Ken Caryl Lands

Traffic Impact Study

Jefferson County, Colorado

Date: May 11, 2020

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KEN CARYL LANDS
TRAFFIC IMPACT STUDY

1.0 INTRODUCTION

This traffic impact study has been prepared by the Fox Tuttle Transportation Group for the Ken Caryl Lands residential project. The project proposes to build up to a total of 950 residential units on three separate parcels located along W. Ken Caryl Avenue just east of the C-470 interchange in unincorporated Jefferson County.

The purpose of this study is to assist in identifying potential traffic impacts within the study area with buildout of this project in the short and long-term scenarios. The traffic study addresses morning and evening peak hour intersection conditions in the study area without and with the project added traffic. The information contained in this study is anticipated to be used by Jefferson County in identifying any intersection or roadway deficiencies and potential improvements for both the near term and long-term future scenarios necessary to service project-added traffic volumes.

2.0 PROJECT DESCRIPTION

The Ken Caryl Lands project proposes to develop single-family detached, single-family paired homes, and multi-family dwelling units on three currently vacant parcels, as described below:

- Parcel A = ± 58.7 acres to be developed with up to 330 single-family residential units
- Parcel B = ± 27.7 acres to be developed with up to 270 multi-family residential units
- Parcel C = ± 11.9 acres to be developed with up to 350 multi-family residential units

A vicinity map is shown on **Figure 1**. Existing adjacent land uses include single-family and multi-family residential, retail, restaurant, and other commercial uses. Parcel C is located adjacent to the existing Regional Transportation District (RTD) Ken Caryl & C-470 Park-n-Ride.

The concept site plans illustrating proposed access are provided on **Figure 2**. Parcels A and C propose access from W. Ken Caryl Avenue via Shaffer Parkway/Indore Place and via an extension of S. Alkire Street into Parcel A. Access to Parcel B is proposed via a new south leg at the W. Ken Caryl Avenue & 12300 Block intersection and via a right-in, right-out access along W. Chatfield Avenue approximately 700’ south of W. Ken Caryl Avenue.

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VICINITY MAP

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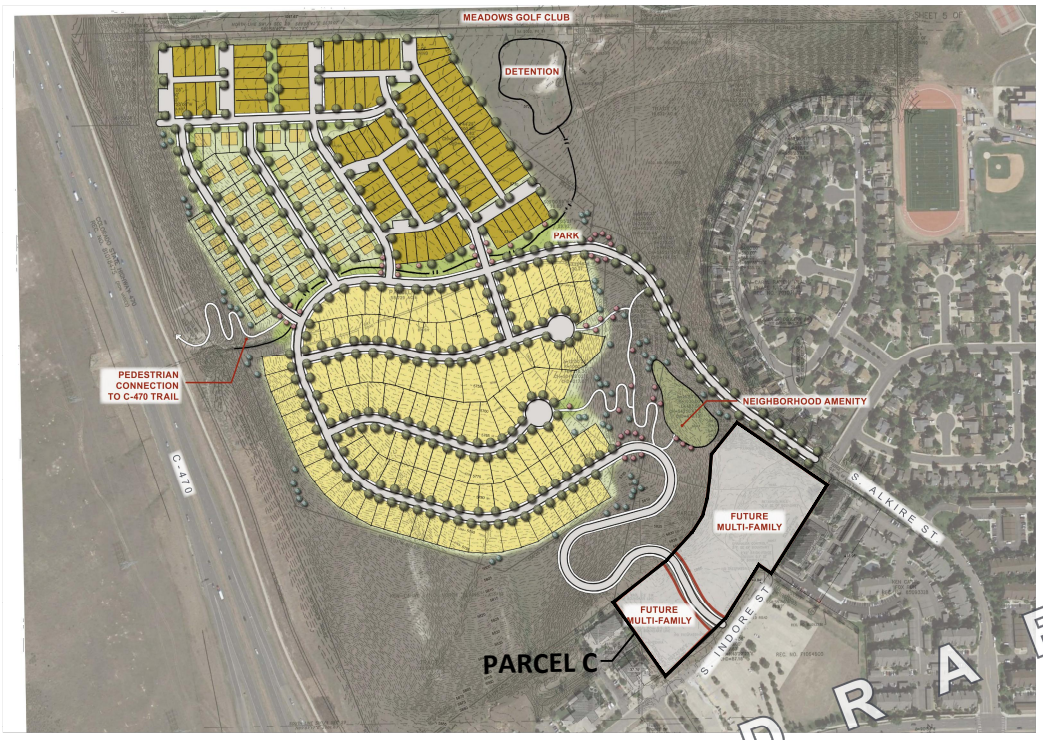

SITE TABULATION

SINGLE FAMILY DETACHED 60' X 100' LOTS	136 UNITS
PAIRED HOMES 40' X 90' LOTS	62 UNITS
ALLEY LOADED S.F.D. 37' X 110' LOTS	95 UNITS
TOTAL UNITS	293 D.U.
MAX ALLOWED	330 D.U.
SITE AREA = 58.73 ACRES	
5 DWELLING UNITS PER ACRE	

DRAFT

CONCEPTUAL SITE PLAN - PARCEL A

KEN CARYL RANCH

JEFFERSON COUNTY, CO

DATE: January 28, 2020 (V.2)
CLIENT: North American Development Group
PROJECT NO: 20001.01
AUTHOR: SW

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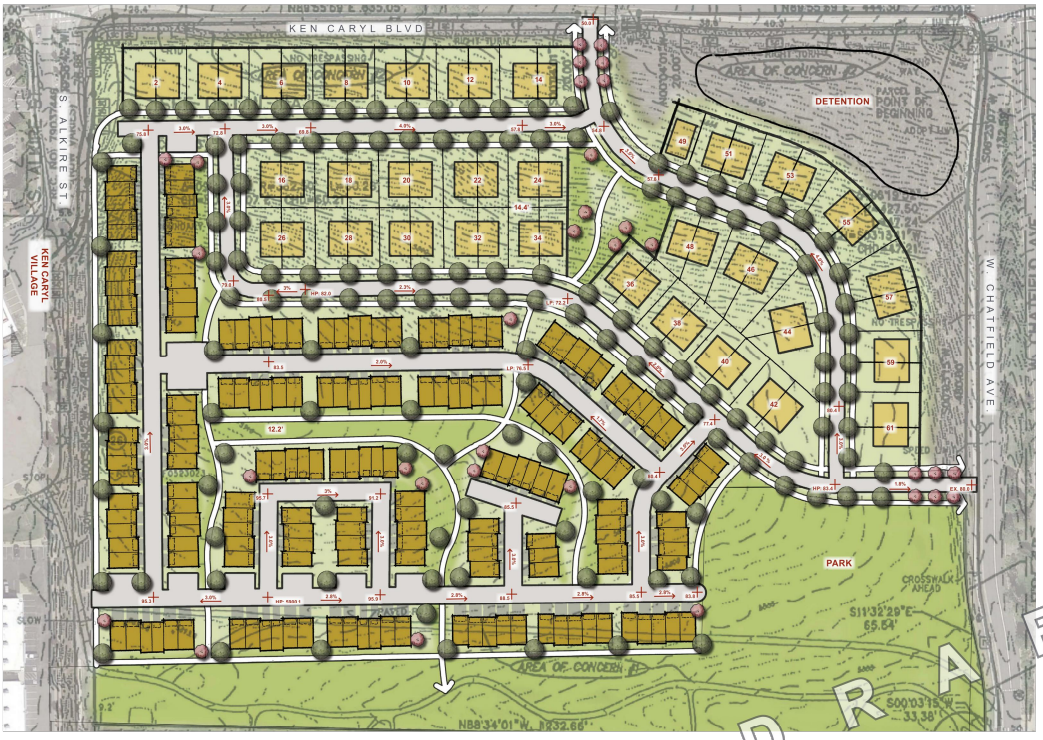

SITE TABULATION

PAIRED HOMES 40' X 90' LOTS	61 UNITS
TOWNHOMES- 3-STORY 16' X 42' & 22' X 42' BUILDING SIZE	189 UNITS
TOTAL UNITS	250 D.U.
MAX ALLOWED	270 D.U.
SITE AREA = 27.66 ACRES	
9.0 DWELLING UNITS PER ACRE	

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CONCEPTUAL SITE PLAN - PARCEL B

KEN CARYL RANCH

JEFFERSON COUNTY, CO

DATE: January 28, 2020 (V.2)
CLIENT: North American Development Group
PROJECT NO: 20001.01
AUTHOR: SW

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CONCEPTUAL SITE PLANS

FT #	20011	Original Scale	NTS	Date	5/8/20	Drawn by	SGT	Figure #	2

3.0 EXISTING TRAFFIC CONDTIONS

3.1 Study Area and Circulation Network

The study area boundaries took into consideration the amount of traffic to be generated by the project and potential impact to the existing and proposed roadway network.

The existing study area street network consists of arterial, collector and local streets. The primary public roadways that serve the project site are discussed in the following text. Roadway classifications discussed are consistent with the Jefferson County Major Thoroughfare Plan[1]. The existing study area roadway network is illustrated on **Figure 1**.

W. Ken Caryl Avenue is a six-lane roadway that is classified as a principal arterial between C-470 and W. Chatfield Avenue. East of W. Chatfield Avenue, there exist three westbound through lanes and two eastbound through lanes, with the roadway classified as a minor arterial. Per Colorado Department of Transportation (CDOT) data available on the Transportation Data Management System (TDMS), W. Ken Caryl Avenue is currently servicing approximately 19,800 vehicles per day (vpd) just east of C-470.The posted speed limit is 40 miles per hour (mph).

Per Section 3.4 of the Transportation Design and Construction Manual[2], a principal arterial street can carry over 25,000 vpd. On this basis, W. Ken Caryl Avenue is currently operating below its theoretical capacity for average daily traffic (ADT). There are no short or long-term improvement plans for W. Ken Caryl Avenue within the study area in the Jefferson County Capital Improvement Program (CIP) or most recent addendum (2014) to the Countywide Transportation Plan.

W. Chatfield Avenue is a four-lane roadway that is classified in the Thoroughfare Plan as a minor arterial roadway. Per CDOT data, W. Chatfield Avenue is currently servicing approximately 10,700 vpd just south of W. Ken Caryl Avenue adjacent to the proposed Parcel B access location. Per the Jefferson County criteria, W. Chatfield Avenue is operating within the 15,000-20,000 vpd theoretical capacity range for ADT. There are no short-term or long-term improvement plans for W. Chatfield Avenue within the study area in the Jefferson County CIP or Transportation Plan. The posted speed limit is 40 mph within the project vicinity. W. Chatfield Avenue becomes S. Simms Street as it continues to the north of W. Ken Caryl Avenue.

Shaffer Parkway is a two-to-four lane roadway (within the study area) that is classified in the Thoroughfare Plan as a major collector. Per Denver Regional Council of Governments (DRCOG) data, Shaffer Parkway is currently servicing approximately 10,000 vehicles per day (vpd) just south of W. Ken Caryl Avenue where it is a four-lane facility. Per the Jefferson County criteria, a major collector can carry 8,000 to 15,000 vpd. On this basis, Shaffer Avenue is currently operating within its theoretical capacity for ADT. There are no short-term or long-term improvement plans for Shaffer Parkway in the Jefferson County CIP or Transportation Plan. The posted speed limit is 30 mph within the project vicinity.

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1 Major Thoroughfare Plan. Jefferson County. Approved January 10, 2018.

2 Transportation Design and Construction Manual. Jefferson County. Revised May 21, 2019.

S. Alkire Street is a two-lane roadway that is not specifically classified in the Thoroughfare Plan but is assumed to operate functionally as a collector roadway with a 44' flow-line width (wider than Jefferson County collector street cross-sections). Per DRCOG data, S. Alkire Street is currently servicing approximately 2,900 vpd just north of W. Ken Caryl Avenue. Per the Jefferson County criteria, a collector can carry 1,000 to 8,000. On this basis, S. Alkire Street is currently operating within its theoretical capacity for average daily traffic. There are no short-term or long-term improvement plans for Alkire Street within the study area in the Jefferson County CIP or Transportation Plan. The posted speed limit is 25 mph within the project vicinity

3.2 Existing Traffic Volumes

Weekday AM and PM peak period turning-movement were collected in February 2020 during typical conditions. The existing traffic volumes, including available CDOT TDMS daily traffic volumes (collected in 2019) are illustrated on **Figure 3**. The existing intersection geometry and traffic control are also shown on the traffic volume figure. Count data sheets are provided in the Appendix.

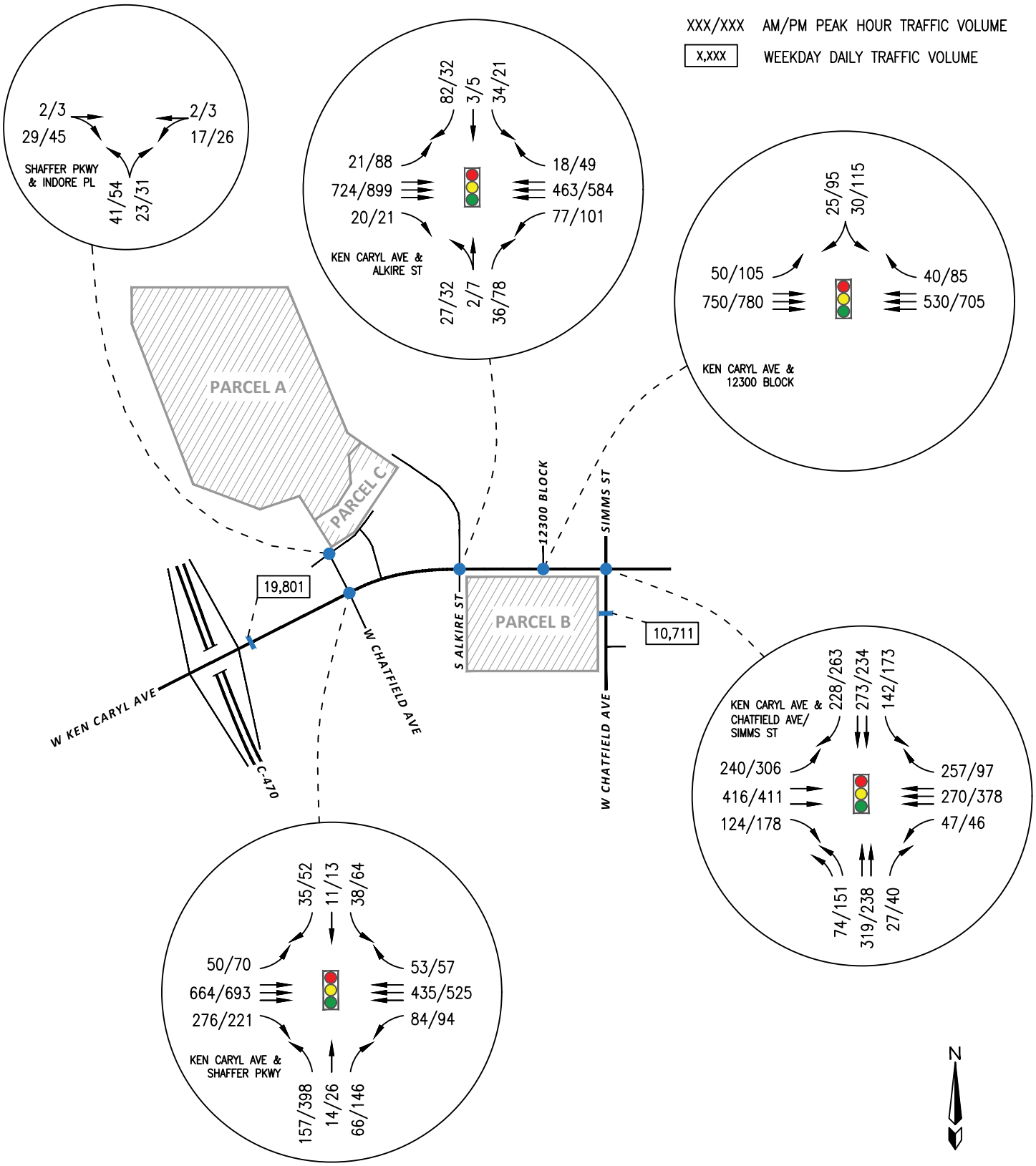
3.3 Existing Intersection Capacity Analysis

In determining the operational characteristics of an intersection, "Levels of Service" (LOS) A through F are applied, with LOS A indicating very good operations and LOS F indicating congested operations. The intersection LOS is represented as a delay in seconds per vehicle for the intersection as a whole and for each turning movement. A more detailed discussion of LOS methodology is contained in the Appendix for reference. Criteria contained in the Highway Capacity Manual (HCM)[3] was applied for these analyses in order to determine existing levels of service and 95th-percentile queues during peak hour periods. Existing signal timing and phasing parameters were obtained from Jefferson County and incorporated into the Synchro models.

The results of the LOS and queue calculations for the intersections are summarized in **Table 1** for existing conditions. The intersection level of service and queue worksheets are attached in the Appendix. The data in the tables shows that all study intersections are operating acceptably overall and for individual movements (LOS D or better) in both peak hours, with the following exception:

- W. Ken Caryl Avenue / W. Chatfield Avenue: The northbound and southbound left-turn movements are calculated to operate at LOS E in the PM peak hours. This is due to the protected-only left-turn phasing used to improve safety for the dual left-turn lane configuration. This level of service is typical for a protected-only left-turn at an arterial intersection and does not warrant mitigation.

[3] Highway Capacity Manual, Sixth Edition, Transportation Research Board, National Research Council, 2016. Synchro v10 software utilized.



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EXISTING TRAFFIC VOLUMES

FT #	20011	Original Scale	NTS	Date	5/8/20	Drawn by	SGT	Figure #	3

Table 1 – Intersection LOS Summary (Existing and Future-Year Background)

Int.	Lane	Existing Conditions				Year 2025 Background				Year 2040 Background			
		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
		Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
Ken Caryl Ave & Shaffer Pkwy	*Overall (Signal)*	**23.7**	**C**	**27.8**	**C**	**24.4**	**C**	**28.7**	**C**	**26.4**	**C**	**31.1**	**C**
	EBL	18	B	22	C	19	B	22	C	19	B	23	C
	EBT	24	C	27	C	25	C	28	C	26	C	31	C
	EBR	29	C	29	C	31	C	30	C	38	D	34	C
	WBL	19	B	22	C	20	B	22	C	21	C	24	C
	WBT	22	C	25	C	22	C	26	C	22	C	28	C
	WBR	20	B	23	C	21	C	23	C	21	C	25	C
	NBL	22	C	35	C	23	C	38	D	23	C	40	D
	NBT	22	C	26	C	23	C	26	C	23	C	26	C
	NBR	24	C	30	C	24	C	30	C	25	C	32	C
	SBL	22	C	25	C	22	C	25	C	22	C	28	C
	SBT	24	C	28	C	24	C	28	C	24	C	31	C
	SBR	25	C	29	C	25	C	29	C	25	C	33	C
Ken Caryl Ave & Alkire St	*Overall (Signal)*	**20.6**	**C**	**18.6**	**B**	**20.9**	**C**	**19.4**	**B**	**21.4**	**C**	**19.9**	**B**
	EBL	17	B	14	B	17	B	14	B	17	B	14	B
	EBT	22	C	18	B	23	C	20	B	23	C	20	C
	EBR	18	B	15	B	18	B	16	B	18	B	16	B
	WBL	17	B	14	B	18	B	15	B	18	B	16	B
	WBTR	19	B	16	B	19	B	18	B	20	B	18	B
	NBLT	19	B	28	C	19	B	29	C	19	B	29	C
	NBR	19	B	29	C	19	B	30	C	19	B	30	C
	SBL	21	C	30	C	21	C	30	C	21	C	30	C
	SBT	19	B	27	C	19	B	27	C	19	B	27	C
	SBR	21	C	30	C	21	C	28	C	21	C	28	C
Ken Caryl Ave & Chatfield Blvd/Simms St	*Overall (Signal)*	**25.0**	**C**	**36**	**D**	**25.6**	**C**	**36.5**	**D**	**25.9**	**C**	**37.3**	**D**
	EBL	19	B	24	C	20	B	25	C	22	C	28	C
	EBT	9	A	36	D	10	A	36	D	11	B	37	D
	EBR	9	A	36	D	10	A	37	D	10	A	37	D
	WBL	24	C	24	C	24	C	24	C	24	C	24	C
	WBT	28	C	28	C	28	C	28	C	28	C	29	C
	WBR	0	A	0	A	0	A	0	A	0	A	0	A
	NBL	51	D	60	E	50	D	59	E	50	D	59	E
	NBTR	31	C	34	C	32	C	34	C	32	C	35	C
	SBL	50	D	59	E	51	D	59	E	51	D	59	E
	SBT	26	C	32	C	26	C	32	C	26	C	33	C
	SBR	33	C	42	D	33	C	42	D	34	C	44	D
Chatfield Ave & 12300 Block	*Overall (Signal)*	**4.8**	**A**	**5.3**	**A**	**4.7**	**A**	**8.9**	**A**	**4.9**	**A**	**9.3**	**A**
	EBL	6	A	7	A	6	A	7	A	6	A	8	A
	EBTR	6	A	7	A	6	A	7	A	6	A	7	A
	WBL												
	WBT	0	A	0	A	0	A	0	A	0	A	0	A
	WBR	0	A	0	A	0	A	0	A	0	A	0	A
	NBLTR												
	SBLTR	35	C	40	D	35	C	53	D	35	D	54	D
RI/RO Access	EBRT												
	SBR												
	SBT												
Shaffer Pkwy & Indore	EBTR	9	A	9	A	9	A	9	A	9	A	9	A
	WBLT	10	A	10	B	10	A	11	B	10	B	11	B
	NBLR	5	A	5	A	5	A	5	A	5	A	5	A

Note: Delay represented in average seconds per vehicle. Delay and queues calculated using Synchro v10 and HCM6 methodology

4.0 FUTURE TRAFFIC CONDITIONS WITHOUT PROJECT

4.1 Annual Growth Factor and Future Volume Methodology

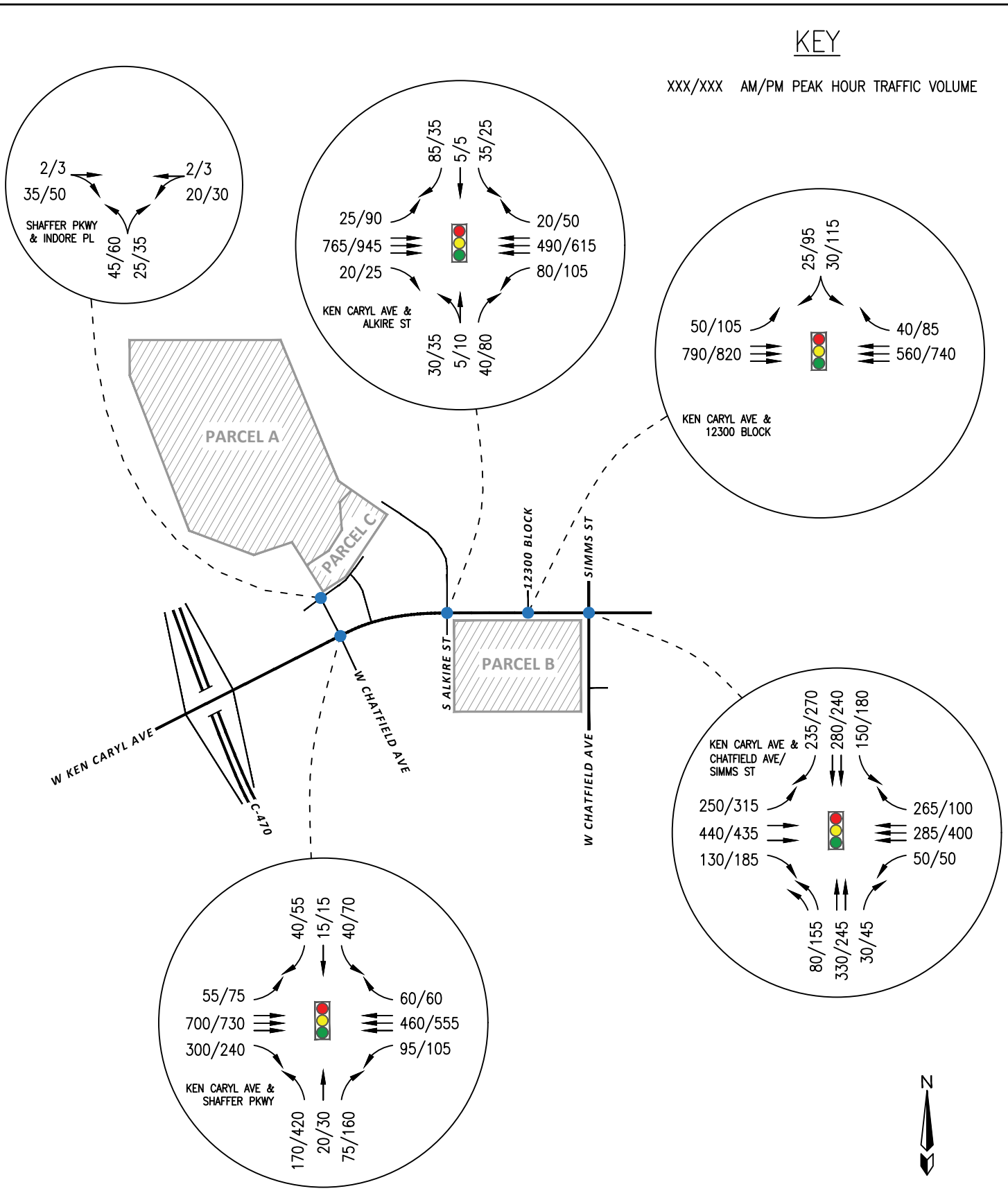
Potential for background (non-project) traffic growth in the project vicinity was considered based on DRCOG regional travel model data and potential future development along the study area roadways. In general, with the exception of the project parcels, the area is largely built out, with some commercial development in-fill along Shaffer Parkway and W. Chatfield Avenue south of the project area. A comparison of the DRCOG base year and Year 2040 volume projections was performed to develop potential background growth on each study area roadway. Based on this data, a 1% annual background growth rate was applied within the study area, with lower growth assumed for W. Chatfield Avenue (0.5% annual) and S. Alkire Street (minimal growth as residential uses with direct access to S. Alkire Street are built out).

The project is anticipated to be fully built and occupied within the next 5 years. Thus, the Year 2025 planning horizon was assumed for the build-out or “opening day” scenario, with Year 2040 as the long-term planning scenario. Using the above growth rates, the projected Year 2025 background traffic volumes are provided on **Figure 4** with the projected Year 2040 background traffic volumes on **Figure 5**.

4.2 Future Year Background (without Project) Capacity Analysis

The level of service criteria discussed Section 3.3 was applied to the study area intersections to determine baseline operations for the Year 2025 and Year 2040 background traffic scenarios. The results of the LOS calculations are summarized on **Table 1** on the previous page. The intersection level of service and queue worksheets are attached in the Appendix.

The data on **Table 1** shows that all study intersections are projected to operate acceptably overall and for individual movements (LOS D or better) in both peak hours, with the exception of the northbound and southbound protected-only (dual) left-turn movements at the W. Ken Caryl Avenue & W. Chatfield Avenue intersection in the PM peak hour. As discussed previously, the protected-only operation is due to safety considerations for dual left-turns and the calculated LOS E does not warrant mitigation.



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YEAR 2025 BACKGROUND TRAFFIC VOLUMES

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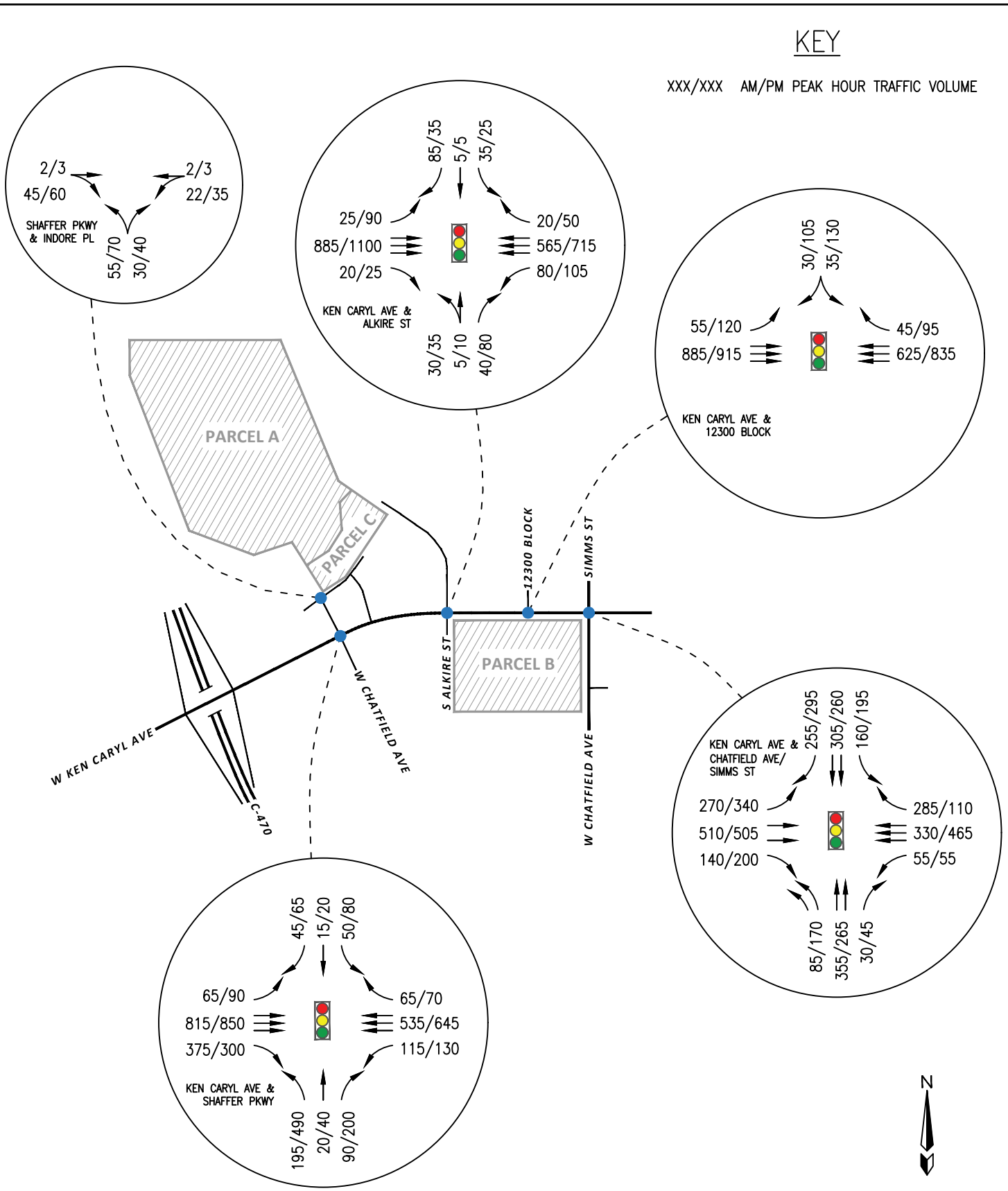

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YEAR 2040 BACKGROUND TRAFFIC VOLUMES

FT #	20011	Original Scale	NTS	Date	5/8/20	Drawn by	SGT	Figure #	5

5.0 PROPOSED DEVELOPMENT TRAFFIC

5.1 Trip Generation

In order to estimate the anticipated volume of trips generated by the site at build-out of all three parcels, residential trip rates contained in the Institute of Transportation Engineers (ITE) Trip Generation manual[4] for the appropriate land use categories were applied. The resulting existing trip estimates for each parcel are summarized on **Table 2** on the following page.

As shown, the 950 residential units on the three parcels combined are anticipated to generate a total of 6,673 daily, 492 AM peak hour and 630 PM peak hour trips at full build-out and occupancy. A 5% vehicular trip reduction was applied to the Parcel C multi-family trip estimates to account for adjacent mixed-use and proximity to the RTD Park-n-Ride facility which provides regional bus service via the 77, 100L and 116X routes.

5.2 Trip Distribution and Assignment

The estimated project build-out trips were distributed onto the surrounding roadway and intersection based on existing residential traffic patterns in the study area determined with the existing count data. Using this data, it is estimated that roughly 65% of the project traffic will be oriented to/from the west along W. Ken Caryl Avenue (including C-470) with 30% of the traffic along W. Ken Caryl Avenue towards W. Chatfield Avenue/S. Simms Street. Approximately 5% of the trips is assumed to be oriented towards local retail and commercial use in the project area. At W. Chatfield Avenue/S. Simms Street, 15% of the site trips area anticipated to be oriented to/from the east along W. Ken Caryl Avenue, 10% to/from the south along W. Chatfield Avenue, and 5% to/from the north along S. Simms St.

The anticipated project-added volumes at build-out, along with the trip distribution assumptions, is provided on **Figure 6**.

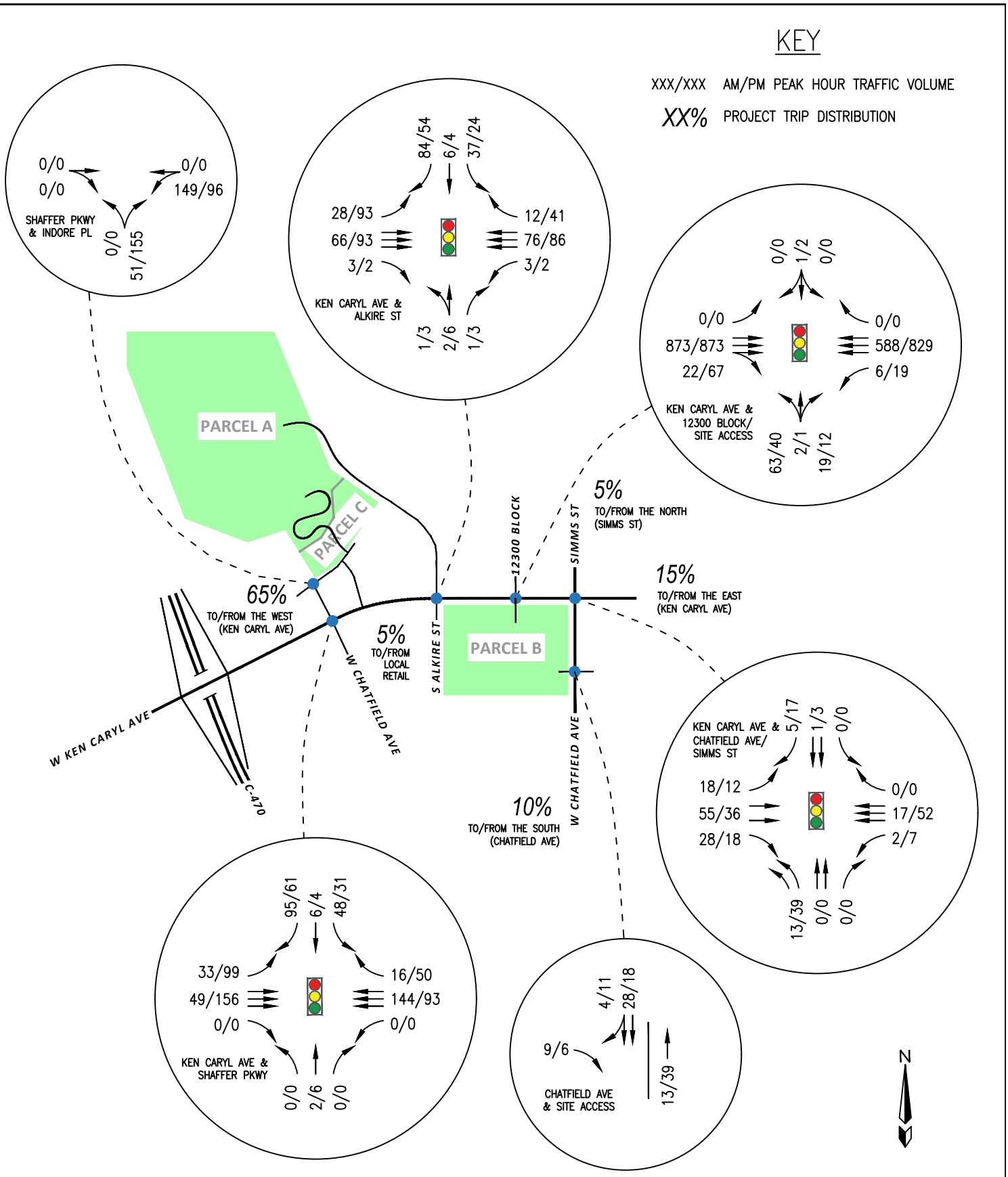
[4] Trip Generation 10th Edition, Institute of Transportation Engineers, 2016.

Table 2 - Trip Generation Estimate

Land Use	Size	Unit	MXD Factor*	Average Daily Trips				A.M. Peak Hour Trips				P.M. Peak Hour Trips			
				Rate	Total	In	Out	Rate	Total	In	Out	Rate	Total	In	Out
Parcel A: ITE 210 - Single-Family Detached Housing	330	D.U.	1.00	9.44	3,115	1,558	1,557	0.75	248	62	186	0.99	327	206	121
Parcel A Subtotal	*330*	*D.U.*			*3,115*	*1,558*	*1,557*		*248*	*62*	*186*		*327*	*206*	*121*
Parcel B: ITE 210 - Single-Family Detached Housing	70	D.U.	1.00	9.44	661	330	331	0.75	53	13	40	0.99	69	44	25
Parcel B: ITE 221 - Multifamily Housing (Mid-Rise)	200	D.U.	1.00	5.44	1,088	544	544	0.36	72	19	53	0.44	88	54	34
Parcel B Subtotal	*270*	*D.U.*			*1,749*	*874*	*875*		*125*	*32*	*93*		*157*	*98*	*59*
Parcel C: ITE 221 - Multifamily Housing (Mid-Rise)	350	D.U.	0.95	5.44	1,809	904	905	0.36	120	31	89	0.44	146	89	57
Parcel C Subtotal	*350*	*D.U.*			*1,809*	*904*	*905*		*120*	*31*	*89*		*146*	*89*	*57*
Project Totals:	**950**	**D.U.**			**6,673**	**3,336**	**3,337**		**492**	**125**	**368**		**630**	**393**	**237**

Source: ITE Trip Generation 10th Edition. 2017.

* MXD factor accounts for non-auto trips that occur between the project residential and adjacent retail/commercial uses and also reflects use of RTD Park-n-Ride transit service adjacent to Parcel C



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SITE-GENERATED TRAFFIC VOLUMES

FT #	20011	Original Scale	NTS	Date	5/8/20	Drawn by	SGT	Figure #	6

6.0 FUTURE TRAFFIC CONDITIONS WITH PROJECT

This analysis has been conducted in order to determine impacts associated with full development and occupancy of the project in the short-term (build-out) and long-term scenarios.

6.1 Intersection Capacity Analysis for Short-Term + Project Scenario

The site-generated traffic volumes were added to the Year 2025 background traffic volumes to analyze potential site impacts in the short-term, build-out scenario. The Year 2025 total traffic volumes are illustrated on **Figure 7**. The level of service criteria discussed in prior sections was applied to the study area intersections to determine impacts with the addition of project build-out traffic volumes in the short-term. The results of the LOS calculations for the intersections are summarized for each scenario in **Table 3**. The intersection level of service and queue worksheets are attached in the Appendix.

