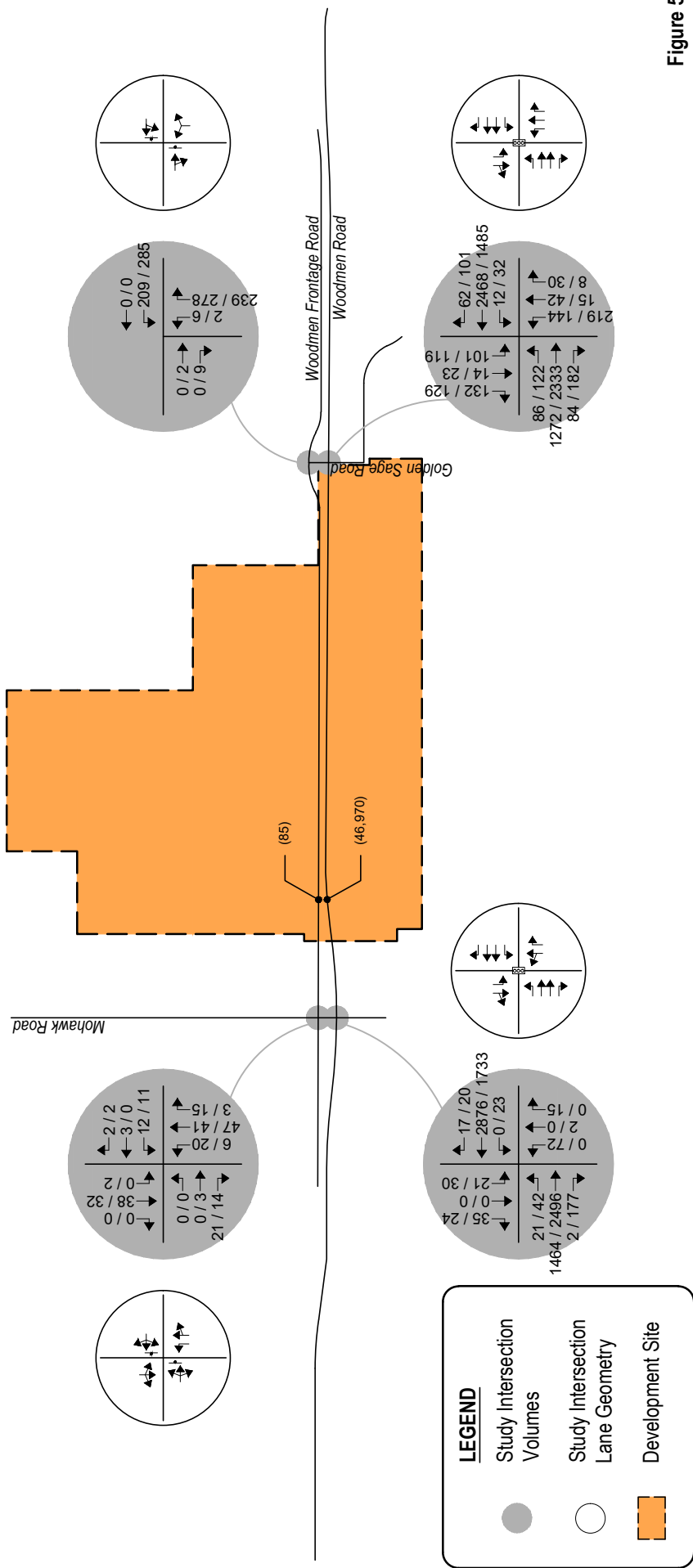


Figure 5
BACKGROUND TRAFFIC - YEAR 2041
Volumes & Intersection Geometry
AM / PM Peak Hour
(ADT) : Average Daily Traffic

As with existing traffic conditions, the operations of study intersections were analyzed under background conditions, without the proposed development, using the SYNCHRO computer program.

Background traffic level of service analysis results for Year 2026 are listed in Table 2. Year 2041 operational results are summarized in Table 3.

Definitions of levels of service are given in Appendix B. Intersection capacity worksheets are provided in Appendix C.

Table 2 – Intersection Capacity Analysis Summary – Background Traffic – Year 2026

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
Woodmen Road / Mohawk Road (Signalized)	B (17.2)	B (18.5)
Woodmen Road / Golden Sage Road (Signalized)	C (22.7)	B (18.2)
Woodmen Frontage Road / Mohawk Road (Stop-Controlled)		
Eastbound Left, Through and Right	A	A
Westbound Left, Through and Right	A	A
Northbound Left	A	A
Southbound Left, Through and Right	A	A
Woodmen Frontage Rd / Golden Sage Rd (Stop-Controlled)		
Eastbound Through and Right	A	A
Westbound Left and Through	A	A
Northbound Left and Right	A	A

Key: Signalized Intersection: Level of Service (Control Delay in sec/veh)
Stop-Controlled Intersection: Level of Service

Background Traffic Analysis Results – Year 2026

Year 2026 background traffic analysis indicates that the signalized intersection of Woodmen Road with Mohawk Road has overall operations at LOS B during both the AM and PM peak traffic hours.

The signalized intersection of Woodmen Road with Golden Sage Road has overall operations at LOS C during the AM peak traffic hour and LOS B during the PM peak traffic hour.

Unsignalized intersections within the study area operate at LOS A during both AM and PM peak traffic periods.

Table 3 – Intersection Capacity Analysis Summary – Background Traffic – Year 2041

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
Woodmen Road / Mohawk Road (Signalized)	F (89.6)	D (43.6)
Woodmen Road / Golden Sage Road (Signalized)	F (82.8)	C (27.1)
Woodmen Frontage Road / Mohawk Road (Stop-Controlled)		
Eastbound Left, Through and Right	A	A
Westbound Left, Through and Right	A	A
Northbound Left	A	A
Southbound Left, Through and Right	A	A
Woodmen Frontage Rd / Golden Sage Rd (Stop-Controlled)		
Eastbound Through and Right	A	A
Westbound Left and Through	A	A
Northbound Left and Right	A	A

Key: Signalized Intersection: Level of Service (Control Delay in sec/veh)
 Stop-Controlled Intersection: Level of Service

Background Traffic Analysis Results – Year 2041

By Year 2041 and without the proposed development, the study intersection of Woodmen Road with Mohawk Road experiences LOS F operations during the AM peak traffic hour and LOS D operations during the PM peak traffic hour. The LOS F operation anticipated during the AM peak traffic period is attributed to the high westbound through volumes.

The study intersection of Woodmen Road with Golden Sage Road experiences LOS F operations during the AM peak traffic hour and LOS C operations during the PM peak traffic hour. The LOS F operation anticipated during the AM peak traffic period is attributed to the high westbound through volumes, and the eastbound and northbound left turning movements.

The unsignalized intersection of Woodmen Frontage Road with Mohawk Road experiences turning movement operations at LOS A during both the AM and PM peak traffic hours.

The unsignalized intersection of Woodmen Frontage Road with Golden Sage Road experiences turning movement operations at LOS A during both the AM and PM peak traffic hours.

IV. Proposed Project Traffic

Trip Generation

Standard traffic generation characteristics compiled by the Institute of Transportation Engineers (ITE) in their report entitled Trip Generation, 10th Edition, were applied to the proposed land uses in order to estimate average daily traffic (ADT), AM Peak Hour, and PM Peak Hour vehicle trips. A vehicle trip is defined as a one-way vehicle movement from a point of origin to a point of destination.

The ITE land use codes 210 (Single-Family Housing), 220 (Multi-Family Housing (Low-Rise), 411 (Public Park), 488 (Soccer Complex), 520 (Elementary School), 530 (High School), 575 (Fire and Rescue Station), and 820 (Shopping Center) were used for estimating trip generation because of their best fit to the proposed land use descriptions.

It is to be noted that the use of the Shopping Center land use code does not imply or otherwise limit the proposed uses to be purely retail development but is rather the best possible ITE land use available to describe a generally commercial focused development. Per the ITE provided description of the Shopping Center land use, this use may include facilities such as offices, restaurants, movie theaters, banks, recreational facilities and other such uses ancillary to merchandise oriented businesses.

As discussed in Section I, land use densities for the proposed commercial, fire state, and educational uses were estimated assuming a floor area ratio (FAR) of 0.2 which is considered typical for these types of uses, and to provide for a conservative analysis. This estimate provides for a gross area of buildable space but does not entirely account for specifics regarding site topography which may limit buildable area or other development requirements such as allocations towards parking or utility easements which would detract from actual building square footage beyond the assumed 0.2 FAR estimate. As actual land uses, densities or site plans within the Percheron development area become defined over time, it is expected that traffic generation characteristics considered within this study will need to be updated by more specific traffic analyses or studies to help assess if transportation improvements are needed to mitigate potential traffic impacts.

Trip generation rates used in this study are presented in Table 4.

Table 4 – Trip Generation Rates

ITE CODE	LAND USE	UNIT	TRIP GENERATION RATES						
			24 HOUR	AM PEAK HOUR			PM PEAK HOUR		
				ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
210	Single-Family Housing	DU	9.44	0.19	0.56	0.74	0.62	0.37	0.99
220	Multi-Family Housing (Low-Rise)	DU	7.32	0.11	0.35	0.46	0.35	0.21	0.56
411	Public Park	ACRE	0.78	0.01	0.01	0.02	0.06	0.05	0.11
488	Soccer Complex	FLD	71.33	0.60	0.39	0.99	10.84	5.59	16.43
520	Elementary School	KSF	19.52	3.83	3.14	6.97	0.62	0.75	1.37
530	High School	KSF	14.07	2.40	0.98	3.38	0.52	0.45	0.97
575	Fire and Rescue Station	KSF	4.80	*	*	*	0.14	0.34	0.48
820	Shopping Center	KSF	37.75	0.58	0.36	0.94	1.83	1.98	3.81

Key: DU = Dwelling Units. ACRE = Total Acreage. FLD = Number of Fields. KSF = Thousand Square Feet Gross Floor Area.

* = ITE does not report significant AM peak hour generation due to the nature of the business.

Note: All data and calculations above are subject to being rounded to nearest value.

Table 5 illustrates projected average daily traffic (ADT), AM Peak Hour, and PM Peak Hour traffic volumes likely generated by the proposed development upon initial phasing and build-out.

Table 5 – Trip Generation Summary

ITE CODE	LAND USE	SIZE	TOTAL TRIPS GENERATED						
			24 HOUR	AM PEAK HOUR			PM PEAK HOUR		
				ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
<u>Site Development - Initial Phasing (5-Year)</u>									
210	Single-Family Housing	880 DU	8,307	163	488	651	549	322	871
220	Multi-Family Housing (Low-Rise)	820 DU	6,002	87	290	377	289	170	459
411	Public Park	8 ACRE	6	0	0	0	0	0	1
488	Soccer Complex	28 FLD	1,997	17	11	28	304	156	460
820	Shopping Center	465 KSF	17,552	271	166	437	850	921	1,771
<i>Initial Phasing Total:</i>			33,865	538	956	1,493	1,993	1,570	3,563
<u>Site Development - Future Phasing (20-Year)</u>									
210	Single-Family Housing	1,072 DU	10,120	198	595	793	669	393	1,061
220	Multi-Family Housing (Low-Rise)	806 DU	5,900	85	285	371	284	167	451
411	Public Park	6 ACRE	5	0	0	0	0	0	1
520	Elementary School	105 KSF	2,041	401	328	729	64	79	143
530	High School	89 KSF	1,250	213	87	300	47	40	86
575	Fire and Rescue Station	26 KSF	125	*	*	*	4	9	13
820	Shopping Center	149 KSF	5,634	87	53	140	273	296	569
<i>Future Phasing Total:</i>			25,075	985	1,349	2,333	1,341	983	2,324
<i>Build-Out Total:</i>			58,940	1,522	2,305	3,827	3,333	2,553	5,887

Note: All data and calculations above are subject to being rounded to nearest value.

Upon build-out, Table 5 illustrates that the proposed development has the potential to generate approximately 58,940 daily trips with 3,827 of those occurring during the morning peak hour and 5,887 during the afternoon peak hour.

Adjustments to Trip Generation Rates

Given the proposed combination of residential with commercial, educational, and recreational land uses, potential internal capture may be applicable given the high probability of residents also visiting retail businesses, schools, or parks within the overall development area and vice versa. Due to the conceptual nature of the land uses assumed in this analysis a precise internal capture percentage can only be assumed. However, it is considered likely that a 10 percent reduction due to internal capture is applicable. This continues to provide for a conservative analysis.

A development of this type may also attract pass-by or diverted linked trips from the adjacent roadway system. However, given that the majority of land uses are conceptual in nature, specific pass-by reductions can only be assumed. Therefore, no reductions due to pass-by or diverted link trips were applied in this analysis. This assumption provides for a conservative analysis.

Table 6 illustrates projected average daily traffic (ADT), AM Peak Hour, and PM Peak Hour traffic volumes likely generated by the proposed development upon build-out with reductions applied due to internal capture.

Table 6 – Trip Generation Summary with Trip Reductions

ITE CODE	LAND USE	SIZE	TOTAL TRIPS GENERATED WITH REDUCTIONS							
			24 HOUR	AM PEAK HOUR			PM PEAK HOUR			
				ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL	
<u>Site Development - Initial Phasing (5-Year)</u>										
210	Single-Family Housing	880 DU	7,476	147	440	586	494	290	784	
220	Multi-Family Housing (Low-Rise)	820 DU	5,402	78	261	339	260	153	413	
411	Public Park	8 ACRE	6	0	0	0	0	0	1	
488	Soccer Complex	28 FLD	1,798	15	10	25	273	141	414	
820	Shopping Center	465 KSF	15,797	244	149	393	765	829	1,594	
<i>Internal Capture Reduction:</i>			<i>10%</i>	<i>10%</i>	<i>10%</i>	<i>10%</i>	<i>10%</i>	<i>10%</i>	<i>10%</i>	
<i>Initial Phasing Total:</i>			30,478	484	860	1,344	1,793	1,413	3,206	
<u>Site Development - Future Phasing (20-Year)</u>										
210	Single-Family Housing	1,072 DU	9,108	178	535	714	602	353	955	
220	Multi-Family Housing (Low-Rise)	806 DU	5,310	77	257	334	256	150	406	
411	Public Park	6 ACRE	4	0	0	0	0	0	1	
520	Elementary School	105 KSF	1,837	361	295	656	58	71	129	
530	High School	89 KSF	1,125	192	78	270	42	36	78	
575	Fire and Rescue Station	26 KSF	113	*	*	*	3	8	11	
820	Shopping Center	149 KSF	5,071	78	48	126	246	266	512	
<i>Internal Capture Reduction:</i>			<i>10%</i>	<i>10%</i>	<i>10%</i>	<i>10%</i>	<i>10%</i>	<i>10%</i>	<i>10%</i>	
<i>Future Phasing Total:</i>			22,568	886	1,214	2,100	1,207	885	2,092	
Build-Out Total:			53,046	1,370	2,074	3,444	3,000	2,298	5,298	

Note: All data and calculations above are subject to being rounded to nearest value.

Upon build-out and with consideration of internal capture reductions, Table 6 indicates that the proposed development has the potential to generate approximately 53,046 daily trips with 3,444 of those occurring during the morning peak hour and 5,298 during the afternoon peak hour.

Trip Distribution

The overall directional distribution of site-generated traffic was determined based on the location of development site within the City, proposed and existing area land uses, allowed turning movements, and available roadway network.

Overall trip distribution patterns for the development are shown on Figures 6 and 7.

Trip Assignment

Traffic assignment is how generated and distributed vehicle trips are expected to be loaded onto the available roadway network.

Applying trip distribution patterns to site-generated traffic provides the overall site-generated trip assignments for years 2026 and 2041 shown on Figure 6 and Figure 7, respectively.



