

TRAFFIC IMPACT STUDY

For

**City Center 7
Aurora, Colorado**

December 2022

Revised:

February 2023

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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 City Center 7.

This traffic impact study has been revised to address City review comments dated 01/11/23 regarding the provision of additional details to study text, tables, and figures.

This proposed development consists of a multifamily residential community. The development is located on the northwest corner of S Chambers Road and E Exposition Avenue in Aurora, Colorado.

Study Area Boundaries

The study area to be examined in this analysis encompasses the S Chambers Road intersections with E Exposition Avenue and E Center Avenue and includes 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 government land uses.

The proposed development is understood to entail the new construction of two five-story multifamily residential buildings supporting a maximum of 600 dwelling units with associated amenities and parking.

Proposed access to the development is provided by the future construction of S Fraser Street, a private road connecting E Exposition with E Center Avenue, and by the future construction of E Gill Avenue, a private road connecting S Fraser Street with S Chambers Road. E Gill Avenue will be restricted to right-in/right-out conditions at its intersection with S Chambers Road.

For purposes of this study, it is anticipated that development construction would be completed by end of Year 2024.

General site and access locations are shown on Figure 1.

A site plan, as prepared by R&R Engineers & Surveyors, Inc., is shown on Figure 2. This plan is provided for illustrative purposes only.



North

Not to Scale



Figure 1
SITE LOCATION

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CITY CENTER 7
Traffic Impact Study

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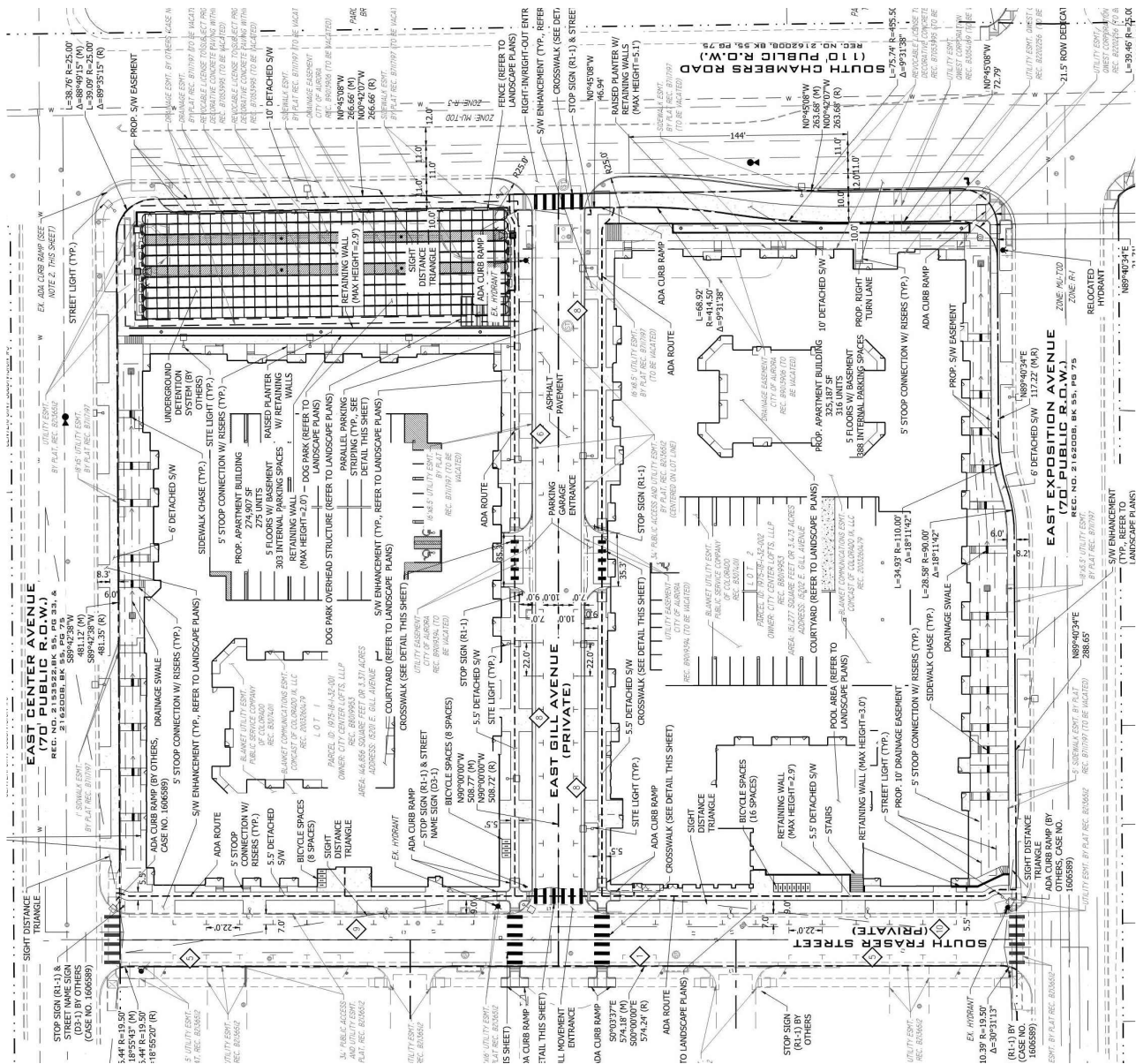


Figure 2
SITE PLAN

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Existing and Committed Surface Transportation Network

Within the study area, S Chambers Road is the primary roadway that will accommodate traffic to and from the proposed development. The secondary roadways include E Exposition Avenue and E Center Avenue. A brief description of each roadway, based on the City's comprehensive plan (Aurora Places)¹ and the City's Roadway Design and Construction Specifications (Specifications)², is provided below:

S Chambers Road is a north-south major arterial roadway having six through lanes (three lanes in each direction) with a combination of shared and exclusive turn lanes at the intersections within the study area. S Chambers Road provides a posted speed limit of 40 MPH.

E Exposition Avenue is an east-west collector roadway having two through lanes (one lane in each direction) with a combination of shared and exclusive turn lanes at the intersection within the study area. E Exposition Avenue provides dedicated bicycle lanes in both directions of travel and a posted speed limit of 30 MPH.

E Center Avenue is an east-west collector roadway having two through lanes (one lane in each direction) with shared turn lanes at the intersection within the study area. E Center Avenue does not provide a posted speed limit. Pursuant to Table 4.04.04.1 from the City's Specifications against the roadway's estimated right-of-way (ROW) width, E Center Avenue is assumed to have a design speed limit of 35 MPH.

The study intersection of S Chambers Road with E Exposition Avenue is signalized. All other study intersections operate under a stop-controlled condition. A stop-controlled intersection is defined as a roadway intersection where vehicle rights-of-way are controlled by one or more "STOP" signs.

No regional or specific improvements for the roadways described above are known to be planned or committed at this time. The study area roadways appear to be built to their ultimate cross-sections.

¹ Aurora Places: planning tomorrow's city, City of Aurora, October 2018.

² Roadway Design & Construction Specifications, City of Aurora, October 2016.

II. Existing Traffic Conditions

Morning (AM) and afternoon (PM) peak hour traffic counts were collected at the intersections of S Chambers Road with E Exposition Avenue and E Center Avenue. Peak hour traffic counts were collected on Tuesday, April 26, 2022, 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. Average daily traffic (ADT) volumes were collected over a 72-hour period on S Chambers Road and on E Center Avenue, collected from Tuesday, April 26, 2022, to Thursday, April 28, 2022.

24-hour traffic volumes shown for E Exposition Avenue were obtained from the Aurora Metro Center Traffic Impact Study³, a traffic study prepared for the overall undeveloped area bounded by S Chambers Road west to S Sable Boulevard and E Center Avenue north to E Alameda Parkway. These referenced counts were then grown to Year 2022 at a conservative annual growth of one percent.

Existing volumes and intersection geometry are shown on Figure 3. Traffic count data is included for reference in Appendix A.

Existing signal timing parameters for S Chambers Road and E Center Avenue 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.

³ Aurora Metro Center: Traffic Impact Study, Felsburg Holt & Ullevig, November 2020.



North

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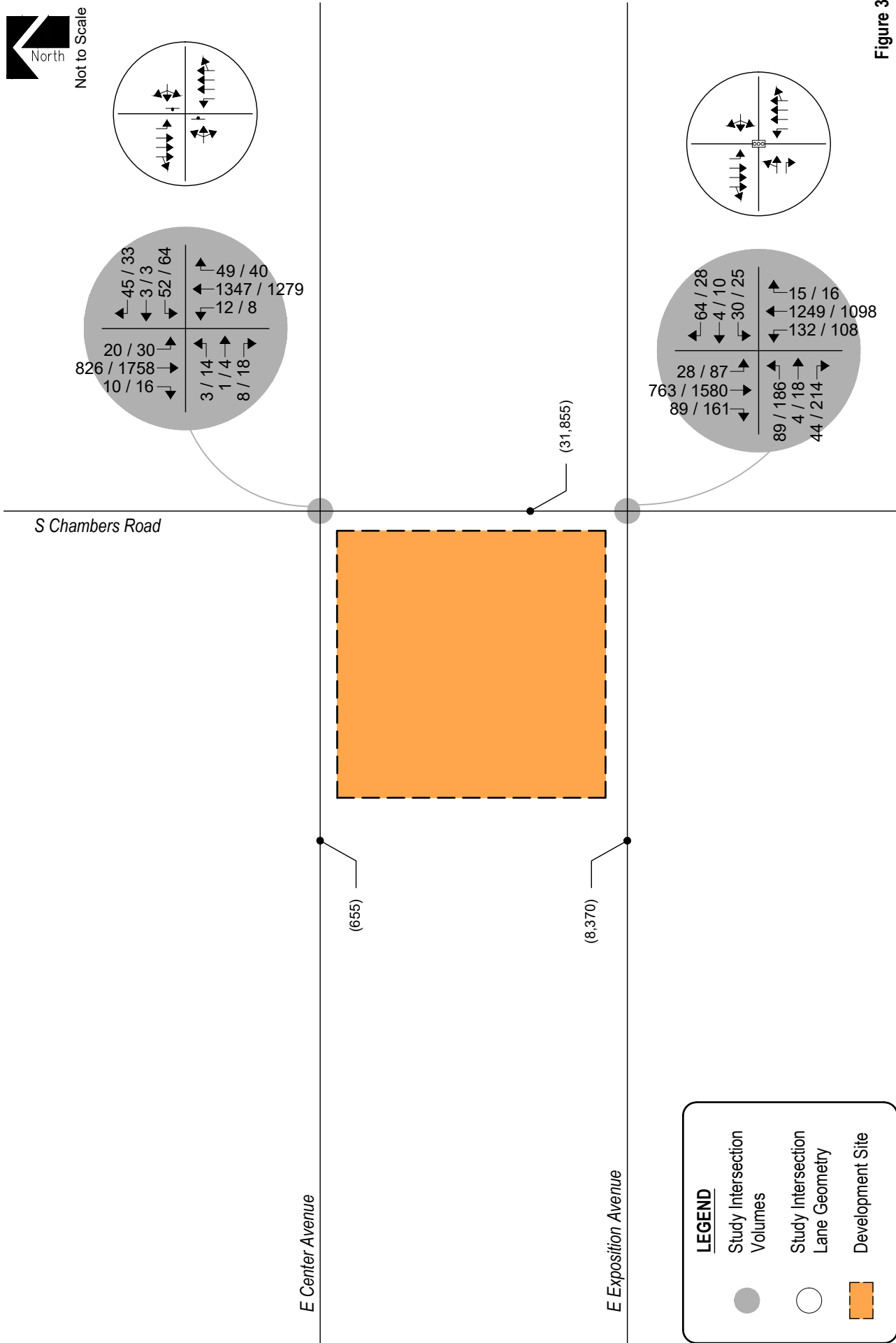


Figure 3
EXISTING TRAFFIC
Volumes & Intersection Geometry
AM / PM Peak Hour
(ADT) : Average Daily Traffic

Peak Hour Intersection Levels of Service – Existing Traffic

The Signalized and Unsignalized Intersection Analysis techniques, as published in the Highway Capacity Manual (HCM), 6th 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.

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
S Chambers Road / E Exposition Avenue (Signalized)	B (10.2)	B (18.7)
Eastbound Left and Through	F (87.3)	E (72.9)
Eastbound Right	B (11.0)	A (7.7)
Westbound Left, Through and Right	C (29.5)	C (27.6)
Northbound Left	A (5.1)	C (24.4)
Northbound Through and Right	A (4.9)	A (8.5)
Southbound Left	B (10.3)	C (22.9)
Southbound Through and Right	A (8.2)	B (19.2)
S Chambers Road / E Center Avenue (Stop-Controlled)		
Eastbound Left, Through, and Right	C (16.1)	F (254.7)
Westbound Left, Through, and Right	C (21.3)	F (357.9)
Northbound Left	B (13.6)	D (33.3)
Southbound Left	A (9.9)	A (9.8)

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

Existing Traffic Analysis Results

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

The stop-controlled intersection of S Chambers Road with E Center Avenue has turn movement operations at or better than LOS C during the morning peak traffic hour and LOS D or better during the afternoon peak traffic hour. Exceptions would include the eastbound and westbound shared turning movements which operate at LOS F during the PM peak traffic hour. The LOS F operations are attributed to the through traffic volume along E Chambers Road and the stop-controlled nature of the intersection. 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.

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 2024 and 2040, a compounded annual growth rate was determined using historical traffic data provided by the Colorado Department of Transportation's (CDOT) Traffic Count Database System (TCDS)⁴ along the adjacent segment of S Chambers Road, which experienced a post-pandemic annual growth rate of less than one percent. Therefore, a compounded annual growth rate of one percent was applied to existing traffic volumes. This annual growth rate provides for a conservative analysis and is assumed to account for regional growth projections for the overall area.

It is important to note that ingress and egress traffic volumes along the east leg of the S Chambers Road with E Exposition Avenue intersection are not subject to annual growth patterns since this access drive does not provide connection to other roadways, therefore does not serve regional traffic. As such, application of annual growth rates described above continues to provide for a conservative analysis.

To account for projected traffic from adjacent developments not yet built, trip generations from the Aurora Metro Center Traffic Impact Study were added to background traffic volumes.

Pursuant to the non-committed area roadway improvements discussed in Section I, Year 2024 and Year 2040 background traffic conditions assume no roadway improvements to accommodate regional transportation demands. As part of the future Aurora Metro Center development, background traffic conditions assume the new construction of S Granby Street, an extension of S Fraser Street north of E Center Avenue to E Alameda Parkway. Year 2040 also assumes existing signal timing parameters for S Chambers Road and E Exposition Avenue with optimized intersection splits in effort to better long-term intersection performance.

Projected background traffic volumes and intersection geometry for Years 2024 and 2040 are shown on Figure 4 and Figure 5, respectively.

⁴ Transportation Data Management System, MS2, 2021.

Background Traffic Auxiliary Lane Analysis

Auxiliary lanes along S Chambers Road at the E Exposition Avenue and E Center Avenue intersections, using Year 2024 and 2040 background traffic volumes, are to be based on CDOT's State Highway Access Code (SHAC)⁵.

The City's supporting criteria does not identify a CDOT access category for S Chambers Avenue. In reference to the roadway's classification discussed in Section I, projected traffic volumes illustrated in Figures 4 and 5, and connection across the City of Aurora against Section 3.11 of CDOT's SHAC, S Chambers Road is assumed to have a CDOT access category of a Non-Rural Arterial (NR-B).

Considering build-out of the surrounding area, an evaluation of auxiliary lane requirements, pursuant to Section 3.11(4)(b) of CDOT's SHAC, reveals that a southbound right turn deceleration lane along S Chambers Road at E Exposition Avenue is required since the projected southbound right turn volume exceeds the State's threshold of 50 vehicles per peak hour. However, Year 2024 and 2040 background traffic volumes remain below CDOT's vehicle volume threshold for a southbound right turn deceleration lane along S Chambers Road at E Center Avenue.

Background Traffic Signal Warrants

A signal warrant analysis, using Year 2024 and 2040 background traffic volumes, was conducted for the S Chambers Road and E Center Avenue intersection to review potential for traffic signal control.

Year 2024 analysis results conclude that the intersection was found to be below the minimum vehicle volumes required to meet Warrant 1 (Eight-Hour Vehicular Volume), Warrant 2 (Four-Hour Vehicular Volume), and Warrant 3 (Peak Hour), from the Manual on Uniform Traffic Control Devices (MUTCD), for the installation of a traffic signal.

By Year 2040, background traffic volumes predict that the intersection will remain below minimum vehicle volume thresholds required to meet the MUTCD's Warrant 1 and Warrant 2. However, the intersection is projected to exceed vehicle volume thresholds required to meet Warrant 3. Warrant study worksheets are provided for reference in Appendix D.

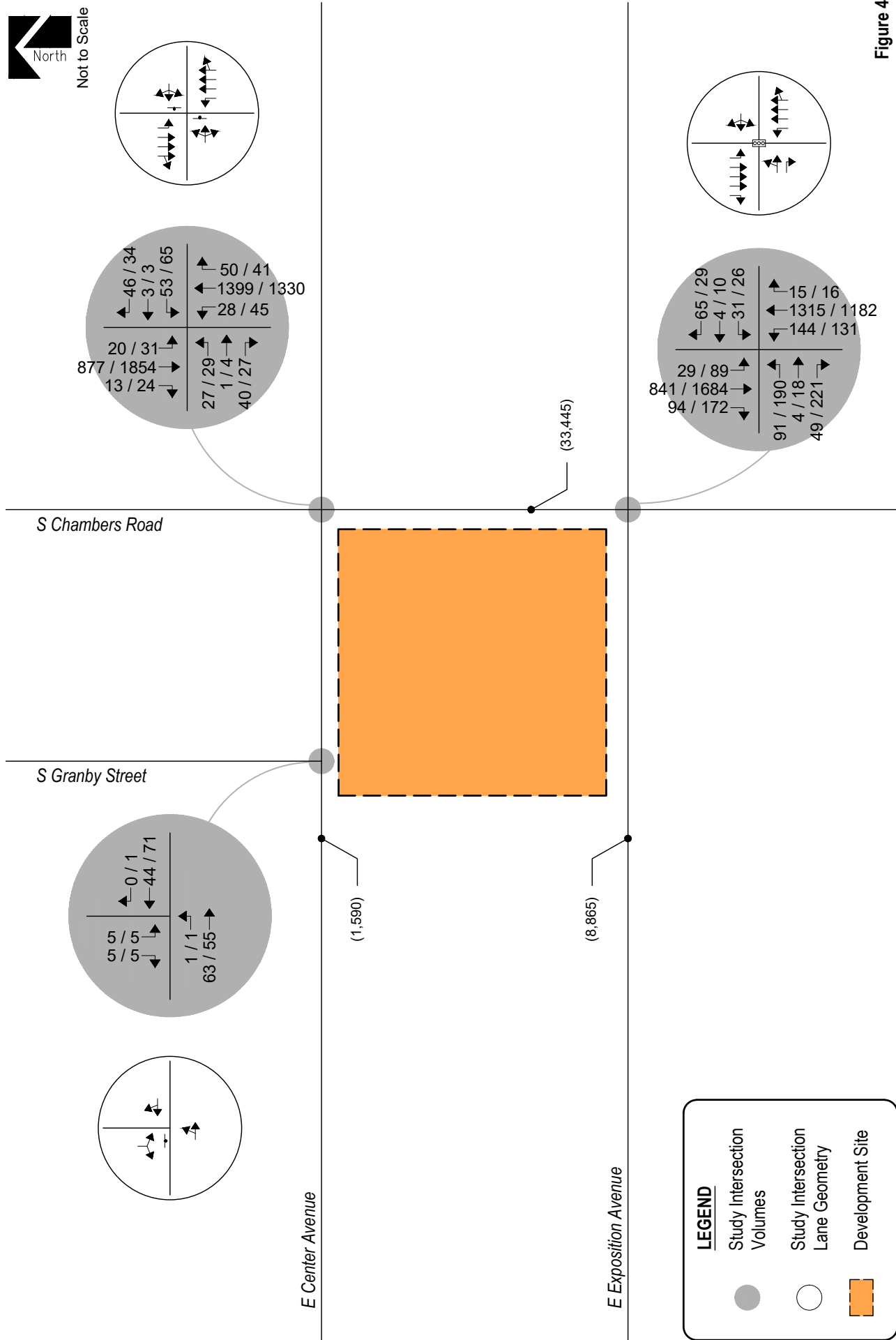
Said intersection should be monitored further by City Staff as area development occurs to determine when or if signalization installation is appropriate.

⁵ State Highway Access Code, The Transportation Commission of Colorado, March 2002.



North

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LEGEND

- Study Intersection Volumes
- Study Intersection Lane Geometry
- Development Site

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

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North

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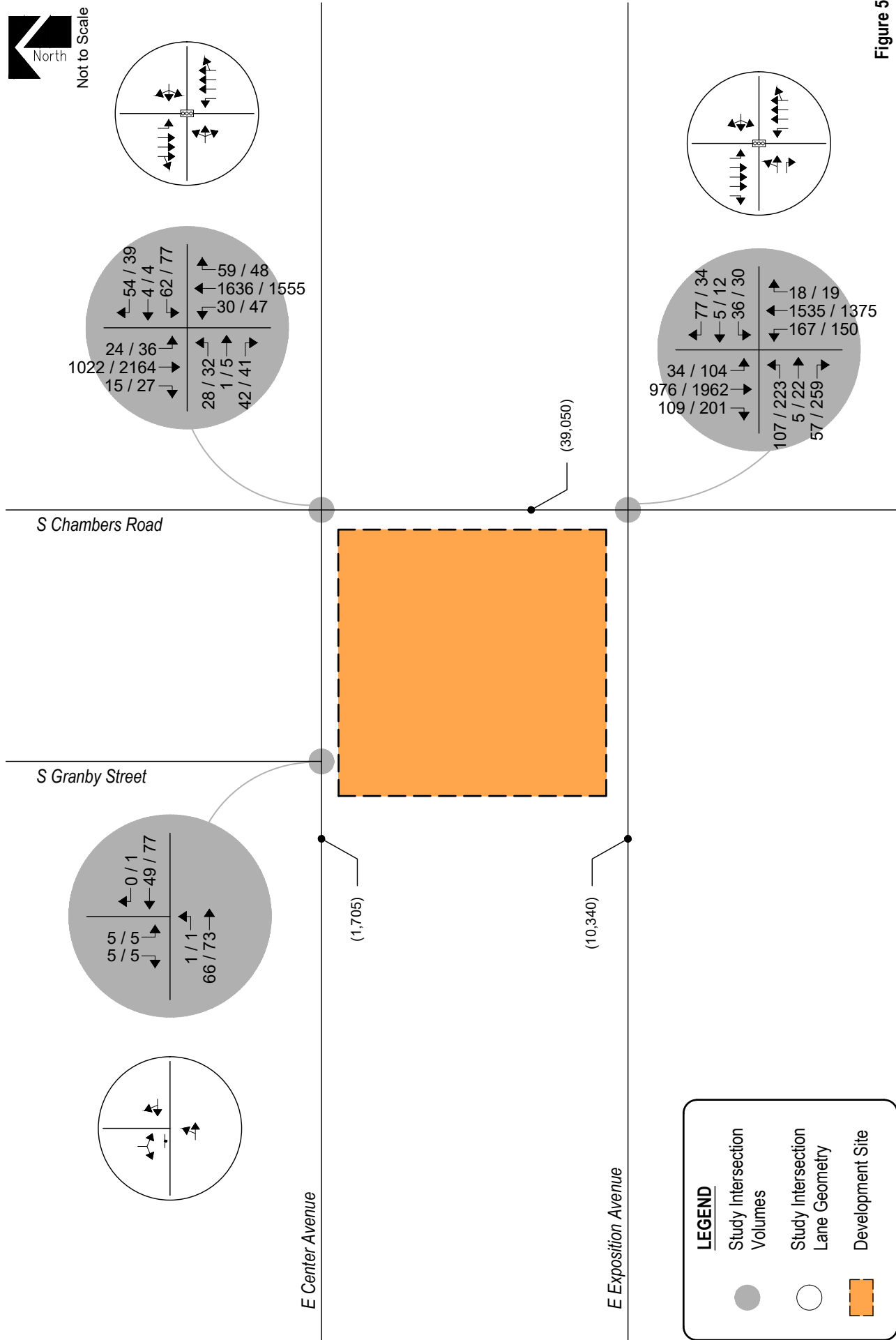


Figure 5
BACKGROUND TRAFFIC - YEAR 2040
Volumes & Intersection Geometry
AM / PM Peak Hour
(ADT) : Average Daily Traffic

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 2024 are listed in Table 2. Year 2040 operational results are summarized in Table 3.

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

Table 2 – Intersection Capacity Analysis Summary – Background Traffic – Year 2024

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
S Chambers Road / E Exposition Avenue (Signalized)	B (10.2)	B (19.1)
Eastbound Left and Through	F (86.9)	E (73.8)
Eastbound Right	B (12.6)	A (7.7)
Westbound Left, Through and Right	C (30.4)	C (27.5)
Northbound Left	A (5.3)	C (28.0)
Northbound Through and Right	A (5.1)	A (8.9)
Southbound Left	B (11.1)	C (27.5)
Southbound Through	A (8.7)	C (20.4)
Southbound Right	A (2.8)	B (10.6)
S Chambers Road / E Center Avenue (Stop-Controlled)		
Eastbound Left, Through, and Right	C (16.6)	F (+300)
Westbound Left, Through, and Right	D (30.4)	F (+300)
Northbound Left	B (14.6)	F (54.9)
Southbound Left	B (10.3)	B (10.2)
S Chambers Road / E Center Avenue (Signalized)	A (6.7)	A (7.0)
Eastbound Left, Through and Right	C (33.6)	D (42.3)
Westbound Left, Through and Right	E (62.6)	E (70.8)
Northbound Left	A (3.5)	B (16.3)
Northbound Through and Right	A (3.6)	A (3.2)
Southbound Left	A (4.7)	A (5.2)
Southbound Through and Right	A (3.4)	A (5.0)
E Center Avenue / S Granby Street (Stop-Controlled)		
Eastbound Left and Through	A (7.3)	A (7.4)
Southbound Left and Right	A (8.9)	A (9.0)

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

Background Traffic Analysis Results – Year 2024

Year 2024 background traffic analysis indicates that the signalized intersection of S Chambers Road with E Exposition Avenue has overall operations at LOS B during both the morning and afternoon peak traffic hours.

The stop-controlled intersection of S Chambers Road with E Center Drive experiences LOS D turning movement operations, or better, during the morning peak traffic hour and LOS B turning movements during the afternoon peak traffic hour. Exceptions would include the eastbound and westbound shared turning movements and the northbound left turning movement which have turning movement operations at LOS F during the afternoon peak traffic hour. The LOS F operations are attributed to the through traffic volume along S Chambers Road and the stop-controlled nature of the intersection. Although traffic volumes do not indicate a traffic signal is warranted, Table 2 indicates the intersection experiences overall LOS A operations during either peak traffic hour under traffic signal control.

The stop-controlled intersection of E Center Avenue with S Granby Street is expected to have turning movement operations at LOS A during both peak traffic periods.

Table 3 – Intersection Capacity Analysis Summary – Background Traffic – Year 2040

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
S Chambers Road / E Exposition Avenue (Signalized)	B (12.8)	C (28.8)
Eastbound Left and Through	F (92.1)	F (82.2)
Eastbound Right	B (12.3)	C (26.9)
Westbound Left, Through and Right	D (48.4)	C (30.2)
Northbound Left	A (7.5)	E (64.9)
Northbound Through and Right	A (6.5)	B (10.5)
Southbound Left	B (16.6)	D (48.1)
Southbound Through	B (11.2)	C (33.0)
Southbound Right	A (5.6)	B (15.1)
S Chambers Road / E Center Avenue (Stop-Controlled)		
Eastbound Left, Through, and Right	C (21.2)	F (+300)
Westbound Left, Through, and Right	F (82.0)	F (+300)
Northbound Left	C (16.7)	F (108.5)
Southbound Left	B (10.8)	B (10.6)
S Chambers Road / E Center Avenue (Signalized)		
Eastbound Left, Through and Right	A (7.1)	A (9.0)
Westbound Left, Through and Right	C (31.1)	D (53.4)
Northbound Left	E (66.1)	F (86.5)
Northbound Through and Right	A (3.9)	E (55.2)
Southbound Left	A (3.9)	A (3.7)
Southbound Through and Right	A (7.2)	A (7.4)
	A (4.0)	A (6.1)
E Center Avenue / S Granby Street (Stop-Controlled)		
Eastbound Left and Through	A (7.3)	A (7.4)
Southbound Left and Right	A (8.9)	A (9.1)

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

Background Traffic Analysis Results – Year 2040

By Year 2040 and without the proposed development, the study intersection of S Chambers Road with E Exposition Avenue experiences LOS B operations during the morning peak traffic hour and LOS C operations during the afternoon peak traffic hour.

Under stop-controlled conditions, the intersection of S Chambers Road with E Center Avenue projects poor turning movement operations for the minor leg approach during either peak traffic hour, and poor operations for the northbound left movement along S Chambers Road during the afternoon peak traffic hour. Table 3 indicates that an overall LOS A can be achieved during either peak traffic hour if the intersection improved to traffic signal control.

The stop-controlled intersection of E Center Avenue with S Granby Street anticipates turning movement operations at LOS A during both peak traffic hours.

IV. Proposed Project Traffic

Trip Generation

Standard traffic generation characteristics compiled by the Institute of Transportation Engineers (ITE) in their report entitled Trip Generation 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 code 221 (Multifamily Housing (Mid-Rise)) was used for estimating trip generation because of its best fit to the proposed land use description. Additional parameters were applied in order to better refine trip generation data that best fits the land use description, including proximity to rail transit and the geographical setting of the overall area.

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

Table 4 – Trip Generation Rates

ITE CODE	LAND USE	UNIT	TRIP GENERATION RATES						
			24 HOUR	AM PEAK HOUR			PM PEAK HOUR		
				ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
221	Multifamily Housing (Mid-Rise)	DU	4.54	0.09	0.28	0.37	0.24	0.15	0.39

Key: DU = Dwelling Units.

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

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
221	Multifamily Housing (Mid-Rise)	600	DU	2,724	51	171	222	143	91	234
Total:				2,724	51	171	222	143	91	234

Key: DU = Dwelling Units.

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

Considering a maximum land use density of 600 dwelling units, Table 5 illustrates that the proposed development has the potential to generate approximately 2,724 daily vehicle trips with 222 of those occurring during the morning peak hour and 234 during the afternoon peak hour.

Adjustments to Trip Generation Rates

A development of this type is not likely to attract trips from within area land uses nor pass-by or diverted link trips from the adjacent roadway system, therefore no trip reduction was taken in this analysis.

Trip Distribution

The overall directional distribution of site-generated traffic was determined based on the location of the development site within the City, proposed and existing area land uses, allowed turning movements, available roadway network, and in reference to historical traffic count data provided by CDOT's TCDS.

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

Trip Assignment

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

Applying trip distribution patterns to site-generated traffic provides the overall site-generated trip assignments shown on Figure 6.

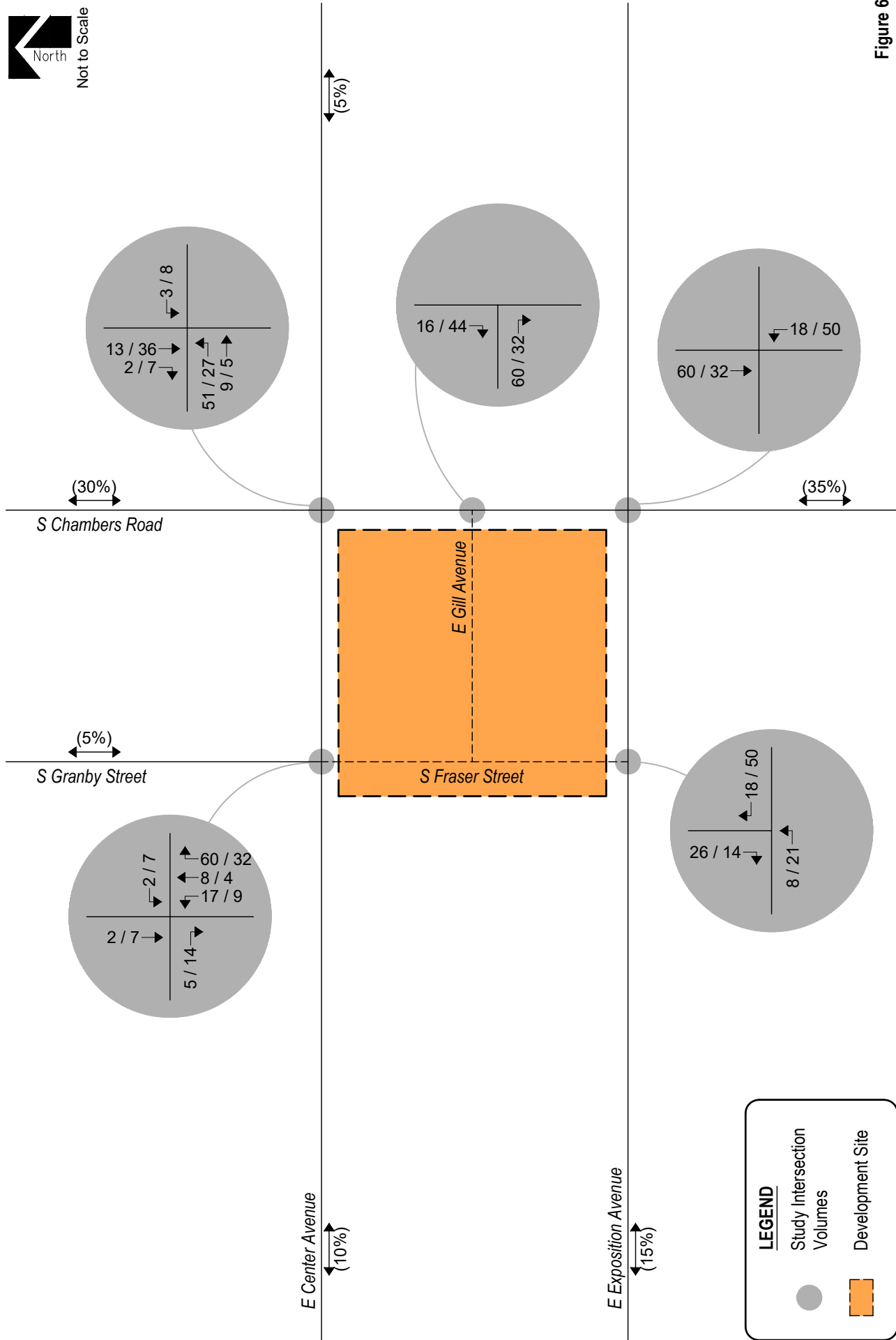


Figure 6
SITE DEVELOPMENT DISTRIBUTION
(%) : Overall
SITE-GENERATED ASSIGNMENT
AM / PM Peak Hour

V. Future Traffic Conditions With Proposed Developments

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 2024 and 2040 with consideration of site-generated traffic. For analysis purposes, it was assumed that development construction would be completed by end of Year 2024.