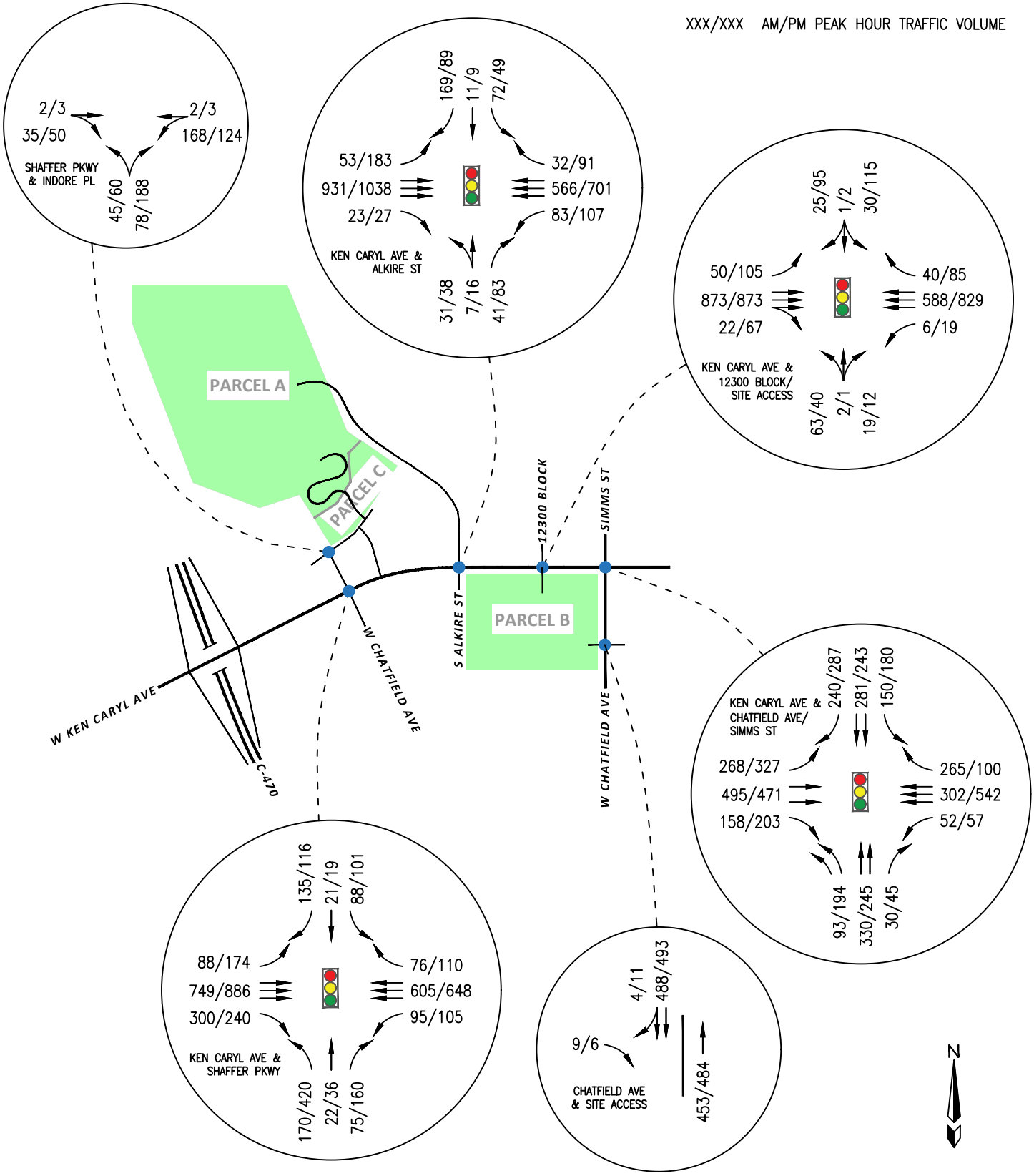
The data contained in **Table 3** illustrates that the study area intersections and proposed accesses will operate acceptably with the addition of project traffic at build-out in the short-term. Other than constructing the new access points as proposed, **no mitigation measures were identified as necessary to support project added traffic in the short-term planning horizon.**

6.2 Intersection Capacity Analysis for Long-Term + Project Scenario

The site-generated traffic volumes were added to the Year 2040 background traffic volumes to analyze potential site impacts in the long-term, build-out scenario. The Year 2040 total traffic volumes are illustrated on **Figure 8**. The level of service criteria discussed in prior sections was applied to the study area intersections to determine impacts with the addition of project build-out traffic volumes in the long-term. The results of the LOS calculations for the intersections are summarized for each scenario in **Table 3**. The intersection level of service and queue worksheets are attached in the Appendix.

The data contained in **Table 3** illustrates that the study area intersections and proposed accesses will operate acceptably with the addition of project traffic at build-out in the long-term. Other than constructing the new access points as proposed, **no mitigation measures were identified as necessary to support project added traffic in the long-term planning horizon.**

As discussed previously, the northbound and southbound left-turn movements at the W. Ken Caryl Avenue & W. Chatfield Avenue intersection are calculated to operate at LOS E in the PM peak hours in all scenarios. This is due to the protected-only left-turn phasing used to improve safety for the dual left-turn lane configuration. This level of service is typical for a protected-only left-turn at an arterial intersection and does not warrant mitigation.



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KEN CARYL LANDS TRAFFIC IMPACT STUDY

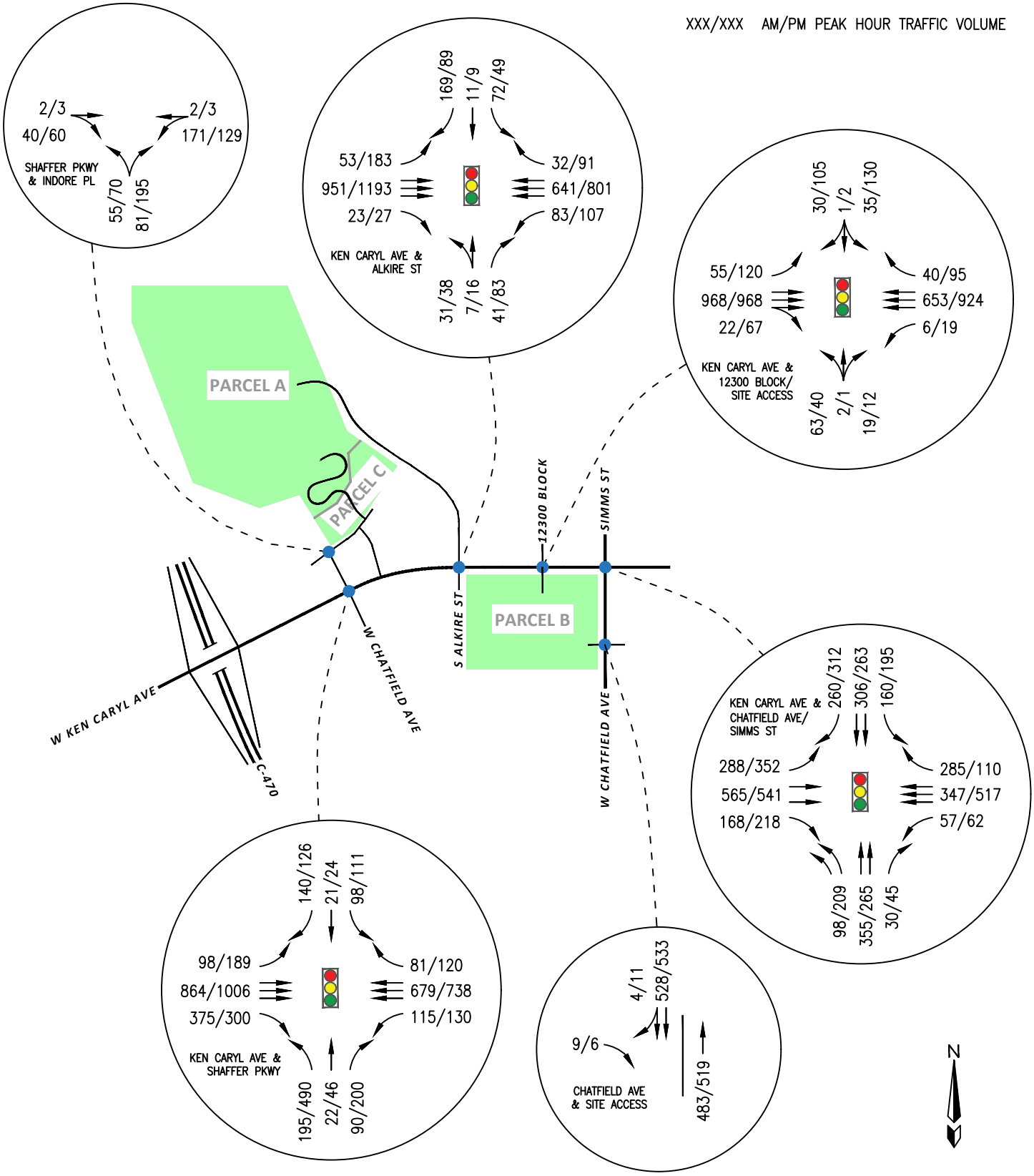
YEAR 2025 TOTAL TRAFFIC VOLUMES

FT #	20011	Original Scale	NTS	Date	5/8/20	Drawn by	SGT	Figure #	7

Table 3 – Intersection LOS Summary (w/Project)

Int.	Lane	Year 2025 Total				Year 2040 Total			
		AM Peak		PM Peak		AM Peak		PM Peak	
		Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
Ken Caryl Ave & Shaffer Pkwy	*Overall (Signal)*	**25**	**C**	**30.4**	**C**	**27.5**	**C**	**33.4**	**C**
	EBL	19	B	22	C	20	B	25	C
	EBT	25	C	29	C	27	C	32	C
	EBR	31	C	30	C	41	D	34	C
	WBL	20	C	24	C	22	C	27	C
	WBT	24	C	26	C	25	C	32	C
	WBR	22	C	28	C	22	C	30	C
	NBL	23	C	41	D	24	C	44	D
	NBT	24	C	28	C	24	C	28	C
	NBR	26	C	32	C	26	C	33	C
	SBL	22	C	24	C	21	C	28	C
	SBT	24	C	28	C	24	C	32	C
	SBR	28	C	32	C	29	C	36	D
Ken Caryl Ave & Alkire St	*Overall (Signal)*	**21.9**	**C**	**20.9**	**C**	**22.7**	**C**	**21.4**	**C**
	EBL	17	B	16	B	17	B	16	B
	EBT	23	C	20	C	24	C	21	C
	EBR	18	B	16	B	18	B	16	B
	WBL	18	B	16	B	19	B	17	B
	WBTR	21	C	20	B	21	C	21	C
	NBLT	19	B	29	C	22	C	29	C
	NBR	19	B	30	C	19	B	30	C
	SBL	22	C	32	C	22	C	32	C
	SBT	19	B	28	C	19	B	28	C
	SBR	24	C	30	C	24	C	30	C
Ken Caryl Ave & Chatfield Blvd/Simms St	*Overall (Signal)*	**25.7**	**C**	**37.6**	**D**	**26.8**	**C**	**38.7**	**D**
	EBL	22	C	28	C	27	C	32	C
	EBT	10	B	37	D	12	B	38	D
	EBR	10	A	38	D	11	B	38	D
	WBL	24	C	24	C	24	C	25	C
	WBT	28	C	29	C	29	C	29	C
	WBR	0	A	0	A	0	A	0	A
	NBL	50	D	59	E	50	D	59	E
	NBTR	32	C	34	C	32	C	34	C
	SBL	51	D	59	E	52	D	59	E
	SBT	27	C	33	C	27	C	33	C
	SBR	34	C	45	D	36	D	48	D
Chatfield Ave & 12300 Block	*Overall (Signal)*	**6.3**	**A**	**9.5**	**A**	**6.4**	**A**	**10**	**A**
	EBL	6	A	7	A	6	A	8	A
	EBTR	6	A	7	A	7	A	8	A
	WBL	7	A	8	A	7	A	9	A
	WBT	0	A	0	A	0	A	0	A
	WBR	0	A	0	A	0	A	0	A
	NBLTR	34	C	40	D	34	C	38	D
	SBLTR	34	C	54	D	35	C	54	D
RI/RO Access	EBRT	9	A	9	A	9	A	10	A
	SBR	0	A	0	A	0	A	0	A
	SBT	0	A	0	A	0	A	0	A
Shaffer Pkwy & Indore	EBTR	9	A	9	A	9	A	9	A
	WBLT	12	B	13	B	13	B	14	B
	NBLR	3	A	2	A	3	A	2	A

Note: Delay represented in average seconds per vehicle. Delay and queues calculated using Synchro v10 and HCM6 methodology.



FOX TUTTLE
TRANSPORTATION GROUP

KEN CARYL LANDS TRAFFIC IMPACT STUDY

YEAR 2040 TOTAL TRAFFIC VOLUMES

FT #	20011	Original Scale	NTS	Date	5/8/20	Drawn by	SGT	Figure #	7

6.3 Site Access and Circulation

The project proposes the following access points and configurations:

1) (Parcel A and C) **Access via a new local street connection to Indore Place opposite the RTD Park-n-Ride.** This driveway should optimally align with the Park-n-Ride access to reduce turning movement path conflicts. This access will be controlled with a stop sign on the southbound (site access) approach.

2) (Parcel A) **Access via an extension of S. Alkire Street to the north into the site.** S. Alkire Street is currently closed north of Vail Pass, though a portion of the curb/gutter, sidewalk, and roadway was previously built but not maintained. It is anticipated that roughly 2/3rds of the Parcel A traffic will utilize this access, resulting in an increase in traffic of approximately 2,100 vpd on S. Alkire Street. As discussed previously, DRCOG shows approximately 2,900 vpd currently on S. Alkire Street just north of W. Ken Caryl Avenue and it anticipated that this volume drops off as S. Alkire Street continues north past existing multi-family uses. Per the Jefferson County criteria, a collector can carry 1,000 to 8,000 vpd, and thus S. Alkire Street is anticipated to continue to operate within its capacity with the addition of project traffic.

3) (Parcel B) **Access via a fourth (south) leg of the existing 12300 Block signalized intersection.** The south leg should be constructed by the project to align with the north leg of the intersection, with the signal improved to provide signal indications for all four legs in compliance with the Manual on Uniform Traffic Control Devices (MUTCD). A westbound left-turn lane should be constructed by the project to include a 100' deceleration lane with median modifications required to provide a back-to-back taper with the existing eastbound left-turn lane approaching W. Chatfield Avenue/S. Simms Street. Note that an eastbound right-turn deceleration lane is not necessary at this access. Using CDOT Access Code criteria, a right-turn lane is not necessary if there are three though lanes as exists on W. Ken Caryl Avenue, unless operational or safety conditions would dictate doing so. The projected volumes and future year operational analysis reinforce that an eastbound right-turn deceleration is not needed.

4) (Parcel B) **Access via W. Chatfield Avenue approximately 700' south of W. Ken Caryl Avenue.** This access will be restricted to right-in, right-out movements with the existing landscape median on W. Chatfield Avenue. A southbound right-turn deceleration lane on W. Chatfield Avenue is not warranted based on projected volumes. This access will be controlled with a stop sign on the eastbound (site access) approach.

The intersection of Shaffer Parkway with Indore Place is currently controlled with stop signs on the sidestreet (Indore Place) approaches, with flashing beacons to reinforce the stop condition when fire trucks are utilizing the West Metro Fire Rescue Station 13 access on the north leg of this intersection. There is also a beacon on the northbound approach to require vehicles to stop for fire trucks when flashing. Per **Table 3**, this intersection is anticipated to operate acceptably with LOS B or better on all approaches with the addition of project traffic with the existing stop

control. Per the queuing reports provided for each intersection/scenario in the Appendix, the westbound approach is projected to operate with a 95th-percentile queue of 31', or less than two vehicles during the busiest peak hour. This illustrates that the projected-added traffic will have minimal impact on RTD bus operations with the bus exit driveway located roughly 60' to the east of the westbound stop bar.

The southbound approach on Shaffer Parkway at the W. Ken Caryl Avenue intersection will experience an increase of traffic with the project-added volumes. The southbound approach is projected to continue to operate with an acceptable level of service with the existing lane geometry and signal timing. The longest 95th-percentile peak hour queues for the southbound approach are anticipated to increase from 59' (< three vehicles) (existing PM) to 76' (approx. 3 vehicles) (2040 total AM), indicating that the project-added traffic will not result in any future operational issues on this approach. Similarly, the project will increase the eastbound left-turn volume from W. Ken Caryl Avenue to northbound Shaffer Parkway. The average queue in the busiest peak hour (2040 total PM) is projected to be roughly 90' (3.6 vehicles) with the 95th-percentile queue projected at 137' (5.5 vehicles). The average queue will be contained within the 120' existing left-turn storage, with the 95th-percentile queue extending into the 180' taper area by roughly ½ vehicle. If any spillback of this lane into the adjacent eastbound through lane is observed in the future, this can be mitigated with minor timing adjustments to increase the protected portion of the protected-permissive left-turn phasing while maintaining adequate level of service for the opposing (westbound) through movement.

Pedestrian and bicycle traffic is anticipated to be accommodated via extensions of existing roadway and sidewalk facilities into the site and via internal connections to existing regional trail facilities. A pedestrian/bike connection to the C-470 trail is proposed at the west side of Parcel A. A pedestrian connection at the south boundary of Parcel B will connect to the off-street 8' asphalt trail, which provides access to the retail sites to the west and a mid-block rectangular rapid flash beacon (RRFB) crossing of W. Chatfield Avenue and multi-use paths to the east and south. The RTD Park-n-Ride located adjacent to Parcel C provides access to local and regional transit routes.

7.0 CONCLUSIONS

This traffic impact study has been prepared by the Fox Tuttle Transportation Group for the Ken Caryl Lands residential project. The project proposes to build up to a total of 950 residential units on three separate Parcels located along W. Ken Caryl Avenue just east of the C-470 interchange in unincorporated Jefferson County. Access is proposed via Indore Place (via Shaffer Parkway), an extension of S. Alkire Street, access via W. Ken Caryl Avenue, and via W. Chatfield Avenue. The purpose of this study is to assist in identifying potential traffic impacts within the study area with buildout of this project in the short and long-term scenarios. The traffic study addresses morning and evening peak hour intersection conditions in the study area without and with the project added traffic.

The project is anticipated to generate a total of approximately 6,673 daily, 492 AM peak hour and 630 PM peak hour trips at full build-out and occupancy. It was determined that the project-added traffic can be accommodated on the existing and future roadway and intersection network with minimal impacts.

The following improvements are recommended to be implemented by the project to service project-added traffic:

- Construct a fourth (south) leg of the 12300 Block & W. Ken Caryl Avenue intersection, to align with the existing north leg. Reconstruct the signal to include signal indications for all movements per the MUTCD, along with pedestrian accommodations to facilitate walking trips from Parcel B to retail on the north side of W. Ken Caryl Avenue. Reconstruct the median on the east leg to include a 100’ westbound left-turn lane into the site and a back-to-back taper with the eastbound left-turn lane approaching W. Chatfield Avenue/S. Simms Street.

- Construct S. Alkire Street extension, Indore Place and W. Chatfield Avenue (restricted right-in, right-out) accesses as proposed.

- Construct bicycle and pedestrian connections to existing sidewalks and local/regional trails as proposed.

APPENDIX

Level of Service Definitions
Intersection Capacity Worksheets
Traffic Count Data Sheets

Level of Service Definitions

LEVEL OF SERVICE DEFINITIONS

In rating roadway and intersection operating conditions with existing or future traffic volumes, "Levels of Service" (LOS) A through F are used, with LOS A indicating very good operation and LOS F indicating poor operation. Levels of service at signalized and unsignalized intersections are closely associated with vehicle delays experienced in seconds per vehicle. More complete level of service definitions and delay data for signal and stop sign controlled intersections are contained in the following table for reference.

Level of Service Rating	Delay in seconds per vehicle *(a)*		Definition
	Signalized	Unsignalized	
A	0.0 to 10.0	0.0 to 10.0	Low vehicular traffic volumes; primarily free flow operations. Density is low and vehicles can freely maneuver within the traffic stream. Drivers are able to maintain their desired speeds with little or no delay.
B	10.1 to 20.0	10.1 to 15.0	Stable vehicular traffic volume flow with potential for some restriction of operating speeds due to traffic conditions. Vehicle maneuvering is only slightly restricted. The stopped delays are not bothersome and drivers are not subject to appreciable tension.
C	20.1 to 35.0	15.1 to 25.0	Stable traffic operations, however the ability for vehicles to maneuver is more restricted by the increase in traffic volumes. Relatively satisfactory operating speeds prevail, but adverse signal coordination or longer vehicle queues cause delays along the corridor.
D	35.1 to 55.0	25.1 to 35.0	Approaching unstable vehicular traffic flow where small increases in volume could cause substantial delays. Most drivers are restricted in ability to maneuver and selection of travel speeds due to congestion. Driver comfort and convenience are low, but tolerable.
E	55.1 to 80.0	35.1 to 50.0	Traffic operations characterized by significant approach delays and average travel speeds of one-half to one-third the free flow speed. Vehicular flow is unstable and there is potential for stoppages of brief duration. High signal density, extensive vehicle queuing, or corridor signal progression/timing are the typical causes of vehicle delays at signalized corridors.
F	> 80.0	> 50.0	Forced vehicular traffic flow and operations with high approach delays at critical intersections. Vehicle speeds are reduced substantially, and stoppages may occur for short or long periods of time because of downstream congestion.

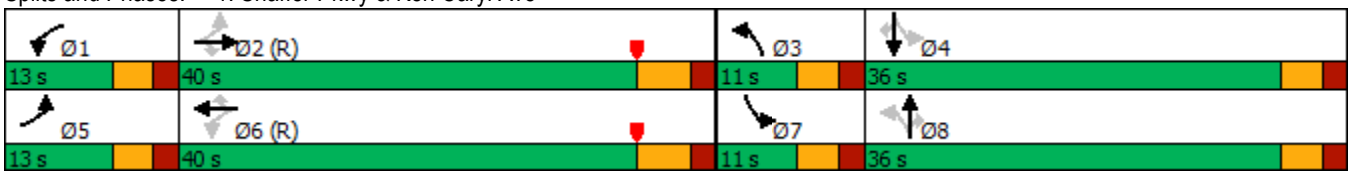
(a) Delay ranges based on Highway Capacity Manual (6th Edition, 2016) criteria.

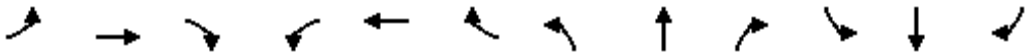
Intersection Capacity Worksheets

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	664	276	84	435	53	157	14	66	38	11	35
Future Volume (vph)	50	664	276	84	435	53	157	14	66	38	11	35
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	24.0	10.0	23.0	23.0	10.0	23.0	23.0
Total Split (s)	13.0	40.0	40.0	13.0	40.0	40.0	11.0	36.0	36.0	11.0	36.0	36.0
Total Split (%)	13.0%	40.0%	40.0%	13.0%	40.0%	40.0%	11.0%	36.0%	36.0%	11.0%	36.0%	36.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Act Effct Green (s)	43.7	36.7	36.7	44.3	37.0	37.0	39.0	35.4	35.4	36.9	31.0	31.0
Actuated g/C Ratio	0.44	0.37	0.37	0.44	0.37	0.37	0.39	0.35	0.35	0.37	0.31	0.31
v/c Ratio	0.14	0.43	0.42	0.30	0.26	0.09	0.33	0.02	0.12	0.08	0.02	0.07
Control Delay	15.0	25.4	4.5	19.8	8.4	0.6	21.8	24.1	0.4	17.9	24.3	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.0	25.4	4.5	19.8	8.4	0.6	21.8	24.1	0.4	17.9	24.3	0.2
LOS	B	C	A	B	A	A	C	C	A	B	C	A
Approach Delay		19.0			9.3			15.9			11.3	
Approach LOS		B			A			B			B	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 39 (39%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.43	
Intersection Signal Delay: 15.5	Intersection LOS: B
Intersection Capacity Utilization 46.2%	ICU Level of Service A
Analysis Period (min) 15	

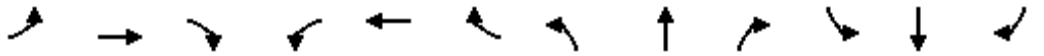
Splits and Phases: 1: Shaffer Pkwy & Ken Caryl Ave





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	60	800	333	95	494	60	178	16	75	45	13	42
v/c Ratio	0.14	0.43	0.42	0.30	0.26	0.09	0.33	0.02	0.12	0.08	0.02	0.07
Control Delay	15.0	25.4	4.5	19.8	8.4	0.6	21.8	24.1	0.4	17.9	24.3	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.0	25.4	4.5	19.8	8.4	0.6	21.8	24.1	0.4	17.9	24.3	0.2
Queue Length 50th (ft)	20	145	0	9	21	0	72	7	0	17	6	0
Queue Length 95th (ft)	39	165	41	65	49	0	117	22	0	35	18	0
Internal Link Dist (ft)		1058			341			383			323	
Turn Bay Length (ft)	120		210	210		480				80		80
Base Capacity (vph)	442	1866	792	321	1883	668	535	659	652	537	577	588
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.43	0.42	0.30	0.26	0.09	0.33	0.02	0.12	0.08	0.02	0.07

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	664	276	84	435	53	157	14	66	38	11	35
Future Volume (veh/h)	50	664	276	84	435	53	157	14	66	38	11	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	60	800	333	95	494	60	178	16	75	45	13	42
Peak Hour Factor	0.83	0.83	0.83	0.88	0.88	0.88	0.88	0.88	0.88	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	412	1893	588	286	1937	601	590	625	530	540	580	491
Arrive On Green	0.04	0.37	0.37	0.05	0.38	0.38	0.06	0.33	0.33	0.04	0.31	0.31
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	60	800	333	95	494	60	178	16	75	45	13	42
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	2.1	11.7	16.7	3.3	6.6	2.4	6.0	0.6	3.3	1.7	0.5	1.9
Cycle Q Clear(g_c), s	2.1	11.7	16.7	3.3	6.6	2.4	6.0	0.6	3.3	1.7	0.5	1.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	412	1893	588	286	1937	601	590	625	530	540	580	491
V/C Ratio(X)	0.15	0.42	0.57	0.33	0.25	0.10	0.30	0.03	0.14	0.08	0.02	0.09
Avail Cap(c_a), veh/h	482	1893	588	341	1937	601	590	625	530	584	580	491
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.1	23.5	25.1	18.6	21.3	20.0	22.1	22.3	23.3	22.0	24.0	24.5
Incr Delay (d2), s/veh	0.2	0.7	3.9	0.7	0.3	0.3	0.3	0.1	0.6	0.1	0.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	4.6	6.8	1.3	2.6	0.9	2.9	0.3	1.3	0.7	0.2	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.3	24.2	29.0	19.3	21.6	20.3	22.4	22.4	23.8	22.0	24.0	24.8
LnGrp LOS	B	C	C	B	C	C	C	C	C	C	C	C
Approach Vol, veh/h		1193			649			269			100	
Approach Delay, s/veh		25.2			21.2			22.8			23.5	
Approach LOS		C			C			C			C	

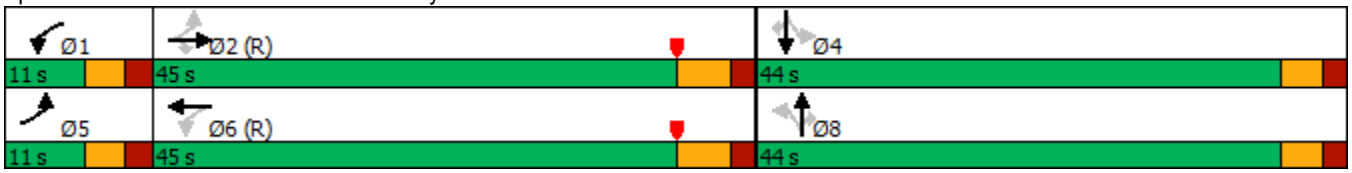
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.9	43.1	11.0	36.0	9.1	43.9	8.6	38.4
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0
Max Green Setting (Gmax), s	8.0	34.0	6.0	31.0	8.0	34.0	6.0	31.0
Max Q Clear Time (g_c+I1), s	5.3	18.7	8.0	3.9	4.1	8.6	3.7	5.3
Green Ext Time (p_c), s	0.0	5.7	0.0	0.2	0.0	3.4	0.0	0.3

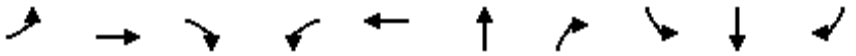
Intersection Summary	
HCM 6th Ctrl Delay	23.7
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	21	724	20	77	463	27	2	36	34	3	82
Future Volume (vph)	21	724	20	77	463	27	2	36	34	3	82
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		8			4	
Permitted Phases	2		2	6		8		8	4		4
Detector Phase	5	2	2	1	6	8	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	11.0	45.0	45.0	11.0	45.0	44.0	44.0	44.0	44.0	44.0	44.0
Total Split (%)	11.0%	45.0%	45.0%	11.0%	45.0%	44.0%	44.0%	44.0%	44.0%	44.0%	44.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	C-Max	C-Max	None	C-Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	46.9	41.2	41.2	49.0	45.6		39.0	39.0	39.0	39.0	39.0
Actuated g/C Ratio	0.47	0.41	0.41	0.49	0.46		0.39	0.39	0.39	0.39	0.39
v/c Ratio	0.06	0.43	0.04	0.30	0.24		0.05	0.06	0.09	0.01	0.16
Control Delay	5.9	8.6	0.1	20.8	24.1		19.4	0.4	20.0	18.7	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	5.9	8.6	0.1	20.8	24.1		19.4	0.4	20.0	18.7	4.5
LOS	A	A	A	C	C		B	A	B	B	A
Approach Delay		8.3			23.7		8.8			9.3	
Approach LOS		A			C		A			A	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 48 (48%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.43	
Intersection Signal Delay: 13.8	Intersection LOS: B
Intersection Capacity Utilization 40.1%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Alkire St & Ken Caryl Ave

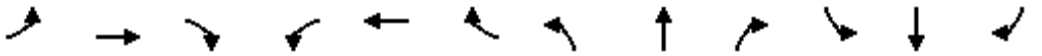




Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	26	894	25	89	553	32	40	47	4	112
v/c Ratio	0.06	0.43	0.04	0.30	0.24	0.05	0.06	0.09	0.01	0.16
Control Delay	5.9	8.6	0.1	20.8	24.1	19.4	0.4	20.0	18.7	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.9	8.6	0.1	20.8	24.1	19.4	0.4	20.0	18.7	4.5
Queue Length 50th (ft)	3	42	0	44	103	12	0	19	2	0
Queue Length 95th (ft)	m7	45	m0	82	164	32	2	34	7	18
Internal Link Dist (ft)		376			477	264			636	
Turn Bay Length (ft)	140		240	185			110	60		125
Base Capacity (vph)	438	2095	696	295	2309	599	670	534	726	685
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.43	0.04	0.30	0.24	0.05	0.06	0.09	0.01	0.16

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	724	20	77	463	18	27	2	36	34	3	82
Future Volume (veh/h)	21	724	20	77	463	18	27	2	36	34	3	82
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	26	894	25	89	532	21	30	2	40	47	4	112
Peak Hour Factor	0.81	0.81	0.81	0.87	0.87	0.87	0.90	0.90	0.90	0.73	0.73	0.73
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	422	2064	641	322	2139	84	544	34	618	584	729	618
Arrive On Green	0.03	0.40	0.40	0.05	0.42	0.42	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h	1781	5106	1585	1781	5041	198	1217	88	1585	1365	1870	1585
Grp Volume(v), veh/h	26	894	25	89	358	195	32	0	40	47	4	112
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1835	1304	0	1585	1365	1870	1585
Q Serve(g_s), s	0.8	12.6	1.0	2.9	6.8	6.8	1.3	0.0	1.6	2.2	0.1	4.6
Cycle Q Clear(g_c), s	0.8	12.6	1.0	2.9	6.8	6.8	1.5	0.0	1.6	3.7	0.1	4.6
Prop In Lane	1.00		1.00	1.00		0.11	0.94		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	422	2064	641	322	1444	778	578	0	618	584	729	618
V/C Ratio(X)	0.06	0.43	0.04	0.28	0.25	0.25	0.06	0.00	0.06	0.08	0.01	0.18
Avail Cap(c_a), veh/h	483	2064	641	348	1444	778	578	0	618	584	729	618
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.6	21.5	18.0	16.9	18.5	18.5	19.0	0.0	19.1	20.2	18.6	20.0
Incr Delay (d2), s/veh	0.1	0.7	0.1	0.5	0.4	0.8	0.2	0.0	0.2	0.3	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	4.9	0.4	1.2	2.6	2.9	0.5	0.0	0.6	0.8	0.1	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.7	22.2	18.1	17.3	18.9	19.3	19.2	0.0	19.3	20.5	18.7	20.7
LnGrp LOS	B	C	B	B	B	B	B	A	B	C	B	C
Approach Vol, veh/h		945			642			72			163	
Approach Delay, s/veh		21.9			18.8			19.3			20.6	
Approach LOS		C			B			B			C	

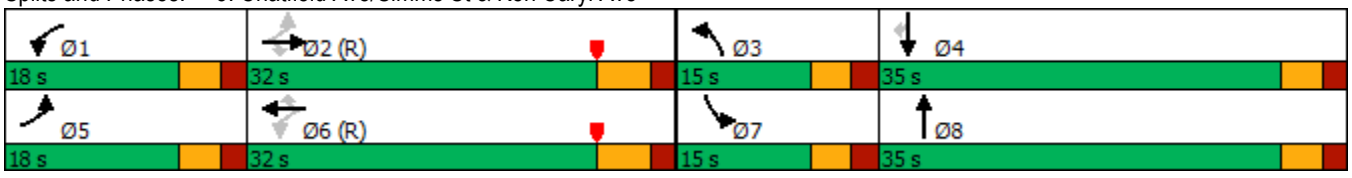
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.6	46.4		44.0	7.6	48.4		44.0				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	39.0		39.0	6.0	39.0		39.0				
Max Q Clear Time (g_c+I1), s	4.9	14.6		6.6	2.8	8.8		3.6				
Green Ext Time (p_c), s	0.0	6.4		0.5	0.0	3.5		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			20.6									
HCM 6th LOS			C									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	240	416	124	47	270	257	74	319	142	273	228
Future Volume (vph)	240	416	124	47	270	257	74	319	142	273	228
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8	7	4	
Permitted Phases	2		2	6		6					4
Detector Phase	5	2	2	1	6	6	3	8	7	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	24.0	10.0	23.0	10.0	23.0	23.0
Total Split (s)	18.0	32.0	32.0	18.0	32.0	32.0	15.0	35.0	15.0	35.0	35.0
Total Split (%)	18.0%	32.0%	32.0%	18.0%	32.0%	32.0%	15.0%	35.0%	15.0%	35.0%	35.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	Max	Max
Act Effct Green (s)	44.7	33.8	33.8	34.6	26.2	26.2	8.3	30.6	9.4	34.0	34.0
Actuated g/C Ratio	0.45	0.34	0.34	0.35	0.26	0.26	0.08	0.31	0.09	0.34	0.34
v/c Ratio	0.65	0.47	0.26	0.16	0.25	0.48	0.37	0.45	0.57	0.30	0.40
Control Delay	15.5	10.3	2.0	17.4	29.8	6.3	46.7	29.2	50.5	26.2	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.5	10.3	2.0	17.4	29.8	6.3	46.7	29.2	50.5	26.2	5.0
LOS	B	B	A	B	C	A	D	C	D	C	A
Approach Delay		10.6			18.3			32.3		24.1	
Approach LOS		B			B			C		C	

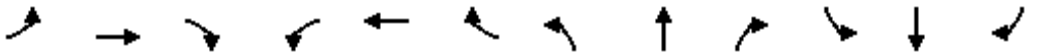
Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 82 (82%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.65	
Intersection Signal Delay: 19.9	Intersection LOS: B
Intersection Capacity Utilization 52.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Chatfield Ave/Simms St & Ken Caryl Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	324	562	168	57	329	313	104	487	184	355	296
v/c Ratio	0.65	0.47	0.26	0.16	0.25	0.48	0.37	0.45	0.57	0.30	0.40
Control Delay	15.5	10.3	2.0	17.4	29.8	6.3	46.7	29.2	50.5	26.2	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.5	10.3	2.0	17.4	29.8	6.3	46.7	29.2	50.5	26.2	5.0
Queue Length 50th (ft)	33	54	0	20	60	0	32	129	58	90	0
Queue Length 95th (ft)	67	98	3	39	78	44	45	134	79	110	29
Internal Link Dist (ft)		504			417			1207		285	
Turn Bay Length (ft)	210			300			240		225		295
Base Capacity (vph)	499	1194	645	446	1333	646	343	1075	343	1201	733
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	0.65	0.47	0.26	0.13	0.25	0.48	0.30	0.45	0.54	0.30	0.40

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	240	416	124	47	270	257	74	319	27	142	273	228
Future Volume (veh/h)	240	416	124	47	270	257	74	319	27	142	273	228
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	324	562	168	57	329	0	104	449	38	184	355	296
Peak Hour Factor	0.74	0.74	0.74	0.82	0.82	0.82	0.71	0.71	0.71	0.77	0.77	0.77
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	553	1340	598	351	1465		165	995	84	253	1156	516
Arrive On Green	0.26	0.75	0.75	0.04	0.29	0.00	0.05	0.30	0.30	0.07	0.33	0.33
Sat Flow, veh/h	1781	3554	1585	1781	5106	1585	3456	3317	280	3456	3554	1585
Grp Volume(v), veh/h	324	562	168	57	329	0	104	240	247	184	355	296
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1702	1585	1728	1777	1820	1728	1777	1585
Q Serve(g_s), s	13.0	5.7	3.3	2.2	4.9	0.0	3.0	10.9	11.0	5.2	7.5	15.5
Cycle Q Clear(g_c), s	13.0	5.7	3.3	2.2	4.9	0.0	3.0	10.9	11.0	5.2	7.5	15.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	553	1340	598	351	1465		165	533	546	253	1156	516
V/C Ratio(X)	0.59	0.42	0.28	0.16	0.22		0.63	0.45	0.45	0.73	0.31	0.57
Avail Cap(c_a), veh/h	553	1340	598	512	1465		346	533	546	346	1156	516
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	0.98	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.3	8.4	8.1	23.4	27.2	0.0	46.7	28.3	28.4	45.4	25.3	28.0
Incr Delay (d2), s/veh	1.6	0.9	1.1	0.2	0.4	0.0	3.9	2.7	2.7	4.9	0.7	4.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	1.8	1.2	0.9	2.0	0.0	1.3	4.9	5.0	2.3	3.1	6.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.8	9.3	9.2	23.6	27.5	0.0	50.7	31.1	31.1	50.3	26.0	32.6
LnGrp LOS	B	A	A	C	C		D	C	C	D	C	C
Approach Vol, veh/h		1054			386	A		591			835	
Approach Delay, s/veh		12.2			27.0			34.5			33.7	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	43.7	9.8	37.5	18.0	34.7	12.3	35.0
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0
Max Green Setting (Gmax), s	13.0	26.0	10.0	30.0	13.0	26.0	10.0	30.0
Max Q Clear Time (g_c+I1), s	4.2	7.7	5.0	17.5	15.0	6.9	7.2	13.0
Green Ext Time (p_c), s	0.1	3.9	0.1	2.6	0.0	1.9	0.1	2.4

Intersection Summary	
HCM 6th Ctrl Delay	25.0
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

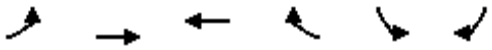
Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Configurations					
Traffic Volume (vph)	50	750	530	40	30
Future Volume (vph)	50	750	530	40	30
Turn Type	pm+pt	NA	NA	Perm	Prot
Protected Phases	5	2	6		4
Permitted Phases	2			6	
Detector Phase	5	2	6	6	4
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	24.0	23.0
Total Split (s)	13.0	75.0	62.0	62.0	25.0
Total Split (%)	13.0%	75.0%	62.0%	62.0%	25.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	6.0	5.0
Lead/Lag	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	Max
Act Effct Green (s)	70.0	69.0	59.6	59.6	20.0
Actuated g/C Ratio	0.70	0.69	0.60	0.60	0.20
v/c Ratio	0.11	0.25	0.21	0.05	0.18
Control Delay	2.9	6.0	4.9	1.2	22.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.9	6.0	4.9	1.2	22.1
LOS	A	A	A	A	C
Approach Delay		5.8	4.7		22.1
Approach LOS		A	A		C

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 5 (5%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.25	
Intersection Signal Delay: 6.0	Intersection LOS: A
Intersection Capacity Utilization 31.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Ken Caryl Ave & 12300 Block

Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	59	882	624	47	64
v/c Ratio	0.11	0.25	0.21	0.05	0.18
Control Delay	2.9	6.0	4.9	1.2	22.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.9	6.0	4.9	1.2	22.1
Queue Length 50th (ft)	8	43	24	0	18
Queue Length 95th (ft)	15	49	46	2	51
Internal Link Dist (ft)		120	504		188
Turn Bay Length (ft)	100				
Base Capacity (vph)	571	3508	3029	962	363
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.10	0.25	0.21	0.05	0.18