Not to Scale

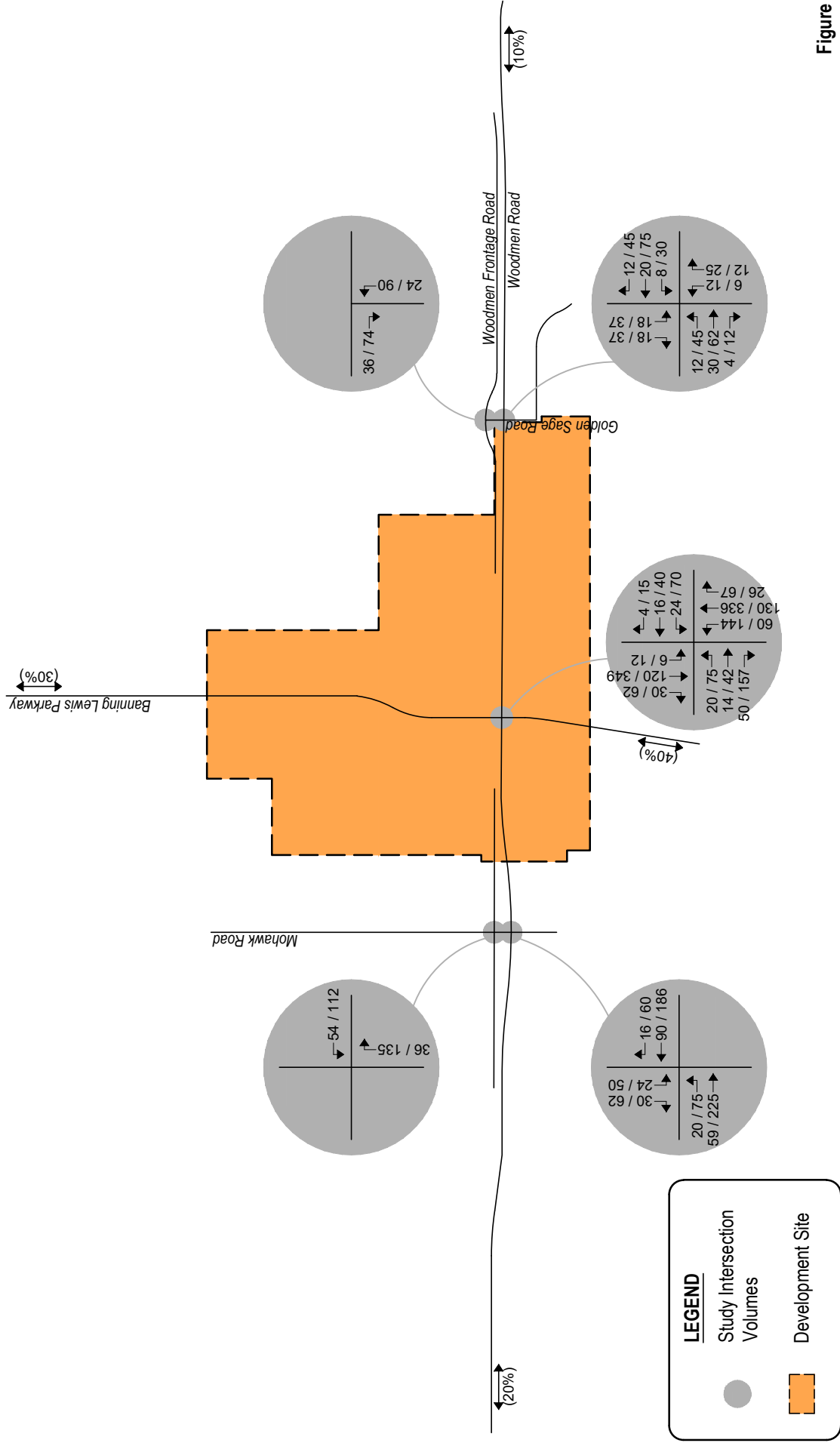


Figure 6
SITE DEVELOPMENT DISTRIBUTION - YEAR 2026
(%) : Overall

SITE-GENERATED
AM / PM Peak Hour





Not to Scale

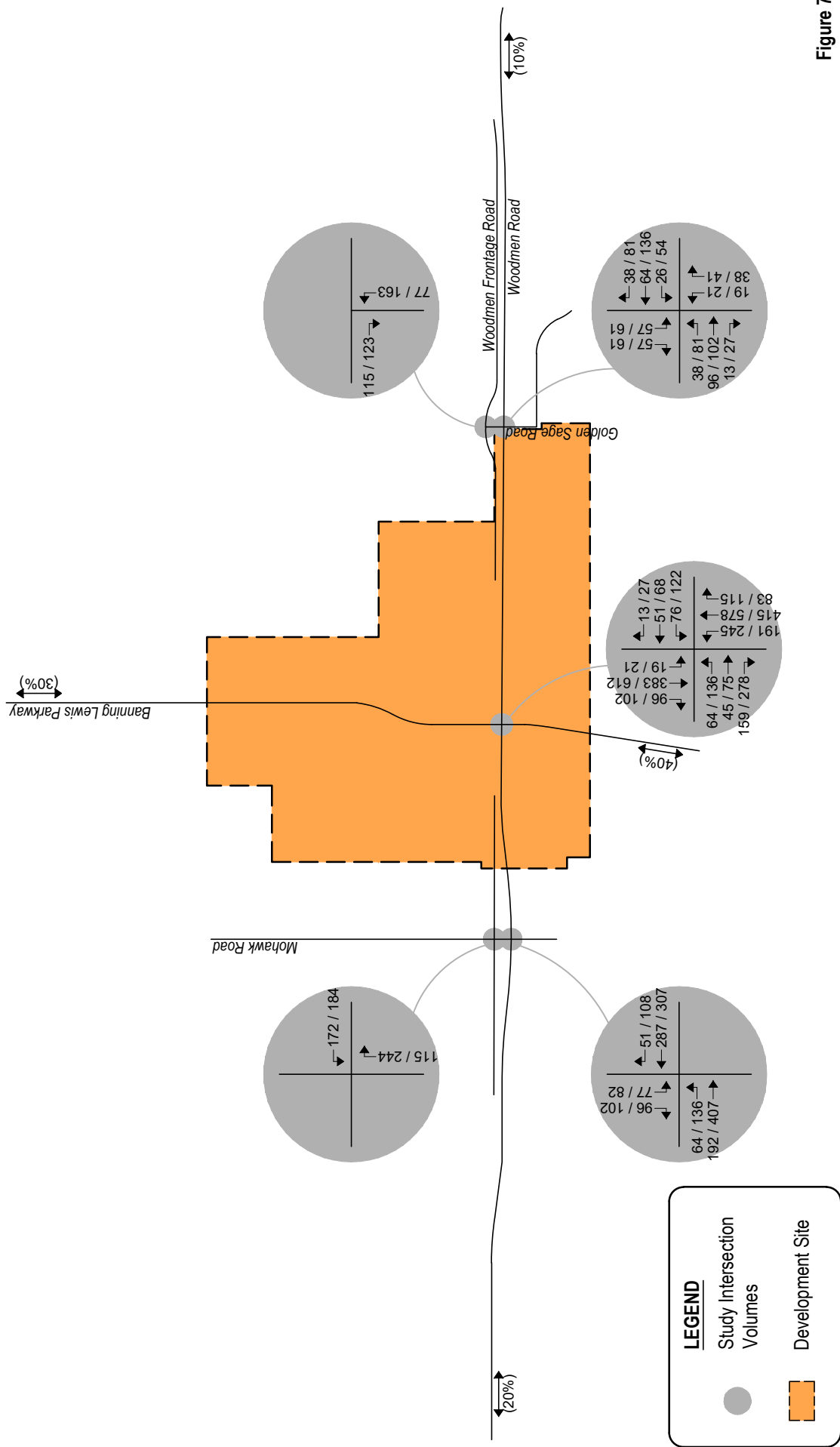


Figure 7
SITE DEVELOPMENT DISTRIBUTION - YEAR 2041
 (%): Overall
SITE-GENERATED
 AM / PM Peak Hour

V. Future Traffic Conditions With Proposed Developments

Site-generated traffic was added to background traffic projections for Years 2026 and 2041 to develop total traffic projections. For analysis purposes, it was assumed that development construction would be completed by end of Year 2026.

Pursuant to area roadway improvement discussions provided in Section III, Year 2026 and Year 2041 total traffic conditions assume no roadway improvements to accommodate regional transportation demands. Roadway improvements associated with site development are expected to be limited to site access and frontage as required by the governing agency.

Projected Year 2026 total traffic volumes and intersection geometry are shown in Figure 8.

Figure 9 shows projected total traffic volumes and intersection geometry for Year 2041.

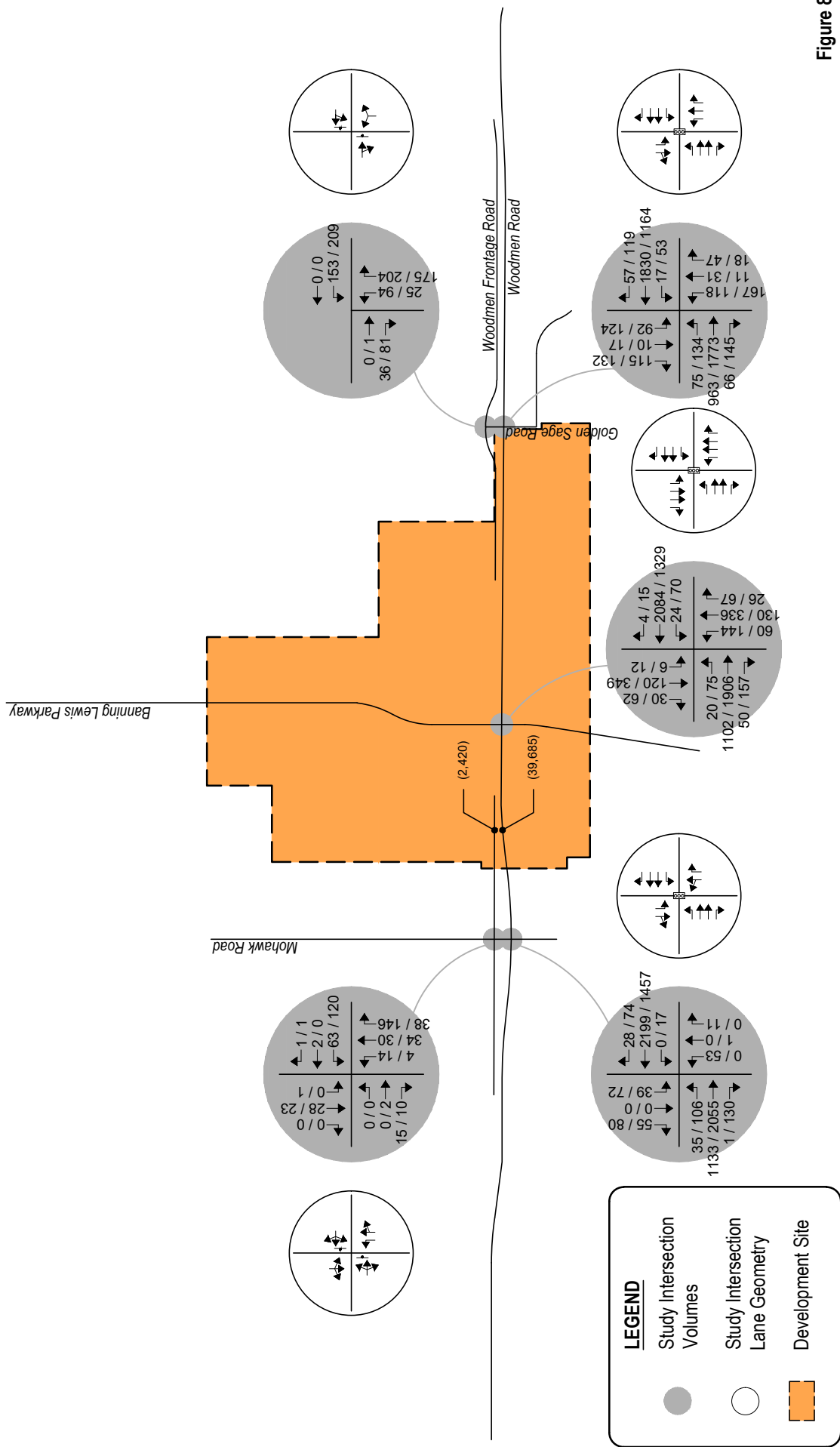


Figure 8
TOTAL TRAFFIC - YEAR 2026
Volumes & Intersection Geometry
AM / PM Peak Hour
(ADT) : Average Daily Traffic



Not to Scale

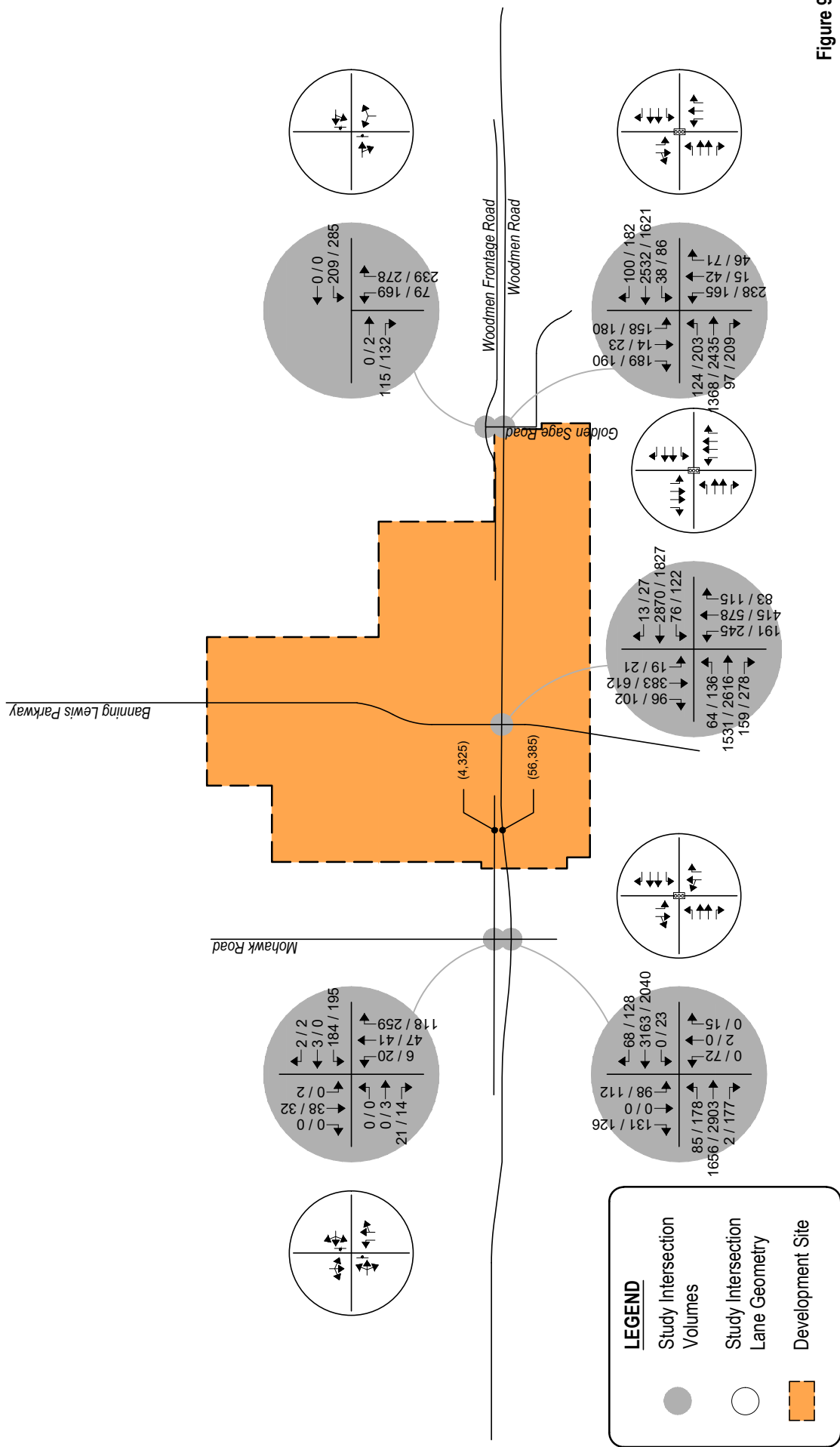


Figure 9
TOTAL TRAFFIC - YEAR 2041
 Volumes & Intersection Geometry
 AM / PM Peak Hour
 (ADT) : Average Daily Traffic



VI. Project Impacts

The analyses and procedures described in this study were performed in accordance with the Highway Capacity Manual (HCM) and are based upon the worst-case conditions that occur during a typical weekday upon build-out of site development and analyzed land uses. Therefore, study intersections are likely to operate with traffic conditions better than those described within this study, which represent the peak hours of weekday operations only.

Peak Hour Intersection Levels of Service

As with background traffic, the operations of the study intersections were analyzed under projected total traffic conditions using the SYNCHRO computer program. Total traffic level of service analysis results for Years 2026 and 2041 are summarized in Table 7 and Table 8, respectively.

Definitions of levels of service are given in Appendix B. Intersection capacity worksheets are provided in Appendix C.

Table 7 – Intersection Capacity Analysis Summary – Total Traffic – Year 2026

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
Woodmen Road / Mohawk Road (Signalized)	C (34.3)	C (28.4)
Woodmen Road / Golden Sage Road (Signalized)	C (27.7)	C (34.3)
Woodmen Road / Banning Lewis Parkway (Signalized)	D (40.7)	C (31.5)
Woodmen Frontage Road / Mohawk Road (Stop-Controlled)		
Eastbound Left, Through and Right	A	A
Westbound Left, Through and Right	A	B
Northbound Left	A	A
Southbound Left, Through and Right	A	A
Woodmen Frontage Rd / Golden Sage Rd (Stop-Controlled)		
Eastbound Through and Right	A	A
Westbound Left and Through	A	A
Northbound Left and Right	A	A

Key: Signalized Intersection: Level of Service (Control Delay in sec/veh)
Stop-Controlled Intersection: Level of Service

Table 8 – Intersection Capacity Analysis Summary – Total Traffic – Year 2041

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
Woodmen Road / Mohawk Road (Signalized)	F (148.3)	F (87.4)
Woodmen Road / Golden Sage Road (Signalized)	F (107.3)	E (72.0)
Woodmen Road / Banning Lewis Parkway (Signalized)	F (125.4)	F (127.2)
Woodmen Frontage Road / Mohawk Road (Stop-Controlled)		
Eastbound Left, Through and Right	A	A
Westbound Left, Through and Right	B	B
Northbound Left	A	A
Southbound Left, Through and Right	A	A
Woodmen Frontage Rd / Golden Sage Rd (Stop-Controlled)		
Eastbound Through and Right	A	A
Westbound Left and Through	A	A
Northbound Left and Right	A	A

Key: Signalized Intersection: Level of Service (Control Delay in sec/veh)
 Stop-Controlled Intersection: Level of Service

Total Traffic Analysis Results Upon Development Build-Out

Table 8 illustrates how, by Year 2041 and upon development build-out, the signalized intersection of Woodmen Road with Mohawk Road shows an overall LOS F operation during both the morning and afternoon peak traffic hours. The LOS F operations anticipated during both peak traffic periods are attributed to the high westbound through volumes, and the eastbound left turning movement. Compared to the background traffic analysis, the traffic generated by the proposed development is expected to cause some impact to the operations of the study intersection.

The signalized intersection of Woodmen Road with Golden Sage Road is projected to have morning peak traffic hour operations at LOS F and afternoon peak traffic hour operations at LOS E. The LOS E and F operations anticipated during both peak traffic periods are attributed primarily to the high westbound through volumes, and the eastbound and northbound left turning movements.

The signalized intersection of Woodmen Road with Banning Lewis Parkway is projected to have morning and afternoon peak traffic hour operations at LOS F. The LOS F operations anticipated during both peak traffic periods are attributed primarily to the high westbound through volumes, and the northbound left turning movement.

The stop-controlled intersection of Woodmen Frontage Road with Mohawk Road is projected to have turning movement operations at LOS B or better for both the morning and afternoon peak traffic hours.

The stop-controlled intersection of Woodmen Frontage Road with Golden Sage Road is projected to have turning movement operations at LOS A for both the morning and afternoon peak traffic hours.

Recommendations

Recommendations for conceptual roadway improvements and traffic mitigation measures to meet or enhance City's intersection operation goals, are based on Year 2041 total traffic conditions. These conditions are analyzed as a worst-case scenario and changes to land use types and sizes may result in rendering these recommendations excessive or all together unnecessary. As actual land uses, and site plans become more defined over the course of site development, additional analysis may be needed to determine appropriate roadway improvements or traffic mitigation methods.

Woodmen Road & Mohawk Road

- Six through lanes (three in each direction) for the westbound/eastbound traffic may be necessary to improve the projected LOS E and LOS F operations. Additional through lanes may be merged back to the existing four lane section once extended beyond the bounds of the proposed development area.
- Signal timings and progression between signals should be optimized.

Woodmen Road & Golden Sage Road

- Dual northbound left turn lanes recommended due to high left turn volumes.
- Six through lanes (three in each direction) for the westbound/eastbound traffic may be necessary to improve the projected LOS E and LOS F operations. Additional through lanes may be merged back to the existing four lane section once extended beyond the bounds of the proposed development area.
- Signal timings and progression between signals should be optimized.

