

TRAFFIC IMPACT STUDY

For

**Prospect Park at Fountain & Union
Colorado Springs, Colorado**

August 2020

Prepared for:

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20-081261

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I. Introduction

Project Overview

This traffic impact study addresses the capacity, geometric, and control requirements associated with the development entitled Prospect Park at Fountain & Union.

This proposed mixed-use development consists of a variety of land uses including commercial and residential. The development is located on the southeast corner of E Fountain Boulevard and S Union Boulevard in Colorado Springs, Colorado.

Study Area Boundaries

The study area to be examined in this analysis encompasses the E Fountain Boulevard intersections with S Union Boulevard, Stewart Place, and Boggs Place, and also includes all proposed site access intersections.

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 open space, public, religious, residential, commercial, and institutional land uses. A small portion of the development is currently occupied by a vacant building previously use as a restaurant land use.

The proposed development is conceptual and specific land uses have not been fully determined. However, for purposes of this analysis, it is anticipated that the development will include the new construction of an approximate 4,400 square foot convenience market with gas station supporting 14 vehicle fueling positions, as well as approximately 38,100 square feet of shopping center land uses and up to 391 multifamily residential dwelling units. It is noted that the assumed shopping center square footage is based on a Floor-Area-Ratio (FAR) calculation of 0.25. This FAR is consider typical for a development of this type and is consistent with City standard FAR allowances.

Proposed access to the development is provided at the following locations: two full-movement accesses onto S Union Boulevard (referred to as Access A and Access B), one right-in/right-out access onto S Union Boulevard (referred to as Access C), and three full-movement accesses onto E Fountain Boulevard (referred to as Access D, Access E, and Access F). Access D and Access E are extensions of Stewart Place and Boggs Place, respectively, south of E Fountain Boulevard. Additionally, it is noted that pursuant to the approved concept plan, a potential right-in/right-out access was originally proposed onto E Fountain Boulevard between S Union Boulevard and Stewart Place. However, it is understood that this access is no longer anticipated to be included with the current development plan. As such, this access is not analyzed within this analysis. This provides for a conservative analysis.

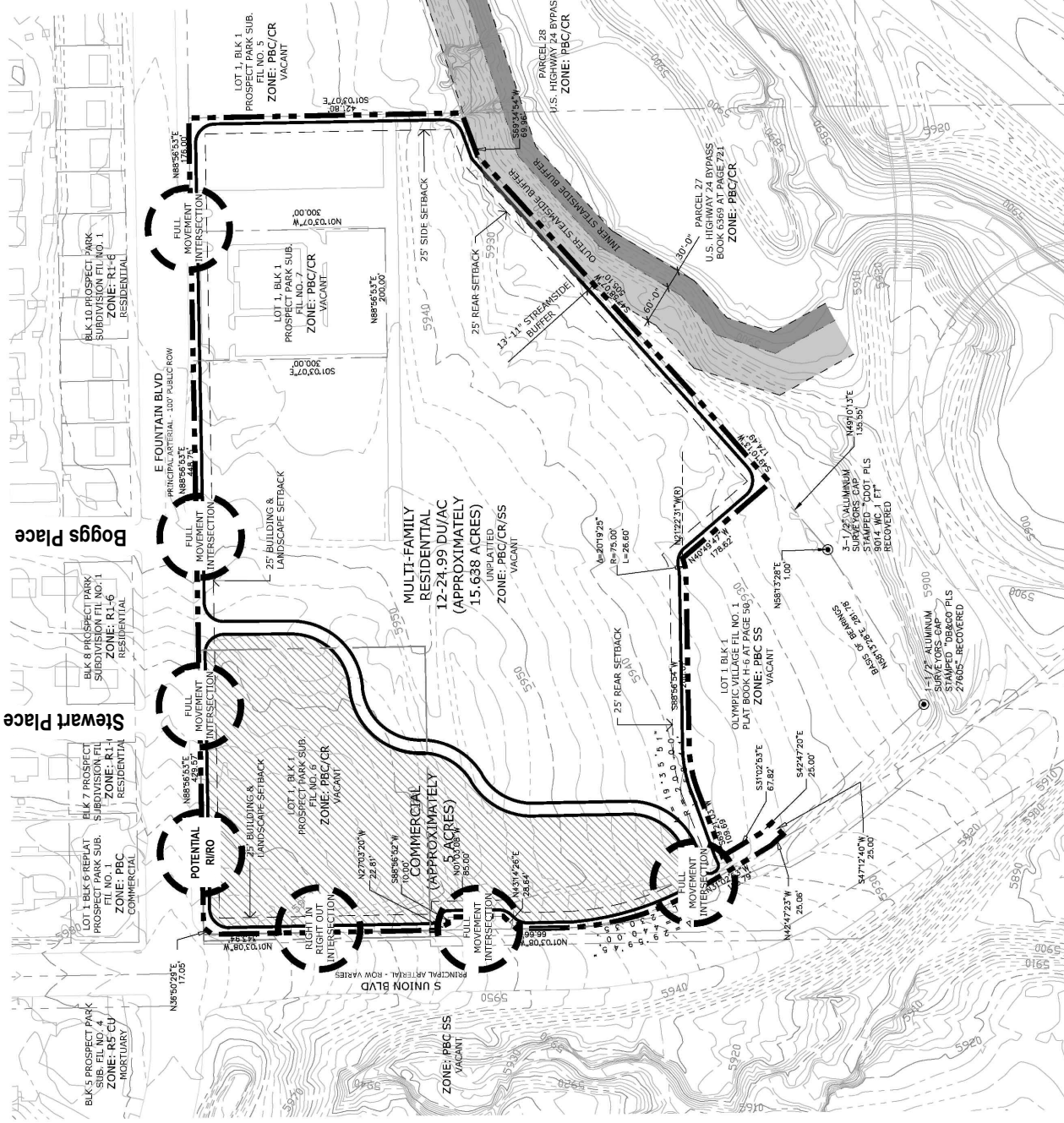
For purposes of this study, it is anticipated that development construction would be completed by end of Year 2022.

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





Not to Scale



PROSPECT PARK AT FOUNTAIN & UNION
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Figure 2
SITE PLAN

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Existing and Committed Surface Transportation Network

Within the study area, E Fountain Boulevard and S Union Boulevard are the primary roadways that will accommodate traffic to and from the proposed development. The secondary roadways include Stewart Place and Boggs Place. A brief description of each roadway is provided below:

E Fountain Boulevard is an east-west principal arterial roadway having four through lanes (two lanes in each direction) with a combination of shared and exclusive turn lanes at the intersections within the study area. E Fountain Boulevard provides a posted speed limit of 40 MPH.

S Union Boulevard is a north-south principal arterial roadway having four through lanes (two lanes in each direction) with a combination of shared and exclusive turn lanes at the intersection within the study area. S Union Boulevard provides a posted speed limit of 30 MPH in either direction north of E Fountain Boulevard and 40 MPH in either direction south of E Fountain Boulevard.

Stewart Place is a north-south roadway having two through lanes (one lane in each direction) with shared turn lanes at the intersection within the study area. Stewart Place is unclassified in the City's major transportation thoroughfare plan¹. However, per Sections 15.0 and 16.0 of the City's design standards², the roadway's estimated ROW width, and connection to E Fountain Boulevard, Stewart Place is assumed to be classified as a collector roadway with a 30 MPH posted speed limit, with the premise that the roadway's average daily traffic (ADT) is less than or equal to 2,500 vehicles per day, allowing for residential frontage per existing conditions.

Boggs Place is a north-south roadway having two through lanes (one lane in each direction) with shared turn lanes at the intersection within the study area. Boggs Place is unclassified in the City's major transportation thoroughfare plan. However, per Sections 15.0 and 16.0 of the City's design standards, the roadway's estimated ROW width, and connection to E Fountain Boulevard, Boggs Place is assumed to be classified as a collector roadway with a posted speed limit of 30 MPH, with the presumption that the roadway's ADT is less than or equal to 2,500 vehicles per day, allowing for residential frontage per existing conditions. Boggs Place ends at Manitoba Drive and continues north as Tahoe Boulevard.

The study intersection of E Fountain Boulevard with S Union Boulevard 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 E Fountain Boulevard, S Union Boulevard, or other described roadways are known to be planned or committed at this time. The study area roadways appear to be built to their ultimate cross-sections.

¹ Major Thoroughfare Plan, City of Colorado Springs, August 2011.

² Engineering Criteria Manual, Section III: Traffic Criteria Manual, City of Colorado Springs City Engineering, July 2010.

II. Existing Traffic Conditions

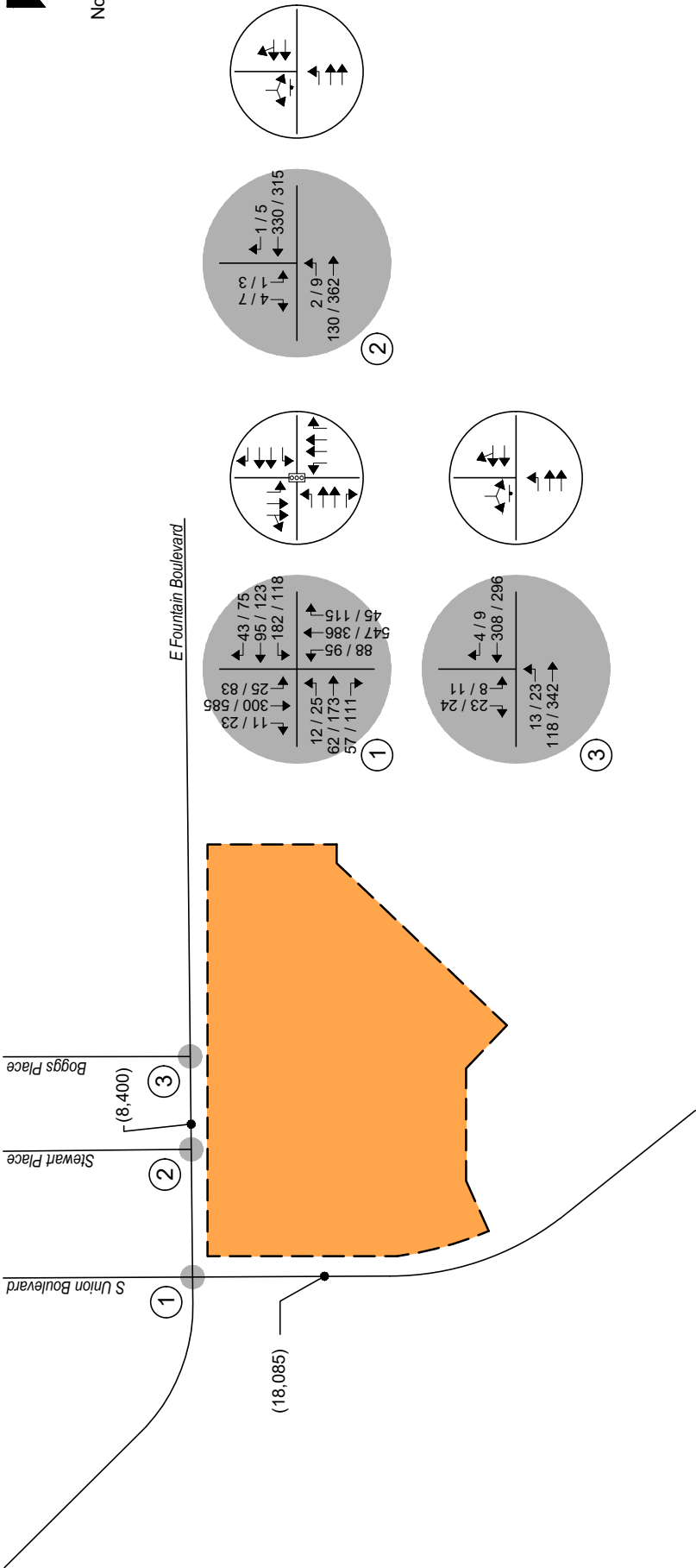
Morning (AM) and afternoon (PM) peak hour traffic counts were collected at the E Fountain Boulevard intersections with S Union Boulevard, Stewart Place, and Boggs Place. Average daily (24-hour) traffic volumes were collected on E Fountain Boulevard and S Union Boulevard. These counts are shown on Figure 3.

It should be noted that due to the effects of the COVID-19 pandemic, traffic volumes collected may not accurately represent peak hour and 24-hour traffic volumes under normal conditions. Therefore, in order to more accurately represent existing traffic volumes under normal conditions, average daily traffic volumes along S Union Boulevard, provided from the City's GIS web mapping application³, were used and grown at a two percent annual growth rate to Year 2020. This calculated 24-hour traffic volume was then compared to the collected count data. Upon comparison, it was determined that collected traffic count data is similar to existing traffic volumes under normal conditions. Therefore, no adjustments to collected counts were made. These counts are shown on Figure 3.

Traffic count data is included for reference in Appendix A.

Existing signal timing parameters for E Fountain Boulevard and S Union Boulevard were obtained from City Staff and used throughout this study to the best extent possible in order to remain consistent with existing signal coordination plans. City signal timing information received is included for reference in Appendix A.

³ Web Mapping Application, City of Colorado Springs GIS, January 2019.



LEGEND

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

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

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

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

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

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

Table 1 – Intersection Capacity Analysis Summary – Existing Traffic

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
E Fountain Boulevard / S Union Boulevard (Signalized)	C (21.2)	C (20.1)
E Fountain Boulevard / Stewart Place (Stop-Controlled)		
Eastbound Left	A	A
Southbound Left and Right	A	A
E Fountain Boulevard / Boggs Place (Stop-Controlled)		
Eastbound Left	A	A
Southbound Left and Right	A	B

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

Existing Traffic Analysis Results

Under existing conditions, operational analysis shows that the signalized intersection of E Fountain Boulevard with S Union Boulevard has overall operations at LOS C during both morning and afternoon peak traffic hours.

The unsignalized intersection of E Fountain Boulevard with Stewart Place has turn movement operations at LOS A during both morning and afternoon peak traffic hours.

The unsignalized intersection of E Fountain Boulevard with Boggs Place has turn movement operations at LOS A during morning peak traffic hours and LOS B or better during afternoon peak traffic hours.

III. Future Traffic Conditions Without Proposed Development

Background traffic is the traffic projected to be on area roadways without consideration of the proposed development. Background traffic includes traffic generated by development of vacant parcels in the area.

To account for projected increases in background traffic for Years 2022 and 2040, a compounded annual growth rate was determined using traffic data provided by CDOT's Online Transportation Information System (OTIS) for the adjacent segment of U.S. Highway 24, which anticipates a 20-year growth rate less than two percent. Therefore, in order to provide for a conservative analysis, a growth rate of approximately two percent was applied to existing traffic volumes.

Pursuant to the non-committed area roadway improvements discussed in Section I, Year 2022 and Year 2040 background traffic conditions assume no roadway improvements to accommodate regional transportation demands. Year 2040 assumes existing signal timing parameters for E Fountain Boulevard and S Union Boulevard with optimized intersection splits in effort to better long-term intersection performance. This assumption provides for a conservative analysis.

Projected background traffic volumes and intersection geometry for Years 2022 and 2040 are shown on Figure 4 and Figure 5, respectively.