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	50	750	530	40	30	25
Future Volume (veh/h)	50	750	530	40	30	25
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1900	1900
Adj Flow Rate, veh/h	59	882	624	47	35	29
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	603	3523	3062	951	182	151
Arrive On Green	0.04	0.69	1.00	1.00	0.20	0.20
Sat Flow, veh/h	1781	5274	5274	1585	910	754
Grp Volume(v), veh/h	59	882	624	47	65	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1702	1585	1689	0
Q Serve(g_s), s	1.2	6.5	0.0	0.0	3.2	0.0
Cycle Q Clear(g_c), s	1.2	6.5	0.0	0.0	3.2	0.0
Prop In Lane	1.00			1.00	0.54	0.45
Lane Grp Cap(c), veh/h	603	3523	3062	951	338	0
V/C Ratio(X)	0.10	0.25	0.20	0.05	0.19	0.00
Avail Cap(c_a), veh/h	674	3523	3062	951	338	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.95	0.95	1.00	0.00
Uniform Delay (d), s/veh	6.0	5.8	0.0	0.0	33.3	0.0
Incr Delay (d2), s/veh	0.1	0.2	0.1	0.1	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.9	0.0	0.0	1.4	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.1	6.0	0.1	0.1	34.5	0.0
LnGrp LOS	A	A	A	A	C	A
Approach Vol, veh/h		941	671		65	
Approach Delay, s/veh		6.0	0.1		34.5	
Approach LOS		A	A		C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		75.0		25.0	9.0	66.0
Change Period (Y+Rc), s		6.0		5.0	5.0	6.0
Max Green Setting (Gmax), s		69.0		20.0	8.0	56.0
Max Q Clear Time (g_c+I1), s		8.5		5.2	3.2	2.0
Green Ext Time (p_c), s		7.1		0.1	0.0	4.7

Intersection Summary	
HCM 6th Ctrl Delay	4.8
HCM 6th LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2	29	17	2	41	23
Future Volume (Veh/h)	2	29	17	2	41	23
Sign Control	Stop			Stop	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	2	34	20	2	48	27
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)					403	
pX, platoon unblocked						
vC, conflicting volume	123	0	144	110	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	123	0	144	110	0	
tC, single (s)	6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3	3.5	4.0	2.2	
p0 queue free %	100	97	97	100	97	
cM capacity (veh/h)	745	1085	779	758	1623	

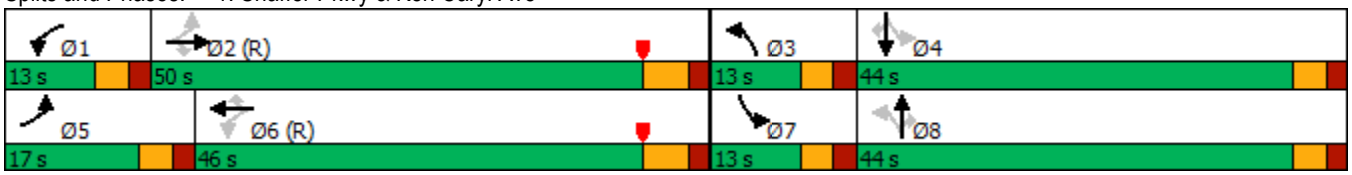
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	36	22	75
Volume Left	0	20	48
Volume Right	34	0	27
cSH	1058	777	1623
Volume to Capacity	0.03	0.03	0.03
Queue Length 95th (ft)	3	2	2
Control Delay (s)	8.5	9.8	4.7
Lane LOS	A	A	A
Approach Delay (s)	8.5	9.8	4.7
Approach LOS	A	A	

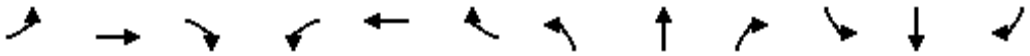
Intersection Summary			
Average Delay	6.6		
Intersection Capacity Utilization	18.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	693	221	94	525	57	398	26	146	64	13	52
Future Volume (vph)	70	693	221	94	525	57	398	26	146	64	13	52
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	24.0	10.0	23.0	23.0	10.0	23.0	23.0
Total Split (s)	17.0	50.0	50.0	13.0	46.0	46.0	13.0	44.0	44.0	13.0	44.0	44.0
Total Split (%)	14.2%	41.7%	41.7%	10.8%	38.3%	38.3%	10.8%	36.7%	36.7%	10.8%	36.7%	36.7%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Act Effct Green (s)	53.4	44.3	44.3	53.5	46.1	46.1	48.1	41.7	41.7	46.5	39.0	39.0
Actuated g/C Ratio	0.44	0.37	0.37	0.45	0.38	0.38	0.40	0.35	0.35	0.39	0.32	0.32
v/c Ratio	0.18	0.38	0.31	0.32	0.30	0.09	0.76	0.04	0.24	0.15	0.03	0.11
Control Delay	18.0	28.6	4.5	28.8	37.6	10.7	39.5	28.2	5.4	21.1	27.9	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	28.6	4.5	28.8	37.6	10.7	39.5	28.2	5.4	21.1	27.9	0.8
LOS	B	C	A	C	D	B	D	C	A	C	C	A
Approach Delay		22.4			34.1			30.3			13.6	
Approach LOS		C			C			C			B	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 12 (10%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 27.2	Intersection LOS: C
Intersection Capacity Utilization 60.6%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Shaffer Pkwy & Ken Caryl Ave





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	72	714	228	104	583	63	428	28	157	81	16	66
v/c Ratio	0.18	0.38	0.31	0.32	0.30	0.09	0.76	0.04	0.24	0.15	0.03	0.11
Control Delay	18.0	28.6	4.5	28.8	37.6	10.7	39.5	28.2	5.4	21.1	27.9	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	28.6	4.5	28.8	37.6	10.7	39.5	28.2	5.4	21.1	27.9	0.8
Queue Length 50th (ft)	29	147	0	69	159	2	243	15	0	37	8	0
Queue Length 95th (ft)	56	184	52	116	201	22	#347	37	47	59	22	0
Internal Link Dist (ft)		1058			341			383			323	
Turn Bay Length (ft)	120		210	210		480				80		80
Base Capacity (vph)	449	1876	727	331	1951	674	564	647	652	565	605	594
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.38	0.31	0.31	0.30	0.09	0.76	0.04	0.24	0.14	0.03	0.11

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	693	221	94	525	57	398	26	146	64	13	52
Future Volume (veh/h)	70	693	221	94	525	57	398	26	146	64	13	52
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	72	714	228	104	583	63	428	28	157	81	16	66
Peak Hour Factor	0.97	0.97	0.97	0.90	0.90	0.90	0.93	0.93	0.93	0.79	0.79	0.79
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	377	1955	607	318	2019	627	599	651	551	528	608	515
Arrive On Green	0.04	0.38	0.38	0.05	0.40	0.40	0.07	0.35	0.35	0.04	0.32	0.32
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	72	714	228	104	583	63	428	28	157	81	16	66
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	2.9	12.0	12.4	4.2	9.4	3.0	8.0	1.2	8.6	3.6	0.7	3.5
Cycle Q Clear(g_c), s	2.9	12.0	12.4	4.2	9.4	3.0	8.0	1.2	8.6	3.6	0.7	3.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	377	1955	607	318	2019	627	599	651	551	528	608	515
V/C Ratio(X)	0.19	0.37	0.38	0.33	0.29	0.10	0.71	0.04	0.28	0.15	0.03	0.13
Avail Cap(c_a), veh/h	487	1955	607	347	2019	627	599	651	551	568	608	515
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.3	26.6	26.7	21.2	24.8	22.8	31.2	25.9	28.3	25.0	27.6	28.5
Incr Delay (d2), s/veh	0.2	0.5	1.8	0.6	0.4	0.3	4.0	0.1	1.3	0.1	0.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	4.9	5.0	1.8	3.8	1.2	7.4	0.6	3.5	1.6	0.3	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.5	27.1	28.5	21.8	25.1	23.2	35.2	26.0	29.6	25.2	27.7	29.0
LnGrp LOS	C	C	C	C	C	C	D	C	C	C	C	C
Approach Vol, veh/h		1014			750			613			163	
Approach Delay, s/veh		27.0			24.5			33.4			27.0	
Approach LOS		C			C			C			C	

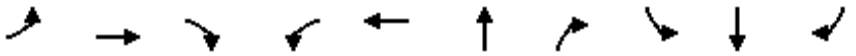
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.1	51.9	13.0	44.0	9.5	53.5	10.3	46.7
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0
Max Green Setting (Gmax), s	8.0	44.0	8.0	39.0	12.0	40.0	8.0	39.0
Max Q Clear Time (g_c+I1), s	6.2	14.4	10.0	5.5	4.9	11.4	5.6	10.6
Green Ext Time (p_c), s	0.0	6.0	0.0	0.3	0.1	4.2	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	27.8
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	25	765	20	80	490	30	5	40	35	5	85
Future Volume (vph)	25	765	20	80	490	30	5	40	35	5	85
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		8			4	
Permitted Phases	2		2	6		8		8	4		4
Detector Phase	5	2	2	1	6	8	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	13.0	63.0	63.0	13.0	63.0	44.0	44.0	44.0	44.0	44.0	44.0
Total Split (%)	10.8%	52.5%	52.5%	10.8%	52.5%	36.7%	36.7%	36.7%	36.7%	36.7%	36.7%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	C-Max	C-Max	None	C-Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	66.0	59.8	59.8	68.7	63.0		39.0	39.0	39.0	39.0	39.0
Actuated g/C Ratio	0.55	0.50	0.50	0.57	0.52		0.32	0.32	0.32	0.32	0.32
v/c Ratio	0.05	0.32	0.03	0.22	0.20		0.08	0.08	0.09	0.01	0.16
Control Delay	3.6	14.4	3.9	6.5	5.9		28.8	2.9	28.9	27.6	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	3.6	14.4	3.9	6.5	5.9		28.8	2.9	28.9	27.6	6.5
LOS	A	B	A	A	A		C	A	C	C	A
Approach Delay		13.8			6.0		15.0			13.5	
Approach LOS		B			A		B			B	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 61 (51%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.32	
Intersection Signal Delay: 11.1	Intersection LOS: B
Intersection Capacity Utilization 41.2%	ICU Level of Service A
Analysis Period (min) 15	

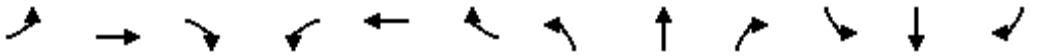
Splits and Phases: 2: Alkire St & Ken Caryl Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	27	823	22	82	520	41	47	38	5	93
v/c Ratio	0.05	0.32	0.03	0.22	0.20	0.08	0.08	0.09	0.01	0.16
Control Delay	3.6	14.4	3.9	6.5	5.9	28.8	2.9	28.9	27.6	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.6	14.4	3.9	6.5	5.9	28.8	2.9	28.9	27.6	6.5
Queue Length 50th (ft)	2	190	3	8	17	22	0	20	3	0
Queue Length 95th (ft)	4	224	m15	13	21	47	11	47	12	38
Internal Link Dist (ft)		376			477	264			636	
Turn Bay Length (ft)	140		240	185			110	60		125
Base Capacity (vph)	530	2534	821	385	2656	495	563	442	605	577
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.32	0.03	0.21	0.20	0.08	0.08	0.09	0.01	0.16

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	765	20	80	490	20	30	5	40	35	5	85
Future Volume (veh/h)	25	765	20	80	490	20	30	5	40	35	5	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	27	823	22	82	500	20	35	6	47	38	5	93
Peak Hour Factor	0.93	0.93	0.93	0.98	0.98	0.98	0.86	0.86	0.86	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	513	2567	797	395	2604	104	429	69	515	472	608	515
Arrive On Green	0.02	0.50	0.50	0.04	0.52	0.52	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1781	5106	1585	1781	5038	200	1149	213	1585	1351	1870	1585
Grp Volume(v), veh/h	27	823	22	82	337	183	41	0	47	38	5	93
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1834	1363	0	1585	1351	1870	1585
Q Serve(g_s), s	0.9	11.5	0.8	2.7	6.4	6.4	2.0	0.0	2.5	2.4	0.2	5.0
Cycle Q Clear(g_c), s	0.9	11.5	0.8	2.7	6.4	6.4	2.4	0.0	2.5	4.8	0.2	5.0
Prop In Lane	1.00		1.00	1.00		0.11	0.85		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	513	2567	797	395	1760	948	498	0	515	472	608	515
V/C Ratio(X)	0.05	0.32	0.03	0.21	0.19	0.19	0.08	0.00	0.09	0.08	0.01	0.18
Avail Cap(c_a), veh/h	587	2567	797	444	1760	948	498	0	515	472	608	515
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.7	17.7	15.0	13.8	15.5	15.6	28.1	0.0	28.2	29.8	27.4	29.0
Incr Delay (d2), s/veh	0.0	0.3	0.1	0.3	0.2	0.5	0.3	0.0	0.4	0.3	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	4.4	0.3	1.1	2.4	2.7	0.9	0.0	1.0	0.8	0.1	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.7	18.0	15.1	14.1	15.8	16.0	28.4	0.0	28.5	30.1	27.4	29.8
LnGrp LOS	B	B	B	B	B	B	C	A	C	C	C	C
Approach Vol, veh/h		872			602			88			136	
Approach Delay, s/veh		17.8			15.6			28.5			29.8	
Approach LOS		B			B			C			C	

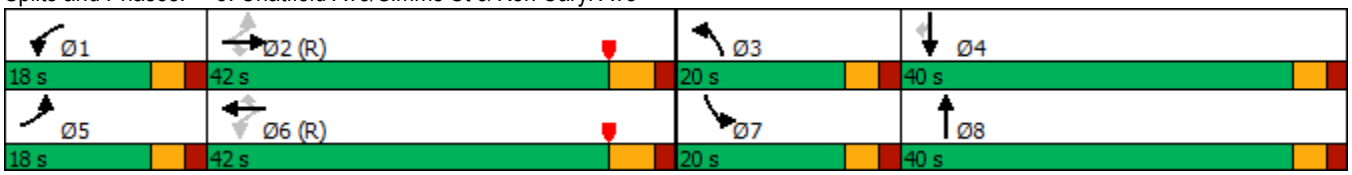
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.7	66.3		44.0	8.0	68.0		44.0				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	8.0	57.0		39.0	8.0	57.0		39.0				
Max Q Clear Time (g_c+I1), s	4.7	13.5		7.0	2.9	8.4		4.5				
Green Ext Time (p_c), s	0.0	6.4		0.4	0.0	3.4		0.4				

Intersection Summary												
HCM 6th Ctrl Delay			18.6									
HCM 6th LOS			B									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	306	411	178	46	378	97	151	238	173	234	263
Future Volume (vph)	306	411	178	46	378	97	151	238	173	234	263
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8	7	4	
Permitted Phases	2		2	6		6					4
Detector Phase	5	2	2	1	6	6	3	8	7	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	24.0	10.0	23.0	10.0	23.0	23.0
Total Split (s)	18.0	42.0	42.0	18.0	42.0	42.0	20.0	40.0	20.0	40.0	40.0
Total Split (%)	15.0%	35.0%	35.0%	15.0%	35.0%	35.0%	16.7%	33.3%	16.7%	33.3%	33.3%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	Max	Max
Act Effct Green (s)	54.7	43.7	43.7	44.4	36.0	36.0	11.1	38.2	11.8	38.9	38.9
Actuated g/C Ratio	0.46	0.36	0.36	0.37	0.30	0.30	0.09	0.32	0.10	0.32	0.32
v/c Ratio	0.70	0.34	0.27	0.13	0.27	0.19	0.52	0.27	0.56	0.22	0.41
Control Delay	30.3	10.3	1.5	19.4	32.6	6.2	57.5	30.2	57.6	30.7	5.4
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	30.3	10.3	1.5	19.4	32.6	6.2	57.5	30.2	57.6	30.7	5.4
LOS	C	B	A	B	C	A	E	C	E	C	A
Approach Delay		15.4			26.5			39.8		27.7	
Approach LOS		B			C			D		C	

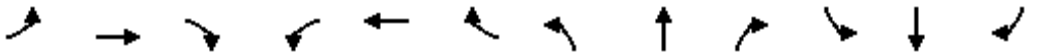
Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 61 (51%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 25.2	Intersection LOS: C
Intersection Capacity Utilization 54.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Chatfield Ave/Simms St & Ken Caryl Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	326	437	189	50	411	105	164	302	188	254	286
v/c Ratio	0.70	0.34	0.27	0.13	0.27	0.19	0.52	0.27	0.56	0.22	0.41
Control Delay	30.3	10.3	1.5	19.4	32.6	6.2	57.5	30.2	57.6	30.7	5.4
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	30.3	10.3	1.5	19.4	32.6	6.2	57.5	30.2	57.6	30.7	5.4
Queue Length 50th (ft)	95	41	0	21	88	0	63	86	72	75	0
Queue Length 95th (ft)	170	64	0	45	118	39	96	130	108	113	63
Internal Link Dist (ft)		504			417			1207		285	
Turn Bay Length (ft)	210			300			240		225		295
Base Capacity (vph)	463	1289	697	477	1525	551	429	1112	429	1148	706
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.34	0.27	0.10	0.27	0.19	0.38	0.27	0.44	0.22	0.41

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	306	411	178	46	378	97	151	238	40	173	234	263
Future Volume (veh/h)	306	411	178	46	378	97	151	238	40	173	234	263
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	326	437	189	50	411	0	164	259	43	188	254	286
Peak Hour Factor	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	541	1518	677	374	1800		225	891	146	250	1062	474
Arrive On Green	0.04	0.14	0.14	0.03	0.35	0.00	0.07	0.29	0.29	0.07	0.30	0.30
Sat Flow, veh/h	1781	3554	1585	1781	5106	1585	3456	3056	501	3456	3554	1585
Grp Volume(v), veh/h	326	437	189	50	411	0	164	149	153	188	254	286
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1702	1585	1728	1777	1780	1728	1777	1585
Q Serve(g_s), s	13.0	13.2	12.8	2.1	6.8	0.0	5.6	7.8	8.0	6.4	6.5	18.5
Cycle Q Clear(g_c), s	13.0	13.2	12.8	2.1	6.8	0.0	5.6	7.8	8.0	6.4	6.5	18.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	1.00		1.00
Lane Grp Cap(c), veh/h	541	1518	677	374	1800		225	518	519	250	1062	474
V/C Ratio(X)	0.60	0.29	0.28	0.13	0.23		0.73	0.29	0.29	0.75	0.24	0.60
Avail Cap(c_a), veh/h	541	1518	677	506	1800		432	518	519	432	1062	474
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	0.98	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.1	35.2	35.0	23.3	27.3	0.0	55.0	32.9	32.9	54.6	31.8	36.0
Incr Delay (d2), s/veh	1.8	0.5	1.0	0.2	0.3	0.0	4.5	1.4	1.4	4.5	0.5	5.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	6.4	5.6	0.9	2.8	0.0	2.5	3.5	3.6	2.9	2.8	7.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.9	35.7	36.0	23.5	27.6	0.0	59.5	34.3	34.4	59.1	32.3	41.6
LnGrp LOS	C	D	D	C	C		E	C	C	E	C	D
Approach Vol, veh/h		952			461	A		466			728	
Approach Delay, s/veh		31.7			27.2			43.2			42.9	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.1	57.3	12.8	40.9	18.0	48.3	13.7	40.0
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0
Max Green Setting (Gmax), s	13.0	36.0	15.0	35.0	13.0	36.0	15.0	35.0
Max Q Clear Time (g_c+I1), s	4.1	15.2	7.6	20.5	15.0	8.8	8.4	10.0
Green Ext Time (p_c), s	0.0	3.3	0.3	2.2	0.0	2.7	0.3	1.6

Intersection Summary	
HCM 6th Ctrl Delay	36.1
HCM 6th LOS	D

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

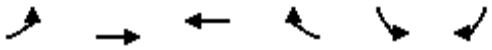
Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Configurations					
Traffic Volume (vph)	50	750	530	40	30
Future Volume (vph)	50	750	530	40	30
Turn Type	pm+pt	NA	NA	Perm	Prot
Protected Phases	5	2	6		4
Permitted Phases	2			6	
Detector Phase	5	2	6	6	4
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	24.0	23.0
Total Split (s)	15.0	90.0	75.0	75.0	30.0
Total Split (%)	12.5%	75.0%	62.5%	62.5%	25.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	6.0	5.0
Lead/Lag	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	Max
Act Effct Green (s)	85.0	84.0	74.5	74.5	25.0
Actuated g/C Ratio	0.71	0.70	0.62	0.62	0.21
v/c Ratio	0.09	0.23	0.18	0.04	0.16
Control Delay	2.5	2.2	10.9	4.2	25.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.5	2.2	10.9	4.2	25.1
LOS	A	A	B	A	C
Approach Delay		2.2	10.4		25.1
Approach LOS		A	B		C

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 61 (51%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.23	
Intersection Signal Delay: 6.4	Intersection LOS: A
Intersection Capacity Utilization 31.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Ken Caryl Ave & 12300 Block

Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	54	815	576	43	60
v/c Ratio	0.09	0.23	0.18	0.04	0.16
Control Delay	2.5	2.2	10.9	4.2	25.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.5	2.2	10.9	4.2	25.1
Queue Length 50th (ft)	3	18	63	0	21
Queue Length 95th (ft)	10	34	88	6	59
Internal Link Dist (ft)		120	504		188
Turn Bay Length (ft)	100				
Base Capacity (vph)	610	3559	3157	999	375
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.09	0.23	0.18	0.04	0.16

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	50	750	530	40	30	25
Future Volume (veh/h)	50	750	530	40	30	25
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1900	1900
Adj Flow Rate, veh/h	54	815	576	43	33	27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	624	3574	3184	988	190	156
Arrive On Green	0.03	0.70	1.00	1.00	0.21	0.21
Sat Flow, veh/h	1781	5274	5274	1585	914	748
Grp Volume(v), veh/h	54	815	576	43	61	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1702	1585	1690	0
Q Serve(g_s), s	1.2	6.8	0.0	0.0	3.6	0.0
Cycle Q Clear(g_c), s	1.2	6.8	0.0	0.0	3.6	0.0
Prop In Lane	1.00			1.00	0.54	0.44
Lane Grp Cap(c), veh/h	624	3574	3184	988	352	0
V/C Ratio(X)	0.09	0.23	0.18	0.04	0.17	0.00
Avail Cap(c_a), veh/h	710	3574	3184	988	352	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.94	0.94	1.00	0.00
Uniform Delay (d), s/veh	6.6	6.4	0.0	0.0	39.0	0.0
Incr Delay (d2), s/veh	0.1	0.1	0.1	0.1	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.2	0.0	0.0	1.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.6	6.6	0.1	0.1	40.1	0.0
LnGrp LOS	A	A	A	A	D	A
Approach Vol, veh/h		869	619		61	
Approach Delay, s/veh		6.6	0.1		40.1	
Approach LOS		A	A		D	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		90.0		30.0	9.2	80.8
Change Period (Y+Rc), s		6.0		5.0	5.0	6.0
Max Green Setting (Gmax), s		84.0		25.0	10.0	69.0
Max Q Clear Time (g_c+I1), s		8.8		5.6	3.2	2.0
Green Ext Time (p_c), s		6.4		0.1	0.0	4.3

Intersection Summary	
HCM 6th Ctrl Delay	5.3
HCM 6th LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	3	45	26	3	54	31
Future Volume (Veh/h)	3	45	26	3	54	31
Sign Control	Stop			Stop	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	4	53	31	4	64	36
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)					403	
pX, platoon unblocked						
vC, conflicting volume	164	0	201	146	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	164	0	201	146	0	
tC, single (s)	6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3	3.5	4.0	2.2	
p0 queue free %	99	95	96	99	96	
cM capacity (veh/h)	700	1085	696	716	1623	

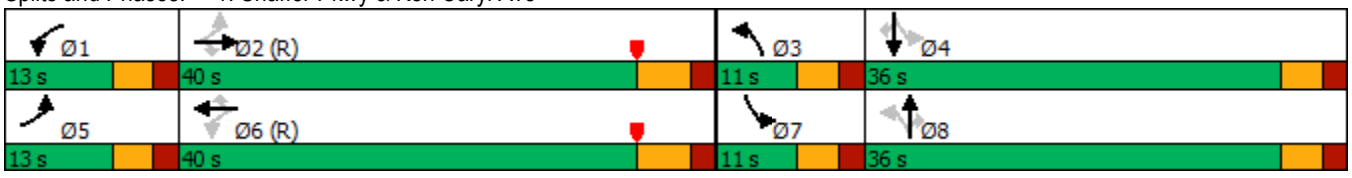
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	57	35	100
Volume Left	0	31	64
Volume Right	53	0	36
cSH	1045	698	1623
Volume to Capacity	0.05	0.05	0.04
Queue Length 95th (ft)	4	4	3
Control Delay (s)	8.6	10.4	4.8
Lane LOS	A	B	A
Approach Delay (s)	8.6	10.4	4.8
Approach LOS	A	B	

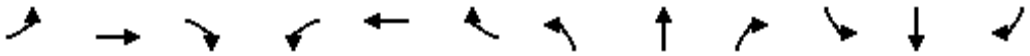
Intersection Summary			
Average Delay	7.0		
Intersection Capacity Utilization	19.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	700	300	95	460	60	170	20	75	40	15	40
Future Volume (vph)	55	700	300	95	460	60	170	20	75	40	15	40
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	24.0	10.0	23.0	23.0	10.0	23.0	23.0
Total Split (s)	13.0	40.0	40.0	13.0	40.0	40.0	11.0	36.0	36.0	11.0	36.0	36.0
Total Split (%)	13.0%	40.0%	40.0%	13.0%	40.0%	40.0%	11.0%	36.0%	36.0%	11.0%	36.0%	36.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Act Effct Green (s)	42.5	34.4	34.4	44.3	37.0	37.0	39.0	35.4	35.4	36.9	31.0	31.0
Actuated g/C Ratio	0.42	0.34	0.34	0.44	0.37	0.37	0.39	0.35	0.35	0.37	0.31	0.31
v/c Ratio	0.16	0.48	0.46	0.37	0.28	0.10	0.36	0.03	0.13	0.09	0.03	0.08
Control Delay	15.2	27.0	4.7	27.4	9.5	0.8	22.4	24.0	1.2	18.0	24.4	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.2	27.0	4.7	27.4	9.5	0.8	22.4	24.0	1.2	18.0	24.4	0.3
LOS	B	C	A	C	A	A	C	C	A	B	C	A
Approach Delay		20.1			11.4			16.5			11.6	
Approach LOS		C			B			B			B	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 39 (39%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.48	
Intersection Signal Delay: 16.7	Intersection LOS: B
Intersection Capacity Utilization 48.2%	ICU Level of Service A
Analysis Period (min) 15	

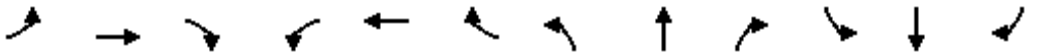
Splits and Phases: 1: Shaffer Pkwy & Ken Caryl Ave





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	66	843	361	108	523	68	193	23	85	48	18	48
v/c Ratio	0.16	0.48	0.46	0.37	0.28	0.10	0.36	0.03	0.13	0.09	0.03	0.08
Control Delay	15.2	27.0	4.7	27.4	9.5	0.8	22.4	24.0	1.2	18.0	24.4	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.2	27.0	4.7	27.4	9.5	0.8	22.4	24.0	1.2	18.0	24.4	0.3
Queue Length 50th (ft)	22	154	0	31	22	0	78	10	0	18	8	0
Queue Length 95th (ft)	42	175	42	83	56	0	125	28	6	37	23	0
Internal Link Dist (ft)		1058			341			383			323	
Turn Bay Length (ft)	120		210	210		480				80		80
Base Capacity (vph)	434	1748	781	298	1879	667	533	659	652	534	577	588
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.48	0.46	0.36	0.28	0.10	0.36	0.03	0.13	0.09	0.03	0.08

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	700	300	95	460	60	170	20	75	40	15	40
Future Volume (veh/h)	55	700	300	95	460	60	170	20	75	40	15	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	66	843	361	108	523	68	193	23	85	48	18	48
Peak Hour Factor	0.83	0.83	0.83	0.88	0.88	0.88	0.88	0.88	0.88	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	400	1864	579	281	1930	599	584	623	528	536	580	491
Arrive On Green	0.04	0.36	0.36	0.06	0.38	0.38	0.06	0.33	0.33	0.04	0.31	0.31
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	66	843	361	108	523	68	193	23	85	48	18	48
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	2.3	12.6	18.7	3.7	7.1	2.8	6.0	0.8	3.8	1.8	0.7	2.2
Cycle Q Clear(g_c), s	2.3	12.6	18.7	3.7	7.1	2.8	6.0	0.8	3.8	1.8	0.7	2.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	400	1864	579	281	1930	599	584	623	528	536	580	491
V/C Ratio(X)	0.16	0.45	0.62	0.38	0.27	0.11	0.33	0.04	0.16	0.09	0.03	0.10
Avail Cap(c_a), veh/h	468	1864	579	326	1930	599	584	623	528	577	580	491
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.4	24.1	26.1	18.9	21.6	20.2	22.4	22.5	23.5	21.9	24.0	24.5
Incr Delay (d2), s/veh	0.2	0.8	5.0	0.9	0.3	0.4	0.3	0.1	0.7	0.1	0.1	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	5.0	7.7	1.5	2.8	1.1	3.3	0.4	1.5	0.8	0.3	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.6	24.9	31.1	19.8	21.9	20.6	22.7	22.6	24.1	22.0	24.1	24.9
LnGrp LOS	B	C	C	B	C	C	C	C	C	C	C	C
Approach Vol, veh/h		1270			699			301			114	
Approach Delay, s/veh		26.4			21.4			23.1			23.6	
Approach LOS		C			C			C			C	

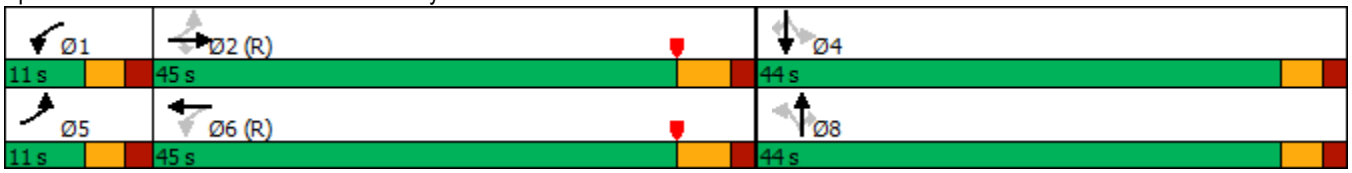
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.5	42.5	11.0	36.0	9.2	43.8	8.7	38.3
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0
Max Green Setting (Gmax), s	8.0	34.0	6.0	31.0	8.0	34.0	6.0	31.0
Max Q Clear Time (g_c+I1), s	5.7	20.7	8.0	4.2	4.3	9.1	3.8	5.8
Green Ext Time (p_c), s	0.0	5.7	0.0	0.2	0.0	3.6	0.0	0.3

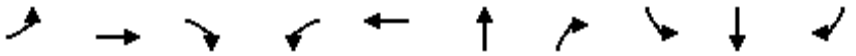
Intersection Summary	
HCM 6th Ctrl Delay	24.4
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	25	765	20	80	490	30	5	40	35	5	85
Future Volume (vph)	25	765	20	80	490	30	5	40	35	5	85
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		8			4	
Permitted Phases	2		2	6		8		8	4		4
Detector Phase	5	2	2	1	6	8	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	11.0	45.0	45.0	11.0	45.0	44.0	44.0	44.0	44.0	44.0	44.0
Total Split (%)	11.0%	45.0%	45.0%	11.0%	45.0%	44.0%	44.0%	44.0%	44.0%	44.0%	44.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	C-Max	C-Max	None	C-Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	47.0	41.2	41.2	48.0	43.4		39.0	39.0	39.0	39.0	39.0
Actuated g/C Ratio	0.47	0.41	0.41	0.48	0.43		0.39	0.39	0.39	0.39	0.39
v/c Ratio	0.07	0.45	0.04	0.33	0.27		0.06	0.07	0.09	0.01	0.17
Control Delay	6.1	8.7	0.1	21.2	26.2		19.6	0.8	20.0	18.8	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	6.1	8.7	0.1	21.2	26.2		19.6	0.8	20.0	18.8	4.5
LOS	A	A	A	C	C		B	A	B	B	A
Approach Delay		8.4			25.5		9.7			9.4	
Approach LOS		A			C		A			A	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 48 (48%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.45	
Intersection Signal Delay: 14.6	Intersection LOS: B
Intersection Capacity Utilization 41.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Alkire St & Ken Caryl Ave

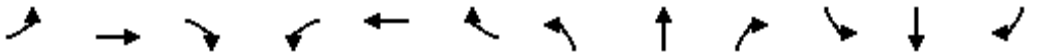




Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	31	944	25	92	586	39	44	48	7	116
v/c Ratio	0.07	0.45	0.04	0.33	0.27	0.06	0.07	0.09	0.01	0.17
Control Delay	6.1	8.7	0.1	21.2	26.2	19.6	0.8	20.0	18.8	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.1	8.7	0.1	21.2	26.2	19.6	0.8	20.0	18.8	4.5
Queue Length 50th (ft)	4	45	0	45	138	15	0	19	3	0
Queue Length 95th (ft)	m7	49	m0	85	174	37	4	35	9	18
Internal Link Dist (ft)		376			477	264			636	
Turn Bay Length (ft)	140		240	185			110	60		125
Base Capacity (vph)	421	2095	696	281	2197	603	670	531	726	688
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.45	0.04	0.33	0.27	0.06	0.07	0.09	0.01	0.17

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	765	20	80	490	20	30	5	40	35	5	85
Future Volume (veh/h)	25	765	20	80	490	20	30	5	40	35	5	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	31	944	25	92	563	23	33	6	44	48	7	116
Peak Hour Factor	0.81	0.81	0.81	0.87	0.87	0.87	0.90	0.90	0.90	0.73	0.73	0.73
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	412	2062	640	310	2120	86	503	86	618	578	729	618
Arrive On Green	0.03	0.40	0.40	0.05	0.42	0.42	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h	1781	5106	1585	1781	5033	205	1118	221	1585	1355	1870	1585
Grp Volume(v), veh/h	31	944	25	92	380	206	39	0	44	48	7	116
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1834	1339	0	1585	1355	1870	1585
Q Serve(g_s), s	1.0	13.5	1.0	3.0	7.3	7.3	1.3	0.0	1.7	2.3	0.2	4.8
Cycle Q Clear(g_c), s	1.0	13.5	1.0	3.0	7.3	7.3	1.7	0.0	1.7	4.0	0.2	4.8
Prop In Lane	1.00		1.00	1.00		0.11	0.85		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	412	2062	640	310	1434	772	589	0	618	578	729	618
V/C Ratio(X)	0.08	0.46	0.04	0.30	0.27	0.27	0.07	0.00	0.07	0.08	0.01	0.19
Avail Cap(c_a), veh/h	467	2062	640	335	1434	772	589	0	618	578	729	618
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.5	21.8	18.1	17.0	18.9	18.9	19.1	0.0	19.1	20.4	18.7	20.1
Incr Delay (d2), s/veh	0.1	0.7	0.1	0.5	0.5	0.8	0.2	0.0	0.2	0.3	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	5.3	0.4	1.2	2.8	3.1	0.6	0.0	0.7	0.8	0.1	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.6	22.5	18.2	17.6	19.3	19.7	19.3	0.0	19.4	20.7	18.7	20.7
LnGrp LOS	B	C	B	B	B	B	B	A	B	C	B	C
Approach Vol, veh/h		1000			678			83			171	
Approach Delay, s/veh		22.2			19.2			19.3			20.6	
Approach LOS		C			B			B			C	

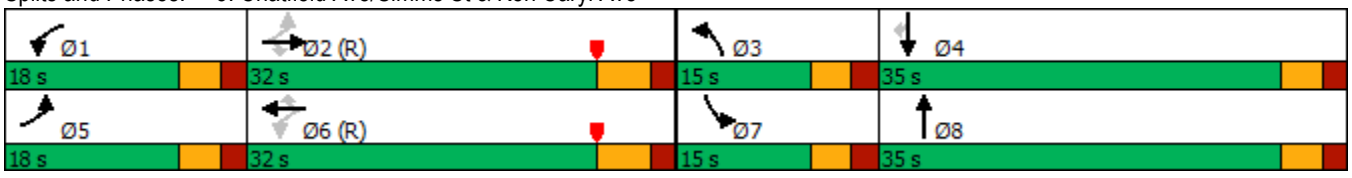
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.6	46.4		44.0	7.9	48.1		44.0				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	39.0		39.0	6.0	39.0		39.0				
Max Q Clear Time (g_c+I1), s	5.0	15.5		6.8	3.0	9.3		3.7				
Green Ext Time (p_c), s	0.0	6.7		0.6	0.0	3.7		0.4				

Intersection Summary			
HCM 6th Ctrl Delay		20.9	
HCM 6th LOS		C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	250	440	130	50	285	265	80	330	150	280	235
Future Volume (vph)	250	440	130	50	285	265	80	330	150	280	235
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8	7	4	
Permitted Phases	2		2	6		6					4
Detector Phase	5	2	2	1	6	6	3	8	7	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	24.0	10.0	23.0	10.0	23.0	23.0
Total Split (s)	18.0	32.0	32.0	18.0	32.0	32.0	15.0	35.0	15.0	35.0	35.0
Total Split (%)	18.0%	32.0%	32.0%	18.0%	32.0%	32.0%	15.0%	35.0%	15.0%	35.0%	35.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	Max	Max
Act Effct Green (s)	44.6	33.6	33.6	34.6	26.1	26.1	8.4	30.5	9.5	31.6	31.6
Actuated g/C Ratio	0.45	0.34	0.34	0.35	0.26	0.26	0.08	0.30	0.10	0.32	0.32
v/c Ratio	0.69	0.50	0.27	0.18	0.26	0.50	0.39	0.47	0.60	0.33	0.43
Control Delay	17.6	10.7	2.0	17.6	30.0	6.3	47.0	29.6	51.4	27.4	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.6	10.7	2.0	17.6	30.0	6.3	47.0	29.6	51.4	27.4	5.2
LOS	B	B	A	B	C	A	D	C	D	C	A
Approach Delay		11.4			18.5			32.7		25.0	
Approach LOS		B			B			C		C	

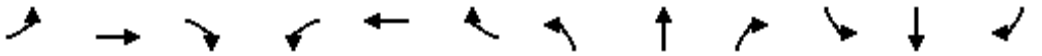
Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 82 (82%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 20.5	Intersection LOS: C
Intersection Capacity Utilization 53.7%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Chatfield Ave/Simms St & Ken Caryl Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	338	595	176	61	348	323	113	507	195	364	305
v/c Ratio	0.69	0.50	0.27	0.18	0.26	0.50	0.39	0.47	0.60	0.33	0.43
Control Delay	17.6	10.7	2.0	17.6	30.0	6.3	47.0	29.6	51.4	27.4	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.6	10.7	2.0	17.6	30.0	6.3	47.0	29.6	51.4	27.4	5.2
Queue Length 50th (ft)	42	66	0	22	64	0	35	135	62	92	0
Queue Length 95th (ft)	76	107	5	41	82	43	48	139	82	113	29
Internal Link Dist (ft)		504			417			1207		285	
Turn Bay Length (ft)	210			300			240		225		295
Base Capacity (vph)	494	1190	649	431	1329	652	343	1073	343	1116	708
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	0.68	0.50	0.27	0.14	0.26	0.50	0.33	0.47	0.57	0.33	0.43

