

MASTER TRAFFIC IMPACT STUDY

For

**Banning Lewis Ranch North
Colorado Springs, Colorado**

June 2019

Prepared for:

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I. Introduction

Project Overview

This traffic impact study addresses the capacity, geometric, and control requirements associated with the development entitled Banning Lewis Ranch North.

This proposed mixed-use development consists primarily of residential development of varying density with commercial 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

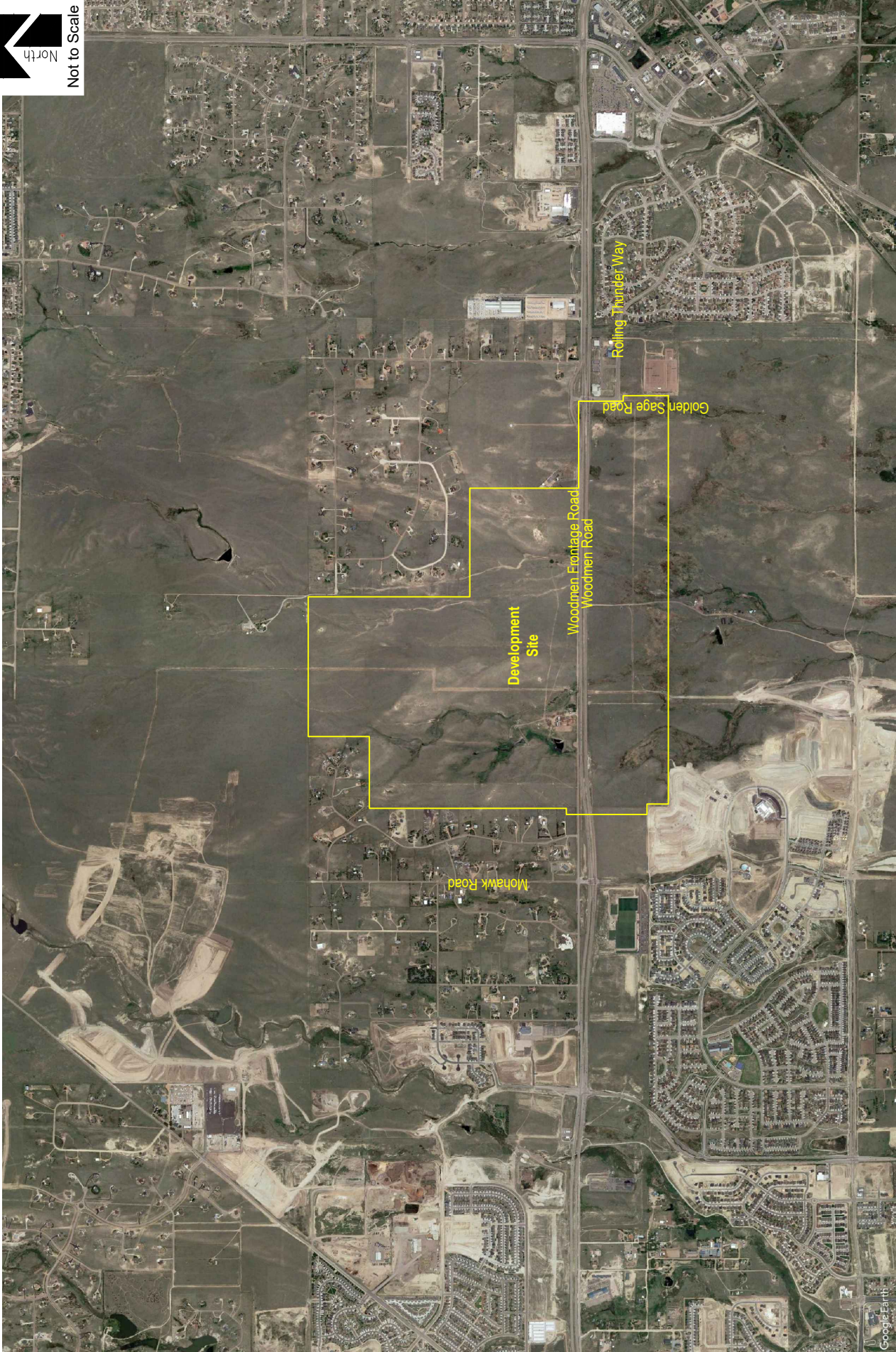
The proposed development is understood to entail the new construction of numerous residential lots consisting of both single-family detached housing and multi-family townhome housing types with a potential maximum of 2,800 dwelling units (approximately 1,745 single family and 1,055 multi-family), as well as the construction of an elementary school of approximately 105,000 square-feet, a high school of approximately 87,000 square feet, approximately 319,000 square-feet of commercial and retail development, and public park sites totaling in approximately 34 acres.

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

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. Specific details regarding precise access locations internal to the site are not known at this time.

For purposes of this study, it is anticipated that development construction would likely be phased with total build-out occurring by end of Year 2039. Specific phasing details are not known at this time, however, in general it is estimated that within a five-year period approximately 1,042 residential dwelling units, 292,000 square-feet of commercial development, and 28 acres of park land will be built. Impacts from this initial phasing is examined under short-term Year 2024 conditions.

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





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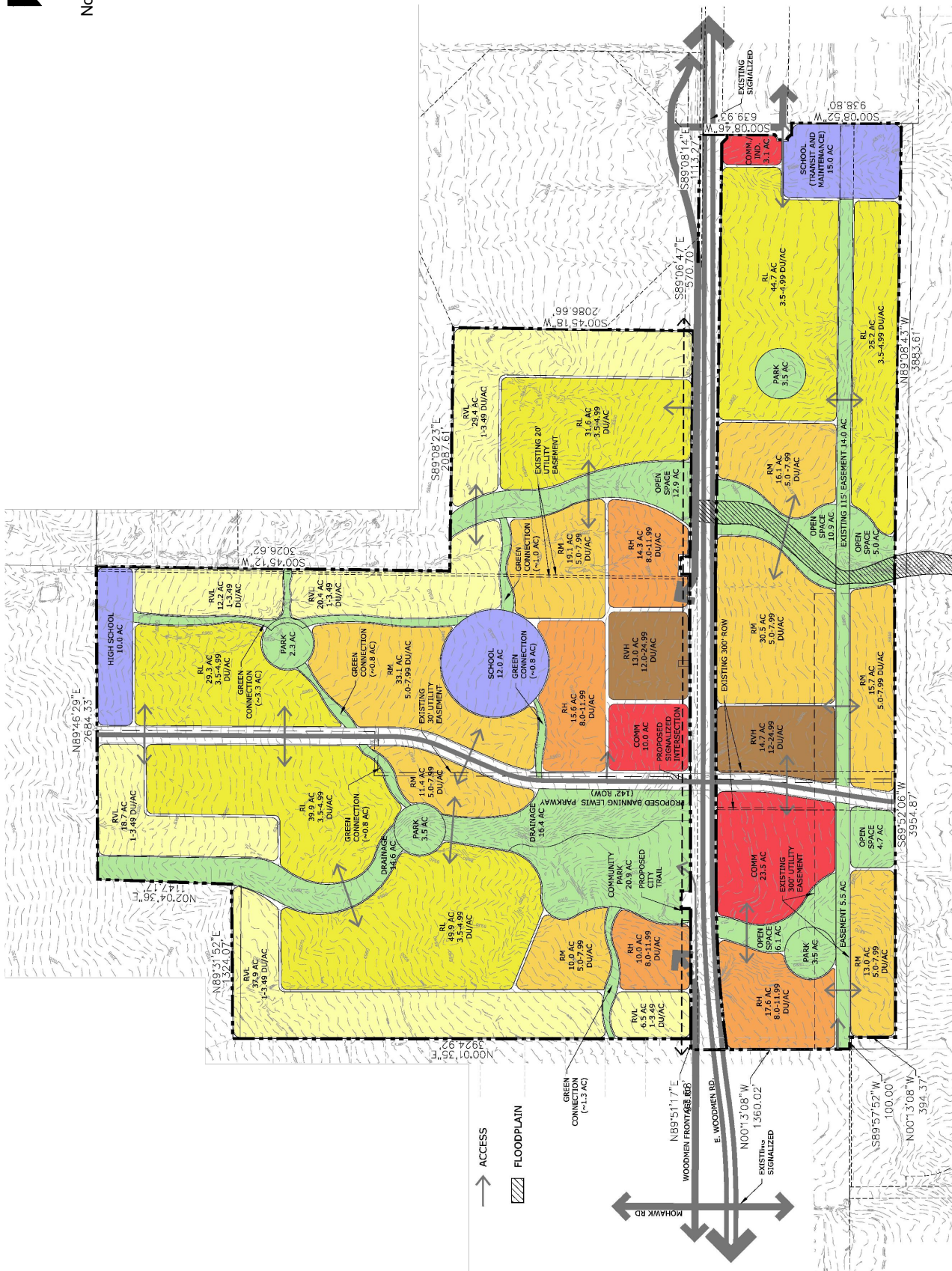


Figure 2
SITE PLAN
June 2019
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Existing and Committed Surface Transportation Network

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 plan¹. However, per City standards² 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.

No regional or specific improvements for the above described roadways are known to be planned or committed at this time. The study area roadways appear to be built to their ultimate cross-sections, assuming a no-build scenario. It is anticipated that the proposed development will be the driving factor in determining additional roadway improvements which are anticipated upon build-out.

¹ Comprehensive Plan: Annual Report, City of Colorado Springs, 2004-2005.

² Engineering Criteria Manual, City of Colorado Springs, July 2010.

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.

Banning Lewis Parkway is anticipated to intersection 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.

II. Existing Traffic Conditions

Morning (AM) and afternoon (PM) peak hour traffic counts were 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. 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.



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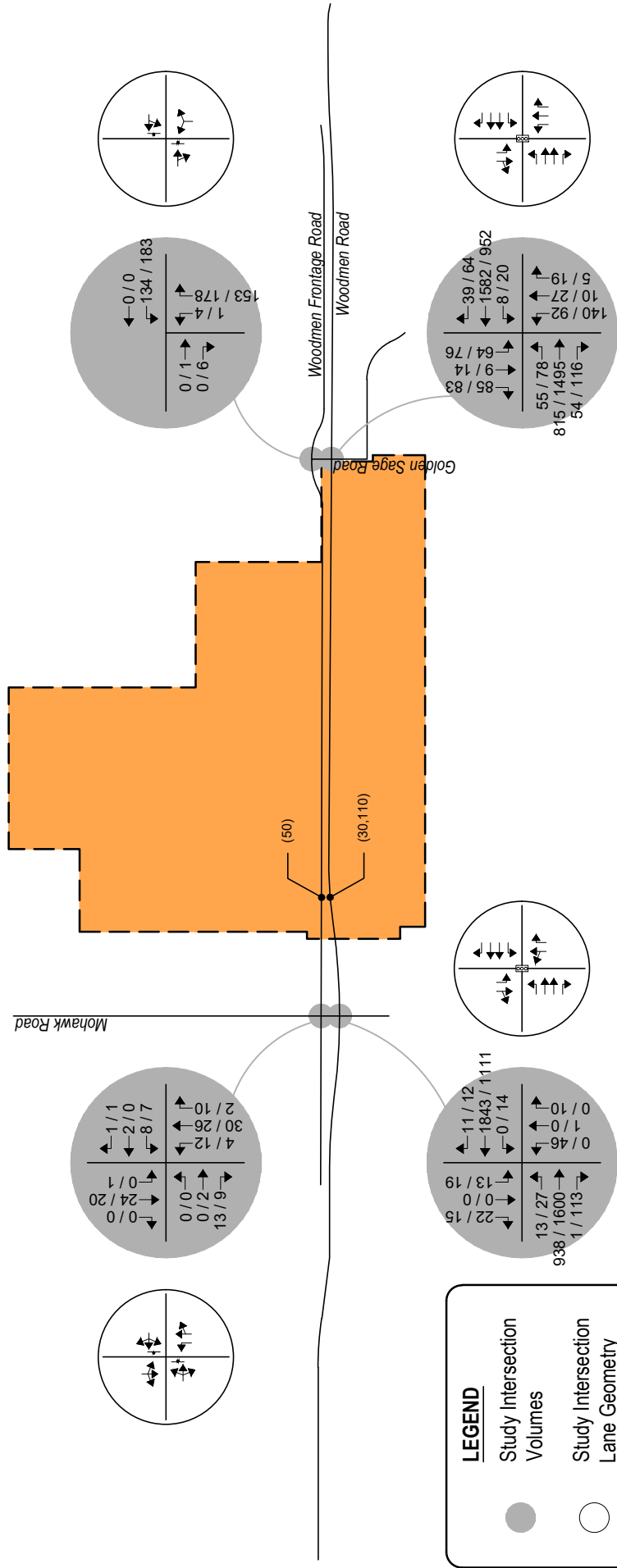


Figure 3
EXISTING TRAFFIC
Volumes & Intersection Geometry
AM / PM Peak Hour
(ADT) : Average Daily Traffic

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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 (12.1)	B (16.5)
Woodmen Road / Golden Sage Road (Signalized)	B (18.5)	B (16.3)
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 2024 and 2039, 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 2024 and Year 2039 background traffic conditions assume no roadway improvements to accommodate regional transportation demands. Year 2039 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 2024 and 2039 are shown on Figure 4 and Figure 5, respectively.

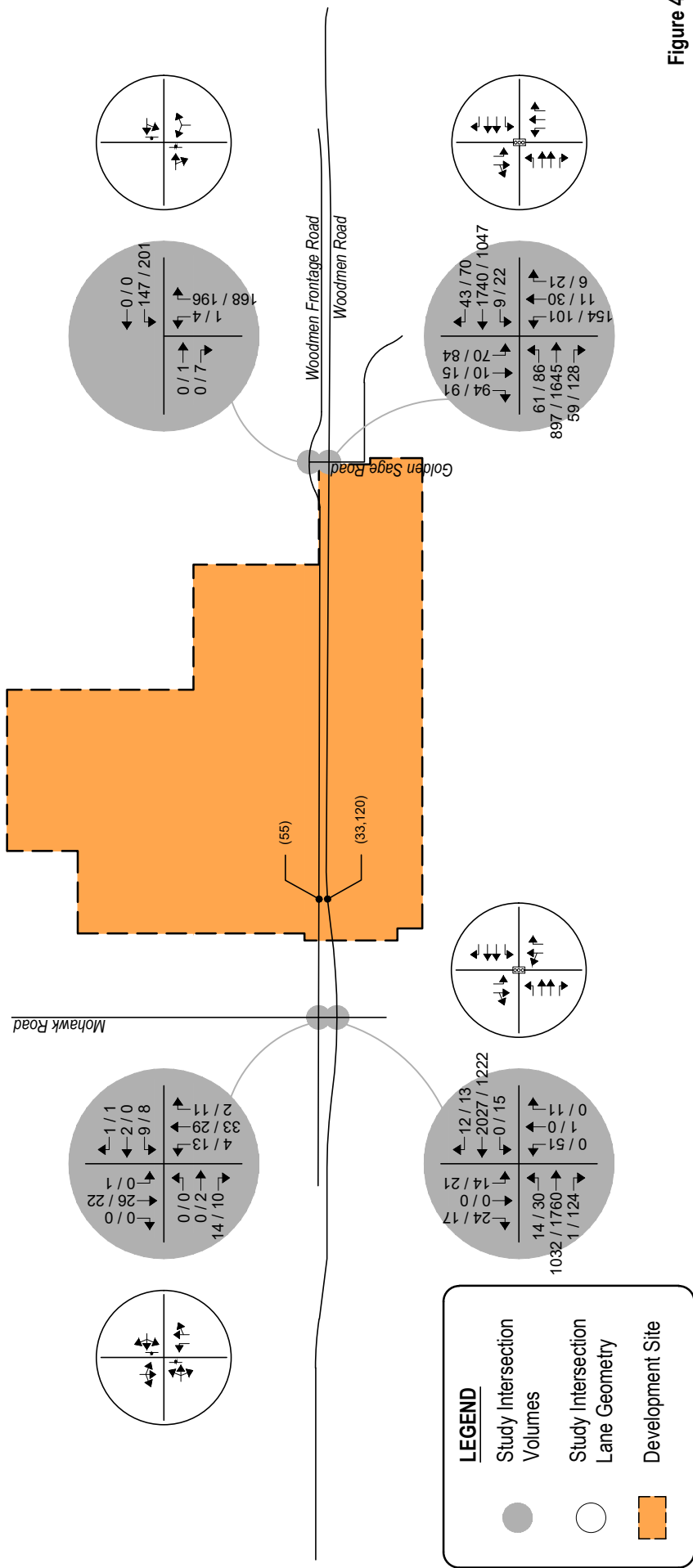


Figure 4
BACKGROUND TRAFFIC - YEAR 2024
Volumes & Intersection Geometry
AM / PM Peak Hour
(ADT) : Average Daily Traffic



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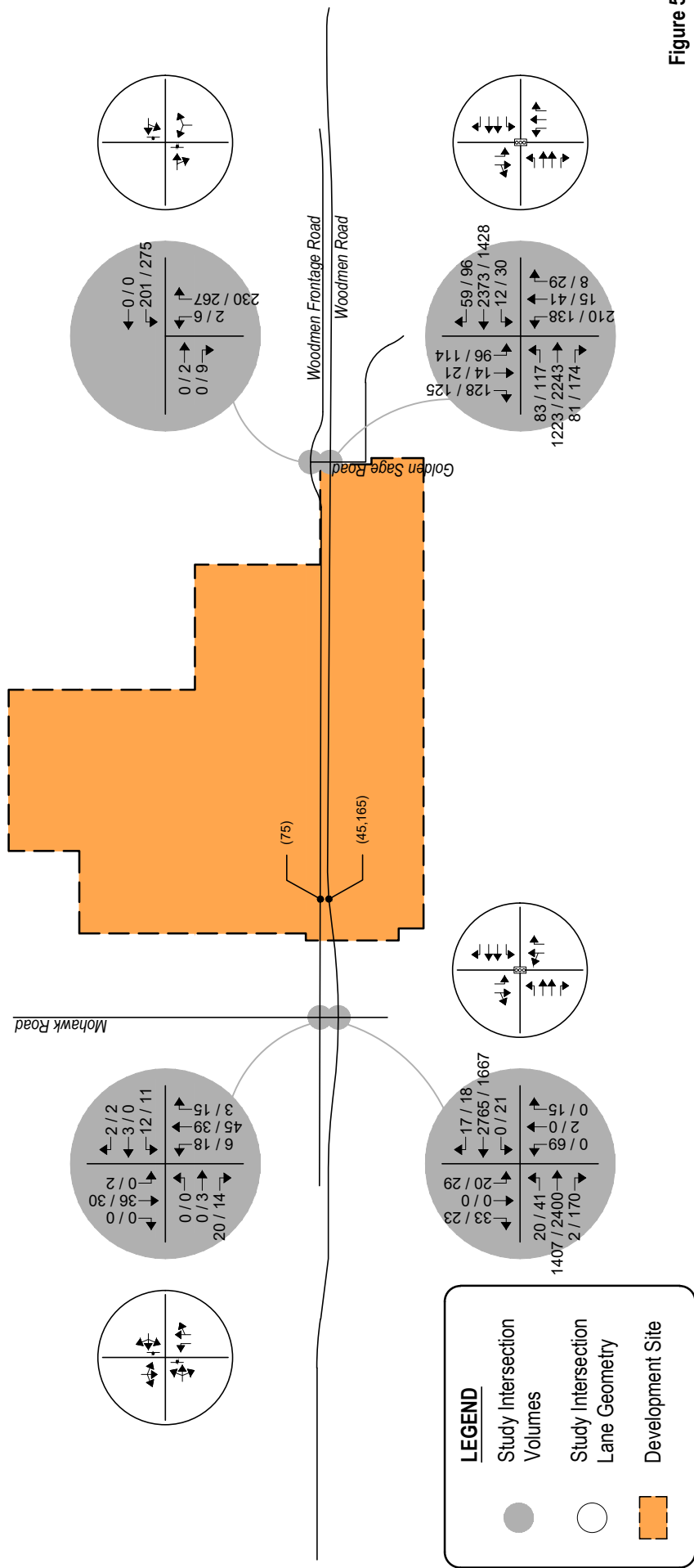


Figure 5
BACKGROUND TRAFFIC - YEAR 2039
 Volumes & Intersection Geometry
 AM / PM Peak Hour
 (ADT) : Average Daily Traffic

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

Background traffic level of service analyses results for Year 2024 are listed in Table 2. Year 2039 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 2024

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
Woodmen Road / Mohawk Road (Signalized)	B (13.8)	B (18.8)
Woodmen Road / Golden Sage Road (Signalized)	C (20.9)	B (17.1)
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 2024

Year 2024 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 2039

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
Woodmen Road / Mohawk Road (Signalized)	E (74.8)	C (34.6)
Woodmen Road / Golden Sage Road (Signalized)	E (70.1)	C (21.9)
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 2039

By Year 2039 and without the proposed development, the study intersection of Woodmen Road with Mohawk Road experiences LOS E operations during the AM peak traffic hour and LOS C operations during the PM peak traffic hour. The LOS E 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 E operations during the AM peak traffic hour and LOS C operations during the PM peak traffic hour. The LOS E 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 use 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 code 210 (Single-Family Housing), 220 (Multi-Family Housing (Low-Rise)), 411 (Public Park), 520 (Elementary School), 530 (High School), and 820 (Shopping Center) were used for estimating trip generation because of their best fit to the proposed land use descriptions.

As actual land uses, densities or site plans within the Banning Lewis Ranch North development 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
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
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. KSF = Thousand Square Feet Gross Floor Area.
 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	270 DU	2,549	50	150	200	168	99	267	
220	Multi-Family Housing (Low-Rise)	772 DU	5,651	82	273	355	272	160	432	
411	Public Park	28 ACRE	22	0	0	1	2	1	3	
820	Shopping Center	292 KSF	11,017	170	104	274	534	578	1,112	
<i>Initial Phasing Total:</i>			19,239	302	528	830	976	838	1,815	
<u>Site Development - Future Phasing (20-Year)</u>										
210	Single-Family Housing	1,475 DU	13,924	273	819	1,092	920	540	1,460	
220	Multi-Family Housing (Low-Rise)	283 DU	2,072	30	100	130	100	59	158	
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	87 KSF	1,226	209	85	294	46	39	85	
820	Shopping Center	27 KSF	1,020	16	10	25	49	54	103	
<i>Future Phasing Total:</i>			20,286	928	1,342	2,270	1,180	770	1,950	
<i>Build-Out Total:</i>			39,525	1,231	1,870	3,100	2,156	1,609	3,765	

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 39,525 daily trips with 3,100 of those occurring during the morning peak hour and 3,765 during the afternoon peak hour.

Adjustments to Trip Generation Rates

In general, a residential focused development of this type is not likely to attract trips from within area land uses nor pass-by or diverted link trips from the adjacent roadway system, therefore no trip reduction was taken in this analysis. It is, however, possible that within the designated commercial areas specific land uses allowed may provide some reduction to trip generation estimates presented in Table 5. Furthermore, the proposed school development areas may generate a majority of their traffic from within the residential development area. However, since a specific reduction can only be assumed at this time, no trip reductions were taken in this analysis. This assumption provides for a conservative analysis.

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 Figure 6.

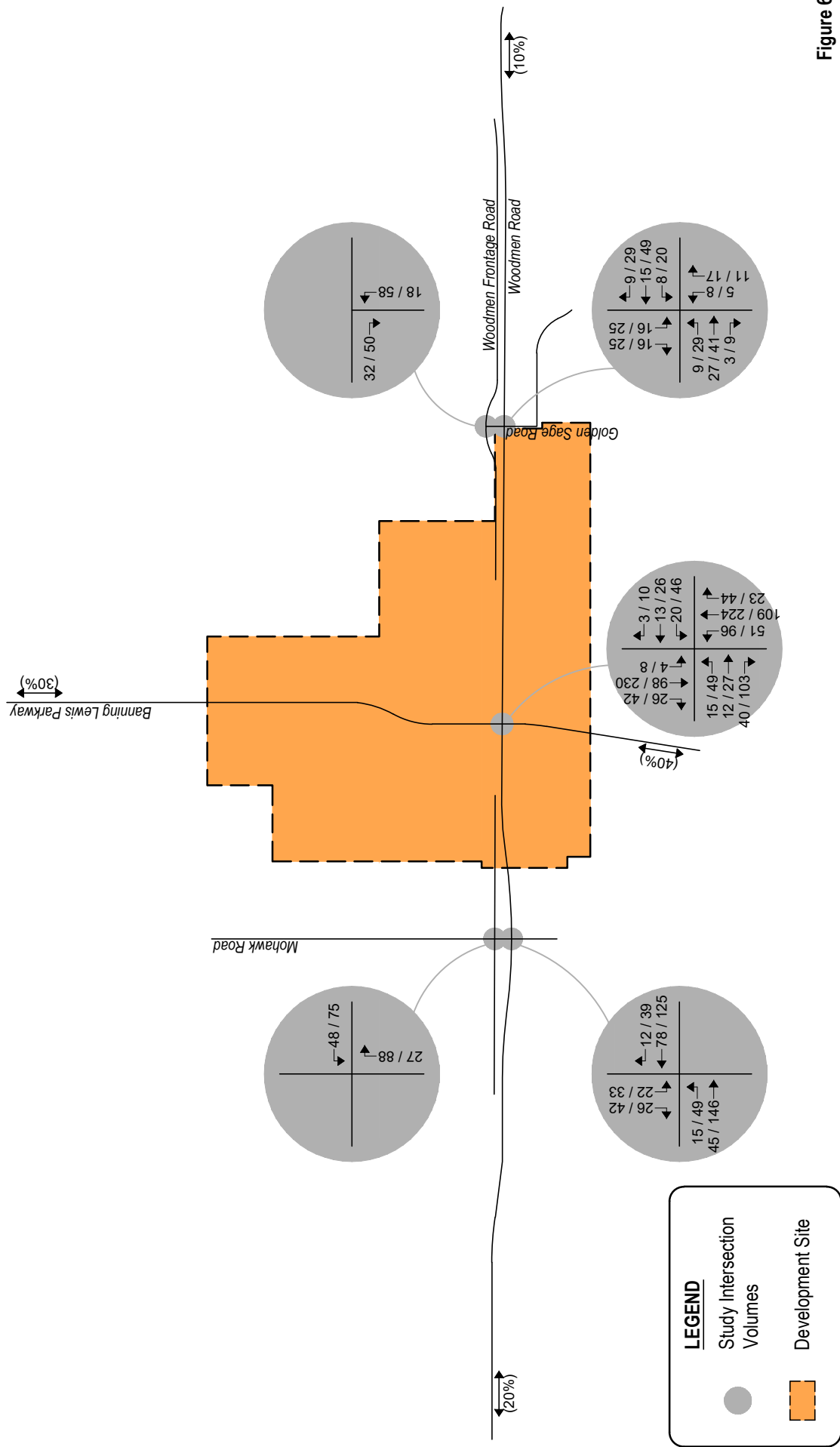
Trip Assignment

Trip 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 2024 and 2039 shown on Figure 6 and Figure 7, respectively.



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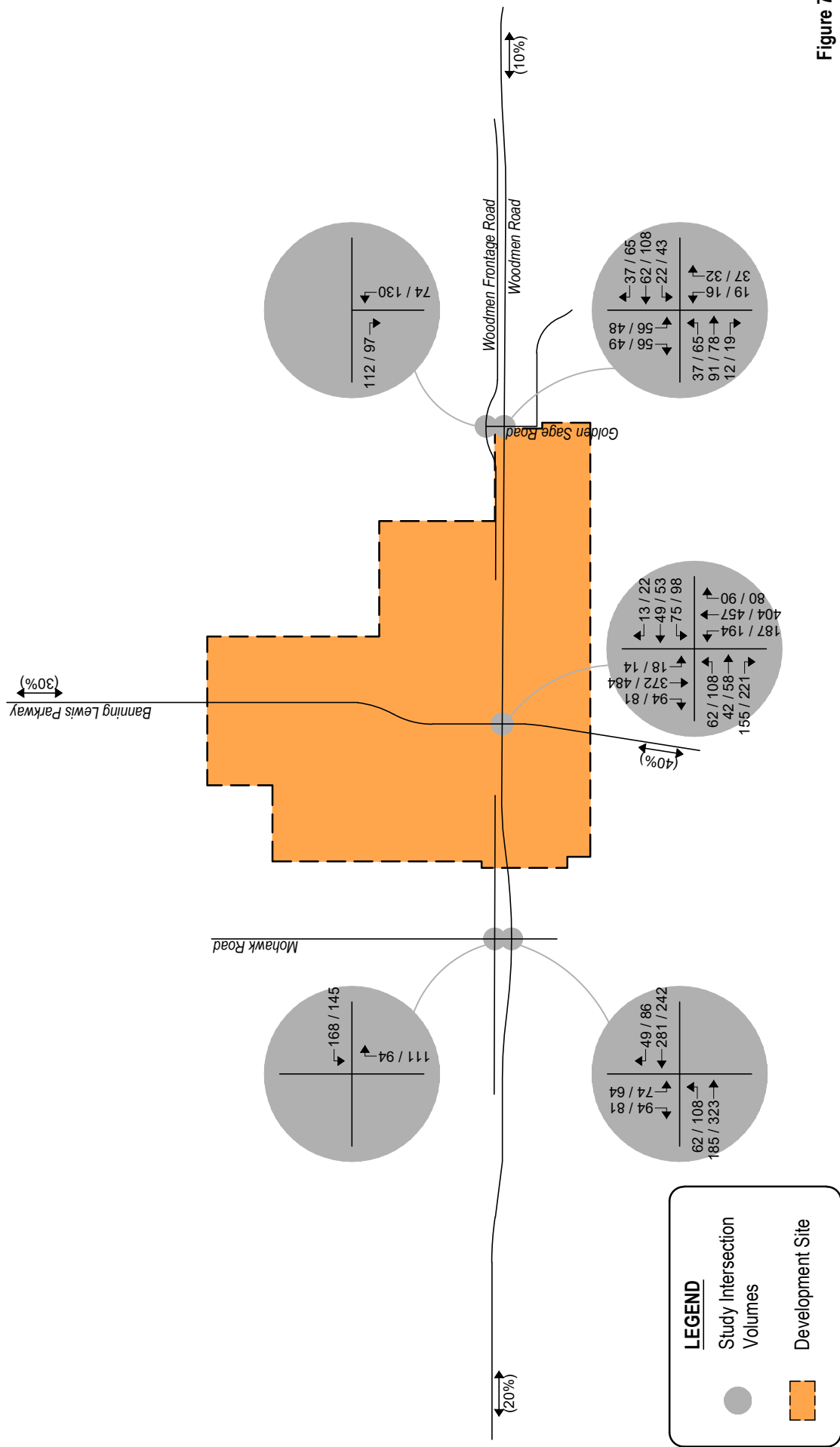


Figure 7

SITE DEVELOPMENT DISTRIBUTION - YEAR 2039

(%) : Overall

SITE-GENERATED

AM / PM Peak Hour

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V. Future Traffic Conditions With Proposed Developments

Site-generated traffic was added to background traffic projections for Years 2024 and 2039 to develop total traffic projections. For analysis purposes, it was assumed that development construction would be completed by end of Year 2024.

Pursuant to area roadway improvement discussions provided in Section III, Year 2024 and Year 2039 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 2024 total traffic volumes and intersection geometry are shown in Figure 8.

Figure 9 shows projected total traffic volumes and intersection geometry for Year 2039.



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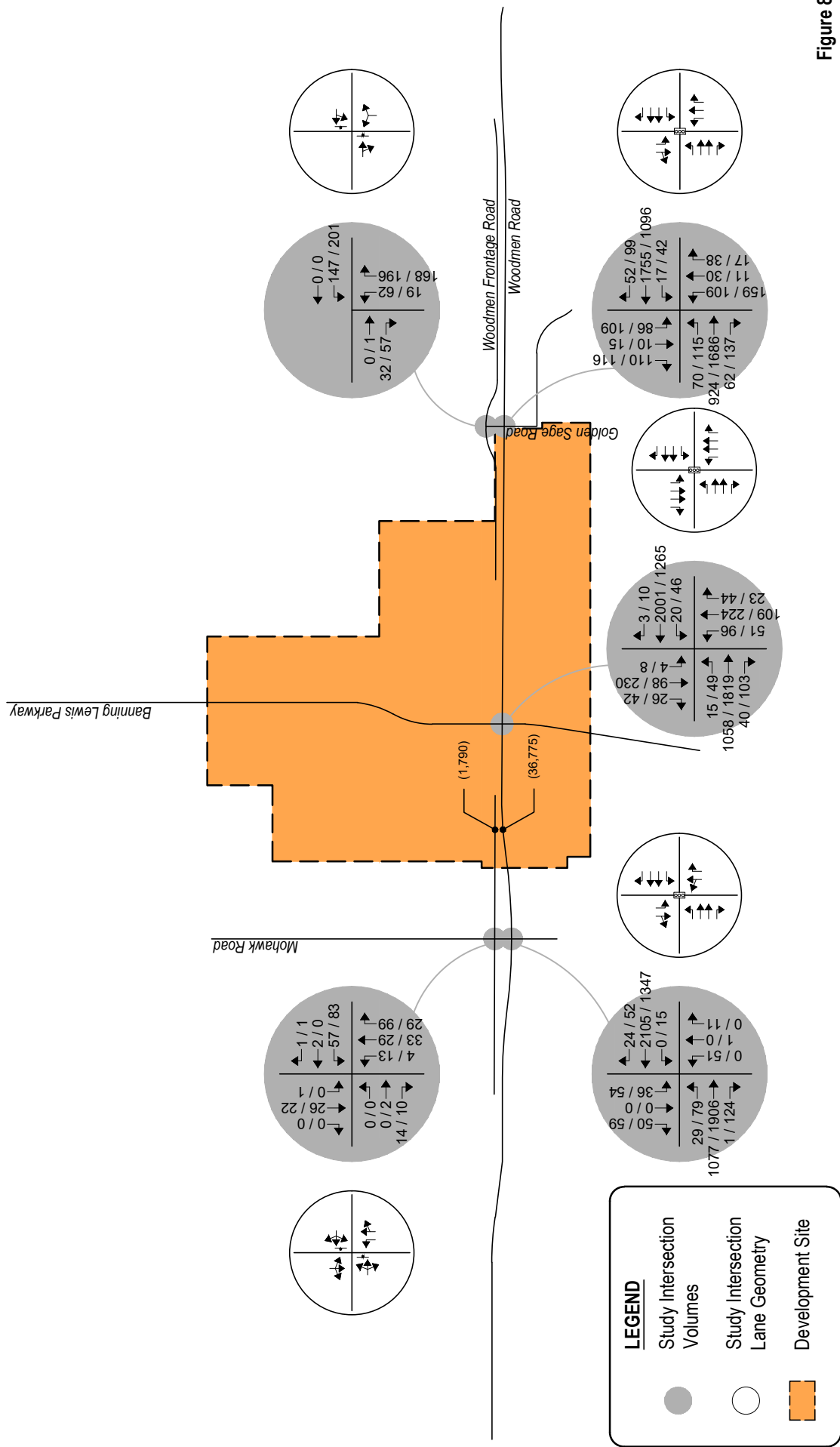


Figure 8
TOTAL TRAFFIC - YEAR 2024
 Volumes & Intersection Geometry
 AM / PM Peak Hour
 (ADT) : Average Daily Traffic

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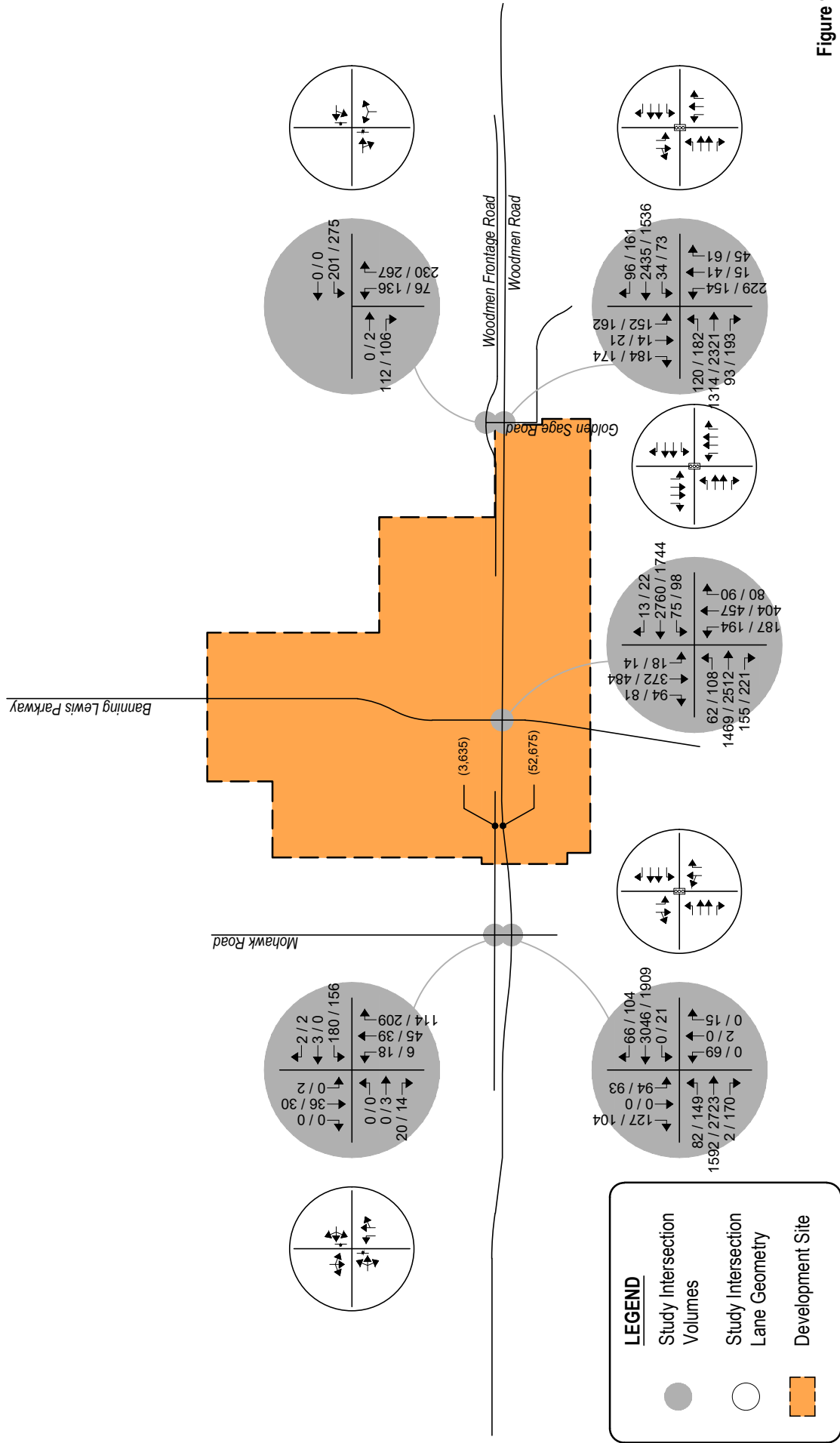


Figure 9
TOTAL TRAFFIC - YEAR 2039
 Volumes & Intersection Geometry
 AM / PM Peak Hour
 (ADT) : Average Daily Traffic

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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 2024 and 2039 are summarized in Table 6 and Table 7, respectively.

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

Table 6 – Intersection Capacity Analysis Summary – Total Traffic – Year 2024

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
Woodmen Road / Mohawk Road (Signalized)	C (25.4)	C (23.2)
Woodmen Road / Golden Sage Road (Signalized)	C (25.1)	C (28.5)
Woodmen Road / Banning Lewis Parkway (Signalized)	C (31.8)	C (26.0)
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 7 – Intersection Capacity Analysis Summary – Total Traffic – Year 2039

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
Woodmen Road / Mohawk Road (Signalized)	F (174.7)	E (70.0)
Woodmen Road / Golden Sage Road (Signalized)	F (102.8)	E (63.0)
Woodmen Road / Banning Lewis Parkway (Signalized)	F (147.3)	F (96.0)
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 7 illustrates how, by Year 2039 and upon development build-out, the signalized intersection of Woodmen Road with Mohawk Road shows an overall LOS F operation during the morning peak traffic hour and LOS E during the afternoon peak traffic hour. The LOS E and 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 2039 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 is recommended. 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 is recommended. 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 is recommended.
- 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.

VII. Conclusion

This traffic impact study addressed the capacity, geometric, and control requirements associated with the development entitled Banning Lewis Ranch North. This proposed mixed-use development consists primarily of residential development of varying density with commercial 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 2024 and Year 2039 background traffic conditions, and Year 2024 and Year 2039 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 2024 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 2039 and without the proposed development, the study intersection of Woodmen Road with Mohawk Road experiences LOS E operations during the AM peak traffic hour and LOS C operations during the PM peak traffic hour. The LOS E 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 E operations during the AM peak traffic hour and LOS C operations during the PM peak traffic hour. The LOS E 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. 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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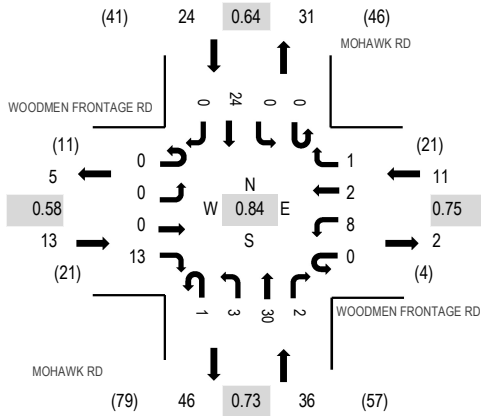
Location: 1 MOHAWK RD & WOODMEN FRONTAGE RD AM

Date: Tuesday, April 2, 2019

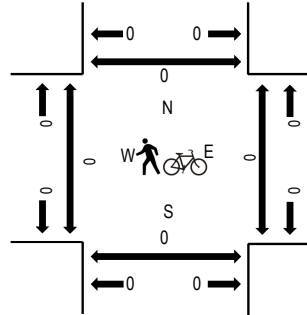
Peak Hour: 07:45 AM - 08:45 AM

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

Peak Hour - All Vehicles



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
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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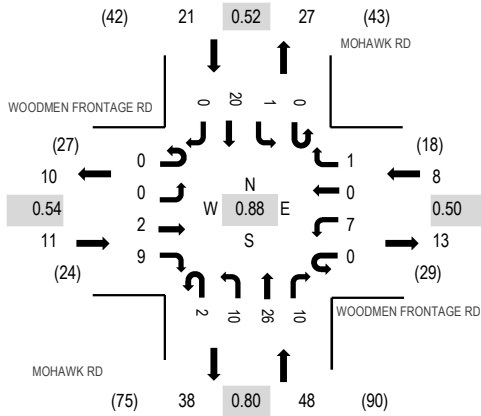
Location: 1 MOHAWK RD & WOODMEN FRONTAGE RD PM

Date: Tuesday, April 2, 2019

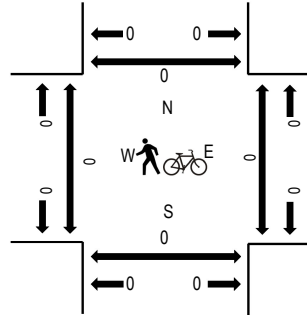
Peak Hour: 05:00 PM - 06:00 PM

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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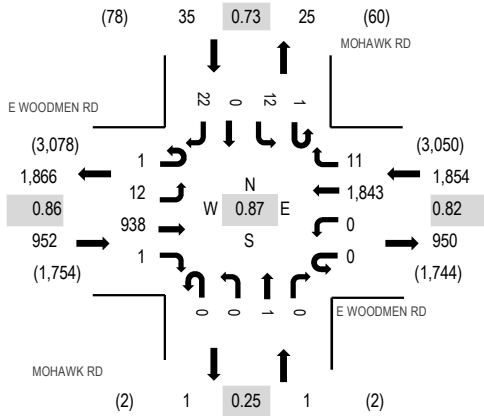
Location: 2 MOHAWK RD & E WOODMEN RD AM

Date: Tuesday, April 2, 2019

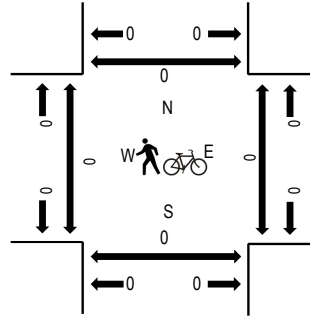
Peak Hour: 07:00 AM - 08:00 AM

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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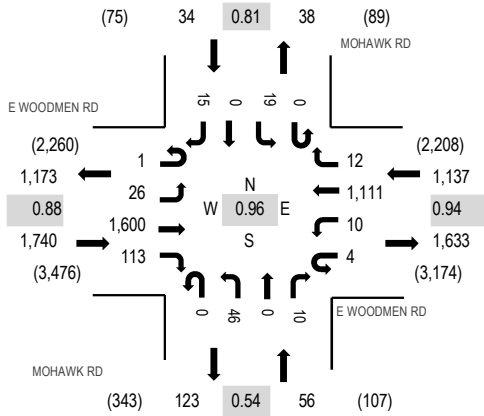
Location: 2 MOHAWK RD & E WOODMEN RD PM

Date: Tuesday, April 2, 2019

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

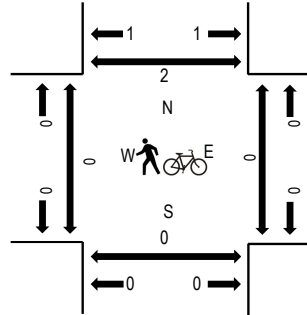
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour - All Vehicles



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				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

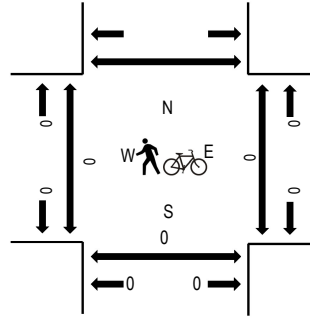
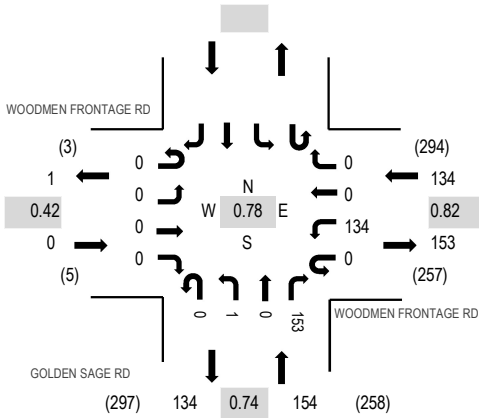
Date: Tuesday, April 2, 2019

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

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

Peak Hour - All Vehicles

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
	7:00 AM	0	0	0	3	0	49	0	0	0	0	0	20	0	0	0			0	72	269	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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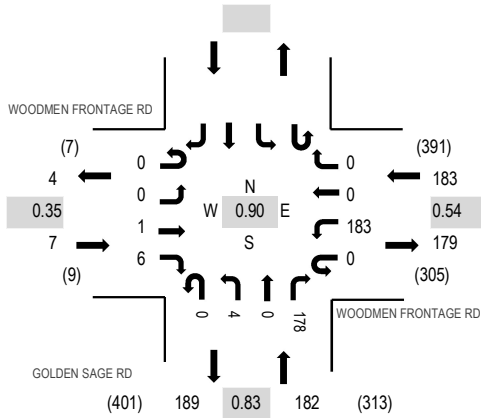
Location: 3 GOLDEN SAGE RD & WOODMEN FRONTAGE RD PM

Date: Tuesday, April 2, 2019

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

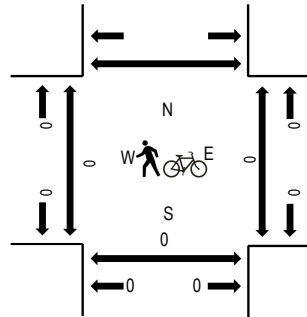
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour - All Vehicles



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				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	2	0	41	0	0	0	0	84	364	0	0	0	
4:15 PM	0	0	0	0	0	48	0	0	0	0	0	46	0	0	0	0	94	372	0	0	0	
4:30 PM	0	0	0	1	0	47	0	0	0	2	0	53	0	0	0	0	103	343	0	0	0	
4:45 PM	0	0	0	1	0	46	0	0	0	2	0	34	0	0	0	0	83	370	0	0	0	
5:00 PM	0	0	1	4	0	42	0	0	0	0	0	45	0	0	0	0	92	349	0	0	0	
5:15 PM	0	0	0	0	0	34	0	0	1	0	0	30	0	0	0	0	65		0	0	0	
5:30 PM	0	0	0	0	0	104	0	0	1	0	0	25	0	0	0	0	130		0	0	0	
5:45 PM	0	0	0	1	0	30	0	0	0	1	0	30	0	0	0	0	62		0	0	0	
Count Total	0	0	1	8	0	391	0	0	2	7	0	304	0	0	0	0	713		0	0	0	
Peak Hour	0	0	1	6	0	183	0	0	0	4	0	178	0	0	0	0	372		0	0	0	



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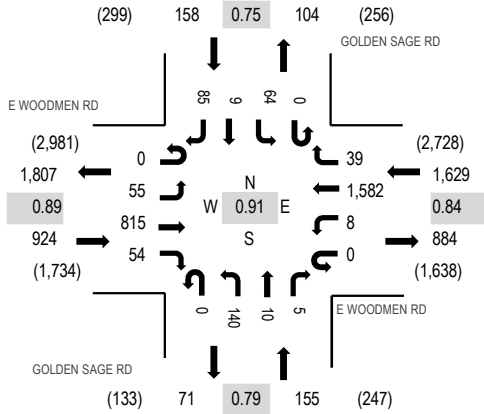
Location: 4 GOLDEN SAGE RD & E WOODMEN RD AM

Date: Tuesday, April 2, 2019

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

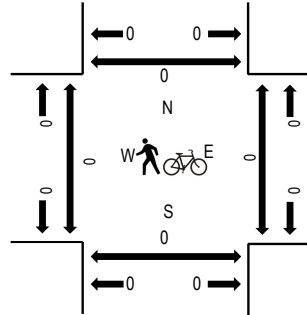
Peak 15-Minutes: 07:15 AM - 07:30 AM

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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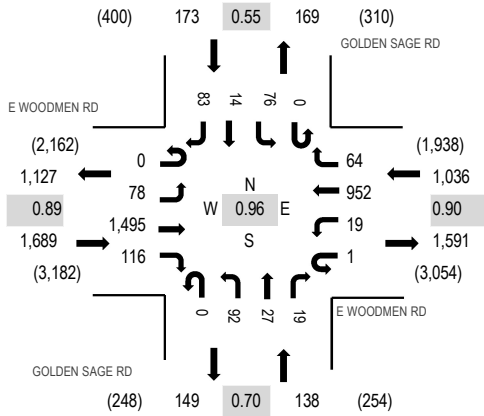
Location: 4 GOLDEN SAGE RD & E WOODMEN RD PM

Date: Tuesday, April 2, 2019

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

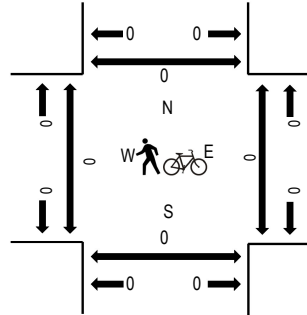
Peak 15-Minutes: 05:00 PM - 05:15 PM

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, 2010: Chapter 18 – Signalized Intersections and Chapter 19 – 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 10s/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	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)	13	938	1	0	1843	11	0	1	0	13	0	22
Future Volume (vph)	13	938	1	0	1843	11	0	1	0	13	0	22
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						94
Lane Group Flow (vph)	14	1020	1	0	2003	12	0	1	0	14	24	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	65.1	65.1		63.1	63.1		24.9		24.9	24.9	
Actuated g/C Ratio	0.05	0.65	0.65		0.63	0.63		0.25		0.25	0.25	
v/c Ratio	0.16	0.44	0.00		0.90	0.01		0.00		0.04	0.05	
Control Delay	49.8	9.0	0.0		13.5	0.0		32.0		32.4	0.2	
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0		0.0	0.0	
Total Delay	49.8	9.0	0.0		13.5	0.0		32.0		32.4	0.2	
LOS	D	A	A		B	A		C		C	A	
Approach Delay		9.5			13.4			32.0			12.1	
Approach LOS		A			B			C			B	
Queue Length 50th (ft)	9	141	0		184	0		1		7	0	
Queue Length 95th (ft)	29	160	0		#786	m0		5		24	0	
Internal Link Dist (ft)		728			9138			407			101	
Turn Bay Length (ft)	465		400			375				35		
Base Capacity (vph)	88	2315	1061		2244	1031		463		350	464	
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	0.16	0.44	0.00		0.89	0.01		0.00		0.04	0.05	

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: 0.90
 Intersection Signal Delay: 12.1 Intersection LOS: B
 Intersection Capacity Utilization 66.7% 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)	55	815	54	8	1582	39	140	10	5	64	9	85
Future Volume (vph)	55	815	54	8	1582	39	140	10	5	64	9	85
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1611	0
Flt Permitted	0.950			0.950			0.691			0.750		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1287	1863	1583	1397	1611	0
Satd. Flow (RTOR)			76			76			76		92	
Lane Group Flow (vph)	60	886	59	9	1720	42	152	11	5	70	102	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	64.0	64.0	5.0	58.0	58.0	24.0	24.0	24.0	24.0	24.0	24.0
Actuated g/C Ratio	0.05	0.64	0.64	0.05	0.58	0.58	0.24	0.24	0.24	0.24	0.24	0.24
v/c Ratio	0.68	0.39	0.06	0.10	0.84	0.04	0.49	0.02	0.01	0.21	0.22	0.22
Control Delay	94.5	4.8	0.3	48.0	21.5	0.7	41.5	32.5	0.0	35.3	10.3	10.3
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	94.5	4.8	0.3	48.0	21.5	0.7	41.5	32.5	0.0	35.3	10.3	10.3
LOS	F	A	A	D	C	A	D	C	A	D	B	B
Approach Delay		9.9			21.2			39.7				20.5
Approach LOS		A			C			D				C
Queue Length 50th (ft)	42	41	0	6	418	0	88	6	0	38	5	5
Queue Length 95th (ft)	#108	60	3	22	519	5	157	21	0	79	49	49
Internal Link Dist (ft)		9138			747			478				130
Turn Bay Length (ft)	465		395	465		385	100		190			
Base Capacity (vph)	88	2318	1063	88	2123	980	308	446	437	335	456	456
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	0.68	0.38	0.06	0.10	0.81	0.04	0.49	0.02	0.01	0.21	0.22	0.22

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: 0.84
 Intersection Signal Delay: 18.5 Intersection LOS: B
 Intersection Capacity Utilization 68.5% 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 2010 TWSC
 3: Mohawk Road & Woodmen Frontage Road

Existing Traffic Volumes
 AM Peak Hour

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	13	8	2	1	4	30	2	0	24	0
Future Vol, veh/h	0	0	13	8	2	1	4	30	2	0	24	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	14	9	2	1	4	33	2	0	26	0
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	70	69	26	75	68	34	26	0	0	35	0	0
Stage 1	26	26	-	42	42	-	-	-	-	-	-	-
Stage 2	44	43	-	33	26	-	-	-	-	-	-	-
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	922	822	1050	915	823	1039	1588	-	-	1576	-	-
Stage 1	992	874	-	972	860	-	-	-	-	-	-	-
Stage 2	970	859	-	983	874	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	917	820	1050	901	821	1039	1588	-	-	1576	-	-
Mov Cap-2 Maneuver	917	820	-	901	821	-	-	-	-	-	-	-
Stage 1	990	874	-	970	858	-	-	-	-	-	-	-
Stage 2	964	857	-	970	874	-	-	-	-	-	-	-
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	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1588	-	-	1050	896	1576	-	-				
HCM Lane V/C Ratio	0.003	-	-	0.013	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 2010 TWSC
4: Golden Sage Road & Woodmen Frontage Road

Existing Traffic Volumes
AM Peak Hour

Intersection

Int Delay, s/veh 3.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕		↕		↕	
Traffic Vol, veh/h	0	0	134	0	1	153
Future Vol, veh/h	0	0	134	0	1	153
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	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	146	0	1	166
























Major/Minor	Minor2		Major2		Major1	
Conflicting Flow All	459	0	166	0	0	0
Stage 1	291	-	-	-	-	-
Stage 2	168	-	-	-	-	-
Critical Hdwy	6.52	6.22	4.12	-	4.12	-
Critical Hdwy Stg 1	5.52	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	4.018	3.318	2.218	-	2.218	-
Pot Cap-1 Maneuver	499	-	1412	-	-	-
Stage 1	672	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %				-		-
Mov Cap-1 Maneuver	0	-	1412	-	-	-
Mov Cap-2 Maneuver	0	-	-	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7.8	
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBR	EBLn1	WBL	WBT
Capacity (veh/h)	-	-	-	1412	-
HCM Lane V/C Ratio	-	-	-	0.103	-
HCM Control Delay (s)	-	-	0	7.8	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	-	0.3	-

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)	27	1600	113	14	1111	12	46	0	10	19	0	15
Future Volume (vph)	27	1600	113	14	1111	12	46	0	10	19	0	15
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	0	1770	1583	1770	1583	0
Flt Permitted	0.950			0.950				0.747		0.724		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	0	1391	1583	1349	1583	0
Satd. Flow (RTOR)			123			76			76		153	
Lane Group Flow (vph)	29	1739	123	15	1208	13	0	50	11	21	16	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	58.3	58.3	5.0	56.3	56.3		27.7	27.7	27.7	27.7	27.7
Actuated g/C Ratio	0.05	0.58	0.58	0.05	0.56	0.56		0.28	0.28	0.28	0.28	0.28
v/c Ratio	0.33	0.84	0.13	0.17	0.61	0.01		0.13	0.02	0.06	0.03	0.03
Control Delay	56.2	21.7	1.9	55.4	8.8	0.0		32.0	0.1	31.4	0.1	0.1
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	56.2	21.7	1.9	55.4	8.8	0.0		32.0	0.1	31.4	0.1	0.1
LOS	E	C	A	E	A	A		C	A	C	A	A
Approach Delay		20.9			9.2			26.3				17.9
Approach LOS		C			A			C				B
Queue Length 50th (ft)	18	426	0	10	105	0		23	0	10	0	0
Queue Length 95th (ft)	48	531	22	m22	131	m0		60	0	32	0	0
Internal Link Dist (ft)		728			9138			407				101
Turn Bay Length (ft)	465		400	465		375				35		
Base Capacity (vph)	88	2123	999	88	2123	980		385	493	373	549	
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	0.33	0.82	0.12	0.17	0.57	0.01		0.13	0.02	0.06	0.03	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: 0.84

Intersection Signal Delay: 16.5

Intersection LOS: B







Intersection Capacity Utilization 65.1%

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)	78	1495	116	20	952	64	92	27	19	76	14	83
Future Volume (vph)	78	1495	116	20	952	64	92	27	19	76	14	83
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1622	0
Flt Permitted	0.950			0.950			0.689			0.738		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1283	1863	1583	1375	1622	0
Satd. Flow (RTOR)			126			76			76		90	
Lane Group Flow (vph)	85	1625	126	22	1035	70	100	29	21	83	105	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	56.9	56.9	5.0	50.9	50.9	29.1	29.1	29.1	29.1	29.1	29.1
Actuated g/C Ratio	0.05	0.57	0.57	0.05	0.51	0.51	0.29	0.29	0.29	0.29	0.29	0.29
v/c Ratio	0.97	0.81	0.13	0.25	0.58	0.08	0.27	0.05	0.04	0.21	0.20	0.20
Control Delay	122.7	9.4	1.1	52.9	17.9	2.0	33.3	30.7	0.2	32.3	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	122.7	9.4	1.1	52.9	17.9	2.0	33.3	30.7	0.2	32.3	10.5	10.5
LOS	F	A	A	D	B	A	C	C	A	C	B	B
Approach Delay		14.1			17.6			28.2				20.2
Approach LOS		B			B			C				C
Queue Length 50th (ft)	59	105	0	14	243	0	47	13	0	38	7	7
Queue Length 95th (ft)	m#86	155	m9	39	231	15	107	40	0	90	52	52
Internal Link Dist (ft)		9138			747			478				130
Turn Bay Length (ft)	465		395	465		385	100		190			
Base Capacity (vph)	88	2123	1000	88	2123	980	373	542	515	400	536	536
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	0.97	0.77	0.13	0.25	0.49	0.07	0.27	0.05	0.04	0.21	0.20	0.20

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: 0.97
 Intersection Signal Delay: 16.3
 Intersection Capacity Utilization 69.8%
 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)	 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

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	12	26	10	1	20	0
Future Vol, veh/h	0	2	9	7	0	1	12	26	10	1	20	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	13	28	11	1	22	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	84	89	22	90	84	34	22	0	0	39	0	0
Stage 1	24	24	-	60	60	-	-	-	-	-	-	-
Stage 2	60	65	-	30	24	-	-	-	-	-	-	-
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	903	801	1055	895	806	1039	1593	-	-	1571	-	-
Stage 1	994	875	-	951	845	-	-	-	-	-	-	-
Stage 2	951	841	-	987	875	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	896	794	1055	879	799	1039	1593	-	-	1571	-	-
Mov Cap-2 Maneuver	896	794	-	879	799	-	-	-	-	-	-	-
Stage 1	986	874	-	943	838	-	-	-	-	-	-	-
Stage 2	942	834	-	974	874	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.7	9.1	1.8	0.3
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1593	-	-	996	896	1571	-	-
HCM Lane V/C Ratio	0.008	-	-	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	-	-

Intersection

Int Delay, s/veh 3.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕		↕		↕	
Traffic Vol, veh/h	1	6	183	0	4	178
Future Vol, veh/h	1	6	183	0	4	178
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	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	199	0	4	193
























Major/Minor	Minor2		Major2		Major1	
Conflicting Flow All	600	0	193	0	0	0
Stage 1	398	-	-	-	-	-
Stage 2	202	-	-	-	-	-
Critical Hdwy	6.52	6.22	4.12	-	4.12	-
Critical Hdwy Stg 1	5.52	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	4.018	3.318	2.218	-	2.218	-
Pot Cap-1 Maneuver	415	-	1380	-	-	-
Stage 1	603	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %				-		-
Mov Cap-1 Maneuver	0	-	1380	-	-	-
Mov Cap-2 Maneuver	0	-	-	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s		8	
HCM LOS	-		

Minor Lane/Major Mvmt	NBL	NBR	EBLn1	WBL	WBT
Capacity (veh/h)	-	-	-	1380	-
HCM Lane V/C Ratio	-	-	-	0.144	-
HCM Control Delay (s)	-	-	-	8	0
HCM Lane LOS	-	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0.5	-

Timings
1: Mohawk Road & Woodmen Road

Background Traffic Volumes
 AM Peak Hour - Year 2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	1032	1	0	2027	12	0	1	0	14	0	24
Future Volume (vph)	14	1032	1	0	2027	12	0	1	0	14	0	24
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					90	
Lane Group Flow (vph)	15	1122	1	0	2203	13	0	1	0	15	26	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	0.17	0.45	0.00		0.94	0.01		0.00		0.05	0.07	
Control Delay	50.1	7.3	0.0		17.0	0.0		32.0		33.1	0.3	
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0		0.0	0.0	
Total Delay	50.1	7.3	0.0		17.0	0.0		32.0		33.1	0.3	
LOS	D	A	A		B	A		C		C	A	
Approach Delay		7.9			16.9			32.0			12.3	
Approach LOS		A			B			C			B	
Queue Length 50th (ft)	9	144	0		207	0		1		8	0	
Queue Length 95th (ft)	31	182	0		#927	m0		5		26	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	388	
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	0.45	0.00		0.94	0.01		0.00		0.05	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: 100
 Control Type: Actuated-Coordinated

Timings

1: Mohawk Road & Woodmen Road

Background Traffic Volumes

AM Peak Hour - Year 2024

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 13.8

Intersection LOS: B

Intersection Capacity Utilization 71.8%

ICU Level of Service C

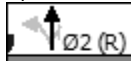
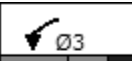


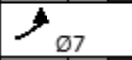
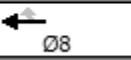
Analysis Period (min) 15

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

Background Traffic Volumes
 AM Peak Hour - Year 2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	897	59	9	1740	43	154	11	6	70	10	94
Future Volume (vph)	61	897	59	9	1740	43	154	11	6	70	10	94
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1611	0
Flt Permitted	0.950			0.950			0.667			0.750		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1242	1863	1583	1397	1611	0
Satd. Flow (RTOR)			76			76			76		97	
Lane Group Flow (vph)	66	975	64	10	1891	47	167	12	7	76	113	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	65.5	65.5	5.0	59.5	59.5	22.5	22.5	22.5	22.5	22.5	22.5
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	0.75	0.42	0.06	0.11	0.90	0.05	0.60	0.03	0.02	0.24	0.26	0.26
Control Delay	101.7	5.4	0.4	48.3	24.8	0.9	46.5	32.6	0.0	36.2	11.1	11.1
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	101.7	5.4	0.4	48.3	24.8	0.9	46.5	32.6	0.0	36.2	11.1	11.1
LOS	F	A	A	D	C	A	D	C	A	D	B	B
Approach Delay		10.8			24.4			43.9				21.2
Approach LOS		B			C			D				C
Queue Length 50th (ft)	46	54	0	6	504	0	99	6	0	41	8	8
Queue Length 95th (ft)	#120	65	3	23	633	7	#189	22	0	84	54	54
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	280	419	415	314	438	438
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	0.75	0.42	0.06	0.11	0.89	0.05	0.60	0.03	0.02	0.24	0.26	0.26

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 2024

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 20.9

Intersection LOS: C

Intersection Capacity Utilization 74.2%







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 2024

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	14	9	2	1	4	33	2	0	26	0
Future Vol, veh/h	0	0	14	9	2	1	4	33	2	0	26	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	10	2	1	4	36	2	0	28	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	75	74	28	81	73	37	28	0	0	38	0	0
Stage 1	28	28	-	45	45	-	-	-	-	-	-	-
Stage 2	47	46	-	36	28	-	-	-	-	-	-	-
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	915	816	1047	907	817	1035	1585	-	-	1572	-	-
Stage 1	989	872	-	969	857	-	-	-	-	-	-	-
Stage 2	967	857	-	980	872	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	910	814	1047	892	815	1035	1585	-	-	1572	-	-
Mov Cap-2 Maneuver	910	814	-	892	815	-	-	-	-	-	-	-
Stage 1	986	872	-	966	854	-	-	-	-	-	-	-
Stage 2	961	854	-	966	872	-	-	-	-	-	-	-

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)	1585	-	-	1047	888	1572	-	-
HCM Lane V/C Ratio	0.003	-	-	0.015	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 2024

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	0	0	147	0	1	168
Future Vol, veh/h	0	0	147	0	1	168
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	160	0	1	183

























Major/Minor	Minor2	Major2	
Conflicting Flow All	320	0	0
Stage 1	320	-	-
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	597	-	-
Stage 1	652	-	-
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 2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	1760	124	15	1222	13	51	0	11	21	0	17
Future Volume (vph)	30	1760	124	15	1222	13	51	0	11	21	0	17
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	0	1770	1583	1770	1583	0
Flt Permitted	0.950			0.950				0.746		0.721		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	0	1390	1583	1343	1583	0
Satd. Flow (RTOR)			135			76			76		136	
Lane Group Flow (vph)	33	1913	135	16	1328	14	0	55	12	23	18	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	59.5	59.5	5.0	57.5	57.5		26.5	26.5	26.5	26.5	26.5
Actuated g/C Ratio	0.05	0.60	0.60	0.05	0.58	0.58		0.26	0.26	0.26	0.26	0.26
v/c Ratio	0.38	0.91	0.14	0.18	0.65	0.01		0.15	0.03	0.06	0.03	0.03
Control Delay	58.4	25.7	1.9	55.1	9.0	0.0		32.4	0.1	31.5	0.1	0.1
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	58.4	25.7	1.9	55.1	9.0	0.0		32.4	0.1	31.5	0.1	0.1
LOS	E	C	A	E	A	A		C	A	C	A	A
Approach Delay		24.7			9.5			26.6				17.7
Approach LOS		C			A			C				B
Queue Length 50th (ft)	21	524	0	11	122	0		25	0	10	0	0
Queue Length 95th (ft)	52	651	23	m22	143	m0		64	0	34	0	0
Internal Link Dist (ft)		728			9138			407				101
Turn Bay Length (ft)	465		400	465		375				35		
Base Capacity (vph)	88	2123	1003	88	2123	980		368	475	355	519	
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	0.38	0.90	0.13	0.18	0.63	0.01		0.15	0.03	0.06	0.03	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

Background Traffic Volumes

PM Peak Hour - Year 2024

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 18.8

Intersection LOS: B







Intersection Capacity Utilization 69.5%

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

Background Traffic Volumes
 PM Peak Hour - Year 2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	1645	128	22	1047	70	101	30	21	84	15	91
Future Volume (vph)	86	1645	128	22	1047	70	101	30	21	84	15	91
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1622	0
Flt Permitted	0.950			0.950			0.678			0.736		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1263	1863	1583	1371	1622	0
Satd. Flow (RTOR)			139			76			76		99	
Lane Group Flow (vph)	93	1788	139	24	1138	76	110	33	23	91	115	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	58.8	58.8	5.0	52.8	52.8	27.2	27.2	27.2	27.2	27.2	27.2
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	1.06	0.86	0.14	0.27	0.61	0.09	0.32	0.07	0.05	0.24	0.22	0.22
Control Delay	136.0	10.4	1.6	53.8	17.6	2.3	35.0	31.1	0.2	33.4	10.4	10.4
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	136.0	10.4	1.6	53.8	17.6	2.3	35.0	31.1	0.2	33.4	10.4	10.4
LOS	F	B	A	D	B	A	C	C	A	C	B	B
Approach Delay		15.6			17.3			29.4				20.6
Approach LOS		B			B			C				C
Queue Length 50th (ft)	~68	114	0	15	270	0	54	15	0	43	7	7
Queue Length 95th (ft)	m#86	m186	m7	42	263	17	117	44	0	98	55	55
Internal Link Dist (ft)		9138			747			478				130
Turn Bay Length (ft)	465		395	465		385	100		190			
Base Capacity (vph)	88	2123	1005	88	2123	980	343	507	486	373	513	513
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	1.06	0.84	0.14	0.27	0.54	0.08	0.32	0.07	0.05	0.24	0.22	0.22

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 2024

Maximum v/c Ratio: 1.06

Intersection Signal Delay: 17.1

Intersection LOS: B

Intersection Capacity Utilization 74.4%

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 2024

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	13	29	11	1	22	0
Future Vol, veh/h	0	2	10	8	0	1	13	29	11	1	22	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	14	32	12	1	24	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	93	98	24	99	92	38	24	0	0	44	0	0
Stage 1	26	26	-	66	66	-	-	-	-	-	-	-
Stage 2	67	72	-	33	26	-	-	-	-	-	-	-
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	891	792	1052	883	798	1034	1591	-	-	1564	-	-
Stage 1	992	874	-	945	840	-	-	-	-	-	-	-
Stage 2	943	835	-	983	874	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	883	784	1052	865	790	1034	1591	-	-	1564	-	-
Mov Cap-2 Maneuver	883	784	-	865	790	-	-	-	-	-	-	-
Stage 1	983	873	-	936	832	-	-	-	-	-	-	-
Stage 2	934	827	-	969	873	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.7		9.1		1.8		0.3	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1591	-	-	995	881	1564	-	-
HCM Lane V/C Ratio	0.009	-	-	0.013	0.011	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

Background Traffic Volumes
 PM Peak Hour - Year 2024

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	1	7	201	0	4	196
Future Vol, veh/h	1	7	201	0	4	196
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	218	0	4	213
























Major/Minor	Minor2	Major2	
Conflicting Flow All	436	0	0
Stage 1	436	-	-
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	514	-	-
Stage 1	580	-	-
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 2039

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	1407	2	0	2765	17	0	2	0	20	0	33
Future Volume (vph)	20	1407	2	0	2765	17	0	2	0	20	0	33
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)	22	1529	2	0	3005	18	0	2	0	22	36	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	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
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	20.0
Actuated g/C Ratio	0.04	0.75	0.75		0.70	0.70		0.17		0.17	0.17	0.17
v/c Ratio	0.30	0.58	0.00		1.21	0.02		0.01		0.09	0.11	0.11
Control Delay	66.7	7.6	0.0		110.7	0.0		42.0		43.6	3.4	3.4
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0
Total Delay	66.7	7.6	0.0		110.7	0.0		42.0		43.6	3.4	3.4
LOS	E	A	A		F	A		D		D	A	A
Approach Delay		8.5			110.0			42.0				18.7
Approach LOS		A			F			D				B
Queue Length 50th (ft)	17	236	0		~1593	0		1		15	0	0
Queue Length 95th (ft)	45	285	0		m#1282	m0		9		39	10	10
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	0
Spillback Cap Reductn	0	0	0		0	0		0		0	0	0
Storage Cap Reductn	0	0	0		0	0		0		0	0	0
Reduced v/c Ratio	0.30	0.58	0.00		1.21	0.02		0.01		0.09	0.11	0.11

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 2039

Maximum v/c Ratio: 1.21

Intersection Signal Delay: 74.8

Intersection LOS: E

Intersection Capacity Utilization 92.5%

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 2039

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	1223	81	12	2373	59	210	15	8	96	14	128
Future Volume (vph)	83	1223	81	12	2373	59	210	15	8	96	14	128
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1611	0
Flt Permitted	0.950			0.950			0.525			0.747		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	978	1863	1583	1391	1611	0
Satd. Flow (RTOR)			88			64			64		71	
Lane Group Flow (vph)	90	1329	88	13	2579	64	228	16	9	104	154	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	1.23	0.55	0.08	0.18	1.15	0.06	1.17	0.04	0.02	0.37	0.41	0.41
Control Delay	220.7	8.0	1.8	61.2	97.0	2.2	160.3	39.3	0.1	46.1	26.0	26.0
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	220.7	8.0	1.8	61.2	97.0	2.2	160.3	39.3	0.1	46.1	26.0	26.0
LOS	F	A	A	E	F	A	F	D	A	D	C	C
Approach Delay		20.3			94.5			146.9				34.1
Approach LOS		C			F			F				C
Queue Length 50th (ft)	~83	264	3	10	~1237	0	~210	10	0	70	55	55
Queue Length 95th (ft)	m#190	415	m23	32	#1367	16	#371	30	0	126	120	120
Internal Link Dist (ft)		9138			747			478				130
Turn Bay Length (ft)	465		395	465		385	100		190			
Base Capacity (vph)	73	2418	1109	73	2241	1026	195	372	367	278	379	379
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	1.23	0.55	0.08	0.18	1.15	0.06	1.17	0.04	0.02	0.37	0.41	0.41

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

AM Peak Hour - Year 2039

Maximum v/c Ratio: 1.23

Intersection Signal Delay: 70.1

Intersection LOS: E

Intersection Capacity Utilization 101.8%

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 2039

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	20	12	3	2	6	45	3	0	36	0
Future Vol, veh/h	0	0	20	12	3	2	6	45	3	0	36	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	22	13	3	2	7	49	3	0	39	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	106	105	39	115	104	51	39	0	0	52	0	0
Stage 1	39	39	-	65	65	-	-	-	-	-	-	-
Stage 2	67	66	-	50	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	873	785	1033	862	786	1017	1571	-	-	1554	-	-
Stage 1	976	862	-	946	841	-	-	-	-	-	-	-
Stage 2	943	840	-	963	862	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	865	782	1033	841	783	1017	1571	-	-	1554	-	-
Mov Cap-2 Maneuver	865	782	-	841	783	-	-	-	-	-	-	-
Stage 1	972	862	-	942	838	-	-	-	-	-	-	-
Stage 2	933	837	-	943	862	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.6	9.3	0.8	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1571	-	-	1033	847	1554	-
HCM Lane V/C Ratio	0.004	-	-	0.021	0.022	-	-
HCM Control Delay (s)	7.3	-	-	8.6	9.3	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 2039

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	0	0	201	0	2	230
Future Vol, veh/h	0	0	201	0	2	230
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	218	0	2	250
























Major/Minor	Minor2	Major2	
Conflicting Flow All	436	0	0
Stage 1	436	-	-
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	514	-	-
Stage 1	580	-	-
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 2039

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	2400	170	21	1667	18	69	0	15	29	0	23
Future Volume (vph)	41	2400	170	21	1667	18	69	0	15	29	0	23
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	0	1770	1583	1770	1583	0
Flt Permitted	0.950			0.950				0.741		0.708		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	0	1380	1583	1319	1583	0
Satd. Flow (RTOR)			185			64			64		89	
Lane Group Flow (vph)	45	2609	185	23	1812	20	0	75	16	32	25	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	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
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	0.42	1.05	0.16	0.32	0.77	0.02		0.33	0.05	0.15	0.07	0.07
Control Delay	65.8	53.8	1.3	78.4	9.6	0.0		48.6	0.3	44.8	0.4	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
Total Delay	65.8	53.8	1.3	78.4	9.6	0.0		48.6	0.3	44.8	0.4	0.4
LOS	E	D	A	E	A	A		D	A	D	A	A
Approach Delay		50.5			10.3			40.1				25.3
Approach LOS		D			B			D				C
Queue Length 50th (ft)	34	~1212	0	19	601	0		52	0	21	0	0
Queue Length 95th (ft)	74	#1342	23	m27	m151	m0		100	0	52	0	0
Internal Link Dist (ft)		728			9138			407				101
Turn Bay Length (ft)	465		400	465		375				35		
Base Capacity (vph)	118	2477	1163	73	2352	1073		230	317	219	338	
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	0.38	1.05	0.16	0.32	0.77	0.02		0.33	0.05	0.15	0.07	0.07

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

1: Mohawk Road & Woodmen Road

Background Traffic Volumes

PM Peak Hour - Year 2039

Maximum v/c Ratio: 1.05

Intersection Signal Delay: 34.6

Intersection LOS: C

Intersection Capacity Utilization 87.2%

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 2039

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	2243	174	30	1428	96	138	41	29	114	21	125
Future Volume (vph)	117	2243	174	30	1428	96	138	41	29	114	21	125
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1624	0
Flt Permitted	0.950			0.950			0.478			0.728		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	890	1863	1583	1356	1624	0
Satd. Flow (RTOR)			189			109			109		136	
Lane Group Flow (vph)	127	2438	189	33	1552	104	150	45	32	124	159	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)	13.2	84.0	84.0	5.0	71.8	71.8	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	0.65	0.98	0.16	0.45	0.73	0.11	1.01	0.15	0.09	0.55	0.41	0.41
Control Delay	67.5	14.4	0.1	75.7	20.4	2.2	127.8	44.2	0.5	56.1	14.1	14.1
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	67.5	14.4	0.1	75.7	20.4	2.2	127.8	44.2	0.5	56.1	14.1	14.1
LOS	E	B	A	E	C	A	F	D	A	E	B	B
Approach Delay		15.9			20.4			93.3				32.5
Approach LOS		B			C			F				C
Queue Length 50th (ft)	93	~1100	0	26	433	0	~119	30	0	89	15	15
Queue Length 95th (ft)	m88	m520	m0	#65	548	22	#258	65	0	155	78	78
Internal Link Dist (ft)		9138			747			478				130
Turn Bay Length (ft)	465		395	465		385	100		190			
Base Capacity (vph)	236	2477	1164	73	2116	990	148	310	354	226	384	384
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	0.54	0.98	0.16	0.45	0.73	0.11	1.01	0.15	0.09	0.55	0.41	0.41

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: 120
 Control Type: Actuated-Coordinated

Timings

2: Golden Sage Road & Woodmen Road

Background Traffic Volumes

PM Peak Hour - Year 2039

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 21.9

Intersection LOS: C

Intersection Capacity Utilization 99.3%

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: 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 2039

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	18	39	15	2	30	0
Future Vol, veh/h	0	3	14	11	0	2	18	39	15	2	30	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	20	42	16	2	33	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	128	135	33	136	127	50	33	0	0	58	0	0
Stage 1	37	37	-	90	90	-	-	-	-	-	-	-
Stage 2	91	98	-	46	37	-	-	-	-	-	-	-
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	845	756	1041	835	764	1018	1579	-	-	1546	-	-
Stage 1	978	864	-	917	820	-	-	-	-	-	-	-
Stage 2	916	814	-	968	864	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	834	745	1041	812	753	1018	1579	-	-	1546	-	-
Mov Cap-2 Maneuver	834	745	-	812	753	-	-	-	-	-	-	-
Stage 1	965	863	-	905	809	-	-	-	-	-	-	-
Stage 2	902	803	-	949	863	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.8		9.4		1.8		0.5	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1579	-	-	973	838	1546	-	-
HCM Lane V/C Ratio	0.012	-	-	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 2039

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Vol, veh/h	2	9	275	0	6	267
Future Vol, veh/h	2	9	275	0	6	267
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	299	0	7	290
























Major/Minor	Minor2	Major2	
Conflicting Flow All	598	0	0
Stage 1	598	-	-
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	416	-	-
Stage 1	491	-	-
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 2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	1077	1	0	2105	24	0	1	0	36	0	50
Future Volume (vph)	29	1077	1	0	2105	24	0	1	0	36	0	50
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)	32	1171	1	0	2288	26	0	1	0	39	54	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	0.36	0.47	0.00		1.01	0.03		0.00		0.14	0.14	
Control Delay	57.8	7.5	0.0		34.7	1.9		32.0		34.5	3.4	
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0		0.0	0.0	
Total Delay	57.8	7.5	0.0		34.7	1.9		32.0		34.5	3.4	
LOS	E	A	A		C	A		C		C	A	
Approach Delay		8.8			34.3			32.0			16.4	
Approach LOS		A			C			C			B	
Queue Length 50th (ft)	20	153	0		-845	0		1		21	0	
Queue Length 95th (ft)	51	193	0		m#791	m0		5		50	13	
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	0.36	0.47	0.00		1.01	0.03		0.00		0.14	0.14	

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

Total Traffic Volumes

AM Peak Hour - Year 2024

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 25.4

Intersection LOS: C

Intersection Capacity Utilization 75.2%

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: 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 2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	924	62	17	1755	52	159	11	17	86	10	110
Future Volume (vph)	70	924	62	17	1755	52	159	11	17	86	10	110
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1608	0
Flt Permitted	0.950			0.950			0.616			0.750		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1147	1863	1583	1397	1608	0
Satd. Flow (RTOR)			76			76			76		97	
Lane Group Flow (vph)	76	1004	67	18	1908	57	173	12	18	93	131	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	65.5	65.5	5.0	59.5	59.5	20.5	20.5	20.5	20.5	20.5	20.5
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	0.86	0.43	0.06	0.20	0.91	0.06	0.74	0.03	0.05	0.33	0.32	0.32
Control Delay	106.9	15.2	5.7	51.2	25.5	1.4	57.7	32.6	0.2	38.0	13.9	13.9
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	106.9	15.2	5.7	51.2	25.5	1.4	57.7	32.6	0.2	38.0	13.9	13.9
LOS	F	B	A	D	C	A	E	C	A	D	B	B
Approach Delay		20.7			25.0			51.1				23.9
Approach LOS		C			C			D				C
Queue Length 50th (ft)	53	179	9	11	515	0	105	6	0	51	18	18
Queue Length 95th (ft)	m#125	430	m25	34	645	10	#211	22	0	99	69	69
Internal Link Dist (ft)		6036			747			478				130
Turn Bay Length (ft)	465		395	465		385	100		190			
Base Capacity (vph)	88	2318	1063	88	2123	980	235	381	385	286	406	406
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	0.86	0.43	0.06	0.20	0.90	0.06	0.74	0.03	0.05	0.33	0.32	0.32

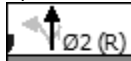
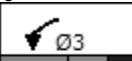


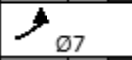
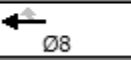
Intersection Summary
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated

Timings
2: Golden Sage Road & Woodmen Road

Total Traffic Volumes
 AM Peak Hour - Year 2024

























Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 25.1
 Intersection Capacity Utilization 80.7%
 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)	 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
 AM Peak Hour - Year 2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	1058	40	20	2001	3	51	109	23	4	96	26
Future Volume (vph)	15	1058	40	20	2001	3	51	109	23	4	96	26
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.068			0.179			0.582			0.677		
Satd. Flow (perm)	127	3539	1583	333	3539	1583	1084	3539	1583	1261	3539	1583
Satd. Flow (RTOR)			115			115			115			115
Lane Group Flow (vph)	16	1150	43	22	2175	3	55	118	25	4	104	28
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	0.10	0.55	0.04	0.08	1.04	0.00	0.17	0.13	0.05	0.01	0.14	0.07
Control Delay	8.1	12.8	0.1	3.0	43.9	0.0	28.3	30.0	0.2	26.2	34.5	0.3
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	8.1	12.8	0.1	3.0	43.9	0.0	28.3	30.0	0.2	26.2	34.5	0.3
LOS	A	B	A	A	D	A	C	C	A	C	C	A
Approach Delay		12.3			43.4			25.7			27.2	
Approach LOS		B			D			C			C	
Queue Length 50th (ft)	3	184	0	2	738	0	26	29	0	2	29	0
Queue Length 95th (ft)	m8	238	m0	m3	#1024	m0	56	59	0	10	53	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	275	2095	983	327	923	498	332	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	0.10	0.55	0.04	0.08	1.04	0.00	0.17	0.13	0.05	0.01	0.14	0.07






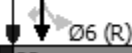


Intersection Summary
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated

Timings
3: Banning Lewis Parkway & Woodmen Road

Total Traffic Volumes
 AM Peak Hour - Year 2024

Maximum v/c Ratio: 1.04
 Intersection Signal Delay: 31.8
 Intersection Capacity Utilization 74.9%
 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: 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 2024

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	14	57	2	1	4	33	29	0	26	0
Future Vol, veh/h	0	0	14	57	2	1	4	33	29	0	26	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	62	2	1	4	36	32	0	28	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	90	104	28	96	88	52	28	0	0	68	0	0
Stage 1	28	28	-	60	60	-	-	-	-	-	-	-
Stage 2	62	76	-	36	28	-	-	-	-	-	-	-
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	895	786	1047	887	802	1016	1585	-	-	1533	-	-
Stage 1	989	872	-	951	845	-	-	-	-	-	-	-
Stage 2	949	832	-	980	872	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	891	784	1047	873	800	1016	1585	-	-	1533	-	-
Mov Cap-2 Maneuver	891	784	-	873	800	-	-	-	-	-	-	-
Stage 1	986	872	-	948	842	-	-	-	-	-	-	-
Stage 2	943	830	-	966	872	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.5		9.5		0.4		0	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1585	-	-	1047	872	1533	-	-
HCM Lane V/C Ratio	0.003	-	-	0.015	0.075	-	-	-
HCM Control Delay (s)	7.3	-	-	8.5	9.5	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0	-	-

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

Total Traffic Volumes
 AM Peak Hour - Year 2024

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	0	32	147	0	19	168
Future Vol, veh/h	0	32	147	0	19	168
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	35	160	0	21	183

Major/Minor	Minor2	Major2	
Conflicting Flow All	320	0	0
Stage 1	320	-	-
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	597	-	-
Stage 1	652	-	-
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 2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	1906	124	15	1347	52	51	0	11	54	0	59
Future Volume (vph)	79	1906	124	15	1347	52	51	0	11	54	0	59
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	0	1770	1583	1770	1583	0
Flt Permitted	0.950			0.950				0.715		0.721		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	0	1332	1583	1343	1583	0
Satd. Flow (RTOR)			135			76			76		122	
Lane Group Flow (vph)	86	2072	135	16	1464	57	0	55	12	59	64	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	63.8	63.8	5.0	57.8	57.8		22.2	22.2	22.2	22.2	22.2
Actuated g/C Ratio	0.05	0.64	0.64	0.05	0.58	0.58		0.22	0.22	0.22	0.22	0.22
v/c Ratio	0.98	0.92	0.13	0.18	0.72	0.06		0.19	0.03	0.20	0.14	0.14
Control Delay	139.9	24.5	1.8	50.5	17.3	1.4		35.4	0.1	35.6	1.1	1.1
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	139.9	24.5	1.8	50.5	17.3	1.4		35.4	0.1	35.6	1.1	1.1
LOS	F	C	A	D	B	A		D	A	D	A	A
Approach Delay		27.5			17.0			29.1				17.6
Approach LOS		C			B			C				B
Queue Length 50th (ft)	56	438	0	10	310	0		29	0	32	0	0
Queue Length 95th (ft)	#154	#847	23	32	387	10		65	0	69	4	4
Internal Link Dist (ft)		728			2631			407				101
Turn Bay Length (ft)	465		400	465		375				35		
Base Capacity (vph)	88	2259	1059	88	2123	980		295	409	297	445	
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	0.98	0.92	0.13	0.18	0.69	0.06		0.19	0.03	0.20	0.14	0.14

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 2024

Maximum v/c Ratio: 0.98
Intersection Signal Delay: 23.2 Intersection LOS: C
Intersection Capacity Utilization 79.0% 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: 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 2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	1686	137	42	1096	99	109	30	38	109	15	116
Future Volume (vph)	115	1686	137	42	1096	99	109	30	38	109	15	116
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1615	0
Flt Permitted	0.950			0.950			0.615			0.736		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1146	1863	1583	1371	1615	0
Satd. Flow (RTOR)			149			108			76		126	
Lane Group Flow (vph)	125	1833	149	46	1191	108	118	33	41	118	142	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	57.1	57.1	22.9	22.9	22.9	22.9	22.9	22.9
Actuated g/C Ratio	0.05	0.59	0.59	0.05	0.57	0.57	0.23	0.23	0.23	0.23	0.23	0.23
v/c Ratio	1.42	0.88	0.15	0.52	0.59	0.11	0.45	0.08	0.10	0.38	0.30	
Control Delay	279.7	23.3	1.8	67.9	15.0	2.0	41.6	33.3	2.6	38.6	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	279.7	23.3	1.8	67.9	15.0	2.0	41.6	33.3	2.6	38.6	10.2	
LOS	F	C	A	E	B	A	D	C	A	D	B	
Approach Delay		37.0			15.7			31.8			23.1	
Approach LOS		D			B			C			C	
Queue Length 50th (ft)	~108	472	0	29	223	0	68	17	0	66	8	
Queue Length 95th (ft)	#224	592	23	#77	281	20	127	44	9	123	60	
Internal Link Dist (ft)		6427			747			478			130	
Turn Bay Length (ft)	465		395	465		385	100		190			
Base Capacity (vph)	88	2123	1009	88	2123	993	262	426	421	314	466	
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	1.42	0.86	0.15	0.52	0.56	0.11	0.45	0.08	0.10	0.38	0.30	

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 2024

Maximum v/c Ratio: 1.42

Intersection Signal Delay: 28.5

Intersection LOS: C

Intersection Capacity Utilization 81.4%

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.

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 2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	1819	103	46	1265	10	95	224	44	8	230	42
Future Volume (vph)	49	1819	103	46	1265	10	95	224	44	8	230	42
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.120			0.055			0.403			0.601		
Satd. Flow (perm)	224	3539	1583	102	3539	1583	751	3539	1583	1120	3539	1583
Satd. Flow (RTOR)			95			95			95			95
Lane Group Flow (vph)	53	1977	112	50	1375	11	103	243	48	9	250	46
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)	77.2	72.6	72.6	76.1	72.1	72.1	29.9	28.9	28.9	25.9	20.8	20.8
Actuated g/C Ratio	0.64	0.60	0.60	0.63	0.60	0.60	0.25	0.24	0.24	0.22	0.17	0.17
v/c Ratio	0.24	0.92	0.11	0.37	0.65	0.01	0.44	0.29	0.11	0.03	0.41	0.13
Control Delay	8.9	29.9	2.9	15.7	17.4	0.0	44.4	40.0	0.8	35.5	47.2	0.8
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	8.9	29.9	2.9	15.7	17.4	0.0	44.4	40.0	0.8	35.5	47.2	0.8
LOS	A	C	A	B	B	A	D	D	A	D	D	A
Approach Delay		28.0			17.2			36.4			39.9	
Approach LOS		C			B			D			D	
Queue Length 50th (ft)	12	673	5	11	343	0	65	81	0	5	93	0
Queue Length 95th (ft)	25	814	28	28	415	0	115	132	3	19	136	1
Internal Link Dist (ft)		2631			6427			408			109	
Turn Bay Length (ft)	200		200	200		200	200		200	200		200
Base Capacity (vph)	217	2149	998	134	2129	990	233	851	452	269	614	353
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	0.24	0.92	0.11	0.37	0.65	0.01	0.44	0.29	0.11	0.03	0.41	0.13









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: 100
 Control Type: Actuated-Coordinated

Timings
3: Banning Lewis Parkway & Woodmen Road

Total Traffic Volumes
 PM Peak Hour - Year 2024

Maximum v/c Ratio: 0.92	Intersection Signal Delay: 26.0	Intersection LOS: C
Intersection Capacity Utilization 73.2%	ICU Level of Service D	
Analysis Period (min) 15		

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 2024

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	0	2	10	83	0	1	13	29	99	1	22	0
Future Vol, veh/h	0	2	10	83	0	1	13	29	99	1	22	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	90	0	1	14	32	108	1	24	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	141	194	24	147	140	86	24	0	0	140	0	0
Stage 1	26	26	-	114	114	-	-	-	-	-	-	-
Stage 2	115	168	-	33	26	-	-	-	-	-	-	-
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	829	701	1052	821	751	973	1591	-	-	1443	-	-
Stage 1	992	874	-	891	801	-	-	-	-	-	-	-
Stage 2	890	759	-	983	874	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	822	694	1052	805	743	973	1591	-	-	1443	-	-
Mov Cap-2 Maneuver	822	694	-	805	743	-	-	-	-	-	-	-
Stage 1	983	873	-	883	794	-	-	-	-	-	-	-
Stage 2	881	752	-	969	873	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.8		10		0.7		0.3	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1591	-	-	969	807	1443	-	-
HCM Lane V/C Ratio	0.009	-	-	0.013	0.113	0.001	-	-
HCM Control Delay (s)	7.3	-	-	8.8	10	7.5	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.4	0	-	-

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

Total Traffic Volumes
 PM Peak Hour - Year 2024

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	1	57	201	0	62	196
Future Vol, veh/h	1	57	201	0	62	196
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	62	218	0	67	213
























Major/Minor	Minor2	Major2	
Conflicting Flow All	436	0	0
Stage 1	436	-	-
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	514	-	-
Stage 1	580	-	-
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 2039

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	1592	2	0	3046	66	0	2	0	94	0	127
Future Volume (vph)	82	1592	2	0	3046	66	0	2	0	94	0	127
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						84
Lane Group Flow (vph)	89	1730	2	0	3311	72	0	2	0	102	138	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		60.0	60.0		20.0		20.0	20.0	20.0
Actuated g/C Ratio	0.05	0.70	0.70		0.60	0.60		0.20		0.20	0.20	0.20
v/c Ratio	1.01	0.70	0.00		1.56	0.07		0.01		0.36	0.36	
Control Delay	148.8	10.7	0.0		275.6	6.4		32.0		38.9	17.9	
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0		0.0	0.0	
Total Delay	148.8	10.7	0.0		275.6	6.4		32.0		38.9	17.9	
LOS	F	B	A		F	A		C		D	B	
Approach Delay		17.5			269.8			32.0			26.8	
Approach LOS		B			F			C			C	
Queue Length 50th (ft)	~58	297	0		~1561	8		1		57	29	
Queue Length 95th (ft)	#160	371	0		m#830	m2		7		107	83	
Internal Link Dist (ft)		728			3022			407			101	
Turn Bay Length (ft)	465		400			375				35		
Base Capacity (vph)	88	2477	1130		2123	980		372		282	383	
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	1.01	0.70	0.00		1.56	0.07		0.01		0.36	0.36	
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: 150												
Control Type: Actuated-Coordinated												

Timings

1: Mohawk Road & Woodmen Road

Total Traffic Volumes

AM Peak Hour - Year 2039

Maximum v/c Ratio: 1.56

Intersection Signal Delay: 174.7

Intersection LOS: F

Intersection Capacity Utilization 104.4%

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 (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 2039

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	1314	93	34	2435	96	229	15	45	152	14	184
Future Volume (vph)	120	1314	93	34	2435	96	229	15	45	152	14	184
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1602	0
Flt Permitted	0.950			0.950			0.411			0.747		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	766	1863	1583	1391	1602	0
Satd. Flow (RTOR)			101			104			76		86	
Lane Group Flow (vph)	130	1428	101	37	2647	104	249	16	49	165	215	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	64.0	64.0	5.0	60.0	60.0	20.0	20.0	20.0	20.0	20.0	20.0
Actuated g/C Ratio	0.05	0.64	0.64	0.05	0.60	0.60	0.20	0.20	0.20	0.20	0.20	0.20
v/c Ratio	1.48	0.63	0.10	0.42	1.25	0.10	1.63	0.04	0.13	0.59	0.55	
Control Delay	283.1	18.2	4.0	60.8	137.6	2.0	339.6	32.8	4.2	46.2	27.3	
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	283.1	18.2	4.0	60.8	137.6	2.0	339.6	32.8	4.2	46.2	27.3	
LOS	F	B	A	E	F	A	F	C	A	D	C	
Approach Delay		38.1			131.5			271.6				35.5
Approach LOS		D			F			F				D
Queue Length 50th (ft)	~112	513	17	23	~1113	0	~230	8	0	96	73	
Queue Length 95th (ft)	m#154	578	m19	57	#1248	20	#385	26	16	167	149	
Internal Link Dist (ft)		6036			747			478				130
Turn Bay Length (ft)	465		395	465		385	100		190			
Base Capacity (vph)	88	2265	1049	88	2123	991	153	372	377	278	389	
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	1.48	0.63	0.10	0.42	1.25	0.10	1.63	0.04	0.13	0.59	0.55	

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: 150
 Control Type: Actuated-Coordinated

Timings
2: Golden Sage Road & Woodmen Road

Total Traffic Volumes
AM Peak Hour - Year 2039

























Maximum v/c Ratio: 1.63
Intersection Signal Delay: 102.8 Intersection LOS: F
Intersection Capacity Utilization 115.4% 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

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

Timings
3: Banning Lewis Parkway & Woodmen Road

Total Traffic Volumes
AM Peak Hour - Year 2039

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	1469	155	75	2760	13	187	404	80	18	372	94
Future Volume (vph)	62	1469	155	75	2760	13	187	404	80	18	372	94
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.074			0.074			0.290			0.389		
Satd. Flow (perm)	138	3539	1583	138	3539	1583	540	3539	1583	725	3539	1583
Satd. Flow (RTOR)			136			115			115			115
Lane Group Flow (vph)	67	1597	168	82	3000	14	203	439	87	20	404	102
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	57.0	57.0	9.5	57.0	57.0	9.5	24.0	24.0	9.5	24.0	24.0
Total Split (%)	9.5%	57.0%	57.0%	9.5%	57.0%	57.0%	9.5%	24.0%	24.0%	9.5%	24.0%	24.0%
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)	58.4	54.4	54.4	58.4	54.4	54.4	27.2	25.2	25.2	24.5	19.5	19.5
Actuated g/C Ratio	0.58	0.54	0.54	0.58	0.54	0.54	0.27	0.25	0.25	0.24	0.20	0.20
v/c Ratio	0.42	0.83	0.18	0.51	1.56	0.02	0.98	0.49	0.18	0.09	0.59	0.25
Control Delay	19.7	23.3	6.5	13.0	272.7	0.0	92.2	35.3	4.3	26.6	40.5	7.1
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	19.7	23.3	6.5	13.0	272.7	0.0	92.2	35.3	4.3	26.6	40.5	7.1
LOS	B	C	A	B	F	A	F	D	A	C	D	A
Approach Delay		21.6			264.6			47.4			33.5	
Approach LOS		C			F			D			C	
Queue Length 50th (ft)	18	328	14	9	~1490	0	104	118	0	9	124	0
Queue Length 95th (ft)	m35	415	m52	m8	m#1060	m0	#259	189	25	27	174	36
Internal Link Dist (ft)		3022			6036			482			110	
Turn Bay Length (ft)	200		200	200		200	200		200	200		200
Base Capacity (vph)	161	1924	923	161	1924	913	208	892	484	229	690	401
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	0.42	0.83	0.18	0.51	1.56	0.02	0.98	0.49	0.18	0.09	0.59	0.25

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: 150
 Control Type: Actuated-Coordinated

Timings

3: Banning Lewis Parkway & Woodmen Road

Total Traffic Volumes

AM Peak Hour - Year 2039

Maximum v/c Ratio: 1.56

Intersection Signal Delay: 147.3

Intersection LOS: F

Intersection Capacity Utilization 108.2%

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: 3: Banning Lewis Parkway & Woodmen Road

 Ø1	 Ø2 (R)	 Ø3	 Ø4
9.5 s	24 s	9.5 s	57 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
9.5 s	24 s	9.5 s	57 s

HCM 2010 TWSC
4: Mohawk Road & Woodmen Frontage Road

Total Traffic Volumes
AM Peak Hour - Year 2039

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	20	180	3	2	6	45	114	0	36	0
Future Vol, veh/h	0	0	20	180	3	2	6	45	114	0	36	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	22	196	3	2	7	49	124	0	39	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	167	226	39	175	164	111	39	0	0	173	0	0
Stage 1	39	39	-	125	125	-	-	-	-	-	-	-
Stage 2	128	187	-	50	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	797	673	1033	788	729	942	1571	-	-	1404	-	-
Stage 1	976	862	-	879	792	-	-	-	-	-	-	-
Stage 2	876	745	-	963	862	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	790	670	1033	769	726	942	1571	-	-	1404	-	-
Mov Cap-2 Maneuver	790	670	-	769	726	-	-	-	-	-	-	-
Stage 1	972	862	-	875	789	-	-	-	-	-	-	-
Stage 2	866	742	-	943	862	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	8.6		11.3		0.3		0	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1571	-	-	1033	770	1404	-
HCM Lane V/C Ratio	0.004	-	-	0.021	0.261	-	-
HCM Control Delay (s)	7.3	-	-	8.6	11.3	0	-
HCM Lane LOS	A	-	-	A	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	1	0	-

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

Total Traffic Volumes
AM Peak Hour - Year 2039

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	0	112	201	0	76	230
Future Vol, veh/h	0	112	201	0	76	230
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	122	218	0	83	250

























Major/Minor	Minor2	Major2	
Conflicting Flow All	436	0	0
Stage 1	436	-	-
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	514	-	-
Stage 1	580	-	-
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 2039

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	149	2723	170	21	1909	104	69	0	15	93	0	104
Future Volume (vph)	149	2723	170	21	1909	104	69	0	15	93	0	104
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	0	1770	1583	1770	1583	0
Flt Permitted	0.950			0.950				0.615		0.708		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	0	1146	1583	1319	1583	0
Satd. Flow (RTOR)			182			113			109		109	
Lane Group Flow (vph)	162	2960	185	23	2075	113	0	75	16	101	113	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)	17.0	85.0	85.0	10.0	78.0	78.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (%)	14.2%	70.8%	70.8%	8.3%	65.0%	65.0%	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
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
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)	12.0	84.0	84.0	5.0	73.0	73.0		20.0	20.0	20.0	20.0	20.0
Actuated g/C Ratio	0.10	0.70	0.70	0.04	0.61	0.61		0.17	0.17	0.17	0.17	0.17
v/c Ratio	0.92	1.19	0.16	0.32	0.96	0.11		0.39	0.05	0.46	0.32	0.32
Control Delay	102.4	112.7	1.4	49.8	21.7	3.5		51.6	0.3	52.9	11.5	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	102.4	112.7	1.4	49.8	21.7	3.5		51.6	0.3	52.9	11.5	11.5
LOS	F	F	A	D	C	A		D	A	D	B	B
Approach Delay		106.0			21.0			42.5				31.0
Approach LOS		F			C			D				C
Queue Length 50th (ft)	126	~1510	1	18	320	5		52	0	71	3	3
Queue Length 95th (ft)	#259	#1633	24	m20	m#401	m9		102	0	130	54	54
Internal Link Dist (ft)		728			2631			407				101
Turn Bay Length (ft)	465		400	465		375				35		
Base Capacity (vph)	177	2477	1162	73	2152	1007		191	354	219	354	
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	0.92	1.19	0.16	0.32	0.96	0.11		0.39	0.05	0.46	0.32	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

Timings

1: Mohawk Road & Woodmen Road

Total Traffic Volumes

PM Peak Hour - Year 2039

Maximum v/c Ratio: 1.19

Intersection Signal Delay: 70.0

Intersection LOS: E

Intersection Capacity Utilization 103.8%

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 (R)	 Ø3	 Ø4
25 s	10 s	85 s
 Ø5 (R)	 Ø7	 Ø8
25 s	17 s	78 s

Timings
2: Golden Sage Road & Woodmen Road

Total Traffic Volumes
PM Peak Hour - Year 2039

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	182	2321	193	73	1536	161	154	41	61	162	21	174
Future Volume (vph)	182	2321	193	73	1536	161	154	41	61	162	21	174
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1613	0
Flt Permitted	0.950			0.950			0.409			0.728		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	762	1863	1583	1356	1613	0
Satd. Flow (RTOR)			210			175			109		184	
Lane Group Flow (vph)	198	2523	210	79	1670	175	167	45	66	176	212	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)	22.0	82.0	82.0	10.0	70.0	70.0	28.0	28.0	28.0	28.0	28.0	28.0
Total Split (%)	18.3%	68.3%	68.3%	8.3%	58.3%	58.3%	23.3%	23.3%	23.3%	23.3%	23.3%	23.3%
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)	16.1	77.0	77.0	5.0	65.9	65.9	23.0	23.0	23.0	23.0	23.0	23.0
Actuated g/C Ratio	0.13	0.64	0.64	0.04	0.55	0.55	0.19	0.19	0.19	0.19	0.19	0.19
v/c Ratio	0.84	1.11	0.19	1.08	0.86	0.18	1.14	0.13	0.17	0.68	0.46	0.46
Control Delay	45.4	91.9	6.3	183.2	29.1	2.4	162.5	41.4	2.6	59.5	12.4	12.4
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	45.4	91.9	6.3	183.2	29.1	2.4	162.5	41.4	2.6	59.5	12.4	12.4
LOS	D	F	A	F	C	A	F	D	A	E	B	B
Approach Delay		82.7			33.0			104.9				33.8
Approach LOS		F			C			F				C
Queue Length 50th (ft)	139	~1211	39	~68	566	0	~151	29	0	128	18	18
Queue Length 95th (ft)	m108	m854	m19	#171	682	32	#293	63	10	#219	88	88
Internal Link Dist (ft)		6427			747			478				130
Turn Bay Length (ft)	465		395	465		385	100		190			
Base Capacity (vph)	250	2270	1091	73	1943	948	146	357	391	259	457	457
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	0.79	1.11	0.19	1.08	0.86	0.18	1.14	0.13	0.17	0.68	0.46	0.46

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

Total Traffic Volumes
PM Peak Hour - Year 2039

Maximum v/c Ratio: 1.14

Intersection Signal Delay: 63.0

Intersection LOS: E

Intersection Capacity Utilization 105.4%

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
28 s	10 s	82 s
 Ø5 (R)	 Ø7	 Ø8
28 s	22 s	70 s

Timings
3: Banning Lewis Parkway & Woodmen Road

Total Traffic Volumes
PM Peak Hour - Year 2039

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	108	2512	221	98	1744	22	194	457	90	14	484	81
Future Volume (vph)	108	2512	221	98	1744	22	194	457	90	14	484	81
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.057			0.057			0.163			0.300		
Satd. Flow (perm)	106	3539	1583	106	3539	1583	304	3539	1583	559	3539	1583
Satd. Flow (RTOR)			109			95			98			95
Lane Group Flow (vph)	117	2730	240	107	1896	24	211	497	98	15	526	88
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)	9.8	75.0	75.0	9.5	74.7	74.7	11.0	26.0	26.0	9.5	24.5	24.5
Total Split (%)	8.2%	62.5%	62.5%	7.9%	62.3%	62.3%	9.2%	21.7%	21.7%	7.9%	20.4%	20.4%
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)	75.8	70.5	70.5	75.2	70.2	70.2	29.8	27.2	27.2	25.0	20.0	20.0
Actuated g/C Ratio	0.63	0.59	0.59	0.63	0.58	0.58	0.25	0.23	0.23	0.21	0.17	0.17
v/c Ratio	0.84	1.31	0.25	0.79	0.92	0.02	1.37	0.62	0.23	0.09	0.89	0.26
Control Delay	31.8	167.1	11.0	47.7	26.5	0.0	234.2	46.7	9.6	34.8	67.7	9.5
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	31.8	167.1	11.0	47.7	26.5	0.0	234.2	46.7	9.6	34.8	67.7	9.5
LOS	C	F	B	D	C	A	F	D	A	C	E	A
Approach Delay		149.9			27.3			91.3			58.8	
Approach LOS		F			C			F			E	
Queue Length 50th (ft)	62	~1426	73	26	775	0	~161	175	0	9	212	0
Queue Length 95th (ft)	m50	m#1064	m58	m45	m852	m0	#334	257	47	27	#309	41
Internal Link Dist (ft)		2631			6427			408			109	
Turn Bay Length (ft)	200		200	200		200	200		200	200		200
Base Capacity (vph)	140	2079	974	135	2070	965	154	802	434	166	589	343
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	0.84	1.31	0.25	0.79	0.92	0.02	1.37	0.62	0.23	0.09	0.89	0.26

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

Total Traffic Volumes

3: Banning Lewis Parkway & Woodmen Road

PM Peak Hour - Year 2039

Maximum v/c Ratio: 1.37

Intersection Signal Delay: 96.0

Intersection LOS: F

Intersection Capacity Utilization 114.0%

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: 3: Banning Lewis Parkway & Woodmen Road

 Ø1	 Ø2 (R)	 Ø3	 Ø4
9.5 s	26 s	9.5 s	75 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
11 s	24.5 s	9.8 s	74.7 s

HCM 2010 TWSC
4: Mohawk Road & Woodmen Frontage Road

Total Traffic Volumes
PM Peak Hour - Year 2039

Intersection												
Int Delay, s/veh	4.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	0	3	14	156	0	2	18	39	209	2	30	0
Future Vol, veh/h	0	3	14	156	0	2	18	39	209	2	30	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	170	0	2	20	42	227	2	33	0

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	234	346	33	242	233	156	33	0	0	269	0	0
Stage 1	37	37	-	196	196	-	-	-	-	-	-	-
Stage 2	197	309	-	46	37	-	-	-	-	-	-	-
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	721	577	1041	712	667	890	1579	-	-	1295	-	-
Stage 1	978	864	-	806	739	-	-	-	-	-	-	-
Stage 2	805	660	-	968	864	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	711	568	1041	691	657	890	1579	-	-	1295	-	-
Mov Cap-2 Maneuver	711	568	-	691	657	-	-	-	-	-	-	-
Stage 1	965	862	-	796	729	-	-	-	-	-	-	-
Stage 2	793	651	-	948	862	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9		11.9		0.5		0.5	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1579	-	-	908	693	1295	-
HCM Lane V/C Ratio	0.012	-	-	0.02	0.248	0.002	-
HCM Control Delay (s)	7.3	-	-	9	11.9	7.8	0
HCM Lane LOS	A	-	-	A	B	A	A
HCM 95th %tile Q(veh)	0	-	-	0.1	1	0	-

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

Total Traffic Volumes
 PM Peak Hour - Year 2039

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Vol, veh/h	2	106	275	0	136	267
Future Vol, veh/h	2	106	275	0	136	267
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	115	299	0	148	290

Major/Minor	Minor2	Major2	
Conflicting Flow All	598	0	0
Stage 1	598	-	-
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	416	-	-
Stage 1	491	-	-
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)	-	-	-