LEGEND

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

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Figure 4
BACKGROUND TRAFFIC - YEAR 2022
Volumes & Intersection Geometry
AM / PM Peak Hour
(ADT) : Average Daily Traffic

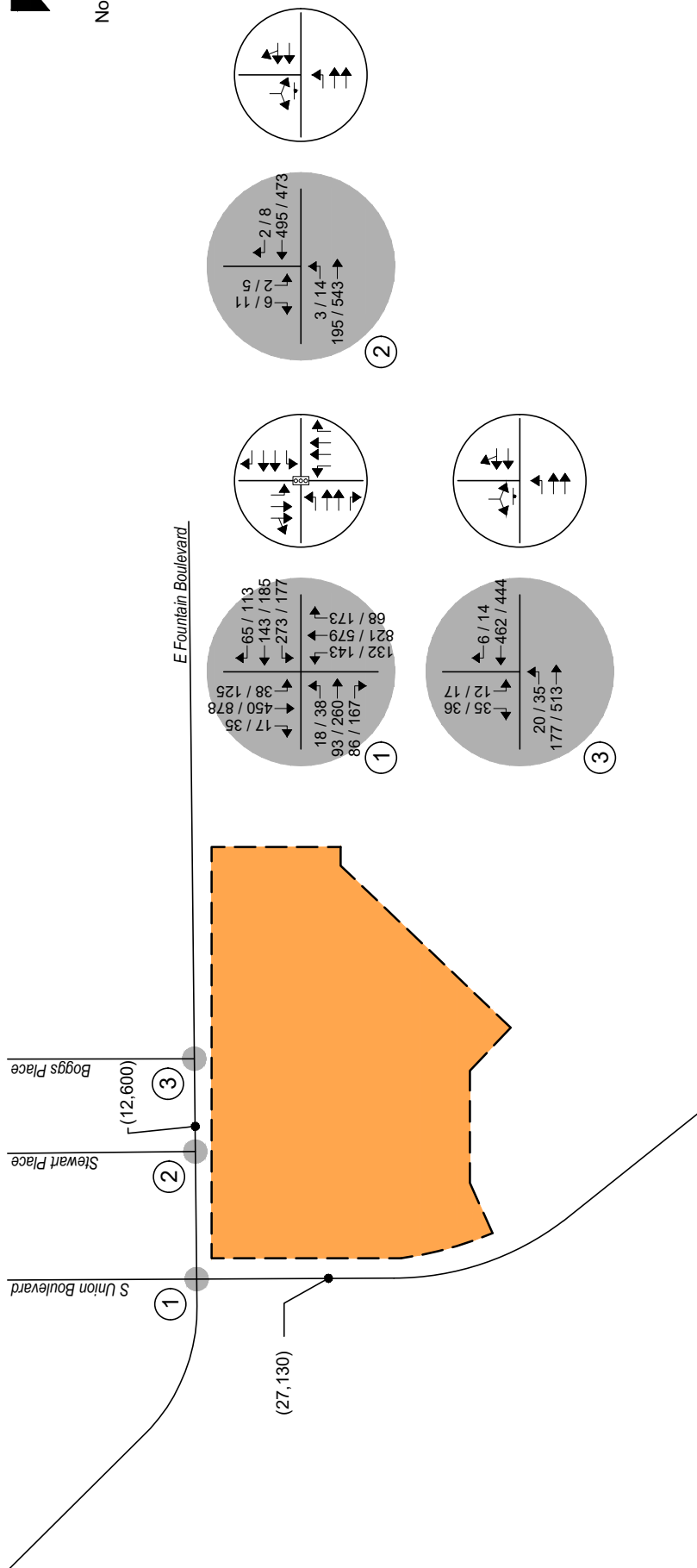


Figure 5
BACKGROUND TRAFFIC - YEAR 2040
Volumes & Intersection Geometry
AM / PM Peak Hour
(ADT) : Average Daily Traffic

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

Background traffic level of service analysis results for Year 2022 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 2022

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
E Fountain Boulevard / S Union Boulevard (Signalized)	C (21.8)	C (20.5)
E Fountain Boulevard / Stewart Place (Stop-Controlled)		
Eastbound Left	A	A
Southbound Left and Right	A	A
E Fountain Boulevard / Boggs Place (Stop-Controlled)		
Eastbound Left	A	A
Southbound Left and Right	B	B

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

Background Traffic Analysis Results – Year 2022

Year 2022 background traffic analysis indicates that the signalized intersection of E Fountain Boulevard with S Union Boulevard has overall operations at LOS C during both the morning and afternoon peak traffic hours.

The unsignalized intersection of E Fountain Boulevard with Stewart Place shows turn movement operations at LOS A during both morning and afternoon peak traffic hours.

The unsignalized intersection of E Fountain Boulevard with Boggs Place has turn movement operations at LOS B or better during both morning and afternoon peak traffic hours.

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

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
E Fountain Boulevard / S Union Boulevard (Signalized)	C (22.4)	C (23.8)
E Fountain Boulevard / Stewart Place (Stop-Controlled)		
Eastbound Left	A	A
Southbound Left and Right	B	B
E Fountain Boulevard / Boggs Place (Stop-Controlled)		
Eastbound Left	A	A
Southbound Left and Right	B	B

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

Background Traffic Analysis Results – Year 2040

By Year 2040 and without the proposed development, the study intersection of E Fountain Boulevard with S Union Boulevard continues to experience LOS C operations during both morning and afternoon peak traffic hours.

The stop-controlled intersection of E Fountain Boulevard with Stewart Place anticipates turn movement operations at LOS B or better during both morning and afternoon peak traffic hours.

The stop-controlled intersection of E Fountain Boulevard with Boggs Place projects turn movement operations at LOS B or better during both morning and afternoon peak traffic hours.

These intersection operations are similar to existing conditions.

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, 10th Edition, were applied to the proposed land use in order to estimate average daily traffic (ADT), AM Peak Hour, and PM Peak Hour vehicle trips. A vehicle trip is defined as a one-way vehicle movement from a point of origin to a point of destination.

The ITE land use codes 221 (Multifamily Housing (Low-Rise)), 820 (Shopping Center), and 960 (Super Convenience Market/Gas Station) were used for estimating trip generation because of their conservative trip generation rates, their best fit to the proposed land use descriptions, and as permitted for the existing Planned Business Center zoning defined within the City's code⁴.

As noted in Section I, assumed shopping center square footage is based on an FAR of 0.25. Multifamily housing units were determined based on the maximum allowable number of dwelling units per acre. As actual land uses, densities or site plans within the development area become defined over time, it is expected that traffic generation characteristics considered within this study will need to be updated by more specific traffic analyses or studies to help assess if transportation improvements are needed to mitigate potential traffic impacts.

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

Table 4 – Trip Generation Rates

ITE CODE LAND USE UNIT			TRIP GENERATION RATES						
			24	AM PEAK HOUR			PM PEAK HOUR		
			HOUR	ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
221	Multifamily Housing (Low-Rise)	DU	7.32	0.11	0.35	0.46	0.35	0.21	0.56
820	Shopping Center	KSF	37.75	0.58	0.36	0.94	1.83	1.98	3.81
960	Super Convenience Market/Gas Station	KSF	837.58	41.57	41.57	83.14	34.64	34.64	69.28

Key: KSF = Thousand Square Feet Gross Floor Area. DU = Dwelling Units.
 Note: All data and calculations above are subject to being rounded to nearest value.

⁴ Colorado Springs, Colorado City Code, Sterling Codifiers, December 12, 2017.

Table 5 illustrates projected average daily traffic (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 CODE	LAND USE	SIZE	TOTAL TRIPS GENERATED						
			24 HOUR	AM PEAK HOUR			PM PEAK HOUR		
				ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
221	Multifamily Housing (Low-Rise)	391 DU	2,862	41	138	180	138	81	219
820	Shopping Center	38.1 KSF	1,439	22	14	36	70	76	145
960	Super Convenience Market/Gas Station	4.4 KSF	3,706	184	184	368	153	153	307
<i>Total:</i>			<i>8,007</i>	<i>248</i>	<i>336</i>	<i>584</i>	<i>361</i>	<i>310</i>	<i>671</i>

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

Upon build-out, Table 5 illustrates that the proposed development has the potential to generate approximately 8,007 daily trips with 584 of those occurring during the morning peak hour and 671 during the afternoon peak hour.

Adjustments to Trip Generation Rates

While a development of this type is likely to attract trips from within area land uses as well as pass-by or diverted linked trips from the adjacent roadway system, no trip reduction was taken in this analysis. This assumption provides for a conservative analysis.

As example, published ITE pass-by and diverted link trip data indicates an average trip generation reduction rate between 46 and 78 percent as typical to service stations with convenience store. Considering the lowest reduction percentage, primary trip generation for the proposed development equates to approximately half of trip generation volumes presented in Table 5. A primary trip is defined by ITE as a trip made for the specific purpose of visiting the destination generator.

Additionally, it is noted that given the combination of both commercial and residential land uses, it is likely some amount of trips generated will have both origin and destination within the overall development area. These internally captured trips would result in an overall reduction to the anticipated trip generation presented in Table 5. However, given the conceptual nature of the proposed development, a specific percentage of internal capture can only be assumed. Therefore, no reduction was considered.

Trip Distribution

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

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

Trip Assignment

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

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

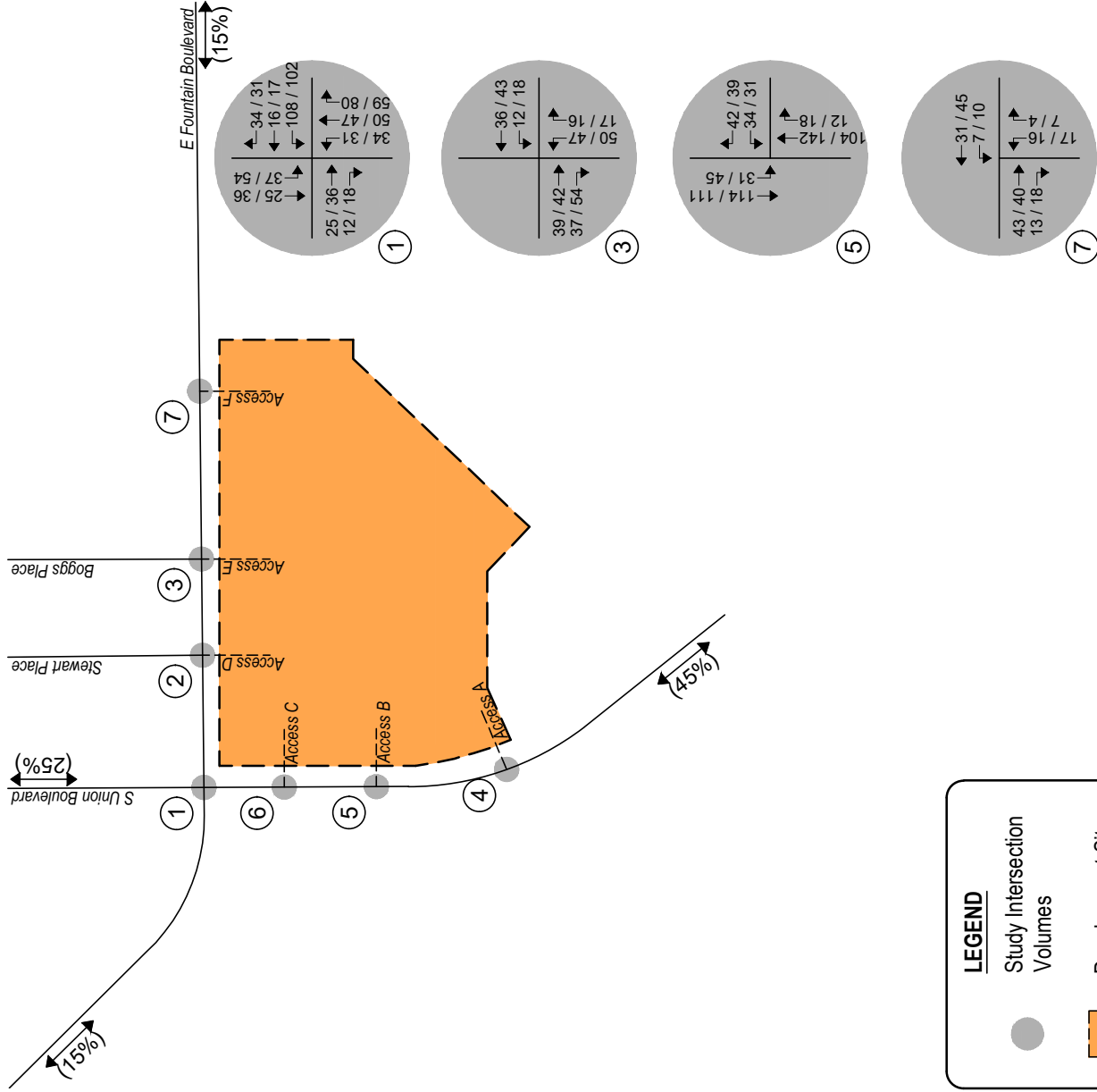


Figure 6
SITE DEVELOPMENT DISTRIBUTION
(%) : Overall
SITE-GENERATED
AM / PM Peak Hour

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V. Future Traffic Conditions With Proposed Developments

Site-generated traffic was added to background traffic projections for Years 2022 and 2040 to develop total traffic projections. For analysis purposes, it was assumed that development construction would be completed by end of Year 2022.

Pursuant to area roadway improvement discussions provided in Section III, Year 2022 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.

Projected Year 2022 total traffic volumes and intersection geometry are shown in Figure 7.

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

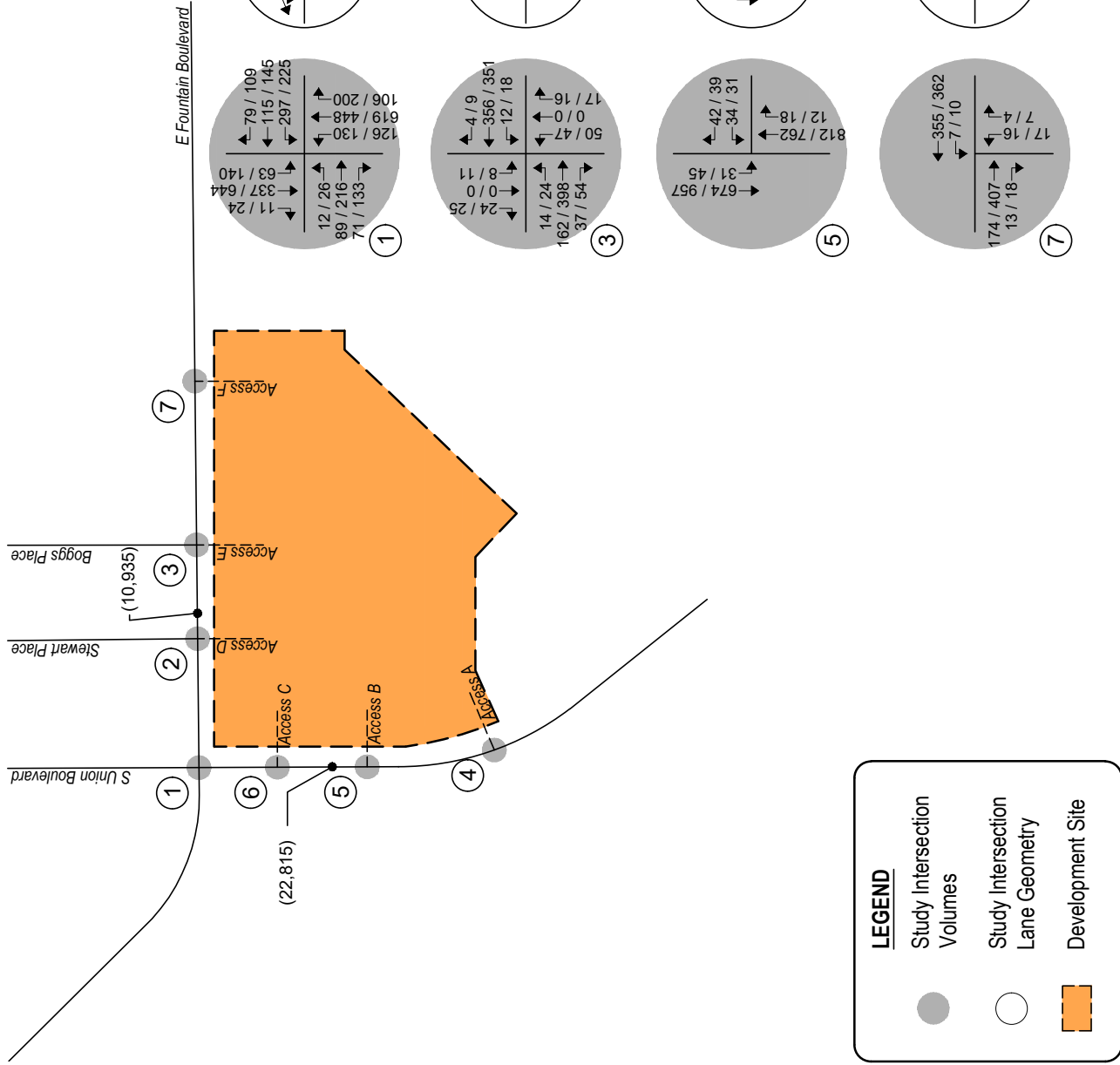


Figure 7
TOTAL TRAFFIC - YEAR 2022
Volumes & Intersection Geometry
AM / PM Peak Hour
(ADT) : Average Daily Traffic