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	250	440	130	50	285	265	80	330	30	150	280	235
Future Volume (veh/h)	250	440	130	50	285	265	80	330	30	150	280	235
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	338	595	176	61	348	0	113	465	42	195	364	305
Peak Hour Factor	0.74	0.74	0.74	0.82	0.82	0.82	0.71	0.71	0.71	0.77	0.77	0.77
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	542	1325	591	343	1449		176	989	89	264	1156	516
Arrive On Green	0.26	0.75	0.75	0.04	0.28	0.00	0.05	0.30	0.30	0.08	0.33	0.33
Sat Flow, veh/h	1781	3554	1585	1781	5106	1585	3456	3297	297	3456	3554	1585
Grp Volume(v), veh/h	338	595	176	61	348	0	113	250	257	195	364	305
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1702	1585	1728	1777	1817	1728	1777	1585
Q Serve(g_s), s	13.0	6.4	3.6	2.4	5.2	0.0	3.2	11.5	11.5	5.5	7.7	16.1
Cycle Q Clear(g_c), s	13.0	6.4	3.6	2.4	5.2	0.0	3.2	11.5	11.5	5.5	7.7	16.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	542	1325	591	343	1449		176	533	545	264	1156	516
V/C Ratio(X)	0.62	0.45	0.30	0.18	0.24		0.64	0.47	0.47	0.74	0.31	0.59
Avail Cap(c_a), veh/h	542	1325	591	502	1449		346	533	545	346	1156	516
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	0.98	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.1	8.8	8.4	23.6	27.5	0.0	46.6	28.5	28.5	45.2	25.3	28.2
Incr Delay (d2), s/veh	2.2	1.1	1.3	0.2	0.4	0.0	3.9	2.9	2.9	5.8	0.7	4.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	2.0	1.3	1.0	2.1	0.0	1.4	5.1	5.3	2.5	3.2	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.3	9.9	9.7	23.9	27.9	0.0	50.4	31.5	31.5	51.1	26.1	33.1
LnGrp LOS	C	A	A	C	C		D	C	C	D	C	C
Approach Vol, veh/h		1109			409	A		620			864	
Approach Delay, s/veh		13.0			27.3			34.9			34.2	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.1	43.3	10.1	37.5	18.0	34.4	12.6	35.0
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0
Max Green Setting (Gmax), s	13.0	26.0	10.0	30.0	13.0	26.0	10.0	30.0
Max Q Clear Time (g_c+I1), s	4.4	8.4	5.2	18.1	15.0	7.2	7.5	13.5
Green Ext Time (p_c), s	0.1	4.1	0.1	2.6	0.0	2.0	0.1	2.5

Intersection Summary	
HCM 6th Ctrl Delay	25.6
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

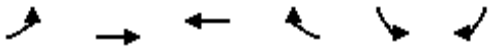
Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Configurations					
Traffic Volume (vph)	50	790	560	40	30
Future Volume (vph)	50	790	560	40	30
Turn Type	pm+pt	NA	NA	Perm	Prot
Protected Phases	5	2	6		4
Permitted Phases	2			6	
Detector Phase	5	2	6	6	4
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	24.0	23.0
Total Split (s)	13.0	75.0	62.0	62.0	25.0
Total Split (%)	13.0%	75.0%	62.0%	62.0%	25.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	6.0	5.0
Lead/Lag	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	Max
Act Effct Green (s)	70.0	69.0	59.6	59.6	20.0
Actuated g/C Ratio	0.70	0.69	0.60	0.60	0.20
v/c Ratio	0.11	0.26	0.22	0.05	0.18
Control Delay	2.9	5.3	4.9	1.1	22.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.9	5.3	4.9	1.1	22.1
LOS	A	A	A	A	C
Approach Delay		5.2	4.6		22.1
Approach LOS		A	A		C

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 5 (5%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.26	
Intersection Signal Delay: 5.6	Intersection LOS: A
Intersection Capacity Utilization 32.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Ken Caryl Ave & 12300 Block

Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	59	929	659	47	64
v/c Ratio	0.11	0.26	0.22	0.05	0.18
Control Delay	2.9	5.3	4.9	1.1	22.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.9	5.3	4.9	1.1	22.1
Queue Length 50th (ft)	8	46	26	0	18
Queue Length 95th (ft)	16	53	47	2	51
Internal Link Dist (ft)		120	504		188
Turn Bay Length (ft)	100				
Base Capacity (vph)	553	3508	3029	962	363
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.11	0.26	0.22	0.05	0.18

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	50	790	560	40	30	25
Future Volume (veh/h)	50	790	560	40	30	25
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1900	1900
Adj Flow Rate, veh/h	59	929	659	47	35	29
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	589	3523	3062	951	182	151
Arrive On Green	0.04	0.69	1.00	1.00	0.20	0.20
Sat Flow, veh/h	1781	5274	5274	1585	910	754
Grp Volume(v), veh/h	59	929	659	47	65	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1702	1585	1689	0
Q Serve(g_s), s	1.2	6.9	0.0	0.0	3.2	0.0
Cycle Q Clear(g_c), s	1.2	6.9	0.0	0.0	3.2	0.0
Prop In Lane	1.00			1.00	0.54	0.45
Lane Grp Cap(c), veh/h	589	3523	3062	951	338	0
V/C Ratio(X)	0.10	0.26	0.22	0.05	0.19	0.00
Avail Cap(c_a), veh/h	659	3523	3062	951	338	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.95	0.95	1.00	0.00
Uniform Delay (d), s/veh	6.0	5.9	0.0	0.0	33.3	0.0
Incr Delay (d2), s/veh	0.1	0.2	0.2	0.1	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.0	0.0	0.0	1.4	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.1	6.1	0.2	0.1	34.5	0.0
LnGrp LOS	A	A	A	A	C	A
Approach Vol, veh/h		988	706		65	
Approach Delay, s/veh		6.1	0.1		34.5	
Approach LOS		A	A		C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		75.0		25.0	9.0	66.0
Change Period (Y+Rc), s		6.0		5.0	5.0	6.0
Max Green Setting (Gmax), s		69.0		20.0	8.0	56.0
Max Q Clear Time (g_c+I1), s		8.9		5.2	3.2	2.0
Green Ext Time (p_c), s		7.6		0.1	0.0	5.1

Intersection Summary	
HCM 6th Ctrl Delay	4.7
HCM 6th LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2	33	19	2	47	27
Future Volume (Veh/h)	2	33	19	2	47	27
Sign Control	Stop			Stop	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	2	39	22	2	55	32
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)					403	
pX, platoon unblocked						
vC, conflicting volume	142	0	166	126	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	142	0	166	126	0	
tC, single (s)	6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3	3.5	4.0	2.2	
p0 queue free %	100	96	97	100	97	
cM capacity (veh/h)	724	1085	748	739	1623	

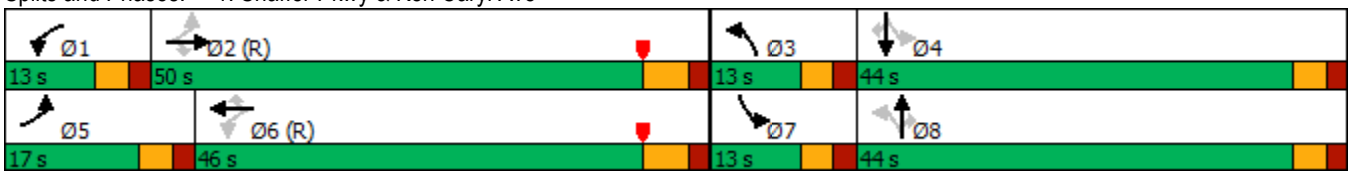
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	41	24	87
Volume Left	0	22	55
Volume Right	39	0	32
cSH	1059	747	1623
Volume to Capacity	0.04	0.03	0.03
Queue Length 95th (ft)	3	2	3
Control Delay (s)	8.5	10.0	4.7
Lane LOS	A	A	A
Approach Delay (s)	8.5	10.0	4.7
Approach LOS	A	A	

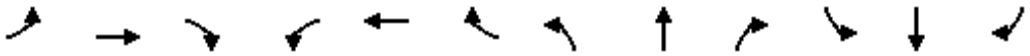
Intersection Summary			
Average Delay	6.6		
Intersection Capacity Utilization	18.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	730	240	105	555	60	420	30	160	70	15	55
Future Volume (vph)	75	730	240	105	555	60	420	30	160	70	15	55
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	24.0	10.0	23.0	23.0	10.0	23.0	23.0
Total Split (s)	17.0	50.0	50.0	13.0	46.0	46.0	13.0	44.0	44.0	13.0	44.0	44.0
Total Split (%)	14.2%	41.7%	41.7%	10.8%	38.3%	38.3%	10.8%	36.7%	36.7%	10.8%	36.7%	36.7%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Act Effct Green (s)	53.5	44.2	44.2	53.3	45.9	45.9	47.4	39.4	39.4	46.6	39.0	39.0
Actuated g/C Ratio	0.45	0.37	0.37	0.44	0.38	0.38	0.40	0.33	0.33	0.39	0.32	0.32
v/c Ratio	0.20	0.40	0.33	0.37	0.32	0.10	0.80	0.05	0.27	0.16	0.03	0.12
Control Delay	18.2	28.9	4.5	34.0	43.1	14.6	42.1	28.3	5.4	21.3	28.0	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.2	28.9	4.5	34.0	43.1	14.6	42.1	28.3	5.4	21.3	28.0	1.3
LOS	B	C	A	C	D	B	D	C	A	C	C	A
Approach Delay		22.6			39.4			31.8			14.1	
Approach LOS		C			D			C			B	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 12 (10%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 29.2	Intersection LOS: C
Intersection Capacity Utilization 63.2%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Shaffer Pkwy & Ken Caryl Ave

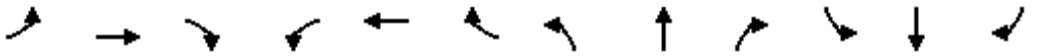




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	77	753	247	117	617	67	452	32	172	89	19	70
v/c Ratio	0.20	0.40	0.33	0.37	0.32	0.10	0.80	0.05	0.27	0.16	0.03	0.12
Control Delay	18.2	28.9	4.5	34.0	43.1	14.6	42.1	28.3	5.4	21.3	28.0	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.2	28.9	4.5	34.0	43.1	14.6	42.1	28.3	5.4	21.3	28.0	1.3
Queue Length 50th (ft)	31	157	0	83	175	6	262	17	0	40	10	0
Queue Length 95th (ft)	59	194	54	140	218	45	#390	41	49	64	25	0
Internal Link Dist (ft)		1058			341			383			323	
Turn Bay Length (ft)	120		210	210		480				80		80
Base Capacity (vph)	436	1873	739	320	1945	672	568	611	634	563	605	594
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.40	0.33	0.37	0.32	0.10	0.80	0.05	0.27	0.16	0.03	0.12

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	730	240	105	555	60	420	30	160	70	15	55
Future Volume (veh/h)	75	730	240	105	555	60	420	30	160	70	15	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	77	753	247	117	617	67	452	32	172	89	19	70
Peak Hour Factor	0.97	0.97	0.97	0.90	0.90	0.90	0.93	0.93	0.93	0.79	0.79	0.79
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	366	1929	599	311	2007	623	595	644	546	527	608	515
Arrive On Green	0.04	0.38	0.38	0.06	0.39	0.39	0.07	0.34	0.34	0.05	0.32	0.32
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	77	753	247	117	617	67	452	32	172	89	19	70
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	3.2	12.9	13.8	4.8	10.0	3.2	8.0	1.4	9.6	4.0	0.8	3.7
Cycle Q Clear(g_c), s	3.2	12.9	13.8	4.8	10.0	3.2	8.0	1.4	9.6	4.0	0.8	3.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	366	1929	599	311	2007	623	595	644	546	527	608	515
V/C Ratio(X)	0.21	0.39	0.41	0.38	0.31	0.11	0.76	0.05	0.32	0.17	0.03	0.14
Avail Cap(c_a), veh/h	473	1929	599	331	2007	623	595	644	546	562	608	515
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.6	27.3	27.5	21.5	25.1	23.1	32.2	26.2	28.9	24.9	27.6	28.6
Incr Delay (d2), s/veh	0.3	0.6	2.1	0.8	0.4	0.3	5.7	0.1	1.5	0.1	0.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	5.2	5.6	2.0	4.0	1.3	8.6	0.6	3.9	1.7	0.4	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.8	27.8	29.6	22.2	25.5	23.4	37.9	26.4	30.4	25.0	27.7	29.1
LnGrp LOS	C	C	C	C	C	C	D	C	C	C	C	C
Approach Vol, veh/h		1077			801			656			178	
Approach Delay, s/veh		27.8			24.9			35.4			26.9	
Approach LOS		C			C			D			C	

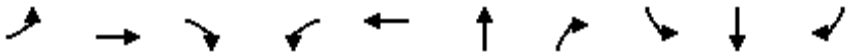
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.7	51.3	13.0	44.0	9.8	53.2	10.7	46.3
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0
Max Green Setting (Gmax), s	8.0	44.0	8.0	39.0	12.0	40.0	8.0	39.0
Max Q Clear Time (g_c+I1), s	6.8	15.8	10.0	5.7	5.2	12.0	6.0	11.6
Green Ext Time (p_c), s	0.0	6.3	0.0	0.3	0.1	4.5	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	28.7
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	90	945	25	105	615	35	10	80	25	5	35
Future Volume (vph)	90	945	25	105	615	35	10	80	25	5	35
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		8			4	
Permitted Phases	2		2	6		8		8	4		4
Detector Phase	5	2	2	1	6	8	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	13.0	63.0	63.0	13.0	63.0	44.0	44.0	44.0	44.0	44.0	44.0
Total Split (%)	10.8%	52.5%	52.5%	10.8%	52.5%	36.7%	36.7%	36.7%	36.7%	36.7%	36.7%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	C-Max	C-Max	None	C-Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	65.9	57.4	57.4	66.1	57.5		39.0	39.0	39.0	39.0	39.0
Actuated g/C Ratio	0.55	0.48	0.48	0.55	0.48		0.32	0.32	0.32	0.32	0.32
v/c Ratio	0.22	0.42	0.03	0.34	0.28		0.11	0.16	0.06	0.01	0.07
Control Delay	5.7	17.7	3.5	12.8	9.0		29.2	6.5	28.6	27.6	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	5.7	17.7	3.5	12.8	9.0		29.2	6.5	28.6	27.6	1.4
LOS	A	B	A	B	A		C	A	C	C	A
Approach Delay		16.3			9.5		14.7			13.7	
Approach LOS		B			A		B			B	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 61 (51%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.42	
Intersection Signal Delay: 13.6	Intersection LOS: B
Intersection Capacity Utilization 46.5%	ICU Level of Service A
Analysis Period (min) 15	

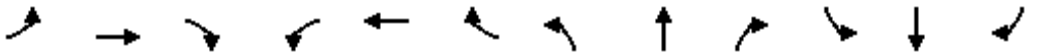
Splits and Phases: 2: Alkire St & Ken Caryl Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	97	1016	27	107	679	53	93	27	5	38
v/c Ratio	0.22	0.42	0.03	0.34	0.28	0.11	0.16	0.06	0.01	0.07
Control Delay	5.7	17.7	3.5	12.8	9.0	29.2	6.5	28.6	27.6	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.7	17.7	3.5	12.8	9.0	29.2	6.5	28.6	27.6	1.4
Queue Length 50th (ft)	9	238	3	16	35	29	0	14	3	0
Queue Length 95th (ft)	15	275	16	m42	42	57	34	37	12	6
Internal Link Dist (ft)		376			477	264			636	
Turn Bay Length (ft)	140		240	185			110	60		125
Base Capacity (vph)	440	2431	790	319	2416	498	577	437	605	563
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.42	0.03	0.34	0.28	0.11	0.16	0.06	0.01	0.07

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	945	25	105	615	50	35	10	80	25	5	35
Future Volume (veh/h)	90	945	25	105	615	50	35	10	80	25	5	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	97	1016	27	107	628	51	41	12	93	27	5	38
Peak Hour Factor	0.93	0.93	0.93	0.98	0.98	0.98	0.86	0.86	0.86	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	457	2536	787	341	2407	194	413	114	515	448	608	515
Arrive On Green	0.04	0.50	0.50	0.05	0.50	0.50	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1781	5106	1585	1781	4816	388	1107	352	1585	1289	1870	1585
Grp Volume(v), veh/h	97	1016	27	107	442	237	53	0	93	27	5	38
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1800	1459	0	1585	1289	1870	1585
Q Serve(g_s), s	3.2	15.0	1.0	3.5	9.0	9.1	2.3	0.0	5.0	1.8	0.2	2.0
Cycle Q Clear(g_c), s	3.2	15.0	1.0	3.5	9.0	9.1	2.9	0.0	5.0	4.7	0.2	2.0
Prop In Lane	1.00		1.00	1.00		0.22	0.77		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	457	2536	787	341	1701	900	527	0	515	448	608	515
V/C Ratio(X)	0.21	0.40	0.03	0.31	0.26	0.26	0.10	0.00	0.18	0.06	0.01	0.07
Avail Cap(c_a), veh/h	501	2536	787	380	1701	900	527	0	515	448	608	515
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.9	19.0	15.5	14.6	17.3	17.3	28.3	0.0	29.0	30.0	27.4	28.0
Incr Delay (d2), s/veh	0.2	0.5	0.1	0.5	0.4	0.7	0.4	0.0	0.8	0.3	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	5.8	0.4	1.4	3.5	3.8	1.1	0.0	2.1	0.6	0.1	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.1	19.5	15.5	15.1	17.6	18.0	28.7	0.0	29.8	30.2	27.4	28.3
LnGrp LOS	B	B	B	B	B	B	C	A	C	C	C	C
Approach Vol, veh/h		1140			786			146			70	
Approach Delay, s/veh		18.9			17.4			29.4			29.0	
Approach LOS		B			B			C			C	

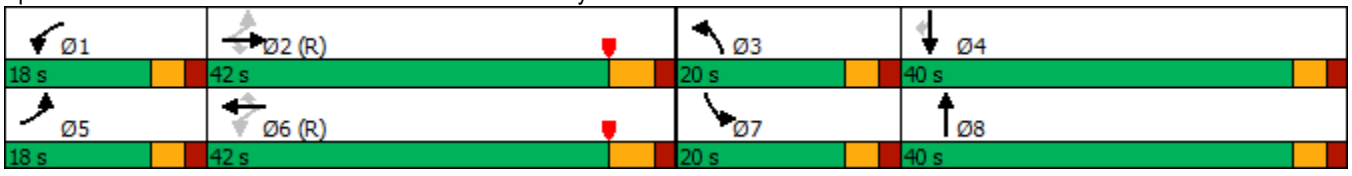
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.4	65.6		44.0	10.0	66.0		44.0				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	8.0	57.0		39.0	8.0	57.0		39.0				
Max Q Clear Time (g_c+I1), s	5.5	17.0		6.7	5.2	11.1		7.0				
Green Ext Time (p_c), s	0.0	8.4		0.2	0.0	4.6		0.6				

Intersection Summary			
HCM 6th Ctrl Delay		19.4	
HCM 6th LOS		B	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	315	435	185	50	400	100	155	245	180	240	270
Future Volume (vph)	315	435	185	50	400	100	155	245	180	240	270
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8	7	4	
Permitted Phases	2		2	6		6					4
Detector Phase	5	2	2	1	6	6	3	8	7	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	24.0	10.0	23.0	10.0	23.0	23.0
Total Split (s)	18.0	42.0	42.0	18.0	42.0	42.0	20.0	40.0	20.0	40.0	40.0
Total Split (%)	15.0%	35.0%	35.0%	15.0%	35.0%	35.0%	16.7%	33.3%	16.7%	33.3%	33.3%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	Max	Max
Act Effct Green (s)	54.6	43.6	43.6	44.5	36.0	36.0	11.2	38.0	12.0	38.8	38.8
Actuated g/C Ratio	0.46	0.36	0.36	0.37	0.30	0.30	0.09	0.32	0.10	0.32	0.32
v/c Ratio	0.74	0.36	0.28	0.14	0.29	0.20	0.53	0.28	0.57	0.23	0.41
Control Delay	33.9	13.3	1.5	19.6	32.8	6.6	57.6	30.3	57.8	30.8	5.4
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	33.9	13.3	1.5	19.6	32.8	6.6	57.6	30.3	57.8	30.8	5.4
LOS	C	B	A	B	C	A	E	C	E	C	A
Approach Delay		17.9			26.8			39.8		28.0	
Approach LOS		B			C			D		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 61 (51%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 26.2	Intersection LOS: C
Intersection Capacity Utilization 56.0%	ICU Level of Service B
Analysis Period (min) 15	

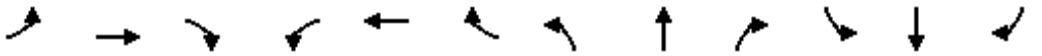
Splits and Phases: 3: Chatfield Ave/Simms St & Ken Caryl Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	335	463	197	54	435	109	168	315	196	261	293
v/c Ratio	0.74	0.36	0.28	0.14	0.29	0.20	0.53	0.28	0.57	0.23	0.41
Control Delay	33.9	13.3	1.5	19.6	32.8	6.6	57.6	30.3	57.8	30.8	5.4
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	33.9	13.3	1.5	19.6	32.8	6.6	57.6	30.3	57.8	30.8	5.4
Queue Length 50th (ft)	92	50	0	23	94	0	64	90	75	77	0
Queue Length 95th (ft)	#193	76	0	47	125	42	98	134	112	116	64
Internal Link Dist (ft)		504			417			1207		285	
Turn Bay Length (ft)	210			300			240		225		295
Base Capacity (vph)	453	1285	700	470	1525	551	429	1106	429	1144	710
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	0.74	0.36	0.28	0.11	0.29	0.20	0.39	0.28	0.46	0.23	0.41

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	315	435	185	50	400	100	155	245	45	180	240	270
Future Volume (veh/h)	315	435	185	50	400	100	155	245	45	180	240	270
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	335	463	197	54	435	0	168	266	49	196	261	293
Peak Hour Factor	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	529	1506	672	359	1788		230	876	159	258	1066	476
Arrive On Green	0.04	0.14	0.14	0.03	0.35	0.00	0.07	0.29	0.29	0.07	0.30	0.30
Sat Flow, veh/h	1781	3554	1585	1781	5106	1585	3456	3004	545	3456	3554	1585
Grp Volume(v), veh/h	335	463	197	54	435	0	168	156	159	196	261	293
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1702	1585	1728	1777	1772	1728	1777	1585
Q Serve(g_s), s	13.0	14.1	13.4	2.3	7.3	0.0	5.7	8.2	8.4	6.7	6.7	19.0
Cycle Q Clear(g_c), s	13.0	14.1	13.4	2.3	7.3	0.0	5.7	8.2	8.4	6.7	6.7	19.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.31	1.00		1.00
Lane Grp Cap(c), veh/h	529	1506	672	359	1788		230	518	517	258	1066	476
V/C Ratio(X)	0.63	0.31	0.29	0.15	0.24		0.73	0.30	0.31	0.76	0.24	0.62
Avail Cap(c_a), veh/h	529	1506	672	490	1788		432	518	517	432	1066	476
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.96	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.8	35.8	35.5	23.5	27.7	0.0	55.0	33.0	33.1	54.5	31.7	36.1
Incr Delay (d2), s/veh	2.4	0.5	1.1	0.2	0.3	0.0	4.5	1.5	1.5	4.5	0.5	5.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	6.8	5.9	1.0	3.0	0.0	2.6	3.7	3.8	3.0	2.9	8.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.1	36.3	36.6	23.7	28.0	0.0	59.4	34.5	34.6	59.0	32.3	41.9
LnGrp LOS	C	D	D	C	C		E	C	C	E	C	D
Approach Vol, veh/h		995			489	A		483			750	
Approach Delay, s/veh		32.6			27.5			43.2			43.0	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.2	56.9	13.0	41.0	18.0	48.0	14.0	40.0
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0
Max Green Setting (Gmax), s	13.0	36.0	15.0	35.0	13.0	36.0	15.0	35.0
Max Q Clear Time (g_c+I1), s	4.3	16.1	7.7	21.0	15.0	9.3	8.7	10.4
Green Ext Time (p_c), s	0.0	3.4	0.3	2.2	0.0	2.8	0.3	1.7

Intersection Summary	
HCM 6th Ctrl Delay	36.5
HCM 6th LOS	D

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

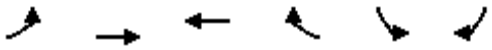
Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Configurations					
Traffic Volume (vph)	105	820	740	85	115
Future Volume (vph)	105	820	740	85	115
Turn Type	pm+pt	NA	NA	Perm	Prot
Protected Phases	5	2	6		4
Permitted Phases	2			6	
Detector Phase	5	2	6	6	4
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	24.0	23.0
Total Split (s)	15.0	90.0	75.0	75.0	30.0
Total Split (%)	12.5%	75.0%	62.5%	62.5%	25.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	6.0	5.0
Lead/Lag	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	Max
Act Effct Green (s)	85.0	84.0	71.1	71.1	25.0
Actuated g/C Ratio	0.71	0.70	0.59	0.59	0.21
v/c Ratio	0.24	0.25	0.27	0.09	0.60
Control Delay	4.5	2.5	12.3	3.7	44.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.5	2.5	12.3	3.7	44.5
LOS	A	A	B	A	D
Approach Delay		2.7	11.5		44.5
Approach LOS		A	B		D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 61 (51%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 10.9	Intersection LOS: B
Intersection Capacity Utilization 45.6%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Ken Caryl Ave & 12300 Block

Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	114	891	804	92	228
v/c Ratio	0.24	0.25	0.27	0.09	0.60
Control Delay	4.5	2.5	12.3	3.7	44.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.5	2.5	12.3	3.7	44.5
Queue Length 50th (ft)	7	20	89	0	139
Queue Length 95th (ft)	20	39	120	10	226
Internal Link Dist (ft)		120	504		188
Turn Bay Length (ft)	100				
Base Capacity (vph)	494	3559	3012	975	379
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.23	0.25	0.27	0.09	0.60

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	105	820	740	85	115	95
Future Volume (veh/h)	105	820	740	85	115	95
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1900	1900
Adj Flow Rate, veh/h	114	891	804	92	125	103
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	516	3574	3154	979	192	158
Arrive On Green	0.04	0.70	1.00	1.00	0.21	0.21
Sat Flow, veh/h	1781	5274	5274	1585	921	759
Grp Volume(v), veh/h	114	891	804	92	229	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1702	1585	1688	0
Q Serve(g_s), s	2.7	7.6	0.0	0.0	14.9	0.0
Cycle Q Clear(g_c), s	2.7	7.6	0.0	0.0	14.9	0.0
Prop In Lane	1.00			1.00	0.55	0.45
Lane Grp Cap(c), veh/h	516	3574	3154	979	352	0
V/C Ratio(X)	0.22	0.25	0.25	0.09	0.65	0.00
Avail Cap(c_a), veh/h	592	3574	3154	979	352	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.94	0.94	1.00	0.00
Uniform Delay (d), s/veh	6.8	6.5	0.0	0.0	43.5	0.0
Incr Delay (d2), s/veh	0.2	0.2	0.2	0.2	9.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	2.4	0.1	0.0	7.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.0	6.7	0.2	0.2	52.5	0.0
LnGrp LOS	A	A	A	A	D	A
Approach Vol, veh/h		1005	896		229	
Approach Delay, s/veh		6.7	0.2		52.5	
Approach LOS		A	A		D	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		90.0		30.0	9.9	80.1
Change Period (Y+Rc), s		6.0		5.0	5.0	6.0
Max Green Setting (Gmax), s		84.0		25.0	10.0	69.0
Max Q Clear Time (g_c+I1), s		9.6		16.9	4.7	2.0
Green Ext Time (p_c), s		7.2		0.4	0.1	6.6

Intersection Summary	
HCM 6th Ctrl Delay	8.9
HCM 6th LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	3	49	28	3	58	33
Future Volume (Veh/h)	3	49	28	3	58	33
Sign Control	Stop			Stop	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	4	58	33	4	68	39
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)					403	
pX, platoon unblocked						
vC, conflicting volume	175	0	216	156	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	175	0	216	156	0	
tC, single (s)	6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3	3.5	4.0	2.2	
p0 queue free %	99	95	95	99	96	
cM capacity (veh/h)	688	1085	676	706	1623	

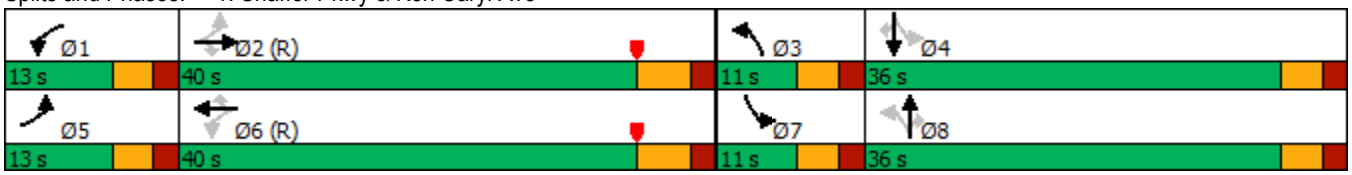
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	62	37	107
Volume Left	0	33	68
Volume Right	58	0	39
cSH	1046	679	1623
Volume to Capacity	0.06	0.05	0.04
Queue Length 95th (ft)	5	4	3
Control Delay (s)	8.7	10.6	4.8
Lane LOS	A	B	A
Approach Delay (s)	8.7	10.6	4.8
Approach LOS	A	B	

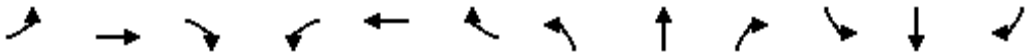
Intersection Summary			
Average Delay	7.0		
Intersection Capacity Utilization	20.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	815	375	115	535	65	195	20	90	50	15	45
Future Volume (vph)	65	815	375	115	535	65	195	20	90	50	15	45
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	24.0	10.0	23.0	23.0	10.0	23.0	23.0
Total Split (s)	13.0	40.0	40.0	13.0	40.0	40.0	11.0	36.0	36.0	11.0	36.0	36.0
Total Split (%)	13.0%	40.0%	40.0%	13.0%	40.0%	40.0%	11.0%	36.0%	36.0%	11.0%	36.0%	36.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Act Effct Green (s)	42.5	34.3	34.3	44.3	36.9	36.9	38.0	33.2	33.2	36.9	31.0	31.0
Actuated g/C Ratio	0.42	0.34	0.34	0.44	0.37	0.37	0.38	0.33	0.33	0.37	0.31	0.31
v/c Ratio	0.19	0.54	0.53	0.47	0.31	0.11	0.40	0.04	0.16	0.11	0.03	0.09
Control Delay	15.6	28.1	5.0	35.0	11.8	1.4	23.3	24.4	2.2	18.2	24.3	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.6	28.1	5.0	35.0	11.8	1.4	23.3	24.4	2.2	18.2	24.3	0.3
LOS	B	C	A	D	B	A	C	C	A	B	C	A
Approach Delay		20.5			14.6			17.1			11.6	
Approach LOS		C			B			B			B	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 39 (39%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.54	
Intersection Signal Delay: 18.0	Intersection LOS: B
Intersection Capacity Utilization 52.9%	ICU Level of Service A
Analysis Period (min) 15	

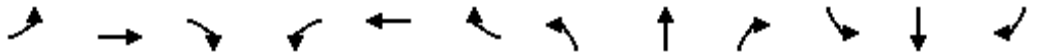
Splits and Phases: 1: Shaffer Pkwy & Ken Caryl Ave





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	76	948	436	126	588	71	214	22	99	57	17	52
v/c Ratio	0.19	0.54	0.53	0.47	0.31	0.11	0.40	0.04	0.16	0.11	0.03	0.09
Control Delay	15.6	28.1	5.0	35.0	11.8	1.4	23.3	24.4	2.2	18.2	24.3	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.6	28.1	5.0	35.0	11.8	1.4	23.3	24.4	2.2	18.2	24.3	0.3
Queue Length 50th (ft)	25	178	0	49	28	1	88	10	0	21	8	0
Queue Length 95th (ft)	48	208	52	107	73	0	142	28	16	44	23	0
Internal Link Dist (ft)		1058			341			383			323	
Turn Bay Length (ft)	120		210	210		480				80		80
Base Capacity (vph)	407	1741	828	272	1874	666	534	618	620	535	577	588
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.54	0.53	0.46	0.31	0.11	0.40	0.04	0.16	0.11	0.03	0.09

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	815	375	115	535	65	195	20	90	50	15	45
Future Volume (veh/h)	65	815	375	115	535	65	195	20	90	50	15	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	76	948	436	126	588	71	214	22	99	57	17	52
Peak Hour Factor	0.86	0.86	0.86	0.91	0.91	0.91	0.91	0.91	0.91	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	379	1825	566	266	1920	596	583	618	523	537	580	491
Arrive On Green	0.04	0.36	0.36	0.06	0.38	0.38	0.06	0.33	0.33	0.04	0.31	0.31
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	76	948	436	126	588	71	214	22	99	57	17	52
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	2.7	14.7	24.4	4.4	8.1	2.9	6.0	0.8	4.5	2.1	0.6	2.3
Cycle Q Clear(g_c), s	2.7	14.7	24.4	4.4	8.1	2.9	6.0	0.8	4.5	2.1	0.6	2.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	379	1825	566	266	1920	596	583	618	523	537	580	491
V/C Ratio(X)	0.20	0.52	0.77	0.47	0.31	0.12	0.37	0.04	0.19	0.11	0.03	0.11
Avail Cap(c_a), veh/h	443	1825	566	297	1920	596	583	618	523	573	580	491
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.9	25.4	28.5	19.7	22.0	20.4	22.8	22.7	23.9	21.8	24.0	24.6
Incr Delay (d2), s/veh	0.3	1.1	9.7	1.3	0.4	0.4	0.4	0.1	0.8	0.1	0.1	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	5.8	10.5	1.8	3.2	1.1	3.7	0.4	1.8	0.9	0.3	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.2	26.4	38.2	21.0	22.4	20.8	23.2	22.8	24.7	21.9	24.1	25.0
LnGrp LOS	B	C	D	C	C	C	C	C	C	C	C	C
Approach Vol, veh/h		1460			785			335			126	
Approach Delay, s/veh		29.6			22.0			23.6			23.5	
Approach LOS		C			C			C			C	

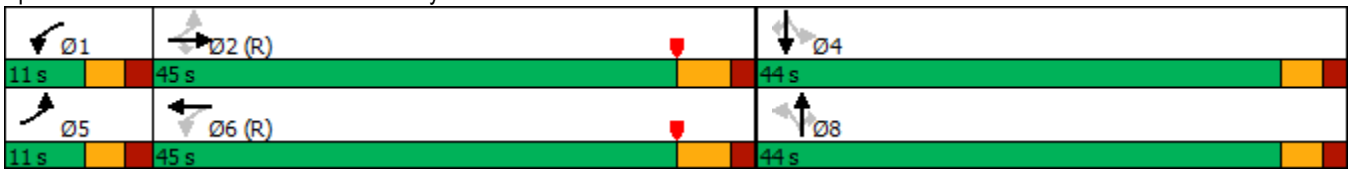
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.3	41.7	11.0	36.0	9.4	43.6	9.0	38.0
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0
Max Green Setting (Gmax), s	8.0	34.0	6.0	31.0	8.0	34.0	6.0	31.0
Max Q Clear Time (g_c+I1), s	6.4	26.4	8.0	4.3	4.7	10.1	4.1	6.5
Green Ext Time (p_c), s	0.0	4.4	0.0	0.2	0.0	4.1	0.0	0.4

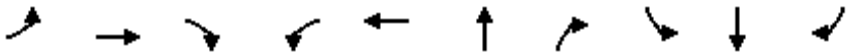
Intersection Summary	
HCM 6th Ctrl Delay	26.4
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	25	885	20	80	565	30	5	40	35	5	85
Future Volume (vph)	25	885	20	80	565	30	5	40	35	5	85
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		8			4	
Permitted Phases	2		2	6		8		8	4		4
Detector Phase	5	2	2	1	6	8	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	11.0	45.0	45.0	11.0	45.0	44.0	44.0	44.0	44.0	44.0	44.0
Total Split (%)	11.0%	45.0%	45.0%	11.0%	45.0%	44.0%	44.0%	44.0%	44.0%	44.0%	44.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	C-Max	C-Max	None	C-Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	47.0	41.2	41.2	48.0	43.4		39.0	39.0	39.0	39.0	39.0
Actuated g/C Ratio	0.47	0.41	0.41	0.48	0.43		0.39	0.39	0.39	0.39	0.39
v/c Ratio	0.08	0.50	0.03	0.35	0.30		0.06	0.07	0.09	0.01	0.17
Control Delay	6.0	8.8	0.1	21.8	26.6		19.6	0.8	20.0	18.8	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	6.0	8.8	0.1	21.8	26.6		19.6	0.8	20.0	18.8	4.5
LOS	A	A	A	C	C		B	A	B	B	A
Approach Delay		8.5			26.0		9.7			9.4	
Approach LOS		A			C		A			A	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 48 (48%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.50	
Intersection Signal Delay: 14.8	Intersection LOS: B
Intersection Capacity Utilization 43.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Alkire St & Ken Caryl Ave

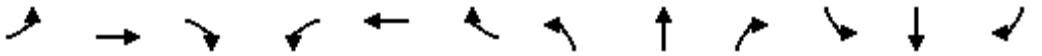




Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	30	1054	24	89	650	39	44	48	7	116
v/c Ratio	0.08	0.50	0.03	0.35	0.30	0.06	0.07	0.09	0.01	0.17
Control Delay	6.0	8.8	0.1	21.8	26.6	19.6	0.8	20.0	18.8	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.0	8.8	0.1	21.8	26.6	19.6	0.8	20.0	18.8	4.5
Queue Length 50th (ft)	3	49	0	44	156	15	0	19	3	0
Queue Length 95th (ft)	m6	56	m0	86	197	37	4	35	9	18
Internal Link Dist (ft)		376			477	264			636	
Turn Bay Length (ft)	140		240	185			110	60		125
Base Capacity (vph)	394	2095	696	252	2199	603	670	531	726	688
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.50	0.03	0.35	0.30	0.06	0.07	0.09	0.01	0.17

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	885	20	80	565	20	30	5	40	35	5	85
Future Volume (veh/h)	25	885	20	80	565	20	30	5	40	35	5	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	30	1054	24	89	628	22	33	6	44	48	7	116
Peak Hour Factor	0.84	0.84	0.84	0.90	0.90	0.90	0.90	0.90	0.90	0.73	0.73	0.73
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	388	2064	641	284	2136	75	503	86	618	578	729	618
Arrive On Green	0.03	0.40	0.40	0.05	0.42	0.42	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h	1781	5106	1585	1781	5066	177	1118	221	1585	1355	1870	1585
Grp Volume(v), veh/h	30	1054	24	89	421	229	39	0	44	48	7	116
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1839	1339	0	1585	1355	1870	1585
Q Serve(g_s), s	1.0	15.5	0.9	2.9	8.2	8.2	1.3	0.0	1.7	2.3	0.2	4.8
Cycle Q Clear(g_c), s	1.0	15.5	0.9	2.9	8.2	8.2	1.7	0.0	1.7	4.0	0.2	4.8
Prop In Lane	1.00		1.00	1.00		0.10	0.85		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	388	2064	641	284	1436	775	589	0	618	578	729	618
V/C Ratio(X)	0.08	0.51	0.04	0.31	0.29	0.29	0.07	0.00	0.07	0.08	0.01	0.19
Avail Cap(c_a), veh/h	444	2064	641	309	1436	775	589	0	618	578	729	618
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.6	22.4	18.0	17.4	19.1	19.1	19.1	0.0	19.1	20.4	18.7	20.1
Incr Delay (d2), s/veh	0.1	0.9	0.1	0.6	0.5	1.0	0.2	0.0	0.2	0.3	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	6.0	0.3	1.2	3.2	3.5	0.6	0.0	0.7	0.8	0.1	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.7	23.3	18.1	18.0	19.6	20.1	19.3	0.0	19.4	20.7	18.7	20.7
LnGrp LOS	B	C	B	B	B	C	B	A	B	C	B	C
Approach Vol, veh/h		1108			739			83			171	
Approach Delay, s/veh		23.0			19.6			19.3			20.6	
Approach LOS		C			B			B			C	

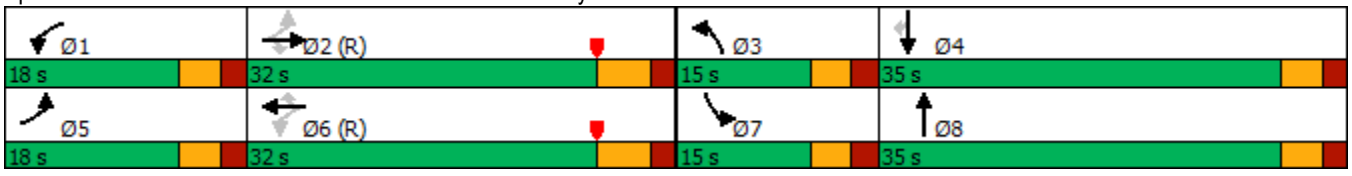
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.6	46.4		44.0	7.8	48.2		44.0				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	39.0		39.0	6.0	39.0		39.0				
Max Q Clear Time (g_c+I1), s	4.9	17.5		6.8	3.0	10.2		3.7				
Green Ext Time (p_c), s	0.0	7.4		0.6	0.0	4.1		0.4				