Woodmen Frontage Road & Mohawk Road

- Dedicated westbound left turn lane recommended due to high left turn volumes.

Woodmen Frontage Road & Golden Sage Road

- Dedicated northbound right turn lane recommended due to high right turn volumes.
- Dedicated westbound left turn lane recommended due to high left turn volumes.

Woodmen Road & Banning Lewis Parkway

- Six through lanes (three in each direction) for the westbound/eastbound traffic may be necessary to improve the projected LOS E and LOS F operations. Additional through lanes may be merged back to the existing four lane section once extended beyond the bounds of the proposed development area.
- Dedicated left and right turn lanes recommended in all directions.
- Right-turn acceleration lanes recommended for all directions subject to post speed limit on Banning Lewis Parkway. Acceleration lanes may be best implemented by using channelized right-turns.
- Future right-of-way dedication advised to allow for potential dual left turn lanes, or additional through lanes as needed pursuant to future adjacent development impacts.

It is noted that additional future roadway connections in the surrounding area are likely to alter future traffic patterns and therefore may decrease the impacts of site generated traffic. Specifically, it is understood that proposed extensions of Briargate Parkway currently located west and north of the proposed development, and Stapleton Drive to the north, would provide additional routes for east-west travel with access to major roadways including Powers Boulevard and I-25. Such connections would likely reduce impacts to Woodmen Road, and the need for six through lanes along Woodmen Road may be unnecessary. Furthermore, it is noted that the above recommendations are based on the anticipated impacts caused by the proposed development only, and do not account for additional impacts caused by adjacent development areas yet to be defined. Therefore, it is recommended that as the proposed area continues to develop that City Staff continue to monitor the region to determine what improvements may be necessary and the appropriate time for implementation.

VII. Conclusion

This traffic impact study addendum addressed the capacity, geometric, and control requirements associated with the development entitled Percheron and serves as an update to the previous traffic impact study prepared for the proposed development area entitled Banning Lewis Ranch North. This proposed mixed-use development consists primarily of residential development of varying density with commercial, recreational, and educational supporting land uses. The development is located along Woodmen Road between Mohawk Road and Golden Sage Road in Colorado Springs, Colorado.

The study area examined in this analysis encompassed the Woodmen Road intersections with Mohawk Road and Golden Sage Road, the intersections of Woodmen Frontage Road with Mohawk Road and Golden Sage Road, and proposed site accesses.

Analysis was conducted for critical AM Peak Hour and PM Peak Hour traffic operations for existing traffic conditions, Year 2026 and Year 2041 background traffic conditions, and Year 2026 and Year 2041 total traffic conditions.

Under existing conditions, operational analysis shows that the signalized intersection of Woodmen Road with Mohawk Road has overall operations at LOS B during both the morning and afternoon peak traffic hours. The signalized intersection of Woodmen Road with Golden Sage Road has overall operations at LOS B during both the morning and afternoon peak traffic hours. The unsignalized intersection of Woodmen Frontage Road with Mohawk Road has turning movement operations at LOS A during both the morning and afternoon peak traffic hours. The unsignalized intersection of Woodmen Frontage Road with Golden Sage Road has turning movement operations at LOS A during both the morning and afternoon peak traffic hours.

Year 2026 background traffic analysis indicates that the signalized intersection of Woodmen Road with Mohawk Road has overall operations at LOS B during both the AM and PM peak traffic hours. The signalized intersection of Woodmen Road with Golden Sage Road has overall operations at LOS C during the AM peak traffic hour and LOS B during the PM peak traffic hour. Unsignalized intersections within the study area operate at LOS A during both AM and PM peak traffic periods.

By Year 2041 and without the proposed development, the study intersection of Woodmen Road with Mohawk Road experiences LOS F operations during the AM peak traffic hour and LOS D operations during the PM peak traffic hour. The LOS F operation anticipated during the AM peak traffic period is attributed to the high westbound through volumes. The study intersection of Woodmen Road with Golden Sage Road experiences LOS F operations during the AM peak traffic hour and LOS C operations during the PM peak traffic hour. The LOS F operation anticipated during the AM peak traffic period is attributed to the high westbound through volumes, and the eastbound and northbound left turning movements. The unsignalized intersection of Woodmen Frontage Road with Mohawk Road experiences turning movement operations at LOS A during both the AM and PM peak traffic hours. The unsignalized intersection of Woodmen Frontage Road with Golden Sage Road experiences turning movement operations at LOS A during both the AM and PM peak traffic hours.

Given the assumed density of the proposed development, analysis of future traffic conditions indicates that the addition of site-generated traffic is expected to cause some impact to traffic operations for the existing and surrounding roadway system. These operations may be improved with the implementation of the recommendations mentioned within this report. It should also be noted that analysis results within this report are based upon conceptual land uses and sizes and presents a conservative analysis. It is anticipated that actual intersection operations will be better than what is presented within this study given the potential for pass-by trips, and internal capture for specific land uses. Additionally, as development areas are further defined additional analyses should be performed to provide additional detail regarding the need for mitigation measures and specific roadway improvements. Overall, it is believed that the proposed development can be successfully accommodated within the development area.

APPENDIX A

Traffic Count Data



(303) 216-2439
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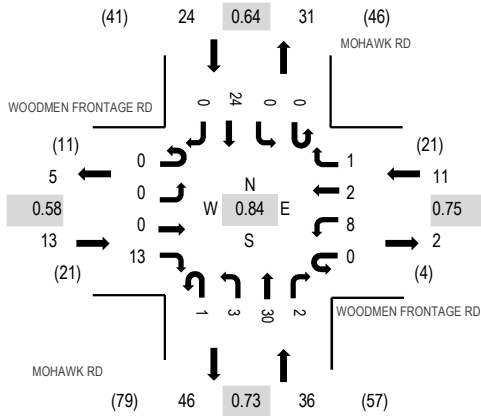
Location: 1 MOHAWK RD & WOODMEN FRONTAGE RD AM

Date: Tuesday, April 2, 2019

Peak Hour: 07:45 AM - 08:45 AM

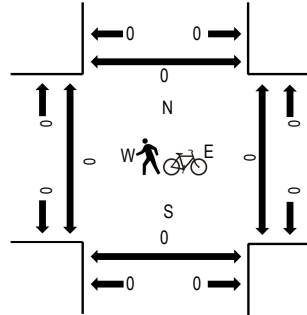
Peak 15-Minutes: 08:00 AM - 08:15 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	WOODMEN FRONTAGE RD Eastbound				WOODMEN FRONTAGE RD Westbound				MOHAWK RD Northbound				MOHAWK 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
7:00 AM	0	0	0	4	0	3	0	1	0	0	4	1	0	0	6	0	19	62	0	0	0	0
7:15 AM	0	0	0	0	0	2	0	0	0	2	1	1	0	0	3	0	9	68	0	0	0	0
7:30 AM	0	0	0	3	0	2	0	0	0	3	5	0	0	0	2	0	15	77	0	0	0	0
7:45 AM	0	0	0	6	0	3	1	0	0	1	5	1	0	0	2	0	19	84	0	0	0	0
8:00 AM	0	0	0	3	0	1	1	0	0	0	13	0	0	0	7	0	25	78	0	0	0	0
8:15 AM	0	0	0	2	0	1	0	1	0	1	8	1	0	0	4	0	18		0	0	0	0
8:30 AM	0	0	0	2	0	3	0	0	1	1	4	0	0	0	11	0	22		0	0	0	0
8:45 AM	0	0	0	1	0	1	0	1	0	1	3	0	0	0	6	0	13		0	0	0	0
Count Total	0	0	0	21	0	16	2	3	1	9	43	4	0	0	41	0	140		0	0	0	0
Peak Hour	0	0	0	13	0	8	2	1	1	3	30	2	0	0	24	0	84		0	0	0	0



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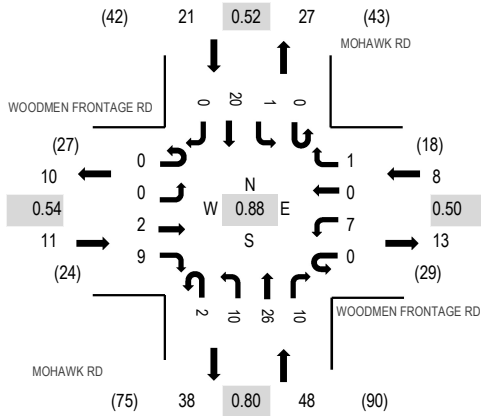
Location: 1 MOHAWK RD & WOODMEN FRONTAGE RD PM

Date: Tuesday, April 2, 2019

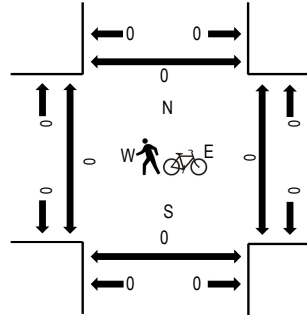
Peak Hour: 05:00 PM - 06:00 PM

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

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	WOODMEN FRONTAGE RD Eastbound				WOODMEN FRONTAGE RD Westbound				MOHAWK RD Northbound				MOHAWK 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	0	0	6	0	3	2	0	0	2	5	2	0	0	1	0	21	86	0	0	0	0
4:15 PM	0	0	0	4	0	0	2	0	0	5	1	4	0	0	11	0	27	80	0	0	0	0
4:30 PM	0	0	1	1	0	0	2	0	0	2	6	6	0	0	4	0	22	78	0	0	0	0
4:45 PM	0	0	0	1	0	1	0	0	0	2	4	3	0	0	5	0	16	81	0	0	0	0
5:00 PM	0	0	0	2	0	3	0	1	0	2	1	3	0	0	3	0	15	88	0	0	0	0
5:15 PM	0	0	0	2	0	2	0	0	1	5	6	3	0	1	5	0	25	0	0	0	0	
5:30 PM	0	0	1	3	0	1	0	0	0	1	11	1	0	0	7	0	25	0	0	0	0	
5:45 PM	0	0	1	2	0	1	0	0	1	2	8	3	0	0	5	0	23	0	0	0	0	
Count Total	0	0	3	21	0	11	6	1	2	21	42	25	0	1	41	0	174	0	0	0	0	
Peak Hour	0	0	2	9	0	7	0	1	2	10	26	10	0	1	20	0	88	0	0	0	0	



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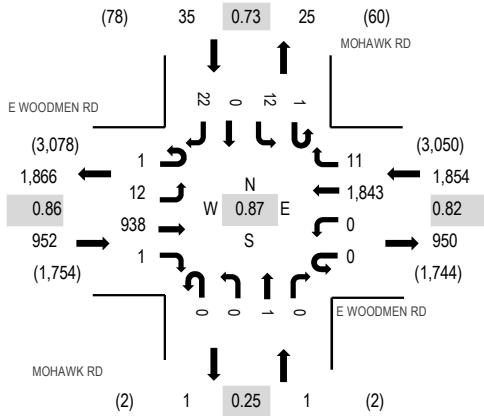
Location: 2 MOHAWK RD & E WOODMEN RD AM

Date: Tuesday, April 2, 2019

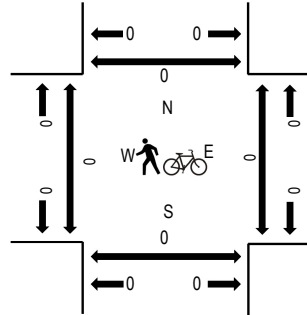
Peak Hour: 07:00 AM - 08:00 AM

Peak 15-Minutes: 07:15 AM - 07:30 AM

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	E WOODMEN RD Eastbound				E WOODMEN RD Westbound				MOHAWK RD Northbound				MOHAWK 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
7:00 AM	0	0	195	1	0	0	464	4	0	0	1	0	0	5	0	7	677	2,842	0	0	0	0
7:15 AM	0	2	237	0	0	0	566	2	0	0	0	0	0	2	0	4	813	2,699	0	0	0	0
7:30 AM	0	7	224	0	0	0	491	1	0	0	0	0	1	0	5	729	2,393	0	0	0	0	0
7:45 AM	1	3	282	0	0	0	322	4	0	0	0	0	1	4	0	6	623	2,235	0	0	0	0
8:00 AM	0	10	223	0	0	0	288	2	0	0	0	0	8	0	3	534	2,042	0	0	0	0	0
8:15 AM	0	9	189	0	0	0	299	2	0	0	0	1	0	0	1	6	507		0	0	0	0
8:30 AM	0	1	197	0	0	0	353	5	0	0	0	0	6	0	9	571		0	0	0	1	0
8:45 AM	0	5	168	0	0	0	246	1	0	0	0	0	2	0	8	430		0	0	0	0	0
Count Total	1	37	1,715	1	0	0	3,029	21	0	0	1	1	1	28	1	48	4,884		0	0	0	1
Peak Hour	1	12	938	1	0	0	1,843	11	0	0	1	0	1	12	0	22	2,842		0	0	0	0



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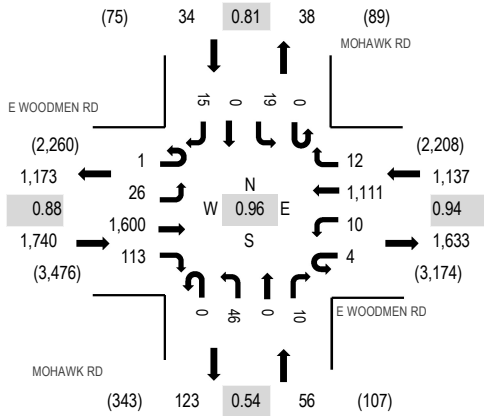
Location: 2 MOHAWK RD & E WOODMEN RD PM

Date: Tuesday, April 2, 2019

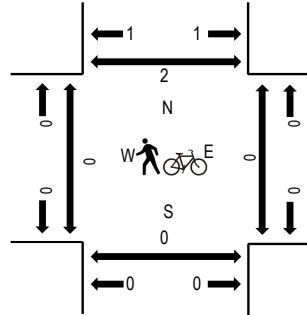
Peak Hour: 04:15 PM - 05:15 PM

Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	E WOODMEN RD Eastbound				E WOODMEN RD Westbound				MOHAWK RD Northbound				MOHAWK 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	3	363	29	0	3	267	6	0	3	0	0	0	0	7	0	3	684	2,943	0	0	0	0
4:15 PM	0	6	343	78	0	4	268	4	0	13	0	4	0	6	0	8	734	2,967	0	0	0	0	
4:30 PM	1	12	397	23	1	3	299	2	0	23	0	3	0	5	0	1	770	2,954	0	0	0	2	
4:45 PM	0	5	471	5	1	0	256	3	0	6	0	2	0	5	0	1	755	2,902	0	0	0	0	
5:00 PM	0	3	389	7	2	3	288	3	0	4	0	1	0	3	0	5	708	2,923	0	0	0	0	
5:15 PM	1	7	391	16	0	2	281	8	0	4	0	1	0	5	0	5	721		0	0	0	0	
5:30 PM	0	8	381	40	0	7	256	5	0	9	0	0	0	3	0	9	718		0	0	0	0	
5:45 PM	1	10	382	104	1	18	214	3	0	28	1	5	0	2	1	6	776		0	0	0	0	
Count Total	3	54	3,117	302	5	40	2,129	34	0	90	1	16	0	36	1	38	5,866		0	0	0	2	
Peak Hour	1	26	1,600	113	4	10	1,111	12	0	46	0	10	0	19	0	15	2,967		0	0	0	2	



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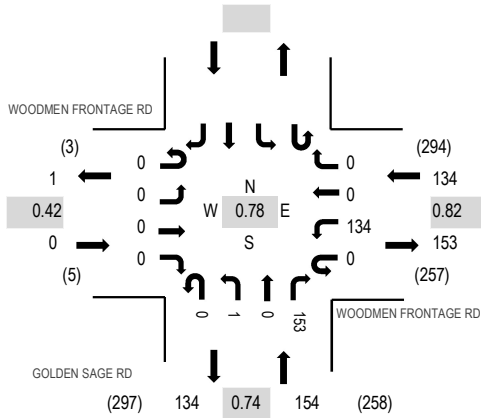
Location: 3 GOLDEN SAGE RD & WOODMEN FRONTAGE RD AM

Date: Tuesday, April 2, 2019

Peak Hour: 08:00 AM - 09:00 AM

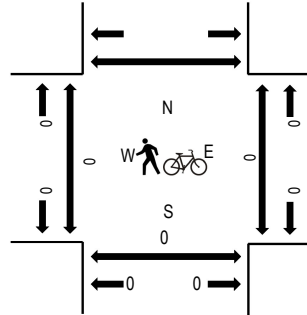
Peak 15-Minutes: 08:30 AM - 08:45 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	WOODMEN FRONTAGE RD				WOODMEN FRONTAGE RD				GOLDEN SAGE 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	0	0	3	0	49	0	0	0	0	0	20	0	0	0	0	72	269	0	0	0	
7:15 AM	0	0	0	0	0	43	1	0	0	0	0	27	0	0	0	0	71	264	0	0	0	
7:30 AM	0	0	1	0	0	32	0	0	0	0	0	30	0	0	0	0	63	257	0	0	0	
7:45 AM	0	0	0	1	0	35	0	0	0	1	0	26	0	0	0	0	63	286	0	0	0	
8:00 AM	0	0	0	0	0	27	0	0	0	0	0	40	0	0	0	0	67	288	0	0	0	
8:15 AM	0	0	0	0	0	33	0	0	0	0	0	31	0	0	0	0	64		0	0	0	
8:30 AM	0	0	0	0	0	40	0	0	0	0	0	52	0	0	0	0	92		0	0	0	
8:45 AM	0	0	0	0	0	34	0	0	0	1	0	30	0	0	0	0	65		0	0	0	
Count Total	0	0	1	4	0	293	1	0	0	2	0	256	0	0	0	0	557		0	0	0	
Peak Hour	0	0	0	0	0	134	0	0	0	1	0	153	0	0	0	0	288		0	0	0	



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Location: 3 GOLDEN SAGE RD & WOODMEN FRONTAGE RD PM

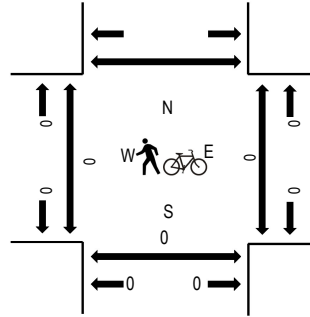
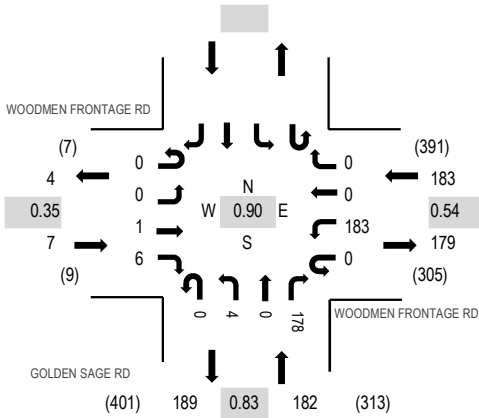
Date: Tuesday, April 2, 2019