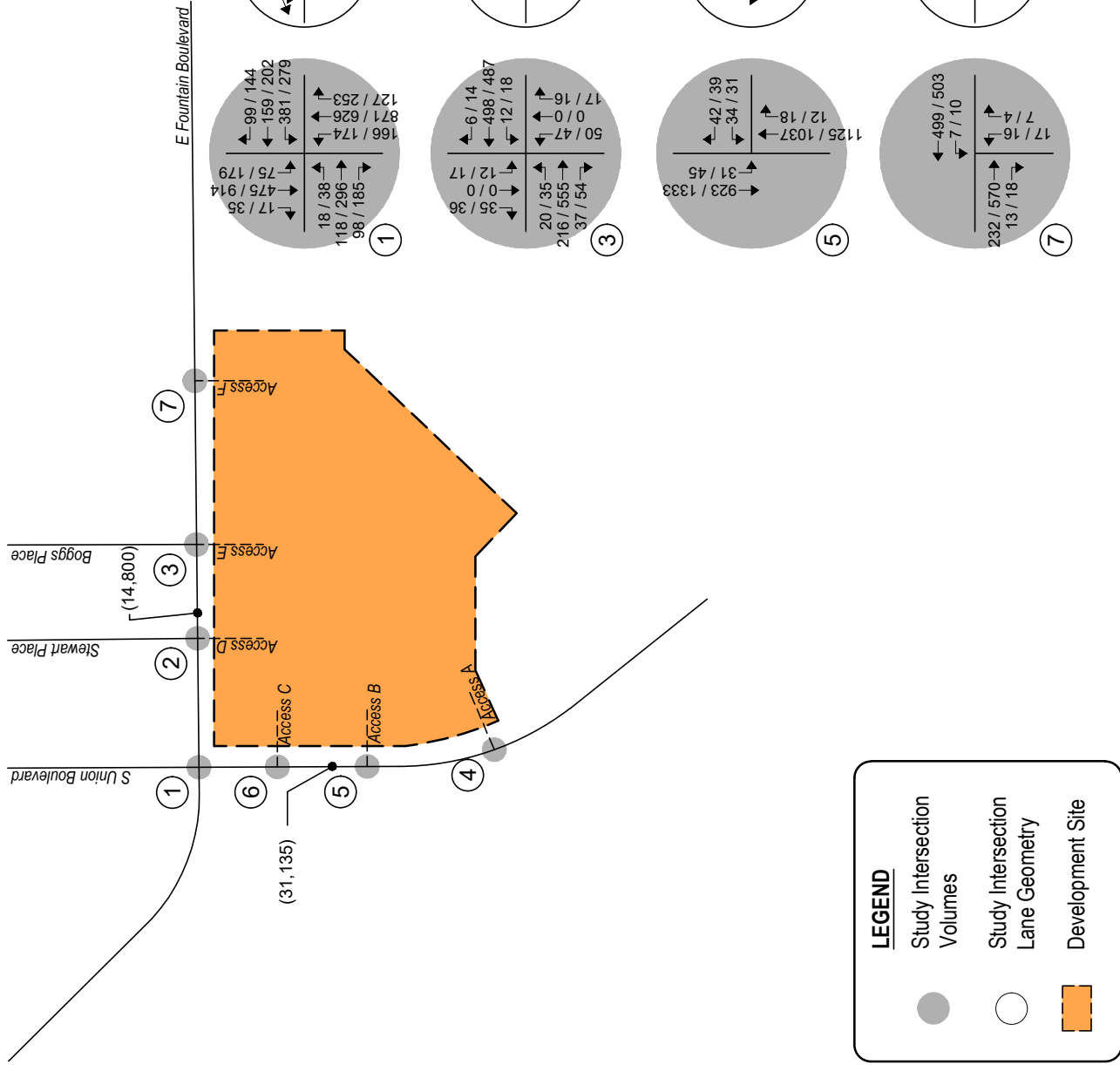


Figure 8
TOTAL TRAFFIC - YEAR 2040
Volumes & Intersection Geometry
AM / PM Peak Hour
(ADT) : Average Daily Traffic

VI. Project Impacts

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

Peak Hour Intersection Levels of Service

As with background traffic, the operations of the study intersections were analyzed under projected total traffic conditions using the SYNCHRO computer program. Total traffic level of service analysis results for Years 2022 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 2022

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
E Fountain Boulevard / S Union Boulevard (Signalized)	D (37.9)	C (24.2)
E Fountain Boulevard / Stewart Place / Access D (Stop-Controlled)		
Eastbound Left	A	A
Westbound Left	A	A
Northbound Left	B	C
Northbound Through and Right	A	A
Southbound Left, Through and Right	B	B
E Fountain Boulevard / Boggs Place / Access E (Stop-Controlled)		
Eastbound Left	A	A
Westbound Left	A	A
Northbound Left, Through and Right	B	B
Southbound Left, Through and Right	B	B
S Union Boulevard / Access A (Stop-Controlled)		
Westbound Left and Right	B	B
Southbound Left and Through	B	B
S Union Boulevard / Access B (Stop-Controlled)		
Westbound Left and Right	B	B
Southbound Left and Through	B	B
S Union Boulevard / Access C (Stop-Controlled)		
Westbound Right	A	A
E Fountain Boulevard / Access F (Stop-Controlled)		
Westbound Left	A	A
Northbound Left and Right	A	B

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

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

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
E Fountain Boulevard / S Union Boulevard (Signalized)	C (26.2)	C (28.6)
E Fountain Boulevard / Stewart Place / Access D (Stop-Controlled)		
Eastbound Left	A	A
Westbound Left	A	A
Northbound Left	C	C
Northbound Through and Right	A	A
Southbound Left, Through and Right	B	B
E Fountain Boulevard / Boggs Place / Access E (Stop-Controlled)		
Eastbound Left	A	A
Westbound Left	A	A
Northbound Left, Through and Right	B	C
Southbound Left, Through and Right	B	B
S Union Boulevard / Access A (Stop-Controlled)		
Westbound Left and Right	C	C
Southbound Left and Through	C	C
S Union Boulevard / Access B (Stop-Controlled)		
Westbound Left and Right	C	D
Southbound Left and Through	C	C
S Union Boulevard / Access C (Stop-Controlled)		
Westbound Right	A	A
E Fountain Boulevard / Access F (Stop-Controlled)		
Westbound Left	A	A
Northbound Left and Right	B	B

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

Total Traffic Analysis Results Upon Development Build-Out

Table 7 illustrates how, by Year 2040 and upon development build-out, the signalized intersection of E Fountain Boulevard with S Union Boulevard shows an overall LOS C operation during both the morning and afternoon peak traffic hours. 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.

The stop-controlled intersection of E Fountain Boulevard with Stewart Place/Access D is projected to have turning movement operations at LOS C or better for both the morning and afternoon peak traffic hours.

The stop-controlled intersection of E Fountain Boulevard with Boggs Place/Access E is projected to have turning movement operations at LOS B or better for the morning peak traffic hour and LOS C or better for the afternoon peak traffic hour.

The stop-controlled intersection of S Union Boulevard with Access A is projected to have turning movement operations at LOS C for both the morning and afternoon peak traffic hours.

The stop-controlled intersection of S Union Boulevard with Access B is projected to have turning movement operations at LOS C for the morning peak traffic hour and LOS D or better for the afternoon peak traffic hour.

The stop-controlled intersection of S Union Boulevard with Access C is projected to have turning movement operations at LOS A for both the morning and afternoon peak traffic hours.

The stop-controlled intersection of E Fountain Boulevard with Access F is projected to have turning movement operations at LOS B or better for both the morning and afternoon peak traffic hours.

These intersection operations are similar to background conditions.

Auxiliary Lane Analysis

Auxiliary lanes for site development accesses are to be based on City's design standards⁵.

Considering development build-out, an evaluation of auxiliary lane requirements, pursuant to Section 8.0, Tables 2 and 3 of the City's design standards, reveals that left turn deceleration lanes are required for all full-movement site development accesses given the roadway classifications of E Fountain Boulevard and S Union Boulevard, as well as posted speed limit. It is however noted that an existing Two-Way-Left-Turn Lane (TWLTL) along E Fountain Boulevard can accommodate left turn needs for site development traffic. Left turn lanes along S Union Boulevard may be accommodated within an existing striped median. As specific land uses are further defined for the proposed development area, specific turn lane geometry and design is to be determined based on City design standards.

⁵ Engineering Criteria Manual, Section III: Traffic Criteria Manual, City of Colorado Springs City Engineering, July 2010.

VII. Conclusion

This traffic impact study addressed the capacity, geometric, and control requirements associated with the development entitled Prospect Park at Fountain & Union. This proposed mixed-use development consists of a variety of land uses including commercial and residential. The development is located on the southeast corner of E Fountain Boulevard and S Union Boulevard in Colorado Springs, Colorado.

The study area examined in this analysis encompassed the E Fountain Boulevard intersections with S Union Boulevard, Stewart Place, and Boggs Place, and also includes all proposed site access intersections.

Analysis was conducted for critical AM Peak Hour and PM Peak Hour traffic operations for existing traffic conditions, Year 2022 and Year 2040 background traffic conditions, and Year 2022 and Year 2040 total traffic conditions.

Under existing conditions, operational analysis shows that the signalized intersection of E Fountain Boulevard with S Union Boulevard has overall operations at LOS C during both morning and afternoon peak traffic hours. The unsignalized intersection of E Fountain Boulevard with Stewart Place has turn movement operations at LOS A during both morning and afternoon peak traffic hours. The unsignalized intersection of E Fountain Boulevard with Boggs Place has turn movement operations at LOS A during morning peak traffic hours and LOS B or better during afternoon peak traffic hours.

Year 2022 background traffic analysis indicates that the signalized intersection of E Fountain Boulevard with S Union Boulevard has overall operations at LOS C during both the morning and afternoon peak traffic hours. The unsignalized intersection of E Fountain Boulevard with Stewart Place shows turn movement operations at LOS A during both morning and afternoon peak traffic hours. The unsignalized intersection of E Fountain Boulevard with Boggs Place has turn movement operations at LOS B or better during both morning and afternoon peak traffic hours.

By Year 2040 and without the proposed development, the study intersection of E Fountain Boulevard with S Union Boulevard continues to experience LOS C operations during both morning and afternoon peak traffic hours. The stop-controlled intersection of E Fountain Boulevard with Stewart Place anticipates turn movement operations at LOS A or better during both morning and afternoon peak traffic hours. The stop-controlled intersection of E Fountain Boulevard with Boggs Place projects turn movement operations at LOS B or better during both morning and afternoon 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 consideration of the 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 accesses have long-term operations at LOS D or better during peak traffic periods and upon build-out.

APPENDIX A

**Traffic Count Data
Signal Timing Information**



ALL TRAFFIC DATA SERVICES

(303) 216-2439

www.alltrafficdata.net

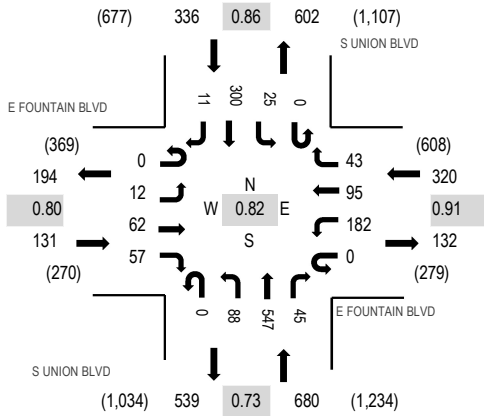
Location: 1 S UNION BLVD & E FOUNTAIN BLVD AM

Date: Thursday, August 13, 2020

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

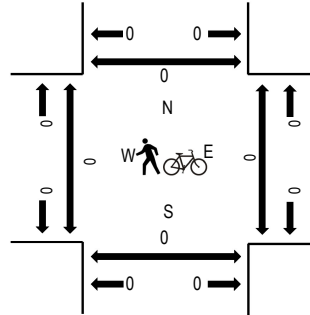
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	E FOUNTAIN BLVD Eastbound				E FOUNTAIN BLVD Westbound				S UNION BLVD Northbound				S UNION BLVD 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	3	18	15	0	37	24	11	0	15	102	9	0	3	53	0	290	1,452	0	0	0	0
7:15 AM	0	3	7	14	0	50	20	16	0	16	123	10	0	5	64	3	331	1,467	0	0	0	0
7:30 AM	0	1	22	13	0	45	27	9	0	26	140	7	0	7	82	2	381	1,456	0	0	0	0
7:45 AM	0	5	14	17	0	48	34	9	0	27	184	21	0	7	80	4	450	1,426	0	0	0	0
8:00 AM	0	3	19	13	0	39	14	9	0	19	100	7	0	6	74	2	305	1,337	0	0	0	0
8:15 AM	0	2	16	11	0	24	26	10	0	17	113	16	0	3	80	2	320		0	0	0	0
8:30 AM	0	1	17	13	0	39	21	18	0	19	106	10	0	8	98	1	351		0	0	0	0
8:45 AM	0	5	21	17	0	34	26	18	0	19	116	12	0	14	74	5	361		0	0	0	0
Count Total	0	23	134	113	0	316	192	100	0	158	984	92	0	53	605	19	2,789		0	0	0	0
Peak Hour	0	12	62	57	0	182	95	43	0	88	547	45	0	25	300	11	1,467		0	0	0	0



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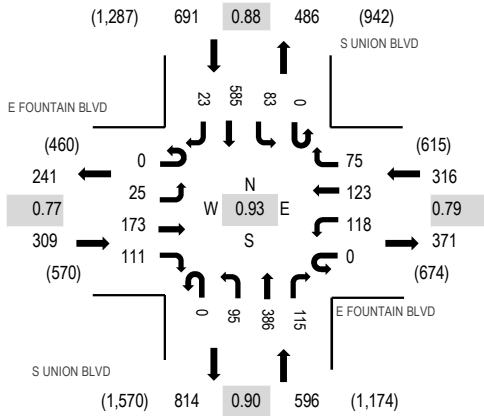
Location: 1 S UNION BLVD & E FOUNTAIN BLVD PM

Date: Thursday, August 13, 2020

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

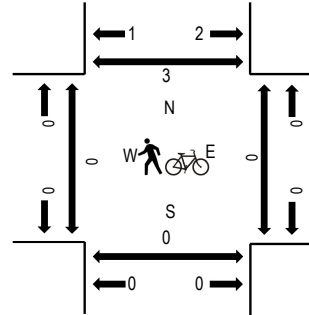
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	E FOUNTAIN BLVD Eastbound				E FOUNTAIN BLVD Westbound				S UNION BLVD Northbound				S UNION BLVD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	7	36	30	0	42	33	14	0	27	85	21	0	14	126	3	438	1,835	0	0	0	1
4:15 PM	0	3	39	25	0	31	15	20	1	24	96	29	0	17	142	4	446	1,909	0	0	0	0
4:30 PM	0	2	42	27	0	25	27	21	0	25	88	25	0	18	158	3	461	1,912	0	0	0	0
4:45 PM	0	6	49	17	0	41	45	20	0	21	94	31	0	15	144	7	490	1,893	0	0	0	1
5:00 PM	0	8	50	43	0	25	29	13	0	21	90	32	0	27	168	6	512	1,811	0	0	0	2
5:15 PM	0	9	32	24	0	27	22	21	0	28	114	27	0	23	115	7	449		0	0	0	0
5:30 PM	0	1	33	26	0	36	30	15	0	26	100	19	0	18	134	4	442		0	0	0	0
5:45 PM	0	4	33	24	0	28	23	12	0	28	99	23	0	21	111	2	408		0	0	0	0
Count Total	0	40	314	216	0	255	224	136	1	200	766	207	0	153	1,098	36	3,646		0	0	0	4
Peak Hour	0	25	173	111	0	118	123	75	0	95	386	115	0	83	585	23	1,912		0	0	0	3



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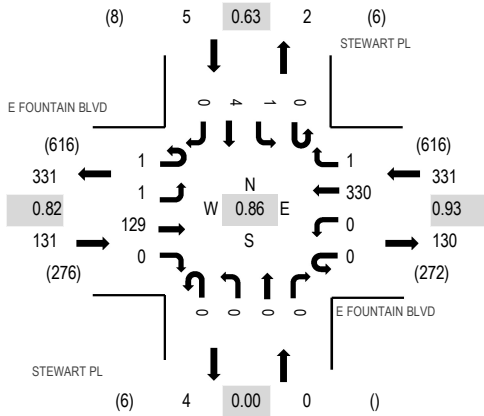
Location: 2 STEWART PL & E FOUNTAIN BLVD AM

Date: Thursday, August 13, 2020

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

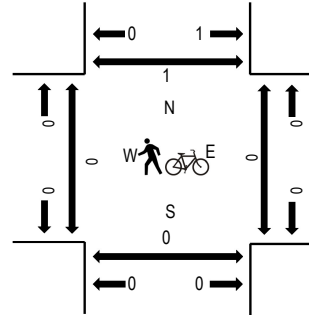
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	E FOUNTAIN BLVD Eastbound				E FOUNTAIN BLVD Westbound				STEWART PL Northbound				STEWART PL Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	31	0	0	0	71	1	0	0	0	0	0	0	1	0	104	467	0	0	0	0
7:15 AM	1	0	21	0	0	0	85	0	0	0	0	0	0	0	0	0	107	458	0	0	0	0
7:30 AM	0	0	34	0	0	0	85	0	0	0	0	0	0	1	1	0	121	450	0	0	0	0
7:45 AM	0	1	43	0	0	0	89	0	0	0	0	0	0	0	2	0	135	443	0	0	0	1
8:00 AM	0	0	30	0	0	0	65	0	0	0	0	0	0	0	0	0	95	433	0	0	0	0
8:15 AM	0	1	35	0	0	0	62	0	0	0	0	0	0	0	1	0	99		0	0	0	1
8:30 AM	0	2	33	0	0	0	78	0	0	0	0	0	0	1	0	0	114		0	0	0	1
8:45 AM	0	1	43	0	0	0	80	0	0	0	0	0	0	0	1	0	125		0	0	0	0
Count Total	1	5	270	0	0	0	615	1	0	0	0	0	0	2	6	0	900		0	0	0	3
Peak Hour	1	1	129	0	0	0	330	1	0	0	0	0	0	1	4	0	467		0	0	0	1



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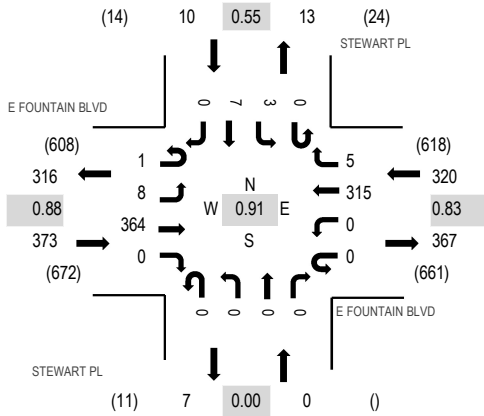
Location: 2 STEWART PL & E FOUNTAIN BLVD PM