Pursuant to area roadway improvement discussions provided in Section III, Year 2024 and Year 2040 total traffic conditions assume no roadway improvements to accommodate regional transportation demands. Roadway improvements associated with site development are expected to be limited to site access and frontage as required by the governing agency.

Total Traffic Signal Warrants

A signal warrant analysis, using Year 2024 and 2040 total traffic volumes, was conducted for the S Chambers Road and E Center Avenue intersection to review potential for traffic signal control.

Analysis results conclude that the intersection exceeds the minimum vehicle volumes required to meet Warrant 2 (Four-Hour Vehicular Volume) and Warrant 3 (Peak Hour) from the MUTCD for the installation of a traffic signal by Year 2024. However, MUTCD's Warrant 1 (Eight-Hour Vehicular Volume) is not shown to be satisfied until Year 2040 total traffic conditions. Warrant study worksheets are provided for reference in Appendix D.

Said intersection should be monitored further by City Staff as area development occurs to determine when or if signalization installation is appropriate.

Projected Year 2024 total traffic volumes and intersection geometry are shown in Figure 7.

Figure 8 shows projected total traffic volumes and intersection geometry for Year 2040.



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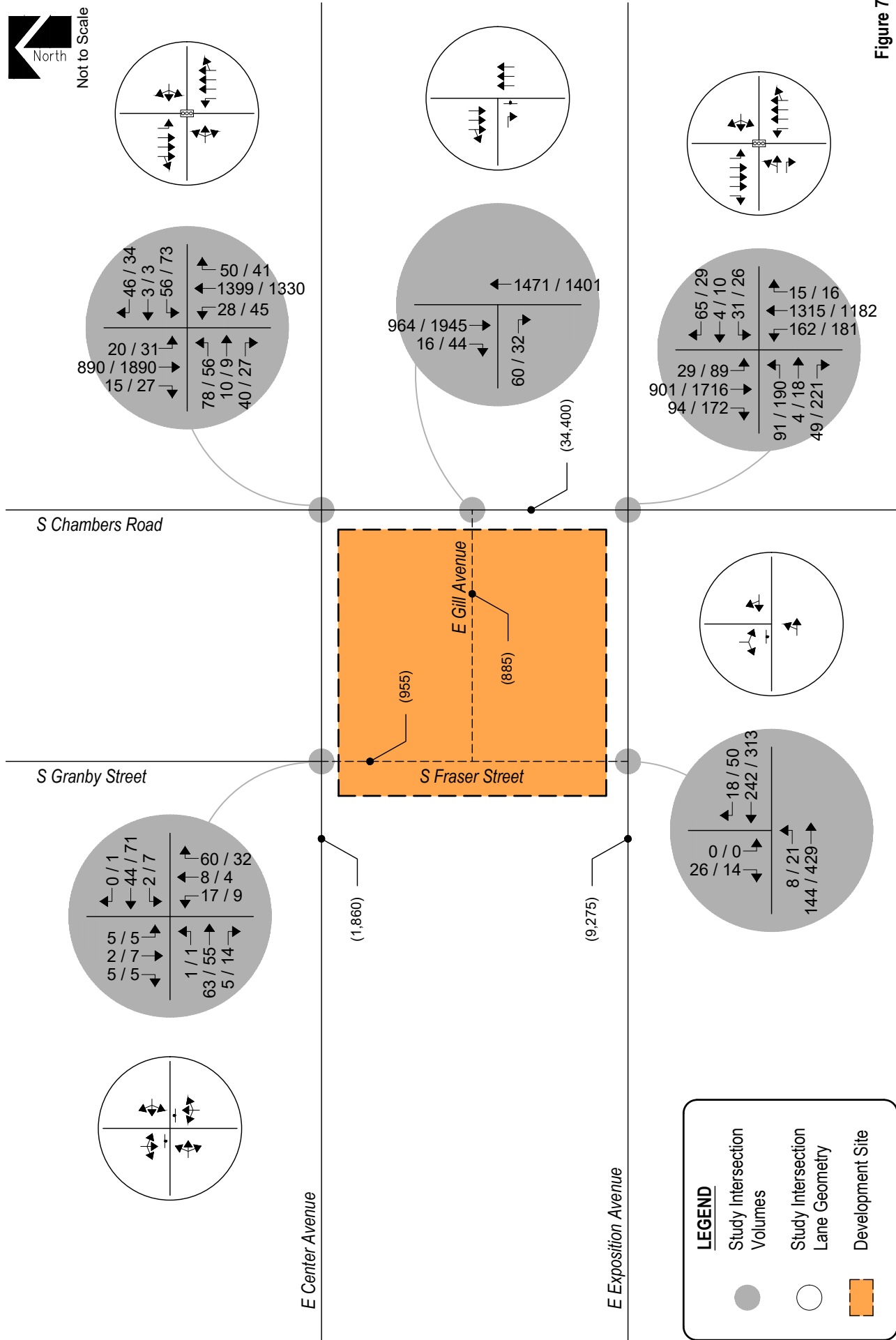


Figure 7
TOTAL TRAFFIC - YEAR 2024
Volumes & Intersection Geometry
AM / PM Peak Hour
(ADT) : Average Daily Traffic



North

Not to Scale

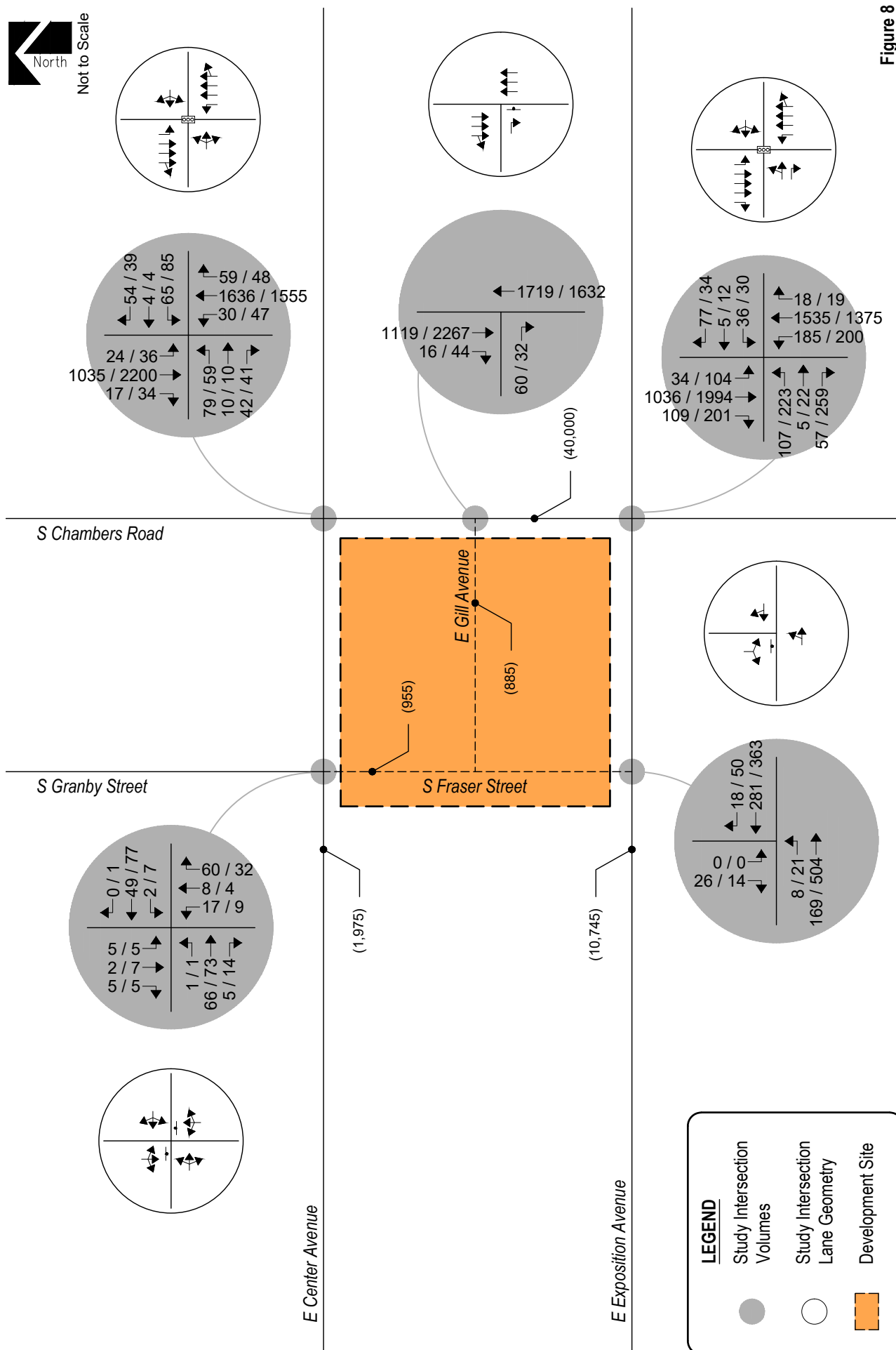


Figure 8
TOTAL TRAFFIC - YEAR 2040
Volumes & Intersection Geometry
AM / PM Peak Hour
(ADT) : Average Daily Traffic

VI. Project Impacts

The analyses and procedures described in this study were performed in accordance with the 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.

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. Total traffic level of service analysis results for Years 2024 and 2040 are summarized in Table 6 and Table 7, respectively.

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

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

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
S Chambers Road / E Exposition Avenue (Signalized)	B (11.7)	C (22.8)
Eastbound Left and Through	F (86.9)	E (73.8)
Eastbound Right	B (12.6)	A (7.7)
Westbound Left, Through and Right	C (30.4)	C (27.5)
Northbound Left	A (6.0)	D (47.4)
Northbound Through and Right	A (5.1)	A (8.9)
Southbound Left	B (14.8)	C (32.0)
Southbound Through	B (12.7)	C (26.0)
Southbound Right	A (7.2)	B (13.3)
S Chambers Road / E Center Avenue (Stop-Controlled)		
Eastbound Left, Through, and Right	D (33.5)	F (+300)
Westbound Left, Through, and Right	E (38.3)	F (+300)
Northbound Left	B (14.8)	F (59.2)
Southbound Left	B (10.3)	B (10.2)
S Chambers Road / E Center Avenue (Signalized)		
Eastbound Left, Through and Right	A (9.9)	A (8.6)
Westbound Left, Through and Right	E (72.4)	E (64.6)
Northbound Left	D (51.0)	E (76.9)
Northbound Through and Right	A (4.8)	C (20.2)
Southbound Left	A (4.9)	A (3.4)
Southbound Through and Right	A (6.4)	A (5.5)
E Center Avenue / S Granby Street (Stop-Controlled)		
Eastbound Left, Through and Right	A (7.3)	A (7.3)
Westbound Left, Through, and Right	A (7.4)	A (7.4)
Northbound Left, Through and Right	A (9.3)	A (9.1)
Southbound Left, Through, and Right	A (9.2)	A (9.5)
E Exposition Avenue / S Fraser Street (Stop Controlled)		
Eastbound Left and Through	A (7.8)	A (8.1)
Southbound Left and Right	A (9.2)	A (9.5)
S Chambers Road / E Gill Avenue (Stop-Controlled)		
Eastbound Right	B (10.7)	B (13.3)

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

Table 7 – Intersection Capacity Analysis Summary – Total Traffic – Year 2040

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
S Chambers Road / E Exposition Avenue (Signalized)	B (12.9)	C (34.4)
Eastbound Left and Through	F (92.1)	F (82.2)
Eastbound Right	B (12.3)	C (26.9)
Westbound Left, Through and Right	D (48.4)	C (30.2)
Northbound Left	A (8.7)	E (74.0)
Northbound Through and Right	A (6.5)	B (10.5)
Southbound Left	B (16.2)	D (51.7)
Southbound Through	B (11.4)	D (43.4)
Southbound Right	A (5.1)	B (15.5)
S Chambers Road / E Center Avenue (Stop-Controlled)		
Eastbound Left, Through, and Right	F (90.2)	F (+300)
Westbound Left, Through, and Right	F (182.3)	F (+300)
Northbound Left	C (16.9)	F (122.2)
Southbound Left	B (10.8)	B (10.6)
S Chambers Road / E Center Avenue (Signalized)		
Eastbound Left, Through and Right	A (10.0)	B (10.6)
Westbound Left, Through and Right	E (73.1)	E (67.4)
Northbound Left	E (58.0)	F (96.2)
Northbound Through and Right	A (4.8)	E (67.9)
Southbound Left	A (4.7)	A (3.9)
Southbound Through and Right	A (9.0)	A (7.6)
	A (5.1)	A (6.6)
E Center Avenue / S Granby Street (Stop-Controlled)		
Eastbound Left, Through and Right	A (7.3)	A (7.4)
Westbound Left, Through, and Right	A (7.4)	A (7.4)
Northbound Left, Through and Right	A (9.3)	A (9.2)
Southbound Left, Through, and Right	A (9.3)	A (9.6)
E Exposition Avenue / S Fraser Street (Stop Controlled)		
Eastbound Left and Through	A (7.9)	A (8.3)
Southbound Left and Right	A (9.4)	A (9.8)
S Chambers Road / E Gill Avenue (Stop-Controlled)		
Eastbound Right	B (11.0)	C (15.0)

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

Total Traffic Analysis Results Upon Development Build-Out

Table 7 illustrates how, by Year 2040 and upon development build-out, the signalized intersection of S Chambers Road with E Exposition Avenue shows an overall LOS B operation during the morning peak traffic hour and LOS C operation during the afternoon peak traffic hour. Compared to the background traffic analysis, the traffic generated by the proposed development is not expected to significantly change the operations of the study intersection.

Operating under stop-controlled conditions, the intersection of S Chambers Road with E Center Avenue is expected to have unacceptable turning movement operations along the minor approach during the morning peak traffic hour, and unacceptable turning movement operations along both the major and minor approaches during the afternoon peak traffic hour. Table 7 further shows how the overall intersection is projected to have morning peak traffic hour operations at LOS A and afternoon peak traffic hour operations at LOS B when operating under traffic signal control.

The stop-controlled, four-legged intersection of E Center Avenue with S Granby Street is expected to have turning movement operations at LOS A during both the morning and afternoon peak traffic hours.

The stop-controlled, T-intersection of E Exposition Avenue with S Fraser Street is projected to have turning movement operations at LOS A during both the morning and afternoon peak traffic hours.

The stop-controlled, right-in/right-out intersection of S Chambers Road and E Gill Avenue anticipates turning movement operations at LOS B during the morning peak traffic hour and LOS C during the afternoon peak traffic hour.

Total Traffic Auxiliary Lane Analysis

As with background traffic conditions, auxiliary lanes along S Chambers Road at the E Center Avenue and E Gill Avenue intersections, using Year 2024 and 2040 total traffic volumes, are to be based on CDOT's State Highway Access Code (SHAC).

It is reemphasized that the City's supporting criteria does not identify a CDOT access category for S Chambers Avenue. In reference to the roadway's classification discussed in Section I, projected traffic volumes illustrated in Figures 7 and 8, and connection across the City of Aurora against Section 3.11 of CDOT's SHAC, S Chambers Road is assumed to have a CDOT access category of a Non-Rural Arterial (NR-B).

Considering development build-out, an evaluation of auxiliary lane requirements, pursuant to Section 3.11(4)(b) of CDOT's SHAC, reveals that southbound right turn deceleration lanes along S Chambers Road at E Center Avenue and E Gill Avenue are not required since the projected southbound right turn volumes remain below CDOT's threshold of 50 vehicles per peak hour.

Queue Length Analysis

Queue lengths for the study intersections were analyzed using Year 2040 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.

Table 8 summarizes the 95th percentile queue results in comparison to the projected storage requirements for turn movements within study area for Year 2040.

Table 8 – Turn Lane Queues and Storage Requirements – Total Traffic – Year 2040

Intersection	Turn Movement		Existing Turn Lane Length (feet)	AM Peak Hour	PM Peak Hour	CDOT SHAC Turn Lane Length (feet)	Recommended Turn Lane Length (feet)
				95th Percentile Queue Length (feet)	95th Percentile Queue Length (feet)		
Signalized Intersections							
S Chambers Road / E Exposition Avenue	EB	L,T	-	167'	368'	-	-
		R	150'	39'	199'	200'	200'
	WB	L,T,R	-	137'	86'	-	-
		L	265'	77'	328'	200'	330'
	NB	T,R	-	249'	250'	-	-
		L	120'	49'	189'	100'	189'
	SB	T	-	259'	730'	-	-
		R	-	64'	147'	200'	150'
S Chambers Road / E Center Avenue	EB	L,T,R	-	175'	164'	-	-
	WB	L,T,R	-	152'	227'	-	-
	NB	L	300'	14'	110'	40'	300'
		T,R	-	162'	135'	-	-
	SB	L	110'	21'	22'	40'	150'
		T,R	-	143'	302'	-	-
Stop-Controlled Intersections							
S Chambers Road / E Center Avenue	EB	L,T,R	-	148'	408'	-	-
	WB	L,T,R	-	198'	440'	-	-
	NB	L	300'	8'	78'	40'	300'
		T,R	-	0'	0'	-	-
	SB	L	110'	3'	5'	40'	150'
		T,R	-	0'	0'	-	-
E Center Avenue / S Granby Street	EB	L,T,R	-	0'	0'	-	-
	WB	L,T,R	-	0'	0'	-	-
	NB	L,T,R	-	8'	5'	-	-
	SB	L,T,R	-	0'	3'	-	-
E Exposition Avenue / S Fraser Street	EB	L,T	-	0'	3'	-	-
	WB	T,R	-	0'	0'	-	-
	SB	L,R	-	3'	3'	-	-
S Chambers Road / E Gill Avenue	EB	R	-	8'	8'	-	-
	NB	T	-	0'	0'	-	-
	SB	T,R	-	0'	0'	-	-

Note: Turn Lane Length does not include taper length.

Key: * = SYNCHRO did not provide queuing data as queue length is assumed to be significant.

As Table 8 shows, all turn lane lengths at the study intersections have sufficient storage to accommodate future traffic volumes. However, at the S Chambers Road with E Exposition Avenue intersection, the northbound and southbound left turning queues may exceed existing storage lane lengths by approximately two to three vehicles. While vehicle queuing for the southbound left turning movement is unaffected by the proposed development, the northbound left turning movement may need to be lengthened approximately 65 feet to accommodate projected 95th percentile queuing.

It is to be noted that recommended turn lane lengths illustrated in Table 8 represent either existing storage lane lengths, CDOT's SHAC minimum requirements, or the City's minimum requirements illustrated in standard detail S2.1 from the City's Specifications.

Considering how vehicle queues shown in Appendix C are a result of conservative analyses and assumptions used throughout this study, City Staff should monitor this intersection further as area development occurs to determine if intersection improvements are needed.

Additional Analysis – Roundabout Consideration

As a supplement to previous MUTCD signal warrant analyses performed in Sections III and V, roundabout control was considered for the intersection of S Chambers Road with E Center Avenue.

An evaluation of roundabout design criteria, pursuant to Section 4.04.6 of the City's Specifications, reveals that roundabout control for the study intersection of S Chambers Road and E Center Avenue may not be ideal as not all design criteria are met. For example, the City's Specifications describe how roundabouts shall be limited to one or two approach lanes. With S Chambers Road currently providing six through lanes with a 40 MPH posted speed limit, and considering the footprint needed to accommodate such parameters, roundabout control is not believed to be appropriate or feasible. As such, an assessment of roundabout control was not included in this analysis.

Pedestrian Circulation & Safety Analysis

In accordance with Section 3.5.4 of the City's Traffic Impact Study Guidelines⁶, an assessment to pedestrian connectivity and safety was considered.

The proposed development would accommodate pedestrians and bicyclists with the following improvements:

- Detached sidewalks along S Chambers Road, E Exposition Avenue, E Center Avenue, S Fraser Street, and E Gill Avenue along the perimeters of the buildings.
- Pedestrian crosswalks across S Fraser Street, E Gill Avenue, and internal site access drives.
- Maintain bicycle lane along E Exposition Avenue adjacent to the property.
- Off-street parking garage enclosed by the proposed building structures.
- Bicycle storage with repair room.

Assuming the development's site plan was designed per the City's Specifications, and pursuant to the Federal Highway Administration's (FHWA) Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations⁷, pedestrian safety is not expected to be of concern. Moreover, traffic calming and pedestrian crossing treatments are not applicable, and traffic calming is not recommended for the proposed conditions.

⁶ Traffic Impact Study Guidelines, City of Aurora, Public Works Department, June 2015.

⁷ Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations, Federal Highway Administration, July 2018.

VII. Conclusion

This traffic impact study is provided as a planning document and addressed the capacity, geometric, and control requirements associated with the development entitled City Center 7. This proposed development consists of a multifamily residential community. The development is located on the northwest corner of S Chambers Road and E Exposition Avenue in Aurora, Colorado.

The study area examined in this analysis encompassed the S Chambers Road intersections with E Exposition Avenue and E Center Avenue and included proposed site access drives.

Analysis was conducted for critical AM Peak Hour and PM Peak Hour traffic operations for existing traffic conditions, Year 2024 and Year 2040 background traffic conditions, and Year 2024 and Year 2040 total traffic conditions.

Analysis of existing traffic conditions indicates that the signalized intersection of S Chambers Road with E Exposition Avenue has overall operations at LOS B during both the morning and afternoon peak traffic hours. The stop-controlled intersection of S Chambers Road with E Center Avenue has turn movement operations at or better than LOS C during the morning peak traffic hour and LOS D or better during the afternoon peak traffic hour. Exceptions would include the eastbound and westbound shared turning movements which operate at LOS F during the PM peak traffic hour. The LOS F operations are attributed to the through traffic volume along E Chambers Road and the stop-controlled nature of the intersection.

Without the proposed development, Year 2024 background operational analysis shows that the signalized intersection of S Chambers Road with E Exposition Avenue has overall operations at LOS B during both the morning and afternoon peak traffic hours. The stop-controlled intersection of S Chambers Road with E Center Drive experiences LOS D turning movement operations, or better, during the morning peak traffic hour and LOS B turning movements during the afternoon peak traffic hour. Exceptions would include the eastbound and westbound shared turning movements and the northbound left turning movement, which have turning movement operations at LOS F during the afternoon peak traffic hour. The LOS F operations are attributed to the through traffic volume along S Chambers Road and the stop-controlled nature of the intersection. Although traffic volumes do not indicate a traffic signal is warranted, overall LOS A operations can be achieved when operating under traffic signal control. The stop-controlled intersection of E Center Avenue with S Granby Street is expected to have turning movement operations at LOS A during both peak traffic periods.

By Year 2040 and without the proposed development, the study intersection of S Chambers Road with E Exposition Avenue experiences LOS B operations during the morning peak traffic hour and LOS C operations during the afternoon peak traffic hour. Under stop-controlled conditions, the intersection of S Chambers Road with E Center Avenue projects poor turning movement operations for the minor leg approach during either peak traffic hour, and poor operations for the northbound left movement along S Chambers Road during the afternoon peak traffic hour. Table 3 indicates that an overall LOS A can be achieved during either peak traffic hour if the intersection improved to traffic signal control. The stop-controlled intersection of E Center Avenue with S Granby Street anticipates turning movement operations at LOS A during both peak traffic hours.

Analysis of future traffic conditions indicates that the addition of site-generated traffic is expected to create no negative impact to traffic operations for the existing and surrounding roadway system upon roadway and intersection control improvements assumed within this analysis. With all conservative assumptions defined in this analysis, the study intersections are projected to operate at future levels of service comparable to Year 2040 background traffic conditions. Proposed site access drives have long-term operations at LOS B or better during peak traffic periods and upon build-out.

APPENDIX A

**Traffic Count Data
Signal Timing Information**



(303) 216-2439
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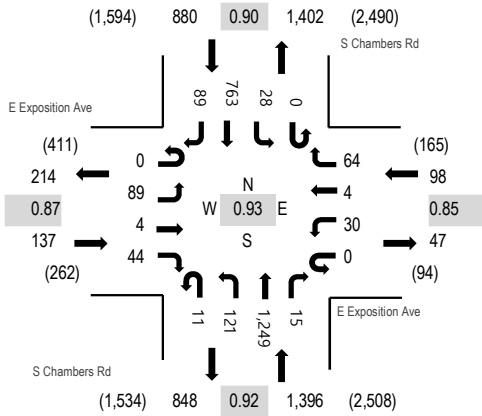
Location: 1 S Chambers Rd & E Exposition Ave AM

Date: Tuesday, April 26, 2022

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

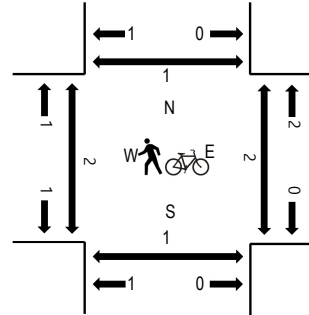
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	E Exposition Ave Eastbound				E Exposition Ave Westbound				S Chambers Rd Northbound				S Chambers 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	10	1	7	0	6	1	9	4	23	269	1	0	5	99	11	446	2,371	0	0	1	1
7:15 AM	0	22	0	11	0	8	2	15	1	22	319	2	0	4	165	9	580	2,511	0	2	0	1
7:30 AM	0	24	2	7	0	2	1	19	3	29	327	4	0	9	216	26	669	2,491	1	0	0	0
7:45 AM	0	25	1	14	0	13	1	15	4	46	324	4	0	10	195	24	676	2,380	0	0	1	0
8:00 AM	0	18	1	12	0	7	0	15	3	24	279	5	0	5	187	30	586	2,158	1	0	0	0
8:15 AM	0	23	2	17	0	13	5	8	1	28	257	1	1	11	169	24	560		0	4	0	0
8:30 AM	0	16	3	13	0	4	0	3	4	25	278	2	1	8	174	27	558		0	1	0	0
8:45 AM	0	14	2	17	0	9	2	7	2	20	192	5	0	6	147	31	454		0	1	0	0
Count Total	0	152	12	98	0	62	12	91	22	217	2,245	24	2	58	1,352	182	4,529		2	8	2	2
Peak Hour	0	89	4	44	0	30	4	64	11	121	1,249	15	0	28	763	89	2,511		2	2	1	1



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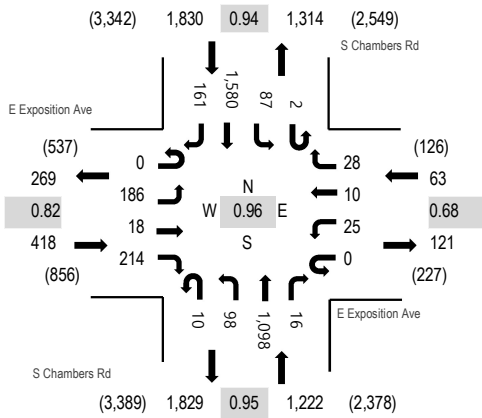
Location: 1 S Chambers Rd & E Exposition Ave PM

Date: Tuesday, April 26, 2022

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

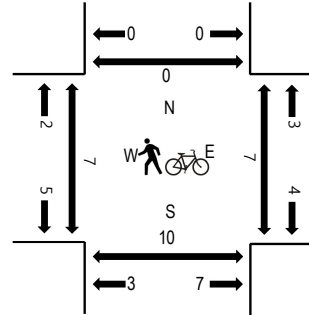
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	E Exposition Ave Eastbound				E Exposition Ave Westbound				S Chambers Rd Northbound				S Chambers 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	40	5	74	0	6	1	7	6	30	273	6	1	10	306	40	805	3,376	0	3	1	0
4:15 PM	0	62	11	72	0	5	5	5	3	14	241	6	0	14	366	48	852	3,494	2	2	3	2
4:30 PM	0	50	11	49	0	5	4	8	1	24	240	4	0	20	383	50	849	3,533	4	3	2	0
4:45 PM	0	48	2	50	0	7	1	5	1	21	289	3	1	29	373	40	870	3,483	1	1	0	0
5:00 PM	0	51	3	60	0	6	5	15	3	27	301	4	0	20	394	34	923	3,326	0	2	2	0
5:15 PM	0	37	2	55	0	7	0	0	5	26	268	5	1	18	430	37	891		1	1	6	0
5:30 PM	0	38	4	44	0	6	2	7	4	34	277	3	0	20	327	33	799		0	0	0	1
5:45 PM	0	44	7	37	0	6	2	11	7	21	228	3	1	17	291	38	713		0	6	1	0
Count Total	0	370	45	441	0	48	20	58	30	197	2,117	34	4	148	2,870	320	6,702		8	18	15	3
Peak Hour	0	186	18	214	0	25	10	28	10	98	1,098	16	2	87	1,580	161	3,533		6	7	10	0



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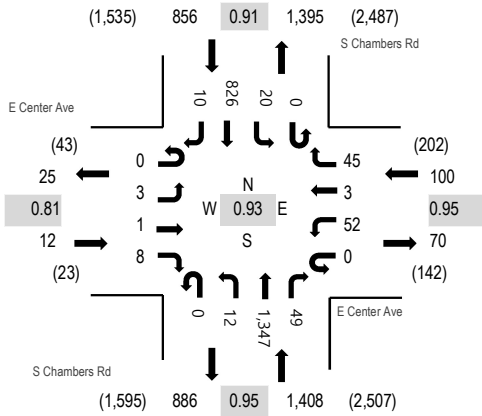
Location: 2 S Chambers Rd & E Center Ave AM

Date: Tuesday, April 26, 2022

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

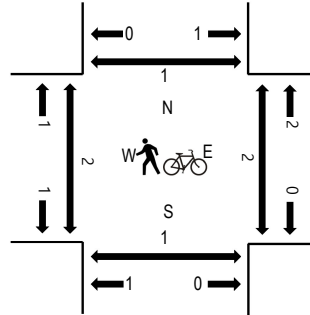
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	E Center Ave Eastbound				E Center Ave Westbound				S Chambers Rd Northbound				S Chambers 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	1	0	1	0	7	1	11	0	2	279	13	0	4	104	1	424	2,227	0	0	0	0
7:15 AM	0	1	1	2	0	10	0	15	0	5	335	15	0	7	171	0	562	2,376	0	0	1	0
7:30 AM	0	2	0	2	0	15	2	8	0	3	358	9	0	3	230	4	636	2,321	1	2	0	1
7:45 AM	0	0	0	3	0	13	0	14	0	2	344	11	0	4	213	1	605	2,226	0	0	0	0
8:00 AM	0	0	0	1	0	14	1	8	0	2	310	14	0	6	212	5	573	2,040	1	0	0	0
8:15 AM	0	1	0	2	0	17	0	11	0	3	270	15	0	7	179	2	507		0	3	0	0
8:30 AM	0	2	0	1	0	16	2	10	0	2	285	13	0	6	202	2	541		0	0	0	0
8:45 AM	0	1	0	2	0	13	1	13	0	0	208	9	0	5	165	2	419		1	0	0	0
Count Total	0	8	1	14	0	105	7	90	0	19	2,389	99	0	42	1,476	17	4,267		3	5	1	1
Peak Hour	0	3	1	8	0	52	3	45	0	12	1,347	49	0	20	826	10	2,376		2	2	1	1



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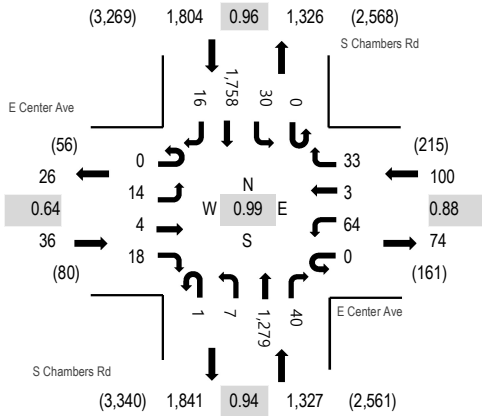
Location: 2 S Chambers Rd & E Center Ave PM

Date: Tuesday, April 26, 2022

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

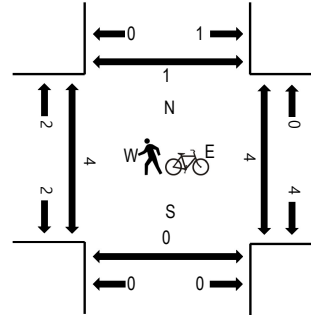
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	E Center Ave Eastbound				E Center Ave Westbound				S Chambers Rd Northbound				S Chambers Rd Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	3	2	7	0	15	1	11	0	3	307	14	1	8	345	4	721	3,098	0	2	0	0
4:15 PM	0	9	2	9	0	16	2	8	0	2	293	14	0	6	392	6	759	3,199	0	1	0	0
4:30 PM	0	2	0	4	0	10	0	13	0	1	300	7	0	9	445	7	798	3,267	3	2	0	0
4:45 PM	0	6	1	6	0	13	1	5	1	3	329	9	0	10	431	5	820	3,204	1	0	0	1
5:00 PM	0	3	1	6	0	18	1	6	0	2	340	16	0	5	424	0	822	3,027	0	0	0	0
5:15 PM	0	3	2	2	0	23	1	9	0	1	310	8	0	6	458	4	827		0	1	0	0
5:30 PM	0	1	2	4	0	14	0	14	0	2	314	8	0	9	363	4	735		0	0	0	1
5:45 PM	0	2	0	3	0	15	2	17	0	2	262	13	0	9	316	2	643		0	0	0	0
Count Total	0	29	10	41	0	124	8	83	1	16	2,455	89	1	62	3,174	32	6,125		4	6	0	2
Peak Hour	0	14	4	18	0	64	3	33	1	7	1,279	40	0	30	1,758	16	3,267		4	3	0	1

Site Code: 3
Station ID: 3
S CHAMBERS RD S.O. E CENTER AVE

Latitude: 0' 0.0000 Undefined

Start Time	26-Apr-22 Tue	NB	SB	Total
12:00 AM		41	61	102
01:00		39	43	82
02:00		57	41	98
03:00		121	39	160
04:00		352	60	412
05:00		805	119	924
06:00		1561	353	1914
07:00		1416	724	2140
08:00		968	818	1786
09:00		755	659	1414
10:00		796	702	1498
11:00		864	748	1612
12:00 PM		911	805	1716
01:00		1005	813	1818
02:00		1278	946	2224
03:00		1318	1379	2697
04:00		1368	1632	3000
05:00		1125	1582	2707
06:00		965	1016	1981
07:00		538	742	1280
08:00		454	536	990
09:00		292	380	672
10:00		148	267	415
11:00		54	203	257
Total		17231	14668	31899
Percent		54.0%	46.0%	
AM Peak	-	06:00	08:00	-
Vol.	-	1561	818	-
PM Peak	-	16:00	16:00	-
Vol.	-	1368	1632	-

Site Code: 3
Station ID: 3
S CHAMBERS RD S.O. E CENTER AVE

Latitude: 0' 0.0000 Undefined

Start Time	27-Apr-22 Wed	NB	SB	Total
12:00 AM		58	97	155
01:00		43	57	100
02:00		57	43	100
03:00		132	46	178
04:00		367	58	425
05:00		835	112	947
06:00		1603	326	1929
07:00		1343	739	2082
08:00		946	830	1776
09:00		763	662	1425
10:00		780	710	1490
11:00		979	725	1704
12:00 PM		889	779	1668
01:00		1063	818	1881
02:00		1180	922	2102
03:00		1280	1406	2686
04:00		1286	1529	2815
05:00		1082	1393	2475
06:00		815	1010	1825
07:00		602	749	1351
08:00		397	566	963
09:00		270	385	655
10:00		131	230	361
11:00		68	150	218
Total		16969	14342	31311
Percent		54.2%	45.8%	
AM Peak	-	06:00	08:00	-
Vol.	-	1603	830	-
PM Peak	-	16:00	16:00	-
Vol.	-	1286	1529	-

Site Code: 3
Station ID: 3
S CHAMBERS RD S.O. E CENTER AVE

Latitude: 0' 0.0000 Undefined

Start Time	28-Apr-22 Thu	NB	SB	Total
12:00 AM		46	66	112
01:00		42	45	87
02:00		56	42	98
03:00		123	41	164
04:00		355	61	416
05:00		814	122	936
06:00		1553	361	1914
07:00		1398	740	2138
08:00		956	837	1793
09:00		806	674	1480
10:00		805	718	1523
11:00		874	765	1639
12:00 PM		921	824	1745
01:00		1016	832	1848
02:00		1290	968	2258
03:00		1347	1411	2758
04:00		1369	1670	3039
05:00		1126	1619	2745
06:00		950	1039	1989
07:00		544	759	1303
08:00		458	548	1006
09:00		293	389	682
10:00		152	273	425
11:00		52	212	264
Total		17346	15016	32362
Percent		53.6%	46.4%	
AM Peak	-	06:00	08:00	-
Vol.	-	1553	837	-
PM Peak	-	16:00	16:00	-
Vol.	-	1369	1670	-
Grand Total		51546	44026	95572
Percent		53.9%	46.1%	
ADT		ADT 31,857	AADT 31,857	

Site Code: 4
Station ID: 4
E CENTER AVE W.O. S CHAMBERS RD

Latitude: 0' 0.0000 Undefined

Start Time	26-Apr-22 Tue	EB	WB	Total
12:00 AM		2	1	3
01:00		1	1	2
02:00		0	1	1
03:00		2	2	4
04:00		0	0	0
05:00		1	8	9
06:00		5	15	20
07:00		13	22	35
08:00		10	21	31
09:00		8	20	28
10:00		13	13	26
11:00		14	23	37
12:00 PM		19	27	46
01:00		14	21	35
02:00		13	25	38
03:00		27	30	57
04:00		50	33	83
05:00		30	23	53
06:00		24	27	51
07:00		10	18	28
08:00		19	16	35
09:00		14	16	30
10:00		6	6	12
11:00		9	4	13
Total		304	373	677
Percent		44.9%	55.1%	
AM Peak	-	11:00	11:00	-
Vol.	-	14	23	-
PM Peak	-	16:00	16:00	-
Vol.	-	50	33	-

Site Code: 4
Station ID: 4
E CENTER AVE W.O. S CHAMBERS RD
Latitude: 0' 0.0000 Undefined

Start Time	27-Apr-22 Wed	EB	WB	Total
12:00 AM		1	2	3
01:00		2	0	2
02:00		3	0	3
03:00		1	0	1
04:00		2	0	2
05:00		2	4	6
06:00		6	17	23
07:00		12	25	37
08:00		6	21	27
09:00		14	24	38
10:00		10	12	22
11:00		10	16	26
12:00 PM		19	18	37
01:00		21	18	39
02:00		20	22	42
03:00		15	27	42
04:00		25	21	46
05:00		26	27	53
06:00		20	25	45
07:00		13	19	32
08:00		13	12	25
09:00		17	6	23
10:00		4	2	6
11:00		4	3	7
Total		266	321	587
Percent		45.3%	54.7%	
AM Peak	-	09:00	07:00	-
Vol.	-	14	25	-
PM Peak	-	17:00	15:00	-
Vol.	-	26	27	-

Site Code: 4
Station ID: 4
E CENTER AVE W.O. S CHAMBERS RD

Latitude: 0' 0.0000 Undefined

Start Time	28-Apr-22 Thu	EB	WB	Total
12:00 AM		4	2	6
01:00		4	0	4
02:00		1	3	4
03:00		0	3	3
04:00		3	2	5
05:00		4	7	11
06:00		5	14	19
07:00		13	24	37
08:00		11	16	27
09:00		11	21	32
10:00		17	16	33
11:00		11	20	31
12:00 PM		23	31	54
01:00		16	22	38
02:00		11	22	33
03:00		26	30	56
04:00		50	31	81
05:00		33	21	54
06:00		25	27	52
07:00		15	23	38
08:00		14	16	30
09:00		8	16	24
10:00		7	5	12
11:00		9	6	15
Total		321	378	699
Percent		45.9%	54.1%	
AM Peak	-	10:00	07:00	-
Vol.	-	17	24	-
PM Peak	-	16:00	12:00	-
Vol.	-	50	31	-
Grand Total		891	1072	1963
Percent		45.4%	54.6%	
ADT		ADT 654	AADT 654	

SEPAC ECOM All Data

6/3/2019

11:54:19AM

Intersection Name: **ExpositionChamb10.2.24.150**

Intersection Alias: **201**

Access Data

1 :1200 Baud
3 :19200 Baud

Access Code: **9999**

Channel:

Address: **1**

Revision: **3.33e**

IP Address: **10.2.24.150**

Phase Initialization Data

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Initial	0-None	2-Red	0-None	1-Inact	1-Inact	2-Red	0-None	1-Inact	0-None	0-None	0-None	0-None	0-None	0-None	0-None	0-None

PHASE DATA

Vehical Basic Timings							Misc Timings				Pedestrian Timings				Alt				Actuated
Min						All	Green	Yellow	Offset	Offset	Bike	Bike		Ped	Alt	Ped	Flash	Ext	Rest in
Phase	Green	Passage	Max1	Max2	Yellow	Red	Delay	Delay	Time	Mode	Green	Psg	Walk	Clr	Walk	Clr	Walk	Ped Clr	Walk
1	0	0.0	0	0	4.0	1.0	0.0	0.0	0	0-Advance	0.0	0.0	0	0	0	0	No	0	No
2	10	3.0	35	0	4.0	2.0	0.0	0.0	0	0-Advance	0.0	0.0	5	12	0	0	No	0	No
3	0	0.0	0	0	4.0	1.0	0.0	0.0	0	0-Advance	0.0	0.0	0	0	0	0	No	0	No
4	8	2.0	25	0	4.0	2.0	0.0	0.0	0	0-Advance	0.0	0.0	5	26	0	0	No	0	No
5	3	1.5	15	0	3.0	1.0	0.0	0.0	0	0-Advance	0.0	0.0	0	0	0	0	No	0	No
6	10	3.0	35	0	4.0	2.0	0.0	0.0	0	0-Advance	0.0	0.0	5	17	0	0	No	0	No
7	0	0.0	0	0	4.0	1.0	0.0	0.0	0	0-Advance	0.0	0.0	0	0	0	0	No	0	No
8	5	2.0	25	0	4.0	2.0	0.0	0.0	0	0-Advance	0.0	0.0	5	27	0	0	No	0	No
9	0	0.0	0	0	3.0	0.0	0.0	0.0	0	0-Advance	0.0	0.0	0	0	0	0	No	0	No
10	0	0.0	0	0	3.0	0.0	0.0	0.0	0	0-Advance	0.0	0.0	0	0	0	0	No	0	No
11	0	0.0	0	0	3.0	0.0	0.0	0.0	0	0-Advance	0.0	0.0	0	0	0	0	No	0	No
12	0	0.0	0	0	3.0	0.0	0.0	0.0	0	0-Advance	0.0	0.0	0	0	0	0	No	0	No
13	0	0.0	0	0	3.0	0.0	0.0	0.0	0	0-Advance	0.0	0.0	0	0	0	0	No	0	No
14	0	0.0	0	0	3.0	0.0	0.0	0.0	0	0-Advance	0.0	0.0	0	0	0	0	No	0	No
15	0	0.0	0	0	3.0	0.0	0.0	0.0	0	0-Advance	0.0	0.0	0	0	0	0	No	0	No
16	0	0.0	0	0	3.0	0.0	0.0	0.0	0	0-Advance	0.0	0.0	0	0	0	0	No	0	No

Vehicle Density Timings							General Control				Miscellaneous					Special Sequence		
Ph.	Added	Max	Time	Car	Time	Min	Non-Act	Veh	Ped	Recall	Non	Dual	Last	Condit	No	Omit	Minus	Omit
	Initial	Initial	B4	B4	To	Gap	Response	Recall	Recall	Delay	Lock	Entry	Car	Service	Simu		Yel	Call
1	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0
2	0.0	0	0	0	0	0.0	None	Max	None	0	No	Yes	No	No	No	0	0	0
3	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0
4	0.0	0	0	0	0	0.0	None	None	None	0	Yes	Yes	No	No	No	0	0	0
5	0.0	0	0	0	0	0.0	None	None	None	0	Yes	No	No	No	No	2	0	0
6	0.0	0	0	0	0	0.0	None	Max	None	0	No	Yes	No	No	No	0	0	0
7	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0
8	0.0	0	0	0	0	0.0	None	None	None	0	Yes	Yes	No	No	No	0	0	0
9	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0
10	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0
11	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0
12	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0
13	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0
14	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0

15	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0
16	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0

Vehical Detector Phase Assignment						Pedestrian Detector						Special Detector Phase Assignment					
	Assign Phase	Mode	Switch Phase	Extend	Delay		Assign Phase	Mode	Switch Phase	Extend	Delay		Assign Phase	Mode	Switch Phase	Extend	Delay
Veh Det:1	5	Veh	0	0.0	0	Ped Det:1	2	Ped	0	0.0	0	: Default Data					
Veh Det:2	8	Veh	0	0.0	0	Ped Det:2	4	Ped	0	0.0	0						
Veh Det:3	0	Veh	0	0.0	2	Ped Det:3	6	Ped	0	0.0	0						
Veh Det:17	4	Veh	0	0.0	0	Ped Det:4	8	Ped	0	0.0	0						
Veh Det:18	4	Veh	0	0.0	8												
Veh Det:19	4	Veh	0	0.0	0												

Unit Data

General Control

Startup Time:	6 sec		Input	Output
Startup State:	All Red	Ring	Respons	Selection
Red Revert:	4.0 sec	1	Ring 1	Ring 1
Auto Ped Clr:	No	2	Ring 2	Ring 2
Stop T Reset:	No	3	None	None
Alt Sequence:	0	4	None	None
Special Seq:	0-Standard			
I/O Modes:				
ABC Input(Entry) Modes: 0		D Input(Entry) Modes: 2		
ABC Output(O/STS) Modes: 0		D Output(O/STS) Modes: 0		

Remote Flash

Test A = Flash			Default Data - No Flash
Phase	Entry	Exit	
Default Data - No Flash			

Overlaps

Overlaps															
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Phase(s)															

Start Green

Overlaps															
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Phase(s)															

Ring

Ring			Phase(s)																
Phase	Ring	Next Phase	Concurrent Phases	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
2	1	3		1	2	3	4	1	1	3	3	9	10	11	12	13	14	15	16
4	1	1		5	5	7	7	2	2	4	4								
5	2	6		6	6	8	8	5	6	7	8								
6	2	7																	
8	2	5																	

Alternate Sequences

	Ph. Pair 1	Ph. Pair 2	Ph. Pair 3	Ph. Pair 4
Alt. Seq. 1	1/2			
Alt. Seq. 2	3/4			
Alt. Seq. 3	1/2	3/4		
Alt. Seq. 4	5/6			
Alt. Seq. 5	1/2	5/6		
Alt. Seq. 6	3/4	5/6		
Alt. Seq. 7	1/2	3/4	5/6	
Alt. Seq. 8	7/8			
Alt. Seq. 9	1/2	7/8		
Alt. Seq. 10	3/4	7/8		
Alt. Seq. 11	1/2	3/4	7/8	
Alt. Seq. 12	5/6	7/8		
Alt. Seq. 13	1/2	5/6	7/8	
Alt. Seq. 14	3/4	5/6	7/8	
Alt. Seq. 15	1/2	3/4	5/6	7/8

Port 1 Data

BIU Addr	Port Status	Basic Det	Message 40
0	Used	No	No
1	Used	No	No
8	Used	No	No
9	Used	No	No
16	Used	No	No
18	Used	No	No

Signal Driver Ouput

Channel	Control	Hardware Pins
1	1 - Veh Phase 1	1 - Phase 1 RYG
2	2 - Veh Phase 2	2 - Phase 2 RYG
3	3 - Veh Phase 3	3 - Phase 3 RYG
4	4 - Veh Phase 4	4 - Phase 4 RYG
5	5 - Veh Phase 5	5 - Phase 5 RYG
6	6 - Veh Phase 6	6 - Phase 6 RYG
7	7 - Veh Phase 7	7 - Phase 7 RYG
8	8 - Veh Phase 8	8 - Phase 8 RYG
9	18 - Ped Phase 2	10 - Phase 2 DPW
10	20 - Ped Phase 4	12 - Phase 4 DPW
11	22 - Ped Phase 6	14 - Phase 6 DPW
12	24 - Ped Phase 8	16 - Phase 8 DPW
13	0 - None	17 - Overlap A RYG
14	0 - None	18 - Overlap B RYG
15	0 - None	19 - Overlap C RYG
16	0 - None	20 - Overlap D RYG
17	0 - None	9 - Phase 1 DPW
18	0 - None	11 - Phase 3 DPW
19	0 - None	13 - Phase 5 DPW
20	0 - None	15 - Phase 7 DPW

Coordination Data

General Coordination Data

Operation Mode: 1=Auto

Coordination Mode: 0=Permissive

Maximun Mode: 0=Inhibit

Correction Mode: 3=Short Way Plus

Offset Mode: 1=End Grn

Force Mode: 0=Plan

Max Dwell Time: 0

Yield Period: 0

Manual Dial: 1

Manual Split: 1

Manual Offset: 1

Dial/Split

Cycle

1/1

140

2/1

120

2/2

120

3/1

135

Split Times and Phase Modes

Dial 1 / Split 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
2	101	1=Coordinate	4	34	0=Actuated	5	20	0=Actuated	6	81	1=Coordinate
8	34	0=Actuated									

Dial 2 / Split 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
2	76	1=Coordinate	4	44	0=Actuated	5	24	0=Actuated	6	52	1=Coordinate
8	44	0=Actuated									

Dial 2 / Split 2

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
2	79	1=Coordinate	4	41	0=Actuated	5	26	0=Actuated	6	53	1=Coordinate
8	41	0=Actuated									

Dial 3 / Split 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
2	92	1=Coordinate	4	43	0=Actuated	5	22	0=Actuated	6	70	1=Coordinate
8	43	0=Actuated									

Traffic Plan Data					
Plan: 1/1/1	Offset Time: 45 Mode: 0=Normal	Alternat Sequence: 0 Special Function: 0	Rg 2 Lag Time: 0 Correction Mode: 0=No	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0
Plan: 2/1/1	Offset Time: 24 Mode: 0=Normal	Alternat Sequence: 0 Special Function: 0	Rg 2 Lag Time: 0 Correction Mode: 0=No	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0
Plan: 2/2/1	Offset Time: 116 Mode: 0=Normal	Alternat Sequence: 0 Special Function: 0	Rg 2 Lag Time: 0 Correction Mode: 0=No	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0
Plan: 3/1/1	Offset Time: 61 Mode: 0=Normal	Alternat Sequence: 0 Special Function: 0	Rg 2 Lag Time: 0 Correction Mode: 0=No	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0

Local TBC Data						<div><div>Source</div><div>Equate Days</div></div>							
Start of Daylight Saving	Month: 3	Week: 2	Cycle Zero Reference	Hours: 24	Min: 0	Day	1	2	3	4	5	6	7
End of Daylight Saving	Month: 11	Week: 1				2	3	4	5	6	0	0	0

Traffic Data					PHASE FUNCTION															
<u>Event</u>	<u>Day</u>	<u>Time</u>	<u>D/S/O</u>	<u>flash</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
1	1	8:30	2/2/1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	1	20:30	0/0/4		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	2	6:0	1/1/1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	2	9:0	2/1/1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	2	15:0	3/1/1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	2	19:0	2/1/1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	2	22:0	0/0/4		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	7	7:30	2/2/1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	7	22:0	0/0/4		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	10	7:30	2/2/1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	10	22:0	0/0/4		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

AUX. Events																		
				Aux Ouputs			Det. Diag.	Det. Rpt.	Det. Mult100	Special Function Outputs								
Event	Program Day	Hour	Min.	1	2	3	D1	D2	D3	Dimming	1	2	3	4	5	6	7	8
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Default Data - No Special Day(s) or Week(s) Programmed

Special Functions																
Function	<u>SF1</u>	<u>SF2</u>	<u>SF3</u>	<u>SF4</u>	<u>SF5</u>	<u>SF6</u>	<u>SF7</u>	<u>SF8</u>	<u>SF9</u>	<u>SF10</u>	<u>SF11</u>	<u>SF12</u>	<u>SF13</u>	<u>SF14</u>	<u>SF15</u>	SF16
Special Function 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Special Function 2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Special Function 3	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Special Function 4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Special Function 5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Special Function 6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Special Function 7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Special Function 8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<u>Phase Function</u>																
	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<u>Phase Omit</u>																
	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<u>Ped Omit</u>																
	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<u>Veh Det Coord ReSvc</u>																
	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<u>Function Phase Recall</u>																
	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<u>Phase Min Recall</u>																
	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<u>Veh Det Ped Recall</u>																
	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<u>Veh Det Bike Recall</u>																
	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<u>Vehicle Function</u>																
<u>Veh Det Switch Omit</u>																
	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<u>Veh Det Switch Now</u>																
	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<u>Veh Det Switch Also</u>																
	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<u>Overlap Function</u>																
	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Dimming Data																
Default Data - No Dimming Programmed																

Lane Definition																
Lanes	Name	Green Inbound	Yellow Inbound	Red Inbound	Green Outbound	Yellow Outbound										

Default Data - Lane Definition																
<div> <div>program</div> <div>day</div> </div> <div> <div>program</div> <div>hour</div> </div> <div> <div>program</div> <div>minute</div> </div> <div> <div>LanePhFun</div> </div>																

Preemption Data

General Preemption Data											
Flash > Preempt				Preempt 2 = Preempt 3				Preempt 4 = Preempt 5			
Preempt 1 = Preempt 2				Preempt 3 = Preempt 4				Preempt 5 = Preempt 6			

Preempt	NLock	Link to Pmpt	Preempt Timers			Max Call	Lock-Out	De Boun ce	Gate Ext	Min G W	Select Ped			Track				Dwell Green	Return Ped			Sel Ret Mode
			Del	Ext	Dur						Clear	Yel	Red	Grn	Ped	Yel	Red		Clear	Yel	Red	
1	N	0	0	0	5	135	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	5	0	0.0	0.0	
2	N	0	0	0	5	135	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	5	0	0.0	0.0	
3	N	0	0	0	0	0	0	0.0	0	0	8	4.0	2.0	10	8	4.0	2.0	10	8	4.0	2.0	
4	N	0	0	0	0	0	0	0.0	0	0	8	4.0	2.0	10	8	4.0	2.0	10	8	4.0	2.0	
5	N	0	0	0	0	0	0	0.0	0	0	8	4.0	2.0	10	8	4.0	2.0	10	8	4.0	2.0	
6	N	0	0	0	0	0	0	0.0	0	0	8	4.0	2.0	10	8	4.0	2.0	10	8	4.0	2.0	

Preempt 1			Preempt 2			Preempt 3			Preempt 4			Preempt 5			Preempt 6		
Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls
2	Yes	No	4	Yes	No	1	No	Yes	1	No	Yes	1	No	Yes	1	No	Yes
6	Yes	No	8	Yes	No	2	No	Yes	2	No	Yes	2	No	Yes	2	No	Yes
						3	No	Yes	3	No	Yes	3	No	Yes	3	No	Yes
						4	No	Yes	4	No	Yes	4	No	Yes	4	No	Yes
						5	No	Yes	5	No	Yes	5	No	Yes	5	No	Yes
						6	No	Yes	6	No	Yes	6	No	Yes	6	No	Yes
						7	No	Yes	7	No	Yes	7	No	Yes	7	No	Yes
						8	No	Yes	8	No	Yes	8	No	Yes	8	No	Yes

Priority Timers																	
Prio rity	Non-Locking	Del ay	Ext end	Free Dial	Free Split	Min Green	No Lock out	Lock out A	Lock out B	Max Green	Pre-Green	Recall	Excl-co Phase Svc.	Transit Overlap			
														Signal Type		Blankout	

Priority Detector Channels

Priority
Detector

Priority Fixed Phases

Priority

Legend: 0 1
CO-PHASE FALSE TRUE
QJ-PHASE

Priority

Priority Bank :

Level

Partial Priority	Full Priority	Recovery
Alt Seq	Freq. Override	Method
Alt Seq Enabled	Ped skip	Return
Min Walk	Force full Priority	PedWait
	Frequency	PedOverride
	Freq. Level	

Codes:	0	X
	FALSE	TRUE

<div>Priority :</div> <div>Priority Bank : Queue Phase Detector Time</div> <div>Default data</div>	<div>Priority :</div> <div>Priority Bank : Queue Phase Detector Time</div> <div>Default data</div>	<div>Priority :</div> <div>Priority Bank : Queue Phase Detector Time</div> <div>Default data</div>
<div>Priority :</div> <div>Priority Bank : Queue Phase Detector Time</div> <div>Default data</div>	<div>Priority :</div> <div>Priority Bank : Queue Phase Detector Time</div> <div>Default data</div>	<div>Priority :</div> <div>Priority Bank : Queue Phase Detector Time</div> <div>Default data</div>

<div>Priority :</div> <div>Bank Detector PE 1A 2A 3A 4A 5A 6A B</div> <div>Default Data</div>	<div>Priority :</div> <div>Bank Detector PE 1A 2A 3A 4A 5A 6A B</div> <div>Default Data</div>
<div>Priority :</div> <div>Bank Detector PE 1A 2A 3A 4A 5A 6A B</div> <div>Default Data</div>	<div>Priority :</div> <div>Bank Detector PE 1A 2A 3A 4A 5A 6A B</div> <div>Default Data</div>
<div>Priority :</div> <div>Bank Detector PE 1A 2A 3A 4A 5A 6A B</div> <div>Default Data</div>	<div>Priority :</div> <div>Bank Detector PE 1A 2A 3A 4A 5A 6A B</div> <div>Default Data</div>

Preempt 1

Vehical Phases				Pedestrian Phases				Overlaps				
Ph.	Track	Dwell	Cycle	Ph	Track	Dwell	Cycle	Ovlp	Track	Dwell	Cycle	Trail Grn
2	Red	Green	No	Default Data				Default Data				
5	Red	Green	No									

Preempt 2

Vehical Phases				Pedestrian Phases				Overlaps				
Ph.	Track	Dwell	Cycle	Ph.	Track	Dwell	Cycle	Ovlp.	Track	Dwell	Cycle	Trail Grn
2	Red	Green	No	Default Data				Default Data				
6	Red	Green	No									

Preempt 3

Vehical Phases				Pedestrian Phases				Overlaps				
Ph.	Track	Dwell	Cycle	Ph.	Track	Dwell	Cycle	Ovlp.	Track	Dwell	Cycle	Trail Grn
Default Data				Default Data				Default Data				

Preempt 4

Vehical Phases				Pedestrian Phases				Overlaps				
Ph.	Track	Dwell	Cycle	Ph.	Track	Dwell	Cycle	Ovlp.	Track	Dwell	Cycle	Trail Grn
Default Data				Default Data				Default Data				

Preempt 5

Vehical Phases				Pedestrian Phases				Overlaps				
Ph.	Track	Dwell	Cycle	Ph.	Track	Dwell	Cycle	Ovlp.	Track	Dwell	Cycle	Trail Grn
Default Data				Default Data				Default Data				

Preempt 6

Vehical Phases			Pedestrian Phases			Overlaps						
Ph.	Track	Dwell	Cycle	Ph.	Track	Dwell	Cycle	Ovlp.	Track	Dwell	Cycle	Trail Grn
Default Data			Default Data			Default Data						

System/Detectors Data

Local Critical Alarms

Local Free: No Cycle Failure: No Coord Failure: No Conflict Flash: Yes Remote Flash: Yes 1st Phone:

Local Fash: Yes Cycle Fault: Yes Coord Fault: Yes Preemption: Yes Voltage Monitor: Yes 2nd Phone:

Special Status 1: No Special Status 2: No Special Status 3: No Special Status 4: No Special Status 5: No Special Status 6: No

Traffic Responsive

System	Detector	Veh/	Average	Occupancy	Min	Queue 1	System	Weight	Queue 2	System	Weight	
Detector	Channel	Name	Hr	Time(mins)	Correction/10	Volume %	Detectors	Detectors	Factor	Detectors	Detectors	Factor

Default Data

Sample Interval: 0

Queue: 1

Input Selection: 0=Average

Detector Failed Level : 0

Queue: 2

Input Selection: 0=Average

Detector Failed Level : 0

Default Data

Queue:

Level Enter Leave Dial / Split / Offset

/ /

Default Data

Vehical Detector

Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count
1	45	0	0
2	45	0	0
3	45	0	0
4	45	0	0
5	45	0	0
6	45	0	0
7	45	0	0
8	45	0	0
9	45	0	0
10	45	0	0
11	45	0	0
12	45	0	0
13	45	0	0
14	45	0	0
15	45	0	0
16	45	0	0
17	45	0	0
18	45	0	0
19	45	0	0
20	45	0	0
21	45	0	0
22	45	0	0
23	45	0	0
24	45	0	0
25	45	0	0
26	45	0	0
27	45	0	0
28	45	0	0
29	45	0	0
30	45	0	0
31	45	0	0
32	45	0	0
33	45	0	0
34	45	0	0
35	45	0	0
36	45	0	0
37	45	0	0
38	45	0	0
39	45	0	0
40	45	0	0
41	45	0	0
42	45	0	0
43	45	0	0
44	45	0	0
45	45	0	0
46	45	0	0
47	45	0	0
48	45	0	0
49	45	0	0
50	45	0	0
51	45	0	0
52	45	0	0
53	45	0	0
54	45	0	0

Vehical Detector

Diagnostic Value 1

Default Data - No Diag 1 Values

Detector	Max Presence	No Activity	Erratic Count
1	45	0	0
2	45	0	0
3	45	0	0
4	45	0	0
5	45	0	0
6	45	0	0
7	45	0	0
8	45	0	0
9	45	0	0
10	45	0	0
11	45	0	0
12	45	0	0
13	45	0	0
14	45	0	0
15	45	0	0
16	45	0	0
17	45	0	0
18	45	0	0
19	45	0	0
20	45	0	0
21	45	0	0
22	45	0	0
23	45	0	0
24	45	0	0
25	45	0	0
26	45	0	0
27	45	0	0
28	45	0	0
29	45	0	0
30	45	0	0
31	45	0	0
32	45	0	0
33	45	0	0
34	45	0	0
35	45	0	0
36	45	0	0
37	45	0	0
38	45	0	0
39	45	0	0
40	45	0	0
41	45	0	0
42	45	0	0
43	45	0	0
44	45	0	0
45	45	0	0
46	45	0	0
47	45	0	0
48	45	0	0
49	45	0	0
50	45	0	0
51	45	0	0
52	45	0	0
53	45	0	0
54	45	0	0

Special Detector

Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count
1	45	0	0
2	45	0	0
3	45	0	0
4	45	0	0
5	45	0	0
6	45	0	0
7	45	0	0
8	45	0	0

55	45	0	0
56	45	0	0
57	45	0	0
58	45	0	0
59	45	0	0
60	45	0	0
61	45	0	0
62	45	0	0
63	45	0	0
64	45	0	0

Pedestrian Detector

Diagnostic Value 0			
Detector	Max Presence	No Activity	Erratic Count
1	45	0	0
2	45	0	0
3	45	0	0
4	45	0	0
5	45	0	0
6	45	0	0
7	45	0	0
8	45	0	0

Pedestrian Detector

Diagnostic Value 1			
Detector	Max Presence	No Activity	Erratic Count
Default Data - No Diag 1 Values			

Special Detector

Diagnostic Value 1			
Detector	Max Presence	No Activity	Erratic Count
Default Data - No Diag 1 Values			

Speed Trap Data

Speed Trap:

Measurement:

Detector 1 Detector_2 Distance :

Dial/Split/Offset

//

Default Data

Speed Trap Speed Trap

Low Treshold High Treshold

Default Data

Volume Detector Data

Report Interval 15

Volume Controller

Detector Detector

Number Channel

Default Data

APPENDIX B

Level of Service Definitions

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

Automobile Level of Service (LOS) for Signalized Intersections

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

LOS A

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

LOS B

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

LOS C

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

LOS D

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

LOS E

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

LOS F

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

Level of Service (LOS) for Unsignalized TWSC Intersections

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
























APPENDIX C

Capacity Worksheets

Timings
1: S Chambers Road & E Exposition Avenue

Existing Traffic Conditions

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (vph)	89	4	44	30	4	64	132	1249	15	28	763	89
Future Volume (vph)	89	4	44	30	4	64	132	1249	15	28	763	89
Satd. Flow (prot)	0	1777	1583	0	1673	0	1770	5075	0	1770	5004	0
Flt Permitted		0.582			0.826		0.274			0.185		
Satd. Flow (perm)	0	1084	1583	0	1403	0	510	5075	0	345	5004	0
Satd. Flow (RTOR)			57		64			3			24	
Lane Group Flow (vph)	0	101	48	0	107	0	143	1374	0	30	926	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	5.0	5.0		3.0	10.0		10.0	10.0	
Minimum Split (s)	14.0	14.0	14.0	11.0	11.0		7.0	16.0		16.0	16.0	
Total Split (s)	34.0	34.0	34.0	34.0	34.0		20.0	101.0		81.0	81.0	
Total Split (%)	25.2%	25.2%	25.2%	25.2%	25.2%		14.8%	74.8%		60.0%	60.0%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		4.0	6.0		6.0	6.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Recall Mode	None	None	None	None	None		None	C-Max		C-Max	C-Max	
Act Effct Green (s)		16.9	16.9		16.9		108.1	106.1		94.1	94.1	
Actuated g/C Ratio		0.13	0.13		0.13		0.80	0.79		0.70	0.70	
v/c Ratio		0.75	0.19		0.46		0.30	0.34		0.12	0.26	
Control Delay		87.3	11.0		29.5		5.1	4.9		10.3	8.2	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		87.3	11.0		29.5		5.1	4.9		10.3	8.2	
LOS		F	B		C		A	A		B	A	
Approach Delay		62.7			29.5			4.9			8.3	
Approach LOS		E			C			A			A	
Queue Length 50th (ft)		87	0		35		23	109		8	97	
Queue Length 95th (ft)		143	29		90		50	167		27	150	
Internal Link Dist (ft)		809			199			287			588	
Turn Bay Length (ft)			150				265			120		
Base Capacity (vph)		224	373		341		557	3990		240	3496	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.45	0.13		0.31		0.26	0.34		0.13	0.26	
Intersection Summary												
Cycle Length: 135												
Actuated Cycle Length: 135												
Offset: 45 (33%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 40												
Control Type: Actuated-Coordinated												

Timings 1: S Chambers Road & E Exposition Avenue

Existing Traffic Conditions
AM Peak Hour

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 10.2






Intersection LOS: B

Intersection Capacity Utilization 60.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: S Chambers Road & E Exposition Avenue






















 Ø2 (L) 101 s		 Ø4 34 s	
 Ø5 20 s	 Ø6 (R) 81 s	 Ø8 34 s	

HCM 6th Signalized Intersection Summary

1: S Chambers Road & E Exposition Avenue

Existing Traffic Conditions

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	4	44	30	4	64	132	1249	15	28	763	89
Future Volume (veh/h)	89	4	44	30	4	64	132	1249	15	28	763	89
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	97	4	48	33	4	70	143	1358	16	30	829	97
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	184	7	311	57	22	84	471	3720	44	296	2980	347
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.04	0.72	0.72	0.64	0.64	0.64
Sat Flow, veh/h	670	33	1585	115	111	428	1781	5202	61	395	4637	540
Grp Volume(v), veh/h	101	0	48	107	0	0	143	889	485	30	607	319
Grp Sat Flow(s),veh/h/ln	703	0	1585	655	0	0	1781	1702	1859	395	1702	1773
Q Serve(g_s), s	0.0	0.0	3.4	4.5	0.0	0.0	3.5	13.6	13.6	4.3	10.5	10.6
Cycle Q Clear(g_c), s	19.9	0.0	3.4	24.4	0.0	0.0	3.5	13.6	13.6	8.1	10.5	10.6
Prop In Lane	0.96		1.00	0.31		0.65	1.00		0.03	1.00		0.30
Lane Grp Cap(c), veh/h	190	0	311	163	0	0	471	2434	1330	296	2187	1139
V/C Ratio(X)	0.53	0.00	0.15	0.66	0.00	0.00	0.30	0.37	0.37	0.10	0.28	0.28
Avail Cap(c_a), veh/h	205	0	329	180	0	0	605	2434	1330	296	2187	1139
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.6	0.0	45.0	53.0	0.0	0.0	7.4	7.4	7.4	10.9	10.5	10.5
Incr Delay (d2), s/veh	2.3	0.0	0.2	7.3	0.0	0.0	0.4	0.4	0.8	0.7	0.3	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.0	1.4	3.9	0.0	0.0	1.3	4.5	5.1	0.4	3.8	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.9	0.0	45.2	60.2	0.0	0.0	7.7	7.8	8.2	11.5	10.8	11.1
LnGrp LOS	D	A	D	E	A	A	A	A	A	B	B	B
Approach Vol, veh/h		149			107			1517			956	
Approach Delay, s/veh		51.1			60.2			7.9			10.9	
Approach LOS		D			E			A			B	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		102.5		32.5	9.8	92.8		32.5				
Change Period (Y+Rc), s		6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s		95.0		28.0	16.0	75.0		28.0				
Max Q Clear Time (g_c+I1), s		15.6		21.9	5.5	12.6		26.4				
Green Ext Time (p_c), s		6.8		0.2	0.3	4.7		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			13.4									
HCM 6th LOS			B									

HCM 6th TWSC
2: S Chambers Road & E Center Avenue






















Existing Traffic Conditions
AM Peak Hour

Intersection												
Int Delay, s/veh		1.1										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↗ ↑↑↑			↗ ↑↑↑		
Traffic Vol, veh/h	3	1	8	52	3	45	12	1347	49	20	826	10
Future Vol, veh/h	3	1	8	52	3	45	12	1347	49	20	826	10
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	-	-	-	-	-	-	300	-	-	110	-	-
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	3	1	9	57	3	49	13	1464	53	22	898	11
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	1561	2491	455	1921	2470	759	909	0	0	1517	0	0
Stage 1	948	948	-	1517	1517	-	-	-	-	-	-	-
Stage 2	613	1543	-	404	953	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	*584	85	472	*289	*89	*606	433	-	-	*762	-	-
Stage 1	*216	338	-	*622	*591	-	-	-	-	-	-	-
Stage 2	*622	578	-	*544	*336	-	-	-	-	-	-	-
Platoon blocked, %	1	1		1	1	1		-	-	1	-	-
Mov Cap-1 Maneuver	*498	80	472	*268	*83	*606	433	-	-	*762	-	-
Mov Cap-2 Maneuver	*498	80	-	*268	*83	-	-	-	-	-	-	-
Stage 1	*210	328	-	*603	*573	-	-	-	-	-	-	-
Stage 2	*551	561	-	*517	*326	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	16.1		21.3			0.1			0.2			
HCM LOS	C		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	433	-	-	338	328	*762	-	-				
HCM Lane V/C Ratio	0.03	-	-	0.039	0.331	0.029	-	-				
HCM Control Delay (s)	13.6	-	-	16.1	21.3	9.9	-	-				
HCM Lane LOS	B	-	-	C	C	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.1	1.4	0.1	-	-				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined				*: All major volume in platoon				

Timings

1: S Chambers Road & E Exposition Avenue

Existing Traffic Conditions
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	186	18	214	25	10	28	108	1098	16	87	1580	161
Future Volume (vph)	186	18	214	25	10	28	108	1098	16	87	1580	161
Satd. Flow (prot)	0	1781	1583	0	1718	0	1770	5075	0	1770	5014	0
Flt Permitted		0.720			0.719		0.068			0.220		
Satd. Flow (perm)	0	1341	1583	0	1259	0	127	5075	0	410	5014	0
Satd. Flow (RTOR)			233		29			3			17	
Lane Group Flow (vph)	0	222	233	0	68	0	117	1210	0	95	1892	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	5.0	5.0		3.0	10.0		10.0	10.0	
Minimum Split (s)	14.0	14.0	14.0	11.0	11.0		7.0	16.0		16.0	16.0	
Total Split (s)	43.0	43.0	43.0	43.0	43.0		22.0	92.0		70.0	70.0	
Total Split (%)	31.9%	31.9%	31.9%	31.9%	31.9%		16.3%	68.1%		51.9%	51.9%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		4.0	6.0		6.0	6.0	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Recall Mode	None	None	None	None	None		None	C-Max		C-Max	C-Max	
Act Effct Green (s)		27.5	27.5		27.5		97.5	95.5		81.9	81.9	
Actuated g/C Ratio		0.20	0.20		0.20		0.72	0.71		0.61	0.61	
v/c Ratio		0.81	0.46		0.24		0.57	0.34		0.38	0.62	
Control Delay		72.9	7.7		27.6		24.4	8.5		22.9	19.2	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		72.9	7.7		27.6		24.4	8.5		22.9	19.2	
LOS		E	A		C		C	A		C	B	
Approach Delay		39.5			27.6			9.9			19.4	
Approach LOS		D			C			A			B	
Queue Length 50th (ft)		187	0		28		28	135		40	352	
Queue Length 95th (ft)		262	64		66		95	201		113	533	
Internal Link Dist (ft)		809			199			287			588	
Turn Bay Length (ft)			150				265			120		
Base Capacity (vph)		367	603		366		310	3589		248	3050	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.60	0.39		0.19		0.38	0.34		0.38	0.62	
Intersection Summary												
Cycle Length: 135												
Actuated Cycle Length: 135												
Offset: 61 (45%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 60												
Control Type: Actuated-Coordinated												

Timings 1: S Chambers Road & E Exposition Avenue

Existing Traffic Conditions
PM Peak Hour

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 18.7






Intersection LOS: B

Intersection Capacity Utilization 71.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: S Chambers Road & E Exposition Avenue






















 Ø2 (L) 92 s		 Ø4 43 s	
 Ø5 22 s	 Ø6 (R) 70 s	 Ø8 43 s	

HCM 6th Signalized Intersection Summary

1: S Chambers Road & E Exposition Avenue

Existing Traffic Conditions

PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	186	18	214	25	10	28	108	1098	16	87	1580	161
Future Volume (veh/h)	186	18	214	25	10	28	108	1098	16	87	1580	161
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	202	20	233	27	11	30	117	1193	17	95	1717	175
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	248	19	434	37	22	17	204	3304	47	297	2660	270
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.04	0.64	0.64	0.56	0.56	0.56
Sat Flow, veh/h	718	71	1585	0	79	63	1781	5187	74	462	4710	479
Grp Volume(v), veh/h	222	0	233	68	0	0	117	783	427	95	1240	652
Grp Sat Flow(s),veh/h/ln	789	0	1585	142	0	0	1781	1702	1857	462	1702	1784
Q Serve(g_s), s	0.0	0.0	16.9	0.0	0.0	0.0	3.6	14.6	14.6	16.5	33.6	33.9
Cycle Q Clear(g_c), s	37.0	0.0	16.9	37.0	0.0	0.0	3.6	14.6	14.6	21.4	33.6	33.9
Prop In Lane	0.91		1.00	0.40		0.44	1.00		0.04	1.00		0.27
Lane Grp Cap(c), veh/h	267	0	434	76	0	0	204	2169	1183	297	1923	1008
V/C Ratio(X)	0.83	0.00	0.54	0.89	0.00	0.00	0.57	0.36	0.36	0.32	0.64	0.65
Avail Cap(c_a), veh/h	267	0	434	76	0	0	366	2169	1183	297	1923	1008
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.5	0.0	41.7	47.2	0.0	0.0	19.6	11.5	11.5	18.9	20.1	20.2
Incr Delay (d2), s/veh	19.3	0.0	1.3	67.7	0.0	0.0	2.5	0.5	0.9	2.8	1.7	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.9	0.0	6.8	3.8	0.0	0.0	1.7	5.4	6.0	1.9	13.1	14.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.8	0.0	43.0	114.9	0.0	0.0	22.1	12.0	12.4	21.7	21.8	23.4
LnGrp LOS	E	A	D	F	A	A	C	B	B	C	C	C
Approach Vol, veh/h		455			68			1327			1987	
Approach Delay, s/veh		55.6			114.9			13.0			22.3	
Approach LOS		E			F			B			C	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		92.0		43.0	9.8	82.2		43.0				
Change Period (Y+Rc), s		6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s		86.0		37.0	18.0	64.0		37.0				
Max Q Clear Time (g_c+I1), s		16.6		39.0	5.6	35.9		39.0				
Green Ext Time (p_c), s		5.7		0.0	0.2	12.3		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			24.7									
HCM 6th LOS			C									

HCM 6th TWSC
2: S Chambers Road & E Center Avenue

Existing Traffic Conditions
PM Peak Hour

Intersection												
Int Delay, s/veh	14											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↗ ↑↑↑			↗ ↑↑↑		
Traffic Vol, veh/h	14	4	18	64	3	33	8	1279	40	30	1758	16
Future Vol, veh/h	14	4	18	64	3	33	8	1279	40	30	1758	16
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	-	-	-	-	-	-	300	-	-	110	-	-
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	15	4	20	70	3	36	9	1390	43	33	1911	17

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2562	3437	964	2262	3424	717	1928	0	0	1433	0	0
Stage 1	1986	1986	-	1430	1430	-	-	-	-	-	-	-
Stage 2	576	1451	-	832	1994	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	*70	10	219	*130	*10	*625	136	-	-	*786	-	-
Stage 1	*39	105	-	*641	*610	-	-	-	-	-	-	-
Stage 2	*641	595	-	*299	*104	-	-	-	-	-	-	-
Platoon blocked, %	1	1		1	1	1		-	-	1	-	-
Mov Cap-1 Maneuver	*44	9	219	*~ 68	*9	*625	136	-	-	*786	-	-
Mov Cap-2 Maneuver	*44	9	-	*~ 68	*9	-	-	-	-	-	-	-
Stage 1	*36	101	-	*599	*570	-	-	-	-	-	-	-
Stage 2	*561	556	-	*250	*100	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	254.7		\$ 357.9		0.2		0.2	
HCM LOS	F		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	136	-	-	43	75	*786	-	-
HCM Lane V/C Ratio	0.064	-	-	0.91	1.449	0.041	-	-
HCM Control Delay (s)	33.3	-	-	254.7	\$ 357.9	9.8	-	-
HCM Lane LOS	D	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	3.6	8.8	0.1	-	-






















Notes			
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Timings

1: S Chambers Road & E Exposition Avenue

Background Traffic Conditions

Year 2024 - AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	91	4	49	31	4	65	144	1315	15	29	841	94
Future Volume (vph)	91	4	49	31	4	65	144	1315	15	29	841	94
Satd. Flow (prot)	0	1777	1583	0	1673	0	1770	5075	0	1770	5085	1583
Flt Permitted		0.580			0.818		0.277			0.172		
Satd. Flow (perm)	0	1080	1583	0	1390	0	516	5075	0	320	5085	1583
Satd. Flow (RTOR)			57		63			3				84
Lane Group Flow (vph)	0	103	53	0	109	0	157	1445	0	32	914	102
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	5.0	5.0		3.0	10.0		10.0	10.0	10.0
Minimum Split (s)	14.0	14.0	14.0	11.0	11.0		7.0	16.0		16.0	16.0	16.0
Total Split (s)	34.0	34.0	34.0	34.0	34.0		20.0	101.0		81.0	81.0	81.0
Total Split (%)	25.2%	25.2%	25.2%	25.2%	25.2%		14.8%	74.8%		60.0%	60.0%	60.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	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		4.0	6.0		6.0	6.0	6.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max		C-Max	C-Max	C-Max
Act Effct Green (s)		17.2	17.2		17.2		107.8	105.8		93.5	93.5	93.5
Actuated g/C Ratio		0.13	0.13		0.13		0.80	0.78		0.69	0.69	0.69
v/c Ratio		0.75	0.21		0.47		0.32	0.36		0.14	0.26	0.09
Control Delay		86.9	12.6		30.4		5.3	5.1		11.1	8.7	2.8
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		86.9	12.6		30.4		5.3	5.1		11.1	8.7	2.8
LOS		F	B		C		A	A		B	A	A
Approach Delay		61.7			30.4			5.1			8.2	
Approach LOS		E			C			A			A	
Queue Length 50th (ft)		88	0		37		25	118		9	100	4
Queue Length 95th (ft)		146	35		93		55	180		29	154	29
Internal Link Dist (ft)		809			199			287			588	
Turn Bay Length (ft)			150				265			120		90
Base Capacity (vph)		224	373		338		560	3979		221	3522	1122
Starvation Cap Reductn		0	0		0		0	0		0	0	0
Spillback Cap Reductn		0	0		0		0	0		0	0	0
Storage Cap Reductn		0	0		0		0	0		0	0	0
Reduced v/c Ratio		0.46	0.14		0.32		0.28	0.36		0.14	0.26	0.09

Intersection Summary

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 45 (33%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 40

Control Type: Actuated-Coordinated

Timings
1: S Chambers Road & E Exposition Avenue

Background Traffic Conditions
Year 2024 - AM Peak Hour

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 10.2







Intersection LOS: B

Intersection Capacity Utilization 61.7%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: S Chambers Road & E Exposition Avenue






















 Ø2 (L)		 Ø4
101 s		34 s
 Ø5	 Ø6 (R)	 Ø8
20 s	81 s	34 s

HCM 6th Signalized Intersection Summary

1: S Chambers Road & E Exposition Avenue

Background Traffic Conditions

Year 2024 - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	4	49	31	4	65	144	1315	15	29	841	94
Future Volume (veh/h)	91	4	49	31	4	65	144	1315	15	29	841	94
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	99	4	53	34	4	71	157	1429	16	32	914	102
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	186	7	317	59	22	85	444	3701	41	275	3242	1006
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.05	0.71	0.71	0.63	0.63	0.63
Sat Flow, veh/h	671	33	1585	118	109	424	1781	5206	58	369	5106	1585
Grp Volume(v), veh/h	103	0	53	109	0	0	157	934	511	32	914	102
Grp Sat Flow(s),veh/h/ln	703	0	1585	650	0	0	1781	1702	1860	369	1702	1585
Q Serve(g_s), s	0.0	0.0	3.7	4.7	0.0	0.0	4.0	14.8	14.8	5.1	10.7	3.4
Cycle Q Clear(g_c), s	20.2	0.0	3.7	25.0	0.0	0.0	4.0	14.8	14.8	9.6	10.7	3.4
Prop In Lane	0.96		1.00	0.31		0.65	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	193	0	317	165	0	0	444	2420	1322	275	3242	1006
V/C Ratio(X)	0.53	0.00	0.17	0.66	0.00	0.00	0.35	0.39	0.39	0.12	0.28	0.10
Avail Cap(c_a), veh/h	203	0	329	176	0	0	573	2420	1322	275	3242	1006
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.2	0.0	44.7	53.0	0.0	0.0	7.7	7.8	7.8	11.7	11.0	9.6
Incr Delay (d2), s/veh	2.4	0.0	0.2	8.1	0.0	0.0	0.5	0.5	0.9	0.9	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.0	1.5	4.1	0.0	0.0	1.4	5.0	5.6	0.5	3.9	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.6	0.0	44.9	61.1	0.0	0.0	8.1	8.2	8.6	12.6	11.2	9.8
LnGrp LOS	D	A	D	E	A	A	A	A	A	B	B	A
Approach Vol, veh/h		156			109			1602			1048	
Approach Delay, s/veh		50.7			61.1			8.4			11.1	
Approach LOS		D			E			A			B	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		102.0		33.0	10.3	91.7		33.0				
Change Period (Y+Rc), s		6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s		95.0		28.0	16.0	75.0		28.0				
Max Q Clear Time (g_c+I1), s		16.8		22.2	6.0	12.7		27.0				
Green Ext Time (p_c), s		7.4		0.2	0.3	5.6		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				13.6								
HCM 6th LOS				B								

HCM 6th TWSC
2: S Chambers Road & E Center Avenue

Background Traffic Conditions
Year 2024 - AM Peak Hour

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕ ↑↑↑			↕ ↑↑↑		
Traffic Vol, veh/h	27	1	40	53	3	46	28	1399	50	20	877	13
Future Vol, veh/h	27	1	40	53	3	46	28	1399	50	20	877	13
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	-	-	-	-	-	-	300	-	-	110	-	-
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	29	1	43	58	3	50	30	1521	54	22	953	14

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1674	2639	484	2034	2619	788	967	0	0	1575	0	0
Stage 1	1004	1004	-	1608	1608	-	-	-	-	-	-	-
Stage 2	670	1635	-	426	1011	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	*470	61	452	231	65	*606	406	-	-	707	-	-
Stage 1	*198	318	-	518	524	-	-	-	-	-	-	-
Stage 2	*622	503	-	528	315	-	-	-	-	-	-	-
Platoon blocked, %	1	1		1	1	1		-	-	1	-	-
Mov Cap-1 Maneuver	*380	55	452	189	58	*606	406	-	-	707	-	-
Mov Cap-2 Maneuver	*380	55	-	189	58	-	-	-	-	-	-	-
Stage 1	*183	308	-	480	486	-	-	-	-	-	-	-
Stage 2	*525	466	-	461	305	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	16.6		30.4		0.3		0.2	
HCM LOS	C		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	406	-	-	383	250	707	-
HCM Lane V/C Ratio	0.075	-	-	0.193	0.443	0.031	-
HCM Control Delay (s)	14.6	-	-	16.6	30.4	10.3	-
HCM Lane LOS	B	-	-	C	D	B	-
HCM 95th %tile Q(veh)	0.2	-	-	0.7	2.1	0.1	-























Notes			
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Timings

2: S Chambers Road & E Center Avenue

Background Traffic Conditions

Year 2024 - AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (vph)	27	1	40	53	3	46	28	1399	50	20	877	13
Future Volume (vph)	27	1	40	53	3	46	28	1399	50	20	877	13
Satd. Flow (prot)	0	1681	0	0	1705	0	1770	5060	0	1770	5075	0
Flt Permitted		0.791			0.797		0.283			0.142		
Satd. Flow (perm)	0	1356	0	0	1394	0	527	5060	0	265	5075	0
Satd. Flow (RTOR)		43			29			8			3	
Lane Group Flow (vph)	0	73	0	0	111	0	30	1575	0	22	967	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		16.0	16.0		16.0	16.0	
Total Split (s)	40.0	40.0		40.0	40.0		95.0	95.0		95.0	95.0	
Total Split (%)	29.6%	29.6%		29.6%	29.6%		70.4%	70.4%		70.4%	70.4%	
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	
Total Lost Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)		13.3			13.3		109.7	109.7		109.7	109.7	
Actuated g/C Ratio		0.10			0.10		0.81	0.81		0.81	0.81	
v/c Ratio		0.42			0.68		0.07	0.38		0.10	0.23	
Control Delay		33.6			62.6		3.5	3.6		4.7	3.4	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		33.6			62.6		3.5	3.6		4.7	3.4	
LOS		C			E		A	A		A	A	
Approach Delay		33.6			62.6			3.6			3.4	
Approach LOS		C			E			A			A	
Queue Length 50th (ft)		25			70		4	99		3	58	
Queue Length 95th (ft)		72			130		m13	149		13	94	
Internal Link Dist (ft)		463			396			588			384	
Turn Bay Length (ft)							300			110		
Base Capacity (vph)		373			372		428	4112		215	4123	
Starvation Cap Reductn		0			0		0	590		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.20			0.30		0.07	0.45		0.10	0.23	
Intersection Summary												
Cycle Length: 135												
Actuated Cycle Length: 135												
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 40												
Control Type: Actuated-Coordinated												

Timings

2: S Chambers Road & E Center Avenue

Background Traffic Conditions

Year 2024 - AM Peak Hour

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 6.7

Intersection LOS: A





Intersection Capacity Utilization 46.7%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 2: S Chambers Road & E Center Avenue























 Ø2 (L)	 Ø4
95 s	40 s
 Ø6 (R)	 Ø8
95 s	40 s

HCM 6th Signalized Intersection Summary

2: S Chambers Road & E Center Avenue




Background Traffic Conditions

Year 2024 - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (veh/h)	27	1	40	53	3	46	28	1399	50	20	877	13
Future Volume (veh/h)	27	1	40	53	3	46	28	1399	50	20	877	13
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	29	1	43	58	3	50	30	1521	54	22	953	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	79	15	81	105	9	61	510	4178	148	322	4278	63
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	1.00	1.00	1.00	0.83	0.83	0.83
Sat Flow, veh/h	480	177	943	751	109	705	581	5062	180	326	5185	76
Grp Volume(v), veh/h	73	0	0	111	0	0	30	1023	552	22	626	341
Grp Sat Flow(s),veh/h/ln	1600	0	0	1565	0	0	581	1702	1838	326	1702	1857
Q Serve(g_s), s	0.0	0.0	0.0	3.5	0.0	0.0	0.4	0.0	0.0	1.7	5.3	5.3
Cycle Q Clear(g_c), s	5.7	0.0	0.0	9.3	0.0	0.0	5.7	0.0	0.0	1.7	5.3	5.3
Prop In Lane	0.40		0.59	0.52		0.45	1.00		0.10	1.00		0.04
Lane Grp Cap(c), veh/h	175	0	0	175	0	0	510	2809	1517	322	2809	1532
V/C Ratio(X)	0.42	0.00	0.00	0.63	0.00	0.00	0.06	0.36	0.36	0.07	0.22	0.22
Avail Cap(c_a), veh/h	421	0	0	418	0	0	510	2809	1517	322	2809	1532
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.94	0.94	0.94	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.0	0.0	0.0	60.5	0.0	0.0	0.1	0.0	0.0	2.2	2.5	2.5
Incr Delay (d2), s/veh	1.6	0.0	0.0	3.8	0.0	0.0	0.2	0.3	0.6	0.4	0.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	0.0	3.9	0.0	0.0	0.0	0.1	0.3	0.1	1.3	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.6	0.0	0.0	64.3	0.0	0.0	0.3	0.3	0.6	2.6	2.7	2.9
LnGrp LOS	E	A	A	E	A	A	A	A	A	A	A	A
Approach Vol, veh/h		73			111			1605			989	
Approach Delay, s/veh		60.6			64.3			0.4			2.8	
Approach LOS		E			E			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		117.4		17.6		117.4		17.6				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		89.0		34.0		89.0		34.0				
Max Q Clear Time (g_c+I1), s		7.7		7.7		7.3		11.3				
Green Ext Time (p_c), s		9.2		0.2		4.8		0.3				
Intersection Summary												
HCM 6th Ctrl Delay				5.4								
HCM 6th LOS				A								

HCM 6th TWSC
3: E Center Avenue & S Granby Street

Background Traffic Conditions
Year 2024 - AM Peak Hour





















Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	63	44	0	5	5
Future Vol, veh/h	1	63	44	0	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	68	48	0	5	5
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	48	0	-	0	118	48
Stage 1	-	-	-	-	48	-
Stage 2	-	-	-	-	70	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1559	-	-	-	878	1021
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	953	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1559	-	-	-	877	1021
Mov Cap-2 Maneuver	-	-	-	-	877	-
Stage 1	-	-	-	-	973	-
Stage 2	-	-	-	-	953	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		8.9		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1559	-	-	-	-	944
HCM Lane V/C Ratio	0.001	-	-	-	-	0.012
HCM Control Delay (s)	7.3	0	-	-	-	8.9
HCM Lane LOS	A	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-	0

Timings

1: S Chambers Road & E Exposition Avenue

Background Traffic Conditions

Year 2024 - PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	190	18	221	26	10	29	131	1182	16	89	1684	172
Future Volume (vph)	190	18	221	26	10	29	131	1182	16	89	1684	172
Satd. Flow (prot)	0	1781	1583	0	1716	0	1770	5075	0	1770	5085	1583
Flt Permitted		0.714			0.710		0.072			0.200		
Satd. Flow (perm)	0	1330	1583	0	1242	0	134	5075	0	373	5085	1583
Satd. Flow (RTOR)			240		30			3				65
Lane Group Flow (vph)	0	227	240	0	71	0	142	1302	0	97	1830	187
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	5.0	5.0		3.0	10.0		10.0	10.0	10.0
Minimum Split (s)	14.0	14.0	14.0	11.0	11.0		7.0	16.0		16.0	16.0	16.0
Total Split (s)	43.0	43.0	43.0	43.0	43.0		22.0	92.0		70.0	70.0	70.0
Total Split (%)	31.9%	31.9%	31.9%	31.9%	31.9%		16.3%	68.1%		51.9%	51.9%	51.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	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		4.0	6.0		6.0	6.0	6.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max		C-Max	C-Max	C-Max
Act Effct Green (s)		28.0	28.0		28.0		97.0	95.0		79.9	79.9	79.9
Actuated g/C Ratio		0.21	0.21		0.21		0.72	0.70		0.59	0.59	0.59
v/c Ratio		0.83	0.46		0.25		0.62	0.36		0.44	0.61	0.19
Control Delay		73.8	7.7		27.5		28.0	8.9		27.5	20.4	10.6
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		73.8	7.7		27.5		28.0	8.9		27.5	20.4	10.6
LOS		E	A		C		C	A		C	C	B
Approach Delay		39.8			27.5			10.8			19.8	
Approach LOS		D			C			B			B	
Queue Length 50th (ft)		191	0		30		40	152		44	355	45
Queue Length 95th (ft)		269	65		69		119	221		130	528	109
Internal Link Dist (ft)		809			199			287			588	
Turn Bay Length (ft)			150				265			120		90
Base Capacity (vph)		364	608		362		314	3572		220	3009	963
Starvation Cap Reductn		0	0		0		0	0		0	0	0
Spillback Cap Reductn		0	0		0		0	0		0	0	0
Storage Cap Reductn		0	0		0		0	0		0	0	0
Reduced v/c Ratio		0.62	0.39		0.20		0.45	0.36		0.44	0.61	0.19

Intersection Summary

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 61 (45%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Timings 1: S Chambers Road & E Exposition Avenue

Background Traffic Conditions
Year 2024 - PM Peak Hour

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 19.1






Intersection LOS: B

Intersection Capacity Utilization 71.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: S Chambers Road & E Exposition Avenue

























 Ø2 (L) 92 s		 Ø4 43 s	
 Ø5 22 s	 Ø6 (R) 70 s	 Ø8 43 s	

HCM 6th Signalized Intersection Summary

1: S Chambers Road & E Exposition Avenue

Background Traffic Conditions

Year 2024 - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (veh/h)	190	18	221	26	10	29	131	1182	16	89	1684	172
Future Volume (veh/h)	190	18	221	26	10	29	131	1182	16	89	1684	172
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	207	20	240	28	11	32	142	1285	17	97	1830	187
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	247	19	434	37	22	18	207	3308	44	272	2849	884
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.05	0.64	0.64	0.56	0.56	0.56
Sat Flow, veh/h	715	69	1585	0	79	65	1781	5193	69	423	5106	1585
Grp Volume(v), veh/h	227	0	240	71	0	0	142	842	460	97	1830	187
Grp Sat Flow(s),veh/h/ln	784	0	1585	144	0	0	1781	1702	1858	423	1702	1585
Q Serve(g_s), s	0.0	0.0	17.5	0.0	0.0	0.0	4.4	16.1	16.1	19.4	33.3	8.0
Cycle Q Clear(g_c), s	37.0	0.0	17.5	37.0	0.0	0.0	4.4	16.1	16.1	24.8	33.3	8.0
Prop In Lane	0.91		1.00	0.39		0.45	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	266	0	434	77	0	0	207	2169	1184	272	2849	884
V/C Ratio(X)	0.85	0.00	0.55	0.93	0.00	0.00	0.68	0.39	0.39	0.36	0.64	0.21
Avail Cap(c_a), veh/h	266	0	434	77	0	0	357	2169	1184	272	2849	884
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.0	0.0	41.9	47.8	0.0	0.0	22.9	11.8	11.8	20.4	20.6	15.0
Incr Delay (d2), s/veh	22.7	0.0	1.5	78.4	0.0	0.0	4.0	0.5	1.0	3.6	1.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	0.0	7.1	4.1	0.0	0.0	2.8	5.9	6.6	2.1	12.9	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.7	0.0	43.4	126.3	0.0	0.0	26.8	12.3	12.8	24.0	21.7	15.5
LnGrp LOS	E	A	D	F	A	A	C	B	B	C	C	B
Approach Vol, veh/h		467			71			1444			2114	
Approach Delay, s/veh		57.7			126.3			13.9			21.2	
Approach LOS		E			F			B			C	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		92.0		43.0	10.7	81.3		43.0				
Change Period (Y+Rc), s		6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s		86.0		37.0	18.0	64.0		37.0				
Max Q Clear Time (g_c+I1), s		18.1		39.0	6.4	35.3		39.0				
Green Ext Time (p_c), s		6.3		0.0	0.3	14.1		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			24.6									
HCM 6th LOS			C									

HCM 6th TWSC
2: S Chambers Road & E Center Avenue

Background Traffic Conditions
Year 2024 - PM Peak Hour

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕ ↑↑↑			↕ ↑↑↑		
Traffic Vol, veh/h	29	4	27	65	3	34	45	1330	41	31	1854	24
Future Vol, veh/h	29	4	27	65	3	34	45	1330	41	31	1854	24
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	-	-	-	-	-	-	300	-	-	110	-	-
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	32	4	29	71	3	37	49	1446	45	34	2015	26

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2774	3685	1021	2443	3676	746	2041	0	0	1491	0	0
Stage 1	2096	2096	-	1567	1567	-	-	-	-	-	-	-
Stage 2	678	1589	-	876	2109	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	*46	5	201	90	6	*625	119	-	-	720	-	-
Stage 1	*33	92	-	477	502	-	-	-	-	-	-	-
Stage 2	*641	487	-	281	91	-	-	-	-	-	-	-
Platoon blocked, %	1	1		1	1	1		-	-	1	-	-
Mov Cap-1 Maneuver	-	~ 3	201	-	~ 3	*625	119	-	-	720	-	-
Mov Cap-2 Maneuver	-	~ 3	-	-	~ 3	-	-	-	-	-	-	-
Stage 1	*~ 19	88	-	280	295	-	-	-	-	-	-	-
Stage 2	*351	286	-	217	87	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			1.7	0.2
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	119	-	-	-	720	-	-
HCM Lane V/C Ratio	0.411	-	-	-	0.047	-	-
HCM Control Delay (s)	54.9	-	-	-	10.2	-	-
HCM Lane LOS	F	-	-	-	B	-	-
HCM 95th %tile Q(veh)	1.7	-	-	-	0.1	-	-



















Notes			
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Timings

2: S Chambers Road & E Center Avenue

Background Traffic Conditions

Year 2024 - PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	4	27	65	3	34	45	1330	41	31	1854	24
Future Volume (vph)	29	4	27	65	3	34	45	1330	41	31	1854	24
Satd. Flow (prot)	0	1709	0	0	1724	0	1770	5060	0	1770	5075	0
Flt Permitted		0.792			0.789		0.080			0.156		
Satd. Flow (perm)	0	1387	0	0	1404	0	149	5060	0	291	5075	0
Satd. Flow (RTOR)		25			16			10			4	
Lane Group Flow (vph)	0	65	0	0	111	0	49	1491	0	34	2041	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		16.0	16.0		16.0	16.0	
Total Split (s)	25.0	25.0		25.0	25.0		110.0	110.0		110.0	110.0	
Total Split (%)	18.5%	18.5%		18.5%	18.5%		81.5%	81.5%		81.5%	81.5%	
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	
Total Lost Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)		14.1			14.1		108.9	108.9		108.9	108.9	
Actuated g/C Ratio		0.10			0.10		0.81	0.81		0.81	0.81	
v/c Ratio		0.39			0.69		0.41	0.37		0.15	0.50	
Control Delay		42.3			70.8		16.3	3.2		5.2	5.0	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		42.3			70.8		16.3	3.2		5.2	5.0	
LOS		D			E		B	A		A	A	
Approach Delay		42.3			70.8			3.6			5.0	
Approach LOS		D			E			A			A	
Queue Length 50th (ft)		33			81		8	88		6	177	
Queue Length 95th (ft)		78			143		m29	113		18	243	
Internal Link Dist (ft)		463			396			588			384	
Turn Bay Length (ft)							300			110		
Base Capacity (vph)		216			211		120	4084		234	4095	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	130	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.30			0.53		0.41	0.37		0.15	0.51	
Intersection Summary												
Cycle Length: 135												
Actuated Cycle Length: 135												
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 60												
Control Type: Actuated-Coordinated												

Timings 2: S Chambers Road & E Center Avenue

Background Traffic Conditions
Year 2024 - PM Peak Hour

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 7.0

Intersection LOS: A





Intersection Capacity Utilization 55.7%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 2: S Chambers Road & E Center Avenue





















 Ø2 (R) 110 s	 Ø4 25 s
 Ø6 (R) 110 s	 Ø8 25 s

HCM 6th Signalized Intersection Summary

2: S Chambers Road & E Center Avenue




Background Traffic Conditions

Year 2024 - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	4	27	65	3	34	45	1330	41	31	1854	24
Future Volume (veh/h)	29	4	27	65	3	34	45	1330	41	31	1854	24
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	32	4	29	71	3	37	49	1446	45	34	2015	26
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	94	21	61	125	7	44	201	4200	131	345	4288	55
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	1.00	1.00	1.00	0.83	0.83	0.83
Sat Flow, veh/h	633	247	709	954	76	515	207	5088	158	353	5195	67
Grp Volume(v), veh/h	65	0	0	111	0	0	49	968	523	34	1320	721
Grp Sat Flow(s),veh/h/ln	1589	0	0	1545	0	0	207	1702	1842	353	1702	1858
Q Serve(g_s), s	0.0	0.0	0.0	4.3	0.0	0.0	6.0	0.0	0.0	2.5	14.9	14.9
Cycle Q Clear(g_c), s	5.1	0.0	0.0	9.4	0.0	0.0	21.0	0.0	0.0	2.5	14.9	14.9
Prop In Lane	0.49		0.45	0.64		0.33	1.00		0.09	1.00		0.04
Lane Grp Cap(c), veh/h	176	0	0	176	0	0	201	2810	1520	345	2810	1534
V/C Ratio(X)	0.37	0.00	0.00	0.63	0.00	0.00	0.24	0.34	0.34	0.10	0.47	0.47
Avail Cap(c_a), veh/h	258	0	0	256	0	0	201	2810	1520	345	2810	1534
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.94	0.94	0.94	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.7	0.0	0.0	60.6	0.0	0.0	1.4	0.0	0.0	2.3	3.4	3.4
Incr Delay (d2), s/veh	1.3	0.0	0.0	3.7	0.0	0.0	2.7	0.3	0.6	0.6	0.6	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.0	0.0	3.9	0.0	0.0	0.2	0.1	0.2	0.2	3.7	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.0	0.0	0.0	64.2	0.0	0.0	4.1	0.3	0.6	2.8	3.9	4.4
LnGrp LOS	E	A	A	E	A	A	A	A	A	A	A	A
Approach Vol, veh/h		65			111			1540			2075	
Approach Delay, s/veh		60.0			64.2			0.5			4.1	
Approach LOS		E			E			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		117.4		17.6		117.4		17.6				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		104.0		19.0		104.0		19.0				
Max Q Clear Time (g_c+I1), s		23.0		7.1		16.9		11.4				
Green Ext Time (p_c), s		10.8		0.1		15.6		0.2				
Intersection Summary												
HCM 6th Ctrl Delay				5.4								
HCM 6th LOS				A								

HCM 6th TWSC
3: E Center Avenue & S Granby Street

Background Traffic Conditions
Year 2024 - PM Peak Hour





















Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	55	71	1	5	5
Future Vol, veh/h	1	55	71	1	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	60	77	1	5	5
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	78	0	-	0	140	78
Stage 1	-	-	-	-	78	-
Stage 2	-	-	-	-	62	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1520	-	-	-	853	983
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	961	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1520	-	-	-	852	983
Mov Cap-2 Maneuver	-	-	-	-	852	-
Stage 1	-	-	-	-	944	-
Stage 2	-	-	-	-	961	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		9		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1520	-	-	-	913	
HCM Lane V/C Ratio	0.001	-	-	-	0.012	
HCM Control Delay (s)	7.4	0	-	-	9	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0	

Timings

1: S Chambers Road & E Exposition Avenue

Background Traffic Conditions

Year 2040 - AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	5	57	36	5	77	167	1535	18	34	976	109
Future Volume (vph)	107	5	57	36	5	77	167	1535	18	34	976	109
Satd. Flow (prot)	0	1777	1583	0	1672	0	1770	5075	0	1770	5085	1583
Flt Permitted		0.551			0.782		0.229			0.133		
Satd. Flow (perm)	0	1026	1583	0	1327	0	427	5075	0	248	5085	1583
Satd. Flow (RTOR)			62		34			3				69
Lane Group Flow (vph)	0	121	62	0	128	0	182	1688	0	37	1061	118
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	5.0	5.0		3.0	10.0		10.0	10.0	10.0
Minimum Split (s)	14.0	14.0	14.0	11.0	11.0		7.0	16.0		16.0	16.0	16.0
Total Split (s)	41.0	41.0	41.0	41.0	41.0		26.0	94.0		68.0	68.0	68.0
Total Split (%)	30.4%	30.4%	30.4%	30.4%	30.4%		19.3%	69.6%		50.4%	50.4%	50.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	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		4.0	6.0		6.0	6.0	6.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max		C-Max	C-Max	C-Max
Act Effct Green (s)		19.6	19.6		19.6		105.4	103.4		90.3	90.3	90.3
Actuated g/C Ratio		0.15	0.15		0.15		0.78	0.77		0.67	0.67	0.67
v/c Ratio		0.82	0.22		0.58		0.43	0.43		0.22	0.31	0.11
Control Delay		92.1	12.3		48.4		7.5	6.5		16.6	11.2	5.6
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		92.1	12.3		48.4		7.5	6.5		16.6	11.2	5.6
LOS		F	B		D		A	A		B	B	A
Approach Delay		65.1			48.4			6.6			10.8	
Approach LOS		E			D			A			B	
Queue Length 50th (ft)		104	0		78		33	164		14	161	25
Queue Length 95th (ft)		167	39		137		70	249		48	237	60
Internal Link Dist (ft)		809			199			287			588	
Turn Bay Length (ft)			150				265			120		90
Base Capacity (vph)		266	456		369		552	3888		165	3401	1081
Starvation Cap Reductn		0	0		0		0	0		0	0	0
Spillback Cap Reductn		0	0		0		0	0		0	0	0
Storage Cap Reductn		0	0		0		0	0		0	0	0
Reduced v/c Ratio		0.45	0.14		0.35		0.33	0.43		0.22	0.31	0.11

Intersection Summary

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 45 (33%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Timings 1: S Chambers Road & E Exposition Avenue

Background Traffic Conditions
Year 2040 - AM Peak Hour

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 12.8






Intersection LOS: B

Intersection Capacity Utilization 67.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: S Chambers Road & E Exposition Avenue

























 Ø2 (L)		 Ø4	
94 s		41 s	
 Ø5		 Ø8	
26 s	 Ø6 (R)	41 s	
	68 s		

HCM 6th Signalized Intersection Summary

1: S Chambers Road & E Exposition Avenue

Background Traffic Conditions

Year 2040 - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (veh/h)	107	5	57	36	5	77	167	1535	18	34	976	109
Future Volume (veh/h)	107	5	57	36	5	77	167	1535	18	34	976	109
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	116	5	62	39	5	84	182	1668	20	37	1061	118
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	207	8	389	63	23	98	379	3462	42	202	2951	916
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.06	0.67	0.67	0.58	0.58	0.58
Sat Flow, veh/h	629	32	1585	115	94	399	1781	5201	62	292	5106	1585
Grp Volume(v), veh/h	121	0	62	128	0	0	182	1092	596	37	1061	118
Grp Sat Flow(s),veh/h/ln	661	0	1585	608	0	0	1781	1702	1859	292	1702	1585
Q Serve(g_s), s	0.0	0.0	4.1	6.2	0.0	0.0	5.4	21.3	21.3	9.6	14.9	4.6
Cycle Q Clear(g_c), s	24.8	0.0	4.1	31.1	0.0	0.0	5.4	21.3	21.3	19.1	14.9	4.6
Prop In Lane	0.96		1.00	0.30		0.66	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	214	0	389	184	0	0	379	2266	1238	202	2951	916
V/C Ratio(X)	0.56	0.00	0.16	0.70	0.00	0.00	0.48	0.48	0.48	0.18	0.36	0.13
Avail Cap(c_a), veh/h	233	0	411	205	0	0	566	2266	1238	202	2951	916
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.7	0.0	40.0	51.1	0.0	0.0	10.9	11.1	11.1	18.7	15.2	13.0
Incr Delay (d2), s/veh	2.7	0.0	0.2	8.6	0.0	0.0	0.9	0.7	1.3	2.0	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.0	1.7	4.8	0.0	0.0	2.1	7.6	8.5	0.8	5.7	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.4	0.0	40.2	59.7	0.0	0.0	11.8	11.8	12.5	20.7	15.5	13.3
LnGrp LOS	D	A	D	E	A	A	B	B	B	C	B	B
Approach Vol, veh/h		183			128			1870			1216	
Approach Delay, s/veh		46.9			59.7			12.0			15.5	
Approach LOS		D			E			B			B	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		95.9		39.1	11.8	84.0		39.1				
Change Period (Y+Rc), s		6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s		88.0		35.0	22.0	62.0		35.0				
Max Q Clear Time (g_c+I1), s		23.3		26.8	7.4	21.1		33.1				
Green Ext Time (p_c), s		9.6		0.4	0.5	7.1		0.1				
Intersection Summary												
HCM 6th Ctrl Delay			16.9									
HCM 6th LOS			B									

HCM 6th TWSC
2: S Chambers Road & E Center Avenue

Background Traffic Conditions
Year 2040 - AM Peak Hour

Intersection												
Int Delay, s/veh	4.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↗ ↑↑↑			↗ ↑↑↑		
Traffic Vol, veh/h	28	1	42	62	4	54	30	1636	59	24	1022	15
Future Vol, veh/h	28	1	42	62	4	54	30	1636	59	24	1022	15
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	-	-	-	-	-	-	300	-	-	110	-	-
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	30	1	46	67	4	59	33	1778	64	26	1111	16

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1950	3079	564	2373	3055	921	1127	0	0	1842	0	0
Stage 1	1171	1171	-	1876	1876	-	-	-	-	-	-	-
Stage 2	779	1908	-	497	1179	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	*418	30	402	165	31	*548	340	-	-	652	-	-
Stage 1	*151	265	-	476	480	-	-	-	-	-	-	-
Stage 2	*563	455	-	478	262	-	-	-	-	-	-	-
Platoon blocked, %	1	1		1	1	1		-	-	1	-	-
Mov Cap-1 Maneuver	*295	26	402	127	27	*548	340	-	-	652	-	-
Mov Cap-2 Maneuver	*295	26	-	127	27	-	-	-	-	-	-	-
Stage 1	*136	254	-	430	433	-	-	-	-	-	-	-
Stage 2	*449	411	-	405	252	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	21.2		82		0.3		0.2	
HCM LOS	C		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	340	-	-	299	163	652	-
HCM Lane V/C Ratio	0.096	-	-	0.258	0.8	0.04	-
HCM Control Delay (s)	16.7	-	-	21.2	82	10.8	-
HCM Lane LOS	C	-	-	C	F	B	-
HCM 95th %tile Q(veh)	0.3	-	-	1	5.2	0.1	-



















Notes			
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Timings

2: S Chambers Road & E Center Avenue

Background Traffic Conditions

Year 2040 - AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	1	42	62	4	54	30	1636	59	24	1022	15
Future Volume (vph)	28	1	42	62	4	54	30	1636	59	24	1022	15
Satd. Flow (prot)	0	1679	0	0	1705	0	1770	5060	0	1770	5075	0
Flt Permitted		0.779			0.792		0.236			0.102		
Satd. Flow (perm)	0	1334	0	0	1385	0	440	5060	0	190	5075	0
Satd. Flow (RTOR)		46			29			9			3	
Lane Group Flow (vph)	0	77	0	0	130	0	33	1842	0	26	1127	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		16.0	16.0		16.0	16.0	
Total Split (s)	38.0	38.0		38.0	38.0		97.0	97.0		97.0	97.0	
Total Split (%)	28.1%	28.1%		28.1%	28.1%		71.9%	71.9%		71.9%	71.9%	
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	
Total Lost Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)		15.1			15.1		107.9	107.9		107.9	107.9	
Actuated g/C Ratio		0.11			0.11		0.80	0.80		0.80	0.80	
v/c Ratio		0.41			0.72		0.09	0.46		0.17	0.28	
Control Delay		31.1			66.1		3.9	3.8		7.2	4.0	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		31.1			66.1		3.9	3.9		7.2	4.0	
LOS		C			E		A	A		A	A	
Approach Delay		31.1			66.1			3.9			4.1	
Approach LOS		C			E			A			A	
Queue Length 50th (ft)		25			87		5	115		4	77	
Queue Length 95th (ft)		73			151		m13	143		18	121	
Internal Link Dist (ft)		463			396			588			384	
Turn Bay Length (ft)							300			110		
Base Capacity (vph)		351			350		351	4047		151	4058	
Starvation Cap Reductn		0			0		0	269		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.22			0.37		0.09	0.49		0.17	0.28	
Intersection Summary												
Cycle Length: 135												
Actuated Cycle Length: 135												
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 40												
Control Type: Actuated-Coordinated												

Timings 2: S Chambers Road & E Center Avenue

Background Traffic Conditions
Year 2040 - AM Peak Hour

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 7.1

Intersection LOS: A





Intersection Capacity Utilization 53.0%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 2: S Chambers Road & E Center Avenue























 Ø2 (R) 97 s	 Ø4 38 s
 Ø6 (R) 97 s	 Ø8 38 s

HCM 6th Signalized Intersection Summary

2: S Chambers Road & E Center Avenue




Background Traffic Conditions

Year 2040 - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (veh/h)	28	1	42	62	4	54	30	1636	59	24	1022	15
Future Volume (veh/h)	28	1	42	62	4	54	30	1636	59	24	1022	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	30	1	46	67	4	59	33	1778	64	26	1111	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	83	17	93	114	11	70	433	4106	148	257	4208	61
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	1.00	1.00	1.00	0.81	0.81	0.81
Sat Flow, veh/h	461	168	933	735	107	699	500	5060	182	251	5186	75
Grp Volume(v), veh/h	77	0	0	130	0	0	33	1196	646	26	729	398
Grp Sat Flow(s),veh/h/ln	1561	0	0	1541	0	0	500	1702	1838	251	1702	1857
Q Serve(g_s), s	0.0	0.0	0.0	5.0	0.0	0.0	0.6	0.0	0.0	2.9	6.9	6.9
Cycle Q Clear(g_c), s	6.1	0.0	0.0	11.1	0.0	0.0	7.6	0.0	0.0	2.9	6.9	6.9
Prop In Lane	0.39		0.60	0.52		0.45	1.00		0.10	1.00		0.04
Lane Grp Cap(c), veh/h	193	0	0	194	0	0	433	2762	1491	257	2762	1507
V/C Ratio(X)	0.40	0.00	0.00	0.67	0.00	0.00	0.08	0.43	0.43	0.10	0.26	0.26
Avail Cap(c_a), veh/h	396	0	0	395	0	0	433	2762	1491	257	2762	1507
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.90	0.90	0.90	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.4	0.0	0.0	59.5	0.0	0.0	0.2	0.0	0.0	2.7	3.1	3.1
Incr Delay (d2), s/veh	1.3	0.0	0.0	4.0	0.0	0.0	0.3	0.4	0.8	0.8	0.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	0.0	4.6	0.0	0.0	0.0	0.2	0.3	0.2	1.8	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.7	0.0	0.0	63.5	0.0	0.0	0.5	0.4	0.8	3.5	3.3	3.5
LnGrp LOS	E	A	A	E	A	A	A	A	A	A	A	A
Approach Vol, veh/h		77			130			1875			1153	
Approach Delay, s/veh		58.7			63.5			0.6			3.4	
Approach LOS		E			E			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		115.5		19.5		115.5		19.5				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		91.0		32.0		91.0		32.0				
Max Q Clear Time (g_c+I1), s		9.6		8.1		8.9		13.1				
Green Ext Time (p_c), s		12.3		0.2		6.1		0.4				
Intersection Summary												
HCM 6th Ctrl Delay				5.5								
HCM 6th LOS				A								

HCM 6th TWSC
3: E Center Avenue & S Granby Street

Background Traffic Conditions
Year 2040 - AM Peak Hour






















Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	66	49	0	5	5
Future Vol, veh/h	1	66	49	0	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	72	53	0	5	5
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	53	0	-	0	127	53
Stage 1	-	-	-	-	53	-
Stage 2	-	-	-	-	74	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1553	-	-	-	868	1014
Stage 1	-	-	-	-	970	-
Stage 2	-	-	-	-	949	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1553	-	-	-	867	1014
Mov Cap-2 Maneuver	-	-	-	-	867	-
Stage 1	-	-	-	-	969	-
Stage 2	-	-	-	-	949	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		8.9		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1553	-	-	-	-	935
HCM Lane V/C Ratio	0.001	-	-	-	-	0.012
HCM Control Delay (s)	7.3	0	-	-	-	8.9
HCM Lane LOS	A	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-	0

Timings

1: S Chambers Road & E Exposition Avenue

Background Traffic Conditions

Year 2040 - PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	223	22	259	30	12	34	150	1375	19	104	1962	201
Future Volume (vph)	223	22	259	30	12	34	150	1375	19	104	1962	201
Satd. Flow (prot)	0	1781	1583	0	1718	0	1770	5075	0	1770	5085	1583
Flt Permitted		0.695			0.640		0.049			0.159		
Satd. Flow (perm)	0	1295	1583	0	1121	0	91	5075	0	296	5085	1583
Satd. Flow (RTOR)			145		29			3				76
Lane Group Flow (vph)	0	266	282	0	83	0	163	1516	0	113	2133	218
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	5.0	5.0		3.0	10.0		10.0	10.0	10.0
Minimum Split (s)	14.0	14.0	14.0	11.0	11.0		7.0	16.0		16.0	16.0	16.0
Total Split (s)	40.0	40.0	40.0	40.0	40.0		15.0	95.0		80.0	80.0	80.0
Total Split (%)	29.6%	29.6%	29.6%	29.6%	29.6%		11.1%	70.4%		59.3%	59.3%	59.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	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		4.0	6.0		6.0	6.0	6.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max		C-Max	C-Max	C-Max
Act Effct Green (s)		30.9	30.9		30.9		94.1	92.1		77.6	77.6	77.6
Actuated g/C Ratio		0.23	0.23		0.23		0.70	0.68		0.57	0.57	0.57
v/c Ratio		0.90	0.60		0.30		0.84	0.44		0.66	0.73	0.23
Control Delay		82.2	26.9		30.2		64.9	10.5		48.1	31.0	15.1
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	2.0	0.0
Total Delay		82.2	26.9		30.2		64.9	10.5		48.1	33.0	15.1
LOS		F	C		C		E	B		D	C	B
Approach Delay		53.7			30.2			15.8			32.1	
Approach LOS		D			C			B			C	
Queue Length 50th (ft)		221	103		38		91	218		85	629	91
Queue Length 95th (ft)		#368	199		86		#215	250		m#186	711	m150
Internal Link Dist (ft)		809			199			287			588	
Turn Bay Length (ft)			150				265			120		90
Base Capacity (vph)		326	507		304		202	3464		170	2921	942
Starvation Cap Reductn		0	0		0		0	0		0	604	0
Spillback Cap Reductn		0	0		0		0	0		0	0	0
Storage Cap Reductn		0	0		0		0	0		0	0	0
Reduced v/c Ratio		0.82	0.56		0.27		0.81	0.44		0.66	0.92	0.23

Intersection Summary

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 61 (45%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Timings 1: S Chambers Road & E Exposition Avenue

Background Traffic Conditions
Year 2040 - PM Peak Hour

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 28.8

Intersection LOS: C

Intersection Capacity Utilization 79.7%

ICU Level of Service D

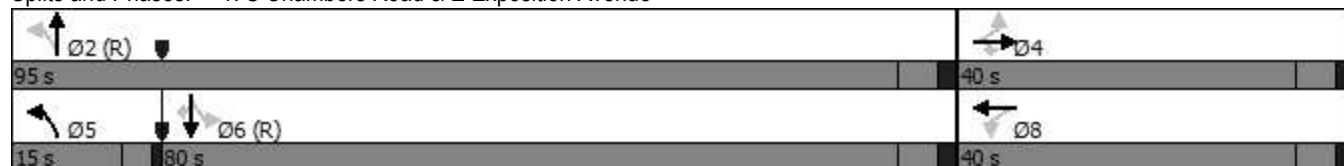
Analysis Period (min) 15

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: S Chambers Road & E Exposition Avenue
























HCM 6th Signalized Intersection Summary

1: S Chambers Road & E Exposition Avenue

Background Traffic Conditions

Year 2040 - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	223	22	259	30	12	34	150	1375	19	104	1962	201
Future Volume (veh/h)	223	22	259	30	12	34	150	1375	19	104	1962	201
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	242	24	282	33	13	37	163	1495	21	113	2133	218
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	233	18	399	37	22	17	189	3421	48	233	2946	914
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.05	0.66	0.66	0.58	0.58	0.58
Sat Flow, veh/h	721	72	1585	0	86	69	1781	5188	73	345	5106	1585
Grp Volume(v), veh/h	266	0	282	83	0	0	163	981	535	113	2133	218
Grp Sat Flow(s),veh/h/ln	793	0	1585	154	0	0	1781	1702	1857	345	1702	1585
Q Serve(g_s), s	0.0	0.0	21.9	0.0	0.0	0.0	5.0	18.6	18.6	31.5	41.0	9.1
Cycle Q Clear(g_c), s	34.0	0.0	21.9	34.0	0.0	0.0	5.0	18.6	18.6	39.0	41.0	9.1
Prop In Lane	0.91		1.00	0.40		0.45	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	251	0	399	76	0	0	189	2244	1224	233	2946	914
V/C Ratio(X)	1.06	0.00	0.71	1.09	0.00	0.00	0.86	0.44	0.44	0.49	0.72	0.24
Avail Cap(c_a), veh/h	251	0	399	76	0	0	240	2244	1224	233	2946	914
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.0	0.0	46.0	50.9	0.0	0.0	28.8	11.0	11.0	23.0	20.7	14.0
Incr Delay (d2), s/veh	74.0	0.0	5.6	129.9	0.0	0.0	22.0	0.6	1.1	7.1	1.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.8	0.0	9.3	5.4	0.0	0.0	4.2	6.7	7.5	2.9	15.8	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	128.0	0.0	51.6	180.8	0.0	0.0	50.8	11.6	12.1	30.1	22.3	14.6
LnGrp LOS	F	A	D	F	A	A	D	B	B	C	C	B
Approach Vol, veh/h		548			83			1679			2464	
Approach Delay, s/veh		88.7			180.8			15.6			22.0	
Approach LOS		F			F			B			C	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		95.0		40.0	11.1	83.9		40.0				
Change Period (Y+Rc), s		6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s		89.0		34.0	11.0	74.0		34.0				
Max Q Clear Time (g_c+I1), s		20.6		36.0	7.0	43.0		36.0				
Green Ext Time (p_c), s		8.0		0.0	0.2	18.7		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			30.2									
HCM 6th LOS			C									

HCM 6th TWSC
2: S Chambers Road & E Center Avenue

Background Traffic Conditions
Year 2040 - PM Peak Hour





















Intersection												
Int Delay, s/veh	104.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↙ ↑↑↑			↙ ↑↑↑		
Traffic Vol, veh/h	32	5	41	77	4	39	47	1555	48	36	2164	27
Future Vol, veh/h	32	5	41	77	4	39	47	1555	48	36	2164	27
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	-	-	-	-	-	-	300	-	-	110	-	-
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	35	5	45	84	4	42	51	1690	52	39	2352	29
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	3225	4289	1191	2839	4277	871	2381	0	0	1742	0	0
Stage 1	2445	2445	-	1818	1818	-	-	-	-	-	-	-
Stage 2	780	1844	-	1021	2459	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	*~ 21	~ 1	154	~ 51	~ 1	*567	80	-	-	683	-	-
Stage 1	*~ 18	61	-	454	471	-	-	-	-	-	-	-
Stage 2	*582	451	-	228	60	-	-	-	-	-	-	-
Platoon blocked, %	1	1		1	1	1		-	-	1	-	-
Mov Cap-1 Maneuver	*~ 9	0	154	~ 17	0	*567	80	-	-	683	-	-
Mov Cap-2 Maneuver	*~ 9	0	-	~ 17	0	-	-	-	-	-	-	-
Stage 1	*~ 7	58	-	165	171	-	-	-	-	-	-	-
Stage 2	*190	164	-	138	57	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, \$	1967.1			\$ 2210.8			3.1			0.2		
HCM LOS	F			F								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	80	-	-	19	25	683	-	-				
HCM Lane V/C Ratio	0.639	-	-	4.462	5.217	0.057	-	-				
HCM Control Delay (s)	108.5	-		\$ 1967.1	\$ 2210.8	10.6	-	-				
HCM Lane LOS	F	-	-	F	F	B	-	-				
HCM 95th %tile Q(veh)	2.9	-	-	11.1	16.2	0.2	-	-				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined				*: All major volume in platoon				

Timings

2: S Chambers Road & E Center Avenue

Background Traffic Conditions

Year 2040 - PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	5	41	77	4	39	47	1555	48	36	2164	27
Future Volume (vph)	32	5	41	77	4	39	47	1555	48	36	2164	27
Satd. Flow (prot)	0	1696	0	0	1726	0	1770	5065	0	1770	5075	0
Flt Permitted		0.815			0.734		0.051			0.115		
Satd. Flow (perm)	0	1410	0	0	1307	0	95	5065	0	214	5075	0
Satd. Flow (RTOR)		18			15			11			4	
Lane Group Flow (vph)	0	85	0	0	130	0	51	1742	0	39	2381	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		16.0	16.0		16.0	16.0	
Total Split (s)	23.0	23.0		23.0	23.0		112.0	112.0		112.0	112.0	
Total Split (%)	17.0%	17.0%		17.0%	17.0%		83.0%	83.0%		83.0%	83.0%	
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	
Total Lost Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)		15.2			15.2		107.8	107.8		107.8	107.8	
Actuated g/C Ratio		0.11			0.11		0.80	0.80		0.80	0.80	
v/c Ratio		0.49			0.82		0.68	0.43		0.23	0.59	
Control Delay		53.4			86.5		55.2	3.7		7.4	6.0	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.1	
Total Delay		53.4			86.5		55.2	3.7		7.4	6.1	
LOS		D			F		E	A		A	A	
Approach Delay		53.4			86.5			5.2			6.1	
Approach LOS		D			F			A			A	
Queue Length 50th (ft)		55			99		12	121		8	262	
Queue Length 95th (ft)		111			#198		m#105	135		22	291	
Internal Link Dist (ft)		463			396			588			384	
Turn Bay Length (ft)							300			110		
Base Capacity (vph)		193			177		75	4048		171	4054	
Starvation Cap Reductn		0			0		0	522		0	0	
Spillback Cap Reductn		0			0		0	0		0	415	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.44			0.73		0.68	0.49		0.23	0.65	
Intersection Summary												
Cycle Length: 135												
Actuated Cycle Length: 135												
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 60												
Control Type: Actuated-Coordinated												

Timings

2: S Chambers Road & E Center Avenue

Background Traffic Conditions
Year 2040 - PM Peak Hour

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 9.0

Intersection LOS: A

Intersection Capacity Utilization 63.3%

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: S Chambers Road & E Center Avenue





















 Ø2 (L) 112 s	 Ø4 (R) 23 s
 Ø6 (T) 112 s	 Ø8 (L) 23 s

HCM 6th Signalized Intersection Summary

2: S Chambers Road & E Center Avenue




Background Traffic Conditions

Year 2040 - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	5	41	77	4	39	47	1555	48	36	2164	27
Future Volume (veh/h)	32	5	41	77	4	39	47	1555	48	36	2164	27
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	35	5	45	84	4	42	51	1690	52	39	2352	29
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	91	24	88	138	8	49	149	4109	126	277	4197	52
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	1.00	1.00	1.00	0.81	0.81	0.81
Sat Flow, veh/h	517	234	845	903	76	467	148	5090	157	277	5199	64
Grp Volume(v), veh/h	85	0	0	130	0	0	51	1130	612	39	1539	842
Grp Sat Flow(s),veh/h/ln	1596	0	0	1447	0	0	148	1702	1842	277	1702	1859
Q Serve(g_s), s	0.0	0.0	0.0	5.3	0.0	0.0	16.1	0.0	0.0	4.3	21.5	21.6
Cycle Q Clear(g_c), s	6.6	0.0	0.0	11.9	0.0	0.0	37.7	0.0	0.0	4.3	21.5	21.6
Prop In Lane	0.41		0.53	0.65		0.32	1.00		0.08	1.00		0.03
Lane Grp Cap(c), veh/h	203	0	0	194	0	0	149	2748	1487	277	2748	1501
V/C Ratio(X)	0.42	0.00	0.00	0.67	0.00	0.00	0.34	0.41	0.41	0.14	0.56	0.56
Avail Cap(c_a), veh/h	236	0	0	226	0	0	149	2748	1487	277	2748	1501
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.90	0.90	0.90	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.1	0.0	0.0	59.5	0.0	0.0	3.7	0.0	0.0	2.9	4.6	4.6
Incr Delay (d2), s/veh	1.4	0.0	0.0	6.0	0.0	0.0	5.6	0.4	0.8	1.1	0.8	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	0.0	4.7	0.0	0.0	0.5	0.2	0.3	0.3	5.8	6.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.5	0.0	0.0	65.5	0.0	0.0	9.3	0.4	0.8	4.0	5.4	6.1
LnGrp LOS	E	A	A	E	A	A	A	A	A	A	A	A
Approach Vol, veh/h		85			130			1793			2420	
Approach Delay, s/veh		58.5			65.5			0.8			5.6	
Approach LOS		E			E			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		115.0		20.0		115.0		20.0				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		106.0		17.0		106.0		17.0				
Max Q Clear Time (g_c+I1), s		39.7		8.6		23.6		13.9				
Green Ext Time (p_c), s		15.4		0.1		23.0		0.1				
Intersection Summary												
HCM 6th Ctrl Delay			6.4									
HCM 6th LOS			A									






















HCM 6th TWSC
3: E Center Avenue & S Granby Street

Background Traffic Conditions
Year 2040 - PM Peak Hour

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	73	77	1	5	5
Future Vol, veh/h	1	73	77	1	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	79	84	1	5	5
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	85	0	-	0	166	85
Stage 1	-	-	-	-	85	-
Stage 2	-	-	-	-	81	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1512	-	-	-	824	974
Stage 1	-	-	-	-	938	-
Stage 2	-	-	-	-	942	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1512	-	-	-	823	974
Mov Cap-2 Maneuver	-	-	-	-	823	-
Stage 1	-	-	-	-	937	-
Stage 2	-	-	-	-	942	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		9.1		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1512	-	-	-	-	892
HCM Lane V/C Ratio	0.001	-	-	-	-	0.012
HCM Control Delay (s)	7.4	0	-	-	-	9.1
HCM Lane LOS	A	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-	0

Timings
1: S Chambers Road & E Exposition Avenue

Total Traffic Conditions
Year 2024 - AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	91	4	49	31	4	65	162	1315	15	29	901	94
Future Volume (vph)	91	4	49	31	4	65	162	1315	15	29	901	94
Satd. Flow (prot)	0	1777	1583	0	1673	0	1770	5075	0	1770	5085	1583
Flt Permitted		0.580			0.818		0.256			0.172		
Satd. Flow (perm)	0	1080	1583	0	1390	0	477	5075	0	320	5085	1583
Satd. Flow (RTOR)			57		63			3				78
Lane Group Flow (vph)	0	103	53	0	109	0	176	1445	0	32	979	102
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	5.0	5.0		3.0	10.0		10.0	10.0	10.0
Minimum Split (s)	14.0	14.0	14.0	11.0	11.0		7.0	16.0		16.0	16.0	16.0
Total Split (s)	34.0	34.0	34.0	34.0	34.0		20.0	101.0		81.0	81.0	81.0
Total Split (%)	25.2%	25.2%	25.2%	25.2%	25.2%		14.8%	74.8%		60.0%	60.0%	60.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	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		4.0	6.0		6.0	6.0	6.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max		C-Max	C-Max	C-Max
Act Effct Green (s)		17.2	17.2		17.2		107.8	105.8		93.1	93.1	93.1
Actuated g/C Ratio		0.13	0.13		0.13		0.80	0.78		0.69	0.69	0.69
v/c Ratio		0.75	0.21		0.47		0.38	0.36		0.15	0.28	0.09
Control Delay		86.9	12.6		30.4		6.0	5.1		14.8	12.7	7.2
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		86.9	12.6		30.4		6.0	5.1		14.8	12.7	7.2
LOS		F	B		C		A	A		B	B	A
Approach Delay		61.7			30.4			5.2			12.2	
Approach LOS		E			C			A			B	
Queue Length 50th (ft)		88	0		37		29	118		12	150	21
Queue Length 95th (ft)		146	35		93		61	180		39	220	55
Internal Link Dist (ft)		469			199			287			256	
Turn Bay Length (ft)			150				265			120		90
Base Capacity (vph)		224	373		338		534	3979		220	3507	1116
Starvation Cap Reductn		0	0		0		0	0		0	0	0
Spillback Cap Reductn		0	0		0		0	0		0	0	0
Storage Cap Reductn		0	0		0		0	0		0	0	0
Reduced v/c Ratio		0.46	0.14		0.32		0.33	0.36		0.15	0.28	0.09

Intersection Summary

Cycle Length: 135
 Actuated Cycle Length: 135
 Offset: 45 (33%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 40
 Control Type: Actuated-Coordinated

Timings 1: S Chambers Road & E Exposition Avenue

Total Traffic Conditions
Year 2024 - AM Peak Hour

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 11.7






Intersection LOS: B

Intersection Capacity Utilization 61.7%

ICU Level of Service B

Analysis Period (min) 15





















Splits and Phases: 1: S Chambers Road & E Exposition Avenue

 Ø2 (L) 101 s		 Ø4 34 s	
 Ø5 20 s	 Ø6 (R) 81 s	 Ø8 34 s	

HCM 6th Signalized Intersection Summary

1: S Chambers Road & E Exposition Avenue

Total Traffic Conditions
Year 2024 - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	4	49	31	4	65	162	1315	15	29	901	94
Future Volume (veh/h)	91	4	49	31	4	65	162	1315	15	29	901	94
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	99	4	53	34	4	71	176	1429	16	32	979	102
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	186	7	317	59	22	85	427	3701	41	275	3220	1000
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.05	0.71	0.71	0.63	0.63	0.63
Sat Flow, veh/h	671	33	1585	118	109	424	1781	5206	58	369	5106	1585
Grp Volume(v), veh/h	103	0	53	109	0	0	176	934	511	32	979	102
Grp Sat Flow(s),veh/h/ln	703	0	1585	650	0	0	1781	1702	1860	369	1702	1585
Q Serve(g_s), s	0.0	0.0	3.7	4.7	0.0	0.0	4.5	14.8	14.8	5.1	11.8	3.4
Cycle Q Clear(g_c), s	20.2	0.0	3.7	25.0	0.0	0.0	4.5	14.8	14.8	9.0	11.8	3.4
Prop In Lane	0.96		1.00	0.31		0.65	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	193	0	317	165	0	0	427	2420	1322	275	3220	1000
V/C Ratio(X)	0.53	0.00	0.17	0.66	0.00	0.00	0.41	0.39	0.39	0.12	0.30	0.10
Avail Cap(c_a), veh/h	203	0	329	176	0	0	548	2420	1322	275	3220	1000
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.2	0.0	44.7	53.0	0.0	0.0	8.0	7.8	7.8	11.7	11.4	9.8
Incr Delay (d2), s/veh	2.4	0.0	0.2	8.1	0.0	0.0	0.6	0.5	0.9	0.9	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.0	1.5	4.1	0.0	0.0	1.6	5.0	5.6	0.5	4.3	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.6	0.0	44.9	61.1	0.0	0.0	8.6	8.2	8.6	12.6	11.6	10.0
LnGrp LOS	D	A	D	E	A	A	A	A	A	B	B	B
Approach Vol, veh/h		156			109			1621			1113	
Approach Delay, s/veh		50.7			61.1			8.4			11.5	
Approach LOS		D			E			A			B	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		102.0		33.0	10.8	91.1		33.0				
Change Period (Y+Rc), s		6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s		95.0		28.0	16.0	75.0		28.0				
Max Q Clear Time (g_c+I1), s		16.8		22.2	6.5	13.8		27.0				
Green Ext Time (p_c), s		7.4		0.2	0.4	6.1		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				13.7								
HCM 6th LOS				B								

HCM 6th TWSC
2: S Chambers Road & E Center Avenue

Total Traffic Conditions
Year 2024 - AM Peak Hour





















Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↘ ↑↑↑			↘ ↑↑↑		
Traffic Vol, veh/h	78	10	40	56	3	46	28	1399	50	20	890	15
Future Vol, veh/h	78	10	40	56	3	46	28	1399	50	20	890	15
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	-	-	-	-	-	-	300	-	-	110	-	-
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	85	11	43	61	3	50	30	1521	54	22	967	16
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	1689	2654	492	2044	2635	788	983	0	0	1575	0	0
Stage 1	1019	1019	-	1608	1608	-	-	-	-	-	-	-
Stage 2	670	1635	-	436	1027	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	*456	59	447	226	62	*606	399	-	-	707	-	-
Stage 1	*193	313	-	518	524	-	-	-	-	-	-	-
Stage 2	*622	503	-	520	310	-	-	-	-	-	-	-
Platoon blocked, %	1	1		1	1	1		-	-	1	-	-
Mov Cap-1 Maneuver	*369	53	447	159	56	*606	399	-	-	707	-	-
Mov Cap-2 Maneuver	*369	53	-	159	56	-	-	-	-	-	-	-
Stage 1	*179	303	-	479	485	-	-	-	-	-	-	-
Stage 2	*524	466	-	438	300	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	33.5		38.3			0.3			0.2			
HCM LOS	D		E									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	399	-	-	261	218	707	-	-				
HCM Lane V/C Ratio	0.076	-	-	0.533	0.524	0.031	-	-				
HCM Control Delay (s)	14.8	-	-	33.5	38.3	10.3	-	-				
HCM Lane LOS	B	-	-	D	E	B	-	-				
HCM 95th %tile Q(veh)	0.2	-	-	2.9	2.7	0.1	-	-				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined				*: All major volume in platoon				

Timings

2: S Chambers Road & E Center Avenue

Total Traffic Conditions

Year 2024 - AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	10	40	56	3	46	28	1399	50	20	890	15
Future Volume (vph)	78	10	40	56	3	46	28	1399	50	20	890	15
Satd. Flow (prot)	0	1731	0	0	1707	0	1770	5060	0	1770	5075	0
Flt Permitted		0.726			0.756		0.275			0.138		
Satd. Flow (perm)	0	1296	0	0	1325	0	512	5060	0	257	5075	0
Satd. Flow (RTOR)		16			28			8			4	
Lane Group Flow (vph)	0	139	0	0	114	0	30	1575	0	22	983	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		16.0	16.0		16.0	16.0	
Total Split (s)	40.0	40.0		40.0	40.0		95.0	95.0		95.0	95.0	
Total Split (%)	29.6%	29.6%		29.6%	29.6%		70.4%	70.4%		70.4%	70.4%	
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	
Total Lost Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)		18.0			18.0		105.0	105.0		105.0	105.0	
Actuated g/C Ratio		0.13			0.13		0.78	0.78		0.78	0.78	
v/c Ratio		0.75			0.57		0.08	0.40		0.11	0.25	
Control Delay		72.4			51.0		4.8	4.8		6.4	4.7	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		72.4			51.0		4.8	4.9		6.4	4.7	
LOS		E			D		A	A		A	A	
Approach Delay		72.4			51.0			4.9			4.7	
Approach LOS		E			D			A			A	
Queue Length 50th (ft)		106			71		5	123		4	73	
Queue Length 95th (ft)		170			129		m16	168		16	116	
Internal Link Dist (ft)		463			396			252			384	
Turn Bay Length (ft)							300			110		
Base Capacity (vph)		338			354		398	3937		199	3949	
Starvation Cap Reductn		0			0		0	539		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.41			0.32		0.08	0.46		0.11	0.25	
Intersection Summary												
Cycle Length: 135												
Actuated Cycle Length: 135												
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 40												
Control Type: Actuated-Coordinated												

Timings
2: S Chambers Road & E Center Avenue

Total Traffic Conditions
Year 2024 - AM Peak Hour

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 9.9

Intersection LOS: A





Intersection Capacity Utilization 47.6%

ICU Level of Service A

Analysis Period (min) 15

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




















Splits and Phases: 2: S Chambers Road & E Center Avenue

 Ø2 (R)	 Ø4
95 s	40 s
 Ø6 (R)	 Ø8
95 s	40 s

HCM 6th Signalized Intersection Summary

2: S Chambers Road & E Center Avenue

Total Traffic Conditions
Year 2024 - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	10	40	56	3	46	28	1399	50	20	890	15
Future Volume (veh/h)	78	10	40	56	3	46	28	1399	50	20	890	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	85	11	43	61	3	50	30	1521	54	22	967	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	137	18	50	120	16	75	482	4029	143	312	4118	68
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.12	1.00	1.00	1.00	0.80	0.80	0.80
Sat Flow, veh/h	820	154	436	690	138	647	572	5062	180	326	5173	86
Grp Volume(v), veh/h	139	0	0	114	0	0	30	1023	552	22	636	347
Grp Sat Flow(s),veh/h/ln	1410	0	0	1475	0	0	572	1702	1838	326	1702	1855
Q Serve(g_s), s	3.2	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	2.0	6.3	6.3
Cycle Q Clear(g_c), s	13.1	0.0	0.0	9.9	0.0	0.0	6.8	0.0	0.0	2.0	6.3	6.3
Prop In Lane	0.61		0.31	0.54		0.44	1.00		0.10	1.00		0.05
Lane Grp Cap(c), veh/h	205	0	0	211	0	0	482	2709	1463	312	2709	1476
V/C Ratio(X)	0.68	0.00	0.00	0.54	0.00	0.00	0.06	0.38	0.38	0.07	0.23	0.23
Avail Cap(c_a), veh/h	403	0	0	410	0	0	482	2709	1463	312	2709	1476
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.6	0.0	0.0	57.1	0.0	0.0	0.2	0.0	0.0	3.0	3.5	3.5
Incr Delay (d2), s/veh	3.9	0.0	0.0	2.1	0.0	0.0	0.2	0.4	0.7	0.4	0.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	0.0	0.0	3.9	0.0	0.0	0.0	0.2	0.3	0.1	1.8	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.5	0.0	0.0	59.2	0.0	0.0	0.4	0.4	0.7	3.5	3.7	3.8
LnGrp LOS	E	A	A	E	A	A	A	A	A	A	A	A
Approach Vol, veh/h		139			114			1605			1005	
Approach Delay, s/veh		62.5			59.2			0.5			3.7	
Approach LOS		E			E			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		113.5		21.5		113.5		21.5				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		89.0		34.0		89.0		34.0				
Max Q Clear Time (g_c+I1), s		8.8		15.1		8.3		11.9				
Green Ext Time (p_c), s		9.2		0.4		4.9		0.4				
Intersection Summary												
HCM 6th Ctrl Delay				7.0								
HCM 6th LOS				A								




HCM 6th TWSC
3: S Fraser Street/S Granby Street & E Center Avenue

Total Traffic Conditions
Year 2024 - AM Peak Hour

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	1	63	5	2	44	0	17	8	60	5	2	5
Future Vol, veh/h	1	63	5	2	44	0	17	8	60	5	2	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
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	68	5	2	48	0	18	9	65	5	2	5
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	48	0	0	73	0	0	129	125	71	162	127	48
Stage 1	-	-	-	-	-	-	73	73	-	52	52	-
Stage 2	-	-	-	-	-	-	56	52	-	110	75	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1570	-	-	1527	-	-	869	782	991	827	780	1046
Stage 1	-	-	-	-	-	-	937	834	-	982	862	-
Stage 2	-	-	-	-	-	-	977	862	-	895	833	-
Platoon blocked, %	1	-	-	-	-	-	1	1	-	1	1	1
Mov Cap-1 Maneuver	1570	-	-	1527	-	-	862	780	991	765	778	1046
Mov Cap-2 Maneuver	-	-	-	-	-	-	862	780	-	765	778	-
Stage 1	-	-	-	-	-	-	936	833	-	981	861	-
Stage 2	-	-	-	-	-	-	969	861	-	827	832	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.3			9.3			9.2		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	939	1570	-	-	1527	-	-	864				
HCM Lane V/C Ratio	0.098	0.001	-	-	0.001	-	-	0.015				
HCM Control Delay (s)	9.3	7.3	0	-	7.4	0	-	9.2				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0				

HCM 6th TWSC
4: E Exposition Avenue & S Fraser Street

Total Traffic Conditions
Year 2024 - AM Peak Hour

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	144	242	18	0	26
Future Vol, veh/h	8	144	242	18	0	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	157	263	20	0	28

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	283	0	0 448 273
Stage 1	-	-	- 273 -
Stage 2	-	-	- 175 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1312	-	- 631 883
Stage 1	-	-	- 834 -
Stage 2	-	-	- 855 -
Platoon blocked, %	1	-	- 1 1
Mov Cap-1 Maneuver	1312	-	- 626 883
Mov Cap-2 Maneuver	-	-	- 626 -
Stage 1	-	-	- 828 -
Stage 2	-	-	- 855 -

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	9.2
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1312	-	-	-	883
HCM Lane V/C Ratio	0.007	-	-	-	0.032
HCM Control Delay (s)	7.8	0	-	-	9.2
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

HCM 6th TWSC
5: S Chambers Road & E Gill Avenue

Total Traffic Conditions
Year 2024 - AM Peak Hour

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑↑	↑↑↑	
Traffic Vol, veh/h	0	60	0	1471	964	16
Future Vol, veh/h	0	60	0	1471	964	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	65	0	1599	1048	17

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	533	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	*702	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %		1		-	-	-
Mov Cap-1 Maneuver	-	*702	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.7	0	0
HCM LOS	B		






















Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 702	-	-
HCM Lane V/C Ratio	- 0.093	-	-
HCM Control Delay (s)	- 10.7	-	-
HCM Lane LOS	- B	-	-
HCM 95th %tile Q(veh)	- 0.3	-	-

Notes			
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Timings

1: S Chambers Road & E Exposition Avenue

Total Traffic Conditions
Year 2024 - PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	190	18	221	26	10	29	181	1182	16	89	1716	172
Future Volume (vph)	190	18	221	26	10	29	181	1182	16	89	1716	172
Satd. Flow (prot)	0	1781	1583	0	1716	0	1770	5075	0	1770	5085	1583
Flt Permitted		0.714			0.710		0.064			0.200		
Satd. Flow (perm)	0	1330	1583	0	1242	0	119	5075	0	373	5085	1583
Satd. Flow (RTOR)			240		30			3				64
Lane Group Flow (vph)	0	227	240	0	71	0	197	1302	0	97	1865	187
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	5.0	5.0		3.0	10.0		10.0	10.0	10.0
Minimum Split (s)	14.0	14.0	14.0	11.0	11.0		7.0	16.0		16.0	16.0	16.0
Total Split (s)	43.0	43.0	43.0	43.0	43.0		22.0	92.0		70.0	70.0	70.0
Total Split (%)	31.9%	31.9%	31.9%	31.9%	31.9%		16.3%	68.1%		51.9%	51.9%	51.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	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		4.0	6.0		6.0	6.0	6.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max		C-Max	C-Max	C-Max
Act Effct Green (s)		28.0	28.0		28.0		97.0	95.0		77.0	77.0	77.0
Actuated g/C Ratio		0.21	0.21		0.21		0.72	0.70		0.57	0.57	0.57
v/c Ratio		0.83	0.46		0.25		0.77	0.36		0.46	0.64	0.20
Control Delay		73.8	7.7		27.5		47.4	8.9		32.0	25.7	13.3
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.3	0.0
Total Delay		73.8	7.7		27.5		47.4	8.9		32.0	26.0	13.3
LOS		E	A		C		D	A		C	C	B
Approach Delay		39.8			27.5			14.0			25.2	
Approach LOS		D			C			B			C	
Queue Length 50th (ft)		191	0		30		100	152		57	465	67
Queue Length 95th (ft)		269	65		69		192	221		m147	623	134
Internal Link Dist (ft)		465			199			287			256	
Turn Bay Length (ft)			150				265			120		90
Base Capacity (vph)		364	608		362		306	3572		212	2901	930
Starvation Cap Reductn		0	0		0		0	0		0	412	0
Spillback Cap Reductn		0	0		0		0	0		0	0	0
Storage Cap Reductn		0	0		0		0	0		0	0	0
Reduced v/c Ratio		0.62	0.39		0.20		0.64	0.36		0.46	0.75	0.20

Intersection Summary

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 61 (45%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Timings 1: S Chambers Road & E Exposition Avenue

Total Traffic Conditions
Year 2024 - PM Peak Hour

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 22.8

Intersection LOS: C





Intersection Capacity Utilization 74.7%

ICU Level of Service D

Analysis Period (min) 15

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

























Splits and Phases: 1: S Chambers Road & E Exposition Avenue

 Ø2 (L)		 Ø4	
92 s		43 s	
 Ø5		 Ø8	
22 s	70 s	43 s	

HCM 6th Signalized Intersection Summary

1: S Chambers Road & E Exposition Avenue

Total Traffic Conditions
Year 2024 - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (veh/h)	190	18	221	26	10	29	181	1182	16	89	1716	172
Future Volume (veh/h)	190	18	221	26	10	29	181	1182	16	89	1716	172
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	207	20	240	28	11	32	197	1285	17	97	1865	187
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	247	19	434	37	22	18	226	3308	44	272	2770	860
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.06	0.64	0.64	0.54	0.54	0.54
Sat Flow, veh/h	715	69	1585	0	79	65	1781	5193	69	423	5106	1585
Grp Volume(v), veh/h	227	0	240	71	0	0	197	842	460	97	1865	187
Grp Sat Flow(s),veh/h/ln	784	0	1585	144	0	0	1781	1702	1858	423	1702	1585
Q Serve(g_s), s	0.0	0.0	17.5	0.0	0.0	0.0	6.3	16.1	16.1	19.4	35.5	8.3
Cycle Q Clear(g_c), s	37.0	0.0	17.5	37.0	0.0	0.0	6.3	16.1	16.1	22.7	35.5	8.3
Prop In Lane	0.91		1.00	0.39		0.45	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	266	0	434	77	0	0	226	2169	1184	272	2770	860
V/C Ratio(X)	0.85	0.00	0.55	0.93	0.00	0.00	0.87	0.39	0.39	0.36	0.67	0.22
Avail Cap(c_a), veh/h	266	0	434	77	0	0	348	2169	1184	272	2770	860
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.0	0.0	41.9	47.8	0.0	0.0	26.3	11.8	11.8	20.4	22.3	16.0
Incr Delay (d2), s/veh	22.7	0.0	1.5	78.4	0.0	0.0	13.9	0.5	1.0	3.6	1.3	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	0.0	7.1	4.1	0.0	0.0	4.3	5.9	6.6	2.1	13.9	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.7	0.0	43.4	126.3	0.0	0.0	40.3	12.3	12.8	24.0	23.6	16.6
LnGrp LOS	E	A	D	F	A	A	D	B	B	C	C	B
Approach Vol, veh/h		467			71			1499			2149	
Approach Delay, s/veh		57.7			126.3			16.1			23.0	
Approach LOS		E			F			B			C	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		92.0		43.0	12.8	79.2		43.0				
Change Period (Y+Rc), s		6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s		86.0		37.0	18.0	64.0		37.0				
Max Q Clear Time (g_c+I1), s		18.1		39.0	8.3	37.5		39.0				
Green Ext Time (p_c), s		6.3		0.0	0.4	13.8		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			26.2									
HCM 6th LOS			C									

HCM 6th TWSC
2: S Chambers Road & E Center Avenue

Total Traffic Conditions
Year 2024 - PM Peak Hour

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕ ↑↑↑			↕ ↑↑↑		
Traffic Vol, veh/h	56	9	27	73	3	34	45	1330	41	31	1890	27
Future Vol, veh/h	56	9	27	73	3	34	45	1330	41	31	1890	27
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	-	-	-	-	-	-	300	-	-	110	-	-
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	61	10	29	79	3	37	49	1446	45	34	2054	29

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2815	3726	1042	2462	3718	746	2083	0	0	1491	0	0
Stage 1	2137	2137	-	1567	1567	-	-	-	-	-	-	-
Stage 2	678	1589	-	895	2151	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	*~ 42	~ 5	194	87	5	*625	113	-	-	720	-	-
Stage 1	*~ 31	88	-	477	502	-	-	-	-	-	-	-
Stage 2	*641	487	-	273	86	-	-	-	-	-	-	-
Platoon blocked, %	1	1		1	1	1		-	-	1	-	-
Mov Cap-1 Maneuver	-	~ 3	194	-	~ 3	*625	113	-	-	720	-	-
Mov Cap-2 Maneuver	-	~ 3	-	-	~ 3	-	-	-	-	-	-	-
Stage 1	*~ 18	84	-	270	284	-	-	-	-	-	-	-
Stage 2	*338	275	-	195	82	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			1.9	0.2
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	113	-	-	-	720	-	-
HCM Lane V/C Ratio	0.433	-	-	-	0.047	-	-
HCM Control Delay (s)	59.2	-	-	-	10.2	-	-
HCM Lane LOS	F	-	-	-	B	-	-
HCM 95th %tile Q(veh)	1.9	-	-	-	0.1	-	-





















Notes			
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Timings

2: S Chambers Road & E Center Avenue

Total Traffic Conditions

Year 2024 - PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	9	27	73	3	34	45	1330	41	31	1890	27
Future Volume (vph)	56	9	27	73	3	34	45	1330	41	31	1890	27
Satd. Flow (prot)	0	1736	0	0	1727	0	1770	5060	0	1770	5075	0
Flt Permitted		0.759			0.739		0.075			0.155		
Satd. Flow (perm)	0	1359	0	0	1319	0	140	5060	0	289	5075	0
Satd. Flow (RTOR)		13			14			10			5	
Lane Group Flow (vph)	0	100	0	0	119	0	49	1491	0	34	2083	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		16.0	16.0		16.0	16.0	
Total Split (s)	25.0	25.0		25.0	25.0		110.0	110.0		110.0	110.0	
Total Split (%)	18.5%	18.5%		18.5%	18.5%		81.5%	81.5%		81.5%	81.5%	
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	
Total Lost Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)		15.2			15.2		107.8	107.8		107.8	107.8	
Actuated g/C Ratio		0.11			0.11		0.80	0.80		0.80	0.80	
v/c Ratio		0.61			0.74		0.44	0.37		0.15	0.51	
Control Delay		64.6			76.9		20.2	3.4		5.5	5.4	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		64.6			76.9		20.2	3.4		5.5	5.5	
LOS		E			E		C	A		A	A	
Approach Delay		64.6			76.9			4.0			5.5	
Approach LOS		E			E			A			A	
Queue Length 50th (ft)		73			90		9	95		6	198	
Queue Length 95th (ft)		134			158		m34	113		18	251	
Internal Link Dist (ft)		463			396			252			384	
Turn Bay Length (ft)							300			110		
Base Capacity (vph)		202			197		111	4043		230	4054	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	166	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.50			0.60		0.44	0.37		0.15	0.54	
Intersection Summary												
Cycle Length: 135												
Actuated Cycle Length: 135												
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 60												
Control Type: Actuated-Coordinated												

Timings 2: S Chambers Road & E Center Avenue

Total Traffic Conditions
Year 2024 - PM Peak Hour

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 8.6

Intersection LOS: A





Intersection Capacity Utilization 55.1%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 2: S Chambers Road & E Center Avenue























 Ø2 (R)	 Ø4
110 s	25 s
 Ø6 (R)	 Ø8
110 s	25 s

HCM 6th Signalized Intersection Summary

2: S Chambers Road & E Center Avenue

Total Traffic Conditions

Year 2024 - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (veh/h)	56	9	27	73	3	34	45	1330	41	31	1890	27
Future Volume (veh/h)	56	9	27	73	3	34	45	1330	41	31	1890	27
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	61	10	29	79	3	37	49	1446	45	34	2054	29
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	123	23	42	134	7	44	191	4144	129	341	4226	60
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	1.00	1.00	1.00	0.81	0.81	0.81
Sat Flow, veh/h	828	239	436	929	70	451	198	5088	158	353	5188	73
Grp Volume(v), veh/h	100	0	0	119	0	0	49	968	523	34	1347	736
Grp Sat Flow(s),veh/h/ln	1504	0	0	1450	0	0	198	1702	1842	353	1702	1857
Q Serve(g_s), s	0.0	0.0	0.0	2.3	0.0	0.0	7.2	0.0	0.0	2.7	16.4	16.4
Cycle Q Clear(g_c), s	8.6	0.0	0.0	10.9	0.0	0.0	23.6	0.0	0.0	2.7	16.4	16.4
Prop In Lane	0.61		0.29	0.66		0.31	1.00		0.09	1.00		0.04
Lane Grp Cap(c), veh/h	188	0	0	184	0	0	191	2773	1500	341	2773	1513
V/C Ratio(X)	0.53	0.00	0.00	0.65	0.00	0.00	0.26	0.35	0.35	0.10	0.49	0.49
Avail Cap(c_a), veh/h	253	0	0	248	0	0	191	2773	1500	341	2773	1513
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.9	0.0	0.0	60.0	0.0	0.0	1.8	0.0	0.0	2.6	3.8	3.8
Incr Delay (d2), s/veh	2.3	0.0	0.0	3.7	0.0	0.0	3.2	0.3	0.6	0.6	0.6	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.0	0.0	4.2	0.0	0.0	0.3	0.1	0.3	0.2	4.3	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.2	0.0	0.0	63.7	0.0	0.0	5.0	0.3	0.6	3.2	4.5	5.0
LnGrp LOS	E	A	A	E	A	A	A	A	A	A	A	A
Approach Vol, veh/h		100			119			1540			2117	
Approach Delay, s/veh		61.2			63.7			0.6			4.6	
Approach LOS		E			E			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		116.0		19.0		116.0		19.0				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		104.0		19.0		104.0		19.0				
Max Q Clear Time (g_c+I1), s		25.6		10.6		18.4		12.9				
Green Ext Time (p_c), s		10.9		0.2		16.3		0.2				
Intersection Summary												
HCM 6th Ctrl Delay				6.3								
HCM 6th LOS				A								

HCM 6th TWSC
3: S Fraser Street/S Granby Street & E Center Avenue

Total Traffic Conditions
Year 2024 - PM Peak Hour

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	1	55	14	7	71	1	9	4	32	5	7	5
Future Vol, veh/h	1	55	14	7	71	1	9	4	32	5	7	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
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	60	15	8	77	1	10	4	35	5	8	5
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	78	0	0	75	0	0	170	164	68	183	171	78
Stage 1	-	-	-	-	-	-	70	70	-	94	94	-
Stage 2	-	-	-	-	-	-	100	94	-	89	77	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1538	-	-	1524	-	-	836	756	995	819	748	1025
Stage 1	-	-	-	-	-	-	940	837	-	948	834	-
Stage 2	-	-	-	-	-	-	941	834	-	918	831	-
Platoon blocked, %	1	-	-		-	-	1	1		1	1	1
Mov Cap-1 Maneuver	1538	-	-	1524	-	-	821	752	995	783	744	1025
Mov Cap-2 Maneuver	-	-	-	-	-	-	821	752	-	783	744	-
Stage 1	-	-	-	-	-	-	939	836	-	947	830	-
Stage 2	-	-	-	-	-	-	922	830	-	880	830	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.7			9.1			9.5		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	929	1538	-	-	1524	-	-	822				
HCM Lane V/C Ratio	0.053	0.001	-	-	0.005	-	-	0.022				
HCM Control Delay (s)	9.1	7.3	0	-	7.4	0	-	9.5				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1				

HCM 6th TWSC
4: E Exposition Avenue & S Fraser Street

Total Traffic Conditions
Year 2024 - PM Peak Hour

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↱		↰	↱
Traffic Vol, veh/h	21	429	313	50	0	14
Future Vol, veh/h	21	429	313	50	0	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	466	340	54	0	15

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	394	0	879
Stage 1	-	-	367
Stage 2	-	-	512
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	1189	-	316
Stage 1	-	-	772
Stage 2	-	-	602
Platoon blocked, %	1	-	1
Mov Cap-1 Maneuver	1189	-	307
Mov Cap-2 Maneuver	-	-	307
Stage 1	-	-	751
Stage 2	-	-	602

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1189	-	-	-	816
HCM Lane V/C Ratio	0.019	-	-	-	0.019
HCM Control Delay (s)	8.1	0	-	-	9.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

HCM 6th TWSC
5: S Chambers Road & E Gill Avenue

Total Traffic Conditions
Year 2024 - PM Peak Hour

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑↑	↑↑↑	
Traffic Vol, veh/h	0	32	0	1401	1945	44
Future Vol, veh/h	0	32	0	1401	1945	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	35	0	1523	2114	48

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 1081	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 7.14	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.92	- -	- -
Pot Cap-1 Maneuver	0 *471	0 -	- -
Stage 1	0 -	0 -	- -
Stage 2	0 -	0 -	- -
Platoon blocked, %	1	- -	- -
Mov Cap-1 Maneuver	- *471	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

Approach	EB	NB	SB
HCM Control Delay, s	13.3	0	0
HCM LOS	B		






















Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 471	- -	- -
HCM Lane V/C Ratio	- 0.074	- -	- -
HCM Control Delay (s)	- 13.3	- -	- -
HCM Lane LOS	- B	- -	- -
HCM 95th %tile Q(veh)	- 0.2	- -	- -

Notes			
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Timings

1: S Chambers Road & E Exposition Avenue

Total Traffic Conditions
Year 2040 - AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	5	57	36	5	77	185	1535	18	34	1036	109
Future Volume (vph)	107	5	57	36	5	77	185	1535	18	34	1036	109
Satd. Flow (prot)	0	1777	1583	0	1672	0	1770	5075	0	1770	5085	1583
Flt Permitted		0.551			0.782		0.211			0.133		
Satd. Flow (perm)	0	1026	1583	0	1327	0	393	5075	0	248	5085	1583
Satd. Flow (RTOR)			62		34			3				65
Lane Group Flow (vph)	0	121	62	0	128	0	201	1688	0	37	1126	118
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	5.0	5.0		3.0	10.0		10.0	10.0	10.0
Minimum Split (s)	14.0	14.0	14.0	11.0	11.0		7.0	16.0		16.0	16.0	16.0
Total Split (s)	41.0	41.0	41.0	41.0	41.0		26.0	94.0		68.0	68.0	68.0
Total Split (%)	30.4%	30.4%	30.4%	30.4%	30.4%		19.3%	69.6%		50.4%	50.4%	50.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	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		4.0	6.0		6.0	6.0	6.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max		C-Max	C-Max	C-Max
Act Effct Green (s)		19.6	19.6		19.6		105.4	103.4		89.9	89.9	89.9
Actuated g/C Ratio		0.15	0.15		0.15		0.78	0.77		0.67	0.67	0.67
v/c Ratio		0.82	0.22		0.58		0.50	0.43		0.23	0.33	0.11
Control Delay		92.1	12.3		48.4		8.7	6.5		16.2	11.4	5.1
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		92.1	12.3		48.4		8.7	6.5		16.2	11.4	5.1
LOS		F	B		D		A	A		B	B	A
Approach Delay		65.1			48.4			6.7			11.0	
Approach LOS		E			D			A			B	
Queue Length 50th (ft)		104	0		78		37	164		15	179	26
Queue Length 95th (ft)		167	39		137		77	249		49	259	64
Internal Link Dist (ft)		469			199			287			256	
Turn Bay Length (ft)			150				265			120		90
Base Capacity (vph)		266	456		369		531	3888		164	3384	1075
Starvation Cap Reductn		0	0		0		0	0		0	0	0
Spillback Cap Reductn		0	0		0		0	0		0	0	0
Storage Cap Reductn		0	0		0		0	0		0	0	0
Reduced v/c Ratio		0.45	0.14		0.35		0.38	0.43		0.23	0.33	0.11

Intersection Summary

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 45 (33%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Timings 1: S Chambers Road & E Exposition Avenue

Total Traffic Conditions
Year 2040 - AM Peak Hour

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 12.9





Intersection LOS: B

Intersection Capacity Utilization 67.0%

ICU Level of Service C

Analysis Period (min) 15























Splits and Phases: 1: S Chambers Road & E Exposition Avenue

 Ø2 (L)		 Ø4	
94 s		41 s	
 Ø5		 Ø8	
26 s	68 s	41 s	

HCM 6th Signalized Intersection Summary





1: S Chambers Road & E Exposition Avenue

Total Traffic Conditions
Year 2040 - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								 			 	
Traffic Volume (veh/h)	107	5	57	36	5	77	185	1535	18	34	1036	109
Future Volume (veh/h)	107	5	57	36	5	77	185	1535	18	34	1036	109
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	116	5	62	39	5	84	201	1668	20	37	1126	118
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	207	8	389	63	23	98	368	3462	42	202	2925	908
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.06	0.67	0.67	0.57	0.57	0.57
Sat Flow, veh/h	629	32	1585	115	94	399	1781	5201	62	292	5106	1585
Grp Volume(v), veh/h	121	0	62	128	0	0	201	1092	596	37	1126	118
Grp Sat Flow(s),veh/h/ln	661	0	1585	608	0	0	1781	1702	1859	292	1702	1585
Q Serve(g_s), s	0.0	0.0	4.1	6.2	0.0	0.0	6.0	21.3	21.3	9.6	16.3	4.6
Cycle Q Clear(g_c), s	24.8	0.0	4.1	31.1	0.0	0.0	6.0	21.3	21.3	18.4	16.3	4.6
Prop In Lane	0.96		1.00	0.30		0.66	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	214	0	389	184	0	0	368	2266	1238	202	2925	908
V/C Ratio(X)	0.56	0.00	0.16	0.70	0.00	0.00	0.55	0.48	0.48	0.18	0.38	0.13
Avail Cap(c_a), veh/h	233	0	411	205	0	0	546	2266	1238	202	2925	908
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.7	0.0	40.0	51.1	0.0	0.0	11.5	11.1	11.1	18.7	15.8	13.3
Incr Delay (d2), s/veh	2.7	0.0	0.2	8.6	0.0	0.0	1.3	0.7	1.3	2.0	0.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.0	1.7	4.8	0.0	0.0	2.3	7.6	8.5	0.8	6.2	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.4	0.0	40.2	59.7	0.0	0.0	12.8	11.8	12.5	20.7	16.2	13.6
LnGrp LOS	D	A	D	E	A	A	B	B	B	C	B	B
Approach Vol, veh/h		183			128			1889			1281	
Approach Delay, s/veh		46.9			59.7			12.1			16.1	
Approach LOS		D			E			B			B	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		95.9		39.1	12.5	83.4		39.1				
Change Period (Y+Rc), s		6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s		88.0		35.0	22.0	62.0		35.0				
Max Q Clear Time (g_c+I1), s		23.3		26.8	8.0	20.4		33.1				
Green Ext Time (p_c), s		9.6		0.4	0.5	7.6		0.1				
Intersection Summary												
HCM 6th Ctrl Delay				17.2								
HCM 6th LOS				B								



















HCM 6th TWSC
2: S Chambers Road & E Center Avenue

Total Traffic Conditions
Year 2040 - AM Peak Hour

Intersection												
Int Delay, s/veh	11.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	79	10	42	65	4	54	30	1636	59	24	1035	17
Future Vol, veh/h	79	10	42	65	4	54	30	1636	59	24	1035	17
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	-	-	-	-	-	-	300	-	-	110	-	-
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	86	11	46	71	4	59	33	1778	64	26	1125	18
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	1965	3094	572	2384	3071	921	1143	0	0	1842	0	0
Stage 1	1186	1186	-	1876	1876	-	-	-	-	-	-	-
Stage 2	779	1908	-	508	1195	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	*405	29	397	161	30	*548	334	-	-	652	-	-
Stage 1	*148	260	-	476	480	-	-	-	-	-	-	-
Stage 2	*563	455	-	471	258	-	-	-	-	-	-	-
Platoon blocked, %	1	1		1	1	1		-	-	1	-	-
Mov Cap-1 Maneuver	*284	25	397	85	26	*548	334	-	-	652	-	-
Mov Cap-2 Maneuver	*284	25	-	85	26	-	-	-	-	-	-	-
Stage 1	*133	250	-	429	432	-	-	-	-	-	-	-
Stage 2	*448	410	-	383	248	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	90.2		182.3			0.3			0.2			
HCM LOS	F		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	334	-	-	167	121	652	-	-				
HCM Lane V/C Ratio	0.098	-	-	0.853	1.105	0.04	-	-				
HCM Control Delay (s)	16.9	-	-	90.2	182.3	10.8	-	-				
HCM Lane LOS	C	-	-	F	F	B	-	-				
HCM 95th %tile Q(veh)	0.3	-	-	5.9	7.9	0.1	-	-				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined			*: All major volume in platoon				

Timings
2: S Chambers Road & E Center Avenue

Total Traffic Conditions
Year 2040 - AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	10	42	65	4	54	30	1636	59	24	1035	17
Future Volume (vph)	79	10	42	65	4	54	30	1636	59	24	1035	17
Satd. Flow (prot)	0	1731	0	0	1707	0	1770	5060	0	1770	5075	0
Flt Permitted		0.709			0.753		0.229			0.099		
Satd. Flow (perm)	0	1264	0	0	1320	0	427	5060	0	184	5075	0
Satd. Flow (RTOR)		17			27			9			4	
Lane Group Flow (vph)	0	143	0	0	134	0	33	1842	0	26	1143	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		16.0	16.0		16.0	16.0	
Total Split (s)	38.0	38.0		38.0	38.0		97.0	97.0		97.0	97.0	
Total Split (%)	28.1%	28.1%		28.1%	28.1%		71.9%	71.9%		71.9%	71.9%	
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	
Total Lost Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)		18.5			18.5		104.5	104.5		104.5	104.5	
Actuated g/C Ratio		0.14			0.14		0.77	0.77		0.77	0.77	
v/c Ratio		0.76			0.66		0.10	0.47		0.18	0.29	
Control Delay		73.1			58.0		4.8	4.7		9.0	5.1	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		73.1			58.0		4.8	4.7		9.0	5.1	
LOS		E			E		A	A		A	A	
Approach Delay		73.1			58.0			4.7			5.2	
Approach LOS		E			E			A			A	
Queue Length 50th (ft)		108			90		5	117		5	91	
Queue Length 95th (ft)		175			152		m14	162		21	143	
Internal Link Dist (ft)		463			396			252			384	
Turn Bay Length (ft)							300			110		
Base Capacity (vph)		312			333		330	3917		142	3927	
Starvation Cap Reductn		0			0		0	252		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.46			0.40		0.10	0.50		0.18	0.29	
Intersection Summary												
Cycle Length: 135												
Actuated Cycle Length: 135												
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 40												
Control Type: Actuated-Coordinated												

Timings 2: S Chambers Road & E Center Avenue

Total Traffic Conditions
Year 2040 - AM Peak Hour

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 10.0

Intersection LOS: A





Intersection Capacity Utilization 52.6%

ICU Level of Service A

Analysis Period (min) 15

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























Splits and Phases: 2: S Chambers Road & E Center Avenue

 Ø2 (L) 97 s	 Ø4 38 s
 Ø6 (R) 97 s	 Ø8 38 s

HCM 6th Signalized Intersection Summary

2: S Chambers Road & E Center Avenue

Total Traffic Conditions
Year 2040 - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (veh/h)	79	10	42	65	4	54	30	1636	59	24	1035	17
Future Volume (veh/h)	79	10	42	65	4	54	30	1636	59	24	1035	17
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	86	11	46	71	4	59	33	1778	64	26	1125	18
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	137	18	53	125	14	78	413	3995	144	252	4087	65
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.12	1.00	1.00	1.00	0.79	0.79	0.79
Sat Flow, veh/h	775	152	439	694	118	639	492	5060	182	251	5177	83
Grp Volume(v), veh/h	143	0	0	134	0	0	33	1196	646	26	740	403
Grp Sat Flow(s),veh/h/ln	1366	0	0	1451	0	0	492	1702	1838	251	1702	1855
Q Serve(g_s), s	2.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	3.3	7.9	7.9
Cycle Q Clear(g_c), s	14.0	0.0	0.0	12.0	0.0	0.0	8.6	0.0	0.0	3.3	7.9	7.9
Prop In Lane	0.60		0.32	0.53		0.44	1.00		0.10	1.00		0.04
Lane Grp Cap(c), veh/h	209	0	0	217	0	0	413	2687	1451	252	2687	1465
V/C Ratio(X)	0.68	0.00	0.00	0.62	0.00	0.00	0.08	0.44	0.45	0.10	0.28	0.28
Avail Cap(c_a), veh/h	375	0	0	385	0	0	413	2687	1451	252	2687	1465
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.2	0.0	0.0	57.2	0.0	0.0	0.3	0.0	0.0	3.3	3.8	3.8
Incr Delay (d2), s/veh	3.9	0.0	0.0	2.8	0.0	0.0	0.4	0.5	1.0	0.8	0.3	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	0.0	0.0	4.6	0.0	0.0	0.0	0.2	0.4	0.2	2.2	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.1	0.0	0.0	60.1	0.0	0.0	0.7	0.5	1.0	4.2	4.1	4.3
LnGrp LOS	E	A	A	E	A	A	A	A	A	A	A	A
Approach Vol, veh/h		143			134			1875			1169	
Approach Delay, s/veh		62.1			60.1			0.7			4.2	
Approach LOS		E			E			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		112.6		22.4		112.6		22.4				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		91.0		32.0		91.0		32.0				
Max Q Clear Time (g_c+I1), s		10.6		16.0		9.9		14.0				
Green Ext Time (p_c), s		12.3		0.4		6.2		0.4				
Intersection Summary												
HCM 6th Ctrl Delay				7.0								
HCM 6th LOS				A								




HCM 6th TWSC
3: S Fraser Street/S Granby Street & E Center Avenue

Total Traffic Conditions
Year 2040 - AM Peak Hour

Intersection												
Int Delay, s/veh	4.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	1	66	5	2	49	0	17	8	60	5	2	5
Future Vol, veh/h	1	66	5	2	49	0	17	8	60	5	2	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
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	72	5	2	53	0	18	9	65	5	2	5
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	53	0	0	77	0	0	138	134	75	171	136	53
Stage 1	-	-	-	-	-	-	77	77	-	57	57	-
Stage 2	-	-	-	-	-	-	61	57	-	114	79	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1563	-	-	1522	-	-	858	773	986	815	771	1040
Stage 1	-	-	-	-	-	-	932	831	-	976	858	-
Stage 2	-	-	-	-	-	-	971	858	-	891	829	-
Platoon blocked, %	1	-	-	-	-	-	1	1	-	1	1	1
Mov Cap-1 Maneuver	1563	-	-	1522	-	-	850	772	986	753	770	1040
Mov Cap-2 Maneuver	-	-	-	-	-	-	850	772	-	753	770	-
Stage 1	-	-	-	-	-	-	931	830	-	975	857	-
Stage 2	-	-	-	-	-	-	963	857	-	823	828	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.3			9.3			9.3		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	932	1563	-	-	1522	-	-	854				
HCM Lane V/C Ratio	0.099	0.001	-	-	0.001	-	-	0.015				
HCM Control Delay (s)	9.3	7.3	0	-	7.4	0	-	9.3				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0				

HCM 6th TWSC
4: E Exposition Avenue & S Fraser Street

Total Traffic Conditions
Year 2040 - AM Peak Hour

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	169	281	18	0	26
Future Vol, veh/h	8	169	281	18	0	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	184	305	20	0	28
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	325	0	-	0	517	315
Stage 1	-	-	-	-	315	-
Stage 2	-	-	-	-	202	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1265	-	-	-	574	846
Stage 1	-	-	-	-	802	-
Stage 2	-	-	-	-	832	-
Platoon blocked, %	1	-	-	-	1	1
Mov Cap-1 Maneuver	1265	-	-	-	569	846
Mov Cap-2 Maneuver	-	-	-	-	569	-
Stage 1	-	-	-	-	796	-
Stage 2	-	-	-	-	832	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.4	0		9.4		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1265	-	-	-	-	846
HCM Lane V/C Ratio	0.007	-	-	-	-	0.033
HCM Control Delay (s)	7.9	0	-	-	-	9.4
HCM Lane LOS	A	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-	0.1






















HCM 6th TWSC
5: S Chambers Road & E Gill Avenue

Total Traffic Conditions
Year 2040 - AM Peak Hour

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑↑↑	↑↑↑	↔
Traffic Vol, veh/h	0	60	0	1719	1119	16
Future Vol, veh/h	0	60	0	1719	1119	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	65	0	1868	1216	17
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	617	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	*663	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %		1		-	-	-
Mov Cap-1 Maneuver	-	*663	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		NB		SB	
HCM Control Delay, s	11		0		0	
HCM LOS	B					
Minor Lane/Major Mvmt	NBT EBLn1		SBT		SBR	
Capacity (veh/h)	- 663		-		-	
HCM Lane V/C Ratio	- 0.098		-		-	
HCM Control Delay (s)	- 11		-		-	
HCM Lane LOS	- B		-		-	
HCM 95th %tile Q(veh)	- 0.3		-		-	
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

Timings
1: S Chambers Road & E Exposition Avenue

Total Traffic Conditions
Year 2040 - PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	223	22	259	30	12	34	200	1375	19	104	1994	201
Future Volume (vph)	223	22	259	30	12	34	200	1375	19	104	1994	201
Satd. Flow (prot)	0	1781	1583	0	1718	0	1770	5075	0	1770	5085	1583
Flt Permitted		0.695			0.640		0.051			0.159		
Satd. Flow (perm)	0	1295	1583	0	1121	0	95	5075	0	296	5085	1583
Satd. Flow (RTOR)			145		29			3				75
Lane Group Flow (vph)	0	266	282	0	83	0	217	1516	0	113	2167	218
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8			2			6		6
Detector Phase	4	4	4	8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	5.0	5.0		3.0	10.0		10.0	10.0	10.0
Minimum Split (s)	14.0	14.0	14.0	11.0	11.0		7.0	16.0		16.0	16.0	16.0
Total Split (s)	40.0	40.0	40.0	40.0	40.0		15.0	95.0		80.0	80.0	80.0
Total Split (%)	29.6%	29.6%	29.6%	29.6%	29.6%		11.1%	70.4%		59.3%	59.3%	59.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	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		4.0	6.0		6.0	6.0	6.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	C-Max		C-Max	C-Max	C-Max
Act Effct Green (s)		30.9	30.9		30.9		94.1	92.1		74.0	74.0	74.0
Actuated g/C Ratio		0.23	0.23		0.23		0.70	0.68		0.55	0.55	0.55
v/c Ratio		0.90	0.60		0.30		0.90	0.44		0.70	0.78	0.24
Control Delay		82.2	26.9		30.2		74.0	10.5		51.7	34.0	15.5
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	9.4	0.0
Total Delay		82.2	26.9		30.2		74.0	10.5		51.7	43.4	15.5
LOS		F	C		C		E	B		D	D	B
Approach Delay		53.7			30.2			18.5			41.3	
Approach LOS		D			C			B			D	
Queue Length 50th (ft)		221	103		38		~158	218		85	645	90
Queue Length 95th (ft)		#368	199		86		#328	250		m#189	730	m147
Internal Link Dist (ft)		469			199			287			256	
Turn Bay Length (ft)			150				265			120		90
Base Capacity (vph)		326	507		304		241	3464		162	2787	901
Starvation Cap Reductn		0	0		0		0	0		0	615	0
Spillback Cap Reductn		0	0		0		0	0		0	0	0
Storage Cap Reductn		0	0		0		0	0		0	0	0
Reduced v/c Ratio		0.82	0.56		0.27		0.90	0.44		0.70	1.00	0.24

Intersection Summary

Cycle Length: 135

Actuated Cycle Length: 135

Offset: 61 (45%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Timings 1: S Chambers Road & E Exposition Avenue

Total Traffic Conditions
Year 2040 - PM Peak Hour

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 34.4

Intersection LOS: C

Intersection Capacity Utilization 83.1%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

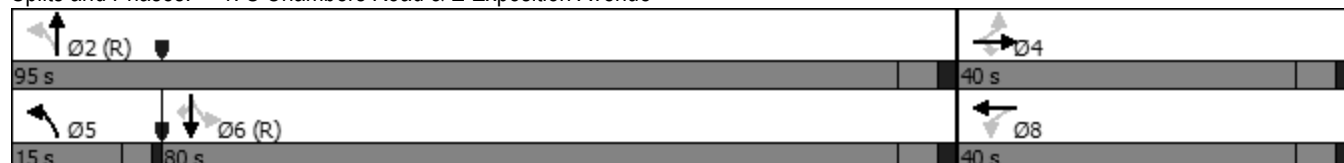
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

























Splits and Phases: 1: S Chambers Road & E Exposition Avenue



HCM 6th Signalized Intersection Summary





1: S Chambers Road & E Exposition Avenue

Total Traffic Conditions
Year 2040 - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (veh/h)	223	22	259	30	12	34	200	1375	19	104	1994	201
Future Volume (veh/h)	223	22	259	30	12	34	200	1375	19	104	1994	201
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	242	24	282	33	13	37	217	1495	21	113	2167	218
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	233	18	399	37	22	17	230	3421	48	233	2799	869
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.08	0.66	0.66	0.55	0.55	0.55
Sat Flow, veh/h	721	72	1585	0	86	69	1781	5188	73	345	5106	1585
Grp Volume(v), veh/h	266	0	282	83	0	0	217	981	535	113	2167	218
Grp Sat Flow(s),veh/h/ln	793	0	1585	154	0	0	1781	1702	1857	345	1702	1585
Q Serve(g_s), s	0.0	0.0	21.9	0.0	0.0	0.0	9.9	18.6	18.6	31.5	45.0	9.7
Cycle Q Clear(g_c), s	34.0	0.0	21.9	34.0	0.0	0.0	9.9	18.6	18.6	35.2	45.0	9.7
Prop In Lane	0.91		1.00	0.40		0.45	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	251	0	399	76	0	0	230	2244	1224	233	2799	869
V/C Ratio(X)	1.06	0.00	0.71	1.09	0.00	0.00	0.94	0.44	0.44	0.49	0.77	0.25
Avail Cap(c_a), veh/h	251	0	399	76	0	0	230	2244	1224	233	2799	869
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.0	0.0	46.0	50.9	0.0	0.0	38.6	11.0	11.0	23.0	23.9	16.0
Incr Delay (d2), s/veh	74.0	0.0	5.6	129.9	0.0	0.0	43.6	0.6	1.1	7.1	2.2	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.8	0.0	9.3	5.4	0.0	0.0	6.6	6.7	7.5	2.9	17.6	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	128.0	0.0	51.6	180.8	0.0	0.0	82.3	11.6	12.1	30.1	26.1	16.7
LnGrp LOS	F	A	D	F	A	A	F	B	B	C	C	B
Approach Vol, veh/h	548				83		1733				2498	
Approach Delay, s/veh	88.7				180.8		20.6				25.5	
Approach LOS	F				F		C				C	
Timer - Assigned Phs	2		4		5		6		8			
Phs Duration (G+Y+Rc), s	95.0		40.0		15.0		80.0		40.0			
Change Period (Y+Rc), s	6.0		6.0		4.0		6.0		6.0			
Max Green Setting (Gmax), s	89.0		34.0		11.0		74.0		34.0			
Max Q Clear Time (g_c+I1), s	20.6		36.0		11.9		47.0		36.0			
Green Ext Time (p_c), s	8.0		0.0		0.0		17.4		0.0			
Intersection Summary												
HCM 6th Ctrl Delay			33.5									
HCM 6th LOS			C									




















HCM 6th TWSC
2: S Chambers Road & E Center Avenue

Total Traffic Conditions
Year 2040 - PM Peak Hour

Intersection												
Int Delay, s/veh	221.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	59	10	41	85	4	39	47	1555	48	36	2200	34
Future Vol, veh/h	59	10	41	85	4	39	47	1555	48	36	2200	34
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	-	-	-	-	-	-	300	-	-	110	-	-
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	64	11	45	92	4	42	51	1690	52	39	2391	37
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	3268	4332	1214	2858	4324	871	2428	0	0	1742	0	0
Stage 1	2488	2488	-	1818	1818	-	-	-	-	-	-	-
Stage 2	780	1844	-	1040	2506	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	*~ 19	~ 1	149	~ 49	~ 1	*567	75	-	-	683	-	-
Stage 1	*~ 17	58	-	454	471	-	-	-	-	-	-	-
Stage 2	*582	451	-	222	56	-	-	-	-	-	-	-
Platoon blocked, %	1	1		1	1	1		-	-	1	-	-
Mov Cap-1 Maneuver	*~ 7	0	149	~ 15	0	*567	75	-	-	683	-	-
Mov Cap-2 Maneuver	*~ 7	0	-	~ 15	0	-	-	-	-	-	-	-
Stage 1	*~ 5	55	-	145	151	-	-	-	-	-	-	-
Stage 2	*167	144	-	118	53	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, \$	5108.7		2745.2			3.5			0.2			
HCM LOS	F		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	75	-	-	11	22	683	-	-				
HCM Lane V/C Ratio	0.681	-	-	10.87	6.324	0.057	-	-				
HCM Control Delay (s)	122.2	-	-	\$ 5108.7	\$ 2745.2	10.6	-	-				
HCM Lane LOS	F	-	-	F	F	B	-	-				
HCM 95th %tile Q(veh)	3.1	-	-	16.3	17.6	0.2	-	-				
Notes												
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												

Timings
2: S Chambers Road & E Center Avenue

Total Traffic Conditions
Year 2040 - PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	10	41	85	4	39	47	1555	48	36	2200	34
Future Volume (vph)	59	10	41	85	4	39	47	1555	48	36	2200	34
Satd. Flow (prot)	0	1722	0	0	1729	0	1770	5065	0	1770	5075	0
Flt Permitted		0.779			0.696		0.047			0.114		
Satd. Flow (perm)	0	1377	0	0	1243	0	88	5065	0	212	5075	0
Satd. Flow (RTOR)		17			13			11			5	
Lane Group Flow (vph)	0	120	0	0	138	0	51	1742	0	39	2428	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.0	11.0		11.0	11.0		16.0	16.0		16.0	16.0	
Total Split (s)	23.0	23.0		23.0	23.0		112.0	112.0		112.0	112.0	
Total Split (%)	17.0%	17.0%		17.0%	17.0%		83.0%	83.0%		83.0%	83.0%	
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	
Total Lost Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)		16.1			16.1		106.9	106.9		106.9	106.9	
Actuated g/C Ratio		0.12			0.12		0.79	0.79		0.79	0.79	
v/c Ratio		0.67			0.87		0.73	0.43		0.23	0.60	
Control Delay		67.4			96.2		67.9	3.9		7.6	6.4	
Queue Delay		0.0			0.0		0.0	0.1		0.0	0.1	
Total Delay		67.4			96.2		67.9	3.9		7.6	6.6	
LOS		E			F		E	A		A	A	
Approach Delay		67.4			96.2			5.7			6.6	
Approach LOS		E			F			A			A	
Queue Length 50th (ft)		87			109		12	121		8	272	
Queue Length 95th (ft)		#164			#227		m#110	135		22	302	
Internal Link Dist (ft)		463			396			252			384	
Turn Bay Length (ft)							300			110		
Base Capacity (vph)		188			167		70	4014		167	4020	
Starvation Cap Reductn		0			0		0	522		0	0	
Spillback Cap Reductn		0			0		0	0		0	482	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.64			0.83		0.73	0.50		0.23	0.69	
Intersection Summary												
Cycle Length: 135												
Actuated Cycle Length: 135												
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 60												
Control Type: Actuated-Coordinated												

Timings 2: S Chambers Road & E Center Avenue

Total Traffic Conditions
Year 2040 - PM Peak Hour

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 10.6

Intersection LOS: B

Intersection Capacity Utilization 63.1%

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: S Chambers Road & E Center Avenue

 Ø2 (L) 112 s	 Ø4 23 s
 Ø6 (R) 112 s	 Ø8 23 s

HCM 6th Signalized Intersection Summary

2: S Chambers Road & E Center Avenue

Total Traffic Conditions
Year 2040 - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (veh/h)	59	10	41	85	4	39	47	1555	48	36	2200	34
Future Volume (veh/h)	59	10	41	85	4	39	47	1555	48	36	2200	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	64	11	45	92	4	42	51	1690	52	39	2391	37
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	124	27	66	146	8	48	141	4049	125	274	4121	64
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.12	1.00	1.00	1.00	0.80	0.80	0.80
Sat Flow, veh/h	721	230	571	880	69	415	141	5090	157	277	5180	80
Grp Volume(v), veh/h	120	0	0	138	0	0	51	1130	612	39	1569	859
Grp Sat Flow(s),veh/h/ln	1522	0	0	1364	0	0	141	1702	1842	277	1702	1856
Q Serve(g_s), s	0.0	0.0	0.0	3.4	0.0	0.0	19.8	0.0	0.0	4.5	23.6	23.8
Cycle Q Clear(g_c), s	10.1	0.0	0.0	13.5	0.0	0.0	43.5	0.0	0.0	4.5	23.6	23.8
Prop In Lane	0.53		0.37	0.67		0.30	1.00		0.08	1.00		0.04
Lane Grp Cap(c), veh/h	217	0	0	202	0	0	141	2708	1466	274	2708	1477
V/C Ratio(X)	0.55	0.00	0.00	0.68	0.00	0.00	0.36	0.42	0.42	0.14	0.58	0.58
Avail Cap(c_a), veh/h	232	0	0	217	0	0	141	2708	1466	274	2708	1477
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.2	0.0	0.0	58.8	0.0	0.0	4.8	0.0	0.0	3.3	5.2	5.2
Incr Delay (d2), s/veh	2.5	0.0	0.0	7.8	0.0	0.0	7.1	0.5	0.9	1.1	0.9	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	0.0	0.0	5.1	0.0	0.0	0.7	0.2	0.4	0.3	6.6	7.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.7	0.0	0.0	66.7	0.0	0.0	11.9	0.5	0.9	4.4	6.1	6.9
LnGrp LOS	E	A	A	E	A	A	B	A	A	A	A	A
Approach Vol, veh/h		120			138			1793			2467	
Approach Delay, s/veh		59.7			66.7			0.9			6.4	
Approach LOS		E			E			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		113.4		21.6		113.4		21.6				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		106.0		17.0		106.0		17.0				
Max Q Clear Time (g_c+I1), s		45.5		12.1		25.8		15.5				
Green Ext Time (p_c), s		15.5		0.1		24.0		0.1				
Intersection Summary												
HCM 6th Ctrl Delay				7.5								
HCM 6th LOS				A								




HCM 6th TWSC
3: S Fraser Street/S Granby Street & E Center Avenue

Total Traffic Conditions
Year 2040 - PM Peak Hour

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	1	73	14	7	77	1	9	4	32	5	7	5
Future Vol, veh/h	1	73	14	7	77	1	9	4	32	5	7	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
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	79	15	8	84	1	10	4	35	5	8	5
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	85	0	0	94	0	0	196	190	87	209	197	85
Stage 1	-	-	-	-	-	-	89	89	-	101	101	-
Stage 2	-	-	-	-	-	-	107	101	-	108	96	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1528	-	-	1500	-	-	803	730	971	787	724	1016
Stage 1	-	-	-	-	-	-	918	821	-	940	828	-
Stage 2	-	-	-	-	-	-	932	828	-	897	815	-
Platoon blocked, %	1	-	-	-	-	-	1	1	-	1	1	1
Mov Cap-1 Maneuver	1528	-	-	1500	-	-	787	725	971	751	719	1016
Mov Cap-2 Maneuver	-	-	-	-	-	-	787	725	-	751	719	-
Stage 1	-	-	-	-	-	-	917	820	-	939	823	-
Stage 2	-	-	-	-	-	-	913	823	-	859	814	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.6			9.2			9.6		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	902	1528	-	-	1500	-	-	798				
HCM Lane V/C Ratio	0.054	0.001	-	-	0.005	-	-	0.023				
HCM Control Delay (s)	9.2	7.4	0	-	7.4	0	-	9.6				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1				

HCM 6th TWSC
4: E Exposition Avenue & S Fraser Street

Total Traffic Conditions
Year 2040 - PM Peak Hour

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	21	504	363	50	0	14
Future Vol, veh/h	21	504	363	50	0	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	548	395	54	0	15

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	449	0	0 1016 422
Stage 1	-	-	- 422 -
Stage 2	-	-	- 594 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1124	-	- 246 762
Stage 1	-	-	- 726 -
Stage 2	-	-	- 552 -
Platoon blocked, %	1	-	- 1 1
Mov Cap-1 Maneuver	1124	-	- 239 762
Mov Cap-2 Maneuver	-	-	- 239 -
Stage 1	-	-	- 705 -
Stage 2	-	-	- 552 -

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	9.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1124	-	-	-	762
HCM Lane V/C Ratio	0.02	-	-	-	0.02
HCM Control Delay (s)	8.3	0	-	-	9.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

HCM 6th TWSC
5: S Chambers Road & E Gill Avenue

Total Traffic Conditions
Year 2040 - PM Peak Hour

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑↑	↑↑↑	
Traffic Vol, veh/h	0	32	0	1632	2267	44
Future Vol, veh/h	0	32	0	1632	2267	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	35	0	1774	2464	48

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 1256	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 7.14	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.92	- -	- -
Pot Cap-1 Maneuver	0 *395	0 -	- -
Stage 1	0 -	0 -	- -
Stage 2	0 -	0 -	- -
Platoon blocked, %	1	- -	- -
Mov Cap-1 Maneuver	- *395	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

Approach	EB	NB	SB
HCM Control Delay, s	15	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 395	- -	- -
HCM Lane V/C Ratio	- 0.088	- -	- -
HCM Control Delay (s)	- 15	- -	- -
HCM Lane LOS	- C	- -	- -
HCM 95th %tile Q(veh)	- 0.3	- -	- -

Notes			
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

APPENDIX D

Warrant Analysis Forms

Standard:

04 The need for a traffic control signal shall be considered if an engineering study finds that one of the following conditions exist for each of any 8 hours of an average day:

- A. The vehicles per hour given in both of the 100 percent columns of Condition A in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection; or
- B. The vehicles per hour given in both of the 100 percent columns of Condition B in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection.

In applying each condition the major-street and minor-street volumes shall be for the same 8 hours. On the minor street, the higher volume shall not be required to be on the same approach during each of these 8 hours.

Option:

05 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, the traffic volumes in the 70 percent columns in Table 4C-1 may be used in place of the 100 percent columns.

Guidance:

06 The combination of Conditions A and B is intended for application at locations where Condition A is not satisfied and Condition B is not satisfied and should be applied only after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems.

Standard:

07 The need for a traffic control signal shall be considered if an engineering study finds that both of the following conditions exist for each of any 8 hours of an average day:

- A. The vehicles per hour given in both of the 80 percent columns of Condition A in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection; and
- B. The vehicles per hour given in both of the 80 percent columns of Condition B in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection.

These major-street and minor-street volumes shall be for the same 8 hours for each condition; however, the 8 hours satisfied in Condition A shall not be required to be the same 8 hours satisfied in Condition B. On the minor street, the higher volume shall not be required to be on the same approach during each of the 8 hours.

Table 4C-1. Warrant 1, Eight-Hour Vehicular Volume

Condition A—Minimum Vehicular Volume

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100% ^a	80% ^b	70% ^c	56% ^d	100% ^a	80% ^b	70% ^c	56% ^d
1	1	500	400	350	280	150	120	105	84
2 or more	1	600	480	420	336	150	120	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	500	400	350	280	200	160	140	112

Condition B—Interruption of Continuous Traffic

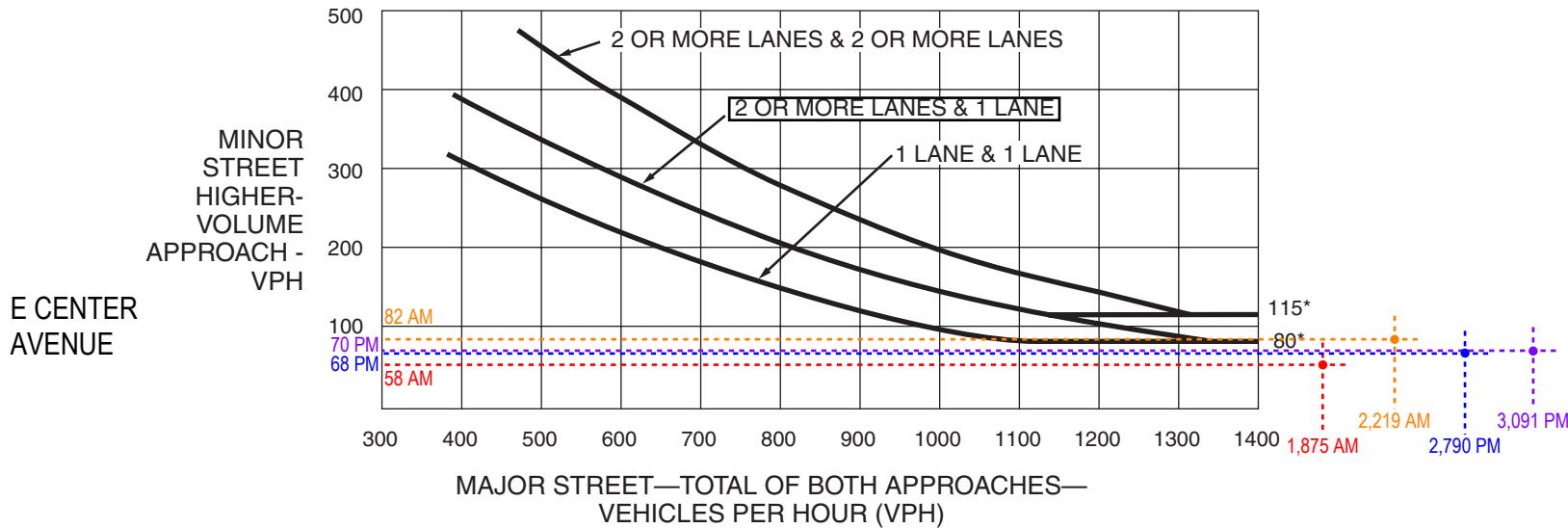
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100% ^a	80% ^b	70% ^c	56% ^d	100% ^a	80% ^b	70% ^c	56% ^d
1	1	750	600	525	420	75	60	53	42
2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	750	600	525	420	100	80	70	56

^a Basic minimum hourly volume

^b Used for combination of Conditions A and B after adequate trial of other remedial measures

^c May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

^d May be used for combination of Conditions A and B after adequate trial of other remedial measures when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume**Key:**

7:00 AM - 8:00 AM

8:00 AM - 9:00 AM

4:00 PM - 5:00 PM

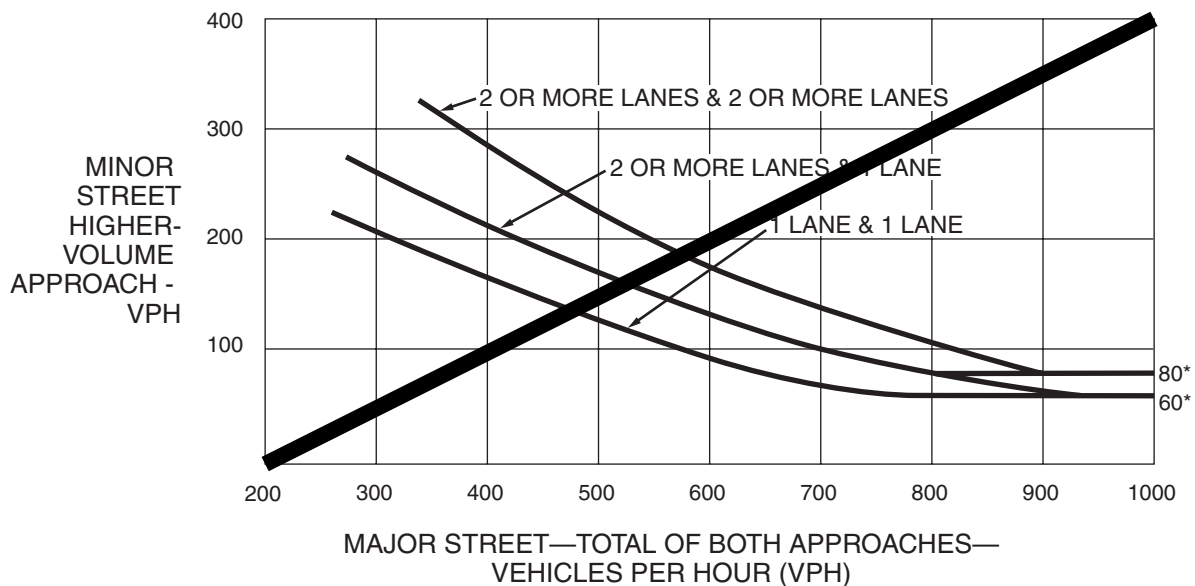
5:00 PM - 6:00 PM

*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

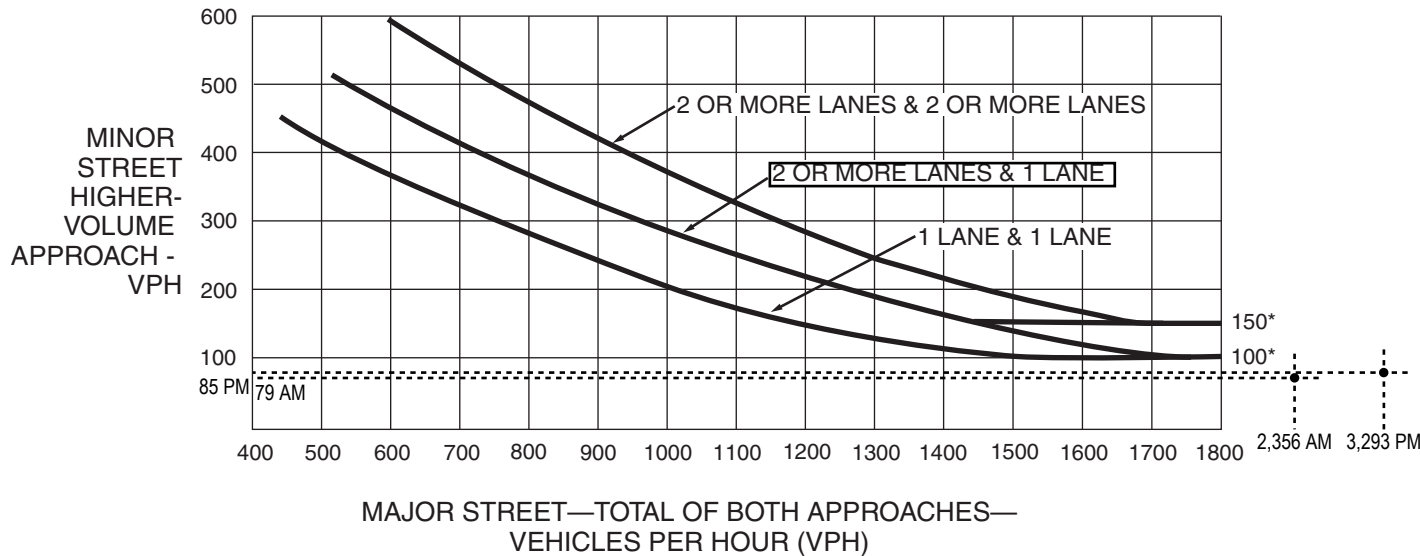
S CHAMBERS ROAD (40 MPH)

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-3. Warrant 3, Peak Hour

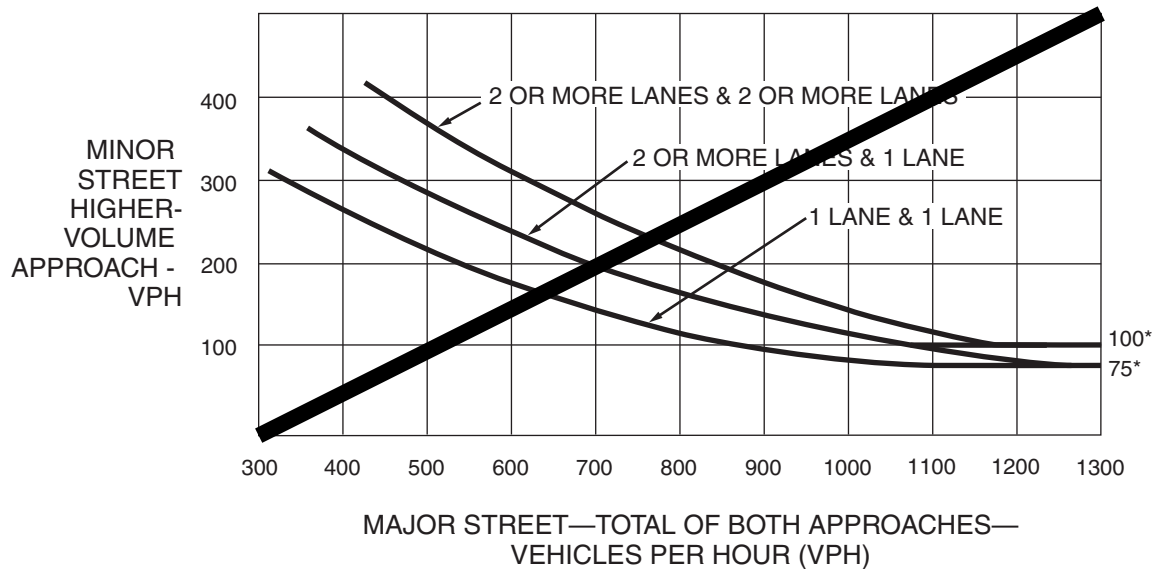
*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

S CHAMBERS ROAD (40 MPH)

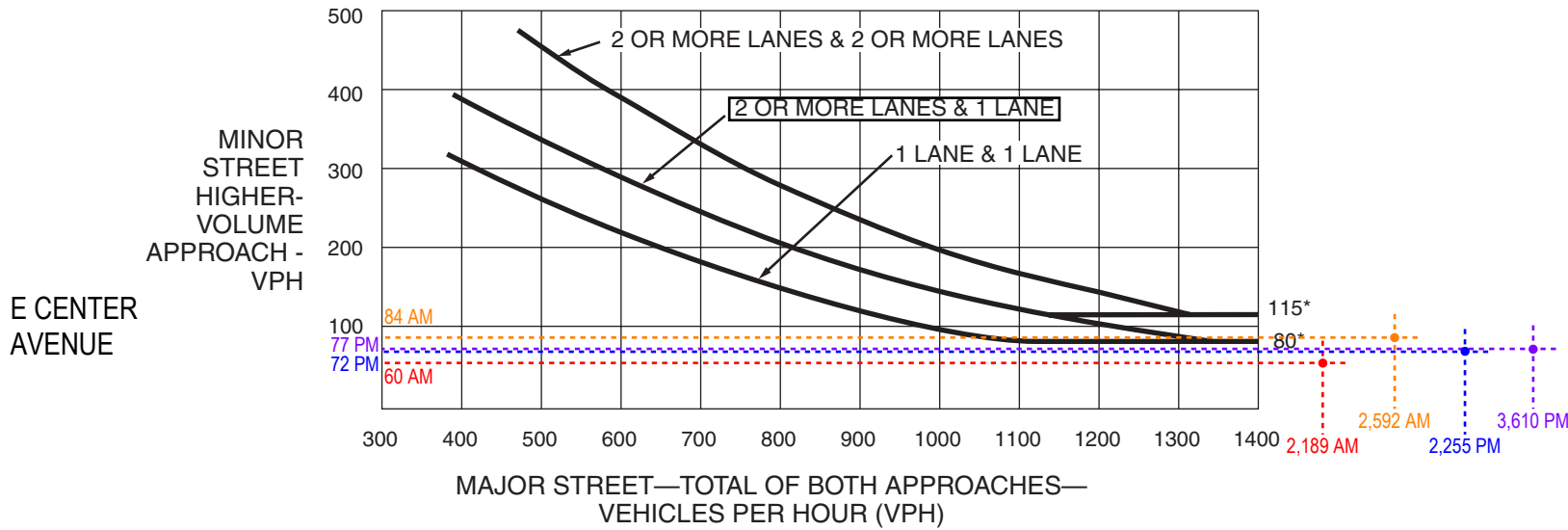
Note: 50% right turn reduction applied.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume**Key:**

7:00 AM - 8:00 AM

8:00 AM - 9:00 AM

4:00 PM - 5:00 PM

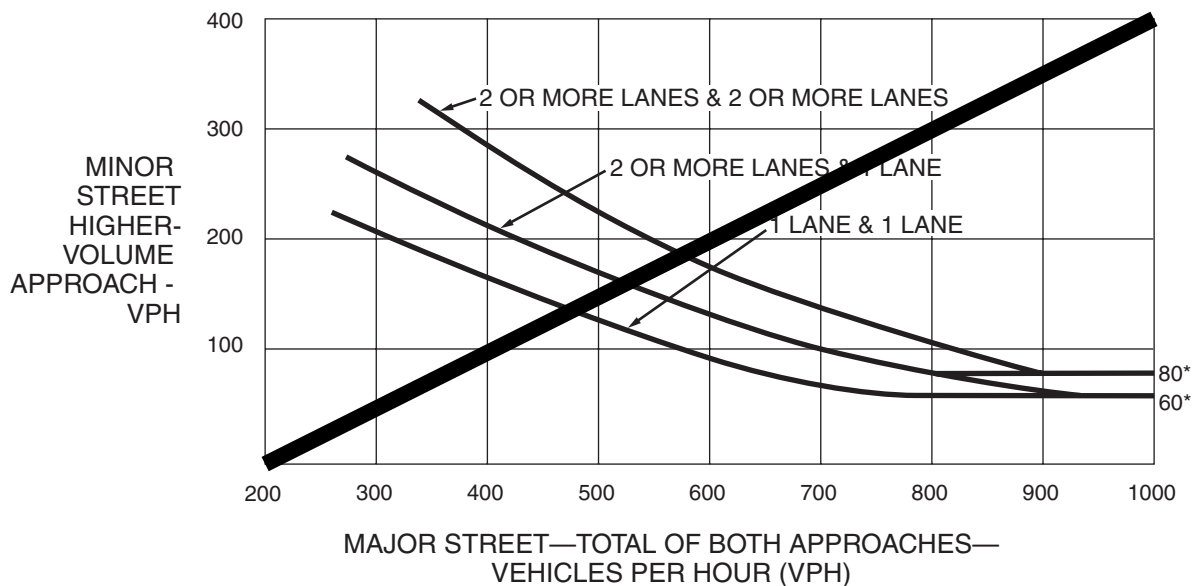
5:00 PM - 6:00 PM

*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

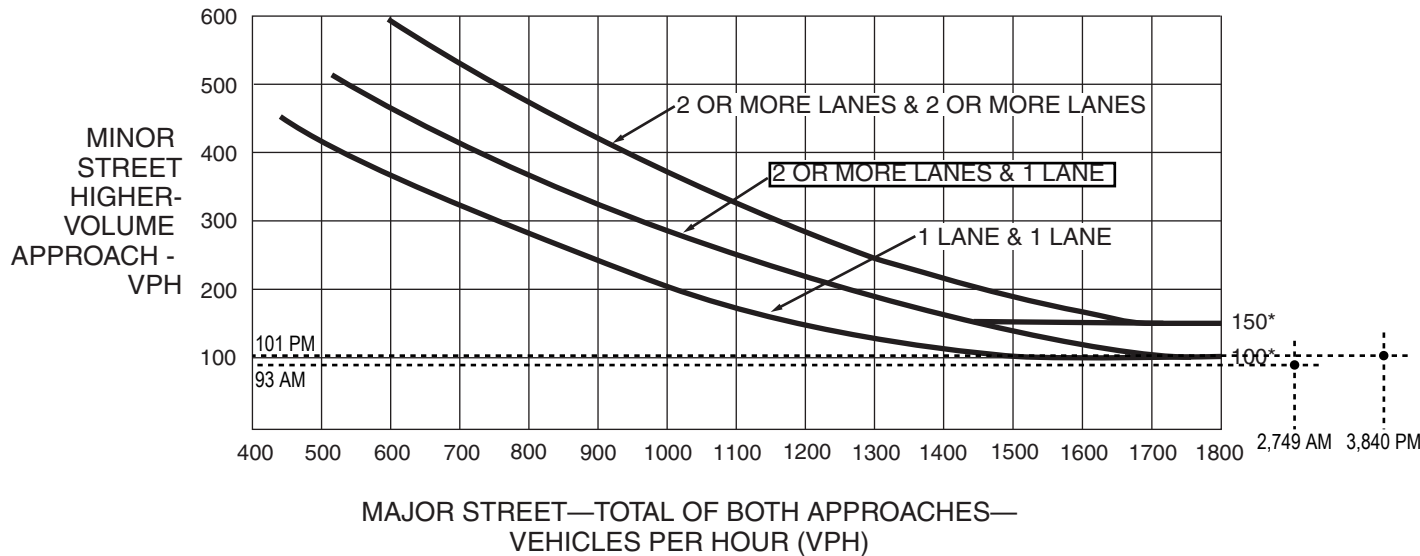
S CHAMBERS ROAD (40 MPH)

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-3. Warrant 3, Peak Hour

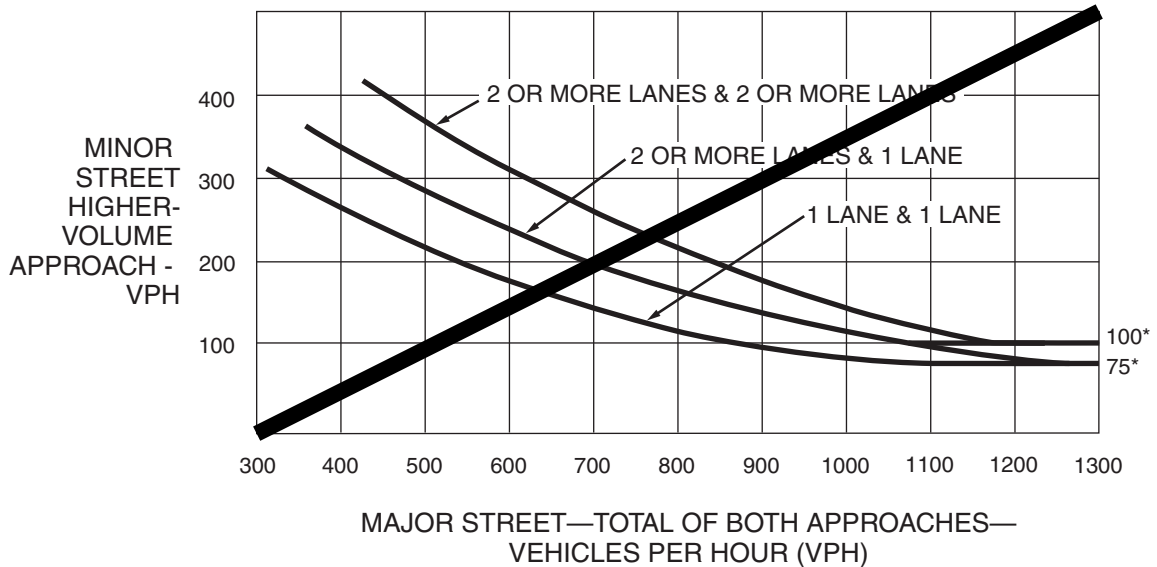
*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

S CHAMBERS ROAD (40 MPH)

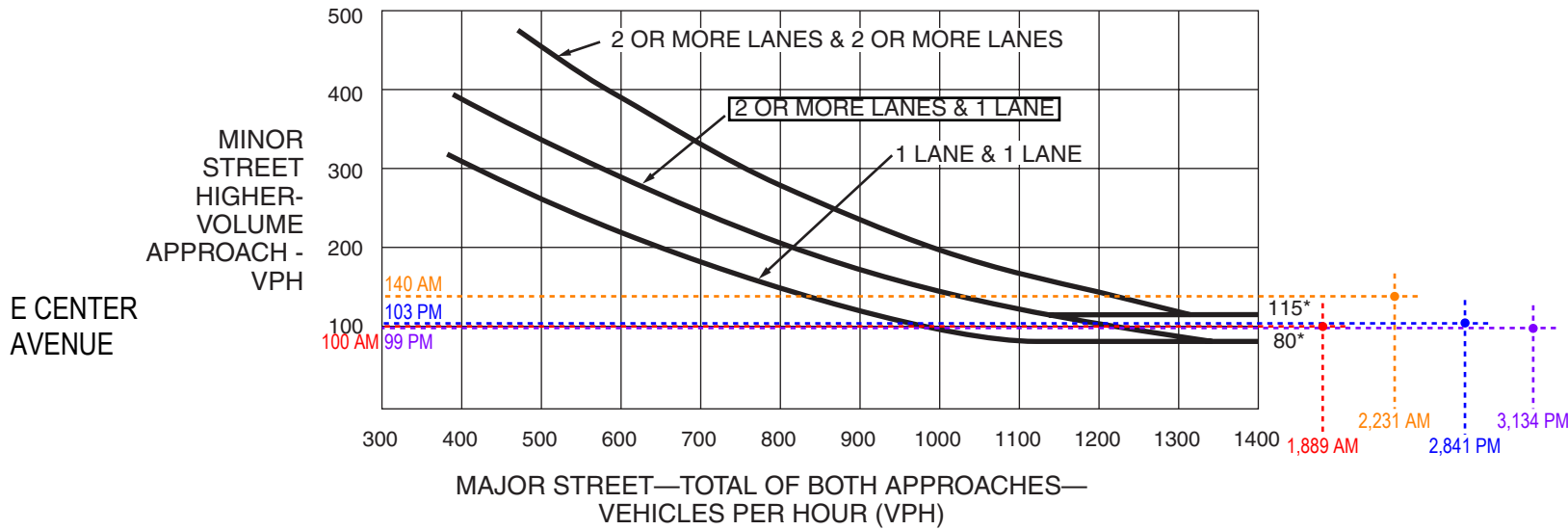
Note: 50% right turn reduction applied.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume**Key:**

7:00 AM - 8:00 AM

8:00 AM - 9:00 AM

4:00 PM - 5:00 PM

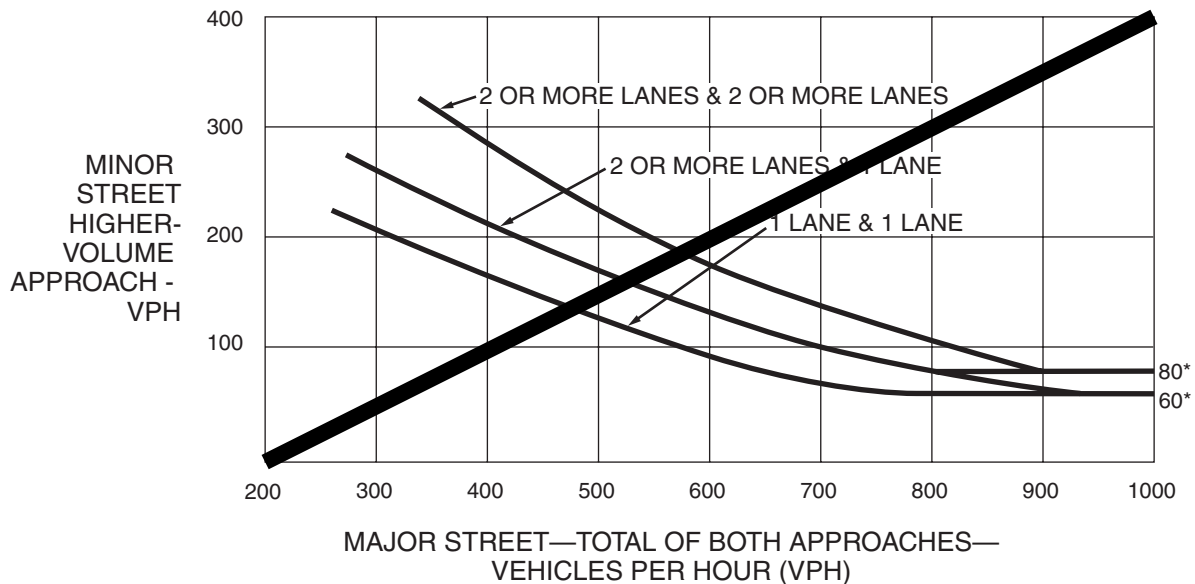
5:00 PM - 6:00 PM

*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

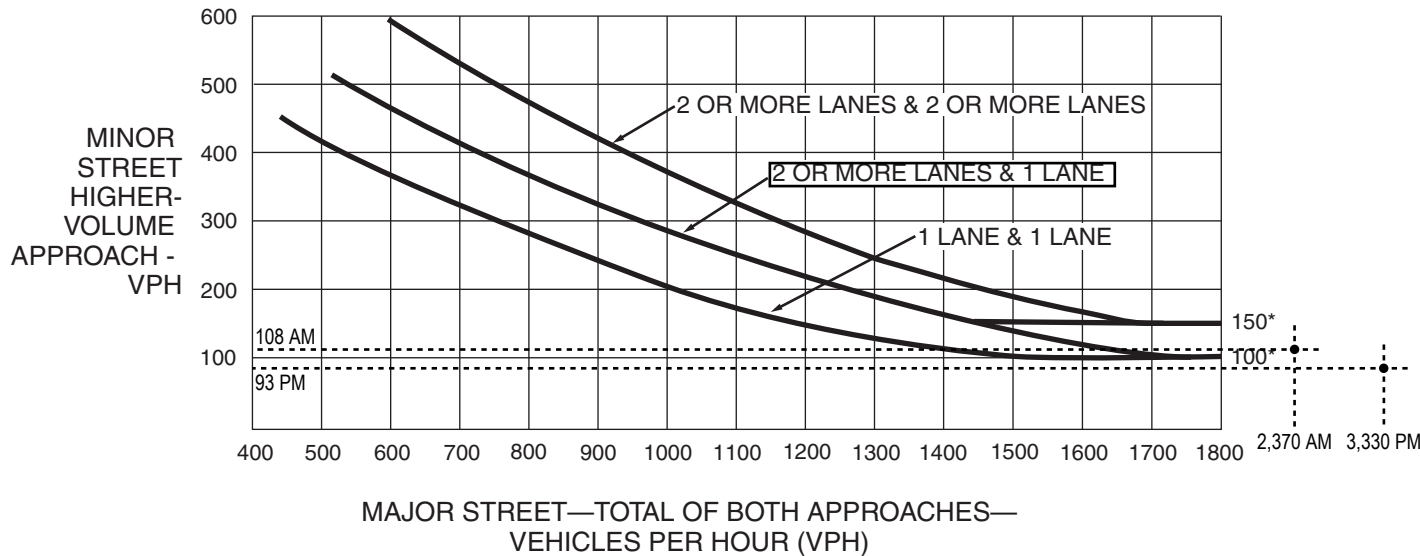
S CHAMBERS ROAD (40 MPH)

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-3. Warrant 3, Peak Hour

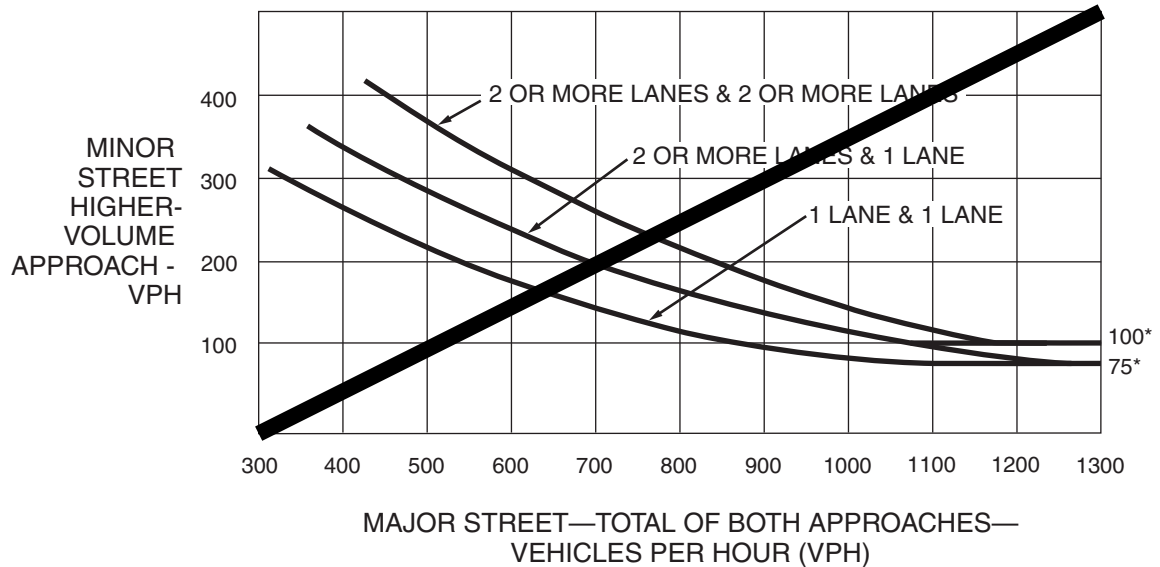
*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

S CHAMBERS ROAD (40 MPH)

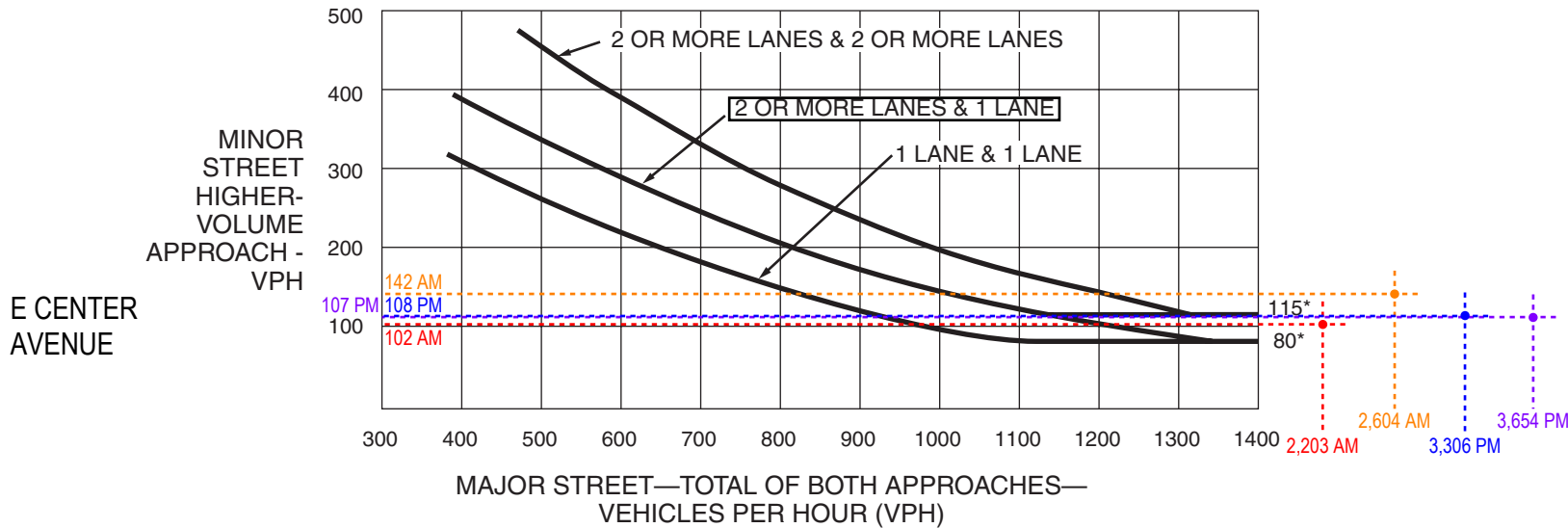
Note: 50% right turn reduction applied.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume**Key:**

7:00 AM - 8:00 AM

8:00 AM - 9:00 AM

4:00 PM - 5:00 PM

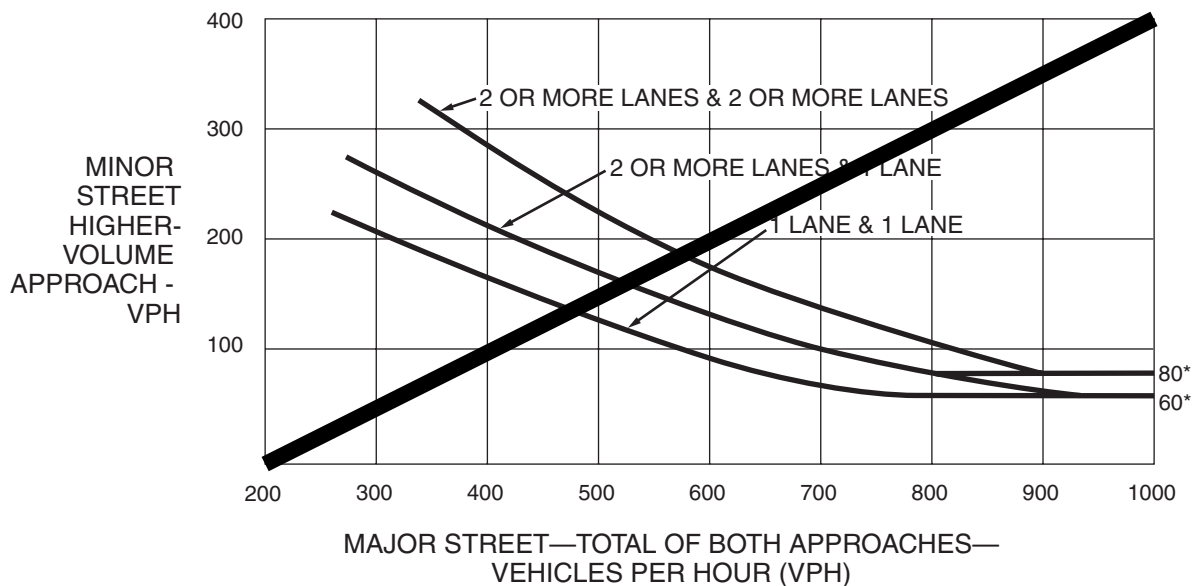
5:00 PM - 6:00 PM

*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

S CHAMBERS ROAD (40 MPH)

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)

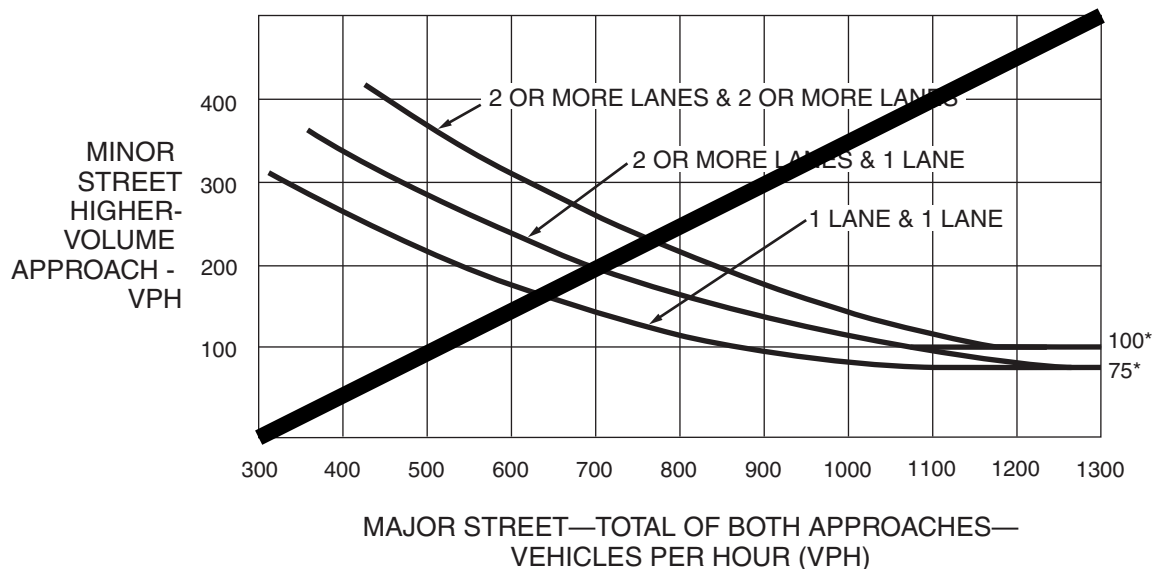


*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.



Note: 50% right turn reduction applied.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.