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FINAL TECHNICAL MEMORANDUM

DATE:	November 9, 2018	
TO:	Reh-Lin Chen, PE, PTOE, City of San Leandro Dean Hsiao, PhD, PE, PTOE, City of San Leandro	
FROM:	David Mahama, PE Maria Tribelhorn, PE	
SUBJECT:	Complete Streets Evaluation for Paving Project on Hesperian Boulevard	P# 18035-000

This memorandum summarizes analysis undertaken for the Complete Streets Evaluation for the Paving Project on Hesperian Boulevard for the City of San Leandro (Purchase Order 56527).

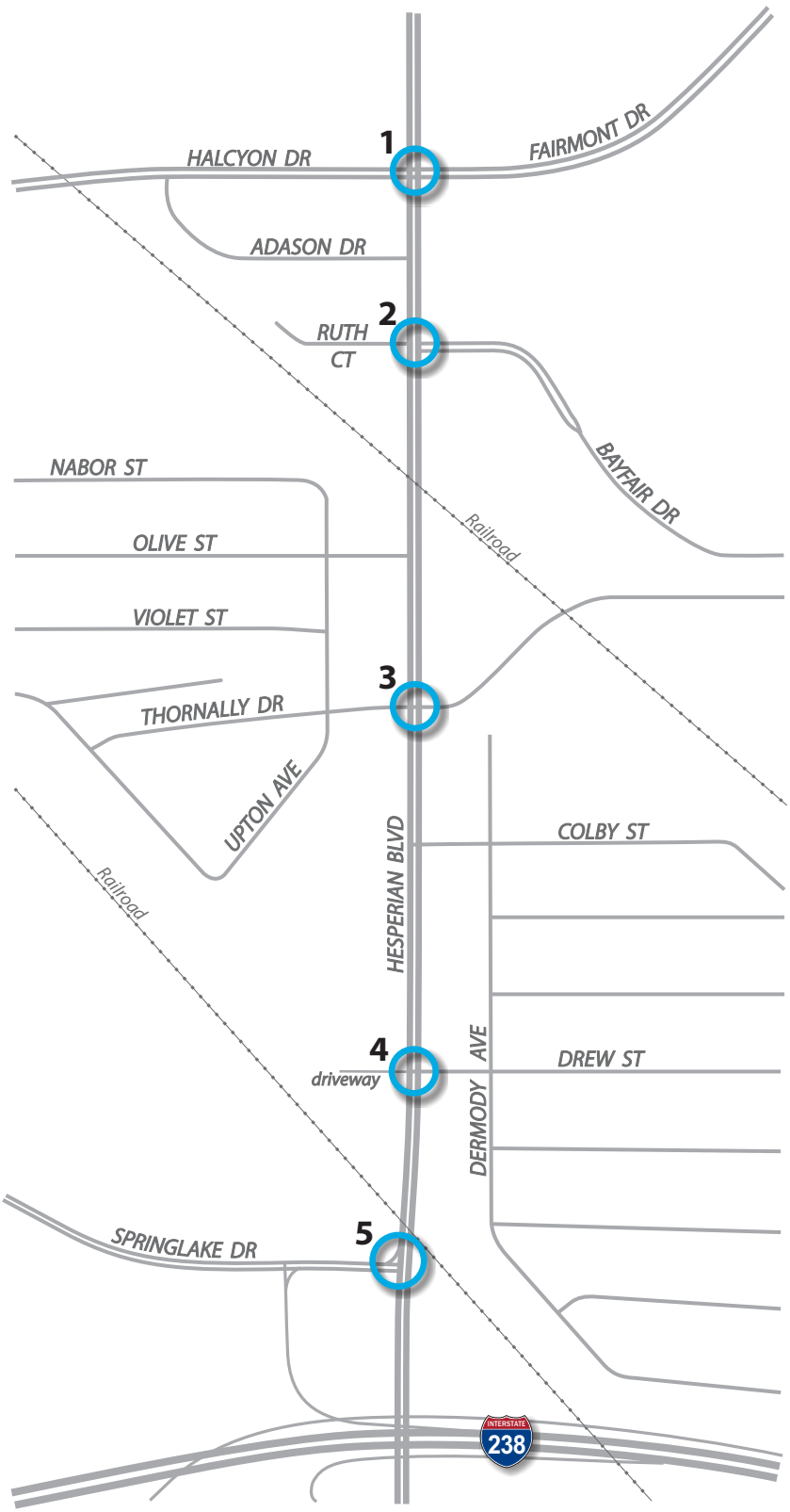
HISTORICAL BACKGROUND

As recommended in the Bayfair Transit Oriented Development (TOD) Study and the City's Bicycle and Pedestrian Master Plan (adopted in March, 2018), the City is interested in assessing the feasibility and impact of reducing the number of travel lanes along the segment of Hesperian Boulevard from Fairmont Drive to Springlake Drive to accommodate a Class IV separated bikeway. A Class IV separated bikeway, often referred to as cycle track or protected bike lane, is for exclusive use of bicycles, physically separated from motor vehicle traffic with a vertical feature. The separation may include, but is not limited to, grade separation, flexible posts, inflexible barriers, or on-street parking.

Installation of a Class IV bikeway on the study corridor necessitates implementation of a road diet, which is a reduction in the number of travel lanes used for automobile traffic. The right lane, previously used for automobile traffic, would be reallocated to bicycle use on the separated bikeway. Currently, this segment of Hesperian Boulevard has three lanes in each direction. This road diet project would result in a reduction to two lanes in each direction. Based on discussion with City staff, the limits of the road diet are as follows:

- Northbound from south of Springlake Drive to Fairmont Drive, and
- Southbound from Fairmont Drive to Springlake Drive.

The purpose of this memo is to assess the potential traffic operational impacts of reducing the number of lanes as a result of the proposed project. DKS assessed the impact on the Hesperian Boulevard study corridor bounded by Fairmont Drive and Springlake Drive, including both arterial level of service (LOS) analysis and signalized intersection LOS analysis. The study area, is shown in Figure 1.



LEGEND

Study Intersection

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No Scale

Figure 1

Study Area Map

The study area includes the following signalized intersections:

1. Hesperian Boulevard and Fairmont Drive,
2. Hesperian Boulevard and Bayfair Drive,
3. Hesperian Boulevard and Thornally Drive,
4. Hesperian Boulevard and Drew Street, and
5. Hesperian Boulevard and Springlake Drive.

EXISTING CONDITIONS ANALYSIS

Level of Service Standards

The Alameda County Transportation Commission (Alameda CTC) has established a Congestion Management Program (CMP) for roadways within Alameda County. Under this CMP network, Hesperian Boulevard is classified as a Principal Arterial (CMP Tier 1 roadway) and thus its performance is monitored by the Alameda CTC. As such, LOS along the corridor shall be maintained at LOS E or better, unless already operating at LOS F.

The City of San Leandro has adopted complete streets policies and a transit-oriented development strategy. As such, automobile LOS is no longer required to be kept above a specific delay threshold on roadways in the local jurisdiction.

For this study, the Alameda CTC guidelines for performance standards were used.

Existing Conditions Operational Analysis

Existing traffic operations at the five study intersections and along the corridor were assessed using Synchro software. ADT counts and turn movement counts, including pedestrians and bicycles, were provided by the City of San Leandro. DKS conducted a field visit on March 22, 2018 to verify the existing network configuration. The AM and PM peak hour counts as well as roadway and intersection geometry for all five signalized intersections are illustrated in **Figure 2.**

DKS evaluated the existing network performance without the project for two scenarios – with the current signal timing and with optimized signal timing (i.e., optimized splits and offsets, removal of maximum recall on some phases). As shown in **Table 1**, for the current signal timing all the study intersections currently operate at an acceptable LOS during the AM and PM peak periods, except for Hesperian Boulevard and Thornally Drive, which currently operate at LOS F during the AM peak period. The detailed reports from Synchro are included in **Appendix 1**.

After optimizing the timing, all intersections are expected to perform at an acceptable LOS. Note that the optimized timings were calculated using a method focusing on the five study intersections alone and do not account for corridor operations beyond the study segment. Therefore, we did not change the cycle lengths for the existing optimized scenario. The calculated timings are not recommended timings for the network but rather optimized timings for the purpose of making an accurate comparison between the existing conditions and the plus project conditions.

Table 1: Existing Intersection Delay (Seconds)/LOS

Study Intersection	Intersection Control	Current Timing		Optimized Timing	
		AM Peak	PM Peak	AM Peak	PM Peak
1) Hesperian Boulevard & Fairmont Drive	Signalized	37.0/D	44.2/D	35.7/D	38.4/D
2) Hesperian Boulevard & Bayfair Drive	Signalized	11.6/B	30.9/C	9.1/A	19.2/B
3) Hesperian Boulevard & Thornally Drive	Signalized	89.0/F	47.9/D	53.2/D	54.7/D
4) Hesperian Boulevard & Drew Street	Signalized	18.5/B	6.5/A	11.2/B	5.5/A
5) Hesperian Boulevard & Springlake Drive	Signalized	24.2/C	21.8/C	18.0/B	17.7/B

Table 2 shows the Arterial LOS analysis results. As shown, with the current signal timings the corridor is currently operating at acceptable LOS during both the AM and PM peak periods in both directions.

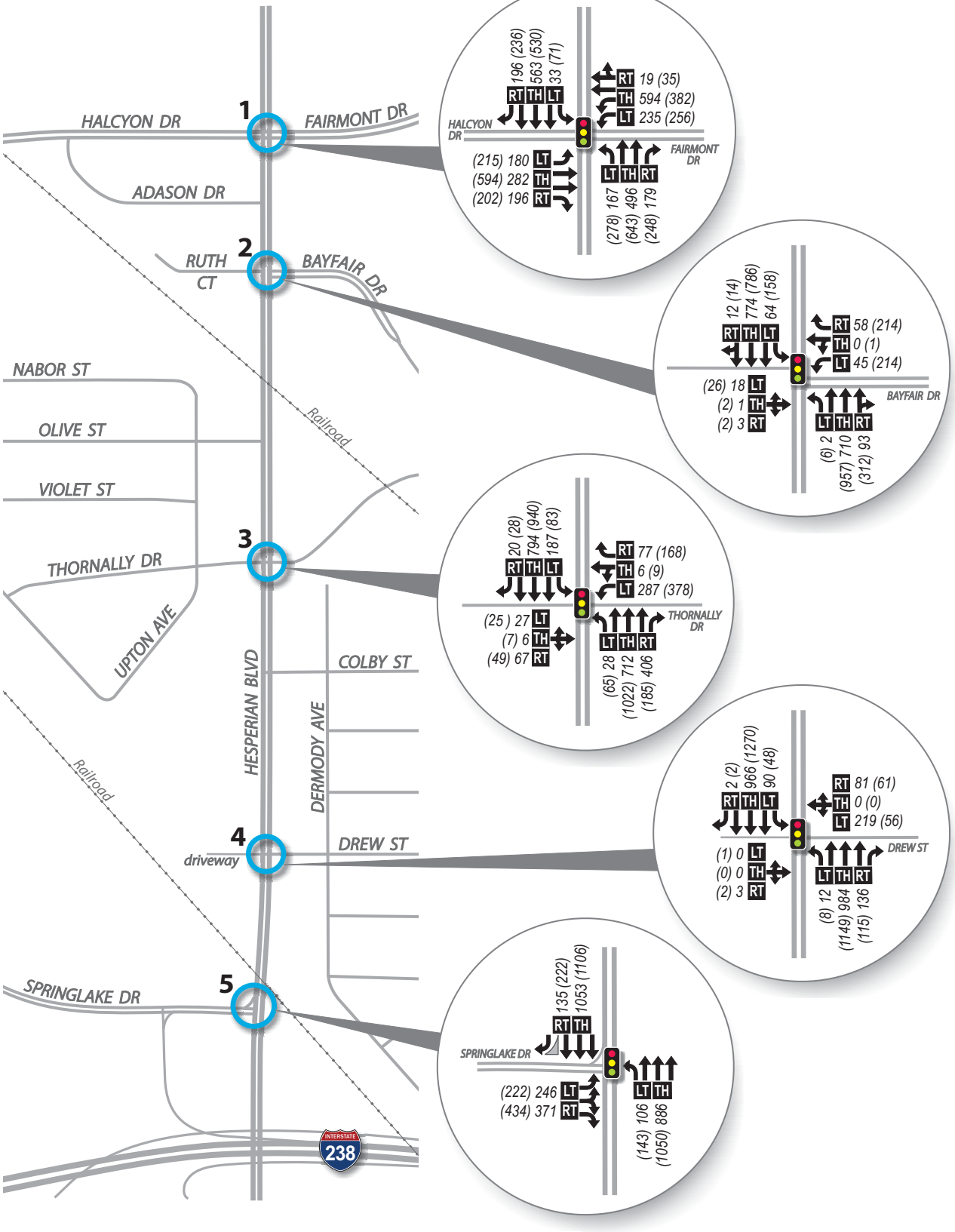
With optimized timings, the network is expected to operate at acceptable LOS during both peak periods in both directions. Note that the optimized timings are not recommended timings and were developed for the purpose of making an accurate comparison between the existing conditions and the plus project conditions. The developed timings do not account for corridor operations beyond the study segment.

Table 2: Existing Arterial LOS

	Study Segment	Current Timings			Optimized Timings		
		Signal Delay (s)	Arterial Speed (mph)	Arterial LOS	Signal Delay (s)	Arterial Speed (mph)	Arterial LOS
AM	NB: Springlake Drive to Fairmont Drive	69.1	16.2	E	56.7	17.8	D
	SB: Fairmont Drive to Springlake Drive	98.1	13.5	E	49.7	18.8	D
PM	NB: Springlake Drive to Fairmont Drive	101.1	13.3	E	52.6	18.3	D
	SB: Fairmont Drive to Springlake Drive	89.6	14.2	E	30.3	22.2	C

Existing Plus Project Conditions Operational Analysis

DKS revised the roadway geometry in the Synchro models to test the effect of the lane reduction. **Figure 3** illustrates the intersection geometry for the plus project conditions. As shown in **Table 3**, delay and LOS would remain within acceptable limits after project implementation for all intersections during both the AM and PM peak periods.



LEGEND

Study Intersection

Traffic Signal

← Lane Configuration

AM (PM) Peak Hour Traffic Volumes

LT TH RT Left•Thru•Right — Volume Turn Movement

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No Scale

Figure **2**

Existing Peak Hour Volumes & Lane Geometry

DKS assumed that signals would be retimed as part of this project (including maximum recall removal for some phases at the Thornally Drive intersection). This resulted in some improvement in operations for the study intersections compared to existing conditions with the current timing plans. Compared to the existing conditions with optimized timings, operations deteriorate somewhat but remain at acceptable LOS. The Hesperian Boulevard/Thornally Drive intersection should be carefully retimed upon project implementation. Due to high westbound left-turn and southbound through movements, the intersection is susceptible to high delay. The project is expected to increase delay, especially for left turn movements.

Appendix 2 contains a graphical representation of the expected queuing for the Existing Plus Project conditions. In general the project is expected to result in increased queue lengths along the corridor, blocking some driveways which would not likely be blocked under existing conditions with optimized timings. This would likely increase delay for drivers entering the corridor from these driveways.

Table 3: Existing Plus Project Delay (Seconds)/LOS

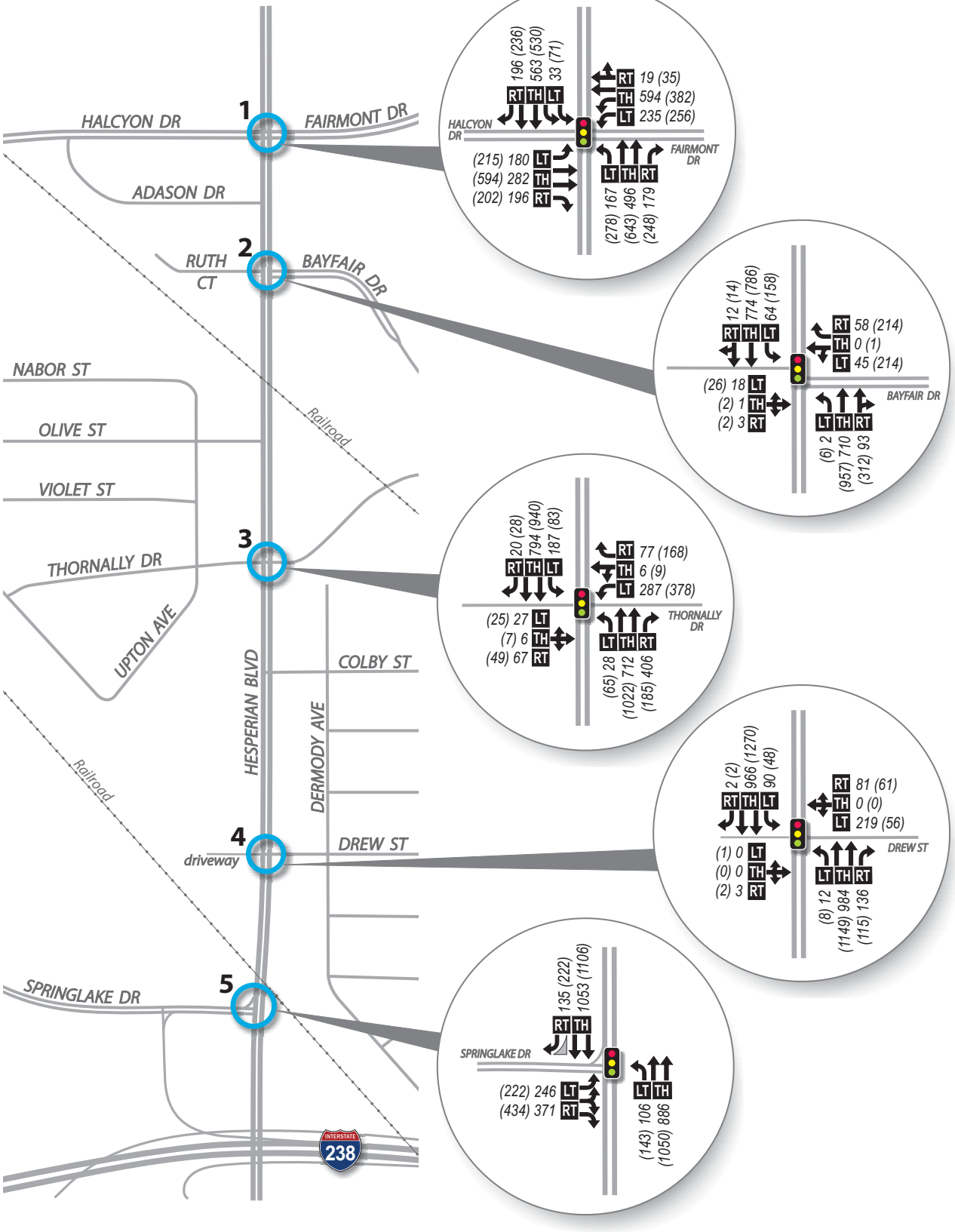
Study Intersection	Intersection Control	AM Peak	PM Peak
1) Hesperian Boulevard & Fairmont Drive	Signalized	36.9/D	38.7/D
2) Hesperian Boulevard & Bayfair Drive	Signalized	10.2/B	18.3/B
3) Hesperian Boulevard & Thornally Drive	Signalized	67.6/E	58.9/E
4) Hesperian Boulevard & Drew Street	Signalized	14.1/B	5.3/A
5) Hesperian Boulevard & Springlake Drive	Signalized	21.0/C	19.1/B

Note: Signal retiming assumed for plus project condition. Reduction in delay compared to existing conditions is due to signal retiming.

Table 4 shows the Arterial LOS analysis results. As shown, the corridor is expected to operate at acceptable LOS in both directions after project implementation for both peak periods. It should be noted that the existing conditions cycle length was maintained to not disrupt coordination.

Table 4: Existing Plus Project Arterial LOS

	Study Segment	Signal Delay (s)	Arterial Speed (mph)	Arterial LOS
AM	NB: Springlake Drive to Fairmont Drive	54.4	18.1	D
	SB: Fairmont Drive to Springlake Drive	48.7	18.9	D
PM	NB: Springlake Drive to Fairmont Drive	55.8	17.9	D
	SB: Fairmont Drive to Springlake Drive	45.5	19.4	D



LEGEND

Study Intersection

Traffic Signal

← Lane Configuration

AM (PM) Peak Hour Traffic Volumes

LT TH RT Left•Thru•Right Volume Turn Movement

DKS

No Scale

Figure **3**

Existing Plus Project Peak Hour Volumes & Lane Geometry

CUMULATIVE CONDITIONS ANALYSIS

DKS also evaluated the operation of Hesperian Boulevard under the cumulative condition. The cumulative scenario assumes that the transit-oriented development has been constructed.

Cumulative Conditions Operational Analysis

Cumulative traffic operations at the five study intersections and along the corridor were assessed using Synchro software. Expected turn movement counts for the future year were provided by the City of San Leandro. The AM and PM peak hour counts as well as roadway and intersection geometry for all five signalized intersections are illustrated in **Figure 4**.

As shown in **Table 5**, all study intersections are expected to operate at an acceptable LOS during the Cumulative AM and PM peak periods. Improvement from existing conditions (current signal timing) at some intersections is due to signal timing modifications. However, it was assumed that the cycle length would not exceed 150 seconds. The detailed reports from Synchro are included in **Appendix 1**.

Table 6 shows the Arterial LOS analysis results. As shown, the corridor is expected to operate at acceptable LOS.

Table 5: Cumulative Delay (Seconds)/LOS

Study Intersection	Intersection Control	AM Peak	PM Peak
1) Hesperian Boulevard & Fairmont Drive	Signalized	60.4/E	75.9/E
2) Hesperian Boulevard & Bayfair Drive	Signalized	13.4/B	21.7/C
3) Hesperian Boulevard & Thornally Drive	Signalized	52.3/D	51.3/D
4) Hesperian Boulevard & Drew Street	Signalized	20.1/B	4.4/A
5) Hesperian Boulevard & Springlake Drive	Signalized	22.4/C	21.7/C

Note: Signal retiming assumed for Cumulative condition. Reduction in delay from existing conditions (current signal timing) is due to retiming.

Table 6: Cumulative Arterial LOS

	Study Segment	Signal Delay (s)	Arterial Speed (mph)	Arterial LOS
AM	NB: Springlake Drive to Fairmont Drive	81.8	14.9	E
	SB: Fairmont Drive to Springlake Drive	53.5	18.2	D
PM	NB: Springlake Drive to Fairmont Drive	72.5	15.9	E
	SB: Fairmont Drive to Springlake Drive	33.7	21.5	D

Cumulative Plus Project Conditions Operational Analysis

DKS revised the roadway geometry in the Synchro models to test the effect of the lane reduction. **Figure 5** illustrates the roadway and intersection geometry for the plus project conditions. As shown in **Table 7**, delay and LOS would remain within acceptable limits after project implementation during the AM peak period. However, operations are expected to deteriorate to LOS F at the Hesperian Boulevard/Fairmont Drive and the Hesperian Boulevard/ Bayfair Drive intersections during the PM peak period. **Appendix 2** shows the expected queuing for the Cumulative Plus Project conditions.

Table 8 shows the Arterial LOS analysis results. As shown, the corridor is expected to operate at acceptable LOS during the AM peak period. However, it is expected to deteriorate to LOS F in both northbound and southbound directions during the PM peak period.