Date: Thursday, August 13, 2020

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

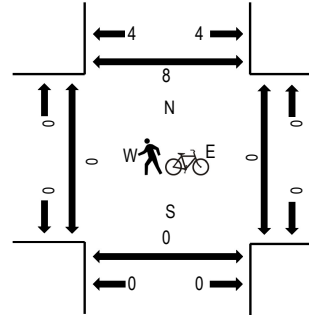
Peak 15-Minutes: 04:45 PM - 05:00 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	E FOUNTAIN BLVD Eastbound				E FOUNTAIN BLVD Westbound				STEWART PL Northbound				STEWART PL 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	2	70	0	0	0	85	2	0	0	0	0	0	0	1	0	160	668	0	0	0	0
4:15 PM	0	1	81	0	0	0	63	0	0	0	0	0	0	0	1	0	146	686	0	0	0	0
4:30 PM	1	2	84	0	0	0	79	1	0	0	0	0	0	1	0	0	168	703	0	0	0	0
4:45 PM	0	0	95	0	0	0	99	0	0	0	0	0	0	0	0	0	194	684	0	0	0	5
5:00 PM	0	4	102	0	0	0	65	2	0	0	0	0	0	2	3	0	178	636	0	0	0	2
5:15 PM	0	2	83	0	0	0	72	2	0	0	0	0	0	0	4	0	163		0	0	0	1
5:30 PM	0	2	67	0	0	0	79	0	0	0	0	0	0	0	1	0	149		0	0	0	1
5:45 PM	0	0	76	0	0	0	65	4	0	0	0	0	0	0	1	0	146		0	0	0	0
Count Total	1	13	658	0	0	0	607	11	0	0	0	0	0	3	11	0	1,304		0	0	0	9
Peak Hour	1	8	364	0	0	0	315	5	0	0	0	0	0	3	7	0	703		0	0	0	8



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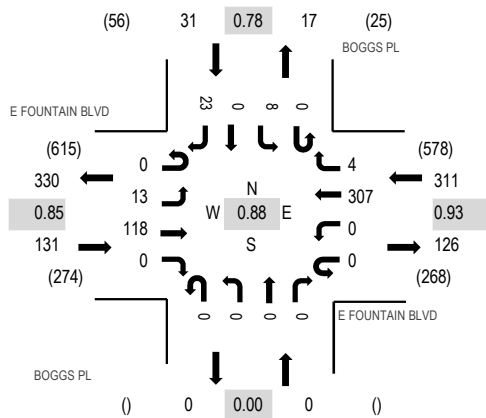
Location: 3 BOGGS PL & E FOUNTAIN BLVD AM

Date: Thursday, August 13, 2020

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

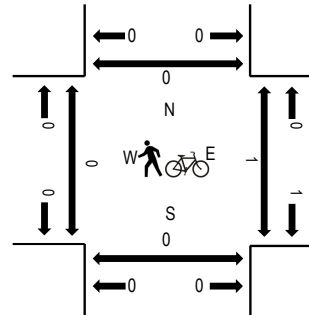
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	E FOUNTAIN BLVD Eastbound				E FOUNTAIN BLVD Westbound				BOGGS PL Northbound				BOGGS PL 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	31	0	0	0	68	2	0	0	0	0	0	2	0	4	108	473	0	0	0	0
7:15 AM	0	3	16	0	0	0	82	2	0	0	0	0	0	3	0	3	109	464	0	0	0	0
7:30 AM	0	2	35	0	0	0	74	0	0	0	0	0	0	0	0	10	121	453	0	1	0	0
7:45 AM	0	7	36	0	0	0	83	0	0	0	0	0	0	3	0	6	135	447	0	0	0	0
8:00 AM	0	1	30	0	0	0	64	1	0	0	0	0	0	1	0	2	99	435	0	0	0	0
8:15 AM	0	2	33	0	0	0	54	1	0	0	0	0	0	1	0	7	98		0	0	0	1
8:30 AM	0	0	34	0	0	0	72	1	0	0	0	0	0	2	0	6	115		0	0	0	1
8:45 AM	0	2	41	0	0	0	74	0	0	0	0	0	0	0	0	6	123		0	0	0	0
Count Total	0	18	256	0	0	0	571	7	0	0	0	0	0	12	0	44	908		0	1	0	2
Peak Hour	0	13	118	0	0	0	307	4	0	0	0	0	0	8	0	23	473		0	1	0	0



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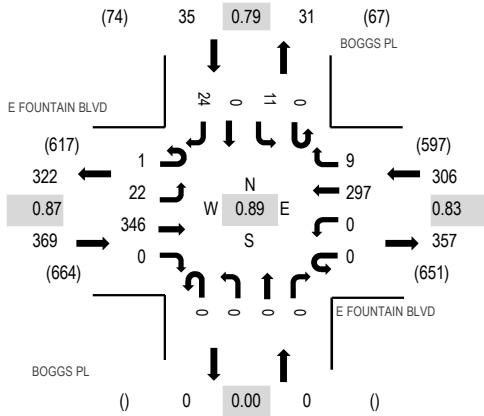
Location: 3 BOGGS PL & E FOUNTAIN BLVD PM

Date: Thursday, August 13, 2020

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

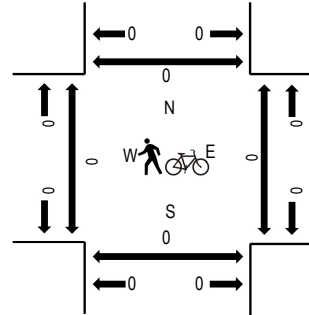
Peak 15-Minutes: 04:45 PM - 05:00 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

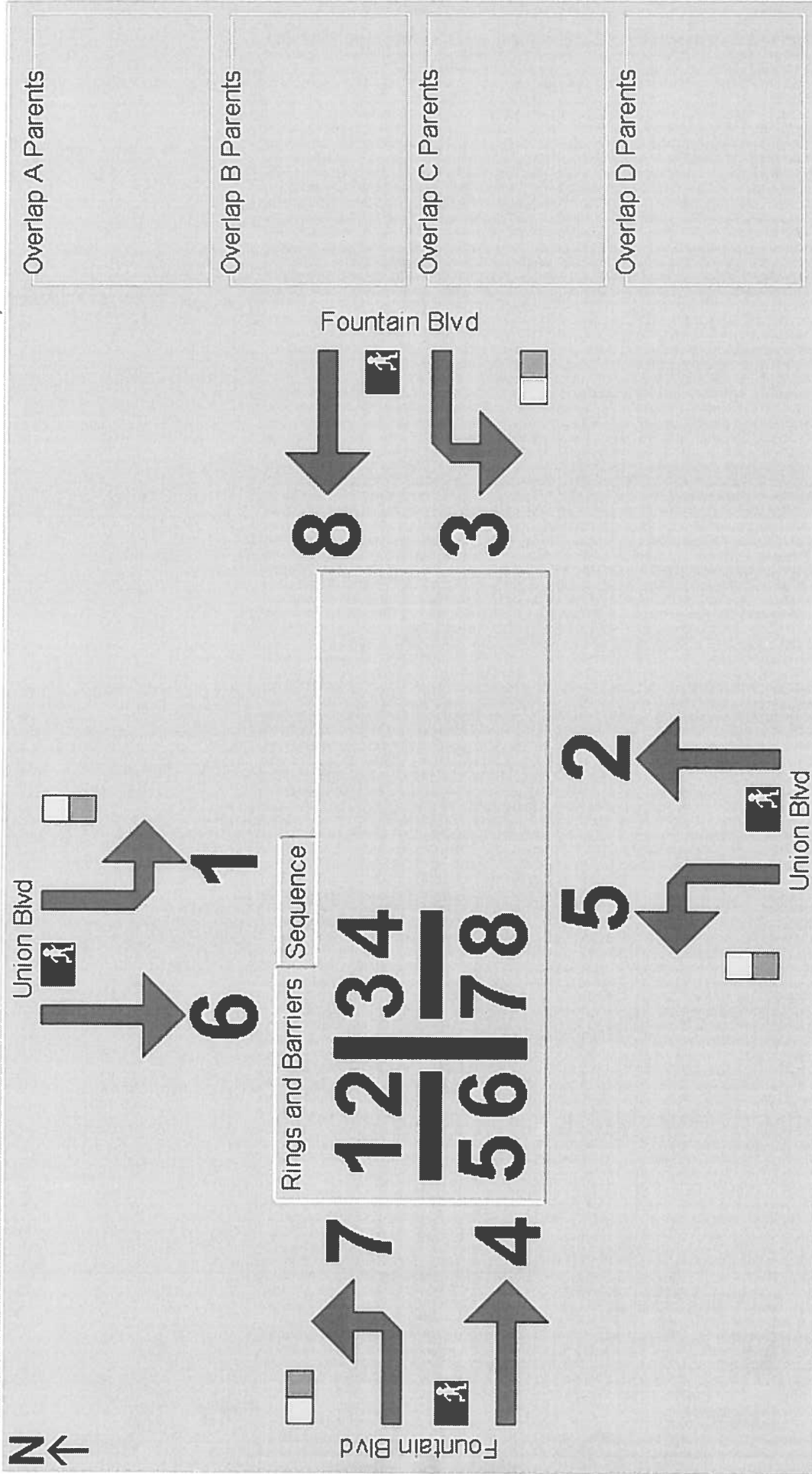
Interval Start Time	E FOUNTAIN BLVD Eastbound				E FOUNTAIN BLVD Westbound				BOGGS PL Northbound				BOGGS PL Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	4	66	0	0	0	80	3	0	0	0	0	0	6	0	6	165	685	0	0	0	0
4:15 PM	0	9	72	0	0	0	57	2	0	0	0	0	0	4	0	6	150	696	0	0	0	0
4:30 PM	0	5	79	0	0	0	77	2	0	0	0	0	0	3	0	5	171	710	0	0	0	0
4:45 PM	0	8	87	0	0	0	92	4	0	0	0	0	0	3	0	5	199	695	0	0	0	0
5:00 PM	1	7	98	0	0	0	63	2	0	0	0	0	0	2	0	3	176	650	0	0	0	0
5:15 PM	0	2	82	0	0	0	65	1	0	0	0	0	0	3	0	11	164		0	0	0	0
5:30 PM	0	2	66	0	0	0	75	5	0	0	0	0	0	4	0	4	156		0	0	0	0
5:45 PM	0	5	71	0	1	0	62	6	0	0	0	0	0	4	0	5	154		0	0	0	0
Count Total	1	42	621	0	1	0	571	25	0	0	0	0	0	29	0	45	1,335		0	0	0	0
Peak Hour	1	22	346	0	0	0	297	9	0	0	0	0	0	11	0	24	710		0	0	0	0

Date Start: 13-Aug-20
E FOUNTAIN BLVD E.O. S UNION BLVD
Site Code: 4
Station ID:

Start Time	13-Aug-20 Thu	EB	WB	Total
12:00 AM		37	29	66
01:00		12	21	33
02:00		11	17	28
03:00		8	14	22
04:00		10	47	57
05:00		39	109	148
06:00		75	238	313
07:00		133	327	460
08:00		151	288	439
09:00		183	295	478
10:00		183	246	429
11:00		209	285	494
12:00 PM		238	302	540
01:00		234	296	530
02:00		225	299	524
03:00		321	305	626
04:00		332	323	655
05:00		339	279	618
06:00		295	298	593
07:00		212	207	419
08:00		229	152	381
09:00		138	113	251
10:00		115	80	195
11:00		56	46	102
Total		3785	4616	8401
Percent		45.1%	54.9%	
AM Peak	-	11:00	07:00	-
Vol.	-	209	327	-
PM Peak	-	17:00	16:00	-
Vol.	-	339	323	-
Grand Total		3785	4616	8401
Percent		45.1%	54.9%	
ADT		ADT 8,401	AADT 8,401	

Date Start: 13-Aug-20
S UNION BLVD S.O. E FOUNTAIN BLVD
Site Code: 5
Station ID:

Start Time	13-Aug-20 Thu	NB	SB	Total
12:00 AM		51	74	125
01:00		31	40	71
02:00		22	30	52
03:00		22	30	52
04:00		38	60	98
05:00		160	204	364
06:00		381	425	806
07:00		682	520	1202
08:00		559	524	1083
09:00		550	523	1073
10:00		483	495	978
11:00		500	549	1049
12:00 PM		531	626	1157
01:00		534	590	1124
02:00		567	628	1195
03:00		594	712	1306
04:00		574	804	1378
05:00		608	757	1365
06:00		549	557	1106
07:00		360	449	809
08:00		297	372	669
09:00		188	270	458
10:00		155	210	365
11:00		66	135	201
Total		8502	9584	18086
Percent		47.0%	53.0%	
AM Peak	-	07:00	11:00	-
Vol.	-	682	549	-
PM Peak	-	17:00	16:00	-
Vol.	-	608	804	-
Grand Total		8502	9584	18086
Percent		47.0%	53.0%	
ADT		ADT 18,086	ADT 18,086	



Intersection 380 at Union Blvd and Fountain Blvd - Plans schedule

8/12/2020 9:05:16 AM

Plan Changes Page Changes Week of 8/10/2020

	Mon 08/10	Tue 08/11	Wed 08/12	Thu 08/13	Fri 08/14
12:00am	Free	Free	Free	Free	Free
Cycle len,offset					
6:30am	Plan4,Ofst1	Plan4,Ofst1	Plan4,Ofst1	Plan4,Ofst1	Plan4,Ofst1
Cycle len,offset	114, 42	114, 42	114, 42	114, 42	114, 42
8:00am	Free	Free	Free	Free	Free
Cycle len,offset					
4:00pm	Plan4,Ofst1	Plan4,Ofst1	Plan4,Ofst1	Plan4,Ofst1	Plan4,Ofst1
Cycle len,offset	114, 42	114, 42	114, 42	114, 42	114, 42
6:30pm	Free	Free	Free	Free	Free
Cycle len,offset					

	Sat 08/15	Sun 08/16
12:00am	Free	Free
Cycle len,offset		

Intersection 380 at Union Blvd and Fountain Blvd - Coordination plan 4

8/12/2020 9:05:24 AM

Plan Length Offset 1 Offset 2

Page Offset 3 Offset 4

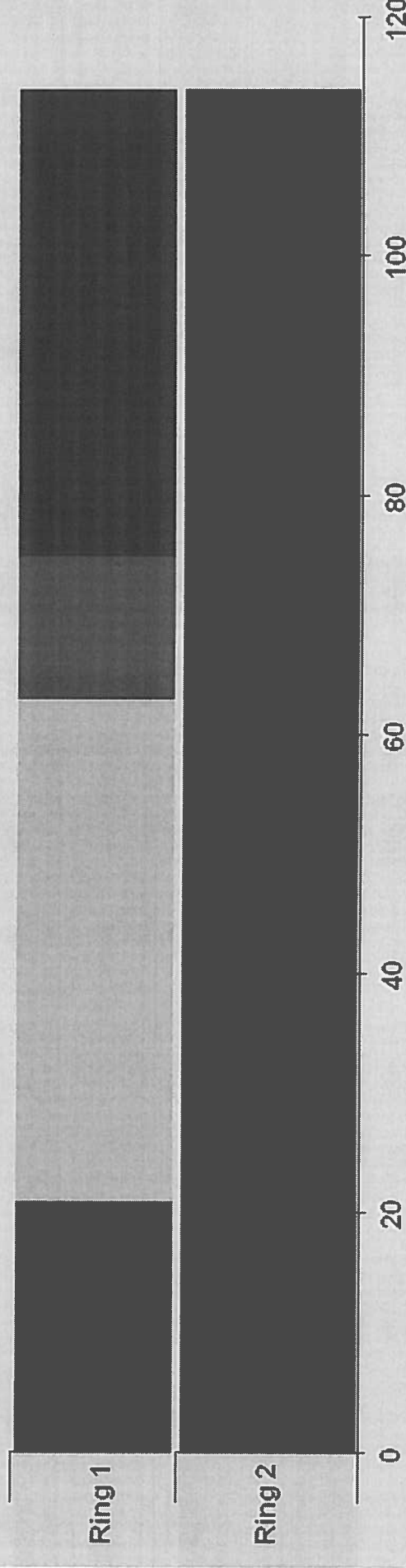
[Done modifying](#)

Ring 1 coordinated phase and splits

<input checked="" type="radio"/> Phase 1	<input type="text" value="12"/>	<input type="text" value="45"/>
South, left		
Green time = 7		
<input checked="" type="radio"/> Phase 3	<input type="text" value="15"/>	<input type="text" value="42"/>
West, left		
Green time = 10		
<input checked="" type="radio"/> Phase 4	<input type="text" value="42"/>	<input type="text" value="35"/>
East, through		
Green time = 35		

Ring 2 coordinated phase and splits

<input checked="" type="radio"/> Phase 5	<input type="text" value="12"/>	<input type="text" value="45"/>
North, left		
Green time = 7		
<input checked="" type="radio"/> Phase 7	<input type="text" value="15"/>	<input type="text" value="42"/>
East, left		
Green time = 10		
<input checked="" type="radio"/> Phase 8	<input type="text" value="42"/>	<input type="text" value="35"/>
West, through		
Green time = 35		



Intersection 380 at Union Blvd and Fountain Blvd - Timing table

Page 1	Phases											
	1	2	3	4	5	6	7	8	9	10	11	12
Min Green	4	30	4	4	4	30	4	4	0	0	0	0
Passage Time I	1.0	5.0	1.0	2.0	1.0	5.0	2.0	1.0	0.0	0.0	0.0	0.0
Passage Time II	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Green I	6	30	6	30	6	30	6	30	0	0	0	0
Max Green II	0	0	0	0	0	0	0	0	0	0	0	0
Yellow Clearance	3.0	4.0	3.0	4.5	3.0	4.0	3.0	4.5	0.0	0.0	0.0	0.0
Red Clearance	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	0.0	0.0	0.0
Added Initial	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Added Initial	0	0	0	0	0	0	0	0	0	0	0	0
Time Before Reduction	0	0	0	0	0	0	0	0	0	0	0	0
Cars Before Reduction	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0
Min Passage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Green Time	0	0	0	0	0	0	0	0	0	0	0	0
Red Revert Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk Time	0	7	0	7	0	7	0	7	0	0	0	0
Pedestrian Clearance	0	21	0	30	0	21	0	30	0	0	0	0
Handicap Walk	0	0	0	0	0	0	0	0	0	0	0	0
Handicap Ped Clearance	0	0	0	0	0	0	0	0	0	0	0	0
Union Blvd	X	X			X	X						
Fountain Blvd			X	X			X	X				
Compass Direction	S	N	W	E	N	S	E	W				
Through, Turn or XPed	Left, p/p	Thru	Left, p/p	Thru	Left, p/p	Thru	Left, p/p	Thru				

APPENDIX B

Level of Service Definitions

The following information can be found in the Highway Capacity Manual, Transportation Research Board, 2010: Chapter 18 – Signalized Intersections and Chapter 19 – Two-Way Stop Controlled Intersections.