Intersection Summary			
HCM 6th Ctrl Delay		21.4	
HCM 6th LOS		C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	270	510	140	55	330	285	85	355	160	305	255
Future Volume (vph)	270	510	140	55	330	285	85	355	160	305	255
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8	7	4	
Permitted Phases	2		2	6		6					4
Detector Phase	5	2	2	1	6	6	3	8	7	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	24.0	10.0	23.0	10.0	23.0	23.0
Total Split (s)	18.0	32.0	32.0	18.0	32.0	32.0	15.0	35.0	15.0	35.0	35.0
Total Split (%)	18.0%	32.0%	32.0%	18.0%	32.0%	32.0%	15.0%	35.0%	15.0%	35.0%	35.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	Max	Max
Act Effct Green (s)	44.6	33.5	33.5	34.6	26.0	26.0	8.5	30.4	9.6	31.5	31.5
Actuated g/C Ratio	0.45	0.34	0.34	0.35	0.26	0.26	0.08	0.30	0.10	0.32	0.32
v/c Ratio	0.73	0.56	0.28	0.21	0.29	0.52	0.40	0.49	0.61	0.34	0.44
Control Delay	21.8	11.2	2.0	18.1	30.4	7.2	47.0	29.9	51.8	27.7	5.3
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	21.8	11.2	2.0	18.1	30.4	7.2	47.0	29.9	51.8	27.7	5.3
LOS	C	B	A	B	C	A	D	C	D	C	A
Approach Delay		12.9			19.5			33.0		25.1	
Approach LOS		B			B			C		C	

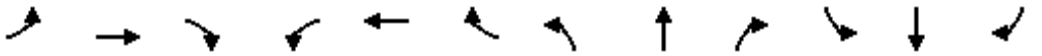
Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 82 (82%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 21.1	Intersection LOS: C
Intersection Capacity Utilization 56.7%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: Chatfield Ave/Simms St & Ken Caryl Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	351	662	182	65	388	335	115	521	200	381	319
v/c Ratio	0.73	0.56	0.28	0.21	0.29	0.52	0.40	0.49	0.61	0.34	0.44
Control Delay	21.8	11.2	2.0	18.1	30.4	7.2	47.0	29.9	51.8	27.7	5.3
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	21.8	11.2	2.0	18.1	30.4	7.2	47.0	29.9	51.8	27.7	5.3
Queue Length 50th (ft)	57	92	0	23	72	6	36	140	63	97	0
Queue Length 95th (ft)	97	140	6	45	94	59	52	150	88	123	36
Internal Link Dist (ft)		504			417			1207		285	
Turn Bay Length (ft)	210			300			240		225		295
Base Capacity (vph)	480	1186	651	402	1323	650	343	1070	343	1114	717
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	0.73	0.56	0.28	0.16	0.29	0.52	0.34	0.49	0.58	0.34	0.44

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	270	510	140	55	330	285	85	355	30	160	305	255
Future Volume (veh/h)	270	510	140	55	330	285	85	355	30	160	305	255
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	351	662	182	65	388	0	115	480	41	200	381	319
Peak Hour Factor	0.77	0.77	0.77	0.85	0.85	0.85	0.74	0.74	0.74	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	526	1317	587	331	1441		178	994	85	269	1159	517
Arrive On Green	0.26	0.74	0.74	0.04	0.28	0.00	0.05	0.30	0.30	0.08	0.33	0.33
Sat Flow, veh/h	1781	3554	1585	1781	5106	1585	3456	3314	282	3456	3554	1585
Grp Volume(v), veh/h	351	662	182	65	388	0	115	257	264	200	381	319
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1702	1585	1728	1777	1820	1728	1777	1585
Q Serve(g_s), s	13.0	7.7	3.9	2.6	5.9	0.0	3.3	11.8	11.9	5.7	8.1	17.0
Cycle Q Clear(g_c), s	13.0	7.7	3.9	2.6	5.9	0.0	3.3	11.8	11.9	5.7	8.1	17.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	526	1317	587	331	1441		178	533	546	269	1159	517
V/C Ratio(X)	0.67	0.50	0.31	0.20	0.27		0.65	0.48	0.48	0.74	0.33	0.62
Avail Cap(c_a), veh/h	526	1317	587	488	1441		346	533	546	346	1159	517
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.9	9.2	8.7	23.7	27.9	0.0	46.5	28.6	28.7	45.1	25.4	28.4
Incr Delay (d2), s/veh	3.1	1.3	1.3	0.3	0.5	0.0	3.9	3.1	3.1	6.3	0.8	5.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	2.3	1.3	1.1	2.4	0.0	1.5	5.3	5.4	2.6	3.4	6.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.0	10.5	10.0	24.0	28.3	0.0	50.4	31.7	31.7	51.4	26.2	33.9
LnGrp LOS	C	B	A	C	C		D	C	C	D	C	C
Approach Vol, veh/h		1195			453	A		636			900	
Approach Delay, s/veh		13.8			27.7			35.1			34.5	
Approach LOS		B			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.2	43.0	10.2	37.6	18.0	34.2	12.8	35.0
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0
Max Green Setting (Gmax), s	13.0	26.0	10.0	30.0	13.0	26.0	10.0	30.0
Max Q Clear Time (g_c+I1), s	4.6	9.7	5.3	19.0	15.0	7.9	7.7	13.9
Green Ext Time (p_c), s	0.1	4.4	0.1	2.7	0.0	2.2	0.1	2.6

Intersection Summary	
HCM 6th Ctrl Delay	25.9
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

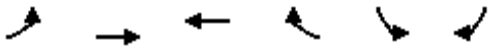
Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Configurations					
Traffic Volume (vph)	55	885	625	45	35
Future Volume (vph)	55	885	625	45	35
Turn Type	pm+pt	NA	NA	Perm	Prot
Protected Phases	5	2	6		4
Permitted Phases	2			6	
Detector Phase	5	2	6	6	4
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	24.0	23.0
Total Split (s)	13.0	75.0	62.0	62.0	25.0
Total Split (%)	13.0%	75.0%	62.0%	62.0%	25.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	6.0	5.0
Lead/Lag	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	Max
Act Effct Green (s)	70.0	69.0	59.5	59.5	20.0
Actuated g/C Ratio	0.70	0.69	0.60	0.60	0.20
v/c Ratio	0.12	0.29	0.23	0.05	0.21
Control Delay	2.9	5.2	4.7	1.0	21.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.9	5.2	4.7	1.0	21.7
LOS	A	A	A	A	C
Approach Delay		5.1	4.5		21.7
Approach LOS		A	A		C

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 5 (5%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.29	
Intersection Signal Delay: 5.5	Intersection LOS: A
Intersection Capacity Utilization 33.7%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Ken Caryl Ave

Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	63	1006	710	51	76
v/c Ratio	0.12	0.29	0.23	0.05	0.21
Control Delay	2.9	5.2	4.7	1.0	21.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.9	5.2	4.7	1.0	21.7
Queue Length 50th (ft)	8	49	27	0	22
Queue Length 95th (ft)	16	57	50	2	56
Internal Link Dist (ft)		120	504		188
Turn Bay Length (ft)	100				
Base Capacity (vph)	528	3508	3026	963	368
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.12	0.29	0.23	0.05	0.21

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	55	885	625	45	35	30
Future Volume (veh/h)	55	885	625	45	35	30
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1900	1900
Adj Flow Rate, veh/h	62	1006	710	51	41	35
Peak Hour Factor	0.88	0.88	0.88	0.88	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	567	3523	3058	949	180	153
Arrive On Green	0.04	0.69	1.00	1.00	0.20	0.20
Sat Flow, veh/h	1781	5274	5274	1585	898	767
Grp Volume(v), veh/h	62	1006	710	51	77	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1702	1585	1687	0
Q Serve(g_s), s	1.2	7.6	0.0	0.0	3.8	0.0
Cycle Q Clear(g_c), s	1.2	7.6	0.0	0.0	3.8	0.0
Prop In Lane	1.00			1.00	0.53	0.45
Lane Grp Cap(c), veh/h	567	3523	3058	949	337	0
V/C Ratio(X)	0.11	0.29	0.23	0.05	0.23	0.00
Avail Cap(c_a), veh/h	637	3523	3058	949	337	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.94	0.94	1.00	0.00
Uniform Delay (d), s/veh	6.0	6.0	0.0	0.0	33.5	0.0
Incr Delay (d2), s/veh	0.1	0.2	0.2	0.1	1.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.3	0.0	0.0	1.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.1	6.2	0.2	0.1	35.1	0.0
LnGrp LOS	A	A	A	A	D	A
Approach Vol, veh/h		1068	761		77	
Approach Delay, s/veh		6.2	0.2		35.1	
Approach LOS		A	A		D	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		75.0		25.0	9.1	65.9
Change Period (Y+Rc), s		6.0		5.0	5.0	6.0
Max Green Setting (Gmax), s		69.0		20.0	8.0	56.0
Max Q Clear Time (g_c+I1), s		9.6		5.8	3.2	2.0
Green Ext Time (p_c), s		8.4		0.1	0.0	5.5

Intersection Summary	
HCM 6th Ctrl Delay	4.9
HCM 6th LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2	39	22	2	53	30
Future Volume (Veh/h)	2	39	22	2	53	30
Sign Control	Stop			Stop	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	2	46	26	2	62	35
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)					403	
pX, platoon unblocked						
vC, conflicting volume	159	0	188	142	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	159	0	188	142	0	
tC, single (s)	6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3	3.5	4.0	2.2	
p0 queue free %	100	96	96	100	96	
cM capacity (veh/h)	705	1085	716	721	1623	

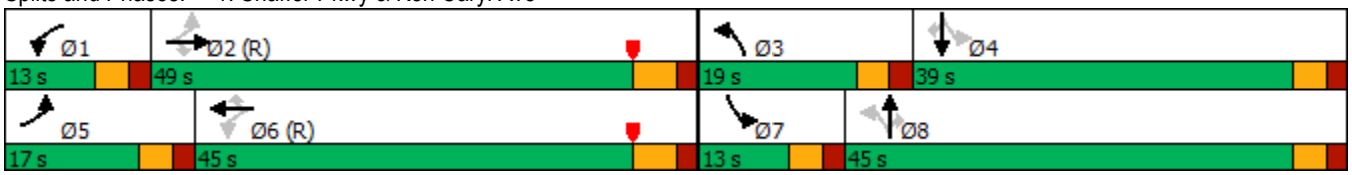
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	48	28	97
Volume Left	0	26	62
Volume Right	46	0	35
cSH	1061	716	1623
Volume to Capacity	0.05	0.04	0.04
Queue Length 95th (ft)	4	3	3
Control Delay (s)	8.6	10.2	4.8
Lane LOS	A	B	A
Approach Delay (s)	8.6	10.2	4.8
Approach LOS	A	B	

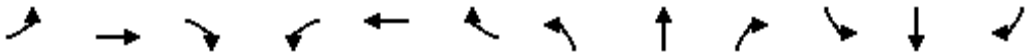
Intersection Summary			
Average Delay	6.7		
Intersection Capacity Utilization	19.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	850	300	130	645	70	490	40	200	80	20	65
Future Volume (vph)	90	850	300	130	645	70	490	40	200	80	20	65
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	24.0	10.0	23.0	23.0	10.0	23.0	23.0
Total Split (s)	17.0	49.0	49.0	13.0	45.0	45.0	19.0	45.0	45.0	13.0	39.0	39.0
Total Split (%)	14.2%	40.8%	40.8%	10.8%	37.5%	37.5%	15.8%	37.5%	37.5%	10.8%	32.5%	32.5%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Act Effct Green (s)	53.1	43.1	43.1	50.9	42.0	42.0	53.0	40.3	40.3	41.7	34.0	34.0
Actuated g/C Ratio	0.44	0.36	0.36	0.42	0.35	0.35	0.44	0.34	0.34	0.35	0.28	0.28
v/c Ratio	0.27	0.48	0.40	0.51	0.39	0.11	0.85	0.07	0.31	0.20	0.05	0.14
Control Delay	19.7	30.9	4.6	40.7	47.7	10.3	43.4	27.8	5.1	21.5	31.6	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.7	30.9	4.6	40.7	47.7	10.3	43.4	27.8	5.1	21.5	31.6	0.5
LOS	B	C	A	D	D	B	D	C	A	C	C	A
Approach Delay		23.7			43.5			32.1			14.5	
Approach LOS		C			D			C			B	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 12 (10%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 30.9	Intersection LOS: C
Intersection Capacity Utilization 70.8%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Shaffer Pkwy & Ken Caryl Ave

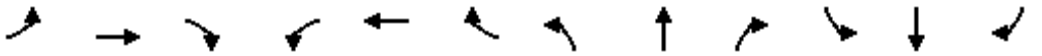




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	93	876	309	140	694	75	510	42	208	98	24	79
v/c Ratio	0.27	0.48	0.40	0.51	0.39	0.11	0.85	0.07	0.31	0.20	0.05	0.14
Control Delay	19.7	30.9	4.6	40.7	47.7	10.3	43.4	27.8	5.1	21.5	31.6	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.7	30.9	4.6	40.7	47.7	10.3	43.4	27.8	5.1	21.5	31.6	0.5
Queue Length 50th (ft)	39	191	0	102	200	7	304	22	0	44	14	0
Queue Length 95th (ft)	71	232	59	163	245	31	#479	49	53	71	32	0
Internal Link Dist (ft)		1058			341			383			323	
Turn Bay Length (ft)	120		210	210		480				80		80
Base Capacity (vph)	387	1826	766	278	1778	654	598	626	669	503	527	566
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.48	0.40	0.50	0.39	0.11	0.85	0.07	0.31	0.19	0.05	0.14

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	850	300	130	645	70	490	40	200	80	20	65
Future Volume (veh/h)	90	850	300	130	645	70	490	40	200	80	20	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	93	876	309	140	694	75	510	42	208	98	24	79
Peak Hour Factor	0.97	0.97	0.97	0.93	0.93	0.93	0.96	0.96	0.96	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	340	1838	570	283	1926	598	622	648	549	475	530	449
Arrive On Green	0.05	0.36	0.36	0.07	0.38	0.38	0.12	0.35	0.35	0.05	0.28	0.28
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	93	876	309	140	694	75	510	42	208	98	24	79
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	3.9	15.9	18.6	5.9	11.8	3.7	14.0	1.8	11.8	4.6	1.1	4.5
Cycle Q Clear(g_c), s	3.9	15.9	18.6	5.9	11.8	3.7	14.0	1.8	11.8	4.6	1.1	4.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	340	1838	570	283	1926	598	622	648	549	475	530	449
V/C Ratio(X)	0.27	0.48	0.54	0.49	0.36	0.13	0.82	0.06	0.38	0.21	0.05	0.18
Avail Cap(c_a), veh/h	434	1838	570	286	1926	598	622	648	549	499	530	449
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.7	29.7	30.5	23.0	26.9	24.4	31.5	26.2	29.5	27.9	31.2	32.4
Incr Delay (d2), s/veh	0.4	0.9	3.7	1.3	0.5	0.4	8.6	0.2	2.0	0.2	0.2	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	6.5	7.7	2.5	4.8	1.5	8.0	0.8	4.8	2.0	0.5	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.1	30.6	34.2	24.4	27.5	24.9	40.1	26.4	31.5	28.1	31.4	33.3
LnGrp LOS	C	C	C	C	C	C	D	C	C	C	C	C
Approach Vol, veh/h		1278			909			760			201	
Approach Delay, s/veh		30.9			26.8			37.0			30.6	
Approach LOS		C			C			D			C	

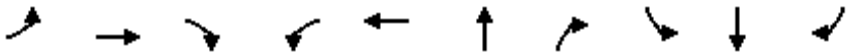
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.8	49.2	19.0	39.0	10.7	51.3	11.4	46.6
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0
Max Green Setting (Gmax), s	8.0	43.0	14.0	34.0	12.0	39.0	8.0	40.0
Max Q Clear Time (g_c+I1), s	7.9	20.6	16.0	6.5	5.9	13.8	6.6	13.8
Green Ext Time (p_c), s	0.0	7.2	0.0	0.3	0.1	5.0	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	31.1
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	90	1100	25	105	715	35	10	80	25	5	35
Future Volume (vph)	90	1100	25	105	715	35	10	80	25	5	35
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		8			4	
Permitted Phases	2		2	6		8		8	4		4
Detector Phase	5	2	2	1	6	8	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	13.0	63.0	63.0	13.0	63.0	44.0	44.0	44.0	44.0	44.0	44.0
Total Split (%)	10.8%	52.5%	52.5%	10.8%	52.5%	36.7%	36.7%	36.7%	36.7%	36.7%	36.7%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	C-Max	C-Max	None	C-Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	65.9	57.4	57.4	66.1	57.5		39.0	39.0	39.0	39.0	39.0
Actuated g/C Ratio	0.55	0.48	0.48	0.55	0.48		0.32	0.32	0.32	0.32	0.32
v/c Ratio	0.24	0.47	0.03	0.39	0.32		0.11	0.16	0.06	0.01	0.07
Control Delay	5.7	17.6	2.8	16.0	8.8		29.2	6.5	28.6	27.6	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	5.7	17.6	2.8	16.0	8.8		29.2	6.5	28.6	27.6	1.4
LOS	A	B	A	B	A		C	A	C	C	A
Approach Delay		16.4			9.7		14.7			13.7	
Approach LOS		B			A		B			B	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 61 (51%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.47	
Intersection Signal Delay: 13.7	Intersection LOS: B
Intersection Capacity Utilization 49.5%	ICU Level of Service A
Analysis Period (min) 15	

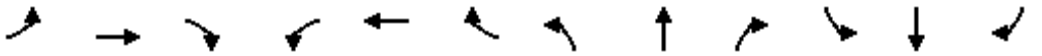
Splits and Phases: 2: Alkire St & Ken Caryl Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	94	1146	26	107	781	53	93	27	5	38
v/c Ratio	0.24	0.47	0.03	0.39	0.32	0.11	0.16	0.06	0.01	0.07
Control Delay	5.7	17.6	2.8	16.0	8.8	29.2	6.5	28.6	27.6	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.7	17.6	2.8	16.0	8.8	29.2	6.5	28.6	27.6	1.4
Queue Length 50th (ft)	8	280	3	17	41	29	0	14	3	0
Queue Length 95th (ft)	13	319	m11	m48	48	57	34	37	12	6
Internal Link Dist (ft)		376			477	264			636	
Turn Bay Length (ft)	140		240	185			110	60		125
Base Capacity (vph)	398	2431	790	282	2418	498	577	437	605	563
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.47	0.03	0.38	0.32	0.11	0.16	0.06	0.01	0.07

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	1100	25	105	715	50	35	10	80	25	5	35
Future Volume (veh/h)	90	1100	25	105	715	50	35	10	80	25	5	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	94	1146	26	107	730	51	41	12	93	27	5	38
Peak Hour Factor	0.96	0.96	0.96	0.98	0.98	0.98	0.86	0.86	0.86	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	418	2536	787	308	2441	170	413	114	515	448	608	515
Arrive On Green	0.04	0.50	0.50	0.05	0.50	0.50	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1781	5106	1585	1781	4875	339	1107	352	1585	1289	1870	1585
Grp Volume(v), veh/h	94	1146	26	107	509	272	53	0	93	27	5	38
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1809	1459	0	1585	1289	1870	1585
Q Serve(g_s), s	3.1	17.5	1.0	3.5	10.5	10.6	2.3	0.0	5.0	1.8	0.2	2.0
Cycle Q Clear(g_c), s	3.1	17.5	1.0	3.5	10.5	10.6	2.9	0.0	5.0	4.7	0.2	2.0
Prop In Lane	1.00		1.00	1.00		0.19	0.77		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	418	2536	787	308	1704	906	527	0	515	448	608	515
V/C Ratio(X)	0.22	0.45	0.03	0.35	0.30	0.30	0.10	0.00	0.18	0.06	0.01	0.07
Avail Cap(c_a), veh/h	464	2536	787	347	1704	906	527	0	515	448	608	515
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.0	19.6	15.5	15.0	17.6	17.6	28.3	0.0	29.0	30.0	27.4	28.0
Incr Delay (d2), s/veh	0.3	0.6	0.1	0.7	0.4	0.9	0.4	0.0	0.8	0.3	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	6.8	0.4	1.4	4.1	4.5	1.1	0.0	2.1	0.6	0.1	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.3	20.2	15.5	15.7	18.0	18.5	28.7	0.0	29.8	30.2	27.4	28.3
LnGrp LOS	B	C	B	B	B	B	C	A	C	C	C	C
Approach Vol, veh/h		1266			888			146			70	
Approach Delay, s/veh		19.7			17.9			29.4			29.0	
Approach LOS		B			B			C			C	

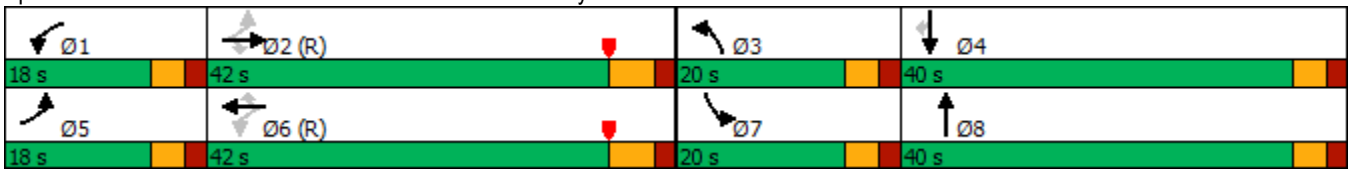
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.4	65.6		44.0	9.9	66.1		44.0				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	8.0	57.0		39.0	8.0	57.0		39.0				
Max Q Clear Time (g_c+I1), s	5.5	19.5		6.7	5.1	12.6		7.0				
Green Ext Time (p_c), s	0.0	9.7		0.2	0.0	5.5		0.6				

Intersection Summary			
HCM 6th Ctrl Delay		19.9	
HCM 6th LOS		B	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	340	505	200	55	465	110	170	265	195	260	295
Future Volume (vph)	340	505	200	55	465	110	170	265	195	260	295
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8	7	4	
Permitted Phases	2		2	6		6					4
Detector Phase	5	2	2	1	6	6	3	8	7	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	24.0	10.0	23.0	10.0	23.0	23.0
Total Split (s)	18.0	42.0	42.0	18.0	42.0	42.0	20.0	40.0	20.0	40.0	40.0
Total Split (%)	15.0%	35.0%	35.0%	15.0%	35.0%	35.0%	16.7%	33.3%	16.7%	33.3%	33.3%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	Max	Max
Act Effct Green (s)	54.5	43.4	43.4	44.7	36.0	36.0	11.6	37.7	12.3	38.4	38.4
Actuated g/C Ratio	0.45	0.36	0.36	0.37	0.30	0.30	0.10	0.31	0.10	0.32	0.32
v/c Ratio	0.82	0.41	0.29	0.16	0.32	0.21	0.54	0.30	0.59	0.24	0.43
Control Delay	44.0	13.1	1.5	19.8	33.2	6.5	57.4	30.9	58.1	31.3	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.0	13.1	1.5	19.8	33.2	6.5	57.4	30.9	58.1	31.3	5.5
LOS	D	B	A	B	C	A	E	C	E	C	A
Approach Delay		20.9			27.4			40.3		28.1	
Approach LOS		C			C			D		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 61 (51%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 27.4	Intersection LOS: C
Intersection Capacity Utilization 59.6%	ICU Level of Service B
Analysis Period (min) 15	

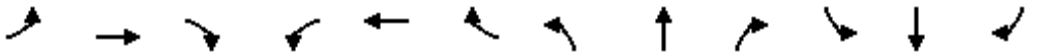
Splits and Phases: 3: Chatfield Ave/Simms St & Ken Caryl Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	351	521	206	58	489	116	179	326	205	274	311
v/c Ratio	0.82	0.41	0.29	0.16	0.32	0.21	0.54	0.30	0.59	0.24	0.43
Control Delay	44.0	13.1	1.5	19.8	33.2	6.5	57.4	30.9	58.1	31.3	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.0	13.1	1.5	19.8	33.2	6.5	57.4	30.9	58.1	31.3	5.5
Queue Length 50th (ft)	121	55	1	25	107	0	69	95	79	82	0
Queue Length 95th (ft)	#235	82	0	50	139	43	104	140	117	123	66
Internal Link Dist (ft)		504			417			1207		285	
Turn Bay Length (ft)	210			300			240		225		295
Base Capacity (vph)	430	1281	704	443	1525	556	429	1099	429	1132	718
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	0.82	0.41	0.29	0.13	0.32	0.21	0.42	0.30	0.48	0.24	0.43

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	340	505	200	55	465	110	170	265	45	195	260	295
Future Volume (veh/h)	340	505	200	55	465	110	170	265	45	195	260	295
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	351	521	206	58	489	0	179	279	47	205	274	311
Peak Hour Factor	0.97	0.97	0.97	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	506	1494	666	333	1775		241	889	148	267	1064	474
Arrive On Green	0.04	0.14	0.14	0.04	0.35	0.00	0.07	0.29	0.29	0.08	0.30	0.30
Sat Flow, veh/h	1781	3554	1585	1781	5106	1585	3456	3049	507	3456	3554	1585
Grp Volume(v), veh/h	351	521	206	58	489	0	179	161	165	205	274	311
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1702	1585	1728	1777	1779	1728	1777	1585
Q Serve(g_s), s	13.0	15.9	14.0	2.5	8.3	0.0	6.1	8.5	8.7	7.0	7.0	20.5
Cycle Q Clear(g_c), s	13.0	15.9	14.0	2.5	8.3	0.0	6.1	8.5	8.7	7.0	7.0	20.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.29	1.00		1.00
Lane Grp Cap(c), veh/h	506	1494	666	333	1775		241	518	519	267	1064	474
V/C Ratio(X)	0.69	0.35	0.31	0.17	0.28		0.74	0.31	0.32	0.77	0.26	0.66
Avail Cap(c_a), veh/h	506	1494	666	462	1775		432	518	519	432	1064	474
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.94	0.94	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.1	36.8	36.0	23.8	28.2	0.0	54.8	33.1	33.2	54.3	31.9	36.6
Incr Delay (d2), s/veh	3.8	0.6	1.1	0.2	0.4	0.0	4.5	1.6	1.6	4.6	0.6	6.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	7.7	6.2	1.1	3.4	0.0	2.8	3.8	3.9	3.2	3.1	8.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.9	37.4	37.1	24.1	28.6	0.0	59.3	34.7	34.8	58.9	32.5	43.6
LnGrp LOS	C	D	D	C	C		E	C	C	E	C	D
Approach Vol, veh/h		1078			547	A		505			790	
Approach Delay, s/veh		34.3			28.1			43.4			43.7	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.3	56.4	13.4	40.9	18.0	47.7	14.3	40.0
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0
Max Green Setting (Gmax), s	13.0	36.0	15.0	35.0	13.0	36.0	15.0	35.0
Max Q Clear Time (g_c+I1), s	4.5	17.9	8.1	22.5	15.0	10.3	9.0	10.7
Green Ext Time (p_c), s	0.1	3.7	0.3	2.2	0.0	3.2	0.3	1.7

Intersection Summary	
HCM 6th Ctrl Delay	37.3
HCM 6th LOS	D

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

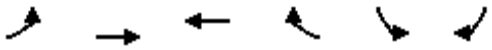
Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Configurations					
Traffic Volume (vph)	120	915	835	95	130
Future Volume (vph)	120	915	835	95	130
Turn Type	pm+pt	NA	NA	Perm	Prot
Protected Phases	5	2	6		4
Permitted Phases	2			6	
Detector Phase	5	2	6	6	4
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	24.0	23.0
Total Split (s)	15.0	89.0	74.0	74.0	31.0
Total Split (%)	12.5%	74.2%	61.7%	61.7%	25.8%
Yellow Time (s)	3.0	4.0	4.0	4.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	6.0	5.0
Lead/Lag	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	Max
Act Effct Green (s)	84.0	83.0	69.7	69.7	26.0
Actuated g/C Ratio	0.70	0.69	0.58	0.58	0.22
v/c Ratio	0.30	0.28	0.31	0.11	0.65
Control Delay	6.6	2.4	12.8	3.4	46.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	6.6	2.4	12.8	3.4	46.2
LOS	A	A	B	A	D
Approach Delay		2.9	11.9		46.2
Approach LOS		A	B		D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 61 (51%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.65	
Intersection Signal Delay: 11.3	Intersection LOS: B
Intersection Capacity Utilization 49.7%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Ken Caryl Ave

Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	130	995	908	103	255
v/c Ratio	0.30	0.28	0.31	0.11	0.65
Control Delay	6.6	2.4	12.8	3.4	46.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	6.6	2.4	12.8	3.4	46.2
Queue Length 50th (ft)	7	20	101	0	160
Queue Length 95th (ft)	38	41	133	11	252
Internal Link Dist (ft)		120	504		188
Turn Bay Length (ft)	100				
Base Capacity (vph)	445	3517	2954	962	393
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.29	0.28	0.31	0.11	0.65

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	120	915	835	95	130	105
Future Volume (veh/h)	120	915	835	95	130	105
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1900	1900
Adj Flow Rate, veh/h	130	995	908	103	141	114
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	475	3532	3098	962	202	163
Arrive On Green	0.04	0.69	1.00	1.00	0.22	0.22
Sat Flow, veh/h	1781	5274	5274	1585	930	752
Grp Volume(v), veh/h	130	995	908	103	256	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1702	1585	1689	0
Q Serve(g_s), s	3.1	9.0	0.0	0.0	16.8	0.0
Cycle Q Clear(g_c), s	3.1	9.0	0.0	0.0	16.8	0.0
Prop In Lane	1.00			1.00	0.55	0.45
Lane Grp Cap(c), veh/h	475	3532	3098	962	366	0
V/C Ratio(X)	0.27	0.28	0.29	0.11	0.70	0.00
Avail Cap(c_a), veh/h	547	3532	3098	962	366	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.92	0.92	1.00	0.00
Uniform Delay (d), s/veh	7.2	7.1	0.0	0.0	43.4	0.0
Incr Delay (d2), s/veh	0.3	0.2	0.2	0.2	10.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	2.9	0.1	0.1	8.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.5	7.3	0.2	0.2	54.0	0.0
LnGrp LOS	A	A	A	A	D	A
Approach Vol, veh/h		1125	1011		256	
Approach Delay, s/veh		7.3	0.2		54.0	
Approach LOS		A	A		D	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		89.0		31.0	10.2	78.8
Change Period (Y+Rc), s		6.0		5.0	5.0	6.0
Max Green Setting (Gmax), s		83.0		26.0	10.0	68.0
Max Q Clear Time (g_c+I1), s		11.0		18.8	5.1	2.0
Green Ext Time (p_c), s		8.3		0.5	0.1	7.8

Intersection Summary	
HCM 6th Ctrl Delay	9.3
HCM 6th LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	3	58	33	3	70	40
Future Volume (Veh/h)	3	58	33	3	70	40
Sign Control	Stop			Stop	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	4	68	39	4	82	47
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)					403	
pX, platoon unblocked						
vC, conflicting volume	211	0	258	188	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	211	0	258	188	0	
tC, single (s)	6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3	3.5	4.0	2.2	
p0 queue free %	99	94	94	99	95	
cM capacity (veh/h)	652	1085	624	671	1623	

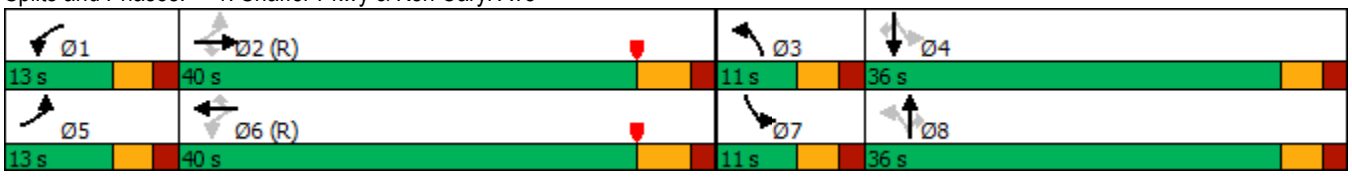
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	72	43	129
Volume Left	0	39	82
Volume Right	68	0	47
cSH	1046	628	1623
Volume to Capacity	0.07	0.07	0.05
Queue Length 95th (ft)	6	5	4
Control Delay (s)	8.7	11.2	4.8
Lane LOS	A	B	A
Approach Delay (s)	8.7	11.2	4.8
Approach LOS	A	B	

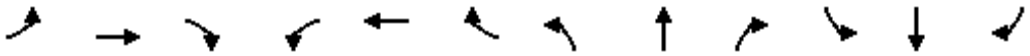
Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	21.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	749	300	95	604	76	170	22	75	88	21	135
Future Volume (vph)	88	749	300	95	604	76	170	22	75	88	21	135
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	24.0	10.0	23.0	23.0	10.0	23.0	23.0
Total Split (s)	13.0	40.0	40.0	13.0	40.0	40.0	11.0	36.0	36.0	11.0	36.0	36.0
Total Split (%)	13.0%	40.0%	40.0%	13.0%	40.0%	40.0%	11.0%	36.0%	36.0%	11.0%	36.0%	36.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Act Effct Green (s)	43.0	34.4	34.4	43.0	34.4	34.4	38.0	33.2	33.2	37.0	31.0	31.0
Actuated g/C Ratio	0.43	0.34	0.34	0.43	0.34	0.34	0.38	0.33	0.33	0.37	0.31	0.31
v/c Ratio	0.30	0.52	0.46	0.38	0.39	0.14	0.36	0.04	0.14	0.20	0.04	0.27
Control Delay	17.0	27.6	4.7	25.7	15.8	1.8	22.4	24.5	1.3	19.3	24.5	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.0	27.6	4.7	25.7	15.8	1.8	22.4	24.5	1.3	19.3	24.5	5.4
LOS	B	C	A	C	B	A	C	C	A	B	C	A
Approach Delay		20.7			15.7			16.6			12.1	
Approach LOS		C			B			B			B	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 39 (39%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.52	
Intersection Signal Delay: 17.8	Intersection LOS: B
Intersection Capacity Utilization 49.2%	ICU Level of Service A
Analysis Period (min) 15	

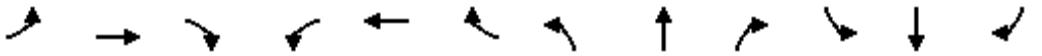
Splits and Phases: 1: Shaffer Pkwy & Ken Caryl Ave





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	106	902	361	108	686	86	193	25	85	105	25	161
v/c Ratio	0.30	0.52	0.46	0.38	0.39	0.14	0.36	0.04	0.14	0.20	0.04	0.27
Control Delay	17.0	27.6	4.7	25.7	15.8	1.8	22.4	24.5	1.3	19.3	24.5	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.0	27.6	4.7	25.7	15.8	1.8	22.4	24.5	1.3	19.3	24.5	5.4
Queue Length 50th (ft)	36	167	0	29	49	0	78	11	0	40	11	0
Queue Length 95th (ft)	61	188	42	81	97	13	125	30	6	69	28	36
Internal Link Dist (ft)		1058			341			383			323	
Turn Bay Length (ft)	120		210	210		480				80		80
Base Capacity (vph)	355	1748	781	288	1749	630	531	618	620	534	577	601
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.52	0.46	0.38	0.39	0.14	0.36	0.04	0.14	0.20	0.04	0.27

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	749	300	95	604	76	170	22	75	88	21	135
Future Volume (veh/h)	88	749	300	95	604	76	170	22	75	88	21	135
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	106	902	361	108	686	86	193	25	85	105	25	161
Peak Hour Factor	0.83	0.83	0.83	0.88	0.88	0.88	0.88	0.88	0.88	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	355	1864	579	270	1868	580	539	586	497	563	580	491
Arrive On Green	0.05	0.36	0.36	0.06	0.37	0.37	0.06	0.31	0.31	0.06	0.31	0.31
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	106	902	361	108	686	86	193	25	85	105	25	161
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	3.7	13.6	18.7	3.7	9.8	3.6	6.0	0.9	3.9	4.0	0.9	7.8
Cycle Q Clear(g_c), s	3.7	13.6	18.7	3.7	9.8	3.6	6.0	0.9	3.9	4.0	0.9	7.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	355	1864	579	270	1868	580	539	586	497	563	580	491
V/C Ratio(X)	0.30	0.48	0.62	0.40	0.37	0.15	0.36	0.04	0.17	0.19	0.04	0.33
Avail Cap(c_a), veh/h	401	1864	579	315	1868	580	539	586	497	569	580	491
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.5	24.5	26.1	19.1	23.2	21.3	22.5	23.9	24.9	21.3	24.1	26.5
Incr Delay (d2), s/veh	0.5	0.9	5.0	1.0	0.6	0.5	0.4	0.1	0.7	0.2	0.1	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	5.4	7.7	1.5	3.9	1.4	3.3	0.4	1.6	1.7	0.4	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.0	25.4	31.1	20.1	23.8	21.8	22.9	24.0	25.6	21.5	24.3	28.3
LnGrp LOS	B	C	C	C	C	C	C	C	C	C	C	C
Approach Vol, veh/h		1369			880			303			291	
Approach Delay, s/veh		26.4			23.1			23.7			25.5	
Approach LOS		C			C			C			C	

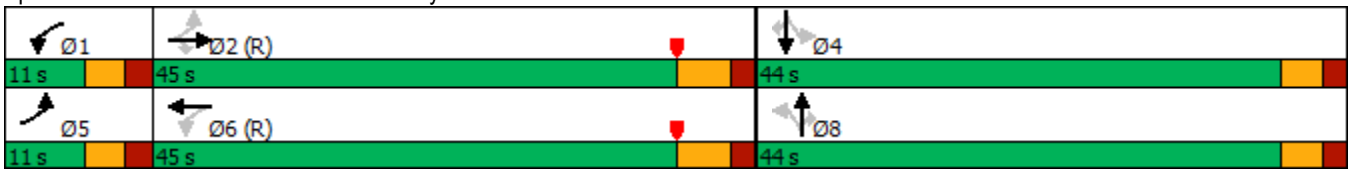
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.5	42.5	11.0	36.0	10.4	42.6	10.6	36.4
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0
Max Green Setting (Gmax), s	8.0	34.0	6.0	31.0	8.0	34.0	6.0	31.0
Max Q Clear Time (g_c+I1), s	5.7	20.7	8.0	9.8	5.7	11.8	6.0	5.9
Green Ext Time (p_c), s	0.0	6.0	0.0	0.6	0.0	4.8	0.0	0.4

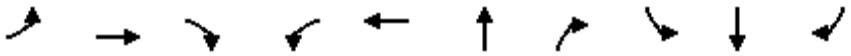
Intersection Summary	
HCM 6th Ctrl Delay	25.0
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	53	831	23	83	566	31	7	41	72	11	169
Future Volume (vph)	53	831	23	83	566	31	7	41	72	11	169
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		8			4	
Permitted Phases	2		2	6		8		8	4		4
Detector Phase	5	2	2	1	6	8	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	11.0	45.0	45.0	11.0	45.0	44.0	44.0	44.0	44.0	44.0	44.0
Total Split (%)	11.0%	45.0%	45.0%	11.0%	45.0%	44.0%	44.0%	44.0%	44.0%	44.0%	44.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	C-Max	C-Max	None	C-Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	47.0	41.2	41.2	47.0	41.2		39.0	39.0	39.0	39.0	39.0
Actuated g/C Ratio	0.47	0.41	0.41	0.47	0.41		0.39	0.39	0.39	0.39	0.39
v/c Ratio	0.18	0.49	0.04	0.37	0.33		0.07	0.07	0.19	0.02	0.31
Control Delay	7.6	10.3	0.1	19.7	25.4		19.7	1.1	21.3	19.0	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	7.6	10.3	0.1	19.7	25.4		19.7	1.1	21.3	19.0	3.9
LOS	A	B	A	B	C		B	A	C	B	A
Approach Delay		9.9			24.7		9.9			9.5	
Approach LOS		A			C		A			A	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 48 (48%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.49	
Intersection Signal Delay: 14.8	Intersection LOS: B
Intersection Capacity Utilization 44.6%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Alkire St & Ken Caryl Ave

