

TRAFFIC IMPACT STUDY

For

Percheron Master Plan Amendment Colorado Springs, Colorado

September 2025
Revised October 2025

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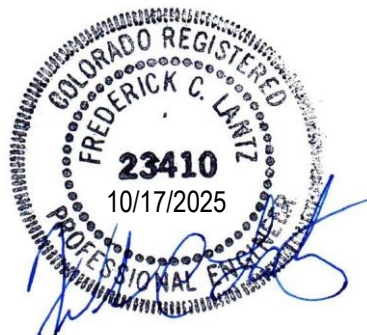
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24-112294

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I. Introduction

Project Overview

This traffic impact study is provided as a planning document and addresses the capacity, geometric, and control requirements associated with the development entitled Percheron Master Plan Amendment.

This traffic impact study has been revised to address City review comments dated October 2, 2025, regarding updates to traffic volumes and assumed and recommended intersection geometry.

This proposed mixed-use development consists of a mix of residential, commercial, and public park land uses. The development is located to the north and south of E 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 E Woodmen Road intersections with Mohawk Road, Banning Lewis Parkway, and Golden Sage Road, as well as the Woodmen Frontage Road intersections with Mohawk Road and Golden Sage Road, and the future Banning Lewis Parkway intersections with Carlana Drive, Golden Jubilee Drive, and additional proposed site access drives.

Figure 1 illustrates location of the site and study intersections.

Site Description

Land for the development is currently vacant and surrounded by a mix of residential, commercial, and light industrial land uses.

The proposed development is conceptual and specific land uses and densities may be subject to change. However, for purposes of this analysis, there is assumed to be construction of approximately 1,900 single-family homes, 1,000 multifamily homes, 12 acres of public parks, a sports complex containing 30 soccer fields, an elementary school with a capacity of 1,100 students, a 26,000 square foot fire station, 260,000 square feet of office park uses, and 915,000 square feet of retail.

Proposed access to the development is provided via multiple access drives along E Woodmen Road, Woodmen Frontage Road, and Banning Lewis Parkway. As specific land uses and densities are further defined, specific parcel access locations may also be subject to change. However, for purposes of this analysis, primary access locations include three full-movement accesses onto Banning Lewis Parkway, two full-movement accesses onto Woodmen Frontage Road, and one full-movement access onto Golden Sage Road.

It is noted that site access drives internal to the overall development area were not included in this analysis as internal intersection operations are expected to be comparable to, or better than, those projected for the intersections analyzed along E Woodmen Road and Banning Lewis Parkway.

It is anticipated that site development will be phased, however the timing for when specific phases may occur is unknown. Therefore, for purposes of this analysis, it is assumed that full build-out would occur by Year 2030. It is, however, noted that the residential portion of the initial phase of development is understood to be currently under construction.

General site and access locations are shown on Figure 1.

A conceptual site plan, as prepared by N.E.S. Inc., is shown in Figure 2. This plan is provided for illustrative purposes only.

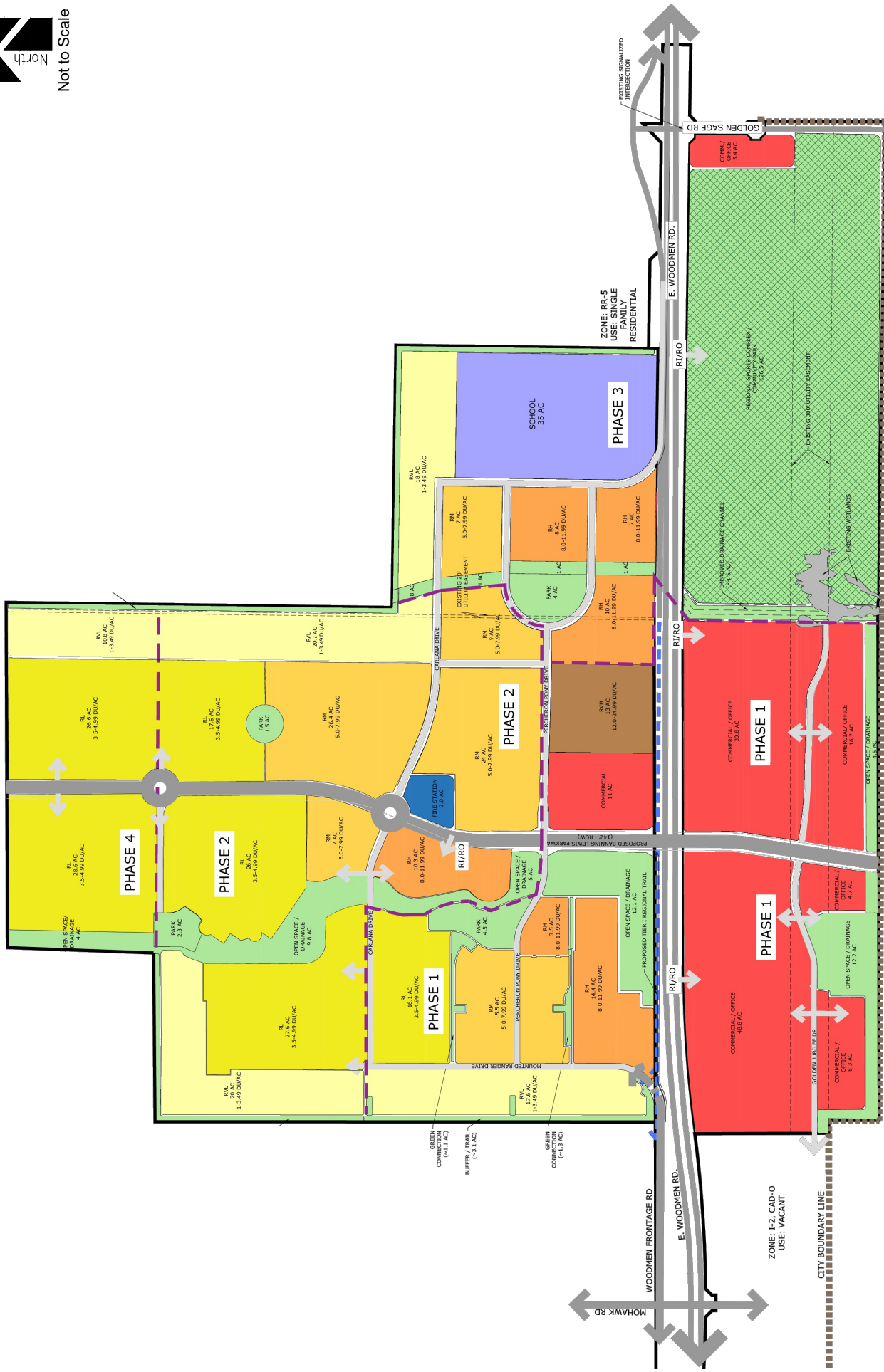


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Existing and Committed Surface Transportation Network

Within the study area, Banning Lewis Parkway and Woodmen Frontage Road are the primary roadways that will accommodate traffic to and from the proposed development. The secondary roadways include E Woodmen Road, Mohawk Road and Golden Sage Road. A brief description of each roadway, County's Major Transportation Corridors Plan (MTCP)¹ and City of Colorado Springs Major Thoroughfare Plan (MTP)², is provided below:

Banning Lewis Parkway is a north-south principal arterial roadway having six through lanes (three lanes in each direction) with exclusive turn lanes at the intersection within the study area. Banning Lewis Parkway provides a posted speed limit of 40 MPH.

Woodmen Frontage Road is an east-west major collector 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.

E Woodmen Road is an east-west expressway roadway having six through lanes (three lanes in each direction) west of Golden Sage Road and four through lanes (two lanes in each direction) east of Golden Sage Road. E Woodmen Road has exclusive turn lanes at the intersections within the study area. E Woodmen Road provides a posted speed limit of 55 MPH.

Mohawk Road is a north-south local 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 minor arterial 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 provides a posted speed limit of 35 MPH.

The E Woodmen Road intersections with Banning Lewis Parkway, 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.

Pursuant to the County's MTCP, E Woodmen Road will be widened from four to six through lanes from Golden Sage Road to U.S. Highway 24. For analysis purposes, it is assumed this improvement to be completed by Year 2045.

No other 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.

¹ El Paso County Major Transportation Corridors Plan, Felsburg Holt & Ullevig, July 18, 2024.

² City of Colorado Springs Major Thoroughfare Plan, City of Colorado Springs, Department of Public Works, May 16, 2025.

II. Existing Traffic Conditions

Morning (AM) and afternoon (PM) peak hour traffic counts were collected at the intersections of E Woodmen Road with Mohawk Road, Banning Lewis Parkway, and Golden Sage Road as well as the Woodmen Frontage Road intersections with Mohawk Road and Golden Sage Road. Average daily traffic (ADT) volumes were collected over a 24-hour period on E Woodmen Road. Counts were collected on Wednesday, August 27, 2025, with AM peak hour counts being collected during the period of 7:00 a.m. to 9:00 a.m. and PM peak hour counts being collected during the period of 4:00 p.m. to 6:00 p.m.

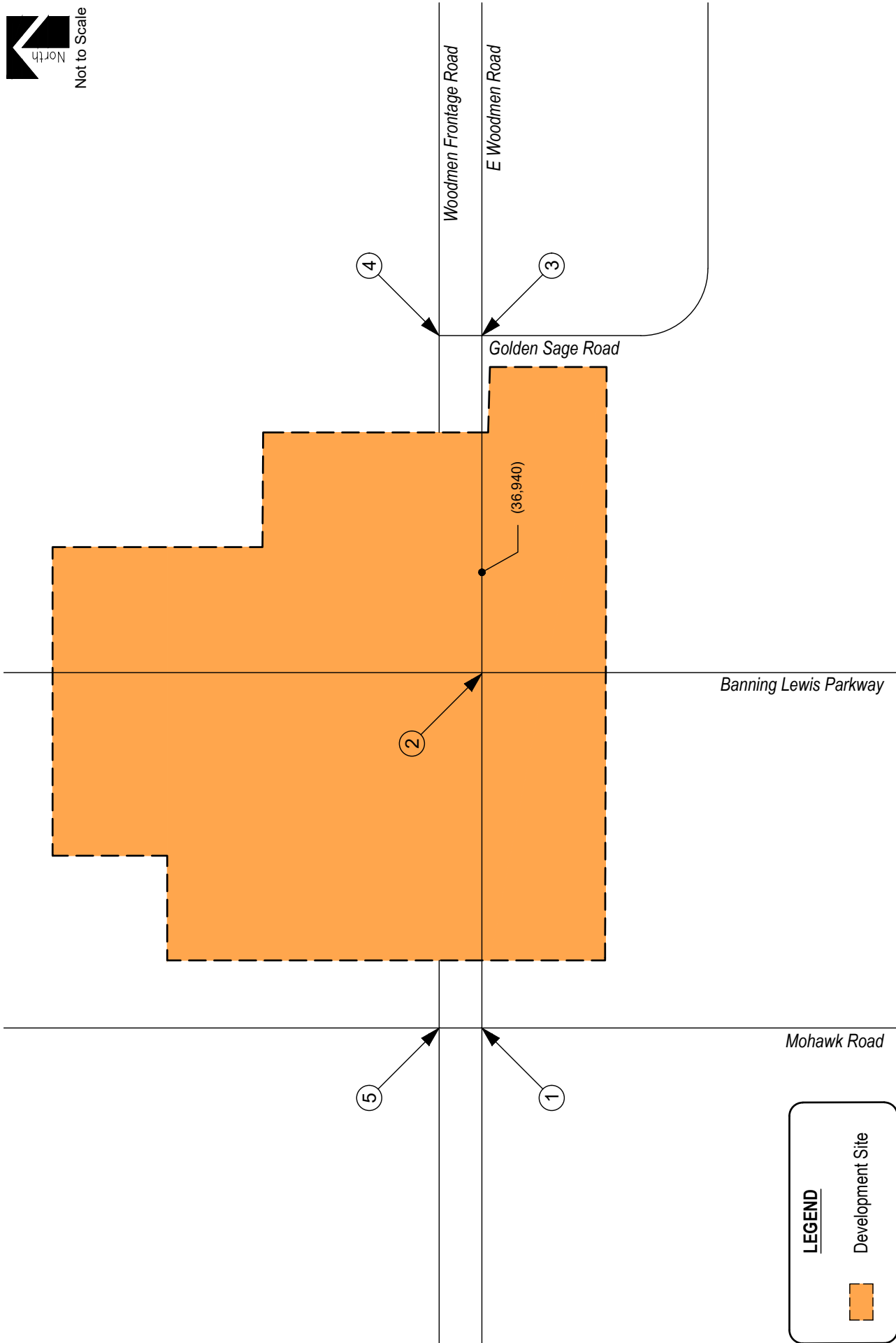
It is noted that in coordination with City Staff, and in order to provide for a conservative analysis, movements which were observed in the collected count data to experience zero volume were grown to assume a minimum of five trips during peak hours.

The study area intersections and ADT volumes are shown on Figure 3A. Newly collected intersection counts are shown in Figure 3B. Existing intersection geometry is shown in Figure 3C. Traffic count data is included for reference in Appendix A.

Existing signal timing parameters for signalized study intersections were assumed based on the existing signal head configuration and allowable movements. Timings were used throughout this study to the best extent possible in order to remain consistent with typical City signal coordination plans.

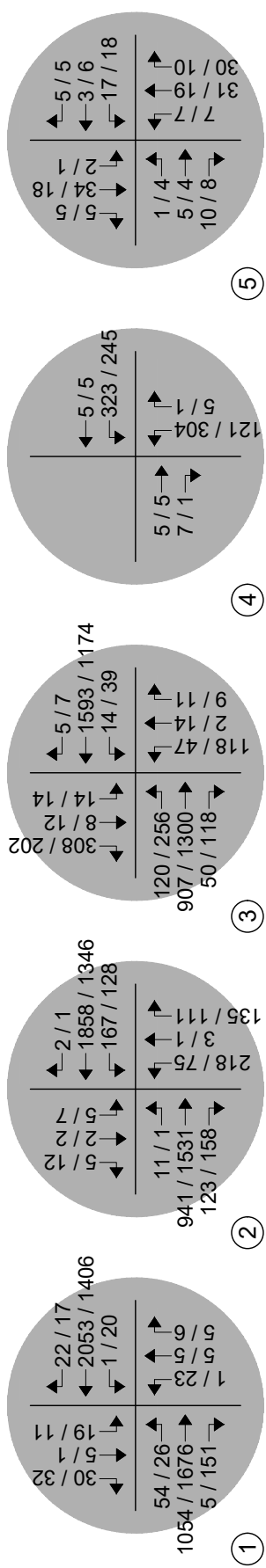


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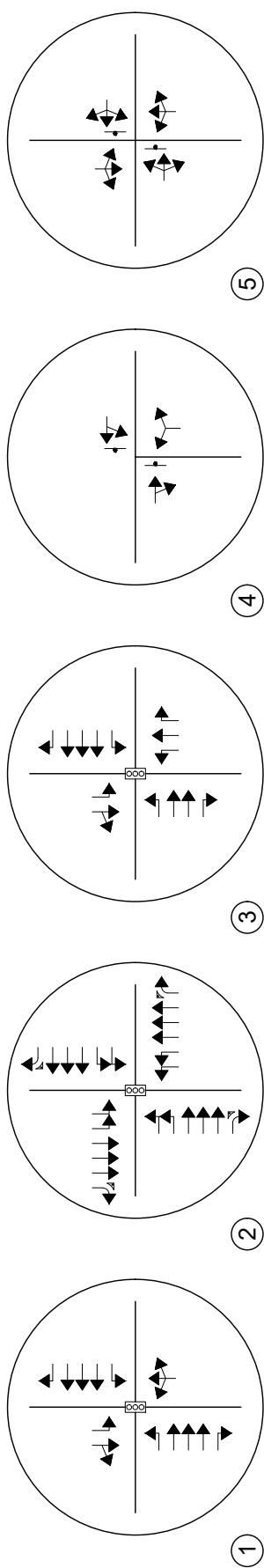
 Development Site



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Study Intersection

Volumes





LEGEND

Study Intersection

Lane Geometry

Peak Hour Intersection Levels of Service – Existing Traffic

The Signalized and Unsignalized, and Roundabout Intersection Analysis techniques, as published in the Highway Capacity Manual (HCM), 7th Edition, by the Transportation Research Board and as incorporated into the SYNCHRO computer program, were used to analyze the study intersections for existing and future 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 and based on the volume to capacity ratio and control delay for each approach for roundabouts.

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
E Woodmen Road / Mohawk Road (Signalized)	A (4.5)	A (7.3)
E Woodmen Road / Banning Lewis Parkway (Signalized)	B (15.2)	B (10.4)
E Woodmen Road / Golden Sage Road (Signalized)	B (17.0)	B (18.7)
Woodmen Frontage Road / Golden Sage Road (Stop-Controlled)		
Eastbound Through and Right	A	C
Westbound Left and Through	C	F
Woodmen Frontage Road / Mohawk Road (Stop-Controlled)		
Eastbound Left, Through and Right	A	A
Westbound Left, Through and Right	A	A
Northbound Left, Through and Right	A	A
Southbound Left, Through 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 intersections of E Woodmen Road with Mohawk Road, Banning Lewis Parkway, and Golden Sage Road have overall operations at or better than LOS B during the morning and afternoon peak traffic hours.

The unsignalized intersection of Woodmen Frontage Road with Golden Sage Road has turn movement operations at or better than LOS C during the morning and afternoon peak traffic hours. Exceptions include the westbound left and through movement which operates at LOS F during the afternoon peak hour. The LOS F operation is attributed to the high number of conflicting northbound and westbound left turning volumes and the stop-controlled nature of the intersection.

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

It is to be noted that it is not uncommon for unsignalized movements to or from an arterial roadway, in urban areas, to operate with noticeable delays during peak traffic hours. It is, however, likely that turn movements will operate better than the results obtained with this HCM Two-Way Stop-Control (TWSC) level of service analysis would indicate, as the HCM analysis may not accurately account for the effect of vehicle platooning and gaps caused by upstream signals.

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.

To account for projected increases in background traffic for Years 2030 and 2045, a compounded annual growth rate was determined using historical traffic data for the surrounding area provided by CDOT's Online Transportation Information System (OTIS) along the adjacent segment of E Woodmen Road, which anticipates a 20-year growth rate between one and two percent. Therefore, in order to provide for a conservative analysis, a growth rate of two percent was applied to existing traffic volumes. This annual growth rate is also consistent with regional growth projections and the level of in-fill development expected within the area.

It is also noted that pursuant to City Staff direction, Year 2045 background traffic volumes at the E Woodmen Road intersection with Mohawk Road were adjusted to better account for expected regional growth in the area.

Pursuant to the proposed and committed area roadway improvements discussed in Section I, Year 2045 background traffic conditions assumes the widening of E Woodmen Road from four to six through lanes east of Golden Sage Road. Year 2045 assumes existing signal timing parameters for signalized study intersections with optimized intersection splits in effort to better long-term intersection performance.

The study area intersections and projected short-term background ADT volumes are shown on Figure 4A. Projected background intersection traffic volumes and intersection geometry for Year 2030 are shown in Figure 4B and Figure 4C, respectively.

The study area intersections and projected long-term background ADT volumes are shown in Figure 5A. Projected background intersection traffic volumes and intersection geometry for Year 2045 are shown in Figure 5B and Figure 5C, respectively.

Background Traffic Auxiliary Lane Analysis

Auxiliary lanes for the study intersection were evaluated, using Year 2030 and 2045 background traffic volumes, and are to be based on the City's Traffic Criteria Manual (TCM)³.

By Year 2030, an evaluation of auxiliary lane requirements, pursuant to Section 8.1, Table 2, of the City's TCM, reveals that the following turn lanes may be required since the projected peak hour turn volumes exceed the City's applicable thresholds.

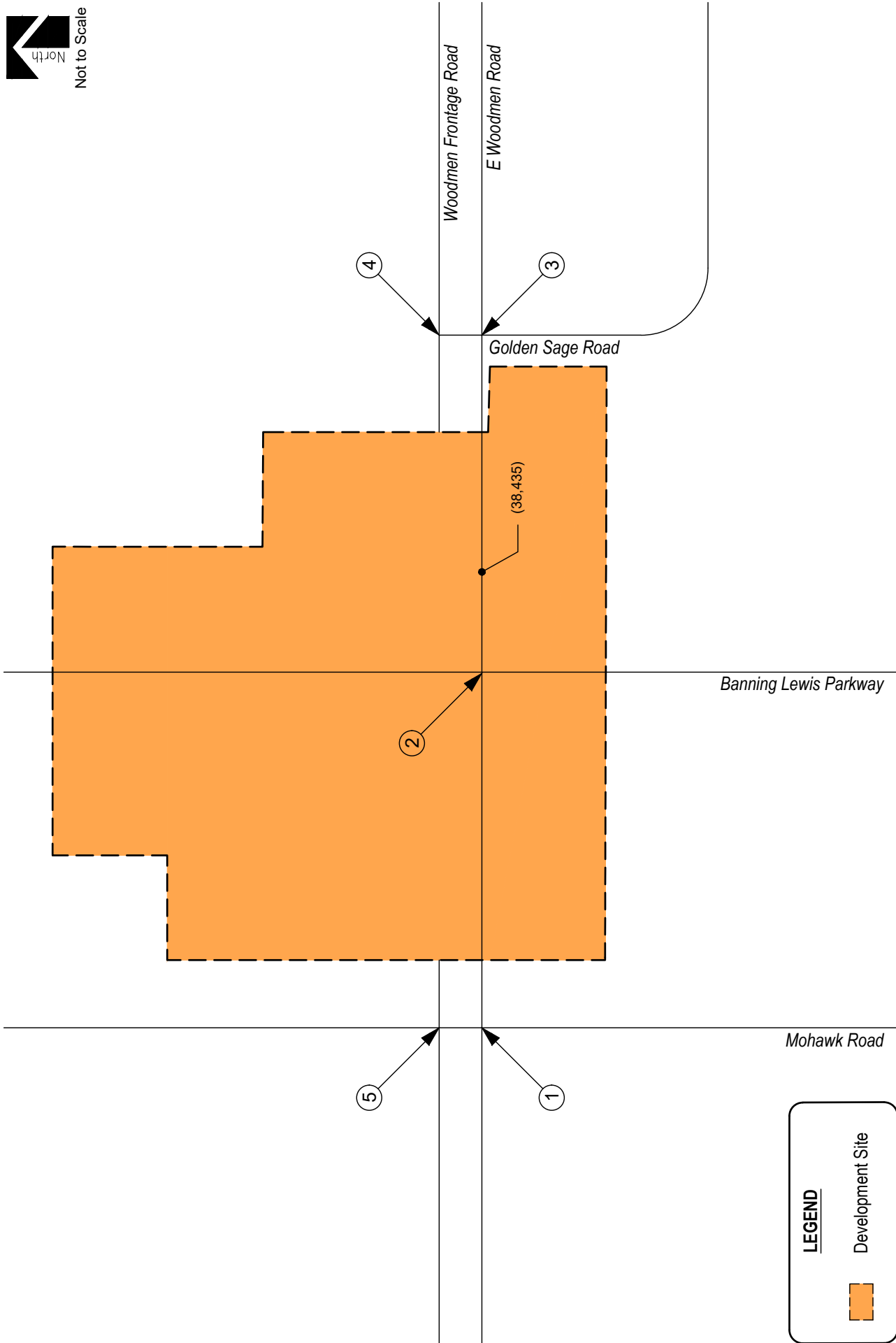
- Northbound left turn deceleration lane at E Woodmen Road and Mohawk Road
- Westbound left turn deceleration lane at Woodmen Frontage Road and Golden Sage Road
- Southbound right turn deceleration lane at E Woodmen Road and Golden Sage Road

Additionally, Year 2045 background traffic volumes reveal that a westbound left turn deceleration lane at Woodmen Frontage Road and Mohawk Road may be required since the westbound left turn volume exceeds the City's threshold of 25 vehicles per hour.

³ Engineering Criteria Manual, Section III: Traffic Criteria Manual, City of Colorado Springs City Engineering, July 2010.



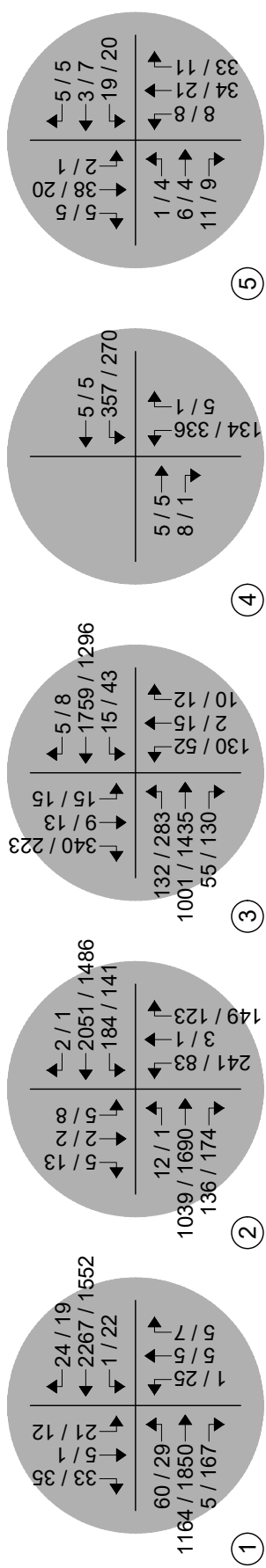
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 Development Site

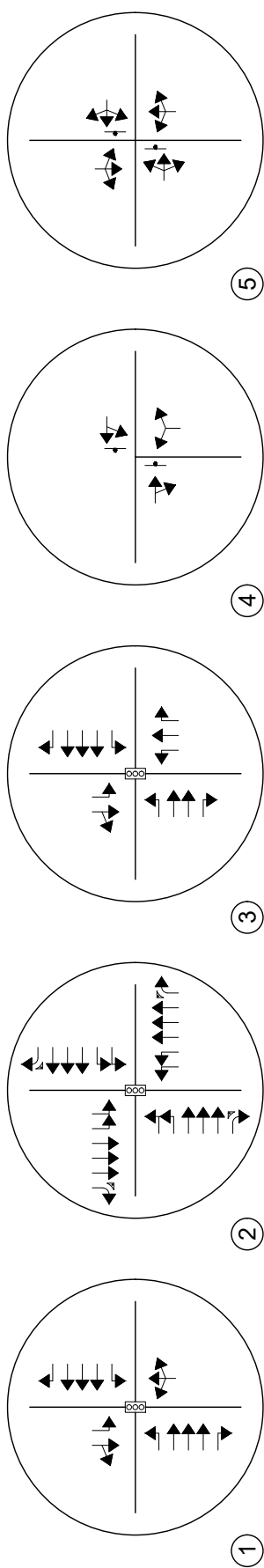
Figure 4A
BACKGROUND TRAFFIC - YEAR 2030
Volumes
(ADT) : Average Daily Traffic



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Study Intersection

Volumes





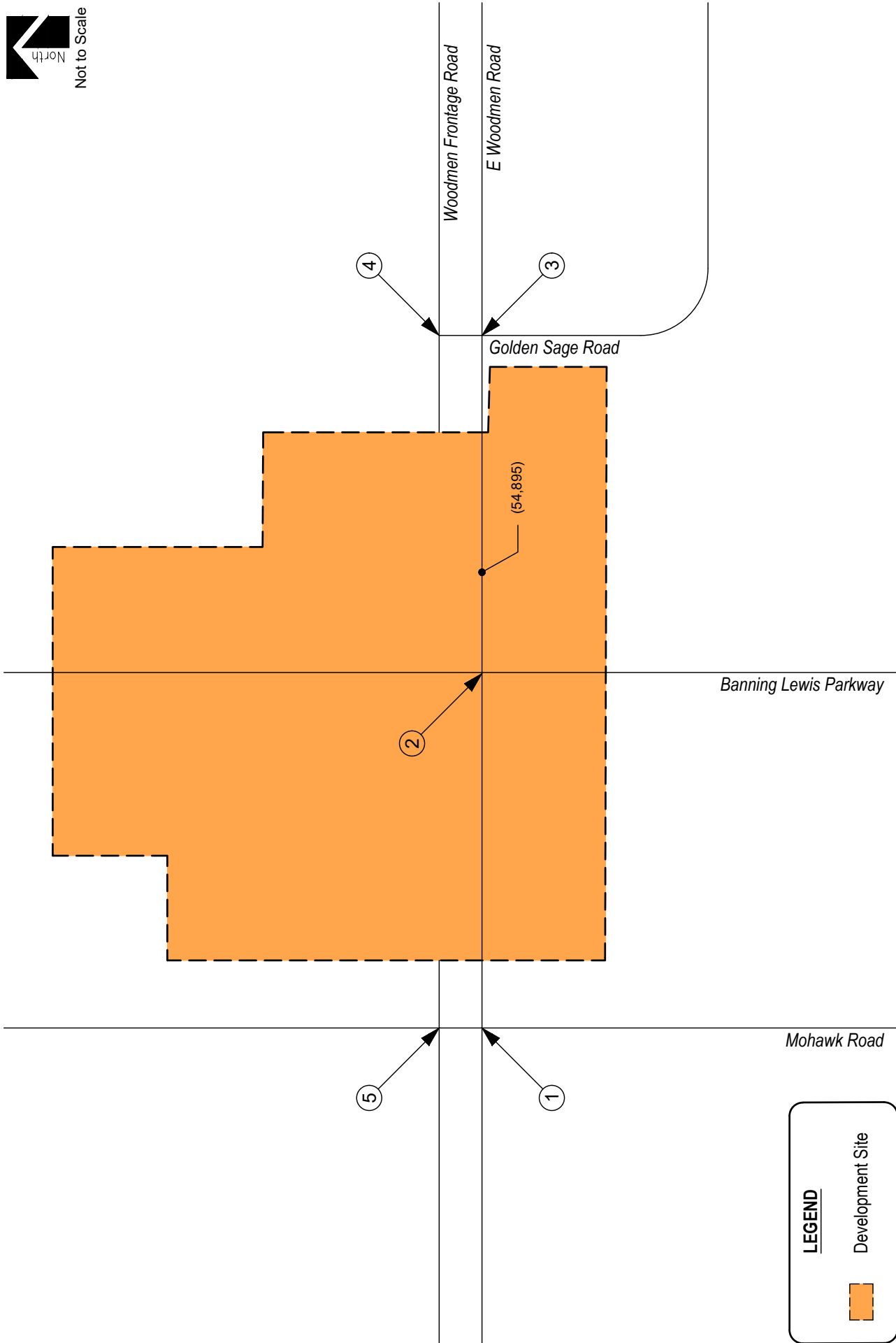
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Study Intersection

Lane Geometry

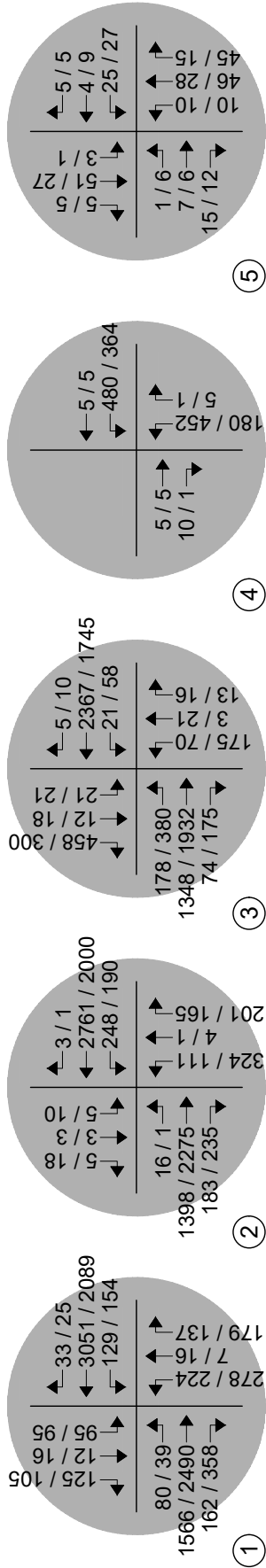


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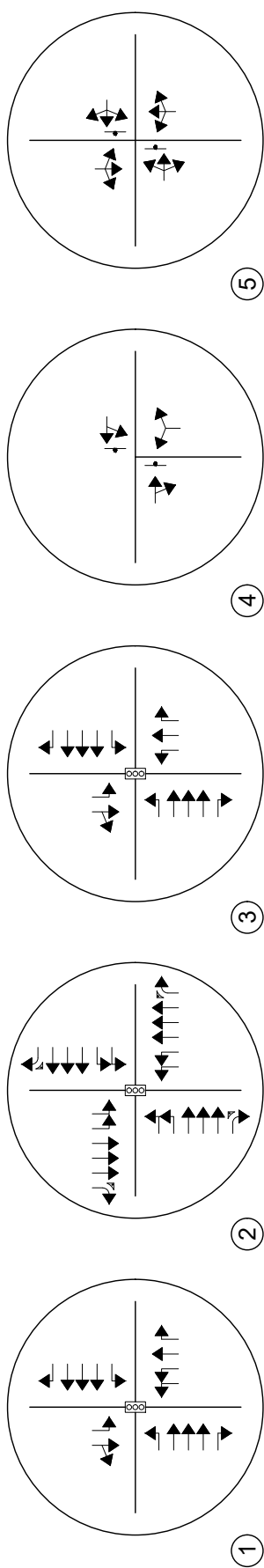
 Development Site



LEGEND

Study Intersection

Volumes





LEGEND

Study Intersection

Lane Geometry

Peak Hour Intersection Levels of Service – Background Traffic

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

Background traffic level of service analysis results for Year 2030 are listed in Table 2. Year 2045 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 2030

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
E Woodmen Road / Mohawk Road (Signalized)	A (5.7)	A (6.8)
E Woodmen Road / Banning Lewis Parkway (Signalized)	B (16.4)	B (12.4)
E Woodmen Road / Golden Sage Road (Signalized)	C (22.6)	C (21.4)
Woodmen Frontage Road / Golden Sage Road (Stop-Controlled)		
Eastbound Through and Right	A	C
Westbound Left and Through	C	F
Woodmen Frontage Road / Mohawk Road (Stop-Controlled)		
Eastbound Left, Through and Right	A	A
Westbound Left, Through and Right	A	A
Northbound Left, Through and Right	A	A
Southbound Left, Through 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 2030

Year 2030 background traffic analysis indicates that the signalized intersections of E Woodmen Road with Mohawk Road, Banning Lewis Parkway, and Golden Sage Road have overall operations at LOS A, LOS B, and LOS C, respectively, during the morning and afternoon peak traffic hours.