Automobile Level of Service (LOS) for Signalized Intersections

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

LOS A

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

LOS B

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

LOS C

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

LOS D

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

LOS E

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

LOS F

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

Level of Service (LOS) for Unsignalized TWSC Intersections

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

APPENDIX C

























Capacity Worksheets

Timings

1: E Fountain Boulevard & S Union Boulevard

Existing Traffic Volumes

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	62	57	182	95	43	88	547	45	25	300	11
Future Volume (vph)	12	62	57	182	95	43	88	547	45	25	300	11
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3522	0
Flt Permitted	0.687			0.440			0.520			0.427		
Satd. Flow (perm)	1280	3539	1583	820	3539	1583	969	3539	1583	795	3522	0
Satd. Flow (RTOR)			124			124			129		3	
Lane Group Flow (vph)	13	67	62	198	103	47	96	595	49	27	338	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	30.0	30.0	4.0	30.0	
Minimum Split (s)	9.0	10.5	10.5	9.0	10.5	10.5	9.0	36.0	36.0	9.0	36.0	
Total Split (s)	15.0	42.0	42.0	15.0	42.0	42.0	12.0	45.0	45.0	12.0	45.0	
Total Split (%)	13.2%	36.8%	36.8%	13.2%	36.8%	36.8%	10.5%	39.5%	39.5%	10.5%	39.5%	
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.0	6.0	5.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	
Act Effect Green (s)	13.9	7.6	7.6	20.8	15.3	15.3	80.5	74.6	74.6	76.0	68.9	
Actuated g/C Ratio	0.12	0.07	0.07	0.18	0.13	0.13	0.71	0.65	0.65	0.67	0.60	
v/c Ratio	0.07	0.29	0.28	0.85	0.22	0.15	0.13	0.26	0.05	0.05	0.16	
Control Delay	36.2	53.3	3.2	73.2	45.6	1.0	5.9	10.0	0.1	5.9	10.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	36.2	53.3	3.2	73.2	45.6	1.0	5.9	10.0	0.1	5.9	10.9	
LOS	D	D	A	E	D	A	A	B	A	A	B	
Approach Delay		29.8			55.3			8.8			10.6	
Approach LOS		C			E			A			B	
Queue Length 50th (ft)	8	25	0	130	33	0	20	104	0	5	56	
Queue Length 95th (ft)	24	48	0	#240	65	0	39	145	0	15	85	
Internal Link Dist (ft)		285			302			388			335	
Turn Bay Length (ft)	100		140	100		75	400		415	180		
Base Capacity (vph)	240	1102	578	232	1102	578	738	2314	1080	596	2130	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.05	0.06	0.11	0.85	0.09	0.08	0.13	0.26	0.05	0.05	0.16	

Intersection Summary

Cycle Length: 114

Actuated Cycle Length: 114

Offset: 42 (37%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Timings

1: E Fountain Boulevard & S Union Boulevard

Existing Traffic Volumes

AM Peak Hour

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 21.2

Intersection LOS: C

Intersection Capacity Utilization 61.2%









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.

Splits and Phases: 1: E Fountain Boulevard & S Union Boulevard

 Ø1	 Ø2 (R)	 Ø3	 Ø4
12 s	45 s	15 s	42 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
12 s	45 s	15 s	42 s





HCM 6th TWSC
2: E Fountain Boulevard & Stewart Place

Existing Traffic Volumes
AM Peak Hour

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	130	330	1	1	4
Future Vol, veh/h	2	130	330	1	1	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	55	-	-	-	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	2	141	359	1	1	4
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	360	0	-	0	435	180
Stage 1	-	-	-	-	360	-
Stage 2	-	-	-	-	75	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1195	-	-	-	*598	832
Stage 1	-	-	-	-	*677	-
Stage 2	-	-	-	-	*991	-
Platoon blocked, %		-	-	-	1	
Mov Cap-1 Maneuver	1195	-	-	-	*597	832
Mov Cap-2 Maneuver	-	-	-	-	*605	-
Stage 1	-	-	-	-	*676	-
Stage 2	-	-	-	-	*991	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		9.7		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1195	-	-	-	774	
HCM Lane V/C Ratio	0.002	-	-	-	0.007	
HCM Control Delay (s)	8	-	-	-	9.7	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

HCM 6th TWSC
3: E Fountain Boulevard & Boggs Place

Existing Traffic Volumes
AM Peak Hour

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	13	118	308	4	8	23
Future Vol, veh/h	13	118	308	4	8	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	115	-	-	-	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	14	128	335	4	9	25

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	339	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	1217	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1217	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	9.9
HCM LOS	A		

























Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1217	-	-	-	769
HCM Lane V/C Ratio	0.012	-	-	-	0.044
HCM Control Delay (s)	8	-	-	-	9.9
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Timings

1: E Fountain Boulevard & S Union Boulevard

Existing Traffic Volumes

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	173	111	118	123	75	95	386	115	83	585	23
Future Volume (vph)	25	173	111	118	123	75	95	386	115	83	585	23
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3518	0
Flt Permitted	0.667			0.461			0.347			0.506		
Satd. Flow (perm)	1242	3539	1583	859	3539	1583	646	3539	1583	943	3518	0
Satd. Flow (RTOR)			124			124			129		4	
Lane Group Flow (vph)	27	188	121	128	134	82	103	420	125	90	661	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	30.0	30.0	4.0	30.0	
Minimum Split (s)	9.0	10.5	10.5	9.0	10.5	10.5	9.0	36.0	36.0	9.0	36.0	
Total Split (s)	15.0	42.0	42.0	15.0	42.0	42.0	12.0	45.0	45.0	12.0	45.0	
Total Split (%)	13.2%	36.8%	36.8%	13.2%	36.8%	36.8%	10.5%	39.5%	39.5%	10.5%	39.5%	
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.0	6.0	5.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	
Act Effect Green (s)	19.8	11.4	11.4	25.9	18.4	18.4	72.8	65.1	65.1	71.2	62.6	
Actuated g/C Ratio	0.17	0.10	0.10	0.23	0.16	0.16	0.64	0.57	0.57	0.62	0.55	
v/c Ratio	0.11	0.53	0.45	0.47	0.23	0.23	0.21	0.21	0.13	0.14	0.34	
Control Delay	33.2	53.9	13.3	40.8	44.0	3.9	8.3	13.4	2.7	7.7	15.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	33.2	53.9	13.3	40.8	44.0	3.9	8.3	13.4	2.7	7.7	15.4	
LOS	C	D	B	D	D	A	A	B	A	A	B	
Approach Delay		37.6			33.3			10.5			14.5	
Approach LOS		D			C			B			B	
Queue Length 50th (ft)	15	70	0	77	47	0	24	78	0	21	134	
Queue Length 95th (ft)	38	105	52	127	77	16	48	120	28	43	195	
Internal Link Dist (ft)		285			302			388			335	
Turn Bay Length (ft)	100		140	100		75	400		415	180		
Base Capacity (vph)	295	1102	578	275	1102	578	492	2020	959	648	1934	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.09	0.17	0.21	0.47	0.12	0.14	0.21	0.21	0.13	0.14	0.34	

Intersection Summary

Cycle Length: 114

Actuated Cycle Length: 114

Offset: 42 (37%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Timings 1: E Fountain Boulevard & S Union Boulevard

Existing Traffic Volumes
PM Peak Hour

Maximum v/c Ratio: 0.53

Intersection Signal Delay: 20.1









Intersection LOS: C

Intersection Capacity Utilization 60.3%

ICU Level of Service B

Analysis Period (min) 15





Splits and Phases: 1: E Fountain Boulevard & S Union Boulevard

 Ø1	 Ø2 (R)	 Ø3	 Ø4
12 s	45 s	15 s	42 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
12 s	45 s	15 s	42 s

HCM 6th TWSC

2: E Fountain Boulevard & Stewart Place





Existing Traffic Volumes
PM Peak Hour

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	9	362	315	5	3	7
Future Vol, veh/h	9	362	315	5	3	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	55	-	-	-	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	10	393	342	5	3	8
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	347	0	-	0	562	174
Stage 1	-	-	-	-	345	-
Stage 2	-	-	-	-	217	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1209	-	-	-	*670	839
Stage 1	-	-	-	-	*688	-
Stage 2	-	-	-	-	*890	-
Platoon blocked, %		-	-	-	1	
Mov Cap-1 Maneuver	1209	-	-	-	*665	839
Mov Cap-2 Maneuver	-	-	-	-	*621	-
Stage 1	-	-	-	-	*682	-
Stage 2	-	-	-	-	*890	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.2	0		9.8		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1209	-	-	-	759	
HCM Lane V/C Ratio	0.008	-	-	-	0.014	
HCM Control Delay (s)	8	-	-	-	9.8	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

HCM 6th TWSC

3: E Fountain Boulevard & Boggs Place

Existing Traffic Volumes
PM Peak Hour

























Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	23	342	296	9	11	24
Future Vol, veh/h	23	342	296	9	11	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	115	-	-	-	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	25	372	322	10	12	26
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	332	0	-	0	563	166
Stage 1	-	-	-	-	327	-
Stage 2	-	-	-	-	236	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1224	-	-	-	*616	849
Stage 1	-	-	-	-	*703	-
Stage 2	-	-	-	-	*915	-
Platoon blocked, %		-	-	-	1	
Mov Cap-1 Maneuver	1224	-	-	-	*604	849
Mov Cap-2 Maneuver	-	-	-	-	*612	-
Stage 1	-	-	-	-	*689	-
Stage 2	-	-	-	-	*915	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.5	0		10		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1224	-	-	-	757	
HCM Lane V/C Ratio	0.02	-	-	-	0.05	
HCM Control Delay (s)	8	-	-	-	10	
HCM Lane LOS	A	-	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2	
Notes						
-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

Timings

1: E Fountain Boulevard & S Union Boulevard

Background Traffic Volumes

AM Peak Hour - Year 2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	64	59	189	99	45	92	569	47	26	312	11
Future Volume (vph)	12	64	59	189	99	45	92	569	47	26	312	11
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3522	0
Flt Permitted	0.684			0.440			0.513			0.417		
Satd. Flow (perm)	1274	3539	1583	820	3539	1583	956	3539	1583	777	3522	0
Satd. Flow (RTOR)			124			124			129		3	
Lane Group Flow (vph)	13	70	64	205	108	49	100	618	51	28	351	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	30.0	30.0	4.0	30.0	
Minimum Split (s)	9.0	10.5	10.5	9.0	10.5	10.5	9.0	36.0	36.0	9.0	36.0	
Total Split (s)	15.0	42.0	42.0	15.0	42.0	42.0	12.0	45.0	45.0	12.0	45.0	
Total Split (%)	13.2%	36.8%	36.8%	13.2%	36.8%	36.8%	10.5%	39.5%	39.5%	10.5%	39.5%	
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.0	6.0	5.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	
Act Effect Green (s)	14.0	7.7	7.7	20.9	15.4	15.4	80.4	74.4	74.4	75.8	68.7	
Actuated g/C Ratio	0.12	0.07	0.07	0.18	0.14	0.14	0.71	0.65	0.65	0.66	0.60	
v/c Ratio	0.07	0.29	0.29	0.88	0.23	0.15	0.14	0.27	0.05	0.05	0.17	
Control Delay	36.0	53.2	3.3	77.2	45.6	1.0	6.0	10.2	0.1	6.0	11.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	36.0	53.2	3.3	77.2	45.6	1.0	6.0	10.2	0.1	6.0	11.1	
LOS	D	D	A	E	D	A	A	B	A	A	B	
Approach Delay		30.0			57.5			8.9			10.7	
Approach LOS		C			E			A			B	
Queue Length 50th (ft)	8	26	0	135	34	0	21	110	0	6	58	
Queue Length 95th (ft)	24	49	0	#252	67	0	40	152	0	15	90	
Internal Link Dist (ft)		285			302			388			335	
Turn Bay Length (ft)	100		140	100		75	400		415	180		
Base Capacity (vph)	242	1102	578	233	1102	578	730	2310	1078	584	2124	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.05	0.06	0.11	0.88	0.10	0.08	0.14	0.27	0.05	0.05	0.17	
Intersection Summary												
Cycle Length: 114												
Actuated Cycle Length: 114												
Offset: 42 (37%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 65												
Control Type: Actuated-Coordinated												

Timings

1: E Fountain Boulevard & S Union Boulevard

Background Traffic Volumes

AM Peak Hour - Year 2022

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 21.8

Intersection LOS: C

Intersection Capacity Utilization 61.8%









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.

Splits and Phases: 1: E Fountain Boulevard & S Union Boulevard





 Ø1	 Ø2 (R)	 Ø3	 Ø4
12 s	45 s	15 s	42 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
12 s	45 s	15 s	42 s

HCM 6th TWSC

2: E Fountain Boulevard & Stewart Place

Background Traffic Volumes

AM Peak Hour - Year 2022





Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	135	343	1	1	4
Future Vol, veh/h	2	135	343	1	1	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	55	-	-	-	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	2	147	373	1	1	4
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	374	0	-	0	452	187
Stage 1	-	-	-	-	374	-
Stage 2	-	-	-	-	78	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1181	-	-	-	*583	823
Stage 1	-	-	-	-	*666	-
Stage 2	-	-	-	-	*991	-
Platoon blocked, %		-	-	-	1	
Mov Cap-1 Maneuver	1181	-	-	-	*582	823
Mov Cap-2 Maneuver	-	-	-	-	*594	-
Stage 1	-	-	-	-	*665	-
Stage 2	-	-	-	-	*991	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		9.7		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1181	-	-	-	-	764
HCM Lane V/C Ratio	0.002	-	-	-	-	0.007
HCM Control Delay (s)	8.1	-	-	-	-	9.7
HCM Lane LOS	A	-	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-	0
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

HCM 6th TWSC

3: E Fountain Boulevard & Boggs Place

Background Traffic Volumes

AM Peak Hour - Year 2022

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	14	123	320	4	8	24
Future Vol, veh/h	14	123	320	4	8	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	115	-	-	-	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	15	134	348	4	9	26

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	352	0	0	447	176
Stage 1	-	-	-	350	-
Stage 2	-	-	-	97	-
Critical Hdwy	4.14	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	3.52	3.32
Pot Cap-1 Maneuver	1203	-	-	588	837
Stage 1	-	-	-	684	-
Stage 2	-	-	-	984	-
Platoon blocked, %		-	-	1	
Mov Cap-1 Maneuver	1203	-	-	581	837
Mov Cap-2 Maneuver	-	-	-	601	-
Stage 1	-	-	-	676	-
Stage 2	-	-	-	984	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	10
HCM LOS			B

























Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1203	-	-	-	762
HCM Lane V/C Ratio	0.013	-	-	-	0.046
HCM Control Delay (s)	8	-	-	-	10
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Timings