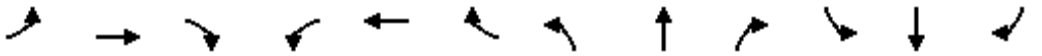




Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	65	1026	28	95	688	42	46	99	15	232
v/c Ratio	0.18	0.49	0.04	0.37	0.33	0.07	0.07	0.19	0.02	0.31
Control Delay	7.6	10.3	0.1	19.7	25.4	19.7	1.1	21.3	19.0	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.6	10.3	0.1	19.7	25.4	19.7	1.1	21.3	19.0	3.9
Queue Length 50th (ft)	9	59	0	42	151	17	0	41	6	0
Queue Length 95th (ft)	16	63	m0	77	182	39	6	62	15	19
Internal Link Dist (ft)		376			477	264			636	
Turn Bay Length (ft)	140		240	185			110	60		125
Base Capacity (vph)	367	2095	696	260	2084	604	670	530	726	758
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.49	0.04	0.37	0.33	0.07	0.07	0.19	0.02	0.31

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	831	23	83	566	32	31	7	41	72	11	169
Future Volume (veh/h)	53	831	23	83	566	32	31	7	41	72	11	169
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	65	1026	28	95	651	37	34	8	46	99	15	232
Peak Hour Factor	0.81	0.81	0.81	0.87	0.87	0.87	0.90	0.90	0.90	0.73	0.73	0.73
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	386	2055	638	292	2018	114	447	99	618	572	729	618
Arrive On Green	0.04	0.40	0.40	0.05	0.41	0.41	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h	1781	5106	1585	1781	4945	280	979	253	1585	1350	1870	1585
Grp Volume(v), veh/h	65	1026	28	95	447	241	42	0	46	99	15	232
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1820	1232	0	1585	1350	1870	1585
Q Serve(g_s), s	2.1	15.0	1.1	3.1	8.9	9.0	1.4	0.0	1.8	5.0	0.5	10.5
Cycle Q Clear(g_c), s	2.1	15.0	1.1	3.1	8.9	9.0	1.9	0.0	1.8	6.9	0.5	10.5
Prop In Lane	1.00		1.00	1.00		0.15	0.81		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	386	2055	638	292	1390	743	546	0	618	572	729	618
V/C Ratio(X)	0.17	0.50	0.04	0.33	0.32	0.32	0.08	0.00	0.07	0.17	0.02	0.38
Avail Cap(c_a), veh/h	419	2055	638	314	1390	743	546	0	618	572	729	618
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.4	22.3	18.2	17.3	20.2	20.2	19.1	0.0	19.2	21.4	18.8	21.8
Incr Delay (d2), s/veh	0.2	0.9	0.1	0.6	0.6	1.2	0.3	0.0	0.2	0.7	0.1	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	5.8	0.4	1.2	3.5	3.9	0.7	0.0	0.7	1.7	0.2	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.6	23.2	18.3	18.0	20.8	21.3	19.4	0.0	19.4	22.0	18.8	23.5
LnGrp LOS	B	C	B	B	C	C	B	A	B	C	B	C
Approach Vol, veh/h		1119			783			88			346	
Approach Delay, s/veh		22.7			20.6			19.4			22.9	
Approach LOS		C			C			B			C	

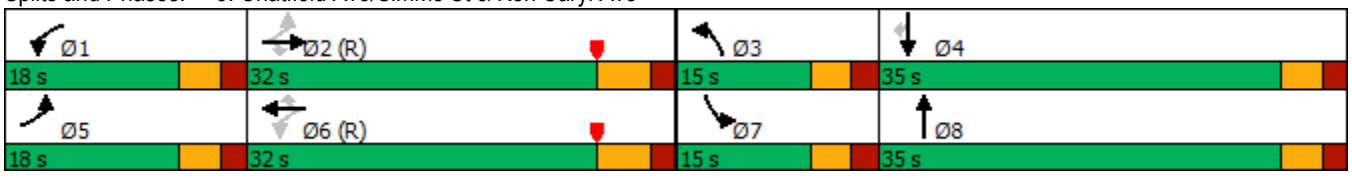
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.7	46.3		44.0	9.2	46.8		44.0				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	39.0		39.0	6.0	39.0		39.0				
Max Q Clear Time (g_c+I1), s	5.1	17.0		12.5	4.1	11.0		3.9				
Green Ext Time (p_c), s	0.0	7.2		1.2	0.0	4.4		0.4				

Intersection Summary												
HCM 6th Ctrl Delay			21.9									
HCM 6th LOS			C									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	268	495	158	52	302	265	93	330	150	281	240
Future Volume (vph)	268	495	158	52	302	265	93	330	150	281	240
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8	7	4	
Permitted Phases	2		2	6		6					4
Detector Phase	5	2	2	1	6	6	3	8	7	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	24.0	10.0	23.0	10.0	23.0	23.0
Total Split (s)	18.0	32.0	32.0	18.0	32.0	32.0	15.0	35.0	15.0	35.0	35.0
Total Split (%)	18.0%	32.0%	32.0%	18.0%	32.0%	32.0%	15.0%	35.0%	15.0%	35.0%	35.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	Max	Max
Act Effct Green (s)	44.6	33.6	33.6	34.5	26.0	26.0	8.8	30.5	9.5	31.2	31.2
Actuated g/C Ratio	0.45	0.34	0.34	0.34	0.26	0.26	0.09	0.30	0.10	0.31	0.31
v/c Ratio	0.74	0.56	0.32	0.21	0.28	0.50	0.43	0.47	0.60	0.33	0.44
Control Delay	21.3	12.8	2.1	18.0	30.2	6.3	47.6	29.6	51.4	27.7	5.3
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	21.3	12.8	2.1	18.0	30.2	6.3	47.6	29.6	51.4	27.7	5.3
LOS	C	B	A	B	C	A	D	C	D	C	A
Approach Delay		13.4			19.0			33.3		25.0	
Approach LOS		B			B			C		C	

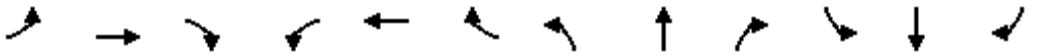
Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 82 (82%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 21.1	Intersection LOS: C
Intersection Capacity Utilization 54.7%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Chatfield Ave/Simms St & Ken Caryl Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	362	669	214	63	368	323	131	507	195	365	312
v/c Ratio	0.74	0.56	0.32	0.21	0.28	0.50	0.43	0.47	0.60	0.33	0.44
Control Delay	21.3	12.8	2.1	18.0	30.2	6.3	47.6	29.6	51.4	27.7	5.3
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	21.3	12.8	2.1	18.0	30.2	6.3	47.6	29.6	51.4	27.7	5.3
Queue Length 50th (ft)	48	111	0	22	68	0	41	135	62	94	0
Queue Length 95th (ft)	75	141	5	42	86	43	54	139	82	113	29
Internal Link Dist (ft)		504			417			635		285	
Turn Bay Length (ft)	210			300			240		225		295
Base Capacity (vph)	489	1188	673	400	1322	650	343	1073	343	1104	708
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	0.74	0.56	0.32	0.16	0.28	0.50	0.38	0.47	0.57	0.33	0.44

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	268	495	158	52	302	265	93	330	30	150	281	240
Future Volume (veh/h)	268	495	158	52	302	265	93	330	30	150	281	240
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	362	669	214	63	368	0	131	465	42	195	365	312
Peak Hour Factor	0.74	0.74	0.74	0.82	0.82	0.82	0.71	0.71	0.71	0.77	0.77	0.77
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	535	1323	590	324	1449		197	989	89	264	1135	506
Arrive On Green	0.26	0.74	0.74	0.04	0.28	0.00	0.06	0.30	0.30	0.08	0.32	0.32
Sat Flow, veh/h	1781	3554	1585	1781	5106	1585	3456	3297	297	3456	3554	1585
Grp Volume(v), veh/h	362	669	214	63	368	0	131	250	257	195	365	312
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1702	1585	1728	1777	1817	1728	1777	1585
Q Serve(g_s), s	13.0	7.7	4.7	2.5	5.6	0.0	3.7	11.5	11.5	5.5	7.8	16.7
Cycle Q Clear(g_c), s	13.0	7.7	4.7	2.5	5.6	0.0	3.7	11.5	11.5	5.5	7.8	16.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	535	1323	590	324	1449		197	533	545	264	1135	506
V/C Ratio(X)	0.68	0.51	0.36	0.19	0.25		0.67	0.47	0.47	0.74	0.32	0.62
Avail Cap(c_a), veh/h	535	1323	590	482	1449		346	533	545	346	1135	506
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.96	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.2	9.0	8.6	23.6	27.6	0.0	46.2	28.5	28.5	45.2	25.8	28.8
Incr Delay (d2), s/veh	3.3	1.3	1.7	0.3	0.4	0.0	3.9	2.9	2.9	5.8	0.7	5.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	2.3	1.6	1.0	2.2	0.0	1.7	5.1	5.3	2.5	3.3	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.4	10.3	10.3	23.9	28.1	0.0	50.1	31.5	31.5	51.1	26.6	34.4
LnGrp LOS	C	B	B	C	C		D	C	C	D	C	C
Approach Vol, veh/h		1245			431	A		638			872	
Approach Delay, s/veh		13.8			27.5			35.3			34.8	
Approach LOS		B			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.1	43.2	10.7	36.9	18.0	34.4	12.6	35.0
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0
Max Green Setting (Gmax), s	13.0	26.0	10.0	30.0	13.0	26.0	10.0	30.0
Max Q Clear Time (g_c+I1), s	4.5	9.7	5.7	18.7	15.0	7.6	7.5	13.5
Green Ext Time (p_c), s	0.1	4.6	0.1	2.6	0.0	2.1	0.1	2.5

Intersection Summary	
HCM 6th Ctrl Delay	25.7
HCM 6th LOS	C

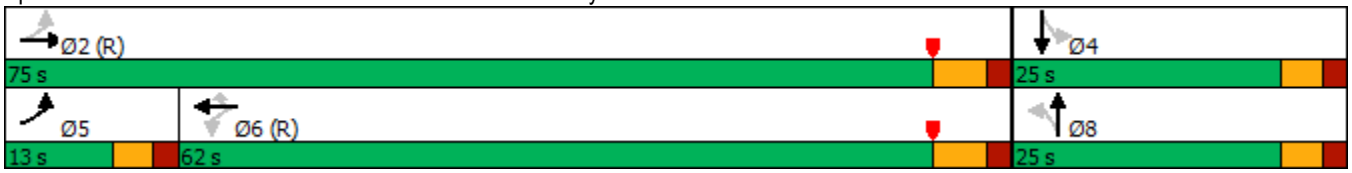
Notes

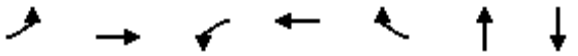
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	50	873	6	588	40	63	2	30	1
Future Volume (vph)	50	873	6	588	40	63	2	30	1
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		6			8		4
Permitted Phases	2		6		6	8		4	
Detector Phase	5	2	6	6	6	8	8	4	4
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	24.0	24.0	23.0	23.0	23.0	23.0
Total Split (s)	13.0	75.0	62.0	62.0	62.0	25.0	25.0	25.0	25.0
Total Split (%)	13.0%	75.0%	62.0%	62.0%	62.0%	25.0%	25.0%	25.0%	25.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.0	6.0	6.0	6.0	6.0		5.0		5.0
Lead/Lag	Lead		Lag	Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	None	None	Max	Max
Act Effct Green (s)	70.0	69.0	59.6	59.6	59.6		20.0		20.0
Actuated g/C Ratio	0.70	0.69	0.60	0.60	0.60		0.20		0.20
v/c Ratio	0.11	0.30	0.02	0.23	0.05		0.34		0.21
Control Delay	3.1	6.0	5.8	4.7	0.3		33.5		22.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	3.1	6.0	5.8	4.7	0.3		33.5		22.9
LOS	A	A	A	A	A		C		C
Approach Delay		5.9		4.4			33.5		22.9
Approach LOS		A		A			C		C

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 5 (5%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.34	
Intersection Signal Delay: 7.2	Intersection LOS: A
Intersection Capacity Utilization 42.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Site Access/12300 Block & Ken Caryl Ave

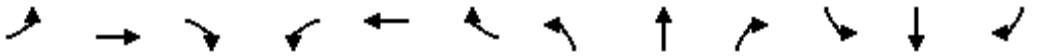




Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	59	1053	7	692	47	98	65
v/c Ratio	0.11	0.30	0.02	0.23	0.05	0.34	0.21
Control Delay	3.1	6.0	5.8	4.7	0.3	33.5	22.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.1	6.0	5.8	4.7	0.3	33.5	22.9
Queue Length 50th (ft)	9	59	1	26	0	47	19
Queue Length 95th (ft)	18	65	m3	47	1	89	52
Internal Link Dist (ft)		120		504		217	188
Turn Bay Length (ft)	100		100				
Base Capacity (vph)	537	3497	288	3029	973	290	310
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.30	0.02	0.23	0.05	0.34	0.21

Intersection Summary

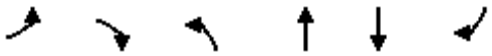
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	873	22	6	588	40	63	2	19	30	1	25
Future Volume (veh/h)	50	873	22	6	588	40	63	2	19	30	1	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	59	1027	26	7	692	47	74	2	22	35	1	29
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	575	3534	89	393	3062	951	279	15	67	207	21	139
Arrive On Green	0.04	0.69	0.69	1.00	1.00	1.00	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	1781	5122	130	536	5106	1585	1078	74	334	757	104	694
Grp Volume(v), veh/h	59	682	371	7	692	47	98	0	0	65	0	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1847	536	1702	1585	1486	0	0	1555	0	0
Q Serve(g_s), s	1.2	7.8	7.8	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.2	7.8	7.8	0.0	0.0	0.0	5.0	0.0	0.0	3.0	0.0	0.0
Prop In Lane	1.00		0.07	1.00		1.00	0.76		0.22	0.54		0.45
Lane Grp Cap(c), veh/h	575	2349	1274	393	3062	951	360	0	0	366	0	0
V/C Ratio(X)	0.10	0.29	0.29	0.02	0.23	0.05	0.27	0.00	0.00	0.18	0.00	0.00
Avail Cap(c_a), veh/h	646	2349	1274	393	3062	951	360	0	0	366	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.94	0.94	0.94	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.0	6.0	6.0	0.0	0.0	0.0	33.9	0.0	0.0	33.2	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.3	0.6	0.1	0.2	0.1	0.4	0.0	0.0	1.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.3	2.6	0.0	0.0	0.0	2.0	0.0	0.0	1.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.1	6.3	6.6	0.1	0.2	0.1	34.3	0.0	0.0	34.3	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	C	A	A	C	A	A
Approach Vol, veh/h		1112			746			98			65	
Approach Delay, s/veh		6.4			0.2			34.3			34.3	
Approach LOS		A			A			C			C	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		75.0		25.0	9.0	66.0		25.0				
Change Period (Y+Rc), s		6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s		69.0		20.0	8.0	56.0		20.0				
Max Q Clear Time (g_c+I1), s		9.8		5.0	3.2	2.0		7.0				
Green Ext Time (p_c), s		8.2		0.2	0.0	5.5		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			6.3									
HCM 6th LOS			A									



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	9	0	453	488	4
Future Volume (Veh/h)	0	9	0	453	488	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	10	0	492	530	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					715	
pX, platoon unblocked	0.95	0.95	0.95			
vC, conflicting volume	778	267	534			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	664	127	407			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	375	856	1092			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	10	246	246	353	181
Volume Left	0	0	0	0	0
Volume Right	10	0	0	0	4
cSH	856	1700	1700	1700	1700
Volume to Capacity	0.01	0.14	0.14	0.21	0.11
Queue Length 95th (ft)	1	0	0	0	0
Control Delay (s)	9.3	0.0	0.0	0.0	0.0
Lane LOS	A				
Approach Delay (s)	9.3	0.0		0.0	
Approach LOS	A				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	23.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2	33	168	2	47	78
Future Volume (Veh/h)	2	33	168	2	47	78
Sign Control	Stop			Stop	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	2	39	198	2	55	92
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)					403	
pX, platoon unblocked						
vC, conflicting volume	202	0	196	156	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	202	0	196	156	0	
tC, single (s)	6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3	3.5	4.0	2.2	
p0 queue free %	100	96	72	100	97	
cM capacity (veh/h)	671	1085	715	711	1623	

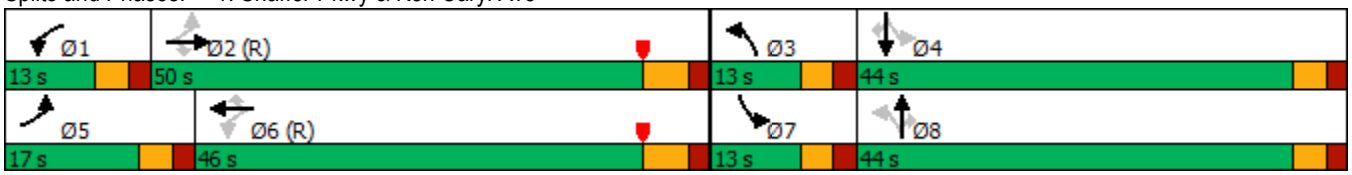
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	41	200	147
Volume Left	0	198	55
Volume Right	39	0	92
cSH	1053	715	1623
Volume to Capacity	0.04	0.28	0.03
Queue Length 95th (ft)	3	29	3
Control Delay (s)	8.6	12.0	2.9
Lane LOS	A	B	A
Approach Delay (s)	8.6	12.0	2.9
Approach LOS	A	B	

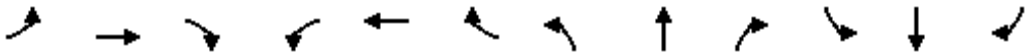
Intersection Summary			
Average Delay	8.2		
Intersection Capacity Utilization	30.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	174	886	240	105	168	110	420	36	160	101	19	116
Future Volume (vph)	174	886	240	105	168	110	420	36	160	101	19	116
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	24.0	10.0	23.0	23.0	10.0	23.0	23.0
Total Split (s)	17.0	50.0	50.0	13.0	46.0	46.0	13.0	44.0	44.0	13.0	44.0	44.0
Total Split (%)	14.2%	41.7%	41.7%	10.8%	38.3%	38.3%	10.8%	36.7%	36.7%	10.8%	36.7%	36.7%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Act Effct Green (s)	56.3	44.2	44.2	49.7	40.9	40.9	47.1	39.1	39.1	46.9	39.0	39.0
Actuated g/C Ratio	0.47	0.37	0.37	0.41	0.34	0.34	0.39	0.33	0.33	0.39	0.32	0.32
v/c Ratio	0.31	0.49	0.33	0.43	0.11	0.20	0.80	0.06	0.27	0.23	0.04	0.24
Control Delay	19.5	30.3	4.5	36.8	43.5	23.8	42.3	28.4	5.4	22.3	28.1	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.5	30.3	4.5	36.8	43.5	23.8	42.3	28.4	5.4	22.3	28.1	5.6
LOS	B	C	A	D	D	C	D	C	A	C	C	A
Approach Delay		24.1			36.0			31.9			14.5	
Approach LOS		C			D			C			B	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 12 (10%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 26.8	Intersection LOS: C
Intersection Capacity Utilization 66.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Shaffer Pkwy & Ken Caryl Ave

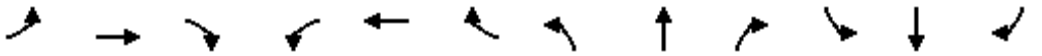




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	179	913	247	117	187	122	452	39	172	128	24	147
v/c Ratio	0.31	0.49	0.33	0.43	0.11	0.20	0.80	0.06	0.27	0.23	0.04	0.24
Control Delay	19.5	30.3	4.5	36.8	43.5	23.8	42.3	28.4	5.4	22.3	28.1	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.5	30.3	4.5	36.8	43.5	23.8	42.3	28.4	5.4	22.3	28.1	5.6
Queue Length 50th (ft)	77	198	0	84	53	25	262	21	0	59	13	0
Queue Length 95th (ft)	124	240	54	139	80	98	#388	47	49	87	29	30
Internal Link Dist (ft)		1058			341			383			323	
Turn Bay Length (ft)	120		210	210		480				80		80
Base Capacity (vph)	585	1873	739	275	1734	620	566	607	631	561	605	613
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.49	0.33	0.43	0.11	0.20	0.80	0.06	0.27	0.23	0.04	0.24

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	174	886	240	105	168	110	420	36	160	101	19	116
Future Volume (veh/h)	174	886	240	105	168	110	420	36	160	101	19	116
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	179	913	247	117	187	122	452	39	172	128	24	147
Peak Hour Factor	0.97	0.97	0.97	0.90	0.90	0.90	0.93	0.93	0.93	0.79	0.79	0.79
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	555	1921	596	278	1801	559	563	614	521	540	608	515
Arrive On Green	0.08	0.38	0.38	0.06	0.35	0.35	0.07	0.33	0.33	0.06	0.32	0.32
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	179	913	247	117	187	122	452	39	172	128	24	147
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	7.6	16.3	13.8	5.0	3.0	6.5	8.0	1.7	9.8	5.7	1.1	8.3
Cycle Q Clear(g_c), s	7.6	16.3	13.8	5.0	3.0	6.5	8.0	1.7	9.8	5.7	1.1	8.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	555	1921	596	278	1801	559	563	614	521	540	608	515
V/C Ratio(X)	0.32	0.48	0.41	0.42	0.10	0.22	0.80	0.06	0.33	0.24	0.04	0.29
Avail Cap(c_a), veh/h	589	1921	596	295	1801	559	563	614	521	547	608	515
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.5	28.4	27.7	23.4	26.1	27.2	33.0	27.6	30.4	24.2	27.7	30.1
Incr Delay (d2), s/veh	0.3	0.8	2.1	1.0	0.1	0.9	8.3	0.2	1.7	0.2	0.1	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	6.6	5.6	2.1	1.2	2.6	9.3	0.8	4.0	2.4	0.5	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.8	29.3	29.8	24.4	26.2	28.1	41.3	27.8	32.0	24.4	27.8	31.5
LnGrp LOS	C	C	C	C	C	C	D	C	C	C	C	C
Approach Vol, veh/h		1339			426			663			299	
Approach Delay, s/veh		28.4			26.3			38.1			28.2	
Approach LOS		C			C			D			C	

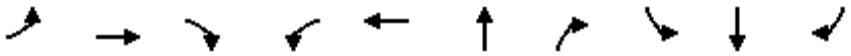
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.9	51.1	13.0	44.0	14.7	48.3	12.6	44.4
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0
Max Green Setting (Gmax), s	8.0	44.0	8.0	39.0	12.0	40.0	8.0	39.0
Max Q Clear Time (g_c+I1), s	7.0	18.3	10.0	10.3	9.6	8.5	7.7	11.8
Green Ext Time (p_c), s	0.0	7.6	0.0	0.6	0.1	1.6	0.0	0.8

Intersection Summary	
HCM 6th Ctrl Delay	30.4
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	183	1038	27	107	701	38	16	83	49	9	89
Future Volume (vph)	183	1038	27	107	701	38	16	83	49	9	89
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		8			4	
Permitted Phases	2		2	6		8		8	4		4
Detector Phase	5	2	2	1	6	8	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	13.0	63.0	63.0	13.0	63.0	44.0	44.0	44.0	44.0	44.0	44.0
Total Split (%)	10.8%	52.5%	52.5%	10.8%	52.5%	36.7%	36.7%	36.7%	36.7%	36.7%	36.7%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	C-Max	C-Max	None	C-Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	66.4	57.4	57.4	65.6	57.0		39.0	39.0	39.0	39.0	39.0
Actuated g/C Ratio	0.55	0.48	0.48	0.55	0.48		0.32	0.32	0.32	0.32	0.32
v/c Ratio	0.51	0.46	0.04	0.38	0.34		0.13	0.17	0.12	0.02	0.17
Control Delay	10.7	17.5	3.0	14.3	9.9		29.5	6.3	29.6	27.8	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	10.7	17.5	3.0	14.3	9.9		29.5	6.3	29.6	27.8	6.3
LOS	B	B	A	B	A		C	A	C	C	A
Approach Delay		16.2			10.4		15.4			15.4	
Approach LOS		B			B		B			B	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 61 (51%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.51	
Intersection Signal Delay: 14.1	Intersection LOS: B
Intersection Capacity Utilization 48.9%	ICU Level of Service A
Analysis Period (min) 15	

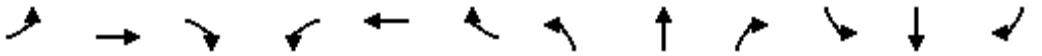
Splits and Phases: 2: Alkire St & Ken Caryl Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	197	1116	29	109	808	63	97	54	10	98
v/c Ratio	0.51	0.46	0.04	0.38	0.34	0.13	0.17	0.12	0.02	0.17
Control Delay	10.7	17.5	3.0	14.3	9.9	29.5	6.3	29.6	27.8	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.7	17.5	3.0	14.3	9.9	29.5	6.3	29.6	27.8	6.3
Queue Length 50th (ft)	20	266	4	18	46	34	0	29	5	0
Queue Length 95th (ft)	47	305	m13	m46	53	65	34	61	18	38
Internal Link Dist (ft)		376			477	264			636	
Turn Bay Length (ft)	140		240	185			110	60		125
Base Capacity (vph)	385	2430	790	291	2388	502	579	433	605	580
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.46	0.04	0.37	0.34	0.13	0.17	0.12	0.02	0.17

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	183	1038	27	107	701	91	38	16	83	49	9	89
Future Volume (veh/h)	183	1038	27	107	701	91	38	16	83	49	9	89
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	197	1116	29	109	715	93	44	19	97	54	10	98
Peak Hour Factor	0.93	0.93	0.93	0.98	0.98	0.98	0.86	0.86	0.86	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	433	2526	784	317	2174	280	366	150	515	438	608	515
Arrive On Green	0.07	0.49	0.49	0.05	0.48	0.48	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1781	5106	1585	1781	4578	590	969	460	1585	1276	1870	1585
Grp Volume(v), veh/h	197	1116	29	109	530	278	63	0	97	54	10	98
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1764	1429	0	1585	1276	1870	1585
Q Serve(g_s), s	6.8	17.0	1.1	3.7	11.6	11.8	2.6	0.0	5.3	3.7	0.4	5.3
Cycle Q Clear(g_c), s	6.8	17.0	1.1	3.7	11.6	11.8	3.5	0.0	5.3	7.2	0.4	5.3
Prop In Lane	1.00		1.00	1.00		0.33	0.70		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	433	2526	784	317	1617	838	516	0	515	438	608	515
V/C Ratio(X)	0.45	0.44	0.04	0.34	0.33	0.33	0.12	0.00	0.19	0.12	0.02	0.19
Avail Cap(c_a), veh/h	433	2526	784	352	1617	838	516	0	515	438	608	515
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.0	19.6	15.6	15.7	19.6	19.6	28.4	0.0	29.1	31.0	27.5	29.1
Incr Delay (d2), s/veh	0.7	0.6	0.1	0.6	0.5	1.1	0.5	0.0	0.8	0.6	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	6.6	0.4	1.5	4.6	4.9	1.4	0.0	2.2	1.2	0.2	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.7	20.2	15.7	16.4	20.1	20.7	28.9	0.0	29.9	31.6	27.5	30.0
LnGrp LOS	B	C	B	B	C	C	C	A	C	C	C	C
Approach Vol, veh/h		1342			917			160			162	
Approach Delay, s/veh		19.4			19.9			29.5			30.4	
Approach LOS		B			B			C			C	

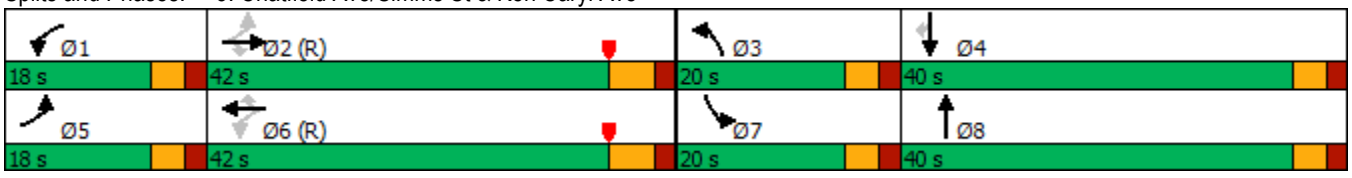
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.6	65.4		44.0	13.0	63.0		44.0				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	8.0	57.0		39.0	8.0	57.0		39.0				
Max Q Clear Time (g_c+I1), s	5.7	19.0		9.2	8.8	13.8		7.3				
Green Ext Time (p_c), s	0.0	9.4		0.5	0.0	5.7		0.7				

Intersection Summary												
HCM 6th Ctrl Delay			20.9									
HCM 6th LOS			C									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	327	471	203	57	452	100	194	245	180	243	287
Future Volume (vph)	327	471	203	57	452	100	194	245	180	243	287
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8	7	4	
Permitted Phases	2		2	6		6					4
Detector Phase	5	2	2	1	6	6	3	8	7	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	24.0	10.0	23.0	10.0	23.0	23.0
Total Split (s)	18.0	42.0	42.0	18.0	42.0	42.0	20.0	40.0	20.0	40.0	40.0
Total Split (%)	15.0%	35.0%	35.0%	15.0%	35.0%	35.0%	16.7%	33.3%	16.7%	33.3%	33.3%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	Max	Max
Act Effct Green (s)	54.4	43.3	43.3	44.8	36.0	36.0	12.4	38.0	12.0	37.6	37.6
Actuated g/C Ratio	0.45	0.36	0.36	0.37	0.30	0.30	0.10	0.32	0.10	0.31	0.31
v/c Ratio	0.81	0.39	0.30	0.16	0.32	0.20	0.59	0.28	0.57	0.24	0.44
Control Delay	42.1	14.5	1.7	19.8	33.3	6.6	58.2	30.3	57.8	31.8	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.1	14.5	1.7	19.8	33.3	6.6	58.2	30.3	57.8	31.8	5.6
LOS	D	B	A	B	C	A	E	C	E	C	A
Approach Delay		20.9			27.6			41.5		27.8	
Approach LOS		C			C			D		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 61 (51%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 27.7	Intersection LOS: C
Intersection Capacity Utilization 57.7%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: Chatfield Ave/Simms St & Ken Caryl Ave

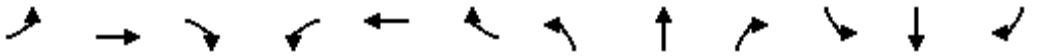


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	348	501	216	62	491	109	211	315	196	264	312
v/c Ratio	0.81	0.39	0.30	0.16	0.32	0.20	0.59	0.28	0.57	0.24	0.44
Control Delay	42.1	14.5	1.7	19.8	33.3	6.6	58.2	30.3	57.8	31.8	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.1	14.5	1.7	19.8	33.3	6.6	58.2	30.3	57.8	31.8	5.6
Queue Length 50th (ft)	120	60	0	26	107	0	81	90	75	80	0
Queue Length 95th (ft)	m#231	87	m0	53	140	42	120	134	112	118	66
Internal Link Dist (ft)		504			417			635		285	
Turn Bay Length (ft)	210			300			240		225		295
Base Capacity (vph)	429	1277	709	453	1525	551	429	1106	429	1107	709
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	0.81	0.39	0.30	0.14	0.32	0.20	0.49	0.28	0.46	0.24	0.44

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	327	471	203	57	452	100	194	245	45	180	243	287
Future Volume (veh/h)	327	471	203	57	452	100	194	245	45	180	243	287
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	348	501	216	62	491	0	211	266	49	196	264	312
Peak Hour Factor	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	503	1485	662	338	1766		273	889	161	258	1036	462
Arrive On Green	0.04	0.14	0.14	0.04	0.35	0.00	0.08	0.30	0.30	0.07	0.29	0.29
Sat Flow, veh/h	1781	3554	1585	1781	5106	1585	3456	3004	545	3456	3554	1585
Grp Volume(v), veh/h	348	501	216	62	491	0	211	156	159	196	264	312
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1702	1585	1728	1777	1772	1728	1777	1585
Q Serve(g_s), s	13.0	15.3	14.8	2.7	8.4	0.0	7.2	8.1	8.3	6.7	6.8	20.8
Cycle Q Clear(g_c), s	13.0	15.3	14.8	2.7	8.4	0.0	7.2	8.1	8.3	6.7	6.8	20.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.31	1.00		1.00
Lane Grp Cap(c), veh/h	503	1485	662	338	1766		273	526	525	258	1036	462
V/C Ratio(X)	0.69	0.34	0.33	0.18	0.28		0.77	0.30	0.30	0.76	0.25	0.67
Avail Cap(c_a), veh/h	503	1485	662	466	1766		432	526	525	432	1036	462
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.96	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.1	36.7	36.5	23.9	28.4	0.0	54.2	32.6	32.7	54.5	32.5	37.5
Incr Delay (d2), s/veh	3.9	0.6	1.3	0.3	0.4	0.0	4.6	1.4	1.5	4.5	0.6	7.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	7.4	6.5	1.1	3.4	0.0	3.3	3.6	3.7	3.0	3.0	8.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.0	37.3	37.7	24.2	28.8	0.0	58.8	34.0	34.2	59.0	33.1	45.2
LnGrp LOS	C	D	D	C	C		E	C	C	E	C	D
Approach Vol, veh/h		1065			553	A		526			772	
Approach Delay, s/veh		34.3			28.3			44.0			44.6	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.4	56.1	14.5	40.0	18.0	47.5	14.0	40.5
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0
Max Green Setting (Gmax), s	13.0	36.0	15.0	35.0	13.0	36.0	15.0	35.0
Max Q Clear Time (g_c+I1), s	4.7	17.3	9.2	22.8	15.0	10.4	8.7	10.3
Green Ext Time (p_c), s	0.1	3.7	0.3	2.1	0.0	3.2	0.3	1.7

Intersection Summary	
HCM 6th Ctrl Delay	37.6
HCM 6th LOS	D

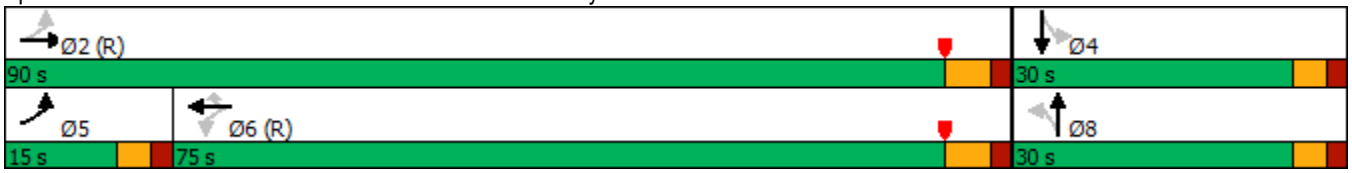
Notes

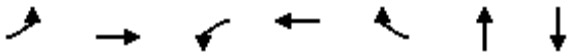
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	105	873	19	829	85	40	1	115	2
Future Volume (vph)	105	873	19	829	85	40	1	115	2
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		6			8		4
Permitted Phases	2		6		6	8		4	
Detector Phase	5	2	6	6	6	8	8	4	4
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	24.0	24.0	23.0	23.0	23.0	23.0
Total Split (s)	15.0	90.0	75.0	75.0	75.0	30.0	30.0	30.0	30.0
Total Split (%)	12.5%	75.0%	62.5%	62.5%	62.5%	25.0%	25.0%	25.0%	25.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.0	6.0	6.0	6.0	6.0		5.0		5.0
Lead/Lag	Lead		Lag	Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	None	None	Max	Max
Act Effct Green (s)	85.0	84.0	70.9	70.9	70.9		25.0		25.0
Actuated g/C Ratio	0.71	0.70	0.59	0.59	0.59		0.21		0.21
v/c Ratio	0.31	0.31	0.08	0.32	0.10		0.24		0.78
Control Delay	7.2	2.6	12.7	13.1	3.7		35.8		56.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	7.2	2.6	12.7	13.1	3.7		35.8		56.6
LOS	A	A	B	B	A		D		E
Approach Delay		3.1		12.3			35.8		56.6
Approach LOS		A		B			D		E

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 61 (51%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 12.7	Intersection LOS: B
Intersection Capacity Utilization 49.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Site Access/12300 Block & Ken Caryl Ave



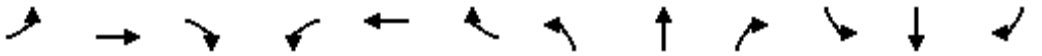


Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	124	1106	22	975	100	62	249
v/c Ratio	0.31	0.31	0.08	0.32	0.10	0.24	0.78
Control Delay	7.2	2.6	12.7	13.1	3.7	35.8	56.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.2	2.6	12.7	13.1	3.7	35.8	56.6
Queue Length 50th (ft)	9	27	7	115	2	33	162
Queue Length 95th (ft)	31	47	m18	140	11	69	#256
Internal Link Dist (ft)		120		504		217	188
Turn Bay Length (ft)	100		100				
Base Capacity (vph)	426	3527	270	3002	975	259	321
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.31	0.08	0.32	0.10	0.24	0.78

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

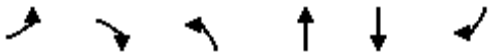
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	873	67	19	829	85	40	1	12	115	2	95
Future Volume (veh/h)	105	873	67	19	829	85	40	1	12	115	2	95
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	124	1027	79	22	975	100	47	1	14	135	2	112
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	457	3385	260	374	3151	978	240	11	58	215	8	144
Arrive On Green	0.04	0.70	0.70	1.00	1.00	1.00	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1781	4836	371	510	5106	1585	898	55	278	808	40	693
Grp Volume(v), veh/h	124	722	384	22	975	100	62	0	0	249	0	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1803	510	1702	1585	1230	0	0	1542	0	0
Q Serve(g_s), s	2.9	9.7	9.7	0.0	0.0	0.0	0.0	0.0	0.0	13.0	0.0	0.0
Cycle Q Clear(g_c), s	2.9	9.7	9.7	0.0	0.0	0.0	5.0	0.0	0.0	18.0	0.0	0.0
Prop In Lane	1.00		0.21	1.00		1.00	0.76		0.23	0.54		0.45
Lane Grp Cap(c), veh/h	457	2383	1262	374	3151	978	309	0	0	367	0	0
V/C Ratio(X)	0.27	0.30	0.30	0.06	0.31	0.10	0.20	0.00	0.00	0.68	0.00	0.00
Avail Cap(c_a), veh/h	532	2383	1262	374	3151	978	309	0	0	367	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.91	0.91	0.91	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.8	6.9	6.9	0.0	0.0	0.0	39.5	0.0	0.0	44.4	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.3	0.6	0.3	0.2	0.2	0.3	0.0	0.0	9.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	3.1	3.5	0.0	0.1	0.1	1.6	0.0	0.0	7.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.1	7.2	7.5	0.3	0.2	0.2	39.8	0.0	0.0	54.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	A
Approach Vol, veh/h		1230			1097			62			249	
Approach Delay, s/veh		7.3			0.2			39.8			54.0	
Approach LOS		A			A			D			D	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		90.0		30.0	10.0	80.0		30.0				
Change Period (Y+Rc), s		6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s		84.0		25.0	10.0	69.0		25.0				
Max Q Clear Time (g_c+I1), s		11.7		20.0	4.9	2.0		7.0				
Green Ext Time (p_c), s		9.0		0.6	0.1	9.0		0.2				

Intersection Summary												
HCM 6th Ctrl Delay			9.5									
HCM 6th LOS			A									



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	6	0	484	493	11
Future Volume (Veh/h)	0	6	0	484	493	11
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	7	0	526	536	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					715	
pX, platoon unblocked	0.96	0.96	0.96			
vC, conflicting volume	805	274	548			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	705	150	436			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	355	832	1071			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	7	263	263	357	191
Volume Left	0	0	0	0	0
Volume Right	7	0	0	0	12
cSH	832	1700	1700	1700	1700
Volume to Capacity	0.01	0.15	0.15	0.21	0.11
Queue Length 95th (ft)	1	0	0	0	0
Control Delay (s)	9.4	0.0	0.0	0.0	0.0
Lane LOS	A				
Approach Delay (s)	9.4	0.0		0.0	
Approach LOS	A				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	24.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	3	49	124	3	58	188
Future Volume (Veh/h)	3	49	124	3	58	188
Sign Control	Stop			Stop	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	4	58	146	4	68	221
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)					403	
pX, platoon unblocked						
vC, conflicting volume	357	0	306	246	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	357	0	306	246	0	
tC, single (s)	6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3	3.5	4.0	2.2	
p0 queue free %	99	95	75	99	96	
cM capacity (veh/h)	545	1085	589	628	1623	

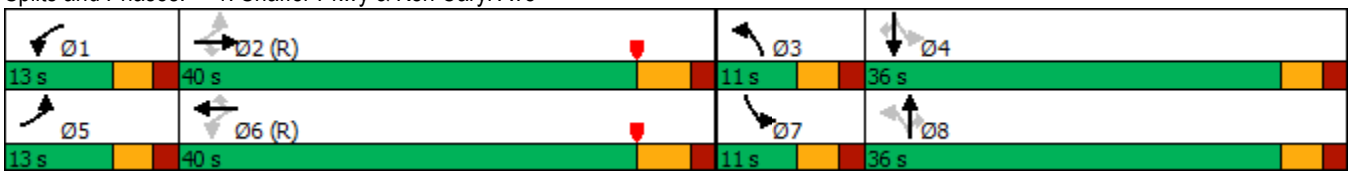
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	62	150	289
Volume Left	0	146	68
Volume Right	58	0	221
cSH	1020	590	1623
Volume to Capacity	0.06	0.25	0.04
Queue Length 95th (ft)	5	25	3
Control Delay (s)	8.8	13.2	2.0
Lane LOS	A	B	A
Approach Delay (s)	8.8	13.2	2.0
Approach LOS	A	B	

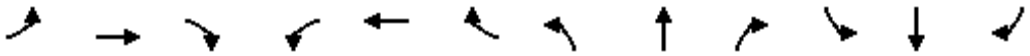
Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	35.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	864	375	115	679	81	195	22	90	98	21	140
Future Volume (vph)	98	864	375	115	679	81	195	22	90	98	21	140
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	24.0	10.0	23.0	23.0	10.0	23.0	23.0
Total Split (s)	13.0	40.0	40.0	13.0	40.0	40.0	11.0	36.0	36.0	11.0	36.0	36.0
Total Split (%)	13.0%	40.0%	40.0%	13.0%	40.0%	40.0%	11.0%	36.0%	36.0%	11.0%	36.0%	36.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Act Effct Green (s)	43.0	34.3	34.3	43.0	34.3	34.3	37.0	31.0	31.0	37.0	31.0	31.0
Actuated g/C Ratio	0.43	0.34	0.34	0.43	0.34	0.34	0.37	0.31	0.31	0.37	0.31	0.31
v/c Ratio	0.37	0.60	0.54	0.52	0.44	0.15	0.42	0.04	0.17	0.22	0.04	0.28
Control Delay	18.1	29.0	5.0	38.1	18.7	3.4	23.6	24.5	2.5	19.6	24.5	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.1	29.0	5.0	38.1	18.7	3.4	23.6	24.5	2.5	19.6	24.5	5.4
LOS	B	C	A	D	B	A	C	C	A	B	C	A
Approach Delay		21.5			19.9			17.5			12.3	
Approach LOS		C			B			B			B	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 39 (39%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 19.7	Intersection LOS: B
Intersection Capacity Utilization 53.9%	ICU Level of Service A
Analysis Period (min) 15	

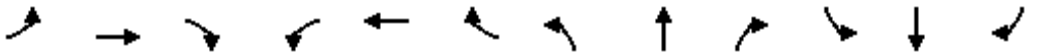
Splits and Phases: 1: Shaffer Pkwy & Ken Caryl Ave





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	118	1041	452	131	772	92	222	25	102	117	25	167
v/c Ratio	0.37	0.60	0.54	0.52	0.44	0.15	0.42	0.04	0.17	0.22	0.04	0.28
Control Delay	18.1	29.0	5.0	38.1	18.7	3.4	23.6	24.5	2.5	19.6	24.5	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.1	29.0	5.0	38.1	18.7	3.4	23.6	24.5	2.5	19.6	24.5	5.4
Queue Length 50th (ft)	40	199	0	53	68	0	92	11	0	45	11	0
Queue Length 95th (ft)	67	221	43	110	117	19	144	30	16	76	28	37
Internal Link Dist (ft)		1058			341			383			323	
Turn Bay Length (ft)	120		210	210		480				80		80
Base Capacity (vph)	327	1741	839	256	1743	628	534	577	588	534	577	605
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.60	0.54	0.51	0.44	0.15	0.42	0.04	0.17	0.22	0.04	0.28

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	98	864	375	115	679	81	195	22	90	98	21	140
Future Volume (veh/h)	98	864	375	115	679	81	195	22	90	98	21	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	118	1041	452	131	772	92	222	25	102	117	25	167
Peak Hour Factor	0.83	0.83	0.83	0.88	0.88	0.88	0.88	0.88	0.88	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	336	1814	563	254	1840	571	537	580	491	559	580	491
Arrive On Green	0.06	0.36	0.36	0.06	0.36	0.36	0.06	0.31	0.31	0.06	0.31	0.31
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	118	1041	452	131	772	92	222	25	102	117	25	167
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	4.2	16.5	25.7	4.6	11.4	3.9	6.0	0.9	4.7	4.4	0.9	8.1
Cycle Q Clear(g_c), s	4.2	16.5	25.7	4.6	11.4	3.9	6.0	0.9	4.7	4.4	0.9	8.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	336	1814	563	254	1840	571	537	580	491	559	580	491
V/C Ratio(X)	0.35	0.57	0.80	0.52	0.42	0.16	0.41	0.04	0.21	0.21	0.04	0.34
Avail Cap(c_a), veh/h	372	1814	563	282	1840	571	537	580	491	559	580	491
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.1	26.1	29.1	20.3	24.1	21.7	23.1	24.1	25.4	21.2	24.1	26.6
Incr Delay (d2), s/veh	0.6	1.3	11.5	1.6	0.7	0.6	0.5	0.1	1.0	0.2	0.1	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	6.6	11.3	1.9	4.5	1.5	3.9	0.4	1.9	1.9	0.4	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.7	27.4	40.6	21.9	24.8	22.3	23.6	24.3	26.4	21.4	24.3	28.5
LnGrp LOS	B	C	D	C	C	C	C	C	C	C	C	C
Approach Vol, veh/h		1611			995			349			309	
Approach Delay, s/veh		30.5			24.2			24.5			25.5	
Approach LOS		C			C			C			C	

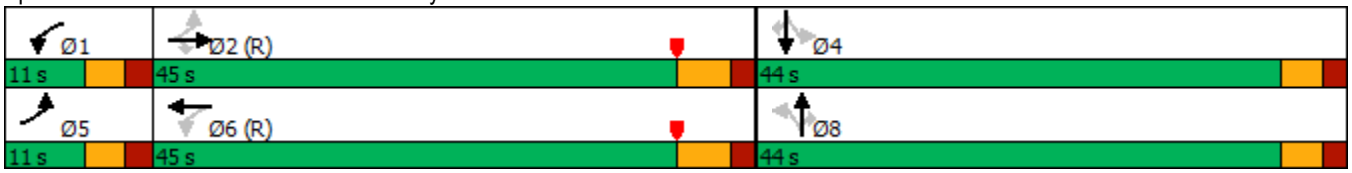
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.5	41.5	11.0	36.0	11.0	42.0	11.0	36.0
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0
Max Green Setting (Gmax), s	8.0	34.0	6.0	31.0	8.0	34.0	6.0	31.0
Max Q Clear Time (g_c+I1), s	6.6	27.7	8.0	10.1	6.2	13.4	6.4	6.7
Green Ext Time (p_c), s	0.0	4.1	0.0	0.6	0.0	5.3	0.0	0.4

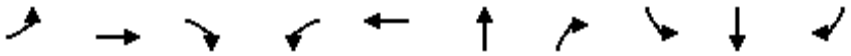
Intersection Summary	
HCM 6th Ctrl Delay	27.5
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	53	951	23	83	641	31	7	41	72	11	169
Future Volume (vph)	53	951	23	83	641	31	7	41	72	11	169
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		8			4	
Permitted Phases	2		2	6		8		8	4		4
Detector Phase	5	2	2	1	6	8	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	11.0	45.0	45.0	11.0	45.0	44.0	44.0	44.0	44.0	44.0	44.0
Total Split (%)	11.0%	45.0%	45.0%	11.0%	45.0%	44.0%	44.0%	44.0%	44.0%	44.0%	44.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	C-Max	C-Max	None	C-Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	47.0	41.2	41.2	47.0	41.2		39.0	39.0	39.0	39.0	39.0
Actuated g/C Ratio	0.47	0.41	0.41	0.47	0.41		0.39	0.39	0.39	0.39	0.39
v/c Ratio	0.19	0.56	0.04	0.42	0.37		0.07	0.07	0.19	0.02	0.31
Control Delay	7.5	10.3	0.1	21.7	26.4		19.7	1.1	21.3	19.0	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	7.5	10.3	0.1	21.7	26.4		19.7	1.1	21.3	19.0	4.4
LOS	A	B	A	C	C		B	A	C	B	A
Approach Delay		9.9			25.9		9.9			9.9	
Approach LOS		A			C		A			A	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 48 (48%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.56	
Intersection Signal Delay: 15.3	Intersection LOS: B
Intersection Capacity Utilization 47.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Alkire St & Ken Caryl Ave

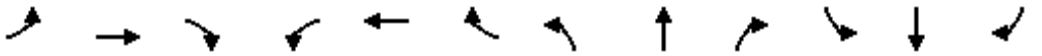




Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	65	1174	28	95	774	42	46	99	15	232
v/c Ratio	0.19	0.56	0.04	0.42	0.37	0.07	0.07	0.19	0.02	0.31
Control Delay	7.5	10.3	0.1	21.7	26.4	19.7	1.1	21.3	19.0	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.5	10.3	0.1	21.7	26.4	19.7	1.1	21.3	19.0	4.4
Queue Length 50th (ft)	8	65	0	43	173	17	0	41	6	4
Queue Length 95th (ft)	m15	70	m0	79	204	39	6	62	15	23
Internal Link Dist (ft)		376			477	264			636	
Turn Bay Length (ft)	140		240	185			110	60		125
Base Capacity (vph)	337	2095	696	225	2085	604	670	530	726	752
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.56	0.04	0.42	0.37	0.07	0.07	0.19	0.02	0.31

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	951	23	83	641	32	31	7	41	72	11	169
Future Volume (veh/h)	53	951	23	83	641	32	31	7	41	72	11	169
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	65	1174	28	95	737	37	34	8	46	99	15	232
Peak Hour Factor	0.81	0.81	0.81	0.87	0.87	0.87	0.90	0.90	0.90	0.73	0.73	0.73
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	359	2055	638	261	2033	102	447	99	618	572	729	618
Arrive On Green	0.04	0.40	0.40	0.05	0.41	0.41	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h	1781	5106	1585	1781	4980	249	979	253	1585	1350	1870	1585
Grp Volume(v), veh/h	65	1174	28	95	503	271	42	0	46	99	15	232
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1826	1232	0	1585	1350	1870	1585
Q Serve(g_s), s	2.1	17.8	1.1	3.1	10.3	10.3	1.4	0.0	1.8	5.0	0.5	10.5
Cycle Q Clear(g_c), s	2.1	17.8	1.1	3.1	10.3	10.3	1.9	0.0	1.8	6.9	0.5	10.5
Prop In Lane	1.00		1.00	1.00		0.14	0.81		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	359	2055	638	261	1390	745	546	0	618	572	729	618
V/C Ratio(X)	0.18	0.57	0.04	0.36	0.36	0.36	0.08	0.00	0.07	0.17	0.02	0.38
Avail Cap(c_a), veh/h	391	2055	638	283	1390	745	546	0	618	572	729	618
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.5	23.2	18.2	18.0	20.5	20.6	19.1	0.0	19.2	21.4	18.8	21.8
Incr Delay (d2), s/veh	0.2	1.2	0.1	0.9	0.7	1.4	0.3	0.0	0.2	0.7	0.1	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	6.9	0.4	1.3	4.0	4.5	0.7	0.0	0.7	1.7	0.2	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.8	24.3	18.3	18.8	21.3	21.9	19.4	0.0	19.4	22.0	18.8	23.5
LnGrp LOS	B	C	B	B	C	C	B	A	B	C	B	C
Approach Vol, veh/h		1267			869			88			346	
Approach Delay, s/veh		23.8			21.2			19.4			22.9	
Approach LOS		C			C			B			C	

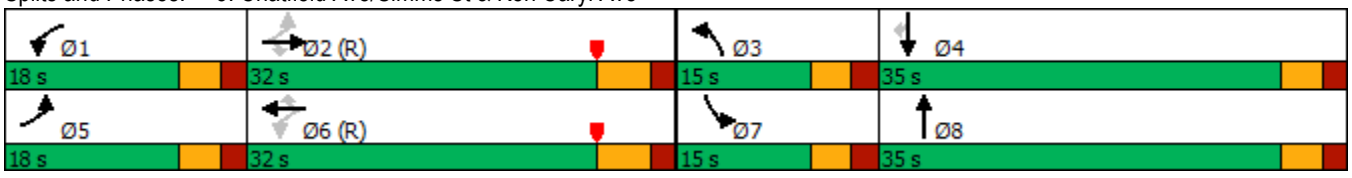
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.7	46.3		44.0	9.2	46.8		44.0				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	39.0		39.0	6.0	39.0		39.0				
Max Q Clear Time (g_c+I1), s	5.1	19.8		12.5	4.1	12.3		3.9				
Green Ext Time (p_c), s	0.0	7.9		1.2	0.0	5.0		0.4				

Intersection Summary												
HCM 6th Ctrl Delay			22.7									
HCM 6th LOS			C									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	288	565	168	57	347	285	98	355	160	306	260
Future Volume (vph)	288	565	168	57	347	285	98	355	160	306	260
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8	7	4	
Permitted Phases	2		2	6		6					4
Detector Phase	5	2	2	1	6	6	3	8	7	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	24.0	10.0	23.0	10.0	23.0	23.0
Total Split (s)	18.0	32.0	32.0	18.0	32.0	32.0	15.0	35.0	15.0	35.0	35.0
Total Split (%)	18.0%	32.0%	32.0%	18.0%	32.0%	32.0%	15.0%	35.0%	15.0%	35.0%	35.0%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	Max	Max
Act Effct Green (s)	44.5	33.4	33.4	34.8	26.0	26.0	8.9	30.4	9.6	31.1	31.1
Actuated g/C Ratio	0.44	0.33	0.33	0.35	0.26	0.26	0.09	0.30	0.10	0.31	0.31
v/c Ratio	0.84	0.65	0.33	0.26	0.32	0.55	0.45	0.51	0.63	0.36	0.47
Control Delay	32.8	13.9	2.1	18.9	30.7	9.1	47.9	30.3	52.4	28.2	5.3
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	32.8	13.9	2.1	18.9	30.7	9.1	47.9	30.3	52.4	28.2	5.3
LOS	C	B	A	B	C	A	D	C	D	C	A
Approach Delay		17.3			20.8			33.9		25.3	
Approach LOS		B			C			C		C	

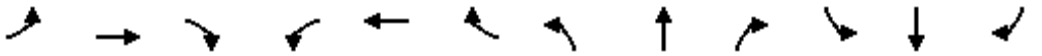
Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 82 (82%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 22.9	Intersection LOS: C
Intersection Capacity Utilization 57.7%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: Chatfield Ave/Simms St & Ken Caryl Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	389	764	227	70	423	348	138	542	208	397	338
v/c Ratio	0.84	0.65	0.33	0.26	0.32	0.55	0.45	0.51	0.63	0.36	0.47
Control Delay	32.8	13.9	2.1	18.9	30.7	9.1	47.9	30.3	52.4	28.2	5.3
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	32.8	13.9	2.1	18.9	30.7	9.1	47.9	30.3	52.4	28.2	5.3
Queue Length 50th (ft)	73	157	0	25	79	20	43	147	66	103	0
Queue Length 95th (ft)	97	172	8	46	98	67	57	149	88	122	29
Internal Link Dist (ft)		504			417			635		285	
Turn Bay Length (ft)	210			300			240		225		295
Base Capacity (vph)	464	1180	679	362	1322	638	343	1068	343	1100	725
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	0.84	0.65	0.33	0.19	0.32	0.55	0.40	0.51	0.61	0.36	0.47

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	288	565	168	57	347	285	98	355	30	160	306	260
Future Volume (veh/h)	288	565	168	57	347	285	98	355	30	160	306	260
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	389	764	227	70	423	0	138	500	42	208	397	338
Peak Hour Factor	0.74	0.74	0.74	0.82	0.82	0.82	0.71	0.71	0.71	0.77	0.77	0.77
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	511	1305	582	300	1430		204	996	83	277	1140	509
Arrive On Green	0.26	0.73	0.73	0.04	0.28	0.00	0.06	0.30	0.30	0.08	0.32	0.32
Sat Flow, veh/h	1781	3554	1585	1781	5106	1585	3456	3319	278	3456	3554	1585
Grp Volume(v), veh/h	389	764	227	70	423	0	138	267	275	208	397	338
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1702	1585	1728	1777	1820	1728	1777	1585
Q Serve(g_s), s	13.0	10.0	5.3	2.8	6.5	0.0	3.9	12.4	12.5	5.9	8.5	18.4
Cycle Q Clear(g_c), s	13.0	10.0	5.3	2.8	6.5	0.0	3.9	12.4	12.5	5.9	8.5	18.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	511	1305	582	300	1430		204	533	546	277	1140	509
V/C Ratio(X)	0.76	0.59	0.39	0.23	0.30		0.68	0.50	0.50	0.75	0.35	0.66
Avail Cap(c_a), veh/h	511	1305	582	455	1430		346	533	546	346	1140	509
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.95	0.95	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.0	9.7	9.1	23.9	28.3	0.0	46.1	28.8	28.9	45.0	26.0	29.3
Incr Delay (d2), s/veh	6.3	1.8	1.9	0.4	0.5	0.0	3.9	3.3	3.3	7.0	0.8	6.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	2.8	1.7	1.2	2.6	0.0	1.7	5.6	5.7	2.7	3.6	7.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.4	11.6	11.0	24.3	28.8	0.0	50.0	32.2	32.2	52.0	26.8	36.0
LnGrp LOS	C	B	B	C	C		D	C	C	D	C	D
Approach Vol, veh/h		1380			493	A		680			943	
Approach Delay, s/veh		15.9			28.1			35.8			35.7	
Approach LOS		B			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.3	42.7	10.9	37.1	18.0	34.0	13.0	35.0
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0
Max Green Setting (Gmax), s	13.0	26.0	10.0	30.0	13.0	26.0	10.0	30.0
Max Q Clear Time (g_c+I1), s	4.8	12.0	5.9	20.4	15.0	8.5	7.9	14.5
Green Ext Time (p_c), s	0.1	4.9	0.1	2.6	0.0	2.4	0.1	2.7

Intersection Summary	
HCM 6th Ctrl Delay	26.8
HCM 6th LOS	C

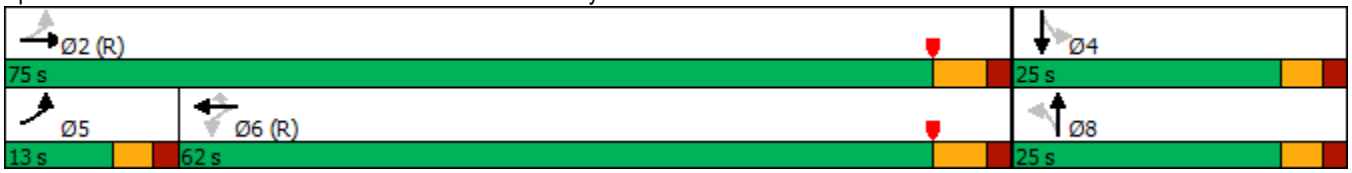
Notes

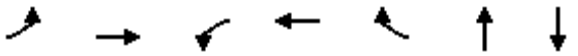
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	55	968	6	653	45	63	2	35	1
Future Volume (vph)	55	968	6	653	45	63	2	35	1
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		6			8		4
Permitted Phases	2		6		6	8		4	
Detector Phase	5	2	6	6	6	8	8	4	4
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	24.0	24.0	23.0	23.0	23.0	23.0
Total Split (s)	13.0	75.0	62.0	62.0	62.0	25.0	25.0	25.0	25.0
Total Split (%)	13.0%	75.0%	62.0%	62.0%	62.0%	25.0%	25.0%	25.0%	25.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.0	6.0	6.0	6.0	6.0		5.0		5.0
Lead/Lag	Lead		Lag	Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	None	None	Max	Max
Act Effct Green (s)	70.0	69.0	59.5	59.5	59.5		20.0		20.0
Actuated g/C Ratio	0.70	0.69	0.60	0.60	0.60		0.20		0.20
v/c Ratio	0.13	0.33	0.03	0.25	0.05		0.34		0.24
Control Delay	3.1	6.1	5.7	4.6	0.4		33.7		22.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	3.1	6.1	5.7	4.6	0.4		33.7		22.5
LOS	A	A	A	A	A		C		C
Approach Delay		5.9		4.4			33.7		22.5
Approach LOS		A		A			C		C

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 5 (5%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.34	
Intersection Signal Delay: 7.1	Intersection LOS: A
Intersection Capacity Utilization 44.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Site Access/12300 Block & Ken Caryl Ave

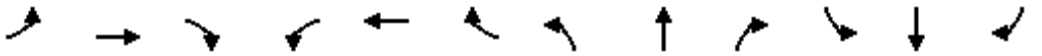




Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	65	1165	7	768	53	98	77
v/c Ratio	0.13	0.33	0.03	0.25	0.05	0.34	0.24
Control Delay	3.1	6.1	5.7	4.6	0.4	33.7	22.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.1	6.1	5.7	4.6	0.4	33.7	22.5
Queue Length 50th (ft)	9	63	1	29	0	47	22
Queue Length 95th (ft)	m17	70	m3	50	1	90	58
Internal Link Dist (ft)		120		504		217	188
Turn Bay Length (ft)	100		100				
Base Capacity (vph)	501	3500	255	3024	972	285	318
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.33	0.03	0.25	0.05	0.34	0.24

Intersection Summary

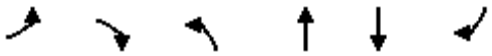
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	968	22	6	653	45	63	2	19	35	1	30
Future Volume (veh/h)	55	968	22	6	653	45	63	2	19	35	1	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	65	1139	26	7	768	53	74	2	22	41	1	35
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	545	3544	81	360	3055	948	280	15	67	204	20	141
Arrive On Green	0.04	0.69	0.69	1.00	1.00	1.00	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	1781	5136	117	482	5106	1585	1082	74	335	746	101	706
Grp Volume(v), veh/h	65	755	410	7	768	53	98	0	0	77	0	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1849	482	1702	1585	1491	0	0	1552	0	0
Q Serve(g_s), s	1.3	8.8	8.8	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.3	8.8	8.8	0.0	0.0	0.0	4.9	0.0	0.0	3.6	0.0	0.0
Prop In Lane	1.00		0.06	1.00		1.00	0.76		0.22	0.53		0.45
Lane Grp Cap(c), veh/h	545	2349	1276	360	3055	948	361	0	0	366	0	0
V/C Ratio(X)	0.12	0.32	0.32	0.02	0.25	0.06	0.27	0.00	0.00	0.21	0.00	0.00
Avail Cap(c_a), veh/h	613	2349	1276	360	3055	948	361	0	0	366	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.92	0.92	0.92	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.0	6.2	6.2	0.0	0.0	0.0	33.9	0.0	0.0	33.5	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.4	0.7	0.1	0.2	0.1	0.4	0.0	0.0	1.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.7	3.0	0.0	0.1	0.0	2.0	0.0	0.0	1.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.1	6.5	6.8	0.1	0.2	0.1	34.3	0.0	0.0	34.8	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	C	A	A	C	A	A
Approach Vol, veh/h		1230			828			98			77	
Approach Delay, s/veh		6.6			0.2			34.3			34.8	
Approach LOS		A			A			C			C	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		75.0		25.0	9.2	65.8		25.0				
Change Period (Y+Rc), s		6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s		69.0		20.0	8.0	56.0		20.0				
Max Q Clear Time (g_c+I1), s		10.8		5.6	3.3	2.0		6.9				
Green Ext Time (p_c), s		9.5		0.3	0.0	6.2		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			6.4									
HCM 6th LOS			A									



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	9	0	483	528	4
Future Volume (Veh/h)	0	9	0	483	528	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	10	0	525	574	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					715	
pX, platoon unblocked	0.94	0.94	0.94			
vC, conflicting volume	838	289	578			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	705	122	428			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	349	854	1062			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	10	262	262	383	195
Volume Left	0	0	0	0	0
Volume Right	10	0	0	0	4
cSH	854	1700	1700	1700	1700
Volume to Capacity	0.01	0.15	0.15	0.23	0.11
Queue Length 95th (ft)	1	0	0	0	0
Control Delay (s)	9.3	0.0	0.0	0.0	0.0
Lane LOS	A				
Approach Delay (s)	9.3	0.0		0.0	
Approach LOS	A				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	24.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2	39	171	2	53	81
Future Volume (Veh/h)	2	39	171	2	53	81
Sign Control	Stop			Stop	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	2	46	201	2	62	95
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)					403	
pX, platoon unblocked						
vC, conflicting volume	219	0	218	172	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	219	0	218	172	0	
tC, single (s)	6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3	3.5	4.0	2.2	
p0 queue free %	100	96	71	100	96	
cM capacity (veh/h)	653	1085	684	694	1623	

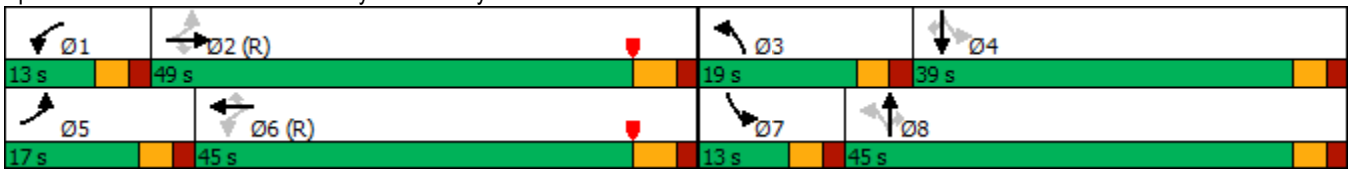
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	48	203	157
Volume Left	0	201	62
Volume Right	46	0	95
cSH	1056	684	1623
Volume to Capacity	0.05	0.30	0.04
Queue Length 95th (ft)	4	31	3
Control Delay (s)	8.6	12.5	3.1
Lane LOS	A	B	A
Approach Delay (s)	8.6	12.5	3.1
Approach LOS	A	B	

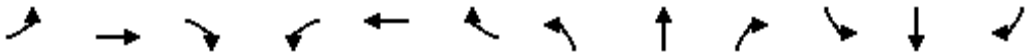
Intersection Summary			
Average Delay	8.4		
Intersection Capacity Utilization	30.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	189	1006	300	130	738	120	490	46	200	111	24	126
Future Volume (vph)	189	1006	300	130	738	120	490	46	200	111	24	126
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	24.0	10.0	23.0	23.0	10.0	23.0	23.0
Total Split (s)	17.0	49.0	49.0	13.0	45.0	45.0	19.0	45.0	45.0	13.0	39.0	39.0
Total Split (%)	14.2%	40.8%	40.8%	10.8%	37.5%	37.5%	15.8%	37.5%	37.5%	10.8%	32.5%	32.5%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Act Effct Green (s)	55.4	43.1	43.1	48.6	39.7	39.7	53.0	40.1	40.1	41.9	34.0	34.0
Actuated g/C Ratio	0.46	0.36	0.36	0.40	0.33	0.33	0.44	0.33	0.33	0.35	0.28	0.28
v/c Ratio	0.59	0.57	0.40	0.59	0.47	0.21	0.86	0.08	0.31	0.27	0.06	0.27
Control Delay	26.5	32.5	4.6	44.6	50.4	18.7	43.7	28.0	5.1	22.8	31.8	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.5	32.5	4.6	44.6	50.4	18.7	43.7	28.0	5.1	22.8	31.8	5.5
LOS	C	C	A	D	D	B	D	C	A	C	C	A
Approach Delay		26.1			45.8			32.3			15.2	
Approach LOS		C			D			C			B	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 12 (10%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 32.1	Intersection LOS: C
Intersection Capacity Utilization 73.8%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Shaffer Pkwy & Ken Caryl Ave

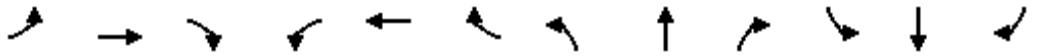




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	195	1037	309	140	794	129	510	48	208	135	29	154
v/c Ratio	0.59	0.57	0.40	0.59	0.47	0.21	0.86	0.08	0.31	0.27	0.06	0.27
Control Delay	26.5	32.5	4.6	44.6	50.4	18.7	43.7	28.0	5.1	22.8	31.8	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.5	32.5	4.6	44.6	50.4	18.7	43.7	28.0	5.1	22.8	31.8	5.5
Queue Length 50th (ft)	87	235	0	101	229	25	304	25	0	62	16	0
Queue Length 95th (ft)	137	282	59	158	275	83	#481	54	53	94	37	31
Internal Link Dist (ft)		1058			341			383			323	
Turn Bay Length (ft)	120		210	210		480				80		80
Base Capacity (vph)	339	1826	766	238	1681	627	596	622	667	501	527	566
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.57	0.40	0.59	0.47	0.21	0.86	0.08	0.31	0.27	0.06	0.27

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	189	1006	300	130	738	120	490	46	200	111	24	126
Future Volume (veh/h)	189	1006	300	130	738	120	490	46	200	111	24	126
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	195	1037	309	140	794	129	510	48	208	135	29	154
Peak Hour Factor	0.97	0.97	0.97	0.93	0.93	0.93	0.96	0.96	0.96	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	347	1830	568	258	1721	534	595	623	528	497	530	449
Arrive On Green	0.09	0.36	0.36	0.07	0.34	0.34	0.12	0.33	0.33	0.07	0.28	0.28
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	195	1037	309	140	794	129	510	48	208	135	29	154
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	8.5	19.6	18.6	6.1	14.6	7.0	14.0	2.1	12.1	6.4	1.4	9.3
Cycle Q Clear(g_c), s	8.5	19.6	18.6	6.1	14.6	7.0	14.0	2.1	12.1	6.4	1.4	9.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	347	1830	568	258	1721	534	595	623	528	497	530	449
V/C Ratio(X)	0.56	0.57	0.54	0.54	0.46	0.24	0.86	0.08	0.39	0.27	0.05	0.34
Avail Cap(c_a), veh/h	368	1830	568	258	1721	534	595	623	528	497	530	449
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.6	31.0	30.7	25.0	31.2	28.7	32.1	27.4	30.7	27.4	31.3	34.1
Incr Delay (d2), s/veh	1.7	1.3	3.7	2.3	0.9	1.1	12.0	0.2	2.2	0.3	0.2	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	8.0	7.7	2.7	6.0	2.9	8.9	1.0	5.0	2.8	0.6	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.3	32.3	34.4	27.3	32.1	29.8	44.1	27.6	32.9	27.7	31.5	36.2
LnGrp LOS	C	C	C	C	C	C	D	C	C	C	C	D
Approach Vol, veh/h		1541			1063			766			318	
Approach Delay, s/veh		31.8			31.2			40.0			32.2	
Approach LOS		C			C			D			C	

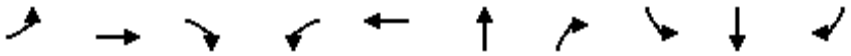
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	49.0	19.0	39.0	15.5	46.5	13.0	45.0
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0
Max Green Setting (Gmax), s	8.0	43.0	14.0	34.0	12.0	39.0	8.0	40.0
Max Q Clear Time (g_c+I1), s	8.1	21.6	16.0	11.3	10.5	16.6	8.4	14.1
Green Ext Time (p_c), s	0.0	8.4	0.0	0.6	0.1	5.8	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	33.4
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	183	1193	27	107	801	38	16	83	49	9	89
Future Volume (vph)	183	1193	27	107	801	38	16	83	49	9	89
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6		8			4	
Permitted Phases	2		2	6		8		8	4		4
Detector Phase	5	2	2	1	6	8	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	13.0	63.0	63.0	13.0	63.0	44.0	44.0	44.0	44.0	44.0	44.0
Total Split (%)	10.8%	52.5%	52.5%	10.8%	52.5%	36.7%	36.7%	36.7%	36.7%	36.7%	36.7%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	C-Max	C-Max	None	C-Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	66.4	57.4	57.4	65.6	57.0		39.0	39.0	39.0	39.0	39.0
Actuated g/C Ratio	0.55	0.48	0.48	0.55	0.48		0.32	0.32	0.32	0.32	0.32
v/c Ratio	0.55	0.51	0.04	0.43	0.38		0.13	0.17	0.12	0.02	0.17
Control Delay	11.9	17.5	2.2	17.7	9.4		29.5	6.3	29.6	27.8	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	11.9	17.5	2.2	17.7	9.4		29.5	6.3	29.6	27.8	6.3
LOS	B	B	A	B	A		C	A	C	C	A
Approach Delay		16.4			10.3		15.4			15.4	
Approach LOS		B			B		B			B	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 61 (51%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.55	
Intersection Signal Delay: 14.1	Intersection LOS: B
Intersection Capacity Utilization 51.9%	ICU Level of Service A
Analysis Period (min) 15	

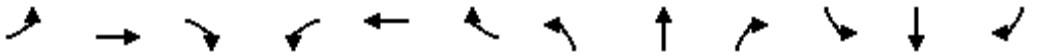
Splits and Phases: 2: Alkire St & Ken Caryl Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	191	1243	28	109	910	63	97	54	10	98
v/c Ratio	0.55	0.51	0.04	0.43	0.38	0.13	0.17	0.12	0.02	0.17
Control Delay	11.9	17.5	2.2	17.7	9.4	29.5	6.3	29.6	27.8	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.9	17.5	2.2	17.7	9.4	29.5	6.3	29.6	27.8	6.3
Queue Length 50th (ft)	15	309	3	21	52	34	0	29	5	0
Queue Length 95th (ft)	46	352	m8	m51	62	65	34	61	18	38
Internal Link Dist (ft)		376			477	264			636	
Turn Bay Length (ft)	140		240	185			110	60		125
Base Capacity (vph)	348	2430	790	260	2390	502	579	433	605	580
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.51	0.04	0.42	0.38	0.13	0.17	0.12	0.02	0.17

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	183	1193	27	107	801	91	38	16	83	49	9	89
Future Volume (veh/h)	183	1193	27	107	801	91	38	16	83	49	9	89
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	191	1243	28	109	817	93	44	19	97	54	10	98
Peak Hour Factor	0.96	0.96	0.96	0.98	0.98	0.98	0.86	0.86	0.86	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	401	2526	784	288	2210	250	366	150	515	438	608	515
Arrive On Green	0.07	0.49	0.49	0.05	0.48	0.48	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1781	5106	1585	1781	4653	527	969	460	1585	1276	1870	1585
Grp Volume(v), veh/h	191	1243	28	109	597	313	63	0	97	54	10	98
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1776	1429	0	1585	1276	1870	1585
Q Serve(g_s), s	6.6	19.5	1.1	3.7	13.4	13.5	2.6	0.0	5.3	3.7	0.4	5.3
Cycle Q Clear(g_c), s	6.6	19.5	1.1	3.7	13.4	13.5	3.5	0.0	5.3	7.2	0.4	5.3
Prop In Lane	1.00		1.00	1.00		0.30	0.70		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	401	2526	784	288	1617	843	516	0	515	438	608	515
V/C Ratio(X)	0.48	0.49	0.04	0.38	0.37	0.37	0.12	0.00	0.19	0.12	0.02	0.19
Avail Cap(c_a), veh/h	401	2526	784	323	1617	843	516	0	515	438	608	515
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.2	20.2	15.6	16.2	20.1	20.1	28.4	0.0	29.1	31.0	27.5	29.1
Incr Delay (d2), s/veh	0.9	0.7	0.1	0.8	0.6	1.3	0.5	0.0	0.8	0.6	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	7.5	0.4	1.5	5.3	5.7	1.4	0.0	2.2	1.2	0.2	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.1	20.9	15.7	17.1	20.7	21.3	28.9	0.0	29.9	31.6	27.5	30.0
LnGrp LOS	B	C	B	B	C	C	C	A	C	C	C	C
Approach Vol, veh/h		1462			1019			160			162	
Approach Delay, s/veh		20.2			20.5			29.5			30.4	
Approach LOS		C			C			C			C	

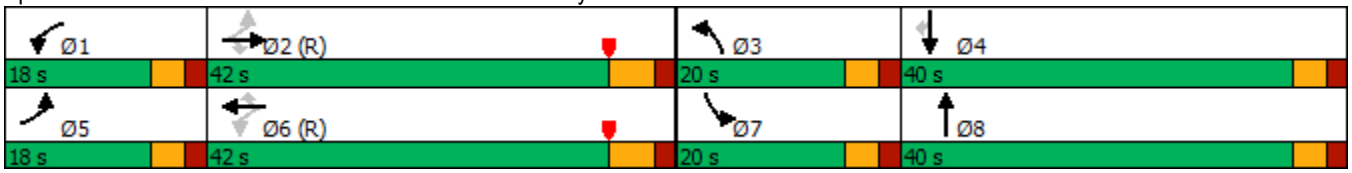
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.6	65.4		44.0	13.0	63.0		44.0				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	8.0	57.0		39.0	8.0	57.0		39.0				
Max Q Clear Time (g_c+I1), s	5.7	21.5		9.2	8.6	15.5		7.3				
Green Ext Time (p_c), s	0.0	10.7		0.5	0.0	6.6		0.7				

Intersection Summary												
HCM 6th Ctrl Delay			21.4									
HCM 6th LOS			C									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	352	541	218	62	517	110	209	265	195	263	321
Future Volume (vph)	352	541	218	62	517	110	209	265	195	263	321
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8	7	4	
Permitted Phases	2		2	6		6					4
Detector Phase	5	2	2	1	6	6	3	8	7	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	10.0	24.0	24.0	10.0	23.0	10.0	23.0	23.0
Total Split (s)	18.0	42.0	42.0	18.0	42.0	42.0	20.0	40.0	20.0	40.0	40.0
Total Split (%)	15.0%	35.0%	35.0%	15.0%	35.0%	35.0%	16.7%	33.3%	16.7%	33.3%	33.3%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	Max	Max
Act Effct Green (s)	54.4	43.2	43.2	45.0	36.0	36.0	12.7	37.7	12.3	37.3	37.3
Actuated g/C Ratio	0.45	0.36	0.36	0.38	0.30	0.30	0.11	0.31	0.10	0.31	0.31
v/c Ratio	0.89	0.44	0.32	0.19	0.36	0.21	0.61	0.30	0.59	0.25	0.48
Control Delay	54.7	14.0	1.6	20.1	33.7	6.5	58.5	30.9	58.1	32.1	8.1
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	54.7	14.0	1.6	20.1	33.7	6.5	58.5	30.9	58.1	32.1	8.1
LOS	D	B	A	C	C	A	E	C	E	C	A
Approach Delay		24.4			28.2			42.0		28.7	
Approach LOS		C			C			D		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 61 (51%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 29.3	Intersection LOS: C
Intersection Capacity Utilization 61.3%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: Chatfield Ave/Simms St & Ken Caryl Ave

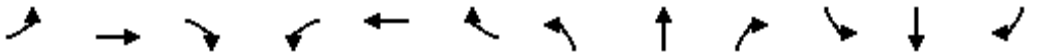


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	363	558	225	65	544	116	220	327	205	277	338
v/c Ratio	0.89	0.44	0.32	0.19	0.36	0.21	0.61	0.30	0.59	0.25	0.48
Control Delay	54.7	14.0	1.6	20.1	33.7	6.5	58.5	30.9	58.1	32.1	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.7	14.0	1.6	20.1	33.7	6.5	58.5	30.9	58.1	32.1	8.1
Queue Length 50th (ft)	147	64	1	28	120	0	85	95	79	84	20
Queue Length 95th (ft)	m#179	m90	m0	55	155	43	124	140	117	124	99
Internal Link Dist (ft)		504			417			635		285	
Turn Bay Length (ft)	210			300			240		225		295
Base Capacity (vph)	408	1273	713	424	1525	556	429	1099	429	1101	700
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	0.89	0.44	0.32	0.15	0.36	0.21	0.51	0.30	0.48	0.25	0.48