Unsignalized intersections within the study area operate at or better than LOS C during the AM and PM peak traffic periods. Exceptions still include the westbound left and through movement at the intersection of Woodmen Frontage Road with Golden Sage Road, which projects LOS F operations during the afternoon peak traffic hour. The LOS F operation is again attributed to the high number of conflicting northbound and westbound left turning volumes and the stop-controlled nature of the intersection.

Table 3 – Intersection Capacity Analysis Summary – Background Traffic – Year 2045

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
E Woodmen Road / Mohawk Road (Signalized)	C (25.6)	C (34.1)
E Woodmen Road / Banning Lewis Parkway (Signalized)	C (20.5)	B (19.9)
E Woodmen Road / Golden Sage Road (Signalized)	F (83.8)	C (32.3)
Woodmen Frontage Road / Golden Sage Road (Stop-Controlled)		
Eastbound Through and Right	A	C
Westbound Left and Through	F	F
Woodmen Frontage Road / Mohawk Road (Stop-Controlled)		
Eastbound Left, Through and Right	A	A
Westbound Left, Through and Right	A	A
Northbound Left, Through and Right	A	A
Southbound Left, Through 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 2045

By Year 2045 and without the proposed development, the study intersection of E Woodmen Road with Mohawk Road experiences LOS C operations during the morning and afternoon peak traffic hours.

The signalized intersection of E Woodmen Road with Banning Lewis Parkway projects operations at LOS C during the AM peak traffic period and LOS B during the PM peak traffic period.

The signalized intersection of E Woodmen Road with Golden Sage Road is expected to have operations at LOS F during the morning peak traffic hour and LOS C during the afternoon peak traffic hour. The LOS F operation is attributed to the high volume of southbound right turns. Construction of a southbound free-flowing channelized right-turn lane is a potential solution to mitigate the LOS F operation projected. With this improvement the intersection projects operations at LOS D during the morning peak traffic hour.

The unsignalized intersections within the study area are expected to experience turning movement operations at LOS A during the AM peak traffic period and at or better than LOS C during the PM peak traffic period. Exceptions include the westbound left and through movement at the intersection of Woodmen Frontage Road with Golden Sage Road, which projects operations at LOS F during the morning and afternoon peak traffic hours. These LOS F operations are attributed to the high number of conflicting northbound and westbound left turning volumes and the stop-controlled nature of the intersection.

It is again noted that it is not uncommon for unsignalized movements to or from an arterial roadway, in urban areas, to operate with noticeable delays during peak traffic hours. It is, however, likely that turn movements will operate better than the results obtained with this HCM Two-Way Stop-Control (TWSC) level of service analysis would indicate, as the HCM analysis may not accurately account for the effect of vehicle platooning and gaps caused by upstream signals.

IV. Proposed Project Traffic

Trip Generation

Standard traffic generation characteristics compiled by the Institute of Transportation Engineers (ITE) in their report entitled Trip Generation Manual, 11th 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 codes 210 (Single-Family Detached Housing), 215 (Single-Family Attached Housing), 220 (Multifamily Housing (Low-Rise)), 411 (Public Park), 488 (Soccer Complex), 520 (Elementary School), 575 (Fire and Rescue Station), 750 (Office Park), 820 (Shopping Center (>150k)), and 821 (Shopping Plaza (40-150k)) were used for estimating trip generation because of their conservative rates and best fit to the proposed land use descriptions.

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	AM PEAK HOUR			PM PEAK HOUR		
			HOUR	ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
210	Single-Family Detached Housing	DU	9.43	0.18	0.53	0.70	0.59	0.35	0.94
215	Single-Family Attached Housing	DU	7.20	0.12	0.36	0.48	0.34	0.23	0.57
220	Multifamily Housing (Low-Rise)	DU	6.74	0.10	0.30	0.40	0.32	0.19	0.51
411	Public Park	ACRE	0.78	0.01	0.01	0.02	0.06	0.05	0.11
488	Soccer Complex	FLD	71.33	0.60	0.39	0.99	10.84	5.59	16.43
520	Elementary School	STS	2.27	0.40	0.34	0.74	0.07	0.09	0.16
575	Fire and Rescue Station	KSF	4.80	*	*	*	0.14	0.34	0.48
750	Office Park	KSF	11.07	1.18	0.15	1.33	0.18	1.12	1.30
820	Shopping Center (>150K)	KSF	37.01	0.52	0.32	0.84	1.63	1.77	3.40
821	Shopping Plaza (40-150K)	KSF	67.52	1.07	0.66	1.73	2.54	2.65	5.19

Key: DU = Dwelling Units. ACRE = Total Acreage. FLD = Number of Fields.
STS = Number of Students. KSF = Thousand Square Feet Gross Floor Area.
* = ITE does not report significant AM peak hour generation due to the nature of the business.
Note: All data and calculations above are subject to being rounded to nearest value.

Table 5 illustrates projected ADT, AM Peak Hour, and PM Peak Hour traffic volumes likely generated by the proposed development upon build-out and provides comparison to previously assumed land uses for the development site.

Table 5 – Trip Generation Summary

ITE CODELAND USESIZE				TOTAL TRIPS GENERATED						
				24 HOUR	AM PEAK HOUR			PM PEAK HOUR		
					ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
<u>Site Development - Previously Assumed</u>										
210	Single-Family Housing	1,952 DU		18,427	361	1,083	1,444	1,218	715	1,933
220	Multi-Family Housing (Low Rise)	1,626 DU		11,902	172	575	747	573	337	910
411	Public Park	14 ACRE		11	0	0	0	0	1	1
488	Soccer Complex	28 FLD		1,997	17	11	28	304	156	460
520	Elementary School	105 KSF		2,041	401	328	729	64	79	143
530	High School	89 KSF		1,250	213	87	300	47	40	87
575	Fire and Rescue Station	26 KSF		125	*	*	*	4	9	13
820	Shopping Center	614 KSF		23,186	358	219	577	1,123	1,217	2,340
Previously Assumed Total:				58,940	1,522	2,305	3,827	3,333	2,553	5,887
<u>Site Development - Proposed</u>										
210	Single-Family Detached Housing	1,143 DU		10,780	200	600	800	677	398	1,075
215	Single-Family Attached Housing	710 DU		5,114	85	256	341	239	166	405
220	Multifamily Housing (Low-Rise)	963 DU		6,489	92	293	385	309	182	491
411	Public Park	12.3 ACRE		10	0	0	0	0	1	1
488	Soccer Complex	28 FLD		1,997	17	11	28	304	156	460
520	Elementary School	1,100 STS		2,497	440	374	814	81	95	176
575	Fire and Rescue Station	26.0 KSF		125	*	*	*	4	9	13
750	Office Park	259 KSF		2,864	306	38	344	47	289	336
820	Shopping Center (>150K)	772 KSF		28,567	402	246	648	1,260	1,365	2,624
821	Shopping Plaza (40-150K)	143 KSF		9,647	153	94	247	363	378	742
Proposed Total:				68,091	1,696	1,912	3,608	3,284	3,038	6,322
Difference Total:				9,151	174	-393	-219	-49	485	436

Key: DU = Dwelling Units. ACRE = Total Acreage. FLD = Number of Fields.
STS = Number of Students. KSF = Thousand Square Feet Gross Floor Area.
* = ITE does not report significant AM peak hour generation due to the nature of the business.
Note: All data and calculations above are subject to being rounded to nearest value.

Upon build-out, Table 5 illustrates that the proposed development has the potential to generate approximately 68,091 daily vehicle trips with 3,608 of those occurring during the morning peak hour and 6,322 during the afternoon peak hour. Compared to the previously assumed land uses, this represents a potential increase in site traffic generation of approximately 9,151 daily trips with a decrease of approximately 219 trips during the morning peak hour and an increase of 436 trips during the afternoon peak hour.

Adjustments to Trip Generation Rates

It is considered likely that a mixed-use development of this type will attract trips from within area land uses. Based on the land uses proposed with this development it was assumed that overall averages of approximately 10% of total trips will be captured internally.

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

Table 6 – Trip Generation Summary with Reductions

ITE CODELAND USESIZE				TOTAL TRIPS GENERATED						
				24 HOUR	AM PEAK HOUR			PM PEAK HOUR		
					ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
Site Development - Previously Assumed										
210	Single-Family Housing	1,952 DU		18,427	361	1,083	1,444	1,218	715	1,933
220	Multi-Family Housing (Low Rise)	1,626 DU		11,902	172	575	747	573	337	910
411	Public Park	14 ACRE		11	0	0	0	0	1	1
488	Soccer Complex	28 FLD		1,997	17	11	28	304	156	460
520	Elementary School	105 KSF		2,041	401	328	729	64	79	143
530	High School	89 KSF		1,250	213	87	300	47	40	87
575	Fire and Rescue Station	26 KSF		125	*	*	*	4	9	13
820	Shopping Center	614 KSF		23,186	358	219	577	1,123	1,217	2,340
Internal Capture Reduction:				10%	10%	10%	10%	10%	10%	10%
Previously Assumed Total:				53,046	1,370	2,074	3,444	3,000	2,298	5,298
Site Development - Proposed										
210	Single-Family Detached Housing	1,145 DU		10,797	200	601	802	678	398	1,076
215	Single-Family Attached Housing	712 DU		5,126	85	256	342	239	166	406
220	Multifamily Housing (Low-Rise)	964 DU		6,497	93	293	386	310	182	492
411	Public Park	12.3 ACRE		10	0	0	0	0	1	1
488	Soccer Complex	28 FLD		1,997	17	11	28	304	156	460
520	Elementary School	1,100 STS		2,497	440	374	814	81	95	176
575	Fire and Rescue Station	26.0 KSF		125	*	*	*	4	9	13
750	Office Park	259 KSF		2,864	306	38	344	47	289	336
820	Shopping Center (>150K)	770 KSF		28,498	401	246	647	1,257	1,361	2,618
821	Shopping Plaza (40-150K)	143 KSF		9,647	153	94	247	363	378	742
Internal Capture Reduction:				10%	10%	10%	10%	10%	10%	10%
Proposed Total:				61,253	1,526	1,722	3,248	2,954	2,733	5,687
Difference Total:				8,207	156	-352	-196	-46	435	389

Key: DU = Dwelling Units. ACRE = Total Acreage. FLD = Number of Fields.
 STS = Number of Students. KSF = Thousand Square Feet Gross Floor Area.
 * = ITE does not report significant AM peak hour generation due to the nature of the business.
 Note: All data and calculations above are subject to being rounded to nearest value.

Upon build-out and with consideration for internal capture trip reductions, Table 6 illustrates that the proposed development has the potential to generate approximately 61,253 daily trips with 3,248 of those occurring during the morning peak hour and 5,687 during the afternoon peak hour. Compared to the previously assumed land uses, this represents a potential increase in site traffic generation of approximately 8,207 daily trips with a decrease of approximately 196 trips during the morning peak hour and an increase of 389 trips during the afternoon peak hour.

Trip Distribution

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

Overall trip distribution patterns for the development are shown on Figure 6.

Trip Assignment

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

Applying trip distribution patterns to site-generated traffic provides the overall site-generated trip assignments shown on Figure 7



Not to Scale

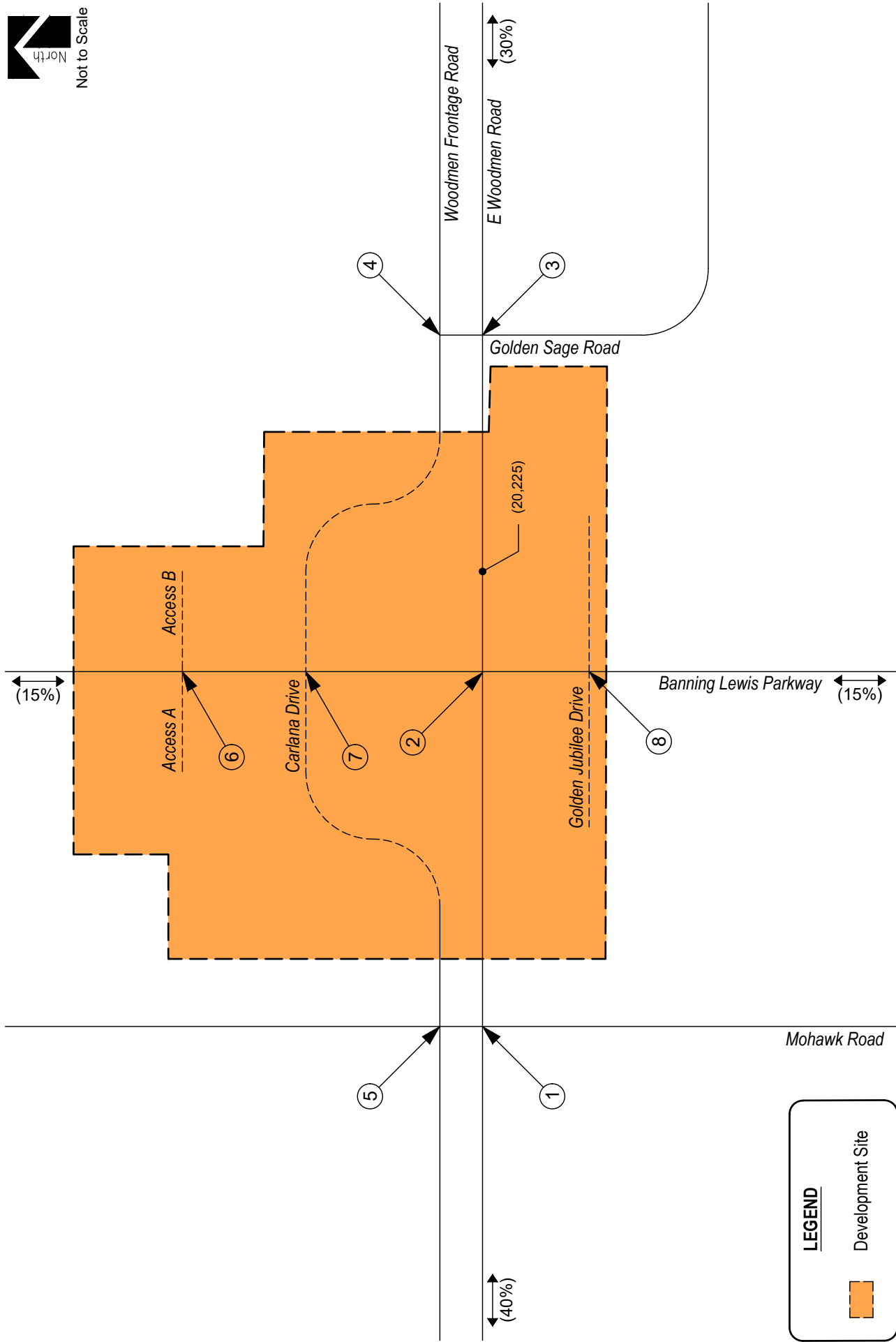
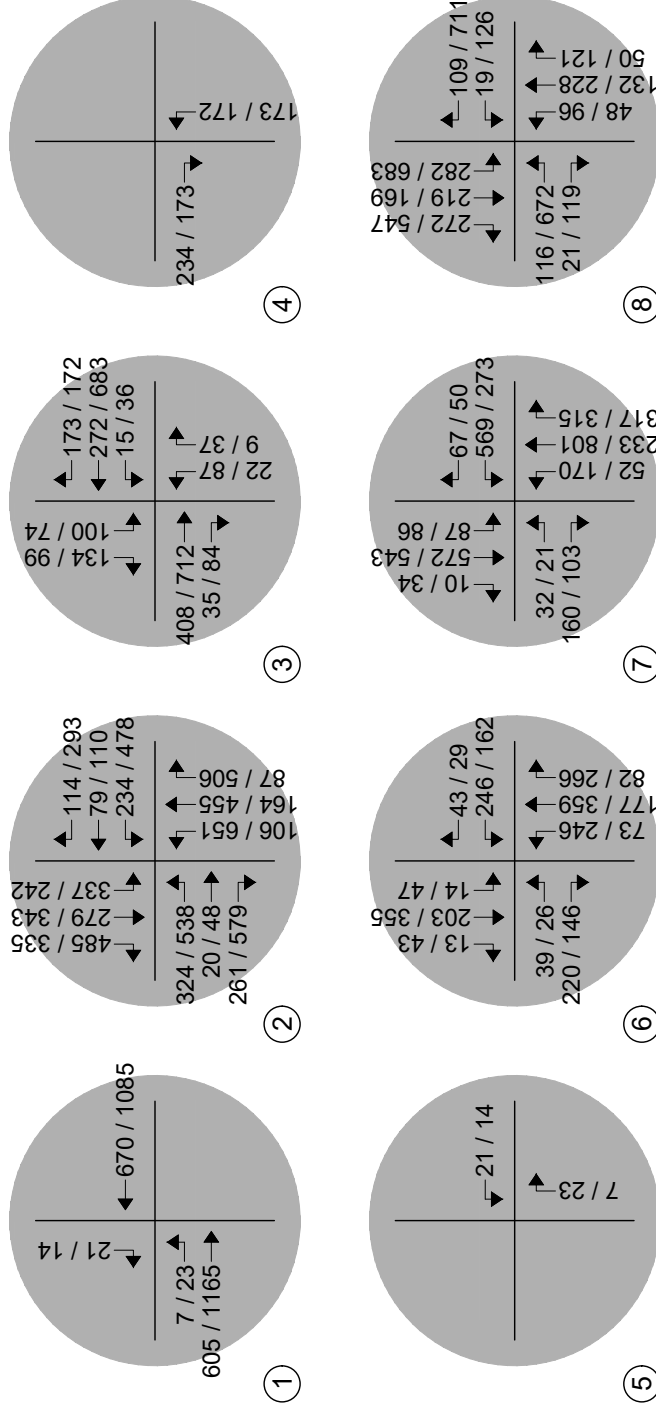


Figure 6
SITE DEVELOPMENT DISTRIBUTION
(%) : Overall
(ADT) : Average Daily Traffic





Not to Scale



LEGEND

Study Intersection
Volumes

V. Future Traffic Conditions With Proposed Development

Total traffic is the traffic projected to be on area roadways with consideration of the proposed development. Total traffic includes background traffic projections for Years 2030 and 2045 with consideration of site-generated traffic. For analysis purposes, it was assumed that development construction would be completed by end of Year 2030.

Pursuant to area roadway improvement discussions provided in Section III, Year 2030 and Year 2045 total traffic conditions assume no additional 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.

The study area intersections and projected short-term total ADT volumes are shown in Figure 8A. Projected Year 2030 total intersection traffic volumes and intersection geometry are shown in Figure 8B and Figure 8C, respectively.

The study area intersections and projected long-term total ADT volumes are shown in Figure 9A. Figure 9B and Figure 9C shows projected total intersection traffic volumes and intersection geometry for Year 2045, respectively.

Total Traffic Auxiliary Lane Analysis

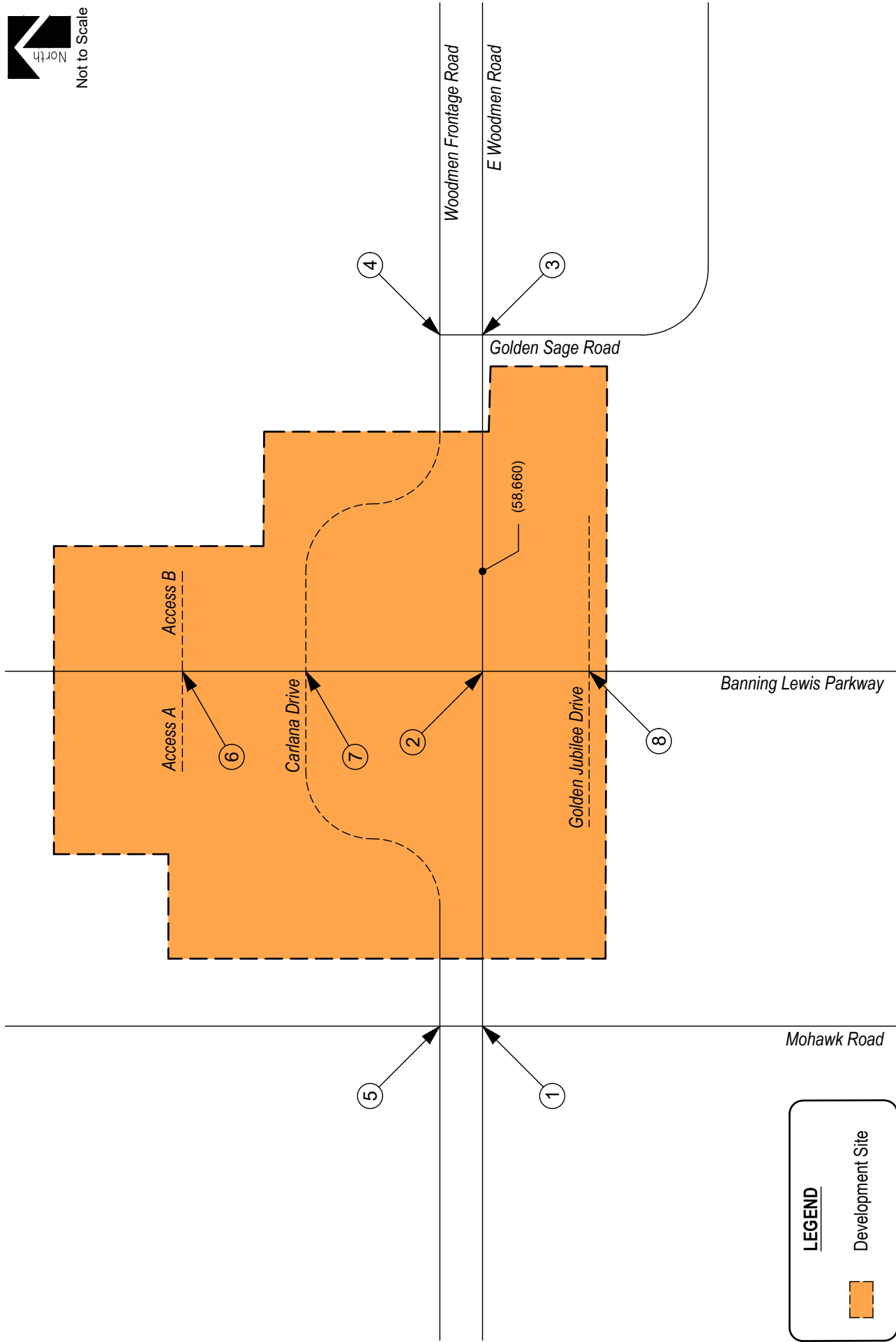
Auxiliary lanes for the study intersections were evaluated and are to be based on the City's TCM.

Considering development build-out, an evaluation of auxiliary lane requirements, pursuant to Section 8.1, Table 2 of the City's TCM, reveals that the following turn lanes may be required since the development's projected peak hour turn volumes exceed the City's applicable thresholds.

- Eastbound right turn deceleration lane at Woodmen Frontage Road and Golden Sage Road
- Southbound right turn deceleration lane at E Woodmen Road and Mohawk Road
- Northbound right turn deceleration lane at Woodmen Frontage Road and Mohawk Road

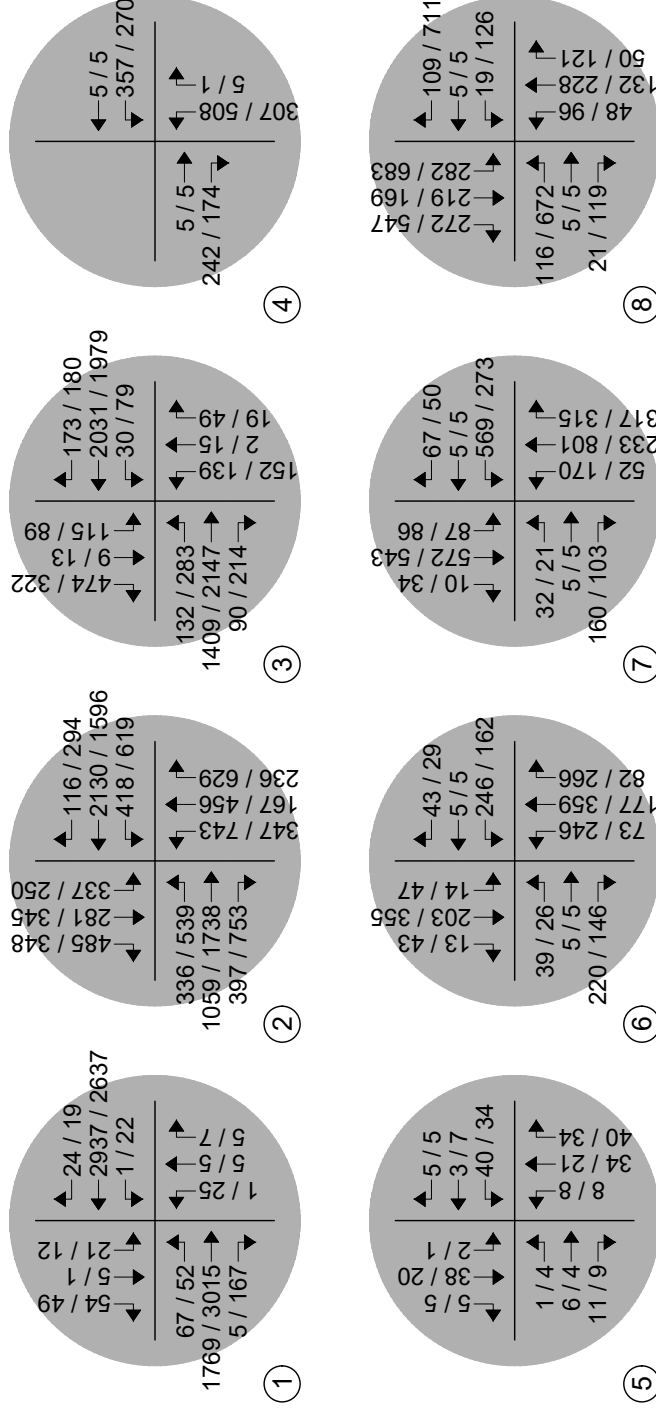


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LEGEND

 Development Site



LEGEND

Study Intersection
Volumes

PERCHERON MASTER PLAN AMENDMENT
Traffic Impact Study

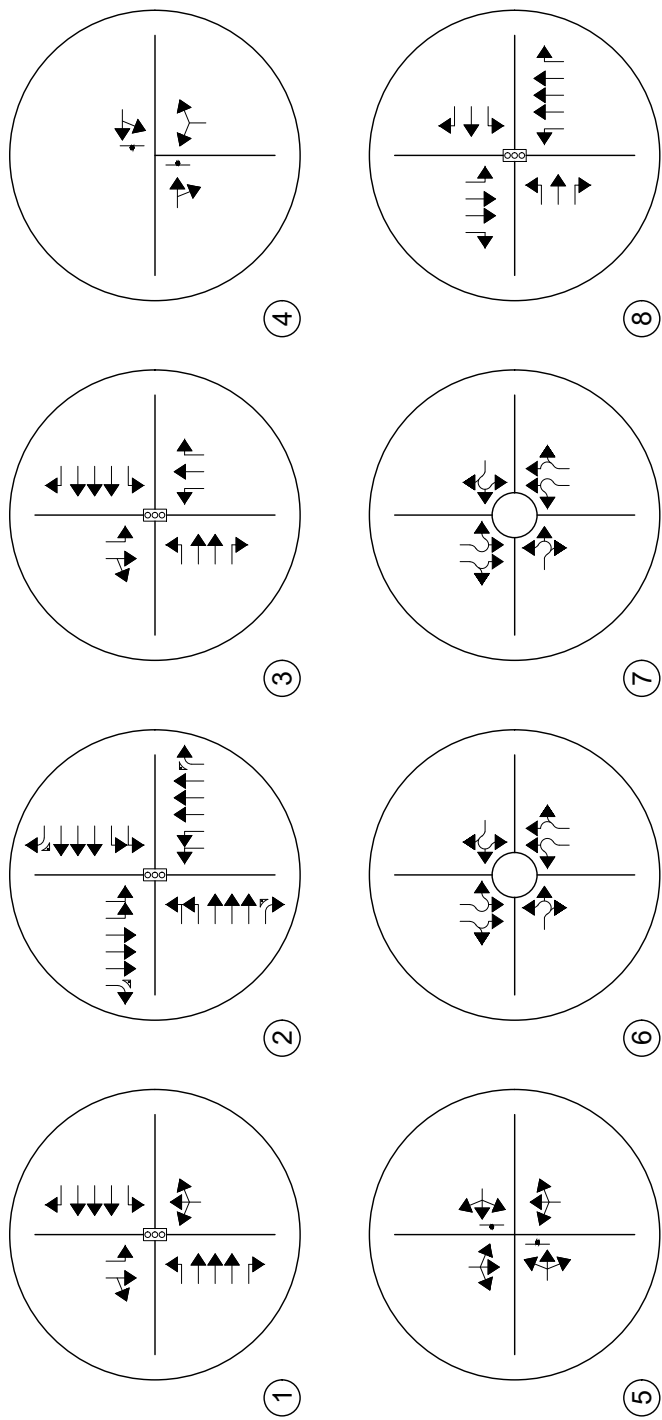
Figure 8B
TOTAL TRAFFIC - YEAR 2030
Volumes
AM / PM Peak Hour

SM ROCHA, LLC

Traffic & Transportation Engineering Consultants

October 2025

Page 30





LEGEND

Study Intersection

Lane Geometry



Not to Scale

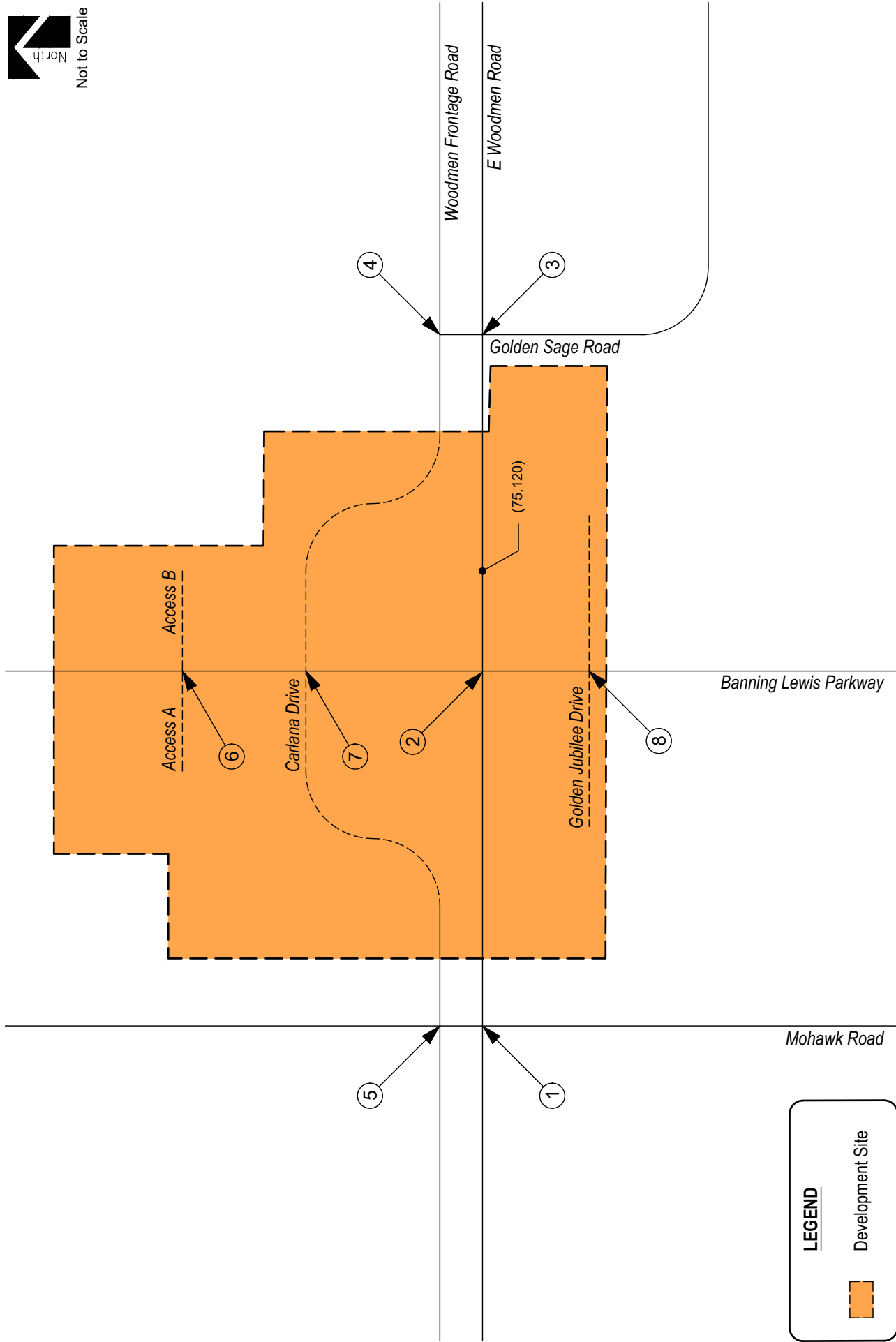
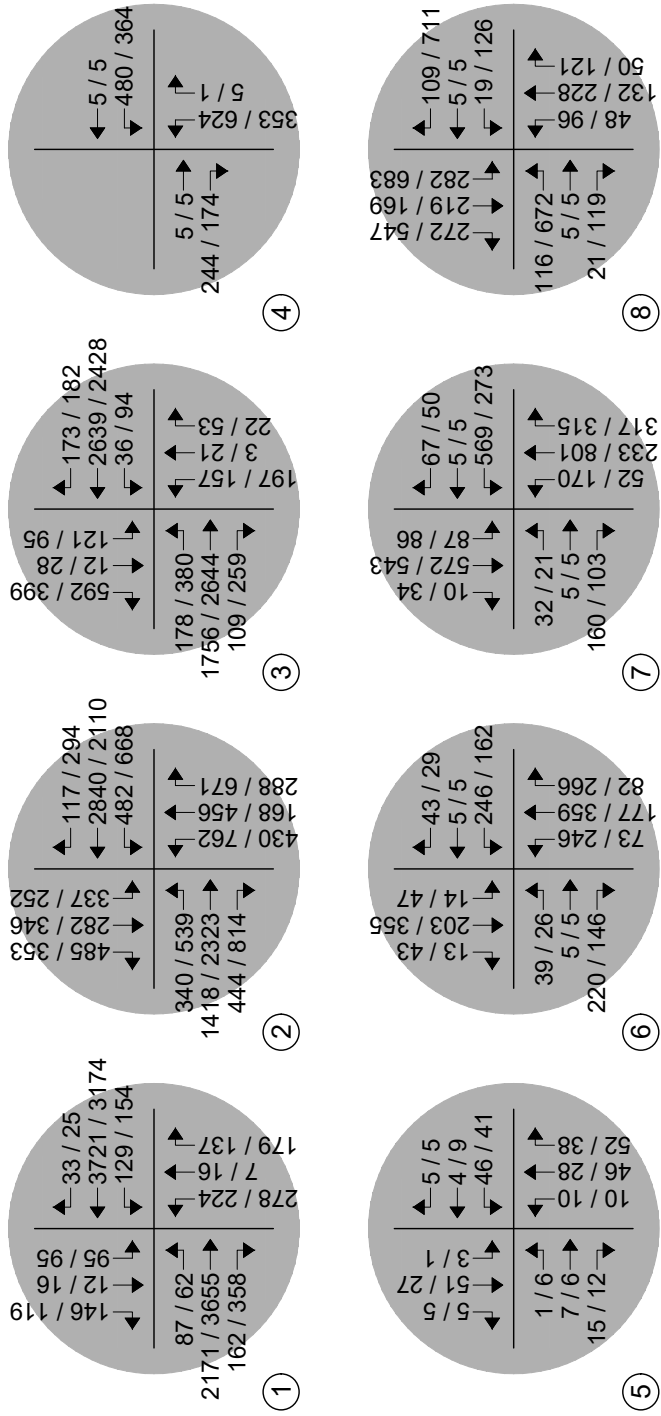


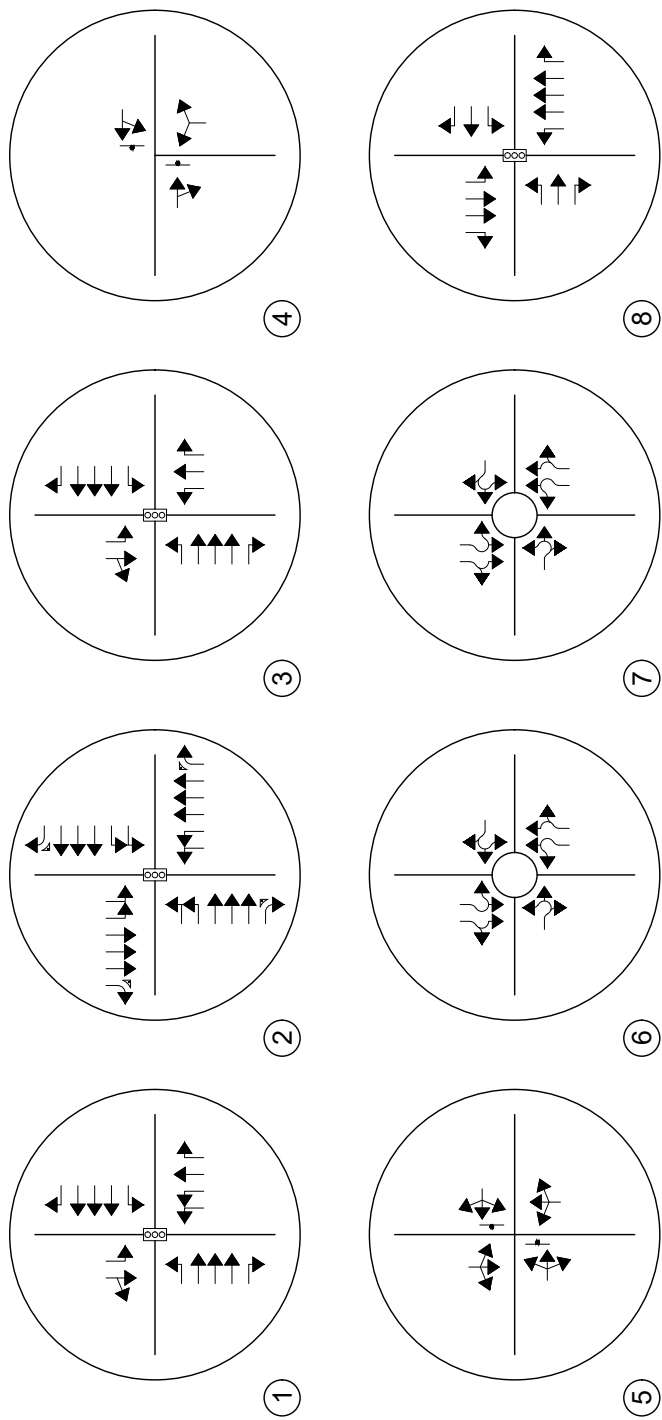
Figure 9A
TOTAL TRAFFIC - YEAR 2045
Volumes
(ADT) : Average Daily Traffic





LEGEND

Study Intersection
Volumes



LEGEND

○

Study Intersection

Lane Geometry

Peak Hour Intersection Levels of Service – Total Traffic

As with background traffic, the operations of the study intersections were analyzed under projected total traffic conditions using the SYNCHRO computer program. The analyses and procedures were performed in accordance with the latest 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.

Total traffic level of service analysis results for Years 2030 and 2045 are summarized in Table 7 and Table 8, respectively.

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

Table 7 – Intersection Capacity Analysis Summary – Total Traffic – Year 2030

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
E Woodmen Road / Mohawk Road (Signalized)	A (7.9)	A (6.4)
E Woodmen Road / Banning Lewis Parkway (Signalized)	C (34.8)	E (57.7)
E Woodmen Road / Golden Sage Road (Signalized)	D (39.1)	E (58.1)
Banning Lewis Parkway / Golden Jubilee Drive (Signalized)	A (7.7)	D (50.4)
Woodmen Frontage Road / Golden Sage Road (Stop-Controlled)		
Eastbound Through and Right	A	A
Westbound Left and Through	F	F
Woodmen Frontage Road / Mohawk Road (Stop-Controlled)		
Eastbound Left, Through and Right	A	A
Westbound Left, Through and Right	A	A
Northbound Left, Through and Right	A	A
Southbound Left, Through and Right	A	A
Banning Lewis Parkway / Access A / Access B (Roundabout)		
Eastbound Left, Through and Right	A	A
Westbound Left, Through and Right	A	A
Northbound Left and Through	A	A
Northbound Through and Right	A	A
Southbound Left and Through	A	A
Southbound Through and Right	A	A
Banning Lewis Parkway / Carlana Drive (Roundabout)		
Eastbound Left, Through and Right	C	A
Westbound Left, Through and Right	B	C
Northbound Left and Through	A	A
Northbound Through and Right	A	A
Southbound Left and Through	B	A
Southbound Through and Right	B	A

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

Roundabout Intersection: Level of Service

Stop-Controlled Intersection: Level of Service

Table 8 – Intersection Capacity Analysis Summary – Total Traffic – Year 2045

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
E Woodmen Road / Mohawk Road (Signalized)	D (46.3)	D (40.5)
E Woodmen Road / Banning Lewis Parkway (Signalized)	E (66.5)	F (96.6)
E Woodmen Road / Golden Sage Road (Signalized)	F (141.2)	F (143.1)
Banning Lewis Parkway / Golden Jubilee Drive (Signalized)	A (8.1)	D (54.8)
Woodmen Frontage Road / Golden Sage Road (Stop-Controlled)		
Eastbound Through and Right	A	B
Westbound Left and Through	F	F
Woodmen Frontage Road / Mohawk Road (Stop-Controlled)		
Eastbound Left, Through and Right	A	A
Westbound Left, Through and Right	A	A
Northbound Left, Through and Right	A	A
Southbound Left, Through and Right	A	A
Banning Lewis Parkway / Access A / Access B (Roundabout)		
Eastbound Left, Through and Right	A	A
Westbound Left, Through and Right	A	A
Northbound Left and Through	A	A
Northbound Through and Right	A	A
Southbound Left and Through	A	A
Southbound Through and Right	A	A
Banning Lewis Parkway / Carlana Drive (Roundabout)		
Eastbound Left, Through and Right	C	A
Westbound Left, Through and Right	B	C
Northbound Left and Through	A	A
Northbound Through and Right	A	A
Southbound Left and Through	B	A
Southbound Through and Right	B	A

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

Total Traffic Analysis Results Upon Development Build-Out

Table 8 illustrates how, by Year 2045 and upon development build-out, the signalized intersection of E Woodmen Road with Mohawk Road shows an overall LOS D operation during the morning and afternoon peak traffic hours.

The signalized intersection of E Woodmen Road with Banning Lewis Parkway is expected to provide overall operations at LOS E during the morning peak traffic hour and LOS F during the afternoon peak traffic hour. The LOS E and F operations are attributed to the through traffic volumes along both E Woodmen Road and Banning Lewis Parkway as well as the high volume of left turn vehicles causing most left turning movements to be over capacity. It is noted that these projected operations are also consistent with adjacent traffic studies prepared for the overall area. Considering the conceptual nature of the proposed development, potential mitigations for the LOS E and F operations may be subject to change as further development of the overall area occurs. It is also noted that the analysis provided does not account for all potential access locations serving individual parcels. As such, actual volumes which may pass through this intersection are likely to be less than indicated.

The signalized intersection of E Woodmen Road with Golden Sage Road is projected to experience LOS F operations during the AM and PM peak traffic periods. As discussed in Section III, construction of a southbound free-flowing channelized right-turn lane is a potential solution to mitigate the LOS F operations projected. With this improvement the intersection projects operations at LOS D during both peak traffic hours.

The signalized intersection of Banning Lewis Parkway with Golden Jubilee Drive expects overall operations at LOS A during the AM peak traffic hour and LOS D during the PM peak traffic hour.

The stop-controlled intersections within the study area project turning movement operations at LOS A during the morning peak traffic hour and at or better than LOS B during the afternoon peak traffic hour. Exceptions still include the westbound left and through movement at the intersection of Woodmen Frontage Road with Golden Sage Road, which is expected to experience operations at LOS F during the morning and afternoon peak traffic hours. These LOS F operations are attributed to the high number of conflicting northbound and westbound left turning volumes and the stop-controlled nature of the intersection.

The roundabout intersections within the study are predicted to experience operations at or better than LOS C during the morning and afternoon peak traffic hours.

It is once again noted that it is not uncommon for unsignalized movements to or from an arterial roadway, in urban areas, to operate with noticeable delays during peak traffic hours. It is, however, likely that turn movements will operate better than the results obtained with this HCM Two-Way Stop-Control (TWSC) level of service analysis would indicate, as the HCM analysis may not accurately account for the effect of vehicle platooning and gaps caused by upstream signals.

VI. Project Impacts

It is emphasized that the analyses and procedures described in this study were performed in accordance with the latest 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.

Queue Length Analysis

Queue lengths for the study intersections were analyzed using Year 2045 background and total traffic conditions. The analysis yields estimate of 95th percentile queue lengths, which have only a five percent probability of being exceeded during the analysis time period. An average vehicle length of 25 feet was assumed. Queue lengths were modeled and are included with the Synchro worksheets in Appendix C.

In general, auxiliary lane lengths are recommended to accommodate City's minimum turn lane lengths or accommodate long-term 95th percentile vehicle queues, whichever is greater.

Table 9 summarizes the 95th percentile queue results in comparison to the projected storage requirements for turn movements within study area for Year 2045.

Table 9 – Turn Lane Queues and Storage Requirements – Year 2045

Intersection	Turn Movement	Existing Turn Lane Length (feet)	Background 2045		Total 2045		Recommended Turn Lane Length (feet)	
			AM Peak Hour (feet)	PM Peak Hour (feet)	AM Peak Hour (feet)	PM Peak Hour (feet)		
Signalized Intersections								
E Woodmen Road / Mohawk Road	EB	L	300'	150'	77'	170'	107'	300'
		T	-	150'	332'	279'	1091'	-
		R	400'	13'	18'	15'	17'	400'
	WB	L	315'	50'	320'	167'	226'	320'
		T	-	271'	199'	279'	268'	-
		R	370'	1'	2'	1'	2'	370'
	NB	L	-	255'	187'	253'	206'	130' x2
		T	-	21'	35'	21'	35'	-
		R	-	221'	178'	248'	188'	250'
	SB	L	50'	138'	139'	135'	151'	155'
T,R		-	210'	149'	237'	217'	-	
E Woodmen Road / Banning Lewis Parkway	EB	L	285' x2	14'	0'	277'	323'	285' x2
		T	-	269'	509'	439'	915'	-
		R	225'	0'	0'	0'	0'	225'
	WB	L	285' x2	89'	124'	143'	321'	285' x2
		T	-	696'	911'	353'	539'	-
		R	225'	0'	0'	0'	0'	225'
	NB	L	185' x2	235'	93'	334'	429'	215' x2
		T	-	5'	2'	77'	132'	-
		R	185'	0'	0'	0'	0'	185'
	SB	L	185' x2	9'	14'	247'	173'	185' x2
		T	-	4'	4'	172'	205'	-
		R	185'	0'	0'	0'	0'	185'
E Woodmen Road / Golden Sage Road	EB	L	530'	139'	444'	138'	272	530'
		T	-	314'	677'	495'	1400'	-
		R	380'	11'	49'	36'	55'	380'
	WB	L	330'	10'	41'	16'	21'	330'
		T	-	524'	538'	633'	495'	-
		R	330'	0'	0'	33'	27'	330'
	NB	L	125'	208'	176'	232'	188'	235'
		T	-	7'	38'	6'	26'	-
		R	195'	0'	0'	0'	0'	195'
	SB	L	110'	23'	39'	82'	100'	110'
T,R		-	317'	125'	425'	339'	-	
Banning Lewis Parkway / Golden Jubilee Drive	EB	L	-	-	-	74'	888'	445' x2
		T	-	-	-	10'	11'	-
		R	-	-	-	0'	13'	110'
	WB	L	-	-	-	20'	102'	110'
		T	-	-	-	10'	14'	-
		R	-	-	-	0'	368'	370'
	NB	L	-	-	-	21'	85'	230'
		T	-	-	-	30'	132'	-
		R	-	-	-	0'	0'	230'
	SB	L	-	-	-	28'	555'	560'
		T	-	-	-	47'	38'	-
		R	-	-	-	0'	58'	670'

Note: Turn Lane Length does not include taper length.

x2 = Dual Turn Lanes.

Table 9 (Continued) – Turn Lane Queues and Storage Requirements — Year 2045

Intersection	Turn Movement		Existing Turn Lane Length (feet)	Background 2045		Total 2045		Recommended
				AM Peak Hour (feet)	PM Peak Hour (feet)	AM Peak Hour (feet)	PM Peak Hour (feet)	Turn Lane Length (feet)
Stop-Controlled Intersections								
Woodmen Frontage Road / Golden Sage Road	EB	T,R	-	2'	2'	27'	22'	-
	WB	L,T	-	408'	835'	619'	552'	-
	NB	L,R	-	10'	32'	23'	53'	-
Woodmen Frontage Road / Mohawk Road	EB	L,T,R	-	2'	2'	2'	2'	-
	WB	L,T,R	-	2'	4'	4'	4'	-
	NB	L,T,R	-	0'	0'	0'	0'	-
	SB	L,T,R	-	0'	0'	0'	0'	-
Roundabout-Controlled Intersections								
Banning Lewis Parkway / Access A / Access B	EB	L,T,R	-	-	-	25'	25'	-
	WB	L,T,R	-	-	-	25'	25'	-
	NB	L,T	-	-	-	0'	50'	-
		T,R	-	-	-	25'	50'	-
	SB	L,T	-	-	-	0'	25'	-
		T,R	-	-	-	0'	25'	-
Banning Lewis Parkway / Carlana Drive	EB	L,T,R	-	-	-	75'	25'	-
	WB	L,T,R	-	-	-	125'	125'	-
	NB	L,T	-	-	-	25'	100'	-
		T,R	-	-	-	25'	100'	-
	SB	L,T	-	-	-	75'	50'	-
		T,R	-	-	-	75'	50'	-

Note: Turn Lane Length does not include taper length.

Development Impacts

Considering development build-out, a review of intersection operations as shown in Table 8 reveals that the study intersections are generally anticipated to operate at or better than LOS D during both peak traffic hours. As discussed in Section V, exceptions include the E Woodmen Road intersections with Banning Lewis Parkway and Golden Sage Road as well as the intersection of Woodmen Frontage Road with Golden Sage Road which project various LOS E and LOS F operations during their respective peak traffic hours. The LOS E and F operations are attributed to the through traffic volumes along both E Woodmen Road and Banning Lewis Parkway as well as the high volume of left turning vehicles causing many movements to be at or over capacity. It is noted that these projected operations are also consistent with adjacent traffic studies prepared for the overall area.

As previously discussed, in order to mitigate poor operations at the intersection of E Woodmen Road with Golden Sage Road, construction of a southbound free-flowing channelized right-turn lane is a potential solution. With this improvement the intersection projects operations at LOS D during the afternoon peak traffic hour.

Considering the conceptual nature of the proposed development, potential mitigations for the LOS E and F operations may be subject to change as further development of the overall area occurs. It is recommended that City Staff monitor the study intersections as specific site plans are developed in order to determine if or when additional mitigation is necessary. In the event of continued poor operations, additional mitigation methods may include specialized intersection treatments to address high left turn volumes, such as displaced left turns or even long-term grade separation.

Recommended Improvements

Roadway and intersection improvement recommendations were assessed pursuant to roadway descriptions discussed in Section I, projected peak hour traffic volumes, level of service results, projected 95th percentile queue lengths, and per requirements defined within the City's TCM.

As discussed in Section II, Section III, and Section V, various left and right turn deceleration lanes at the study intersections may be required since the projected peak hour left and right turn volumes exceed the City's applicable thresholds. It is recommended that both new and existing turn lanes are constructed or lengthened to accommodate City standards or 95th percentile queues where needed.

As previously discussed, possible mitigation methods for the intersection of E Woodmen Road with Golden Sage Road may include the construction of a southbound free-flowing channelized right-turn lane. In the event of continued poor operations, additional mitigation methods at the E Woodmen Road study intersections may include specialized intersection treatments or even long-term grade separation. However, it is recommended that City Staff monitor the study intersection to determine if or when any mitigation options are needed.

Recommended roadway and intersection improvements for Years 2030 and 2045 total traffic conditions are included for reference in Appendix D.

VII. Conclusion

This traffic impact study addressed the capacity, geometric, and control requirements associated with the development entitled Percheron Master Plan Amendment. This proposed mixed-use development consists of a mix of residential, commercial, and public park land uses. The development is located to the north and south of E Woodmen Road between Mohawk Road and Golden Sage Road in Colorado Springs, Colorado.

The study area examined in this analysis encompassed the E Woodmen Road intersections with Mohawk Road, Banning Lewis Parkway, and Golden Sage Road, as well as the Woodmen Frontage Road intersections with Mohawk Road and Golden Sage Road, and the future Banning Lewis Parkway intersections with Carlana Drive, Golden Jubilee Drive, and additional proposed site access drives.

Analysis was conducted for critical AM Peak Hour and PM Peak Hour traffic operations for existing traffic conditions, Year 2030 and Year 2045 background traffic conditions, and Year 2030 and Year 2045 total traffic conditions.

Analysis of existing traffic conditions indicates that all signalized intersections operate under LOS B conditions during their respective peak hour periods, while all stop-controlled intersections operate with turn movements at or better than LOS C during their respective peak traffic periods. Exceptions include the westbound left and through movement at the intersection of Woodmen Frontage Road with Golden Sage Road, which operates at LOS F during the afternoon peak traffic hour.

Under Year 2030 and 2045 background traffic conditions, operational analysis shows that all signalized intersections are projected to operate with LOS C operations during peak traffic periods. Exceptions include the intersection of E Woodmen Road with Golden Sage Road which is projected to operate at LOS F in the Year 2045 morning peak traffic hour. All stop-controlled intersections anticipate turn movement operations at or better than LOS C during their respective peak traffic periods. Exceptions still include the westbound left and through movement at the intersection of Woodmen Frontage Road with Golden Sage Road, which operates at LOS F during the morning and afternoon peak traffic hours.

Analysis of future traffic conditions indicates that the addition of site-generated traffic is expected to create minimal impact to traffic operations for the existing and surrounding roadway system upon implementation of the various roadway and intersection control improvements assumed within this analysis. Proposed site accesses have long-term operations at LOS C or better during peak traffic periods and upon build-out. It is, however, noted that for the intersections of E Woodmen Road with Mohawk Road, Banning Lewis Parkway, and Golden Sage Road, long-term analysis results continue to project potential for LOS E and F operations. These operations are primarily attributed to high through volumes along E Woodmen Road with the addition of background traffic and some site-generated turning volumes.

It is emphasized that specific land uses and densities assessed in this analysis are conceptual and subject to change. As actual site plans become further defined, it is anticipated that updated analyses may be necessary in order to determine what mitigation measures are most beneficial. It is therefore recommended that City Staff continue to monitor the E Woodmen Road intersections with Banning Lewis Parkway and Golden Sage Road to determine if or when any mitigation options are needed.

APPENDIX A

Traffic Count Data



ALL TRAFFIC DATA SERVICES

(303) 216-2439

www.alltrafficdata.net

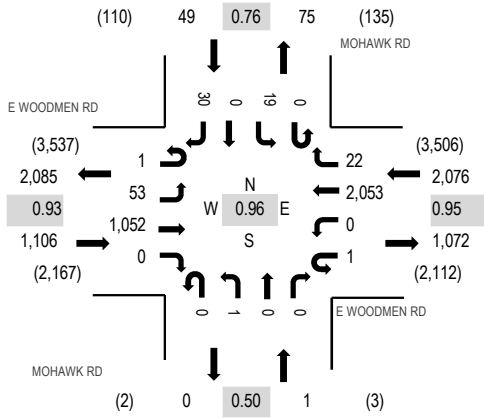
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Date: Wednesday, August 27, 2025

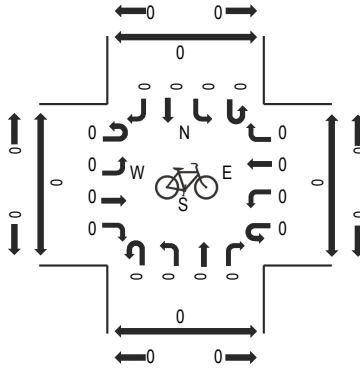
Peak Hour: 07:00 AM - 08:00 AM

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

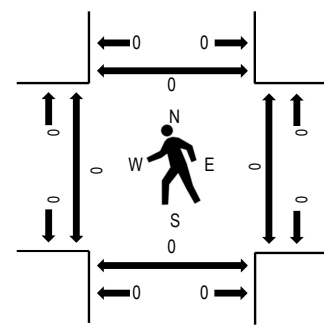
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	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	11	259	0	0	0	507	4	0	0	0	0	0	3	0	9	793	3,232	0	0	0	0
7:15 AM	0	19	262	0	1	0	538	5	0	0	0	0	0	6	0	8	839	3,079	0	0	0	0
7:30 AM	0	11	241	0	0	0	533	7	0	0	0	0	0	5	0	8	805	2,917	0	0	0	0
7:45 AM	1	12	290	0	0	0	475	6	0	1	0	0	0	5	0	5	795	2,784	0	0	0	0
8:00 AM	0	9	255	0	1	0	353	4	0	0	0	0	0	8	0	10	640	2,554	0	0	0	0
8:15 AM	1	15	288	0	0	0	357	3	0	0	0	0	0	7	0	6	677		0	0	0	0
8:30 AM	1	15	239	0	0	1	392	3	0	1	0	0	0	10	0	10	672		0	0	0	0
8:45 AM	1	9	227	1	0	0	314	2	0	0	0	1	0	4	0	6	565		0	0	0	0
Count Total	4	101	2,061	1	2	1	3,469	34	0	2	0	1	0	48	0	62	5,786		0	0	0	0
Peak Hour	1	53	1,052	0	1	0	2,053	22	0	1	0	0	0	19	0	30	3,232		0	0	0	0



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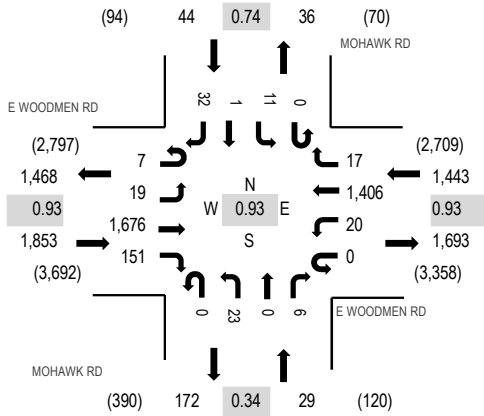
Location: 1 MOHAWK RD & E WOODMEN RD PM

Date: Wednesday, August 27, 2025

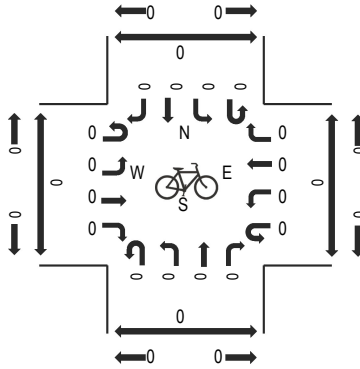
Peak Hour: 04:00 PM - 05:00 PM

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

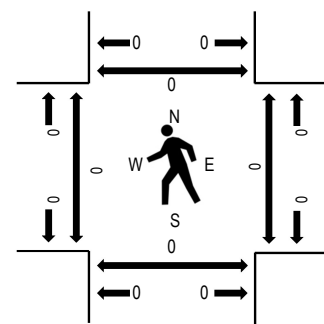
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	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	5	436	23	0	2	354	4	0	1	0	0	0	6	0	9	840	3,369	0	0	0	0
4:15 PM	5	9	391	61	0	13	349	5	0	1	0	0	0	3	1	9	847	3,299	0	0	0	0
4:30 PM	1	3	449	47	0	4	383	3	0	6	0	4	0	2	0	8	910	3,194	0	0	0	0
4:45 PM	1	2	400	20	0	1	320	5	0	15	0	2	0	0	0	6	772	3,143	0	0	0	0
5:00 PM	0	4	375	12	0	2	350	4	0	9	0	2	0	3	1	8	770	3,246	0	0	0	0
5:15 PM	0	2	426	15	0	3	267	4	0	7	0	1	0	10	0	7	742		0	0	0	0
5:30 PM	0	2	443	50	0	7	333	5	0	4	0	1	0	3	0	11	859		0	0	0	0
5:45 PM	1	5	386	118	0	9	274	8	0	55	0	12	0	3	1	3	875		0	0	0	0
Count Total	8	32	3,306	346	0	41	2,630	38	0	98	0	22	0	30	3	61	6,615		0	0	0	0
Peak Hour	7	19	1,676	151	0	20	1,406	17	0	23	0	6	0	11	1	32	3,369		0	0	0	0



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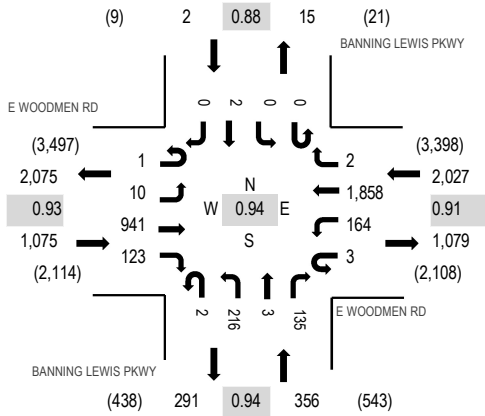
Location: 2 BANNING LEWIS PKWY & E WOODMEN RD AM

Date: Wednesday, August 27, 2025

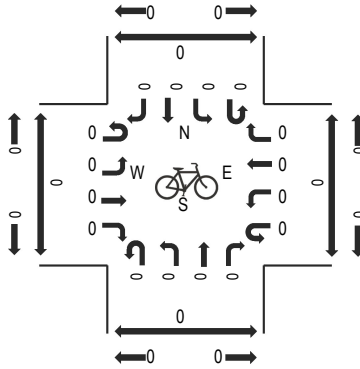
Peak Hour: 07:00 AM - 08:00 AM

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

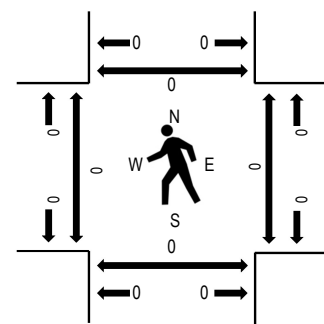
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	E WOODMEN RD Eastbound				E WOODMEN RD Westbound				BANNING LEWIS PKWY Northbound				BANNING LEWIS PKWY 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	2	241	20	0	28	440	0	1	61	1	23	0	0	0	0	817	3,460	0	0	0	0
7:15 AM	1	3	222	42	1	72	480	1	0	64	1	30	0	0	0	0	917	3,311	0	0	0	0
7:30 AM	0	3	225	18	1	38	490	1	0	46	0	43	0	0	2	0	867	3,078	0	0	0	0
7:45 AM	0	2	253	43	1	26	448	0	1	45	1	39	0	0	0	0	859	2,894	0	0	0	0
8:00 AM	0	0	242	25	0	14	340	0	0	23	0	22	1	0	0	1	668	2,604	0	0	0	0
8:15 AM	1	1	245	38	0	17	321	0	0	31	0	28	0	1	1	0	684		0	0	0	0
8:30 AM	0	2	234	17	0	10	357	0	0	34	1	26	0	2	0	0	683		0	0	0	0
8:45 AM	0	0	221	13	1	11	299	1	0	15	0	7	0	0	1	0	569		0	0	0	0
Count Total	2	13	1,883	216	4	216	3,175	3	2	319	4	218	1	3	4	1	6,064		0	0	0	0
Peak Hour	1	10	941	123	3	164	1,858	2	2	216	3	135	0	0	2	0	3,460		0	0	0	0



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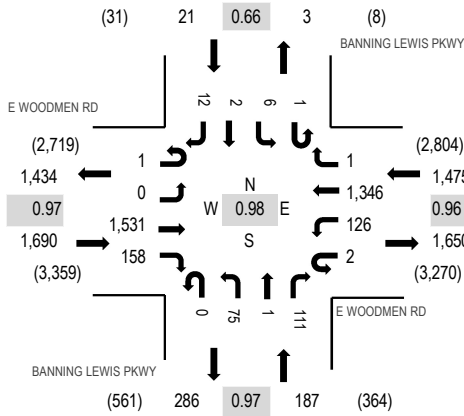
Location: 2 BANNING LEWIS PKWY & E WOODMEN RD PM

Date: Wednesday, August 27, 2025

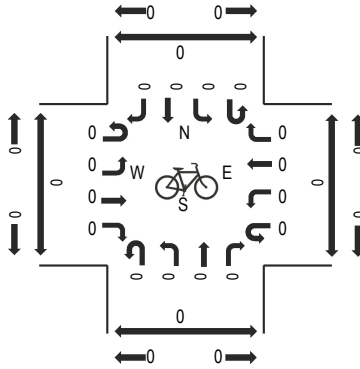
Peak Hour: 04:00 PM - 05:00 PM

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

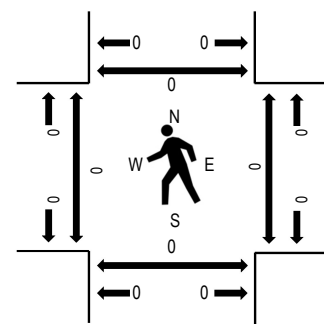
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	E WOODMEN RD Eastbound				E WOODMEN RD Westbound				BANNING LEWIS PKWY Northbound				BANNING LEWIS PKWY 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	375	32	1	39	327	0	0	14	1	33	1	2	0	5	830	3,373	0	0	0	0
4:15 PM	0	0	393	34	0	28	356	0	0	21	0	22	0	2	1	4	861	3,316	0	0	0	0
4:30 PM	0	0	395	40	1	28	343	1	0	19	0	28	0	1	1	3	860	3,275	0	0	0	0
4:45 PM	1	0	368	52	0	31	320	0	0	21	0	28	0	1	0	0	822	3,214	0	0	0	0
5:00 PM	0	0	330	31	0	35	332	0	0	17	2	26	0	0	0	0	773	3,185	0	0	0	0
5:15 PM	0	0	410	45	0	35	277	0	0	21	0	28	0	0	3	1	820		0	0	0	0
5:30 PM	0	0	394	37	0	26	289	0	0	21	1	28	0	0	0	3	799		0	0	0	0
5:45 PM	0	0	382	40	2	23	309	1	0	13	1	19	0	1	0	2	793		0	0	0	0
Count Total	1	0	3,047	311	4	245	2,553	2	0	147	5	212	1	7	5	18	6,558		0	0	0	0
Peak Hour	1	0	1,531	158	2	126	1,346	1	0	75	1	111	1	6	2	12	3,373		0	0	0	0



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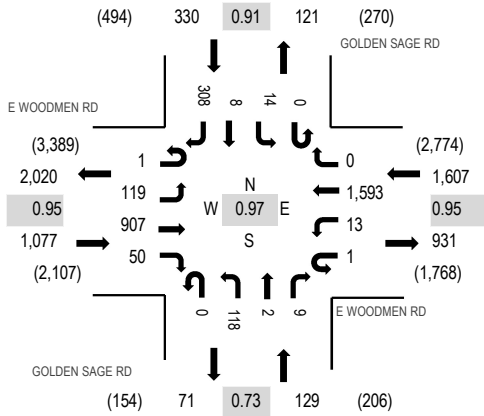
Location: 3 GOLDEN SAGE RD & E WOODMEN RD AM