1: E Fountain Boulevard & S Union Boulevard

Background Traffic Volumes

PM Peak Hour - Year 2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	180	115	123	128	78	99	401	120	86	608	24
Future Volume (vph)	26	180	115	123	128	78	99	401	120	86	608	24
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3518	0
Flt Permitted	0.664			0.460			0.340			0.486		
Satd. Flow (perm)	1237	3539	1583	857	3539	1583	633	3539	1583	905	3518	0
Satd. Flow (RTOR)			125			124			130		4	
Lane Group Flow (vph)	28	196	125	134	139	85	108	436	130	93	687	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	30.0	30.0	4.0	30.0	
Minimum Split (s)	9.0	10.5	10.5	9.0	10.5	10.5	9.0	36.0	36.0	9.0	36.0	
Total Split (s)	15.0	42.0	42.0	15.0	42.0	42.0	12.0	45.0	45.0	12.0	45.0	
Total Split (%)	13.2%	36.8%	36.8%	13.2%	36.8%	36.8%	10.5%	39.5%	39.5%	10.5%	39.5%	
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.0	6.0	5.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	
Act Effect Green (s)	20.1	11.7	11.7	26.2	18.7	18.7	71.5	62.5	62.5	70.8	62.1	
Actuated g/C Ratio	0.18	0.10	0.10	0.23	0.16	0.16	0.63	0.55	0.55	0.62	0.54	
v/c Ratio	0.11	0.54	0.46	0.49	0.24	0.23	0.23	0.22	0.14	0.15	0.36	
Control Delay	33.0	53.9	13.7	41.1	43.8	4.2	8.5	14.3	2.9	7.9	15.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	33.0	53.9	13.7	41.1	43.8	4.2	8.5	14.3	2.9	7.9	15.9	
LOS	C	D	B	D	D	A	A	B	A	A	B	
Approach Delay		37.8			33.4			11.2			14.9	
Approach LOS		D			C			B			B	
Queue Length 50th (ft)	16	73	0	80	49	0	26	83	0	22	143	
Queue Length 95th (ft)	38	108	54	132	80	19	51	125	31	44	205	
Internal Link Dist (ft)		285			302			388			335	
Turn Bay Length (ft)	100		140	100		75	400		415	180		
Base Capacity (vph)	298	1102	579	277	1102	578	479	1940	926	623	1919	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.09	0.18	0.22	0.48	0.13	0.15	0.23	0.22	0.14	0.15	0.36	
Intersection Summary												
Cycle Length: 114												
Actuated Cycle Length: 114												
Offset: 42 (37%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 65												
Control Type: Actuated-Coordinated												

Timings

1: E Fountain Boulevard & S Union Boulevard

Background Traffic Volumes

PM Peak Hour - Year 2022

Maximum v/c Ratio: 0.54

Intersection Signal Delay: 20.5









Intersection LOS: C

Intersection Capacity Utilization 61.0%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: E Fountain Boulevard & S Union Boulevard





 Ø1	 Ø2 (R)	 Ø3	 Ø4
12 s	45 s	15 s	42 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
12 s	45 s	15 s	42 s

HCM 6th TWSC

2: E Fountain Boulevard & Stewart Place

Background Traffic Volumes

PM Peak Hour - Year 2022





Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	9	376	328	5	3	7
Future Vol, veh/h	9	376	328	5	3	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	55	-	-	-	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	10	409	357	5	3	8
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	362	0	-	0	585	181
Stage 1	-	-	-	-	360	-
Stage 2	-	-	-	-	225	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1193	-	-	-	*646	831
Stage 1	-	-	-	-	*677	-
Stage 2	-	-	-	-	*890	-
Platoon blocked, %		-	-	-	1	
Mov Cap-1 Maneuver	1193	-	-	-	*641	831
Mov Cap-2 Maneuver	-	-	-	-	*610	-
Stage 1	-	-	-	-	*672	-
Stage 2	-	-	-	-	*890	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.2	0		9.9		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1193	-	-	-	750	
HCM Lane V/C Ratio	0.008	-	-	-	0.014	
HCM Control Delay (s)	8	-	-	-	9.9	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

HCM 6th TWSC

3: E Fountain Boulevard & Boggs Place

Background Traffic Volumes

PM Peak Hour - Year 2022

























Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	24	356	308	9	11	25
Future Vol, veh/h	24	356	308	9	11	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	115	-	-	-	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	26	387	335	10	12	27
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	345	0	-	0	586	173
Stage 1	-	-	-	-	340	-
Stage 2	-	-	-	-	246	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1211	-	-	-	*645	840
Stage 1	-	-	-	-	*692	-
Stage 2	-	-	-	-	*890	-
Platoon blocked, %		-	-	-	1	
Mov Cap-1 Maneuver	1211	-	-	-	*632	840
Mov Cap-2 Maneuver	-	-	-	-	*612	-
Stage 1	-	-	-	-	*677	-
Stage 2	-	-	-	-	*890	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.5	0		10		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1211	-	-	-	754	
HCM Lane V/C Ratio	0.022	-	-	-	0.052	
HCM Control Delay (s)	8	-	-	-	10	
HCM Lane LOS	A	-	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2	
Notes						
-: Volume exceeds capacity	\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon	

Timings

1: E Fountain Boulevard & S Union Boulevard

Background Traffic Volumes

AM Peak Hour - Year 2040

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	93	86	273	143	65	132	821	68	38	450	17
Future Volume (vph)	18	93	86	273	143	65	132	821	68	38	450	17
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3522	0
Flt Permitted	0.654			0.480			0.378			0.260		
Satd. Flow (perm)	1218	3539	1583	894	3539	1583	704	3539	1583	484	3522	0
Satd. Flow (RTOR)			220			172			177		4	
Lane Group Flow (vph)	20	101	93	297	155	71	143	892	74	41	507	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	30.0	30.0	4.0	30.0	
Minimum Split (s)	9.0	10.5	10.5	9.0	10.5	10.5	9.0	36.0	36.0	9.0	36.0	
Total Split (s)	9.0	16.0	16.0	33.0	40.0	40.0	16.0	56.0	56.0	9.0	49.0	
Total Split (%)	7.9%	14.0%	14.0%	28.9%	35.1%	35.1%	14.0%	49.1%	49.1%	7.9%	43.0%	
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.0	6.0	5.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	
Act Effect Green (s)	14.0	8.5	8.5	36.3	31.2	31.2	67.0	60.1	60.1	59.3	52.4	
Actuated g/C Ratio	0.12	0.07	0.07	0.32	0.27	0.27	0.59	0.53	0.53	0.52	0.46	
v/c Ratio	0.12	0.38	0.29	0.66	0.16	0.13	0.29	0.48	0.08	0.13	0.31	
Control Delay	28.5	54.1	2.3	38.6	31.5	0.5	13.1	20.0	0.2	12.9	21.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	28.5	54.1	2.3	38.6	31.5	0.5	13.1	20.0	0.2	12.9	21.3	
LOS	C	D	A	D	C	A	B	C	A	B	C	
Approach Delay		29.2			31.3			17.8			20.7	
Approach LOS		C			C			B			C	
Queue Length 50th (ft)	10	37	0	177	43	0	44	231	0	12	120	
Queue Length 95th (ft)	25	65	0	237	71	0	88	317	0	32	185	
Internal Link Dist (ft)		285			302			388			335	
Turn Bay Length (ft)	100		140	100		75	400		415	180		
Base Capacity (vph)	169	299	335	499	1048	590	518	1867	918	317	1620	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.12	0.34	0.28	0.60	0.15	0.12	0.28	0.48	0.08	0.13	0.31	

Intersection Summary

Cycle Length: 114

Actuated Cycle Length: 114

Offset: 42 (37%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Timings

1: E Fountain Boulevard & S Union Boulevard

Background Traffic Volumes

AM Peak Hour - Year 2040

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 22.4









Intersection LOS: C

Intersection Capacity Utilization 68.7%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: E Fountain Boulevard & S Union Boulevard





 Ø1	 Ø2(R)	 Ø3	 Ø4
9 s	56 s	33 s	16 s
 Ø5	 Ø6(R)	 Ø7	 Ø8
16 s	49 s	9 s	40 s

HCM 6th TWSC

2: E Fountain Boulevard & Stewart Place

Background Traffic Volumes

AM Peak Hour - Year 2040





Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	195	495	2	2	6
Future Vol, veh/h	3	195	495	2	2	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	55	-	-	-	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	3	212	538	2	2	7
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	540	0	-	0	651	270
Stage 1	-	-	-	-	539	-
Stage 2	-	-	-	-	112	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1025	-	-	-	*463	728
Stage 1	-	-	-	-	*549	-
Stage 2	-	-	-	-	*966	-
Platoon blocked, %		-	-	-	1	
Mov Cap-1 Maneuver	1025	-	-	-	*462	728
Mov Cap-2 Maneuver	-	-	-	-	*488	-
Stage 1	-	-	-	-	*547	-
Stage 2	-	-	-	-	*966	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		10.6		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1025	-	-	-	648	
HCM Lane V/C Ratio	0.003	-	-	-	0.013	
HCM Control Delay (s)	8.5	-	-	-	10.6	
HCM Lane LOS	A	-	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0	
Notes						
-: Volume exceeds capacity	\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon	

HCM 6th TWSC

3: E Fountain Boulevard & Boggs Place

Background Traffic Volumes

AM Peak Hour - Year 2040

























Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	177	462	6	12	35
Future Vol, veh/h	20	177	462	6	12	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	115	-	-	-	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	22	192	502	7	13	38
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	509	0	-	0	646	255
Stage 1	-	-	-	-	506	-
Stage 2	-	-	-	-	140	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1052	-	-	-	*467	744
Stage 1	-	-	-	-	*571	-
Stage 2	-	-	-	-	*966	-
Platoon blocked, %		-	-	-	1	
Mov Cap-1 Maneuver	1052	-	-	-	*457	744
Mov Cap-2 Maneuver	-	-	-	-	*495	-
Stage 1	-	-	-	-	*559	-
Stage 2	-	-	-	-	*966	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.9	0		10.9		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1052	-	-	-	659	
HCM Lane V/C Ratio	0.021	-	-	-	0.078	
HCM Control Delay (s)	8.5	-	-	-	10.9	
HCM Lane LOS	A	-	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Timings

1: E Fountain Boulevard & S Union Boulevard

Background Traffic Volumes

PM Peak Hour - Year 2040

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	260	167	177	185	113	143	579	173	125	878	35
Future Volume (vph)	38	260	167	177	185	113	143	579	173	125	878	35
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3518	0
Flt Permitted	0.626			0.378			0.181			0.370		
Satd. Flow (perm)	1166	3539	1583	704	3539	1583	337	3539	1583	689	3518	0
Satd. Flow (RTOR)			182			124			188		4	
Lane Group Flow (vph)	41	283	182	192	201	123	155	629	188	136	992	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	30.0	30.0	4.0	30.0	
Minimum Split (s)	9.0	10.5	10.5	9.0	10.5	10.5	9.0	36.0	36.0	9.0	36.0	
Total Split (s)	9.0	24.0	24.0	18.0	33.0	33.0	17.0	60.0	60.0	12.0	55.0	
Total Split (%)	7.9%	21.1%	21.1%	15.8%	28.9%	28.9%	14.9%	52.6%	52.6%	10.5%	48.2%	
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.0	6.0	5.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	
Act Effect Green (s)	19.7	14.2	14.2	33.2	26.3	26.3	67.6	57.0	57.0	64.1	55.2	
Actuated g/C Ratio	0.17	0.12	0.12	0.29	0.23	0.23	0.59	0.50	0.50	0.56	0.48	
v/c Ratio	0.18	0.64	0.51	0.60	0.25	0.27	0.48	0.36	0.21	0.30	0.58	
Control Delay	30.8	54.1	11.7	39.8	36.9	7.8	15.0	18.6	3.0	11.6	23.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	30.8	54.1	11.7	39.8	36.9	7.8	15.0	18.6	3.0	11.6	23.7	
LOS	C	D	B	D	D	A	B	B	A	B	C	
Approach Delay		37.0			31.1			15.0			22.2	
Approach LOS		D			C			B			C	
Queue Length 50th (ft)	22	105	0	111	65	0	45	148	0	39	270	
Queue Length 95th (ft)	47	147	63	170	97	47	80	195	38	72	369	
Internal Link Dist (ft)		285			302			388			335	
Turn Bay Length (ft)	100		140	100		75	400		415	180		
Base Capacity (vph)	222	543	397	326	849	474	357	1768	885	462	1705	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.18	0.52	0.46	0.59	0.24	0.26	0.43	0.36	0.21	0.29	0.58	

Intersection Summary

Cycle Length: 114

Actuated Cycle Length: 114

Offset: 42 (37%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Timings

1: E Fountain Boulevard & S Union Boulevard

Background Traffic Volumes

PM Peak Hour - Year 2040

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 23.8









Intersection LOS: C

Intersection Capacity Utilization 69.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: E Fountain Boulevard & S Union Boulevard





 Ø1	 Ø2 (R)	 Ø3	 Ø4
12 s	60 s	18 s	24 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
17 s	55 s	9 s	33 s

HCM 6th TWSC

2: E Fountain Boulevard & Stewart Place

Background Traffic Volumes

PM Peak Hour - Year 2040

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	14	543	473	8	5	11
Future Vol, veh/h	14	543	473	8	5	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	55	-	-	-	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	15	590	514	9	5	12

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	523	0	0	844	262
Stage 1	-	-	-	519	-
Stage 2	-	-	-	325	-
Critical Hdwy	4.14	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	3.52	3.32
Pot Cap-1 Maneuver	1040	-	-	*537	737
Stage 1	-	-	-	*562	-
Stage 2	-	-	-	*814	-
Platoon blocked, %		-	-	1	
Mov Cap-1 Maneuver	1040	-	-	*530	737
Mov Cap-2 Maneuver	-	-	-	*504	-
Stage 1	-	-	-	*554	-
Stage 2	-	-	-	*814	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1040	-	-	-	644
HCM Lane V/C Ratio	0.015	-	-	-	0.027
HCM Control Delay (s)	8.5	-	-	-	10.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1





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

HCM 6th TWSC

3: E Fountain Boulevard & Boggs Place

Background Traffic Volumes

PM Peak Hour - Year 2040

























Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	35	513	444	14	17	36
Future Vol, veh/h	35	513	444	14	17	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	115	-	-	-	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	38	558	483	15	18	39
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	498	0	-	0	846	249
Stage 1	-	-	-	-	491	-
Stage 2	-	-	-	-	355	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1062	-	-	-	*491	751
Stage 1	-	-	-	-	*581	-
Stage 2	-	-	-	-	*839	-
Platoon blocked, %		-	-	-	1	
Mov Cap-1 Maneuver	1062	-	-	-	*473	751
Mov Cap-2 Maneuver	-	-	-	-	*496	-
Stage 1	-	-	-	-	*560	-
Stage 2	-	-	-	-	*839	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.5	0		11.1		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1062	-	-	-	645	
HCM Lane V/C Ratio	0.036	-	-	-	0.089	
HCM Control Delay (s)	8.5	-	-	-	11.1	
HCM Lane LOS	A	-	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3	
Notes						
-: Volume exceeds capacity	\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon	

Timings

1: S Union Boulevard & E Fountain Boulevard

Total Traffic Volumes

AM Peak Hour - Year 2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	89	71	297	115	79	126	619	106	63	337	11
Future Volume (vph)	12	89	71	297	115	79	126	619	106	63	337	11
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3522	0
Flt Permitted	0.673			0.482			0.501			0.373		
Satd. Flow (perm)	1254	3539	1583	898	3539	1583	933	3539	1583	695	3522	0
Satd. Flow (RTOR)			124			124			129		3	
Lane Group Flow (vph)	13	97	77	323	125	86	137	673	115	68	378	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	30.0	30.0	4.0	30.0	
Minimum Split (s)	9.0	10.5	10.5	9.0	10.5	10.5	9.0	36.0	36.0	9.0	36.0	
Total Split (s)	15.0	42.0	42.0	15.0	42.0	42.0	12.0	45.0	45.0	12.0	45.0	
Total Split (%)	13.2%	36.8%	36.8%	13.2%	36.8%	36.8%	10.5%	39.5%	39.5%	10.5%	39.5%	
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.0	6.0	5.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	
Act Effect Green (s)	16.3	8.5	8.5	24.2	18.7	18.7	76.4	68.2	68.2	72.4	64.5	
Actuated g/C Ratio	0.14	0.07	0.07	0.21	0.16	0.16	0.67	0.60	0.60	0.64	0.57	
v/c Ratio	0.06	0.37	0.33	1.21	0.22	0.24	0.20	0.32	0.12	0.13	0.19	
Control Delay	35.1	53.7	5.7	162.1	44.0	4.6	6.9	12.7	1.9	6.8	12.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	35.1	53.7	5.7	162.1	44.0	4.6	6.9	12.7	1.9	6.8	12.7	
LOS	D	D	A	F	D	A	A	B	A	A	B	
Approach Delay		32.7			109.1			10.5			11.8	
Approach LOS		C			F			B			B	
Queue Length 50th (ft)	8	36	0	~273	40	0	30	126	0	14	66	
Queue Length 95th (ft)	24	63	12	#372	75	21	55	178	21	31	102	
Internal Link Dist (ft)		285			302			137			335	
Turn Bay Length (ft)	100		140	100		75			415	180		
Base Capacity (vph)	265	1102	578	267	1102	578	688	2117	999	513	1993	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.05	0.09	0.13	1.21	0.11	0.15	0.20	0.32	0.12	0.13	0.19	

Intersection Summary

Cycle Length: 114

Actuated Cycle Length: 114

Offset: 42 (37%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Timings

1: S Union Boulevard & E Fountain Boulevard

Total Traffic Volumes

AM Peak Hour - Year 2022

Maximum v/c Ratio: 1.21

Intersection Signal Delay: 37.9

Intersection LOS: D

Intersection Capacity Utilization 69.7%

ICU Level of Service C

Analysis Period (min) 15









~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: S Union Boulevard & E Fountain Boulevard

 Ø1	 Ø2 (R)	 Ø3	 Ø4
12 s	45 s	15 s	42 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
12 s	45 s	15 s	42 s