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	352	541	218	62	517	110	209	265	46	195	263	321
Future Volume (veh/h)	352	541	218	62	517	110	209	265	46	195	263	321
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	363	558	225	65	544	0	220	279	48	205	277	338
Peak Hour Factor	0.97	0.97	0.97	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	481	1474	657	313	1753		283	899	153	267	1036	462
Arrive On Green	0.04	0.14	0.14	0.04	0.34	0.00	0.08	0.30	0.30	0.08	0.29	0.29
Sat Flow, veh/h	1781	3554	1585	1781	5106	1585	3456	3038	516	3456	3554	1585
Grp Volume(v), veh/h	363	558	225	65	544	0	220	162	165	205	277	338
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1702	1585	1728	1777	1777	1728	1777	1585
Q Serve(g_s), s	13.0	17.2	15.4	2.8	9.4	0.0	7.5	8.5	8.7	7.0	7.2	23.0
Cycle Q Clear(g_c), s	13.0	17.2	15.4	2.8	9.4	0.0	7.5	8.5	8.7	7.0	7.2	23.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.29	1.00		1.00
Lane Grp Cap(c), veh/h	481	1474	657	313	1753		283	526	526	267	1036	462
V/C Ratio(X)	0.75	0.38	0.34	0.21	0.31		0.78	0.31	0.31	0.77	0.27	0.73
Avail Cap(c_a), veh/h	481	1474	657	441	1753		432	526	526	432	1036	462
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.94	0.94	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.6	37.7	37.0	24.3	29.0	0.0	54.0	32.7	32.8	54.3	32.6	38.3
Incr Delay (d2), s/veh	6.3	0.7	1.3	0.3	0.5	0.0	4.9	1.5	1.6	4.6	0.6	9.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	8.3	6.8	1.2	3.8	0.0	3.4	3.8	3.9	3.2	3.1	10.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.9	38.4	38.3	24.6	29.4	0.0	59.0	34.2	34.3	58.9	33.3	48.1
LnGrp LOS	C	D	D	C	C		E	C	C	E	C	D
Approach Vol, veh/h		1146			609	A		547			820	
Approach Delay, s/veh		36.3			28.9			44.2			45.8	
Approach LOS		D			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.4	55.8	14.8	40.0	18.0	47.2	14.3	40.5
Change Period (Y+Rc), s	5.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0
Max Green Setting (Gmax), s	13.0	36.0	15.0	35.0	13.0	36.0	15.0	35.0
Max Q Clear Time (g_c+I1), s	4.8	19.2	9.5	25.0	15.0	11.4	9.0	10.7
Green Ext Time (p_c), s	0.1	4.0	0.3	2.1	0.0	3.6	0.3	1.7

Intersection Summary	
HCM 6th Ctrl Delay	38.7
HCM 6th LOS	D

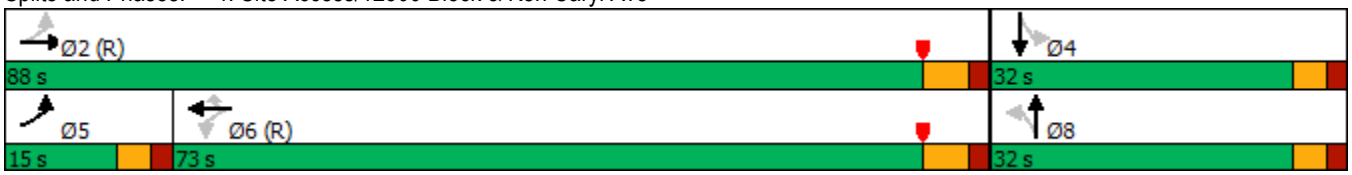
Notes

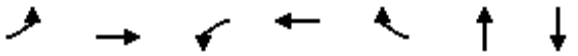
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	120	968	19	924	95	40	1	130	2
Future Volume (vph)	120	968	19	924	95	40	1	130	2
Turn Type	pm+pt	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		6			8		4
Permitted Phases	2		6		6	8		4	
Detector Phase	5	2	6	6	6	8	8	4	4
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	24.0	24.0	24.0	24.0	23.0	23.0	23.0	23.0
Total Split (s)	15.0	88.0	73.0	73.0	73.0	32.0	32.0	32.0	32.0
Total Split (%)	12.5%	73.3%	60.8%	60.8%	60.8%	26.7%	26.7%	26.7%	26.7%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	5.0	6.0	6.0	6.0	6.0		5.0		5.0
Lead/Lag	Lead		Lag	Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	None	None	Max	Max
Act Effct Green (s)	83.0	82.0	68.5	68.5	68.5		27.0		27.0
Actuated g/C Ratio	0.69	0.68	0.57	0.57	0.57		0.22		0.22
v/c Ratio	0.39	0.35	0.10	0.37	0.12		0.22		0.81
Control Delay	14.3	2.7	13.7	14.2	3.6		34.0		58.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	14.3	2.7	13.7	14.2	3.6		34.0		58.7
LOS	B	A	B	B	A		C		E
Approach Delay		3.9		13.2			34.0		58.7
Approach LOS		A		B			C		E

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 61 (51%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 13.7	Intersection LOS: B
Intersection Capacity Utilization 52.7%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Site Access/12300 Block & Ken Caryl Ave



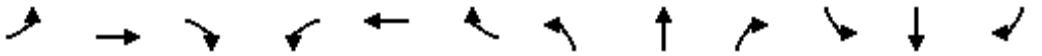


Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	141	1218	22	1087	112	62	279
v/c Ratio	0.39	0.35	0.10	0.37	0.12	0.22	0.81
Control Delay	14.3	2.7	13.7	14.2	3.6	34.0	58.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.3	2.7	13.7	14.2	3.6	34.0	58.7
Queue Length 50th (ft)	22	28	7	134	3	32	185
Queue Length 95th (ft)	54	50	m18	158	15	68	#292
Internal Link Dist (ft)		120		504		217	188
Turn Bay Length (ft)	100		100				
Base Capacity (vph)	378	3446	231	2901	951	279	343
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.35	0.10	0.37	0.12	0.22	0.81

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

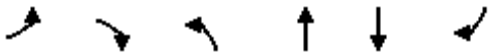
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	968	67	19	924	95	40	1	12	130	2	105
Future Volume (veh/h)	120	968	67	19	924	95	40	1	12	130	2	105
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	141	1139	79	22	1087	112	47	1	14	153	2	124
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	421	3332	231	329	3038	943	254	12	62	232	6	153
Arrive On Green	0.05	0.68	0.68	1.00	1.00	1.00	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1781	4876	338	458	5106	1585	893	52	276	824	27	681
Grp Volume(v), veh/h	141	795	423	22	1087	112	62	0	0	279	0	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1810	458	1702	1585	1220	0	0	1533	0	0
Q Serve(g_s), s	3.5	11.6	11.6	0.1	0.0	0.0	0.0	0.0	0.0	15.5	0.0	0.0
Cycle Q Clear(g_c), s	3.5	11.6	11.6	1.1	0.0	0.0	4.9	0.0	0.0	20.4	0.0	0.0
Prop In Lane	1.00		0.19	1.00		1.00	0.76		0.23	0.55		0.44
Lane Grp Cap(c), veh/h	421	2326	1237	329	3038	943	327	0	0	391	0	0
V/C Ratio(X)	0.34	0.34	0.34	0.07	0.36	0.12	0.19	0.00	0.00	0.71	0.00	0.00
Avail Cap(c_a), veh/h	486	2326	1237	329	3038	943	327	0	0	391	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.90	0.90	0.90	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.6	7.9	7.9	0.0	0.0	0.0	37.8	0.0	0.0	43.6	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.4	0.8	0.4	0.3	0.2	0.3	0.0	0.0	10.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	3.9	4.2	0.0	0.1	0.1	1.5	0.0	0.0	8.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.1	8.3	8.6	0.4	0.3	0.2	38.1	0.0	0.0	54.2	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	D	A	A	D	A	A
Approach Vol, veh/h		1359			1221			62			279	
Approach Delay, s/veh		8.3			0.3			38.1			54.2	
Approach LOS		A			A			D			D	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		88.0		32.0	10.6	77.4		32.0				
Change Period (Y+Rc), s		6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s		82.0		27.0	10.0	67.0		27.0				
Max Q Clear Time (g_c+I1), s		13.6		22.4	5.5	3.1		6.9				
Green Ext Time (p_c), s		10.4		0.7	0.1	10.6		0.2				

Intersection Summary												
HCM 6th Ctrl Delay			10.0									
HCM 6th LOS			A									



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	6	0	519	533	11
Future Volume (Veh/h)	0	6	0	519	533	11
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	7	0	564	579	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					715	
pX, platoon unblocked	0.95	0.95	0.95			
vC, conflicting volume	867	296	591			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	761	161	471			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	325	815	1035			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	7	282	282	386	205
Volume Left	0	0	0	0	0
Volume Right	7	0	0	0	12
cSH	815	1700	1700	1700	1700
Volume to Capacity	0.01	0.17	0.17	0.23	0.12
Queue Length 95th (ft)	1	0	0	0	0
Control Delay (s)	9.5	0.0	0.0	0.0	0.0
Lane LOS	A				
Approach Delay (s)	9.5	0.0		0.0	
Approach LOS	A				

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	25.1%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	3	58	129	3	70	195
Future Volume (Veh/h)	3	58	129	3	70	195
Sign Control	Stop			Stop	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	4	68	152	4	82	229
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)					403	
pX, platoon unblocked						
vC, conflicting volume	393	0	348	278	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	393	0	348	278	0	
tC, single (s)	6.5	6.2	7.1	6.5	4.1	
tC, 2 stage (s)						
tF (s)	4.0	3.3	3.5	4.0	2.2	
p0 queue free %	99	94	72	99	95	
cM capacity (veh/h)	516	1085	543	598	1623	

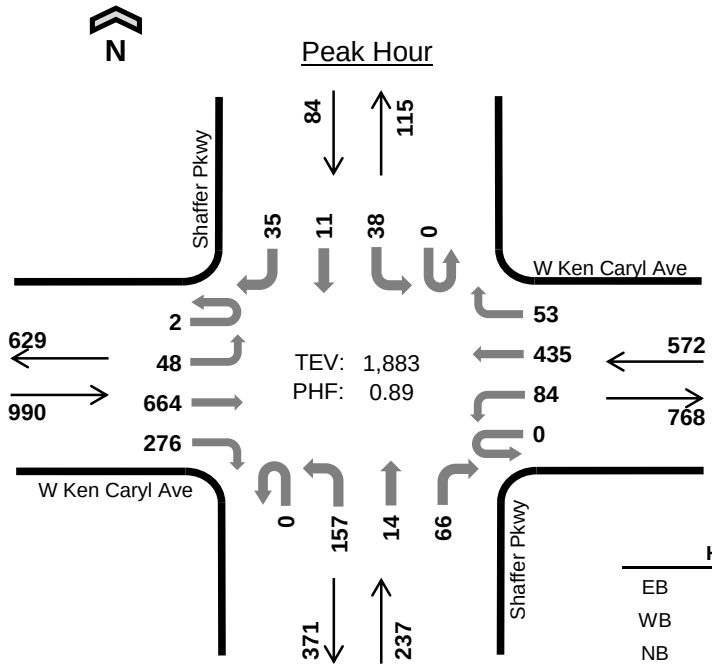
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	72	156	311
Volume Left	0	152	82
Volume Right	68	0	229
cSH	1022	544	1623
Volume to Capacity	0.07	0.29	0.05
Queue Length 95th (ft)	6	29	4
Control Delay (s)	8.8	14.3	2.2
Lane LOS	A	B	A
Approach Delay (s)	8.8	14.3	2.2
Approach LOS	A	B	

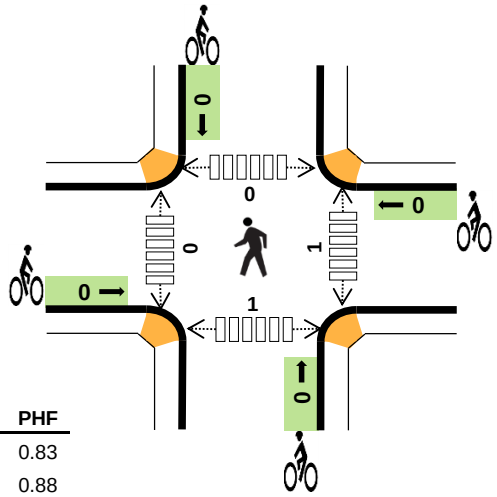
Intersection Summary			
Average Delay	6.6		
Intersection Capacity Utilization	36.5%	ICU Level of Service	A
Analysis Period (min)	15		

Traffic Count Data Sheets

Shaffer Pkwy
W Ken Caryl Ave

Date: Tue, Feb 11, 2020
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:15 AM to 8:15 AM





	HV %:	PHF
EB	0.9%	0.83
WB	0.9%	0.88
NB	1.7%	0.88
SB	9.5%	0.84
TOTAL	1.4%	0.89

Two-Hour Count Summaries

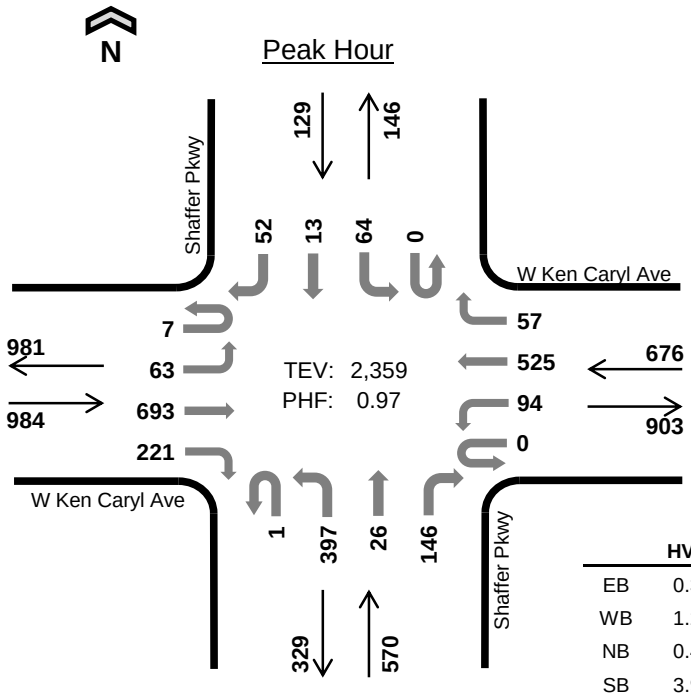
Interval Start	W Ken Caryl Ave Eastbound				W Ken Caryl Ave Westbound				Shaffer Pkwy Northbound				Shaffer Pkwy Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	6	91	41	1	12	136	10	0	48	4	6	0	4	4	8	371	0
7:15 AM	**0**	**10**	**140**	**62**	**0**	**18**	**107**	**6**	**0**	**46**	**6**	**12**	**0**	**6**	**3**	**8**	**424**	0
7:30 AM	**0**	**17**	**207**	**76**	**0**	**27**	**94**	**17**	**0**	**43**	**4**	**20**	**0**	**12**	**5**	**8**	**530**	0
7:45 AM	**1**	**11**	**201**	**79**	**0**	**25**	**99**	**16**	**0**	**34**	**1**	**20**	**0**	**10**	**1**	**11**	**509**	1,834
8:00 AM	**1**	**10**	**116**	**59**	**0**	**14**	**135**	**14**	**0**	**34**	**3**	**14**	**0**	**10**	**2**	**8**	**420**	**1,883**
8:15 AM	0	10	134	48	0	24	102	9	0	45	3	16	0	7	1	5	404	1,863
8:30 AM	2	12	135	50	1	7	129	13	0	49	5	17	0	9	3	4	436	1,769
8:45 AM	0	18	205	55	0	20	95	7	0	46	2	9	0	5	3	13	478	1,738
Count Total	4	94	1,229	470	2	147	897	92	0	345	28	114	0	63	22	65	3,572	0
Peak Hour	**2**	**48**	**664**	**276**	**0**	**84**	**435**	**53**	**0**	**157**	**14**	**66**	**0**	**38**	**11**	**35**	**1,883**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

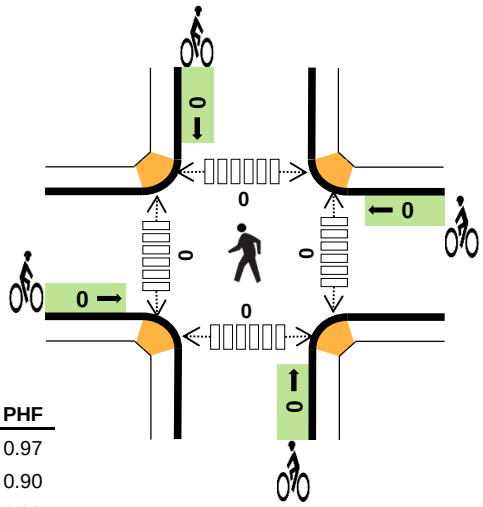
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	1	3	2	1	*7*	0	0	0	0	*0*	0	1	1	0	*2*
7:15 AM	**3**	**1**	**0**	**1**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:30 AM	**2**	**2**	**3**	**3**	***10***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**1**	*2*
7:45 AM	**2**	**1**	**1**	**1**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**2**	**1**	**0**	**3**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:15 AM	1	4	0	1	*6*	0	0	0	0	*0*	0	0	0	1	*1*
8:30 AM	3	1	1	2	*7*	0	0	0	0	*0*	1	0	0	0	*1*
8:45 AM	3	2	2	1	*8*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	17	15	9	13	*54*	0	0	0	0	*0*	2	1	1	2	*6*
Peak Hour	**9**	**5**	**4**	**8**	***26***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**1**	***2***

Mark Skaggs: (425) 250-0777 mark.skaggs@idaxdata.com

Shaffer Pkwy
W Ken Caryl Ave



Date: Tue, Feb 11, 2020
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM



	HV %:	PHF
EB	0.3%	0.97
WB	1.2%	0.90
NB	0.4%	0.93
SB	3.9%	0.79
TOTAL	0.8%	0.97

Two-Hour Count Summaries

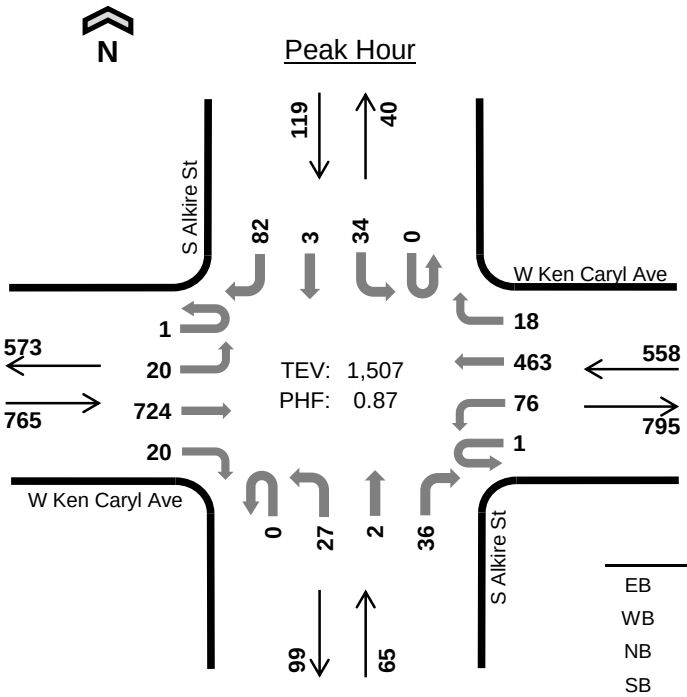
Interval Start	W Ken Caryl Ave Eastbound				W Ken Caryl Ave Westbound				Shaffer Pkwy Northbound				Shaffer Pkwy Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	1	13	204	62	0	23	115	12	0	73	6	34	0	12	2	14	571	0
4:15 PM	2	12	207	56	0	15	157	7	0	69	4	24	0	12	0	8	573	0
4:30 PM	**0**	**12**	**167**	**62**	**0**	**25**	**122**	**11**	**1**	**101**	**9**	**43**	**0**	**15**	**4**	**11**	**583**	0
4:45 PM	**0**	**12**	**185**	**52**	**0**	**25**	**127**	**12**	**0**	**94**	**3**	**37**	**0**	**11**	**3**	**14**	**575**	2,302
5:00 PM	**3**	**19**	**163**	**56**	**0**	**22**	**146**	**19**	**0**	**104**	**5**	**28**	**0**	**18**	**2**	**10**	**595**	2,326
5:15 PM	**4**	**20**	**178**	**51**	**0**	**22**	**130**	**15**	**0**	**98**	**9**	**38**	**0**	**20**	**4**	**17**	**606**	**2,359**
5:30 PM	0	18	176	53	0	19	115	15	0	83	9	25	0	11	7	14	545	2,321
5:45 PM	2	17	195	54	1	16	117	14	0	67	4	31	0	22	4	12	556	2,302
Count Total	12	123	1,475	446	1	167	1,029	105	1	689	49	260	0	121	26	100	4,604	0
Peak Hour	**7**	**63**	**693**	**221**	**0**	**94**	**525**	**57**	**1**	**397**	**26**	**146**	**0**	**64**	**13**	**52**	**2,359**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

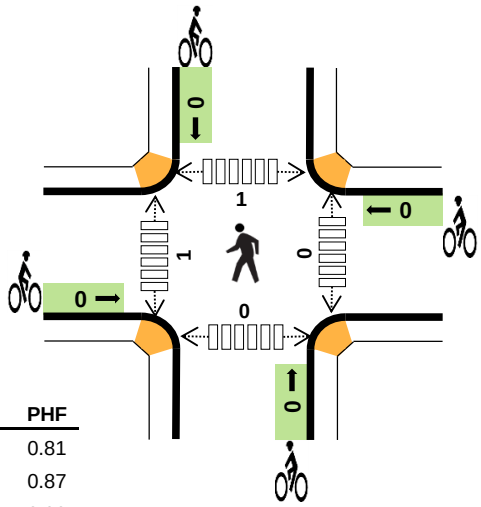
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	2	3	0	2	*7*	0	0	0	0	*0*	0	3	2	0	*5*
4:15 PM	0	3	3	0	*6*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	**1**	**2**	**1**	**3**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:45 PM	**1**	**1**	**0**	**0**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**1**	**2**	**1**	**2**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**0**	**3**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:30 PM	0	2	0	1	*3*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	1	3	0	3	*7*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	6	19	5	11	*41*	0	0	0	0	*0*	0	3	2	0	*5*
Peak Hour	**3**	**8**	**2**	**5**	***18***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Mark Skaggs: (425) 250-0777 mark.skaggs@idaxdata.com

S Alkire St
W Ken Caryl Ave



Date: Tue, Feb 11, 2020
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:15 AM to 8:15 AM



	HV %:	PHF
EB	2.0%	0.81
WB	1.1%	0.87
NB	1.5%	0.90
SB	3.4%	0.73
TOTAL	1.7%	0.87

Two-Hour Count Summaries

Interval Start	W Ken Caryl Ave Eastbound				W Ken Caryl Ave Westbound				S Alkire St Northbound				S Alkire St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	1	5	87	7	0	26	138	1	0	5	0	7	0	8	4	22	311	0
7:15 AM	**0**	**8**	**155**	**2**	**0**	**17**	**106**	**4**	**0**	**8**	**1**	**9**	**0**	**8**	**1**	**20**	**339**	0
7:30 AM	**0**	**5**	**216**	**3**	**0**	**11**	**99**	**3**	**0**	**5**	**0**	**9**	**0**	**12**	**1**	**28**	**392**	0
7:45 AM	**1**	**2**	**229**	**4**	**1**	**28**	**122**	**7**	**0**	**6**	**0**	**9**	**0**	**8**	**0**	**14**	**431**	1,473
8:00 AM	**0**	**5**	**124**	**11**	**0**	**20**	**136**	**4**	**0**	**8**	**1**	**9**	**0**	**6**	**1**	**20**	**345**	**1,507**
8:15 AM	1	7	141	4	0	22	122	5	0	8	0	7	0	9	0	7	333	1,501
8:30 AM	0	1	141	6	0	25	123	2	0	2	1	17	0	8	3	19	348	1,457
8:45 AM	2	5	211	6	0	19	109	3	0	6	0	21	0	3	3	9	397	1,423
Count Total	5	38	1,304	43	1	168	955	29	0	48	3	88	0	62	13	139	2,896	0
Peak Hour	**1**	**20**	**724**	**20**	**1**	**76**	**463**	**18**	**0**	**27**	**2**	**36**	**0**	**34**	**3**	**82**	**1,507**	**0**

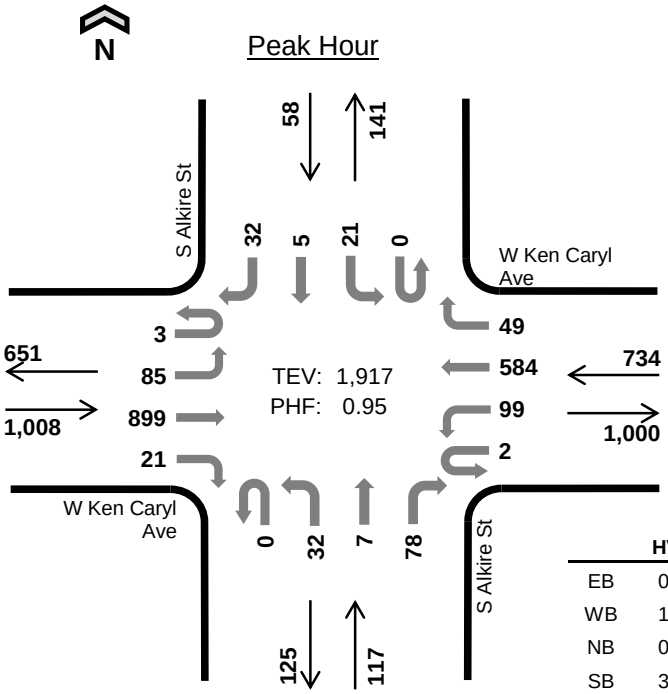
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

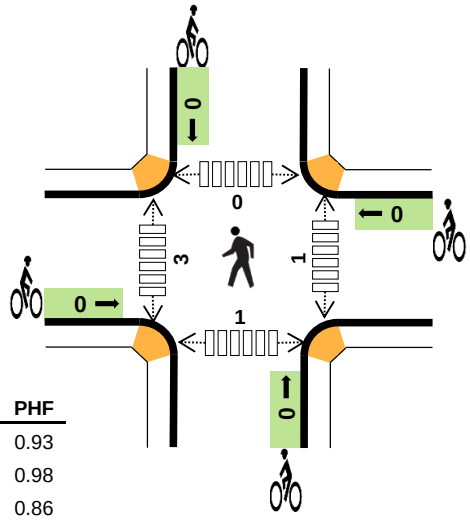
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	3	8	0	0	*11*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	**6**	**3**	**0**	**0**	***9***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:30 AM	**2**	**2**	**0**	**1**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**1**	**0**	*2*
7:45 AM	**4**	**0**	**1**	**1**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**3**	**1**	**0**	**2**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:15 AM	1	4	0	0	*5*	0	0	0	0	*0*	1	0	0	1	*2*
8:30 AM	1	1	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	5	4	1	0	*10*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	25	23	2	4	*54*	0	0	0	0	*0*	1	1	1	1	*4*
Peak Hour	**15**	**6**	**1**	**4**	***26***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**1**	**0**	***2***

Mark Skaggs: (425) 250-0777 mark.skaggs@idaxdata.com

S Alkire St
W Ken Caryl Ave

Date: Tue, Feb 11, 2020
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM





	HV %:	PHF
EB	0.8%	0.93
WB	1.1%	0.98
NB	0.0%	0.86
SB	3.4%	0.91
TOTAL	0.9%	0.95

Two-Hour Count Summaries

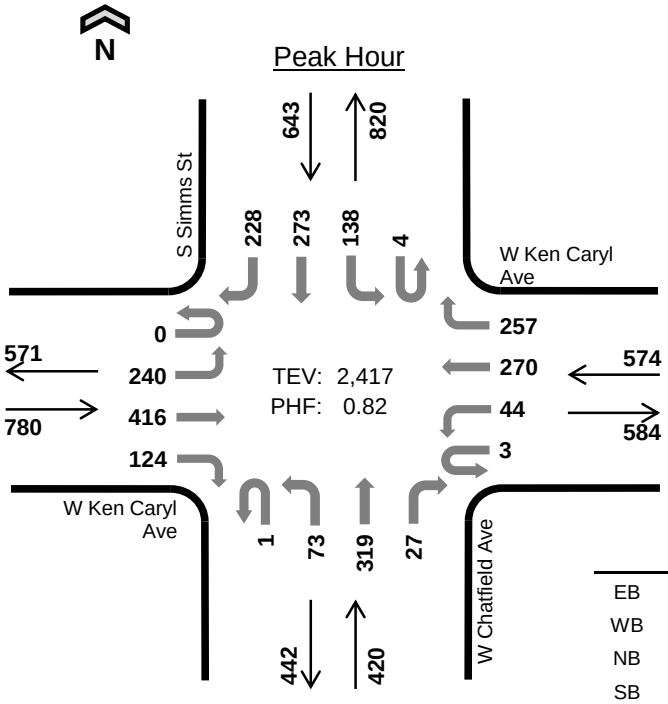
Interval Start	W Ken Caryl Ave Eastbound				W Ken Caryl Ave Westbound				S Alkire St Northbound				S Alkire St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**19**	**244**	**8**	**0**	**31**	**142**	**12**	**0**	**7**	**3**	**23**	**0**	**4**	**1**	**11**	**505**	0
4:15 PM	**0**	**12**	**228**	**4**	**1**	**21**	**151**	**10**	**0**	**13**	**2**	**19**	**0**	**6**	**1**	**7**	**475**	0
4:30 PM	**2**	**28**	**211**	**4**	**0**	**21**	**151**	**15**	**0**	**5**	**1**	**18**	**0**	**6**	**1**	**6**	**469**	0
4:45 PM	**1**	**26**	**216**	**5**	**1**	**26**	**140**	**12**	**0**	**7**	**1**	**18**	**0**	**5**	**2**	**8**	**468**	**1,917**
5:00 PM	3	22	181	8	1	31	173	12	0	10	3	31	0	4	2	9	490	1,902
5:15 PM	1	22	218	5	0	26	140	18	0	5	3	25	0	12	4	11	490	1,917
5:30 PM	0	24	181	4	0	31	130	12	0	7	1	18	0	5	2	14	429	1,877
5:45 PM	1	24	214	3	0	36	130	11	0	4	7	21	0	10	2	10	473	1,882
Count Total	8	177	1,693	41	3	223	1,157	102	0	58	21	173	0	52	15	76	3,799	0
Peak Hour	**3**	**85**	**899**	**21**	**2**	**99**	**584**	**49**	**0**	**32**	**7**	**78**	**0**	**21**	**5**	**32**	**1,917**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

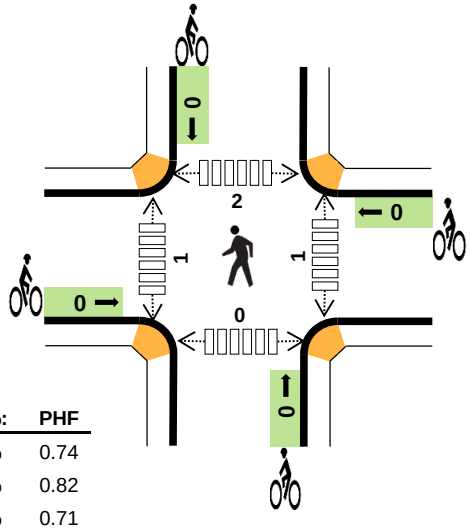
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	**4**	**3**	**0**	**1**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:15 PM	**0**	**2**	**0**	**1**	***3***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**1**	*2*
4:30 PM	**3**	**2**	**0**	**0**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**2**	**0**	**0**	*2*
4:45 PM	**1**	**1**	**0**	**0**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	***1***
5:00 PM	3	2	0	0	*5*	0	0	0	0	*0*	0	0	0	0	*0*
5:15 PM	0	3	0	1	*4*	0	0	0	0	*0*	1	0	0	1	*2*
5:30 PM	1	3	0	0	*4*	0	0	0	0	*0*	0	1	0	0	*1*
5:45 PM	2	2	1	1	*6*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	14	18	1	4	*37*	0	0	0	0	*0*	2	4	0	2	*8*
Peak Hour	**8**	**8**	**0**	**2**	***18***	**0**	**0**	**0**	**0**	***0***	**1**	**3**	**0**	**1**	***5***

Mark Skaggs: (425) 250-0777 mark.skaggs@idaxdata.com

W Chatfield Ave
W Ken Caryl Ave



Date: Tue, Feb 11, 2020
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:15 AM to 8:15 AM



	HV %:	PHF
EB	2.4%	0.74
WB	1.2%	0.82
NB	0.7%	0.71
SB	0.6%	0.77
TOTAL	1.4%	0.82

Two-Hour Count Summaries

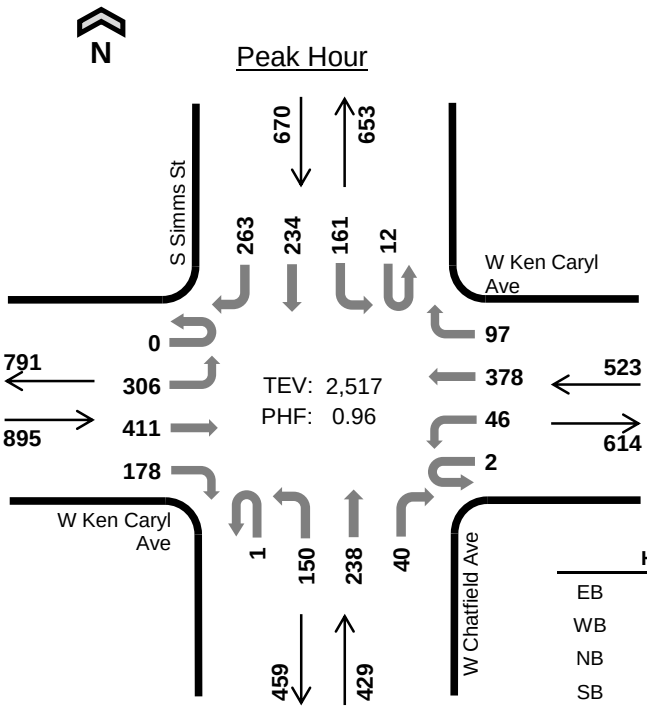
Interval Start	W Ken Caryl Ave Eastbound				W Ken Caryl Ave Westbound				W Chatfield Ave Northbound				S Simms St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	34	47	17	2	8	80	30	0	17	32	4	0	16	30	53	370	0
7:15 AM	**0**	**64**	**73**	**29**	**0**	**9**	**63**	**61**	**0**	**18**	**66**	**5**	**0**	**29**	**43**	**44**	**504**	0
7:30 AM	**0**	**61**	**133**	**24**	**0**	**11**	**59**	**105**	**1**	**18**	**124**	**5**	**2**	**27**	**72**	**51**	**693**	0
7:45 AM	**0**	**74**	**149**	**42**	**2**	**13**	**59**	**65**	**0**	**23**	**94**	**10**	**0**	**49**	**91**	**70**	**741**	2,308
8:00 AM	**0**	**41**	**61**	**29**	**1**	**11**	**89**	**26**	**0**	**14**	**35**	**7**	**2**	**33**	**67**	**63**	**479**	**2,417**
8:15 AM	0	66	59	22	0	10	90	23	0	21	50	4	0	22	47	45	459	2,372
8:30 AM	0	49	85	24	0	8	70	25	0	26	36	9	1	29	33	61	456	2,135
8:45 AM	0	64	93	51	1	10	55	27	0	25	46	9	0	20	38	43	482	1,876
Count Total	0	453	700	238	6	80	565	362	1	162	483	53	5	225	421	430	4,184	0
Peak Hour	**0**	**240**	**416**	**124**	**3**	**44**	**270**	**257**	**1**	**73**	**319**	**27**	**4**	**138**	**273**	**228**	**2,417**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

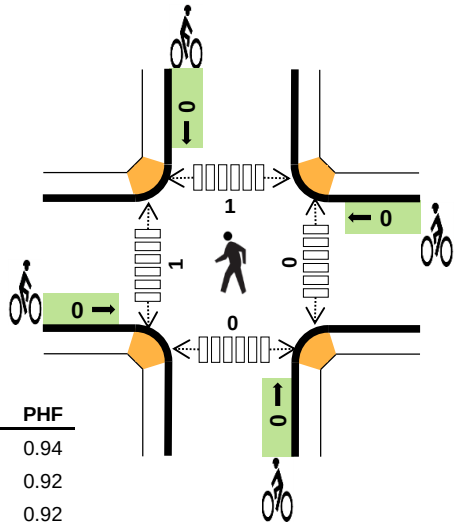
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	3	3	1	6	*13*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	**6**	**2**	**0**	**2**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:30 AM	**2**	**2**	**1**	**2**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**0**	*1*
7:45 AM	**7**	**1**	**1**	**0**	***9***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**1**	**0**	*2*
8:00 AM	**4**	**2**	**1**	**0**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	***1***
8:15 AM	1	5	2	0	*8*	0	0	0	0	*0*	0	0	0	0	*0*
8:30 AM	1	1	1	3	*6*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	5	0	1	4	*10*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	29	16	8	17	*70*	0	0	0	0	*0*	1	1	2	0	*4*
Peak Hour	**19**	**7**	**3**	**4**	***33***	**0**	**0**	**0**	**0**	***0***	**1**	**1**	**2**	**0**	***4***

Mark Skaggs: (425) 250-0777 mark.skaggs@idaxdata.com

W Chatfield Ave
W Ken Caryl Ave



Date: Tue, Feb 11, 2020
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM



	HV %:	PHF
EB	0.7%	0.94
WB	1.5%	0.92
NB	0.0%	0.92
SB	0.0%	0.92
TOTAL	0.6%	0.96

Two-Hour Count Summaries

Interval Start	W Ken Caryl Ave Eastbound				W Ken Caryl Ave Westbound				W Chatfield Ave Northbound				S Simms St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	68	134	49	0	10	83	27	0	44	40	2	3	31	51	61	603	0
4:15 PM	0	62	129	44	0	14	92	19	0	38	52	7	1	48	57	66	629	0
4:30 PM	0	69	112	32	0	7	87	27	0	49	52	9	3	38	45	60	590	0
4:45 PM	**0**	**90**	**110**	**30**	**0**	**13**	**86**	**25**	**0**	**46**	**62**	**9**	**2**	**35**	**62**	**59**	**629**	2,451
5:00 PM	**0**	**58**	**104**	**53**	**0**	**12**	**113**	**13**	**0**	**40**	**57**	**8**	**5**	**53**	**37**	**75**	**628**	2,476
5:15 PM	**0**	**86**	**100**	**51**	**1**	**7**	**87**	**24**	**1**	**33**	**68**	**13**	**4**	**36**	**79**	**63**	**653**	2,500
5:30 PM	**0**	**72**	**97**	**44**	**1**	**14**	**92**	**35**	**0**	**31**	**51**	**10**	**1**	**37**	**56**	**66**	**607**	**2,517**
5:45 PM	1	68	123	39	0	11	78	33	0	36	45	5	4	46	70	59	618	2,506
Count Total	1	573	909	342	2	88	718	203	1	317	427	63	23	324	457	509	4,957	0
Peak Hour	**0**	**306**	**411**	**178**	**2**	**46**	**378**	**97**	**1**	**150**	**238**	**40**	**12**	**161**	**234**	**263**	**2,517**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	2	3	1	0	*6*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	2	0	0	3	*5*	0	0	0	0	*0*	2	0	0	0	*2*
4:30 PM	3	2	0	0	*5*	0	0	0	0	*0*	1	0	1	0	*2*
4:45 PM	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**3**	**2**	**0**	**0**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	*1*
5:15 PM	**2**	**2**	**0**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**0**	*1*
5:30 PM	**1**	**3**	**0**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:45 PM	2	2	0	1	*5*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	15	15	1	4	*35*	0	0	0	0	*0*	3	1	2	0	*6*
Peak Hour	**6**	**8**	**0**	**0**	***14***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**1**	**0**	***2***

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