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

Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour - All Vehicles

Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	WOODMEN FRONTAGE RD Eastbound				WOODMEN FRONTAGE RD Westbound				GOLDEN SAGE RD Northbound				GOLDEN SAGE 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	0	0	1	0	40	0	0	0	0	2	0	41	0	0			0	0	0	0
4:15 PM	0	0	0	0	0	48	0	0	0	0	0	0	46	0	0	0	0	0	0	0		
4:30 PM	0	0	0	1	0	47	0	0	0	0	2	0	53	103	343	0	0	0	0	0		
4:45 PM	0	0	0	1	0	46	0	0	0	0	2	0	34	83	370	0	0	0	0	0		
5:00 PM	0	0	1	4	0	42	0	0	0	0	0	0	45	92	349	0	0	0	0	0		
5:15 PM	0	0	0	0	0	34	0	0	1	0	0	30	65			0	0	0	0	0		
5:30 PM	0	0	0	0	0	104	0	0	1	0	0	25	130			0	0	0	0	0		
5:45 PM	0	0	0	1	0	30	0	0	0	1	0	30	62			0	0	0	0	0		
Count Total	0	0	1	8	0	391	0	0	2	7	0	304	713			0	0	0	0	0		
Peak Hour	0	0	1	6	0	183	0	0	0	4	0	178	372			0	0	0	0	0		



(303) 216-2439
www.alltrafficdata.net

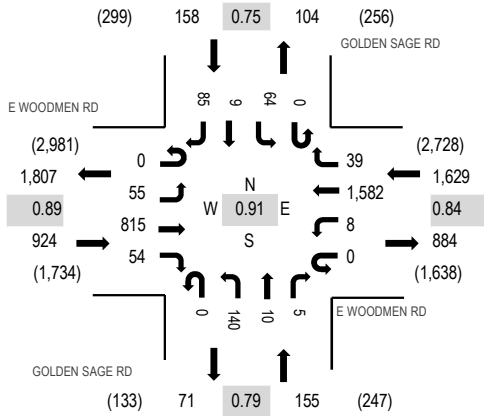
Location: 4 GOLDEN SAGE RD & E WOODMEN RD AM

Date: Tuesday, April 2, 2019

Peak Hour: 07:00 AM - 08:00 AM

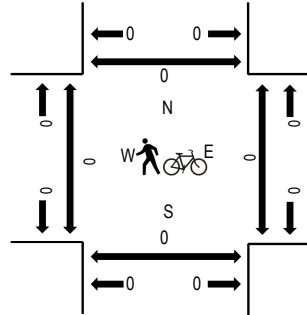
Peak 15-Minutes: 07:15 AM - 07:30 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	E WOODMEN RD Eastbound				E WOODMEN RD Westbound				GOLDEN SAGE RD Northbound				GOLDEN SAGE 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
7:00 AM	0	12	189	8	0	0	419	5	0	33	3	2	0	20	3	30	724	2,866	0	0	0	0
7:15 AM	0	14	184	15	0	4	474	9	0	45	4	0	0	14	4	24	791	2,710	0	0	0	0
7:30 AM	0	9	202	20	0	2	396	17	0	46	3	0	0	16	0	17	728	2,424	0	0	0	0
7:45 AM	0	20	240	11	0	2	293	8	0	16	0	3	0	14	2	14	623	2,307	0	0	0	0
8:00 AM	0	19	220	14	0	4	238	15	0	18	4	2	0	15	3	16	568	2,142	0	0	0	0
8:15 AM	0	18	150	8	0	2	262	11	0	15	4	3	0	11	1	20	505		0	0	0	0
8:30 AM	0	25	160	7	0	4	323	25	0	25	0	2	0	11	5	24	611		0	0	0	0
8:45 AM	0	15	163	11	1	1	199	14	0	15	2	2	0	14	2	19	458		0	0	0	0
Count Total	0	132	1,508	94	1	19	2,604	104	0	213	20	14	0	115	20	164	5,008		0	0	0	0
Peak Hour	0	55	815	54	0	8	1,582	39	0	140	10	5	0	64	9	85	2,866		0	0	0	0



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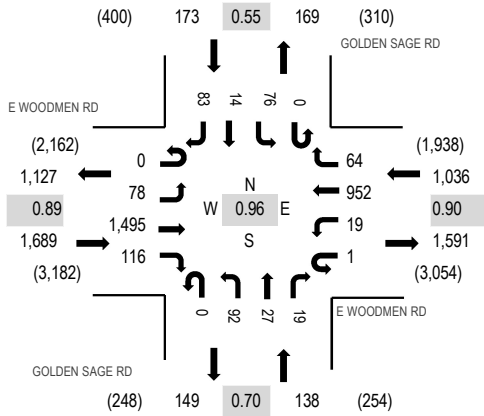
Location: 4 GOLDEN SAGE RD & E WOODMEN RD PM

Date: Tuesday, April 2, 2019

Peak Hour: 04:30 PM - 05:30 PM

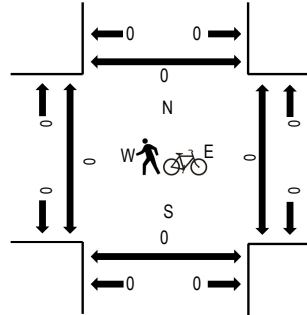
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	E WOODMEN RD Eastbound				E WOODMEN RD Westbound				GOLDEN SAGE RD Northbound				GOLDEN SAGE 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	2	24	318	22	3	5	218	14	0	19	4	8	0	12	3	27	679	2,901	0	0	0	0
4:15 PM	0	24	323	27	0	2	228	17	0	21	4	2	0	17	3	28	696	3,014	0	0	0	0
4:30 PM	0	26	345	31	0	2	231	19	0	23	11	1	0	16	5	27	737	3,036	0	0	0	0
4:45 PM	0	17	428	29	1	8	220	15	0	20	3	2	0	18	7	21	789	3,025	0	0	0	0
5:00 PM	0	19	359	33	0	6	264	19	0	29	8	12	0	20	1	22	792	2,873	0	0	0	0
5:15 PM	0	16	363	23	0	3	237	11	0	20	5	4	0	22	1	13	718		0	0	0	0
5:30 PM	0	8	352	15	0	1	202	9	0	28	5	1	0	59	5	41	726		0	0	0	0
5:45 PM	0	16	349	13	1	1	189	12	0	19	4	1	0	17	2	13	637		0	0	0	0
Count Total	2	150	2,837	193	5	28	1,789	116	0	179	44	31	0	181	27	192	5,774		0	0	0	0
Peak Hour	0	78	1,495	116	1	19	952	64	0	92	27	19	0	76	14	83	3,036		0	0	0	0

Site Code: 5
Station ID:
E WOODMEN RD E.O. MOHAWK RD

Start Time	02-Apr-19 Tue	EB	WB	Total
12:00 AM		87	39	126
01:00		43	18	61
02:00		26	21	47
03:00		27	54	81
04:00		67	155	222
05:00		149	429	578
06:00		534	1203	1737
07:00		940	1797	2737
08:00		799	1197	1996
09:00		666	984	1650
10:00		651	872	1523
11:00		769	825	1594
12:00 PM		864	819	1683
01:00		892	790	1682
02:00		1004	856	1860
03:00		1408	1016	2424
04:00		1577	1106	2683
05:00		1536	1046	2582
06:00		1122	719	1841
07:00		796	420	1216
08:00		560	238	798
09:00		381	157	538
10:00		209	82	291
11:00		107	54	161
Total		15214	14897	30111
Percent		50.5%	49.5%	
AM Peak	-	07:00	07:00	-
Vol.	-	940	1797	-
PM Peak	-	16:00	16:00	-
Vol.	-	1577	1106	-
Grand Total		15214	14897	30111
Percent		50.5%	49.5%	
ADT		ADT 30,111	ADT 30,111	AADT 30,111

Site Code: 6
Station ID:
WOODMEN FRONTAGE RD E/O MOHAWK RD

Start Time	02-Apr-19 Tue	EB	WB	Total
12:00 AM		0	0	0
01:00		0	0	0
02:00		0	0	0
03:00		0	0	0
04:00		0	0	0
05:00		0	0	0
06:00		2	1	3
07:00		2	3	5
08:00		1	1	2
09:00		0	0	0
10:00		3	0	3
11:00		1	3	4
12:00 PM		5	3	8
01:00		1	1	2
02:00		0	0	0
03:00		7	8	15
04:00		1	1	2
05:00		2	0	2
06:00		3	2	5
07:00		0	0	0
08:00		0	0	0
09:00		0	0	0
10:00		0	0	0
11:00		0	0	0
Total		28	23	51
Percent		54.9%	45.1%	
AM Peak		10:00	07:00	
Vol.		3	3	
PM Peak		15:00	15:00	
Vol.		7	8	
Grand Total		28	23	51
Percent		54.9%	45.1%	
ADT		ADT 51	ADT 51	AADT 51

APPENDIX B

Level of Service Definitions

The following information can be found in the Highway Capacity Manual, Transportation Research Board, 2016: Chapter 19 – Signalized Intersections and Chapter 20 – Two-Way Stop Controlled Intersections.

Automobile Level of Service (LOS) for Signalized Intersections

Levels of service are defined to represent reasonable ranges in control delay.

LOS A

Describes operations with a control delay of 10 s/veh or less and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is exceptionally favorable or the cycle length is very short. If it is due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.

LOS B

Describes operations with control delay between 10 and 20 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.

LOS C

Describes operations with control delay between 20 and 35 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when progression is favorable or the cycle length is moderate. Individual *cycle failures* (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.

LOS D

Describes operations with control delay between 35 and 55 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.

LOS E

Describes operations with control delay between 55 and 80 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.

LOS F

Describes operations with control delay exceeding 80 s/veh or a volume-to-capacity ratio greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.

Level of Service (LOS) for Unsignalized TWSC Intersections
























Level of Service (v/c ≤ 1.0)	Average Control Delay (s/veh)
A	0 - 10
B	> 10 - 15
C	> 15 - 25
D	> 25 - 35
E	> 35 - 50
F	> 50

APPENDIX C

Capacity Worksheets

Timings
1: Mohawk Road & Woodmen Road

Existing Traffic Volumes
 AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	976	1	0	1917	11	0	1	0	14	0	23
Future Volume (vph)	14	976	1	0	1917	11	0	1	0	14	0	23
Satd. Flow (prot)	1770	3539	1583	1863	3539	1583	0	1863	1863	1770	1583	0
Flt Permitted	0.950									0.757		
Satd. Flow (perm)	1770	3539	1583	1863	3539	1583	0	1863	1863	1410	1583	0
Satd. Flow (RTOR)			76			76						92
Lane Group Flow (vph)	15	1061	1	0	2084	12	0	1	0	15	25	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm		NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2				6
Permitted Phases			4			8	2		2	6		
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	10.0%	65.0%	65.0%	10.0%	65.0%	65.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	5.0	67.8	67.8		63.8	63.8		22.2		22.2	22.2	
Actuated g/C Ratio	0.05	0.68	0.68		0.64	0.64		0.22		0.22	0.22	
v/c Ratio	0.17	0.44	0.00		0.92	0.01		0.00		0.05	0.06	
Control Delay	50.1	7.9	0.0		15.1	0.0		32.0		33.0	0.3	
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0		0.0	0.0	
Total Delay	50.1	7.9	0.0		15.1	0.0		32.0		33.0	0.3	
LOS	D	A	A		B	A		C		C	A	
Approach Delay		8.5			15.0			32.0			12.5	
Approach LOS		A			B			C			B	
Queue Length 50th (ft)	9	133	0		172	0		1		8	0	
Queue Length 95th (ft)	31	168	0		#844	m0		5		26	0	
Internal Link Dist (ft)		728			9138			407			101	
Turn Bay Length (ft)	465		400			375				35		
Base Capacity (vph)	88	2399	1097		2258	1037		413		313	423	
Starvation Cap Reductn	0	0	0		0	0		0		0	0	
Spillback Cap Reductn	0	0	0		0	0		0		0	0	
Storage Cap Reductn	0	0	0		0	0		0		0	0	
Reduced v/c Ratio	0.17	0.44	0.00		0.92	0.01		0.00		0.05	0.06	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated

Timings

1: Mohawk Road & Woodmen Road

Existing Traffic Volumes
AM Peak Hour

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 12.8

Intersection LOS: B

Intersection Capacity Utilization 68.8%

ICU Level of Service C







Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

























m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Mohawk Road & Woodmen Road

 Ø2 (R)	 Ø3	 Ø4
25 s	10 s	65 s
 Ø5 (R)	 Ø7	 Ø8
25 s	10 s	65 s

Timings
2: Golden Sage Road & Woodmen Road

Existing Traffic Volumes
 AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	848	56	8	1645	41	146	10	5	67	9	88
Future Volume (vph)	57	848	56	8	1645	41	146	10	5	67	9	88
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1609	0
Flt Permitted	0.950			0.950			0.687			0.750		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1280	1863	1583	1397	1609	0
Satd. Flow (RTOR)			76			76			76		96	
Lane Group Flow (vph)	62	922	61	9	1788	45	159	11	5	73	106	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2				6
Permitted Phases			4			8	2		2	6		
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	10.0%	65.0%	65.0%	10.0%	65.0%	65.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	5.0	64.7	64.7	5.0	58.7	58.7	23.3	23.3	23.3	23.3	23.3	23.3
Actuated g/C Ratio	0.05	0.65	0.65	0.05	0.59	0.59	0.23	0.23	0.23	0.23	0.23	0.23
v/c Ratio	0.70	0.40	0.06	0.10	0.86	0.05	0.53	0.03	0.01	0.22	0.24	0.24
Control Delay	96.4	5.2	0.4	48.0	22.5	0.8	43.2	32.6	0.0	35.8	10.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	96.4	5.2	0.4	48.0	22.5	0.8	43.2	32.6	0.0	35.8	10.2	
LOS	F	A	A	D	C	A	D	C	A	D	B	
Approach Delay		10.3			22.1			41.3				20.6
Approach LOS		B			C			D				C
Queue Length 50th (ft)	43	51	0	6	450	0	93	6	0	40	5	
Queue Length 95th (ft)	#113	62	3	22	562	6	164	21	0	81	50	
Internal Link Dist (ft)		9138			747			478				130
Turn Bay Length (ft)	465		395	465		385	100		190			
Base Capacity (vph)	88	2328	1067	88	2123	980	298	434	427	325	448	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.40	0.06	0.10	0.84	0.05	0.53	0.03	0.01	0.22	0.24	

Intersection Summary
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated

Timings

2: Golden Sage Road & Woodmen Road

Existing Traffic Volumes
AM Peak Hour

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 19.2

Intersection LOS: B

Intersection Capacity Utilization 70.5%







ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Golden Sage Road & Woodmen Road

 Ø2 (R)	 Ø3	 Ø4
25 s	10 s	65 s
 Ø5 (R)	 Ø7	 Ø8
25 s	10 s	65 s

HCM 6th TWSC
3: Mohawk Road & Woodmen Frontage Road

Existing Traffic Volumes
AM Peak Hour

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	0	0	14	8	2	1	4	31	2	0	25	0
Future Vol, veh/h	0	0	14	8	2	1	4	31	2	0	25	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	35	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	15	9	2	1	4	34	2	0	27	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	72	71	27	78	70	35	27	0	0	36	0	0
Stage 1	27	27	-	43	43	-	-	-	-	-	-	-
Stage 2	45	44	-	35	27	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	919	819	1048	911	821	1038	1587	-	-	1575	-	-
Stage 1	990	873	-	971	859	-	-	-	-	-	-	-
Stage 2	969	858	-	981	873	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	914	817	1048	896	819	1038	1587	-	-	1575	-	-
Mov Cap-2 Maneuver	914	817	-	896	819	-	-	-	-	-	-	-
Stage 1	987	873	-	968	856	-	-	-	-	-	-	-
Stage 2	963	855	-	967	873	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.5		9.1		0.8		0	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1587	-	-	1048	892	1575	-
HCM Lane V/C Ratio	0.003	-	-	0.015	0.013	-	-
HCM Control Delay (s)	7.3	-	-	8.5	9.1	0	-
HCM Lane LOS	A	-	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-

HCM 6th TWSC
4: Golden Sage Road & Woodmen Frontage Road

Existing Traffic Volumes
AM Peak Hour

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	0	0	139	0	1	159
Future Vol, veh/h	0	0	139	0	1	159
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	16974	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	151	0	1	173
























Major/Minor	Minor2	Major2	
Conflicting Flow All	302	0	0
Stage 1	302	-	-
Stage 2	0	-	-
Critical Hdwy	6.52	6.22	4.12
Critical Hdwy Stg 1	5.52	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	4.018	3.318	2.218
Pot Cap-1 Maneuver	611	-	-
Stage 1	664	-	-
Stage 2	-	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	0	-	-
Mov Cap-2 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-

Approach	EB	WB
HCM Control Delay, s	0	
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	WBL	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	-	-	-

Timings
1: Mohawk Road & Woodmen Road

Existing Traffic Volumes
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	1664	118	15	1155	13	48	0	10	20	0	16
Future Volume (vph)	28	1664	118	15	1155	13	48	0	10	20	0	16
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	0	1770	1583	1770	1583	0
Flt Permitted	0.950			0.950				0.746		0.723		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	0	1390	1583	1347	1583	0
Satd. Flow (RTOR)			128			76			76		146	
Lane Group Flow (vph)	30	1809	128	16	1255	14	0	52	11	22	17	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2				6
Permitted Phases			4			8	2		2	6		
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	10.0%	65.0%	65.0%	10.0%	65.0%	65.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	5.0	58.9	58.9	5.0	56.9	56.9		27.1	27.1	27.1	27.1	27.1
Actuated g/C Ratio	0.05	0.59	0.59	0.05	0.57	0.57		0.27	0.27	0.27	0.27	0.27
v/c Ratio	0.34	0.87	0.13	0.18	0.62	0.02		0.14	0.02	0.06	0.03	
Control Delay	56.7	22.8	1.9	55.4	8.8	0.0		32.2	0.1	31.5	0.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	56.7	22.8	1.9	55.4	8.8	0.0		32.2	0.1	31.5	0.1	
LOS	E	C	A	E	A	A		C	A	C	A	
Approach Delay		21.9			9.3			26.6				17.8
Approach LOS		C			A			C				B
Queue Length 50th (ft)	19	462	0	11	113	0		24	0	10	0	
Queue Length 95th (ft)	49	576	22	m22	136	m0		62	0	33	0	
Internal Link Dist (ft)		728			9138			407				101
Turn Bay Length (ft)	465		400	465		375				35		
Base Capacity (vph)	88	2123	1001	88	2123	980		376	484	364	535	
Starvation Cap Reductn	0	0	0	0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0		0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0		0	0	0	0	
Reduced v/c Ratio	0.34	0.85	0.13	0.18	0.59	0.01		0.14	0.02	0.06	0.03	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated

Timings

1: Mohawk Road & Woodmen Road

Existing Traffic Volumes
PM Peak Hour

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 17.1

Intersection LOS: B







Intersection Capacity Utilization 66.8%

ICU Level of Service C

Analysis Period (min) 15

























m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Mohawk Road & Woodmen Road

 Ø2 (R)	 Ø3	 Ø4
25 s	10 s	65 s
 Ø5 (R)	 Ø7	 Ø8
25 s	10 s	65 s

Timings
2: Golden Sage Road & Woodmen Road

Existing Traffic Volumes
 PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	1555	121	21	990	67	96	28	20	79	15	86
Future Volume (vph)	81	1555	121	21	990	67	96	28	20	79	15	86
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1624	0
Flt Permitted	0.950			0.950			0.687			0.738		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1280	1863	1583	1375	1624	0
Satd. Flow (RTOR)			132			76			76		93	
Lane Group Flow (vph)	88	1690	132	23	1076	73	104	30	22	86	109	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2				6
Permitted Phases			4			8	2		2	6		
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	10.0%	65.0%	65.0%	10.0%	65.0%	65.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	5.0	57.8	57.8	5.0	51.8	51.8	28.2	28.2	28.2	28.2	28.2	28.2
Actuated g/C Ratio	0.05	0.58	0.58	0.05	0.52	0.52	0.28	0.28	0.28	0.28	0.28	0.28
v/c Ratio	1.00	0.83	0.14	0.26	0.59	0.09	0.29	0.06	0.04	0.22	0.21	0.21
Control Delay	128.0	9.8	1.4	53.3	17.7	2.2	34.0	30.9	0.1	32.8	10.6	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	128.0	9.8	1.4	53.3	17.7	2.2	34.0	30.9	0.1	32.8	10.6	10.6
LOS	F	A	A	D	B	A	C	C	A	C	B	B
Approach Delay		14.6			17.4			28.6				20.4
Approach LOS		B			B			C				C
Queue Length 50th (ft)	61	103	0	14	251	0	50	13	0	40	7	7
Queue Length 95th (ft)	m#86	176	m8	40	243	16	111	41	0	93	54	54
Internal Link Dist (ft)		9138			747			478				130
Turn Bay Length (ft)	465		395	465		385	100		190			
Base Capacity (vph)	88	2123	1002	88	2123	980	361	526	501	388	525	525
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.00	0.80	0.13	0.26	0.51	0.07	0.29	0.06	0.04	0.22	0.21	0.21

Intersection Summary
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated

Timings

2: Golden Sage Road & Woodmen Road

Existing Traffic Volumes

PM Peak Hour

Maximum v/c Ratio: 1.00

Intersection Signal Delay: 16.5

Intersection LOS: B

Intersection Capacity Utilization 71.6%

ICU Level of Service C







Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Golden Sage Road & Woodmen Road

 Ø2 (R) 25 s	 Ø3 10 s	 Ø4 65 s
 Ø5 (R) 25 s	 Ø7 10 s	 Ø8 65 s

HCM 2010 TWSC
 3: Mohawk Road & Woodmen Frontage Road

Existing Traffic Volumes
 PM Peak Hour

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	0	2	9	7	0	1	13	27	10	1	21	0
Future Vol, veh/h	0	2	9	7	0	1	13	27	10	1	21	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	35	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	2	10	8	0	1	14	29	11	1	23	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	88	93	23	94	88	35	23	0	0	40	0	0
Stage 1	25	25	-	63	63	-	-	-	-	-	-	-
Stage 2	63	68	-	31	25	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	897	797	1054	889	802	1038	1592	-	-	1570	-	-
Stage 1	993	874	-	948	842	-	-	-	-	-	-	-
Stage 2	948	838	-	986	874	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	889	789	1054	872	794	1038	1592	-	-	1570	-	-
Mov Cap-2 Maneuver	889	789	-	872	794	-	-	-	-	-	-	-
Stage 1	984	873	-	939	834	-	-	-	-	-	-	-
Stage 2	939	830	-	973	873	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.7		9.1		1.9		0.3	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1592	-	-	993	890	1570	-
HCM Lane V/C Ratio	0.009	-	-	0.012	0.01	0.001	-
HCM Control Delay (s)	7.3	-	-	8.7	9.1	7.3	0
HCM Lane LOS	A	-	-	A	A	A	A
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-

HCM 2010 TWSC
4: Golden Sage Road & Woodmen Frontage Road

Existing Traffic Volumes
PM Peak Hour

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	1	6	190	0	4	185
Future Vol, veh/h	1	6	190	0	4	185
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	-	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	7	207	0	4	201
























Major/Minor	Minor2	Major2	
Conflicting Flow All	414	0	0
Stage 1	414	-	-
Stage 2	0	-	-
Critical Hdwy	6.52	6.22	4.12
Critical Hdwy Stg 1	5.52	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	4.018	3.318	2.218
Pot Cap-1 Maneuver	529	-	-
Stage 1	593	-	-
Stage 2	-	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	0	-	-
Mov Cap-2 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-

Approach	EB	WB
HCM Control Delay, s		
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	WBL	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Timings
1: Mohawk Road & Woodmen Road

Background Traffic Volumes
 AM Peak Hour - Year 2026

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	1074	1	0	2109	12	0	1	0	15	0	25
Future Volume (vph)	15	1074	1	0	2109	12	0	1	0	15	0	25
Satd. Flow (prot)	1770	3539	1583	1863	3539	1583	0	1863	1863	1770	1583	0
Flt Permitted	0.950									0.757		
Satd. Flow (perm)	1770	3539	1583	1863	3539	1583	0	1863	1863	1410	1583	0
Satd. Flow (RTOR)			76			76						89
Lane Group Flow (vph)	16	1167	1	0	2292	13	0	1	0	16	27	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm		NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2				6
Permitted Phases			4			8	2		2	6		
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	10.0%	65.0%	65.0%	10.0%	65.0%	65.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	5.0	70.0	70.0		66.0	66.0		20.0		20.0	20.0	
Actuated g/C Ratio	0.05	0.70	0.70		0.66	0.66		0.20		0.20	0.20	
v/c Ratio	0.18	0.47	0.00		0.98	0.01		0.00		0.06	0.07	
Control Delay	50.5	7.5	0.0		22.1	0.0		32.0		33.2	0.4	
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0		0.0	0.0	
Total Delay	50.5	7.5	0.0		22.1	0.0		32.0		33.2	0.4	
LOS	D	A	A		C	A		C		C	A	
Approach Delay		8.0			22.0			32.0			12.6	
Approach LOS		A			C			C			B	
Queue Length 50th (ft)	10	153	0		241	0		1		8	0	
Queue Length 95th (ft)	32	192	0		m#982	m0		5		27	0	
Internal Link Dist (ft)		728			9138			407			101	
Turn Bay Length (ft)	465		400			375				35		
Base Capacity (vph)	88	2477	1130		2335	1070		372		282	387	
Starvation Cap Reductn	0	0	0		0	0		0		0	0	
Spillback Cap Reductn	0	0	0		0	0		0		0	0	
Storage Cap Reductn	0	0	0		0	0		0		0	0	
Reduced v/c Ratio	0.18	0.47	0.00		0.98	0.01		0.00		0.06	0.07	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated

Timings

1: Mohawk Road & Woodmen Road

Background Traffic Volumes

AM Peak Hour - Year 2026

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 17.2

Intersection LOS: B

Intersection Capacity Utilization 74.1%

ICU Level of Service D







Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Mohawk Road & Woodmen Road

 Ø2 (R)	 Ø3	 Ø4
25 s	10 s	65 s
 Ø5 (R)	 Ø7	 Ø8
25 s	10 s	65 s

Timings
2: Golden Sage Road & Woodmen Road

Background Traffic Volumes
 AM Peak Hour - Year 2026

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	933	62	9	1810	45	161	11	6	74	10	97
Future Volume (vph)	63	933	62	9	1810	45	161	11	6	74	10	97
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1609	0
Flt Permitted	0.950			0.950			0.659			0.750		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1228	1863	1583	1397	1609	0
Satd. Flow (RTOR)			76			76			76		95	
Lane Group Flow (vph)	68	1014	67	10	1967	49	175	12	7	80	116	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2				6
Permitted Phases			4			8	2		2	6		
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	10.0%	65.0%	65.0%	10.0%	65.0%	65.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	5.0	65.8	65.8	5.0	59.8	59.8	22.2	22.2	22.2	22.2	22.2	22.2
Actuated g/C Ratio	0.05	0.66	0.66	0.05	0.60	0.60	0.22	0.22	0.22	0.22	0.22	0.22
v/c Ratio	0.77	0.44	0.06	0.11	0.93	0.05	0.64	0.03	0.02	0.26	0.27	0.27
Control Delay	104.4	5.3	0.5	48.3	27.8	1.0	49.2	32.6	0.0	36.5	12.0	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	104.4	5.3	0.5	48.3	27.8	1.0	49.2	32.6	0.0	36.5	12.0	12.0
LOS	F	A	A	D	C	A	D	C	A	D	B	B
Approach Delay		10.9			27.2			46.4				22.0
Approach LOS		B			C			D				C
Queue Length 50th (ft)	47	56	0	6	550	0	105	6	0	44	11	11
Queue Length 95th (ft)	#124	67	3	23	#729	7	#203	22	0	87	58	58
Internal Link Dist (ft)		9138			747			478				130
Turn Bay Length (ft)	465		395	465		385	100		190			
Base Capacity (vph)	88	2335	1070	88	2123	980	272	413	410	310	431	431
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.43	0.06	0.11	0.93	0.05	0.64	0.03	0.02	0.26	0.27	0.27

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated

Timings

2: Golden Sage Road & Woodmen Road

Background Traffic Volumes
AM Peak Hour - Year 2026

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 22.7

Intersection LOS: C

Intersection Capacity Utilization 76.3%







ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Golden Sage Road & Woodmen Road

 Ø2 (R)	 Ø3	 Ø4
25 s	10 s	65 s
 Ø5 (R)	 Ø7	 Ø8
25 s	10 s	65 s

HCM 2010 TWSC
3: Mohawk Road & Woodmen Frontage Road

Background Traffic Volumes
AM Peak Hour - Year 2026

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	0	0	15	9	2	1	4	34	2	0	28	0
Future Vol, veh/h	0	0	15	9	2	1	4	34	2	0	28	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	35	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	16	10	2	1	4	37	2	0	30	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	78	77	30	84	76	38	30	0	0	39	0	0
Stage 1	30	30	-	46	46	-	-	-	-	-	-	-
Stage 2	48	47	-	38	30	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	911	813	1044	903	814	1034	1583	-	-	1571	-	-
Stage 1	987	870	-	968	857	-	-	-	-	-	-	-
Stage 2	965	856	-	977	870	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	906	811	1044	887	812	1034	1583	-	-	1571	-	-
Mov Cap-2 Maneuver	906	811	-	887	812	-	-	-	-	-	-	-
Stage 1	984	870	-	965	854	-	-	-	-	-	-	-
Stage 2	959	853	-	962	870	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.5		9.1		0.7		0	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1583	-	-	1044	884	1571	-	-
HCM Lane V/C Ratio	0.003	-	-	0.016	0.015	-	-	-
HCM Control Delay (s)	7.3	-	-	8.5	9.1	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

HCM 2010 TWSC
 4: Golden Sage Road & Woodmen Frontage Road

Background Traffic Volumes
 AM Peak Hour - Year 2026

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	0	0	153	0	1	175
Future Vol, veh/h	0	0	153	0	1	175
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	-	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	166	0	1	190
























Major/Minor	Minor2	Major2	
Conflicting Flow All	332	0	0
Stage 1	332	-	-
Stage 2	0	-	-
Critical Hdwy	6.52	6.22	4.12
Critical Hdwy Stg 1	5.52	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	4.018	3.318	2.218
Pot Cap-1 Maneuver	588	-	-
Stage 1	644	-	-
Stage 2	-	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	0	-	-
Mov Cap-2 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-

Approach	EB	WB
HCM Control Delay, s	0	
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	WBL	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	-	-	-

Timings
1: Mohawk Road & Woodmen Road

Background Traffic Volumes
 PM Peak Hour - Year 2026

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	1830	130	17	1271	14	53	0	11	22	0	18
Future Volume (vph)	31	1830	130	17	1271	14	53	0	11	22	0	18
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	0	1770	1583	1770	1583	0
Flt Permitted	0.950			0.950				0.744		0.719		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	0	1386	1583	1339	1583	0
Satd. Flow (RTOR)			141			76			76		130	
Lane Group Flow (vph)	34	1989	141	18	1382	15	0	58	12	24	20	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2				6
Permitted Phases			4			8	2		2	6		
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	10.0%	65.0%	65.0%	10.0%	65.0%	65.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	5.0	61.3	61.3	5.0	59.3	59.3		24.7	24.7	24.7	24.7	24.7
Actuated g/C Ratio	0.05	0.61	0.61	0.05	0.59	0.59		0.25	0.25	0.25	0.25	0.25
v/c Ratio	0.39	0.92	0.14	0.20	0.66	0.02		0.17	0.03	0.07	0.04	0.04
Control Delay	58.9	25.6	1.8	54.9	8.2	0.0		33.8	0.1	32.6	0.2	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	58.9	25.6	1.8	54.9	8.2	0.0		33.8	0.1	32.6	0.2	0.2
LOS	E	C	A	D	A	A		C	A	C	A	A
Approach Delay		24.6			8.8			28.1				17.9
Approach LOS		C			A			C				B
Queue Length 50th (ft)	21	435	0	12	86	0		30	0	12	0	0
Queue Length 95th (ft)	54	#789	23	m23	148	m0		68	0	35	0	0
Internal Link Dist (ft)		728			9138			407				101
Turn Bay Length (ft)	465		400	465		375				35		
Base Capacity (vph)	88	2178	1028	88	2123	980		342	448	330	489	
Starvation Cap Reductn	0	0	0	0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.39	0.91	0.14	0.20	0.65	0.02		0.17	0.03	0.07	0.04	0.04

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated

Timings

1: Mohawk Road & Woodmen Road

Background Traffic Volumes

PM Peak Hour - Year 2026

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 18.5

Intersection LOS: B

Intersection Capacity Utilization 71.4%

ICU Level of Service C







Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

























m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Mohawk Road & Woodmen Road

 Ø2 (R) 25 s	 Ø3 10 s	 Ø4 65 s
 Ø5 (R) 25 s	 Ø7 10 s	 Ø8 65 s

Timings
2: Golden Sage Road & Woodmen Road

Background Traffic Volumes
 PM Peak Hour - Year 2026

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	89	1711	133	23	1089	74	106	31	22	87	17	95
Future Volume (vph)	89	1711	133	23	1089	74	106	31	22	87	17	95
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1624	0
Flt Permitted	0.950			0.950			0.666			0.735		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1241	1863	1583	1369	1624	0
Satd. Flow (RTOR)			145			80			76		103	
Lane Group Flow (vph)	97	1860	145	25	1184	80	115	34	24	95	121	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2				6
Permitted Phases			4			8	2		2	6		
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	10.0%	65.0%	65.0%	10.0%	65.0%	65.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	5.0	59.1	59.1	5.0	53.1	53.1	26.9	26.9	26.9	26.9	26.9	26.9
Actuated g/C Ratio	0.05	0.59	0.59	0.05	0.53	0.53	0.27	0.27	0.27	0.27	0.27	0.27
v/c Ratio	1.10	0.89	0.15	0.28	0.63	0.09	0.35	0.07	0.05	0.26	0.24	0.24
Control Delay	146.3	11.9	1.6	54.3	17.8	2.2	35.5	31.0	0.2	33.7	10.5	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	146.3	11.9	1.6	54.3	17.8	2.2	35.5	31.0	0.2	33.7	10.5	10.5
LOS	F	B	A	D	B	A	D	C	A	C	B	B
Approach Delay		17.4			17.6			29.7				20.7
Approach LOS		B			B			C				C
Queue Length 50th (ft)	~73	168	0	16	291	0	56	15	0	45	8	8
Queue Length 95th (ft)	m#92	m191	m7	43	278	18	122	45	0	101	57	57
Internal Link Dist (ft)		9138			747			478				130
Turn Bay Length (ft)	465		395	465		385	100		190			
Base Capacity (vph)	88	2123	1007	88	2123	981	333	500	481	367	511	511
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.10	0.88	0.14	0.28	0.56	0.08	0.35	0.07	0.05	0.26	0.24	0.24

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated

Timings

2: Golden Sage Road & Woodmen Road

Background Traffic Volumes

PM Peak Hour - Year 2026

Maximum v/c Ratio: 1.10

Intersection Signal Delay: 18.2

Intersection LOS: B

Intersection Capacity Utilization 76.5%

ICU Level of Service D

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Golden Sage Road & Woodmen Road

Ø2 (R)	Ø3	Ø4
25 s	10 s	65 s
Ø5 (R)	Ø7	Ø8
25 s	10 s	65 s

HCM 2010 TWSC
3: Mohawk Road & Woodmen Frontage Road

Background Traffic Volumes
PM Peak Hour - Year 2026

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	0	2	10	8	0	1	14	30	11	1	23	0
Future Vol, veh/h	0	2	10	8	0	1	14	30	11	1	23	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	35	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	2	11	9	0	1	15	33	12	1	25	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	97	102	25	103	96	39	25	0	0	45	0	0
Stage 1	27	27	-	69	69	-	-	-	-	-	-	-
Stage 2	70	75	-	34	27	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	885	788	1051	877	794	1033	1589	-	-	1563	-	-
Stage 1	990	873	-	941	837	-	-	-	-	-	-	-
Stage 2	940	833	-	982	873	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	877	780	1051	859	786	1033	1589	-	-	1563	-	-
Mov Cap-2 Maneuver	877	780	-	859	786	-	-	-	-	-	-	-
Stage 1	981	872	-	933	829	-	-	-	-	-	-	-
Stage 2	930	826	-	968	872	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.7		9.2		1.9		0.3	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1589	-	-	993	875	1563	-	-
HCM Lane V/C Ratio	0.01	-	-	0.013	0.011	0.001	-	-
HCM Control Delay (s)	7.3	-	-	8.7	9.2	7.3	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

HCM 2010 TWSC
 4: Golden Sage Road & Woodmen Frontage Road

Background Traffic Volumes
 PM Peak Hour - Year 2026

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	1	7	209	0	4	204
Future Vol, veh/h	1	7	209	0	4	204
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	-	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	8	227	0	4	222
























Major/Minor	Minor2	Major2	
Conflicting Flow All	454	0	0
Stage 1	454	-	-
Stage 2	0	-	-
Critical Hdwy	6.52	6.22	4.12
Critical Hdwy Stg 1	5.52	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	4.018	3.318	2.218
Pot Cap-1 Maneuver	502	-	-
Stage 1	569	-	-
Stage 2	-	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	0	-	-
Mov Cap-2 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-

Approach	EB	WB
HCM Control Delay, s		
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	WBL	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Timings
1: Mohawk Road & Woodmen Road

Background Traffic Volumes
 AM Peak Hour - Year 2041

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	1464	2	0	2876	17	0	2	0	21	0	35
Future Volume (vph)	21	1464	2	0	2876	17	0	2	0	21	0	35
Satd. Flow (prot)	1770	3539	1583	1863	3539	1583	0	1863	1863	1770	1583	0
Flt Permitted	0.950									0.757		
Satd. Flow (perm)	1770	3539	1583	1863	3539	1583	0	1863	1863	1410	1583	0
Satd. Flow (RTOR)			64			64						66
Lane Group Flow (vph)	23	1591	2	0	3126	18	0	2	0	23	38	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm		NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2				6
Permitted Phases			4			8	2		2	6		
Detector Phase	7	4	4	3	8	8	2	2	2	6		6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (s)	10.0	85.0	85.0	10.0	85.0	85.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	8.3%	70.8%	70.8%	8.3%	70.8%	70.8%	20.8%	20.8%	20.8%	20.8%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	5.0	90.0	90.0		84.0	84.0		20.0		20.0		20.0
Actuated g/C Ratio	0.04	0.75	0.75		0.70	0.70		0.17		0.17		0.17
v/c Ratio	0.32	0.60	0.00		1.26	0.02		0.01		0.10		0.12
Control Delay	67.4	8.0	0.0		133.3	0.0		42.0		43.8		4.0
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0		0.0		0.0
Total Delay	67.4	8.0	0.0		133.3	0.0		42.0		43.8		4.0
LOS	E	A	A		F	A		D		D		A
Approach Delay		8.8			132.6			42.0				19.0
Approach LOS		A			F			D				B
Queue Length 50th (ft)	18	253	0		~1700	0		1		15		0
Queue Length 95th (ft)	46	306	0		m#1285	m0		9		40		13
Internal Link Dist (ft)		728			9138			407				101
Turn Bay Length (ft)	465		400			375				35		
Base Capacity (vph)	73	2654	1203		2477	1127		310		235		318
Starvation Cap Reductn	0	0	0		0	0		0		0		0
Spillback Cap Reductn	0	0	0		0	0		0		0		0
Storage Cap Reductn	0	0	0		0	0		0		0		0
Reduced v/c Ratio	0.32	0.60	0.00		1.26	0.02		0.01		0.10		0.12

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated

Timings

1: Mohawk Road & Woodmen Road

Background Traffic Volumes

AM Peak Hour - Year 2041

Maximum v/c Ratio: 1.26

Intersection Signal Delay: 89.6

Intersection LOS: F

Intersection Capacity Utilization 95.7%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.







Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

























m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Mohawk Road & Woodmen Road

 Ø2 (R)	 Ø3	 Ø4
25 s	10 s	85 s
 Ø5 (R)	 Ø7	 Ø8
25 s	10 s	85 s

Timings
2: Golden Sage Road & Woodmen Road

Background Traffic Volumes
 AM Peak Hour - Year 2041

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	1272	84	12	2468	62	219	15	8	101	14	132
Future Volume (vph)	86	1272	84	12	2468	62	219	15	8	101	14	132
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1609	0
Flt Permitted	0.950			0.950			0.515			0.747		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	959	1863	1583	1391	1609	0
Satd. Flow (RTOR)			91			64			64		70	
Lane Group Flow (vph)	93	1383	91	13	2683	67	238	16	9	110	158	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2				6
Permitted Phases			4			8	2		2	6		
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (s)	10.0	81.0	81.0	10.0	81.0	81.0	29.0	29.0	29.0	29.0	29.0	29.0
Total Split (%)	8.3%	67.5%	67.5%	8.3%	67.5%	67.5%	24.2%	24.2%	24.2%	24.2%	24.2%	24.2%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	5.0	82.0	82.0	5.0	76.0	76.0	24.0	24.0	24.0	24.0	24.0	24.0
Actuated g/C Ratio	0.04	0.68	0.68	0.04	0.63	0.63	0.20	0.20	0.20	0.20	0.20	0.20
v/c Ratio	1.27	0.57	0.08	0.18	1.20	0.07	1.25	0.04	0.02	0.40	0.42	0.42
Control Delay	233.6	8.2	1.7	61.2	117.0	2.4	187.3	39.3	0.1	46.7	26.8	26.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	233.6	8.2	1.7	61.2	117.0	2.4	187.3	39.3	0.1	46.7	26.8	26.8
LOS	F	A	A	E	F	A	F	D	A	D	C	C
Approach Delay		21.2			113.9			171.9				34.9
Approach LOS		C			F			F				C
Queue Length 50th (ft)	~88	282	3	10	~1325	1	~229	10	0	75	58	58
Queue Length 95th (ft)	m#189	442	m21	32	#1454	17	#392	30	0	133	125	125
Internal Link Dist (ft)		9138			747			478				130
Turn Bay Length (ft)	465		395	465		385	100		190			
Base Capacity (vph)	73	2418	1110	73	2241	1026	191	372	367	278	377	377
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.27	0.57	0.08	0.18	1.20	0.07	1.25	0.04	0.02	0.40	0.42	0.42

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated

Timings

2: Golden Sage Road & Woodmen Road

Background Traffic Volumes

AM Peak Hour - Year 2041

Maximum v/c Ratio: 1.27

Intersection Signal Delay: 82.8

Intersection LOS: F

Intersection Capacity Utilization 105.0%

ICU Level of Service G

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.







Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Golden Sage Road & Woodmen Road

 Ø2 (R)	 Ø3	 Ø4
29 s	10 s	81 s
 Ø5 (R)	 Ø7	 Ø8
29 s	10 s	81 s

HCM 2010 TWSC
 3: Mohawk Road & Woodmen Frontage Road

Background Traffic Volumes
 AM Peak Hour - Year 2041

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕	↕		↕		
Traffic Vol, veh/h	0	0	21	12	3	2	6	47	3	0	38	0
Future Vol, veh/h	0	0	21	12	3	2	6	47	3	0	38	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	35	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	23	13	3	2	7	51	3	0	41	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	110	109	41	120	108	53	41	0	0	54	0	0
Stage 1	41	41	-	67	67	-	-	-	-	-	-	-
Stage 2	69	68	-	53	41	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	868	781	1030	855	782	1014	1568	-	-	1551	-	-
Stage 1	974	861	-	943	839	-	-	-	-	-	-	-
Stage 2	941	838	-	960	861	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	860	778	1030	834	779	1014	1568	-	-	1551	-	-
Mov Cap-2 Maneuver	860	778	-	834	779	-	-	-	-	-	-	-
Stage 1	970	861	-	939	836	-	-	-	-	-	-	-
Stage 2	931	835	-	939	861	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.6		9.4		0.8		0	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1568	-	-	1030	841	1551	-
HCM Lane V/C Ratio	0.004	-	-	0.022	0.022	-	-
HCM Control Delay (s)	7.3	-	-	8.6	9.4	0	-
HCM Lane LOS	A	-	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-

HCM 2010 TWSC
4: Golden Sage Road & Woodmen Frontage Road

Background Traffic Volumes
AM Peak Hour - Year 2041

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	0	0	209	0	2	239
Future Vol, veh/h	0	0	209	0	2	239
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	-	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	227	0	2	260

























Major/Minor	Minor2	Major2	
Conflicting Flow All	454	0	0
Stage 1	454	-	-
Stage 2	0	-	-
Critical Hdwy	6.52	6.22	4.12
Critical Hdwy Stg 1	5.52	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	4.018	3.318	2.218
Pot Cap-1 Maneuver	502	-	-
Stage 1	569	-	-
Stage 2	-	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	0	-	-
Mov Cap-2 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-

Approach	EB	WB
HCM Control Delay, s	0	
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	WBL	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	-	-	-

Timings
1: Mohawk Road & Woodmen Road

Background Traffic Volumes
 PM Peak Hour - Year 2041

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	2496	177	23	1733	20	72	0	15	30	0	24
Future Volume (vph)	42	2496	177	23	1733	20	72	0	15	30	0	24
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	0	1770	1583	1770	1583	0
Flt Permitted	0.950			0.950				0.740		0.706		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	0	1378	1583	1315	1583	0
Satd. Flow (RTOR)			192			64			64		85	
Lane Group Flow (vph)	46	2713	192	25	1884	22	0	78	16	33	26	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2				6
Permitted Phases			4			8	2		2	6		
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (s)	13.0	85.0	85.0	10.0	82.0	82.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	10.8%	70.8%	70.8%	8.3%	68.3%	68.3%	20.8%	20.8%	20.8%	20.8%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	7.3	84.0	84.0	5.0	79.8	79.8		20.0	20.0	20.0	20.0	20.0
Actuated g/C Ratio	0.06	0.70	0.70	0.04	0.66	0.66		0.17	0.17	0.17	0.17	0.17
v/c Ratio	0.43	1.10	0.16	0.34	0.80	0.02		0.34	0.05	0.15	0.08	
Control Delay	66.2	70.0	1.3	77.9	10.1	0.0		49.0	0.3	44.9	0.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	66.2	70.0	1.3	77.9	10.1	0.0		49.0	0.3	44.9	0.5	
LOS	E	E	A	E	B	A		D	A	D	A	
Approach Delay		65.5			10.9			40.7				25.3
Approach LOS		E			B			D				C
Queue Length 50th (ft)	35	~1300	0	21	649	0		54	0	22	0	
Queue Length 95th (ft)	75	#1428	23	m28	m194	m0		103	0	53	0	
Internal Link Dist (ft)		728			9138			407				101
Turn Bay Length (ft)	465		400	465		375				35		
Base Capacity (vph)	118	2477	1165	73	2352	1073		229	317	219	334	
Starvation Cap Reductn	0	0	0	0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0		0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0		0	0	0	0	
Reduced v/c Ratio	0.39	1.10	0.16	0.34	0.80	0.02		0.34	0.05	0.15	0.08	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated

Timings

1: Mohawk Road & Woodmen Road

Background Traffic Volumes

PM Peak Hour - Year 2041

Maximum v/c Ratio: 1.10

Intersection Signal Delay: 43.6

Intersection LOS: D

Intersection Capacity Utilization 89.8%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.







Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Mohawk Road & Woodmen Road

 Ø2 (R)	 Ø3	 Ø4
25 s	10 s	85 s
 Ø5 (R)	 Ø7	 Ø8
25 s	13 s	82 s

Timings
2: Golden Sage Road & Woodmen Road

Background Traffic Volumes
 PM Peak Hour - Year 2041

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	122	2333	182	32	1485	101	144	42	30	119	23	129
Future Volume (vph)	122	2333	182	32	1485	101	144	42	30	119	23	129
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1626	0
Flt Permitted	0.950			0.950			0.461			0.727		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	859	1863	1583	1354	1626	0
Satd. Flow (RTOR)			198			110			109		140	
Lane Group Flow (vph)	133	2536	198	35	1614	110	157	46	33	129	165	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2				6
Permitted Phases			4			8	2		2	6		
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (s)	21.0	85.0	85.0	10.0	74.0	74.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	17.5%	70.8%	70.8%	8.3%	61.7%	61.7%	20.8%	20.8%	20.8%	20.8%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	13.5	84.0	84.0	5.0	71.5	71.5	20.0	20.0	20.0	20.0	20.0	20.0
Actuated g/C Ratio	0.11	0.70	0.70	0.04	0.60	0.60	0.17	0.17	0.17	0.17	0.17	0.17
v/c Ratio	0.67	1.02	0.17	0.48	0.77	0.11	1.10	0.15	0.09	0.57	0.43	0.43
Control Delay	65.2	22.7	0.1	77.7	21.6	2.4	150.8	44.3	0.5	57.2	14.2	14.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.2	22.7	0.1	77.7	21.6	2.4	150.8	44.3	0.5	57.2	14.2	14.2
LOS	E	C	A	E	C	A	F	D	A	E	B	B
Approach Delay		23.1			21.5			109.0				33.1
Approach LOS		C			C			F				C
Queue Length 50th (ft)	98	~1185	0	27	470	0	~138	31	0	93	17	17
Queue Length 95th (ft)	m90	m585	m0	#68	587	24	#276	66	0	160	81	81
Internal Link Dist (ft)		9138			747			478				130
Turn Bay Length (ft)	465		395	465		385	100		190			
Base Capacity (vph)	236	2477	1167	73	2109	987	143	310	354	225	387	387
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	1.02	0.17	0.48	0.77	0.11	1.10	0.15	0.09	0.57	0.43	0.43

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated

Timings

2: Golden Sage Road & Woodmen Road

Background Traffic Volumes

PM Peak Hour - Year 2041

Maximum v/c Ratio: 1.10

Intersection Signal Delay: 27.1

Intersection LOS: C

Intersection Capacity Utilization 102.5%

ICU Level of Service G

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.







Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Golden Sage Road & Woodmen Road

 Ø2 (R)	 Ø3	 Ø4
25 s	10 s	85 s
 Ø5 (R)	 Ø7	 Ø8
25 s	21 s	74 s

HCM 2010 TWSC
 3: Mohawk Road & Woodmen Frontage Road

Background Traffic Volumes
 PM Peak Hour - Year 2041

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	0	3	14	11	0	2	20	41	15	2	32	0
Future Vol, veh/h	0	3	14	11	0	2	20	41	15	2	32	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	35	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	3	15	12	0	2	22	45	16	2	35	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	137	144	35	145	136	53	35	0	0	61	0	0
Stage 1	39	39	-	97	97	-	-	-	-	-	-	-
Stage 2	98	105	-	48	39	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	834	747	1038	824	755	1014	1576	-	-	1542	-	-
Stage 1	976	862	-	910	815	-	-	-	-	-	-	-
Stage 2	908	808	-	965	862	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	822	736	1038	800	744	1014	1576	-	-	1542	-	-
Mov Cap-2 Maneuver	822	736	-	800	744	-	-	-	-	-	-	-
Stage 1	962	861	-	897	804	-	-	-	-	-	-	-
Stage 2	893	797	-	946	861	-	-	-	-	-	-	-

Approach	EB		WB		NB			SB		
HCM Control Delay, s	8.8		9.4		1.9			0.4		
HCM LOS	A		A							

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1576	-	-	968	827	1542	-	-
HCM Lane V/C Ratio	0.014	-	-	0.019	0.017	0.001	-	-
HCM Control Delay (s)	7.3	-	-	8.8	9.4	7.3	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

HCM 2010 TWSC
4: Golden Sage Road & Woodmen Frontage Road

Background Traffic Volumes
PM Peak Hour - Year 2041

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	2	9	285	0	6	278
Future Vol, veh/h	2	9	285	0	6	278
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	-	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	10	310	0	7	302
























Major/Minor	Minor2	Major2	
Conflicting Flow All	620	0	0
Stage 1	620	-	-
Stage 2	0	-	-
Critical Hdwy	6.52	6.22	4.12
Critical Hdwy Stg 1	5.52	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	4.018	3.318	2.218
Pot Cap-1 Maneuver	404	-	-
Stage 1	480	-	-
Stage 2	-	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	0	-	-
Mov Cap-2 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-

Approach	EB	WB
HCM Control Delay, s		
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	WBL	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Timings
1: Mohawk Road & Woodmen Road

Total Traffic Volumes
 AM Peak Hour - Year 2026

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	1133	1	0	2199	28	0	1	0	39	0	55
Future Volume (vph)	35	1133	1	0	2199	28	0	1	0	39	0	55
Satd. Flow (prot)	1770	3539	1583	1863	3539	1583	0	1863	1863	1770	1583	0
Flt Permitted	0.950									0.757		
Satd. Flow (perm)	1770	3539	1583	1863	3539	1583	0	1863	1863	1410	1583	0
Satd. Flow (RTOR)			76			76						88
Lane Group Flow (vph)	38	1232	1	0	2390	30	0	1	0	42	60	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm		NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2				6
Permitted Phases			4			8	2		2	6		
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	10.0%	65.0%	65.0%	10.0%	65.0%	65.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	5.0	70.0	70.0		64.0	64.0		20.0		20.0	20.0	
Actuated g/C Ratio	0.05	0.70	0.70		0.64	0.64		0.20		0.20	0.20	
v/c Ratio	0.43	0.50	0.00		1.06	0.03		0.00		0.15	0.16	
Control Delay	61.4	7.7	0.0		48.6	2.5		32.0		34.7	4.3	
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0		0.0	0.0	
Total Delay	61.4	7.7	0.0		48.6	2.5		32.0		34.7	4.3	
LOS	E	A	A		D	A		C		C	A	
Approach Delay		9.3			48.1			32.0			16.8	
Approach LOS		A			D			C			B	
Queue Length 50th (ft)	24	165	0		-918	0		1		22	0	
Queue Length 95th (ft)	#58	208	0		m#800	m0		5		52	18	
Internal Link Dist (ft)		728			3022			407			101	
Turn Bay Length (ft)	465		400			375				35		
Base Capacity (vph)	88	2477	1130		2265	1040		372		282	387	
Starvation Cap Reductn	0	0	0		0	0		0		0	0	
Spillback Cap Reductn	0	0	0		0	0		0		0	0	
Storage Cap Reductn	0	0	0		0	0		0		0	0	
Reduced v/c Ratio	0.43	0.50	0.00		1.06	0.03		0.00		0.15	0.16	

Intersection Summary
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated

Timings

1: Mohawk Road & Woodmen Road

Total Traffic Volumes

AM Peak Hour - Year 2026

Maximum v/c Ratio: 1.06

Intersection Signal Delay: 34.3

Intersection LOS: C

Intersection Capacity Utilization 77.9%

ICU Level of Service D

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.







Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

























m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Mohawk Road & Woodmen Road

 Ø2 (R)	 Ø3	 Ø4
25 s	10 s	65 s
 Ø5 (R)	 Ø7	 Ø8
25 s	10 s	65 s

Timings
2: Golden Sage Road & Woodmen Road

Total Traffic Volumes
AM Peak Hour - Year 2026

























												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	963	66	17	1830	57	167	11	18	92	10	115
Future Volume (vph)	75	963	66	17	1830	57	167	11	18	92	10	115
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1606	0
Flt Permitted	0.950			0.950			0.601			0.750		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1120	1863	1583	1397	1606	0
Satd. Flow (RTOR)			76			76			76		95	
Lane Group Flow (vph)	82	1047	72	18	1989	62	182	12	20	100	136	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2				6
Permitted Phases			4			8	2		2	6		
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	10.0%	65.0%	65.0%	10.0%	65.0%	65.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	5.0	65.8	65.8	5.0	59.8	59.8	20.2	20.2	20.2	20.2	20.2	20.2
Actuated g/C Ratio	0.05	0.66	0.66	0.05	0.60	0.60	0.20	0.20	0.20	0.20	0.20	0.20
v/c Ratio	0.93	0.45	0.07	0.20	0.94	0.06	0.81	0.03	0.05	0.36	0.34	
Control Delay	120.7	15.3	5.7	51.2	28.9	1.6	65.6	32.6	0.3	38.7	15.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	120.7	15.3	5.7	51.2	28.9	1.6	65.6	32.6	0.3	38.7	15.1	
LOS	F	B	A	D	C	A	E	C	A	D	B	
Approach Delay		22.0			28.3			57.7			25.1	
Approach LOS		C			C			E			C	
Queue Length 50th (ft)	57	186	12	11	565	0	112	6	0	55	22	
Queue Length 95th (ft)	m#131	445	m26	34	#789	12	#230	22	0	106	74	
Internal Link Dist (ft)		6036			747			478			130	
Turn Bay Length (ft)	465		395	465		385	100		190			
Base Capacity (vph)	88	2330	1068	88	2123	980	226	375	379	281	399	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.45	0.07	0.20	0.94	0.06	0.81	0.03	0.05	0.36	0.34	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated

Timings
3: Banning Lewis Parkway & Woodmen Road

Total Traffic Volumes
 AM Peak Hour - Year 2026

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	1102	50	24	2084	4	60	130	26	6	120	30
Future Volume (vph)	20	1102	50	24	2084	4	60	130	26	6	120	30
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.068			0.166			0.568			0.663		
Satd. Flow (perm)	127	3539	1583	309	3539	1583	1058	3539	1583	1235	3539	1583
Satd. Flow (RTOR)			115			115			115			115
Lane Group Flow (vph)	22	1198	54	26	2265	4	65	141	28	7	130	33
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	9.5	58.0	58.0	9.5	58.0	58.0	9.5	23.0	23.0	9.5	23.0	23.0
Total Split (%)	9.5%	58.0%	58.0%	9.5%	58.0%	58.0%	9.5%	23.0%	23.0%	9.5%	23.0%	23.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	61.2	59.2	59.2	61.2	59.2	59.2	27.1	26.1	26.1	24.4	20.4	20.4
Actuated g/C Ratio	0.61	0.59	0.59	0.61	0.59	0.59	0.27	0.26	0.26	0.24	0.20	0.20
v/c Ratio	0.14	0.57	0.05	0.10	1.08	0.00	0.20	0.15	0.06	0.02	0.18	0.08
Control Delay	8.9	13.0	0.1	3.2	59.7	0.0	28.9	30.1	0.2	26.5	34.8	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.9	13.0	0.1	3.2	59.7	0.0	28.9	30.1	0.2	26.5	34.8	0.4
LOS	A	B	A	A	E	A	C	C	A	C	C	A
Approach Delay		12.4			58.9			26.2			27.8	
Approach LOS		B			E			C			C	
Queue Length 50th (ft)	5	195	0	3	-824	0	31	35	0	3	37	0
Queue Length 95th (ft)	m10	247	m0	m3	m#1060	m0	65	68	0	14	64	0
Internal Link Dist (ft)		3022			6036			482			110	
Turn Bay Length (ft)	200		200	200		200	200		200	200		200
Base Capacity (vph)	160	2095	983	261	2095	983	322	923	498	327	721	414
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.57	0.05	0.10	1.08	0.00	0.20	0.15	0.06	0.02	0.18	0.08

Intersection Summary
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 130
 Control Type: Actuated-Coordinated

Timings

3: Banning Lewis Parkway & Woodmen Road

Total Traffic Volumes

AM Peak Hour - Year 2026

Maximum v/c Ratio: 1.08

Intersection Signal Delay: 40.7

Intersection LOS: D

Intersection Capacity Utilization 77.2%

ICU Level of Service D

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.









Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Banning Lewis Parkway & Woodmen Road

 Ø1	 Ø2 (R)	 Ø3	 Ø4
9.5 s	23 s	9.5 s	58 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
9.5 s	23 s	9.5 s	58 s

HCM 2010 TWSC
 4: Mohawk Road & Woodmen Frontage Road

Total Traffic Volumes
 AM Peak Hour - Year 2026

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕	↕			↕	
Traffic Vol, veh/h	0	0	15	63	2	1	4	34	38	0	28	0
Future Vol, veh/h	0	0	15	63	2	1	4	34	38	0	28	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	35	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	16	68	2	1	4	37	41	0	30	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	97	116	30	104	96	58	30	0	0	78	0	0
Stage 1	30	30	-	66	66	-	-	-	-	-	-	-
Stage 2	67	86	-	38	30	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	885	774	1044	876	794	1008	1583	-	-	1520	-	-
Stage 1	987	870	-	945	840	-	-	-	-	-	-	-
Stage 2	943	824	-	977	870	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	881	772	1044	860	792	1008	1583	-	-	1520	-	-
Mov Cap-2 Maneuver	881	772	-	860	792	-	-	-	-	-	-	-
Stage 1	984	870	-	942	837	-	-	-	-	-	-	-
Stage 2	937	822	-	962	870	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.5		9.6		0.4		0	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1583	-	-	1044	860	1520	-
HCM Lane V/C Ratio	0.003	-	-	0.016	0.083	-	-
HCM Control Delay (s)	7.3	-	-	8.5	9.6	0	-
HCM Lane LOS	A	-	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.3	0	-

HCM 2010 TWSC
5: Golden Sage Road & Woodmen Frontage Road

Total Traffic Volumes
AM Peak Hour - Year 2026

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	0	36	153	0	25	175
Future Vol, veh/h	0	36	153	0	25	175
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	-	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	39	166	0	27	190

Major/Minor	Minor2	Major2	
Conflicting Flow All	332	0	0
Stage 1	332	-	-
Stage 2	0	-	-
Critical Hdwy	6.52	6.22	4.12
Critical Hdwy Stg 1	5.52	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	4.018	3.318	2.218
Pot Cap-1 Maneuver	588	-	-
Stage 1	644	-	-
Stage 2	-	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	0	-	-
Mov Cap-2 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-

Approach	EB	WB
HCM Control Delay, s		
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	WBL	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Timings
1: Mohawk Road & Woodmen Road

Total Traffic Volumes
 PM Peak Hour - Year 2026

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	2055	130	17	1457	74	53	0	11	72	0	80
Future Volume (vph)	106	2055	130	17	1457	74	53	0	11	72	0	80
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	0	1770	1583	1770	1583	0
Flt Permitted	0.950			0.950				0.701		0.719		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	0	1306	1583	1339	1583	0
Satd. Flow (RTOR)			141			80			76		112	
Lane Group Flow (vph)	115	2234	141	18	1584	80	0	58	12	78	87	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2				6
Permitted Phases			4			8	2		2	6		
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	10.0%	65.0%	65.0%	10.0%	65.0%	65.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	5.0	66.0	66.0	5.0	60.0	60.0		20.0	20.0	20.0	20.0	20.0
Actuated g/C Ratio	0.05	0.66	0.66	0.05	0.60	0.60		0.20	0.20	0.20	0.20	0.20
v/c Ratio	1.31	0.96	0.13	0.20	0.75	0.08		0.22	0.03	0.29	0.21	0.21
Control Delay	238.1	28.5	1.8	51.2	17.3	2.2		36.2	0.2	37.5	5.1	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	238.1	28.5	1.8	51.2	17.3	2.2		36.2	0.2	37.5	5.1	5.1
LOS	F	C	A	D	B	A		D	A	D	A	A
Approach Delay		36.7			16.9			30.0				20.4
Approach LOS		D			B			C				C
Queue Length 50th (ft)	~94	532	0	11	356	0		31	0	43	0	0
Queue Length 95th (ft)	#206	#961	23	34	445	18		68	0	86	26	26
Internal Link Dist (ft)		728			2631			407				101
Turn Bay Length (ft)	465		400	465		375				35		
Base Capacity (vph)	88	2335	1092	88	2123	981		261	377	267	406	406
Starvation Cap Reductn	0	0	0	0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0	0	0	0
Reduced v/c Ratio	1.31	0.96	0.13	0.20	0.75	0.08		0.22	0.03	0.29	0.21	0.21

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated

Timings

1: Mohawk Road & Woodmen Road

Total Traffic Volumes

PM Peak Hour - Year 2026

Maximum v/c Ratio: 1.31

Intersection Signal Delay: 28.4

Intersection LOS: C

Intersection Capacity Utilization 84.1%

ICU Level of Service E

Analysis Period (min) 15







~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

























Queue shown is maximum after two cycles.

Splits and Phases: 1: Mohawk Road & Woodmen Road

 Ø2 (R)	 Ø3	 Ø4
25 s	10 s	65 s
 Ø5 (R)	 Ø7	 Ø8
25 s	10 s	65 s

Timings
2: Golden Sage Road & Woodmen Road

Total Traffic Volumes
 PM Peak Hour - Year 2026

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	134	1773	145	53	1164	119	118	31	47	124	17	132
Future Volume (vph)	134	1773	145	53	1164	119	118	31	47	124	17	132
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1615	0
Flt Permitted	0.950			0.950			0.572			0.735		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1065	1863	1583	1369	1615	0
Satd. Flow (RTOR)			158			129			76		143	
Lane Group Flow (vph)	146	1927	158	58	1265	129	128	34	51	135	161	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2				6
Permitted Phases			4			8	2		2	6		
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	10.0%	65.0%	65.0%	10.0%	65.0%	65.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	5.0	59.6	59.6	5.0	57.6	57.6	22.4	22.4	22.4	22.4	22.4	22.4
Actuated g/C Ratio	0.05	0.60	0.60	0.05	0.58	0.58	0.22	0.22	0.22	0.22	0.22	0.22
v/c Ratio	1.66	0.91	0.16	0.66	0.62	0.13	0.54	0.08	0.12	0.44	0.34	0.34
Control Delay	373.3	26.1	1.8	80.9	15.3	1.9	45.5	33.4	4.4	40.3	10.1	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	373.3	26.1	1.8	80.9	15.3	1.9	45.5	33.4	4.4	40.3	10.1	10.1
LOS	F	C	A	F	B	A	D	C	A	D	B	B
Approach Delay		47.1			16.7			33.7				23.9
Approach LOS		D			B			C				C
Queue Length 50th (ft)	~136	526	0	37	244	0	75	18	0	77	9	9
Queue Length 95th (ft)	#260	#662	24	#101	306	22	#142	45	17	138	63	63
Internal Link Dist (ft)		6427			747			478				130
Turn Bay Length (ft)	465		395	465		385	100		190			
Base Capacity (vph)	88	2123	1013	88	2123	1001	238	416	413	306	472	472
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.66	0.91	0.16	0.66	0.60	0.13	0.54	0.08	0.12	0.44	0.34	0.34

Intersection Summary
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated

Timings

2: Golden Sage Road & Woodmen Road

Total Traffic Volumes
PM Peak Hour - Year 2026

Maximum v/c Ratio: 1.66

Intersection Signal Delay: 34.3

Intersection LOS: C

Intersection Capacity Utilization 85.4%

ICU Level of Service E

Analysis Period (min) 15







~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

























Queue shown is maximum after two cycles.

Splits and Phases: 2: Golden Sage Road & Woodmen Road

 Ø2 (R)	 Ø3	 Ø4
25 s	10 s	65 s
 Ø5 (R)	 Ø7	 Ø8
25 s	10 s	65 s

Timings
3: Banning Lewis Parkway & Woodmen Road

Total Traffic Volumes
PM Peak Hour - Year 2026

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	1906	157	70	1329	15	144	336	67	12	349	62
Future Volume (vph)	75	1906	157	70	1329	15	144	336	67	12	349	62
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.105			0.055			0.236			0.465		
Satd. Flow (perm)	196	3539	1583	102	3539	1583	440	3539	1583	866	3539	1583
Satd. Flow (RTOR)			108			95			95			95
Lane Group Flow (vph)	82	2072	171	76	1445	16	157	365	73	13	379	67
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	10.2	77.4	77.4	9.5	76.7	76.7	9.6	23.6	23.6	9.5	23.5	23.5
Total Split (%)	8.5%	64.5%	64.5%	7.9%	63.9%	63.9%	8.0%	19.7%	19.7%	7.9%	19.6%	19.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	77.5	72.9	72.9	76.3	72.3	72.3	28.7	26.7	26.7	24.4	19.3	19.3
Actuated g/C Ratio	0.65	0.61	0.61	0.64	0.60	0.60	0.24	0.22	0.22	0.20	0.16	0.16
v/c Ratio	0.41	0.96	0.17	0.57	0.68	0.02	0.88	0.46	0.17	0.06	0.67	0.20
Control Delay	12.6	35.5	4.4	30.0	18.1	0.0	84.5	44.5	5.8	36.0	53.8	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.6	35.5	4.4	30.0	18.1	0.0	84.5	44.5	5.8	36.0	53.8	5.1
LOS	B	D	A	C	B	A	F	D	A	D	D	A
Approach Delay		32.4			18.5			50.3			46.2	
Approach LOS		C			B			D			D	
Queue Length 50th (ft)	19	751	19	17	373	0	102	126	0	8	147	0
Queue Length 95th (ft)	36	#983	48	#66	450	0	#216	194	27	25	201	22
Internal Link Dist (ft)		2631			6427			408			109	
Turn Bay Length (ft)	200		200	200		200	200		200	200		200
Base Capacity (vph)	201	2149	1004	134	2133	992	179	787	425	214	569	334
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.96	0.17	0.57	0.68	0.02	0.88	0.46	0.17	0.06	0.67	0.20

Intersection Summary









Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated

Timings
3: Banning Lewis Parkway & Woodmen Road

Total Traffic Volumes
 PM Peak Hour - Year 2026

Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 31.5
 Intersection Capacity Utilization 89.5%
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Banning Lewis Parkway & Woodmen Road

 Ø1	 Ø2 (R)	 Ø3	 Ø4
9.5 s	23.6 s	9.5 s	77.4 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
9.6 s	23.5 s	10.2 s	76.7 s

HCM 2010 TWSC
4: Mohawk Road & Woodmen Frontage Road

Total Traffic Volumes
PM Peak Hour - Year 2026

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	0	2	10	120	0	1	14	30	146	1	23	0
Future Vol, veh/h	0	2	10	120	0	1	14	30	146	1	23	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	35	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	2	11	130	0	1	15	33	159	1	25	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	170	249	25	177	170	113	25	0	0	192	0	0
Stage 1	27	27	-	143	143	-	-	-	-	-	-	-
Stage 2	143	222	-	34	27	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	794	654	1051	785	723	940	1589	-	-	1381	-	-
Stage 1	990	873	-	860	779	-	-	-	-	-	-	-
Stage 2	860	720	-	982	873	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	787	647	1051	769	716	940	1589	-	-	1381	-	-
Mov Cap-2 Maneuver	787	647	-	769	716	-	-	-	-	-	-	-
Stage 1	981	872	-	852	772	-	-	-	-	-	-	-
Stage 2	851	714	-	968	872	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.8		10.6		0.5		0.3	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1589	-	-	952	770	1381	-
HCM Lane V/C Ratio	0.01	-	-	0.014	0.171	0.001	-
HCM Control Delay (s)	7.3	-	-	8.8	10.6	7.6	0
HCM Lane LOS	A	-	-	A	B	A	A
HCM 95th %tile Q(veh)	0	-	-	0	0.6	0	-

HCM 2010 TWSC
5: Golden Sage Road & Woodmen Frontage Road

Total Traffic Volumes
PM Peak Hour - Year 2026

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔		↔
Traffic Vol, veh/h	1	81	209	0	94	204
Future Vol, veh/h	1	81	209	0	94	204
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	-	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	88	227	0	102	222
























Major/Minor	Minor2	Major2	
Conflicting Flow All	454	0	0
Stage 1	454	-	-
Stage 2	0	-	-
Critical Hdwy	6.52	6.22	4.12
Critical Hdwy Stg 1	5.52	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	4.018	3.318	2.218
Pot Cap-1 Maneuver	502	-	-
Stage 1	569	-	-
Stage 2	-	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	0	-	-
Mov Cap-2 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-

Approach	EB	WB
HCM Control Delay, s		
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	WBL	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Timings
1: Mohawk Road & Woodmen Road

Total Traffic Volumes
AM Peak Hour - Year 2041

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	1656	2	0	3163	68	0	2	0	98	0	131
Future Volume (vph)	85	1656	2	0	3163	68	0	2	0	98	0	131
Satd. Flow (prot)	1770	3539	1583	1863	3539	1583	0	1863	1863	1770	1583	0
Flt Permitted	0.950									0.757		
Satd. Flow (perm)	1770	3539	1583	1863	3539	1583	0	1863	1863	1410	1583	0
Satd. Flow (RTOR)			64			64					65	
Lane Group Flow (vph)	92	1800	2	0	3438	74	0	2	0	107	142	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm		NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2				6
Permitted Phases			4			8	2		2	6		
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (s)	10.0	85.0	85.0	10.0	85.0	85.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	8.3%	70.8%	70.8%	8.3%	70.8%	70.8%	20.8%	20.8%	20.8%	20.8%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	10.7	95.7	95.7		80.0	80.0		14.3		14.3	14.3	
Actuated g/C Ratio	0.09	0.80	0.80		0.67	0.67		0.12		0.12	0.12	
v/c Ratio	0.59	0.64	0.00		1.46	0.07		0.01		0.64	0.58	
Control Delay	69.7	6.8	0.0		234.9	5.7		43.0		66.6	36.0	
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0		0.0	0.0	
Total Delay	69.7	6.8	0.0		234.9	5.7		43.0		66.6	36.0	
LOS	E	A	A		F	A		D		E	D	
Approach Delay		9.8			230.0			43.0			49.1	
Approach LOS		A			F			D			D	
Queue Length 50th (ft)	70	246	0		~1906	12		1		80	56	
Queue Length 95th (ft)	#198	387	0		m#1092	m5		9		135	118	
Internal Link Dist (ft)		728			3022			407			101	
Turn Bay Length (ft)	465		400			375				35		
Base Capacity (vph)	157	2822	1275		2359	1076		310		235	318	
Starvation Cap Reductn	0	0	0		0	0		0		0	0	
Spillback Cap Reductn	0	0	0		0	0		0		0	0	
Storage Cap Reductn	0	0	0		0	0		0		0	0	
Reduced v/c Ratio	0.59	0.64	0.00		1.46	0.07		0.01		0.46	0.45	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated

Timings

1: Mohawk Road & Woodmen Road

Total Traffic Volumes

AM Peak Hour - Year 2041

Maximum v/c Ratio: 1.46

Intersection Signal Delay: 148.3

Intersection LOS: F

Intersection Capacity Utilization 107.9%

ICU Level of Service G

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.



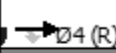


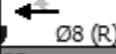
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

























m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Mohawk Road & Woodmen Road

 Ø2 25 s	 Ø3 10 s	 Ø4 (R) 85 s
 Ø6 25 s	 Ø7 10 s	 Ø8 (R) 85 s

Timings 2: Golden Sage Road & Woodmen Road

Total Traffic Volumes
AM Peak Hour - Year 2041

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	1368	97	38	2532	100	238	15	46	158	14	189
Future Volume (vph)	124	1368	97	38	2532	100	238	15	46	158	14	189
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1602	0
Flt Permitted	0.950			0.950			0.428			0.747		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	797	1863	1583	1391	1602	0
Satd. Flow (RTOR)			105			95			64		86	
Lane Group Flow (vph)	135	1487	105	41	2752	109	259	16	50	172	220	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2				6
Permitted Phases			4			8	2		2	6		
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (s)	11.0	77.0	77.0	12.0	78.0	78.0	31.0	31.0	31.0	31.0	31.0	31.0
Total Split (%)	9.2%	64.2%	64.2%	10.0%	65.0%	65.0%	25.8%	25.8%	25.8%	25.8%	25.8%	25.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	6.0	74.4	74.4	6.7	73.0	73.0	26.0	26.0	26.0	26.0	26.0	26.0
Actuated g/C Ratio	0.05	0.62	0.62	0.06	0.61	0.61	0.22	0.22	0.22	0.22	0.22	0.22
v/c Ratio	1.53	0.68	0.10	0.41	1.28	0.11	1.51	0.04	0.13	0.57	0.53	
Control Delay	320.2	8.5	0.6	67.5	153.8	2.8	289.5	37.7	7.0	50.6	30.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	320.2	8.5	0.6	67.5	153.8	2.8	289.5	37.7	7.0	50.6	30.2	
LOS	F	A	A	E	F	A	F	D	A	D	C	
Approach Delay		32.4			146.9			233.6				39.1
Approach LOS		C			F			F				D
Queue Length 50th (ft)	~144	420	3	31	~1421	4	~278	10	0	120	91	
Queue Length 95th (ft)	m#217	355	m4	70	#1549	27	#448	30	24	196	173	
Internal Link Dist (ft)		6036			747			478				130
Turn Bay Length (ft)	465		395	465		385	100		190			
Base Capacity (vph)	88	2194	1021	103	2152	1000	172	403	393	301	414	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.53	0.68	0.10	0.40	1.28	0.11	1.51	0.04	0.13	0.57	0.53	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated

Timings

2: Golden Sage Road & Woodmen Road

Total Traffic Volumes
AM Peak Hour - Year 2041

Maximum v/c Ratio: 1.53

Intersection Signal Delay: 107.3 Intersection LOS: F

Intersection Capacity Utilization 119.1% ICU Level of Service H

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.



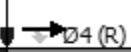


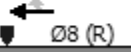
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

























m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Golden Sage Road & Woodmen Road

		
31 s	12 s	77 s
		
31 s	11 s	78 s

Timings
3: Banning Lewis Parkway & Woodmen Road

Total Traffic Volumes
AM Peak Hour - Year 2041

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	1531	159	76	2870	13	191	415	83	19	383	96
Future Volume (vph)	64	1531	159	76	2870	13	191	415	83	19	383	96
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.054			0.068			0.187			0.318		
Satd. Flow (perm)	101	3539	1583	127	3539	1583	348	3539	1583	592	3539	1583
Satd. Flow (RTOR)			129			95			95			95
Lane Group Flow (vph)	70	1664	173	83	3120	14	208	451	90	21	416	104
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	9.5	75.0	75.0	10.5	76.0	76.0	11.0	25.0	25.0	9.5	23.5	23.5
Total Split (%)	7.9%	62.5%	62.5%	8.8%	63.3%	63.3%	9.2%	20.8%	20.8%	7.9%	19.6%	19.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)	78.0	73.7	73.7	79.2	74.3	74.3	27.6	25.0	25.0	22.8	17.8	17.8
Actuated g/C Ratio	0.65	0.61	0.61	0.66	0.62	0.62	0.23	0.21	0.21	0.19	0.15	0.15
v/c Ratio	0.49	0.77	0.17	0.50	1.42	0.01	1.32	0.61	0.22	0.13	0.80	0.33
Control Delay	32.5	16.6	1.2	14.9	217.0	0.0	219.2	47.9	9.2	36.4	61.2	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.5	16.6	1.2	14.9	217.0	0.0	219.2	47.9	9.2	36.4	61.2	13.7
LOS	C	B	A	B	F	A	F	D	A	D	E	B
Approach Delay		15.8			210.8			90.8			51.1	
Approach LOS		B			F			F			D	
Queue Length 50th (ft)	10	523	8	29	~1750	0	~147	158	0	12	163	6
Queue Length 95th (ft)	m43	624	7	m24	m#1188	m0	#314	236	43	34	221	56
Internal Link Dist (ft)		3022			6036			482			110	
Turn Bay Length (ft)	200		200	200		200	200		200	200		200
Base Capacity (vph)	143	2173	1022	168	2191	1016	157	736	404	161	560	330
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.77	0.17	0.49	1.42	0.01	1.32	0.61	0.22	0.13	0.74	0.32

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated

HCM 2010 TWSC
4: Mohawk Road & Woodmen Frontage Road

Total Traffic Volumes
AM Peak Hour - Year 2041

Intersection												
Int Delay, s/veh	5.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	0	0	21	184	3	2	6	47	118	0	38	0
Future Vol, veh/h	0	0	21	184	3	2	6	47	118	0	38	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	35	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	23	200	3	2	7	51	128	0	41	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	173	234	41	182	170	115	41	0	0	179	0	0
Stage 1	41	41	-	129	129	-	-	-	-	-	-	-
Stage 2	132	193	-	53	41	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	790	666	1030	779	723	937	1568	-	-	1397	-	-
Stage 1	974	861	-	875	789	-	-	-	-	-	-	-
Stage 2	871	741	-	960	861	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	783	663	1030	760	720	937	1568	-	-	1397	-	-
Mov Cap-2 Maneuver	783	663	-	760	720	-	-	-	-	-	-	-
Stage 1	970	861	-	872	786	-	-	-	-	-	-	-
Stage 2	862	738	-	939	861	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.6		11.5		0.3		0	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1568	-	-	1030	761	1397	-
HCM Lane V/C Ratio	0.004	-	-	0.022	0.27	-	-
HCM Control Delay (s)	7.3	-	-	8.6	11.5	0	-
HCM Lane LOS	A	-	-	A	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	1.1	0	-

HCM 2010 TWSC
5: Golden Sage Road & Woodmen Frontage Road

Total Traffic Volumes
AM Peak Hour - Year 2041

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	0	115	209	0	79	239
Future Vol, veh/h	0	115	209	0	79	239
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	-	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	125	227	0	86	260

























Major/Minor	Minor2	Major2	
Conflicting Flow All	454	0	0
Stage 1	454	-	-
Stage 2	0	-	-
Critical Hdwy	6.52	6.22	4.12
Critical Hdwy Stg 1	5.52	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	4.018	3.318	2.218
Pot Cap-1 Maneuver	502	-	-
Stage 1	569	-	-
Stage 2	-	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	0	-	-
Mov Cap-2 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-

Approach	EB	WB
HCM Control Delay, s		
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	WBL	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Timings
1: Mohawk Road & Woodmen Road

Total Traffic Volumes
 PM Peak Hour - Year 2041

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	178	2903	177	23	2040	128	72	0	15	112	0	126
Future Volume (vph)	178	2903	177	23	2040	128	72	0	15	112	0	126
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	0	1770	1583	1770	1583	0
Flt Permitted	0.950			0.950				0.516		0.706		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	0	961	1583	1315	1583	0
Satd. Flow (RTOR)			177			139			109		115	
Lane Group Flow (vph)	193	3155	192	25	2217	139	0	78	16	122	137	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2				6
Permitted Phases			4			8	2		2	6		
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (s)	18.0	85.0	85.0	10.0	77.0	77.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	15.0%	70.8%	70.8%	8.3%	64.2%	64.2%	20.8%	20.8%	20.8%	20.8%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	16.4	87.7	87.7	5.9	72.9	72.9		15.7	15.7	15.7	15.7	
Actuated g/C Ratio	0.14	0.73	0.73	0.05	0.61	0.61		0.13	0.13	0.13	0.13	
v/c Ratio	0.80	1.22	0.16	0.29	1.03	0.14		0.62	0.05	0.71	0.45	
Control Delay	75.5	122.2	1.6	57.1	58.3	7.1		69.7	0.3	71.4	16.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	75.5	122.2	1.6	57.1	58.3	7.1		69.7	0.3	71.4	16.5	
LOS	E	F	A	E	E	A		E	A	E	B	
Approach Delay		113.1			55.3			57.9			42.4	
Approach LOS		F			E			E			D	
Queue Length 50th (ft)	147	~1656	3	17	~1000	25		58	0	91	15	
Queue Length 95th (ft)	#306	#1794	27	m18	m904	m22		109	0	154	73	
Internal Link Dist (ft)		728			2631			407			101	
Turn Bay Length (ft)	465		400	465		375				35		
Base Capacity (vph)	241	2586	1204	87	2151	1016		160	354	219	359	
Starvation Cap Reductn	0	0	0	0	0	0		0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0		0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0		0	0	0	0	
Reduced v/c Ratio	0.80	1.22	0.16	0.29	1.03	0.14		0.49	0.05	0.56	0.38	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated

Timings

1: Mohawk Road & Woodmen Road

Total Traffic Volumes

PM Peak Hour - Year 2041

Maximum v/c Ratio: 1.22

Intersection Signal Delay: 87.4

Intersection LOS: F

Intersection Capacity Utilization 113.0%

ICU Level of Service H

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.



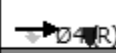


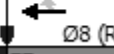
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

























m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Mohawk Road & Woodmen Road

		
25 s	10 s	85 s
		
25 s	18 s	77 s

Timings
2: Golden Sage Road & Woodmen Road

Total Traffic Volumes
PM Peak Hour - Year 2041

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	203	2435	209	86	1621	182	165	42	71	180	23	190
Future Volume (vph)	203	2435	209	86	1621	182	165	42	71	180	23	190
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1613	0
Flt Permitted	0.950			0.950			0.392			0.727		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	730	1863	1583	1354	1613	0
Satd. Flow (RTOR)			219			198			109		170	
Lane Group Flow (vph)	221	2647	227	93	1762	198	179	46	77	196	232	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2				6
Permitted Phases			4			8	2		2	6		
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	65.0	65.0	10.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (s)	21.0	80.0	80.0	10.0	69.0	69.0	30.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	17.5%	66.7%	66.7%	8.3%	57.5%	57.5%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	16.0	75.0	75.0	5.0	64.0	64.0	25.0	25.0	25.0	25.0	25.0	25.0
Actuated g/C Ratio	0.13	0.62	0.62	0.04	0.53	0.53	0.21	0.21	0.21	0.21	0.21	0.21
v/c Ratio	0.94	1.20	0.21	1.27	0.93	0.21	1.18	0.12	0.19	0.70	0.49	
Control Delay	80.5	102.0	0.0	241.2	36.6	2.5	171.0	39.7	4.0	58.2	16.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	80.5	102.0	0.0	241.2	36.6	2.5	171.0	39.7	4.0	58.2	16.3	
LOS	F	F	A	F	D	A	F	D	A	E	B	
Approach Delay		93.0			42.6			108.4				35.5
Approach LOS		F			D			F				D
Queue Length 50th (ft)	184	~1299	0	~90	641	0	~166	29	0	142	40	
Queue Length 95th (ft)	m138	m32	m0	#202	#833	35	#313	63	20	#240	117	
Internal Link Dist (ft)		6427			747			478				130
Turn Bay Length (ft)	465		395	465		385	100		190			
Base Capacity (vph)	236	2211	1071	73	1887	936	152	388	416	282	470	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	1.20	0.21	1.27	0.93	0.21	1.18	0.12	0.19	0.70	0.49	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated

Timings

2: Golden Sage Road & Woodmen Road

Total Traffic Volumes
PM Peak Hour - Year 2041

Maximum v/c Ratio: 1.27

Intersection Signal Delay: 72.0

Intersection LOS: E

Intersection Capacity Utilization 110.8%

ICU Level of Service H

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.



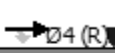


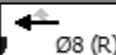
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

























m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Golden Sage Road & Woodmen Road

		
30 s	10 s	80 s
		
30 s	21 s	69 s

Timings
3: Banning Lewis Parkway & Woodmen Road

Total Traffic Volumes
PM Peak Hour - Year 2041

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	136	2616	278	122	1827	27	245	578	115	21	612	102
Future Volume (vph)	136	2616	278	122	1827	27	245	578	115	21	612	102
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.060			0.061			0.151			0.210		
Satd. Flow (perm)	112	3539	1583	114	3539	1583	281	3539	1583	391	3539	1583
Satd. Flow (RTOR)			122			95			124			95
Lane Group Flow (vph)	148	2843	302	133	1986	29	266	628	125	23	665	111
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	10.8	71.0	71.0	9.5	69.7	69.7	13.0	30.0	30.0	9.5	26.5	26.5
Total Split (%)	9.0%	59.2%	59.2%	7.9%	58.1%	58.1%	10.8%	25.0%	25.0%	7.9%	22.1%	22.1%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)	72.8	66.5	66.5	70.2	65.2	65.2	34.4	29.3	29.3	27.0	22.0	22.0
Actuated g/C Ratio	0.61	0.55	0.55	0.58	0.54	0.54	0.29	0.24	0.24	0.22	0.18	0.18
v/c Ratio	0.96	1.45	0.32	0.99	1.03	0.03	1.43	0.73	0.26	0.16	1.03	0.30
Control Delay	49.9	222.4	1.6	77.3	56.4	0.6	252.3	48.3	8.4	33.4	90.4	13.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.9	222.4	1.6	77.3	56.4	0.6	252.3	48.3	8.4	33.4	90.4	13.6
LOS	D	F	A	E	E	A	F	D	A	C	F	B
Approach Delay		194.4			57.0			96.7			78.1	
Approach LOS		F			E			F			E	
Queue Length 50th (ft)	61	~1576	16	78	~851	0	~229	246	1	13	~288	10
Queue Length 95th (ft)	m44	m#1162	m9	m#96	m#944	m0	#406	#333	51	34	#409	61
Internal Link Dist (ft)		2631			6427			408			109	
Turn Bay Length (ft)	200		200	200		200	200		200	200		200
Base Capacity (vph)	154	1961	931	135	1922	903	186	864	480	145	648	367
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	1.45	0.32	0.99	1.03	0.03	1.43	0.73	0.26	0.16	1.03	0.30

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated

Timings

3: Banning Lewis Parkway & Woodmen Road

Total Traffic Volumes
PM Peak Hour - Year 2041

Maximum v/c Ratio: 1.45

Intersection Signal Delay: 127.2

Intersection LOS: F

Intersection Capacity Utilization 124.6%

ICU Level of Service H

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.









Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Banning Lewis Parkway & Woodmen Road

 Ø1	 Ø2 (R)	 Ø3	 Ø4
9.5 s	30 s	9.5 s	71 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
13 s	26.5 s	10.8 s	69.7 s

HCM 2010 TWSC
4: Mohawk Road & Woodmen Frontage Road

Total Traffic Volumes
PM Peak Hour - Year 2041

Intersection												
Int Delay, s/veh	5.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	0	3	14	195	0	2	20	41	259	2	32	0
Future Vol, veh/h	0	3	14	195	0	2	20	41	259	2	32	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	35	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	3	15	212	0	2	22	45	282	2	35	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	270	410	35	278	269	186	35	0	0	327	0	0
Stage 1	39	39	-	230	230	-	-	-	-	-	-	-
Stage 2	231	371	-	48	39	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	683	531	1038	674	637	856	1576	-	-	1233	-	-
Stage 1	976	862	-	773	714	-	-	-	-	-	-	-
Stage 2	772	620	-	965	862	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	673	523	1038	653	627	856	1576	-	-	1233	-	-
Mov Cap-2 Maneuver	673	523	-	653	627	-	-	-	-	-	-	-
Stage 1	962	860	-	762	704	-	-	-	-	-	-	-
Stage 2	759	611	-	945	860	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.2		13.1		0.5		0.5	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1576	-	-	884	655	1233	-
HCM Lane V/C Ratio	0.014	-	-	0.021	0.327	0.002	-
HCM Control Delay (s)	7.3	-	-	9.2	13.1	7.9	0
HCM Lane LOS	A	-	-	A	B	A	A
HCM 95th %tile Q(veh)	0	-	-	0.1	1.4	0	-

HCM 2010 TWSC
5: Golden Sage Road & Woodmen Frontage Road

Total Traffic Volumes
PM Peak Hour - Year 2041

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	2	132	285	0	169	278
Future Vol, veh/h	2	132	285	0	169	278
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	-	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	143	310	0	184	302

Major/Minor	Minor2	Major2	
Conflicting Flow All	620	0	0
Stage 1	620	-	-
Stage 2	0	-	-
Critical Hdwy	6.52	6.22	4.12
Critical Hdwy Stg 1	5.52	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	4.018	3.318	2.218
Pot Cap-1 Maneuver	404	-	-
Stage 1	480	-	-
Stage 2	-	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	0	-	-
Mov Cap-2 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-

Approach	EB	WB
HCM Control Delay, s		
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	WBL	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-