HCM 6th TWSC

2: Access D/Stewart Place & E Fountain Boulevard

Total Traffic Volumes
AM Peak Hour - Year 2022

Intersection												
Int Delay, s/veh	1.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰	↱			↰↱	
Traffic Vol, veh/h	2	194	62	12	417	1	84	0	17	1	0	4
Future Vol, veh/h	2	194	62	12	417	1	84	0	17	1	0	4
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	55	-	-	55	-	-	0	-	-	-	-	-
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	2	211	67	13	453	1	91	0	18	1	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	454	0	0	278	0	0	502	729	139	590	762	227
Stage 1	-	-	-	-	-	-	249	249	-	480	480	-
Stage 2	-	-	-	-	-	-	253	480	-	110	282	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1103	-	-	1385	-	-	542	392	*1023	*466	374	776
Stage 1	-	-	-	-	-	-	859	776	-	*536	553	-
Stage 2	-	-	-	-	-	-	729	553	-	*965	749	-
Platoon blocked, %		-	-	1	-	-	1	1	1	1	1	
Mov Cap-1 Maneuver	1103	-	-	1385	-	-	535	388	*1023	*454	370	776
Mov Cap-2 Maneuver	-	-	-	-	-	-	535	388	-	*454	370	-
Stage 1	-	-	-	-	-	-	857	774	-	*535	548	-
Stage 2	-	-	-	-	-	-	718	548	-	*946	748	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.2	12.3	10.3
HCM LOS			B	B







Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	535	1023	1103	-	-	1385	-	-	680
HCM Lane V/C Ratio	0.171	0.018	0.002	-	-	0.009	-	-	0.008
HCM Control Delay (s)	13.1	8.6	8.3	-	-	7.6	-	-	10.3
HCM Lane LOS	B	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.6	0.1	0	-	-	0	-	-	0

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

HCM 6th TWSC

3: Access E/Boggs Place & E Fountain Boulevard

Total Traffic Volumes
AM Peak Hour - Year 2022

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	14	162	37	12	356	4	50	0	17	8	0	24
Future Vol, veh/h	14	162	37	12	356	4	50	0	17	8	0	24
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	115	-	-	115	-	-	-	-	-	-	-	-
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	176	40	13	387	4	54	0	18	9	0	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	391	0	0	216	0	0	446	643	108	533	661	196
Stage 1	-	-	-	-	-	-	226	226	-	415	415	-
Stage 2	-	-	-	-	-	-	220	417	-	118	246	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1164	-	-	1465	-	-	597	442	*1023	*514	431	812
Stage 1	-	-	-	-	-	-	887	795	-	*585	591	-
Stage 2	-	-	-	-	-	-	762	590	-	*965	778	-
Platoon blocked, %		-	-	1	-	-	1	1	1	1	1	
Mov Cap-1 Maneuver	1164	-	-	1465	-	-	569	433	*1023	*497	421	812
Mov Cap-2 Maneuver	-	-	-	-	-	-	569	433	-	*497	421	-
Stage 1	-	-	-	-	-	-	876	784	-	*577	586	-
Stage 2	-	-	-	-	-	-	731	585	-	*935	768	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0.2			11.3			10.4		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	641	1164	-	-	1465	-	-	701
HCM Lane V/C Ratio	0.114	0.013	-	-	0.009	-	-	0.05
HCM Control Delay (s)	11.3	8.1	-	-	7.5	-	-	10.4
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.2

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

HCM 6th TWSC




4: S Union Boulevard & Access A

Total Traffic Volumes
AM Peak Hour - Year 2022

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	👤👤		👤👤👤		👤👤	
Traffic Vol, veh/h	17	17	807	12	13	695
Future Vol, veh/h	17	17	807	12	13	695
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	18	18	877	13	14	755
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1290	445	0	0	890	0
Stage 1	884	-	-	-	-	-
Stage 2	406	-	-	-	-	-
Critical Hdwy	6.29	7.14	-	-	5.34	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.67	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	*570	479	-	-	442	-
Stage 1	*291	-	-	-	-	-
Stage 2	*732	-	-	-	-	-
Platoon blocked, %	1	-	-	-	-	-
Mov Cap-1 Maneuver	*538	479	-	-	442	-
Mov Cap-2 Maneuver	*538	-	-	-	-	-
Stage 1	*291	-	-	-	-	-
Stage 2	*692	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	12.7	0		0.6		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-	507	442	-	
HCM Lane V/C Ratio	-	-	0.073	0.032	-	
HCM Control Delay (s)	-	-	12.7	13.4	0.4	
HCM Lane LOS	-	-	B	B	A	
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

HCM 6th TWSC
5: S Union Boulevard & Access B

Total Traffic Volumes
AM Peak Hour - Year 2022

Intersection						
Int Delay, s/veh	1.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	34	42	812	12	31	674
Future Vol, veh/h	34	42	812	12	31	674
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	37	46	883	13	34	733
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1325	448	0	0	896	0
Stage 1	890	-	-	-	-	-
Stage 2	435	-	-	-	-	-
Critical Hdwy	6.29	7.14	-	-	5.34	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.67	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	*538	477	-	-	439	-
Stage 1	*289	-	-	-	-	-
Stage 2	*732	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	*467	477	-	-	439	-
Mov Cap-2 Maneuver	*467	-	-	-	-	-
Stage 1	*289	-	-	-	-	-
Stage 2	*636	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	14.2	0		1.4		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-	472	439	-	
HCM Lane V/C Ratio	-	-	0.175	0.077	-	
HCM Control Delay (s)	-	-	14.2	13.9	0.8	
HCM Lane LOS	-	-	B	B	A	
HCM 95th %tile Q(veh)	-	-	0.6	0.2	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

HCM 6th TWSC

7: Access F & E Fountain Boulevard

Total Traffic Volumes
AM Peak Hour - Year 2022

























Intersection						
Int Delay, s/veh	0.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↱		↱	↑↑	↱	
Traffic Vol, veh/h	174	13	7	355	17	7
Future Vol, veh/h	174	13	7	355	17	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	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	189	14	8	386	18	8
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	203	0	405	102
Stage 1	-	-	-	-	196	-
Stage 2	-	-	-	-	209	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1482	-	674	*1023
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	806	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	1482	-	670	*1023
Mov Cap-2 Maneuver	-	-	-	-	692	-
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	802	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.1		9.9	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	764	-	-	1482	-	
HCM Lane V/C Ratio	0.034	-	-	0.005	-	
HCM Control Delay (s)	9.9	-	-	7.4	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Timings

1: S Union Boulevard & E Fountain Boulevard

Total Traffic Volumes

PM Peak Hour - Year 2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	216	133	225	145	109	130	448	200	140	644	24
Future Volume (vph)	26	216	133	225	145	109	130	448	200	140	644	24
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3522	0
Flt Permitted	0.652			0.429			0.317			0.444		
Satd. Flow (perm)	1215	3539	1583	799	3539	1583	590	3539	1583	827	3522	0
Satd. Flow (RTOR)			145			124			217		4	
Lane Group Flow (vph)	28	235	145	245	158	118	141	487	217	152	726	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	30.0	30.0	4.0	30.0	
Minimum Split (s)	9.0	10.5	10.5	9.0	10.5	10.5	9.0	36.0	36.0	9.0	36.0	
Total Split (s)	15.0	42.0	42.0	15.0	42.0	42.0	12.0	45.0	45.0	12.0	45.0	
Total Split (%)	13.2%	36.8%	36.8%	13.2%	36.8%	36.8%	10.5%	39.5%	39.5%	10.5%	39.5%	
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.0	6.0	5.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	
Act Effect Green (s)	21.3	12.9	12.9	27.8	20.3	20.3	69.3	59.2	59.2	69.8	59.5	
Actuated g/C Ratio	0.19	0.11	0.11	0.24	0.18	0.18	0.61	0.52	0.52	0.61	0.52	
v/c Ratio	0.11	0.59	0.47	0.88	0.25	0.31	0.31	0.26	0.23	0.26	0.39	
Control Delay	31.9	53.7	12.6	68.5	42.6	9.1	9.9	16.4	2.9	9.2	17.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	31.9	53.7	12.6	68.5	42.6	9.1	9.9	16.4	2.9	9.2	17.8	
LOS	C	D	B	E	D	A	A	B	A	A	B	
Approach Delay		37.6			47.2			11.9			16.3	
Approach LOS		D			D			B			B	
Queue Length 50th (ft)	16	87	0	155	55	0	36	100	0	39	160	
Queue Length 95th (ft)	37	125	57	#283	87	47	67	152	41	71	232	
Internal Link Dist (ft)		285			302			137			335	
Turn Bay Length (ft)	100		140	100		75			415	180		
Base Capacity (vph)	309	1102	592	280	1102	578	453	1839	926	584	1840	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.09	0.21	0.24	0.88	0.14	0.20	0.31	0.26	0.23	0.26	0.39	

Intersection Summary

Cycle Length: 114

Actuated Cycle Length: 114

Offset: 42 (37%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Timings 1: S Union Boulevard & E Fountain Boulevard

Total Traffic Volumes
PM Peak Hour - Year 2022

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 24.2

Intersection LOS: C

Intersection Capacity Utilization 69.9%









ICU Level of Service C

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: S Union Boulevard & E Fountain Boulevard

 Ø1	 Ø2 (R)	 Ø3	 Ø4
12 s	45 s	15 s	42 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
12 s	45 s	15 s	42 s

HCM 6th TWSC

2: Access D/Stewart Place & E Fountain Boulevard

Total Traffic Volumes
PM Peak Hour - Year 2022

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰	↱			↰↱	
Traffic Vol, veh/h	9	456	90	18	400	5	78	0	16	3	0	7
Future Vol, veh/h	9	456	90	18	400	5	78	0	16	3	0	7
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	55	-	-	55	-	-	0	-	-	-	-	-
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	10	496	98	20	435	5	85	0	17	3	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	440	0	0	594	0	0	823	1045	297	746	1092	220
Stage 1	-	-	-	-	-	-	565	565	-	478	478	-
Stage 2	-	-	-	-	-	-	258	480	-	268	614	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1116	-	-	1203	-	-	433	310	*916	*502	288	784
Stage 1	-	-	-	-	-	-	736	672	-	*537	554	-
Stage 2	-	-	-	-	-	-	724	553	-	*864	634	-
Platoon blocked, %		-	-	1	-	-	1	1	1	1	1	
Mov Cap-1 Maneuver	1116	-	-	1203	-	-	421	302	*916	*483	281	784
Mov Cap-2 Maneuver	-	-	-	-	-	-	421	302	-	*483	281	-
Stage 1	-	-	-	-	-	-	729	666	-	*532	545	-
Stage 2	-	-	-	-	-	-	705	544	-	*840	629	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.3	14.6	10.5
HCM LOS			B	B







Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	421	916	1116	-	-	1203	-	-	661
HCM Lane V/C Ratio	0.201	0.019	0.009	-	-	0.016	-	-	0.016
HCM Control Delay (s)	15.7	9	8.3	-	-	8	-	-	10.5
HCM Lane LOS	C	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.7	0.1	0	-	-	0.1	-	-	0.1

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

HCM 6th TWSC

3: Access E/Boggs Place & E Fountain Boulevard

Total Traffic Volumes
PM Peak Hour - Year 2022

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	398	54	18	351	9	47	0	16	11	0	25
Future Vol, veh/h	24	398	54	18	351	9	47	0	16	11	0	25
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	115	-	-	115	-	-	-	-	-	-	-	-
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	26	433	59	20	382	10	51	0	17	12	0	27

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	392	0	0	492	0	0	746	947	246	696	971	196
Stage 1	-	-	-	-	-	-	515	515	-	427	427	-
Stage 2	-	-	-	-	-	-	231	432	-	269	544	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1163	-	-	1276	-	-	457	340	*943	*502	328	812
Stage 1	-	-	-	-	-	-	733	675	-	*576	584	-
Stage 2	-	-	-	-	-	-	751	581	-	*889	653	-
Platoon blocked, %		-	-	1	-	-	1	1	1	1	1	
Mov Cap-1 Maneuver	1163	-	-	1276	-	-	429	327	*943	*479	316	812
Mov Cap-2 Maneuver	-	-	-	-	-	-	429	327	-	*479	316	-
Stage 1	-	-	-	-	-	-	717	660	-	*563	575	-
Stage 2	-	-	-	-	-	-	714	572	-	*853	639	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.4	13.4	10.7
HCM LOS			B	B




Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	498	1163	-	-	1276	-	-	670
HCM Lane V/C Ratio	0.138	0.022	-	-	0.015	-	-	0.058
HCM Control Delay (s)	13.4	8.2	-	-	7.9	-	-	10.7
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0	-	-	0.2

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

HCM 6th TWSC

4: S Union Boulevard & Access A




Total Traffic Volumes
PM Peak Hour - Year 2022

Intersection						
Int Delay, s/veh	0.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	16	16	764	18	18	970
Future Vol, veh/h	16	16	764	18	18	970
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	17	17	830	20	20	1054
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1407	425	0	0	850	0
Stage 1	840	-	-	-	-	-
Stage 2	567	-	-	-	-	-
Critical Hdwy	6.29	7.14	-	-	5.34	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.67	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	*635	494	-	-	462	-
Stage 1	*310	-	-	-	-	-
Stage 2	*635	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	*568	494	-	-	462	-
Mov Cap-2 Maneuver	*568	-	-	-	-	-
Stage 1	*310	-	-	-	-	-
Stage 2	*568	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	12.3	0		0.9		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-	528	462	-	
HCM Lane V/C Ratio	-	-	0.066	0.042	-	
HCM Control Delay (s)	-	-	12.3	13.1	0.7	
HCM Lane LOS	-	-	B	B	A	
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

HCM 6th TWSC

5: S Union Boulevard & Access B

Total Traffic Volumes
PM Peak Hour - Year 2022

Intersection						
Int Delay, s/veh	1.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	31	39	762	18	45	957
Future Vol, veh/h	31	39	762	18	45	957
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	34	42	828	20	49	1040
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1456	424	0	0	848	0
Stage 1	838	-	-	-	-	-
Stage 2	618	-	-	-	-	-
Critical Hdwy	6.29	7.14	-	-	5.34	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.67	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	*635	495	-	-	463	-
Stage 1	*311	-	-	-	-	-
Stage 2	*635	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	*475	495	-	-	463	-
Mov Cap-2 Maneuver	*475	-	-	-	-	-
Stage 1	*311	-	-	-	-	-
Stage 2	*475	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	13.8	0		2.1		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)		-	-	486	463	-
HCM Lane V/C Ratio		-	-	0.157	0.106	-
HCM Control Delay (s)		-	-	13.8	13.7	1.6
HCM Lane LOS		-	-	B	B	A
HCM 95th %tile Q(veh)		-	-	0.6	0.4	-
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

HCM 6th TWSC
7: Access F & E Fountain Boulevard

Total Traffic Volumes
PM Peak Hour - Year 2022

Intersection						
Int Delay, s/veh	0.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↱	↑↑	↲	
Traffic Vol, veh/h	407	18	10	362	16	14
Future Vol, veh/h	407	18	10	362	16	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	-	-	100	-	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	442	20	11	393	17	15

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	462	0	671
Stage 1	-	-	-	-	452
Stage 2	-	-	-	-	219
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	1315	-	561
Stage 1	-	-	-	-	819
Stage 2	-	-	-	-	796
Platoon blocked, %	-	-	1	-	1
Mov Cap-1 Maneuver	-	-	1315	-	556
Mov Cap-2 Maneuver	-	-	-	-	621
Stage 1	-	-	-	-	819
Stage 2	-	-	-	-	790

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	10.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	739	-	-	1315	-
HCM Lane V/C Ratio	0.044	-	-	0.008	-
HCM Control Delay (s)	10.1	-	-	7.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

























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

Timings

1: S Union Boulevard & E Fountain Boulevard

Total Traffic Volumes

AM Peak Hour - Year 2040

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	118	98	381	159	99	166	871	127	75	475	17
Future Volume (vph)	18	118	98	381	159	99	166	871	127	75	475	17
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3522	0
Flt Permitted	0.643			0.471			0.343			0.196		
Satd. Flow (perm)	1198	3539	1583	877	3539	1583	639	3539	1583	365	3522	0
Satd. Flow (RTOR)			172			124			177		3	
Lane Group Flow (vph)	20	128	107	414	173	108	180	947	138	82	534	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	30.0	30.0	4.0	30.0	
Minimum Split (s)	9.0	10.5	10.5	9.0	10.5	10.5	9.0	36.0	36.0	9.0	36.0	
Total Split (s)	9.0	15.2	15.2	37.0	43.2	43.2	15.0	50.8	50.8	11.0	46.8	
Total Split (%)	7.9%	13.3%	13.3%	32.5%	37.9%	37.9%	13.2%	44.6%	44.6%	9.6%	41.1%	
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.0	6.0	5.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	
Act Effect Green (s)	14.3	8.8	8.8	42.2	37.1	37.1	60.7	51.4	51.4	53.6	46.0	
Actuated g/C Ratio	0.13	0.08	0.08	0.37	0.33	0.33	0.53	0.45	0.45	0.47	0.40	
v/c Ratio	0.12	0.47	0.38	0.77	0.15	0.18	0.41	0.59	0.17	0.32	0.38	
Control Delay	26.6	56.1	4.8	39.6	27.5	4.4	17.5	27.1	1.9	18.0	25.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	26.6	56.1	4.8	39.6	27.5	4.4	17.5	27.1	1.9	18.0	25.8	
LOS	C	E	A	D	C	A	B	C	A	B	C	
Approach Delay		32.3			31.1			23.0			24.8	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	9	47	0	242	43	0	66	290	0	28	148	
Queue Length 95th (ft)	24	81	8	330	74	31	115	372	20	58	203	
Internal Link Dist (ft)		285			302			137			335	
Turn Bay Length (ft)	100		140	100		75			415	180		
Base Capacity (vph)	170	286	285	575	1180	610	442	1594	810	253	1423	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.12	0.45	0.38	0.72	0.15	0.18	0.41	0.59	0.17	0.32	0.38	