Date: Wednesday, August 27, 2025

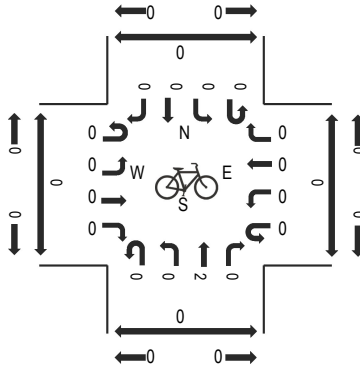
Peak Hour: 07:00 AM - 08:00 AM

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

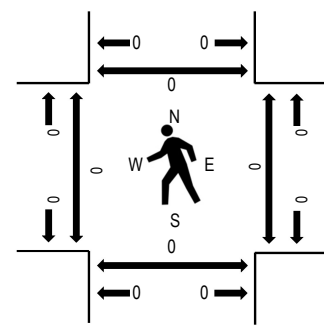
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	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	1	26	219	10	1	1	383	0	0	37	2	5	0	4	3	73	765	3,143	0	0	0	0
7:15 AM	0	23	226	14	0	2	423	0	0	30	0	2	0	4	1	86	811	2,984	0	0	0	0
7:30 AM	0	39	220	10	0	3	417	0	0	23	0	1	0	2	1	86	802	2,821	0	0	0	0
7:45 AM	0	31	242	16	0	7	370	0	0	28	0	1	0	4	3	63	765	2,661	0	0	0	0
8:00 AM	0	38	207	17	0	0	281	1	0	11	0	1	0	0	1	49	606	2,438	0	0	0	0
8:15 AM	0	35	227	12	1	6	301	4	0	17	1	3	0	2	4	35	648		0	0	0	0
8:30 AM	0	37	211	17	0	0	317	0	0	18	2	0	0	3	2	35	642		0	0	0	0
8:45 AM	0	30	182	17	0	4	252	0	0	23	1	0	0	0	3	30	542		0	0	0	0
Count Total	1	259	1,734	113	2	23	2,744	5	0	187	6	13	0	19	18	457	5,581		0	0	0	0
Peak Hour	1	119	907	50	1	13	1,593	0	0	118	2	9	0	14	8	308	3,143		0	0	0	0



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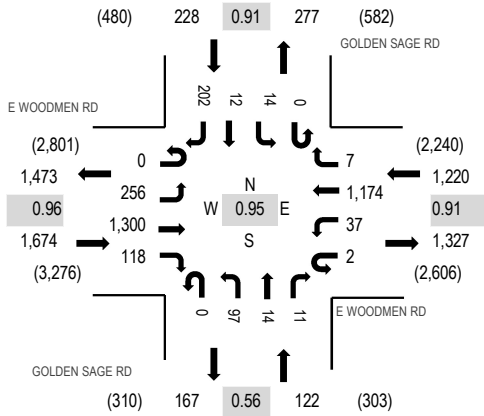
Location: 3 GOLDEN SAGE RD & E WOODMEN RD PM

Date: Wednesday, August 27, 2025

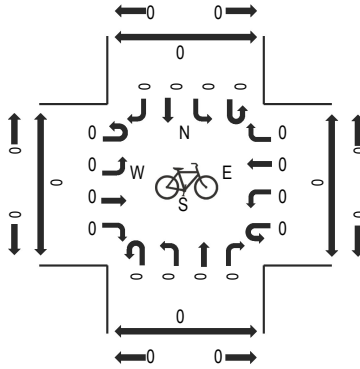
Peak Hour: 04:00 PM - 05:00 PM

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

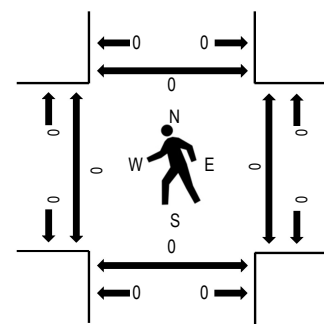
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	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	0	60	327	44	0	21	313	2	0	20	3	3	0	5	5	51	854	3,244	0	0	0	0
4:15 PM	0	67	315	33	0	5	294	2	0	32	9	2	0	3	2	45	809	3,170	0	0	0	0
4:30 PM	0	63	353	21	0	7	307	2	0	21	1	1	0	4	2	58	840	3,104	0	0	0	0
4:45 PM	0	66	305	20	2	4	260	1	0	24	1	5	0	2	3	48	741	3,089	0	0	0	0
5:00 PM	0	50	310	24	0	6	290	2	0	20	3	6	0	4	1	64	780	3,055	0	0	0	0
5:15 PM	2	74	266	40	0	18	206	2	0	52	12	18	0	1	7	45	743		0	0	0	0
5:30 PM	0	81	357	20	0	2	253	3	0	24	6	13	0	1	5	60	825		0	0	0	0
5:45 PM	0	66	299	13	0	3	233	2	0	22	4	1	0	3	4	57	707		0	0	0	0
Count Total	2	527	2,532	215	2	66	2,156	16	0	215	39	49	0	23	29	428	6,299		0	0	0	0
Peak Hour	0	256	1,300	118	2	37	1,174	7	0	97	14	11	0	14	12	202	3,244		0	0	0	0

Interval Start Time	WOODMEN FRONTAGE RD				WOODMEN FRONTAGE RD				GOLDEN SAGE RD				GOLDEN SAGE RD				Total	Rolling Hour	Pedestrian Crossings			
	Eastbound				Westbound				Northbound				Southbound						West	East	South	North
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right						
7:00 AM	0	0	0	3	0	76	0	0	1	26	0	0	0	0	0	0	106	451	0	0	0	0
7:15 AM	0	0	0	3	1	88	0	0	0	23	0	0	0	0	0	0	115	434	0	0	0	0
7:30 AM	0	0	0	1	0	88	0	0	0	38	0	0	0	0	0	0	127	400	0	0	0	0
7:45 AM	0	0	0	0	0	70	0	0	0	33	0	0	0	0	0	0	103	351	0	0	0	0
8:00 AM	0	0	0	0	0	50	0	0	0	39	0	0	0	0	0	0	89	313	0	0	0	0
8:15 AM	0	0	0	0	0	41	0	0	0	40	0	0	0	0	0	0	81		0	0	0	0
8:30 AM	0	0	0	0	0	40	0	0	0	37	0	1	0	0	0	0	78		0	0	0	0
8:45 AM	0	0	0	1	0	32	0	0	0	32	0	0	0	0	0	0	65		0	0	0	0
Count Total	0	0	0	8	1	485	0	0	1	268	0	1	0	0	0	0	764		0	0	0	0
Peak Hour	0	0	0	7	1	322	0	0	1	120	0	0	0	0	0	0	451		0	0	0	0



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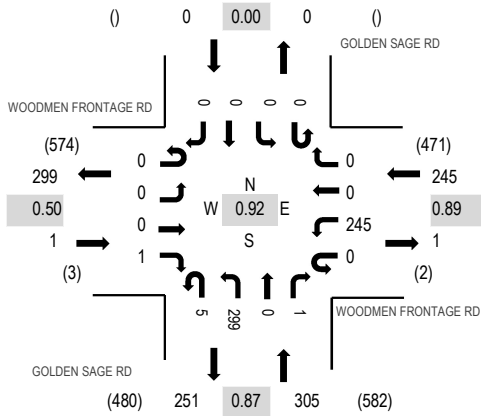
Location: 4 GOLDEN SAGE RD & WOODMEN FRONTAGE RD PM

Date: Wednesday, August 27, 2025

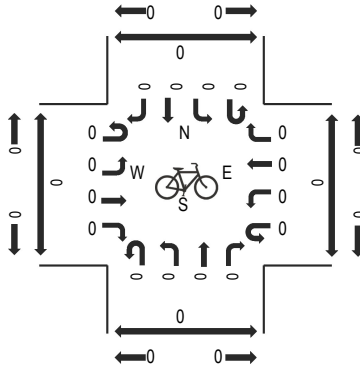
Peak Hour: 05:00 PM - 06:00 PM

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

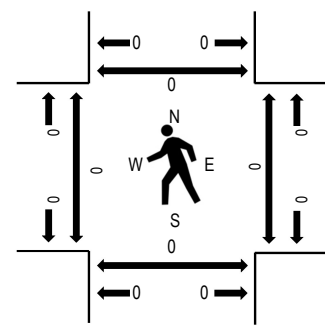
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	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	61	0	0	1	63	0	1	0	0	0	0	127	505	0	0	0	0
4:15 PM	0	0	0	0	0	48	0	0	0	78	0	0	0	0	0	0	126	502	0	0	0	0
4:30 PM	0	0	0	0	0	63	0	0	1	65	0	0	0	0	0	0	129	512	0	0	0	0
4:45 PM	0	0	0	1	0	53	1	0	0	68	0	0	0	0	0	0	123	533	0	0	0	0
5:00 PM	0	0	0	0	0	69	0	0	1	54	0	0	0	0	0	0	124	551	0	0	0	0
5:15 PM	0	0	0	0	0	48	0	0	3	85	0	0	0	0	0	0	136		0	0	0	0
5:30 PM	0	0	0	0	0	66	0	0	1	82	0	1	0	0	0	0	150		0	0	0	0
5:45 PM	0	0	0	1	0	62	0	0	0	78	0	0	0	0	0	0	141		0	0	0	0
Count Total	0	0	0	3	0	470	1	0	7	573	0	2	0	0	0	0	1,056		0	0	0	0
Peak Hour	0	0	0	1	0	245	0	0	5	299	0	1	0	0	0	0	551		0	0	0	0



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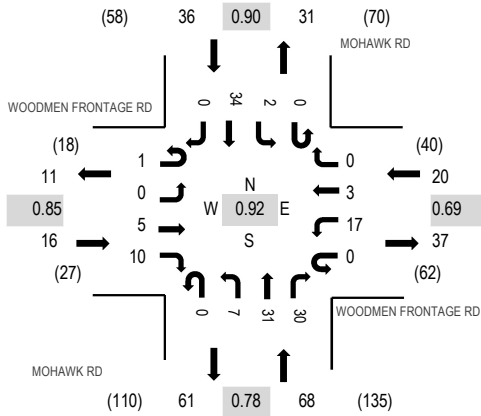
Location: 5 MOHAWK RD & WOODMEN FRONTAGE RD AM

Date: Wednesday, August 27, 2025

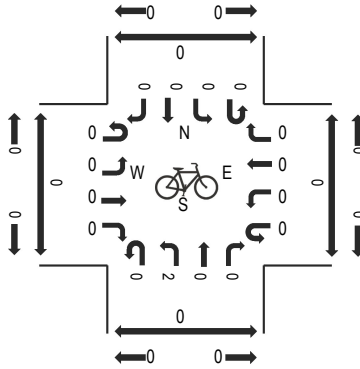
Peak Hour: 07:45 AM - 08:45 AM

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

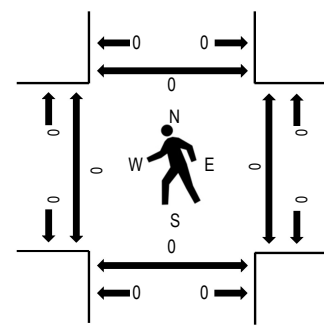
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	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	0	0	6	0	0	1	1	3	10	0	0	7	0	28	131	0	0	0	1
7:15 AM	0	1	1	2	0	6	1	0	0	2	14	8	0	0	4	0	39	138	0	0	0	0
7:30 AM	1	0	0	1	0	4	0	0	0	1	13	3	0	0	8	0	31	133	0	0	0	0
7:45 AM	0	0	2	2	0	3	0	0	0	1	10	8	0	0	7	0	33	140	0	0	0	0
8:00 AM	1	0	1	3	0	6	2	0	0	3	4	6	0	2	7	0	35	129	0	0	0	0
8:15 AM	0	0	2	1	0	3	0	0	0	3	9	6	0	0	10	0	34		0	0	0	0
8:30 AM	0	0	0	4	0	5	1	0	0	0	8	10	0	0	10	0	38		0	0	0	0
8:45 AM	0	0	1	4	0	3	0	0	0	1	8	2	0	0	3	0	22		0	0	0	0
Count Total	2	1	7	17	0	36	4	0	1	12	69	53	0	2	56	0	260		0	0	0	1
Peak Hour	1	0	5	10	0	17	3	0	0	7	31	30	0	2	34	0	140		0	0	0	0



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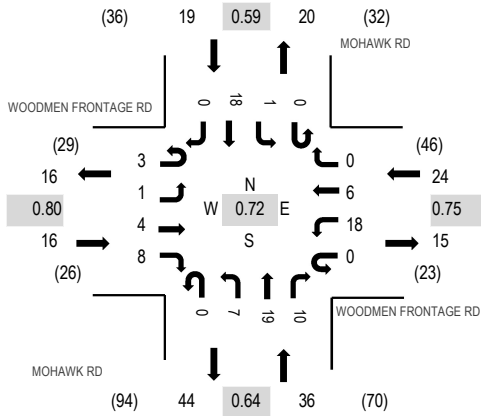
Location: 5 MOHAWK RD & WOODMEN FRONTAGE RD PM

Date: Wednesday, August 27, 2025

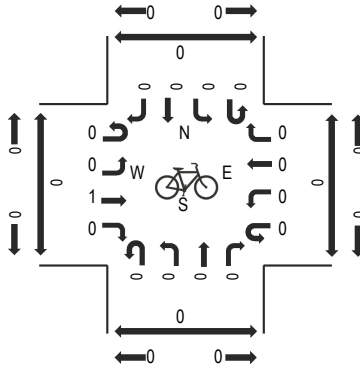
Peak Hour: 04:00 PM - 05:00 PM

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

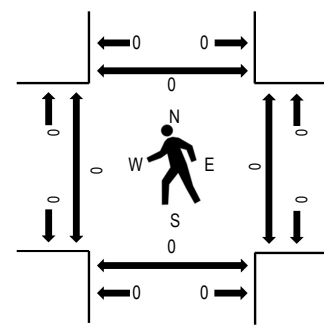
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	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	1	4	0	4	4	0	0	3	4	2	0	1	7	0	30	95	0	0	0	0
4:15 PM	3	0	2	0	0	7	1	0	0	1	9	4	0	0	6	0	33	84	0	0	0	0
4:30 PM	0	1	0	2	0	5	1	0	0	1	4	1	0	0	3	0	18	74	0	0	0	0
4:45 PM	0	0	1	2	0	2	0	0	0	2	2	3	0	0	2	0	14	78	0	0	0	0
5:00 PM	0	0	0	0	0	3	0	0	1	2	4	1	0	0	8	0	19	83	0	0	0	0
5:15 PM	0	0	0	8	0	5	0	0	0	1	3	2	0	0	4	0	23		0	0	0	0
5:30 PM	0	0	0	1	0	10	1	0	0	2	3	2	0	0	3	0	22		0	0	0	0
5:45 PM	0	0	0	1	0	3	0	0	1	7	2	3	0	0	2	0	19		0	0	0	0
Count Total	3	1	4	18	0	39	7	0	2	19	31	18	0	1	35	0	178		0	0	0	0
Peak Hour	3	1	4	8	0	18	6	0	0	7	19	10	0	1	18	0	95		0	0	0	0



All Traffic Data Services

SITE 2_E - E WOODMEN RD EAST OF BANNING LEWIS PKWY

Time	EB	WB	Total
8/27/2025	21	13	34
8/27/2025 12:15:00 AM	24	6	30
8/27/2025 12:30:00 AM	16	4	20
8/27/2025 12:45:00 AM	16	7	23
8/27/2025 1:00:00 AM	7	5	12
8/27/2025 1:15:00 AM	12	4	16
8/27/2025 1:30:00 AM	6	6	12
8/27/2025 1:45:00 AM	12	10	22
8/27/2025 2:00:00 AM	7	5	12
8/27/2025 2:15:00 AM	4	12	16
8/27/2025 2:30:00 AM	6	7	13
8/27/2025 2:45:00 AM	7	2	9
8/27/2025 3:00:00 AM	8	10	18
8/27/2025 3:15:00 AM	8	9	17
8/27/2025 3:30:00 AM	9	13	22
8/27/2025 3:45:00 AM	11	18	29
8/27/2025 4:00:00 AM	12	20	32
8/27/2025 4:15:00 AM	8	25	33
8/27/2025 4:30:00 AM	17	41	58
8/27/2025 4:45:00 AM	33	53	86
8/27/2025 5:00:00 AM	30	67	97
8/27/2025 5:15:00 AM	44	100	144
8/27/2025 5:30:00 AM	59	124	183
8/27/2025 5:45:00 AM	65	125	190
8/27/2025 6:00:00 AM	79	177	256
8/27/2025 6:15:00 AM	120	261	381
8/27/2025 6:30:00 AM	177	358	535
8/27/2025 6:45:00 AM	261	387	648
8/27/2025 7:00:00 AM	264	468	732
8/27/2025 7:15:00 AM	253	554	807
8/27/2025 7:30:00 AM	269	530	799
8/27/2025 7:45:00 AM	293	475	768
8/27/2025 8:00:00 AM	264	354	618
8/27/2025 8:15:00 AM	274	338	612
8/27/2025 8:30:00 AM	262	367	629
8/27/2025 8:45:00 AM	229	312	541
8/27/2025 9:00:00 AM	206	270	476
8/27/2025 9:15:00 AM	201	305	506
8/27/2025 9:30:00 AM	187	314	501
8/27/2025 9:45:00 AM	196	260	456
8/27/2025 10:00:00 AM	195	247	442
8/27/2025 10:15:00 AM	229	278	507
8/27/2025 10:30:00 AM	229	277	506
8/27/2025 10:45:00 AM	230	248	478
8/27/2025 11:00:00 AM	233	262	495
8/27/2025 11:15:00 AM	215	263	478
8/27/2025 11:30:00 AM	261	253	514
8/27/2025 11:45:00 AM	260	246	506
Total	5,829	8,490	14,319
Percentage	40.7%	59.3%	
Peak Hour	7:30 AM	7:00 AM	7:00 AM
Volume	1,100	2,027	3,106
PHF	0.939	0.915	0.962



All Traffic Data Services

SITE 2_E - E WOODMEN RD EAST OF BANNING LEWIS PKWY

Time	EB	WB	Total
8/27/2025 12:00:00 PM	292	289	581
8/27/2025 12:15:00 PM	295	262	557
8/27/2025 12:30:00 PM	269	254	523
8/27/2025 12:45:00 PM	295	248	543
8/27/2025 1:00:00 PM	238	263	501
8/27/2025 1:15:00 PM	288	246	534
8/27/2025 1:30:00 PM	291	255	546
8/27/2025 1:45:00 PM	273	241	514
8/27/2025 2:00:00 PM	286	238	524
8/27/2025 2:15:00 PM	301	295	596
8/27/2025 2:30:00 PM	329	282	611
8/27/2025 2:45:00 PM	346	279	625
8/27/2025 3:00:00 PM	335	330	665
8/27/2025 3:15:00 PM	491	347	838
8/27/2025 3:30:00 PM	422	371	793
8/27/2025 3:45:00 PM	508	423	931
8/27/2025 4:00:00 PM	411	367	778
8/27/2025 4:15:00 PM	417	384	801
8/27/2025 4:30:00 PM	425	373	798
8/27/2025 4:45:00 PM	397	351	748
8/27/2025 5:00:00 PM	356	367	723
8/27/2025 5:15:00 PM	438	312	750
8/27/2025 5:30:00 PM	422	315	737
8/27/2025 5:45:00 PM	404	335	739
8/27/2025 6:00:00 PM	374	292	666
8/27/2025 6:15:00 PM	388	221	609
8/27/2025 6:30:00 PM	341	214	555
8/27/2025 6:45:00 PM	328	213	541
8/27/2025 7:00:00 PM	227	187	414
8/27/2025 7:15:00 PM	295	167	462
8/27/2025 7:30:00 PM	239	151	390
8/27/2025 7:45:00 PM	230	152	382
8/27/2025 8:00:00 PM	178	173	351
8/27/2025 8:15:00 PM	230	144	374
8/27/2025 8:30:00 PM	252	90	342
8/27/2025 8:45:00 PM	191	81	272
8/27/2025 9:00:00 PM	139	59	198
8/27/2025 9:15:00 PM	139	83	222
8/27/2025 9:30:00 PM	101	47	148
8/27/2025 9:45:00 PM	89	45	134
8/27/2025 10:00:00 PM	74	35	109
8/27/2025 10:15:00 PM	74	38	112
8/27/2025 10:30:00 PM	67	37	104
8/27/2025 10:45:00 PM	44	22	66
8/27/2025 11:00:00 PM	36	30	66
8/27/2025 11:15:00 PM	33	21	54
8/27/2025 11:30:00 PM	35	11	46
8/27/2025 11:45:00 PM	32	12	44
Total	12,665	9,952	22,617
Percentage	56.0%	44.0%	
Peak Hour	3:15 PM	3:45 PM	3:15 PM
Volume	1,832	1,547	3,340
PHF	0.902	0.914	0.897
Grand Total	18,494	18,442	36,936
Percentage	50.1%	49.9%	

APPENDIX B

Level of Service Definitions

The following information is referenced from the Highway Capacity Manual: A Guide for Multimodal Mobility Analysis, 7th Edition, Transportation Research Board, 2022: Chapter 19 – Signalized Intersections.

Motorized Vehicle Level of Service (LOS) for Signalized Intersections

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

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

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

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

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

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

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

Control Delay (s/veh)	LOS by Volume-to-Capacity Ratio ^a	
	$v/c \leq 1.0$	$v/c > 1.0$
≤ 10	A	F
$> 10 - 20$	B	F
$> 20 - 35$	C	F
$> 35 - 55$	D	F
$> 55 - 80$	E	F
> 80	F	F

Note: ^a For approach-based and intersectionwide assessments, LOS is defined solely by control delay.

The following information is referenced from the Highway Capacity Manual: A Guide for Multimodal Mobility Analysis, 7th Edition, Transportation Research Board, 2022: Chapter 20 – Two-Way Stop-Controlled Intersections, Chapter 21 – All-Way Stop-Controlled Intersections, and Chapter 22 - Roundabouts.

Motorized Vehicle Level of Service (LOS) for Unsignalized & Roundabout Intersections

LOS is a quantitative stratification of performance measure(s) representing quality of service. Quality of service describes how well a transportation facility or service operates from a traveler's perspective. LOS is measured on an A – F scale, with LOS A representing the best operating conditions from a traveler's perspective.

Control Delay (s/veh)	<u>LOS by Volume-to-Capacity Ratio^a</u>	
	$v/c \leq 1.0$	$v/c > 1.0$
0 – 10	A	F
> 10 – 15	B	F
> 15 – 25	C	F
> 25 – 35	D	F
> 35 – 50	E	F
> 50	F	F

Note: The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection as a whole.

^a For approaches and intersectionwide assessment, LOS is defined solely by control delay.

APPENDIX C

Capacity Worksheets

Timings

1: Mohawk Road & E Woodmen Road

Existing Traffic Conditions

AM Peak Traffic Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 				
Traffic Volume (vph)	54	1054	5	1	2053	22	1	5	5	19	5	30
Future Volume (vph)	54	1054	5	1	2053	22	1	5	5	19	5	30
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	0	1740	0	1770	1621	0
Flt Permitted	0.068			0.236				0.965		0.750		
Satd. Flow (perm)	127	5085	1583	440	5085	1583	0	1688	0	1397	1621	0
Satd. Flow (RTOR)			18			24		5			32	
Lane Group Flow (vph)	59	1146	5	1	2232	24	0	11	0	21	38	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	6	6	6	8	8		4	4	
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	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0		10.0	10.0	
Total Split (s)	109.0	109.0	109.0	109.0	109.0	109.0	11.0	11.0		11.0	11.0	
Total Split (%)	90.8%	90.8%	90.8%	90.8%	90.8%	90.8%	9.2%	9.2%		9.2%	9.2%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	Max	Max	Max	Max	Max		Max	Max	
Act Effect Green (s)	103.0	103.0	103.0	103.0	103.0	103.0		6.0		6.0	6.0	
Actuated g/C Ratio	0.86	0.86	0.86	0.86	0.86	0.86		0.05		0.05	0.05	
v/c Ratio	0.54	0.26	0.00	0.00	0.51	0.02		0.12		0.30	0.34	
Control Delay (s/veh)	23.5	1.7	0.2	3.0	4.3	1.4		44.6		66.7	30.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay (s/veh)	23.5	1.7	0.2	3.0	4.3	1.4		44.6		66.7	30.7	
LOS	C	A	A	A	A	A		D		E	C	
Approach Delay (s/veh)		2.8			4.3			44.6			43.5	
Approach LOS		A			A			D			D	
Queue Length 50th (ft)	8	41	0	0	107	0		5		16	5	
Queue Length 95th (ft)	#98	49	1	m0	341	m6		25		44	41	
Internal Link Dist (ft)		2474			750			6246			419	
Turn Bay Length (ft)	300		400	315		370				50		
Base Capacity (vph)	109	4364	1361	377	4364	1362		89		69	111	
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	0.54	0.26	0.00	0.00	0.51	0.02		0.12		0.30	0.34	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green												
Natural Cycle: 60												
Control Type: Actuated-Coordinated												

Maximum v/c Ratio: 0.54	
Intersection Signal Delay (s/veh): 4.5	Intersection LOS: A
Intersection Capacity Utilization 60.7%	ICU Level of Service B
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 & E Woodmen Road



Timings

2: Banning Lewis Parkway & E Woodmen Road

Existing Traffic Conditions

AM Peak Traffic Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  		 	  		 	  	
Traffic Volume (vph)	11	941	123	167	1858	2	218	3	135	5	2	5
Future Volume (vph)	11	941	123	167	1858	2	218	3	135	5	2	5
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Satd. Flow (RTOR)			382			382			382			382
Lane Group Flow (vph)	12	1023	134	182	2020	2	237	3	147	5	2	5
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			Free			Free			Free			Free
Detector Phase	5	2		1	6		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Total Split (s)	11.0	25.0		13.0	27.0		11.0	11.0		11.0	11.0	
Total Split (%)	18.3%	41.7%		21.7%	45.0%		18.3%	18.3%		18.3%	18.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	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	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effect Green (s)	5.5	26.6	60.0	7.7	38.2	60.0	5.4	5.4	60.0	5.0	5.0	60.0
Actuated g/C Ratio	0.09	0.44	1.00	0.13	0.64	1.00	0.09	0.09	1.00	0.08	0.08	1.00
v/c Ratio	0.04	0.45	0.08	0.41	0.62	0.00	0.76	0.01	0.09	0.02	0.00	0.00
Control Delay (s/veh)	27.7	11.7	0.1	22.0	14.8	0.0	46.1	25.0	0.1	25.4	25.5	0.0
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 (s/veh)	27.7	11.7	0.1	22.0	14.8	0.0	46.1	25.0	0.1	25.4	25.5	0.0
LOS	C	B	A	C	B	A	D	C	A	C	C	A
Approach Delay (s/veh)		10.5			15.3			28.5			14.8	
Approach LOS		B			B			C			B	
Queue Length 50th (ft)	2	89	0	35	175	0	44	0	0	1	0	0
Queue Length 95th (ft)	6	142	0	m44	#391	m0	#98	2	0	5	2	0
Internal Link Dist (ft)		712			722			667			695	
Turn Bay Length (ft)	285			285		225	185		185	185		185
Base Capacity (vph)	314	2257	1583	451	3235	1583	310	459	1583	286	423	1583
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	0.04	0.45	0.08	0.40	0.62	0.00	0.76	0.01	0.09	0.02	0.00	0.00

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 60

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Timings
 2: Banning Lewis Parkway & E Woodmen Road

Existing Traffic Conditions
 AM Peak Traffic Hour

Maximum v/c Ratio: 0.76

Intersection Signal Delay (s/veh): 15.2

Intersection LOS: B

Intersection Capacity Utilization 68.0%

ICU Level of Service C

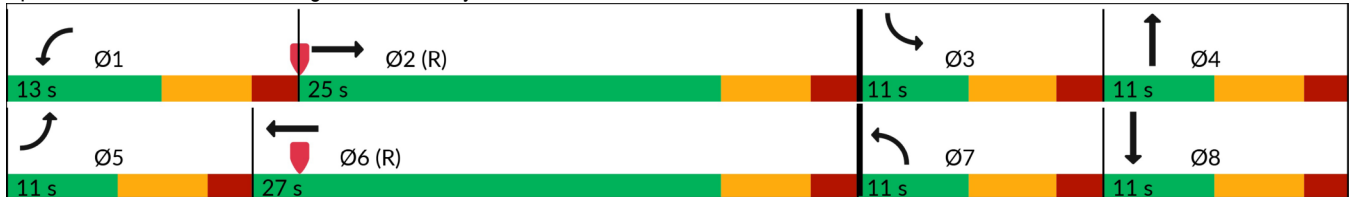
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Banning Lewis Parkway & E Woodmen Road



Timings

3: Golden Sage Road & E Woodmen Road

Existing Traffic Conditions

AM Peak Traffic Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	907	50	14	1593	5	118	2	9	14	8	308
Future Volume (vph)	120	907	50	14	1593	5	118	2	9	14	8	308
Satd. Flow (prot)	1770	3539	1583	1770	5085	1583	1770	1863	1583	1770	1591	0
Flt Permitted	0.148			0.238			0.346			0.757		
Satd. Flow (perm)	276	3539	1583	443	5085	1583	645	1863	1583	1410	1591	0
Satd. Flow (RTOR)			145			145			255		196	
Lane Group Flow (vph)	130	986	54	15	1732	5	128	2	10	15	344	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Free	Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		Free	8		
Detector Phase	5	2	2	1	6	6	4	4		8	8	
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	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0		10.0	10.0	
Total Split (s)	11.0	29.0	29.0	11.0	29.0	29.0	20.0	20.0		20.0	20.0	
Total Split (%)	18.3%	48.3%	48.3%	18.3%	48.3%	48.3%	33.3%	33.3%		33.3%	33.3%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	
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)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max		Max	Max	
Act Effect Green (s)	32.8	31.8	31.8	29.2	25.2	25.2	15.0	15.0	60.0	15.0	15.0	
Actuated g/C Ratio	0.55	0.53	0.53	0.49	0.42	0.42	0.25	0.25	1.00	0.25	0.25	
v/c Ratio	0.47	0.53	0.06	0.05	0.81	0.01	0.80	0.00	0.01	0.04	0.63	
Control Delay (s/veh)	18.6	7.2	0.3	6.4	20.6	0.0	59.2	17.0	0.0	17.6	14.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	18.6	7.2	0.3	6.4	20.6	0.0	59.2	17.0	0.0	17.6	14.8	
LOS	B	A	A	A	C	A	E	B	A	B	B	
Approach Delay (s/veh)		8.1			20.4			54.4			14.9	
Approach LOS		A			C			D			B	
Queue Length 50th (ft)	12	31	0	2	207	0	43	1	0	4	44	
Queue Length 95th (ft)	61	88	0	8	#302	0	#128	5	0	16	120	
Internal Link Dist (ft)		600			542			565			379	
Turn Bay Length (ft)	530		380	330		360	125		195	110		
Base Capacity (vph)	275	1875	906	326	2135	749	161	465	1583	352	544	
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	0.47	0.53	0.06	0.05	0.81	0.01	0.80	0.00	0.01	0.04	0.63	

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 60

Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81	
Intersection Signal Delay (s/veh): 17.0	Intersection LOS: B
Intersection Capacity Utilization 81.8%	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: 3: Golden Sage Road & E Woodmen Road



HCM Unsignalized Intersection Capacity Analysis
4: Golden Sage Road & Woodmen Frontage Road

Existing Traffic Conditions
AM Peak Traffic Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	5	7	323	5	121	5
Future Volume (Veh/h)	5	7	323	5	121	5
Sign Control	Stop			Stop	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	8	351	5	132	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)					459	
pX, platoon unblocked						
vC, conflicting volume	269	0	277	267	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	269	0	277	267	0	
tC, single (s)	6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3	3.5	4.0	2.2	
p0 queue free %	99	99	44	99	92	
cM capacity (veh/h)	585	1085	625	587	1623	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	13	356	137			
Volume Left	0	351	132			
Volume Right	8	0	5			
cSH	817	624	1623			
Volume to Capacity	0.02	0.57	0.08			
Queue Length 95th (ft)	1	90	7			
Control Delay (s/veh)	9.5	18.1	7.2			
Lane LOS	A	C	A			
Approach Delay (s/veh)	9.5	18.1	7.2			
Approach LOS	A	C				
Intersection Summary						
Average Delay		15.0				
Intersection Capacity Utilization		38.5%		ICU Level of Service		A
Analysis Period (min)		15				

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	1	5	10	17	3	5	7	31	30	2	34	5
Future Vol, veh/h	1	5	10	17	3	5	7	31	30	2	34	5
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	-	-	-	-	-	-	-	-	-	-	-	-
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	1	5	11	18	3	5	8	34	33	2	37	5
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	95	126	40	109	112	50	42	0	0	66	0	0
Stage 1	44	44	-	65	65	-	-	-	-	-	-	-
Stage 2	51	82	-	44	47	-	-	-	-	-	-	-
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	889	765	1032	869	778	1018	1567	-	-	1535	-	-
Stage 1	970	858	-	945	841	-	-	-	-	-	-	-
Stage 2	962	827	-	970	856	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	874	760	1032	848	773	1018	1567	-	-	1535	-	-
Mov Cap-2 Maneuver	874	760	-	848	773	-	-	-	-	-	-	-
Stage 1	969	857	-	941	836	-	-	-	-	-	-	-
Stage 2	949	823	-	952	855	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	8.99		9.29		0.75		0.36					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	169	-	-	919	867	86	-	-				
HCM Lane V/C Ratio	0.005	-	-	0.019	0.031	0.001	-	-				
HCM Ctrl Dly (s/v)	7.3	0	-	9	9.3	7.3	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-				

Timings

1: Mohawk Road & E Woodmen Road

Existing Traffic Conditions

PM Peak Traffic Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	1676	151	20	1406	17	23	5	6	11	1	32
Future Volume (vph)	26	1676	151	20	1406	17	23	5	6	11	1	32
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	0	1754	0	1770	1591	0
Flt Permitted	0.148			0.103				0.805		0.812		
Satd. Flow (perm)	276	5085	1583	192	5085	1583	0	1461	0	1513	1591	0
Satd. Flow (RTOR)			164			18		7			35	
Lane Group Flow (vph)	28	1822	164	22	1528	18	0	37	0	12	36	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	6	6	6	8	8		4	4	
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	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0		10.0	10.0	
Total Split (s)	100.0	100.0	100.0	100.0	100.0	100.0	20.0	20.0		20.0	20.0	
Total Split (%)	83.3%	83.3%	83.3%	83.3%	83.3%	83.3%	16.7%	16.7%		16.7%	16.7%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	Max	Max	Max	Max	Max		Max	Max	
Act Effect Green (s)	94.0	94.0	94.0	94.0	94.0	94.0		15.0		15.0	15.0	
Actuated g/C Ratio	0.78	0.78	0.78	0.78	0.78	0.78		0.13		0.13	0.13	
v/c Ratio	0.13	0.46	0.13	0.15	0.38	0.01		0.20		0.06	0.16	
Control Delay (s/veh)	4.7	4.8	0.7	8.3	9.6	2.6		43.0		47.4	17.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay (s/veh)	4.7	4.8	0.7	8.3	9.6	2.6		43.0		47.4	17.1	
LOS	A	A	A	A	A	A		D		D	B	
Approach Delay (s/veh)		4.5			9.5			43.0			24.7	
Approach LOS		A			A			D			C	
Queue Length 50th (ft)	4	144	0	9	256	3		21		8	1	
Queue Length 95th (ft)	13	165	13	m21	256	m8		55		28	33	
Internal Link Dist (ft)		2474			750			6246			419	
Turn Bay Length (ft)	300		400	315		370				50		
Base Capacity (vph)	216	3983	1275	150	3983	1243		188		189	229	
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	0.13	0.46	0.13	0.15	0.38	0.01		0.20		0.06	0.16	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green												
Natural Cycle: 40												
Control Type: Actuated-Coordinated												

Maximum v/c Ratio: 0.46	
Intersection Signal Delay (s/veh): 7.3	Intersection LOS: A
Intersection Capacity Utilization 50.1%	ICU Level of Service A
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 1: Mohawk Road & E Woodmen Road



Timings

2: Banning Lewis Parkway & E Woodmen Road

Existing Traffic Conditions

PM Peak Traffic Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  		 	  		  		
Traffic Volume (vph)	1	1531	158	128	1346	1	75	1	111	7	2	12
Future Volume (vph)	1	1531	158	128	1346	1	75	1	111	7	2	12
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Satd. Flow (RTOR)			382			382			438			382
Lane Group Flow (vph)	1	1664	172	139	1463	1	82	1	121	8	2	13
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			Free			Free			Free			Free
Detector Phase	5	2		1	6		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Total Split (s)	11.0	27.0		11.0	27.0		11.0	11.0		11.0	11.0	
Total Split (%)	18.3%	45.0%		18.3%	45.0%		18.3%	18.3%		18.3%	18.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	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	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effect Green (s)	5.4	33.4	60.0	6.8	41.7	60.0	5.3	5.4	60.0	5.0	5.1	60.0
Actuated g/C Ratio	0.09	0.56	1.00	0.11	0.70	1.00	0.09	0.09	1.00	0.08	0.09	1.00
v/c Ratio	0.00	0.59	0.11	0.36	0.41	0.00	0.27	0.00	0.08	0.03	0.00	0.01
Control Delay (s/veh)	33.0	11.6	0.1	32.5	8.0	0.0	28.1	25.0	0.1	25.6	25.5	0.0
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 (s/veh)	33.0	11.6	0.1	32.5	8.0	0.0	28.1	25.0	0.1	25.6	25.5	0.0
LOS	C	B	A	C	A	A	C	C	A	C	C	A
Approach Delay (s/veh)		10.6			10.1			11.5			11.1	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)	0	182	0	40	57	0	14	0	0	1	0	0
Queue Length 95th (ft)	m0	#301	0	71	305	m0	32	1	0	7	2	0
Internal Link Dist (ft)		712			722			667			695	
Turn Bay Length (ft)	285			285		225	185		185	185		185
Base Capacity (vph)	308	2834	1583	390	3533	1583	303	457	1583	286	432	1583
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	0.00	0.59	0.11	0.36	0.41	0.00	0.27	0.00	0.08	0.03	0.00	0.01

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 60

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Timings
 2: Banning Lewis Parkway & E Woodmen Road

Existing Traffic Conditions
 PM Peak Traffic Hour

Maximum v/c Ratio: 0.59

Intersection Signal Delay (s/veh): 10.4

Intersection LOS: B

Intersection Capacity Utilization 57.6%

ICU Level of Service B

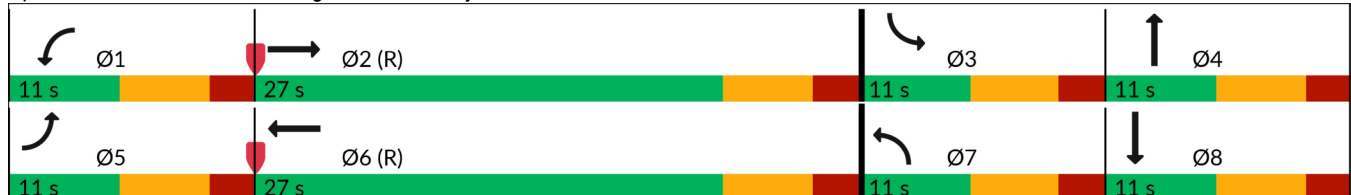
Analysis Period (min) 15

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: Banning Lewis Parkway & E Woodmen Road



Timings

3: Golden Sage Road & E Woodmen Road

Existing Traffic Conditions

PM Peak Traffic Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	256	1300	118	39	1174	7	47	14	11	14	12	202
Future Volume (vph)	256	1300	118	39	1174	7	47	14	11	14	12	202
Satd. Flow (prot)	1770	3539	1583	1770	5085	1583	1770	1863	1583	1770	1598	0
Flt Permitted	0.148			0.146			0.376			0.748		
Satd. Flow (perm)	276	3539	1583	272	5085	1583	700	1863	1583	1393	1598	0
Satd. Flow (RTOR)			128			127			182		220	
Lane Group Flow (vph)	278	1413	128	42	1276	8	51	15	12	15	233	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Free	Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		Free	8		
Detector Phase	5	2	2	1	6	6	4	4		8	8	
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	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0		10.0	10.0	
Total Split (s)	32.0	80.0	80.0	11.0	59.0	59.0	29.0	29.0		29.0	29.0	
Total Split (%)	26.7%	66.7%	66.7%	9.2%	49.2%	49.2%	24.2%	24.2%		24.2%	24.2%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	
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)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max		Max	Max	
Act Effect Green (s)	85.0	76.2	76.2	68.9	63.9	63.9	24.0	24.0	120.0	24.0	24.0	
Actuated g/C Ratio	0.71	0.64	0.64	0.57	0.53	0.53	0.20	0.20	1.00	0.20	0.20	
v/c Ratio	0.73	0.63	0.12	0.19	0.47	0.01	0.36	0.04	0.01	0.05	0.47	
Control Delay (s/veh)	32.9	17.1	6.4	9.6	18.9	0.0	50.2	39.2	0.0	39.6	9.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	32.9	17.1	6.4	9.6	18.9	0.0	50.2	39.2	0.0	39.6	9.9	
LOS	C	B	A	A	B	A	D	D	A	D	A	
Approach Delay (s/veh)		18.8			18.5			40.3			11.7	
Approach LOS		B			B			D			B	
Queue Length 50th (ft)	131	293	25	9	213	0	34	10	0	9	8	
Queue Length 95th (ft)	233	348	61	19	296	0	76	29	0	29	78	
Internal Link Dist (ft)		600			542			565			379	
Turn Bay Length (ft)	530		380	330		360	125		195	110		
Base Capacity (vph)	519	2247	1052	218	2707	902	140	372	1583	278	495	
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	0.54	0.63	0.12	0.19	0.47	0.01	0.36	0.04	0.01	0.05	0.47	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Timings
3: Golden Sage Road & E Woodmen Road

Existing Traffic Conditions
PM Peak Traffic Hour

Maximum v/c Ratio: 0.73

Intersection Signal Delay (s/veh): 18.7

Intersection LOS: B

Intersection Capacity Utilization 75.7%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Golden Sage Road & E Woodmen Road



HCM Unsignalized Intersection Capacity Analysis
4: Golden Sage Road & Woodmen Frontage Road

Existing Traffic Conditions
PM Peak Traffic Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	5	1	245	5	304	1
Future Volume (Veh/h)	5	1	245	5	304	1
Sign Control	Stop			Stop	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	1	266	5	330	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)					459	
pX, platoon unblocked						
vC, conflicting volume	661	0	664	661	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	661	0	664	661	0	
tC, single (s)	6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3	3.5	4.0	2.2	
p0 queue free %	98	100	15	98	80	
cM capacity (veh/h)	305	1085	311	305	1623	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	6	271	331			
Volume Left	0	266	330			
Volume Right	1	0	1			
cSH	346	311	1623			
Volume to Capacity	0.02	0.87	0.20			
Queue Length 95th (ft)	1	197	19			
Control Delay (s/veh)	15.6	60.7	7.8			
Lane LOS	C	F	A			
Approach Delay (s/veh)	15.6	60.7	7.8			
Approach LOS	C	F				
Intersection Summary						
Average Delay		31.5				
Intersection Capacity Utilization		44.1%		ICU Level of Service		A
Analysis Period (min)		15				

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	4	8	18	6	5	7	19	10	1	18	5
Future Vol, veh/h	4	4	8	18	6	5	7	19	10	1	18	5
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	-	-	-	-	-	-	-	-	-	-	-	-
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	4	4	9	20	7	5	8	21	11	1	20	5
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	64	71	22	65	68	26	25	0	0	32	0	0
Stage 1	24	24	-	41	41	-	-	-	-	-	-	-
Stage 2	39	47	-	24	27	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	931	819	1055	928	822	1050	1589	-	-	1581	-	-
Stage 1	993	875	-	973	861	-	-	-	-	-	-	-
Stage 2	976	856	-	994	873	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	913	815	1055	911	818	1050	1589	-	-	1581	-	-
Mov Cap-2 Maneuver	913	815	-	911	818	-	-	-	-	-	-	-
Stage 1	993	874	-	969	856	-	-	-	-	-	-	-
Stage 2	959	852	-	980	872	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	8.87		9.1		1.41		0.3					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	327	-	-	948	910	72	-	-				
HCM Lane V/C Ratio	0.005	-	-	0.018	0.035	0.001	-	-				
HCM Ctrl Dly (s/v)	7.3	0	-	8.9	9.1	7.3	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-				

Timings

1: Mohawk Road & E Woodmen Road

Background Traffic Conditions

AM Peak Traffic Hour - 2030

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	1164	5	1	2267	24	1	5	5	21	5	33
Future Volume (vph)	60	1164	5	1	2267	24	1	5	5	21	5	33
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	0	1740	0	1770	1617	0
Flt Permitted	0.051			0.208				0.964		0.750		
Satd. Flow (perm)	95	5085	1583	387	5085	1583	0	1686	0	1397	1617	0
Satd. Flow (RTOR)			18			26		5			22	
Lane Group Flow (vph)	65	1265	5	1	2464	26	0	11	0	23	41	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	6	6	6	8	8		4	4	
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	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0		10.0	10.0	
Total Split (s)	109.0	109.0	109.0	109.0	109.0	109.0	11.0	11.0		11.0	11.0	
Total Split (%)	90.8%	90.8%	90.8%	90.8%	90.8%	90.8%	9.2%	9.2%		9.2%	9.2%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	Max	Max	Max	Max	Max		Max	Max	
Act Effct Green (s)	103.0	103.0	103.0	103.0	103.0	103.0		6.0		6.0	6.0	
Actuated g/C Ratio	0.86	0.86	0.86	0.86	0.86	0.86		0.05		0.05	0.05	
v/c Ratio	0.80	0.29	0.00	0.00	0.56	0.02		0.12		0.33	0.41	
Control Delay (s/veh)	69.6	1.8	0.2	2.0	4.7	1.3		44.6		68.3	44.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay (s/veh)	69.6	1.8	0.2	2.0	4.7	1.3		44.6		68.3	44.0	
LOS	E	A	A	A	A	A		D		E	D	
Approach Delay (s/veh)		5.1			4.6			44.6			52.7	
Approach LOS		A			A			D			D	
Queue Length 50th (ft)	16	47	0	0	107	0		5		18	14	
Queue Length 95th (ft)	#70	55	1	m0	376	m5		25		46	52	
Internal Link Dist (ft)		2474			750			6246			419	
Turn Bay Length (ft)	300		400	315		370				50		
Base Capacity (vph)	81	4364	1361	332	4364	1362		89		69	101	
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	0.80	0.29	0.00	0.00	0.56	0.02		0.12		0.33	0.41	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green												
Natural Cycle: 60												
Control Type: Actuated-Coordinated												

Maximum v/c Ratio: 0.80	
Intersection Signal Delay (s/veh): 5.7	Intersection LOS: A
Intersection Capacity Utilization 66.4%	ICU Level of Service C
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 1: Mohawk Road & E Woodmen Road



Timings
2: Banning Lewis Parkway & E Woodmen Road

Background Traffic Conditions
AM Peak Traffic Hour - 2030

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	1039	136	184	2051	2	241	3	149	5	2	5
Future Volume (vph)	12	1039	136	184	2051	2	241	3	149	5	2	5
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Satd. Flow (RTOR)			382			382			382			382
Lane Group Flow (vph)	13	1129	148	200	2229	2	262	3	162	5	2	5
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			Free			Free			Free			Free
Detector Phase	5	2		1	6		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Total Split (s)	11.0	25.0		13.0	27.0		11.0	11.0		11.0	11.0	
Total Split (%)	18.3%	41.7%		21.7%	45.0%		18.3%	18.3%		18.3%	18.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	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	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effect Green (s)	5.5	26.4	60.0	7.9	38.2	60.0	5.4	5.4	60.0	5.0	5.0	60.0
Actuated g/C Ratio	0.09	0.44	1.00	0.13	0.64	1.00	0.09	0.09	1.00	0.08	0.08	1.00
v/c Ratio	0.04	0.50	0.09	0.44	0.69	0.00	0.85	0.01	0.10	0.02	0.00	0.00
Control Delay (s/veh)	27.8	12.2	0.1	21.8	15.8	0.0	54.3	25.0	0.1	25.4	25.5	0.0
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 (s/veh)	27.8	12.2	0.1	21.8	15.8	0.0	54.3	25.0	0.1	25.4	25.5	0.0
LOS	C	B	A	C	B	A	D	C	A	C	C	A
Approach Delay (s/veh)		11.0			16.2			33.6			14.8	
Approach LOS		B			B			C			B	
Queue Length 50th (ft)	3	102	0	39	212	0	49	0	0	1	0	0
Queue Length 95th (ft)	m7	159	0	m44	m#431	m0	#111	2	0	5	2	0
Internal Link Dist (ft)		712			722			667			695	
Turn Bay Length (ft)	285			285		225	185		185	185		185
Base Capacity (vph)	315	2240	1583	461	3235	1583	310	459	1583	286	423	1583
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	0.04	0.50	0.09	0.43	0.69	0.00	0.85	0.01	0.10	0.02	0.00	0.00

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 60

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Timings
2: Banning Lewis Parkway & E Woodmen Road

Background Traffic Conditions
AM Peak Traffic Hour - 2030

Maximum v/c Ratio: 0.85

Intersection Signal Delay (s/veh): 16.4

Intersection LOS: B

Intersection Capacity Utilization 72.3%

ICU Level of Service C

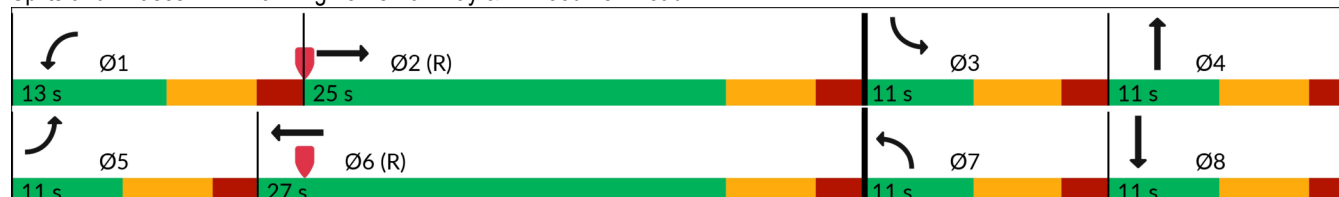
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Banning Lewis Parkway & E Woodmen Road



Timings

3: Golden Sage Road & E Woodmen Road

Background Traffic Conditions

AM Peak Traffic Hour - 2030

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	132	1001	55	15	1759	5	130	2	10	15	9	340
Future Volume (vph)	132	1001	55	15	1759	5	130	2	10	15	9	340
Satd. Flow (prot)	1770	3539	1583	1770	5085	1583	1770	1863	1583	1770	1591	0
Flt Permitted	0.148			0.193			0.284			0.757		
Satd. Flow (perm)	276	3539	1583	360	5085	1583	529	1863	1583	1410	1591	0
Satd. Flow (RTOR)			145			145			255		196	
Lane Group Flow (vph)	143	1088	60	16	1912	5	141	2	11	16	380	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Free	Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		Free	8		
Detector Phase	5	2	2	1	6	6	4	4		8	8	
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	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0		10.0	10.0	
Total Split (s)	11.0	29.0	29.0	11.0	29.0	29.0	20.0	20.0		20.0	20.0	
Total Split (%)	18.3%	48.3%	48.3%	18.3%	48.3%	48.3%	33.3%	33.3%		33.3%	33.3%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	
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)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max		Max	Max	
Act Effect Green (s)	32.8	31.8	31.8	29.2	25.2	25.2	15.0	15.0	60.0	15.0	15.0	
Actuated g/C Ratio	0.55	0.53	0.53	0.49	0.42	0.42	0.25	0.25	1.00	0.25	0.25	
v/c Ratio	0.52	0.58	0.07	0.05	0.90	0.01	1.07	0.00	0.01	0.05	0.70	
Control Delay (s/veh)	20.6	8.1	0.5	6.5	25.3	0.0	128.0	17.0	0.0	17.6	18.1	
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 (s/veh)	20.6	8.1	0.5	6.5	25.3	0.0	128.0	17.0	0.0	17.6	18.1	
LOS	C	A	A	A	C	A	F	B	A	B	B	
Approach Delay (s/veh)		9.1			25.1			117.4			18.1	
Approach LOS		A			C			F			B	
Queue Length 50th (ft)	18	34	0	2	241	0	~58	1	0	4	56	
Queue Length 95th (ft)	67	113	0	9	#355	0	#153	5	0	17	#167	
Internal Link Dist (ft)		600			542			565			379	
Turn Bay Length (ft)	530		380	330		360	125		195	110		
Base Capacity (vph)	275	1875	906	292	2135	749	132	465	1583	352	544	
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	0.52	0.58	0.07	0.05	0.90	0.01	1.07	0.00	0.01	0.05	0.70	

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 60

Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 50

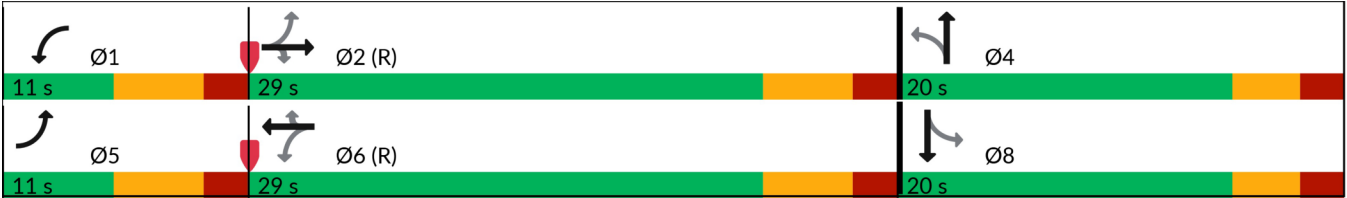
Control Type: Actuated-Coordinated

Timings
3: Golden Sage Road & E Woodmen Road

Background Traffic Conditions
AM Peak Traffic Hour - 2030

Maximum v/c Ratio: 1.07	
Intersection Signal Delay (s/veh): 22.6	Intersection LOS: C
Intersection Capacity Utilization 88.3%	ICU Level of Service E
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 3: Golden Sage Road & E Woodmen Road



HCM Unsignalized Intersection Capacity Analysis
4: Golden Sage Road & Woodmen Frontage Road

Background Traffic Conditions
AM Peak Traffic Hour - 2030

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	5	8	5	357	132	5
Future Volume (Veh/h)	5	8	5	357	132	5
Sign Control	Stop			Stop	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	9	5	388	143	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh						
Upstream signal (ft)					459	
pX, platoon unblocked						
vC, conflicting volume	291	0	300	289	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	291	0	300	289	0	
tC, single (s)	6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3	3.5	4.0	2.2	
p0 queue free %	99	99	99	32	91	
cM capacity (veh/h)	565	1085	599	567	1623	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	14	393	148			
Volume Left	0	5	143			
Volume Right	9	0	5			
cSH	817	567	1623			
Volume to Capacity	0.02	0.69	0.09			
Queue Length 95th (ft)	1	136	7			
Control Delay (s/veh)	9.5	24.4	7.2			
Lane LOS	A	C	A			
Approach Delay (s/veh)	9.5	24.4	7.2			
Approach LOS	A	C				
Intersection Summary						
Average Delay			19.5			
Intersection Capacity Utilization			37.1%	ICU Level of Service	A	
Analysis Period (min)			15			

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	1	6	11	19	3	5	8	34	33	2	38	5
Future Vol, veh/h	1	6	11	19	3	5	8	34	33	2	38	5
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	-	-	-	-	-	-	-	-	-	-	-	-
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	1	7	12	21	3	5	9	37	36	2	41	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	104	139	44	121	123	55	47	0	0	73	0	0
Stage 1	48	48	-	72	72	-	-	-	-	-	-	-
Stage 2	56	90	-	49	51	-	-	-	-	-	-	-
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	876	752	1026	854	767	1012	1561	-	-	1527	-	-
Stage 1	965	855	-	937	835	-	-	-	-	-	-	-
Stage 2	956	820	-	964	852	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	861	747	1026	830	761	1012	1561	-	-	1527	-	-
Mov Cap-2 Maneuver	861	747	-	830	761	-	-	-	-	-	-	-
Stage 1	964	853	-	932	830	-	-	-	-	-	-	-
Stage 2	942	815	-	944	851	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	9.07		9.39		0.78		0.33	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	175	-	-	904	850	78	-
HCM Lane V/C Ratio	0.006	-	-	0.022	0.035	0.001	-
HCM Ctrl Dly (s/v)	7.3	0	-	9.1	9.4	7.4	0
HCM Lane LOS	A	A	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-

Timings

1: Mohawk Road & E Woodmen Road

Background Traffic Conditions

PM Peak Traffic Hour - 2030

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 				
Traffic Volume (vph)	29	1850	167	22	1552	19	25	5	7	12	1	35
Future Volume (vph)	29	1850	167	22	1552	19	25	5	7	12	1	35
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	0	1753	0	1770	1591	0
Flt Permitted	0.122			0.082				0.799		0.802		
Satd. Flow (perm)	227	5085	1583	153	5085	1583	0	1448	0	1494	1591	0
Satd. Flow (RTOR)			182			21		8			38	
Lane Group Flow (vph)	32	2011	182	24	1687	21	0	40	0	13	39	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	6	6	6	8	8		4	4	
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	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0		10.0	10.0	
Total Split (s)	100.0	100.0	100.0	100.0	100.0	100.0	20.0	20.0		20.0	20.0	
Total Split (%)	83.3%	83.3%	83.3%	83.3%	83.3%	83.3%	16.7%	16.7%		16.7%	16.7%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	Max	Max	Max	Max	Max		Max	Max	
Act Effect Green (s)	94.0	94.0	94.0	94.0	94.0	94.0		15.0		15.0	15.0	
Actuated g/C Ratio	0.78	0.78	0.78	0.78	0.78	0.78		0.13		0.13	0.13	
v/c Ratio	0.18	0.50	0.14	0.20	0.42	0.02		0.21		0.07	0.17	
Control Delay (s/veh)	5.9	5.2	0.7	9.2	8.1	1.9		42.8		47.5	16.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay (s/veh)	5.9	5.2	0.7	9.2	8.1	1.9		42.8		47.5	16.9	
LOS	A	A	A	A	A	A		D		D	B	
Approach Delay (s/veh)		4.8			8.1			42.8			24.5	
Approach LOS		A			A			D			C	
Queue Length 50th (ft)	5	169	0	7	237	2		23		9	1	
Queue Length 95th (ft)	16	193	14	m22	281	m9		57		29	34	
Internal Link Dist (ft)		2474			750			6246			419	
Turn Bay Length (ft)	300		400	315		370				50		
Base Capacity (vph)	177	3983	1279	119	3983	1244		188		186	232	
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	0.18	0.50	0.14	0.20	0.42	0.02		0.21		0.07	0.17	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green												
Natural Cycle: 40												
Control Type: Actuated-Coordinated												

Timings
1: Mohawk Road & E Woodmen Road

Background Traffic Conditions
PM Peak Traffic Hour - 2030

Maximum v/c Ratio: 0.50	
Intersection Signal Delay (s/veh): 6.8	Intersection LOS: A
Intersection Capacity Utilization 53.7%	ICU Level of Service A
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 1: Mohawk Road & E Woodmen Road



Timings

2: Banning Lewis Parkway & E Woodmen Road

Background Traffic Conditions

PM Peak Traffic Hour - 2030

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  		 	  		  		
Traffic Volume (vph)	1	1690	174	141	1486	1	83	1	123	8	2	13
Future Volume (vph)	1	1690	174	141	1486	1	83	1	123	8	2	13
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Satd. Flow (RTOR)			382			382			436			382
Lane Group Flow (vph)	1	1837	189	153	1615	1	90	1	134	9	2	14
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			Free			Free			Free			Free
Detector Phase	5	2		1	6		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Total Split (s)	11.0	27.0		11.0	27.0		11.0	11.0		11.0	11.0	
Total Split (%)	18.3%	45.0%		18.3%	45.0%		18.3%	18.3%		18.3%	18.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	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	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effect Green (s)	5.4	33.3	60.0	7.0	41.7	60.0	5.3	5.4	60.0	5.0	5.1	60.0
Actuated g/C Ratio	0.09	0.56	1.00	0.12	0.70	1.00	0.09	0.09	1.00	0.08	0.09	1.00
v/c Ratio	0.00	0.65	0.12	0.38	0.46	0.00	0.30	0.00	0.08	0.03	0.00	0.01
Control Delay (s/veh)	34.0	12.9	0.1	30.8	11.5	0.0	28.4	25.0	0.1	25.6	25.5	0.0
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 (s/veh)	34.0	12.9	0.1	30.8	11.5	0.0	28.4	25.0	0.1	25.6	25.5	0.0
LOS	C	B	A	C	B	A	C	C	A	C	C	A
Approach Delay (s/veh)		11.7			13.2			11.6			11.3	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)	0	214	0	44	130	0	15	0	0	1	0	0
Queue Length 95th (ft)	m0	#420	0	77	389	m0	35	1	0	7	2	0
Internal Link Dist (ft)		712			722			667			695	
Turn Bay Length (ft)	285			285		225	185		185	185		185
Base Capacity (vph)	308	2822	1583	399	3533	1583	303	457	1583	286	432	1583
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	0.00	0.65	0.12	0.38	0.46	0.00	0.30	0.00	0.08	0.03	0.00	0.01

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 60

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Timings
 2: Banning Lewis Parkway & E Woodmen Road

Background Traffic Conditions
 PM Peak Traffic Hour - 2030

Maximum v/c Ratio: 0.65

Intersection Signal Delay (s/veh): 12.4

Intersection LOS: B

Intersection Capacity Utilization 60.9%

ICU Level of Service B

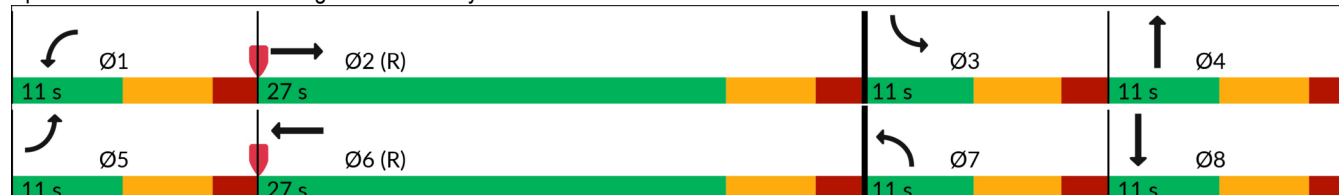
Analysis Period (min) 15

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: Banning Lewis Parkway & E Woodmen Road



Timings

3: Golden Sage Road & E Woodmen Road

Background Traffic Conditions

PM Peak Traffic Hour - 2030

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	283	1435	130	43	1296	8	52	15	12	15	13	223
Future Volume (vph)	283	1435	130	43	1296	8	52	15	12	15	13	223
Satd. Flow (prot)	1770	3539	1583	1770	5085	1583	1770	1863	1583	1770	1598	0
Flt Permitted	0.115			0.116			0.327			0.747		
Satd. Flow (perm)	214	3539	1583	216	5085	1583	609	1863	1583	1391	1598	0
Satd. Flow (RTOR)			141			127			182		242	
Lane Group Flow (vph)	308	1560	141	47	1409	9	57	16	13	16	256	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Free	Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		Free	8		
Detector Phase	5	2	2	1	6	6	4	4		8	8	
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	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0		10.0	10.0	
Total Split (s)	32.0	80.0	80.0	11.0	59.0	59.0	29.0	29.0		29.0	29.0	
Total Split (%)	26.7%	66.7%	66.7%	9.2%	49.2%	49.2%	24.2%	24.2%		24.2%	24.2%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	
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)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max		Max	Max	
Act Effect Green (s)	85.0	76.2	76.2	65.6	60.6	60.6	24.0	24.0	120.0	24.0	24.0	
Actuated g/C Ratio	0.71	0.64	0.64	0.55	0.51	0.51	0.20	0.20	1.00	0.20	0.20	
v/c Ratio	0.79	0.69	0.13	0.26	0.55	0.01	0.47	0.04	0.01	0.06	0.50	
Control Delay (s/veh)	43.6	18.4	6.2	12.4	22.2	0.0	56.9	39.3	0.0	39.7	9.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	43.6	18.4	6.2	12.4	22.2	0.0	56.9	39.3	0.0	39.7	9.9	
LOS	D	B	A	B	C	A	E	D	A	D	A	
Approach Delay (s/veh)		21.4			21.8			45.0			11.7	
Approach LOS		C			C			D			B	
Queue Length 50th (ft)	178	325	28	10	266	0	39	10	0	10	9	
Queue Length 95th (ft)	280	382	m64	21	353	0	87	30	0	30	82	
Internal Link Dist (ft)		600			542			565			379	
Turn Bay Length (ft)	530		380	330		360	125		195	110		
Base Capacity (vph)	488	2247	1056	182	2566	862	121	372	1583	278	513	
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	0.63	0.69	0.13	0.26	0.55	0.01	0.47	0.04	0.01	0.06	0.50	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79	
Intersection Signal Delay (s/veh): 21.4	Intersection LOS: C
Intersection Capacity Utilization 80.8%	ICU Level of Service D
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 3: Golden Sage Road & E Woodmen Road



HCM Unsignalized Intersection Capacity Analysis
4: Golden Sage Road & Woodmen Frontage Road

Background Traffic Conditions
PM Peak Traffic Hour - 2030

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	5	1	270	5	336	1
Future Volume (Veh/h)	5	1	270	5	336	1
Sign Control	Stop			Stop	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	1	293	5	365	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						None
Median storage veh						
Upstream signal (ft)						459
pX, platoon unblocked						
vC, conflicting volume	731	0	734	731	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	731	0	734	731	0	
tC, single (s)	6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3	3.5	4.0	2.2	
p0 queue free %	98	100	0	98	78	
cM capacity (veh/h)	270	1085	274	270	1623	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	6	298	366			
Volume Left	0	293	365			
Volume Right	1	0	1			
cSH	309	274	1623			
Volume to Capacity	0.02	1.09	0.22			
Queue Length 95th (ft)	1	305	22			
Control Delay (s/veh)	16.9	121.1	7.8			
Lane LOS	C	F	A			
Approach Delay (s/veh)	16.9	121.1	7.8			
Approach LOS	C	F				
Intersection Summary						
Average Delay			58.3			
Intersection Capacity Utilization			47.2%	ICU Level of Service	A	
Analysis Period (min)			15			

Intersection

Int Delay, s/veh 4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	4	9	20	7	5	8	21	11	1	20	5
Future Vol, veh/h	4	4	9	20	7	5	8	21	11	1	20	5
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	-	-	-	-	-	-	-	-	-	-	-	-
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	4	4	10	22	8	5	9	23	12	1	22	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	71	79	24	72	76	29	27	0	0	35	0	0
Stage 1	27	27	-	46	46	-	-	-	-	-	-	-
Stage 2	44	52	-	26	29	-	-	-	-	-	-	-
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	921	811	1052	919	815	1046	1587	-	-	1577	-	-
Stage 1	991	873	-	968	856	-	-	-	-	-	-	-
Stage 2	970	851	-	991	871	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	902	806	1052	900	810	1046	1587	-	-	1577	-	-
Mov Cap-2 Maneuver	902	806	-	900	810	-	-	-	-	-	-	-
Stage 1	990	872	-	962	852	-	-	-	-	-	-	-
Stage 2	951	847	-	977	870	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	8.88		9.17		1.46		0.28	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	337	-	-	947	897	67	-
HCM Lane V/C Ratio	0.005	-	-	0.02	0.039	0.001	-
HCM Ctrl Dly (s/v)	7.3	0	-	8.9	9.2	7.3	0
HCM Lane LOS	A	A	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-

Timings

1: Mohawk Road & E Woodmen Road

Background Traffic Conditions

AM Peak Traffic Hour - 2045

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  		 					
Traffic Volume (vph)	80	1566	162	129	3051	33	278	7	179	95	12	125
Future Volume (vph)	80	1566	162	129	3051	33	278	7	179	95	12	125
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	3433	1863	1583	1770	1608	0
Flt Permitted	0.039			0.127			0.667			0.752		
Satd. Flow (perm)	73	5085	1583	237	5085	1583	2410	1863	1583	1401	1608	0
Satd. Flow (RTOR)			176			36			78		5	
Lane Group Flow (vph)	87	1702	176	140	3316	36	302	8	195	103	149	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8		8	4		
Detector Phase	2	2	2	6	6	6	8	8	8	4	4	
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	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0	10.0	10.0	10.0	
Total Split (s)	109.0	109.0	109.0	109.0	109.0	109.0	11.0	11.0	11.0	11.0	11.0	
Total Split (%)	90.8%	90.8%	90.8%	90.8%	90.8%	90.8%	9.2%	9.2%	9.2%	9.2%	9.2%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	
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)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	Max	Max	Max	Max	Max	Max	Max	Max	
Act Effct Green (s)	103.0	103.0	103.0	103.0	103.0	103.0	6.0	6.0	6.0	6.0	6.0	
Actuated g/C Ratio	0.86	0.86	0.86	0.86	0.86	0.86	0.05	0.05	0.05	0.05	0.05	
v/c Ratio	1.40	0.39	0.13	0.69	0.76	0.03	2.52	0.09	1.27	1.47	1.75	
Control Delay (s/veh)	273.3	2.1	0.4	17.6	2.5	0.2	729.9	56.6	192.0	313.7	414.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	273.3	2.1	0.4	17.6	2.5	0.2	729.9	56.6	192.0	313.7	414.7	
LOS	F	A	A	B	A	A	F	E	F	F	F	
Approach Delay (s/veh)		13.9			3.1			511.5			373.4	
Approach LOS		B			A			F			F	
Queue Length 50th (ft)	~40	71	0	6	61	0	~201	6	~130	~110	~169	
Queue Length 95th (ft)	#150	82	7	m29	153	m1	#293	23	#284	#226	#307	
Internal Link Dist (ft)		2474			750			6246			419	
Turn Bay Length (ft)	300		400	315		370	150		150	50		
Base Capacity (vph)	62	4364	1383	203	4364	1363	120	93	153	70	85	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.40	0.39	0.13	0.69	0.76	0.03	2.52	0.09	1.27	1.47	1.75	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green												
Natural Cycle: 70												
Control Type: Actuated-Coordinated												

Maximum v/c Ratio: 2.52	
Intersection Signal Delay (s/veh): 62.9	Intersection LOS: E
Intersection Capacity Utilization 98.0%	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 & E Woodmen Road



Timings

2: Banning Lewis Parkway & E Woodmen Road

Background Traffic Conditions

AM Peak Traffic Hour - 2045

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	1398	183	248	2761	3	324	4	201	5	3	5
Future Volume (vph)	16	1398	183	248	2761	3	324	4	201	5	3	5
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Satd. Flow (RTOR)			300			300			300			300
Lane Group Flow (vph)	17	1520	199	270	3001	3	352	4	218	5	3	5
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			Free			Free			Free			Free
Detector Phase	5	2		1	6		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Total Split (s)	11.0	69.0		21.0	79.0		19.0	19.0		11.0	11.0	
Total Split (%)	9.2%	57.5%		17.5%	65.8%		15.8%	15.8%		9.2%	9.2%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	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	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	5.7	72.9	120.0	13.9	88.1	120.0	13.0	13.0	120.0	5.0	5.0	120.0
Actuated g/C Ratio	0.05	0.61	1.00	0.12	0.73	1.00	0.11	0.11	1.00	0.04	0.04	1.00
v/c Ratio	0.10	0.49	0.13	0.68	0.80	0.00	0.95	0.01	0.14	0.03	0.01	0.00
Control Delay (s/veh)	56.4	12.6	0.1	46.8	16.8	0.0	88.8	47.8	0.2	55.8	55.3	0.0
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 (s/veh)	56.4	12.6	0.1	46.8	16.8	0.0	88.8	47.8	0.2	55.8	55.3	0.0
LOS	E	B	A	D	B	A	F	D	A	E	E	A
Approach Delay (s/veh)		11.6			19.3			54.9			34.2	
Approach LOS		B			B			D			C	
Queue Length 50th (ft)	6	189	0	105	455	0	141	1	0	2	0	0
Queue Length 95th (ft)	m15	m261	m0	m89	m696	m0	#235	5	0	9	4	0
Internal Link Dist (ft)		712			722			667			695	
Turn Bay Length (ft)	285			285		225	185		185	185		185
Base Capacity (vph)	163	3087	1583	436	3734	1583	371	550	1583	143	211	1583
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	0.49	0.13	0.62	0.80	0.00	0.95	0.01	0.14	0.03	0.01	0.00

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Timings
2: Banning Lewis Parkway & E Woodmen Road

Background Traffic Conditions
AM Peak Traffic Hour - 2045

Maximum v/c Ratio: 0.95

Intersection Signal Delay (s/veh): 20.6

Intersection LOS: C

Intersection Capacity Utilization 88.4%

ICU Level of Service E

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: Banning Lewis Parkway & E Woodmen Road



Timings

3: Golden Sage Road & E Woodmen Road

Background Traffic Conditions

AM Peak Traffic Hour - 2045

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  							
Traffic Volume (vph)	178	1348	74	21	2367	5	175	3	13	21	12	458
Future Volume (vph)	178	1348	74	21	2367	5	175	3	13	21	12	458
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770	1863	1583	1770	1591	0
Flt Permitted	0.138			0.160			0.308			0.756		
Satd. Flow (perm)	257	5085	1583	298	5085	1583	574	1863	1583	1408	1591	0
Satd. Flow (RTOR)			145			145			255		182	
Lane Group Flow (vph)	193	1465	80	23	2573	5	190	3	14	23	511	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Free	Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		Free	8		
Detector Phase	5	2	2	1	6	6	4	4		8	8	
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	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0		10.0	10.0	
Total Split (s)	11.0	31.0	31.0	11.0	31.0	31.0	18.0	18.0		18.0	18.0	
Total Split (%)	18.3%	51.7%	51.7%	18.3%	51.7%	51.7%	30.0%	30.0%		30.0%	30.0%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	
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)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effect Green (s)	34.8	33.8	33.8	30.0	25.0	25.0	13.0	13.0	60.0	13.0	13.0	
Actuated g/C Ratio	0.58	0.56	0.56	0.50	0.42	0.42	0.22	0.22	1.00	0.22	0.22	
v/c Ratio	0.70	0.51	0.08	0.08	1.21	0.01	1.53	0.01	0.01	0.08	1.05	
Control Delay (s/veh)	35.0	7.4	1.8	5.9	121.9	0.0	301.1	18.7	0.0	19.6	73.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	35.0	7.4	1.8	5.9	121.9	0.0	301.1	18.7	0.0	19.6	73.7	
LOS	C	A	A	A	F	A	F	B	A	B	E	
Approach Delay (s/veh)		10.2			120.7			276.6			71.4	
Approach LOS		B			F			F			E	
Queue Length 50th (ft)	64	87	0	3	~431	0	~100	1	0	7	~149	
Queue Length 95th (ft)	#158	314	11	10	#524	0	#208	7	0	23	#317	
Internal Link Dist (ft)		600			542			565			379	
Turn Bay Length (ft)	530		380	330		360	125		195	110		
Base Capacity (vph)	275	2864	954	271	2118	744	124	403	1583	305	487	
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	0.70	0.51	0.08	0.08	1.21	0.01	1.53	0.01	0.01	0.08	1.05	

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 60

Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Timings
3: Golden Sage Road & E Woodmen Road

Background Traffic Conditions
AM Peak Traffic Hour - 2045

Maximum v/c Ratio: 1.53

Intersection Signal Delay (s/veh): 84.0

Intersection LOS: F

Intersection Capacity Utilization 112.6%

ICU Level of Service H

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: Golden Sage Road & E Woodmen Road



HCM Unsignalized Intersection Capacity Analysis
4: Golden Sage Road & Woodmen Frontage Road

Background Traffic Conditions
AM Peak Traffic Hour - 2045

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	5	10	480	5	180	5
Future Volume (Veh/h)	5	10	480	5	180	5
Sign Control	Stop			Stop	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	11	522	5	196	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						None
Median storage veh						
Upstream signal (ft)						459
pX, platoon unblocked						
vC, conflicting volume	397	0	408	395	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	397	0	408	395	0	
tC, single (s)	6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3	3.5	4.0	2.2	
p0 queue free %	99	99	0	99	88	
cM capacity (veh/h)	475	1085	493	477	1623	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	16	527	201			
Volume Left	0	522	196			
Volume Right	11	0	5			
cSH	774	493	1623			
Volume to Capacity	0.02	1.07	0.12			
Queue Length 95th (ft)	2	408	10			
Control Delay (s/veh)	9.7	88.9	7.4			
Lane LOS	A	F	A			
Approach Delay (s/veh)	9.7	88.9	7.4			
Approach LOS	A	F				
Intersection Summary						
Average Delay	65.2					
Intersection Capacity Utilization	50.5%		ICU Level of Service		A	
Analysis Period (min)	15					

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	1	7	15	25	4	5	10	46	45	3	51	5
Future Vol, veh/h	1	7	15	25	4	5	10	46	45	3	51	5
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	-	-	-	-	-	-	-	-	-	-	-	-
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	1	8	16	27	4	5	11	50	49	3	55	5
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	139	185	58	162	164	74	61	0	0	99	0	0
Stage 1	65	65	-	96	96	-	-	-	-	-	-	-
Stage 2	74	121	-	66	67	-	-	-	-	-	-	-
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	832	709	1008	803	729	987	1542	-	-	1494	-	-
Stage 1	946	841	-	910	815	-	-	-	-	-	-	-
Stage 2	935	796	-	945	839	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	814	702	1008	774	722	987	1542	-	-	1494	-	-
Mov Cap-2 Maneuver	814	702	-	774	722	-	-	-	-	-	-	-
Stage 1	944	839	-	904	809	-	-	-	-	-	-	-
Stage 2	918	790	-	919	837	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	9.2		9.76		0.73		0.38					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	162	-	-	882	792	90	-	-				
HCM Lane V/C Ratio	0.007	-	-	0.028	0.047	0.002	-	-				
HCM Ctrl Dly (s/v)	7.4	0	-	9.2	9.8	7.4	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-				

Timings

1: Mohawk Road & E Woodmen Road

Background Traffic Conditions

PM Peak Traffic Hour - 2045

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  		 					
Traffic Volume (vph)	39	2490	358	154	2089	25	224	16	137	95	16	105
Future Volume (vph)	39	2490	358	154	2089	25	224	16	137	95	16	105
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	3433	1863	1583	1770	1619	0
Flt Permitted	0.058			0.043			0.528			0.746		
Satd. Flow (perm)	108	5085	1583	80	5085	1583	1908	1863	1583	1390	1619	0
Satd. Flow (RTOR)			389			27			27		21	
Lane Group Flow (vph)	42	2707	389	167	2271	27	243	17	149	103	131	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8		8	4		
Detector Phase	2	2	2	6	6	6	8	8	8	4	4	
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	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0	10.0	10.0	10.0	
Total Split (s)	100.0	100.0	100.0	100.0	100.0	100.0	20.0	20.0	20.0	20.0	20.0	
Total Split (%)	83.3%	83.3%	83.3%	83.3%	83.3%	83.3%	16.7%	16.7%	16.7%	16.7%	16.7%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	
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)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	Max	Max	Max	Max	Max	Max	Max	Max	
Act Effect Green (s)	94.0	94.0	94.0	94.0	94.0	94.0	15.0	15.0	15.0	15.0	15.0	
Actuated g/C Ratio	0.78	0.78	0.78	0.78	0.78	0.78	0.13	0.13	0.13	0.13	0.13	
v/c Ratio	0.50	0.68	0.29	2.69	0.57	0.02	1.02	0.07	0.67	0.60	0.60	
Control Delay (s/veh)	28.9	7.1	0.9	807.7	2.8	1.2	115.7	47.4	56.9	64.8	53.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	28.9	7.1	0.9	807.7	2.8	1.2	115.7	47.4	56.9	64.8	53.6	
LOS	C	A	A	F	A	A	F	D	E	E	D	
Approach Delay (s/veh)		6.6			57.3			91.5			58.5	
Approach LOS		A			E			F			E	
Queue Length 50th (ft)	10	294	0	~222	41	0	~103	12	91	77	81	
Queue Length 95th (ft)	#77	332	18	m#320	199	m2	#187	35	#178	#139	149	
Internal Link Dist (ft)		2474			750			6246			419	
Turn Bay Length (ft)	300		400	315		370	150		150	50		
Base Capacity (vph)	84	3983	1324	62	3983	1245	238	232	221	173	220	
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	0.50	0.68	0.29	2.69	0.57	0.02	1.02	0.07	0.67	0.60	0.60	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green												
Natural Cycle: 45												
Control Type: Actuated-Coordinated												

Timings

1: Mohawk Road & E Woodmen Road

Background Traffic Conditions
PM Peak Traffic Hour - 2045

Maximum v/c Ratio: 2.69	
Intersection Signal Delay (s/veh): 34.1	Intersection LOS: C
Intersection Capacity Utilization 88.7%	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 & E Woodmen Road

 Ø2 (R)	 Ø4
100 s	20 s
 Ø6	 Ø8
100 s	20 s

Timings

2: Banning Lewis Parkway & E Woodmen Road

Background Traffic Conditions

PM Peak Traffic Hour - 2045

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	2275	235	248	2761	3	111	1	165	10	3	18
Future Volume (vph)	1	2275	235	248	2761	3	111	1	165	10	3	18
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Satd. Flow (RTOR)			245			245			245			245
Lane Group Flow (vph)	1	2473	255	270	3001	3	121	1	179	11	3	20
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			Free			Free			Free			Free
Detector Phase	5	2		1	6		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Total Split (s)	11.0	76.0		21.0	86.0		12.0	12.0		11.0	11.0	
Total Split (%)	9.2%	63.3%		17.5%	71.7%		10.0%	10.0%		9.2%	9.2%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	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	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effect Green (s)	5.4	79.9	120.0	13.9	97.6	120.0	6.0	6.0	120.0	5.0	5.0	120.0
Actuated g/C Ratio	0.05	0.67	1.00	0.12	0.81	1.00	0.05	0.05	1.00	0.04	0.04	1.00
v/c Ratio	0.01	0.73	0.16	0.68	0.73	0.00	0.71	0.00	0.11	0.08	0.01	0.01
Control Delay (s/veh)	54.0	14.8	0.2	48.5	21.9	0.0	78.3	54.0	0.1	56.5	55.3	0.0
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 (s/veh)	54.0	14.8	0.2	48.5	21.9	0.0	78.3	54.0	0.1	56.5	55.3	0.0
LOS	D	B	A	D	C	A	E	D	A	E	E	A
Approach Delay (s/veh)		13.5			24.1			31.8			23.2	
Approach LOS		B			C			C			C	
Queue Length 50th (ft)	0	369	0	90	759	0	48	0	0	4	0	0
Queue Length 95th (ft)	m0	509	0	m124	m911	m0	#93	2	0	14	4	0
Internal Link Dist (ft)		712			722			667			695	
Turn Bay Length (ft)	285			285		225	185		185	185		185
Base Capacity (vph)	155	3384	1583	436	4136	1583	171	254	1583	143	211	1583
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	0.01	0.73	0.16	0.62	0.73	0.00	0.71	0.00	0.11	0.08	0.01	0.01

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Timings
2: Banning Lewis Parkway & E Woodmen Road

Background Traffic Conditions
PM Peak Traffic Hour - 2045

Maximum v/c Ratio: 0.73

Intersection Signal Delay (s/veh): 19.9

Intersection LOS: B

Intersection Capacity Utilization 82.3%

ICU Level of Service E

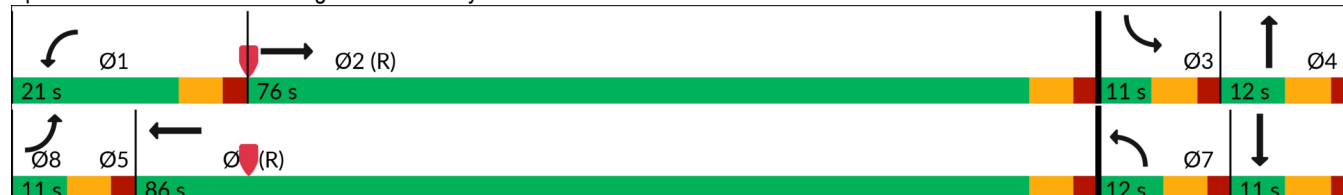
Analysis Period (min) 15

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: Banning Lewis Parkway & E Woodmen Road



Timings

3: Golden Sage Road & E Woodmen Road

Background Traffic Conditions

PM Peak Traffic Hour - 2045

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Traffic Volume (vph)	380	1932	175	58	1745	10	70	21	16	21	18	300
Future Volume (vph)	380	1932	175	58	1745	10	70	21	16	21	18	300
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770	1863	1583	1770	1600	0
Flt Permitted	0.067			0.075			0.167			0.742		
Satd. Flow (perm)	125	5085	1583	140	5085	1583	311	1863	1583	1382	1600	0
Satd. Flow (RTOR)			190			127			182		301	
Lane Group Flow (vph)	413	2100	190	63	1897	11	76	23	17	23	346	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Free	Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		Free	8		
Detector Phase	5	2	2	1	6	6	4	4		8	8	
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	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0		10.0	10.0	
Total Split (s)	32.0	80.0	80.0	11.0	59.0	59.0	29.0	29.0		29.0	29.0	
Total Split (%)	26.7%	66.7%	66.7%	9.2%	49.2%	49.2%	24.2%	24.2%		24.2%	24.2%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	
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)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max		Max	Max	
Act Effect Green (s)	85.0	76.2	76.2	58.8	53.8	53.8	24.0	24.0	120.0	24.0	24.0	
Actuated g/C Ratio	0.71	0.64	0.64	0.49	0.45	0.45	0.20	0.20	1.00	0.20	0.20	
v/c Ratio	0.95	0.65	0.18	0.46	0.83	0.01	1.23	0.06	0.01	0.08	0.62	
Control Delay (s/veh)	62.9	24.1	5.5	27.1	33.4	0.0	229.1	39.6	0.0	40.2	13.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	62.9	24.1	5.5	27.1	33.4	0.0	229.1	39.6	0.0	40.2	13.0	
LOS	E	C	A	C	C	A	F	D	A	D	B	
Approach Delay (s/veh)		28.7			33.0			158.0			14.7	
Approach LOS		C			C			F			B	
Queue Length 50th (ft)	289	626	37	13	469	0	~72	15	0	15	29	
Queue Length 95th (ft)	#444	677	m49	41	538	0	#176	38	0	39	125	
Internal Link Dist (ft)		600			542			565			379	
Turn Bay Length (ft)	530		380	330		360	125		195	110		
Base Capacity (vph)	444	3228	1074	136	2277	779	62	372	1583	276	560	
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	0.93	0.65	0.18	0.46	0.83	0.01	1.23	0.06	0.01	0.08	0.62	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Timings
3: Golden Sage Road & E Woodmen Road

Background Traffic Conditions
PM Peak Traffic Hour - 2045

Maximum v/c Ratio: 1.23

Intersection Signal Delay (s/veh): 32.3

Intersection LOS: C

Intersection Capacity Utilization 96.8%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

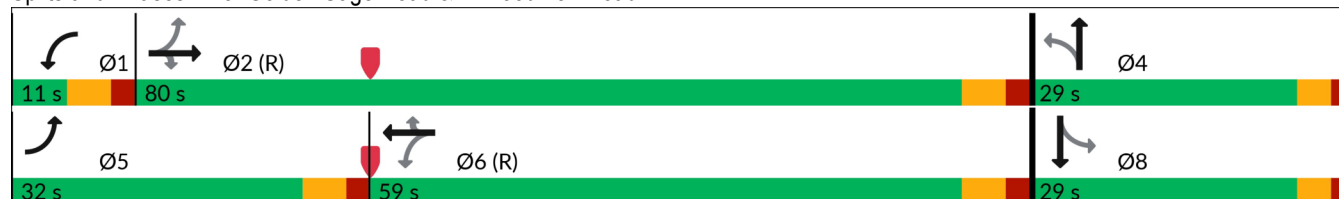
Queue shown is maximum after two cycles.

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: 3: Golden Sage Road & E Woodmen Road



HCM Unsignalized Intersection Capacity Analysis
4: Golden Sage Road & Woodmen Frontage Road

Background Traffic Conditions
PM Peak Traffic Hour - 2045

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	5	1	364	5	452	1
Future Volume (Veh/h)	5	1	364	5	452	1
Sign Control	Stop			Stop	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	1	396	5	491	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)					459	
pX, platoon unblocked						
vC, conflicting volume	983	0	986	983	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	983	0	986	983	0	
tC, single (s)	6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3	3.5	4.0	2.2	
p0 queue free %	97	100	0	97	70	
cM capacity (veh/h)	174	1085	170	174	1623	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	6	401	492			
Volume Left	0	396	491			
Volume Right	1	0	1			
cSH	202	170	1623			
Volume to Capacity	0.03	2.36	0.30			
Queue Length 95th (ft)	2	835	32			
Control Delay (s/veh)	23.4	672.6	8.2			
Lane LOS	C	F	A			
Approach Delay (s/veh)	23.4	672.6	8.2			
Approach LOS	C	F				
Intersection Summary						
Average Delay		304.6				
Intersection Capacity Utilization		58.9%		ICU Level of Service		B
Analysis Period (min)		15				

Intersection												
Int Delay, s/veh	4.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	6	12	27	9	5	10	28	15	1	27	5
Future Vol, veh/h	6	6	12	27	9	5	10	28	15	1	27	5
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	-	-	-	-	-	-	-	-	-	-	-	-
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	7	7	13	29	10	5	11	30	16	1	29	5
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	91	103	32	95	97	39	35	0	0	47	0	0
Stage 1	34	34	-	60	60	-	-	-	-	-	-	-
Stage 2	57	68	-	35	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	893	787	1042	888	793	1033	1577	-	-	1561	-	-
Stage 1	982	866	-	951	845	-	-	-	-	-	-	-
Stage 2	955	838	-	981	864	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	870	781	1042	863	787	1033	1577	-	-	1561	-	-
Mov Cap-2 Maneuver	870	781	-	863	787	-	-	-	-	-	-	-
Stage 1	981	866	-	944	839	-	-	-	-	-	-	-
Stage 2	932	832	-	961	864	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	9.03		9.41		1.38		0.22					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	317	-	-	920	862	53	-	-				
HCM Lane V/C Ratio	0.007	-	-	0.028	0.052	0.001	-	-				
HCM Ctrl Dly (s/v)	7.3	0	-	9	9.4	7.3	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0	-	-				

Timings

1: Mohawk Road & E Woodmen Road

Total Traffic Conditions
AM Peak Traffic Hour - 2030

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 				
Traffic Volume (vph)	67	1769	5	1	2937	24	1	5	5	21	5	54
Future Volume (vph)	67	1769	5	1	2937	24	1	5	5	21	5	54
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	0	1740	0	1770	1606	0
Flt Permitted	0.039			0.098				0.962		0.750		
Satd. Flow (perm)	73	5085	1583	183	5085	1583	0	1683	0	1397	1606	0
Satd. Flow (RTOR)			18			26		5			6	
Lane Group Flow (vph)	73	1923	5	1	3192	26	0	11	0	23	64	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	6	6	6	8	8		4	4	
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	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0		10.0	10.0	
Total Split (s)	109.0	109.0	109.0	109.0	109.0	109.0	11.0	11.0		11.0	11.0	
Total Split (%)	90.8%	90.8%	90.8%	90.8%	90.8%	90.8%	9.2%	9.2%		9.2%	9.2%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	Max	Max	Max	Max	Max		Max	Max	
Act Effect Green (s)	103.0	103.0	103.0	103.0	103.0	103.0		6.0		6.0	6.0	
Actuated g/C Ratio	0.86	0.86	0.86	0.86	0.86	0.86		0.05		0.05	0.05	
v/c Ratio	1.18	0.44	0.00	0.01	0.73	0.02		0.13		0.33	0.74	
Control Delay (s/veh)	190.6	2.3	0.2	1.0	4.8	0.5		44.7		68.3	95.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay (s/veh)	190.6	2.3	0.2	1.0	4.8	0.5		44.7		68.3	95.7	
LOS	F	A	A	A	A	A		D		E	F	
Approach Delay (s/veh)		9.1			4.8			44.7			88.4	
Approach LOS		A			A			D			F	
Queue Length 50th (ft)	~17	86	0	0	116	0		5		18	45	
Queue Length 95th (ft)	#119	99	1	m0	123	m1		25		46	#124	
Internal Link Dist (ft)		2474			750			6246			419	
Turn Bay Length (ft)	300		400	315		370				50		
Base Capacity (vph)	62	4364	1361	157	4364	1362		88		69	86	
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	1.18	0.44	0.00	0.01	0.73	0.02		0.13		0.33	0.74	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green												
Natural Cycle: 60												
Control Type: Actuated-Coordinated												

Timings

1: Mohawk Road & E Woodmen Road

Total Traffic Conditions
AM Peak Traffic Hour - 2030

Maximum v/c Ratio: 1.18

Intersection Signal Delay (s/veh): 7.9

Intersection LOS: A

Intersection Capacity Utilization 73.3%

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 & E Woodmen Road



Timings

2: Banning Lewis Parkway & E Woodmen Road

Total Traffic Conditions
AM Peak Traffic Hour - 2030

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	336	1059	397	418	2130	116	347	167	236	337	281	485
Future Volume (vph)	336	1059	397	418	2130	116	347	167	236	337	281	485
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Satd. Flow (RTOR)			338			245			257			251
Lane Group Flow (vph)	365	1151	432	454	2315	126	377	182	257	366	305	527
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			Free			Free			Free			Free
Detector Phase	5	2		1	6		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Total Split (s)	20.0	57.0		29.0	66.0		20.0	12.0		22.0	14.0	
Total Split (%)	16.7%	47.5%		24.2%	55.0%		16.7%	10.0%		18.3%	11.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	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	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		Max	None		Max	None	
Act Effect Green (s)	14.0	53.6	120.0	20.4	60.0	120.0	14.0	6.0	120.0	16.0	8.0	120.0
Actuated g/C Ratio	0.12	0.45	1.00	0.17	0.50	1.00	0.12	0.05	1.00	0.13	0.07	1.00
v/c Ratio	0.91	0.51	0.27	0.78	0.91	0.08	0.94	0.72	0.16	0.80	0.90	0.33
Control Delay (s/veh)	77.0	27.7	0.4	46.0	26.4	0.0	88.3	71.6	0.2	64.6	84.8	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	77.0	27.7	0.4	46.0	26.4	0.0	88.3	71.6	0.2	64.6	84.8	0.6
LOS	E	C	A	D	C	A	F	E	A	E	F	A
Approach Delay (s/veh)		30.9			28.3			56.8			41.6	
Approach LOS		C			C			E			D	
Queue Length 50th (ft)	146	243	0	180	656	0	155	49	0	143	87	0
Queue Length 95th (ft)	#236	309	0	m174	m647	m0	#250	#83	0	#211	#145	0
Internal Link Dist (ft)		712			722			667			695	
Turn Bay Length (ft)	285			285		225	185		185	185		185
Base Capacity (vph)	400	2272	1583	657	2542	1583	400	254	1583	457	339	1583
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	0.91	0.51	0.27	0.69	0.91	0.08	0.94	0.72	0.16	0.80	0.90	0.33

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Timings
2: Banning Lewis Parkway & E Woodmen Road

Total Traffic Conditions
AM Peak Traffic Hour - 2030

Maximum v/c Ratio: 0.94

Intersection Signal Delay (s/veh): 34.8

Intersection LOS: C

Intersection Capacity Utilization 86.1%

ICU Level of Service E

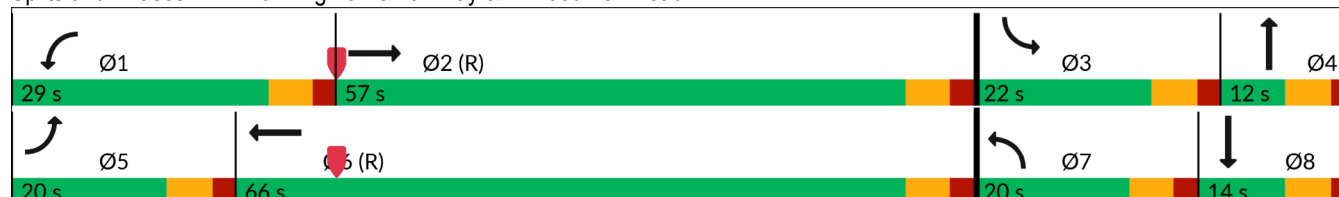
Analysis Period (min) 15

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: Banning Lewis Parkway & E Woodmen Road



Timings

3: Golden Sage Road & E Woodmen Road

Total Traffic Conditions

AM Peak Traffic Hour - 2030

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	132	1409	90	30	2031	173	152	2	19	115	9	474
Future Volume (vph)	132	1409	90	30	2031	173	152	2	19	115	9	474
Satd. Flow (prot)	1770	3539	1583	1770	5085	1583	1770	1863	1583	1770	1589	0
Flt Permitted	0.148			0.160			0.286			0.757		
Satd. Flow (perm)	276	3539	1583	298	5085	1583	533	1863	1583	1410	1589	0
Satd. Flow (RTOR)			145			188			255		188	
Lane Group Flow (vph)	143	1532	98	33	2208	188	165	2	21	125	525	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Free	Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		Free	8		
Detector Phase	5	2	2	1	6	6	4	4		8	8	
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	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0		10.0	10.0	
Total Split (s)	11.0	30.0	30.0	11.0	30.0	30.0	19.0	19.0		19.0	19.0	
Total Split (%)	18.3%	50.0%	50.0%	18.3%	50.0%	50.0%	31.7%	31.7%		31.7%	31.7%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	
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)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max		Max	Max	
Act Effect Green (s)	32.6	30.6	30.6	30.2	26.2	26.2	14.0	14.0	60.0	14.0	14.0	
Actuated g/C Ratio	0.54	0.51	0.51	0.50	0.44	0.44	0.23	0.23	1.00	0.23	0.23	
v/c Ratio	0.52	0.85	0.11	0.12	0.99	0.24	1.33	0.00	0.01	0.38	1.02	
Control Delay (s/veh)	20.2	22.6	2.7	6.7	38.7	3.1	221.0	17.5	0.0	23.4	64.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	20.2	22.6	2.7	6.7	38.7	3.1	221.0	17.5	0.0	23.4	64.2	
LOS	C	C	A	A	D	A	F	B	A	C	E	
Approach Delay (s/veh)		21.3			35.5			194.1			56.4	
Approach LOS		C			D			F			E	
Queue Length 50th (ft)	40	283	0	4	~339	0	~80	1	0	38	~135	
Queue Length 95th (ft)	m83	#603	m18	13	#430	32	#182	5	0	80	#318	
Internal Link Dist (ft)		600			542			565			379	
Turn Bay Length (ft)	530		380	330		360	125		195	110		
Base Capacity (vph)	274	1804	878	272	2220	797	124	434	1583	329	514	
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	0.52	0.85	0.11	0.12	0.99	0.24	1.33	0.00	0.01	0.38	1.02	
Intersection Summary												
Cycle Length: 60												
Actuated Cycle Length: 60												
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green												
Natural Cycle: 120												
Control Type: Actuated-Coordinated												

Timings

3: Golden Sage Road & E Woodmen Road

Total Traffic Conditions
AM Peak Traffic Hour - 2030

Maximum v/c Ratio: 1.33

Intersection Signal Delay (s/veh): 39.1

Intersection LOS: D

Intersection Capacity Utilization 103.1%

ICU Level of Service G

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

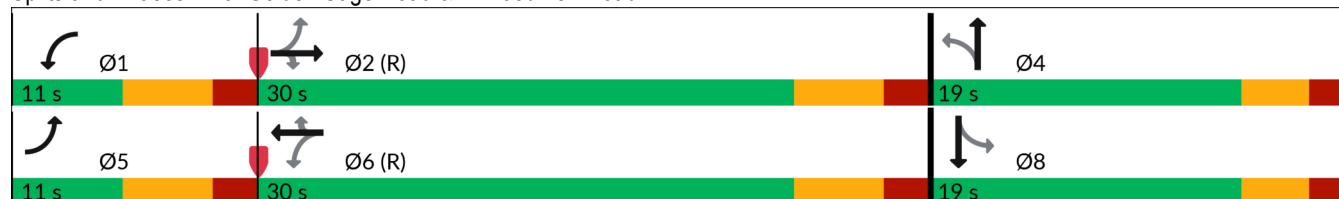
Queue shown is maximum after two cycles.

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: Golden Sage Road & E Woodmen Road



HCM Unsignalized Intersection Capacity Analysis
4: Golden Sage Road & Woodmen Frontage Road

Total Traffic Conditions
AM Peak Traffic Hour - 2030

									
Movement	EBT	EBR	WBL	WBT	NBL	NBR			
Lane Configurations									
Traffic Volume (veh/h)	5	242	357	5	307	5			
Future Volume (Veh/h)	5	242	357	5	307	5			
Sign Control	Stop			Stop	Free				
Grade	0%			0%	0%				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	5	263	388	5	334	5			
Pedestrians									
Lane Width (ft)									
Walking Speed (ft/s)									
Percent Blockage									
Right turn flare (veh)									
Median type					None				
Median storage veh									
Upstream signal (ft)					459				
pX, platoon unblocked									
vC, conflicting volume	673	0	936	671	0				
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	673	0	936	671	0				
tC, single (s)	6.5	6.2	7.1	6.5	4.1				
tC, 2 stage (s)									
tF (s)	4.0	3.3	3.5	4.0	2.2				
p0 queue free %	98	76	0	98	79				
cM capacity (veh/h)	299	1085	154	300	1623				
Direction, Lane #	EB 1	WB 1	NB 1						
Volume Total	268	393	339						
Volume Left	0	388	334						
Volume Right	263	0	5						
cSH	1034	155	1623						
Volume to Capacity	0.26	2.53	0.21						
Queue Length 95th (ft)	26	851	19						
Control Delay (s/veh)	9.7	752.4	7.7						
Lane LOS	A	F	A						
Approach Delay (s/veh)	9.7	752.4	7.7						
Approach LOS	A	F							
Intersection Summary									
Average Delay		300.9							
Intersection Capacity Utilization		62.6%	ICU Level of Service	B					
Analysis Period (min)		15							

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	6	11	40	3	5	8	34	40	2	38	5
Future Vol, veh/h	1	6	11	40	3	5	8	34	40	2	38	5
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	-	-	-	-	-	-	-	-	-	-	-	-
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	1	7	12	43	3	5	9	37	43	2	41	5
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	104	146	44	125	127	59	47	0	0	80	0	0
Stage 1	48	48	-	76	76	-	-	-	-	-	-	-
Stage 2	56	98	-	49	51	-	-	-	-	-	-	-
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	876	745	1026	849	763	1007	1561	-	-	1517	-	-
Stage 1	965	855	-	933	832	-	-	-	-	-	-	-
Stage 2	956	814	-	964	852	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	861	740	1026	826	758	1007	1561	-	-	1517	-	-
Mov Cap-2 Maneuver	861	740	-	826	758	-	-	-	-	-	-	-
Stage 1	964	853	-	928	827	-	-	-	-	-	-	-
Stage 2	942	809	-	944	851	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	9.09		9.59		0.71		0.33					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	158	-	-	900	837	78	-	-				
HCM Lane V/C Ratio	0.006	-	-	0.022	0.062	0.001	-	-				
HCM Ctrl Dly (s/v)	7.3	0	-	9.1	9.6	7.4	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0	-	-				

Intersection						
Intersection Delay, s/veh	5.5					
Intersection LOS	A					
Approach	EB	WB	NB		SB	
Entry Lanes	1	1	2		2	
Conflicting Circle Lanes	2	2	2		2	
Adj Approach Flow, veh/h	281	314	360		250	
Demand Flow Rate, veh/h	287	320	368		254	
Vehicles Circulating, veh/h	512	320	58		353	
Vehicles Exiting, veh/h	95	106	741		287	
Ped Vol Crossing Leg, #/h	0	0	0		0	
Ped Cap Adj	1.000	1.000	1.000		1.000	
Approach Delay, s/veh	7.4	6.3	3.9		4.8	
Approach LOS	A	A	A		A	
Lane	Left	Left	Left	Right	Left	Right
Designated Moves	LTR	LTR	LT	TR	LT	TR
Assumed Moves	LTR	LTR	LT	TR	LT	TR
RT Channelized						
Lane Util	1.000	1.000	0.470	0.530	0.469	0.531
Follow-Up Headway, s	2.535	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.328	4.328	4.645	4.328	4.645	4.328
A (Intercept)	1420	1420	1350	1420	1350	1420
B (Slope)	8.501e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4
Entry Flow, veh/h	287	320	173	195	119	135
Cap Entry Lane, veh/h	919	1082	1280	1352	976	1052
Entry HV Adj Factor	0.979	0.981	0.978	0.979	0.986	0.980
Flow Entry, veh/h	281	314	169	191	117	132
Cap Entry, veh/h	900	1062	1252	1323	962	1031
V/C Ratio	0.312	0.296	0.135	0.144	0.122	0.128
Control Delay, s/veh	7.4	6.3	4.0	3.9	4.9	4.6
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	1	0	1	0	0

Intersection						
Intersection Delay, s/veh	11.1					
Intersection LOS	B					
Approach	EB	WB	NB	SB		
Entry Lanes	1	1	2	2		
Conflicting Circle Lanes	2	2	2	2		
Adj Approach Flow, veh/h	209	691	655	728		
Demand Flow Rate, veh/h	213	704	668	742		
Vehicles Circulating, veh/h	1361	352	133	688		
Vehicles Exiting, veh/h	69	449	1441	368		
Ped Vol Crossing Leg, #/h	0	0	0	0		
Ped Cap Adj	1.000	1.000	1.000	1.000		
Approach Delay, s/veh	17.9	13.6	5.4	11.9		
Approach LOS	C	B	A	B		
Lane	Left	Left	Left	Right	Left	Right
Designated Moves	LTR	LTR	LT	TR	LT	TR
Assumed Moves	LTR	LTR	LT	R	LT	TR
RT Channelized						
Lane Util	1.000	1.000	0.473	0.527	0.470	0.530
Follow-Up Headway, s	2.535	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.328	4.328	4.645	4.328	4.645	4.328
A (Intercept)	1420	1420	1350	1420	1350	1420
B (Slope)	8.501e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4
Entry Flow, veh/h	213	704	316	352	349	393
Cap Entry Lane, veh/h	447	1053	1194	1268	717	791
Entry HV Adj Factor	0.981	0.982	0.981	0.980	0.980	0.981
Flow Entry, veh/h	209	691	310	345	342	386
Cap Entry, veh/h	438	1033	1171	1243	702	776
V/C Ratio	0.477	0.669	0.265	0.278	0.487	0.497
Control Delay, s/veh	17.9	13.6	5.5	5.4	12.3	11.6
LOS	C	B	A	A	B	B
95th %tile Queue, veh	3	5	1	1	3	3

Timings

8: Banning Lewis Parkway & Golden Jubilee Drive

Total Traffic Conditions

AM Peak Traffic Hour - 2030

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	0	21	19	0	109	48	132	50	282	219	272
Future Volume (vph)	116	0	21	19	0	109	48	132	50	282	219	272
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	5085	1583	1770	3539	1583
Flt Permitted	0.491			0.757			0.604			0.472		
Satd. Flow (perm)	915	1863	1583	1410	1863	1583	1125	5085	1583	879	3539	1583
Satd. Flow (RTOR)			677			650			345			296
Lane Group Flow (vph)	126	0	23	21	0	118	52	143	54	307	238	296
Turn Type	pm+pt		Perm	pm+pt		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)	10.0	10.0	10.0	10.0	10.0	10.0	11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	11.0	11.0	11.0	10.0	10.0	10.0	11.0	18.0	18.0	21.0	28.0	28.0
Total Split (%)	18.3%	18.3%	18.3%	16.7%	16.7%	16.7%	18.3%	30.0%	30.0%	35.0%	46.7%	46.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
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	6.0	6.0	6.0	6.0	6.0	6.0
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)	13.2		11.9	9.0		5.1	25.4	20.3	20.3	37.2	31.8	31.8
Actuated g/C Ratio	0.22		0.20	0.15		0.09	0.42	0.34	0.34	0.62	0.53	0.53
v/c Ratio	0.44		0.03	0.09		0.16	0.10	0.08	0.07	0.43	0.13	0.30
Control Delay (s/veh)	23.2		0.0	17.6		0.5	8.6	17.8	0.2	6.1	6.5	2.9
Queue Delay	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	23.2		0.0	17.6		0.5	8.6	17.8	0.2	6.1	6.5	2.9
LOS	C		A	B		A	A	B	A	A	A	A
Approach Delay (s/veh)		19.6			3.1			12.1			5.1	
Approach LOS		B			A			B			A	
Queue Length 50th (ft)	36		0	6		0	8	14	0	20	38	27
Queue Length 95th (ft)	74		0	20		0	21	30	0	m44	m53	m74
Internal Link Dist (ft)		872			1012			5450			375	
Turn Bay Length (ft)	110		110	110		110	230		230	230		
Base Capacity (vph)	286		858	241		729	531	1722	764	767	1875	977
Starvation Cap Reductn	0		0	0		0	0	0	0	0	0	0
Spillback Cap Reductn	0		0	0		0	0	0	0	0	0	0
Storage Cap Reductn	0		0	0		0	0	0	0	0	0	0
Reduced v/c Ratio	0.44		0.03	0.09		0.16	0.10	0.08	0.07	0.40	0.13	0.30

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 60

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 45

Control Type: Actuated-Coordinated

Timings
 8: Banning Lewis Parkway & Golden Jubilee Drive

Total Traffic Conditions
 AM Peak Traffic Hour - 2030

Maximum v/c Ratio: 0.44

Intersection Signal Delay (s/veh): 7.7

Intersection LOS: A

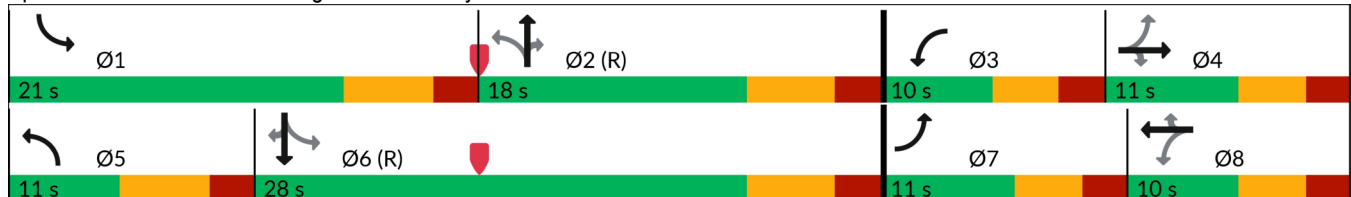
Intersection Capacity Utilization 47.0%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 8: Banning Lewis Parkway & Golden Jubilee Drive



Timings

1: Mohawk Road & E Woodmen Road

Total Traffic Conditions
PM Peak Traffic Hour - 2030

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 				
Traffic Volume (vph)	52	3015	167	22	2637	19	25	5	7	12	1	49
Future Volume (vph)	52	3015	167	22	2637	19	25	5	7	12	1	49
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	0	1753	0	1770	1589	0
Flt Permitted	0.039			0.039				0.764		0.880		
Satd. Flow (perm)	73	5085	1583	73	5085	1583	0	1385	0	1639	1589	0
Satd. Flow (RTOR)			182			21		5			11	
Lane Group Flow (vph)	57	3277	182	24	2866	21	0	40	0	13	54	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	6	6	6	8	8		4	4	
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	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0		10.0	10.0	
Total Split (s)	109.0	109.0	109.0	109.0	109.0	109.0	11.0	11.0		11.0	11.0	
Total Split (%)	90.8%	90.8%	90.8%	90.8%	90.8%	90.8%	9.2%	9.2%		9.2%	9.2%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	Max	Max	Max	Max	Max		Max	Max	
Act Effect Green (s)	103.0	103.0	103.0	103.0	103.0	103.0		6.0		6.0	6.0	
Actuated g/C Ratio	0.86	0.86	0.86	0.86	0.86	0.86		0.05		0.05	0.05	
v/c Ratio	0.92	0.75	0.13	0.39	0.66	0.02		0.54		0.16	0.61	
Control Delay (s/veh)	111.5	4.7	0.4	15.9	4.0	0.9		76.4		59.3	74.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	
Total Delay (s/veh)	111.5	4.7	0.4	15.9	4.0	0.9		76.4		59.3	74.0	
LOS	F	A	A	B	A	A		E		E	E	
Approach Delay (s/veh)		6.2			4.1			76.4			71.2	
Approach LOS		A			A			E			E	
Queue Length 50th (ft)	20	259	0	3	149	1		27		10	33	
Queue Length 95th (ft)	#83	292	7	m4	m149	m1		#77		32	#93	
Internal Link Dist (ft)		2474			750			6246			419	
Turn Bay Length (ft)	300		400	315		370				50		
Base Capacity (vph)	62	4364	1384	62	4364	1361		74		81	89	
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	0.92	0.75	0.13	0.39	0.66	0.02		0.54		0.16	0.61	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green												
Natural Cycle: 60												
Control Type: Actuated-Coordinated												

Maximum v/c Ratio: 0.92	
Intersection Signal Delay (s/veh): 6.4	Intersection LOS: A
Intersection Capacity Utilization 76.2%	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.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 1: Mohawk Road & E Woodmen Road



Timings

2: Banning Lewis Parkway & E Woodmen Road

Total Traffic Conditions

PM Peak Traffic Hour - 2030

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	539	1738	753	619	1596	294	743	456	629	250	345	348
Future Volume (vph)	539	1738	753	619	1596	294	743	456	629	250	345	348
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Satd. Flow (RTOR)			390			245			402			345
Lane Group Flow (vph)	586	1889	818	673	1735	320	808	496	684	272	375	378
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			Free			Free			Free			Free
Detector Phase	5	2		1	6		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Total Split (s)	26.0	48.0		27.0	49.0		31.0	24.0		21.0	14.0	
Total Split (%)	21.7%	40.0%		22.5%	40.8%		25.8%	20.0%		17.5%	11.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	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	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	Max		None	Max	
Act Effect Green (s)	20.0	42.0	120.0	21.0	43.0	120.0	25.0	19.3	120.0	13.7	8.0	120.0
Actuated g/C Ratio	0.17	0.35	1.00	0.18	0.36	1.00	0.21	0.16	1.00	0.11	0.07	1.00
v/c Ratio	1.02	1.06	0.52	1.12	0.95	0.20	1.13	0.61	0.43	0.69	1.11	0.24
Control Delay (s/veh)	82.8	84.9	0.8	108.3	37.5	0.1	107.4	41.5	0.5	60.8	131.6	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	82.8	84.9	0.8	108.3	37.5	0.1	107.4	41.5	0.5	60.8	131.6	0.4
LOS	F	F	A	F	D	A	F	D	A	E	F	A
Approach Delay (s/veh)		63.6			50.6			54.2			64.4	
Approach LOS		E			D			D			E	
Queue Length 50th (ft)	~249	~609	0	~311	469	0	~370	126	0	105	~121	0
Queue Length 95th (ft)	#366	#709	0	m#387	m442	m0	m#371	m130	m0	151	#191	0
Internal Link Dist (ft)		712			722			667			695	
Turn Bay Length (ft)	285			285		225	185		185	185		185
Base Capacity (vph)	572	1779	1583	600	1822	1583	715	816	1583	429	339	1583
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	1.02	1.06	0.52	1.12	0.95	0.20	1.13	0.61	0.43	0.63	1.11	0.24

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

Timings
 2: Banning Lewis Parkway & E Woodmen Road

Total Traffic Conditions
 PM Peak Traffic Hour - 2030

Maximum v/c Ratio: 1.13

Intersection Signal Delay (s/veh): 57.7

Intersection LOS: E

Intersection Capacity Utilization 99.1%

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: Banning Lewis Parkway & E Woodmen Road



Timings

3: Golden Sage Road & E Woodmen Road

Total Traffic Conditions

PM Peak Traffic Hour - 2030

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  							
Traffic Volume (vph)	283	2147	214	79	1979	180	139	15	49	89	13	322
Future Volume (vph)	283	2147	214	79	1979	180	139	15	49	89	13	322
Satd. Flow (prot)	1770	3539	1583	1770	5085	1583	1770	1863	1583	1770	1595	0
Flt Permitted	0.118			0.129			0.800			0.800		
Satd. Flow (perm)	220	3539	1583	240	5085	1583	1490	1863	1583	1490	1595	0
Satd. Flow (RTOR)			233			196			255		154	
Lane Group Flow (vph)	308	2334	233	86	2151	196	151	16	53	97	364	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Free	Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		Free	8		
Detector Phase	5	2	2	1	6	6	4	4		8	8	
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	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0		10.0	10.0	
Total Split (s)	13.0	39.0	39.0	11.0	37.0	37.0	10.0	10.0		10.0	10.0	
Total Split (%)	21.7%	65.0%	65.0%	18.3%	61.7%	61.7%	16.7%	16.7%		16.7%	16.7%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	
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)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max		Max	Max	
Act Effect Green (s)	40.8	35.2	35.2	36.0	31.0	31.0	5.0	5.0	60.0	5.0	5.0	
Actuated g/C Ratio	0.68	0.59	0.59	0.60	0.52	0.52	0.08	0.08	1.00	0.08	0.08	
v/c Ratio	0.93	1.12	0.23	0.32	0.82	0.21	1.22	0.10	0.03	0.78	1.33	
Control Delay (s/veh)	49.1	83.1	3.6	6.7	15.5	2.1	182.1	27.1	0.0	70.5	190.1	
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 (s/veh)	49.1	83.1	3.6	6.7	15.5	2.1	182.1	27.1	0.0	70.5	190.1	
LOS	D	F	A	A	B	A	F	C	A	E	F	
Approach Delay (s/veh)		73.0			14.1			127.0			164.9	
Approach LOS		E			B			F			F	
Queue Length 50th (ft)	150	~1171	29	6	217	0	~69	6	0	35	~120	
Queue Length 95th (ft)	m#173	m#1134	m37	14	280	25	#167	21	0	#107	#267	
Internal Link Dist (ft)		600			542			565			379	
Turn Bay Length (ft)	530		380	330		360	125		195	110		
Base Capacity (vph)	330	2076	1025	271	2627	912	124	155	1583	124	274	
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	0.93	1.12	0.23	0.32	0.82	0.21	1.22	0.10	0.03	0.78	1.33	
Intersection Summary												
Cycle Length: 60												
Actuated Cycle Length: 60												
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green												
Natural Cycle: 70												
Control Type: Actuated-Coordinated												

Maximum v/c Ratio: 1.33	
Intersection Signal Delay (s/veh): 58.1	Intersection LOS: E
Intersection Capacity Utilization 110.4%	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: 3: Golden Sage Road & E Woodmen Road



HCM Unsignalized Intersection Capacity Analysis
4: Golden Sage Road & Woodmen Frontage Road

Total Traffic Conditions
PM Peak Traffic Hour - 2030

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	5	174	270	5	508	1
Future Volume (Veh/h)	5	174	270	5	508	1
Sign Control	Stop			Stop	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	189	293	5	552	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)					459	
pX, platoon unblocked						
vC, conflicting volume	1105	0	1296	1105	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1105	0	1296	1105	0	
tC, single (s)	6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3	3.5	4.0	2.2	
p0 queue free %	96	83	0	96	66	
cM capacity (veh/h)	139	1085	82	139	1623	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	194	298	553			
Volume Left	0	293	552			
Volume Right	189	0	1			
cSH	923	83	1623			
Volume to Capacity	0.21	3.59	0.34			
Queue Length 95th (ft)	20	Err	38			
Control Delay (s/veh)	9.9	Err	8.3			
Lane LOS	A	F	A			
Approach Delay (s/veh)	9.9	Err	8.3			
Approach LOS	A	F				
Intersection Summary						
Average Delay		2857.7				
Intersection Capacity Utilization		64.5%		ICU Level of Service		C
Analysis Period (min)		15				

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	4	4	9	34	7	5	8	21	34	1	20	5
Future Vol, veh/h	4	4	9	34	7	5	8	21	34	1	20	5
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	-	-	-	-	-	-	-	-	-	-	-	-
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	4	4	10	37	8	5	9	23	37	1	22	5
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	71	104	24	85	88	41	27	0	0	60	0	0
Stage 1	27	27	-	59	59	-	-	-	-	-	-	-
Stage 2	44	77	-	26	29	-	-	-	-	-	-	-
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	921	786	1052	902	802	1030	1587	-	-	1544	-	-
Stage 1	991	873	-	953	846	-	-	-	-	-	-	-
Stage 2	970	831	-	991	871	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	902	781	1052	883	797	1030	1587	-	-	1544	-	-
Mov Cap-2 Maneuver	902	781	-	883	797	-	-	-	-	-	-	-
Stage 1	990	872	-	948	841	-	-	-	-	-	-	-
Stage 2	951	826	-	977	870	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	8.91		9.33		0.92		0.28					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	203	-	-	939	882	67	-	-				
HCM Lane V/C Ratio	0.005	-	-	0.02	0.057	0.001	-	-				
HCM Ctrl Dly (s/v)	7.3	0	-	8.9	9.3	7.3	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0	-	-				

Intersection						
Intersection Delay, s/veh	6.7					
Intersection LOS	A					
Approach	EB	WB	NB	SB		
Entry Lanes	1	1	2	2		
Conflicting Circle Lanes	2	2	2	2		
Adj Approach Flow, veh/h	192	213	946	484		
Demand Flow Rate, veh/h	196	218	965	494		
Vehicles Circulating, veh/h	626	699	86	457		
Vehicles Exiting, veh/h	325	352	736	460		
Ped Vol Crossing Leg, #/h	0	0	0	0		
Ped Cap Adj	1.000	1.000	1.000	1.000		
Approach Delay, s/veh	6.9	7.9	6.5	6.7		
Approach LOS	A	A	A	A		
Lane	Left	Left	Left	Right	Left	Right
Designated Moves	LTR	LTR	LT	TR	LT	TR
Assumed Moves	LTR	LTR	LT	TR	LT	TR
RT Channelized						
Lane Util	1.000	1.000	0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.535	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.328	4.328	4.645	4.328	4.645	4.328
A (Intercept)	1420	1420	1350	1420	1350	1420
B (Slope)	8.501e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4
Entry Flow, veh/h	196	218	454	511	232	262
Cap Entry Lane, veh/h	834	784	1247	1320	887	963
Entry HV Adj Factor	0.979	0.977	0.980	0.981	0.981	0.980
Flow Entry, veh/h	192	213	445	501	228	257
Cap Entry, veh/h	817	766	1222	1295	870	943
V/C Ratio	0.235	0.278	0.364	0.387	0.262	0.272
Control Delay, s/veh	6.9	7.9	6.4	6.5	6.9	6.6
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	1	2	2	1	1

Intersection						
Intersection Delay, s/veh	11.1					
Intersection LOS	B					
Approach	EB	WB	NB	SB		
Entry Lanes	1	1	2	2		
Conflicting Circle Lanes	2	2	2	2		
Adj Approach Flow, veh/h	140	356	1398	720		
Demand Flow Rate, veh/h	142	363	1426	735		
Vehicles Circulating, veh/h	1000	1100	123	497		
Vehicles Exiting, veh/h	232	449	1019	966		
Ped Vol Crossing Leg, #/h	0	0	0	0		
Ped Cap Adj	1.000	1.000	1.000	1.000		
Approach Delay, s/veh	9.0	21.3	9.7	9.0		
Approach LOS	A	C	A	A		
Lane	Left	Left	Left	Right	Left	Right
Designated Moves	LTR	LTR	LT	TR	LT	TR
Assumed Moves	LTR	LTR	LT	TR	LT	TR
RT Channelized						
Lane Util	1.000	1.000	0.470	0.530	0.469	0.531
Follow-Up Headway, s	2.535	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.328	4.328	4.645	4.328	4.645	4.328
A (Intercept)	1420	1420	1350	1420	1350	1420
B (Slope)	8.501e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4
Entry Flow, veh/h	142	363	670	756	345	390
Cap Entry Lane, veh/h	607	557	1205	1279	855	931
Entry HV Adj Factor	0.985	0.980	0.980	0.980	0.981	0.979
Flow Entry, veh/h	140	356	657	741	338	382
Cap Entry, veh/h	598	547	1182	1253	838	911
V/C Ratio	0.234	0.651	0.556	0.591	0.404	0.419
Control Delay, s/veh	9.0	21.3	9.6	9.9	9.2	8.9
LOS	A	C	A	A	A	A
95th %tile Queue, veh	1	5	4	4	2	2

Timings

8: Banning Lewis Parkway & Golden Jubilee Drive

Total Traffic Conditions

PM Peak Traffic Hour - 2030

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	672	5	119	126	5	711	96	228	121	683	169	547
Future Volume (vph)	672	5	119	126	5	711	96	228	121	683	169	547
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	5085	1583	1770	3539	1583
Flt Permitted	0.605			0.754			0.667			0.333		
Satd. Flow (perm)	1127	1863	1583	1405	1863	1583	1242	5085	1583	620	3539	1583
Satd. Flow (RTOR)			182			658			218			595
Lane Group Flow (vph)	730	5	129	137	5	773	104	248	132	742	184	595
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)	10.0	10.0	10.0	10.0	10.0	10.0	11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	30.0	49.0	49.0	11.0	30.0	30.0	15.0	12.0	12.0	48.0	45.0	45.0
Total Split (%)	25.0%	40.8%	40.8%	9.2%	25.0%	25.0%	12.5%	10.0%	10.0%	40.0%	37.5%	37.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
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	6.0	6.0	6.0	6.0	6.0	6.0
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)	50.2	39.2	39.2	26.2	20.2	20.2	14.3	6.0	6.0	58.8	44.6	44.6
Actuated g/C Ratio	0.42	0.33	0.33	0.22	0.17	0.17	0.12	0.05	0.05	0.49	0.37	0.37
v/c Ratio	1.21	0.01	0.20	0.42	0.02	0.95	0.57	0.98	0.46	0.99	0.14	0.62
Control Delay (s/veh)	138.6	24.2	1.7	29.9	38.0	30.0	39.1	107.8	5.3	34.9	10.9	4.2
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 (s/veh)	138.6	24.2	1.7	29.9	38.0	30.0	39.1	107.8	5.3	34.9	10.9	4.2
LOS	F	C	A	C	D	C	D	F	A	C	B	A
Approach Delay (s/veh)		117.5			30.0			65.1			20.0	
Approach LOS		F			C			E			B	
Queue Length 50th (ft)	~612	3	0	61	3	85	46	71	0	~567	30	86
Queue Length 95th (ft)	#888	11	13	102	14	#368	85	#132	0	m#601	m35	m99
Internal Link Dist (ft)		872			1012			5450			375	
Turn Bay Length (ft)	110		110	110		110	230		230	230		
Base Capacity (vph)	605	683	695	324	388	850	194	254	286	752	1314	962
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	1.21	0.01	0.19	0.42	0.01	0.91	0.54	0.98	0.46	0.99	0.14	0.62

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 20 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 140

Control Type: Actuated-Coordinated

Timings
8: Banning Lewis Parkway & Golden Jubilee Drive

Total Traffic Conditions
PM Peak Traffic Hour - 2030

Maximum v/c Ratio: 1.21

Intersection Signal Delay (s/veh): 50.4

Intersection LOS: D

Intersection Capacity Utilization 100.3%

ICU Level of Service G

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

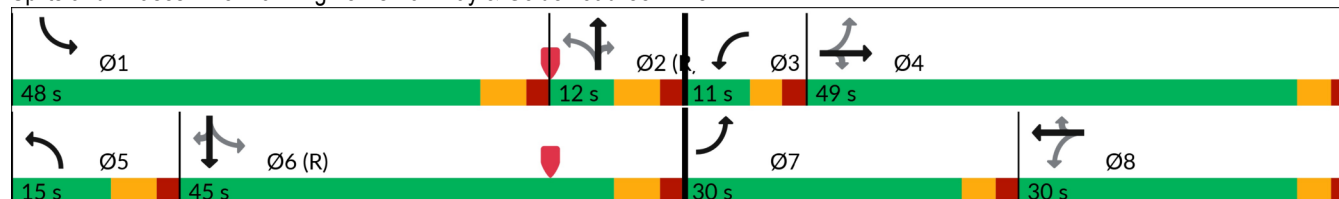
Queue shown is maximum after two cycles.

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: 8: Banning Lewis Parkway & Golden Jubilee Drive



Timings

1: Mohawk Road & E Woodmen Road

Total Traffic Conditions

AM Peak Traffic Hour - 2045

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  		 					
Traffic Volume (vph)	87	2171	162	129	3721	33	278	7	179	95	12	146
Future Volume (vph)	87	2171	162	129	3721	33	278	7	179	95	12	146
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	3433	1863	1583	1770	1604	0
Flt Permitted	0.038			0.059			0.800			0.800		
Satd. Flow (perm)	71	5085	1583	110	5085	1583	2891	1863	1583	1490	1604	0
Satd. Flow (RTOR)			176			36			27		2	
Lane Group Flow (vph)	95	2360	176	140	4045	36	302	8	195	103	172	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8		8	4		
Detector Phase	2	2	2	6	6	6	8	8	8	4	4	
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	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0	10.0	10.0	10.0	
Total Split (s)	110.0	110.0	110.0	110.0	110.0	110.0	10.0	10.0	10.0	10.0	10.0	
Total Split (%)	91.7%	91.7%	91.7%	91.7%	91.7%	91.7%	8.3%	8.3%	8.3%	8.3%	8.3%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	
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)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	Max	Max	Max	Max	Max	Max	Max	Max	
Act Effect Green (s)	104.0	104.0	104.0	104.0	104.0	104.0	5.0	5.0	5.0	5.0	5.0	
Actuated g/C Ratio	0.87	0.87	0.87	0.87	0.87	0.87	0.04	0.04	0.04	0.04	0.04	
v/c Ratio	1.56	0.54	0.13	1.47	0.92	0.03	2.52	0.10	2.14	1.66	2.53	
Control Delay (s/veh)	335.3	2.5	0.4	247.3	10.7	0.3	730.0	58.4	572.8	393.4	752.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	335.3	2.5	0.4	247.3	10.7	0.3	730.0	58.4	572.8	393.4	752.6	
LOS	F	A	A	F	B	A	F	E	F	F	F	
Approach Delay (s/veh)		14.4			18.5			658.6			618.1	
Approach LOS		B			B			F			F	
Queue Length 50th (ft)	~55	112	0	~149	337	0	~201	6	~222	~116	~223	
Queue Length 95th (ft)	#170	127	7	m#148	m108	m0	#293	23	#376	#232	#369	
Internal Link Dist (ft)		2474			750			6246			419	
Turn Bay Length (ft)	300		400	315		370	150		150	50		
Base Capacity (vph)	61	4407	1395	95	4407	1376	120	77	91	62	68	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.56	0.54	0.13	1.47	0.92	0.03	2.52	0.10	2.14	1.66	2.53	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green												
Natural Cycle: 70												
Control Type: Actuated-Coordinated												

Maximum v/c Ratio: 2.53	
Intersection Signal Delay (s/veh): 81.0	Intersection LOS: F
Intersection Capacity Utilization 112.6%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 1: Mohawk Road & E Woodmen Road



Timings

2: Banning Lewis Parkway & E Woodmen Road

Total Traffic Conditions

AM Peak Traffic Hour - 2045

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	340	1418	444	482	2840	117	430	168	288	337	282	485
Future Volume (vph)	340	1418	444	482	2840	117	430	168	288	337	282	485
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Satd. Flow (RTOR)			283			245			313			245
Lane Group Flow (vph)	370	1541	483	524	3087	127	467	183	313	366	307	527
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			Free			Free			Free			Free
Detector Phase	5	2		1	6		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Total Split (s)	17.0	56.0		32.0	71.0		20.0	13.0		19.0	12.0	
Total Split (%)	14.2%	46.7%		26.7%	59.2%		16.7%	10.8%		15.8%	10.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	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	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	Max		None	Max	
Act Effect Green (s)	11.0	53.2	120.0	22.8	65.0	120.0	14.0	7.0	120.0	13.0	6.0	120.0
Actuated g/C Ratio	0.09	0.44	1.00	0.19	0.54	1.00	0.12	0.06	1.00	0.11	0.05	1.00
v/c Ratio	1.18	0.68	0.31	0.80	1.12	0.08	1.17	0.62	0.20	0.99	1.21	0.33
Control Delay (s/veh)	147.5	30.6	0.4	44.2	80.0	0.0	147.1	64.7	0.3	97.1	172.4	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	147.5	30.6	0.4	44.2	80.0	0.0	147.1	64.7	0.3	97.1	172.4	0.6
LOS	F	C	A	D	E	A	F	E	A	F	F	A
Approach Delay (s/veh)		42.6			72.3			83.7			74.0	
Approach LOS		D			E			F			E	
Queue Length 50th (ft)	~178	341	0	208	~1021	0	~224	49	0	147	~106	0
Queue Length 95th (ft)	m#251	m384	m0	m143	m353	m0	#334	77	0	#247	#172	0
Internal Link Dist (ft)		712			722			667			695	
Turn Bay Length (ft)	285			285		225	185		185	185		185
Base Capacity (vph)	314	2253	1583	743	2754	1583	400	296	1583	371	254	1583
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	1.18	0.68	0.31	0.71	1.12	0.08	1.17	0.62	0.20	0.99	1.21	0.33

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 140

Control Type: Actuated-Coordinated

Timings
2: Banning Lewis Parkway & E Woodmen Road

Total Traffic Conditions
AM Peak Traffic Hour - 2045

Maximum v/c Ratio: 1.21

Intersection Signal Delay (s/veh): 65.3

Intersection LOS: E

Intersection Capacity Utilization 102.3%

ICU Level of Service G

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

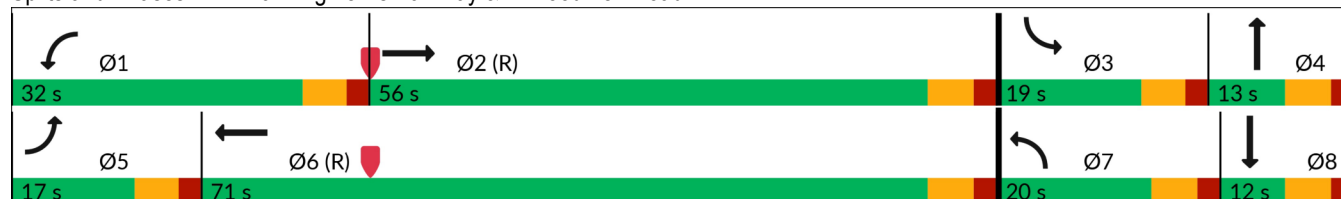
Queue shown is maximum after two cycles.

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: Banning Lewis Parkway & E Woodmen Road



Timings

3: Golden Sage Road & E Woodmen Road

Total Traffic Conditions

AM Peak Traffic Hour - 2045

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	178	1756	109	36	2639	173	197	3	22	121	12	592
Future Volume (vph)	178	1756	109	36	2639	173	197	3	22	121	12	592
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770	1863	1583	1770	1589	0
Flt Permitted	0.154			0.174			0.267			0.756		
Satd. Flow (perm)	287	5085	1583	324	5085	1583	497	1863	1583	1408	1589	0
Satd. Flow (RTOR)			145			188			255		195	
Lane Group Flow (vph)	193	1909	118	39	2868	188	214	3	24	132	656	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Free	Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		Free	8		
Detector Phase	5	2	2	1	6	6	4	4		8	8	
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	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0		10.0	10.0	
Total Split (s)	11.0	29.0	29.0	11.0	29.0	29.0	20.0	20.0		20.0	20.0	
Total Split (%)	18.3%	48.3%	48.3%	18.3%	48.3%	48.3%	33.3%	33.3%		33.3%	33.3%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	
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)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max		Max	Max	
Act Effect Green (s)	31.6	29.6	29.6	28.0	23.0	23.0	15.0	15.0	60.0	15.0	15.0	
Actuated g/C Ratio	0.53	0.49	0.49	0.47	0.38	0.38	0.25	0.25	1.00	0.25	0.25	
v/c Ratio	0.70	0.76	0.14	0.14	1.47	0.26	1.73	0.01	0.02	0.38	1.21	
Control Delay (s/veh)	32.3	20.4	4.8	7.4	236.6	3.4	381.3	17.0	0.0	22.4	129.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	32.3	20.4	4.8	7.4	236.6	3.4	381.3	17.0	0.0	22.4	129.6	
LOS	C	C	A	A	F	A	F	B	A	C	F	
Approach Delay (s/veh)		20.6			219.6			338.8			111.7	
Approach LOS		C			F			F			F	
Queue Length 50th (ft)	77	269	9	6	~539	0	~118	1	0	39	~241	
Queue Length 95th (ft)	m#138	m#495	m36	16	#633	33	#232	6	0	82	#425	
Internal Link Dist (ft)		600			542			565			379	
Turn Bay Length (ft)	530		380	330		360	125		195	110		
Base Capacity (vph)	274	2508	854	271	1949	722	124	465	1583	352	543	
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	0.70	0.76	0.14	0.14	1.47	0.26	1.73	0.01	0.02	0.38	1.21	
Intersection Summary												
Cycle Length: 60												
Actuated Cycle Length: 60												
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green												
Natural Cycle: 55												
Control Type: Actuated-Coordinated												

Maximum v/c Ratio: 1.73

Intersection Signal Delay (s/veh): 141.1

Intersection LOS: F

Intersection Capacity Utilization 127.4%

ICU Level of Service H

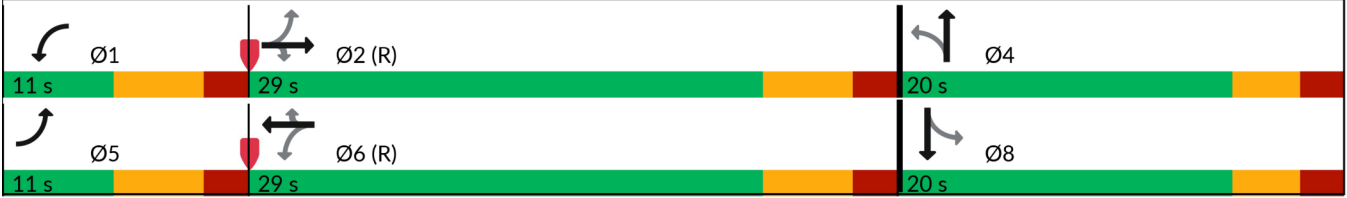
Analysis Period (min) 15

~ 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: 3: Golden Sage Road & E Woodmen Road



HCM Unsignalized Intersection Capacity Analysis
4: Golden Sage Road & Woodmen Frontage Road

Total Traffic Conditions
AM Peak Traffic Hour - 2045

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	5	244	480	5	353	5
Future Volume (Veh/h)	5	244	480	5	353	5
Sign Control	Stop			Stop	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	265	522	5	384	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh						
Upstream signal (ft)					459	
pX, platoon unblocked						
vC, conflicting volume	773	0	1038	771	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	773	0	1038	771	0	
tC, single (s)	6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3	3.5	4.0	2.2	
p0 queue free %	98	76	0	98	76	
cM capacity (veh/h)	252	1085	127	253	1623	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	270	527	389			
Volume Left	0	522	384			
Volume Right	265	0	5			
cSH	1022	128	1623			
Volume to Capacity	0.26	4.12	0.24			
Queue Length 95th (ft)	27	Err	23			
Control Delay (s/veh)	9.8	Err	7.8			
Lane LOS	A	F	A			
Approach Delay (s/veh)	9.8	Err	7.8			
Approach LOS	A	F				
Intersection Summary						
Average Delay			4447.9			
Intersection Capacity Utilization			72.1%	ICU Level of Service		C
Analysis Period (min)			15			

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	7	15	46	4	5	10	46	52	3	51	5
Future Vol, veh/h	1	7	15	46	4	5	10	46	52	3	51	5
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	-	-	-	-	-	-	-	-	-	-	-	-
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	1	8	16	50	4	5	11	50	57	3	55	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	139	193	58	166	167	78	61	0	0	107	0	0
Stage 1	65	65	-	100	100	-	-	-	-	-	-	-
Stage 2	74	128	-	66	67	-	-	-	-	-	-	-
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	832	702	1008	799	725	982	1542	-	-	1484	-	-
Stage 1	946	841	-	906	812	-	-	-	-	-	-	-
Stage 2	935	790	-	945	839	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	814	695	1008	770	718	982	1542	-	-	1484	-	-
Mov Cap-2 Maneuver	814	695	-	770	718	-	-	-	-	-	-	-
Stage 1	944	839	-	899	806	-	-	-	-	-	-	-
Stage 2	918	784	-	919	837	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	9.22		9.99		0.68		0.38	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	151	-	-	879	781	90	-
HCM Lane V/C Ratio	0.007	-	-	0.028	0.077	0.002	-
HCM Ctrl Dly (s/v)	7.4	0	-	9.2	10	7.4	0
HCM Lane LOS	A	A	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0	-

Intersection						
Intersection Delay, s/veh	5.6					
Intersection LOS	A					
Approach	EB	WB	NB	SB		
Entry Lanes	1	1	2	2		
Conflicting Circle Lanes	2	2	2	2		
Adj Approach Flow, veh/h	286	319	360	250		
Demand Flow Rate, veh/h	292	325	368	254		
Vehicles Circulating, veh/h	512	320	63	358		
Vehicles Exiting, veh/h	100	111	741	287		
Ped Vol Crossing Leg, #/h	0	0	0	0		
Ped Cap Adj	1.000	1.000	1.000	1.000		
Approach Delay, s/veh	7.4	6.3	4.0	4.8		
Approach LOS	A	A	A	A		
Lane	Left	Left	Left	Right	Left	Right
Designated Moves	LTR	LTR	LT	TR	LT	TR
Assumed Moves	LTR	LTR	LT	TR	LT	TR
RT Channelized						
Lane Util	1.000	1.000	0.470	0.530	0.469	0.531
Follow-Up Headway, s	2.535	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.328	4.328	4.645	4.328	4.645	4.328
A (Intercept)	1420	1420	1350	1420	1350	1420
B (Slope)	8.501e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4
Entry Flow, veh/h	292	325	173	195	119	135
Cap Entry Lane, veh/h	919	1082	1274	1346	971	1047
Entry HV Adj Factor	0.979	0.981	0.978	0.979	0.986	0.980
Flow Entry, veh/h	286	319	169	191	117	132
Cap Entry, veh/h	900	1062	1246	1318	957	1026
V/C Ratio	0.318	0.300	0.136	0.145	0.123	0.129
Control Delay, s/veh	7.4	6.3	4.0	3.9	4.9	4.7
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	1	0	1	0	0

Intersection						
Intersection Delay, s/veh	11.2					
Intersection LOS	B					
Approach	EB	WB	NB	SB		
Entry Lanes	1	1	2	2		
Conflicting Circle Lanes	2	2	2	2		
Adj Approach Flow, veh/h	214	696	655	728		
Demand Flow Rate, veh/h	218	709	668	742		
Vehicles Circulating, veh/h	1361	352	138	693		
Vehicles Exiting, veh/h	74	454	1441	368		
Ped Vol Crossing Leg, #/h	0	0	0	0		
Ped Cap Adj	1.000	1.000	1.000	1.000		
Approach Delay, s/veh	18.2	13.7	5.5	12.0		
Approach LOS	C	B	A	B		
Lane	Left	Left	Left	Right	Left	Right
Designated Moves	LTR	LTR	LT	TR	LT	TR
Assumed Moves	LTR	LTR	LT	R	LT	TR
RT Channelized						
Lane Util	1.000	1.000	0.473	0.527	0.470	0.530
Follow-Up Headway, s	2.535	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.328	4.328	4.645	4.328	4.645	4.328
A (Intercept)	1420	1420	1350	1420	1350	1420
B (Slope)	8.501e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4
Entry Flow, veh/h	218	709	316	352	349	393
Cap Entry Lane, veh/h	447	1053	1189	1263	714	788
Entry HV Adj Factor	0.981	0.982	0.981	0.980	0.980	0.981
Flow Entry, veh/h	214	696	310	345	342	386
Cap Entry, veh/h	438	1033	1166	1238	699	773
V/C Ratio	0.488	0.673	0.266	0.279	0.489	0.499
Control Delay, s/veh	18.2	13.7	5.5	5.4	12.4	11.7
LOS	C	B	A	A	B	B
95th %tile Queue, veh	3	5	1	1	3	3

Timings

8: Banning Lewis Parkway & Golden Jubilee Drive

Total Traffic Conditions

AM Peak Traffic Hour - 2045

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	5	21	19	5	109	48	132	50	282	219	272
Future Volume (vph)	116	5	21	19	5	109	48	132	50	282	219	272
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	5085	1583	1770	3539	1583
Flt Permitted	0.489			0.754			0.604			0.472		
Satd. Flow (perm)	911	1863	1583	1405	1863	1583	1125	5085	1583	879	3539	1583
Satd. Flow (RTOR)			364			364			345			296
Lane Group Flow (vph)	126	5	23	21	5	118	52	143	54	307	238	296
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)	10.0	10.0	10.0	10.0	10.0	10.0	11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	11.0	11.0	11.0	10.0	10.0	10.0	11.0	18.0	18.0	21.0	28.0	28.0
Total Split (%)	18.3%	18.3%	18.3%	16.7%	16.7%	16.7%	18.3%	30.0%	30.0%	35.0%	46.7%	46.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
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	6.0	6.0	6.0	6.0	6.0	6.0
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)	13.2	11.9	11.9	9.0	5.1	5.1	25.4	20.3	20.3	37.2	31.8	31.8
Actuated g/C Ratio	0.22	0.20	0.20	0.15	0.09	0.09	0.42	0.34	0.34	0.62	0.53	0.53
v/c Ratio	0.44	0.01	0.04	0.09	0.03	0.25	0.10	0.08	0.07	0.43	0.13	0.30
Control Delay (s/veh)	23.2	21.2	0.1	17.6	25.8	1.3	8.6	17.8	0.2	5.5	6.6	3.2
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 (s/veh)	23.2	21.2	0.1	17.6	25.8	1.3	8.6	17.8	0.2	5.5	6.6	3.2
LOS	C	C	A	B	C	A	A	B	A	A	A	A
Approach Delay (s/veh)		19.7			4.5			12.1			5.0	
Approach LOS		B			A			B			A	
Queue Length 50th (ft)	36	1	0	6	2	0	8	14	0	21	36	0
Queue Length 95th (ft)	74	10	0	20	10	0	21	30	0	m28	m47	m0
Internal Link Dist (ft)		872			1012			5450			375	
Turn Bay Length (ft)	110		110	110		110	230		230	230		
Base Capacity (vph)	286	372	607	241	158	467	531	1722	764	767	1875	977
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	0.44	0.01	0.04	0.09	0.03	0.25	0.10	0.08	0.07	0.40	0.13	0.30

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 60

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 45

Control Type: Actuated-Coordinated

Timings
 8: Banning Lewis Parkway & Golden Jubilee Drive

Total Traffic Conditions
 AM Peak Traffic Hour - 2045

Maximum v/c Ratio: 0.44

Intersection Signal Delay (s/veh): 7.9

Intersection LOS: A

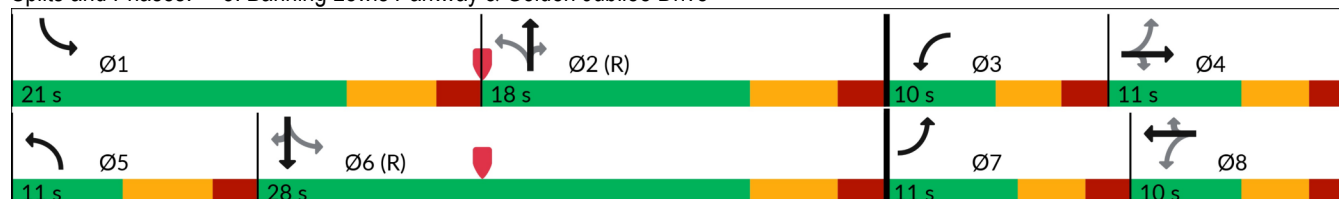
Intersection Capacity Utilization 47.0%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 8: Banning Lewis Parkway & Golden Jubilee Drive



Timings

1: Mohawk Road & E Woodmen Road

Total Traffic Conditions

PM Peak Traffic Hour - 2045

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  		 					
Traffic Volume (vph)	62	3655	358	154	3174	25	224	16	137	95	16	119
Future Volume (vph)	62	3655	358	154	3174	25	224	16	137	95	16	119
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	3433	1863	1583	1770	1615	0
Flt Permitted	0.038			0.038			0.800			0.800		
Satd. Flow (perm)	71	5085	1583	71	5085	1583	2891	1863	1583	1490	1615	0
Satd. Flow (RTOR)			389			27			27		4	
Lane Group Flow (vph)	67	3973	389	167	3450	27	243	17	149	103	146	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8		8	4		
Detector Phase	2	2	2	6	6	6	8	8	8	4	4	
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	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0	10.0	10.0	10.0	
Total Split (s)	110.0	110.0	110.0	110.0	110.0	110.0	10.0	10.0	10.0	10.0	10.0	
Total Split (%)	91.7%	91.7%	91.7%	91.7%	91.7%	91.7%	8.3%	8.3%	8.3%	8.3%	8.3%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	
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)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	Max	Max	Max	Max	Max	Max	Max	Max	
Act Effct Green (s)	104.0	104.0	104.0	104.0	104.0	104.0	5.0	5.0	5.0	5.0	5.0	
Actuated g/C Ratio	0.87	0.87	0.87	0.87	0.87	0.87	0.04	0.04	0.04	0.04	0.04	
v/c Ratio	1.10	0.90	0.27	2.74	0.78	0.02	2.03	0.22	1.64	1.66	2.06	
Control Delay (s/veh)	165.2	8.9	0.6	810.3	6.1	0.8	518.2	62.6	360.2	393.4	548.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	165.2	8.9	0.6	810.3	6.1	0.8	518.2	62.6	360.2	393.4	548.2	
LOS	F	A	A	F	A	A	F	E	F	F	F	
Approach Delay (s/veh)		10.5			42.9			441.7			484.2	
Approach LOS		B			D			F			F	
Queue Length 50th (ft)	~58	464	0	~221	197	1	~152	13	~146	~116	~177	
Queue Length 95th (ft)	#108	532	9	m#221	m181	m1	#236	38	#284	#232	#315	
Internal Link Dist (ft)		2474			750			6246			419	
Turn Bay Length (ft)	300		400	315		370	150		150	50		
Base Capacity (vph)	61	4407	1423	61	4407	1375	120	77	91	62	71	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.10	0.90	0.27	2.74	0.78	0.02	2.03	0.22	1.64	1.66	2.06	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green												
Natural Cycle: 70												
Control Type: Actuated-Coordinated												

Maximum v/c Ratio: 2.74	
Intersection Signal Delay (s/veh): 57.7	Intersection LOS: E
Intersection Capacity Utilization 112.1%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 1: Mohawk Road & E Woodmen Road



Timings

2: Banning Lewis Parkway & E Woodmen Road

Total Traffic Conditions

PM Peak Traffic Hour - 2045

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	539	2323	814	668	2110	294	762	456	671	252	346	353
Future Volume (vph)	539	2323	814	668	2110	294	762	456	671	252	346	353
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Satd. Flow (RTOR)			316			245			334			280
Lane Group Flow (vph)	586	2525	885	726	2293	320	828	496	729	274	376	384
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			Free			Free			Free			Free
Detector Phase	5	2		1	6		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Total Split (s)	21.0	54.0		25.0	58.0		28.0	23.0		18.0	13.0	
Total Split (%)	17.5%	45.0%		20.8%	48.3%		23.3%	19.2%		15.0%	10.8%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	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	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	Max		None	Max	
Act Effect Green (s)	15.0	48.0	120.0	19.0	52.0	120.0	22.0	17.1	120.0	11.9	7.0	120.0
Actuated g/C Ratio	0.13	0.40	1.00	0.16	0.43	1.00	0.18	0.14	1.00	0.10	0.06	1.00
v/c Ratio	1.37	1.24	0.56	1.34	1.04	0.20	1.32	0.68	0.46	0.81	1.27	0.24
Control Delay (s/veh)	208.0	147.1	0.5	190.5	49.5	0.0	180.3	40.2	0.6	71.7	190.6	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	208.0	147.1	0.5	190.5	49.5	0.0	180.3	40.2	0.6	71.7	190.6	0.4
LOS	F	F	A	F	D	A	F	D	A	E	F	A
Approach Delay (s/veh)		123.5			75.4			82.7			88.4	
Approach LOS		F			E			F			F	
Queue Length 50th (ft)	~311	~890	0	~383	~711	0	~424	134	0	108	~134	0
Queue Length 95th (ft)	m#350	m#945	m0	m#321	m539	m0	m#429	m132	m0	#173	#205	0
Internal Link Dist (ft)		712			722			667			695	
Turn Bay Length (ft)	285			285		225	185		185	185		185
Base Capacity (vph)	429	2034	1583	543	2203	1583	629	726	1583	343	296	1583
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	1.37	1.24	0.56	1.34	1.04	0.20	1.32	0.68	0.46	0.80	1.27	0.24

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Timings
 2: Banning Lewis Parkway & E Woodmen Road

Total Traffic Conditions
 PM Peak Traffic Hour - 2045

Maximum v/c Ratio: 1.37

Intersection Signal Delay (s/veh): 96.6

Intersection LOS: F

Intersection Capacity Utilization 112.4%

ICU Level of Service H

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

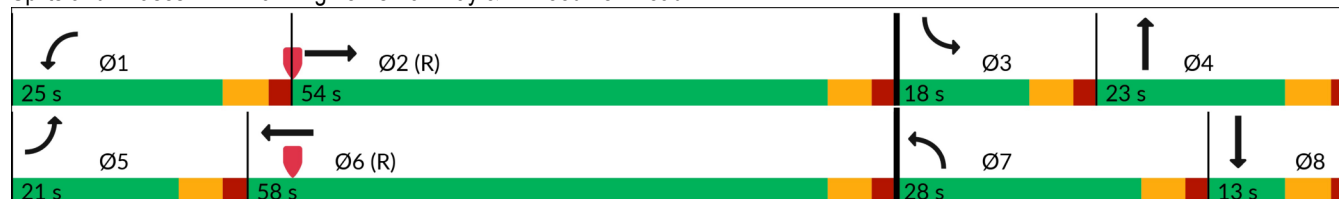
Queue shown is maximum after two cycles.

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: Banning Lewis Parkway & E Woodmen Road



Timings

3: Golden Sage Road & E Woodmen Road

Total Traffic Conditions

PM Peak Traffic Hour - 2045

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			  							
Traffic Volume (vph)	380	2644	259	94	2428	182	157	21	53	95	28	399
Future Volume (vph)	380	2644	259	94	2428	182	157	21	53	95	28	399
Satd. Flow (prot)	1770	3539	1583	1770	5085	1583	1770	1863	1583	1770	1602	0
Flt Permitted	0.125			0.138			0.571			0.742		
Satd. Flow (perm)	233	3539	1583	257	5085	1583	1064	1863	1583	1382	1602	0
Satd. Flow (RTOR)			282			198			255		161	
Lane Group Flow (vph)	413	2874	282	102	2639	198	171	23	58	103	464	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Free	Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4		Free	8		
Detector Phase	5	2	2	1	6	6	4	4		8	8	
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	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	10.0	10.0		10.0	10.0	
Total Split (s)	13.0	37.0	37.0	11.0	35.0	35.0	12.0	12.0		12.0	12.0	
Total Split (%)	21.7%	61.7%	61.7%	18.3%	58.3%	58.3%	20.0%	20.0%		20.0%	20.0%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	
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)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max		Max	Max	
Act Effect Green (s)	38.8	33.2	33.2	34.0	29.0	29.0	7.0	7.0	60.0	7.0	7.0	
Actuated g/C Ratio	0.65	0.55	0.55	0.57	0.48	0.48	0.12	0.12	1.00	0.12	0.12	
v/c Ratio	1.26	1.47	0.28	0.38	1.07	0.23	1.38	0.11	0.04	0.64	1.41	
Control Delay (s/veh)	146.6	235.9	4.9	8.5	59.9	2.4	241.2	25.0	0.0	46.5	221.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	146.6	235.9	4.9	8.5	59.9	2.4	241.2	25.0	0.0	46.5	221.8	
LOS	F	F	A	A	E	A	F	C	A	D	F	
Approach Delay (s/veh)		207.3			54.2			166.0			190.0	
Approach LOS		F			D			F			F	
Queue Length 50th (ft)	~206	~1707	60	9	~402	0	~85	8	0	36	~178	
Queue Length 95th (ft)	m#271	m#1400	m55	21	#495	27	#188	26	0	#100	#339	
Internal Link Dist (ft)		600			542			565			379	
Turn Bay Length (ft)	530		380	330		360	125		195	110		
Base Capacity (vph)	329	1958	1002	271	2457	867	124	217	1583	161	329	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.26	1.47	0.28	0.38	1.07	0.23	1.38	0.11	0.04	0.64	1.41	
Intersection Summary												
Cycle Length: 60												
Actuated Cycle Length: 60												
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green												
Natural Cycle: 70												
Control Type: Actuated-Coordinated												

Timings

3: Golden Sage Road & E Woodmen Road

Total Traffic Conditions
PM Peak Traffic Hour - 2045

Maximum v/c Ratio: 1.47

Intersection Signal Delay (s/veh): 143.1

Intersection LOS: F

Intersection Capacity Utilization 131.5%

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: Golden Sage Road & E Woodmen Road



HCM Unsignalized Intersection Capacity Analysis
4: Golden Sage Road & Woodmen Frontage Road

Total Traffic Conditions
PM Peak Traffic Hour - 2045

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	5	174	364	5	624	1
Future Volume (Veh/h)	5	174	364	5	624	1
Sign Control	Stop			Stop	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	189	396	5	678	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)					459	
pX, platoon unblocked						
vC, conflicting volume	1357	0	1548	1357	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1357	0	1548	1357	0	
tC, single (s)	6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3	3.5	4.0	2.2	
p0 queue free %	94	83	0	94	58	
cM capacity (veh/h)	87	1085	50	87	1623	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	194	401	679			
Volume Left	0	396	678			
Volume Right	189	0	1			
cSH	837	50	1623			
Volume to Capacity	0.23	8.04	0.42			
Queue Length 95th (ft)	22	Err	53			
Control Delay (s/veh)	10.6	Err	8.8			
Lane LOS	B	F	A			
Approach Delay (s/veh)	10.6	Err	8.8			
Approach LOS	B	F				
Intersection Summary						
Average Delay		3153.6				
Intersection Capacity Utilization		76.1%		ICU Level of Service		D
Analysis Period (min)		15				

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	6	12	41	9	5	10	28	38	1	27	5
Future Vol, veh/h	6	6	12	41	9	5	10	28	38	1	27	5
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	-	-	-	-	-	-	-	-	-	-	-	-
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	7	7	13	45	10	5	11	30	41	1	29	5
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	91	128	32	108	110	51	35	0	0	72	0	0
Stage 1	34	34	-	73	73	-	-	-	-	-	-	-
Stage 2	57	93	-	35	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	893	763	1042	871	780	1017	1577	-	-	1528	-	-
Stage 1	982	866	-	937	834	-	-	-	-	-	-	-
Stage 2	955	818	-	981	864	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	870	757	1042	846	774	1017	1577	-	-	1528	-	-
Mov Cap-2 Maneuver	870	757	-	846	774	-	-	-	-	-	-	-
Stage 1	981	866	-	930	828	-	-	-	-	-	-	-
Stage 2	932	812	-	961	864	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	9.07		9.58		0.96		0.22					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	212	-	-	911	846	53	-	-				
HCM Lane V/C Ratio	0.007	-	-	0.029	0.071	0.001	-	-				
HCM Ctrl Dly (s/v)	7.3	0	-	9.1	9.6	7.4	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0	-	-				

Intersection						
Intersection Delay, s/veh	6.7					
Intersection LOS	A					
Approach	EB	WB	NB	SB		
Entry Lanes	1	1	2	2		
Conflicting Circle Lanes	2	2	2	2		
Adj Approach Flow, veh/h	192	213	946	484		
Demand Flow Rate, veh/h	196	218	965	494		
Vehicles Circulating, veh/h	626	699	86	457		
Vehicles Exiting, veh/h	325	352	736	460		
Ped Vol Crossing Leg, #/h	0	0	0	0		
Ped Cap Adj	1.000	1.000	1.000	1.000		
Approach Delay, s/veh	6.9	7.9	6.5	6.7		
Approach LOS	A	A	A	A		
Lane	Left	Left	Left	Right	Left	Right
Designated Moves	LTR	LTR	LT	TR	LT	TR
Assumed Moves	LTR	LTR	LT	TR	LT	TR
RT Channelized						
Lane Util	1.000	1.000	0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.535	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.328	4.328	4.645	4.328	4.645	4.328
A (Intercept)	1420	1420	1350	1420	1350	1420
B (Slope)	8.501e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4
Entry Flow, veh/h	196	218	454	511	232	262
Cap Entry Lane, veh/h	834	784	1247	1320	887	963
Entry HV Adj Factor	0.979	0.977	0.980	0.981	0.981	0.980
Flow Entry, veh/h	192	213	445	501	228	257
Cap Entry, veh/h	817	766	1222	1295	870	943
V/C Ratio	0.235	0.278	0.364	0.387	0.262	0.272
Control Delay, s/veh	6.9	7.9	6.4	6.5	6.9	6.6
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	1	2	2	1	1

Intersection						
Intersection Delay, s/veh	11.1					
Intersection LOS	B					
Approach	EB	WB	NB	SB		
Entry Lanes	1	1	2	2		
Conflicting Circle Lanes	2	2	2	2		
Adj Approach Flow, veh/h	140	356	1398	720		
Demand Flow Rate, veh/h	142	363	1426	735		
Vehicles Circulating, veh/h	1000	1100	123	497		
Vehicles Exiting, veh/h	232	449	1019	966		
Ped Vol Crossing Leg, #/h	0	0	0	0		
Ped Cap Adj	1.000	1.000	1.000	1.000		
Approach Delay, s/veh	9.0	21.3	9.7	9.0		
Approach LOS	A	C	A	A		
Lane	Left	Left	Left	Right	Left	Right
Designated Moves	LTR	LTR	LT	TR	LT	TR
Assumed Moves	LTR	LTR	LT	TR	LT	TR
RT Channelized						
Lane Util	1.000	1.000	0.470	0.530	0.469	0.531
Follow-Up Headway, s	2.535	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.328	4.328	4.645	4.328	4.645	4.328
A (Intercept)	1420	1420	1350	1420	1350	1420
B (Slope)	8.501e-4	8.501e-4	9.199e-4	8.501e-4	9.199e-4	8.501e-4
Entry Flow, veh/h	142	363	670	756	345	390
Cap Entry Lane, veh/h	607	557	1205	1279	855	931
Entry HV Adj Factor	0.985	0.980	0.980	0.980	0.981	0.979
Flow Entry, veh/h	140	356	657	741	338	382
Cap Entry, veh/h	598	547	1182	1253	838	911
V/C Ratio	0.234	0.651	0.556	0.591	0.404	0.419
Control Delay, s/veh	9.0	21.3	9.6	9.9	9.2	8.9
LOS	A	C	A	A	A	A
95th %tile Queue, veh	1	5	4	4	2	2

Timings

8: Banning Lewis Parkway & Golden Jubilee Drive

Total Traffic Conditions

PM Peak Traffic Hour - 2045

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	672	5	119	126	5	711	96	228	121	683	169	547
Future Volume (vph)	672	5	119	126	5	711	96	228	121	683	169	547
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	5085	1583	1770	3539	1583
Flt Permitted	0.605			0.754			0.667			0.333		
Satd. Flow (perm)	1127	1863	1583	1405	1863	1583	1242	5085	1583	620	3539	1583
Satd. Flow (RTOR)			182			658			218			595
Lane Group Flow (vph)	730	5	129	137	5	773	104	248	132	742	184	595
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)	10.0	10.0	10.0	10.0	10.0	10.0	11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	30.0	49.0	49.0	11.0	30.0	30.0	15.0	12.0	12.0	48.0	45.0	45.0
Total Split (%)	25.0%	40.8%	40.8%	9.2%	25.0%	25.0%	12.5%	10.0%	10.0%	40.0%	37.5%	37.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
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	6.0	6.0	6.0	6.0	6.0	6.0
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 Effect Green (s)	50.2	39.2	39.2	26.2	20.2	20.2	14.3	6.0	6.0	58.8	44.6	44.6
Actuated g/C Ratio	0.42	0.33	0.33	0.22	0.17	0.17	0.12	0.05	0.05	0.49	0.37	0.37
v/c Ratio	1.21	0.01	0.20	0.42	0.02	0.95	0.57	0.98	0.46	0.99	0.14	0.62
Control Delay (s/veh)	138.6	24.2	1.7	29.9	38.0	30.0	39.1	107.8	5.3	52.0	23.2	6.0
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 (s/veh)	138.6	24.2	1.7	29.9	38.0	30.0	39.1	107.8	5.3	52.0	23.2	6.0
LOS	F	C	A	C	D	C	D	F	A	D	C	A
Approach Delay (s/veh)		117.5			30.0			65.1			30.5	
Approach LOS		F			C			E			C	
Queue Length 50th (ft)	~612	3	0	61	3	85	46	71	0	~607	34	9
Queue Length 95th (ft)	#888	11	13	102	14	#368	85	#132	0	m#555	m38	m58
Internal Link Dist (ft)		872			1012			5450			375	
Turn Bay Length (ft)	110		110	110		110	230		230	230		
Base Capacity (vph)	605	683	695	324	388	850	194	254	286	752	1314	962
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	1.21	0.01	0.19	0.42	0.01	0.91	0.54	0.98	0.46	0.99	0.14	0.62

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
8: Banning Lewis Parkway & Golden Jubilee Drive

Total Traffic Conditions
PM Peak Traffic Hour - 2045

Maximum v/c Ratio: 1.21

Intersection Signal Delay (s/veh): 54.7

Intersection LOS: D

Intersection Capacity Utilization 100.3%

ICU Level of Service G

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

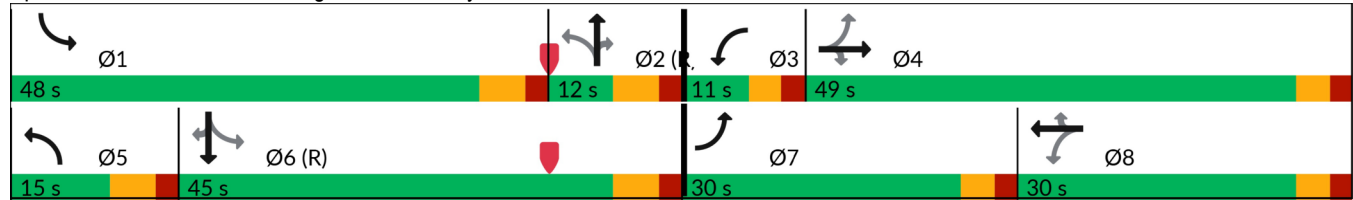
Queue shown is maximum after two cycles.

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: 8: Banning Lewis Parkway & Golden Jubilee Drive

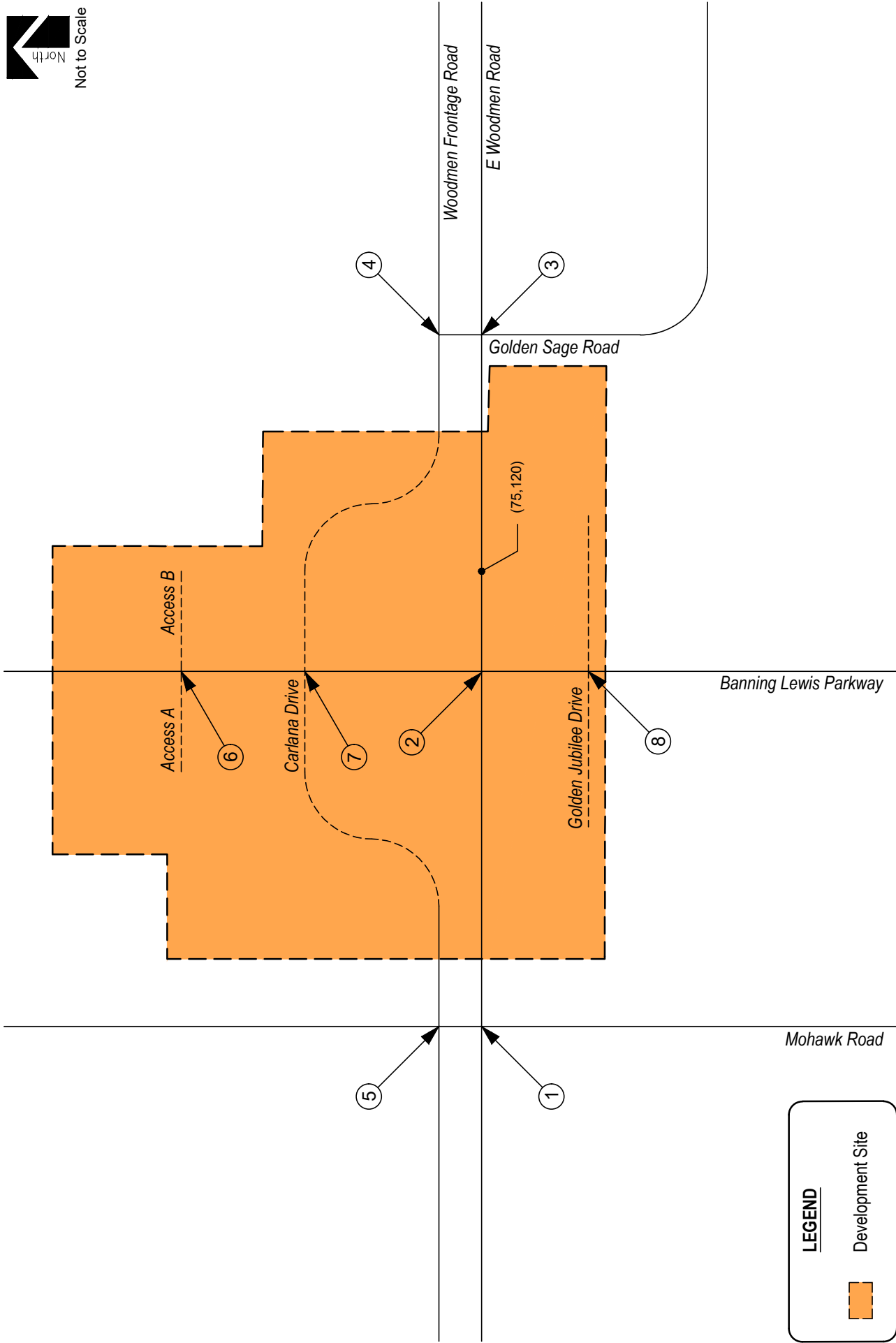


APPENDIX D

Recommended Intersection Geometry



Not to Scale



LEGEND

 Development Site