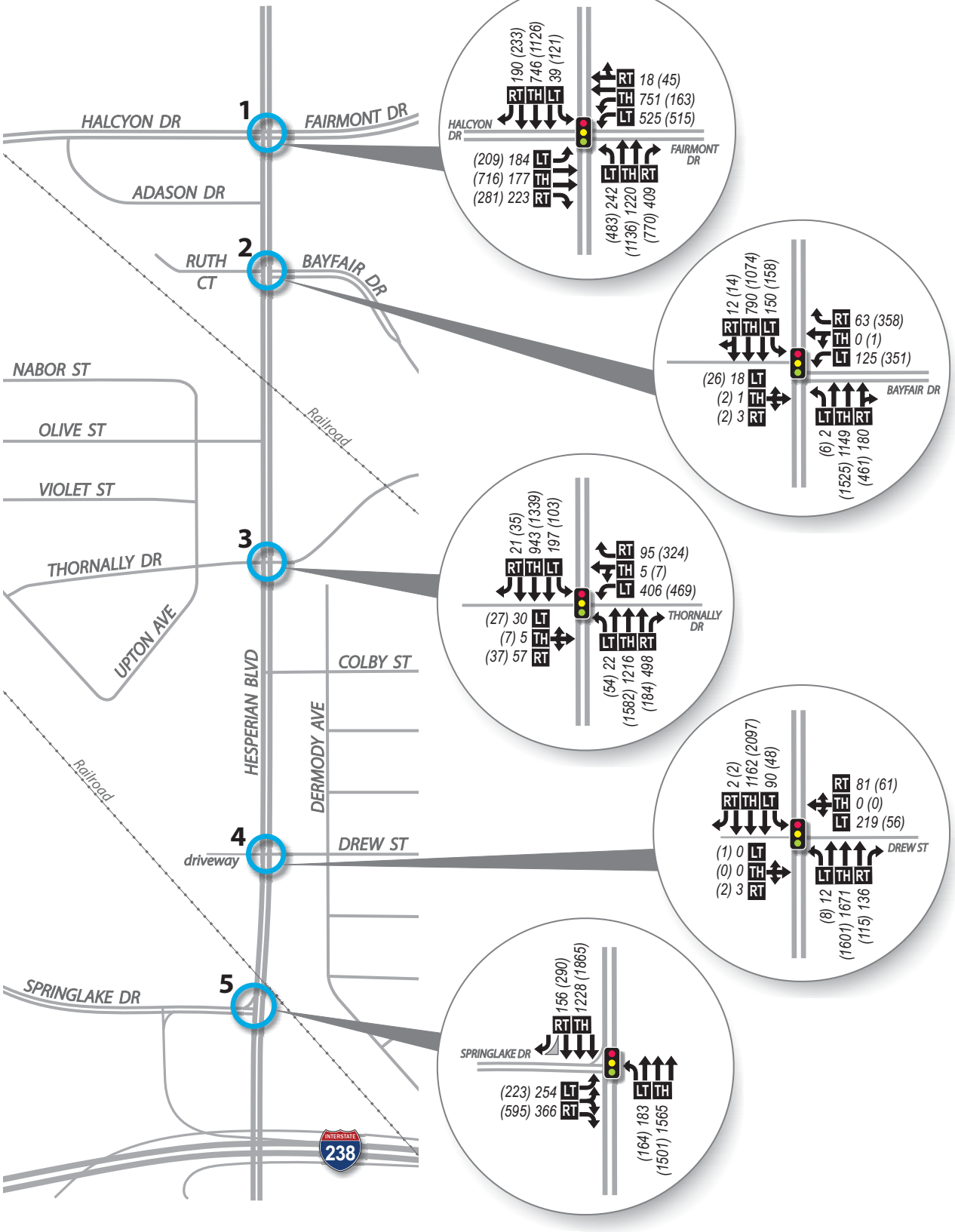
As shown in **Appendix 2**, the project is expected to cause significant queueing, especially in the northbound direction. During the AM period, northbound queues are expected to spill back from Fairmont Drive past the Bayfair Drive intersection. The northbound queue from Drew Street is expected to spill back past the rail road tracks to Springlake Drive. In the PM period, northbound queues are expected to extend from Fairmont Drive past Drew Street. Southbound queues are expected to spill back from Springlake Drive past Drew Street and from Thornally Drive to Bayfair Drive. This represents a significant increase from the no project conditions.

Table 7: Cumulative Plus Project Delay (Seconds)/LOS

Study Intersection	Intersection Control	AM Peak	PM Peak
1) Hesperian Boulevard & Fairmont Drive	Signalized	51.6/D	72.9/E
2) Hesperian Boulevard & Bayfair Drive	Signalized	12.9/B	93.6/F
3) Hesperian Boulevard & Thornally Drive	Signalized	70.7/E	86.1/F
4) Hesperian Boulevard & Drew Street	Signalized	24.5/C	6.8/A
5) Hesperian Boulevard & Springlake Drive	Signalized	26.7/C	60.1/E

Table 8: Cumulative Plus Project Arterial LOS

	Study Segment	Signal Delay (s)	Arterial Speed (mph)	Arterial LOS
AM	NB: Springlake Drive to Fairmont Drive	89.4	14.2	E
	SB: Fairmont Drive to Springlake Drive	62.0	17.1	D
PM	NB: Springlake Drive to Fairmont Drive	254.3	7.1	F
	SB: Fairmont Drive to Springlake Drive	140.0	10.9	F



LEGEND

- # Study Intersection
- Traffic Signal
- Lane Configuration
- AM (PM) Peak Hour Traffic Volumes
- LT TH RT (Left•Thru•Right) Volume Turn Movement

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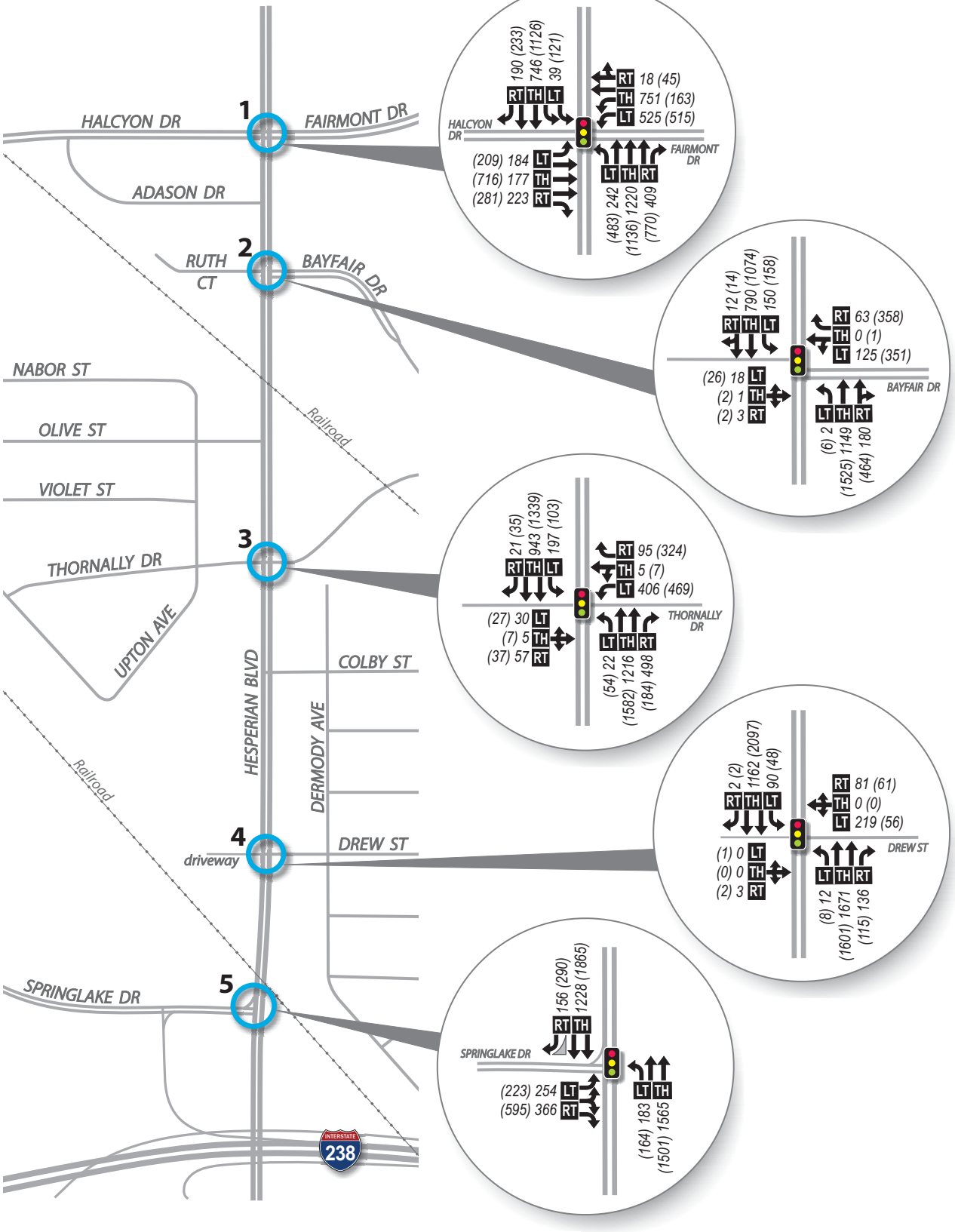
No Scale

Figure 4

Cumulative Peak Hour Volumes & Lane Geometry



LEGEND

- # Study Intersection
- Traffic Signal
- ← Lane Configuration
- AM (PM) Peak Hour Traffic Volumes
- LT TH RT (Left•Thru•Right) Volume Turn Movement

DKS

No Scale

Figure 5

Cumulative Plus Project Peak Hour Volumes & Lane Geometry

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Overall, the proposed road diet on Hesperian Boulevard from Springlake Drive to Fairmont Drive is expected to have some impact on the roadway operations. With the current signal timings, all study intersections operate at acceptable LOS, except for the Hesperian Boulevard/Thornally Drive intersection. The arterial operates at acceptable LOS during both AM and PM peak period in both directions.

With optimized signal timings, all the study intersections are expected to operate at acceptable LOS with lower delays than existing signal timings. The study arterial is expected to operate at acceptable LOS.

For the existing year with the project implemented, all the study intersections are expected to operate at acceptable LOS with higher delays than existing (optimized) signal timings. The study arterial is expected to operate at acceptable LOS. However, the project is expected to cause some increase in queuing on the corridor.

Under the Cumulative Conditions, the intersections are expected to operate at LOS E or better. Arterial LOS under the cumulative year with no project is expected to be acceptable.

Under the Cumulative Plus Project conditions, intersection LOS is expected to deteriorate to LOS F at the Hesperian Boulevard/Fairmont Drive and Hesperian Boulevard/Bayfair Drive intersections during the PM peak period. With the project, arterial LOS is expected to deteriorate to LOS F in both northbound and southbound directions during the PM peak period.

For the cumulative year, the project is expected to cause a significant increase in queuing, resulting in a queue spill back from the Fairmont Drive intersection past the Drew Street intersection in the northbound direction during the PM peak period.

In summary, the road diet is not expected to have a significant impact on the study area for the existing year, although queues are expected to increase. However, for the cumulative year the project is expected to impact intersection operations and arterial operations, and to result in significant queuing.

Recommendations

As the analysis shows that removing a vehicle travel lane for this project would likely result in a significant deterioration in operations in the future, DKS developed a few potential mitigations. First, there are some signal modifications which could help with individual intersection operations. Second, there are bikeway options that could constitute a more temporary solution for bicycles and could be reversed if severe traffic develops in the future. Finally, there are more permanent lane management and geometric modifications that would reduce the project impact.

Signal Operations

During the course of the analysis, DKS noticed that the Hesperian Boulevard/Thornally Drive intersection could operate more efficiently using protected-permissive mode on the westbound approach, due to high westbound left turn volumes. Changing from permissive operations to protected-permissive operations could improve the operation of the intersection and the

corridor. This would require changing the signal heads, specifically for the westbound left turn approach at the Hesperian Boulevard/ Thornally Drive intersection, to protected left turn arrow heads. It would also require striping modifications.

Bikeway Options (reversible construction)

Class IV bikeways are often implemented using permanent barriers, such as curb medians, to physically prevent automobiles from encroaching on the space reserved for bicycles. The physical barriers provide the best protection to bicycles. However, if the deterioration of operations is not acceptable for the Cumulative conditions, there are a few potential solutions which would more readily allow for the reversal of the Class IV bikeway infrastructure in the future.

One option is to install flexible posts rather than concrete curb to delineate the boundary between the bikeway and the automobile travel lanes. These are relatively easy to remove.

Another option is to switch the location of the parking with the location of the bikeway for part of the corridor, where there is sufficient right-of-way. The parking can be located next to the automobile travel lanes and the bikeway along the curb. In this case, the parking lane would serve as the buffer between the automobile travel way and the bikeway.

Lane Management and Restriping (partial corridor - permanent solution)

Currently, there are parking lanes from north of Springlake Drive to south of Bayfair Drive (near the BART overcrossing). In this segment, the parking spaces could be removed and re-allocated to the bikeway rather than removing a vehicle travel lane. This could either be implemented as a permanent lane modification, with complete parking loss, or it could be implemented on a time-of-day basis, only during peak morning and peak afternoon periods when traffic is heaviest. If implemented on a time-of-day basis, the third travel lane would be converted to parking, which would be located next to the automobile travel lanes. The bikeway would replace the existing parking lane next to the curb. During peak periods, there would be three travel lanes and a bikeway, and during off-peak periods there would be two travel lanes, a parking lane, and a bikeway. In this case, the parking lane would serve as the buffer between the automobile travel way and the bikeway during off-peak periods.

Restriping between Springlake Drive and where the parking lane begins north of Springlake Drive should provide sufficient space for three lanes of travel in each direction plus a bikeway. However, the bikeway width may need to be narrowed approaching the Springlake Drive intersection in the southbound direction.

This solution would not be applicable between the BART overcrossing and the intersection of Fairmont Drive, and therefore would not assist with mitigating the impact for the full corridor.

Roadway Geometric Modifications (full corridor - permanent solution)

The Hesperian Boulevard corridor has a central curb median, ranging from 4-feet to 16-feet wide, running between the southbound and northbound directions. Reducing this median to 2-feet wide, in combination with narrowing the traffic lanes, would provide sufficient space for the bikeway along the length of the corridor (minimum 5-feet bikeway width plus 1.5 to 3-feet buffer width). In this case, DKS recommends using a physical curb barrier between motor vehicle traffic and the bikeway for safety. This solution could be implemented throughout the corridor,

or could be implemented along the northern part of the study corridor in combination with lane management on the southern part of the study corridor.

Removal of the center curb median would be the most costly solution, requiring curb median demolition, paving, and restriping, as well as some potential traffic signal modifications, due to realignment of traffic lanes. However, this modification would allow the project to be implemented without loss of travel lanes, resulting in a less-than-significant impact.

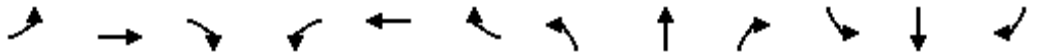
APPENDIX 1

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Traffic Volume (vph)	132	286	193	1	251	596	14	1	185	553	163	11
Future Volume (vph)	132	286	193	1	251	596	14	1	185	553	163	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	13	11	11	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.6	4.6		4.0	4.9			4.0	4.9	4.9	
Lane Util. Factor	1.00	0.95	1.00		0.97	0.95			1.00	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	0.97		1.00	1.00			1.00	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Frt	1.00	1.00	0.85		1.00	1.00			1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (prot)	1770	3539	1590		3319	3526			1770	3539	1554	
Flt Permitted	0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (perm)	1770	3539	1590		3319	3526			1770	3539	1554	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	140	304	205	1	267	634	15	1	197	588	173	12
RTOR Reduction (vph)	0	0	123	0	0	2	0	0	0	0	93	0
Lane Group Flow (vph)	140	304	82	0	268	647	0	0	198	588	80	0
Confl. Peds. (#/hr)			12				2				4	
Confl. Bikes (#/hr)			4				2				5	
Turn Type	Prot	NA	Perm	Prot	Prot	NA		Prot	Prot	NA	Perm	Prot
Protected Phases	3	8		7	7	4		1	1	6		5
Permitted Phases			8								6	
Actuated Green, G (s)	13.9	27.6	27.6		14.3	27.7			19.5	55.7	55.7	
Effective Green, g (s)	13.9	27.6	27.6		14.3	27.7			19.5	55.7	55.7	
Actuated g/C Ratio	0.12	0.23	0.23		0.12	0.23			0.16	0.46	0.46	
Clearance Time (s)	4.0	4.6	4.6		4.0	4.9			4.0	4.9	4.9	
Vehicle Extension (s)	3.0	4.0	4.0		4.0	3.0			2.0	6.0	6.0	
Lane Grp Cap (vph)	205	813	365		395	813			287	1642	721	
v/s Ratio Prot	0.08	0.09			c0.08	c0.18			c0.11	0.17		
v/s Ratio Perm			0.05								0.05	
v/c Ratio	0.68	0.37	0.22		0.68	0.80			0.69	0.36	0.11	
Uniform Delay, d1	50.9	38.9	37.5		50.6	43.5			47.4	20.7	18.2	
Progression Factor	1.00	1.00	1.00		1.00	1.00			0.92	0.73	1.71	
Incremental Delay, d2	9.0	0.4	0.4		5.0	5.4			5.3	0.4	0.2	
Delay (s)	60.0	39.3	37.9		55.6	48.9			49.1	15.5	31.3	
Level of Service	E	D	D		E	D			D	B	C	
Approach Delay (s)		43.3				50.9				25.3		
Approach LOS		D				D				C		

Intersection Summary			
HCM 2000 Control Delay	37.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.8
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

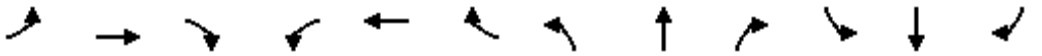
Movement	SBL	SBT	SBR
Lane Configurations			
Traffic Volume (vph)	23	620	193
Future Volume (vph)	23	620	193
Ideal Flow (vphpl)	1900	1900	1900
Lane Width	12	12	15
Total Lost time (s)	4.0	4.9	4.9
Lane Util. Factor	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00
Frt	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1701
Flt Permitted	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1701
Peak-hour factor, PHF	0.94	0.94	0.94
Adj. Flow (vph)	24	660	205
RTOR Reduction (vph)	0	0	129
Lane Group Flow (vph)	36	660	76
Confl. Peds. (#/hr)			9
Confl. Bikes (#/hr)			3
Turn Type	Prot	NA	Perm
Protected Phases	5	2	
Permitted Phases			2
Actuated Green, G (s)	4.9	41.1	41.1
Effective Green, g (s)	4.9	41.1	41.1
Actuated g/C Ratio	0.04	0.34	0.34
Clearance Time (s)	4.0	4.9	4.9
Vehicle Extension (s)	2.0	6.0	6.0
Lane Grp Cap (vph)	72	1741	582
v/s Ratio Prot	c0.02	c0.13	
v/s Ratio Perm			0.04
v/c Ratio	0.50	0.38	0.13
Uniform Delay, d1	56.4	29.8	27.2
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	2.0	0.6	0.5
Delay (s)	58.3	30.4	27.6
Level of Service	E	C	C
Approach Delay (s)		30.9	
Approach LOS		C	

Intersection Summary



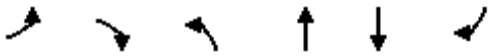
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	1	3	45	0	58	2	710	93	64	774	12
Future Volume (vph)	18	1	3	45	0	58	2	710	93	64	774	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	11	12	12	12
Total Lost time (s)		4.0		5.0	5.0	5.0	4.0	5.0		4.9	5.0	
Lane Util. Factor		1.00		0.95	0.95	1.00	1.00	0.91		1.00	0.91	
Frt		0.98		1.00	1.00	0.85	1.00	0.98		1.00	1.00	
Flt Protected		0.96		0.95	0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1758		1681	1681	1583	1770	4830		1770	5074	
Flt Permitted		0.50		0.74	0.74	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		907		1312	1312	1583	1770	4830		1770	5074	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	1	3	49	0	63	2	772	101	70	841	13
RTOR Reduction (vph)	0	3	0	0	0	59	0	7	0	0	1	0
Lane Group Flow (vph)	0	21	0	24	25	4	2	866	0	70	853	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		3			4		1	6		5	2	
Permitted Phases	3			4		4						
Actuated Green, G (s)		7.4		8.4	8.4	8.4	1.3	76.1		9.2	84.9	
Effective Green, g (s)		7.4		8.4	8.4	8.4	1.3	76.1		9.2	84.9	
Actuated g/C Ratio		0.06		0.07	0.07	0.07	0.01	0.63		0.08	0.71	
Clearance Time (s)		4.0		5.0	5.0	5.0	4.0	5.0		4.9	5.0	
Vehicle Extension (s)		2.0		4.0	4.0	4.0	3.5	4.0		3.5	4.0	
Lane Grp Cap (vph)		55		91	91	110	19	3063		135	3589	
v/s Ratio Prot							0.00	c0.18		c0.04	0.17	
v/s Ratio Perm		c0.02		0.02	c0.02	0.00						
v/c Ratio		0.39		0.26	0.27	0.04	0.11	0.28		0.52	0.24	
Uniform Delay, d1		54.1		52.9	52.9	52.0	58.8	9.8		53.3	6.2	
Progression Factor		1.00		1.00	1.00	1.00	1.16	0.12		1.01	1.82	
Incremental Delay, d2		1.6		2.1	2.2	0.2	2.3	0.2		3.6	0.1	
Delay (s)		55.7		55.0	55.1	52.2	70.3	1.3		57.4	11.4	
Level of Service		E		D	E	D	E	A		E	B	
Approach Delay (s)		55.7			53.5			1.5			14.9	
Approach LOS		E			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	11.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.9
Intersection Capacity Utilization	40.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	6	67	287	6	77	28	712	406	187	794	20
Future Volume (vph)	27	6	67	287	6	77	28	712	406	187	794	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	11	11	11	12
Total Lost time (s)		4.5		4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Lane Util. Factor		1.00		0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes		0.97		1.00	1.00	0.99	1.00	1.00	0.97	1.00	1.00	0.96
Flpb, ped/bikes		1.00		0.97	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.91		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.99		0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1645		1604	1616	1531	1805	4730	1502	1711	4916	1548
Flt Permitted		0.29		0.69	0.66	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		491		1159	1114	1531	1805	4730	1502	1711	4916	1548
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	7	73	312	7	84	30	774	441	203	863	22
RTOR Reduction (vph)	0	53	0	0	0	61	0	0	214	0	0	17
Lane Group Flow (vph)	0	56	0	159	160	23	30	774	227	203	863	5
Confl. Peds. (#/hr)	2		29	29		2	8		13	13		8
Heavy Vehicles (%)	0%	0%	1%	4%	0%	4%	0%	6%	1%	2%	2%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		3			4		5	2		1	6	
Permitted Phases	3			4		4			2			6
Actuated Green, G (s)		33.0		33.0	33.0	33.0	6.0	29.5	29.5	6.0	29.5	29.5
Effective Green, g (s)		33.0		33.0	33.0	33.0	6.0	29.5	29.5	6.0	29.5	29.5
Actuated g/C Ratio		0.28		0.28	0.28	0.28	0.05	0.25	0.25	0.05	0.25	0.25
Clearance Time (s)		4.5		4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Vehicle Extension (s)		4.0		4.0	4.0	4.0	2.0	6.0	6.0	2.0	6.0	6.0
Lane Grp Cap (vph)		135		318	306	421	90	1162	369	85	1208	380
v/s Ratio Prot							0.02	0.16		c0.12	c0.18	
v/s Ratio Perm		c0.11		0.14	c0.14	0.02			0.15			0.00
v/c Ratio		0.42		0.50	0.52	0.05	0.33	0.67	0.61	2.39	0.71	0.01
Uniform Delay, d1		35.6		36.6	36.8	32.0	55.1	40.8	40.2	57.0	41.4	34.2
Progression Factor		1.00		1.00	1.00	1.00	1.06	0.83	1.03	1.11	0.84	1.00
Incremental Delay, d2		9.2		5.5	6.3	0.2	8.8	2.8	6.8	659.0	3.6	0.1
Delay (s)		44.8		42.1	43.1	32.3	67.3	36.6	48.2	722.4	38.4	34.3
Level of Service		D		D	D	C	E	D	D	F	D	C
Approach Delay (s)		44.8			40.4			41.4			166.0	
Approach LOS		D			D			D			F	

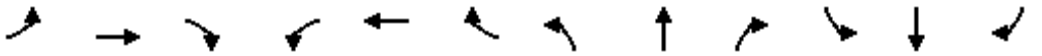
Intersection Summary			
HCM 2000 Control Delay	89.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	90.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	246	371	106	886	1053	135
Future Volume (vph)	246	371	106	886	1053	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	11	11	11
Total Lost time (s)	4.6	4.6	4.0	4.9	4.9	
Lane Util. Factor	0.97	0.91	1.00	0.91	0.91	
Frpb, ped/bikes	0.99	0.99	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	0.94	0.85	1.00	1.00	0.98	
Flt Protected	0.97	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3254	1420	1652	4868	4762	
Flt Permitted	0.97	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3254	1420	1652	4868	4762	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	293	442	126	1055	1254	161
RTOR Reduction (vph)	127	191	0	0	10	0
Lane Group Flow (vph)	374	43	126	1055	1405	0
Confl. Peds. (#/hr)	5	1	9			9
Confl. Bikes (#/hr)		1				6
Heavy Vehicles (%)	3%	2%	2%	3%	3%	3%
Turn Type	Prot	Perm	Prot	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	22.2	22.2	14.4	88.3	69.9	
Effective Green, g (s)	22.2	22.2	14.4	88.3	69.9	
Actuated g/C Ratio	0.18	0.18	0.12	0.74	0.58	
Clearance Time (s)	4.6	4.6	4.0	4.9	4.9	
Vehicle Extension (s)	4.0	4.0	3.0	4.0	4.0	
Lane Grp Cap (vph)	601	262	198	3582	2773	
v/s Ratio Prot	c0.11		c0.08	0.22	c0.30	
v/s Ratio Perm		0.03				
v/c Ratio	0.62	0.17	0.64	0.29	0.51	
Uniform Delay, d1	45.0	41.1	50.3	5.3	14.8	
Progression Factor	1.00	1.00	1.00	1.00	1.61	
Incremental Delay, d2	2.3	0.4	6.5	0.2	0.2	
Delay (s)	47.3	41.5	56.9	5.6	24.1	
Level of Service	D	D	E	A	C	
Approach Delay (s)	45.5			11.0	24.1	
Approach LOS	D			B	C	

Intersection Summary			
HCM 2000 Control Delay	24.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	3	219	0	81	12	984	136	90	966	2
Future Volume (vph)	0	0	3	219	0	81	12	984	136	90	966	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	12	11	11
Total Lost time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor		1.00			1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes		0.99			0.99		1.00	1.00	0.95	1.00	1.00	0.95
Flpb, ped/bikes		1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.86			0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00			0.96		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1587			1719		1662	4775	1419	1752	4868	1438
Flt Permitted		1.00			0.78		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1587			1395		1662	4775	1419	1752	4868	1438
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	3	233	0	86	13	1047	145	96	1028	2
RTOR Reduction (vph)	0	2	0	0	83	0	0	0	82	0	0	0
Lane Group Flow (vph)	0	1	0	0	236	0	13	1047	63	96	1028	2
Confl. Peds. (#/hr)	7		3	3		7			14			18
Confl. Bikes (#/hr)									3			3
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	5%	5%	3%	3%	3%
Turn Type		NA		Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			6
Actuated Green, G (s)		14.2			14.2		1.2	26.2	26.2	6.1	31.1	31.1
Effective Green, g (s)		14.2			14.2		1.2	26.2	26.2	6.1	31.1	31.1
Actuated g/C Ratio		0.24			0.24		0.02	0.44	0.44	0.10	0.52	0.52
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		375			330		33	2085	619	178	2523	745
v/s Ratio Prot		0.00					0.01	c0.22		c0.05	0.21	
v/s Ratio Perm					c0.17				0.04			0.00
v/c Ratio		0.00			0.71		0.39	0.50	0.10	0.54	0.41	0.00
Uniform Delay, d1		17.5			21.0		29.0	12.2	10.0	25.6	8.8	7.0
Progression Factor		1.00			1.00		1.10	0.98	1.27	0.80	2.38	2.11
Incremental Delay, d2		0.0			7.2		7.3	0.8	0.3	2.4	0.4	0.0
Delay (s)		17.5			28.2		39.1	12.8	13.0	22.8	21.4	14.7
Level of Service		B			C		D	B	B	C	C	B
Approach Delay (s)		17.5			28.2			13.1			21.5	
Approach LOS		B			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	18.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Arterial Level of Service: EB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	17.0	22.7	39.7	0.13	12.1	E
E. 14th Street	III	35	16.2	33.9	50.1	0.13	9.1	F
Total	III		33.2	56.6	89.8	0.26	10.4	E

Arterial Level of Service: WB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	16.2	15.2	31.4	0.13	14.5	D
	III	35	17.0	50.9	67.9	0.13	7.1	F
Total	III		33.2	66.1	99.3	0.26	9.4	F

Arterial Level of Service: NB Hesperian Blvd

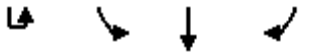
Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Drew St	II	40	13.0	13.9	26.9	0.11	15.1	E
Thornally Dr	II	40	24.0	36.8	60.8	0.21	12.4	F
Bayfair Dr	II	40	24.2	1.5	25.7	0.21	29.4	B
Fairmont Dr	II	40	13.5	16.9	30.4	0.12	13.9	E
Total	II		74.7	69.1	143.8	0.65	16.2	E

Arterial Level of Service: SB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	II	40	13.5	12.0	25.5	0.12	16.5	E
Thornally Dr	II	40	24.2	38.7	62.9	0.21	12.0	F
Drew St	II	40	24.0	20.0	44.0	0.21	17.1	D
Springlake Dr	II	40	13.0	27.4	40.4	0.11	10.0	F
Total	II		74.7	98.1	172.8	0.65	13.5	E

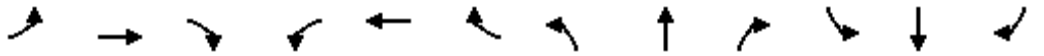
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	6	210	630	267	6	251	380	31	3	275	605	275
Future Volume (vph)	6	210	630	267	6	251	380	31	3	275	605	275
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	12	11	12	12	12	12	12	15
Total Lost time (s)		4.0	4.6	4.6		4.0	4.9			4.0	4.9	4.9
Lane Util. Factor		1.00	0.95	1.00		0.97	0.95			1.00	0.95	1.00
Frpb, ped/bikes		1.00	1.00	0.98		1.00	1.00			1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00		1.00	1.00			1.00	1.00	1.00
Frt		1.00	1.00	0.85		1.00	0.99			1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00
Satd. Flow (prot)		1770	3539	1595		3319	3490			1770	3539	1699
Flt Permitted		0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00
Satd. Flow (perm)		1770	3539	1595		3319	3490			1770	3539	1699
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	6	216	649	275	6	259	392	32	3	284	624	284
RTOR Reduction (vph)	0	0	0	65	0	0	5	0	0	0	0	167
Lane Group Flow (vph)	0	222	649	210	0	265	419	0	0	287	624	117
Confl. Peds. (#/hr)				9				18				9
Confl. Bikes (#/hr)				3				2				6
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA		Prot	Prot	NA	Perm
Protected Phases	3	3	8		7	7	4		1	1	6	
Permitted Phases				8								6
Actuated Green, G (s)		20.4	30.5	30.5		16.2	26.0			24.6	53.6	53.6
Effective Green, g (s)		20.4	30.5	30.5		16.2	26.0			24.6	53.6	53.6
Actuated g/C Ratio		0.16	0.23	0.23		0.12	0.20			0.19	0.41	0.41
Clearance Time (s)		4.0	4.6	4.6		4.0	4.9			4.0	4.9	4.9
Vehicle Extension (s)		3.0	4.0	4.0		4.0	3.0			2.0	6.0	6.0
Lane Grp Cap (vph)		277	830	374		413	698			334	1459	700
v/s Ratio Prot		c0.13	c0.18			0.08	0.12			c0.16	c0.18	
v/s Ratio Perm				0.13								0.07
v/c Ratio		0.80	0.78	0.56		0.64	0.60			0.86	0.43	0.17
Uniform Delay, d1		52.8	46.6	43.9		54.1	47.3			51.0	27.3	24.1
Progression Factor		1.00	1.00	1.00		1.00	1.00			0.95	0.66	1.81
Incremental Delay, d2		15.2	5.1	2.3		3.8	1.5			16.4	0.5	0.3
Delay (s)		68.1	51.7	46.2		57.9	48.7			64.7	18.4	44.0
Level of Service		E	D	D		E	D			E	B	D
Approach Delay (s)			53.6				52.3				35.6	
Approach LOS			D				D				D	

Intersection Summary			
HCM 2000 Control Delay	44.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	17.8
Intersection Capacity Utilization	89.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Volume (vph)	32	71	533	222
Future Volume (vph)	32	71	533	222
Ideal Flow (vphpl)	1900	1900	1900	1900
Lane Width	12	12	12	15
Total Lost time (s)		4.0	4.9	4.9
Lane Util. Factor		1.00	0.91	1.00
Frpb, ped/bikes		1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00	1.00
Frt		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00
Satd. Flow (prot)		1770	5085	1682
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		1770	5085	1682
Peak-hour factor, PHF	0.97	0.97	0.97	0.97
Adj. Flow (vph)	33	73	549	229
RTOR Reduction (vph)	0	0	0	156
Lane Group Flow (vph)	0	106	549	73
Confl. Peds. (#/hr)				19
Confl. Bikes (#/hr)				1
Turn Type	Prot	Prot	NA	Perm
Protected Phases	5	5	2	
Permitted Phases				2
Actuated Green, G (s)		12.2	41.2	41.2
Effective Green, g (s)		12.2	41.2	41.2
Actuated g/C Ratio		0.09	0.32	0.32
Clearance Time (s)		4.0	4.9	4.9
Vehicle Extension (s)		2.0	6.0	6.0
Lane Grp Cap (vph)		166	1611	533
v/s Ratio Prot		0.06	0.11	
v/s Ratio Perm				0.04
v/c Ratio		0.64	0.34	0.14
Uniform Delay, d1		56.8	34.0	31.7
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		5.8	0.6	0.5
Delay (s)		62.6	34.6	32.2
Level of Service		E	C	C
Approach Delay (s)			37.3	
Approach LOS			D	

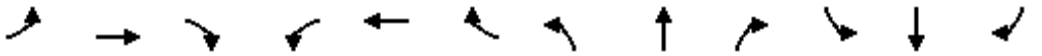
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	2	2	214	1	214	6	957	312	158	786	14
Future Volume (vph)	26	2	2	214	1	214	6	957	312	158	786	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		5.0	5.0	5.0	4.0	5.0		4.9	5.0	
Lane Util. Factor		1.00		0.95	0.95	1.00	1.00	0.91		1.00	0.91	
Frt		0.99		1.00	1.00	0.85	1.00	0.96		1.00	1.00	
Flt Protected		0.96		0.95	0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1770		1681	1686	1583	1770	4898		1770	5072	
Flt Permitted		0.35		0.74	0.70	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		641		1303	1247	1583	1770	4898		1770	5072	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	2	2	233	1	233	7	1040	339	172	854	15
RTOR Reduction (vph)	0	2	0	0	0	199	0	34	0	0	1	0
Lane Group Flow (vph)	0	30	0	116	118	34	7	1345	0	172	868	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		3			4		1	6		5	2	
Permitted Phases	3			4		4						
Actuated Green, G (s)		10.8		18.7	18.7	18.7	1.5	63.4		18.2	81.0	
Effective Green, g (s)		10.8		18.7	18.7	18.7	1.5	63.4		18.2	81.0	
Actuated g/C Ratio		0.08		0.14	0.14	0.14	0.01	0.49		0.14	0.62	
Clearance Time (s)		4.0		5.0	5.0	5.0	4.0	5.0		4.9	5.0	
Vehicle Extension (s)		2.0		4.0	4.0	4.0	3.5	4.0		3.5	4.0	
Lane Grp Cap (vph)		53		187	179	227	20	2388		247	3160	
v/s Ratio Prot							0.00	c0.27		c0.10	0.17	
v/s Ratio Perm		c0.05		0.09	c0.09	0.02						
v/c Ratio		0.57		0.62	0.66	0.15	0.35	0.56		0.70	0.27	
Uniform Delay, d1		57.4		52.3	52.6	48.7	63.8	23.5		53.3	11.1	
Progression Factor		1.00		1.00	1.00	1.00	1.03	1.11		0.91	1.57	
Incremental Delay, d2		8.1		7.1	9.4	0.4	7.8	0.6		7.8	0.2	
Delay (s)		65.5		59.4	62.0	49.1	73.5	26.8		56.3	17.7	
Level of Service		E		E	E	D	E	C		E	B	
Approach Delay (s)		65.5			54.9			27.1			24.1	
Approach LOS		E			D			C			C	

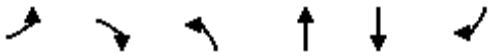
Intersection Summary			
HCM 2000 Control Delay	30.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	18.9
Intersection Capacity Utilization	55.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	7	49	378	9	168	65	1022	185	83	940	28
Future Volume (vph)	25	7	49	378	9	168	65	1022	185	83	940	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	11	12	12	12
Total Lost time (s)		4.5		4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Lane Util. Factor		1.00		0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes		0.96		1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.92
Flpb, ped/bikes		1.00		0.96	0.96	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.92		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.98		0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1637		1607	1620	1544	1770	4964	1477	1687	5136	1480
Flt Permitted		0.30		0.70	0.67	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		500		1184	1142	1544	1770	4964	1477	1687	5136	1480
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	8	53	411	10	183	71	1111	201	90	1022	30
RTOR Reduction (vph)	0	39	0	0	0	134	0	0	66	0	0	22
Lane Group Flow (vph)	0	49	0	210	211	49	71	1111	135	90	1022	8
Confl. Peds. (#/hr)	3		42	42		3	22		10	10		22
Heavy Vehicles (%)	0%	0%	2%	2%	0%	3%	2%	1%	3%	7%	1%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		3			4		5	2		1	6	
Permitted Phases	3			4		4			2			6
Actuated Green, G (s)		35.1		35.1	35.1	35.1	8.1	33.2	33.2	8.1	33.2	33.2
Effective Green, g (s)		35.1		35.1	35.1	35.1	8.1	33.2	33.2	8.1	33.2	33.2
Actuated g/C Ratio		0.27		0.27	0.27	0.27	0.06	0.26	0.26	0.06	0.26	0.26
Clearance Time (s)		4.5		4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Vehicle Extension (s)		4.0		4.0	4.0	4.0	2.0	6.0	6.0	2.0	6.0	6.0
Lane Grp Cap (vph)		135		319	308	416	110	1267	377	105	1311	377
v/s Ratio Prot							0.04	c0.22		c0.05	0.20	
v/s Ratio Perm		c0.10		0.18	c0.18	0.03			0.09			0.01
v/c Ratio		0.37		0.66	0.69	0.12	0.65	0.88	0.36	0.86	0.78	0.02
Uniform Delay, d1		38.4		42.1	42.5	35.8	59.5	46.4	39.7	60.4	45.0	36.2
Progression Factor		1.00		1.00	1.00	1.00	1.19	0.86	0.71	0.91	0.84	1.00
Incremental Delay, d2		7.5		10.2	11.7	0.6	25.0	8.5	2.6	54.4	4.5	0.1
Delay (s)		45.9		52.3	54.2	36.4	95.9	48.4	30.7	109.2	42.3	36.3
Level of Service		D		D	D	D	F	D	C	F	D	D
Approach Delay (s)		45.9			48.2			48.2			47.5	
Approach LOS		D			D			D			D	

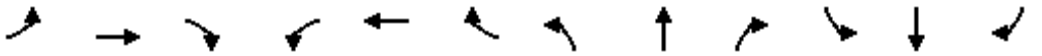
Intersection Summary			
HCM 2000 Control Delay	47.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	90.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	222	434	143	1050	1106	222
Future Volume (vph)	222	434	143	1050	1106	222
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	11	11	11
Total Lost time (s)	4.6	4.6	4.0	4.9	4.9	
Lane Util. Factor	0.97	0.91	1.00	0.91	0.91	
Frpb, ped/bikes	0.99	0.99	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	0.93	0.85	1.00	1.00	0.97	
Flt Protected	0.98	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3290	1450	1668	4916	4820	
Flt Permitted	0.98	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3290	1450	1668	4916	4820	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	236	462	152	1117	1177	236
RTOR Reduction (vph)	164	194	0	0	16	0
Lane Group Flow (vph)	303	37	152	1117	1397	0
Confl. Peds. (#/hr)	2		5			5
Confl. Bikes (#/hr)		1				6
Heavy Vehicles (%)	1%	0%	1%	2%	1%	0%
Turn Type	Prot	Perm	Prot	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	20.7	20.7	17.1	99.8	78.7	
Effective Green, g (s)	20.7	20.7	17.1	99.8	78.7	
Actuated g/C Ratio	0.16	0.16	0.13	0.77	0.61	
Clearance Time (s)	4.6	4.6	4.0	4.9	4.9	
Vehicle Extension (s)	4.0	4.0	3.0	4.0	4.0	
Lane Grp Cap (vph)	523	230	219	3773	2917	
v/s Ratio Prot	c0.09		c0.09	0.23	c0.29	
v/s Ratio Perm		0.03				
v/c Ratio	0.58	0.16	0.69	0.30	0.48	
Uniform Delay, d1	50.6	47.1	54.0	4.5	14.3	
Progression Factor	1.00	1.00	1.00	1.00	1.15	
Incremental Delay, d2	1.9	0.4	9.2	0.2	0.2	
Delay (s)	52.5	47.6	63.1	4.7	16.6	
Level of Service	D	D	E	A	B	
Approach Delay (s)	50.9			11.7	16.6	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay	21.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	2	56	0	61	8	1149	115	48	1270	2
Future Volume (vph)	1	0	2	56	0	61	8	1149	115	48	1270	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	12	11	11
Total Lost time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor		1.00			1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes		0.99			0.99		1.00	1.00	0.97	1.00	1.00	0.95
Flpb, ped/bikes		1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.91			0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.98			0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1643			1670		1711	4916	1484	1770	4916	1459
Flt Permitted		0.94			0.85		0.19	1.00	1.00	0.22	1.00	1.00
Satd. Flow (perm)		1565			1447		335	4916	1484	403	4916	1459
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1	0	2	59	0	64	8	1209	121	51	1337	2
RTOR Reduction (vph)	0	3	0	0	53	0	0	0	31	0	0	0
Lane Group Flow (vph)	0	0	0	0	70	0	8	1209	90	51	1337	2
Confl. Peds. (#/hr)	5		7	7		5			5			15
Confl. Bikes (#/hr)									3			
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)		7.5			7.5		48.5	48.5	48.5	48.5	48.5	48.5
Effective Green, g (s)		7.5			7.5		48.5	48.5	48.5	48.5	48.5	48.5
Actuated g/C Ratio		0.12			0.12		0.75	0.75	0.75	0.75	0.75	0.75
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		180			166		249	3668	1107	300	3668	1088
v/s Ratio Prot								0.25			c0.27	
v/s Ratio Perm		0.00			c0.05		0.02		0.06	0.13		0.00
v/c Ratio		0.00			0.42		0.03	0.33	0.08	0.17	0.36	0.00
Uniform Delay, d1		25.4			26.7		2.1	2.8	2.2	2.4	2.9	2.1
Progression Factor		1.00			1.00		0.89	1.04	1.34	2.43	2.66	2.26
Incremental Delay, d2		0.0			1.7		0.2	0.2	0.1	0.8	0.2	0.0
Delay (s)		25.4			28.5		2.1	3.1	3.1	6.6	7.8	4.7
Level of Service		C			C		A	A	A	A	A	A
Approach Delay (s)		25.4			28.5			3.1			7.8	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Arterial Level of Service: EB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	15.5	25.7	41.2	0.11	10.0	E
E. 14th Street	III	35	17.8	74.3	92.1	0.14	5.4	F
Total	III		33.3	100.0	133.3	0.25	6.9	F

Arterial Level of Service: WB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	17.8	17.1	34.9	0.14	14.3	D
	III	35	15.5	49.9	65.4	0.11	6.3	F
Total	III		33.3	67.0	100.3	0.25	9.1	F

Arterial Level of Service: NB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Drew St	II	40	13.0	3.4	16.4	0.11	24.9	C
Thornally Dr	II	40	24.0	48.7	72.7	0.21	10.3	F
Bayfair Dr	II	40	24.2	28.9	53.1	0.21	14.3	E
Fairmont Dr	II	40	13.5	20.1	33.6	0.12	12.5	F
Total	II		74.7	101.1	175.8	0.65	13.3	E

Arterial Level of Service: SB Hesperian Blvd

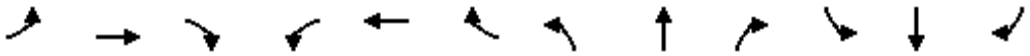
Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	II	40	13.5	19.5	33.0	0.12	12.8	F
Thornally Dr	II	40	24.2	42.6	66.8	0.21	11.3	F
Drew St	II	40	24.0	8.7	32.7	0.21	22.9	C
Springlake Dr	II	40	13.0	18.8	31.8	0.11	12.8	F
Total	II		74.7	89.6	164.3	0.65	14.2	E

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Traffic Volume (vph)	132	286	193	1	251	596	14	1	185	553	163	11
Future Volume (vph)	132	286	193	1	251	596	14	1	185	553	163	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	13	11	11	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.6	4.6		4.0	4.9			4.0	4.9	4.9	
Lane Util. Factor	1.00	0.95	1.00		0.97	0.95			1.00	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	0.97		1.00	1.00			1.00	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Frt	1.00	1.00	0.85		1.00	1.00			1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (prot)	1770	3539	1590		3319	3526			1770	3539	1554	
Flt Permitted	0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (perm)	1770	3539	1590		3319	3526			1770	3539	1554	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	140	304	205	1	267	634	15	1	197	588	173	12
RTOR Reduction (vph)	0	0	118	0	0	2	0	0	0	0	91	0
Lane Group Flow (vph)	140	304	87	0	268	647	0	0	198	588	82	0
Confl. Peds. (#/hr)			12				2				4	
Confl. Bikes (#/hr)			4				2				5	
Turn Type	Prot	NA	Perm	Prot	Prot	NA		Prot	Prot	NA	Perm	Prot
Protected Phases	3	8		7	7	4		1	1	6		5
Permitted Phases			8								6	
Actuated Green, G (s)	13.7	27.1	27.1		14.6	27.7			19.2	56.6	56.6	
Effective Green, g (s)	13.7	27.1	27.1		14.6	27.7			19.2	56.6	56.6	
Actuated g/C Ratio	0.11	0.23	0.23		0.12	0.23			0.16	0.47	0.47	
Clearance Time (s)	4.0	4.6	4.6		4.0	4.9			4.0	4.9	4.9	
Vehicle Extension (s)	3.0	4.0	4.0		4.0	3.0			2.0	6.0	6.0	
Lane Grp Cap (vph)	202	799	359		403	813			283	1669	732	
v/s Ratio Prot	0.08	0.09			c0.08	c0.18			c0.11	0.17		
v/s Ratio Perm			0.05								0.05	
v/c Ratio	0.69	0.38	0.24		0.67	0.80			0.70	0.35	0.11	
Uniform Delay, d1	51.1	39.3	38.1		50.4	43.5			47.7	20.1	17.7	
Progression Factor	1.00	1.00	1.00		1.00	1.00			0.81	0.55	1.31	
Incremental Delay, d2	9.8	0.4	0.5		4.5	5.4			5.9	0.4	0.2	
Delay (s)	61.0	39.8	38.5		54.9	48.9			44.7	11.4	23.4	
Level of Service	E	D	D		D	D			D	B	C	
Approach Delay (s)		43.9				50.7				20.5		
Approach LOS		D				D				C		

Intersection Summary			
HCM 2000 Control Delay	35.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.8
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

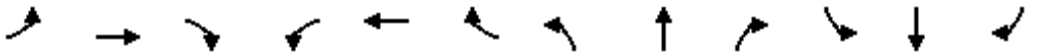
Movement	SBL	SBT	SBR
Lane Configurations			
Traffic Volume (vph)	23	620	193
Future Volume (vph)	23	620	193
Ideal Flow (vphpl)	1900	1900	1900
Lane Width	12	12	15
Total Lost time (s)	4.0	4.9	4.9
Lane Util. Factor	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00
Frt	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1701
Flt Permitted	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1701
Peak-hour factor, PHF	0.94	0.94	0.94
Adj. Flow (vph)	24	660	205
RTOR Reduction (vph)	0	0	127
Lane Group Flow (vph)	36	660	78
Confl. Peds. (#/hr)			9
Confl. Bikes (#/hr)			3
Turn Type	Prot	NA	Perm
Protected Phases	5	2	
Permitted Phases			2
Actuated Green, G (s)	4.2	41.6	41.6
Effective Green, g (s)	4.2	41.6	41.6
Actuated g/C Ratio	0.04	0.35	0.35
Clearance Time (s)	4.0	4.9	4.9
Vehicle Extension (s)	2.0	6.0	6.0
Lane Grp Cap (vph)	61	1762	589
v/s Ratio Prot	c0.02	c0.13	
v/s Ratio Perm			0.05
v/c Ratio	0.59	0.37	0.13
Uniform Delay, d1	57.1	29.4	26.8
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	9.8	0.6	0.5
Delay (s)	66.8	30.0	27.3
Level of Service	E	C	C
Approach Delay (s)		30.9	
Approach LOS		C	

Intersection Summary



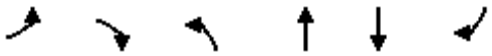
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	1	3	45	0	58	2	710	93	64	774	12
Future Volume (vph)	18	1	3	45	0	58	2	710	93	64	774	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	11	12	12	12
Total Lost time (s)		4.0		5.0	5.0	5.0	4.0	5.0		4.9	5.0	
Lane Util. Factor		1.00		0.95	0.95	1.00	1.00	0.91		1.00	0.91	
Frt		0.98		1.00	1.00	0.85	1.00	0.98		1.00	1.00	
Flt Protected		0.96		0.95	0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1758		1681	1681	1583	1770	4830		1770	5074	
Flt Permitted		0.83		0.83	0.83	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1526		1476	1476	1583	1770	4830		1770	5074	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	1	3	49	0	63	2	772	101	70	841	13
RTOR Reduction (vph)	0	3	0	0	0	59	0	8	0	0	1	0
Lane Group Flow (vph)	0	21	0	24	25	4	2	865	0	70	853	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		3			4		1	6		5	2	
Permitted Phases	3			4		4						
Actuated Green, G (s)		4.4		8.2	8.2	8.2	1.3	74.2		14.3	88.1	
Effective Green, g (s)		4.4		8.2	8.2	8.2	1.3	74.2		14.3	88.1	
Actuated g/C Ratio		0.04		0.07	0.07	0.07	0.01	0.62		0.12	0.73	
Clearance Time (s)		4.0		5.0	5.0	5.0	4.0	5.0		4.9	5.0	
Vehicle Extension (s)		2.0		4.0	4.0	4.0	3.5	4.0		3.5	4.0	
Lane Grp Cap (vph)		55		100	100	108	19	2986		210	3725	
v/s Ratio Prot							0.00	c0.18		c0.04	0.17	
v/s Ratio Perm		c0.01		0.02	c0.02	0.00						
v/c Ratio		0.38		0.24	0.25	0.04	0.11	0.29		0.33	0.23	
Uniform Delay, d1		56.5		52.9	53.0	52.2	58.8	10.6		48.5	5.1	
Progression Factor		1.00		1.00	1.00	1.00	1.52	0.15		1.09	1.05	
Incremental Delay, d2		1.6		1.7	1.8	0.2	2.3	0.2		1.0	0.1	
Delay (s)		58.1		54.6	54.8	52.4	91.8	1.8		53.9	5.5	
Level of Service		E		D	D	D	F	A		D	A	
Approach Delay (s)		58.1			53.4			2.0			9.2	
Approach LOS		E			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.9
Intersection Capacity Utilization	40.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	6	67	287	6	77	28	712	406	187	794	20
Future Volume (vph)	27	6	67	287	6	77	28	712	406	187	794	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	11	11	11	12
Total Lost time (s)		4.5		4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Lane Util. Factor		1.00		0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes		0.97		1.00	1.00	0.99	1.00	1.00	0.97	1.00	1.00	0.96
Flpb, ped/bikes		1.00		0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.91		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.99		0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1645		1626	1638	1531	1805	4730	1502	1711	4916	1548
Flt Permitted		0.87		0.27	0.28	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1442		458	475	1531	1805	4730	1502	1711	4916	1548
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	7	73	312	7	84	30	774	441	203	863	22
RTOR Reduction (vph)	0	65	0	0	0	61	0	0	212	0	0	13
Lane Group Flow (vph)	0	44	0	159	160	23	30	774	229	203	863	9
Confl. Peds. (#/hr)	2		29	29		2	8		13	13		8
Heavy Vehicles (%)	0%	0%	1%	4%	0%	4%	0%	6%	1%	2%	2%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		3			4		5	2		1	6	
Permitted Phases	3			4		4			2			6
Actuated Green, G (s)		12.7		33.0	33.0	33.0	4.1	29.3	29.3	26.5	51.7	51.7
Effective Green, g (s)		12.7		33.0	33.0	33.0	4.1	29.3	29.3	26.5	51.7	51.7
Actuated g/C Ratio		0.11		0.28	0.28	0.28	0.03	0.24	0.24	0.22	0.43	0.43
Clearance Time (s)		4.5		4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Vehicle Extension (s)		4.0		4.0	4.0	4.0	2.0	6.0	6.0	2.0	6.0	6.0
Lane Grp Cap (vph)		152		125	130	421	61	1154	366	377	2117	666
v/s Ratio Prot							0.02	c0.16		c0.12	0.18	
v/s Ratio Perm		c0.03		c0.35	0.34	0.02			0.15			0.01
v/c Ratio		0.29		1.27	1.23	0.05	0.49	0.67	0.63	0.54	0.41	0.01
Uniform Delay, d1		49.5		43.5	43.5	32.0	56.9	41.0	40.5	41.3	23.6	19.6
Progression Factor		1.00		1.00	1.00	1.00	0.70	0.69	0.82	0.97	1.23	1.00
Incremental Delay, d2		1.4		170.7	153.7	0.1	2.1	2.9	7.3	0.7	0.6	0.0
Delay (s)		50.9		214.2	197.2	32.1	41.7	31.0	40.6	40.7	29.6	19.6
Level of Service		D		F	F	C	D	C	D	D	C	B
Approach Delay (s)		50.9			169.5			34.7			31.5	
Approach LOS		D			F			C			C	

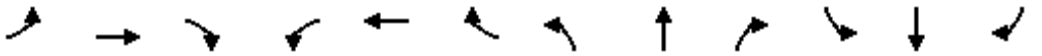
Intersection Summary			
HCM 2000 Control Delay	53.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	246	371	106	886	1053	135
Future Volume (vph)	246	371	106	886	1053	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	11	11	11
Total Lost time (s)	4.6	4.6	4.0	4.9	4.9	
Lane Util. Factor	0.97	0.91	1.00	0.91	0.91	
Frpb, ped/bikes	0.99	0.99	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	0.94	0.85	1.00	1.00	0.98	
Flt Protected	0.97	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3254	1420	1652	4868	4762	
Flt Permitted	0.97	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3254	1420	1652	4868	4762	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	293	442	126	1055	1254	161
RTOR Reduction (vph)	127	191	0	0	10	0
Lane Group Flow (vph)	374	43	126	1055	1405	0
Confl. Peds. (#/hr)	5	1	9			9
Confl. Bikes (#/hr)		1				6
Heavy Vehicles (%)	3%	2%	2%	3%	3%	3%
Turn Type	Prot	Perm	Prot	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	22.2	22.2	14.2	88.3	70.1	
Effective Green, g (s)	22.2	22.2	14.2	88.3	70.1	
Actuated g/C Ratio	0.18	0.18	0.12	0.74	0.58	
Clearance Time (s)	4.6	4.6	4.0	4.9	4.9	
Vehicle Extension (s)	4.0	4.0	3.0	4.0	4.0	
Lane Grp Cap (vph)	601	262	195	3582	2781	
v/s Ratio Prot	c0.11		c0.08	0.22	c0.30	
v/s Ratio Perm		0.03				
v/c Ratio	0.62	0.17	0.65	0.29	0.51	
Uniform Delay, d1	45.0	41.1	50.5	5.3	14.7	
Progression Factor	1.00	1.00	1.00	1.00	0.64	
Incremental Delay, d2	2.3	0.4	7.2	0.2	0.2	
Delay (s)	47.3	41.5	57.7	5.6	9.5	
Level of Service	D	D	E	A	A	
Approach Delay (s)	45.5			11.1	9.5	
Approach LOS	D			B	A	

Intersection Summary			
HCM 2000 Control Delay	18.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	3	219	0	81	12	984	136	90	966	2
Future Volume (vph)	0	0	3	219	0	81	12	984	136	90	966	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	12	11	11
Total Lost time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor		1.00			1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes		0.99			0.99		1.00	1.00	0.95	1.00	1.00	0.95
Flpb, ped/bikes		1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.86			0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00			0.96		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1587			1719		1662	4775	1419	1752	4868	1438
Flt Permitted		1.00			0.78		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1587			1395		1662	4775	1419	1752	4868	1438
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	3	233	0	86	13	1047	145	96	1028	2
RTOR Reduction (vph)	0	2	0	0	153	0	0	0	82	0	0	0
Lane Group Flow (vph)	0	1	0	0	166	0	13	1047	63	96	1028	2
Confl. Peds. (#/hr)	7		3	3		7			14			18
Confl. Bikes (#/hr)									3			3
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	5%	5%	3%	3%	3%
Turn Type		NA		Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			6
Actuated Green, G (s)		11.9			11.9		1.2	25.9	25.9	8.7	33.4	33.4
Effective Green, g (s)		11.9			11.9		1.2	25.9	25.9	8.7	33.4	33.4
Actuated g/C Ratio		0.20			0.20		0.02	0.43	0.43	0.14	0.56	0.56
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		314			276		33	2061	612	254	2709	800
v/s Ratio Prot		0.00					0.01	c0.22		0.05	c0.21	
v/s Ratio Perm					c0.12				0.04			0.00
v/c Ratio		0.00			0.60		0.39	0.51	0.10	0.38	0.38	0.00
Uniform Delay, d1		19.3			21.9		29.0	12.4	10.1	23.2	7.5	5.9
Progression Factor		1.00			1.00		1.12	0.95	1.06	0.83	0.51	0.46
Incremental Delay, d2		0.0			3.7		7.3	0.9	0.3	0.8	0.3	0.0
Delay (s)		19.3			25.5		39.7	12.6	11.0	20.1	4.2	2.7
Level of Service		B			C		D	B	B	C	A	A
Approach Delay (s)		19.3			25.5			12.7			5.5	
Approach LOS		B			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Arterial Level of Service: EB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	17.1	22.9	40.0	0.13	12.0	E
E. 14th Street	III	35	16.3	33.9	50.2	0.13	9.1	F
Total	III		33.4	56.8	90.2	0.26	10.4	E

Arterial Level of Service: WB Fairmont Dr

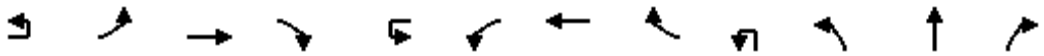
Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	16.3	15.2	31.5	0.13	14.5	D
	III	35	17.1	50.9	68.0	0.13	7.1	F
Total	III		33.4	66.1	99.5	0.26	9.4	F

Arterial Level of Service: NB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Drew St	II	40	13.0	11.6	24.6	0.11	16.5	E
Thornally Dr	II	40	24.0	31.1	55.1	0.21	13.6	E
Bayfair Dr	II	40	24.2	1.7	25.9	0.21	29.2	B
Fairmont Dr	II	40	13.5	12.3	25.8	0.12	16.3	E
Total	II		74.7	56.7	131.4	0.65	17.8	D

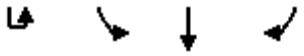
Arterial Level of Service: SB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	II	40	13.5	5.3	18.8	0.12	22.4	C
Thornally Dr	II	40	24.2	29.4	53.6	0.21	14.1	E
Drew St	II	40	24.0	3.9	27.9	0.21	27.0	C
Springlake Dr	II	40	13.0	11.1	24.1	0.11	16.8	E
Total	II		74.7	49.7	124.4	0.65	18.8	D



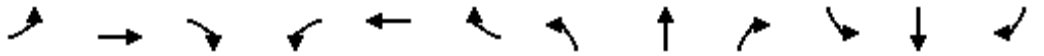
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	6	210	630	267	6	251	380	31	3	275	605	275
Future Volume (vph)	6	210	630	267	6	251	380	31	3	275	605	275
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	12	11	12	12	12	12	12	15
Total Lost time (s)		4.0	4.6	4.6		4.0	4.9			4.0	4.9	4.9
Lane Util. Factor		1.00	0.95	1.00		0.97	0.95			1.00	0.95	1.00
Frpb, ped/bikes		1.00	1.00	0.98		1.00	1.00			1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00		1.00	1.00			1.00	1.00	1.00
Frt		1.00	1.00	0.85		1.00	0.99			1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00
Satd. Flow (prot)		1770	3539	1595		3319	3490			1770	3539	1699
Flt Permitted		0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00
Satd. Flow (perm)		1770	3539	1595		3319	3490			1770	3539	1699
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	6	216	649	275	6	259	392	32	3	284	624	284
RTOR Reduction (vph)	0	0	0	101	0	0	5	0	0	0	0	165
Lane Group Flow (vph)	0	222	649	174	0	265	419	0	0	287	624	119
Confl. Peds. (#/hr)				9				18				9
Confl. Bikes (#/hr)				3				2				6
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA		Prot	Prot	NA	Perm
Protected Phases	3	3	8		7	7	4		1	1	6	
Permitted Phases				8								6
Actuated Green, G (s)		20.5	30.9	30.9		15.6	25.7			26.1	54.3	54.3
Effective Green, g (s)		20.5	30.9	30.9		15.6	25.7			26.1	54.3	54.3
Actuated g/C Ratio		0.16	0.24	0.24		0.12	0.20			0.20	0.42	0.42
Clearance Time (s)		4.0	4.6	4.6		4.0	4.9			4.0	4.9	4.9
Vehicle Extension (s)		3.0	4.0	4.0		4.0	3.0			2.0	6.0	6.0
Lane Grp Cap (vph)		279	841	379		398	689			355	1478	709
v/s Ratio Prot		0.13	c0.18			0.08	c0.12			c0.16	c0.18	
v/s Ratio Perm				0.11								0.07
v/c Ratio		0.80	0.77	0.46		0.67	0.61			0.81	0.42	0.17
Uniform Delay, d1		52.7	46.3	42.4		54.7	47.6			49.6	26.8	23.7
Progression Factor		1.00	1.00	1.00		1.00	1.00			0.59	0.42	0.16
Incremental Delay, d2		14.5	4.7	1.2		4.6	1.5			10.6	0.5	0.3
Delay (s)		67.2	50.9	43.6		59.3	49.1			39.9	11.6	4.1
Level of Service		E	D	D		E	D			D	B	A
Approach Delay (s)			52.3				53.0				16.6	
Approach LOS			D				D				B	

Intersection Summary			
HCM 2000 Control Delay	38.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	17.8
Intersection Capacity Utilization	89.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Volume (vph)	32	71	533	222
Future Volume (vph)	32	71	533	222
Ideal Flow (vphpl)	1900	1900	1900	1900
Lane Width	12	12	12	15
Total Lost time (s)		4.0	4.9	4.9
Lane Util. Factor		1.00	0.91	1.00
Frpb, ped/bikes		1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00	1.00
Frt		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00
Satd. Flow (prot)		1770	5085	1682
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		1770	5085	1682
Peak-hour factor, PHF	0.97	0.97	0.97	0.97
Adj. Flow (vph)	33	73	549	229
RTOR Reduction (vph)	0	0	0	159
Lane Group Flow (vph)	0	106	549	70
Confl. Peds. (#/hr)				19
Confl. Bikes (#/hr)				1
Turn Type	Prot	Prot	NA	Perm
Protected Phases	5	5	2	
Permitted Phases				2
Actuated Green, G (s)		11.7	39.9	39.9
Effective Green, g (s)		11.7	39.9	39.9
Actuated g/C Ratio		0.09	0.31	0.31
Clearance Time (s)		4.0	4.9	4.9
Vehicle Extension (s)		2.0	6.0	6.0
Lane Grp Cap (vph)		159	1560	516
v/s Ratio Prot		c0.06	0.11	
v/s Ratio Perm				0.04
v/c Ratio		0.67	0.35	0.14
Uniform Delay, d1		57.3	35.0	32.6
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		7.9	0.6	0.5
Delay (s)		65.2	35.6	33.1
Level of Service		E	D	C
Approach Delay (s)			38.5	
Approach LOS			D	

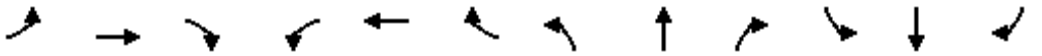
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	2	2	214	1	214	6	957	312	158	786	14
Future Volume (vph)	26	2	2	214	1	214	6	957	312	158	786	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		5.0	5.0	5.0	4.0	5.0		4.9	5.0	
Lane Util. Factor		1.00		0.95	0.95	1.00	1.00	0.91		1.00	0.91	
Frt		0.99		1.00	1.00	0.85	1.00	0.96		1.00	1.00	
Flt Protected		0.96		0.95	0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1770		1681	1686	1583	1770	4898		1770	5072	
Flt Permitted		0.35		0.74	0.70	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		653		1303	1247	1583	1770	4898		1770	5072	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	2	2	233	1	233	7	1040	339	172	854	15
RTOR Reduction (vph)	0	2	0	0	0	199	0	35	0	0	1	0
Lane Group Flow (vph)	0	30	0	116	118	34	7	1344	0	172	868	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		3			4		1	6		5	2	
Permitted Phases	3			4		4						
Actuated Green, G (s)		10.6		18.7	18.7	18.7	3.1	62.2		19.6	79.6	
Effective Green, g (s)		10.6		18.7	18.7	18.7	3.1	62.2		19.6	79.6	
Actuated g/C Ratio		0.08		0.14	0.14	0.14	0.02	0.48		0.15	0.61	
Clearance Time (s)		4.0		5.0	5.0	5.0	4.0	5.0		4.9	5.0	
Vehicle Extension (s)		2.0		4.0	4.0	4.0	3.5	4.0		3.5	4.0	
Lane Grp Cap (vph)		53		187	179	227	42	2343		266	3105	
v/s Ratio Prot							0.00	c0.27		c0.10	0.17	
v/s Ratio Perm		c0.05		0.09	c0.09	0.02						
v/c Ratio		0.57		0.62	0.66	0.15	0.17	0.57		0.65	0.28	
Uniform Delay, d1		57.5		52.3	52.6	48.7	62.2	24.4		51.9	11.8	
Progression Factor		1.00		1.00	1.00	1.00	0.88	0.26		1.16	0.62	
Incremental Delay, d2		8.1		7.1	9.4	0.4	2.0	0.9		5.1	0.2	
Delay (s)		65.6		59.4	62.0	49.1	56.8	7.3		65.6	7.5	
Level of Service		E		E	E	D	E	A		E	A	
Approach Delay (s)		65.6			54.9			7.6			17.1	
Approach LOS		E			D			A			B	

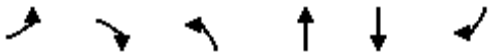
Intersection Summary			
HCM 2000 Control Delay	19.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	18.9
Intersection Capacity Utilization	55.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	7	49	378	9	168	65	1022	185	83	940	28
Future Volume (vph)	25	7	49	378	9	168	65	1022	185	83	940	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	11	12	12	12
Total Lost time (s)		4.5		4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Lane Util. Factor		1.00		0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes		0.96		1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.92
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.92		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.98		0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1635		1681	1691	1544	1770	4964	1477	1687	5136	1480
Flt Permitted		0.83		0.31	0.32	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1377		544	563	1544	1770	4964	1477	1687	5136	1480
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	8	53	411	10	183	71	1111	201	90	1022	30
RTOR Reduction (vph)	0	48	0	0	0	131	0	0	55	0	0	17
Lane Group Flow (vph)	0	40	0	210	211	52	71	1111	146	90	1022	13
Confl. Peds. (#/hr)	3		42	42		3	22		10	10		22
Heavy Vehicles (%)	0%	0%	2%	2%	0%	3%	2%	1%	3%	7%	1%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		3			4		5	2		1	6	
Permitted Phases	3			4		4			2			6
Actuated Green, G (s)		12.7		35.6	35.6	35.6	8.6	52.6	52.6	10.6	54.6	54.6
Effective Green, g (s)		12.7		35.6	35.6	35.6	8.6	52.6	52.6	10.6	54.6	54.6
Actuated g/C Ratio		0.10		0.27	0.27	0.27	0.07	0.40	0.40	0.08	0.42	0.42
Clearance Time (s)		4.5		4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Vehicle Extension (s)		4.0		4.0	4.0	4.0	2.0	6.0	6.0	2.0	6.0	6.0
Lane Grp Cap (vph)		134		148	154	422	117	2008	597	137	2157	621
v/s Ratio Prot							0.04	c0.22		c0.05	0.20	
v/s Ratio Perm		c0.03		c0.39	0.37	0.03			0.10			0.01
v/c Ratio		0.30		1.42	1.37	0.12	0.61	0.55	0.24	0.66	0.47	0.02
Uniform Delay, d1		54.5		47.2	47.2	35.5	59.1	29.7	25.6	57.9	27.3	22.1
Progression Factor		1.00		1.00	1.00	1.00	0.92	0.95	0.94	0.53	0.30	1.00
Incremental Delay, d2		1.7		223.3	202.2	0.2	5.8	1.1	0.9	8.2	0.7	0.1
Delay (s)		56.2		270.5	249.4	35.6	60.1	29.2	25.0	39.1	8.9	22.1
Level of Service		E		F	F	D	E	C	C	D	A	C
Approach Delay (s)		56.2			192.0			30.2			11.6	
Approach LOS		E			F			C			B	

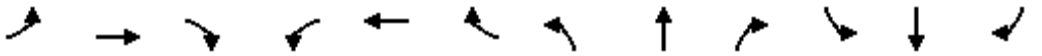
Intersection Summary			
HCM 2000 Control Delay	54.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	222	434	143	1050	1106	222
Future Volume (vph)	222	434	143	1050	1106	222
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	11	11	11
Total Lost time (s)	4.6	4.6	4.0	4.9	4.9	
Lane Util. Factor	0.97	0.91	1.00	0.91	0.91	
Frpb, ped/bikes	0.99	0.99	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	0.93	0.85	1.00	1.00	0.97	
Flt Protected	0.98	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3290	1450	1668	4916	4820	
Flt Permitted	0.98	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3290	1450	1668	4916	4820	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	236	462	152	1117	1177	236
RTOR Reduction (vph)	162	194	0	0	16	0
Lane Group Flow (vph)	305	37	152	1117	1397	0
Confl. Peds. (#/hr)	2		5			5
Confl. Bikes (#/hr)		1				6
Heavy Vehicles (%)	1%	0%	1%	2%	1%	0%
Turn Type	Prot	Perm	Prot	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	20.7	20.7	17.1	99.8	78.7	
Effective Green, g (s)	20.7	20.7	17.1	99.8	78.7	
Actuated g/C Ratio	0.16	0.16	0.13	0.77	0.61	
Clearance Time (s)	4.6	4.6	4.0	4.9	4.9	
Vehicle Extension (s)	4.0	4.0	3.0	4.0	4.0	
Lane Grp Cap (vph)	523	230	219	3773	2917	
v/s Ratio Prot	c0.09		c0.09	0.23	c0.29	
v/s Ratio Perm		0.03				
v/c Ratio	0.58	0.16	0.69	0.30	0.48	
Uniform Delay, d1	50.6	47.1	54.0	4.5	14.3	
Progression Factor	1.00	1.00	1.00	1.00	0.46	
Incremental Delay, d2	2.0	0.4	9.2	0.2	0.2	
Delay (s)	52.6	47.6	63.1	4.7	6.7	
Level of Service	D	D	E	A	A	
Approach Delay (s)	50.9			11.7	6.7	
Approach LOS	D			B	A	

Intersection Summary			
HCM 2000 Control Delay	17.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	2	56	0	61	8	1149	115	48	1270	2
Future Volume (vph)	1	0	2	56	0	61	8	1149	115	48	1270	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	12	11	11
Total Lost time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor		1.00			1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes		0.99			0.99		1.00	1.00	0.97	1.00	1.00	0.95
Flpb, ped/bikes		1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.91			0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.98			0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1643			1670		1711	4916	1484	1770	4916	1459
Flt Permitted		0.94			0.85		0.19	1.00	1.00	0.22	1.00	1.00
Satd. Flow (perm)		1565			1447		335	4916	1484	403	4916	1459
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1	0	2	59	0	64	8	1209	121	51	1337	2
RTOR Reduction (vph)	0	3	0	0	53	0	0	0	31	0	0	0
Lane Group Flow (vph)	0	0	0	0	70	0	8	1209	90	51	1337	2
Confl. Peds. (#/hr)	5		7	7		5			5			15
Confl. Bikes (#/hr)									3			
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)		7.5			7.5		48.5	48.5	48.5	48.5	48.5	48.5
Effective Green, g (s)		7.5			7.5		48.5	48.5	48.5	48.5	48.5	48.5
Actuated g/C Ratio		0.12			0.12		0.75	0.75	0.75	0.75	0.75	0.75
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		180			166		249	3668	1107	300	3668	1088
v/s Ratio Prot								0.25			c0.27	
v/s Ratio Perm		0.00			c0.05		0.02		0.06	0.13		0.00
v/c Ratio		0.00			0.42		0.03	0.33	0.08	0.17	0.36	0.00
Uniform Delay, d1		25.4			26.7		2.1	2.8	2.2	2.4	2.9	2.1
Progression Factor		1.00			1.00		1.61	1.39	3.06	1.55	1.51	1.44
Incremental Delay, d2		0.0			1.7		0.2	0.2	0.1	0.8	0.2	0.0
Delay (s)		25.4			28.5		3.7	4.1	7.0	4.6	4.5	3.0
Level of Service		C			C		A	A	A	A	A	A
Approach Delay (s)		25.4			28.5			4.4			4.5	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	5.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Arterial Level of Service: EB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	15.5	27.1	42.6	0.11	9.7	F
E. 14th Street	III	35	17.8	40.5	58.3	0.14	8.6	F
Total	III		33.3	67.6	100.9	0.25	9.1	F

Arterial Level of Service: WB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	17.8	16.6	34.4	0.14	14.6	D
	III	35	15.5	50.2	65.7	0.11	6.3	F
Total	III		33.3	66.8	100.1	0.25	9.1	F

Arterial Level of Service: NB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Drew St	II	40	13.0	4.5	17.5	0.11	23.3	C
Thornally Dr	II	40	24.0	28.6	52.6	0.21	14.3	E
Bayfair Dr	II	40	24.2	6.9	31.1	0.21	24.3	C
Fairmont Dr	II	40	13.5	12.6	26.1	0.12	16.1	E
Total	II		74.7	52.6	127.3	0.65	18.3	D

Arterial Level of Service: SB Hesperian Blvd

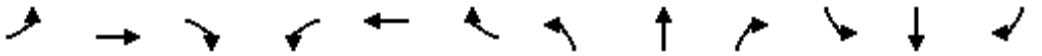
Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	II	40	13.5	8.5	22.0	0.12	19.2	D
Thornally Dr	II	40	24.2	8.9	33.1	0.21	22.9	C
Drew St	II	40	24.0	5.0	29.0	0.21	25.9	C
Springlake Dr	II	40	13.0	7.9	20.9	0.11	19.5	D
Total	II		74.7	30.3	105.0	0.65	22.2	C

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Traffic Volume (vph)	132	286	193	1	251	596	14	1	185	553	163	11
Future Volume (vph)	132	286	193	1	251	596	14	1	185	553	163	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	10	11	11	11	10	10	10	12	14	12
Total Lost time (s)	4.0	4.6	4.6		4.0	4.9			4.0	4.9	4.9	
Lane Util. Factor	1.00	0.95	1.00		0.97	0.95			1.00	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	0.97		1.00	1.00			1.00	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Frt	1.00	1.00	0.85		1.00	1.00			1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (prot)	1652	3539	1436		3319	3408			1652	3539	1657	
Flt Permitted	0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (perm)	1652	3539	1436		3319	3408			1652	3539	1657	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	140	304	205	1	267	634	15	1	197	588	173	12
RTOR Reduction (vph)	0	0	117	0	0	2	0	0	0	0	91	0
Lane Group Flow (vph)	140	304	88	0	268	647	0	0	198	588	82	0
Confl. Peds. (#/hr)			12				2				4	
Confl. Bikes (#/hr)			4				2				5	
Turn Type	Prot	NA	Perm	Prot	Prot	NA		Prot	Prot	NA	Perm	Prot
Protected Phases	3	8		7	7	4		1	1	6		5
Permitted Phases			8								6	
Actuated Green, G (s)	13.8	28.6	28.6		13.8	28.3			17.5	48.4	48.4	
Effective Green, g (s)	13.8	28.6	28.6		13.8	28.3			17.5	48.4	48.4	
Actuated g/C Ratio	0.12	0.24	0.24		0.12	0.24			0.15	0.40	0.40	
Clearance Time (s)	4.0	4.6	4.6		4.0	4.9			4.0	4.9	4.9	
Vehicle Extension (s)	3.0	4.0	4.0		4.0	3.0			2.0	6.0	6.0	
Lane Grp Cap (vph)	189	843	342		381	803			240	1427	668	
v/s Ratio Prot	c0.08	0.09			0.08	c0.19			c0.12	0.17		
v/s Ratio Perm			0.06								0.05	
v/c Ratio	0.74	0.36	0.26		0.70	0.81			0.82	0.41	0.12	
Uniform Delay, d1	51.4	38.1	37.1		51.1	43.3			49.8	25.6	22.5	
Progression Factor	1.00	1.00	1.00		1.00	1.00			0.73	0.53	0.69	
Incremental Delay, d2	14.4	0.4	0.5		6.2	5.9			18.6	0.5	0.2	
Delay (s)	65.8	38.4	37.6		57.3	49.2			55.1	14.1	15.8	
Level of Service	E	D	D		E	D			E	B	B	
Approach Delay (s)		44.1				51.6				22.9		
Approach LOS		D				D				C		

Intersection Summary			
HCM 2000 Control Delay	36.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.8
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

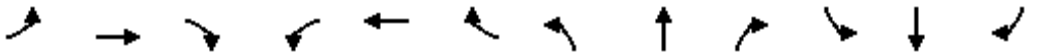
Movement	SBL	SBT	SBR
Lane Configurations			
Traffic Volume (vph)	23	620	193
Future Volume (vph)	23	620	193
Ideal Flow (vphpl)	1900	1900	1900
Lane Width	12	12	15
Total Lost time (s)	4.0	4.9	4.9
Lane Util. Factor	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00
Frt	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1701
Flt Permitted	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1701
Peak-hour factor, PHF	0.94	0.94	0.94
Adj. Flow (vph)	24	660	205
RTOR Reduction (vph)	0	0	88
Lane Group Flow (vph)	36	660	117
Confl. Peds. (#/hr)			9
Confl. Bikes (#/hr)			3
Turn Type	Prot	NA	Perm
Protected Phases	5	2	
Permitted Phases			2
Actuated Green, G (s)	11.7	42.6	42.6
Effective Green, g (s)	11.7	42.6	42.6
Actuated g/C Ratio	0.10	0.36	0.36
Clearance Time (s)	4.0	4.9	4.9
Vehicle Extension (s)	2.0	6.0	6.0
Lane Grp Cap (vph)	334	1256	603
v/s Ratio Prot	0.01	c0.19	
v/s Ratio Perm			0.07
v/c Ratio	0.11	0.53	0.19
Uniform Delay, d1	49.4	30.7	26.8
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	0.1	1.6	0.7
Delay (s)	49.4	32.3	27.5
Level of Service	D	C	C
Approach Delay (s)		31.9	
Approach LOS		C	

Intersection Summary



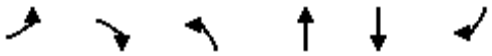
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	1	3	45	0	58	2	710	93	64	774	12
Future Volume (vph)	18	1	3	45	0	58	2	710	93	64	774	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	11	12	12	12
Total Lost time (s)		4.0		5.0	5.0	5.0	4.0	5.0		4.9	5.0	
Lane Util. Factor		1.00		0.95	0.95	1.00	1.00	0.95		1.00	0.95	
Frt		0.98		1.00	1.00	0.85	1.00	0.98		1.00	1.00	
Flt Protected		0.96		0.95	0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1758		1681	1681	1583	1770	3362		1770	3531	
Flt Permitted		0.49		0.74	0.74	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		895		1312	1312	1583	1770	3362		1770	3531	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	1	3	49	0	63	2	772	101	70	841	13
RTOR Reduction (vph)	0	3	0	0	0	59	0	4	0	0	0	0
Lane Group Flow (vph)	0	21	0	24	25	4	2	869	0	70	854	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		3			4		1	6		5	2	
Permitted Phases	3			4		4						
Actuated Green, G (s)		7.5		8.4	8.4	8.4	3.1	76.0		9.2	83.0	
Effective Green, g (s)		7.5		8.4	8.4	8.4	3.1	76.0		9.2	83.0	
Actuated g/C Ratio		0.06		0.07	0.07	0.07	0.03	0.63		0.08	0.69	
Clearance Time (s)		4.0		5.0	5.0	5.0	4.0	5.0		4.9	5.0	
Vehicle Extension (s)		2.0		4.0	4.0	4.0	3.5	4.0		3.5	4.0	
Lane Grp Cap (vph)		55		91	91	110	45	2129		135	2442	
v/s Ratio Prot							0.00	c0.26		c0.04	0.24	
v/s Ratio Perm		c0.02		0.02	c0.02	0.00						
v/c Ratio		0.39		0.26	0.27	0.04	0.04	0.41		0.52	0.35	
Uniform Delay, d1		54.0		52.9	52.9	52.0	57.0	10.9		53.3	7.5	
Progression Factor		1.00		1.00	1.00	1.00	0.53	0.10		0.85	1.13	
Incremental Delay, d2		1.6		2.1	2.2	0.2	0.4	0.5		3.3	0.3	
Delay (s)		55.7		55.0	55.1	52.2	30.6	1.6		48.7	8.8	
Level of Service		E		D	E	D	C	A		D	A	
Approach Delay (s)		55.7			53.5			1.6			11.8	
Approach LOS		E			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.9
Intersection Capacity Utilization	46.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	6	67	287	6	77	28	712	406	187	794	20
Future Volume (vph)	27	6	67	287	6	77	28	712	406	187	794	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	11	11	11	12
Total Lost time (s)		4.5		4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Lane Util. Factor		1.00		0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		0.97		1.00	1.00	0.99	1.00	1.00	0.97	1.00	1.00	0.96
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.91		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.99		0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1645		1649	1659	1531	1805	3292	1502	1711	3421	1548
Flt Permitted		0.87		0.27	0.28	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1442		464	481	1531	1805	3292	1502	1711	3421	1548
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	7	73	312	7	84	30	774	441	203	863	22
RTOR Reduction (vph)	0	65	0	0	0	61	0	0	119	0	0	13
Lane Group Flow (vph)	0	44	0	159	160	23	30	774	322	203	863	9
Confl. Peds. (#/hr)	2		29	29		2	8		13	13		8
Heavy Vehicles (%)	0%	0%	1%	4%	0%	4%	0%	6%	1%	2%	2%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		3			4		5	2		1	6	
Permitted Phases	3			4		4			2			6
Actuated Green, G (s)		12.7		33.5	33.5	33.5	3.6	47.0	47.0	8.3	51.7	51.7
Effective Green, g (s)		12.7		33.5	33.5	33.5	3.6	47.0	47.0	8.3	51.7	51.7
Actuated g/C Ratio		0.11		0.28	0.28	0.28	0.03	0.39	0.39	0.07	0.43	0.43
Clearance Time (s)		4.5		4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Vehicle Extension (s)		4.0		4.0	4.0	4.0	2.0	6.0	6.0	2.0	6.0	6.0
Lane Grp Cap (vph)		152		129	134	427	54	1289	588	118	1473	666
v/s Ratio Prot							0.02	0.24		c0.12	c0.25	
v/s Ratio Perm		c0.03		c0.34	0.33	0.02			0.21			0.01
v/c Ratio		0.29		1.23	1.19	0.05	0.56	0.60	0.55	1.72	0.59	0.01
Uniform Delay, d1		49.5		43.2	43.2	31.7	57.4	29.0	28.3	55.9	26.0	19.6
Progression Factor		1.00		1.00	1.00	1.00	0.86	0.73	0.65	0.88	0.47	1.00
Incremental Delay, d2		1.4		154.7	139.2	0.1	5.8	1.7	3.1	356.6	1.7	0.0
Delay (s)		50.9		197.9	182.4	31.7	55.1	22.8	21.5	405.8	13.8	19.6
Level of Service		D		F	F	C	E	C	C	F	B	B
Approach Delay (s)		50.9			157.1			23.2			87.1	
Approach LOS		D			F			C			F	

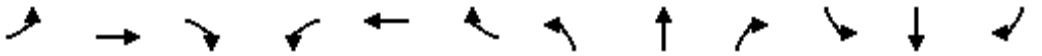
Intersection Summary			
HCM 2000 Control Delay	67.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	246	371	106	886	1053	135
Future Volume (vph)	246	371	106	886	1053	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	11	11	11
Total Lost time (s)	4.6	4.6	4.0	4.9	4.9	
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	
Frpb, ped/bikes	0.99	0.99	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	0.94	0.85	1.00	1.00	0.98	
Flt Protected	0.97	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3254	1420	1652	3388	3315	
Flt Permitted	0.97	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3254	1420	1652	3388	3315	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	293	442	126	1055	1254	161
RTOR Reduction (vph)	124	178	0	0	6	0
Lane Group Flow (vph)	377	56	126	1055	1409	0
Confl. Peds. (#/hr)	5	1	9			9
Confl. Bikes (#/hr)		1				6
Heavy Vehicles (%)	3%	2%	2%	3%	3%	3%
Turn Type	Prot	Perm	Prot	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	22.3	22.3	12.7	88.2	71.5	
Effective Green, g (s)	22.3	22.3	12.7	88.2	71.5	
Actuated g/C Ratio	0.19	0.19	0.11	0.74	0.60	
Clearance Time (s)	4.6	4.6	4.0	4.9	4.9	
Vehicle Extension (s)	4.0	4.0	3.0	4.0	4.0	
Lane Grp Cap (vph)	604	263	174	2490	1975	
v/s Ratio Prot	c0.12		c0.08	0.31	c0.42	
v/s Ratio Perm		0.04				
v/c Ratio	0.62	0.21	0.72	0.42	0.71	
Uniform Delay, d1	45.0	41.4	52.0	6.1	17.0	
Progression Factor	1.00	1.00	1.00	1.00	0.80	
Incremental Delay, d2	2.3	0.6	13.9	0.5	1.2	
Delay (s)	47.3	42.0	65.8	6.6	14.9	
Level of Service	D	D	E	A	B	
Approach Delay (s)	45.6			13.0	14.9	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay	21.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	62.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	3	219	0	81	12	984	136	90	966	2
Future Volume (vph)	0	0	3	219	0	81	12	984	136	90	966	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	12	11	11
Total Lost time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		0.99			0.99		1.00	1.00	0.95	1.00	1.00	0.95
Flpb, ped/bikes		1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.86			0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00			0.96		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1587			1719		1662	3323	1420	1752	3388	1438
Flt Permitted		1.00			0.78		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1587			1395		1662	3323	1420	1752	3388	1438
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	3	233	0	86	13	1047	145	96	1028	2
RTOR Reduction (vph)	0	2	0	0	153	0	0	0	69	0	0	0
Lane Group Flow (vph)	0	1	0	0	166	0	13	1047	76	96	1028	2
Confl. Peds. (#/hr)	7		3	3		7			14			18
Confl. Bikes (#/hr)									3			3
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	5%	5%	3%	3%	3%
Turn Type		NA		Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			6
Actuated Green, G (s)		11.8			11.8		1.2	27.2	27.2	7.5	33.5	33.5
Effective Green, g (s)		11.8			11.8		1.2	27.2	27.2	7.5	33.5	33.5
Actuated g/C Ratio		0.20			0.20		0.02	0.45	0.45	0.12	0.56	0.56
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		312			274		33	1506	643	219	1891	802
v/s Ratio Prot		0.00					0.01	c0.32		0.05	c0.30	
v/s Ratio Perm					c0.12				0.05			0.00
v/c Ratio		0.00			0.60		0.39	0.70	0.12	0.44	0.54	0.00
Uniform Delay, d1		19.4			22.0		29.0	13.1	9.5	24.3	8.4	5.9
Progression Factor		1.00			1.00		0.99	1.07	0.77	0.83	0.87	1.18
Incremental Delay, d2		0.0			3.7		7.0	2.5	0.3	1.0	0.8	0.0
Delay (s)		19.4			25.7		35.6	16.5	7.6	21.0	8.1	6.9
Level of Service		B			C		D	B	A	C	A	A
Approach Delay (s)		19.4			25.7			15.6			9.2	
Approach LOS		B			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	14.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Arterial Level of Service: EB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	17.0	25.9	42.9	0.13	11.1	E
E. 14th Street	III	35	16.2	34.9	51.1	0.13	8.9	F
Total	III		33.2	60.8	94.0	0.26	9.9	F

Arterial Level of Service: WB Fairmont Dr

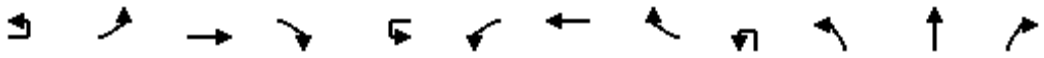
Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	16.2	17.7	33.9	0.13	13.5	E
	III	35	17.0	51.3	68.3	0.13	7.0	F
Total	III		33.2	69.0	102.2	0.26	9.1	F

Arterial Level of Service: NB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Drew St	II	40	13.0	14.8	27.8	0.11	14.6	E
Thornally Dr	II	40	24.0	22.0	46.0	0.21	16.3	E
Bayfair Dr	II	40	24.2	1.7	25.9	0.21	29.2	B
Fairmont Dr	II	40	13.5	15.9	29.4	0.12	14.3	E
Total	II		74.7	54.4	129.1	0.65	18.1	D

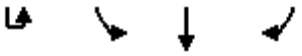
Arterial Level of Service: SB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	II	40	13.5	10.2	23.7	0.12	17.8	D
Thornally Dr	II	40	24.2	13.6	37.8	0.21	20.0	D
Drew St	II	40	24.0	7.6	31.6	0.21	23.8	C
Springlake Dr	II	40	13.0	17.3	30.3	0.11	13.4	E
Total	II		74.7	48.7	123.4	0.65	18.9	D



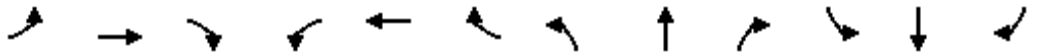
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Volume (vph)	6	210	630	267	6	251	380	31	3	275	605	275
Future Volume (vph)	6	210	630	267	6	251	380	31	3	275	605	275
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	13	12	11	11	12	12	12	12	15
Total Lost time (s)		4.0	4.6	4.6		4.0	4.9			4.0	4.9	4.9
Lane Util. Factor		1.00	0.95	1.00		0.97	0.95			1.00	0.95	1.00
Frpb, ped/bikes		1.00	1.00	0.98		1.00	1.00			1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00		1.00	1.00			1.00	1.00	1.00
Frt		1.00	1.00	0.85		1.00	0.99			1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00
Satd. Flow (prot)		1770	3539	1595		3319	3374			1770	3539	1699
Flt Permitted		0.95	1.00	1.00		0.95	1.00			0.95	1.00	1.00
Satd. Flow (perm)		1770	3539	1595		3319	3374			1770	3539	1699
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	6	216	649	275	6	259	392	32	3	284	624	284
RTOR Reduction (vph)	0	0	0	101	0	0	5	0	0	0	0	110
Lane Group Flow (vph)	0	222	649	174	0	265	419	0	0	287	624	174
Confl. Peds. (#/hr)				9				18				9
Confl. Bikes (#/hr)				3				2				6
Turn Type	Prot	Prot	NA	Perm	Prot	Prot	NA		Prot	Prot	NA	Perm
Protected Phases	3	3	8		7	7	4		1	1	6	
Permitted Phases				8								6
Actuated Green, G (s)		19.4	30.9	30.9		15.6	26.8			24.4	57.5	57.5
Effective Green, g (s)		19.4	30.9	30.9		15.6	26.8			24.4	57.5	57.5
Actuated g/C Ratio		0.15	0.24	0.24		0.12	0.21			0.19	0.44	0.44
Clearance Time (s)		4.0	4.6	4.6		4.0	4.9			4.0	4.9	4.9
Vehicle Extension (s)		3.0	4.0	4.0		4.0	3.0			2.0	6.0	6.0
Lane Grp Cap (vph)		264	841	379		398	695			332	1565	751
v/s Ratio Prot		c0.13	c0.18			c0.08	0.12			c0.16	0.18	
v/s Ratio Perm				0.11								0.10
v/c Ratio		0.84	0.77	0.46		0.67	0.60			0.86	0.40	0.23
Uniform Delay, d1		53.8	46.3	42.4		54.7	46.8			51.2	24.5	22.5
Progression Factor		1.00	1.00	1.00		1.00	1.00			0.56	0.37	0.11
Incremental Delay, d2		20.8	4.7	1.2		4.6	1.5			16.0	0.4	0.3
Delay (s)		74.6	50.9	43.6		59.3	48.3			44.8	9.5	2.8
Level of Service		E	D	D		E	D			D	A	A
Approach Delay (s)			53.8				52.5				16.4	
Approach LOS			D				D				B	

Intersection Summary			
HCM 2000 Control Delay	38.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	17.8
Intersection Capacity Utilization	89.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Volume (vph)	32	71	533	222
Future Volume (vph)	32	71	533	222
Ideal Flow (vphpl)	1900	1900	1900	1900
Lane Width	12	12	12	15
Total Lost time (s)		4.0	4.9	4.9
Lane Util. Factor		0.97	0.95	1.00
Frpb, ped/bikes		1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00	1.00
Frt		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00
Satd. Flow (prot)		3433	3539	1682
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3433	3539	1682
Peak-hour factor, PHF	0.97	0.97	0.97	0.97
Adj. Flow (vph)	33	73	549	229
RTOR Reduction (vph)	0	0	0	112
Lane Group Flow (vph)	0	106	549	117
Confl. Peds. (#/hr)				19
Confl. Bikes (#/hr)				1
Turn Type	Prot	Prot	NA	Perm
Protected Phases	5	5	2	
Permitted Phases				2
Actuated Green, G (s)		8.5	41.6	41.6
Effective Green, g (s)		8.5	41.6	41.6
Actuated g/C Ratio		0.07	0.32	0.32
Clearance Time (s)		4.0	4.9	4.9
Vehicle Extension (s)		2.0	6.0	6.0
Lane Grp Cap (vph)		224	1132	538
v/s Ratio Prot		0.03	c0.16	
v/s Ratio Perm				0.07
v/c Ratio		0.47	0.48	0.22
Uniform Delay, d1		58.6	35.6	32.3
Progression Factor		1.00	1.00	1.00
Incremental Delay, d2		0.6	1.5	0.9
Delay (s)		59.2	37.1	33.2
Level of Service		E	D	C
Approach Delay (s)			38.7	
Approach LOS			D	

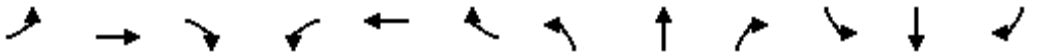
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	2	2	214	1	214	6	957	312	158	786	14
Future Volume (vph)	26	2	2	214	1	214	6	957	312	158	786	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		5.0	5.0	5.0	4.0	5.0		4.9	5.0	
Lane Util. Factor		1.00		0.95	0.95	1.00	1.00	0.95		1.00	0.95	
Frt		0.99		1.00	1.00	0.85	1.00	0.96		1.00	1.00	
Flt Protected		0.96		0.95	0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1770		1681	1686	1583	1770	3409		1770	3530	
Flt Permitted		0.69		0.88	0.88	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1283		1548	1550	1583	1770	3409		1770	3530	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	2	2	233	1	233	7	1040	339	172	854	15
RTOR Reduction (vph)	0	2	0	0	0	204	0	17	0	0	0	0
Lane Group Flow (vph)	0	30	0	116	118	29	7	1362	0	172	869	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		3			4		1	6		5	2	
Permitted Phases	3			4		4						
Actuated Green, G (s)		5.4		16.3	16.3	16.3	3.1	71.8		17.6	87.2	
Effective Green, g (s)		5.4		16.3	16.3	16.3	3.1	71.8		17.6	87.2	
Actuated g/C Ratio		0.04		0.13	0.13	0.13	0.02	0.55		0.14	0.67	
Clearance Time (s)		4.0		5.0	5.0	5.0	4.0	5.0		4.9	5.0	
Vehicle Extension (s)		2.0		4.0	4.0	4.0	3.5	4.0		3.5	4.0	
Lane Grp Cap (vph)		53		194	194	198	42	1882		239	2367	
v/s Ratio Prot							0.00	c0.40		c0.10	0.25	
v/s Ratio Perm		c0.02		0.07	c0.08	0.02						
v/c Ratio		0.57		0.60	0.61	0.15	0.17	0.72		0.72	0.37	
Uniform Delay, d1		61.2		53.8	53.8	50.7	62.2	21.7		53.8	9.3	
Progression Factor		1.00		1.00	1.00	1.00	0.77	0.19		1.15	0.52	
Incremental Delay, d2		8.0		5.7	6.1	0.5	1.6	1.8		9.0	0.4	
Delay (s)		69.2		59.5	60.0	51.1	49.5	5.9		71.1	5.3	
Level of Service		E		E	E	D	D	A		E	A	
Approach Delay (s)		69.2			55.4			6.1			16.1	
Approach LOS		E			E			A			B	

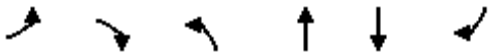
Intersection Summary			
HCM 2000 Control Delay	18.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	18.9
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	7	49	378	9	168	65	1022	185	83	940	28
Future Volume (vph)	25	7	49	378	9	168	65	1022	185	83	940	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	11	12	12	12
Total Lost time (s)		4.5		4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Lane Util. Factor		1.00		0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		0.96		1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.92
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.92		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.98		0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1635		1681	1691	1544	1770	3455	1477	1687	3574	1480
Flt Permitted		0.83		0.31	0.32	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1377		543	562	1544	1770	3455	1477	1687	3574	1480
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	8	53	411	10	183	71	1111	201	90	1022	30
RTOR Reduction (vph)	0	48	0	0	0	129	0	0	54	0	0	19
Lane Group Flow (vph)	0	40	0	210	211	54	71	1111	147	90	1022	11
Confl. Peds. (#/hr)	3		42	42		3	22		10	10		22
Heavy Vehicles (%)	0%	0%	2%	2%	0%	3%	2%	1%	3%	7%	1%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		3			4		5	2		1	6	
Permitted Phases	3			4		4			2			6
Actuated Green, G (s)		12.7		38.5	38.5	38.5	10.8	53.8	53.8	6.5	49.5	49.5
Effective Green, g (s)		12.7		38.5	38.5	38.5	10.8	53.8	53.8	6.5	49.5	49.5
Actuated g/C Ratio		0.10		0.30	0.30	0.30	0.08	0.41	0.41	0.05	0.38	0.38
Clearance Time (s)		4.5		4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Vehicle Extension (s)		4.0		4.0	4.0	4.0	2.0	6.0	6.0	2.0	6.0	6.0
Lane Grp Cap (vph)		134		160	166	457	147	1429	611	84	1360	563
v/s Ratio Prot							0.04	c0.32		c0.05	0.29	
v/s Ratio Perm		c0.03		c0.39	0.38	0.04			0.10			0.01
v/c Ratio		0.30		1.31	1.27	0.12	0.48	0.78	0.24	1.07	0.75	0.02
Uniform Delay, d1		54.5		45.8	45.8	33.4	56.9	32.9	24.8	61.8	34.9	25.1
Progression Factor		1.00		1.00	1.00	1.00	0.91	0.96	0.93	0.74	0.58	1.00
Incremental Delay, d2		1.7		178.0	160.6	0.2	0.8	3.9	0.9	117.1	3.7	0.1
Delay (s)		56.2		223.7	206.4	33.5	52.6	35.6	24.0	162.8	23.9	25.2
Level of Service		E		F	F	C	D	D	C	F	C	C
Approach Delay (s)		56.2			160.0			34.8			34.9	
Approach LOS		E			F			C			C	

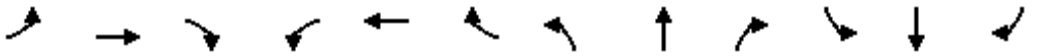
Intersection Summary			
HCM 2000 Control Delay	58.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	222	434	143	1050	1106	222
Future Volume (vph)	222	434	143	1050	1106	222
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	11	11	11
Total Lost time (s)	4.6	4.6	4.0	4.9	4.9	
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	
Frpb, ped/bikes	0.99	0.99	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	0.93	0.85	1.00	1.00	0.97	
Flt Protected	0.98	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3290	1450	1668	3421	3355	
Flt Permitted	0.98	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3290	1450	1668	3421	3355	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	236	462	152	1117	1177	236
RTOR Reduction (vph)	157	194	0	0	10	0
Lane Group Flow (vph)	310	37	152	1117	1403	0
Confl. Peds. (#/hr)	2		5			5
Confl. Bikes (#/hr)		1				6
Heavy Vehicles (%)	1%	0%	1%	2%	1%	0%
Turn Type	Prot	Perm	Prot	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	20.9	20.9	15.4	99.6	80.2	
Effective Green, g (s)	20.9	20.9	15.4	99.6	80.2	
Actuated g/C Ratio	0.16	0.16	0.12	0.77	0.62	
Clearance Time (s)	4.6	4.6	4.0	4.9	4.9	
Vehicle Extension (s)	4.0	4.0	3.0	4.0	4.0	
Lane Grp Cap (vph)	528	233	197	2621	2069	
v/s Ratio Prot	c0.09		c0.09	0.33	c0.42	
v/s Ratio Perm		0.03				
v/c Ratio	0.59	0.16	0.77	0.43	0.68	
Uniform Delay, d1	50.6	47.0	55.6	5.3	16.4	
Progression Factor	1.00	1.00	1.00	1.00	0.45	
Incremental Delay, d2	2.0	0.4	16.9	0.5	0.9	
Delay (s)	52.5	47.4	72.5	5.8	8.2	
Level of Service	D	D	E	A	A	
Approach Delay (s)	50.8			13.8	8.2	
Approach LOS	D			B	A	

Intersection Summary			
HCM 2000 Control Delay	19.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	2	56	0	61	8	1149	115	48	1270	2
Future Volume (vph)	1	0	2	56	0	61	8	1149	115	48	1270	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	12	11	11
Total Lost time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		0.99			0.99		1.00	1.00	0.97	1.00	1.00	0.95
Flpb, ped/bikes		1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.91			0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.98			0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1643			1670		1711	3421	1484	1770	3421	1459
Flt Permitted		0.94			0.85		0.18	1.00	1.00	0.21	1.00	1.00
Satd. Flow (perm)		1566			1447		323	3421	1484	394	3421	1459
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1	0	2	59	0	64	8	1209	121	51	1337	2
RTOR Reduction (vph)	0	3	0	0	57	0	0	0	30	0	0	0
Lane Group Flow (vph)	0	0	0	0	66	0	8	1209	91	51	1337	2
Confl. Peds. (#/hr)	5		7	7		5			5			15
Confl. Bikes (#/hr)									3			
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)		7.3			7.3		48.7	48.7	48.7	48.7	48.7	48.7
Effective Green, g (s)		7.3			7.3		48.7	48.7	48.7	48.7	48.7	48.7
Actuated g/C Ratio		0.11			0.11		0.75	0.75	0.75	0.75	0.75	0.75
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		175			162		242	2563	1111	295	2563	1093
v/s Ratio Prot								0.35			c0.39	
v/s Ratio Perm		0.00			c0.05		0.02		0.06	0.13		0.00
v/c Ratio		0.00			0.41		0.03	0.47	0.08	0.17	0.52	0.00
Uniform Delay, d1		25.6			26.8		2.1	3.2	2.2	2.3	3.4	2.0
Progression Factor		1.00			1.00		0.78	1.03	1.20	1.34	1.32	1.28
Incremental Delay, d2		0.0			1.7		0.2	0.6	0.1	0.6	0.3	0.0
Delay (s)		25.6			28.5		1.9	3.8	2.7	3.7	4.8	2.6
Level of Service		C			C		A	A	A	A	A	A
Approach Delay (s)		25.6			28.5			3.7			4.7	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	5.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Arterial Level of Service: EB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	15.4	38.8	54.2	0.11	7.6	F
E. 14th Street	III	35	17.9	56.3	74.2	0.14	6.8	F
Total	III		33.3	95.1	128.4	0.25	7.1	F

Arterial Level of Service: WB Fairmont Dr

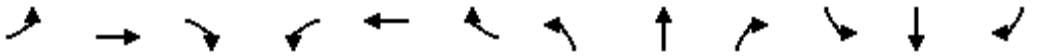
Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	17.9	18.5	36.4	0.14	13.8	E
	III	35	15.4	49.4	64.8	0.11	6.4	F
Total	III		33.3	67.9	101.2	0.25	9.0	F

Arterial Level of Service: NB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Drew St	II	40	13.0	4.2	17.2	0.11	23.7	C
Thornally Dr	II	40	24.0	36.2	60.2	0.21	12.5	F
Bayfair Dr	II	40	24.2	5.2	29.4	0.21	25.7	C
Fairmont Dr	II	40	13.5	10.2	23.7	0.12	17.8	D
Total	II		74.7	55.8	130.5	0.65	17.9	D

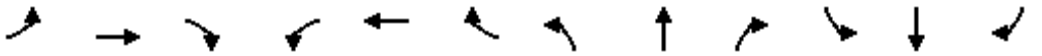
Arterial Level of Service: SB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	II	40	13.5	5.7	19.2	0.12	21.9	D
Thornally Dr	II	40	24.2	24.6	48.8	0.21	15.5	E
Drew St	II	40	24.0	5.4	29.4	0.21	25.5	C
Springlake Dr	II	40	13.0	9.8	22.8	0.11	17.9	D
Total	II		74.7	45.5	120.2	0.65	19.4	D



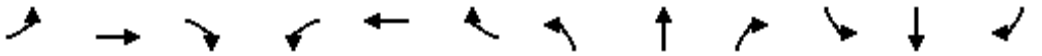
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	184	177	223	525	751	18	242	1220	409	39	746	190
Future Volume (vph)	184	177	223	525	751	18	242	1220	409	39	746	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6	4.6	4.9	4.9		4.0	4.9	4.9	4.0	4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1608	3185	1334	3090	3166		1562	3094	1343	1577	4577	1383
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1608	3185	1334	3090	3166		1562	3094	1343	1577	4577	1383
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	198	190	240	565	808	19	260	1312	440	42	802	204
RTOR Reduction (vph)	0	0	197	0	1	0	0	0	153	0	0	85
Lane Group Flow (vph)	198	190	43	565	826	0	260	1312	287	42	802	119
Confl. Peds. (#/hr)	10		17	17		10	13		14	14		13
Confl. Bikes (#/hr)			2			1			1			1
Heavy Vehicles (%)	1%	2%	5%	2%	2%	11%	4%	5%	5%	3%	2%	2%
Turn Type	Split	NA	Perm	Split	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	8	8		4	4		1	6		5	2	
Permitted Phases			8						6			2
Actuated Green, G (s)	26.6	26.6	26.6	34.1	34.1		27.7	65.1	65.1	5.8	43.2	43.2
Effective Green, g (s)	26.6	26.6	26.6	34.1	34.1		27.7	65.1	65.1	5.8	43.2	43.2
Actuated g/C Ratio	0.18	0.18	0.18	0.23	0.23		0.18	0.43	0.43	0.04	0.29	0.29
Clearance Time (s)	4.6	4.6	4.6	4.9	4.9		4.0	4.9	4.9	4.0	4.9	4.9
Vehicle Extension (s)	4.0	4.0	4.0	3.0	3.0		2.0	6.0	6.0	2.0	6.0	6.0
Lane Grp Cap (vph)	285	564	236	702	719		288	1342	582	60	1318	398
v/s Ratio Prot	c0.12	0.06		0.18	c0.26		0.17	c0.42		0.03	c0.18	
v/s Ratio Perm			0.03						0.21			0.09
v/c Ratio	0.69	0.34	0.18	0.80	1.15		0.90	0.98	0.49	0.70	0.61	0.30
Uniform Delay, d1	57.9	54.0	52.4	54.8	58.0		59.8	41.7	30.6	71.2	46.1	41.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.61	0.45	0.07	1.00	1.00	1.00
Incremental Delay, d2	7.7	0.5	0.5	6.7	82.8		28.1	19.2	1.8	24.9	2.1	1.9
Delay (s)	65.6	54.5	52.9	61.5	140.7		64.6	37.9	4.0	96.2	48.2	43.5
Level of Service	E	D	D	E	F		E	D	A	F	D	D
Approach Delay (s)		57.4			108.5			34.0			49.2	
Approach LOS		E			F			C			D	

Intersection Summary			
HCM 2000 Control Delay	60.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.4
Intersection Capacity Utilization	94.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



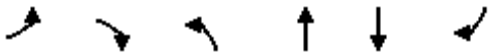
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	1	3	125	0	63	2	1149	180	150	790	12
Future Volume (vph)	18	1	3	125	0	63	2	1149	180	150	790	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	11	12	12	12
Total Lost time (s)		4.0		5.0	5.0	5.0	4.0	5.0		4.9	5.0	
Lane Util. Factor		1.00		0.95	0.95	1.00	1.00	0.91		1.00	0.91	
Frt		0.98		1.00	1.00	0.85	1.00	0.98		1.00	1.00	
Flt Protected		0.96		0.95	0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1758		1681	1681	1583	1770	4816		1770	5074	
Flt Permitted		0.75		0.83	0.83	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1370		1475	1475	1583	1770	4816		1770	5074	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	1	3	136	0	68	2	1249	196	163	859	13
RTOR Reduction (vph)	0	3	0	0	0	62	0	9	0	0	1	0
Lane Group Flow (vph)	0	21	0	68	68	6	2	1436	0	163	871	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		3			4		1	6		5	2	
Permitted Phases	3			4		4						
Actuated Green, G (s)		4.9		13.6	13.6	13.6	3.1	90.3		22.3	110.4	
Effective Green, g (s)		4.9		13.6	13.6	13.6	3.1	90.3		22.3	110.4	
Actuated g/C Ratio		0.03		0.09	0.09	0.09	0.02	0.60		0.15	0.74	
Clearance Time (s)		4.0		5.0	5.0	5.0	4.0	5.0		4.9	5.0	
Vehicle Extension (s)		2.0		4.0	4.0	4.0	3.5	4.0		3.5	4.0	
Lane Grp Cap (vph)		44		133	133	143	36	2899		263	3734	
v/s Ratio Prot							0.00	c0.30		c0.09	0.17	
v/s Ratio Perm		c0.02		c0.05	0.05	0.00						
v/c Ratio		0.48		0.51	0.51	0.04	0.06	0.50		0.62	0.23	
Uniform Delay, d1		71.3		65.0	65.0	62.3	72.0	16.9		59.9	6.3	
Progression Factor		1.00		1.00	1.00	1.00	0.85	0.06		1.08	1.35	
Incremental Delay, d2		3.0		4.4	4.4	0.2	0.5	0.4		3.4	0.1	
Delay (s)		74.3		69.4	69.4	62.4	61.8	1.4		68.3	8.7	
Level of Service		E		E	E	E	E	A		E	A	
Approach Delay (s)		74.3			67.1			1.5			18.1	
Approach LOS		E			E			A			B	

Intersection Summary			
HCM 2000 Control Delay	13.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.9
Intersection Capacity Utilization	55.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	5	57	406	5	95	22	1216	498	197	943	21
Future Volume (vph)	30	5	57	406	5	95	22	1216	498	197	943	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	11	11	11	12
Total Lost time (s)		4.5		4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Lane Util. Factor		1.00		0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes		0.97		1.00	1.00	0.99	1.00	1.00	0.97	1.00	1.00	0.95
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.92		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.98		0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1648		1649	1656	1530	1805	4730	1496	1711	4916	1540
Flt Permitted		0.81		0.33	0.34	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1349		573	582	1530	1805	4730	1496	1711	4916	1540
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	5	62	441	5	103	24	1322	541	214	1025	23
RTOR Reduction (vph)	0	45	0	0	0	70	0	0	105	0	0	13
Lane Group Flow (vph)	0	55	0	225	221	33	24	1322	436	214	1025	10
Confl. Peds. (#/hr)	2		29	29		2	8		13	13		8
Heavy Vehicles (%)	0%	0%	1%	4%	0%	4%	0%	6%	1%	2%	2%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		3			4		5	2		1	6	
Permitted Phases	3			4		4			2			6
Actuated Green, G (s)		13.9		47.5	47.5	47.5	6.5	53.8	53.8	16.3	63.6	63.6
Effective Green, g (s)		13.9		47.5	47.5	47.5	6.5	53.8	53.8	16.3	63.6	63.6
Actuated g/C Ratio		0.09		0.32	0.32	0.32	0.04	0.36	0.36	0.11	0.42	0.42
Clearance Time (s)		4.5		4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Vehicle Extension (s)		4.0		4.0	4.0	4.0	2.0	6.0	6.0	2.0	6.0	6.0
Lane Grp Cap (vph)		125		181	184	484	78	1696	536	185	2084	652
v/s Ratio Prot							0.01	0.28		c0.13	0.21	
v/s Ratio Perm		c0.04		c0.39	0.38	0.02			c0.29			0.01
v/c Ratio		0.44		1.24	1.20	0.07	0.31	0.78	0.81	1.16	0.49	0.01
Uniform Delay, d1		64.4		51.2	51.2	35.8	69.6	42.8	43.6	66.8	31.4	25.0
Progression Factor		1.00		1.00	1.00	1.00	0.64	0.49	0.28	0.80	0.65	1.00
Incremental Delay, d2		3.3		147.2	130.9	0.1	0.6	2.8	10.1	114.5	0.8	0.0
Delay (s)		67.7		198.4	182.1	35.9	45.1	24.0	22.4	167.9	21.2	25.1
Level of Service		E		F	F	D	D	C	C	F	C	C
Approach Delay (s)		67.7			161.4			23.8			46.2	
Approach LOS		E			F			C			D	

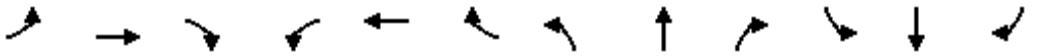
Intersection Summary			
HCM 2000 Control Delay	52.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	254	366	183	1565	1228	156
Future Volume (vph)	254	366	183	1565	1228	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	11	11	11
Total Lost time (s)	4.6	4.6	4.0	4.9	4.9	
Lane Util. Factor	0.97	0.91	1.00	0.91	0.91	
Frpb, ped/bikes	0.99	0.99	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	0.94	0.85	1.00	1.00	0.98	
Flt Protected	0.97	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3260	1420	1652	4868	4761	
Flt Permitted	0.97	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3260	1420	1652	4868	4761	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	302	436	218	1863	1462	186
RTOR Reduction (vph)	87	194	0	0	8	0
Lane Group Flow (vph)	416	41	218	1863	1640	0
Confl. Peds. (#/hr)	5	1	9			9
Confl. Bikes (#/hr)		1				6
Heavy Vehicles (%)	3%	2%	2%	3%	3%	3%
Turn Type	Prot	Perm	Prot	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	26.4	26.4	24.9	114.1	85.2	
Effective Green, g (s)	26.4	26.4	24.9	114.1	85.2	
Actuated g/C Ratio	0.18	0.18	0.17	0.76	0.57	
Clearance Time (s)	4.6	4.6	4.0	4.9	4.9	
Vehicle Extension (s)	4.0	4.0	3.0	4.0	4.0	
Lane Grp Cap (vph)	573	249	274	3702	2704	
v/s Ratio Prot	c0.13		c0.13	0.38	c0.34	
v/s Ratio Perm		0.03				
v/c Ratio	0.73	0.17	0.80	0.50	0.61	
Uniform Delay, d1	58.4	52.5	60.1	7.0	21.4	
Progression Factor	1.00	1.00	1.00	1.00	0.71	
Incremental Delay, d2	4.9	0.4	14.7	0.5	0.4	
Delay (s)	63.2	52.9	74.8	7.5	15.7	
Level of Service	E	D	E	A	B	
Approach Delay (s)	59.9			14.5	15.7	
Approach LOS	E			B	B	

Intersection Summary			
HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	3	219	0	81	12	1671	136	90	1162	2
Future Volume (vph)	0	0	3	219	0	81	12	1671	136	90	1162	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	12	11	11
Total Lost time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor		1.00			1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes		0.98			0.99		1.00	1.00	0.92	1.00	1.00	0.90
Flpb, ped/bikes		1.00			0.99		1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.86			0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00			0.96		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1580			1709		1662	4775	1369	1752	4868	1372
Flt Permitted		1.00			0.78		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1580			1387		1662	4775	1369	1752	4868	1372
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	3	233	0	86	13	1778	145	96	1236	2
RTOR Reduction (vph)	0	2	0	0	59	0	0	0	23	0	0	0
Lane Group Flow (vph)	0	1	0	0	260	0	13	1778	122	96	1236	2
Confl. Peds. (#/hr)	7		3	3		7			14			18
Confl. Bikes (#/hr)									3			3
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	5%	5%	3%	3%	3%
Turn Type		NA		Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			6
Actuated Green, G (s)		33.2			33.2		3.0	84.1	84.1	19.2	100.3	100.3
Effective Green, g (s)		33.2			33.2		3.0	84.1	84.1	19.2	100.3	100.3
Actuated g/C Ratio		0.22			0.22		0.02	0.56	0.56	0.13	0.67	0.67
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		349			306		33	2677	767	224	3255	917
v/s Ratio Prot		0.00					0.01	c0.37		0.05	c0.25	
v/s Ratio Perm					c0.19				0.09			0.00
v/c Ratio		0.00			0.85		0.39	0.66	0.16	0.43	0.38	0.00
Uniform Delay, d1		45.5			56.0		72.6	23.1	15.9	60.3	11.0	8.2
Progression Factor		1.00			1.00		1.16	0.78	0.76	0.78	0.46	0.60
Incremental Delay, d2		0.0			19.2		6.6	1.1	0.4	0.9	0.2	0.0
Delay (s)		45.5			75.2		90.8	19.1	12.4	47.9	5.3	5.0
Level of Service		D			E		F	B	B	D	A	A
Approach Delay (s)		45.5			75.2			19.1			8.4	
Approach LOS		D			E			B			A	

Intersection Summary			
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Arterial Level of Service: EB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	17.0	25.5	42.5	0.13	11.3	E
E. 14th Street	III	35	16.2	33.2	49.4	0.13	9.2	F
Total	III		33.2	58.7	91.9	0.26	10.2	E

Arterial Level of Service: WB Fairmont Dr

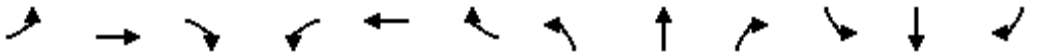
Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	16.2	16.4	32.6	0.13	14.0	E
Hesperian Bl	III	35	17.0	132.9	149.9	0.13	3.2	F
Total	III		33.2	149.3	182.5	0.26	5.1	F

Arterial Level of Service: NB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Drew St	II	40	13.0	18.7	31.7	0.11	12.8	F
Thornally Dr	II	40	24.0	23.1	47.1	0.21	16.0	E
Bayfair Dr	II	40	24.2	1.3	25.5	0.21	29.7	B
Fairmont Dr	II	40	13.5	38.7	52.2	0.12	8.1	F
Total	II		74.7	81.8	156.5	0.65	14.9	E

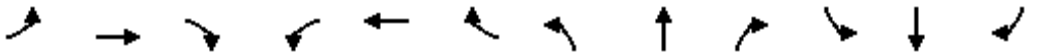
Arterial Level of Service: SB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	II	40	13.5	9.1	22.6	0.12	18.6	D
Thornally Dr	II	40	24.2	21.2	45.4	0.21	16.7	E
Drew St	II	40	24.0	5.7	29.7	0.21	25.3	C
Springlake Dr	II	40	13.0	17.5	30.5	0.11	13.3	E
Total	II		74.7	53.5	128.2	0.65	18.2	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	209	716	281	515	163	45	483	1136	770	121	1126	233
Future Volume (vph)	209	716	281	515	163	45	483	1136	770	121	1126	233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.6	4.6	4.0	4.9		4.0	4.9	4.9	4.0	4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1608	3217	1387	3090	3104		1593	3185	1414	1608	4622	1398
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1608	3217	1387	3090	3104		1593	3185	1414	1608	4622	1398
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	215	738	290	531	168	46	498	1171	794	125	1161	240
RTOR Reduction (vph)	0	0	197	0	16	0	0	0	226	0	0	85
Lane Group Flow (vph)	215	738	93	531	198	0	498	1171	568	125	1161	155
Confl. Peds. (#/hr)	8		10	10		8	12		12	12		12
Confl. Bikes (#/hr)			2			1			1			1
Heavy Vehicles (%)	1%	1%	2%	2%	1%	0%	2%	2%	0%	1%	1%	1%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8						6			2
Actuated Green, G (s)	21.1	34.0	34.0	22.0	34.6		40.0	64.3	64.3	12.2	36.5	36.5
Effective Green, g (s)	21.1	34.0	34.0	22.0	34.6		40.0	64.3	64.3	12.2	36.5	36.5
Actuated g/C Ratio	0.14	0.23	0.23	0.15	0.23		0.27	0.43	0.43	0.08	0.24	0.24
Clearance Time (s)	4.0	4.6	4.6	4.0	4.9		4.0	4.9	4.9	4.0	4.9	4.9
Vehicle Extension (s)	3.0	4.0	4.0	4.0	3.0		2.0	6.0	6.0	2.0	6.0	6.0
Lane Grp Cap (vph)	226	729	314	453	715		424	1365	606	130	1124	340
v/s Ratio Prot	0.13	c0.23		c0.17	0.06		c0.31	0.37		0.08	c0.25	
v/s Ratio Perm			0.07						0.40			0.11
v/c Ratio	0.95	1.01	0.30	1.17	0.28		1.17	0.86	0.94	0.96	1.03	0.46
Uniform Delay, d1	63.9	58.0	48.1	64.0	47.4		55.0	38.7	40.9	68.7	56.8	48.3
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.61	0.49	0.14	1.00	1.00	1.00
Incremental Delay, d2	46.1	36.4	0.7	98.7	0.2		96.5	5.0	19.4	66.4	35.7	4.4
Delay (s)	110.1	94.4	48.8	162.7	47.6		129.9	23.9	25.0	135.1	92.4	52.7
Level of Service	F	F	D	F	D		F	C	C	F	F	D
Approach Delay (s)		86.5			129.7			45.7			89.7	
Approach LOS		F			F			D			F	

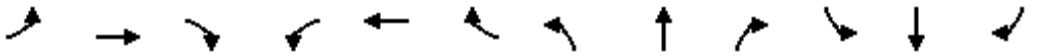
Intersection Summary			
HCM 2000 Control Delay	75.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	17.8
Intersection Capacity Utilization	112.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	2	2	351	1	358	6	1525	464	158	1074	14
Future Volume (vph)	26	2	2	351	1	358	6	1525	464	158	1074	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		5.0	5.0	5.0	4.0	5.0		4.9	5.0	
Lane Util. Factor		1.00		0.95	0.95	1.00	1.00	0.91		1.00	0.91	
Frt		0.99		1.00	1.00	0.85	1.00	0.97		1.00	1.00	
Flt Protected		0.96		0.95	0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1770		1681	1686	1583	1770	4907		1770	5076	
Flt Permitted		0.62		0.88	0.88	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1144		1548	1549	1583	1770	4907		1770	5076	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	2	2	382	1	389	7	1658	504	172	1167	15
RTOR Reduction (vph)	0	2	0	0	0	269	0	30	0	0	1	0
Lane Group Flow (vph)	0	30	0	191	192	120	7	2132	0	172	1181	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		3			4		1	6		5	2	
Permitted Phases	3			4		4						
Actuated Green, G (s)		7.2		25.2	25.2	25.2	3.1	79.3		19.4	96.5	
Effective Green, g (s)		7.2		25.2	25.2	25.2	3.1	79.3		19.4	96.5	
Actuated g/C Ratio		0.05		0.17	0.17	0.17	0.02	0.53		0.13	0.64	
Clearance Time (s)		4.0		5.0	5.0	5.0	4.0	5.0		4.9	5.0	
Vehicle Extension (s)		2.0		4.0	4.0	4.0	3.5	4.0		3.5	4.0	
Lane Grp Cap (vph)		54		260	260	265	36	2594		228	3265	
v/s Ratio Prot							0.00	c0.43		c0.10	0.23	
v/s Ratio Perm		c0.03		0.12	c0.12	0.08						
v/c Ratio		0.56		0.73	0.74	0.45	0.19	0.82		0.75	0.36	
Uniform Delay, d1		69.8		59.2	59.3	56.2	72.2	29.5		63.0	12.4	
Progression Factor		1.00		1.00	1.00	1.00	0.73	0.30		1.09	0.43	
Incremental Delay, d2		6.9		10.9	11.1	1.7	2.0	2.0		1.4	0.0	
Delay (s)		76.7		70.1	70.4	57.9	54.4	10.8		69.9	5.4	
Level of Service		E		E	E	E	D	B		E	A	
Approach Delay (s)		76.7			64.0			11.0			13.6	
Approach LOS		E			E			B			B	

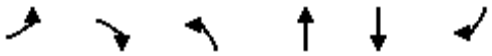
Intersection Summary			
HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.9
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	7	37	469	7	324	54	1582	184	103	1339	35
Future Volume (vph)	27	7	37	469	7	324	54	1582	184	103	1339	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	11	12	12	12
Total Lost time (s)		4.5		4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Lane Util. Factor		1.00		0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes		0.96		1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.91
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.93		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.98		0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1654		1681	1689	1543	1770	4964	1474	1687	5136	1464
Flt Permitted		0.77		0.38	0.38	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1302		666	680	1543	1770	4964	1474	1687	5136	1464
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	8	40	510	8	352	59	1720	200	112	1455	38
RTOR Reduction (vph)	0	30	0	0	0	184	0	0	44	0	0	22
Lane Group Flow (vph)	0	47	0	260	258	168	59	1720	156	112	1455	16
Confl. Peds. (#/hr)	3		42	42		3	22		10	10		22
Heavy Vehicles (%)	0%	0%	2%	2%	0%	3%	2%	1%	3%	7%	1%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		3			4		5	2		1	6	
Permitted Phases	3			4		4			2			6
Actuated Green, G (s)		13.4		46.5	46.5	46.5	7.1	63.1	63.1	8.5	64.5	64.5
Effective Green, g (s)		13.4		46.5	46.5	46.5	7.1	63.1	63.1	8.5	64.5	64.5
Actuated g/C Ratio		0.09		0.31	0.31	0.31	0.05	0.42	0.42	0.06	0.43	0.43
Clearance Time (s)		4.5		4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Vehicle Extension (s)		4.0		4.0	4.0	4.0	2.0	6.0	6.0	2.0	6.0	6.0
Lane Grp Cap (vph)		116		206	210	478	83	2088	620	95	2208	629
v/s Ratio Prot							0.03	c0.35		c0.07	0.28	
v/s Ratio Perm		c0.04		c0.39	0.38	0.11			0.11			0.01
v/c Ratio		0.40		1.26	1.23	0.35	0.71	0.82	0.25	1.18	0.66	0.03
Uniform Delay, d1		64.5		51.8	51.8	40.1	70.4	38.5	28.2	70.8	34.0	24.6
Progression Factor		1.00		1.00	1.00	1.00	0.91	0.81	0.78	0.71	0.28	4.39
Incremental Delay, d2		3.1		150.9	137.4	0.6	20.2	3.7	0.9	145.4	1.5	0.1
Delay (s)		67.7		202.6	189.1	40.7	84.0	34.8	23.0	195.7	10.9	108.3
Level of Service		E		F	F	D	F	C	C	F	B	F
Approach Delay (s)		67.7			133.1			35.0			26.1	
Approach LOS		E			F			D			C	

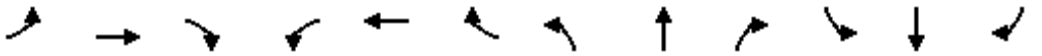
Intersection Summary			
HCM 2000 Control Delay	51.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	86.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	223	595	164	1501	1865	290
Future Volume (vph)	223	595	164	1501	1865	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	11	11	11
Total Lost time (s)	4.6	4.6	4.0	4.9	4.9	
Lane Util. Factor	0.97	0.91	1.00	0.91	0.91	
Frpb, ped/bikes	0.99	0.99	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	0.91	0.85	1.00	1.00	0.98	
Flt Protected	0.98	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3260	1450	1668	4916	4847	
Flt Permitted	0.98	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3260	1450	1668	4916	4847	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	237	633	174	1597	1984	309
RTOR Reduction (vph)	176	195	0	0	12	0
Lane Group Flow (vph)	378	121	174	1597	2281	0
Confl. Peds. (#/hr)	2		5			5
Confl. Bikes (#/hr)		1				6
Heavy Vehicles (%)	1%	0%	1%	2%	1%	0%
Turn Type	Prot	Perm	Prot	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	25.2	25.2	19.4	115.3	91.9	
Effective Green, g (s)	25.2	25.2	19.4	115.3	91.9	
Actuated g/C Ratio	0.17	0.17	0.13	0.77	0.61	
Clearance Time (s)	4.6	4.6	4.0	4.9	4.9	
Vehicle Extension (s)	4.0	4.0	3.0	4.0	4.0	
Lane Grp Cap (vph)	547	243	215	3778	2969	
v/s Ratio Prot	c0.12		c0.10	0.32	c0.47	
v/s Ratio Perm		0.08				
v/c Ratio	0.69	0.50	0.81	0.42	0.77	
Uniform Delay, d1	58.7	56.7	63.5	5.9	21.3	
Progression Factor	1.00	1.00	1.00	1.00	0.54	
Incremental Delay, d2	4.0	2.2	19.7	0.3	1.1	
Delay (s)	62.8	58.9	83.2	6.3	12.6	
Level of Service	E	E	F	A	B	
Approach Delay (s)	61.3			13.8	12.6	
Approach LOS	E			B	B	

Intersection Summary			
HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	2	56	0	61	8	1601	115	48	2097	2
Future Volume (vph)	1	0	2	56	0	61	8	1601	115	48	2097	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	12	11	11
Total Lost time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor		1.00			1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes		0.98			0.99		1.00	1.00	0.96	1.00	1.00	0.92
Flpb, ped/bikes		1.00			0.99		1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.91			0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.98			0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1631			1656		1711	4916	1467	1770	4916	1406
Flt Permitted		0.96			0.85		0.07	1.00	1.00	0.12	1.00	1.00
Satd. Flow (perm)		1584			1435		120	4916	1467	232	4916	1406
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1	0	2	59	0	64	8	1685	121	51	2207	2
RTOR Reduction (vph)	0	3	0	0	29	0	0	0	15	0	0	0
Lane Group Flow (vph)	0	0	0	0	94	0	8	1685	106	51	2207	2
Confl. Peds. (#/hr)	5		7	7		5			5			15
Confl. Bikes (#/hr)									3			
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)		14.9			14.9		126.1	126.1	126.1	126.1	126.1	126.1
Effective Green, g (s)		14.9			14.9		126.1	126.1	126.1	126.1	126.1	126.1
Actuated g/C Ratio		0.10			0.10		0.84	0.84	0.84	0.84	0.84	0.84
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		157			142		100	4132	1233	195	4132	1181
v/s Ratio Prot								0.34			c0.45	
v/s Ratio Perm		0.00			c0.07		0.07		0.07	0.22		0.00
v/c Ratio		0.00			0.66		0.08	0.41	0.09	0.26	0.53	0.00
Uniform Delay, d1		60.9			65.1		2.0	2.9	2.1	2.4	3.5	1.9
Progression Factor		1.00			1.00		0.53	0.55	0.16	0.66	0.63	0.87
Incremental Delay, d2		0.0			11.1		1.4	0.3	0.1	2.2	0.3	0.0
Delay (s)		60.9			76.2		2.5	1.9	0.4	3.9	2.5	1.7
Level of Service		E			E		A	A	A	A	A	A
Approach Delay (s)		60.9			76.2			1.8			2.6	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	4.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Arterial Level of Service: EB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	15.5	42.6	58.1	0.11	7.1	F
E. 14th Street	III	35	17.9	50.3	68.2	0.14	7.4	F
Total	III		33.4	92.9	126.3	0.25	7.3	F

Arterial Level of Service: WB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	17.9	15.2	33.1	0.14	15.2	D
Hesperian Bl	III	35	15.5	44.0	59.5	0.11	7.0	F
Total	III		33.4	59.2	92.6	0.25	9.9	F

Arterial Level of Service: NB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Drew St	II	40	13.0	2.1	15.1	0.11	27.0	C
Thornally Dr	II	40	24.0	35.3	59.3	0.21	12.6	F
Bayfair Dr	II	40	24.2	10.2	34.4	0.21	22.0	C
Fairmont Dr	II	40	13.5	24.9	38.4	0.12	11.0	F
Total	II		74.7	72.5	147.2	0.65	15.9	E

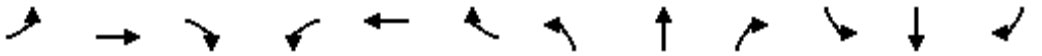
Arterial Level of Service: SB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	II	40	13.5	5.7	19.2	0.12	21.9	D
Thornally Dr	II	40	24.2	11.1	35.3	0.21	21.4	D
Drew St	II	40	24.0	2.8	26.8	0.21	28.0	C
Springlake Dr	II	40	13.0	14.1	27.1	0.11	15.0	E
Total	II		74.7	33.7	108.4	0.65	21.5	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	184	177	223	525	751	18	242	1220	409	39	746	190
Future Volume (vph)	184	177	223	525	751	18	242	1220	409	39	746	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	13	11	11	12	12	12	12	12	12	15
Total Lost time (s)	4.6	4.6	4.6	4.9	4.9		4.0	4.9	4.9	4.0	4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00		1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	3539	1531	3319	3401		1736	3438	1492	3400	3539	1690
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1787	3539	1531	3319	3401		1736	3438	1492	3400	3539	1690
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	198	190	240	565	808	19	260	1312	440	42	802	204
RTOR Reduction (vph)	0	0	173	0	1	0	0	0	74	0	0	59
Lane Group Flow (vph)	198	190	67	565	826	0	260	1312	366	42	802	145
Confl. Peds. (#/hr)	10		17	17		10	13		14	14		13
Confl. Bikes (#/hr)			2			1			1			1
Heavy Vehicles (%)	1%	2%	5%	2%	2%	11%	4%	5%	5%	3%	2%	2%
Turn Type	Split	NA	Perm	Split	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	8	8		4	4		1	6		5	2	
Permitted Phases			8						6			2
Actuated Green, G (s)	25.8	25.8	25.8	35.5	35.5		25.0	65.2	65.2	5.1	45.3	45.3
Effective Green, g (s)	25.8	25.8	25.8	35.5	35.5		25.0	65.2	65.2	5.1	45.3	45.3
Actuated g/C Ratio	0.17	0.17	0.17	0.24	0.24		0.17	0.43	0.43	0.03	0.30	0.30
Clearance Time (s)	4.6	4.6	4.6	4.9	4.9		4.0	4.9	4.9	4.0	4.9	4.9
Vehicle Extension (s)	4.0	4.0	4.0	3.0	3.0		2.0	6.0	6.0	2.0	6.0	6.0
Lane Grp Cap (vph)	307	608	263	785	804		289	1494	648	115	1068	510
v/s Ratio Prot	c0.11	0.05		0.17	c0.24		0.15	c0.38		0.01	c0.23	
v/s Ratio Perm			0.04						0.25			0.09
v/c Ratio	0.64	0.31	0.25	0.72	1.03		0.90	0.88	0.56	0.37	0.75	0.29
Uniform Delay, d1	57.8	54.3	53.8	52.7	57.2		61.3	38.8	31.8	70.9	47.3	40.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.69	0.55	0.45	1.00	1.00	1.00
Incremental Delay, d2	5.1	0.4	0.7	3.2	39.0		26.3	6.5	2.2	0.7	4.9	1.4
Delay (s)	63.0	54.7	54.5	55.9	96.2		68.7	28.0	16.3	71.6	52.1	41.4
Level of Service	E	D	D	E	F		E	C	B	E	D	D
Approach Delay (s)		57.2			79.9			30.7			50.8	
Approach LOS		E			E			C			D	

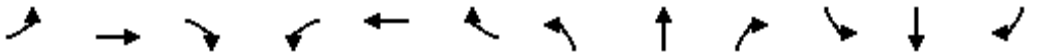
Intersection Summary			
HCM 2000 Control Delay	51.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.4
Intersection Capacity Utilization	93.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



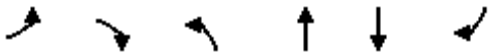
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	1	3	125	0	63	2	1149	180	150	790	12
Future Volume (vph)	18	1	3	125	0	63	2	1149	180	150	790	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	11	12	12	12
Total Lost time (s)		4.0		5.0	5.0	5.0	4.0	5.0		4.9	5.0	
Lane Util. Factor		1.00		0.95	0.95	1.00	1.00	0.95		1.00	0.95	
Frt		0.98		1.00	1.00	0.85	1.00	0.98		1.00	1.00	
Flt Protected		0.96		0.95	0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1758		1681	1681	1583	1770	3352		1770	3531	
Flt Permitted		0.75		0.83	0.83	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1370		1475	1475	1583	1770	3352		1770	3531	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	1	3	136	0	68	2	1249	196	163	859	13
RTOR Reduction (vph)	0	3	0	0	0	62	0	6	0	0	0	0
Lane Group Flow (vph)	0	21	0	68	68	6	2	1439	0	163	872	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		3			4		1	6		5	2	
Permitted Phases	3			4		4						
Actuated Green, G (s)		4.9		13.6	13.6	13.6	1.4	93.7		18.9	112.1	
Effective Green, g (s)		4.9		13.6	13.6	13.6	1.4	93.7		18.9	112.1	
Actuated g/C Ratio		0.03		0.09	0.09	0.09	0.01	0.62		0.13	0.75	
Clearance Time (s)		4.0		5.0	5.0	5.0	4.0	5.0		4.9	5.0	
Vehicle Extension (s)		2.0		4.0	4.0	4.0	3.5	4.0		3.5	4.0	
Lane Grp Cap (vph)		44		133	133	143	16	2093		223	2638	
v/s Ratio Prot							0.00	c0.43		c0.09	0.25	
v/s Ratio Perm		c0.02		c0.05	0.05	0.00						
v/c Ratio		0.48		0.51	0.51	0.04	0.12	0.69		0.73	0.33	
Uniform Delay, d1		71.3		65.0	65.0	62.3	73.7	18.5		63.1	6.4	
Progression Factor		1.00		1.00	1.00	1.00	1.65	0.16		0.86	0.59	
Incremental Delay, d2		3.0		4.4	4.4	0.2	1.8	0.8		8.8	0.2	
Delay (s)		74.3		69.4	69.4	62.4	123.2	3.7		63.2	4.0	
Level of Service		E		E	E	E	F	A		E	A	
Approach Delay (s)		74.3			67.1			3.9			13.3	
Approach LOS		E			E			A			B	

Intersection Summary			
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.9
Intersection Capacity Utilization	66.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	5	57	406	5	95	22	1216	498	197	943	21
Future Volume (vph)	30	5	57	406	5	95	22	1216	498	197	943	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	11	11	11	12
Total Lost time (s)		4.5		4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Lane Util. Factor		1.00		0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		0.97		1.00	1.00	0.99	1.00	1.00	0.97	1.00	1.00	0.95
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.92		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.98		0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1648		1649	1656	1530	1805	3292	1496	1711	3421	1540
Flt Permitted		0.81		0.33	0.34	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1349		573	582	1530	1805	3292	1496	1711	3421	1540
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	5	62	441	5	103	24	1322	541	214	1025	23
RTOR Reduction (vph)	0	45	0	0	0	73	0	0	72	0	0	12
Lane Group Flow (vph)	0	55	0	225	221	30	24	1322	469	214	1025	11
Confl. Peds. (#/hr)	2		29	29		2	8		13	13		8
Heavy Vehicles (%)	0%	0%	1%	4%	0%	4%	0%	6%	1%	2%	2%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		3			4		5	2		1	6	
Permitted Phases	3			4		4			2			6
Actuated Green, G (s)		13.9		43.5	43.5	43.5	3.7	60.7	60.7	13.4	70.4	70.4
Effective Green, g (s)		13.9		43.5	43.5	43.5	3.7	60.7	60.7	13.4	70.4	70.4
Actuated g/C Ratio		0.09		0.29	0.29	0.29	0.02	0.40	0.40	0.09	0.47	0.47
Clearance Time (s)		4.5		4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Vehicle Extension (s)		4.0		4.0	4.0	4.0	2.0	6.0	6.0	2.0	6.0	6.0
Lane Grp Cap (vph)		125		166	168	443	44	1332	605	152	1605	722
v/s Ratio Prot							0.01	c0.40		c0.13	0.30	
v/s Ratio Perm		c0.04		c0.39	0.38	0.02			0.31			0.01
v/c Ratio		0.44		1.36	1.32	0.07	0.55	0.99	0.78	1.41	0.64	0.01
Uniform Delay, d1		64.4		53.2	53.2	38.6	72.3	44.4	38.7	68.3	30.2	21.3
Progression Factor		1.00		1.00	1.00	1.00	0.68	0.54	0.36	0.86	0.82	1.00
Incremental Delay, d2		3.3		194.0	177.7	0.1	3.8	16.0	5.0	217.5	1.9	0.0
Delay (s)		67.7		247.3	230.9	38.6	52.8	39.8	19.0	276.1	26.7	21.3
Level of Service		E		F	F	D	D	D	B	F	C	C
Approach Delay (s)		67.7			201.5			34.0			68.9	
Approach LOS		E			F			C			E	

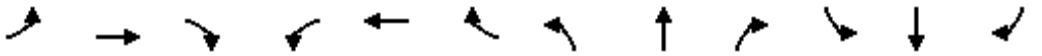
Intersection Summary			
HCM 2000 Control Delay	70.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	79.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	254	366	183	1565	1228	156
Future Volume (vph)	254	366	183	1565	1228	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	11	11	11
Total Lost time (s)	4.6	4.6	4.0	4.9	4.9	
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	
Frpb, ped/bikes	0.99	0.99	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	0.94	0.85	1.00	1.00	0.98	
Flt Protected	0.97	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3260	1420	1652	3388	3313	
Flt Permitted	0.97	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3260	1420	1652	3388	3313	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	302	436	218	1863	1462	186
RTOR Reduction (vph)	87	194	0	0	6	0
Lane Group Flow (vph)	416	41	218	1863	1642	0
Confl. Peds. (#/hr)	5	1	9			9
Confl. Bikes (#/hr)		1				6
Heavy Vehicles (%)	3%	2%	2%	3%	3%	3%
Turn Type	Prot	Perm	Prot	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	26.4	26.4	22.1	114.1	88.0	
Effective Green, g (s)	26.4	26.4	22.1	114.1	88.0	
Actuated g/C Ratio	0.18	0.18	0.15	0.76	0.59	
Clearance Time (s)	4.6	4.6	4.0	4.9	4.9	
Vehicle Extension (s)	4.0	4.0	3.0	4.0	4.0	
Lane Grp Cap (vph)	573	249	243	2577	1943	
v/s Ratio Prot	c0.13		c0.13	0.55	c0.50	
v/s Ratio Perm		0.03				
v/c Ratio	0.73	0.17	0.90	0.72	0.85	
Uniform Delay, d1	58.4	52.5	62.8	9.5	25.4	
Progression Factor	1.00	1.00	1.00	1.00	0.67	
Incremental Delay, d2	4.9	0.4	31.6	1.8	3.3	
Delay (s)	63.3	52.9	94.5	11.3	20.2	
Level of Service	E	D	F	B	C	
Approach Delay (s)	60.0			20.0	20.2	
Approach LOS	E			C	C	

Intersection Summary			
HCM 2000 Control Delay	26.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	3	219	0	81	12	1671	136	90	1162	2
Future Volume (vph)	0	0	3	219	0	81	12	1671	136	90	1162	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	12	11	11
Total Lost time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		0.98			0.99		1.00	1.00	0.92	1.00	1.00	0.91
Flpb, ped/bikes		1.00			0.99		1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.86			0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00			0.96		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1580			1709		1662	3323	1370	1752	3388	1372
Flt Permitted		1.00			0.78		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1580			1387		1662	3323	1370	1752	3388	1372
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	3	233	0	86	13	1778	145	96	1236	2
RTOR Reduction (vph)	0	2	0	0	60	0	0	0	30	0	0	0
Lane Group Flow (vph)	0	1	0	0	259	0	13	1778	115	96	1236	2
Confl. Peds. (#/hr)	7		3	3		7			14			18
Confl. Bikes (#/hr)									3			3
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	5%	5%	3%	3%	3%
Turn Type		NA		Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			6
Actuated Green, G (s)		30.9			30.9		2.4	91.5	91.5	14.1	103.2	103.2
Effective Green, g (s)		30.9			30.9		2.4	91.5	91.5	14.1	103.2	103.2
Actuated g/C Ratio		0.21			0.21		0.02	0.61	0.61	0.09	0.69	0.69
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		325			285		26	2027	835	164	2330	943
v/s Ratio Prot		0.00					0.01	c0.53		c0.05	0.36	
v/s Ratio Perm					c0.19				0.08			0.00
v/c Ratio		0.00			0.91		0.50	0.88	0.14	0.59	0.53	0.00
Uniform Delay, d1		47.3			58.2		73.2	24.5	12.5	65.1	11.5	7.3
Progression Factor		1.00			1.00		0.90	0.76	0.86	0.85	0.75	1.11
Incremental Delay, d2		0.0			30.2		10.1	4.1	0.2	2.9	0.5	0.0
Delay (s)		47.3			88.3		76.1	22.7	10.9	58.0	9.1	8.1
Level of Service		D			F		E	C	B	E	A	A
Approach Delay (s)		47.3			88.3			22.1			12.6	
Approach LOS		D			F			C			B	

Intersection Summary			
HCM 2000 Control Delay	24.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	86.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Arterial Level of Service: EB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	17.0	29.5	46.5	0.13	10.3	E
E. 14th Street	III	35	16.3	36.7	53.0	0.13	8.7	F
Total	III		33.3	66.2	99.5	0.26	9.4	F

Arterial Level of Service: WB Fairmont Dr

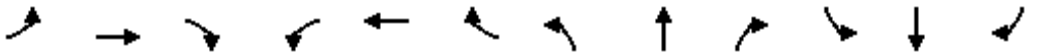
Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	16.3	19.9	36.2	0.13	12.7	E
Hesperian Bl	III	35	17.0	94.0	111.0	0.13	4.3	F
Total	III		33.3	113.9	147.2	0.26	6.4	F

Arterial Level of Service: NB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Drew St	II	40	13.0	21.4	34.4	0.11	11.8	F
Thornally Dr	II	40	24.0	34.7	58.7	0.21	12.8	F
Bayfair Dr	II	40	24.2	3.4	27.6	0.21	27.4	C
Fairmont Dr	II	40	13.5	29.9	43.4	0.12	9.7	F
Total	II		74.7	89.4	164.1	0.65	14.2	E

Arterial Level of Service: SB Hesperian Blvd

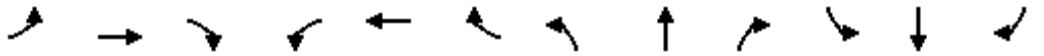
Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	II	40	13.5	3.9	17.4	0.12	24.2	C
Thornally Dr	II	40	24.2	26.6	50.8	0.21	14.9	E
Drew St	II	40	24.0	9.1	33.1	0.21	22.7	C
Springlake Dr	II	40	13.0	22.4	35.4	0.11	11.5	F
Total	II		74.7	62.0	136.7	0.65	17.1	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	209	716	281	515	163	45	483	1136	770	121	1126	233
Future Volume (vph)	209	716	281	515	163	45	483	1136	770	121	1126	233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	13	11	11	12	12	12	12	12	12	15
Total Lost time (s)	4.0	4.6	4.6	4.0	4.9		4.0	4.9	4.9	4.0	4.9	4.9
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	3574	1592	3319	3334		1770	3539	1571	3467	3574	1709
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1787	3574	1592	3319	3334		1770	3539	1571	3467	3574	1709
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	215	738	290	531	168	46	498	1171	794	125	1161	240
RTOR Reduction (vph)	0	0	88	0	16	0	0	0	165	0	0	79
Lane Group Flow (vph)	215	738	202	531	198	0	498	1171	629	125	1161	161
Confl. Peds. (#/hr)	8		10	10		8	12		12	12		12
Confl. Bikes (#/hr)			2			1			1			1
Heavy Vehicles (%)	1%	1%	2%	2%	1%	0%	2%	2%	0%	1%	1%	1%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8						6			2
Actuated Green, G (s)	19.0	33.9	33.9	20.1	34.7		34.0	71.7	71.7	6.8	44.5	44.5
Effective Green, g (s)	19.0	33.9	33.9	20.1	34.7		34.0	71.7	71.7	6.8	44.5	44.5
Actuated g/C Ratio	0.13	0.23	0.23	0.13	0.23		0.23	0.48	0.48	0.05	0.30	0.30
Clearance Time (s)	4.0	4.6	4.6	4.0	4.9		4.0	4.9	4.9	4.0	4.9	4.9
Vehicle Extension (s)	3.0	4.0	4.0	4.0	3.0		2.0	6.0	6.0	2.0	6.0	6.0
Lane Grp Cap (vph)	226	807	359	444	771		401	1691	750	157	1060	507
v/s Ratio Prot	0.12	c0.21		c0.16	0.06		c0.28	0.33		0.04	c0.32	
v/s Ratio Perm			0.13						0.40			0.09
v/c Ratio	0.95	0.91	0.56	1.20	0.26		1.24	0.69	0.84	0.80	1.10	0.32
Uniform Delay, d1	65.0	56.6	51.5	65.0	47.1		58.0	30.5	34.1	70.9	52.8	41.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.57	0.35	0.10	1.00	1.00	1.00
Incremental Delay, d2	46.1	15.0	2.4	108.3	0.2		114.7	0.5	2.7	22.3	57.4	1.6
Delay (s)	111.2	71.6	53.9	173.3	47.3		147.9	11.2	6.1	93.2	110.2	42.6
Level of Service	F	E	D	F	D		F	B	A	F	F	D
Approach Delay (s)		74.3			137.1			37.2			98.2	
Approach LOS		E			F			D			F	

Intersection Summary			
HCM 2000 Control Delay	72.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	17.8
Intersection Capacity Utilization	109.4%	ICU Level of Service	H
Analysis Period (min)	15		

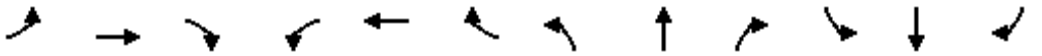
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	2	2	351	1	358	6	1525	464	158	1074	14
Future Volume (vph)	26	2	2	351	1	358	6	1525	464	158	1074	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		5.0	5.0	5.0	4.0	5.0		4.9	5.0	
Lane Util. Factor		1.00		0.95	0.95	1.00	1.00	0.95		1.00	0.95	
Frt		0.99		1.00	1.00	0.85	1.00	0.97		1.00	1.00	
Flt Protected		0.96		0.95	0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1770		1681	1686	1583	1770	3415		1770	3532	
Flt Permitted		0.27		0.74	0.70	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		506		1303	1245	1583	1770	3415		1770	3532	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	2	2	382	1	389	7	1658	504	172	1167	15
RTOR Reduction (vph)	0	2	0	0	0	271	0	18	0	0	0	0
Lane Group Flow (vph)	0	30	0	191	192	118	7	2144	0	172	1182	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		3			4		1	6		5	2	
Permitted Phases	3			4		4						
Actuated Green, G (s)		13.7		28.0	28.0	28.0	3.1	71.8		17.6	87.2	
Effective Green, g (s)		13.7		28.0	28.0	28.0	3.1	71.8		17.6	87.2	
Actuated g/C Ratio		0.09		0.19	0.19	0.19	0.02	0.48		0.12	0.58	
Clearance Time (s)		4.0		5.0	5.0	5.0	4.0	5.0		4.9	5.0	
Vehicle Extension (s)		2.0		4.0	4.0	4.0	3.5	4.0		3.5	4.0	
Lane Grp Cap (vph)		46		243	232	295	36	1634		207	2053	
v/s Ratio Prot							0.00	c0.63		c0.10	0.33	
v/s Ratio Perm		c0.06		0.15	c0.15	0.07						
v/c Ratio		0.66		0.79	0.83	0.40	0.19	1.31		0.83	0.58	
Uniform Delay, d1		65.9		58.1	58.7	53.6	72.2	39.1		64.7	19.8	
Progression Factor		1.00		1.00	1.00	1.00	0.61	0.30		1.24	0.21	
Incremental Delay, d2		22.8		16.1	21.8	1.2	0.9	141.9		2.8	0.1	
Delay (s)		88.7		74.3	80.4	54.8	45.2	153.5		82.9	4.2	
Level of Service		F		E	F	D	D	F		F	A	
Approach Delay (s)		88.7			66.0			153.1			14.2	
Approach LOS		F			E			F			B	

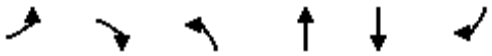
Intersection Summary			
HCM 2000 Control Delay	93.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.9
Intersection Capacity Utilization	94.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	7	37	469	7	324	54	1582	184	103	1339	35
Future Volume (vph)	27	7	37	469	7	324	54	1582	184	103	1339	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	11	12	12	12
Total Lost time (s)		4.5		4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Lane Util. Factor		1.00		0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		0.96		1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	0.91
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.93		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.98		0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1654		1681	1689	1543	1770	3455	1474	1687	3574	1464
Flt Permitted		0.77		0.38	0.38	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1302		667	680	1543	1770	3455	1474	1687	3574	1464
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	8	40	510	8	352	59	1720	200	112	1455	38
RTOR Reduction (vph)	0	30	0	0	0	183	0	0	44	0	0	21
Lane Group Flow (vph)	0	47	0	260	258	169	59	1720	156	112	1455	17
Confl. Peds. (#/hr)	3		42	42		3	22		10	10		22
Heavy Vehicles (%)	0%	0%	2%	2%	0%	3%	2%	1%	3%	7%	1%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		3			4		5	2		1	6	
Permitted Phases	3			4		4			2			6
Actuated Green, G (s)		13.4		42.5	42.5	42.5	10.4	68.1	68.1	7.5	65.2	65.2
Effective Green, g (s)		13.4		42.5	42.5	42.5	10.4	68.1	68.1	7.5	65.2	65.2
Actuated g/C Ratio		0.09		0.28	0.28	0.28	0.07	0.45	0.45	0.05	0.43	0.43
Clearance Time (s)		4.5		4.5	4.5	4.5	4.5	5.0	5.0	4.5	5.0	5.0
Vehicle Extension (s)		4.0		4.0	4.0	4.0	2.0	6.0	6.0	2.0	6.0	6.0
Lane Grp Cap (vph)		116		188	192	437	122	1568	669	84	1553	636
v/s Ratio Prot							0.03	c0.50		c0.07	0.41	
v/s Ratio Perm		c0.04		c0.39	0.38	0.11			0.11			0.01
v/c Ratio		0.40		1.38	1.34	0.39	0.48	1.10	0.23	1.33	0.94	0.03
Uniform Delay, d1		64.5		53.8	53.8	43.2	67.2	41.0	25.0	71.2	40.4	24.2
Progression Factor		1.00		1.00	1.00	1.00	1.17	0.89	1.07	0.72	0.53	2.19
Incremental Delay, d2		3.1		201.9	185.3	0.8	1.0	52.9	0.7	202.6	10.4	0.1
Delay (s)		67.7		255.6	239.0	44.0	79.6	89.6	27.4	254.3	32.0	53.2
Level of Service		E		F	F	D	E	F	C	F	C	D
Approach Delay (s)		67.7			165.1			83.0			48.0	
Approach LOS		E			F			F			D	

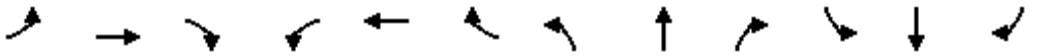
Intersection Summary			
HCM 2000 Control Delay	86.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	99.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	223	595	164	1501	1865	290
Future Volume (vph)	223	595	164	1501	1865	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	10	11	11	11
Total Lost time (s)	4.6	4.6	4.0	4.9	4.9	
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	
Frpb, ped/bikes	0.99	0.99	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	0.91	0.85	1.00	1.00	0.98	
Flt Protected	0.98	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3260	1450	1668	3421	3373	
Flt Permitted	0.98	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	3260	1450	1668	3421	3373	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	237	633	174	1597	1984	309
RTOR Reduction (vph)	130	130	0	0	8	0
Lane Group Flow (vph)	424	186	174	1597	2285	0
Confl. Peds. (#/hr)	2		5			5
Confl. Bikes (#/hr)		1				6
Heavy Vehicles (%)	1%	0%	1%	2%	1%	0%
Turn Type	Prot	Perm	Prot	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	27.3	27.3	21.2	113.2	88.0	
Effective Green, g (s)	27.3	27.3	21.2	113.2	88.0	
Actuated g/C Ratio	0.18	0.18	0.14	0.75	0.59	
Clearance Time (s)	4.6	4.6	4.0	4.9	4.9	
Vehicle Extension (s)	4.0	4.0	3.0	4.0	4.0	
Lane Grp Cap (vph)	593	263	235	2581	1978	
v/s Ratio Prot	c0.13		c0.10	0.47	c0.68	
v/s Ratio Perm		0.13				
v/c Ratio	0.71	0.71	0.74	0.62	1.16	
Uniform Delay, d1	57.7	57.6	61.8	8.5	31.0	
Progression Factor	1.00	1.00	1.00	1.00	0.61	
Incremental Delay, d2	4.4	9.0	11.8	1.1	73.9	
Delay (s)	62.1	66.6	73.6	9.6	92.9	
Level of Service	E	E	E	A	F	
Approach Delay (s)	63.7			15.9	92.9	
Approach LOS	E			B	F	

Intersection Summary			
HCM 2000 Control Delay	60.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	93.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	2	56	0	61	8	1601	115	48	2097	2
Future Volume (vph)	1	0	2	56	0	61	8	1601	115	48	2097	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	12	11	11
Total Lost time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		0.98			0.99		1.00	1.00	0.96	1.00	1.00	0.92
Flpb, ped/bikes		1.00			0.99		1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.91			0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.98			0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1631			1656		1711	3421	1467	1770	3421	1406
Flt Permitted		0.96			0.85		0.06	1.00	1.00	0.12	1.00	1.00
Satd. Flow (perm)		1584			1435		104	3421	1467	228	3421	1406
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1	0	2	59	0	64	8	1685	121	51	2207	2
RTOR Reduction (vph)	0	3	0	0	27	0	0	0	13	0	0	0
Lane Group Flow (vph)	0	0	0	0	96	0	8	1685	108	51	2207	2
Confl. Peds. (#/hr)	5		7	7		5			5			15
Confl. Bikes (#/hr)									3			
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)		14.9			14.9		126.1	126.1	126.1	126.1	126.1	126.1
Effective Green, g (s)		14.9			14.9		126.1	126.1	126.1	126.1	126.1	126.1
Actuated g/C Ratio		0.10			0.10		0.84	0.84	0.84	0.84	0.84	0.84
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		157			142		87	2875	1233	191	2875	1181
v/s Ratio Prot								0.49			c0.65	
v/s Ratio Perm		0.00			c0.07		0.08		0.07	0.22		0.00
v/c Ratio		0.00			0.68		0.09	0.59	0.09	0.27	0.77	0.00
Uniform Delay, d1		60.9			65.2		2.1	3.8	2.1	2.5	5.4	1.9
Progression Factor		1.00			1.00		0.62	0.49	0.31	0.76	1.06	0.96
Incremental Delay, d2		0.0			12.0		1.6	0.7	0.1	1.3	0.8	0.0
Delay (s)		60.9			77.2		2.9	2.5	0.7	3.2	6.5	1.8
Level of Service		E			E		A	A	A	A	A	A
Approach Delay (s)		60.9			77.2			2.4			6.4	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Arterial Level of Service: EB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	15.5	92.8	108.3	0.11	3.8	F
E. 14th Street	III	35	17.8	83.1	100.9	0.14	5.0	F
Total	III		33.3	175.9	209.2	0.25	4.4	F

Arterial Level of Service: WB Fairmont Dr

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	III	35	17.8	16.1	33.9	0.14	14.8	D
Hesperian Bl	III	35	15.5	43.6	59.1	0.11	7.0	F
Total	III		33.3	59.7	93.0	0.25	9.8	F

Arterial Level of Service: NB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Drew St	II	40	13.0	2.8	15.8	0.11	25.8	C
Thornally Dr	II	40	24.0	88.3	112.3	0.21	6.7	F
Bayfair Dr	II	40	24.2	151.7	175.9	0.21	4.3	F
Fairmont Dr	II	40	13.5	11.5	25.0	0.12	16.9	E
Total	II		74.7	254.3	329.0	0.65	7.1	F

Arterial Level of Service: SB Hesperian Blvd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Bayfair Dr	II	40	13.5	4.4	17.9	0.12	23.5	C
Thornally Dr	II	40	24.2	33.5	57.7	0.21	13.1	E
Drew St	II	40	24.0	7.5	31.5	0.21	23.8	C
Springlake Dr	II	40	13.0	94.6	107.6	0.11	3.8	F
Total	II		74.7	140.0	214.7	0.65	10.9	F

APPENDIX 2

LEGEND:

- AM PEAK - EXISTING
- AM PEAK - EXISTING + PROJECT

SPRINGLAKE DR.
THORNALLY DR.
HALCYON DR.
HESPERIAN BLVD
DREW ST.
BAYFAIR DR.
FAIRMONT DR.

147' 60' 59' 143' 239' 144' 201' 377' 230' 108' 19' 15' 104' 51' 85' 183' 224' 244' 139' 44' 186' 140' 83' 161' 161' 161' 161' 29' 310' 44' 34' 17' 47' 49' 108' 103' 267' 239' 286' 267' 297' 269' 147' 91' 203' 191' 135' 93' 65' 101' 28' 64' 199' 295' 161' 172' 300'

GRAPHIC SCALE (IN FEET)
160' 0 160' 320'
GRAPHIC SCALE: 1"=160'

PREPARED BY:
DKS
DKS ASSOCIATES
1970 BROADWAY, SUITE # 740
OAKLAND, CA 94612
TEL: 510-763-2061

CIVIL ENGINEER
RCE NO. _____ EXP. _____
CHECKED BY MARIA TRIBELHORN
DESIGNED BY
DRAWN BY DANE RINI

No.	DATE	BY	REFERENCE

Fairmont Dr.
Corridor Queuing Diagram (95th Percentile)
Existing vs. Existing Plus Project AM

DRAFT

SCALE:
HOR.
VERT.
DATE: OCT 26, 2018
SHEET NO.
01 OF 04

I FILENAME: hesperian queuing_fullsize_10_26 11-02-18 10:14am Dane.Rini II XREFS:I <<--

Last Saved By: Dane.Rini 11-02-18 10:13am

LEGEND:

PM PEAK - EXISTING

PM PEAK - EXISTING + PROJECT

SPRINGLAKE DR.

THORNALLY DR.

HESPERIAN BLVD

HALCYON DR.

DREW ST.

BAYFAIR DR.

FAIRMONT DR.

GRAPHIC SCALE (IN FEET)

160' 0 160' 320'

GRAPHIC SCALE: 1"=160'

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PREPARED BY:

DKS

DKS ASSOCIATES
1970 BROADWAY, SUITE # 740
OAKLAND, CA 94612
TEL: 510-763-2061

CIVIL ENGINEER	
RCE NO. _____	EXP. _____
CHECKED BY	MARIA TRIBELHORN
DESIGNED BY	
DRAWN BY	DANE RINI

No.	DATE	BY	REFERENCE

Fairmont Dr.
Corridor Queuing Diagram (95th Percentile)
Existing vs. Existing Plus Project PM

DRAFT

SCALE:
HOR.
VERT.
DATE: OCT 26, 2018
SHEET NO.
02 OF 04

GRAPHIC SCALE (IN FEET)

160' 0 160' 320'

GRAPHIC SCALE: 1"=160'

PREPARED BY:

DKS

DKS ASSOCIATES
1970 BROADWAY, SUITE # 740
OAKLAND, CA 94612
TEL: 510-763-2061

CIVIL ENGINEER	
RCE NO. ______ EXP. ______	
CHECKED BY	MARIA TRIBELHORN
DESIGNED BY	
DRAWN BY	DANE RINI

No.	DATE	BY	REFERENCE

Fairmont Dr.
Corridor Queuing Diagram (95th Percentile)
Cumulative vs. Cumulative Plus Project AM

DRAFT

SCALE:
HOR.
VERT.
DATE: OCT 26, 2018
SHEET NO.
03 OF 04

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LEGEND:

- PM PEAK - CUMULATIVE
- PM PEAK - CUMULATIVE+ PROJECT
- OVERLAPPING QUEUES

SPRINGLAKE DR.
THORNALLY DR.
HALCYON DR.
HESPERIAN BLVD
DREW ST.
BAYFAIR DR.
FAIRMONT DR.

285' 246' 219' 193'
353' 263' 260' 490'
34' 121' 1510'
2441' 65'
158'
422'
150' 105' 127' 94'
96'
164' 182'
547'
170' 944'
268'
801' 791' 182'
75'
514' 492'
126' 202' 284' 129' 161'
530' 486' 379' 266' 122'
122'
281' 272' 301'
161' 173'
180' 206' 120' 261' 542' 613'
443'

GRAPHIC SCALE (IN FEET)
160' 0 160' 320'
GRAPHIC SCALE: 1"=160'

PREPARED BY:

DKS

DKS ASSOCIATES
1970 BROADWAY, SUITE # 740
OAKLAND, CA 94612
TEL: 510-763-2061

CIVIL ENGINEER
RCE NO. _____ EXP. _____
CHECKED BY MARIA TRIBELHORN
DESIGNED BY
DRAWN BY DANE RINI

No.	DATE	BY	REFERENCE

Fairmont Dr.
Corridor Queuing Diagram (95th Percentile)
Existing vs. Existing Plus Project PM

DRAFT

SCALE:
HOR.
VERT.
DATE: OCT 26, 2018
SHEET NO.
04 OF 04

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