Intersection Summary

Cycle Length: 114

Actuated Cycle Length: 114

Offset: 42 (37%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Timings 1: S Union Boulevard & E Fountain Boulevard

Total Traffic Volumes
AM Peak Hour - Year 2040

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 26.2









Intersection LOS: C

Intersection Capacity Utilization 76.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: S Union Boulevard & E Fountain Boulevard

 Ø1	 Ø2 (R)	 Ø3	 Ø4
11 s	50.8 s	37 s	15.2 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
15 s	46.8 s	9 s	43.2 s

HCM 6th TWSC

2: Access D/Stewart Place & E Fountain Boulevard

Total Traffic Volumes
AM Peak Hour - Year 2040

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰	↱			↰↱	
Traffic Vol, veh/h	3	254	62	12	569	2	84	0	17	2	0	6
Future Vol, veh/h	3	254	62	12	569	2	84	0	17	2	0	6
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	55	-	-	55	-	-	0	-	-	-	-	-
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	276	67	13	618	2	91	0	18	2	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	620	0	0	343	0	0	651	962	172	789	994	310
Stage 1	-	-	-	-	-	-	316	316	-	645	645	-
Stage 2	-	-	-	-	-	-	335	646	-	144	349	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	956	-	-	1357	-	-	455	297	*997	*356	283	686
Stage 1	-	-	-	-	-	-	843	759	-	*427	466	-
Stage 2	-	-	-	-	-	-	653	465	-	*939	732	-
Platoon blocked, %		-	-	1	-	-	1	1	1	1	1	
Mov Cap-1 Maneuver	956	-	-	1357	-	-	447	293	*997	*346	280	686
Mov Cap-2 Maneuver	-	-	-	-	-	-	447	293	-	*346	280	-
Stage 1	-	-	-	-	-	-	840	757	-	*426	461	-
Stage 2	-	-	-	-	-	-	641	460	-	*919	730	-







Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.2	14	11.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	447	997	956	-	-	1357	-	-	551
HCM Lane V/C Ratio	0.204	0.019	0.003	-	-	0.01	-	-	0.016
HCM Control Delay (s)	15.1	8.7	8.8	-	-	7.7	-	-	11.6
HCM Lane LOS	C	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.8	0.1	0	-	-	0	-	-	0

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

HCM 6th TWSC
3: Access E/Boggs Place & E Fountain Boulevard

Total Traffic Volumes
AM Peak Hour - Year 2040

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	20	216	37	12	498	6	50	0	17	12	0	35
Future Vol, veh/h	20	216	37	12	498	6	50	0	17	12	0	35
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	115	-	-	115	-	-	-	-	-	-	-	-
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	22	235	40	13	541	7	54	0	18	13	0	38

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	548	0	0	275	0	0	596	873	138	733	890	274
Stage 1	-	-	-	-	-	-	299	299	-	571	571	-
Stage 2	-	-	-	-	-	-	297	574	-	162	319	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1018	-	-	1389	-	-	461	320	*1023	*363	313	724
Stage 1	-	-	-	-	-	-	800	736	-	*473	503	-
Stage 2	-	-	-	-	-	-	687	501	-	*965	720	-
Platoon blocked, %		-	-	1	-	-	1	1	1	1	1	
Mov Cap-1 Maneuver	1018	-	-	1389	-	-	427	310	*1023	*348	303	724
Mov Cap-2 Maneuver	-	-	-	-	-	-	427	310	-	*348	303	-
Stage 1	-	-	-	-	-	-	783	720	-	*463	498	-
Stage 2	-	-	-	-	-	-	645	496	-	*927	704	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.2	13.4	12
HCM LOS			B	B




Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	501	1018	-	-	1389	-	-	567
HCM Lane V/C Ratio	0.145	0.021	-	-	0.009	-	-	0.09
HCM Control Delay (s)	13.4	8.6	-	-	7.6	-	-	12
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0	-	-	0.3

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

HCM 6th TWSC

4: S Union Boulevard & Access A

Total Traffic Volumes
AM Peak Hour - Year 2040

Intersection						
Int Delay, s/veh	0.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	17	17	1120	12	13	944
Future Vol, veh/h	17	17	1120	12	13	944
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	18	18	1217	13	14	1026
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1765	615	0	0	1230	0
Stage 1	1224	-	-	-	-	-
Stage 2	541	-	-	-	-	-
Critical Hdwy	6.29	7.14	-	-	5.34	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.67	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	*449	372	-	-	303	-
Stage 1	*180	-	-	-	-	-
Stage 2	*635	-	-	-	-	-
Platoon blocked, %	1	-	-	-	-	-
Mov Cap-1 Maneuver	*401	372	-	-	303	-
Mov Cap-2 Maneuver	*401	-	-	-	-	-
Stage 1	*180	-	-	-	-	-
Stage 2	*567	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	15.3	0		1.1		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-	386	303	-	
HCM Lane V/C Ratio	-	-	0.096	0.047	-	
HCM Control Delay (s)	-	-	15.3	17.5	0.9	
HCM Lane LOS	-	-	C	C	A	
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

HCM 6th TWSC
5: S Union Boulevard & Access B

Total Traffic Volumes
AM Peak Hour - Year 2040

Intersection						
Int Delay, s/veh	1.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑↑↑			↑↑
Traffic Vol, veh/h	34	42	1125	12	31	923
Future Vol, veh/h	34	42	1125	12	31	923
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	37	46	1223	13	34	1003

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1800	618	0	0	1236
Stage 1	1230	-	-	-	-
Stage 2	570	-	-	-	-
Critical Hdwy	6.29	7.14	-	-	5.34
Critical Hdwy Stg 1	6.64	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-
Follow-up Hdwy	3.67	3.92	-	-	3.12
Pot Cap-1 Maneuver	*358	370	-	-	301
Stage 1	*178	-	-	-	-
Stage 2	*659	-	-	-	-
Platoon blocked, %	1	-	-	-	-
Mov Cap-1 Maneuver	*267	370	-	-	301
Mov Cap-2 Maneuver	*267	-	-	-	-
Stage 1	*178	-	-	-	-
Stage 2	*491	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.4	0	2.7
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	316	301
HCM Lane V/C Ratio	-	-	0.261	0.112
HCM Control Delay (s)	-	-	20.4	18.5
HCM Lane LOS	-	-	C	C
HCM 95th %tile Q(veh)	-	-	1	0.4

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

HCM 6th TWSC
7: Access F & E Fountain Boulevard

Total Traffic Volumes
AM Peak Hour - Year 2040

Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑↑	
Traffic Vol, veh/h	232	13	7	499	17	7
Future Vol, veh/h	232	13	7	499	17	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	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	252	14	8	542	18	8

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	266	0	546	133
Stage 1	-	-	-	-	259	-
Stage 2	-	-	-	-	287	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1457	-	585	*997
Stage 1	-	-	-	-	918	-
Stage 2	-	-	-	-	736	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	1457	-	582	*997
Mov Cap-2 Maneuver	-	-	-	-	626	-
Stage 1	-	-	-	-	918	-
Stage 2	-	-	-	-	732	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	10.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	702	-	-	1457	-
HCM Lane V/C Ratio	0.037	-	-	0.005	-
HCM Control Delay (s)	10.3	-	-	7.5	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

























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

Timings

1: S Union Boulevard & E Fountain Boulevard

Total Traffic Volumes

PM Peak Hour - Year 2040

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	296	185	279	202	144	174	626	253	179	914	35
Future Volume (vph)	38	296	185	279	202	144	174	626	253	179	914	35
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3518	0
Flt Permitted	0.614			0.332			0.128			0.304		
Satd. Flow (perm)	1144	3539	1583	618	3539	1583	238	3539	1583	566	3518	0
Satd. Flow (RTOR)			201			157			275		4	
Lane Group Flow (vph)	41	322	201	303	220	157	189	680	275	195	1031	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	30.0	30.0	4.0	30.0	
Minimum Split (s)	9.0	10.5	10.5	9.0	10.5	10.5	9.0	36.0	36.0	9.0	36.0	
Total Split (s)	9.0	22.0	22.0	25.0	38.0	38.0	19.0	50.0	50.0	17.0	48.0	
Total Split (%)	7.9%	19.3%	19.3%	21.9%	33.3%	33.3%	16.7%	43.9%	43.9%	14.9%	42.1%	
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.0	6.0	5.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	
Act Effect Green (s)	19.9	14.4	14.4	39.5	32.6	32.6	60.4	47.8	47.8	58.7	47.0	
Actuated g/C Ratio	0.17	0.13	0.13	0.35	0.29	0.29	0.53	0.42	0.42	0.51	0.41	
v/c Ratio	0.19	0.72	0.54	0.76	0.22	0.28	0.67	0.46	0.33	0.48	0.71	
Control Delay	27.7	57.6	11.9	41.9	31.9	6.3	28.2	26.0	3.9	17.3	32.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	27.7	57.6	11.9	41.9	31.9	6.3	28.2	26.0	3.9	17.3	32.3	
LOS	C	E	B	D	C	A	C	C	A	B	C	
Approach Delay		39.1			30.4			21.0			29.9	
Approach LOS		D			C			C			C	
Queue Length 50th (ft)	19	120	0	168	65	0	68	196	0	70	341	
Queue Length 95th (ft)	43	169	67	251	98	50	132	253	53	112	435	
Internal Link Dist (ft)		285			302			137			335	
Turn Bay Length (ft)	100		140	100		75			415	180		
Base Capacity (vph)	221	481	388	415	1012	565	318	1483	822	424	1451	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.19	0.67	0.52	0.73	0.22	0.28	0.59	0.46	0.33	0.46	0.71	

Intersection Summary

Cycle Length: 114

Actuated Cycle Length: 114

Offset: 42 (37%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Timings 1: S Union Boulevard & E Fountain Boulevard

Total Traffic Volumes
PM Peak Hour - Year 2040

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 28.6









Intersection LOS: C

Intersection Capacity Utilization 78.4%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: S Union Boulevard & E Fountain Boulevard

 Ø1	 Ø2 (R)	 Ø3	 Ø4
17 s	50 s	25 s	22 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
19 s	48 s	9 s	38 s

HCM 6th TWSC

2: Access D/Stewart Place & E Fountain Boulevard

Total Traffic Volumes
PM Peak Hour - Year 2040

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰	↱			↰↱	
Traffic Vol, veh/h	14	623	90	18	545	8	78	0	16	5	0	11
Future Vol, veh/h	14	623	90	18	545	8	78	0	16	5	0	11
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	55	-	-	55	-	-	0	-	-	-	-	-
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	677	98	20	592	9	85	0	17	5	0	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	601	0	0	775	0	0	1092	1397	388	1006	1442	301
Stage 1	-	-	-	-	-	-	756	756	-	637	637	-
Stage 2	-	-	-	-	-	-	336	641	-	369	805	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	972	-	-	1134	-	-	335	208	*836	*402	191	695
Stage 1	-	-	-	-	-	-	699	631	-	*432	470	-
Stage 2	-	-	-	-	-	-	652	468	-	*788	593	-
Platoon blocked, %		-	-	1	-	-	1	1	1	1	1	
Mov Cap-1 Maneuver	972	-	-	1134	-	-	321	201	*836	*384	185	695
Mov Cap-2 Maneuver	-	-	-	-	-	-	321	201	-	*384	185	-
Stage 1	-	-	-	-	-	-	688	622	-	*426	462	-
Stage 2	-	-	-	-	-	-	629	460	-	*759	584	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.3	18.4	11.7
HCM LOS			C	B







Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	321	836	972	-	-	1134	-	-	555
HCM Lane V/C Ratio	0.264	0.021	0.016	-	-	0.017	-	-	0.031
HCM Control Delay (s)	20.2	9.4	8.8	-	-	8.2	-	-	11.7
HCM Lane LOS	C	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1	0.1	0	-	-	0.1	-	-	0.1

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

HCM 6th TWSC

3: Access E/Boggs Place & E Fountain Boulevard

Total Traffic Volumes
PM Peak Hour - Year 2040

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	35	555	54	18	487	14	47	0	16	17	0	36
Future Vol, veh/h	35	555	54	18	487	14	47	0	16	17	0	36
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	115	-	-	115	-	-	-	-	-	-	-	-
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	38	603	59	20	529	15	51	0	17	18	0	39

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	544	0	0	662	0	0	1014	1293	331	955	1315	272
Stage 1	-	-	-	-	-	-	709	709	-	577	577	-
Stage 2	-	-	-	-	-	-	305	584	-	378	738	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1021	-	-	1224	-	-	358	234	*862	*405	225	726
Stage 1	-	-	-	-	-	-	691	631	-	*469	500	-
Stage 2	-	-	-	-	-	-	680	496	-	*813	609	-
Platoon blocked, %		-	-	1	-	-	1	1	1	1	1	
Mov Cap-1 Maneuver	1021	-	-	1224	-	-	325	222	*862	*380	214	726
Mov Cap-2 Maneuver	-	-	-	-	-	-	325	222	-	*380	214	-
Stage 1	-	-	-	-	-	-	666	608	-	*452	492	-
Stage 2	-	-	-	-	-	-	633	488	-	*767	587	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.3	16.3	12.1
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	386	1021	-	-	1224	-	-	562
HCM Lane V/C Ratio	0.177	0.037	-	-	0.016	-	-	0.103
HCM Control Delay (s)	16.3	8.7	-	-	8	-	-	12.1
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.6	0.1	-	-	0	-	-	0.3

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

HCM 6th TWSC




4: S Union Boulevard & Access A

Total Traffic Volumes
PM Peak Hour - Year 2040

Intersection						
Int Delay, s/veh	1.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	👤👤		👤👤👤		👤👤	
Traffic Vol, veh/h	16	16	1039	18	18	1346
Future Vol, veh/h	16	16	1039	18	18	1346
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	17	17	1129	20	20	1463
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1911	575	0	0	1149	0
Stage 1	1139	-	-	-	-	-
Stage 2	772	-	-	-	-	-
Critical Hdwy	6.29	7.14	-	-	5.34	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.67	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	*489	395	-	-	331	-
Stage 1	*203	-	-	-	-	-
Stage 2	*489	-	-	-	-	-
Platoon blocked, %	1	-	-	-	-	-
Mov Cap-1 Maneuver	*331	395	-	-	331	-
Mov Cap-2 Maneuver	*331	-	-	-	-	-
Stage 1	*203	-	-	-	-	-
Stage 2	*331	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	16.1	0		2.8		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-	360	331	-	
HCM Lane V/C Ratio	-	-	0.097	0.059	-	
HCM Control Delay (s)	-	-	16.1	16.6	2.6	
HCM Lane LOS	-	-	C	C	A	
HCM 95th %tile Q(veh)	-	-	0.3	0.2	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

HCM 6th TWSC
5: S Union Boulevard & Access B

Total Traffic Volumes
PM Peak Hour - Year 2040

Intersection						
Int Delay, s/veh	4.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	31	39	1037	18	45	1333
Future Vol, veh/h	31	39	1037	18	45	1333
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	34	42	1127	20	49	1449
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1960	574	0	0	1147	0
Stage 1	1137	-	-	-	-	-
Stage 2	823	-	-	-	-	-
Critical Hdwy	6.29	7.14	-	-	5.34	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.67	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	*489	396	-	-	332	-
Stage 1	*203	-	-	-	-	-
Stage 2	*489	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	*119	396	-	-	332	-
Mov Cap-2 Maneuver	*119	-	-	-	-	-
Stage 1	*203	-	-	-	-	-
Stage 2	*119	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	34.8	0		6.7		
HCM LOS	D					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-	195	332	-	
HCM Lane V/C Ratio	-	-	0.39	0.147	-	
HCM Control Delay (s)	-	-	34.8	17.7	6.3	
HCM Lane LOS	-	-	D	C	A	
HCM 95th %tile Q(veh)	-	-	1.7	0.5	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

HCM 6th TWSC
7: Access F & E Fountain Boulevard

Total Traffic Volumes
PM Peak Hour - Year 2040

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↱		↱	↑↑	↱	
Traffic Vol, veh/h	570	18	10	503	16	4
Future Vol, veh/h	570	18	10	503	16	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	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	620	20	11	547	17	4
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	640	0	926	320
Stage 1	-	-	-	-	630	-
Stage 2	-	-	-	-	296	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1253	-	463	*862
Stage 1	-	-	-	-	793	-
Stage 2	-	-	-	-	729	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	1253	-	459	*862
Mov Cap-2 Maneuver	-	-	-	-	553	-
Stage 1	-	-	-	-	793	-
Stage 2	-	-	-	-	722	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.2		11.3	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	596	-	-	1253	-	
HCM Lane V/C Ratio	0.036	-	-	0.009	-	
HCM Control Delay (s)	11.3	-	-	7.9	-	
HCM Lane LOS	B	-	-	A	-	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon