Appendix 11-C

Storm Water Control Plan for a Regulated Project: Sid Commons

CSW/ Stuber-Stroeh Engineering Group, Inc., July 21, 2015; and

Preliminary Storm Water Control Plan (Sheet C-7)

CSW/Stuber-Stroeh Engineering Group, Inc., May 1, 2017

Stormwater Control Plan

For a Regulated Project

Sid Commons

July 21, 2015

This template is to be used in conjunction with the instructions, criteria, and minimum requirements in the Bay Area Stormwater Management Agencies Association's (BASMAA's) *Post-Construction Manual*.

Check www.basmaa.org for new information and updates to the *Post-Construction Manual* and this template.

Owner:

J. Cyril Johnson Investment Corp.
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Prepared by:

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This Stormwater Control Plan was prepared using the template dated July 11, 2014.

I. Project Data

Table 1. Project Data Form

Project Name/Number	Sid Commons
Application Submittal Date	7/21/15
Project Location	Graylawn Avenue, Petaluma (APNs 007-391-005, 019-010-006, 019-010-007, 019-010-008, 019-010-009, 136-100-025)
Project Phase No.	N/A
Project Type and Description	14 buildings containing 282 apartment units, river terrace and revegetation and public road extension
Total Project Site Area (acres)	9.5 (excludes river terrace improvements and the extension of Shasta Avenue)
Total New and Replaced Impervious Surface Area	288,194
Total Pre-Project Impervious Surface Area	0
Total Post-Project Impervious Surface Area	288,194

II. Setting

II.A. Project Location and Description

The Sid Commons project consists of fourteen (14) new buildings containing 282 apartment units, associated parking lot, river terrace and revegetation improvements to the Petaluma River and the extension of Shasta Avenue. The project site is located at Graylawn Avenue, Petaluma, Sonoma County. The site is bounded to the west by North West Pacific Rail Road, to the north and east by the Petaluma River, and to the south by single family homes. The project site is owned by J. Cyril Johnson Investment Corp.

II.B. Existing Site Features and Conditions

The existing Sid Commons site slopes from south to north towards the Petaluma River. The site consists of hydrologic soil groups C and D.

II.C. Opportunities and Constraints for Stormwater Control

A portion of the Sid Commons project site lies within the 100-year flood plain; as such buildings are located outside the flood plain limiting the site layout. The site consists of hydrologic soil groups C and D which prevents infiltration.

III. Low Impact Development Design Strategies

III.A. Optimization of Site Layout

III.A.1. Preservation of natural drainage features

The existing site drains to the Petaluma River. The project proposes to maintain existing drainage patterns by discharging into the Petaluma River.

III.A.2. Setbacks from creeks, wetlands, and riparian habitats

A minimum 200 foot setback from the centerline of the Petaluma River (General Plan Policy 8-P-30) is required at the project site. Proposed buildings and roadways remain outside of the required setbacks. Proposed buildings have been located outside the 100-year flood zone.

III.B. Dispersal of Runoff to Pervious Areas

Where possible walkways drain to landscape areas

III.C.Stormwater Control Measures

Bioretention areas are proposed throughout the project site. The bioretention areas are sized to treat runoff from the proposed buildings, parking lot and walkways.

IV. Documentation of Drainage Design

IV.A. Descriptions of Each Drainage Management Area

IV.A.1. Table of Drainage Management Areas

DMA Name	Surface Type	Area (square feet)
A1 impervious	roof	21,121
A1 pervious	landscape	12,730
A2 impervious	roof	10,438
A2 pervious	landscape	7,979
B1	parking lot and landscape	121,571
C1 impervious	Roof	92,731
C1 pervious	landscape	81,345
D1	parking lot and landscape	32,544
D2	roof and landscape	17,791
D3 impervious	roof	10,226
D3 pervious	landscape	7,380

IV.A.2. Drainage Management Area Descriptions

DMA A1 impervious, totaling 21,121 square feet, drains building roofs. DMA A1 drains to bioretetion area a1.

DMA A1 pervious, totaling 12,730 square feet, drains landscape areas. DMA A1 is a self-treating area.

DMA A2 impervious, totaling 10,438 square feet, drains building roofs. DMA A2 drains to bioretetion area a2.

DMA A2 pervious, totaling 7,979 square feet, drains [description of area]. DMA A2 is a self-treating area.

DMA B1, totaling 121,571 square feet, drains pavement and landscape areas. DMA B1 drains to bioretetion area b1.

DMA C1 impervious, totaling 92,731 square feet, drains building roofs. DMA C1 drains to bioretetion area c1.

DMA C1 pervious, totaling 81,345 square feet, drains [description of area]. DMA C1 is a self-treating area.

DMA D1, totaling 32,544 square feet, drains a parking lot and landscape areas. DMA D1 drains to bioretetion area d1.

DMA D2, totaling 17,791 square feet, drains a building roof and landscape area. DMA D2 drains to bioretetion area d2.

DMA D3 impervious, totaling 10,226 square feet, drains building roof. DMA D3 drains to bioretention area d3.

DMA D1 pervious, totaling 7,380 square feet, drains [description of area]. DMA D1 is a self-treating area.

IV.B.Tabulation and Sizing Calculations

IV.B.1. Information Summary for Bioretention Facility Design

Total Project Area (Square Feet)	415,856
A1	33,851
A2	18,417
B1	121,571
C1	174,076
D1	32,544
D2	17,791
D3	17,606

IV.B.2. Self-Treating Areas

DMA Name	Area (square feet)
A1 pervious	12,730
A2 pervious	7,979
C1 pervious	81,345
D3 pervious	7,380

IV.B.3. Areas Draining to Bioretention Facilities

DMA Name	DMA Area (square feet)	Post-project surface type	DMA Runoff factor	DMA Area × runoff factor	Facility Name: Bioretention – a1		
A1	21,121	Roof	1.0	21,121	Sizing factor	Minimum Facility Size	Proposed Facility Size
Total>				21,121	0.04	845	866

DMA Name	DMA Area (square feet)	Post-project surface type	DMA Runoff factor	DMA Area × runoff factor	Facility Name: Bioretention – a2		
A2	10,438	Roof	1.0	10,438	Sizing factor	Minimum Facility Size	Proposed Facility Size
Total>				10,438	0.04	418	420

DMA Name	DMA Area (square feet)	Post-project surface type	DMA Runoff factor	DMA Area × runoff factor	Facility Name		
					Bioretention – b1		
B1	114,106	Pavement	1.0	114,106	Sizing factor	Minimum Facility Size	Proposed Facility Size
B1	7,465	Landscape	0.1	747			
Total>				114,853	0.04	4,594	4,830

DMA Name	DMA Area (square feet)	Post-project surface type	DMA Runoff factor	DMA Area × runoff factor	Facility Name		
					Bioretention – c1		
C1	92,731	Roof	1.0	92,731	Sizing factor	Minimum Facility Size	Proposed Facility Size
Total>				92,731	0.04	3,669	3,750

DMA Name	DMA Area (square feet)	Post-project surface type	DMA Runoff factor	DMA Area × runoff factor	Facility Name		
					Bioretention – d1		
D1	28,775	Pavement	1.0	28,775	Sizing factor	Minimum Facility Size	Proposed Facility Size
D1	3,769	Landscape	0.1	377			
Total>				29,152	0.04	1,166	1,330

DMA Name	DMA Area (square feet)	Post-project surface type	DMA Runoff factor	DMA Area × runoff factor	Facility Name		
					Bioretention – d2		
D2	10,797	Roof	1.0	10,797	Sizing factor	Minimum Facility Size	Proposed Facility Size
D2	6,994	Landscape	0.1	699			
Total>				11,496	0.04	460	480

DMA Name	DMA Area (square feet)	Post-project surface type	DMA Runoff factor	DMA Area × runoff factor	Facility Name		
					Bioretention – d3		
D3	10,226	Roof	1.0	10,226	Sizing factor	Minimum Facility Size	Proposed Facility Size
Total>				10,964	0.04	409	420

V. Source Control Measures

V.A. Site activities and potential sources of pollutants

Potential pollutant activities and sources include landscape maintenance, sidewalks and plaza, parking lot and building roofs.

V.B. Source Control Table

Potential source of runoff pollutants	Permanent source control BMPs	Operational source control BMPs
On-site storm drain inlets (unauthorized non-stormwater discharges and accidental spills or leaks	Mark all inlets with the words "No Dumping! Flow to River"	Maintain and periodically repaint or replace inlet markings.
Landscape/ Outdoor Pesticide Use/ Building and Grounds Maintenance		Maintain landscaping using minimum or no pesticides.
Refuse Area	Dumpsters or other receptacles shall be graded and paved to prevent run-on. Drains from dumpsters shall be connected to grease removal device before discharging to sanitary sewer.	Adequate number of receptacles will be provided. A "no hazardous materials" sign will be posted.
Fire Sprinkler Test Water	Provide a means to drain fire sprinkler test water to sanitary sewer prior to test.	See the CASQA Stormwater Quality Handbook Fact Sheet SC-41.
Plaza, sidewalks, and parking lots		Sweep plazas, sidewalks and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Cllect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to storm drain.

VI. Stormwater Facility Maintenance

VI.A. Ownership and Responsibility for Maintenance in Perpetuity

The applicant accepts responsibility for interim operation and maintenance of stormwater treatment and flow-control facilities until such time as this responsibility is formally transferred to a subsequent owner.

VI.B.Summary of Maintenance Requirements for Each Stormwater Facility

The stormwater facilities proposed throughout the project site to meet runoff quality requirements include bioretention facilities. The following are minimum maintenance requirements for these types of facilities. Other types of treatment facilities exist or may be developed that may be approved to be incorporated in the project site. If other facilities are proposed, in addition to pervious pavement and bioretention facilities, operation and maintenance guidelines shall be expanded to include the additional facility requirements.

a. Bioretention Facilities – During Construction

- Avoid compaction of soils (native and amended within bioretention facilities.
- Closely follow design elevations of plans prepared for construction.
- Grade surface of facility to evenly distribute discharged runoff over soil.
- Set overflow inlets at proper elevation so surface of bioretention facility floods as intended.

b. Bioretention Facilities – Landscape Maintenance

- Maintain the design elevation of the soil or mulch surface, which should be a minimum 4 inches below the overflow elevation.
- Remove any soil or debris blocking planter inlets or overflows.
- Use only compost or other organic material to amend or condition soils. Amendments to planter soils must not reduce the infiltration rate.
- Remove any nuisance or invasive vegetation.
- Note condition of vegetation and replace any dead plants.
- Do not fertilize unless plant health requires it. If fertilizer is required, use only slow-release organic fertilizers.
- Pesticides may be applied only by a licensed pest control operator trained in the use of Integrated Pest Management.
- Confirm that irrigation is adequate but not excessive. If underdrains flow during dry weather, reduce irrigation.

c. Bioretention Facilities – Routine and Post Storm Event Maintenance

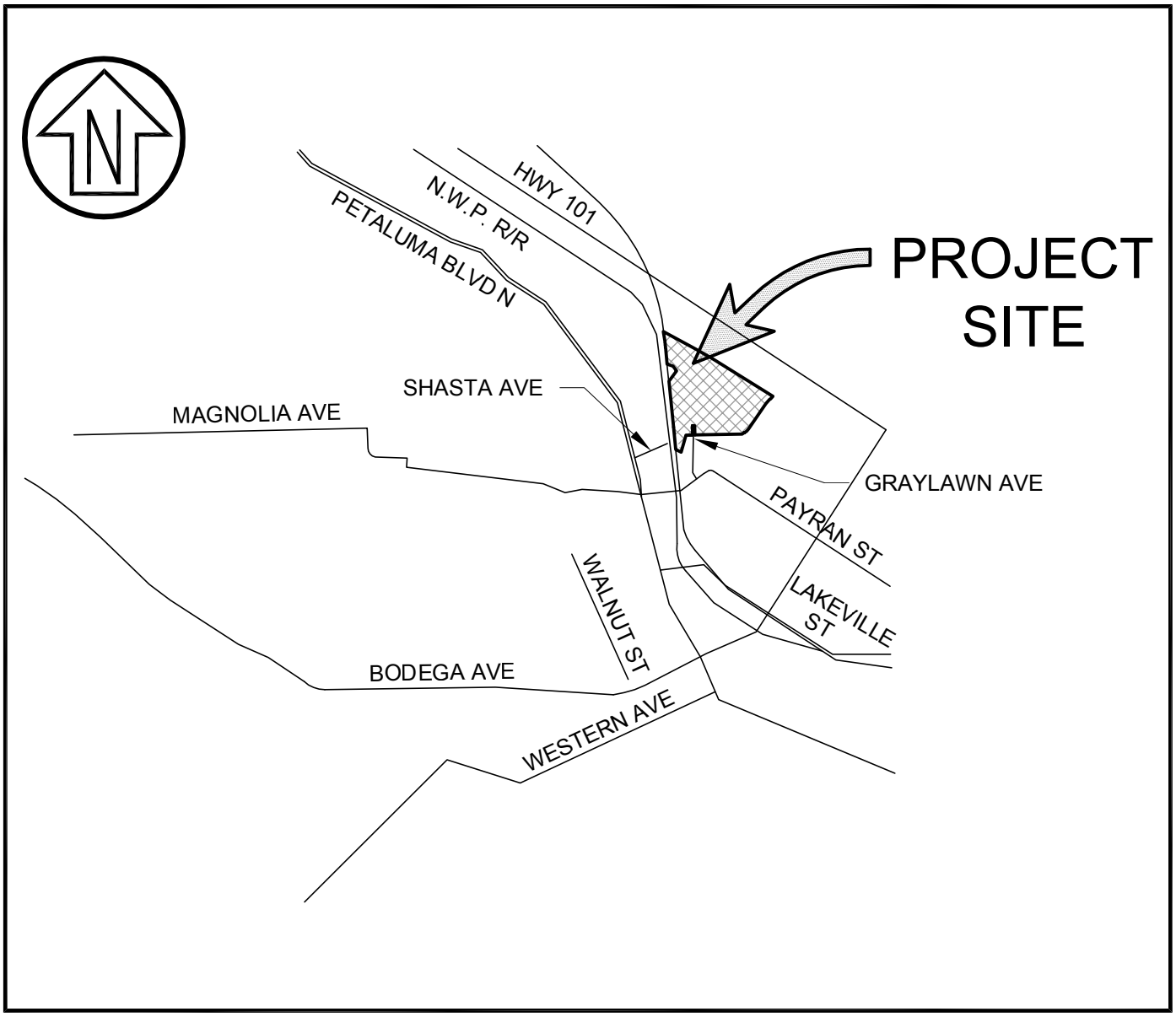
- Check rocks at inlets and repair, replace, or replenish as necessary.
- Remove any accumulations of sediment, litter and debris.
- Examine the overflow. Remove any debris. Note any damaged or disconnected piping.
- Check cleanouts and confirm underdrain piping is intact and unobstructed.
- Observe walls and other structural elements. Fix any holes, cracks or failure.
- Check that the soil surface is level and is at least four inches below the overflow height.
- Prune or remove any overgrown plants or shrubs that may interfere with operation of the planter.
- Clean up fallen leaves or debris and replenish mulch.

VII. Construction Checklist

Stormwater Control Plan Page #	Source Control or Treatment Control Measure	See Plan Sheet #s
C7	Bioretention Areas	

VIII. Certifications

The preliminary design of stormwater treatment facilities and other stormwater pollution control measures in this plan are in accordance with the current edition of the BASMAA *Post-Construction Manual*.



VICINITY MAP

SCALE: NTS

CSW | ST2

CSW/Stuber-Stroeh Engineering Group, Inc.

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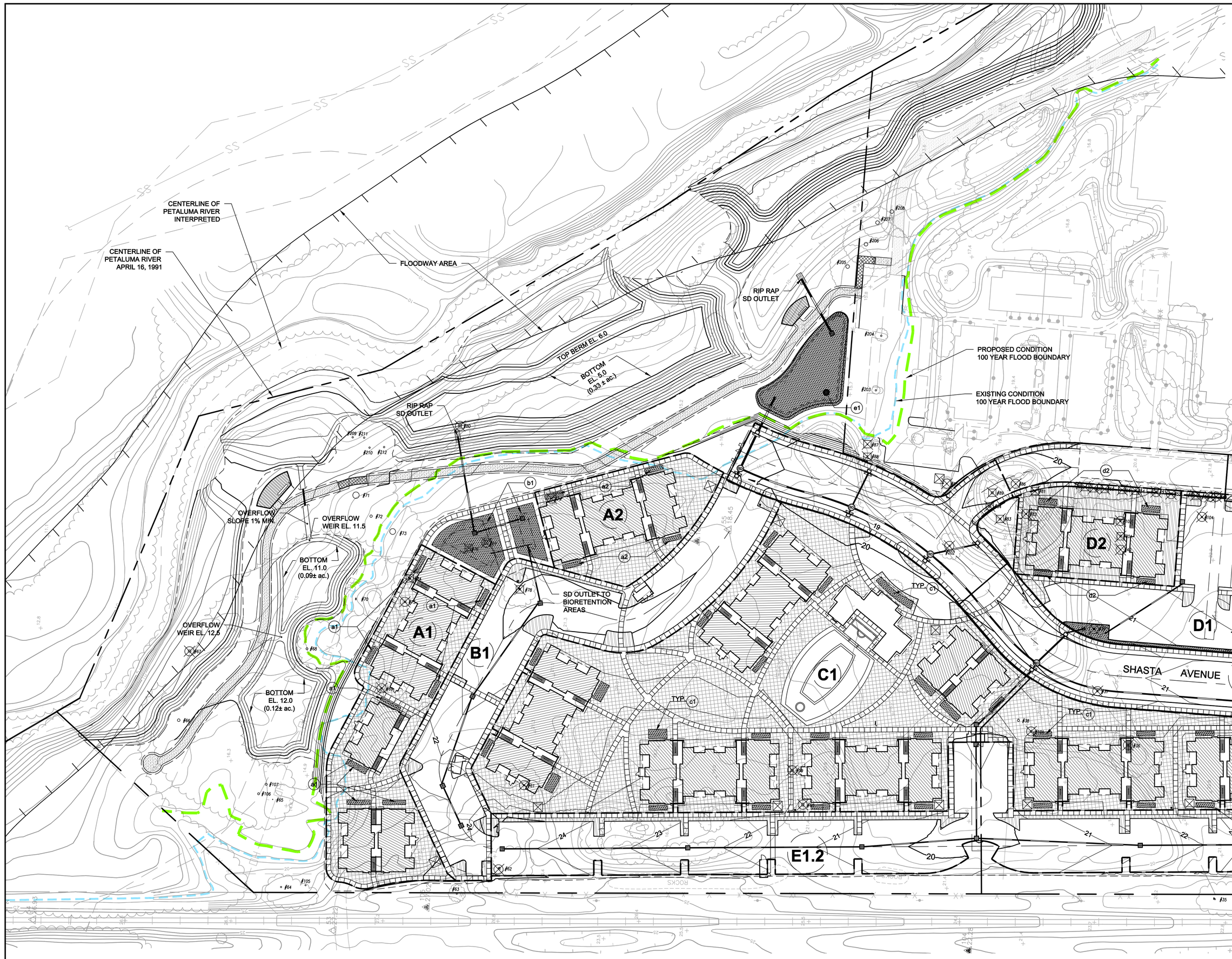
Rev. -	Date: 07/21/15
Job No. 5.1037.00	Scale: None

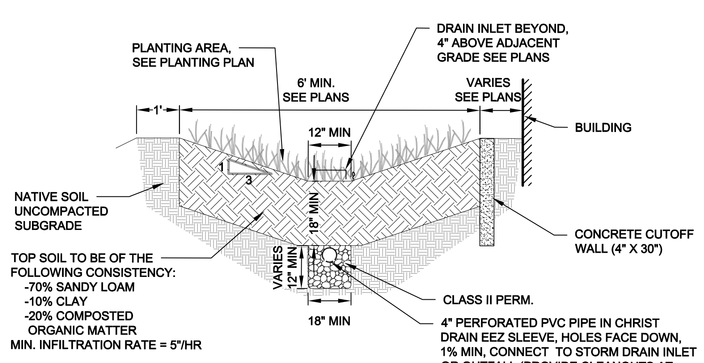
SID COMMONS
FIGURE 1
VICINITY MAP

PETALUMA SONOMA COUNTY CALIFORNIA

SELF-TREATING AREAS	
WATERSHED AREA	PERVIOUS AREA (SF)
A1	12730
A2	7979
C1	81345
D3	7380
TOTAL	109434

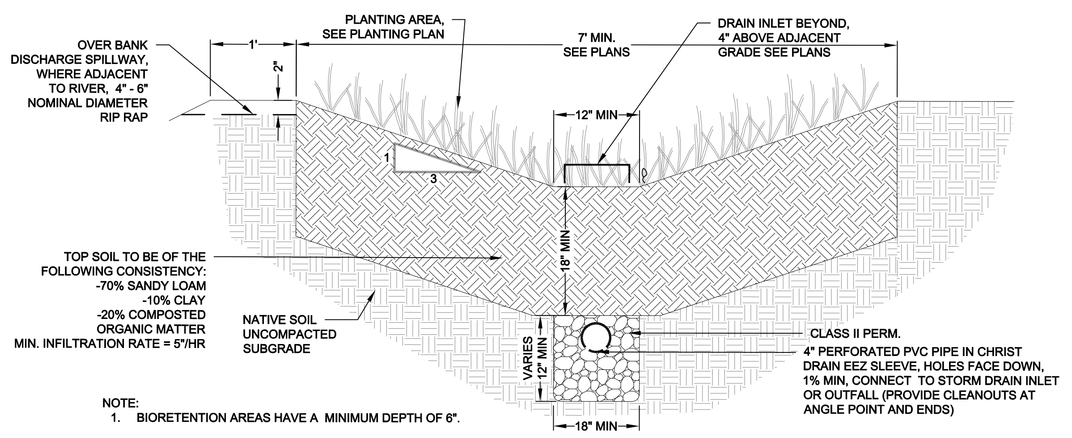
BIORETENTION AREAS					
WATERSHED AREA	IMPERVIOUS AREA (SF)	PERVIOUS AREA (SF)	TREATMENT NEEDED (SF)	TREATMENT AREA	TREATMENT AVAILABLE (SF)
A1	21121	0	845	a1	866
A2	10438	0	418	a2	420
B1	42085	2867	1683	b1	4830
C1	92731	0	3709	c1	3750
D1	28775	3769	1151	d1	1330
D2	10797	6994	432	d2	480
D3	10226	0	409	d3	420
E1.1 / E1.2	65046 / 72432	0 / 4188	2602 / 2897	e1	6343
F1	11079	0	443	f1	810
TOTAL	364730	17818	14589		19249





NOTE:
1. BIORETENTION AREAS HAVE A MINIMUM DEPTH OF 6".

1 BIORETENTION DETAIL (ADJACENT TO BUILDINGS)
SCALE: 1/2" = 1'



NOTE:
1. BIORETENTION AREAS HAVE A MINIMUM DEPTH OF 6".

2 BIORETENTION DETAIL
SCALE: 1" = 1'

LEGEND

- BIORETENTION AREA (REFER TO DETAILS 1 & 2)
- SELF-TREATING AREAS (LANDSCAPED OR TURF AREAS)
- PERVIOUS AREA
- (X#) BMP IDENTIFICATION
- X# WATER SHED IDENTIFICATION
- WATERSHED AREA
- BMP BEST MANAGEMENT PRACTICES

Rev	Date	Description	Designed	Drawn	Checked
	05/01/2017	RESPONSE TO CITY COMMENTS			WFL
-	11/29/2016	ISSUED IN RESPONSE TO CITY COMMENTS			WFL
-	08/19/2016	ISSUED IN RESPONSE TO CITY COMMENTS			WFL
-	06/02/2016	ISSUED IN RESPONSE TO CITY COMMENTS			WFL
-	08/06/2015	ISSUED			WFL
-	02/23/2015	ISSUED			WFL

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City: Petaluma
County: Sonoma
State: California

SID COMMONS

PRELIMINARY STORMWATER CONTROL PLAN

J. CYRIL JOHNSON INVESTMENT CORP.

Prepared Under the Direction of:

Sheet C7

Scale:	1"=50'
Date:	11/22/2013
Project Number:	5.1037.00
Plan File:	D-5254.07

P:\2015\1037\00\CSWSheet_Drawings\C7 - STORMWATER CONTROL PLAN.dwg 05/26/2017 - 08:01 PM wleaf 11:36

Appendix 14A

Traffic Impact Study

Fehr & Peers in 2008, including updates as of through March, 2017

Traffic Count Data Sheets

Level-Of-Service Worksheets

- **Existing Traffic Conditions**
- **Existing plus Project Conditions**
- **Pipeline Conditions**
- **Pipeline plus Project Conditions**
- **Cumulative Conditions**
- **Cumulative plus Project Conditions**

All Traffic Data

(916) 771-8700
F(916) 786-2879

CITY OF PETALUMA

File Name : 3
Site Code : 00000000
Start Date : 5/22/2007
Page No : 1

Groups Printed- Unshifted

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07:00	0	114	79	0	193	24	0	45	0	69	0	133	71	0	204	0	0	0	0	0	0	466	466
07:15	0	154	69	0	223	21	0	53	0	74	0	152	107	0	259	0	0	0	1	0	1	556	557
07:30	0	143	98	0	241	32	0	62	0	94	0	189	110	0	299	0	0	0	0	0	0	634	634
07:45	0	206	95	0	301	37	0	82	1	119	0	204	83	0	287	0	0	0	0	0	1	707	708
Total	0	617	341	0	958	114	0	242	1	356	0	678	371	0	1049	0	0	0	1	0	2	2363	2365
08:00	0	244	81	0	325	39	0	55	0	94	0	213	64	0	277	0	0	0	2	0	2	696	698
08:15	0	196	77	0	273	31	0	90	1	121	0	233	75	0	308	0	0	0	2	0	3	702	705
08:30	0	201	106	0	307	35	0	91	0	126	0	204	113	0	317	0	0	0	1	0	1	750	751
08:45	0	154	79	0	233	29	0	88	0	117	0	191	61	0	252	0	0	0	1	0	1	602	603
Total	0	795	343	0	1138	134	0	324	1	458	0	841	313	0	1154	0	0	0	6	0	7	2750	2757
16:00	2	168	131	0	301	34	0	96	0	130	0	176	69	0	245	0	0	0	0	0	0	676	676
16:15	0	165	126	0	291	37	0	89	0	126	0	224	85	0	309	0	0	0	2	0	2	726	728
16:30	0	193	137	0	330	38	0	73	0	111	0	192	117	0	309	0	0	0	2	0	2	750	752
16:45	0	187	142	0	329	39	0	79	0	118	0	189	115	0	304	0	0	0	3	0	3	751	754
Total	2	713	536	0	1251	148	0	337	0	485	0	781	386	0	1167	0	0	0	7	0	7	2903	2910
17:00	6	201	134	0	341	39	0	71	0	110	0	215	121	1	336	0	0	0	0	0	1	787	788
17:15	0	196	145	0	341	34	0	77	0	111	0	254	106	1	360	0	0	0	0	0	1	812	813
17:30	0	175	118	0	293	39	0	88	0	127	0	187	127	0	314	0	0	0	3	0	3	734	737
17:45	0	162	117	0	279	57	0	115	0	172	0	204	99	0	303	0	0	0	3	0	3	754	757
Total	6	734	514	0	1254	169	0	351	0	520	0	860	453	2	1313	0	0	0	6	0	8	3087	3095
Grand Total	8	2859	1734	0	4601	565	0	1254	2	1819	0	3160	1523	2	4683	0	0	0	20	0	24	11103	11127
Apprch %	0.2	62.1	37.7			31.1	0	68.9			0	67.5	32.5			0	0	0					
Total %	0.1	25.7	15.6		41.4	5.1	0	11.3		16.4	0	28.5	13.7		42.2	0	0	0		0	0.2	99.8	

	OLD REDWOOD HWY Southbound				SR 101 NB RAMPS Westbound				Northbound				SR 101 NB ON RAMP Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45																	
07:45	0	206	95	301	37	0	82	119	0	204	83	287	0	0	0	0	707
08:00	0	**244**	81	**325**	**39**	0	55	94	0	213	64	277	0	0	0	0	696
08:15	0	196	77	273	31	0	90	121	0	**233**	75	308	0	0	0	0	702
08:30	0	201	**106**	307	35	0	**91**	**126**	0	204	**113**	**317**	0	0	0	0	**750**
Total Volume	0	847	359	1206	142	0	318	460	0	854	335	1189	0	0	0	0	2855
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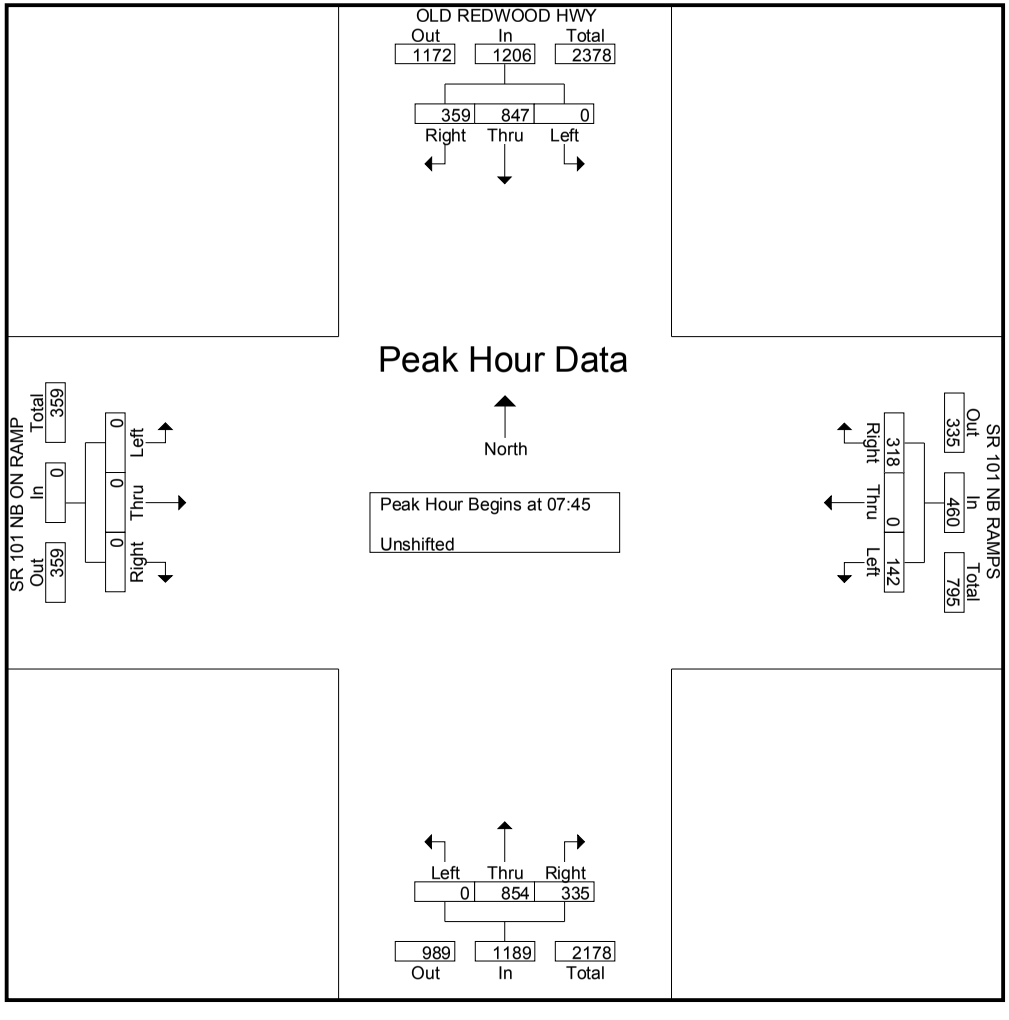

Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 16:30

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16:45	0	187	142	329	**39**	0	**79**	**118**	0	189	115	304	0	0	0	0	751
17:00	**6**	**201**	134	**341**	39	0	71	110	0	215	**121**	336	0	0	0	0	787
17:15	0	196	**145**	341	34	0	77	111	0	**254**	106	**360**	0	0	0	0	**812**
Total Volume	6	777	558	1341	150	0	300	450	0	850	459	1309	0	0	0	0	3100
% App. Total	0.4	57.9	41.6		33.3	0	66.7		0	64.9	35.1		0	0	0		
PHF	.250	.966	.962	.983	.962	.000	.949	.953	.000	.837	.948	.909	.000	.000	.000	.000	.954

All Traffic Data

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F(916) 786-2879

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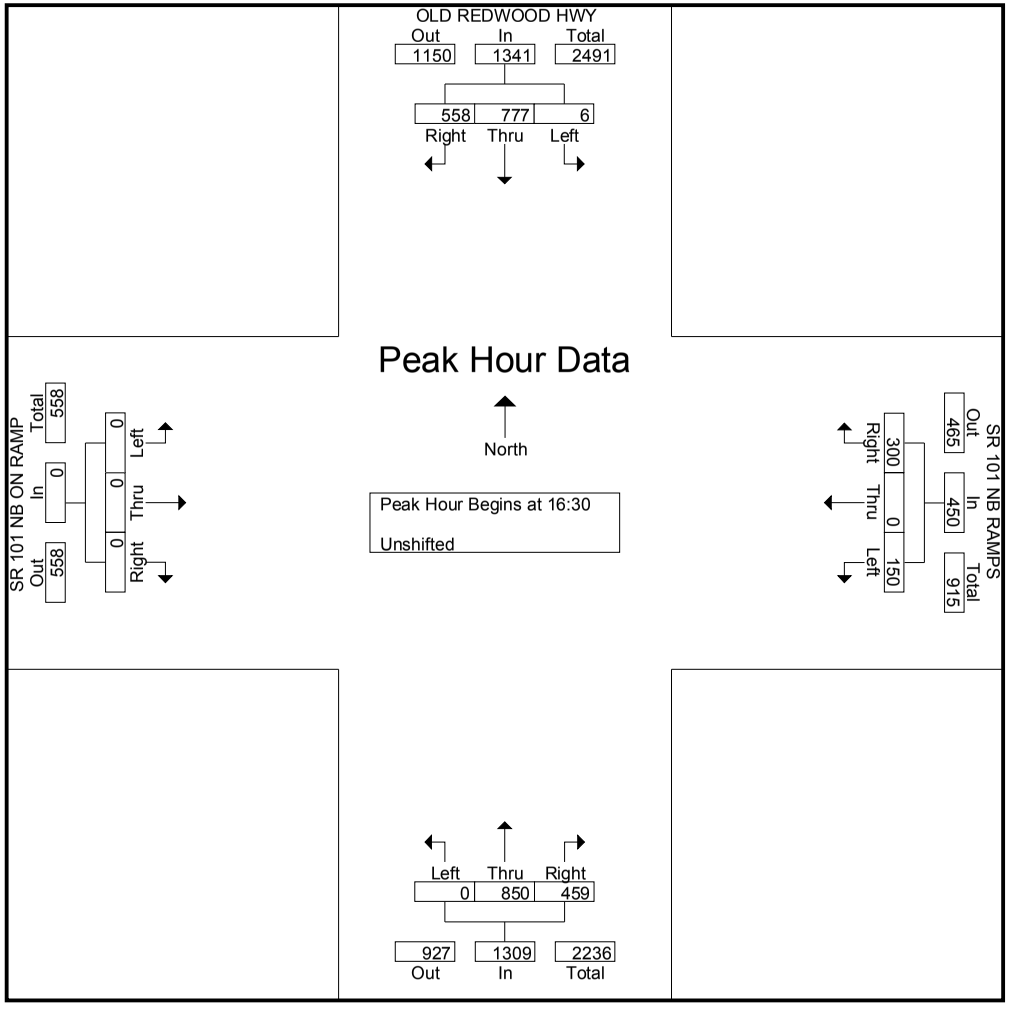
Page No : 3



All Traffic Data

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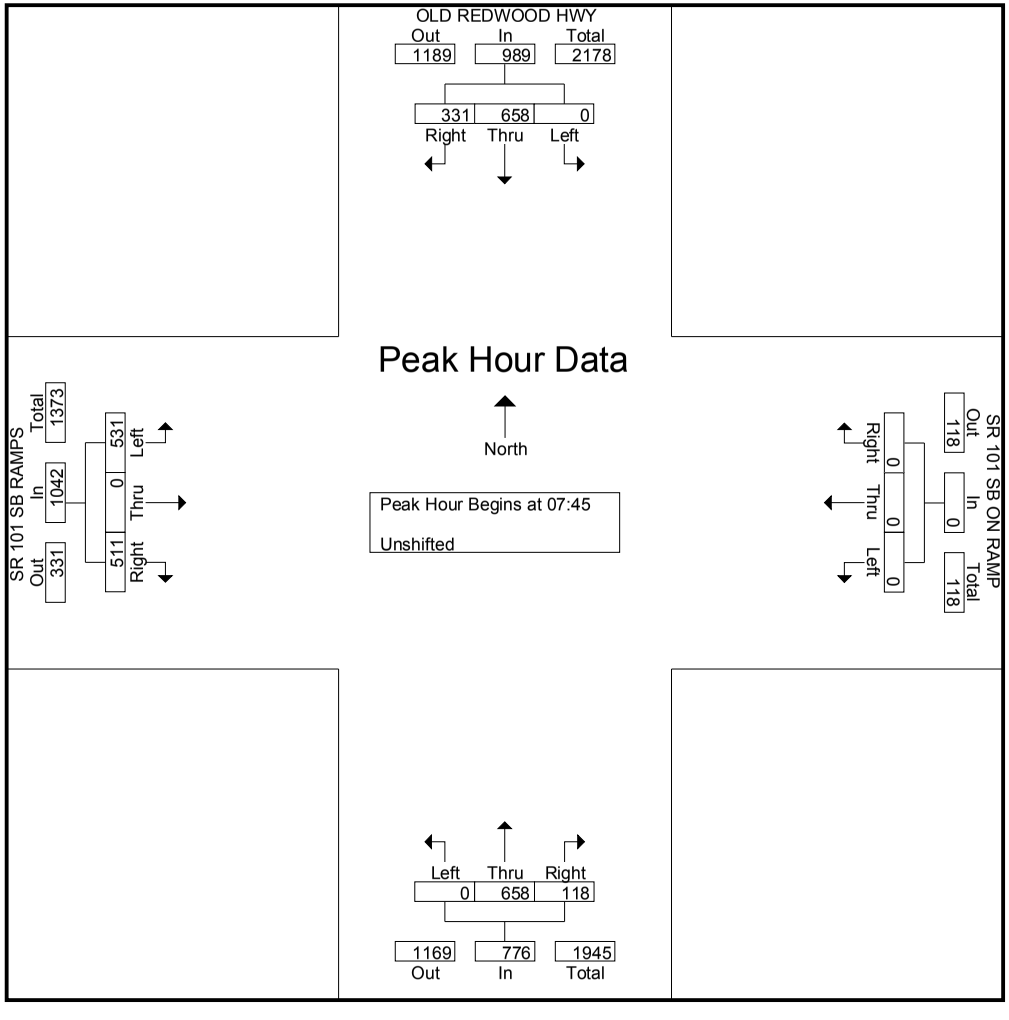
CITY OF PETALUMA

File Name : 2
Site Code : 00000000
Start Date : 5/22/2007
Page No : 1

Groups Printed- Unshifted

	OLD REDWOOD HWY Southbound					SR 101 SB ON RAMP Westbound					Northbound					SR 101 SB RAMPS Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00	0	81	57	0	138	0	0	0	0	0	0	104	19	0	123	102	0	93	1	195	1	456	457
07:15	0	116	59	0	175	0	0	0	0	0	0	147	18	0	165	112	0	128	0	240	0	580	580
07:30	0	121	54	0	175	0	0	0	0	0	0	170	29	0	199	129	0	114	0	243	0	617	617
07:45	0	167	76	0	243	0	0	0	1	0	0	144	27	2	171	143	0	140	2	283	5	697	702
Total	0	485	246	0	731	0	0	0	1	0	0	565	93	2	658	486	0	475	3	961	6	2350	2356
08:00	0	178	105	0	283	0	0	0	0	0	0	149	32	1	181	128	0	125	2	253	3	717	720
08:15	0	161	66	0	227	0	0	0	1	0	0	170	37	0	207	138	0	124	1	262	2	696	698
08:30	0	152	84	0	236	0	0	0	0	0	0	195	22	0	217	122	0	122	1	244	1	697	698
08:45	0	129	54	0	183	0	0	0	0	0	0	140	32	0	172	112	0	96	1	208	1	563	564
Total	0	620	309	0	929	0	0	0	1	0	0	654	123	1	777	500	0	467	5	967	7	2673	2680
16:00	0	146	56	0	202	0	0	0	0	0	0	182	48	0	230	75	0	80	2	155	2	587	589
16:15	0	145	57	0	202	0	0	0	0	0	0	185	27	1	212	104	0	121	1	225	2	639	641
16:30	0	166	65	0	231	0	0	0	0	0	0	230	38	2	268	91	0	114	4	205	6	704	710
16:45	0	161	65	0	226	0	0	0	0	0	0	212	39	0	251	88	0	128	0	216	0	693	693
Total	0	618	243	0	861	0	0	0	0	0	0	809	152	3	961	358	0	443	7	801	10	2623	2633
17:00	0	160	80	0	240	0	0	0	0	0	0	240	36	0	276	96	0	132	0	228	0	744	744
17:15	0	161	69	0	230	0	0	0	0	0	0	245	61	0	306	115	0	134	0	249	0	785	785
17:30	0	142	72	0	214	0	0	0	0	0	0	224	49	6	273	86	0	119	2	205	8	692	700
17:45	0	163	54	0	217	0	0	0	0	0	0	196	36	2	232	107	0	102	5	209	7	658	665
Total	0	626	275	0	901	0	0	0	0	0	0	905	182	8	1087	404	0	487	7	891	15	2879	2894
Grand Total	0	2349	1073	0	3422	0	0	0	2	0	0	2933	550	14	3483	1748	0	1872	22	3620	38	10525	10563
Apprch %	0	68.6	31.4			0	0	0			0	84.2	15.8			48.3	0	51.7					
Total %	0	22.3	10.2		32.5	0	0	0		0	0	27.9	5.2		33.1	16.6	0	17.8		34.4	0.4	99.6	

	OLD REDWOOD HWY Southbound				SR 101 SB ON RAMP Westbound				Northbound				SR 101 SB RAMPS Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45																	
07:45	0	167	76	243	0	0	0	0	0	144	27	171	**143**	0	**140**	**283**	697
08:00	0	**178**	**105**	**283**	0	0	0	0	0	149	32	181	128	0	125	253	**717**
08:15	0	161	66	227	0	0	0	0	0	170	**37**	207	138	0	124	262	696
08:30	0	152	84	236	0	0	0	0	0	**195**	22	**217**	122	0	122	244	697
Total Volume	0	658	331	989	0	0	0	0	0	658	118	776	531	0	511	1042	2807
% App. Total	0	66.5	33.5		0	0	0		0	84.8	15.2		51	0	49		



Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 16:30

16:30	0	**166**	65	231	0	0	0	0	0	230	38	268	91	0	114	205	704
16:45	0	161	65	226	0	0	0	0	0	212	39	251	88	0	128	216	693
17:00	0	160	**80**	**240**	0	0	0	0	0	240	36	276	96	0	132	228	744
17:15	0	161	69	230	0	0	0	0	0	**245**	**61**	**306**	**115**	0	**134**	**249**	**785**
Total Volume	0	648	279	927	0	0	0	0	0	927	174	1101	390	0	508	898	2926
% App. Total	0	69.9	30.1		0	0	0		0	84.2	15.8		43.4	0	56.6		
PHF	.000	.976	.872	.966	.000	.000	.000	.000	.000	.946	.713	.900	.848	.000	.948	.902	.932

All Traffic Data

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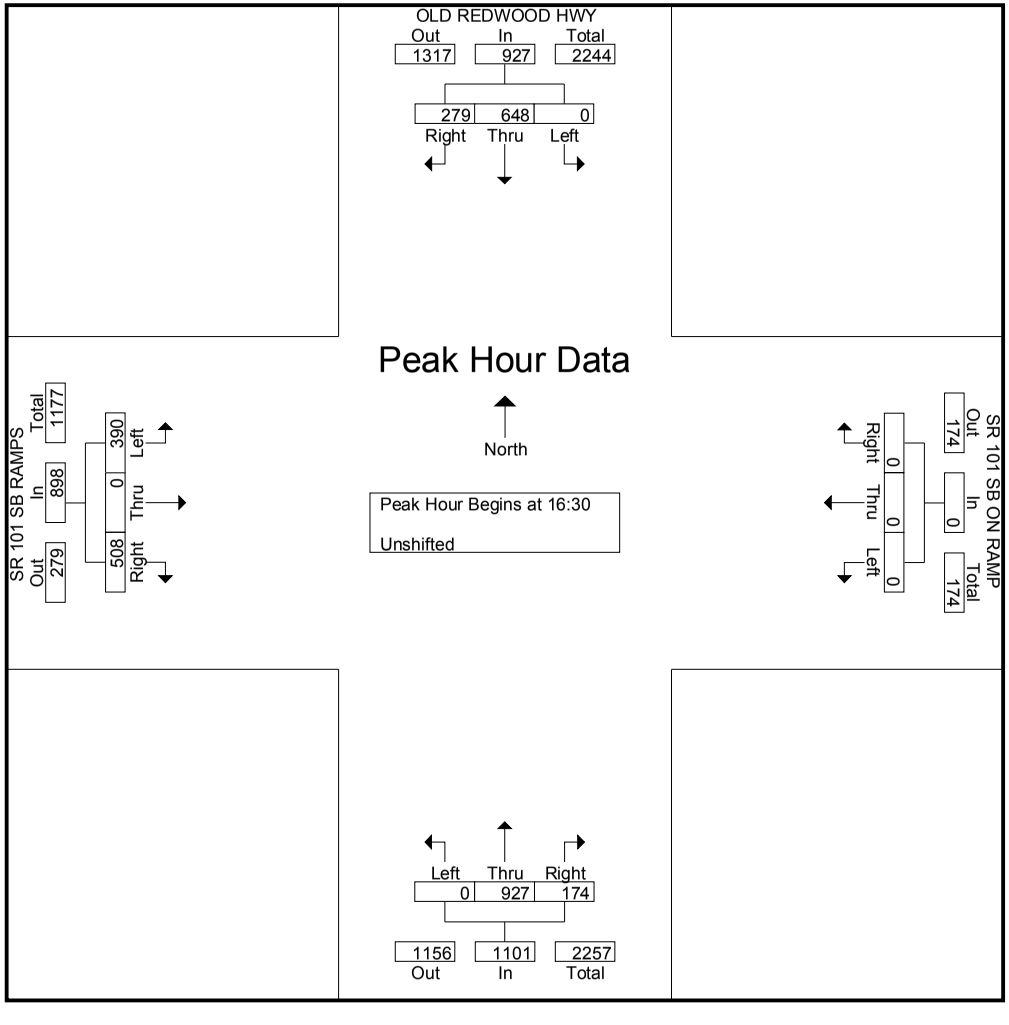

All Traffic Data

(916) 771-8700
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CITY OF PETALUMA

File Name : 1
Site Code : 00000000
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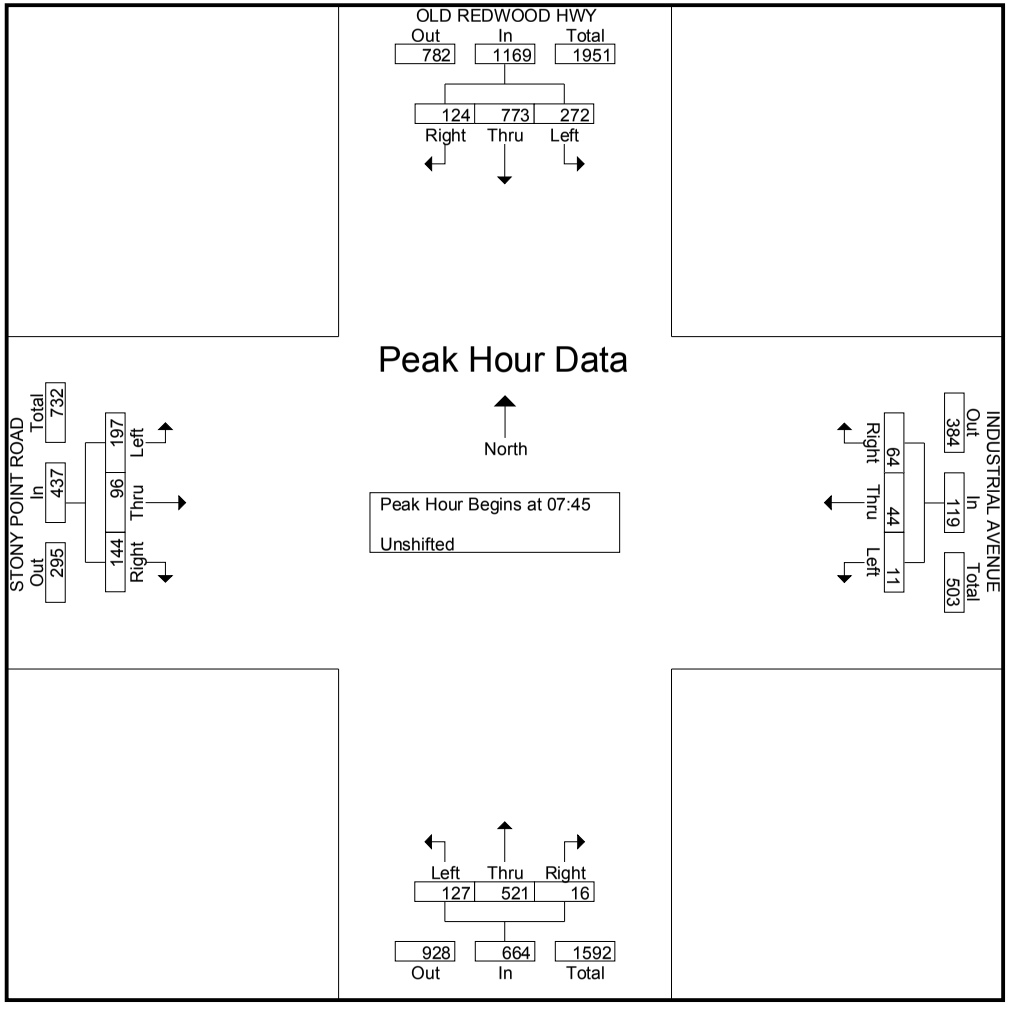
Groups Printed- Unshifted

	OLD REDWOOD HWY Southbound					INDUSTRIAL AVENUE Westbound					Northbound					STONY POINT ROAD Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00	39	123	12	0	174	1	8	9	0	18	20	87	0	0	107	30	13	41	0	84	0	383	383
07:15	49	179	16	0	244	1	8	12	0	21	26	114	0	0	140	38	26	39	0	103	0	508	508
07:30	48	155	32	0	235	0	6	14	0	20	30	137	0	0	167	42	23	41	0	106	0	528	528
07:45	83	194	30	0	307	3	11	5	0	19	33	119	2	0	154	51	28	36	0	115	0	595	595
Total	219	651	90	0	960	5	33	40	0	78	109	457	2	0	568	161	90	157	0	408	0	2014	2014
08:00	57	213	33	0	303	3	10	24	0	37	29	110	3	0	142	47	23	38	1	108	1	590	591
08:15	71	183	31	0	285	2	8	20	0	30	33	139	3	0	175	48	24	39	1	111	1	601	602
08:30	61	183	30	1	274	3	15	15	0	33	32	153	8	0	193	51	21	31	1	103	2	603	605
08:45	41	144	40	3	225	1	19	30	0	50	26	97	4	0	127	45	23	30	0	98	3	500	503
Total	230	723	134	4	1087	9	52	89	0	150	120	499	18	0	637	191	91	138	3	420	7	2294	2301
16:00	14	165	46	0	225	2	31	46	0	79	70	133	9	0	212	32	18	30	0	80	0	596	596
16:15	41	145	76	2	262	0	32	41	0	73	80	142	4	0	226	31	20	35	1	86	3	647	650
16:30	25	182	72	2	279	3	36	62	0	101	68	179	6	0	253	25	14	43	0	82	2	715	717
16:45	34	183	76	0	293	6	46	64	0	116	106	169	5	0	280	39	29	46	0	114	0	803	803
Total	114	675	270	4	1059	11	145	213	0	369	324	623	24	0	971	127	81	154	1	362	5	2761	2766
17:00	18	203	72	0	293	1	37	69	0	107	93	173	1	0	267	33	10	40	0	83	0	750	750
17:15	25	180	86	0	291	1	37	58	0	96	112	204	2	0	318	45	21	47	0	113	0	818	818
17:30	19	169	72	0	260	0	40	56	0	96	96	191	2	0	289	27	13	46	0	86	0	731	731
17:45	20	164	82	1	266	0	32	40	0	72	73	158	1	0	232	37	14	43	1	94	2	664	666
Total	82	716	312	1	1110	2	146	223	0	371	374	726	6	0	1106	142	58	176	1	376	2	2963	2965
Grand Total	645	2765	806	9	4216	27	376	565	0	968	927	2305	50	0	3282	621	320	625	5	1566	14	10032	10046
Apprch %	15.3	65.6	19.1			2.8	38.8	58.4			28.2	70.2	1.5			39.7	20.4	39.9					
Total %	6.4	27.6	8		42	0.3	3.7	5.6		9.6	9.2	23	0.5		32.7	6.2	3.2	6.2		15.6	0.1	99.9	

	OLD REDWOOD HWY Southbound				INDUSTRIAL AVENUE Westbound				Northbound				STONY POINT ROAD Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45																	
07:45	**83**	194	30	**307**	**3**	11	5	19	**33**	119	2	154	**51**	**28**	36	**115**	595
08:00	57	**213**	**33**	303	3	10	**24**	**37**	29	110	3	142	47	23	38	108	590
08:15	71	183	31	285	2	8	20	30	33	139	3	175	48	24	**39**	111	601
08:30	61	183	30	274	3	**15**	15	33	32	**153**	**8**	**193**	51	21	31	103	**603**
Total Volume	272	773	124	1169	11	44	64	119	127	521	16	664	197	96	144	437	2389
% App. Total	23.3	66.1	10.6		9.2	37	53.8		19.1	78.5	2.4		45.1	22	33		



Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 16:45

16:45	**34**	183	76	**293**	**6**	**46**	64	**116**	106	169	**5**	280	39	**29**	46	**114**	803
17:00	18	**203**	72	293	1	37	**69**	107	93	173	1	267	33	10	40	83	750
17:15	25	180	**86**	291	1	37	58	96	**112**	**204**	2	**318**	**45**	21	**47**	113	**818**
17:30	19	169	72	260	0	40	56	96	96	191	2	289	27	13	46	86	731
Total Volume	96	735	306	1137	8	160	247	415	407	737	10	1154	144	73	179	396	3102
% App. Total	8.4	64.6	26.9		1.9	38.6	59.5		35.3	63.9	0.9		36.4	18.4	45.2		
PHF	.706	.905	.890	.970	.333	.870	.895	.894	.908	.903	.500	.907	.800	.629	.952	.868	.948

All Traffic Data

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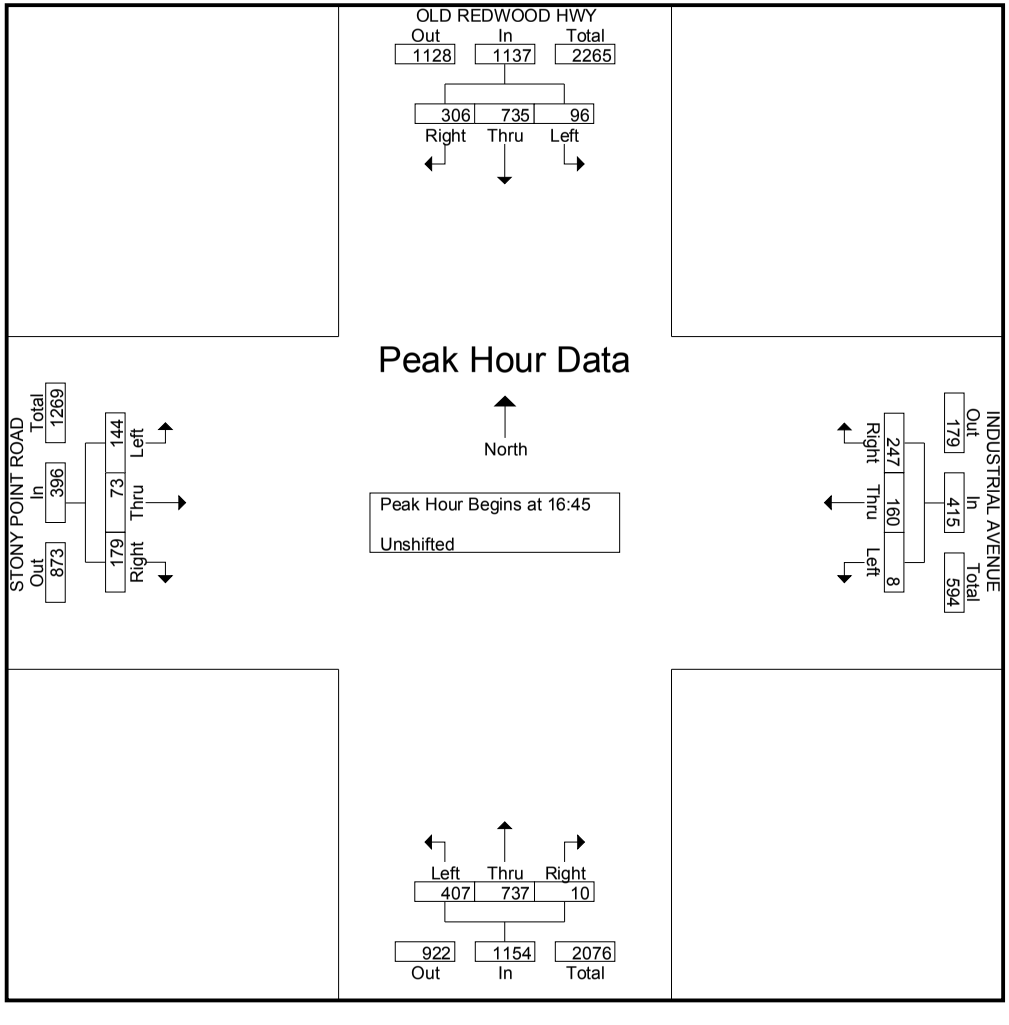

All Traffic Data

(916) 771-8700
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CITY OF PETALUMA

File Name : 7
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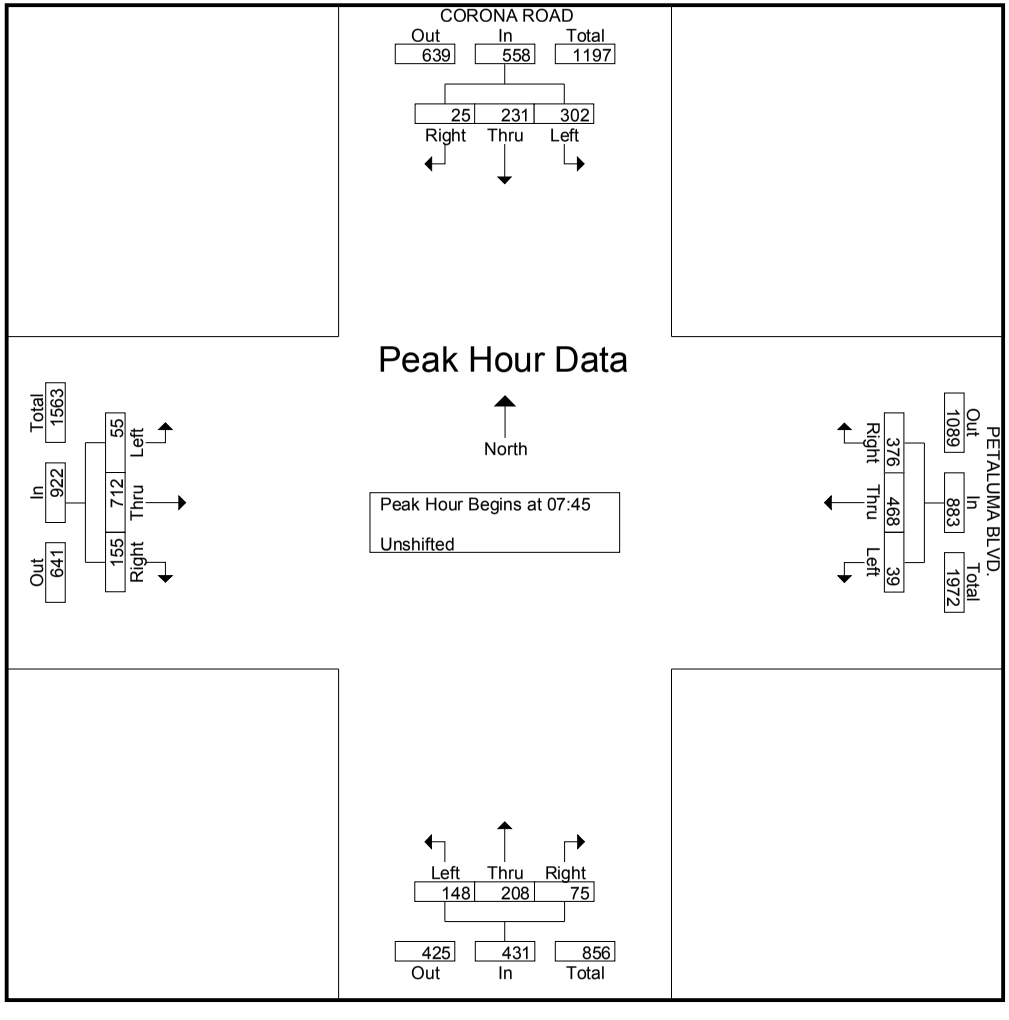
Groups Printed- Unshifted

	CORONA ROAD Southbound					PETALUMA BLVD. Westbound					Northbound					Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00	26	30	1	0	57	5	75	38	0	118	28	23	11	0	62	4	106	16	1	126	1	363	364
07:15	29	27	1	0	57	6	87	58	0	151	33	21	5	0	59	10	154	31	0	195	0	462	462
07:30	43	35	3	0	81	5	102	75	1	182	36	35	10	0	81	7	167	24	1	198	2	542	544
07:45	81	73	4	1	158	11	122	84	0	217	31	47	13	0	91	16	208	23	0	247	1	713	714
Total	179	165	9	1	353	27	386	255	1	668	128	126	39	0	293	37	635	94	2	766	4	2080	2084
08:00	97	56	5	0	158	12	116	95	0	223	25	35	21	0	81	16	199	62	0	277	0	739	739
08:15	77	66	9	0	152	10	110	107	0	227	44	66	22	0	132	8	171	38	0	217	0	728	728
08:30	47	36	7	0	90	6	120	90	0	216	48	60	19	0	127	15	134	32	0	181	0	614	614
08:45	60	40	6	0	106	12	97	86	1	195	24	38	9	0	71	13	149	20	0	182	1	554	555
Total	281	198	27	0	506	40	443	378	1	861	141	199	71	0	411	52	653	152	0	857	1	2635	2636
16:00	85	32	18	0	135	20	182	94	0	296	23	33	11	0	67	9	148	17	1	174	1	672	673
16:15	75	48	10	0	133	10	209	101	0	320	25	45	8	1	78	8	152	24	0	184	1	715	716
16:30	79	37	11	0	127	10	207	89	0	306	29	44	11	0	84	14	126	31	0	171	0	688	688
16:45	75	52	16	0	143	11	194	90	0	295	29	41	6	0	76	15	147	33	1	195	1	709	710
Total	314	169	55	0	538	51	792	374	0	1217	106	163	36	1	305	46	573	105	2	724	3	2784	2787
17:00	77	65	15	0	157	16	255	117	1	388	28	28	14	0	70	13	155	26	0	194	1	809	810
17:15	99	57	12	0	168	18	230	115	0	363	34	60	10	0	104	10	148	35	0	193	0	828	828
17:30	75	65	8	0	148	9	243	101	0	353	21	35	8	0	64	8	148	20	0	176	0	741	741
17:45	70	44	9	1	123	6	175	62	0	243	26	27	10	0	63	4	124	27	1	155	2	584	586
Total	321	231	44	1	596	49	903	395	1	1347	109	150	42	0	301	35	575	108	1	718	3	2962	2965
Grand Total	1095	763	135	2	1993	167	2524	1402	3	4093	484	638	188	1	1310	170	2436	459	5	3065	11	10461	10472
Apprch %	54.9	38.3	6.8			4.1	61.7	34.3			36.9	48.7	14.4			5.5	79.5	15					
Total %	10.5	7.3	1.3		19.1	1.6	24.1	13.4		39.1	4.6	6.1	1.8		12.5	1.6	23.3	4.4		29.3	0.1	99.9	

	CORONA ROAD Southbound				PETALUMA BLVD. Westbound				Northbound				Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45																	
07:45	81	**73**	4	**158**	11	**122**	84	217	31	47	13	91	**16**	**208**	23	247	713
08:00	**97**	56	5	158	**12**	116	95	223	25	35	21	81	16	199	**62**	**277**	**739**
08:15	77	66	**9**	152	10	110	**107**	**227**	44	**66**	**22**	**132**	8	171	38	217	728
08:30	47	36	7	90	6	120	90	216	**48**	60	19	127	15	134	32	181	614
Total Volume	302	231	25	558	39	468	376	883	148	208	75	431	55	712	155	922	2794
% App. Total	54.1	41.4	4.5		4.4	53	42.6		34.3	48.3	17.4		6	77.2	16.8		



Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 16:45

16:45	75	52	**16**	143	11	194	90	295	29	41	6	76	**15**	147	33	**195**	709
17:00	77	**65**	15	157	16	**255**	**117**	**388**	28	28	**14**	70	13	**155**	26	194	809
17:15	**99**	57	12	**168**	**18**	230	115	363	**34**	**60**	10	**104**	10	148	**35**	193	**828**
17:30	75	65	8	148	9	243	101	353	21	35	8	64	8	148	20	176	741
Total Volume	326	239	51	616	54	922	423	1399	112	164	38	314	46	598	114	758	3087
% App. Total	52.9	38.8	8.3		3.9	65.9	30.2		35.7	52.2	12.1		6.1	78.9	15		
PHF	.823	.919	.797	.917	.750	.904	.904	.901	.824	.683	.679	.755	.767	.965	.814	.972	.932

All Traffic Data

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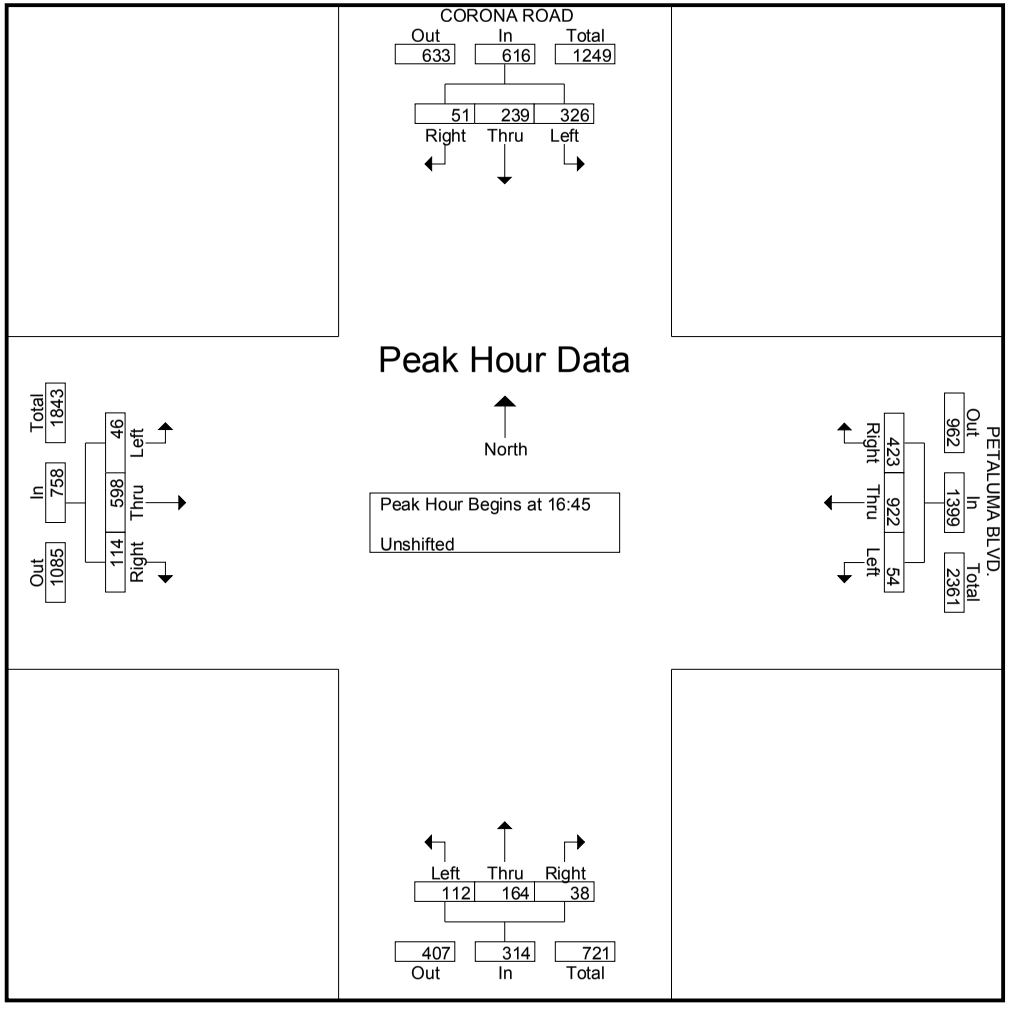

All Traffic Data

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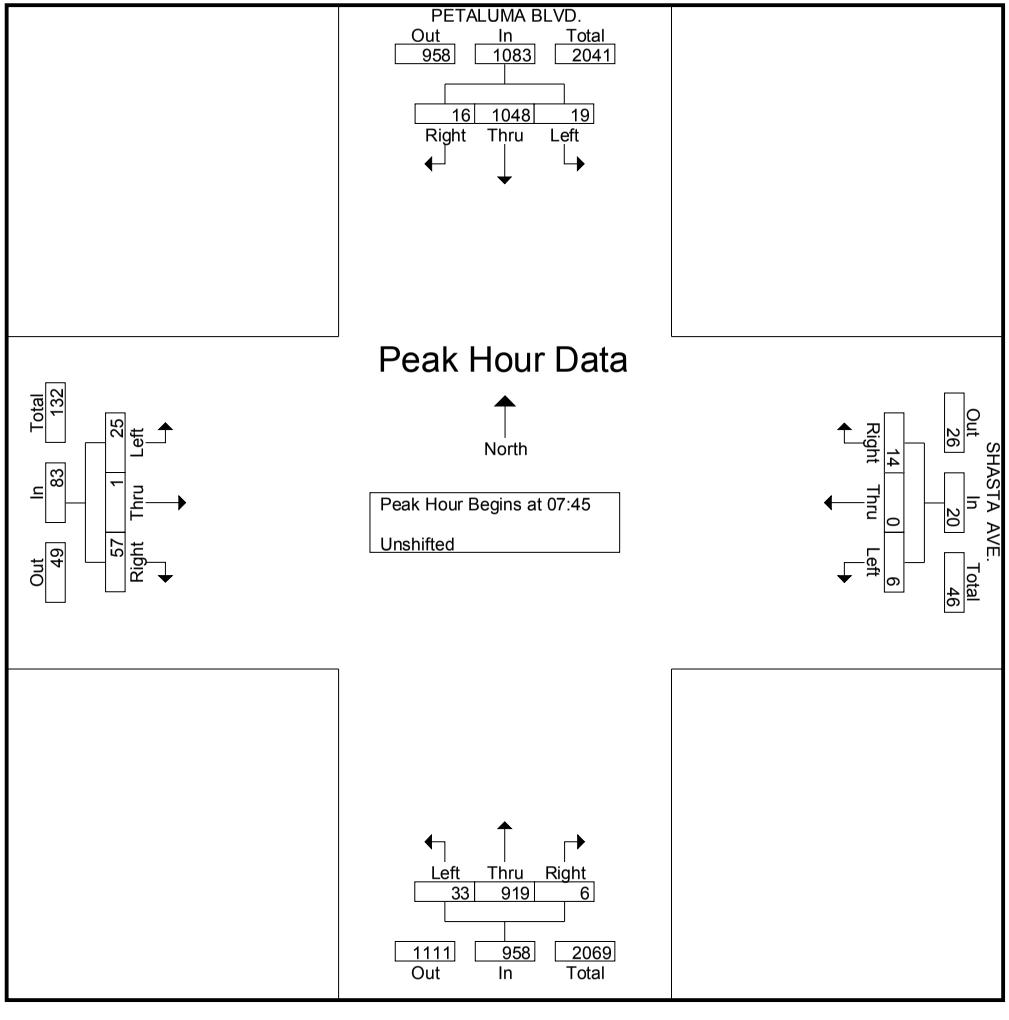
Groups Printed- Unshifted

	PETALUMA BLVD. Southbound					SHASTA AVE. Westbound					Northbound					Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00	6	137	1	1	144	0	0	2	0	2	5	110	0	1	115	4	0	11	1	15	3	276	279
07:15	6	169	1	0	176	0	0	3	0	3	3	164	0	0	167	2	1	12	0	15	0	361	361
07:30	2	178	3	0	183	0	0	6	2	6	5	163	1	0	169	10	1	9	0	20	2	378	380
07:45	5	259	1	0	265	1	0	5	0	6	4	195	0	0	199	10	1	12	0	23	0	493	493
Total	19	743	6	1	768	1	0	16	2	17	17	632	1	1	650	26	3	44	1	73	5	1508	1513
08:00	5	325	3	0	333	0	0	2	0	2	9	241	0	0	250	5	0	18	0	23	0	608	608
08:15	3	252	6	0	261	2	0	1	0	3	10	239	1	2	250	5	0	12	0	17	2	531	533
08:30	6	212	6	0	224	3	0	6	1	9	10	244	5	2	259	5	0	15	0	20	3	512	515
08:45	4	215	6	0	225	3	0	6	1	9	5	189	1	0	195	5	1	7	0	13	1	442	443
Total	18	1004	21	0	1043	8	0	15	2	23	34	913	7	4	954	20	1	52	0	73	6	2093	2099
16:00	6	226	6	1	238	4	1	11	1	16	6	304	0	2	310	3	0	7	0	10	4	574	578
16:15	8	203	6	0	217	2	0	11	0	13	10	308	5	0	323	6	0	10	0	16	0	569	569
16:30	14	256	5	0	275	3	0	6	1	9	15	305	2	1	322	5	0	11	0	16	2	622	624
16:45	13	227	6	2	246	3	1	6	0	10	8	309	2	0	319	9	1	9	0	19	2	594	596
Total	41	912	23	3	976	12	2	34	2	48	39	1226	9	3	1274	23	1	37	0	61	8	2359	2367
17:00	11	254	3	0	268	3	1	11	0	15	14	363	1	0	378	8	0	8	0	16	0	677	677
17:15	12	260	2	0	274	2	0	8	3	10	13	318	1	2	332	5	2	6	0	13	5	629	634
17:30	12	216	4	1	232	0	0	9	2	9	11	294	2	0	307	5	1	10	0	16	3	564	567
17:45	7	194	4	1	205	3	3	8	2	14	19	264	1	0	284	4	1	8	2	13	5	516	521
Total	42	924	13	2	979	8	4	36	7	48	57	1239	5	2	1301	22	4	32	2	58	13	2386	2399
Grand Total	120	3583	63	6	3766	29	6	101	13	136	147	4010	22	10	4179	91	9	165	3	265	32	8346	8378
Apprch %	3.2	95.1	1.7			21.3	4.4	74.3			3.5	96	0.5			34.3	3.4	62.3					
Total %	1.4	42.9	0.8		45.1	0.3	0.1	1.2		1.6	1.8	48	0.3		50.1	1.1	0.1	2		3.2	0.4	99.6	

	PETALUMA BLVD. Southbound				SHASTA AVE. Westbound				Northbound				Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45																	
07:45	5	259	1	265	1	0	5	6	4	195	0	199	**10**	**1**	12	**23**	493
08:00	5	**325**	3	**333**	0	0	2	2	9	241	0	250	5	0	**18**	23	**608**
08:15	3	252	**6**	261	2	0	1	3	**10**	239	1	250	5	0	12	17	531
08:30	**6**	212	6	224	**3**	0	**6**	**9**	10	**244**	**5**	**259**	5	0	15	20	512
Total Volume	19	1048	16	1083	6	0	14	20	33	919	6	958	25	1	57	83	2144
% App. Total	1.8	96.8	1.5		30	0	70		3.4	95.9	0.6		30.1	1.2	68.7		



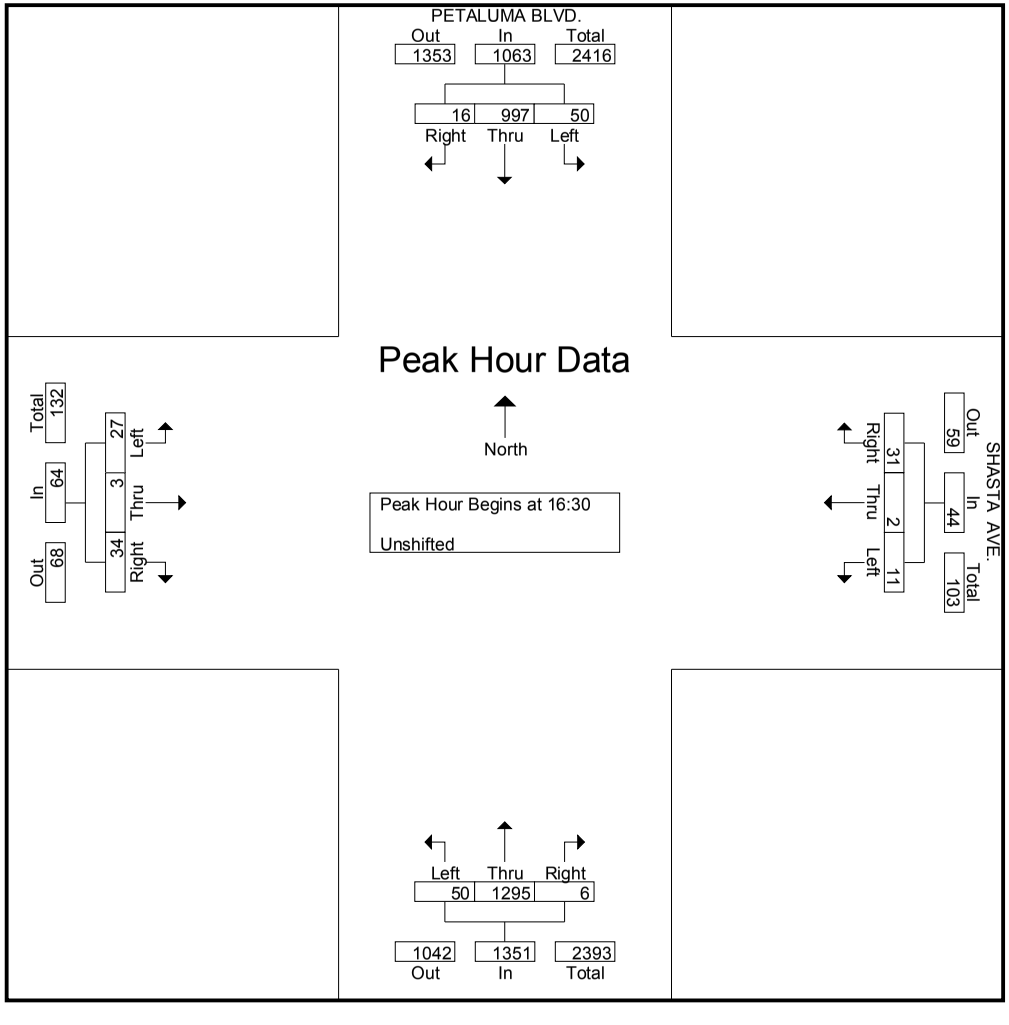
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 16:30

16:30	**14**	256	5	**275**	**3**	0	6	9	**15**	305	**2**	322	5	0	**11**	16	622
16:45	13	227	**6**	246	3	**1**	6	10	8	309	2	319	**9**	1	9	**19**	594
17:00	11	254	3	268	3	1	**11**	**15**	14	**363**	1	**378**	8	0	8	16	**677**
17:15	12	**260**	2	274	2	0	8	10	13	318	1	332	5	**2**	6	13	629
Total Volume	50	997	16	1063	11	2	31	44	50	1295	6	1351	27	3	34	64	2522
% App. Total	4.7	93.8	1.5		25	4.5	70.5		3.7	95.9	0.4		42.2	4.7	53.1		
PHF	.893	.959	.667	.966	.917	.500	.705	.733	.833	.892	.750	.894	.750	.375	.773	.842	.931

All Traffic Data

(916) 771-8700
F(916) 786-2879

File Name : 9
Site Code : 00000000
Start Date : 5/23/2007
Page No : 3



All Traffic Data

(916) 771-8700
F(916) 786-2879

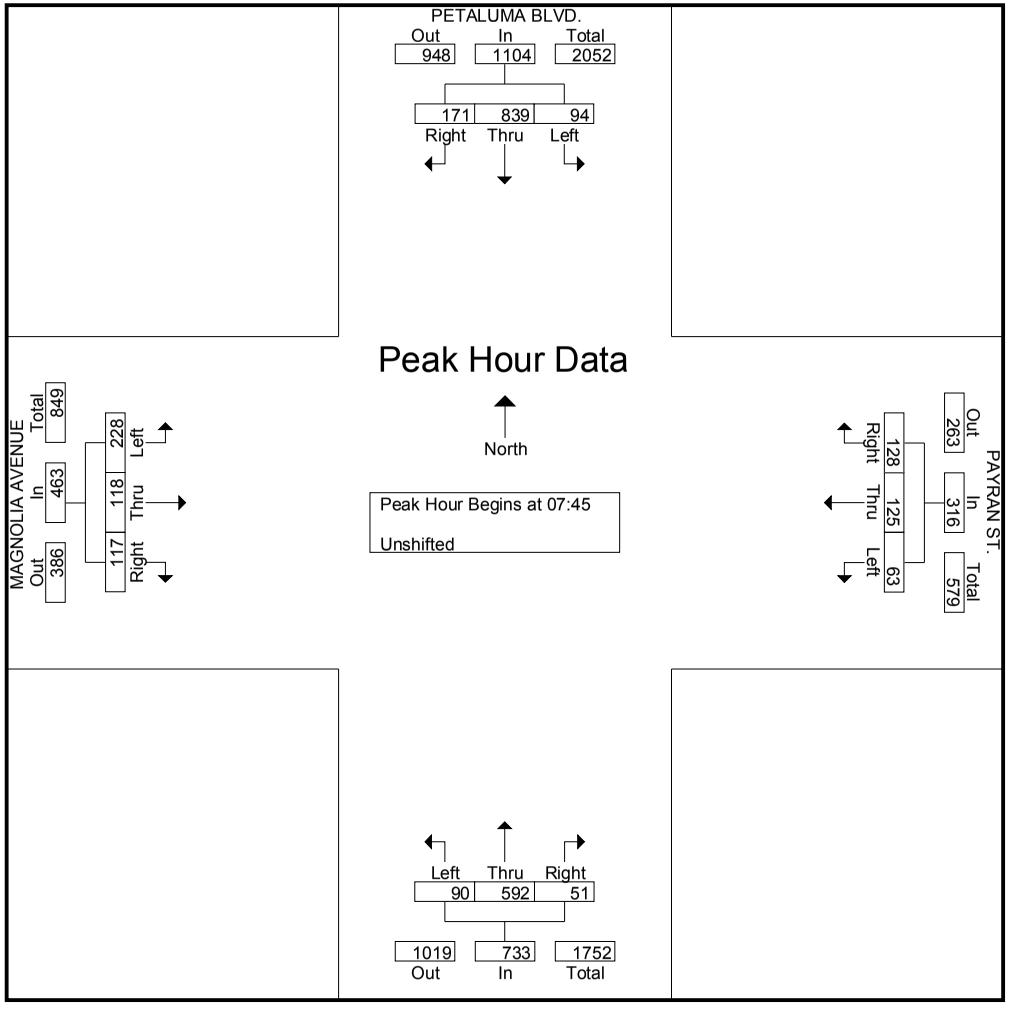
CITY OF PETALUMA

File Name : 10
Site Code : 00000000
Start Date : 5/23/2007
Page No : 1

Groups Printed- Unshifted

	PETALUMA BLVD. Southbound					PAYRAN ST. Westbound					Northbound					MAGNOLIA AVENUE Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00	17	118	9	1	144	8	7	12	0	27	4	79	2	0	85	25	14	14	0	53	1	309	310
07:15	28	141	18	1	187	14	13	27	0	54	6	104	6	0	116	33	17	16	3	66	4	423	427
07:30	22	147	18	3	187	10	13	18	1	41	9	118	12	4	139	46	27	21	1	94	9	461	470
07:45	23	199	40	1	262	11	21	30	0	62	18	126	3	0	147	31	16	18	0	65	1	536	537
Total	90	605	85	6	780	43	54	87	1	184	37	427	23	4	487	135	74	69	4	278	15	1729	1744
08:00	19	233	83	0	335	18	48	32	0	98	31	153	9	0	193	64	30	19	0	113	0	739	739
08:15	28	218	27	1	273	19	45	28	0	92	26	158	14	1	198	71	45	42	0	158	2	721	723
08:30	24	189	21	2	234	15	11	38	0	64	15	155	25	1	195	62	27	38	0	127	3	620	623
08:45	18	186	17	0	221	11	12	23	0	46	17	128	11	2	156	44	19	28	1	91	3	514	517
Total	89	826	148	3	1063	63	116	121	0	300	89	594	59	4	742	241	121	127	1	489	8	2594	2602
16:00	38	169	34	1	241	14	43	53	1	110	20	227	19	0	266	34	27	19	0	80	2	697	699
16:15	33	156	22	0	211	16	28	55	0	99	19	226	15	5	260	39	29	14	0	82	5	652	657
16:30	53	196	32	0	281	22	31	50	0	103	16	238	19	1	273	39	28	18	0	85	1	742	743
16:45	41	168	30	0	239	29	23	53	0	105	17	230	26	4	273	31	27	28	1	86	5	703	708
Total	165	689	118	1	972	81	125	211	1	417	72	921	79	10	1072	143	111	79	1	333	13	2794	2807
17:00	39	201	34	0	274	29	40	61	0	130	19	274	26	6	319	42	25	8	0	75	6	798	804
17:15	49	181	34	0	264	18	30	48	3	96	17	238	23	2	278	44	21	15	1	80	6	718	724
17:30	33	164	32	3	229	25	39	48	0	112	21	220	18	2	259	42	32	14	1	88	6	688	694
17:45	31	135	32	2	198	20	36	42	1	98	28	195	10	4	233	45	33	11	1	89	8	618	626
Total	152	681	132	5	965	92	145	199	4	436	85	927	77	14	1089	173	111	48	3	332	26	2822	2848
Grand Total	496	2801	483	15	3780	279	440	618	6	1337	283	2869	238	32	3390	692	417	323	9	1432	62	9939	10001
Apprch %	13.1	74.1	12.8			20.9	32.9	46.2			8.3	84.6	7			48.3	29.1	22.6					
Total %	5	28.2	4.9		38	2.8	4.4	6.2		13.5	2.8	28.9	2.4		34.1	7	4.2	3.2		14.4	0.6	99.4	

	PETALUMA BLVD. Southbound				PAYRAN ST. Westbound				Northbound				MAGNOLIA AVENUE Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45																	
07:45	23	199	40	262	11	21	30	62	18	126	3	147	31	16	18	65	536
08:00	19	**233**	**83**	**335**	18	**48**	32	**98**	**31**	153	9	193	64	30	19	113	**739**
08:15	**28**	218	27	273	**19**	45	28	92	26	**158**	14	**198**	**71**	**45**	**42**	**158**	721
08:30	24	189	21	234	15	11	**38**	64	15	155	**25**	195	62	27	38	127	620
Total Volume	94	839	171	1104	63	125	128	316	90	592	51	733	228	118	117	463	2616
% App. Total	8.5	76	15.5		19.9	39.6	40.5		12.3	80.8	7		49.2	25.5	25.3		



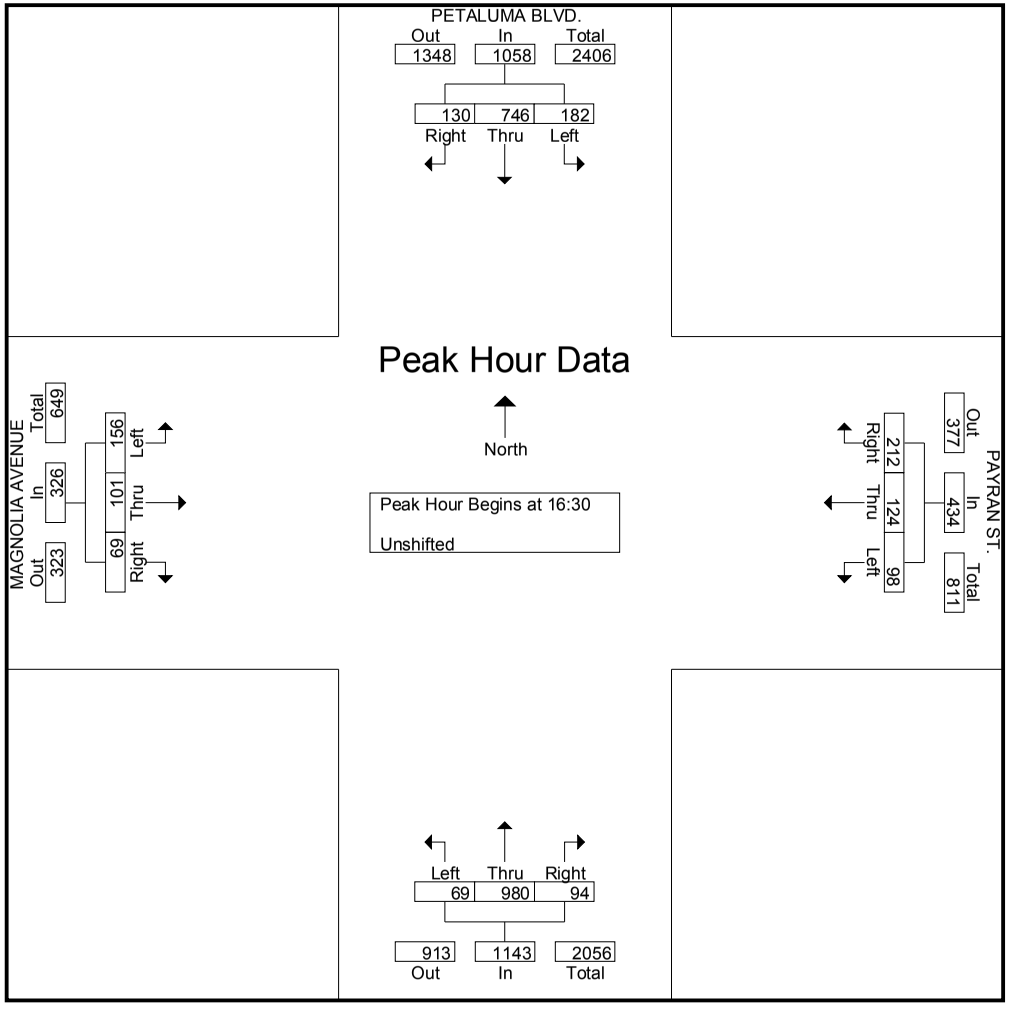
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 16:30

16:30	**53**	196	32	**281**	22	31	50	103	16	238	19	273	39	**28**	18	85	742
16:45	41	168	30	239	**29**	23	53	105	17	230	**26**	273	31	27	**28**	**86**	703
17:00	39	**201**	**34**	274	29	**40**	**61**	**130**	**19**	**274**	26	**319**	42	25	8	75	**798**
17:15	49	181	34	264	18	30	48	96	17	238	23	278	**44**	21	15	80	718
Total Volume	182	746	130	1058	98	124	212	434	69	980	94	1143	156	101	69	326	2961
% App. Total	17.2	70.5	12.3		22.6	28.6	48.8		6	85.7	8.2		47.9	31	21.2		
PHF	.858	.928	.956	.941	.845	.775	.869	.835	.908	.894	.904	.896	.886	.902	.616	.948	.928

All Traffic Data

(916) 771-8700
F(916) 786-2879

File Name : 10
Site Code : 00000000
Start Date : 5/23/2007
Page No : 3



MARKS TRAFFIC DATA

CITY OF PETALUMA

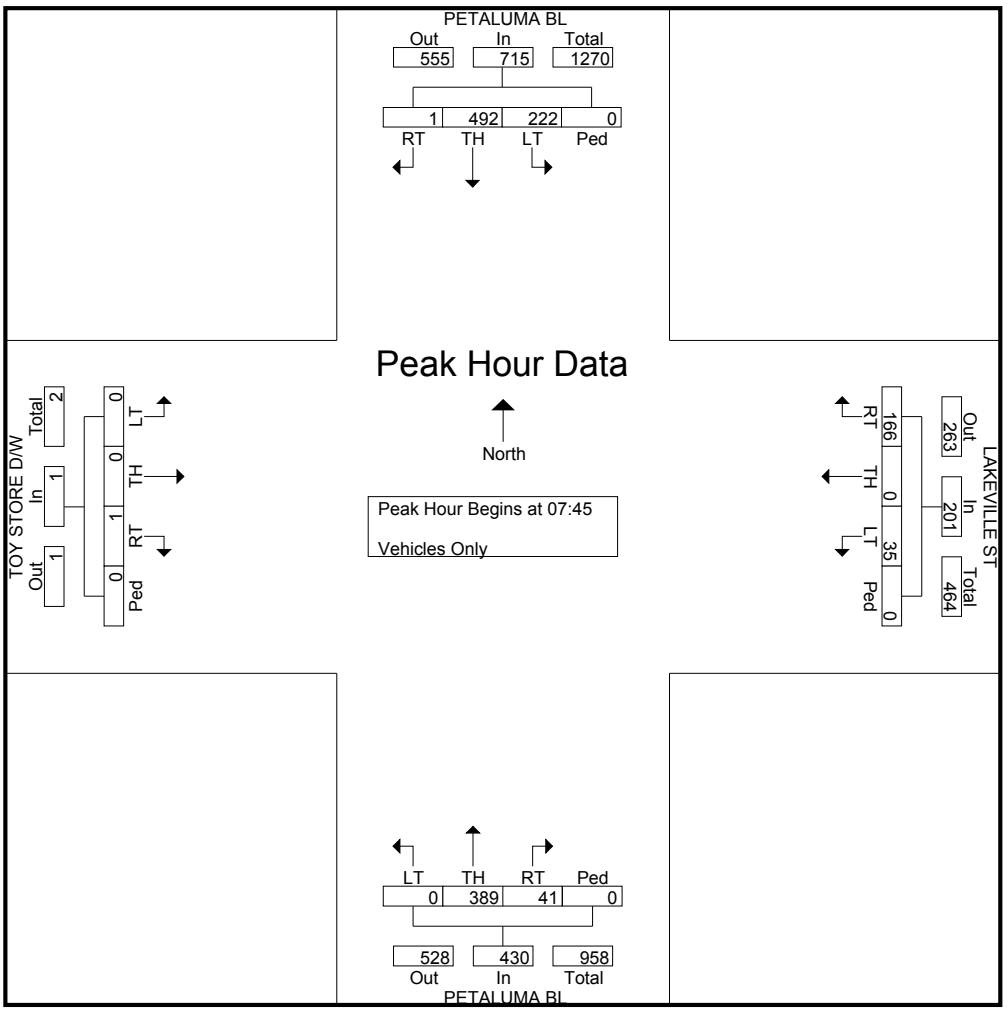
FP
Mietek 916-806-0250

File Name : petaluma-lakeville-a
Site Code : 4
Start Date : 10/30/2007
Page No : 1

Groups Printed- Vehicles Only

	PETALUMA BL Southbound					LAKEVILLE ST Westbound					PETALUMA BL Northbound					TOY STORE D/W Eastbound					
Start Time	RT	TH	LT	Ped	App. Total	RT	TH	LT	Ped	App. Total	RT	TH	LT	Ped	App. Total	RT	TH	LT	Ped	App. Total	Int. Total
07:00	0	142	30	0	172	21	0	4	0	25	2	69	0	0	71	0	0	0	0	0	268
07:15	0	117	37	0	154	25	0	2	0	27	3	76	0	0	79	0	0	0	0	0	260
07:30	0	94	43	0	137	30	0	5	0	35	5	78	0	0	83	0	0	0	0	0	255
07:45	0	135	68	0	203	45	0	6	0	51	7	111	0	0	118	0	0	0	0	0	372
Total	0	488	178	0	666	121	0	17	0	138	17	334	0	0	351	0	0	0	0	0	1155
08:00	0	119	56	0	175	46	0	17	0	63	6	95	0	0	101	0	0	0	0	0	339
08:15	1	138	55	0	194	39	0	7	0	46	13	95	0	0	108	1	0	0	0	1	349
08:30	0	100	43	0	143	36	0	5	0	41	15	88	0	0	103	0	0	0	0	0	287
08:45	0	135	37	0	172	25	0	6	0	31	8	73	0	0	81	0	0	0	0	0	284
Total	1	492	191	0	684	146	0	35	0	181	42	351	0	0	393	1	0	0	0	1	1259
Grand Total	1	980	369	0	1350	267	0	52	0	319	59	685	0	0	744	1	0	0	0	1	2414
Apprch %	0.1	72.6	27.3	0		83.7	0	16.3	0		7.9	92.1	0	0		100	0	0	0		
Total %	0	40.6	15.3	0	55.9	11.1	0	2.2	0	13.2	2.4	28.4	0	0	30.8	0	0	0	0	0	

	PETALUMA BL Southbound					LAKEVILLE ST Westbound					PETALUMA BL Northbound					TOY STORE D/W Eastbound					
Start Time	RT	TH	LT	Ped	App. Total	RT	TH	LT	Ped	App. Total	RT	TH	LT	Ped	App. Total	RT	TH	LT	Ped	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45																					
07:45	0	135	**68**	0	**203**	45	0	6	0	51	7	**111**	0	0	**118**	0	0	0	0	0	**372**
08:00	0	119	56	0	175	**46**	0	**17**	0	**63**	6	95	0	0	101	0	0	0	0	0	339
08:15	**1**	**138**	55	0	194	39	0	7	0	46	13	95	0	0	108	**1**	0	0	0	**1**	349
08:30	0	100	43	0	143	36	0	5	0	41	**15**	88	0	0	103	0	0	0	0	0	287
Total Volume	1	492	222	0	715	166	0	35	0	201	41	389	0	0	430	1	0	0	0	1	1347
% App. Total	0.1	68.8	31	0		82.6	0	17.4	0		9.5	90.5	0	0		100	0	0	0		
PHF	.250	.891	.816	.000	.881	.902	.000	.515	.000	.798	.683	.876	.000	.000	.911	.250	.000	.000	.000	.250	.905



MARKS TRAFFIC DATA

CITY OF PETALUMA

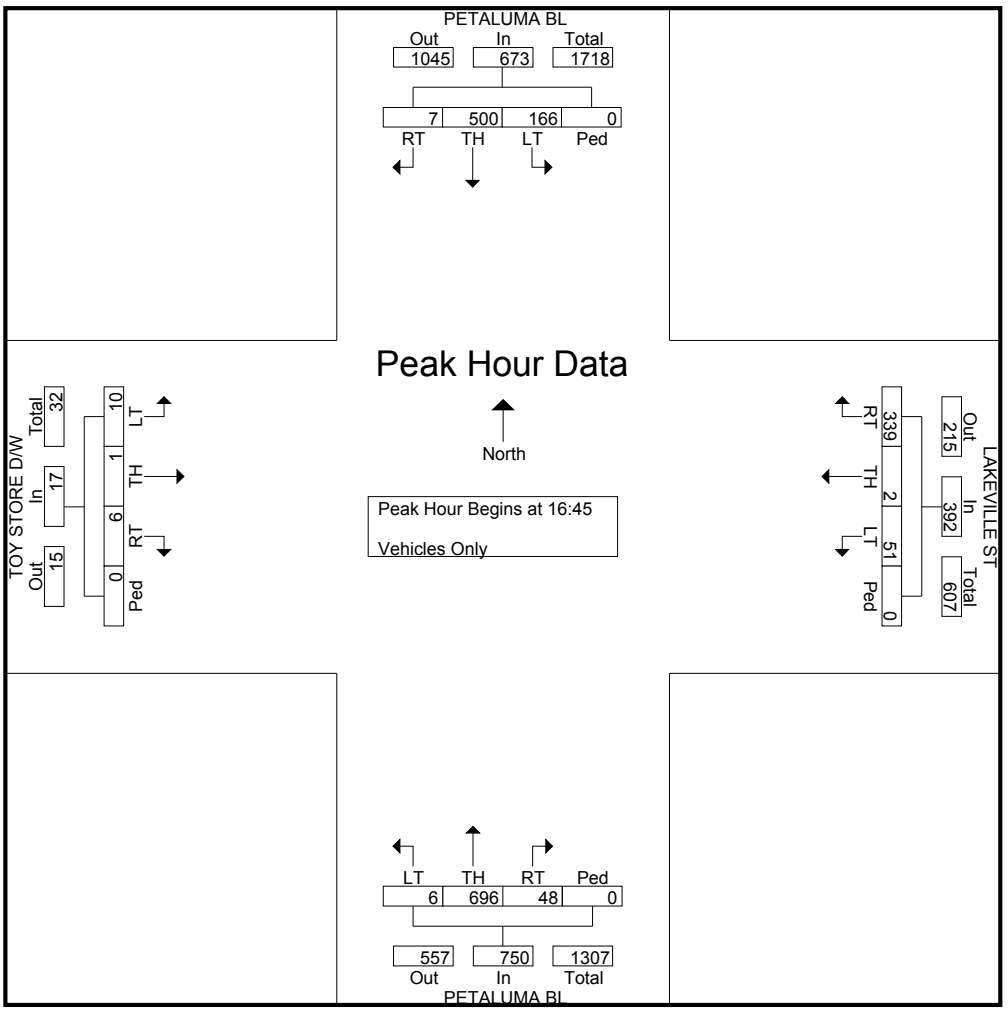
FP
Mietek 916-806-0250

File Name : petaluma-lakeville-p
Site Code : 4
Start Date : 10/30/2007
Page No : 1

Groups Printed- Vehicles Only

	PETALUMA BL Southbound					LAKEVILLE ST Westbound					PETALUMA BL Northbound					TOY STORE D/W Eastbound					
Start Time	RT	TH	LT	Ped	App. Total	RT	TH	LT	Ped	App. Total	RT	TH	LT	Ped	App. Total	RT	TH	LT	Ped	App. Total	Int. Total
16:00	4	116	54	0	174	78	0	7	0	85	23	123	0	0	146	2	2	1	0	5	410
16:15	2	107	42	0	151	89	2	10	0	101	19	132	2	0	153	4	0	4	0	8	413
16:30	2	123	48	0	173	67	2	13	0	82	7	163	1	0	171	2	0	0	0	2	428
16:45	2	133	49	0	184	71	0	12	0	83	15	162	2	0	179	3	1	4	0	8	454
Total	10	479	193	0	682	305	4	42	0	351	64	580	5	0	649	11	3	9	0	23	1705
17:00	1	123	50	0	174	105	0	16	0	121	13	177	1	0	191	0	0	2	0	2	488
17:15	2	126	34	0	162	78	0	16	0	94	8	173	1	0	182	0	0	2	0	2	440
17:30	2	118	33	0	153	85	2	7	0	94	12	184	2	0	198	3	0	2	0	5	450
17:45	1	146	41	0	188	95	0	7	0	102	13	142	1	0	156	2	0	1	0	3	449
Total	6	513	158	0	677	363	2	46	0	411	46	676	5	0	727	5	0	7	0	12	1827
Grand Total	16	992	351	0	1359	668	6	88	0	762	110	1256	10	0	1376	16	3	16	0	35	3532
Apprch %	1.2	73	25.8	0		87.7	0.8	11.5	0		8	91.3	0.7	0		45.7	8.6	45.7	0		
Total %	0.5	28.1	9.9	0	38.5	18.9	0.2	2.5	0	21.6	3.1	35.6	0.3	0	39	0.5	0.1	0.5	0	1	

	PETALUMA BL Southbound					LAKEVILLE ST Westbound					PETALUMA BL Northbound					TOY STORE D/W Eastbound					
Start Time	RT	TH	LT	Ped	App. Total	RT	TH	LT	Ped	App. Total	RT	TH	LT	Ped	App. Total	RT	TH	LT	Ped	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:45																					
16:45	**2**	**133**	49	0	**184**	71	0	12	0	83	**15**	162	**2**	0	179	**3**	**1**	**4**	0	**8**	454
17:00	1	123	**50**	0	174	**105**	0	**16**	0	**121**	13	177	1	0	191	0	0	2	0	2	**488**
17:15	2	126	34	0	162	78	0	16	0	94	8	173	1	0	182	0	0	2	0	2	440
17:30	2	118	33	0	153	85	**2**	7	0	94	12	**184**	2	0	**198**	3	0	2	0	5	450
Total Volume	7	500	166	0	673	339	2	51	0	392	48	696	6	0	750	6	1	10	0	17	1832
% App. Total	1	74.3	24.7	0		86.5	0.5	13	0		6.4	92.8	0.8	0		35.3	5.9	58.8	0		
PHF	.875	.940	.830	.000	.914	.807	.250	.797	.000	.810	.800	.946	.750	.000	.947	.500	.250	.625	.000	.531	.939



MARKS TRAFFIC DATA

CITY OF PETALUMA

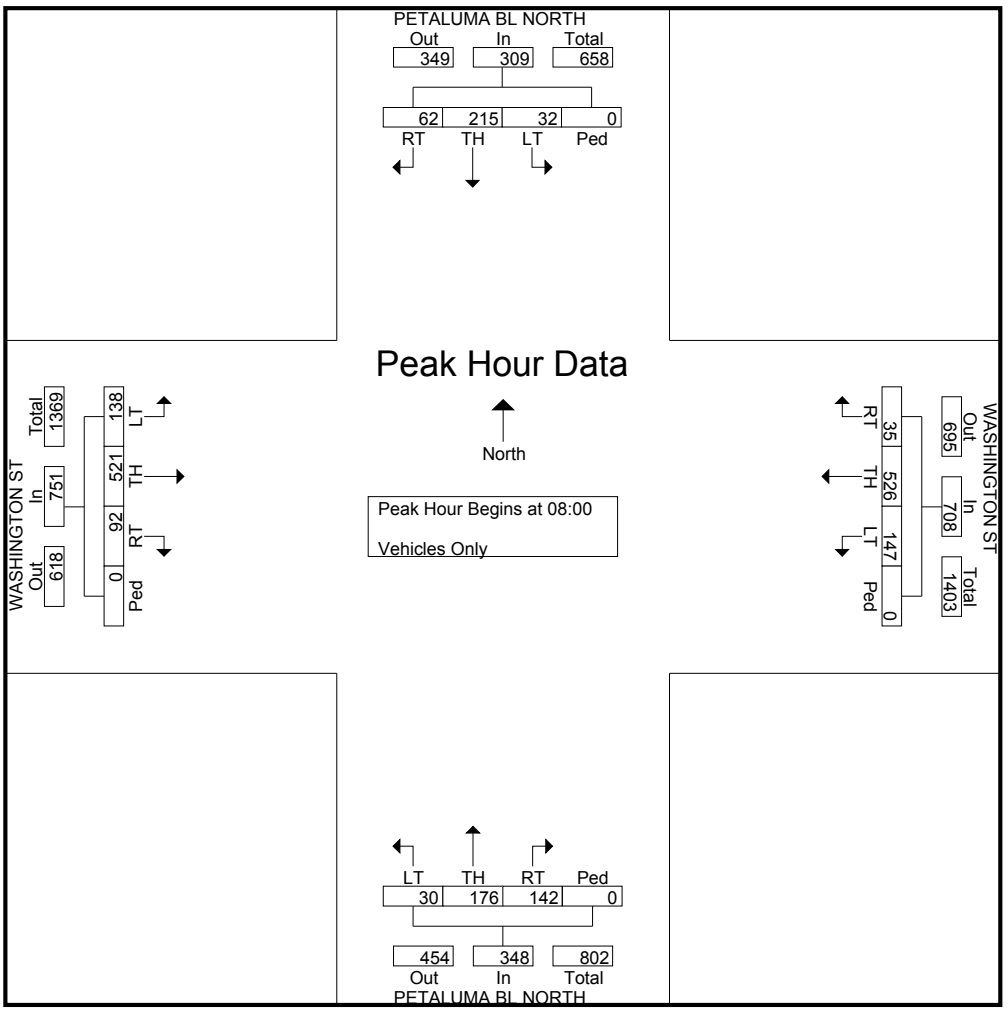
FP
Mietek 916-806-0250

File Name : petaluma-washington-a
Site Code : 5
Start Date : 10/30/2007
Page No : 1

Groups Printed- Vehicles Only

	PETALUMA BL NORTH Southbound					WASHINGTON ST Westbound					PETALUMA BL NORTH Northbound					WASHINGTON ST Eastbound					
Start Time	RT	TH	LT	Ped	App. Total	RT	TH	LT	Ped	App. Total	RT	TH	LT	Ped	App. Total	RT	TH	LT	Ped	App. Total	Int. Total
07:00	30	54	6	0	90	2	78	20	0	100	14	24	8	0	46	20	60	16	0	96	332
07:15	22	66	7	0	95	5	89	22	0	116	20	24	9	0	53	14	86	39	0	139	403
07:30	18	64	6	0	88	7	88	21	0	116	20	51	7	0	78	26	89	41	0	156	438
07:45	19	74	7	0	100	9	107	27	0	143	14	41	6	0	61	21	91	44	0	156	460
Total	89	258	26	0	373	23	362	90	0	475	68	140	30	0	238	81	326	140	0	547	1633
08:00	28	59	9	0	96	5	166	44	0	215	23	48	7	0	78	20	91	39	0	150	539
08:15	13	60	4	0	77	11	143	33	0	187	25	51	10	0	86	26	146	24	0	196	546
08:30	9	47	8	0	64	7	107	38	0	152	48	42	5	0	95	24	171	47	0	242	553
08:45	12	49	11	0	72	12	110	32	0	154	46	35	8	0	89	22	113	28	0	163	478
Total	62	215	32	0	309	35	526	147	0	708	142	176	30	0	348	92	521	138	0	751	2116
Grand Total	151	473	58	0	682	58	888	237	0	1183	210	316	60	0	586	173	847	278	0	1298	3749
Apprch %	22.1	69.4	8.5	0		4.9	75.1	20	0		35.8	53.9	10.2	0		13.3	65.3	21.4	0		
Total %	4	12.6	1.5	0	18.2	1.5	23.7	6.3	0	31.6	5.6	8.4	1.6	0	15.6	4.6	22.6	7.4	0	34.6	

	PETALUMA BL NORTH Southbound					WASHINGTON ST Westbound					PETALUMA BL NORTH Northbound					WASHINGTON ST Eastbound					
Start Time	RT	TH	LT	Ped	App. Total	RT	TH	LT	Ped	App. Total	RT	TH	LT	Ped	App. Total	RT	TH	LT	Ped	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00																					
08:00	**28**	59	9	0	**96**	5	**166**	**44**	0	**215**	23	48	7	0	78	20	91	39	0	150	539
08:15	13	**60**	4	0	77	11	143	33	0	187	25	**51**	**10**	0	86	**26**	146	24	0	196	546
08:30	9	47	8	0	64	7	107	38	0	152	**48**	42	5	0	**95**	24	**171**	**47**	0	**242**	**553**
08:45	12	49	**11**	0	72	**12**	110	32	0	154	46	35	8	0	89	22	113	28	0	163	478
Total Volume	62	215	32	0	309	35	526	147	0	708	142	176	30	0	348	92	521	138	0	751	2116
% App. Total	20.1	69.6	10.4	0		4.9	74.3	20.8	0		40.8	50.6	8.6	0		12.3	69.4	18.4	0		
PHF	.554	.896	.727	.000	.805	.729	.792	.835	.000	.823	.740	.863	.750	.000	.916	.885	.762	.734	.000	.776	.957



MARKS TRAFFIC DATA

CITY OF PETALUMA

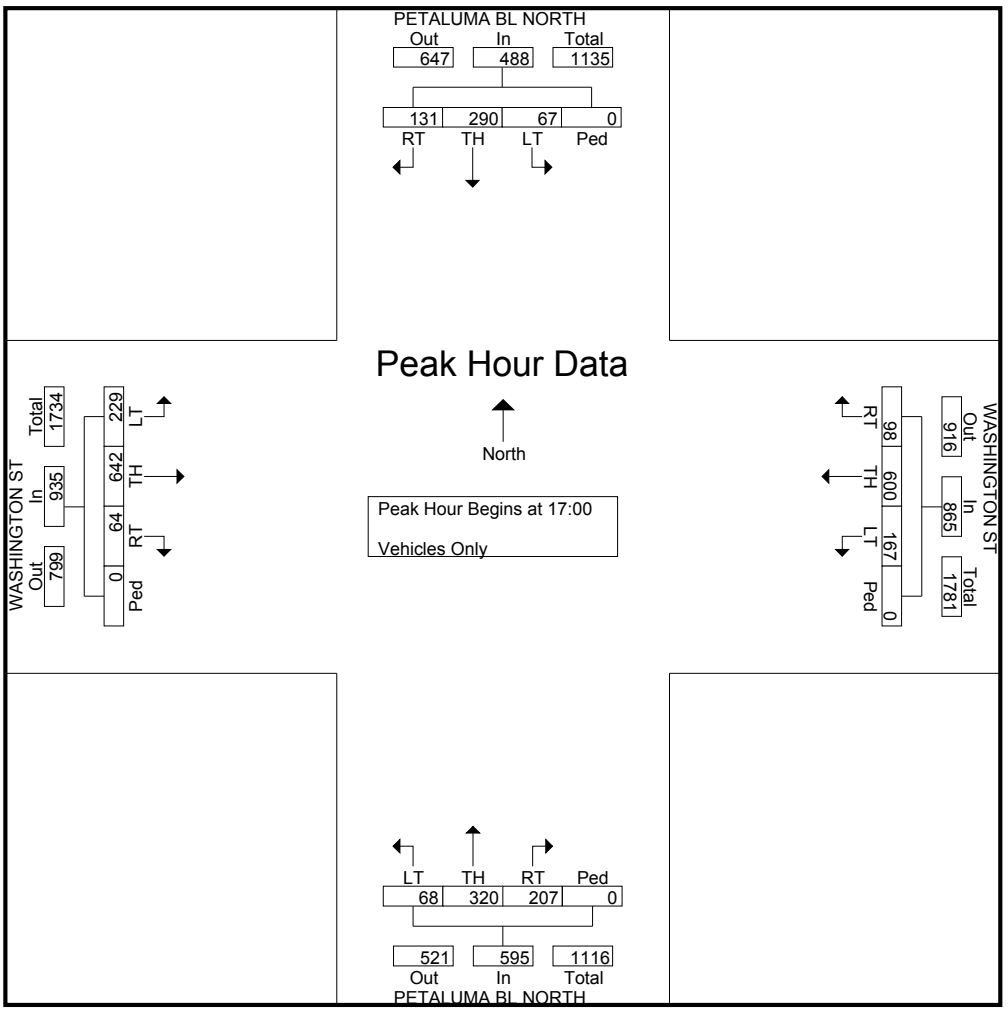
FP
Mietek 916-806-0250

File Name : petaluma-washington-p
Site Code : 5
Start Date : 10/30/2007
Page No : 1

Groups Printed- Vehicles Only

	PETALUMA BL NORTH Southbound					WASHINGTON ST Westbound					PETALUMA BL NORTH Northbound					WASHINGTON ST Eastbound					
Start Time	RT	TH	LT	Ped	App. Total	RT	TH	LT	Ped	App. Total	RT	TH	LT	Ped	App. Total	RT	TH	LT	Ped	App. Total	Int. Total
16:00	33	61	23	0	117	23	160	40	0	223	26	52	5	0	83	10	140	46	0	196	619
16:15	30	59	12	0	101	28	131	35	0	194	38	39	4	0	81	14	141	58	0	213	589
16:30	31	65	8	0	104	28	126	49	0	203	46	81	9	0	136	20	149	61	0	230	673
16:45	24	80	14	0	118	22	162	38	0	222	47	86	19	0	152	20	160	47	0	227	719
Total	118	265	57	0	440	101	579	162	0	842	157	258	37	0	452	64	590	212	0	866	2600
17:00	33	75	13	0	121	29	156	47	0	232	48	90	18	0	156	21	165	57	0	243	752
17:15	30	72	16	0	118	23	137	31	0	191	64	87	16	0	167	21	159	50	0	230	706
17:30	29	69	15	0	113	24	143	41	0	208	48	85	15	0	148	9	159	61	0	229	698
17:45	39	74	23	0	136	22	164	48	0	234	47	58	19	0	124	13	159	61	0	233	727
Total	131	290	67	0	488	98	600	167	0	865	207	320	68	0	595	64	642	229	0	935	2883
Grand Total	249	555	124	0	928	199	1179	329	0	1707	364	578	105	0	1047	128	1232	441	0	1801	5483
Apprch %	26.8	59.8	13.4	0		11.7	69.1	19.3	0		34.8	55.2	10	0		7.1	68.4	24.5	0		
Total %	4.5	10.1	2.3	0	16.9	3.6	21.5	6	0	31.1	6.6	10.5	1.9	0	19.1	2.3	22.5	8	0	32.8	

	PETALUMA BL NORTH Southbound					WASHINGTON ST Westbound					PETALUMA BL NORTH Northbound					WASHINGTON ST Eastbound					
Start Time	RT	TH	LT	Ped	App. Total	RT	TH	LT	Ped	App. Total	RT	TH	LT	Ped	App. Total	RT	TH	LT	Ped	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 17:00																					
17:00	33	**75**	13	0	121	**29**	156	47	0	232	48	**90**	18	0	156	**21**	**165**	57	0	**243**	**752**
17:15	30	72	16	0	118	23	137	31	0	191	**64**	87	16	0	**167**	21	159	50	0	230	706
17:30	29	69	15	0	113	24	143	41	0	208	48	85	15	0	148	9	159	**61**	0	229	698
17:45	**39**	74	**23**	0	**136**	22	**164**	**48**	0	**234**	47	58	**19**	0	124	13	159	61	0	233	727
Total Volume	131	290	67	0	488	98	600	167	0	865	207	320	68	0	595	64	642	229	0	935	2883
% App. Total	26.8	59.4	13.7	0		11.3	69.4	19.3	0		34.8	53.8	11.4	0		6.8	68.7	24.5	0		
PHF	.840	.967	.728	.000	.897	.845	.915	.870	.000	.924	.809	.889	.895	.000	.891	.762	.973	.939	.000	.962	.958



All Traffic Data

(916) 771-8700
F(916) 786-2879

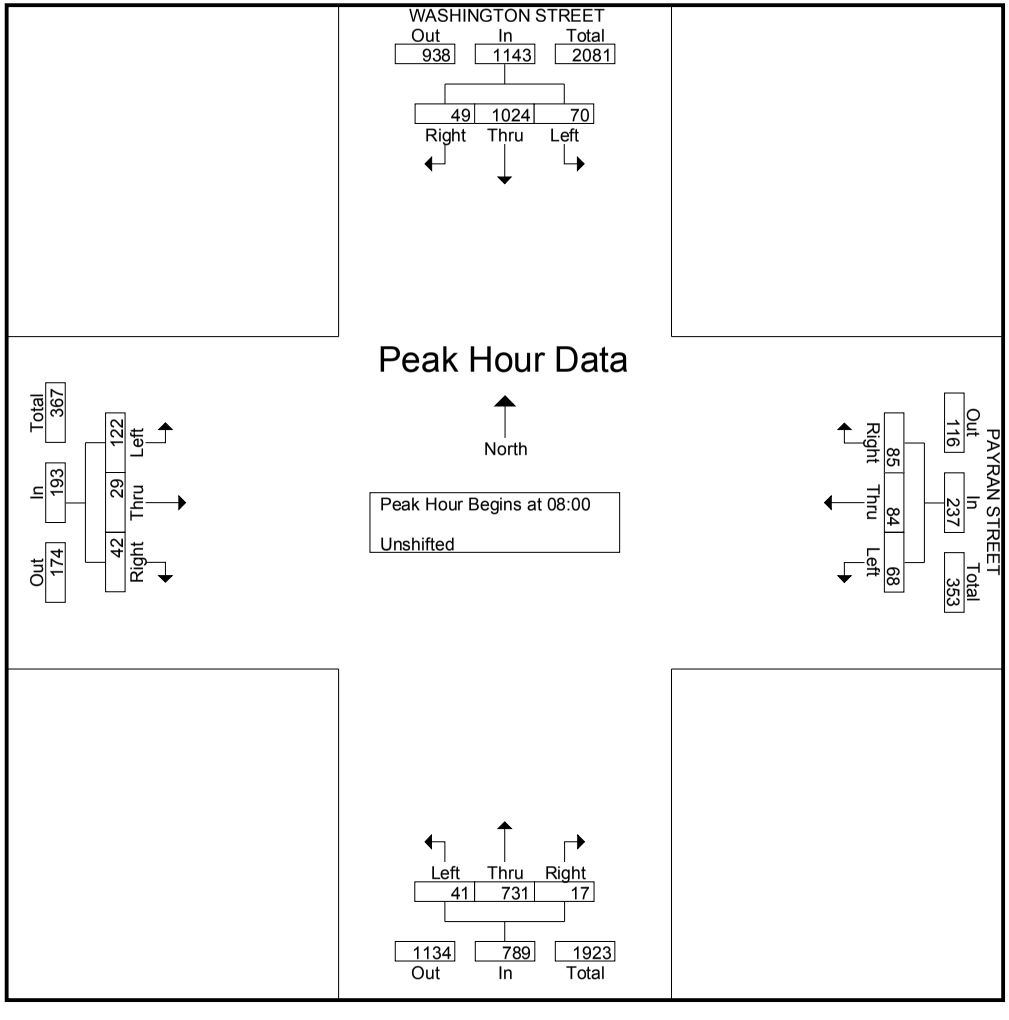
CITY OF PETALUMA

File Name : 13
Site Code : 00000000
Start Date : 5/24/2007
Page No : 1

Groups Printed- Unshifted

	WASHINGTON STREET Southbound					PAYRAN STREET Westbound					Northbound					Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00	12	148	9	1	169	4	28	12	0	44	4	96	2	0	102	18	2	14	3	34	4	349	353
07:15	10	161	6	0	177	8	19	13	1	40	7	111	0	2	118	22	5	13	2	40	5	375	380
07:30	9	170	10	0	189	6	24	9	1	39	6	136	6	1	148	20	2	11	1	33	3	409	412
07:45	13	220	7	5	240	11	21	17	0	49	9	132	2	0	143	27	9	10	1	46	6	478	484
Total	44	699	32	6	775	29	92	51	2	172	26	475	10	3	511	87	18	48	7	153	18	1611	1629
08:00	12	277	10	0	299	15	17	23	1	55	7	134	2	5	143	30	6	12	1	48	7	545	552
08:15	16	307	13	3	336	16	22	22	1	60	11	209	5	1	225	31	7	13	2	51	7	672	679
08:30	23	212	11	1	246	25	20	15	1	60	13	221	3	3	237	32	9	10	0	51	5	594	599
08:45	19	228	15	0	262	12	25	25	1	62	10	167	7	1	184	29	7	7	1	43	3	551	554
Total	70	1024	49	4	1143	68	84	85	4	237	41	731	17	10	789	122	29	42	4	193	22	2362	2384
16:00	22	249	28	2	299	16	44	42	3	102	15	219	5	3	239	31	23	4	4	58	12	698	710
16:15	20	305	30	0	355	6	27	31	2	64	11	246	3	6	260	35	19	12	0	66	8	745	753
16:30	28	288	30	3	346	15	34	52	6	101	14	227	6	2	247	29	18	8	4	55	15	749	764
16:45	23	303	34	1	360	14	26	34	2	74	6	238	5	1	249	37	20	6	6	63	10	746	756
Total	93	1145	122	6	1360	51	131	159	13	341	46	930	19	12	995	132	80	30	14	242	45	2938	2983
17:00	28	273	38	1	339	15	37	48	3	100	5	255	3	1	263	27	19	10	1	56	6	758	764
17:15	21	311	31	0	363	11	38	29	9	78	11	238	11	7	260	30	17	12	1	59	17	760	777
17:30	26	300	24	6	350	12	34	32	2	78	26	210	8	1	244	31	26	14	1	71	10	743	753
17:45	19	275	19	5	313	15	31	45	3	91	8	216	5	0	229	32	17	9	3	58	11	691	702
Total	94	1159	112	12	1365	53	140	154	17	347	50	919	27	9	996	120	79	45	6	244	44	2952	2996
Grand Total	301	4027	315	28	4643	201	447	449	36	1097	163	3055	73	34	3291	461	206	165	31	832	129	9863	9992
Apprch %	6.5	86.7	6.8			18.3	40.7	40.9			5	92.8	2.2			55.4	24.8	19.8					
Total %	3.1	40.8	3.2		47.1	2	4.5	4.6		11.1	1.7	31	0.7		33.4	4.7	2.1	1.7		8.4	1.3	98.7	

	WASHINGTON STREET Southbound				PAYRAN STREET Westbound				Northbound				Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00																	
08:00	12	277	10	299	15	17	23	55	7	134	2	143	30	6	12	48	545
08:15	16	**307**	13	**336**	16	22	22	60	11	209	5	225	31	7	**13**	**51**	**672**
08:30	**23**	212	11	246	**25**	20	15	60	**13**	**221**	3	**237**	**32**	**9**	10	51	594
08:45	19	228	**15**	262	12	**25**	**25**	**62**	10	167	**7**	184	29	7	7	43	551
Total Volume	70	1024	49	1143	68	84	85	237	41	731	17	789	122	29	42	193	2362
% App. Total	6.1	89.6	4.3		28.7	35.4	35.9		5.2	92.6	2.2		63.2	15	21.8		



Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 16:30

16:30	**28**	288	30	346	**15**	34	**52**	**101**	**14**	227	6	247	29	18	8	55	749
16:45	23	303	34	360	14	26	34	74	6	238	5	249	**37**	**20**	6	**63**	746
17:00	28	273	**38**	339	15	37	48	100	5	**255**	3	**263**	27	19	10	56	758
17:15	21	**311**	31	**363**	11	**38**	29	78	11	238	**11**	260	30	17	**12**	59	**760**
Total Volume	100	1175	133	1408	55	135	163	353	36	958	25	1019	123	74	36	233	3013
% App. Total	7.1	83.5	9.4		15.6	38.2	46.2		3.5	94	2.5		52.8	31.8	15.5		
PHF	.893	.945	.875	.970	.917	.888	.784	.874	.643	.939	.568	.969	.831	.925	.750	.925	.991

All Traffic Data

(916) 771-8700
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File Name : 13
Site Code : 00000000
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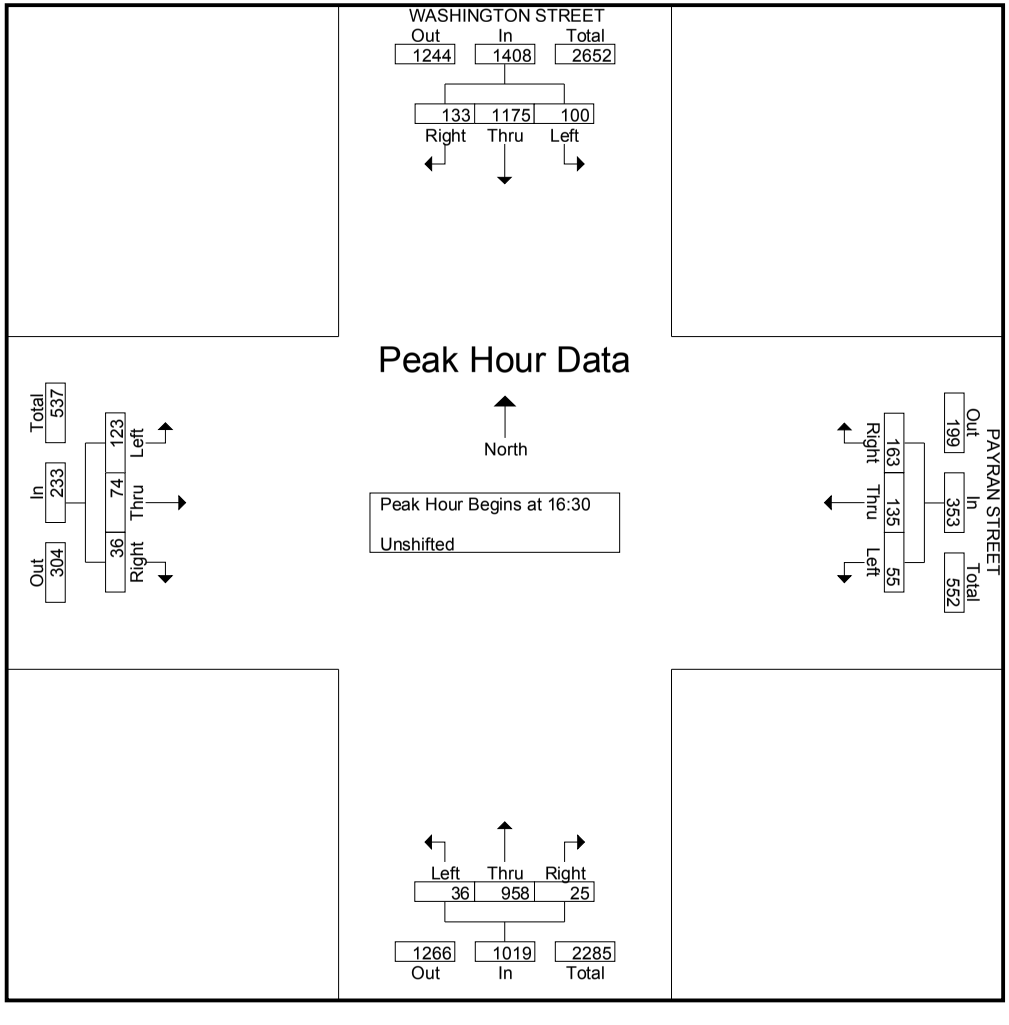


All Traffic Data

(916) 771-8700
F(916) 786-2879

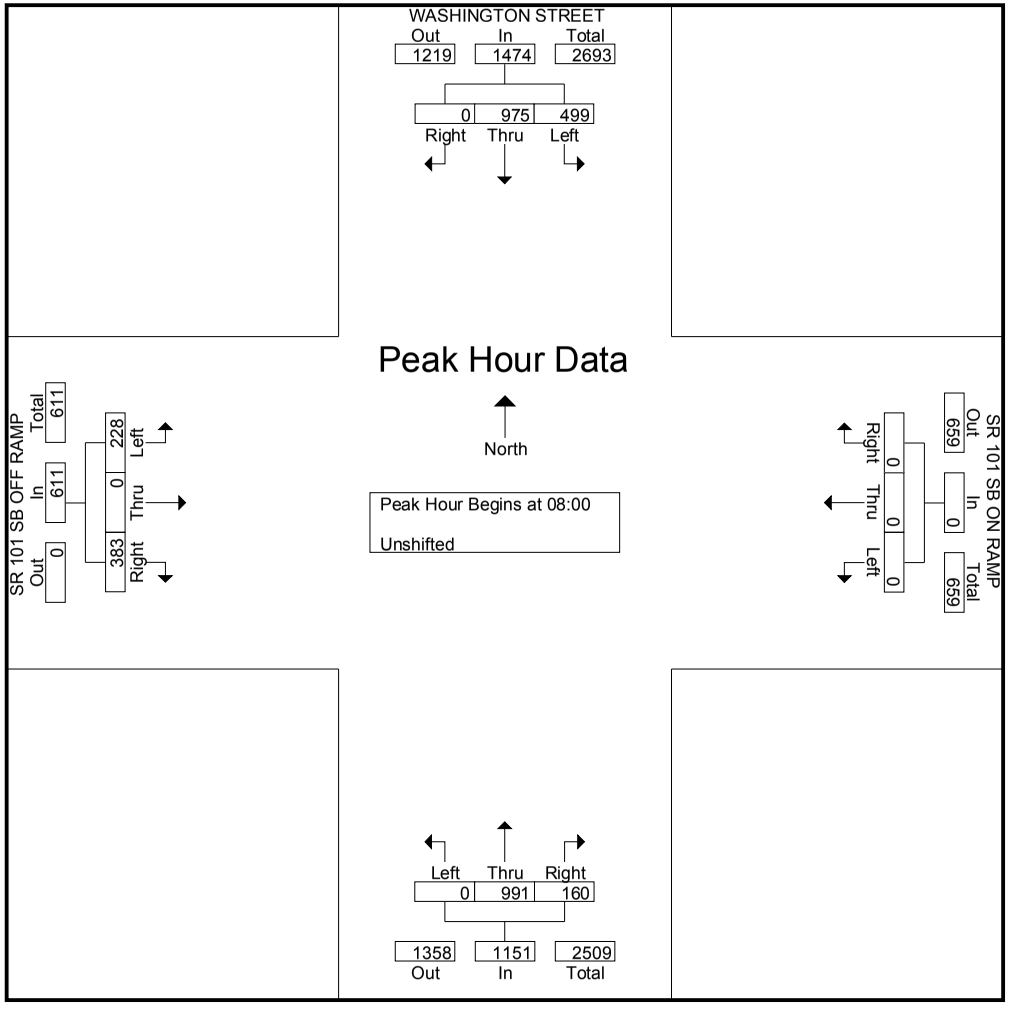
CITY OF PETALUMA

File Name : 15
Site Code : 00000000
Start Date : 5/24/2007
Page No : 1

Groups Printed- Unshifted

	WASHINGTON STREET Southbound					SR 101 SB ON RAMP Westbound					Northbound					SR 101 SB OFF RAMP Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00	74	113	0	0	187	0	0	0	0	0	0	149	34	0	183	33	0	76	0	109	0	479	479
07:15	91	142	0	0	233	0	0	0	1	0	0	146	27	0	173	32	0	56	3	88	4	494	498
07:30	126	139	0	0	265	0	0	0	1	0	0	163	39	0	202	53	0	72	2	125	3	592	595
07:45	115	201	0	0	316	0	0	0	0	0	0	181	51	0	232	51	0	86	0	137	0	685	685
Total	406	595	0	0	1001	0	0	0	2	0	0	639	151	0	790	169	0	290	5	459	7	2250	2257
08:00	100	248	0	0	348	0	0	0	1	0	0	202	37	0	239	53	0	97	0	150	1	737	738
08:15	157	309	0	0	466	0	0	0	2	0	0	273	48	0	321	65	0	105	1	170	3	957	960
08:30	127	212	0	0	339	0	0	0	4	0	0	284	48	0	332	50	0	88	0	138	4	809	813
08:45	115	206	0	0	321	0	0	0	0	0	0	232	27	0	259	60	0	93	2	153	2	733	735
Total	499	975	0	0	1474	0	0	0	7	0	0	991	160	0	1151	228	0	383	3	611	10	3236	3246
16:00	69	279	0	0	348	0	0	0	6	0	0	290	20	0	310	66	0	70	2	136	8	794	802
16:15	64	359	0	0	423	0	0	0	1	0	0	328	35	0	363	73	0	73	0	146	1	932	933
16:30	64	324	0	0	388	0	0	0	1	0	0	296	31	2	327	60	0	83	5	143	8	858	866
16:45	78	322	0	0	400	0	0	0	2	0	0	302	32	0	334	88	0	106	0	194	2	928	930
Total	275	1284	0	0	1559	0	0	0	10	0	0	1216	118	2	1334	287	0	332	7	619	19	3512	3531
17:00	87	319	0	0	406	0	0	0	4	0	0	346	31	0	377	53	0	80	0	133	4	916	920
17:15	60	354	0	0	414	0	0	0	2	0	0	297	36	0	333	88	0	87	2	175	4	922	926
17:30	60	308	0	0	368	0	0	0	3	0	0	282	20	0	302	72	0	96	2	168	5	838	843
17:45	51	284	0	0	335	0	0	0	4	0	0	303	31	0	334	79	0	81	3	160	7	829	836
Total	258	1265	0	0	1523	0	0	0	13	0	0	1228	118	0	1346	292	0	344	7	636	20	3505	3525
Grand Total	1438	4119	0	0	5557	0	0	0	32	0	0	4074	547	2	4621	976	0	1349	22	2325	56	12503	12559
Apprch %	25.9	74.1	0			0	0	0			0	88.2	11.8			42	0	58					
Total %	11.5	32.9	0		44.4	0	0	0		0	0	32.6	4.4		37	7.8	0	10.8		18.6	0.4	99.6	

	WASHINGTON STREET Southbound				SR 101 SB ON RAMP Westbound				Northbound				SR 101 SB OFF RAMP Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00																	
08:00	100	248	0	348	0	0	0	0	0	202	37	239	53	0	97	150	737
08:15	**157**	**309**	0	**466**	0	0	0	0	0	273	**48**	321	**65**	0	**105**	**170**	**957**
08:30	127	212	0	339	0	0	0	0	0	**284**	48	**332**	50	0	88	138	809
08:45	115	206	0	321	0	0	0	0	0	232	27	259	60	0	93	153	733
Total Volume	499	975	0	1474	0	0	0	0	0	991	160	1151	228	0	383	611	3236
% App. Total	33.9	66.1	0		0	0	0		0	86.1	13.9		37.3	0	62.7		



Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 16:15

16:15	64	**359**	0	**423**	0	0	0	0	0	328	**35**	363	73	0	73	146	**932**
16:30	64	324	0	388	0	0	0	0	0	296	31	327	60	0	83	143	858
16:45	78	322	0	400	0	0	0	0	0	302	32	334	**88**	0	**106**	**194**	928
17:00	**87**	319	0	406	0	0	0	0	0	**346**	31	**377**	53	0	80	133	916
Total Volume	293	1324	0	1617	0	0	0	0	0	1272	129	1401	274	0	342	616	3634
% App. Total	18.1	81.9	0		0	0	0		0	90.8	9.2		44.5	0	55.5		
PHF	.842	.922	.000	.956	.000	.000	.000	.000	.000	.919	.921	.929	.778	.000	.807	.794	.975

All Traffic Data

(916) 771-8700
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File Name : 15
Site Code : 00000000
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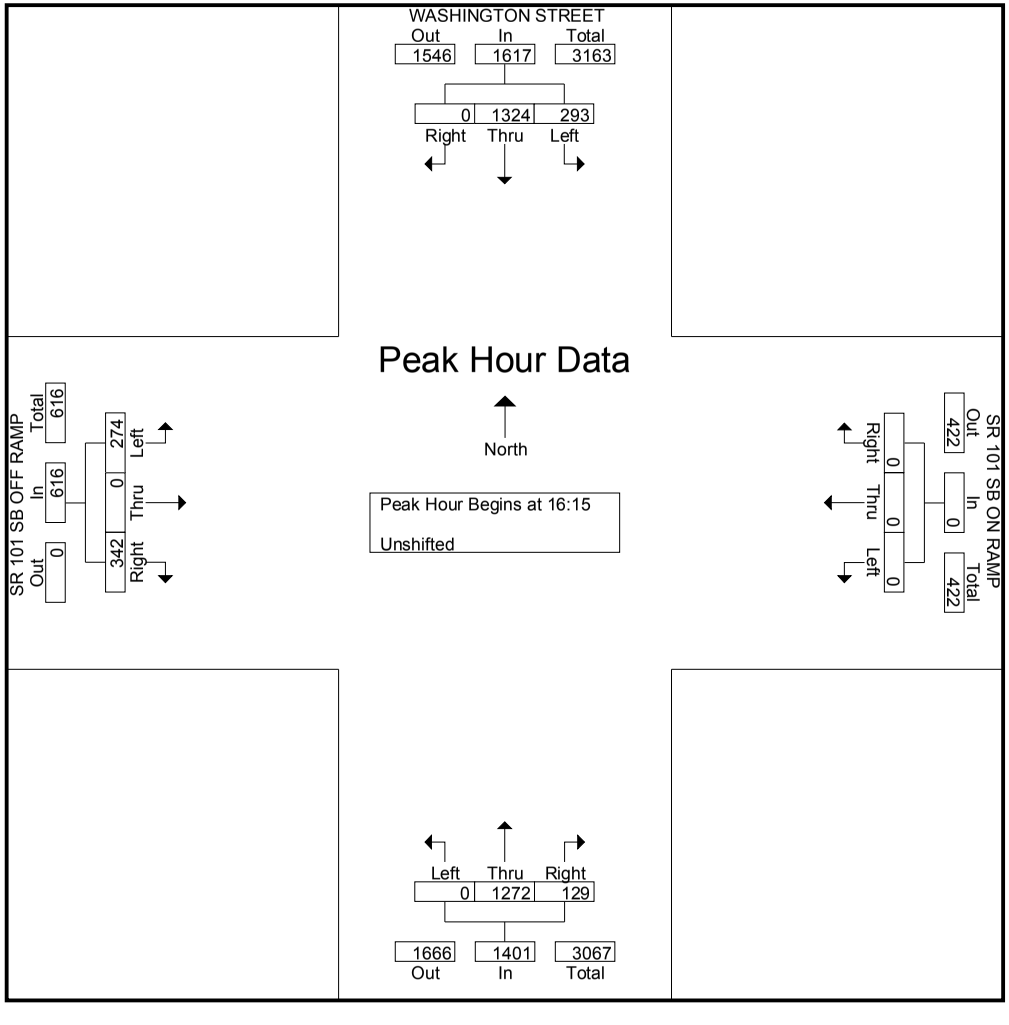

All Traffic Data

(916) 771-8700
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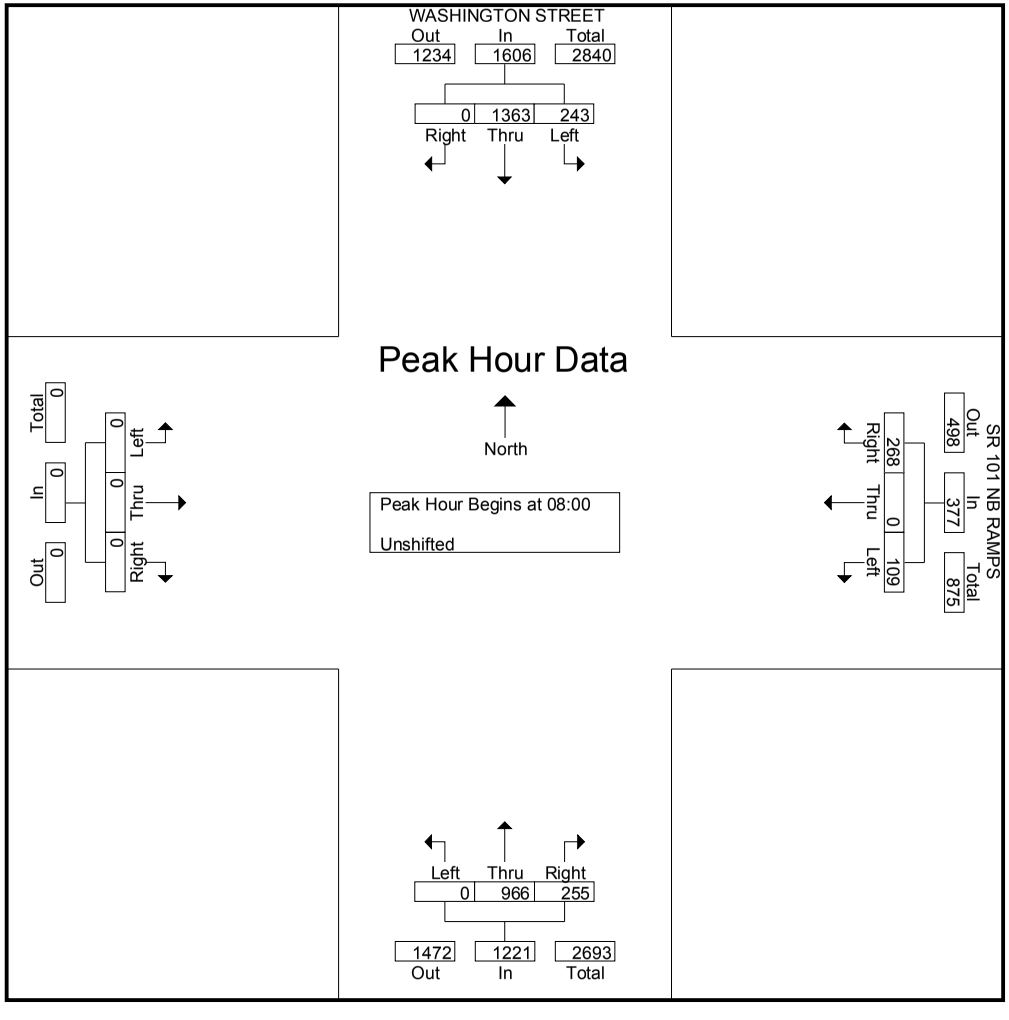
CITY OF PETALUMA

File Name : 16
Site Code : 00000000
Start Date : 5/24/2007
Page No : 1

Groups Printed- Unshifted

	WASHINGTON STREET Southbound					SR 101 NB RAMPS Westbound					Northbound					Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00	67	171	0	0	238	16	0	29	1	45	0	128	54	0	182	0	0	0	0	0	1	465	466
07:15	61	219	0	0	280	14	0	37	2	51	0	120	57	0	177	0	0	0	0	0	2	508	510
07:30	80	242	0	0	322	21	0	39	0	60	0	144	72	0	216	0	0	0	0	0	0	598	598
07:45	67	275	0	0	342	41	0	76	1	117	0	180	53	0	233	0	0	0	0	0	1	692	693
Total	275	907	0	0	1182	92	0	181	4	273	0	572	236	0	808	0	0	0	0	0	4	2263	2267
08:00	52	314	0	0	366	33	0	79	0	112	0	201	55	0	256	0	0	0	0	0	0	734	734
08:15	66	432	0	0	498	33	0	71	1	104	0	275	64	0	339	0	0	0	0	0	1	941	942
08:30	61	320	0	0	381	19	0	62	3	81	0	260	74	0	334	0	0	0	0	0	3	796	799
08:45	64	297	0	0	361	24	0	56	1	80	0	230	62	0	292	0	0	0	0	0	1	733	734
Total	243	1363	0	0	1606	109	0	268	5	377	0	966	255	0	1221	0	0	0	0	0	5	3204	3209
16:00	63	312	0	0	375	36	0	122	3	158	0	274	82	0	356	0	0	0	0	0	3	889	892
16:15	62	385	0	0	447	40	0	124	3	164	0	331	72	0	403	0	0	0	0	0	3	1014	1017
16:30	45	349	0	0	394	39	0	118	2	157	0	275	81	0	356	0	0	0	0	0	2	907	909
16:45	46	360	0	0	406	40	0	117	4	157	0	314	76	0	390	0	0	0	0	0	4	953	957
Total	216	1406	0	0	1622	155	0	481	12	636	0	1194	311	0	1505	0	0	0	0	0	12	3763	3775
17:00	65	365	0	0	430	41	0	136	2	177	0	329	70	0	399	0	0	0	0	0	2	1006	1008
17:15	62	384	0	0	446	30	0	153	1	183	0	306	79	0	385	0	0	0	0	0	1	1014	1015
17:30	59	331	0	0	390	37	0	159	5	196	0	281	73	0	354	0	0	0	0	0	5	940	945
17:45	61	281	0	0	342	54	0	129	3	183	0	309	73	0	382	0	0	0	0	0	3	907	910
Total	247	1361	0	0	1608	162	0	577	11	739	0	1225	295	0	1520	0	0	0	0	0	11	3867	3878
Grand Total	981	5037	0	0	6018	518	0	1507	32	2025	0	3957	1097	0	5054	0	0	0	0	0	32	13097	13129
Apprch %	16.3	83.7	0			25.6	0	74.4			0	78.3	21.7			0	0	0					
Total %	7.5	38.5	0		45.9	4	0	11.5		15.5	0	30.2	8.4		38.6	0	0	0		0	0.2	99.8	

	WASHINGTON STREET Southbound				SR 101 NB RAMPS Westbound				Northbound				Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00																	
08:00	52	314	0	366	**33**	0	**79**	**112**	0	201	55	256	0	0	0	0	734
08:15	**66**	**432**	0	**498**	33	0	71	104	0	**275**	64	**339**	0	0	0	0	**941**
08:30	61	320	0	381	19	0	62	81	0	260	**74**	334	0	0	0	0	796
08:45	64	297	0	361	24	0	56	80	0	230	62	292	0	0	0	0	733
Total Volume	243	1363	0	1606	109	0	268	377	0	966	255	1221	0	0	0	0	3204
% App. Total	15.1	84.9	0		28.9	0	71.1		0	79.1	20.9		0	0	0		



Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 16:45

16:45	46	360	0	406	40	0	117	157	0	314	76	390	0	0	0	0	953
17:00	**65**	365	0	430	**41**	0	136	177	0	**329**	70	**399**	0	0	0	0	1006
17:15	62	**384**	0	**446**	30	0	153	183	0	306	**79**	385	0	0	0	0	**1014**
17:30	59	331	0	390	37	0	**159**	**196**	0	281	73	354	0	0	0	0	940
Total Volume	232	1440	0	1672	148	0	565	713	0	1230	298	1528	0	0	0	0	3913
% App. Total	13.9	86.1	0		20.8	0	79.2		0	80.5	19.5		0	0	0		
PHF	.892	.938	.000	.937	.902	.000	.888	.909	.000	.935	.943	.957	.000	.000	.000	.000	.965

All Traffic Data

(916) 771-8700
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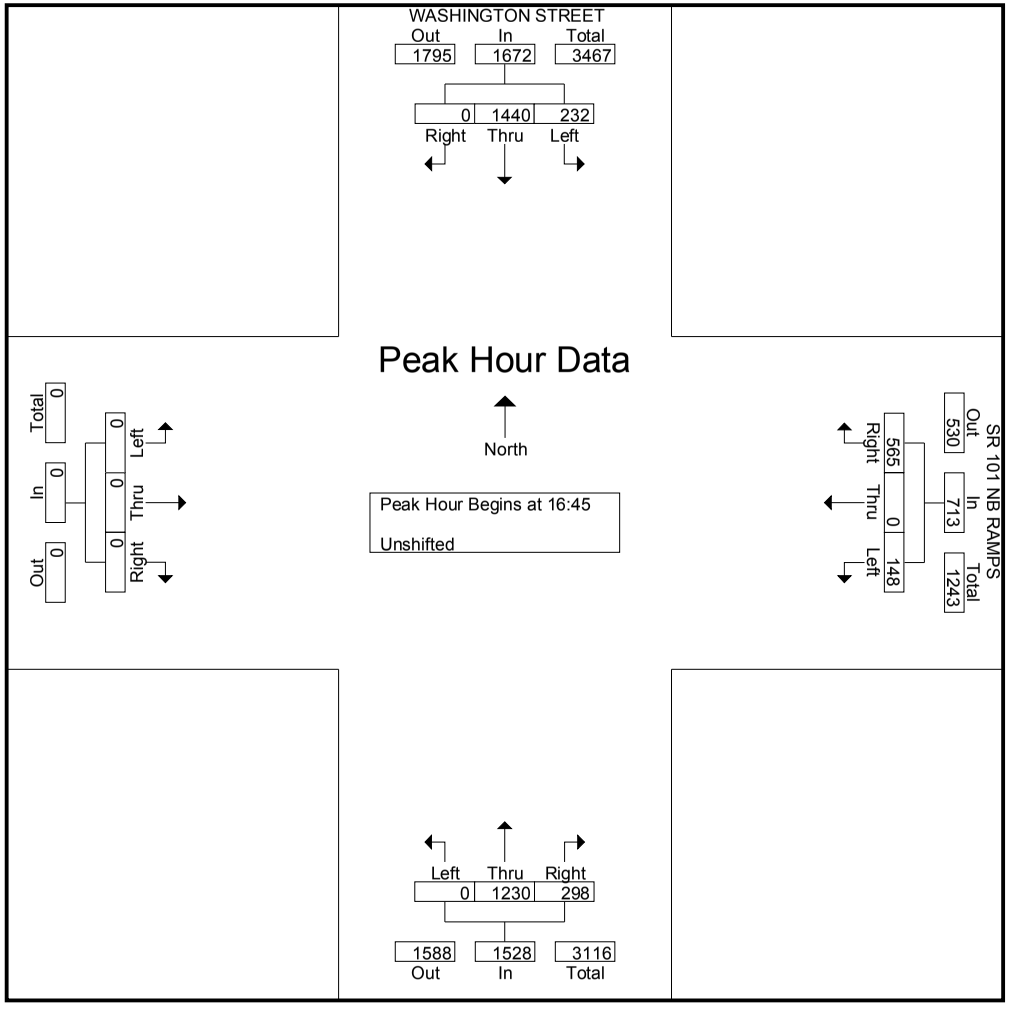
File Name : 16
Site Code : 00000000
Start Date : 5/24/2007
Page No : 3



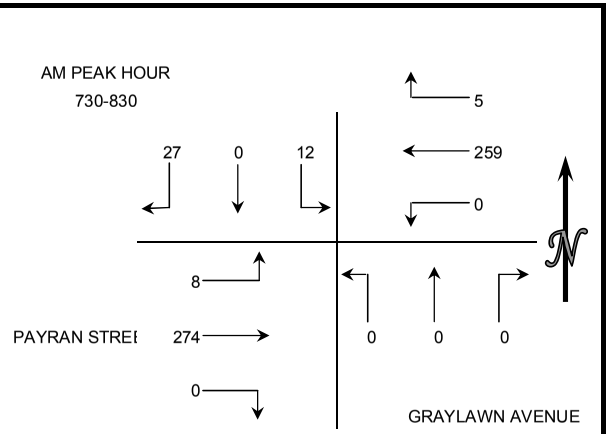
WILTEC

Phone: (925) 706-9911 Fax: (925) 706-9914

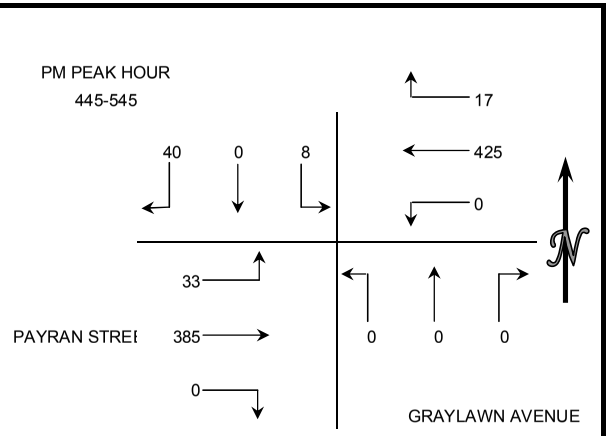
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: FEHR AND PEERS ASSOCIATES
PROJECT: PETALUMA TRAFFIC COUNTS
DATE: WEDNESDAY, JANUARY 16, 2008
PERIODS: 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM
INTERSECTION: N/S GRAYLAWN AVENUE
E/W PAYRAN STREET

15 MIN COUNTS	7:00 AM TO 9:00 AM												
	1	2	3	4	5	6	7	8	9	10	11	12	
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
700-715	10	0	3	1	33	0	0	0	0	0	43	6	96
715-730	3	0	4	1	25	0	0	0	0	0	49	4	86
730-745	8	0	5	0	54	0	0	0	0	0	61	0	128
745-800	11	0	5	1	84	0	0	0	0	0	75	2	178
800-815	6	0	0	4	71	0	0	0	0	0	76	0	157
815-830	2	0	2	0	50	0	0	0	0	0	62	6	122
830-845	1	0	2	0	47	0	0	0	0	0	32	1	83
845-900	1	0	1	1	25	0	0	0	0	0	46	2	76
HOUR TOTALS													
	1	2	3	4	5	6	7	8	9	10	11	12	
TIME	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
700-800	32	0	17	3	196	0	0	0	0	0	228	12	488
715-815	28	0	14	6	234	0	0	0	0	0	261	6	549
730-830	27	0	12	5	259	0	0	0	0	0	274	8	585
745-845	20	0	9	5	252	0	0	0	0	0	245	9	540
800-900	10	0	5	5	193	0	0	0	0	0	216	9	438



15 MIN COUNTS	4:00 PM TO 6:00 PM												
	1	2	3	4	5	6	7	8	9	10	11	12	
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-415	8	0	3	3	71	0	0	0	0	0	14	3	102
415-430	9	0	2	7	97	0	0	0	0	0	68	14	197
430-445	11	0	4	9	82	0	0	0	0	0	90	14	210
445-500	7	0	2	3	103	0	0	0	0	0	90	11	216
500-515	14	0	2	6	105	0	0	0	0	0	95	2	224
515-530	8	0	1	6	119	0	0	0	0	0	103	17	254
530-545	11	0	3	2	98	0	0	0	0	0	97	3	214
545-600	8	0	2	9	93	0	0	0	0	0	94	5	211
HOUR TOTALS													
	1	2	3	4	5	6	7	8	9	10	11	12	
TIME	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-500	35	0	11	22	353	0	0	0	0	0	262	42	725
415-515	41	0	10	25	387	0	0	0	0	0	343	41	847
430-530	40	0	9	24	409	0	0	0	0	0	378	44	904
445-545	40	0	8	17	425	0	0	0	0	0	385	33	908
500-600	41	0	8	23	415	0	0	0	0	0	389	27	903



All Traffic Data

(916) 771-8700
F(916) 786-2879

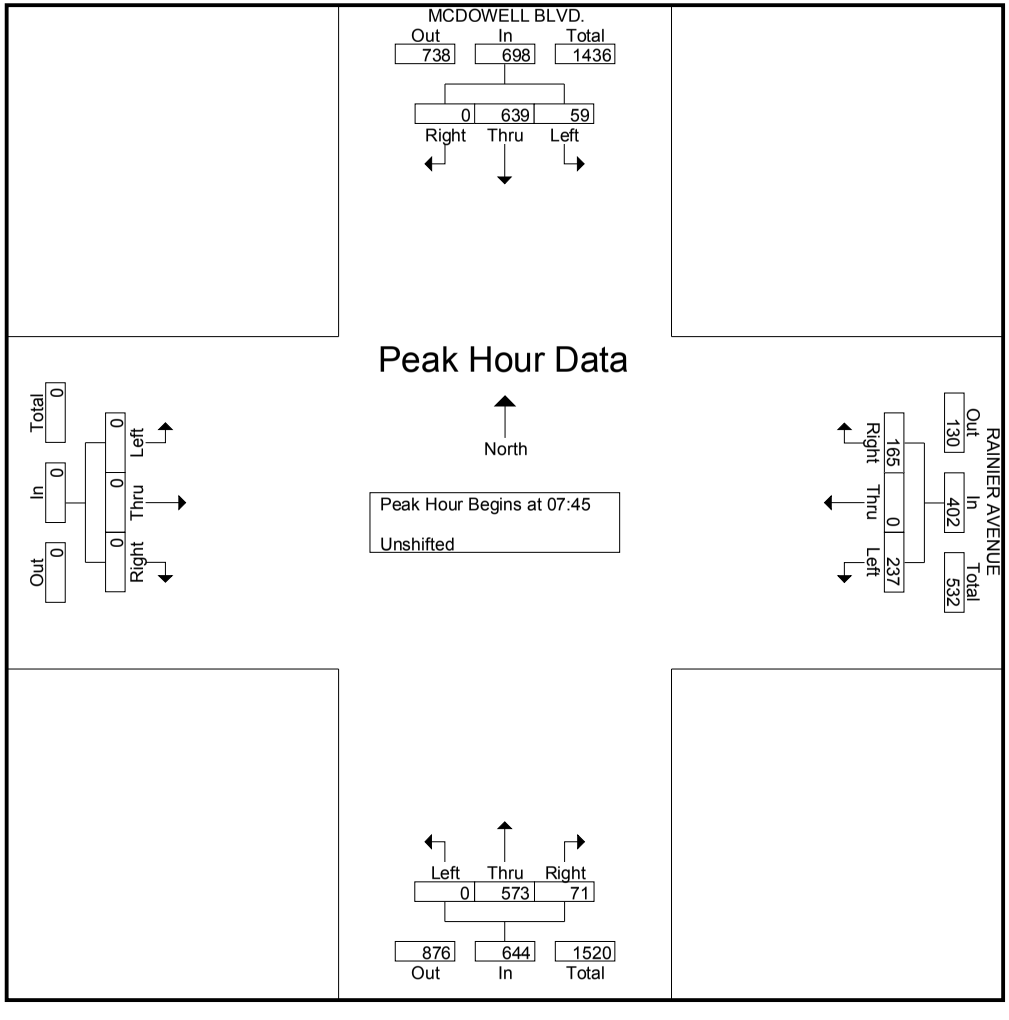
CITY OF PETALUMA

File Name : 11
Site Code : 00000000
Start Date : 5/23/2007
Page No : 1

Groups Printed- Unshifted

	MCDOWELL BLVD. Southbound					RAINIER AVENUE Westbound					Northbound					Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00	11	117	0	0	128	30	0	33	0	63	0	79	10	0	89	0	0	0	0	0	0	280	280
07:15	10	122	0	0	132	31	0	32	3	63	0	71	11	0	82	0	0	0	0	0	3	277	280
07:30	12	114	0	0	126	35	0	25	1	60	0	82	13	0	95	0	0	0	0	0	1	281	282
07:45	16	149	0	0	165	44	0	51	0	95	0	135	15	0	150	0	0	0	0	0	0	410	410
Total	49	502	0	0	551	140	0	141	4	281	0	367	49	0	416	0	0	0	0	0	4	1248	1252
08:00	13	150	0	0	163	74	0	30	1	104	0	137	17	0	154	0	0	0	0	0	1	421	422
08:15	13	160	0	0	173	74	0	49	1	123	0	153	22	0	175	0	0	0	0	0	1	471	472
08:30	17	180	0	0	197	45	0	35	0	80	0	148	17	0	165	0	0	0	0	0	0	442	442
08:45	11	163	0	1	174	46	0	31	0	77	0	132	12	0	144	0	0	0	0	0	1	395	396
Total	54	653	0	1	707	239	0	145	2	384	0	570	68	0	638	0	0	0	0	0	3	1729	1732
16:00	31	186	0	0	217	42	0	23	0	65	0	181	33	0	214	0	0	0	0	0	0	496	496
16:15	39	190	0	1	229	25	0	20	0	45	0	186	34	0	220	0	0	0	0	0	1	494	495
16:30	29	197	0	0	226	18	0	23	0	41	0	207	33	1	240	0	0	0	0	0	1	507	508
16:45	44	183	0	1	227	31	0	22	0	53	0	191	45	1	236	0	0	0	0	0	2	516	518
Total	143	756	0	2	899	116	0	88	0	204	0	765	145	2	910	0	0	0	0	0	4	2013	2017
17:00	58	232	0	0	290	29	0	18	0	47	0	212	39	0	251	0	0	0	0	0	0	588	588
17:15	42	192	0	0	234	31	0	24	0	55	0	165	38	0	203	0	0	0	0	0	0	492	492
17:30	36	178	0	0	214	34	0	20	0	54	0	199	46	0	245	0	0	0	0	0	0	513	513
17:45	39	139	0	0	178	33	0	23	0	56	0	175	41	1	216	0	0	0	0	0	1	450	451
Total	175	741	0	0	916	127	0	85	0	212	0	751	164	1	915	0	0	0	0	0	1	2043	2044
Grand Total	421	2652	0	3	3073	622	0	459	6	1081	0	2453	426	3	2879	0	0	0	0	0	12	7033	7045
Apprch %	13.7	86.3	0			57.5	0	42.5			0	85.2	14.8			0	0	0					
Total %	6	37.7	0		43.7	8.8	0	6.5		15.4	0	34.9	6.1		40.9	0	0	0		0	0.2	99.8	

	MCDOWELL BLVD. Southbound				RAINIER AVENUE Westbound				Northbound				Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45																	
07:45	16	149	0	165	44	0	**51**	95	0	135	15	150	0	0	0	0	410
08:00	13	150	0	163	**74**	0	30	104	0	137	17	154	0	0	0	0	421
08:15	13	160	0	173	74	0	49	**123**	0	**153**	**22**	**175**	0	0	0	0	**471**
08:30	**17**	**180**	0	**197**	45	0	35	80	0	148	17	165	0	0	0	0	442
Total Volume	59	639	0	698	237	0	165	402	0	573	71	644	0	0	0	0	1744
% App. Total	8.5	91.5	0		59	0	41		0	89	11		0	0	0		



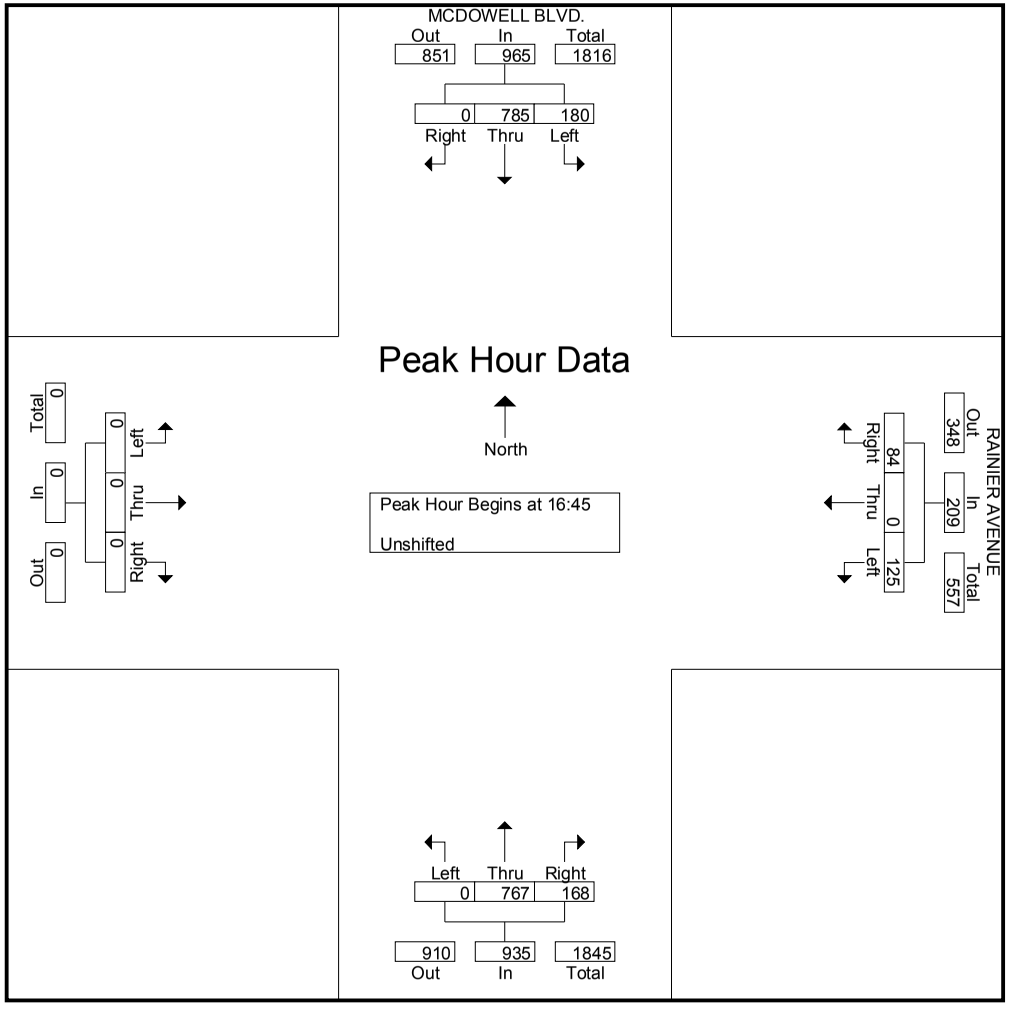
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 16:45

16:45	44	183	0	227	31	0	22	53	0	191	45	236	0	0	0	0	516
17:00	**58**	**232**	0	**290**	29	0	18	47	0	**212**	39	**251**	0	0	0	0	**588**
17:15	42	192	0	234	31	0	**24**	**55**	0	165	38	203	0	0	0	0	492
17:30	36	178	0	214	**34**	0	20	54	0	199	**46**	245	0	0	0	0	513
Total Volume	180	785	0	965	125	0	84	209	0	767	168	935	0	0	0	0	2109
% App. Total	18.7	81.3	0		59.8	0	40.2		0	82	18		0	0	0		
PHF	.776	.846	.000	.832	.919	.000	.875	.950	.000	.904	.913	.931	.000	.000	.000	.000	.897

All Traffic Data

(916) 771-8700
F(916) 786-2879

File Name : 11
Site Code : 00000000
Start Date : 5/23/2007
Page No : 3



MARKS TRAFFIC DATA

mietekm@comcast.net
916.806.0250

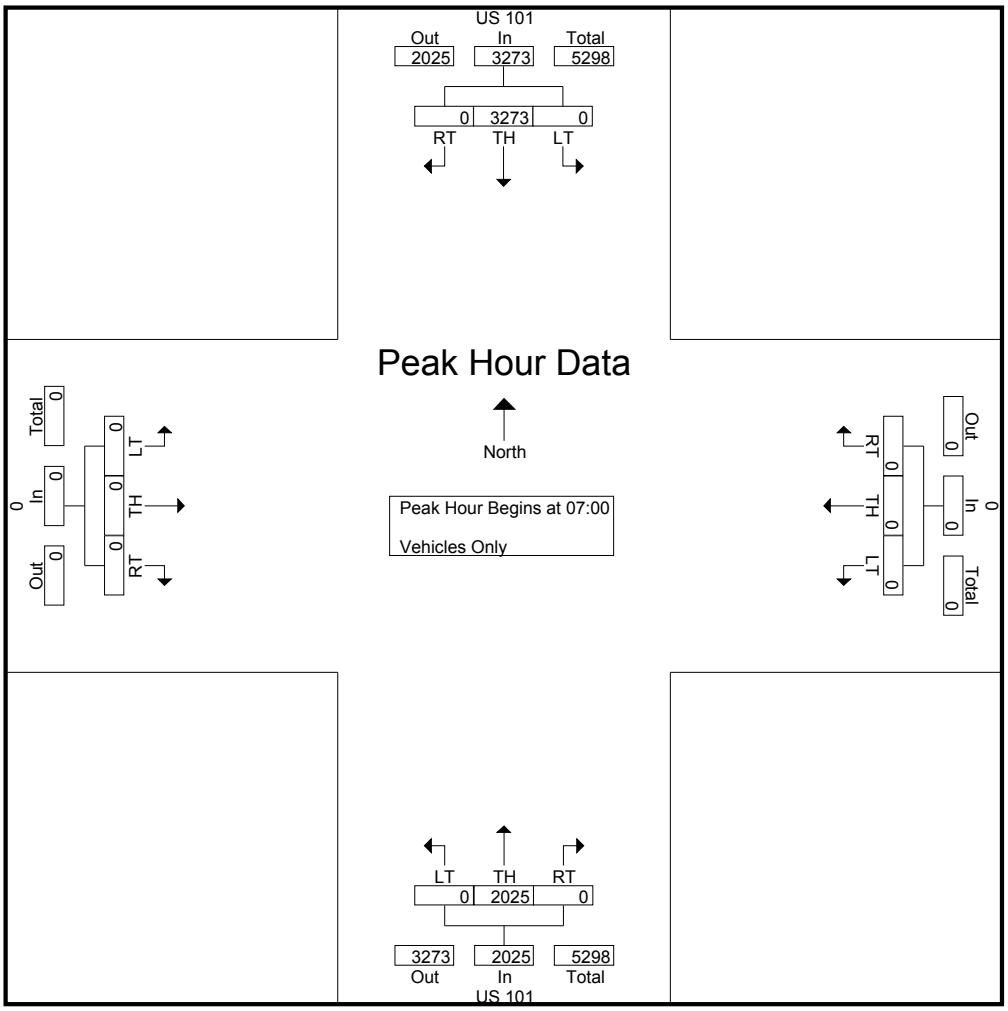
CITY OF PETALUMA
US 101 - KASTANIA RD. to PETALUMA BLVD.

File Name : 101 - kastania to petaluma-a
Site Code : A
Start Date : 9/3/2014
Page No : 1

Groups Printed- Vehicles Only

	US 101 Southbound				0 Westbound				US 101 Northbound				0 Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	0	795	0	795	0	0	0	0	0	425	0	425	0	0	0	0	1220
07:15	0	830	0	830	0	0	0	0	0	502	0	502	0	0	0	0	1332
07:30	0	843	0	843	0	0	0	0	0	519	0	519	0	0	0	0	1362
07:45	0	805	0	805	0	0	0	0	0	579	0	579	0	0	0	0	1384
Total	0	3273	0	3273	0	0	0	0	0	2025	0	2025	0	0	0	0	5298
08:00	0	658	0	658	0	0	0	0	0	450	0	450	0	0	0	0	1108
08:15	0	683	0	683	0	0	0	0	0	458	0	458	0	0	0	0	1141
08:30	0	903	0	903	0	0	0	0	0	581	0	581	0	0	0	0	1484
08:45	0	726	0	726	0	0	0	0	0	611	0	611	0	0	0	0	1337
Total	0	2970	0	2970	0	0	0	0	0	2100	0	2100	0	0	0	0	5070
Grand Total	0	6243	0	6243	0	0	0	0	0	4125	0	4125	0	0	0	0	10368
Apprch %	0	100	0		0	0	0		0	100	0		0	0	0		
Total %	0	60.2	0	60.2	0	0	0	0	0	39.8	0	39.8	0	0	0	0	

	US 101 Southbound				0 Westbound				US 101 Northbound				0 Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00																	
07:00	0	795	0	795	0	0	0	0	0	425	0	425	0	0	0	0	1220
07:15	0	830	0	830	0	0	0	0	0	502	0	502	0	0	0	0	1332
07:30	0	**843**	0	**843**	0	0	0	0	0	519	0	519	0	0	0	0	1362
07:45	0	805	0	805	0	0	0	0	0	**579**	0	**579**	0	0	0	0	**1384**
Total Volume	0	3273	0	3273	0	0	0	0	0	2025	0	2025	0	0	0	0	5298
% App. Total	0	100	0		0	0	0		0	100	0		0	0	0		
PHF	.000	.971	.000	.971	.000	.000	.000	.000	.000	.874	.000	.874	.000	.000	.000	.000	.957



MARKS TRAFFIC DATA

mietekm@comcast.net
916.806.0250

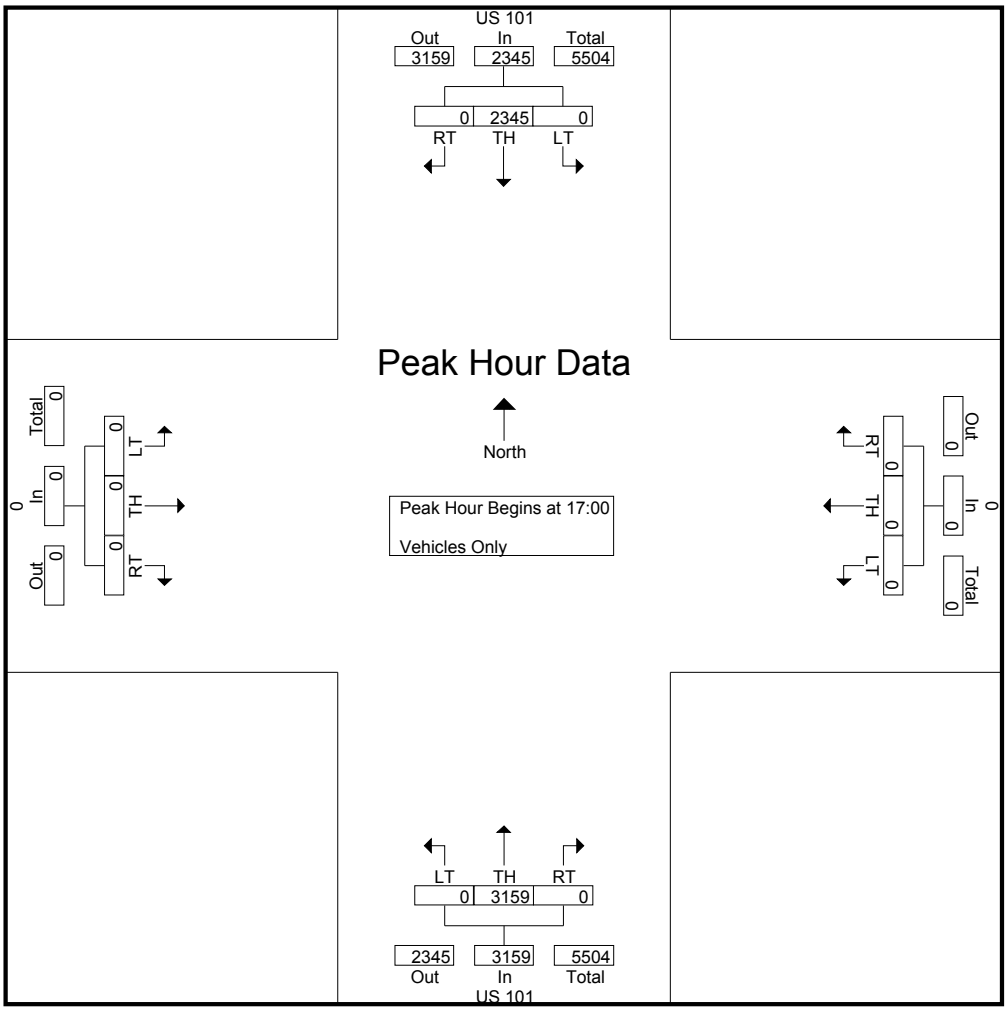
CITY OF PETALUMA
US 101 - KASTANIA RD. to PETALUMA BLVD.

File Name : 101 - kastania to petaluma-p
Site Code : A
Start Date : 9/3/2014
Page No : 1

Groups Printed- Vehicles Only

	US 101 Southbound				0 Westbound				US 101 Northbound				0 Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	0	610	0	610	0	0	0	0	0	737	0	737	0	0	0	0	1347
16:15	0	594	0	594	0	0	0	0	0	768	0	768	0	0	0	0	1362
16:30	0	564	0	564	0	0	0	0	0	795	0	795	0	0	0	0	1359
16:45	0	541	0	541	0	0	0	0	0	782	0	782	0	0	0	0	1323
Total	0	2309	0	2309	0	0	0	0	0	3082	0	3082	0	0	0	0	5391
17:00	0	553	0	553	0	0	0	0	0	778	0	778	0	0	0	0	1331
17:15	0	604	0	604	0	0	0	0	0	784	0	784	0	0	0	0	1388
17:30	0	574	0	574	0	0	0	0	0	775	0	775	0	0	0	0	1349
17:45	0	614	0	614	0	0	0	0	0	822	0	822	0	0	0	0	1436
Total	0	2345	0	2345	0	0	0	0	0	3159	0	3159	0	0	0	0	5504
Grand Total	0	4654	0	4654	0	0	0	0	0	6241	0	6241	0	0	0	0	10895
Apprch %	0	100	0		0	0	0		0	100	0		0	0	0		
Total %	0	42.7	0	42.7	0	0	0	0	0	57.3	0	57.3	0	0	0	0	

	US 101 Southbound				0 Westbound				US 101 Northbound				0 Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	0	553	0	553	0	0	0	0	0	778	0	778	0	0	0	0	1331
17:15	0	604	0	604	0	0	0	0	0	784	0	784	0	0	0	0	1388
17:30	0	574	0	574	0	0	0	0	0	775	0	775	0	0	0	0	1349
17:45	0	**614**	0	**614**	0	0	0	0	0	**822**	0	**822**	0	0	0	0	**1436**
Total Volume	0	2345	0	2345	0	0	0	0	0	3159	0	3159	0	0	0	0	5504
% App. Total	0	100	0		0	0	0		0	100	0		0	0	0		
PHF	.000	.955	.000	.955	.000	.000	.000	.000	.000	.961	.000	.961	.000	.000	.000	.000	.958



MARKS TRAFFIC DATA

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916.806.0250

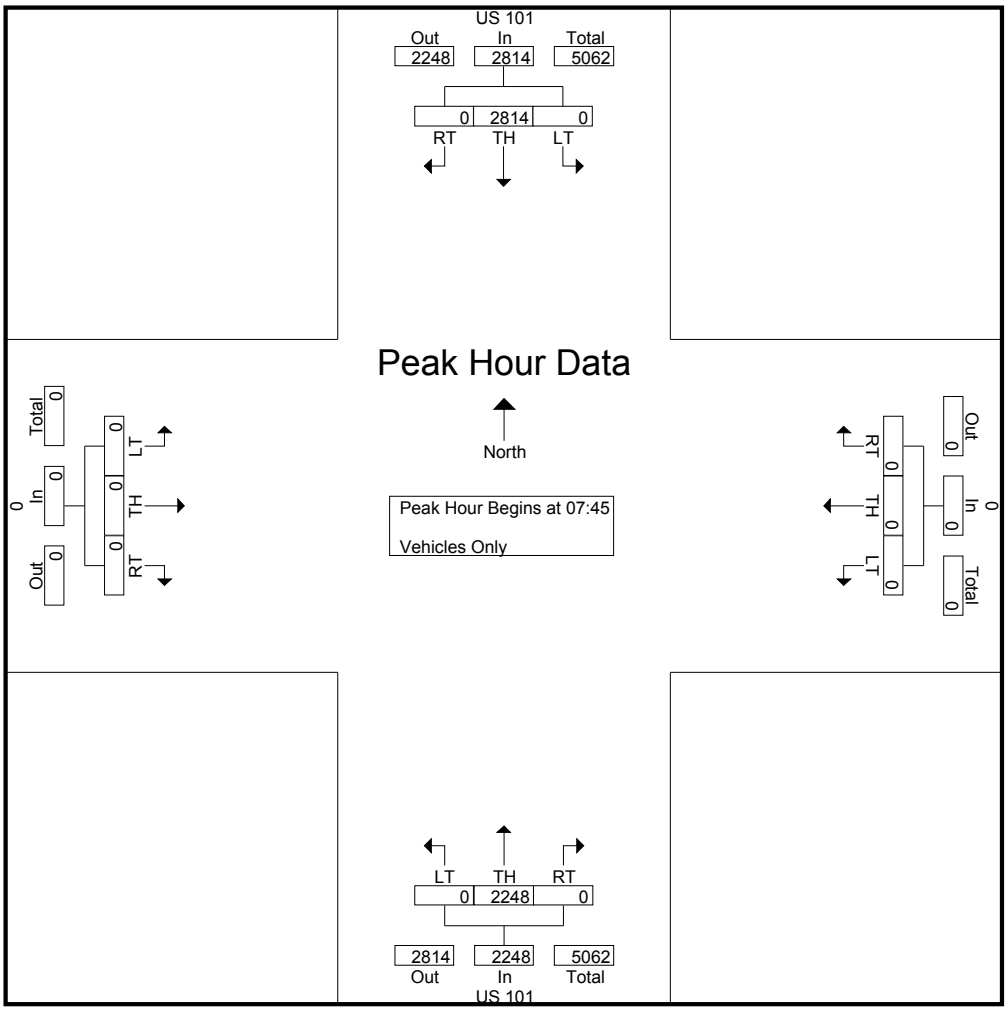
CITY OF PETALUMA
US 101 - PETALUMA BLVD. to LAKEVILLE HWY

File Name : 101 - petaluma to lakeville-a
Site Code : B
Start Date : 9/3/2014
Page No : 1

Groups Printed- Vehicles Only

	US 101 Southbound				0 Westbound				US 101 Northbound				0 Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	0	620	0	620	0	0	0	0	0	401	0	401	0	0	0	0	1021
07:15	0	671	0	671	0	0	0	0	0	504	0	504	0	0	0	0	1175
07:30	0	696	0	696	0	0	0	0	0	539	0	539	0	0	0	0	1235
07:45	0	712	0	712	0	0	0	0	0	565	0	565	0	0	0	0	1277
Total	0	2699	0	2699	0	0	0	0	0	2009	0	2009	0	0	0	0	4708
08:00	0	655	0	655	0	0	0	0	0	558	0	558	0	0	0	0	1213
08:15	0	712	0	712	0	0	0	0	0	556	0	556	0	0	0	0	1268
08:30	0	735	0	735	0	0	0	0	0	569	0	569	0	0	0	0	1304
08:45	0	652	0	652	0	0	0	0	0	587	0	587	0	0	0	0	1239
Total	0	2754	0	2754	0	0	0	0	0	2270	0	2270	0	0	0	0	5024
Grand Total	0	5453	0	5453	0	0	0	0	0	4279	0	4279	0	0	0	0	9732
Apprch %	0	100	0		0	0	0		0	100	0		0	0	0		
Total %	0	56	0	56	0	0	0	0	0	44	0	44	0	0	0	0	

	US 101 Southbound				0 Westbound				US 101 Northbound				0 Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45																	
07:45	0	712	0	712	0	0	0	0	0	565	0	565	0	0	0	0	1277
08:00	0	655	0	655	0	0	0	0	0	558	0	558	0	0	0	0	1213
08:15	0	712	0	712	0	0	0	0	0	556	0	556	0	0	0	0	1268
08:30	0	**735**	0	**735**	0	0	0	0	0	**569**	0	**569**	0	0	0	0	**1304**
Total Volume	0	2814	0	2814	0	0	0	0	0	2248	0	2248	0	0	0	0	5062
% App. Total	0	100	0		0	0	0		0	100	0		0	0	0		
PHF	.000	.957	.000	.957	.000	.000	.000	.000	.000	.988	.000	.988	.000	.000	.000	.000	.970



MARKS TRAFFIC DATA

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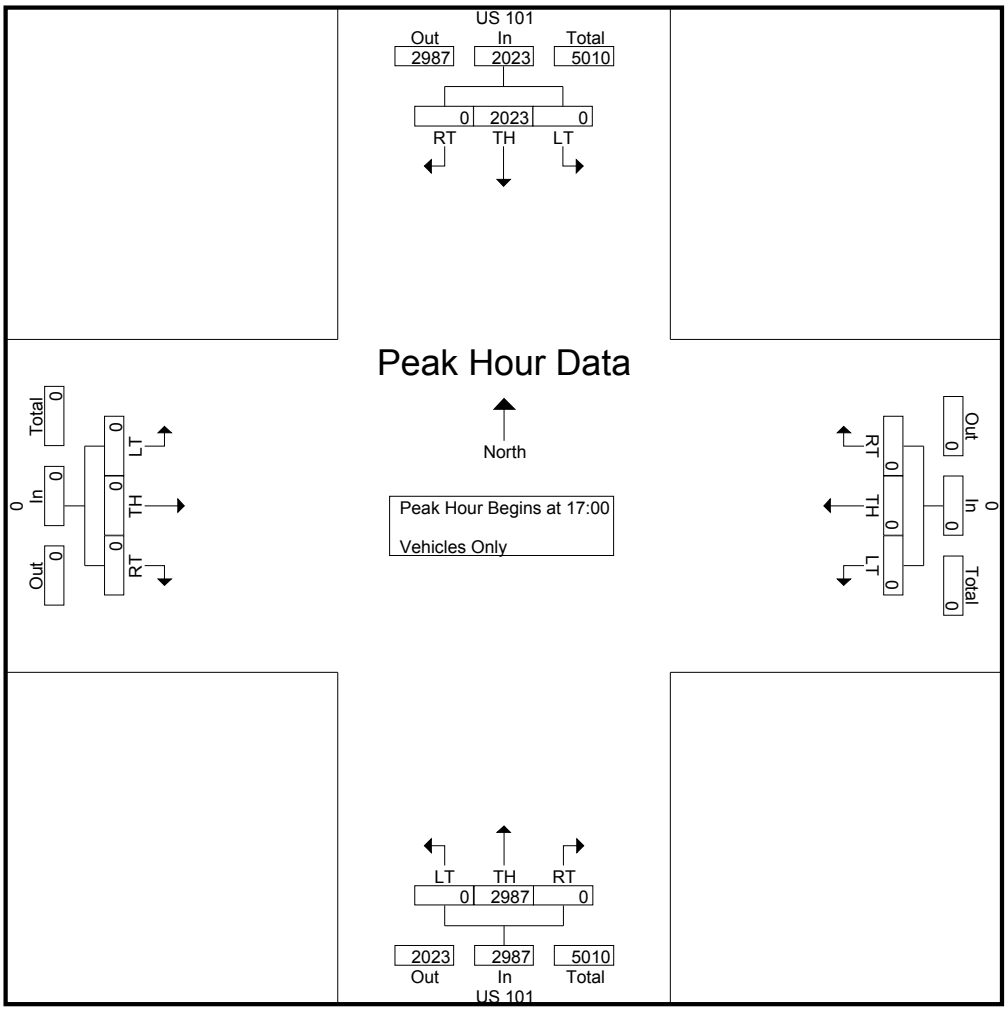
CITY OF PETALUMA
US 101 - PETALUMA BLVD. to LAKEVILLE HWY

File Name : 101 - petaluma to lakeville-p
Site Code : B
Start Date : 9/3/2014
Page No : 1

Groups Printed- Vehicles Only

	US 101 Southbound				0 Westbound				US 101 Northbound				0 Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	0	558	0	558	0	0	0	0	0	701	0	701	0	0	0	0	1259
16:15	0	558	0	558	0	0	0	0	0	734	0	734	0	0	0	0	1292
16:30	0	496	0	496	0	0	0	0	0	694	0	694	0	0	0	0	1190
16:45	0	521	0	521	0	0	0	0	0	747	0	747	0	0	0	0	1268
Total	0	2133	0	2133	0	0	0	0	0	2876	0	2876	0	0	0	0	5009
17:00	0	480	0	480	0	0	0	0	0	742	0	742	0	0	0	0	1222
17:15	0	524	0	524	0	0	0	0	0	705	0	705	0	0	0	0	1229
17:30	0	487	0	487	0	0	0	0	0	776	0	776	0	0	0	0	1263
17:45	0	532	0	532	0	0	0	0	0	764	0	764	0	0	0	0	1296
Total	0	2023	0	2023	0	0	0	0	0	2987	0	2987	0	0	0	0	5010
Grand Total	0	4156	0	4156	0	0	0	0	0	5863	0	5863	0	0	0	0	10019
Apprch %	0	100	0		0	0	0		0	100	0		0	0	0		
Total %	0	41.5	0	41.5	0	0	0	0	0	58.5	0	58.5	0	0	0	0	

	US 101 Southbound				0 Westbound				US 101 Northbound				0 Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	0	480	0	480	0	0	0	0	0	742	0	742	0	0	0	0	1222
17:15	0	524	0	524	0	0	0	0	0	705	0	705	0	0	0	0	1229
17:30	0	487	0	487	0	0	0	0	0	**776**	0	**776**	0	0	0	0	1263
17:45	0	**532**	0	**532**	0	0	0	0	0	764	0	764	0	0	0	0	**1296**
Total Volume	0	2023	0	2023	0	0	0	0	0	2987	0	2987	0	0	0	0	5010
% App. Total	0	100	0		0	0	0		0	100	0		0	0	0		
PHF	.000	.951	.000	.951	.000	.000	.000	.000	.000	.962	.000	.962	.000	.000	.000	.000	.966



MARKS TRAFFIC DATA

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916.806.0250

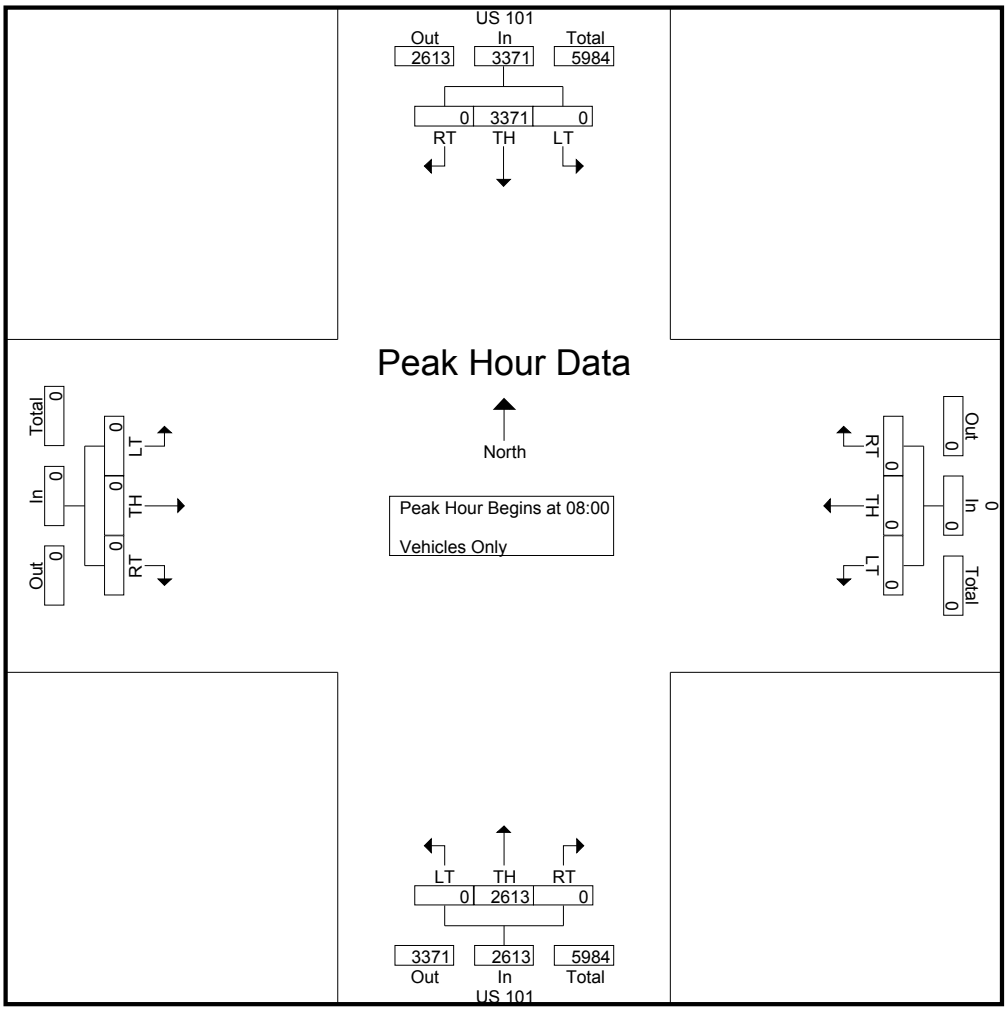
CITY OF PETALUMA
US 101 - LAKEVILLE HWY to WASHINGTON ST.

File Name : 101 - lakeville to washington-a
Site Code : C
Start Date : 9/3/2014
Page No : 1

Groups Printed- Vehicles Only

	US 101 Southbound				0 Westbound				US 101 Northbound				Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	0	741	0	741	0	0	0	0	0	473	0	473	0	0	0	0	1214
07:15	0	750	0	750	0	0	0	0	0	594	0	594	0	0	0	0	1344
07:30	0	868	0	868	0	0	0	0	0	664	0	664	0	0	0	0	1532
07:45	0	775	0	775	0	0	0	0	0	621	0	621	0	0	0	0	1396
Total	0	3134	0	3134	0	0	0	0	0	2352	0	2352	0	0	0	0	5486
08:00	0	800	0	800	0	0	0	0	0	631	0	631	0	0	0	0	1431
08:15	0	894	0	894	0	0	0	0	0	666	0	666	0	0	0	0	1560
08:30	0	884	0	884	0	0	0	0	0	674	0	674	0	0	0	0	1558
08:45	0	793	0	793	0	0	0	0	0	642	0	642	0	0	0	0	1435
Total	0	3371	0	3371	0	0	0	0	0	2613	0	2613	0	0	0	0	5984
Grand Total	0	6505	0	6505	0	0	0	0	0	4965	0	4965	0	0	0	0	11470
Apprch %	0	100	0		0	0	0		0	100	0		0	0	0		
Total %	0	56.7	0	56.7	0	0	0	0	0	43.3	0	43.3	0	0	0	0	

	US 101 Southbound				0 Westbound				US 101 Northbound				Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00																	
08:00	0	800	0	800	0	0	0	0	0	631	0	631	0	0	0	0	1431
08:15	0	**894**	0	**894**	0	0	0	0	0	666	0	666	0	0	0	0	**1560**
08:30	0	884	0	884	0	0	0	0	0	**674**	0	**674**	0	0	0	0	1558
08:45	0	793	0	793	0	0	0	0	0	642	0	642	0	0	0	0	1435
Total Volume	0	3371	0	3371	0	0	0	0	0	2613	0	2613	0	0	0	0	5984
% App. Total	0	100	0		0	0	0		0	100	0		0	0	0		
PHF	.000	.943	.000	.943	.000	.000	.000	.000	.000	.969	.000	.969	.000	.000	.000	.000	.959



MARKS TRAFFIC DATA

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916.806.0250

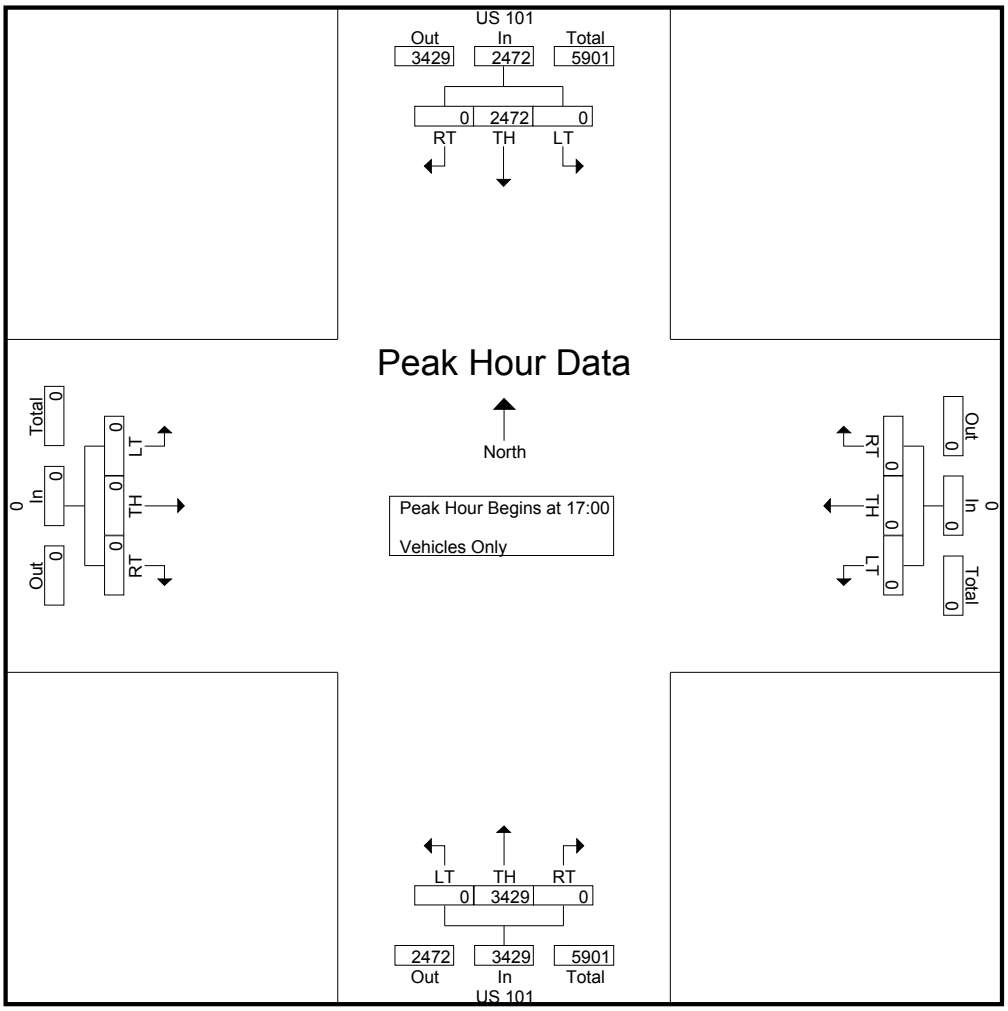
CITY OF PETALUMA
US 101 - LAKEVILLE HWY to WASHINGTON ST.

File Name : 101 - lakeville to washington-p
Site Code : C
Start Date : 9/3/2014
Page No : 1

Groups Printed- Vehicles Only

	US 101 Southbound				0 Westbound				US 101 Northbound				0 Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	0	559	0	559	0	0	0	0	0	846	0	846	0	0	0	0	1405
16:15	0	450	0	450	0	0	0	0	0	802	0	802	0	0	0	0	1252
16:30	0	553	0	553	0	0	0	0	0	854	0	854	0	0	0	0	1407
16:45	0	630	0	630	0	0	0	0	0	782	0	782	0	0	0	0	1412
Total	0	2192	0	2192	0	0	0	0	0	3284	0	3284	0	0	0	0	5476
17:00	0	490	0	490	0	0	0	0	0	890	0	890	0	0	0	0	1380
17:15	0	671	0	671	0	0	0	0	0	830	0	830	0	0	0	0	1501
17:30	0	660	0	660	0	0	0	0	0	851	0	851	0	0	0	0	1511
17:45	0	651	0	651	0	0	0	0	0	858	0	858	0	0	0	0	1509
Total	0	2472	0	2472	0	0	0	0	0	3429	0	3429	0	0	0	0	5901
Grand Total	0	4664	0	4664	0	0	0	0	0	6713	0	6713	0	0	0	0	11377
Apprch %	0	100	0		0	0	0		0	100	0		0	0	0		
Total %	0	41	0	41	0	0	0	0	0	59	0	59	0	0	0	0	

	US 101 Southbound				0 Westbound				US 101 Northbound				0 Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	0	490	0	490	0	0	0	0	0	**890**	0	**890**	0	0	0	0	1380
17:15	0	**671**	0	**671**	0	0	0	0	0	830	0	830	0	0	0	0	1501
17:30	0	660	0	660	0	0	0	0	0	851	0	851	0	0	0	0	**1511**
17:45	0	651	0	651	0	0	0	0	0	858	0	858	0	0	0	0	1509
Total Volume	0	2472	0	2472	0	0	0	0	0	3429	0	3429	0	0	0	0	5901
% App. Total	0	100	0		0	0	0		0	100	0		0	0	0		
PHF	.000	.921	.000	.921	.000	.000	.000	.000	.000	.963	.000	.963	.000	.000	.000	.000	.976



MARKS TRAFFIC DATA

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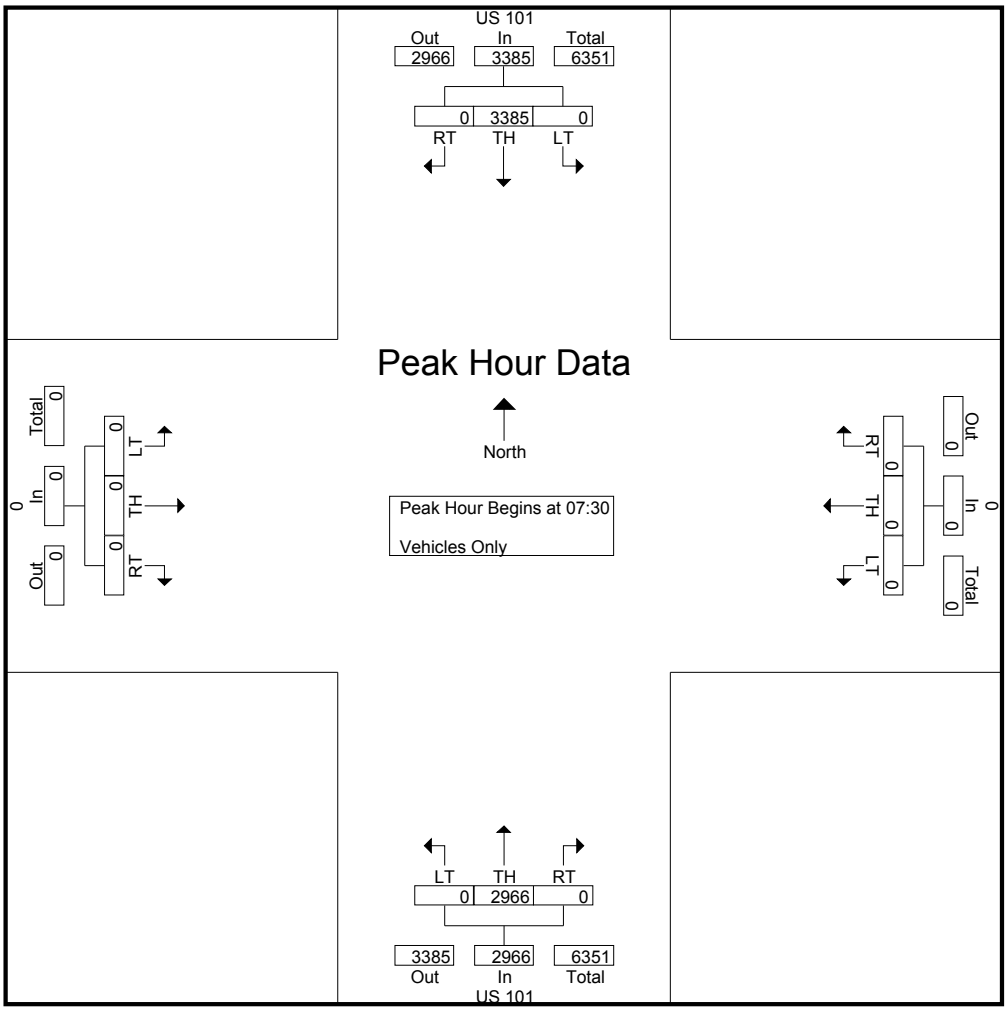
CITY OF PETALUMA
US 101 - WASHINGTON ST. to REDWOOD HWY

File Name : 101 - washington to redwood-a
Site Code : C
Start Date : 9/3/2014
Page No : 1

Groups Printed- Vehicles Only

	US 101 Southbound				0 Westbound				US 101 Northbound				0 Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	0	643	0	643	0	0	0	0	0	553	0	553	0	0	0	0	1196
07:15	0	712	0	712	0	0	0	0	0	669	0	669	0	0	0	0	1381
07:30	0	795	0	795	0	0	0	0	0	751	0	751	0	0	0	0	1546
07:45	0	833	0	833	0	0	0	0	0	747	0	747	0	0	0	0	1580
Total	0	2983	0	2983	0	0	0	0	0	2720	0	2720	0	0	0	0	5703
08:00	0	849	0	849	0	0	0	0	0	679	0	679	0	0	0	0	1528
08:15	0	908	0	908	0	0	0	0	0	789	0	789	0	0	0	0	1697
08:30	0	815	0	815	0	0	0	0	0	714	0	714	0	0	0	0	1529
08:45	0	860	0	860	0	0	0	0	0	688	0	688	0	0	0	0	1548
Total	0	3432	0	3432	0	0	0	0	0	2870	0	2870	0	0	0	0	6302
Grand Total	0	6415	0	6415	0	0	0	0	0	5590	0	5590	0	0	0	0	12005
Apprch %	0	100	0		0	0	0		0	100	0		0	0	0		
Total %	0	53.4	0	53.4	0	0	0	0	0	46.6	0	46.6	0	0	0	0	

	US 101 Southbound				0 Westbound				US 101 Northbound				0 Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30																	
07:30	0	795	0	795	0	0	0	0	0	751	0	751	0	0	0	0	1546
07:45	0	833	0	833	0	0	0	0	0	747	0	747	0	0	0	0	1580
08:00	0	849	0	849	0	0	0	0	0	679	0	679	0	0	0	0	1528
08:15	0	**908**	0	**908**	0	0	0	0	0	**789**	0	**789**	0	0	0	0	**1697**
Total Volume	0	3385	0	3385	0	0	0	0	0	2966	0	2966	0	0	0	0	6351
% App. Total	0	100	0		0	0	0		0	100	0		0	0	0		
PHF	.000	.932	.000	.932	.000	.000	.000	.000	.000	.940	.000	.940	.000	.000	.000	.000	.936



MARKS TRAFFIC DATA

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916.806.0250

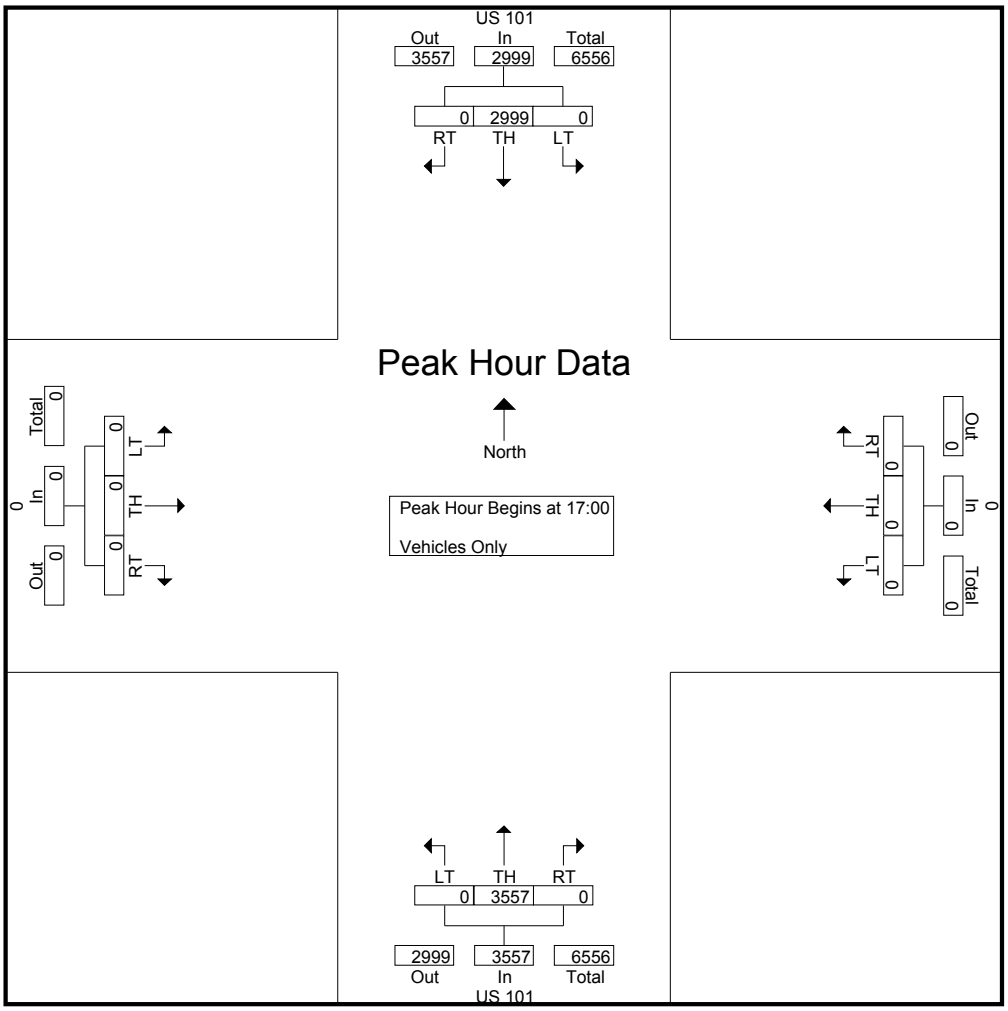
CITY OF PETALUMA
US 101 - WASHINGTON ST. to REDWOOD HWY

File Name : 101 - washington to redwood-p
Site Code : C
Start Date : 9/3/2014
Page No : 1

Groups Printed- Vehicles Only

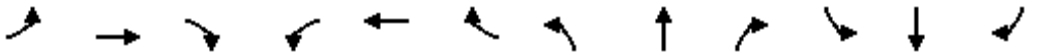
	US 101 Southbound				0 Westbound				US 101 Northbound				0 Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	0	725	0	725	0	0	0	0	0	869	0	869	0	0	0	0	1594
16:15	0	752	0	752	0	0	0	0	0	866	0	866	0	0	0	0	1618
16:30	0	658	0	658	0	0	0	0	0	854	0	854	0	0	0	0	1512
16:45	0	730	0	730	0	0	0	0	0	861	0	861	0	0	0	0	1591
Total	0	2865	0	2865	0	0	0	0	0	3450	0	3450	0	0	0	0	6315
17:00	0	741	0	741	0	0	0	0	0	900	0	900	0	0	0	0	1641
17:15	0	753	0	753	0	0	0	0	0	907	0	907	0	0	0	0	1660
17:30	0	717	0	717	0	0	0	0	0	890	0	890	0	0	0	0	1607
17:45	0	788	0	788	0	0	0	0	0	860	0	860	0	0	0	0	1648
Total	0	2999	0	2999	0	0	0	0	0	3557	0	3557	0	0	0	0	6556
Grand Total	0	5864	0	5864	0	0	0	0	0	7007	0	7007	0	0	0	0	12871
Apprch %	0	100	0		0	0	0		0	100	0		0	0	0		
Total %	0	45.6	0	45.6	0	0	0	0	0	54.4	0	54.4	0	0	0	0	

	US 101 Southbound				0 Westbound				US 101 Northbound				0 Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	0	741	0	741	0	0	0	0	0	900	0	900	0	0	0	0	1641
17:15	0	753	0	753	0	0	0	0	0	**907**	0	**907**	0	0	0	0	**1660**
17:30	0	717	0	717	0	0	0	0	0	890	0	890	0	0	0	0	1607
17:45	0	**788**	0	**788**	0	0	0	0	0	860	0	860	0	0	0	0	1648
Total Volume	0	2999	0	2999	0	0	0	0	0	3557	0	3557	0	0	0	0	6556
% App. Total	0	100	0		0	0	0		0	100	0		0	0	0		
PHF	.000	.951	.000	.951	.000	.000	.000	.000	.000	.980	.000	.980	.000	.000	.000	.000	.987



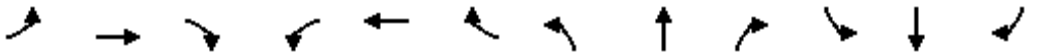
Appendix F

Intersection Level of Service Technical Calculations
Existing Conditions



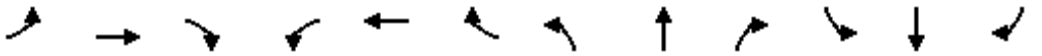
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	144	0	319	0	855	335	0	855	359
Future Volume (vph)	0	0	0	144	0	319	0	855	335	0	855	359
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				1.00		1.00		0.95	1.00		1.00	1.00
Frpb, ped/bikes				1.00		1.00		1.00	0.98		1.00	0.98
Flpb, ped/bikes				1.00		1.00		1.00	1.00		1.00	1.00
Frt				1.00		0.85		1.00	0.85		1.00	0.85
Flt Protected				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)				1703		1524		3539	1550		1863	1514
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				1703		1524		3539	1550		1863	1514
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)	0	0	0	152	0	336	0	900	353	0	900	378
RTOR Reduction (vph)	0	0	0	0	0	197	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	152	0	139	0	900	353	0	900	378
Confl. Peds. (#/hr)									2			5
Confl. Bikes (#/hr)												4
Heavy Vehicles (%)	2%	2%	2%	6%	2%	6%	2%	2%	2%	2%	2%	4%
Turn Type				Prot		Prot		NA	Free		NA	Perm
Protected Phases				8		8		2			6	
Permitted Phases									Free			6
Actuated Green, G (s)				13.4		13.4		79.1	100.0		79.1	79.1
Effective Green, g (s)				12.9		12.9		79.1	100.0		79.1	79.1
Actuated g/C Ratio				0.13		0.13		0.79	1.00		0.79	0.79
Clearance Time (s)				3.5		3.5		4.0			4.0	4.0
Vehicle Extension (s)				2.0		2.0		4.0			4.0	4.0
Lane Grp Cap (vph)				219		196		2799	1550		1473	1197
v/s Ratio Prot				0.09		c0.09		0.25			c0.48	
v/s Ratio Perm									0.23			0.25
v/c Ratio				0.69		0.71		0.32	0.23		0.61	0.32
Uniform Delay, d1				41.7		41.8		2.9	0.0		4.2	2.9
Progression Factor				1.00		1.00		0.74	1.00		1.79	1.01
Incremental Delay, d2				7.5		9.2		0.2	0.3		1.7	0.6
Delay (s)				49.1		51.0		2.4	0.3		9.3	3.5
Level of Service				D		D		A	A		A	A
Approach Delay (s)		0.0			50.4			1.8			7.6	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	12.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	59.6%	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)	531	0	520	0	0	0	0	659	118	0	668	331
Future Volume (vph)	531	0	520	0	0	0	0	659	118	0	668	331
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	1.00		1.00					1.00	1.00		0.95	1.00
Frpb, ped/bikes	1.00		1.00					1.00	0.98		1.00	0.98
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	1.00
Frt	1.00		0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	1736		1553					1845	1347		3539	1547
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	1736		1553					1845	1347		3539	1547
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	542	0	531	0	0	0	0	672	120	0	682	338
RTOR Reduction (vph)	0	0	107	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	542	0	424	0	0	0	0	672	120	0	682	338
Confl. Peds. (#/hr)			3						2			6
Confl. Bikes (#/hr)			4						4			
Heavy Vehicles (%)	4%	2%	4%	2%	2%	2%	2%	3%	17%	2%	2%	2%
Turn Type	Prot		Prot					NA	Perm		NA	Free
Protected Phases	4		4					2			6	
Permitted Phases									2			Free
Actuated Green, G (s)	37.1		37.1					54.9	54.9		54.9	100.0
Effective Green, g (s)	37.1		37.1					54.9	54.9		54.9	100.0
Actuated g/C Ratio	0.37		0.37					0.55	0.55		0.55	1.00
Clearance Time (s)	4.0		4.0					4.0	4.0		4.0	
Vehicle Extension (s)	3.0		3.0					4.0	4.0		4.0	
Lane Grp Cap (vph)	644		576					1012	739		1942	1547
v/s Ratio Prot	c0.31		0.27					c0.36			0.19	
v/s Ratio Perm									0.09			0.22
v/c Ratio	0.84		0.74					0.66	0.16		0.35	0.22
Uniform Delay, d1	28.8		27.2					16.0	11.2		12.6	0.0
Progression Factor	1.00		1.00					1.92	1.78		1.02	1.00
Incremental Delay, d2	9.7		4.9					2.5	0.3		0.4	0.3
Delay (s)	38.5		32.1					33.3	20.2		13.2	0.3
Level of Service	D		C					C	C		B	A
Approach Delay (s)		35.3			0.0			31.3			8.9	
Approach LOS		D			A			C			A	

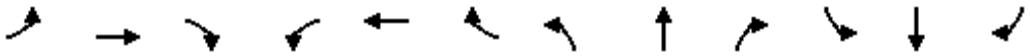
Intersection Summary			
HCM 2000 Control Delay	24.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	197	96	144	11	44	64	127	521	16	272	773	124
Future Volume (vph)	197	96	144	11	44	64	127	521	16	272	773	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
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	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1719	1863	1583	1770	1863	1536	3433	3426		1752	3505	1560
Flt Permitted	0.98	1.00	1.00	0.71	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1765	1863	1583	1331	1863	1536	3433	3426		1752	3505	1560
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	199	97	145	11	44	65	128	526	16	275	781	125
RTOR Reduction (vph)	0	0	116	0	0	30	0	2	0	0	0	39
Lane Group Flow (vph)	199	97	29	11	44	35	128	540	0	275	781	87
Confl. Peds. (#/hr)						1						3
Heavy Vehicles (%)	5%	2%	2%	2%	2%	5%	2%	5%	2%	3%	3%	2%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8						6
Actuated Green, G (s)	13.0	13.0	19.9	6.4	5.9	53.5	6.9	23.1		47.6	62.3	71.2
Effective Green, g (s)	12.0	13.5	19.9	6.4	6.4	53.5	6.9	22.1		47.6	62.8	69.2
Actuated g/C Ratio	0.12	0.14	0.20	0.06	0.06	0.54	0.07	0.22		0.48	0.63	0.69
Clearance Time (s)	3.0	4.5	4.0	4.0	4.5	4.0	4.0	3.0		4.0	4.5	3.0
Vehicle Extension (s)	1.0	1.2	1.2	1.0	1.2	1.0	1.2	1.2		1.0	1.2	1.0
Lane Grp Cap (vph)	211	251	315	88	119	821	236	757		833	2201	1079
v/s Ratio Prot	0.07	0.05	0.01	0.00	c0.02	0.02	c0.04	c0.16		0.16	c0.22	0.01
v/s Ratio Perm	c0.04		0.01	0.01		0.00						0.05
v/c Ratio	0.94	0.39	0.09	0.12	0.37	0.04	0.54	0.71		0.33	0.35	0.08
Uniform Delay, d1	43.8	39.5	32.7	44.2	44.9	11.1	45.0	36.0		16.3	8.9	5.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		0.67	1.07	0.84
Incremental Delay, d2	45.5	0.4	0.0	0.2	0.7	0.0	1.4	2.7		0.9	0.4	0.0
Delay (s)	89.2	39.8	32.7	44.4	45.6	11.1	46.4	38.7		11.9	9.9	4.2
Level of Service	F	D	C	D	D	B	D	D		B	A	A
Approach Delay (s)		59.8			26.8			40.2			9.8	
Approach LOS		E			C			D			A	

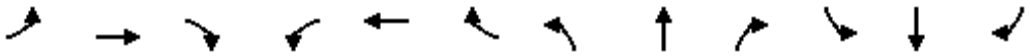
Intersection Summary			
HCM 2000 Control Delay	28.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	712	155	39	468	376	148	208	75	302	231	25
Future Volume (vph)	55	712	155	39	468	376	148	208	75	302	231	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85		0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98		0.95	1.00	
Satd. Flow (prot)	1770	3404		1752	3438	1549		1785		1770	1830	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98		0.95	1.00	
Satd. Flow (perm)	1770	3404		1752	3438	1549		1785		1770	1830	
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)	58	749	163	41	493	396	156	219	79	318	243	26
RTOR Reduction (vph)	0	16	0	0	0	282	0	7	0	0	4	0
Lane Group Flow (vph)	58	896	0	41	493	114	0	447	0	318	265	0
Confl. Peds. (#/hr)						1						
Confl. Bikes (#/hr)			1									2
Heavy Vehicles (%)	2%	3%	2%	3%	5%	2%	2%	2%	3%	2%	2%	4%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6						
Actuated Green, G (s)	4.1	27.2		3.0	26.1	26.1		26.4		20.7	20.7	
Effective Green, g (s)	4.1	28.2		3.0	27.1	27.1		26.4		20.7	20.7	
Actuated g/C Ratio	0.04	0.30		0.03	0.29	0.29		0.28		0.22	0.22	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0		4.0		4.0	4.0	
Vehicle Extension (s)	1.5	1.5		1.5	1.5	1.5		1.5		1.5	1.5	
Lane Grp Cap (vph)	76	1017		55	988	445		499		388	401	
v/s Ratio Prot	c0.03	c0.26		0.02	0.14			c0.25		c0.18	0.14	
v/s Ratio Perm						0.07						
v/c Ratio	0.76	0.88		0.75	0.50	0.26		0.90		0.82	0.66	
Uniform Delay, d1	44.6	31.5		45.3	28.0	25.8		32.6		35.0	33.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	32.7	8.8		37.5	0.1	0.1		17.9		12.1	3.2	
Delay (s)	77.3	40.3		82.8	28.1	26.0		50.6		47.1	36.8	
Level of Service	E	D		F	C	C		D		D	D	
Approach Delay (s)		42.5			29.6			50.6			42.4	
Approach LOS		D			C			D			D	

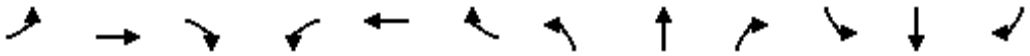
Intersection Summary			
HCM 2000 Control Delay	39.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	94.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	81.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	1	57	6	0	14	33	919	6	19	1048	16
Future Volume (vph)	25	1	57	6	0	14	33	919	6	19	1048	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.93		1.00	0.97		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.85		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1474		1770	1544		1770	3535		1770	3530	
Flt Permitted	0.57	1.00		1.00	1.00		0.20	1.00		0.25	1.00	
Satd. Flow (perm)	1064	1474		1863	1544		380	3535		466	3530	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	28	1	65	7	0	16	38	1044	7	22	1191	18
RTOR Reduction (vph)	0	59	0	0	15	0	0	0	0	0	0	0
Lane Group Flow (vph)	28	7	0	7	1	0	38	1051	0	22	1209	0
Confl. Peds. (#/hr)			44						1			
Confl. Bikes (#/hr)			1			2			1			1
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	9.5	9.5		3.4	3.4		80.2	76.8		76.4	74.9	
Effective Green, g (s)	9.1	9.5		3.4	3.4		79.4	77.4		75.6	75.5	
Actuated g/C Ratio	0.09	0.10		0.03	0.03		0.79	0.77		0.76	0.76	
Clearance Time (s)	3.6	4.0		4.0	4.0		3.6	4.6		3.6	4.6	
Vehicle Extension (s)	2.5	2.5		2.0	2.0		2.5	3.0		2.5	3.0	
Lane Grp Cap (vph)	111	140		63	52		343	2736		366	2665	
v/s Ratio Prot	c0.01	0.00			0.00		c0.00	0.30		0.00	c0.34	
v/s Ratio Perm	c0.02			0.00			0.08			0.04		
v/c Ratio	0.25	0.05		0.11	0.01		0.11	0.38		0.06	0.45	
Uniform Delay, d1	42.0	41.2		46.8	46.7		4.9	3.6		4.8	4.6	
Progression Factor	1.00	1.00		1.00	1.00		0.49	0.52		1.00	1.00	
Incremental Delay, d2	0.9	0.1		0.3	0.0		0.1	0.4		0.1	0.6	
Delay (s)	42.9	41.3		47.1	46.7		2.5	2.3		4.9	5.1	
Level of Service	D	D		D	D		A	A		A	A	
Approach Delay (s)		41.7			46.8			2.3			5.1	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	5.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		

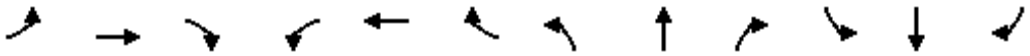
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	228	118	117	63	125	128	90	592	51	94	839	171
Future Volume (vph)	228	118	117	63	125	128	90	592	51	94	839	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	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	0.85	1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1566	1770	1863	1564	1770	3491		1770	3436	
Flt Permitted	0.37	1.00	1.00	0.67	1.00	1.00	0.16	1.00		0.32	1.00	
Satd. Flow (perm)	690	1863	1566	1250	1863	1564	296	3491		588	3436	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	259	134	133	72	142	145	102	673	58	107	953	194
RTOR Reduction (vph)	0	0	65	0	0	112	0	5	0	0	13	0
Lane Group Flow (vph)	259	134	68	72	142	33	102	726	0	107	1134	0
Confl. Peds. (#/hr)			2			4						
Confl. Bikes (#/hr)						1			2			4
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6	7	3	8		7	4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	27.4	21.0	27.6	15.2	12.8	18.1	60.5	53.9		58.3	53.0	
Effective Green, g (s)	27.6	21.2	28.0	15.2	12.8	19.3	60.9	54.5		59.5	53.6	
Actuated g/C Ratio	0.28	0.21	0.28	0.15	0.13	0.19	0.61	0.54		0.60	0.54	
Clearance Time (s)	4.2	4.2	4.2	4.0	4.0	4.6	4.2	4.6		4.6	4.6	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	307	394	438	202	238	301	280	1902		419	1841	
v/s Ratio Prot	c0.09	0.07	0.01	0.01	0.08	0.01	c0.02	0.21		0.02	c0.33	
v/s Ratio Perm	c0.14		0.03	0.05		0.01	0.20			0.14		
v/c Ratio	0.84	0.34	0.16	0.36	0.60	0.11	0.36	0.38		0.26	0.62	
Uniform Delay, d1	32.0	33.5	27.1	37.6	41.2	33.3	22.0	13.1		14.1	16.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		0.50	0.77	
Incremental Delay, d2	17.9	0.2	0.1	0.4	2.7	0.1	0.3	0.6		0.1	1.5	
Delay (s)	49.9	33.6	27.2	37.9	43.8	33.3	22.3	13.7		7.1	13.8	
Level of Service	D	C	C	D	D	C	C	B		A	B	
Approach Delay (s)		40.0			38.4			14.7			13.2	
Approach LOS		D			D			B			B	

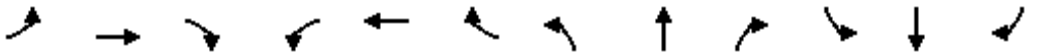
Intersection Summary			
HCM 2000 Control Delay	21.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



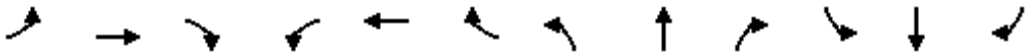
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	1	35	0	166	0	389	41	222	492	1
Future Volume (vph)	0	0	1	35	0	166	0	389	41	222	492	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00			0.95		1.00	0.95	
Frt		0.86			0.89			0.99		1.00	1.00	
Flt Protected		1.00			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		1611			1638			3489		1770	3538	
Flt Permitted		1.00			0.95			1.00		0.95	1.00	
Satd. Flow (perm)		1611			1561			3489		1770	3538	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	0	1	38	0	182	0	427	45	244	541	1
RTOR Reduction (vph)	0	1	0	0	148	0	0	12	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	72	0	0	460	0	244	542	0
Heavy Vehicles (%)	2%	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type		NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2			6								
Actuated Green, G (s)		8.3			8.3			11.4		12.4	27.8	
Effective Green, g (s)		8.3			8.3			11.9		12.4	28.3	
Actuated g/C Ratio		0.19			0.19			0.27		0.28	0.63	
Clearance Time (s)		4.0			4.0			4.5		4.0	4.5	
Vehicle Extension (s)		4.0			4.0			2.5		2.0	2.5	
Lane Grp Cap (vph)		299			290			930		492	2244	
v/s Ratio Prot		0.00						c0.13		c0.14	0.15	
v/s Ratio Perm					c0.05							
v/c Ratio		0.00			0.25			0.49		0.50	0.24	
Uniform Delay, d1		14.8			15.5			13.8		13.5	3.5	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.0			0.6			0.3		0.3	0.0	
Delay (s)		14.8			16.1			14.1		13.8	3.6	
Level of Service		B			B			B		B	A	
Approach Delay (s)		14.8			16.1			14.1			6.7	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	44.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



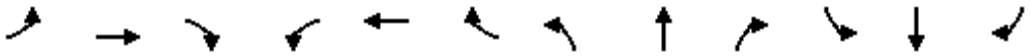
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	138	641	92	147	953	35	30	257	142	32	434	62
Future Volume (vph)	138	641	92	147	953	35	30	257	142	32	434	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.5		3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3414		1770	3486		1752	1863	1583	1752	1863	1583
Flt Permitted	0.13	1.00		0.18	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	247	3414		333	3486		1752	1863	1583	1752	1863	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	144	668	96	153	993	36	31	268	148	33	452	65
RTOR Reduction (vph)	0	9	0	0	2	0	0	0	120	0	0	48
Lane Group Flow (vph)	144	755	0	153	1027	0	31	268	28	33	452	17
Heavy Vehicles (%)	2%	4%	2%	2%	3%	3%	3%	2%	2%	3%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2			6					8			4
Actuated Green, G (s)	39.9	30.2		40.3	30.4		18.5	18.5	18.5	25.1	25.1	25.1
Effective Green, g (s)	39.9	30.2		40.3	30.4		18.5	18.5	18.5	25.1	25.1	25.1
Actuated g/C Ratio	0.40	0.31		0.41	0.31		0.19	0.19	0.19	0.25	0.25	0.25
Clearance Time (s)	3.5	4.5		3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.5	2.5	2.5	2.5	2.5	2.5
Lane Grp Cap (vph)	249	1044		280	1073		328	349	296	445	473	402
v/s Ratio Prot	c0.06	0.22		0.05	c0.29		0.02	c0.14		0.02	c0.24	
v/s Ratio Perm	0.18			0.17					0.02			0.01
v/c Ratio	0.58	0.72		0.55	0.96		0.09	0.77	0.09	0.07	0.96	0.04
Uniform Delay, d1	22.5	30.5		20.5	33.5		33.2	38.1	33.2	28.0	36.3	27.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.0	2.7		1.2	18.0		0.1	9.3	0.1	0.1	30.1	0.0
Delay (s)	24.5	33.2		21.6	51.5		33.3	47.4	33.3	28.0	66.3	27.8
Level of Service	C	C		C	D		C	D	C	C	E	C
Approach Delay (s)		31.8			47.6			41.7			59.5	
Approach LOS		C			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	44.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	98.7	Sum of lost time (s)	15.0
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)	120	31	45	67	80	77	40	696	12	64	1016	41
Future Volume (vph)	120	31	45	67	80	77	40	696	12	64	1016	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.97		1.00	0.97	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.96	1.00		0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1774	1541		1812	1505	1752	3462		1770	3482	
Flt Permitted		0.96	1.00		0.98	1.00	0.13	1.00		0.27	1.00	
Satd. Flow (perm)		1774	1541		1812	1505	248	3462		504	3482	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	136	35	51	76	91	88	45	791	14	73	1155	47
RTOR Reduction (vph)	0	0	43	0	0	75	0	2	0	0	3	0
Lane Group Flow (vph)	0	171	8	0	167	13	45	803	0	73	1199	0
Confl. Peds. (#/hr)			9			9			3			4
Confl. Bikes (#/hr)			4			7			3			1
Heavy Vehicles (%)	3%	3%	2%	2%	3%	4%	3%	4%	2%	2%	3%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8	2			6		
Actuated Green, G (s)		10.2	10.2		10.4	10.4	30.2	30.2		36.0	35.3	
Effective Green, g (s)		10.2	10.2		10.4	10.4	29.7	30.4		35.5	35.5	
Actuated g/C Ratio		0.15	0.15		0.15	0.15	0.44	0.45		0.52	0.52	
Clearance Time (s)		4.0	4.0		4.0	4.0	3.5	4.2		3.5	4.2	
Vehicle Extension (s)		1.2	1.2		1.2	1.2	1.0	1.2		1.0	1.2	
Lane Grp Cap (vph)		265	230		276	229	108	1545		283	1815	
v/s Ratio Prot		c0.10			c0.09			0.23		0.00	c0.34	
v/s Ratio Perm			0.00			0.01	0.18			0.13		
v/c Ratio		0.65	0.03		0.61	0.06	0.42	0.52		0.26	0.66	
Uniform Delay, d1		27.2	24.7		26.9	24.7	13.2	13.6		13.4	11.9	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		4.0	0.0		2.6	0.0	0.9	1.3		0.2	1.9	
Delay (s)		31.2	24.8		29.5	24.7	14.2	14.8		13.6	13.8	
Level of Service		C	C		C	C	B	B		B	B	
Approach Delay (s)		29.8			27.8			14.8			13.8	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	68.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	58.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



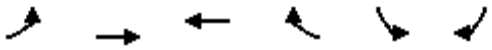
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	219	0	376	0	0	0	0	943	184	499	970	0
Future Volume (vph)	219	0	376	0	0	0	0	943	184	499	970	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00					0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	1.00					1.00	0.96	1.00	1.00	
Flpb, ped/bikes		1.00	1.00					1.00	1.00	1.00	1.00	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1752	1568					3539	1308	1752	3539	
Flt Permitted		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1752	1568					3539	1308	1752	3539	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	258	0	442	0	0	0	0	1109	216	587	1141	0
RTOR Reduction (vph)	0	0	97	0	0	0	0	0	77	0	0	0
Lane Group Flow (vph)	0	258	345	0	0	0	0	1109	139	587	1141	0
Confl. Peds. (#/hr)			2						9			7
Confl. Bikes (#/hr)			1			8						
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	2%	2%	18%	3%	2%	2%
Turn Type	Split	NA	Prot					NA	Perm	Prot	NA	
Protected Phases	4	4	4					2		1	6	
Permitted Phases									2			
Actuated Green, G (s)		23.8	23.8					33.2	33.2	35.0	70.2	
Effective Green, g (s)		21.8	21.8					33.2	33.2	33.0	70.2	
Actuated g/C Ratio		0.22	0.22					0.33	0.33	0.33	0.70	
Clearance Time (s)		2.0	2.0					4.0	4.0	2.0	4.0	
Vehicle Extension (s)		3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		381	341					1174	434	578	2484	
v/s Ratio Prot		0.15	c0.22					c0.31		c0.33	0.32	
v/s Ratio Perm									0.11			
v/c Ratio		0.68	1.01					0.94	0.32	1.02	0.46	
Uniform Delay, d1		35.9	39.1					32.5	25.0	33.5	6.6	
Progression Factor		1.00	1.00					0.80	0.46	0.98	1.23	
Incremental Delay, d2		4.7	51.8					14.0	1.6	38.0	0.5	
Delay (s)		40.6	90.9					40.0	13.1	70.9	8.5	
Level of Service		D	F					D	B	E	A	
Approach Delay (s)		72.3			0.0			35.6			29.7	
Approach LOS		E			A			D			C	

Intersection Summary			
HCM 2000 Control Delay	39.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	126	288	916	246	246	1343
Future Volume (vph)	126	288	916	246	246	1343
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	0.95	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1500	3539	1545	1770	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.24	1.00
Satd. Flow (perm)	1770	1500	3539	1545	454	3539
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	148	339	1078	289	289	1580
RTOR Reduction (vph)	0	144	0	0	0	0
Lane Group Flow (vph)	148	195	1078	289	289	1580
Confl. Peds. (#/hr)				9		
Confl. Bikes (#/hr)		26				
Turn Type	Prot	Perm	NA	Free	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		Free	6	
Actuated Green, G (s)	15.2	15.2	77.8	100.0	79.8	79.8
Effective Green, g (s)	14.2	14.2	77.8	100.0	77.8	77.8
Actuated g/C Ratio	0.14	0.14	0.78	1.00	0.78	0.78
Clearance Time (s)	3.0	3.0	4.0		2.0	2.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	251	213	2753	1545	353	2753
v/s Ratio Prot	0.08		0.30			0.45
v/s Ratio Perm		c0.13		0.19	c0.64	
v/c Ratio	0.59	0.91	0.39	0.19	0.82	0.57
Uniform Delay, d1	40.2	42.3	3.5	0.0	6.8	4.5
Progression Factor	1.00	1.00	2.07	1.00	1.19	0.73
Incremental Delay, d2	3.5	38.7	0.2	0.1	9.7	0.4
Delay (s)	43.7	81.0	7.5	0.1	17.8	3.7
Level of Service	D	F	A	A	B	A
Approach Delay (s)	69.6		5.9			5.9
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		

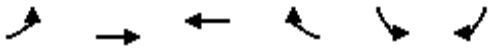
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	274	259	5	12	27
Future Volume (Veh/h)	9	274	259	5	12	27
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	11	334	316	6	15	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	322				675	319
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	322				675	319
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				96	95
cM capacity (veh/h)	1238				416	722

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	345	322	48
Volume Left	11	0	15
Volume Right	0	6	33
cSH	1238	1700	587
Volume to Capacity	0.01	0.19	0.08
Queue Length 95th (ft)	1	0	7
Control Delay (s)	0.3	0.0	11.7
Lane LOS	A		B
Approach Delay (s)	0.3	0.0	11.7
Approach LOS			B

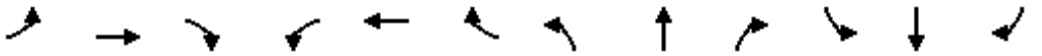
Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	31.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	59	639	573	71	237	165
Future Volume (vph)	59	639	573	71	237	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0	5.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	3539	3476		1770	1583
Flt Permitted	0.32	1.00	1.00		0.95	1.00
Satd. Flow (perm)	592	3539	3476		1770	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	63	687	616	76	255	177
RTOR Reduction (vph)	0	0	15	0	0	125
Lane Group Flow (vph)	63	687	677	0	255	52
Confl. Peds. (#/hr)				2		
Confl. Bikes (#/hr)						6
Turn Type	pm+pt	NA	NA		Prot	Prot
Protected Phases	7	4	8		6	6
Permitted Phases	4					
Actuated Green, G (s)	33.6	33.6	29.4		17.9	17.9
Effective Green, g (s)	33.6	33.6	29.4		17.9	17.9
Actuated g/C Ratio	0.56	0.56	0.49		0.30	0.30
Clearance Time (s)	3.0	5.0	5.0		4.0	4.0
Vehicle Extension (s)	2.0	3.0	3.0		4.0	4.0
Lane Grp Cap (vph)	352	1965	1689		523	468
v/s Ratio Prot	0.00	c0.19	c0.19		c0.14	0.03
v/s Ratio Perm	0.10					
v/c Ratio	0.18	0.35	0.40		0.49	0.11
Uniform Delay, d1	6.5	7.4	9.9		17.5	15.5
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	0.1	0.2		3.2	0.5
Delay (s)	6.6	7.5	10.1		20.8	16.0
Level of Service	A	A	B		C	B
Approach Delay (s)		7.5	10.1		18.8	
Approach LOS		A	B		B	

Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	60.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		

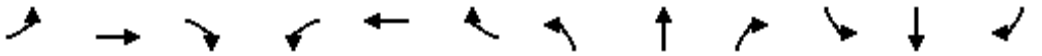
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	124	18	191	125	76	22	624	205	120	682	39
Future Volume (vph)	15	124	18	191	125	76	22	624	205	120	682	39
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		4.0	4.2		4.0	4.2	4.2
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes		0.99		1.00	0.99		1.00	0.99		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		0.98		1.00	0.94		1.00	0.96		1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1814		1770	1739		1770	3370		1770	3539	1504
Flt Permitted		0.95		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1730		1770	1739		1770	3370		1770	3539	1504
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	17	138	20	212	139	84	24	693	228	133	758	43
RTOR Reduction (vph)	0	0	0	0	23	0	0	30	0	0	0	21
Lane Group Flow (vph)	0	175	0	212	200	0	24	891	0	133	758	22
Confl. Peds. (#/hr)	10		10			10			10			10
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Perm	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4											6
Actuated Green, G (s)		13.5		14.5	32.6		2.9	44.8		9.8	51.7	51.7
Effective Green, g (s)		13.5		14.5	32.6		2.9	44.8		9.8	51.7	51.7
Actuated g/C Ratio		0.14		0.14	0.33		0.03	0.45		0.10	0.52	0.52
Clearance Time (s)		4.6		4.6	4.6		4.0	4.2		4.0	4.2	4.2
Vehicle Extension (s)		2.0		2.0	2.5		2.0	4.0		2.0	4.0	4.0
Lane Grp Cap (vph)		233		256	566		51	1509		173	1829	777
v/s Ratio Prot				c0.12	0.12		0.01	c0.26		c0.08	0.21	
v/s Ratio Perm		c0.10										0.01
v/c Ratio		0.75		0.83	0.35		0.47	0.59		0.77	0.41	0.03
Uniform Delay, d1		41.6		41.5	25.7		47.8	20.7		44.0	14.8	11.8
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		11.4		18.5	0.3		2.5	1.7		16.7	0.7	0.1
Delay (s)		53.1		60.0	26.0		50.3	22.4		60.7	15.5	11.9
Level of Service		D		E	C		D	C		E	B	B
Approach Delay (s)		53.1			42.6			23.1			21.8	
Approach LOS		D			D			C			C	

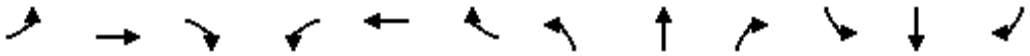
Intersection Summary			
HCM 2000 Control Delay	28.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.4
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



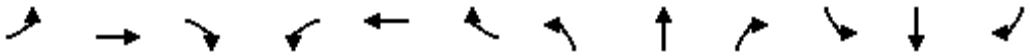
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	150	0	300	0	879	470	0	802	577
Future Volume (vph)	0	0	0	150	0	300	0	879	470	0	802	577
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				1.00		1.00		0.95	1.00		1.00	1.00
Frpb, ped/bikes				1.00		1.00		1.00	0.98		1.00	1.00
Flpb, ped/bikes				1.00		1.00		1.00	1.00		1.00	1.00
Frt				1.00		0.85		1.00	0.85		1.00	0.85
Flt Protected				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)				1736		1553		3539	1550		1845	1538
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				1736		1553		3539	1550		1845	1538
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)	0	0	0	158	0	316	0	925	495	0	844	607
RTOR Reduction (vph)	0	0	0	0	0	105	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	158	0	211	0	925	495	0	844	607
Confl. Peds. (#/hr)									2			5
Confl. Bikes (#/hr)												4
Heavy Vehicles (%)	2%	2%	2%	4%	2%	4%	2%	2%	2%	2%	3%	5%
Turn Type				Prot		Prot		NA	Free		NA	Prot
Protected Phases				8		8		2			6	6
Permitted Phases									Free			
Actuated Green, G (s)				17.9		17.9		74.6	100.0		74.6	74.6
Effective Green, g (s)				17.4		17.4		74.6	100.0		74.6	74.6
Actuated g/C Ratio				0.17		0.17		0.75	1.00		0.75	0.75
Clearance Time (s)				3.5		3.5		4.0			4.0	4.0
Vehicle Extension (s)				2.0		2.0		4.0			4.0	4.0
Lane Grp Cap (vph)				302		270		2640	1550		1376	1147
v/s Ratio Prot				0.09		c0.14		0.26			c0.46	0.39
v/s Ratio Perm									0.32			
v/c Ratio				0.52		0.78		0.35	0.32		0.61	0.53
Uniform Delay, d1				37.5		39.5		4.4	0.0		5.9	5.3
Progression Factor				1.00		1.00		0.75	1.00		1.42	1.40
Incremental Delay, d2				0.8		12.7		0.2	0.3		1.4	1.2
Delay (s)				38.3		52.2		3.5	0.3		9.8	8.7
Level of Service				D		D		A	A		A	A
Approach Delay (s)		0.0			47.5			2.4			9.3	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	57.2%	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)	390	0	508	0	0	0	0	959	180	0	665	287
Future Volume (vph)	390	0	508	0	0	0	0	959	180	0	665	287
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	1.00		1.00					1.00	1.00		0.95	1.00
Frpb, ped/bikes	1.00		1.00					1.00	0.98		1.00	0.98
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	1.00
Frt	1.00		0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	1770		1583					1845	1359		3539	1547
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	1770		1583					1845	1359		3539	1547
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)	419	0	546	0	0	0	0	1031	194	0	715	309
RTOR Reduction (vph)	0	0	160	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	419	0	386	0	0	0	0	1031	194	0	715	309
Confl. Peds. (#/hr)			3						2			6
Confl. Bikes (#/hr)			4						4			
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	3%	16%	2%	2%	2%
Turn Type	Prot		Prot					NA	Perm		NA	Free
Protected Phases	4		4					2			6	
Permitted Phases									2			Free
Actuated Green, G (s)	28.4		28.4					65.1	65.1		63.6	100.0
Effective Green, g (s)	28.4		28.4					63.6	63.6		63.6	100.0
Actuated g/C Ratio	0.28		0.28					0.64	0.64		0.64	1.00
Clearance Time (s)	4.0		4.0					2.5	2.5		4.0	
Vehicle Extension (s)	3.0		3.0					4.0	4.0		4.0	
Lane Grp Cap (vph)	502		449					1173	864		2250	1547
v/s Ratio Prot	0.24		c0.24					c0.56			0.20	
v/s Ratio Perm									0.14			0.20
v/c Ratio	0.83		0.86					0.88	0.22		0.32	0.20
Uniform Delay, d1	33.6		33.9					15.0	7.7		8.3	0.0
Progression Factor	1.00		1.00					0.95	0.71		1.41	1.00
Incremental Delay, d2	11.4		15.0					8.7	0.5		0.3	0.2
Delay (s)	45.0		48.9					23.0	6.0		12.0	0.2
Level of Service	D		D					C	A		B	A
Approach Delay (s)		47.2			0.0			20.3			8.4	
Approach LOS		D			A			C			A	

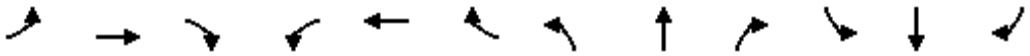
Intersection Summary			
HCM 2000 Control Delay	24.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	142	74	176	11	156	253	379	725	14	102	752	308
Future Volume (vph)	142	74	176	11	156	253	379	725	14	102	752	308
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.99
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	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1845	1583	1770	1863	1540	3433	3462		1770	3539	1561
Flt Permitted	0.37	1.00	1.00	0.71	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	691	1845	1583	1316	1863	1540	3433	3462		1770	3539	1561
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)	149	78	185	12	164	266	399	763	15	107	792	324
RTOR Reduction (vph)	0	0	125	0	0	97	0	1	0	0	0	142
Lane Group Flow (vph)	149	78	60	12	164	169	399	777	0	107	792	182
Confl. Peds. (#/hr)						1						3
Heavy Vehicles (%)	3%	3%	2%	2%	2%	4%	2%	4%	2%	2%	2%	2%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8						6
Actuated Green, G (s)	28.2	23.2	36.2	16.7	15.7	24.8	13.0	51.2		9.1	47.8	56.3
Effective Green, g (s)	28.2	23.7	32.2	16.7	16.2	24.8	11.0	50.2		9.1	48.3	54.3
Actuated g/C Ratio	0.28	0.24	0.32	0.17	0.16	0.25	0.11	0.50		0.09	0.48	0.54
Clearance Time (s)	4.0	4.5	2.0	4.0	4.5	4.0	2.0	3.0		4.0	4.5	4.0
Vehicle Extension (s)	1.0	1.2	1.2	1.0	1.2	1.0	1.2	1.2		1.0	1.2	1.0
Lane Grp Cap (vph)	285	437	509	224	301	381	377	1737		161	1709	847
v/s Ratio Prot	c0.04	0.04	0.01	0.00	0.09	0.04	c0.12	c0.22		0.06	0.22	0.02
v/s Ratio Perm	c0.10		0.02	0.01		0.07						0.10
v/c Ratio	0.52	0.18	0.12	0.05	0.54	0.44	1.06	0.45		0.66	0.46	0.22
Uniform Delay, d1	28.6	30.4	23.9	34.9	38.5	31.8	44.5	16.0		44.0	17.2	11.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.11	0.70	0.65
Incremental Delay, d2	0.8	0.1	0.0	0.0	1.1	0.3	62.6	0.8		6.7	0.8	0.0
Delay (s)	29.4	30.5	23.9	35.0	39.6	32.1	107.1	16.8		55.4	12.8	7.7
Level of Service	C	C	C	C	D	C	F	B		E	B	A
Approach Delay (s)		27.1			34.9			47.4			15.2	
Approach LOS		C			C			D			B	

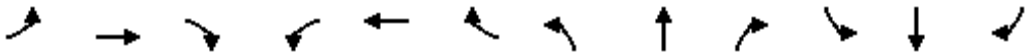
Intersection Summary			
HCM 2000 Control Delay	31.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	576	125	55	886	411	120	173	41	330	211	54
Future Volume (vph)	52	576	125	55	886	411	120	173	41	330	211	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85		0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98		0.95	1.00	
Satd. Flow (prot)	1770	3404		1752	3438	1549		1797		1770	1794	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98		0.95	1.00	
Satd. Flow (perm)	1770	3404		1752	3438	1549		1797		1770	1794	
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)	56	619	134	59	953	442	129	186	44	355	227	58
RTOR Reduction (vph)	0	14	0	0	0	179	0	4	0	0	8	0
Lane Group Flow (vph)	56	739	0	59	953	263	0	355	0	355	277	0
Confl. Peds. (#/hr)						1						
Confl. Bikes (#/hr)			1									2
Heavy Vehicles (%)	2%	3%	2%	3%	5%	2%	2%	2%	3%	2%	2%	4%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6						
Actuated Green, G (s)	6.0	33.2		6.1	33.3	33.3		24.7		25.5	25.5	
Effective Green, g (s)	6.0	34.2		6.1	34.3	34.3		24.7		25.5	25.5	
Actuated g/C Ratio	0.06	0.32		0.06	0.32	0.32		0.23		0.24	0.24	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0		4.0		4.0	4.0	
Vehicle Extension (s)	1.5	1.5		1.5	1.5	1.5		1.5		1.5	1.5	
Lane Grp Cap (vph)	99	1093		100	1107	498		416		423	429	
v/s Ratio Prot	0.03	0.22		c0.03	c0.28			c0.20		c0.20	0.15	
v/s Ratio Perm						0.17						
v/c Ratio	0.57	0.68		0.59	0.86	0.53		0.85		0.84	0.65	
Uniform Delay, d1	49.0	31.3		49.0	33.9	29.5		39.2		38.5	36.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	4.4	1.3		5.6	6.8	0.5		15.0		13.1	2.5	
Delay (s)	53.3	32.7		54.6	40.7	30.0		54.2		51.6	39.0	
Level of Service	D	C		D	D	C		D		D	D	
Approach Delay (s)		34.1			38.0			54.2			46.0	
Approach LOS		C			D			D			D	

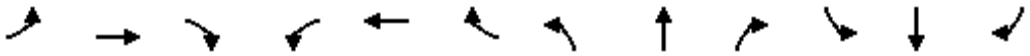
Intersection Summary			
HCM 2000 Control Delay	40.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	106.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	3	34	11	2	31	50	1295	6	50	997	16
Future Volume (vph)	27	3	34	11	2	31	50	1295	6	50	997	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.93		1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.86		1.00	0.86		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1497		1770	1564		1770	3537		1770	3530	
Flt Permitted	0.54	1.00		1.00	1.00		0.23	1.00		0.15	1.00	
Satd. Flow (perm)	1007	1497		1863	1564		425	3537		280	3530	
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)	29	3	37	12	2	33	54	1392	6	54	1072	17
RTOR Reduction (vph)	0	33	0	0	32	0	0	0	0	0	1	0
Lane Group Flow (vph)	29	7	0	12	3	0	54	1398	0	54	1088	0
Confl. Peds. (#/hr)			44						1			
Confl. Bikes (#/hr)			1			2			1			1
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	11.9	11.9		3.8	3.8		75.9	71.2		75.9	71.2	
Effective Green, g (s)	11.5	11.9		3.8	3.8		75.1	71.8		75.1	71.8	
Actuated g/C Ratio	0.12	0.12		0.04	0.04		0.75	0.72		0.75	0.72	
Clearance Time (s)	3.6	4.0		4.0	4.0		3.6	4.6		3.6	4.6	
Vehicle Extension (s)	2.5	2.5		2.0	2.0		2.5	3.0		2.5	3.0	
Lane Grp Cap (vph)	147	178		70	59		377	2539		274	2534	
v/s Ratio Prot	c0.01	0.00			0.00		0.01	c0.40		c0.01	0.31	
v/s Ratio Perm	c0.01			0.01			0.10			0.14		
v/c Ratio	0.20	0.04		0.17	0.06		0.14	0.55		0.20	0.43	
Uniform Delay, d1	39.9	39.0		46.6	46.4		3.7	6.6		4.6	5.7	
Progression Factor	1.00	1.00		1.00	1.00		0.74	0.60		1.00	1.00	
Incremental Delay, d2	0.5	0.1		0.4	0.1		0.1	0.7		0.3	0.5	
Delay (s)	40.4	39.1		47.0	46.5		2.8	4.6		4.9	6.3	
Level of Service	D	D		D	D		A	A		A	A	
Approach Delay (s)		39.6			46.6			4.6			6.2	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	64.2%	ICU Level of Service	C
Analysis Period (min)	15		

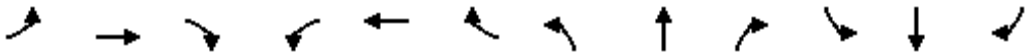
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	156	101	69	98	124	212	69	980	94	182	746	130
Future Volume (vph)	156	101	69	98	124	212	69	980	94	182	746	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	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	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1542	1770	1863	1583	1770	3484		1770	3448	
Flt Permitted	0.37	1.00	1.00	0.69	1.00	1.00	0.25	1.00		0.13	1.00	
Satd. Flow (perm)	681	1863	1542	1279	1863	1583	469	3484		236	3448	
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)	168	109	74	105	133	228	74	1054	101	196	802	140
RTOR Reduction (vph)	0	0	58	0	0	139	0	5	0	0	10	0
Lane Group Flow (vph)	168	109	16	105	133	89	74	1150	0	196	932	0
Confl. Peds. (#/hr)			13						3			2
Confl. Bikes (#/hr)			7						4			2
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6	7	3	8		7	4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	28.0	15.5	20.8	20.0	11.5	21.4	54.0	48.7		63.2	53.7	
Effective Green, g (s)	28.2	15.7	21.2	20.0	11.5	22.6	54.4	49.3		63.8	54.3	
Actuated g/C Ratio	0.28	0.16	0.21	0.20	0.12	0.23	0.54	0.49		0.64	0.54	
Clearance Time (s)	4.2	4.2	4.2	4.0	4.0	4.6	4.2	4.6		4.6	4.6	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	330	292	388	297	214	357	326	1717		311	1872	
v/s Ratio Prot	c0.06	0.06	0.00	0.03	c0.07	0.03	0.01	c0.33		c0.07	0.27	
v/s Ratio Perm	0.08		0.01	0.04		0.03	0.11			0.34		
v/c Ratio	0.51	0.37	0.04	0.35	0.62	0.25	0.23	0.67		0.63	0.50	
Uniform Delay, d1	28.8	37.7	31.3	34.0	42.2	31.7	11.3	19.2		13.2	14.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		2.27	0.64	
Incremental Delay, d2	0.5	0.3	0.0	0.3	4.0	0.1	0.1	2.1		2.9	0.9	
Delay (s)	29.2	38.0	31.3	34.3	46.2	31.9	11.4	21.3		32.9	10.1	
Level of Service	C	D	C	C	D	C	B	C		C	B	
Approach Delay (s)		32.4			36.5			20.7			14.0	
Approach LOS		C			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		

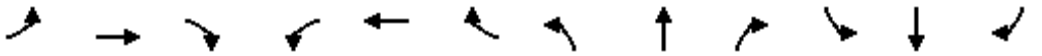
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1	6	51	2	339	6	696	48	166	500	7
Future Volume (vph)	10	1	6	51	2	339	6	696	48	166	500	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.95			0.88		1.00	0.99		1.00	1.00	
Flt Protected		0.97			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1726			1634		1770	3505		1770	3532	
Flt Permitted		0.78			0.96		0.45	1.00		0.22	1.00	
Satd. Flow (perm)		1385			1577		840	3505		411	3532	
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)	11	1	6	54	2	361	6	740	51	177	532	7
RTOR Reduction (vph)	0	5	0	0	225	0	0	7	0	0	1	0
Lane Group Flow (vph)	0	13	0	0	192	0	6	784	0	177	538	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		12.4			12.4		20.7	20.0		29.4	24.7	
Effective Green, g (s)		12.4			12.4		20.7	20.5		29.4	25.2	
Actuated g/C Ratio		0.25			0.25		0.41	0.41		0.58	0.50	
Clearance Time (s)		4.0			4.0		4.0	4.5		4.0	4.5	
Vehicle Extension (s)		4.0			4.0		2.0	2.5		2.0	2.5	
Lane Grp Cap (vph)		341			388		358	1428		386	1769	
v/s Ratio Prot							0.00	c0.22		c0.05	0.15	
v/s Ratio Perm		0.01			c0.12		0.01			0.22		
v/c Ratio		0.04			0.49		0.02	0.55		0.46	0.30	
Uniform Delay, d1		14.4			16.3		8.7	11.4		5.9	7.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			1.4		0.0	0.3		0.3	0.1	
Delay (s)		14.5			17.6		8.7	11.7		6.2	7.5	
Level of Service		B			B		A	B		A	A	
Approach Delay (s)		14.5			17.6			11.7			7.2	
Approach LOS		B			B			B			A	

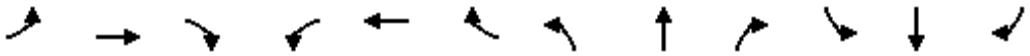
Intersection Summary			
HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	50.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



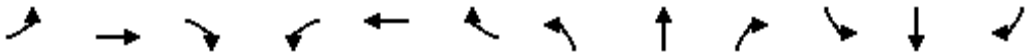
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	229	816	64	167	1097	98	68	423	207	67	359	131
Future Volume (vph)	229	816	64	167	1097	98	68	423	207	67	359	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3408		1770	3496		1770	1863	1583	1770	1863	1583
Flt Permitted	0.12	1.00		0.22	1.00		0.28	1.00	1.00	0.19	1.00	1.00
Satd. Flow (perm)	231	3408		412	3496		529	1863	1583	353	1863	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	239	850	67	174	1143	102	71	441	216	70	374	136
RTOR Reduction (vph)	0	6	0	0	7	0	0	0	155	0	0	97
Lane Group Flow (vph)	239	911	0	174	1238	0	71	441	61	70	374	39
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8		8	4		4
Actuated Green, G (s)	43.7	32.8		38.9	30.4		21.6	21.6	21.6	21.6	21.6	21.6
Effective Green, g (s)	42.7	33.3		37.9	30.9		21.1	21.1	21.1	21.1	21.1	21.1
Actuated g/C Ratio	0.57	0.45		0.51	0.42		0.28	0.28	0.28	0.28	0.28	0.28
Clearance Time (s)	3.5	4.5		3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.5	2.5	2.5	2.5	2.5	2.5
Lane Grp Cap (vph)	347	1525		355	1451		150	528	448	100	528	448
v/s Ratio Prot	c0.10	0.27		0.05	c0.35			c0.24			0.20	
v/s Ratio Perm	0.30			0.20			0.13		0.04	0.20		0.02
v/c Ratio	0.69	0.60		0.49	0.85		0.47	0.84	0.14	0.70	0.71	0.09
Uniform Delay, d1	13.5	15.5		10.6	19.7		22.1	25.0	19.9	23.8	23.9	19.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.5	0.7		0.4	5.3		1.7	10.8	0.1	17.9	4.0	0.1
Delay (s)	18.0	16.2		11.0	25.0		23.8	35.8	20.0	41.7	27.9	19.6
Level of Service	B	B		B	C		C	D	B	D	C	B
Approach Delay (s)		16.6			23.3			29.9			27.6	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	23.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	74.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
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)	125	82	42	52	135	143	48	941	27	98	1187	127
Future Volume (vph)	125	82	42	52	135	143	48	941	27	98	1187	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.97		1.00	0.97	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.97	1.00		0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1791	1538		1824	1501	1752	3456		1770	3447	
Flt Permitted		0.97	1.00		0.99	1.00	0.10	1.00		0.17	1.00	
Satd. Flow (perm)		1791	1538		1824	1501	182	3456		317	3447	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	126	83	42	53	136	144	48	951	27	99	1199	128
RTOR Reduction (vph)	0	0	35	0	0	121	0	2	0	0	5	0
Lane Group Flow (vph)	0	209	7	0	189	23	48	976	0	99	1322	0
Confl. Peds. (#/hr)			9			9			3			4
Confl. Bikes (#/hr)			4			7			3			1
Heavy Vehicles (%)	3%	3%	2%	2%	3%	4%	3%	4%	2%	2%	3%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8	2			6		
Actuated Green, G (s)		16.0	16.0		14.8	14.8	45.4	41.1		47.0	41.9	
Effective Green, g (s)		16.0	16.0		14.8	14.8	44.4	41.3		46.0	42.1	
Actuated g/C Ratio		0.17	0.17		0.16	0.16	0.48	0.45		0.50	0.45	
Clearance Time (s)		4.0	4.0		4.0	4.0	3.5	4.2		3.5	4.2	
Vehicle Extension (s)		1.2	1.2		1.2	1.2	1.0	1.2		1.0	1.2	
Lane Grp Cap (vph)		309	265		291	239	151	1539		229	1565	
v/s Ratio Prot		c0.12			c0.10		0.01	0.28		c0.02	c0.38	
v/s Ratio Perm			0.00			0.02	0.14			0.19		
v/c Ratio		0.68	0.03		0.65	0.10	0.32	0.63		0.43	0.84	
Uniform Delay, d1		35.9	31.9		36.5	33.2	17.3	19.9		14.5	22.4	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		4.6	0.0		3.7	0.1	0.4	0.6		0.5	4.2	
Delay (s)		40.5	31.9		40.2	33.3	17.8	20.5		14.9	26.6	
Level of Service		D	C		D	C	B	C		B	C	
Approach Delay (s)		39.0			37.2			20.4			25.8	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	92.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	78.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



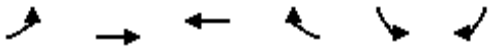
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	289	0	356	0	0	0	0	1243	130	289	1319	0
Future Volume (vph)	289	0	356	0	0	0	0	1243	130	289	1319	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5	4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00					0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	1.00					1.00	0.96	1.00	1.00	
Flpb, ped/bikes		1.00	1.00					1.00	1.00	1.00	1.00	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1752	1568					3539	1308	1752	3539	
Flt Permitted		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1752	1568					3539	1308	1752	3539	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	295	0	363	0	0	0	0	1268	133	295	1346	0
RTOR Reduction (vph)	0	0	61	0	0	0	0	0	39	0	0	0
Lane Group Flow (vph)	0	295	302	0	0	0	0	1268	94	295	1346	0
Confl. Peds. (#/hr)			2						9			7
Confl. Bikes (#/hr)			1			8						
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	2%	2%	18%	3%	2%	2%
Turn Type	Split	NA	Prot					NA	Perm	Prot	NA	
Protected Phases	4	4	4					2		1	6	
Permitted Phases									2			
Actuated Green, G (s)		21.7	21.7					48.3	48.3	19.5	70.8	
Effective Green, g (s)		19.7	21.2					48.3	48.3	18.5	70.8	
Actuated g/C Ratio		0.20	0.21					0.48	0.48	0.18	0.71	
Clearance Time (s)		3.5	3.5					4.0	4.0	3.0	4.0	
Vehicle Extension (s)		2.0	2.0					3.5	3.5	2.0	4.0	
Lane Grp Cap (vph)		345	332					1709	631	324	2505	
v/s Ratio Prot		0.17	c0.19					c0.36		c0.17	0.38	
v/s Ratio Perm									0.07			
v/c Ratio		0.86	0.91					0.74	0.15	0.91	0.54	
Uniform Delay, d1		38.8	38.5					20.8	14.4	39.9	6.9	
Progression Factor		1.00	1.00					1.00	0.87	0.90	1.29	
Incremental Delay, d2		17.7	26.7					2.6	0.4	24.7	0.7	
Delay (s)		56.5	65.2					23.5	13.0	60.6	9.6	
Level of Service		E	E					C	B	E	A	
Approach Delay (s)		61.3			0.0			22.5			18.7	
Approach LOS		E			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	27.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	77.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	150	524	1226	306	218	1458
Future Volume (vph)	150	524	1226	306	218	1458
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	3539	1545	1770	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1583	3539	1545	1770	3539
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	155	540	1264	315	225	1503
RTOR Reduction (vph)	0	21	0	0	0	0
Lane Group Flow (vph)	155	519	1264	315	225	1503
Confl. Peds. (#/hr)				9		
Confl. Bikes (#/hr)		26				
Turn Type	Prot	pt+ov	NA	Free	Prot	NA
Protected Phases	8	8 1	2		1	6
Permitted Phases				Free		
Actuated Green, G (s)	18.4	39.4	53.6	100.0	19.0	76.6
Effective Green, g (s)	17.4	35.4	53.6	100.0	17.0	74.6
Actuated g/C Ratio	0.17	0.35	0.54	1.00	0.17	0.75
Clearance Time (s)	3.0		4.0		2.0	2.0
Vehicle Extension (s)	2.0		4.0		2.0	4.0
Lane Grp Cap (vph)	307	560	1896	1545	300	2640
v/s Ratio Prot	0.09	c0.33	c0.36		0.13	0.42
v/s Ratio Perm				0.20		
v/c Ratio	0.50	0.93	0.67	0.20	0.75	0.57
Uniform Delay, d1	37.4	31.1	16.8	0.0	39.5	5.6
Progression Factor	1.00	1.00	0.47	1.00	1.03	1.04
Incremental Delay, d2	0.5	21.3	1.2	0.2	7.7	0.4
Delay (s)	37.9	52.3	9.1	0.2	48.5	6.2
Level of Service	D	D	A	A	D	A
Approach Delay (s)	49.1		7.3			11.7
Approach LOS	D		A			B

Intersection Summary			
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.0%	ICU Level of Service	D
Analysis Period (min)	15		

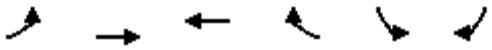
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	33	385	425	17	8	40
Future Volume (Veh/h)	33	385	425	17	8	40
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	37	433	478	19	9	45
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	497				994	488
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	497				994	488
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				97	92
cM capacity (veh/h)	1067				262	580

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	470	497	54
Volume Left	37	0	9
Volume Right	0	19	45
cSH	1067	1700	483
Volume to Capacity	0.03	0.29	0.11
Queue Length 95th (ft)	3	0	9
Control Delay (s)	1.0	0.0	13.4
Lane LOS	A		B
Approach Delay (s)	1.0	0.0	13.4
Approach LOS			B

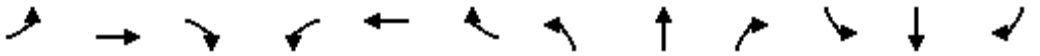
Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	173	939	1064	155	109	87
Future Volume (vph)	173	939	1064	155	109	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	3539	3472		1770	1583
Flt Permitted	0.10	1.00	1.00		0.95	1.00
Satd. Flow (perm)	191	3539	3472		1770	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	192	1043	1182	172	121	97
RTOR Reduction (vph)	0	0	14	0	0	81
Lane Group Flow (vph)	192	1043	1340	0	121	16
Confl. Peds. (#/hr)						1
Confl. Bikes (#/hr)						2
Turn Type	pm+pt	NA	NA		Prot	Prot
Protected Phases	7	4	8		6	6
Permitted Phases	4					
Actuated Green, G (s)	48.0	48.0	36.0		10.9	10.9
Effective Green, g (s)	47.0	49.0	37.0		10.9	10.9
Actuated g/C Ratio	0.69	0.72	0.54		0.16	0.16
Clearance Time (s)	3.0	5.0	5.0		4.0	4.0
Vehicle Extension (s)	2.0	3.0	3.0		4.0	4.0
Lane Grp Cap (vph)	318	2553	1891		284	254
v/s Ratio Prot	c0.07	0.29	c0.39		c0.07	0.01
v/s Ratio Perm	0.35					
v/c Ratio	0.60	0.41	0.71		0.43	0.06
Uniform Delay, d1	9.5	3.7	11.5		25.7	24.2
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.2	0.1	1.2		1.4	0.1
Delay (s)	11.7	3.8	12.7		27.1	24.3
Level of Service	B	A	B		C	C
Approach Delay (s)		5.1	12.7		25.8	
Approach LOS		A	B		C	

Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	67.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



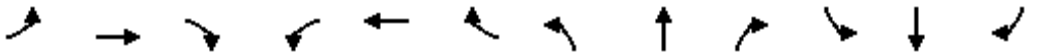
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	65	59	211	130	60	56	777	199	65	619	18
Future Volume (vph)	56	65	59	211	130	60	56	777	199	65	619	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6		4.6	4.6		4.0	4.2		4.0	4.2	4.2
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes		0.99		1.00	0.99		1.00	0.99		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		0.96		1.00	0.95		1.00	0.97		1.00	1.00	0.85
Flt Protected		0.98		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1724		1770	1757		1770	3394		1770	3539	1500
Flt Permitted		0.82		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1432		1770	1757		1770	3394		1770	3539	1500
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	62	72	66	234	144	67	62	863	221	72	688	20
RTOR Reduction (vph)	0	0	0	0	17	0	0	21	0	0	0	11
Lane Group Flow (vph)	0	200	0	234	194	0	62	1063	0	72	688	9
Confl. Peds. (#/hr)	10		10			10			10			10
Confl. Bikes (#/hr)			8			13			20			12
Turn Type	Perm	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4											6
Actuated Green, G (s)		15.1		15.1	34.8		6.8	45.3		7.1	45.6	45.6
Effective Green, g (s)		15.1		15.1	34.8		6.8	45.3		7.1	45.6	45.6
Actuated g/C Ratio		0.15		0.15	0.35		0.07	0.45		0.07	0.46	0.46
Clearance Time (s)		4.6		4.6	4.6		4.0	4.2		4.0	4.2	4.2
Vehicle Extension (s)		2.0		2.0	2.5		2.0	4.0		2.0	4.0	4.0
Lane Grp Cap (vph)		216		267	611		120	1537		125	1613	684
v/s Ratio Prot				c0.13	0.11		0.04	c0.31		c0.04	0.19	
v/s Ratio Perm		c0.14										0.01
v/c Ratio		0.93		0.88	0.32		0.52	0.69		0.58	0.43	0.01
Uniform Delay, d1		41.9		41.5	23.9		45.0	21.8		45.0	18.4	14.9
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		40.3		25.2	0.2		1.6	2.6		3.9	0.8	0.0
Delay (s)		82.2		66.7	24.1		46.6	24.4		48.9	19.2	14.9
Level of Service		F		E	C		D	C		D	B	B
Approach Delay (s)		82.2			46.5			25.6			21.8	
Approach LOS		F			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	32.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.4
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

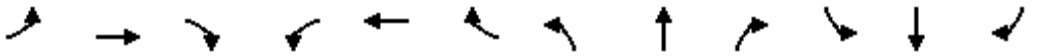
Appendix F

Intersection Level of Service Technical Calculations
Existing With Project Conditions



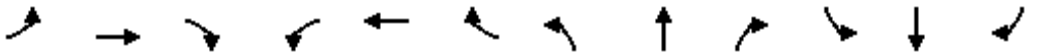
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	144	0	319	0	858	335	0	856	359
Future Volume (vph)	0	0	0	144	0	319	0	858	335	0	856	359
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				1.00		1.00		0.95	1.00		1.00	1.00
Frpb, ped/bikes				1.00		1.00		1.00	0.98		1.00	0.98
Flpb, ped/bikes				1.00		1.00		1.00	1.00		1.00	1.00
Frt				1.00		0.85		1.00	0.85		1.00	0.85
Flt Protected				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)				1703		1524		3539	1550		1863	1514
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				1703		1524		3539	1550		1863	1514
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)	0	0	0	152	0	336	0	903	353	0	901	378
RTOR Reduction (vph)	0	0	0	0	0	196	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	152	0	140	0	903	353	0	901	378
Confl. Peds. (#/hr)									2			5
Confl. Bikes (#/hr)												4
Heavy Vehicles (%)	2%	2%	2%	6%	2%	6%	2%	2%	2%	2%	2%	4%
Turn Type				Prot		Prot		NA	Free		NA	Perm
Protected Phases				8		8		2			6	
Permitted Phases									Free			6
Actuated Green, G (s)				13.4		13.4		79.1	100.0		79.1	79.1
Effective Green, g (s)				12.9		12.9		79.1	100.0		79.1	79.1
Actuated g/C Ratio				0.13		0.13		0.79	1.00		0.79	0.79
Clearance Time (s)				3.5		3.5		4.0			4.0	4.0
Vehicle Extension (s)				2.0		2.0		4.0			4.0	4.0
Lane Grp Cap (vph)				219		196		2799	1550		1473	1197
v/s Ratio Prot				0.09		c0.09		0.26			c0.48	
v/s Ratio Perm									0.23			0.25
v/c Ratio				0.69		0.71		0.32	0.23		0.61	0.32
Uniform Delay, d1				41.7		41.8		2.9	0.0		4.2	2.9
Progression Factor				1.00		1.00		0.76	1.00		1.79	1.01
Incremental Delay, d2				7.5		9.8		0.2	0.2		1.7	0.6
Delay (s)				49.1		51.6		2.5	0.2		9.3	3.6
Level of Service				D		D		A	A		A	A
Approach Delay (s)		0.0			50.8			1.8			7.6	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	59.7%	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)	531	0	522	0	0	0	0	668	118	0	669	331
Future Volume (vph)	531	0	522	0	0	0	0	668	118	0	669	331
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	1.00		1.00					1.00	1.00		0.95	1.00
Frpb, ped/bikes	1.00		1.00					1.00	0.98		1.00	0.98
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	1.00
Frt	1.00		0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	1736		1553					1845	1347		3539	1547
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	1736		1553					1845	1347		3539	1547
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	542	0	533	0	0	0	0	682	120	0	683	338
RTOR Reduction (vph)	0	0	107	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	542	0	426	0	0	0	0	682	120	0	683	338
Confl. Peds. (#/hr)			3						2			6
Confl. Bikes (#/hr)			4						4			
Heavy Vehicles (%)	4%	2%	4%	2%	2%	2%	2%	3%	17%	2%	2%	2%
Turn Type	Prot		Prot					NA	Perm		NA	Free
Protected Phases	4		4					2			6	
Permitted Phases									2			Free
Actuated Green, G (s)	37.1		37.1					54.9	54.9		54.9	100.0
Effective Green, g (s)	37.1		37.1					54.9	54.9		54.9	100.0
Actuated g/C Ratio	0.37		0.37					0.55	0.55		0.55	1.00
Clearance Time (s)	4.0		4.0					4.0	4.0		4.0	
Vehicle Extension (s)	3.0		3.0					4.0	4.0		4.0	
Lane Grp Cap (vph)	644		576					1012	739		1942	1547
v/s Ratio Prot	c0.31		0.27					c0.37			0.19	
v/s Ratio Perm									0.09			0.22
v/c Ratio	0.84		0.74					0.67	0.16		0.35	0.22
Uniform Delay, d1	28.8		27.3					16.1	11.2		12.6	0.0
Progression Factor	1.00		1.00					1.92	1.78		1.01	1.00
Incremental Delay, d2	9.7		5.0					2.5	0.3		0.4	0.3
Delay (s)	38.5		32.2					33.5	20.2		13.2	0.3
Level of Service	D		C					C	C		B	A
Approach Delay (s)		35.4			0.0			31.5			8.9	
Approach LOS		D			A			C			A	

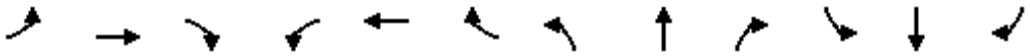
Intersection Summary			
HCM 2000 Control Delay	25.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	197	96	144	11	44	65	131	530	16	272	775	124
Future Volume (vph)	197	96	144	11	44	65	131	530	16	272	775	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
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	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1719	1863	1583	1770	1863	1536	3433	3426		1752	3505	1560
Flt Permitted	0.98	1.00	1.00	0.71	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1765	1863	1583	1331	1863	1536	3433	3426		1752	3505	1560
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	199	97	145	11	44	66	132	535	16	275	783	125
RTOR Reduction (vph)	0	0	116	0	0	31	0	2	0	0	0	39
Lane Group Flow (vph)	199	97	29	11	44	35	132	549	0	275	783	86
Confl. Peds. (#/hr)						1						3
Heavy Vehicles (%)	5%	2%	2%	2%	2%	5%	2%	5%	2%	3%	3%	2%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8						6
Actuated Green, G (s)	13.0	13.0	20.0	6.4	5.9	53.5	7.0	23.1		47.6	62.2	71.1
Effective Green, g (s)	12.0	13.5	20.0	6.4	6.4	53.5	7.0	22.1		47.6	62.7	69.1
Actuated g/C Ratio	0.12	0.14	0.20	0.06	0.06	0.54	0.07	0.22		0.48	0.63	0.69
Clearance Time (s)	3.0	4.5	4.0	4.0	4.5	4.0	4.0	3.0		4.0	4.5	3.0
Vehicle Extension (s)	1.0	1.2	1.2	1.0	1.2	1.0	1.2	1.2		1.0	1.2	1.0
Lane Grp Cap (vph)	211	251	316	88	119	821	240	757		833	2197	1077
v/s Ratio Prot	0.07	0.05	0.01	0.00	c0.02	0.02	c0.04	c0.16		0.16	c0.22	0.01
v/s Ratio Perm	c0.04		0.01	0.01		0.00						0.05
v/c Ratio	0.94	0.39	0.09	0.12	0.37	0.04	0.55	0.72		0.33	0.36	0.08
Uniform Delay, d1	43.8	39.5	32.6	44.2	44.9	11.1	45.0	36.1		16.3	9.0	5.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		0.67	1.07	0.86
Incremental Delay, d2	45.5	0.4	0.0	0.2	0.7	0.0	1.5	2.9		0.9	0.4	0.0
Delay (s)	89.2	39.8	32.6	44.4	45.6	11.1	46.5	39.1		11.9	10.0	4.3
Level of Service	F	D	C	D	D	B	D	D		B	B	A
Approach Delay (s)		59.8			26.6			40.5			9.9	
Approach LOS		E			C			D			A	

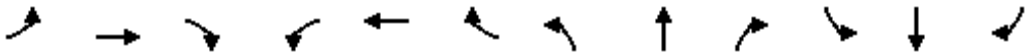
Intersection Summary			
HCM 2000 Control Delay	28.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	715	155	42	481	385	148	208	76	304	231	25
Future Volume (vph)	55	715	155	42	481	385	148	208	76	304	231	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85		0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98		0.95	1.00	
Satd. Flow (prot)	1770	3404		1752	3438	1549		1785		1770	1830	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98		0.95	1.00	
Satd. Flow (perm)	1770	3404		1752	3438	1549		1785		1770	1830	
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)	58	753	163	44	506	405	156	219	80	320	243	26
RTOR Reduction (vph)	0	16	0	0	0	289	0	7	0	0	4	0
Lane Group Flow (vph)	58	900	0	44	506	116	0	448	0	320	265	0
Confl. Peds. (#/hr)						1						
Confl. Bikes (#/hr)			1									2
Heavy Vehicles (%)	2%	3%	2%	3%	5%	2%	2%	2%	3%	2%	2%	4%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6						
Actuated Green, G (s)	4.1	27.2		3.0	26.1	26.1		26.5		20.8	20.8	
Effective Green, g (s)	4.1	28.2		3.0	27.1	27.1		26.5		20.8	20.8	
Actuated g/C Ratio	0.04	0.30		0.03	0.29	0.29		0.28		0.22	0.22	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0		4.0		4.0	4.0	
Vehicle Extension (s)	1.5	1.5		1.5	1.5	1.5		1.5		1.5	1.5	
Lane Grp Cap (vph)	76	1015		55	985	444		500		389	402	
v/s Ratio Prot	c0.03	c0.26		0.03	0.15			c0.25		c0.18	0.14	
v/s Ratio Perm						0.07						
v/c Ratio	0.76	0.89		0.80	0.51	0.26		0.90		0.82	0.66	
Uniform Delay, d1	44.7	31.6		45.5	28.2	26.0		32.7		35.1	33.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	32.7	9.2		52.8	0.2	0.1		17.9		12.5	3.0	
Delay (s)	77.4	40.8		98.3	28.4	26.1		50.6		47.6	36.6	
Level of Service	E	D		F	C	C		D		D	D	
Approach Delay (s)		43.0			30.6			50.6			42.6	
Approach LOS		D			C			D			D	

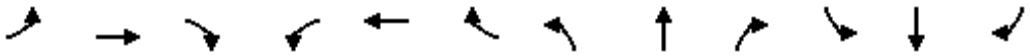
Intersection Summary			
HCM 2000 Control Delay	40.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	94.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	82.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	1	82	6	0	14	33	919	19	25	1048	16
Future Volume (vph)	76	1	82	6	0	14	33	919	19	25	1048	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.93		1.00	0.97		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.85		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1472		1770	1535		1770	3527		1770	3530	
Flt Permitted	0.67	1.00		1.00	1.00		0.20	1.00		0.24	1.00	
Satd. Flow (perm)	1242	1472		1863	1535		381	3527		456	3530	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	86	1	93	7	0	16	38	1044	22	28	1191	18
RTOR Reduction (vph)	0	84	0	0	16	0	0	1	0	0	0	0
Lane Group Flow (vph)	86	10	0	7	0	0	38	1065	0	28	1209	0
Confl. Peds. (#/hr)			44						1			
Confl. Bikes (#/hr)			1			2			1			1
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	9.6	9.6		2.4	2.4		78.6	75.9		77.8	75.5	
Effective Green, g (s)	9.2	9.6		2.4	2.4		77.8	76.5		77.0	76.1	
Actuated g/C Ratio	0.09	0.10		0.02	0.02		0.78	0.76		0.77	0.76	
Clearance Time (s)	3.6	4.0		4.0	4.0		3.6	4.6		3.6	4.6	
Vehicle Extension (s)	2.5	2.5		2.0	2.0		2.5	3.0		2.5	3.0	
Lane Grp Cap (vph)	131	141		44	36		328	2698		376	2686	
v/s Ratio Prot	c0.02	0.01			0.00		c0.00	0.30		0.00	c0.34	
v/s Ratio Perm	c0.04			0.00			0.09			0.06		
v/c Ratio	0.66	0.07		0.16	0.01		0.12	0.39		0.07	0.45	
Uniform Delay, d1	43.9	41.1		47.8	47.6		5.4	4.0		4.7	4.3	
Progression Factor	1.00	1.00		1.00	1.00		0.49	0.53		1.00	1.00	
Incremental Delay, d2	10.1	0.2		0.6	0.0		0.1	0.4		0.1	0.5	
Delay (s)	54.0	41.3		48.4	47.7		2.7	2.5		4.7	4.9	
Level of Service	D	D		D	D		A	A		A	A	
Approach Delay (s)		47.4			47.9			2.5			4.9	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		

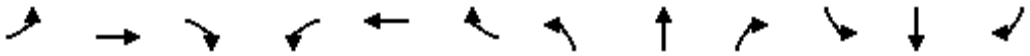
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	228	118	117	67	126	128	90	605	52	94	892	173
Future Volume (vph)	228	118	117	67	126	128	90	605	52	94	892	173
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	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	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1566	1770	1863	1564	1770	3491		1770	3440	
Flt Permitted	0.37	1.00	1.00	0.67	1.00	1.00	0.14	1.00		0.31	1.00	
Satd. Flow (perm)	689	1863	1566	1250	1863	1564	260	3491		573	3440	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	259	134	133	76	143	145	102	688	59	107	1014	197
RTOR Reduction (vph)	0	0	58	0	0	108	0	5	0	0	13	0
Lane Group Flow (vph)	259	134	75	76	143	37	102	742	0	107	1198	0
Confl. Peds. (#/hr)			2			4						
Confl. Bikes (#/hr)						1			2			4
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6	7	3	8		7	4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	27.5	21.1	27.8	15.3	12.9	18.3	60.4	53.7		58.2	52.8	
Effective Green, g (s)	27.7	21.3	28.2	15.3	12.9	19.5	60.8	54.3		59.4	53.4	
Actuated g/C Ratio	0.28	0.21	0.28	0.15	0.13	0.20	0.61	0.54		0.59	0.53	
Clearance Time (s)	4.2	4.2	4.2	4.0	4.0	4.6	4.2	4.6		4.6	4.6	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	307	396	441	203	240	304	262	1895		412	1836	
v/s Ratio Prot	c0.09	0.07	0.01	0.01	0.08	0.01	c0.03	0.21		0.02	c0.35	
v/s Ratio Perm	c0.14		0.04	0.05		0.02	0.21			0.14		
v/c Ratio	0.84	0.34	0.17	0.37	0.60	0.12	0.39	0.39		0.26	0.65	
Uniform Delay, d1	31.9	33.4	27.1	37.6	41.1	33.2	24.1	13.3		14.4	16.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		0.53	0.79	
Incremental Delay, d2	17.9	0.2	0.1	0.4	2.6	0.1	0.3	0.6		0.1	1.7	
Delay (s)	49.8	33.6	27.1	38.0	43.7	33.3	24.5	13.9		7.8	14.9	
Level of Service	D	C	C	D	D	C	C	B		A	B	
Approach Delay (s)		40.0			38.4			15.1			14.3	
Approach LOS		D			D			B			B	

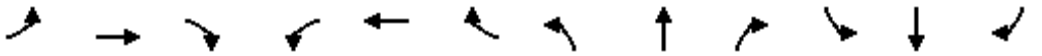
Intersection Summary			
HCM 2000 Control Delay	21.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



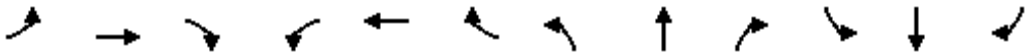
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	1	35	0	166	0	403	41	222	547	1
Future Volume (vph)	0	0	1	35	0	166	0	403	41	222	547	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00			0.95		1.00	0.95	
Frt		0.86			0.89			0.99		1.00	1.00	
Flt Protected		1.00			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		1611			1638			3490		1770	3538	
Flt Permitted		1.00			0.95			1.00		0.95	1.00	
Satd. Flow (perm)		1611			1561			3490		1770	3538	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	0	1	38	0	182	0	443	45	244	601	1
RTOR Reduction (vph)	0	1	0	0	148	0	0	12	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	72	0	0	476	0	244	602	0
Heavy Vehicles (%)	2%	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type		NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2			6								
Actuated Green, G (s)		8.3			8.3			11.5		12.5	28.0	
Effective Green, g (s)		8.3			8.3			12.0		12.5	28.5	
Actuated g/C Ratio		0.19			0.19			0.27		0.28	0.64	
Clearance Time (s)		4.0			4.0			4.5		4.0	4.5	
Vehicle Extension (s)		4.0			4.0			2.5		2.0	2.5	
Lane Grp Cap (vph)		298			289			934		493	2250	
v/s Ratio Prot		0.00						c0.14		c0.14	0.17	
v/s Ratio Perm					c0.05							
v/c Ratio		0.00			0.25			0.51		0.49	0.27	
Uniform Delay, d1		14.9			15.6			13.9		13.5	3.6	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.0			0.6			0.3		0.3	0.0	
Delay (s)		14.9			16.2			14.2		13.8	3.6	
Level of Service		B			B			B		B	A	
Approach Delay (s)		14.9			16.2			14.2			6.6	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	44.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



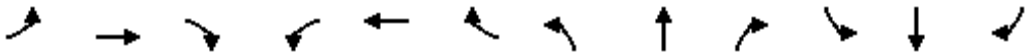
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	641	92	147	953	42	30	262	142	62	453	68
Future Volume (vph)	140	641	92	147	953	42	30	262	142	62	453	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.5		3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3414		1770	3483		1752	1863	1583	1752	1863	1583
Flt Permitted	0.13	1.00		0.18	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	247	3414		331	3483		1752	1863	1583	1752	1863	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	146	668	96	153	993	44	31	273	148	65	472	71
RTOR Reduction (vph)	0	9	0	0	3	0	0	0	120	0	0	53
Lane Group Flow (vph)	146	755	0	153	1034	0	31	273	28	65	472	18
Heavy Vehicles (%)	2%	4%	2%	2%	3%	3%	3%	2%	2%	3%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2			6					8			4
Actuated Green, G (s)	40.0	30.2		40.4	30.4		18.7	18.7	18.7	25.1	25.1	25.1
Effective Green, g (s)	40.0	30.2		40.4	30.4		18.7	18.7	18.7	25.1	25.1	25.1
Actuated g/C Ratio	0.40	0.31		0.41	0.31		0.19	0.19	0.19	0.25	0.25	0.25
Clearance Time (s)	3.5	4.5		3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.5	2.5	2.5	2.5	2.5	2.5
Lane Grp Cap (vph)	250	1041		280	1069		330	351	299	444	472	401
v/s Ratio Prot	c0.06	0.22		0.06	c0.30		0.02	c0.15		0.04	c0.25	
v/s Ratio Perm	0.18			0.17					0.02			0.01
v/c Ratio	0.58	0.73		0.55	0.97		0.09	0.78	0.09	0.15	1.00	0.04
Uniform Delay, d1	22.7	30.7		20.6	33.8		33.2	38.2	33.2	28.6	37.0	27.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.2	2.7		1.2	20.0		0.1	10.0	0.1	0.1	41.4	0.0
Delay (s)	24.9	33.4		21.7	53.8		33.2	48.2	33.3	28.8	78.4	27.9
Level of Service	C	C		C	D		C	D	C	C	E	C
Approach Delay (s)		32.1			49.7			42.3			67.2	
Approach LOS		C			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	46.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	99.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	76.4%	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)	150	44	45	67	83	77	40	726	12	64	1023	48
Future Volume (vph)	150	44	45	67	83	77	40	726	12	64	1023	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.97		1.00	0.97	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.96	1.00		0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1776	1543		1812	1505	1752	3462		1770	3478	
Flt Permitted		0.96	1.00		0.98	1.00	0.14	1.00		0.25	1.00	
Satd. Flow (perm)		1776	1543		1812	1505	259	3462		462	3478	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	170	50	51	76	94	88	45	825	14	73	1162	55
RTOR Reduction (vph)	0	0	42	0	0	74	0	1	0	0	4	0
Lane Group Flow (vph)	0	220	9	0	170	14	45	838	0	73	1214	0
Confl. Peds. (#/hr)			9			9			3			4
Confl. Bikes (#/hr)			4			7			3			1
Heavy Vehicles (%)	3%	3%	2%	2%	3%	4%	3%	4%	2%	2%	3%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8	2			6		
Actuated Green, G (s)		12.0	12.0		10.5	10.5	29.0	29.0		34.1	33.4	
Effective Green, g (s)		12.0	12.0		10.5	10.5	28.5	29.2		33.3	33.6	
Actuated g/C Ratio		0.18	0.18		0.15	0.15	0.42	0.43		0.49	0.49	
Clearance Time (s)		4.0	4.0		4.0	4.0	3.5	4.2		3.5	4.2	
Vehicle Extension (s)		1.2	1.2		1.2	1.2	1.0	1.2		1.0	1.2	
Lane Grp Cap (vph)		312	271		279	232	108	1484		233	1716	
v/s Ratio Prot		c0.12			c0.09			0.24		0.00	c0.35	
v/s Ratio Perm			0.01			0.01	0.17			0.15		
v/c Ratio		0.71	0.03		0.61	0.06	0.42	0.56		0.31	0.71	
Uniform Delay, d1		26.4	23.2		26.9	24.6	13.9	14.7		15.7	13.4	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		5.8	0.0		2.6	0.0	0.9	1.6		0.3	2.5	
Delay (s)		32.2	23.3		29.5	24.6	14.9	16.2		16.0	15.9	
Level of Service		C	C		C	C	B	B		B	B	
Approach Delay (s)		30.5			27.8			16.2			15.9	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	18.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	68.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



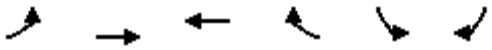
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	219	0	376	0	0	0	0	971	216	499	985	0
Future Volume (vph)	219	0	376	0	0	0	0	971	216	499	985	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00					0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	1.00					1.00	0.96	1.00	1.00	
Flpb, ped/bikes		1.00	1.00					1.00	1.00	1.00	1.00	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1752	1568					3539	1308	1752	3539	
Flt Permitted		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1752	1568					3539	1308	1752	3539	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	258	0	442	0	0	0	0	1142	254	587	1159	0
RTOR Reduction (vph)	0	0	94	0	0	0	0	0	88	0	0	0
Lane Group Flow (vph)	0	258	348	0	0	0	0	1142	166	587	1159	0
Confl. Peds. (#/hr)			2						9			7
Confl. Bikes (#/hr)			1			8						
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	2%	2%	18%	3%	2%	2%
Turn Type	Split	NA	Prot					NA	Perm	Prot	NA	
Protected Phases	4	4	4					2		1	6	
Permitted Phases									2			
Actuated Green, G (s)		23.8	23.8					33.2	33.2	35.0	70.2	
Effective Green, g (s)		21.8	21.8					33.2	33.2	33.0	70.2	
Actuated g/C Ratio		0.22	0.22					0.33	0.33	0.33	0.70	
Clearance Time (s)		2.0	2.0					4.0	4.0	2.0	4.0	
Vehicle Extension (s)		3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		381	341					1174	434	578	2484	
v/s Ratio Prot		0.15	c0.22					c0.32		c0.33	0.33	
v/s Ratio Perm									0.13			
v/c Ratio		0.68	1.02					0.97	0.38	1.02	0.47	
Uniform Delay, d1		35.9	39.1					33.0	25.6	33.5	6.6	
Progression Factor		1.00	1.00					0.81	0.50	0.98	1.22	
Incremental Delay, d2		4.7	54.2					18.7	2.2	37.8	0.5	
Delay (s)		40.6	93.3					45.4	14.9	70.6	8.6	
Level of Service		D	F					D	B	E	A	
Approach Delay (s)		73.9			0.0			39.8			29.4	
Approach LOS		E			A			D			C	

Intersection Summary			
HCM 2000 Control Delay	41.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	134	288	944	246	246	1350
Future Volume (vph)	134	288	944	246	246	1350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	0.95	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1501	3539	1545	1770	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.23	1.00
Satd. Flow (perm)	1770	1501	3539	1545	436	3539
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	158	339	1111	289	289	1588
RTOR Reduction (vph)	0	136	0	0	0	0
Lane Group Flow (vph)	158	203	1111	289	289	1588
Confl. Peds. (#/hr)				9		
Confl. Bikes (#/hr)		26				
Turn Type	Prot	Perm	NA	Free	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		Free	6	
Actuated Green, G (s)	15.5	15.5	77.5	100.0	79.5	79.5
Effective Green, g (s)	14.5	14.5	77.5	100.0	77.5	77.5
Actuated g/C Ratio	0.14	0.14	0.78	1.00	0.78	0.78
Clearance Time (s)	3.0	3.0	4.0		2.0	2.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	256	217	2742	1545	337	2742
v/s Ratio Prot	0.09		0.31			0.45
v/s Ratio Perm		c0.14		0.19	c0.66	
v/c Ratio	0.62	0.94	0.41	0.19	0.86	0.58
Uniform Delay, d1	40.1	42.3	3.7	0.0	7.5	4.6
Progression Factor	1.00	1.00	2.12	1.00	1.20	0.73
Incremental Delay, d2	4.4	43.1	0.2	0.1	12.8	0.4
Delay (s)	44.5	85.4	8.0	0.1	21.9	3.8
Level of Service	D	F	A	A	C	A
Approach Delay (s)	72.4		6.4			6.6
Approach LOS	E		A			A

Intersection Summary			
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		

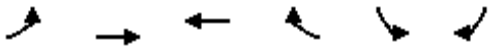
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	274	259	15	55	31
Future Volume (Veh/h)	10	274	259	15	55	31
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	12	334	316	18	67	38
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	334				683	325
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	334				683	325
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				84	95
cM capacity (veh/h)	1225				411	716

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	346	334	105
Volume Left	12	0	67
Volume Right	0	18	38
cSH	1225	1700	486
Volume to Capacity	0.01	0.20	0.22
Queue Length 95th (ft)	1	0	20
Control Delay (s)	0.4	0.0	14.4
Lane LOS	A		B
Approach Delay (s)	0.4	0.0	14.4
Approach LOS			B

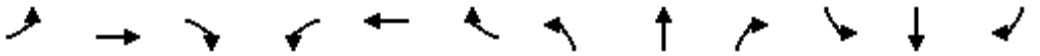
Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	34.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	62	639	573	74	238	166
Future Volume (vph)	62	639	573	74	238	166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0	5.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	3539	3473		1770	1583
Flt Permitted	0.32	1.00	1.00		0.95	1.00
Satd. Flow (perm)	589	3539	3473		1770	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	67	687	616	80	256	178
RTOR Reduction (vph)	0	0	16	0	0	125
Lane Group Flow (vph)	67	687	680	0	256	53
Confl. Peds. (#/hr)				2		
Confl. Bikes (#/hr)						6
Turn Type	pm+pt	NA	NA		Prot	Prot
Protected Phases	7	4	8		6	6
Permitted Phases	4					
Actuated Green, G (s)	33.6	33.6	29.4		17.9	17.9
Effective Green, g (s)	33.6	33.6	29.4		17.9	17.9
Actuated g/C Ratio	0.56	0.56	0.49		0.30	0.30
Clearance Time (s)	3.0	5.0	5.0		4.0	4.0
Vehicle Extension (s)	2.0	3.0	3.0		4.0	4.0
Lane Grp Cap (vph)	350	1965	1687		523	468
v/s Ratio Prot	0.00	c0.19	c0.20		c0.14	0.03
v/s Ratio Perm	0.10					
v/c Ratio	0.19	0.35	0.40		0.49	0.11
Uniform Delay, d1	6.5	7.4	9.9		17.5	15.5
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	0.1	0.2		3.3	0.5
Delay (s)	6.6	7.5	10.1		20.8	16.0
Level of Service	A	A	B		C	B
Approach Delay (s)		7.5	10.1		18.8	
Approach LOS		A	B		B	

Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	60.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		

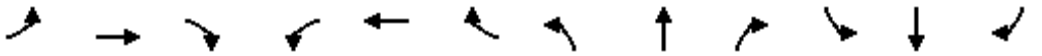
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	124	18	191	125	76	22	654	205	120	689	39
Future Volume (vph)	15	124	18	191	125	76	22	654	205	120	689	39
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		4.0	4.2		4.0	4.2	4.2
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes		0.99		1.00	0.99		1.00	0.99		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		0.98		1.00	0.94		1.00	0.96		1.00	1.00	0.85
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1814		1770	1739		1770	3376		1770	3539	1504
Flt Permitted		0.95		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1730		1770	1739		1770	3376		1770	3539	1504
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	17	138	20	212	139	84	24	727	228	133	766	43
RTOR Reduction (vph)	0	0	0	0	23	0	0	28	0	0	0	21
Lane Group Flow (vph)	0	175	0	212	200	0	24	927	0	133	766	22
Confl. Peds. (#/hr)	10		10			10			10			10
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Perm	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4											6
Actuated Green, G (s)		13.5		14.5	32.6		2.9	44.8		9.8	51.7	51.7
Effective Green, g (s)		13.5		14.5	32.6		2.9	44.8		9.8	51.7	51.7
Actuated g/C Ratio		0.14		0.14	0.33		0.03	0.45		0.10	0.52	0.52
Clearance Time (s)		4.6		4.6	4.6		4.0	4.2		4.0	4.2	4.2
Vehicle Extension (s)		2.0		2.0	2.5		2.0	4.0		2.0	4.0	4.0
Lane Grp Cap (vph)		233		256	566		51	1512		173	1829	777
v/s Ratio Prot				c0.12	0.12		0.01	c0.27		c0.08	0.22	
v/s Ratio Perm		c0.10										0.01
v/c Ratio		0.75		0.83	0.35		0.47	0.61		0.77	0.42	0.03
Uniform Delay, d1		41.6		41.5	25.7		47.8	21.0		44.0	14.9	11.8
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		11.4		18.5	0.3		2.5	1.9		16.7	0.7	0.1
Delay (s)		53.1		60.0	26.0		50.3	22.9		60.7	15.6	11.9
Level of Service		D		E	C		D	C		E	B	B
Approach Delay (s)		53.1			42.6			23.5			21.8	
Approach LOS		D			D			C			C	

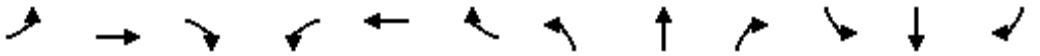
Intersection Summary			
HCM 2000 Control Delay	28.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.4
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



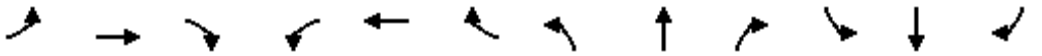
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	150	0	300	0	880	470	0	804	577
Future Volume (vph)	0	0	0	150	0	300	0	880	470	0	804	577
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				1.00		1.00		0.95	1.00		1.00	1.00
Frpb, ped/bikes				1.00		1.00		1.00	0.98		1.00	1.00
Flpb, ped/bikes				1.00		1.00		1.00	1.00		1.00	1.00
Frt				1.00		0.85		1.00	0.85		1.00	0.85
Flt Protected				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)				1736		1553		3539	1550		1845	1538
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				1736		1553		3539	1550		1845	1538
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)	0	0	0	158	0	316	0	926	495	0	846	607
RTOR Reduction (vph)	0	0	0	0	0	104	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	158	0	212	0	926	495	0	846	607
Confl. Peds. (#/hr)									2			5
Confl. Bikes (#/hr)												4
Heavy Vehicles (%)	2%	2%	2%	4%	2%	4%	2%	2%	2%	2%	3%	5%
Turn Type				Prot		Prot		NA	Free		NA	Prot
Protected Phases				8		8		2			6	6
Permitted Phases									Free			
Actuated Green, G (s)				17.9		17.9		74.6	100.0		74.6	74.6
Effective Green, g (s)				17.4		17.4		74.6	100.0		74.6	74.6
Actuated g/C Ratio				0.17		0.17		0.75	1.00		0.75	0.75
Clearance Time (s)				3.5		3.5		4.0			4.0	4.0
Vehicle Extension (s)				2.0		2.0		4.0			4.0	4.0
Lane Grp Cap (vph)				302		270		2640	1550		1376	1147
v/s Ratio Prot				0.09		c0.14		0.26			c0.46	0.39
v/s Ratio Perm									0.32			
v/c Ratio				0.52		0.78		0.35	0.32		0.61	0.53
Uniform Delay, d1				37.5		39.5		4.4	0.0		6.0	5.3
Progression Factor				1.00		1.00		0.75	1.00		1.42	1.40
Incremental Delay, d2				0.8		12.9		0.2	0.3		1.4	1.2
Delay (s)				38.3		52.4		3.4	0.3		9.8	8.7
Level of Service				D		D		A	A		A	A
Approach Delay (s)		0.0			47.7			2.3			9.3	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	57.3%	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)	390	0	514	0	0	0	0	964	180	0	667	287
Future Volume (vph)	390	0	514	0	0	0	0	964	180	0	667	287
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	1.00		1.00					1.00	1.00		0.95	1.00
Frpb, ped/bikes	1.00		1.00					1.00	0.98		1.00	0.98
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	1.00
Frt	1.00		0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	1770		1583					1845	1359		3539	1547
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	1770		1583					1845	1359		3539	1547
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)	419	0	553	0	0	0	0	1037	194	0	717	309
RTOR Reduction (vph)	0	0	159	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	419	0	394	0	0	0	0	1037	194	0	717	309
Confl. Peds. (#/hr)			3						2			6
Confl. Bikes (#/hr)			4						4			
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	3%	16%	2%	2%	2%
Turn Type	Prot		Prot					NA	Perm		NA	Free
Protected Phases	4		4					2			6	
Permitted Phases									2			Free
Actuated Green, G (s)	28.5		28.5					65.0	65.0		63.5	100.0
Effective Green, g (s)	28.5		28.5					63.5	63.5		63.5	100.0
Actuated g/C Ratio	0.28		0.28					0.64	0.64		0.64	1.00
Clearance Time (s)	4.0		4.0					2.5	2.5		4.0	
Vehicle Extension (s)	3.0		3.0					4.0	4.0		4.0	
Lane Grp Cap (vph)	504		451					1171	862		2247	1547
v/s Ratio Prot	0.24		c0.25					c0.56			0.20	
v/s Ratio Perm									0.14			0.20
v/c Ratio	0.83		0.87					0.89	0.23		0.32	0.20
Uniform Delay, d1	33.5		34.0					15.2	7.8		8.4	0.0
Progression Factor	1.00		1.00					0.95	0.72		1.41	1.00
Incremental Delay, d2	11.2		16.8					9.2	0.5		0.3	0.2
Delay (s)	44.7		50.8					23.7	6.1		12.1	0.2
Level of Service	D		D					C	A		B	A
Approach Delay (s)		48.1			0.0			20.9			8.5	
Approach LOS		D			A			C			A	

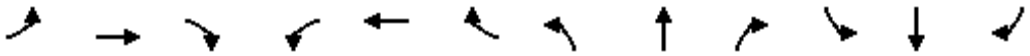
Intersection Summary			
HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	142	74	176	11	156	257	381	730	14	102	761	308
Future Volume (vph)	142	74	176	11	156	257	381	730	14	102	761	308
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.99
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	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1845	1583	1770	1863	1540	3433	3462		1770	3539	1561
Flt Permitted	0.37	1.00	1.00	0.71	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	691	1845	1583	1316	1863	1540	3433	3462		1770	3539	1561
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)	149	78	185	12	164	271	401	768	15	107	801	324
RTOR Reduction (vph)	0	0	125	0	0	96	0	1	0	0	0	140
Lane Group Flow (vph)	149	78	60	12	164	175	401	782	0	107	801	184
Confl. Peds. (#/hr)						1						3
Heavy Vehicles (%)	3%	3%	2%	2%	2%	4%	2%	4%	2%	2%	2%	2%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8						6
Actuated Green, G (s)	28.2	23.2	36.2	16.7	15.7	24.8	13.0	51.2		9.1	47.8	56.3
Effective Green, g (s)	28.2	23.7	32.2	16.7	16.2	24.8	11.0	50.2		9.1	48.3	54.3
Actuated g/C Ratio	0.28	0.24	0.32	0.17	0.16	0.25	0.11	0.50		0.09	0.48	0.54
Clearance Time (s)	4.0	4.5	2.0	4.0	4.5	4.0	2.0	3.0		4.0	4.5	4.0
Vehicle Extension (s)	1.0	1.2	1.2	1.0	1.2	1.0	1.2	1.2		1.0	1.2	1.0
Lane Grp Cap (vph)	285	437	509	224	301	381	377	1737		161	1709	847
v/s Ratio Prot	c0.04	0.04	0.01	0.00	0.09	0.04	c0.12	0.23		0.06	c0.23	0.02
v/s Ratio Perm	c0.10		0.02	0.01		0.07						0.10
v/c Ratio	0.52	0.18	0.12	0.05	0.54	0.46	1.06	0.45		0.66	0.47	0.22
Uniform Delay, d1	28.6	30.4	23.9	34.9	38.5	31.9	44.5	16.0		44.0	17.3	11.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.11	0.70	0.64
Incremental Delay, d2	0.8	0.1	0.0	0.0	1.1	0.3	64.2	0.8		6.6	0.8	0.0
Delay (s)	29.4	30.5	23.9	35.0	39.6	32.2	108.7	16.9		55.4	12.8	7.6
Level of Service	C	C	C	C	D	C	F	B		E	B	A
Approach Delay (s)		27.1			35.0			48.0			15.2	
Approach LOS		C			D			D			B	

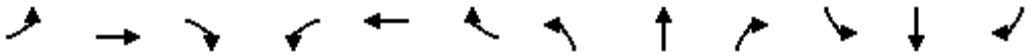
Intersection Summary			
HCM 2000 Control Delay	31.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	588	125	56	893	416	120	173	43	339	211	54
Future Volume (vph)	52	588	125	56	893	416	120	173	43	339	211	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85		0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98		0.95	1.00	
Satd. Flow (prot)	1770	3406		1752	3438	1549		1796		1770	1794	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98		0.95	1.00	
Satd. Flow (perm)	1770	3406		1752	3438	1549		1796		1770	1794	
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)	56	632	134	60	960	447	129	186	46	365	227	58
RTOR Reduction (vph)	0	14	0	0	0	180	0	5	0	0	8	0
Lane Group Flow (vph)	56	752	0	60	960	267	0	356	0	365	277	0
Confl. Peds. (#/hr)						1						
Confl. Bikes (#/hr)			1									2
Heavy Vehicles (%)	2%	3%	2%	3%	5%	2%	2%	2%	3%	2%	2%	4%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6						
Actuated Green, G (s)	6.0	33.4		6.2	33.6	33.6		24.9		26.1	26.1	
Effective Green, g (s)	6.0	34.4		6.2	34.6	34.6		24.9		26.1	26.1	
Actuated g/C Ratio	0.06	0.32		0.06	0.32	0.32		0.23		0.24	0.24	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0		4.0		4.0	4.0	
Vehicle Extension (s)	1.5	1.5		1.5	1.5	1.5		1.5		1.5	1.5	
Lane Grp Cap (vph)	98	1088		100	1105	498		415		429	435	
v/s Ratio Prot	0.03	0.22		c0.03	c0.28			c0.20		c0.21	0.15	
v/s Ratio Perm						0.17						
v/c Ratio	0.57	0.69		0.60	0.87	0.54		0.86		0.85	0.64	
Uniform Delay, d1	49.5	32.0		49.5	34.4	29.9		39.7		38.9	36.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	4.9	1.5		6.3	7.2	0.6		15.5		14.4	2.3	
Delay (s)	54.5	33.5		55.8	41.6	30.5		55.1		53.3	38.8	
Level of Service	D	C		E	D	C		E		D	D	
Approach Delay (s)		34.9			38.8			55.1			46.9	
Approach LOS		C			D			E			D	

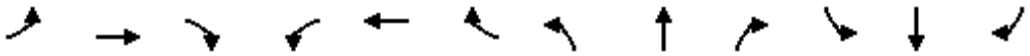
Intersection Summary			
HCM 2000 Control Delay	41.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	107.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	3	47	11	2	31	50	1295	61	74	997	16
Future Volume (vph)	56	3	47	11	2	31	50	1295	61	74	997	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.93		1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.86		1.00	0.86		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1490		1770	1564		1770	3512		1770	3530	
Flt Permitted	0.54	1.00		1.00	1.00		0.22	1.00		0.13	1.00	
Satd. Flow (perm)	1007	1490		1863	1564		417	3512		241	3530	
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)	60	3	51	12	2	33	54	1392	66	80	1072	17
RTOR Reduction (vph)	0	44	0	0	32	0	0	2	0	0	1	0
Lane Group Flow (vph)	60	10	0	12	3	0	54	1456	0	80	1088	0
Confl. Peds. (#/hr)			44						1			
Confl. Bikes (#/hr)			1			2			1			1
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	14.2	14.2		3.8	3.8		73.2	68.4		74.0	68.8	
Effective Green, g (s)	13.8	14.2		3.8	3.8		72.4	69.0		73.2	69.4	
Actuated g/C Ratio	0.14	0.14		0.04	0.04		0.72	0.69		0.73	0.69	
Clearance Time (s)	3.6	4.0		4.0	4.0		3.6	4.6		3.6	4.6	
Vehicle Extension (s)	2.5	2.5		2.0	2.0		2.5	3.0		2.5	3.0	
Lane Grp Cap (vph)	187	211		70	59		361	2423		249	2449	
v/s Ratio Prot	c0.02	0.01			0.00		0.01	c0.41		c0.02	0.31	
v/s Ratio Perm	c0.02			0.01			0.10			0.22		
v/c Ratio	0.32	0.05		0.17	0.06		0.15	0.60		0.32	0.44	
Uniform Delay, d1	38.5	37.1		46.6	46.4		4.5	8.2		6.2	6.8	
Progression Factor	1.00	1.00		1.00	1.00		0.69	0.61		1.00	1.00	
Incremental Delay, d2	0.7	0.1		0.4	0.1		0.1	0.9		0.5	0.6	
Delay (s)	39.2	37.1		47.0	46.5		3.2	5.9		6.8	7.4	
Level of Service	D	D		D	D		A	A		A	A	
Approach Delay (s)		38.2			46.6			5.8			7.3	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		

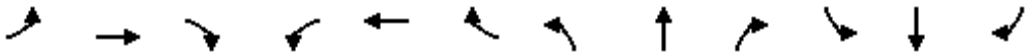
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	158	103	69	99	125	212	69	1033	97	182	774	131
Future Volume (vph)	158	103	69	99	125	212	69	1033	97	182	774	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	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	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1542	1770	1863	1583	1770	3485		1770	3450	
Flt Permitted	0.36	1.00	1.00	0.69	1.00	1.00	0.24	1.00		0.11	1.00	
Satd. Flow (perm)	676	1863	1542	1277	1863	1583	445	3485		204	3450	
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)	170	111	74	106	134	228	74	1111	104	196	832	141
RTOR Reduction (vph)	0	0	58	0	0	136	0	5	0	0	10	0
Lane Group Flow (vph)	170	111	16	106	134	92	74	1210	0	196	963	0
Confl. Peds. (#/hr)			13						3			2
Confl. Bikes (#/hr)			7						4			2
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6	7	3	8		7	4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	28.1	15.6	20.9	20.0	11.5	21.4	53.9	48.6		63.1	53.6	
Effective Green, g (s)	28.3	15.8	21.3	20.0	11.5	22.6	54.3	49.2		63.7	54.2	
Actuated g/C Ratio	0.28	0.16	0.21	0.20	0.12	0.23	0.54	0.49		0.64	0.54	
Clearance Time (s)	4.2	4.2	4.2	4.0	4.0	4.6	4.2	4.6		4.6	4.6	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	331	294	390	297	214	357	314	1714		294	1869	
v/s Ratio Prot	c0.07	0.06	0.00	0.03	c0.07	0.03	0.01	c0.35		c0.07	0.28	
v/s Ratio Perm	0.08		0.01	0.04		0.03	0.11			0.35		
v/c Ratio	0.51	0.38	0.04	0.36	0.63	0.26	0.24	0.71		0.67	0.52	
Uniform Delay, d1	28.7	37.7	31.2	34.0	42.2	31.8	11.4	19.8		14.6	14.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		2.19	0.59	
Incremental Delay, d2	0.6	0.3	0.0	0.3	4.1	0.1	0.1	2.5		4.1	1.0	
Delay (s)	29.3	38.0	31.3	34.3	46.3	31.9	11.5	22.2		36.1	9.5	
Level of Service	C	D	C	C	D	C	B	C		D	A	
Approach Delay (s)		32.4			36.6			21.6			13.9	
Approach LOS		C			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	22.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		

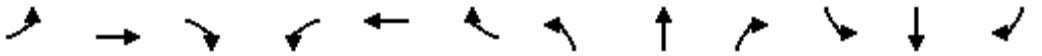
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1	6	51	2	339	6	752	48	166	529	7
Future Volume (vph)	10	1	6	51	2	339	6	752	48	166	529	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.95			0.88		1.00	0.99		1.00	1.00	
Flt Protected		0.97			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1726			1634		1770	3507		1770	3533	
Flt Permitted		0.73			0.96		0.44	1.00		0.20	1.00	
Satd. Flow (perm)		1290			1575		815	3507		377	3533	
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)	11	1	6	54	2	361	6	800	51	177	563	7
RTOR Reduction (vph)	0	5	0	0	231	0	0	6	0	0	1	0
Lane Group Flow (vph)	0	13	0	0	186	0	6	845	0	177	569	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		12.3			12.3		23.2	22.5		33.5	28.8	
Effective Green, g (s)		12.3			12.3		23.2	23.0		33.5	29.3	
Actuated g/C Ratio		0.23			0.23		0.43	0.42		0.62	0.54	
Clearance Time (s)		4.0			4.0		4.0	4.5		4.0	4.5	
Vehicle Extension (s)		4.0			4.0		2.0	2.5		2.0	2.5	
Lane Grp Cap (vph)		292			356		360	1485		412	1906	
v/s Ratio Prot							0.00	c0.24		c0.06	0.16	
v/s Ratio Perm		0.01			c0.12		0.01			0.21		
v/c Ratio		0.05			0.52		0.02	0.57		0.43	0.30	
Uniform Delay, d1		16.4			18.4		8.9	11.9		5.8	6.9	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			1.8		0.0	0.4		0.3	0.1	
Delay (s)		16.5			20.2		8.9	12.3		6.1	6.9	
Level of Service		B			C		A	B		A	A	
Approach Delay (s)		16.5			20.2			12.3			6.7	
Approach LOS		B			C			B			A	

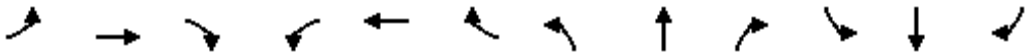
Intersection Summary			
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	54.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	235	816	64	167	1097	128	68	442	207	83	369	134
Future Volume (vph)	235	816	64	167	1097	128	68	442	207	83	369	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3408		1770	3484		1770	1863	1583	1770	1863	1583
Flt Permitted	0.12	1.00		0.21	1.00		0.31	1.00	1.00	0.21	1.00	1.00
Satd. Flow (perm)	230	3408		393	3484		568	1863	1583	384	1863	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	245	850	67	174	1143	133	71	460	216	86	384	140
RTOR Reduction (vph)	0	6	0	0	10	0	0	0	148	0	0	96
Lane Group Flow (vph)	245	911	0	174	1266	0	71	460	68	86	384	44
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8		8	4		4
Actuated Green, G (s)	44.3	32.9		38.7	30.1		25.0	25.0	25.0	25.0	25.0	25.0
Effective Green, g (s)	43.3	33.4		37.7	30.6		24.5	24.5	24.5	24.5	24.5	24.5
Actuated g/C Ratio	0.56	0.43		0.48	0.39		0.31	0.31	0.31	0.31	0.31	0.31
Clearance Time (s)	3.5	4.5		3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.5	2.5	2.5	2.5	2.5	2.5
Lane Grp Cap (vph)	342	1459		332	1366		178	585	497	120	585	497
v/s Ratio Prot	c0.10	0.27		0.05	c0.36			c0.25			0.21	
v/s Ratio Perm	0.30			0.20			0.12		0.04	0.22		0.03
v/c Ratio	0.72	0.62		0.52	0.93		0.40	0.79	0.14	0.72	0.66	0.09
Uniform Delay, d1	15.7	17.4		12.4	22.6		21.0	24.4	19.2	23.7	23.1	18.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.8	1.0		0.7	11.1		1.1	6.7	0.1	17.2	2.4	0.1
Delay (s)	21.5	18.4		13.1	33.7		22.0	31.0	19.3	40.9	25.5	18.9
Level of Service	C	B		B	C		C	C	B	D	C	B
Approach Delay (s)		19.0			31.3			26.8			26.2	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	78.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	88.6%	ICU Level of Service	E
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)	141	89	42	52	147	143	48	957	27	98	1216	156
Future Volume (vph)	141	89	42	52	147	143	48	957	27	98	1216	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.97		1.00	0.97	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected		0.97	1.00		0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1790	1536		1825	1500	1752	3456		1770	3436	
Flt Permitted		0.97	1.00		0.99	1.00	0.09	1.00		0.16	1.00	
Satd. Flow (perm)		1790	1536		1825	1500	167	3456		295	3436	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	142	90	42	53	148	144	48	967	27	99	1228	158
RTOR Reduction (vph)	0	0	35	0	0	121	0	2	0	0	7	0
Lane Group Flow (vph)	0	232	7	0	201	23	48	992	0	99	1379	0
Confl. Peds. (#/hr)			9			9			3			4
Confl. Bikes (#/hr)			4			7			3			1
Heavy Vehicles (%)	3%	3%	2%	2%	3%	4%	3%	4%	2%	2%	3%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8	2			6		
Actuated Green, G (s)		17.4	17.4		15.7	15.7	49.0	44.7		53.6	47.0	
Effective Green, g (s)		17.4	17.4		15.7	15.7	48.0	44.9		52.6	47.2	
Actuated g/C Ratio		0.17	0.17		0.16	0.16	0.48	0.45		0.53	0.47	
Clearance Time (s)		4.0	4.0		4.0	4.0	3.5	4.2		3.5	4.2	
Vehicle Extension (s)		1.2	1.2		1.2	1.2	1.0	1.2		1.0	1.2	
Lane Grp Cap (vph)		311	266		286	235	140	1550		244	1620	
v/s Ratio Prot		c0.13			c0.11		0.01	0.29		c0.02	c0.40	
v/s Ratio Perm			0.00			0.02	0.15			0.19		
v/c Ratio		0.75	0.03		0.70	0.10	0.34	0.64		0.41	0.85	
Uniform Delay, d1		39.3	34.3		40.0	36.1	18.8	21.4		14.6	23.4	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		8.2	0.0		6.3	0.1	0.5	0.7		0.4	4.4	
Delay (s)		47.5	34.3		46.2	36.2	19.4	22.0		15.0	27.7	
Level of Service		D	C		D	D	B	C		B	C	
Approach Delay (s)		45.5			42.0			21.9			26.9	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	100.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

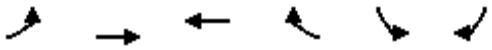
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	289	0	356	0	0	0	0	1258	147	289	1377	0
Future Volume (vph)	289	0	356	0	0	0	0	1258	147	289	1377	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5	4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00					0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	1.00					1.00	0.96	1.00	1.00	
Flpb, ped/bikes		1.00	1.00					1.00	1.00	1.00	1.00	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1752	1568					3539	1308	1752	3539	
Flt Permitted		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1752	1568					3539	1308	1752	3539	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	295	0	363	0	0	0	0	1284	150	295	1405	0
RTOR Reduction (vph)	0	0	54	0	0	0	0	0	43	0	0	0
Lane Group Flow (vph)	0	295	309	0	0	0	0	1284	107	295	1405	0
Confl. Peds. (#/hr)			2						9			7
Confl. Bikes (#/hr)			1			8						
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	2%	2%	18%	3%	2%	2%
Turn Type	Split	NA	Prot					NA	Perm	Prot	NA	
Protected Phases	4	4	4					2		1	6	
Permitted Phases									2			
Actuated Green, G (s)		22.0	22.0					48.0	48.0	19.5	70.5	
Effective Green, g (s)		20.0	21.5					48.0	48.0	18.5	70.5	
Actuated g/C Ratio		0.20	0.22					0.48	0.48	0.18	0.70	
Clearance Time (s)		3.5	3.5					4.0	4.0	3.0	4.0	
Vehicle Extension (s)		2.0	2.0					3.5	3.5	2.0	4.0	
Lane Grp Cap (vph)		350	337					1698	627	324	2494	
v/s Ratio Prot		0.17	c0.20					c0.36		c0.17	0.40	
v/s Ratio Perm									0.08			
v/c Ratio		0.84	0.92					0.76	0.17	0.91	0.56	
Uniform Delay, d1		38.5	38.4					21.2	14.7	39.9	7.2	
Progression Factor		1.00	1.00					1.00	0.88	0.90	1.30	
Incremental Delay, d2		16.0	28.1					2.9	0.5	24.4	0.8	
Delay (s)		54.5	66.5					24.1	13.6	60.3	10.1	
Level of Service		D	E					C	B	E	B	
Approach Delay (s)		61.1			0.0			23.0			18.8	
Approach LOS		E			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	27.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	181	524	1241	306	218	1486
Future Volume (vph)	181	524	1241	306	218	1486
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	3539	1545	1770	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1583	3539	1545	1770	3539
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	187	540	1279	315	225	1532
RTOR Reduction (vph)	0	19	0	0	0	0
Lane Group Flow (vph)	187	521	1279	315	225	1532
Confl. Peds. (#/hr)				9		
Confl. Bikes (#/hr)		26				
Turn Type	Prot	pt+ov	NA	Free	Prot	NA
Protected Phases	8	8 1	2		1	6
Permitted Phases				Free		
Actuated Green, G (s)	18.5	39.5	53.5	100.0	19.0	76.5
Effective Green, g (s)	17.5	35.5	53.5	100.0	17.0	74.5
Actuated g/C Ratio	0.18	0.36	0.54	1.00	0.17	0.74
Clearance Time (s)	3.0		4.0		2.0	2.0
Vehicle Extension (s)	2.0		4.0		2.0	4.0
Lane Grp Cap (vph)	309	561	1893	1545	300	2636
v/s Ratio Prot	0.11	c0.33	c0.36		0.13	0.43
v/s Ratio Perm				0.20		
v/c Ratio	0.61	0.93	0.68	0.20	0.75	0.58
Uniform Delay, d1	38.1	31.0	16.9	0.0	39.5	5.7
Progression Factor	1.00	1.00	0.47	1.00	1.03	1.04
Incremental Delay, d2	2.3	21.4	1.3	0.2	8.1	0.5
Delay (s)	40.4	52.4	9.2	0.2	48.8	6.4
Level of Service	D	D	A	A	D	A
Approach Delay (s)	49.3		7.4			11.8
Approach LOS	D		A			B

Intersection Summary			
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		

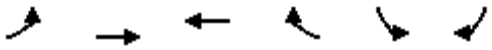
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	38	385	425	59	30	42
Future Volume (Veh/h)	38	385	425	59	30	42
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	43	433	478	66	34	47
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	544				1030	511
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	544				1030	511
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				86	92
cM capacity (veh/h)	1025				248	563

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	476	544	81
Volume Left	43	0	34
Volume Right	0	66	47
cSH	1025	1700	367
Volume to Capacity	0.04	0.32	0.22
Queue Length 95th (ft)	3	0	21
Control Delay (s)	1.2	0.0	17.6
Lane LOS	A		C
Approach Delay (s)	1.2	0.0	17.6
Approach LOS			C

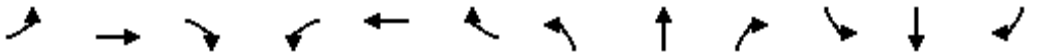
Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	175	939	1064	157	112	90
Future Volume (vph)	175	939	1064	157	112	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	3539	3471		1770	1583
Flt Permitted	0.10	1.00	1.00		0.95	1.00
Satd. Flow (perm)	190	3539	3471		1770	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	194	1043	1182	174	124	100
RTOR Reduction (vph)	0	0	14	0	0	84
Lane Group Flow (vph)	194	1043	1342	0	124	16
Confl. Peds. (#/hr)						1
Confl. Bikes (#/hr)						2
Turn Type	pm+pt	NA	NA		Prot	Prot
Protected Phases	7	4	8		6	6
Permitted Phases	4					
Actuated Green, G (s)	48.2	48.2	36.2		11.0	11.0
Effective Green, g (s)	47.2	49.2	37.2		11.0	11.0
Actuated g/C Ratio	0.69	0.72	0.55		0.16	0.16
Clearance Time (s)	3.0	5.0	5.0		4.0	4.0
Vehicle Extension (s)	2.0	3.0	3.0		4.0	4.0
Lane Grp Cap (vph)	316	2553	1893		285	255
v/s Ratio Prot	c0.07	0.29	c0.39		c0.07	0.01
v/s Ratio Perm	0.35					
v/c Ratio	0.61	0.41	0.71		0.44	0.06
Uniform Delay, d1	9.9	3.8	11.5		25.8	24.2
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.5	0.1	1.2		1.5	0.1
Delay (s)	12.4	3.9	12.7		27.2	24.4
Level of Service	B	A	B		C	C
Approach Delay (s)		5.2	12.7		26.0	
Approach LOS		A	B		C	

Intersection Summary			
HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	68.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



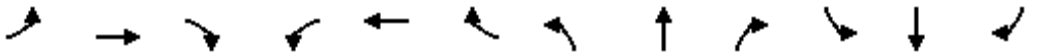
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	65	59	211	130	60	56	793	199	65	649	18
Future Volume (vph)	56	65	59	211	130	60	56	793	199	65	649	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6		4.6	4.6		4.0	4.2		4.0	4.2	4.2
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes		0.99		1.00	0.99		1.00	0.99		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		0.96		1.00	0.95		1.00	0.97		1.00	1.00	0.85
Flt Protected		0.98		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1724		1770	1757		1770	3396		1770	3539	1500
Flt Permitted		0.82		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1432		1770	1757		1770	3396		1770	3539	1500
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	62	72	66	234	144	67	62	881	221	72	721	20
RTOR Reduction (vph)	0	0	0	0	17	0	0	21	0	0	0	11
Lane Group Flow (vph)	0	200	0	234	194	0	62	1081	0	72	721	9
Confl. Peds. (#/hr)	10		10			10			10			10
Confl. Bikes (#/hr)			8			13			20			12
Turn Type	Perm	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4											6
Actuated Green, G (s)		15.1		15.1	34.8		6.8	45.3		7.1	45.6	45.6
Effective Green, g (s)		15.1		15.1	34.8		6.8	45.3		7.1	45.6	45.6
Actuated g/C Ratio		0.15		0.15	0.35		0.07	0.45		0.07	0.46	0.46
Clearance Time (s)		4.6		4.6	4.6		4.0	4.2		4.0	4.2	4.2
Vehicle Extension (s)		2.0		2.0	2.5		2.0	4.0		2.0	4.0	4.0
Lane Grp Cap (vph)		216		267	611		120	1538		125	1613	684
v/s Ratio Prot				c0.13	0.11		0.04	c0.32		c0.04	0.20	
v/s Ratio Perm		c0.14										0.01
v/c Ratio		0.93		0.88	0.32		0.52	0.70		0.58	0.45	0.01
Uniform Delay, d1		41.9		41.5	23.9		45.0	22.0		45.0	18.6	14.9
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		40.3		25.2	0.2		1.6	2.7		3.9	0.9	0.0
Delay (s)		82.2		66.7	24.1		46.6	24.7		48.9	19.5	14.9
Level of Service		F		E	C		D	C		D	B	B
Approach Delay (s)		82.2			46.5			25.8			22.0	
Approach LOS		F			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	32.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.4
Intersection Capacity Utilization	72.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

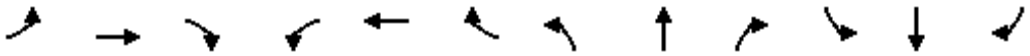
Appendix F

Intersection Level of Service Technical Calculations
Pipeline Conditions



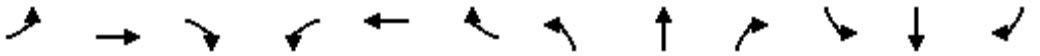
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	166	0	347	0	877	353	0	893	375
Future Volume (vph)	0	0	0	166	0	347	0	877	353	0	893	375
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				1.00		1.00		0.95	1.00		1.00	1.00
Frpb, ped/bikes				1.00		1.00		1.00	0.98		1.00	0.97
Flpb, ped/bikes				1.00		1.00		1.00	1.00		1.00	1.00
Frt				1.00		0.85		1.00	0.85		1.00	0.85
Flt Protected				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)				1703		1524		3539	1550		1863	1514
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				1703		1524		3539	1550		1863	1514
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)	0	0	0	175	0	365	0	923	372	0	940	395
RTOR Reduction (vph)	0	0	0	0	0	186	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	175	0	179	0	923	372	0	940	395
Confl. Peds. (#/hr)									2			5
Confl. Bikes (#/hr)												4
Heavy Vehicles (%)	2%	2%	2%	6%	2%	6%	2%	2%	2%	2%	2%	4%
Turn Type				Prot		Prot		NA	Free		NA	Perm
Protected Phases				8		8		2			6	
Permitted Phases									Free			6
Actuated Green, G (s)				14.7		14.7		77.8	100.0		77.8	77.8
Effective Green, g (s)				14.2		14.2		77.8	100.0		77.8	77.8
Actuated g/C Ratio				0.14		0.14		0.78	1.00		0.78	0.78
Clearance Time (s)				3.5		3.5		4.0			4.0	4.0
Vehicle Extension (s)				2.0		2.0		4.0			4.0	4.0
Lane Grp Cap (vph)				241		216		2753	1550		1449	1177
v/s Ratio Prot				0.10		c0.12		0.26			c0.50	
v/s Ratio Perm									0.24			0.26
v/c Ratio				0.73		0.83		0.34	0.24		0.65	0.34
Uniform Delay, d1				41.0		41.7		3.3	0.0		5.0	3.3
Progression Factor				1.00		1.00		0.76	1.00		1.73	1.04
Incremental Delay, d2				8.9		21.3		0.2	0.3		2.1	0.7
Delay (s)				49.9		63.0		2.8	0.3		10.7	4.2
Level of Service				D		E		A	A		B	A
Approach Delay (s)		0.0			58.7			2.1			8.7	
Approach LOS		A			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	14.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	62.9%	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)	538	0	530	0	0	0	0	694	136	0	704	356
Future Volume (vph)	538	0	530	0	0	0	0	694	136	0	704	356
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	1.00		1.00					1.00	1.00		0.95	1.00
Frpb, ped/bikes	1.00		1.00					1.00	0.98		1.00	0.98
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	1.00
Frt	1.00		0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	1736		1553					1845	1347		3539	1547
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	1736		1553					1845	1347		3539	1547
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	549	0	541	0	0	0	0	708	139	0	718	363
RTOR Reduction (vph)	0	0	96	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	549	0	445	0	0	0	0	708	139	0	718	363
Confl. Peds. (#/hr)			3						2			6
Confl. Bikes (#/hr)			4						4			
Heavy Vehicles (%)	4%	2%	4%	2%	2%	2%	2%	3%	17%	2%	2%	2%
Turn Type	Prot		Prot					NA	Perm		NA	Free
Protected Phases	4		4					2			6	
Permitted Phases									2			Free
Actuated Green, G (s)	37.4		37.4					54.6	54.6		54.6	100.0
Effective Green, g (s)	37.4		37.4					54.6	54.6		54.6	100.0
Actuated g/C Ratio	0.37		0.37					0.55	0.55		0.55	1.00
Clearance Time (s)	4.0		4.0					4.0	4.0		4.0	
Vehicle Extension (s)	3.0		3.0					4.0	4.0		4.0	
Lane Grp Cap (vph)	649		580					1007	735		1932	1547
v/s Ratio Prot	c0.32		0.29					c0.38			0.20	
v/s Ratio Perm									0.10			0.23
v/c Ratio	0.85		0.77					0.70	0.19		0.37	0.23
Uniform Delay, d1	28.7		27.5					16.7	11.5		12.9	0.0
Progression Factor	1.00		1.00					1.88	1.76		0.98	1.00
Incremental Delay, d2	9.9		6.0					2.7	0.4		0.4	0.3
Delay (s)	38.6		33.5					34.1	20.6		13.0	0.3
Level of Service	D		C					C	C		B	A
Approach Delay (s)		36.0			0.0			31.9			8.7	
Approach LOS		D			A			C			A	

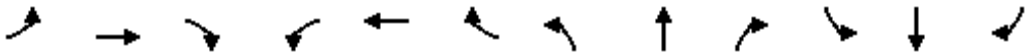
Intersection Summary			
HCM 2000 Control Delay	25.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	212	107	157	11	56	66	144	555	16	277	793	141
Future Volume (vph)	212	107	157	11	56	66	144	555	16	277	793	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
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	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1719	1863	1583	1770	1863	1535	3433	3427		1752	3505	1560
Flt Permitted	0.62	1.00	1.00	0.69	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1114	1863	1583	1280	1863	1535	3433	3427		1752	3505	1560
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	214	108	159	11	57	67	145	561	16	280	801	142
RTOR Reduction (vph)	0	0	123	0	0	31	0	2	0	0	0	47
Lane Group Flow (vph)	214	108	36	11	57	36	145	575	0	280	801	95
Confl. Peds. (#/hr)						1						3
Heavy Vehicles (%)	5%	2%	2%	2%	2%	5%	2%	5%	2%	3%	3%	2%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8						6
Actuated Green, G (s)	15.5	15.5	22.6	8.8	8.3	53.5	7.1	23.0		45.2	59.6	68.6
Effective Green, g (s)	14.5	16.0	22.6	8.8	8.8	53.5	7.1	22.0		45.2	60.1	66.6
Actuated g/C Ratio	0.14	0.16	0.23	0.09	0.09	0.54	0.07	0.22		0.45	0.60	0.67
Clearance Time (s)	3.0	4.5	4.0	4.0	4.5	4.0	4.0	3.0		4.0	4.5	3.0
Vehicle Extension (s)	1.0	1.2	1.2	1.0	1.2	1.0	1.2	1.2		1.0	1.2	1.0
Lane Grp Cap (vph)	209	298	357	116	163	821	243	753		791	2106	1038
v/s Ratio Prot	c0.08	0.06	0.01	0.00	c0.03	0.02	c0.04	c0.17		0.16	c0.23	0.01
v/s Ratio Perm	c0.07		0.02	0.01		0.00						0.05
v/c Ratio	1.02	0.36	0.10	0.09	0.35	0.04	0.60	0.76		0.35	0.38	0.09
Uniform Delay, d1	42.4	37.5	30.7	41.9	42.9	11.1	45.1	36.6		17.9	10.3	5.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		0.69	1.09	1.11
Incremental Delay, d2	68.6	0.3	0.0	0.1	0.5	0.0	2.6	4.2		1.1	0.5	0.0
Delay (s)	111.0	37.7	30.7	42.1	43.4	11.1	47.7	40.7		13.5	11.7	6.6
Level of Service	F	D	C	D	D	B	D	D		B	B	A
Approach Delay (s)		68.0			27.2			42.1			11.5	
Approach LOS		E			C			D			B	

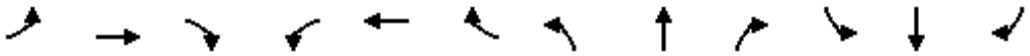
Intersection Summary			
HCM 2000 Control Delay	31.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	59.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	744	156	75	519	401	149	221	105	339	244	25
Future Volume (vph)	55	744	156	75	519	401	149	221	105	339	244	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85		0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98		0.95	1.00	
Satd. Flow (prot)	1770	3407		1752	3438	1548		1775		1770	1831	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98		0.95	1.00	
Satd. Flow (perm)	1770	3407		1752	3438	1548		1775		1770	1831	
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)	58	783	164	79	546	422	157	233	111	357	257	26
RTOR Reduction (vph)	0	13	0	0	0	269	0	8	0	0	3	0
Lane Group Flow (vph)	58	934	0	79	546	153	0	493	0	357	280	0
Confl. Peds. (#/hr)						1						
Confl. Bikes (#/hr)			1									2
Heavy Vehicles (%)	2%	3%	2%	3%	5%	2%	2%	2%	3%	2%	2%	4%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6						
Actuated Green, G (s)	6.6	36.2		7.1	36.7	36.7		37.2		28.5	28.5	
Effective Green, g (s)	6.6	37.2		7.1	37.7	37.7		37.2		28.5	28.5	
Actuated g/C Ratio	0.05	0.30		0.06	0.30	0.30		0.30		0.23	0.23	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0		4.0		4.0	4.0	
Vehicle Extension (s)	1.5	1.5		1.5	1.5	1.5		1.5		1.5	1.5	
Lane Grp Cap (vph)	92	1005		98	1028	463		524		400	414	
v/s Ratio Prot	0.03	c0.27		c0.05	0.16			c0.28		c0.20	0.15	
v/s Ratio Perm						0.10						
v/c Ratio	0.63	0.93		0.81	0.53	0.33		0.94		0.89	0.68	
Uniform Delay, d1	58.5	43.1		58.8	36.8	34.3		43.3		47.3	44.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	9.9	14.0		34.9	0.3	0.2		25.2		20.9	3.4	
Delay (s)	68.4	57.2		93.7	37.1	34.5		68.5		68.2	48.0	
Level of Service	E	E		F	D	C		E		E	D	
Approach Delay (s)		57.8			40.3			68.5			59.2	
Approach LOS		E			D			E			E	

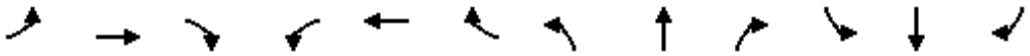
Intersection Summary			
HCM 2000 Control Delay	54.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	126.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	88.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	1	57	6	0	14	33	1031	6	19	1146	16
Future Volume (vph)	25	1	57	6	0	14	33	1031	6	19	1146	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.93		1.00	0.97		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.85		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1474		1770	1544		1770	3536		1770	3531	
Flt Permitted	0.57	1.00		1.00	1.00		0.18	1.00		0.21	1.00	
Satd. Flow (perm)	1064	1474		1863	1544		330	3536		399	3531	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	28	1	65	7	0	16	38	1172	7	22	1302	18
RTOR Reduction (vph)	0	59	0	0	15	0	0	0	0	0	0	0
Lane Group Flow (vph)	28	7	0	7	1	0	38	1179	0	22	1320	0
Confl. Peds. (#/hr)			44						1			
Confl. Bikes (#/hr)			1			2			1			1
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	9.5	9.5		3.4	3.4		80.2	76.8		76.4	74.9	
Effective Green, g (s)	9.1	9.5		3.4	3.4		79.4	77.4		75.6	75.5	
Actuated g/C Ratio	0.09	0.10		0.03	0.03		0.79	0.77		0.76	0.76	
Clearance Time (s)	3.6	4.0		4.0	4.0		3.6	4.6		3.6	4.6	
Vehicle Extension (s)	2.5	2.5		2.0	2.0		2.5	3.0		2.5	3.0	
Lane Grp Cap (vph)	111	140		63	52		305	2736		316	2665	
v/s Ratio Prot	c0.01	0.00			0.00		c0.00	0.33		0.00	c0.37	
v/s Ratio Perm	c0.02			0.00			0.10			0.05		
v/c Ratio	0.25	0.05		0.11	0.01		0.12	0.43		0.07	0.50	
Uniform Delay, d1	42.0	41.2		46.8	46.7		5.7	3.8		5.5	4.8	
Progression Factor	1.00	1.00		1.00	1.00		0.51	0.54		1.00	1.00	
Incremental Delay, d2	0.9	0.1		0.3	0.0		0.1	0.4		0.1	0.7	
Delay (s)	42.9	41.3		47.1	46.7		3.0	2.5		5.6	5.5	
Level of Service	D	D		D	D		A	A		A	A	
Approach Delay (s)		41.7			46.8			2.5			5.5	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	5.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		

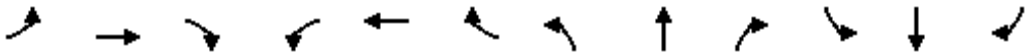
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	231	131	140	63	134	143	121	685	51	118	908	177
Future Volume (vph)	231	131	140	63	134	143	121	685	51	118	908	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	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	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1566	1770	1863	1564	1770	3497		1770	3440	
Flt Permitted	0.36	1.00	1.00	0.66	1.00	1.00	0.13	1.00		0.27	1.00	
Satd. Flow (perm)	665	1863	1566	1234	1863	1564	243	3497		497	3440	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	262	149	159	72	152	162	138	778	58	134	1032	201
RTOR Reduction (vph)	0	0	57	0	0	85	0	4	0	0	13	0
Lane Group Flow (vph)	263	149	102	72	152	78	138	832	0	134	1220	0
Confl. Peds. (#/hr)			2			4						
Confl. Bikes (#/hr)						1			2			4
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6	7	3	8		7	4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	28.0	21.6	28.5	15.8	13.4	19.0	59.9	53.0		57.7	52.1	
Effective Green, g (s)	28.2	21.8	28.9	15.8	13.4	20.2	60.3	53.6		58.9	52.7	
Actuated g/C Ratio	0.28	0.22	0.29	0.16	0.13	0.20	0.60	0.54		0.59	0.53	
Clearance Time (s)	4.2	4.2	4.2	4.0	4.0	4.6	4.2	4.6		4.6	4.6	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	306	406	452	207	249	315	254	1874		371	1812	
v/s Ratio Prot	c0.09	0.08	0.02	0.01	0.08	0.02	c0.04	0.24		0.02	c0.35	
v/s Ratio Perm	c0.15		0.05	0.05		0.03	0.29			0.19		
v/c Ratio	0.86	0.37	0.23	0.35	0.61	0.25	0.54	0.44		0.36	0.67	
Uniform Delay, d1	31.7	33.2	27.0	37.0	40.8	33.5	28.9	14.1		17.3	17.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		0.57	0.77	
Incremental Delay, d2	20.0	0.2	0.1	0.4	3.1	0.1	1.3	0.8		0.2	1.8	
Delay (s)	51.7	33.4	27.1	37.4	43.9	33.7	30.1	14.9		10.0	15.3	
Level of Service	D	C	C	D	D	C	C	B		A	B	
Approach Delay (s)		40.1			38.4			17.1			14.7	
Approach LOS		D			D			B			B	

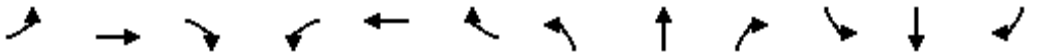
Intersection Summary			
HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



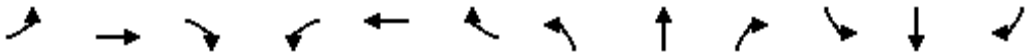
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	1	44	0	216	0	476	45	261	555	1
Future Volume (vph)	0	0	1	44	0	216	0	476	45	261	555	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00			0.95		1.00	0.95	
Frt		0.86			0.89			0.99		1.00	1.00	
Flt Protected		1.00			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		1611			1637			3494		1770	3538	
Flt Permitted		1.00			0.95			1.00		0.95	1.00	
Satd. Flow (perm)		1611			1560			3494		1770	3538	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	0	1	48	0	237	0	523	49	287	610	1
RTOR Reduction (vph)	0	1	0	0	187	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	98	0	0	561	0	287	611	0
Heavy Vehicles (%)	2%	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type		NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2			6								
Actuated Green, G (s)		9.3			9.3			13.6		15.3	32.9	
Effective Green, g (s)		9.3			9.3			14.1		15.3	33.4	
Actuated g/C Ratio		0.18			0.18			0.28		0.30	0.66	
Clearance Time (s)		4.0			4.0			4.5		4.0	4.5	
Vehicle Extension (s)		4.0			4.0			2.5		2.0	2.5	
Lane Grp Cap (vph)		295			286			971		534	2330	
v/s Ratio Prot		0.00						c0.16		c0.16	0.17	
v/s Ratio Perm					c0.06							
v/c Ratio		0.00			0.34			0.58		0.54	0.26	
Uniform Delay, d1		16.9			18.0			15.7		14.8	3.6	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.0			1.0			0.7		0.5	0.0	
Delay (s)		16.9			19.0			16.4		15.3	3.6	
Level of Service		B			B			B		B	A	
Approach Delay (s)		16.9			19.0			16.4			7.3	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	50.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.5%	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)	153	733	101	174	1040	77	53	304	183	105	488	89
Future Volume (vph)	153	733	101	174	1040	77	53	304	183	105	488	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.5		3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3416		1770	3469		1752	1863	1583	1752	1863	1583
Flt Permitted	0.12	1.00		0.12	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	220	3416		218	3469		1752	1863	1583	1752	1863	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	159	764	105	181	1083	80	55	317	191	109	508	93
RTOR Reduction (vph)	0	10	0	0	5	0	0	0	154	0	0	66
Lane Group Flow (vph)	159	859	0	181	1158	0	55	317	37	109	508	27
Heavy Vehicles (%)	2%	4%	2%	2%	3%	3%	3%	2%	2%	3%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2			6					8			4
Actuated Green, G (s)	40.7	33.9		45.1	36.1		20.8	20.8	20.8	30.0	30.0	30.0
Effective Green, g (s)	40.7	33.9		45.1	36.1		20.8	20.8	20.8	30.0	30.0	30.0
Actuated g/C Ratio	0.37	0.31		0.41	0.33		0.19	0.19	0.19	0.28	0.28	0.28
Clearance Time (s)	3.5	4.5		3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.5	2.5	2.5	2.5	2.5	2.5
Lane Grp Cap (vph)	179	1065		218	1152		335	356	302	483	514	436
v/s Ratio Prot	0.06	0.25		c0.07	c0.33		0.03	c0.17		0.06	c0.27	
v/s Ratio Perm	0.28			0.28					0.02			0.02
v/c Ratio	0.89	0.81		0.83	1.01		0.16	0.89	0.12	0.23	0.99	0.06
Uniform Delay, d1	27.9	34.4		24.2	36.3		36.7	42.8	36.4	30.4	39.2	29.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	36.4	4.8		21.8	27.9		0.2	23.0	0.1	0.2	36.3	0.0
Delay (s)	64.2	39.2		46.1	64.2		36.9	65.9	36.5	30.6	75.5	29.0
Level of Service	E	D		D	E		D	E	D	C	E	C
Approach Delay (s)		43.1			61.7			53.1			62.5	
Approach LOS		D			E			D			E	

Intersection Summary			
HCM 2000 Control Delay	55.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	108.7	Sum of lost time (s)	15.0
Intersection Capacity Utilization	82.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

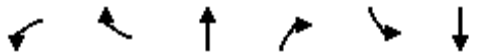


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	149	38	45	76	86	127	40	913	30	105	1159	60
Future Volume (vph)	149	38	45	76	86	127	40	913	30	105	1159	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.97		1.00	0.97	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.96	1.00		0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1774	1543		1811	1506	1752	3454		1770	3476	
Flt Permitted		0.96	1.00		0.98	1.00	0.12	1.00		0.17	1.00	
Satd. Flow (perm)		1774	1543		1811	1506	226	3454		317	3476	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	169	43	51	86	98	144	45	1038	34	119	1317	68
RTOR Reduction (vph)	0	0	42	0	0	121	0	3	0	0	4	0
Lane Group Flow (vph)	0	212	9	0	184	23	45	1069	0	119	1381	0
Confl. Peds. (#/hr)			9			9			3			4
Confl. Bikes (#/hr)			4			7			3			1
Heavy Vehicles (%)	3%	3%	2%	2%	3%	4%	3%	4%	2%	2%	3%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8	2			6		
Actuated Green, G (s)		11.7	11.7		11.0	11.0	33.2	33.2		33.2	33.2	
Effective Green, g (s)		11.7	11.7		11.0	11.0	32.7	33.4		32.7	33.4	
Actuated g/C Ratio		0.17	0.17		0.16	0.16	0.48	0.49		0.48	0.49	
Clearance Time (s)		4.0	4.0		4.0	4.0	3.5	4.2		3.5	4.2	
Vehicle Extension (s)		1.2	1.2		1.2	1.2	1.0	1.2		1.0	1.2	
Lane Grp Cap (vph)		304	265		292	243	108	1694		152	1704	
v/s Ratio Prot		c0.12			c0.10			0.31			c0.40	
v/s Ratio Perm			0.01			0.02	0.20			0.38		
v/c Ratio		0.70	0.03		0.63	0.10	0.42	0.63		0.78	0.81	
Uniform Delay, d1		26.5	23.5		26.7	24.3	11.5	12.8		14.7	14.7	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		5.5	0.0		3.2	0.1	0.9	1.8		21.1	4.3	
Delay (s)		32.1	23.5		29.9	24.4	12.5	14.6		35.8	19.0	
Level of Service		C	C		C	C	B	B		D	B	
Approach Delay (s)		30.4			27.5			14.5			20.3	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	19.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	68.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	64.4%	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)	240	0	411	0	0	0	0	1209	209	574	1233	0
Future Volume (vph)	240	0	411	0	0	0	0	1209	209	574	1233	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00					0.95	1.00	0.97	0.95	
Frpb, ped/bikes		1.00	1.00					1.00	0.97	1.00	1.00	
Flpb, ped/bikes		1.00	1.00					1.00	1.00	1.00	1.00	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1752	1568					3539	1332	3400	3539	
Flt Permitted		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1752	1568					3539	1332	3400	3539	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	282	0	484	0	0	0	0	1422	246	675	1451	0
RTOR Reduction (vph)	0	0	39	0	0	0	0	0	68	0	0	0
Lane Group Flow (vph)	0	282	445	0	0	0	0	1422	178	675	1451	0
Confl. Peds. (#/hr)			2						9			7
Confl. Bikes (#/hr)			1			8						
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	2%	2%	18%	3%	2%	2%
Turn Type	Split	NA	Prot					NA	Perm	Prot	NA	
Protected Phases	4	4	4					2		1	6	
Permitted Phases									2			
Actuated Green, G (s)		29.0	29.0					41.0	41.0	22.0	65.0	
Effective Green, g (s)		27.0	27.0					41.0	41.0	20.0	65.0	
Actuated g/C Ratio		0.27	0.27					0.41	0.41	0.20	0.65	
Clearance Time (s)		2.0	2.0					4.0	4.0	2.0	4.0	
Vehicle Extension (s)		3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		473	423					1450	546	680	2300	
v/s Ratio Prot		0.16	c0.28					c0.40		c0.20	0.41	
v/s Ratio Perm									0.13			
v/c Ratio		0.60	1.05					0.98	0.33	0.99	0.63	
Uniform Delay, d1		31.8	36.5					29.1	20.1	39.9	10.4	
Progression Factor		1.00	1.00					0.80	0.73	1.00	1.00	
Incremental Delay, d2		2.0	58.3					18.4	1.4	32.5	1.3	
Delay (s)		33.8	94.8					41.8	16.1	72.4	11.7	
Level of Service		C	F					D	B	E	B	
Approach Delay (s)		72.3			0.0			38.0			31.0	
Approach LOS		E			A			D			C	

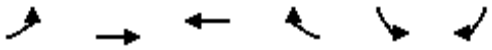
Intersection Summary			
HCM 2000 Control Delay	40.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	168	375	1178	272	0	1885
Future Volume (vph)	168	375	1178	272	0	1885
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0		4.0
Lane Util. Factor	0.97	0.88	0.95	1.00		0.95
Frpb, ped/bikes	1.00	0.95	1.00	0.98		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	3433	2660	3539	1545		3539
Flt Permitted	0.95	1.00	1.00	1.00		1.00
Satd. Flow (perm)	3433	2660	3539	1545		3539
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	198	441	1386	320	0	2218
RTOR Reduction (vph)	0	79	0	0	0	0
Lane Group Flow (vph)	198	362	1386	320	0	2218
Confl. Peds. (#/hr)				9		
Confl. Bikes (#/hr)		26				
Turn Type	Prot	Perm	NA	Free		NA
Protected Phases	8		2			6
Permitted Phases		8		Free		
Actuated Green, G (s)	7.9	7.9	25.1	40.0		27.1
Effective Green, g (s)	6.9	6.9	25.1	40.0		25.1
Actuated g/C Ratio	0.17	0.17	0.63	1.00		0.63
Clearance Time (s)	3.0	3.0	4.0			2.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	592	458	2220	1545		2220
v/s Ratio Prot	0.06		0.39			c0.63
v/s Ratio Perm		c0.14		0.21		
v/c Ratio	0.33	0.79	0.62	0.21		1.00
Uniform Delay, d1	14.5	15.9	4.6	0.0		7.4
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.3	9.0	1.3	0.3		18.9
Delay (s)	14.9	24.9	5.9	0.3		26.3
Level of Service	B	C	A	A		C
Approach Delay (s)	21.8		4.8			26.3
Approach LOS	C		A			C

Intersection Summary			
HCM 2000 Control Delay	17.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		

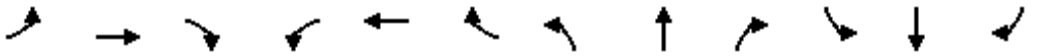
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	310	284	5	12	27
Future Volume (Veh/h)	9	310	284	5	12	27
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	11	378	346	6	15	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	352				749	349
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	352				749	349
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				96	95
cM capacity (veh/h)	1207				376	694

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	389	352	48
Volume Left	11	0	15
Volume Right	0	6	33
cSH	1207	1700	549
Volume to Capacity	0.01	0.21	0.09
Queue Length 95th (ft)	1	0	7
Control Delay (s)	0.3	0.0	12.2
Lane LOS	A		B
Approach Delay (s)	0.3	0.0	12.2
Approach LOS			B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	33.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	795	68	27	677	131	38	5	18	302	9	174
Future Volume (vph)	68	795	68	27	677	131	38	5	18	302	9	174
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		5.0	5.0		4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	0.88			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1770	3497		1770	3445		1770	1639			1777	1583
Flt Permitted	0.16	1.00		0.22	1.00		0.44	1.00			0.95	1.00
Satd. Flow (perm)	300	3497		418	3445		828	1639			1777	1583
Peak-hour factor, PHF	0.93	0.93	0.92	0.92	0.93	0.93	0.92	0.92	0.92	0.93	0.92	0.93
Adj. Flow (vph)	73	855	74	29	728	141	41	5	20	325	10	187
RTOR Reduction (vph)	0	8	0	0	19	0	0	18	0	0	0	126
Lane Group Flow (vph)	73	921	0	29	850	0	41	7	0	0	335	61
Confl. Peds. (#/hr)						2						
Confl. Bikes (#/hr)												6
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Split	NA	Prot
Protected Phases	7	4			8			2		6	6	6
Permitted Phases	4			8			2					
Actuated Green, G (s)	35.4	35.4		30.0	30.0		9.0	9.0			27.6	27.6
Effective Green, g (s)	35.4	35.4		30.0	30.0		9.0	9.0			27.6	27.6
Actuated g/C Ratio	0.42	0.42		0.35	0.35		0.11	0.11			0.32	0.32
Clearance Time (s)	3.0	5.0		5.0	5.0		4.0	4.0			4.0	4.0
Vehicle Extension (s)	2.0	3.0		3.0	3.0		3.0	3.0			4.0	4.0
Lane Grp Cap (vph)	166	1456		147	1215		87	173			577	514
v/s Ratio Prot	0.01	c0.26			c0.25			0.00			c0.19	0.04
v/s Ratio Perm	0.17			0.07			c0.05					
v/c Ratio	0.44	0.63		0.20	0.70		0.47	0.04			0.58	0.12
Uniform Delay, d1	17.0	19.7		19.1	23.6		35.8	34.1			23.9	20.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	0.7	0.9		0.7	1.8		4.0	0.1			4.2	0.5
Delay (s)	17.6	20.6		19.8	25.4		39.8	34.2			28.1	20.6
Level of Service	B	C		B	C		D	C			C	C
Approach Delay (s)		20.3			25.2			37.7			25.4	
Approach LOS		C			C			D			C	

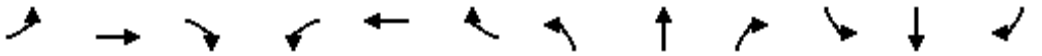
Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	175	22	251	165	119	24	791	286	156	784	53
Future Volume (vph)	40	175	22	251	165	119	24	791	286	156	784	53
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		4.0	4.2		4.0	4.2	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.99		1.00	0.94		1.00	0.96		1.00	0.99	
Flt Protected		0.99		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1815		1770	1725		1770	3357		1770	3494	
Flt Permitted		0.87		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1601		1770	1725		1770	3357		1770	3494	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	44	194	24	279	183	132	27	879	318	173	871	59
RTOR Reduction (vph)	0	0	0	0	26	0	0	37	0	0	5	0
Lane Group Flow (vph)	0	262	0	279	289	0	27	1160	0	173	925	0
Confl. Peds. (#/hr)	10		10			10			10			10
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Perm	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4											
Actuated Green, G (s)		14.4		15.8	34.8		4.2	42.0		10.4	48.2	
Effective Green, g (s)		14.4		15.8	34.8		4.2	42.0		10.4	48.2	
Actuated g/C Ratio		0.14		0.16	0.35		0.04	0.42		0.10	0.48	
Clearance Time (s)		4.6		4.6	4.6		4.0	4.2		4.0	4.2	
Vehicle Extension (s)		2.0		2.0	2.5		2.0	4.0		2.0	4.0	
Lane Grp Cap (vph)		230		279	600		74	1409		184	1684	
v/s Ratio Prot				c0.16	0.17		0.02	c0.35		c0.10	0.26	
v/s Ratio Perm		c0.16										
v/c Ratio		1.14		1.00	0.48		0.36	0.82		0.94	0.55	
Uniform Delay, d1		42.8		42.1	25.5		46.6	25.7		44.5	18.2	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		102.0		53.9	0.4		1.1	5.6		48.8	1.3	
Delay (s)		144.8		96.0	26.0		47.7	31.3		93.3	19.5	
Level of Service		F		F	C		D	C		F	B	
Approach Delay (s)		144.8			58.9			31.7			31.1	
Approach LOS		F			E			C			C	

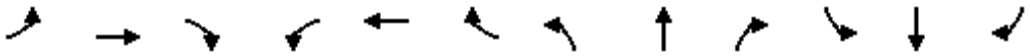
Intersection Summary			
HCM 2000 Control Delay	45.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.4
Intersection Capacity Utilization	86.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



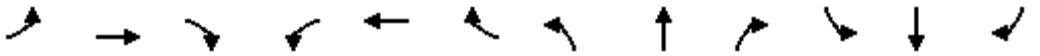
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	175	0	336	0	911	482	0	857	592
Future Volume (vph)	0	0	0	175	0	336	0	911	482	0	857	592
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				1.00		1.00		0.95	1.00		1.00	1.00
Frpb, ped/bikes				1.00		1.00		1.00	0.98		1.00	1.00
Flpb, ped/bikes				1.00		1.00		1.00	1.00		1.00	1.00
Frt				1.00		0.85		1.00	0.85		1.00	0.85
Flt Protected				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)				1736		1553		3539	1550		1845	1538
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				1736		1553		3539	1550		1845	1538
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)	0	0	0	184	0	354	0	959	507	0	902	623
RTOR Reduction (vph)	0	0	0	0	0	93	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	184	0	261	0	959	507	0	902	623
Confl. Peds. (#/hr)									2			5
Confl. Bikes (#/hr)												4
Heavy Vehicles (%)	2%	2%	2%	4%	2%	4%	2%	2%	2%	2%	3%	5%
Turn Type				Prot		Prot		NA	Free		NA	Prot
Protected Phases				8		8		2			6	6
Permitted Phases									Free			
Actuated Green, G (s)				21.1		21.1		71.4	100.0		71.4	71.4
Effective Green, g (s)				20.6		20.6		71.4	100.0		71.4	71.4
Actuated g/C Ratio				0.21		0.21		0.71	1.00		0.71	0.71
Clearance Time (s)				3.5		3.5		4.0			4.0	4.0
Vehicle Extension (s)				2.0		2.0		4.0			4.0	4.0
Lane Grp Cap (vph)				357		319		2526	1550		1317	1098
v/s Ratio Prot				0.11		c0.17		0.27			c0.49	0.41
v/s Ratio Perm									0.33			
v/c Ratio				0.52		0.82		0.38	0.33		0.68	0.57
Uniform Delay, d1				35.3		37.9		5.6	0.0		8.0	6.9
Progression Factor				1.00		1.00		0.78	1.00		1.35	1.36
Incremental Delay, d2				0.5		14.3		0.2	0.3		2.0	1.5
Delay (s)				35.8		52.2		4.6	0.3		12.8	10.8
Level of Service				D		D		A	A		B	B
Approach Delay (s)		0.0			46.6			3.1			12.0	
Approach LOS		A			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	61.5%	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)	407	0	528	0	0	0	0	988	206	0	708	324
Future Volume (vph)	407	0	528	0	0	0	0	988	206	0	708	324
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	1.00		1.00					1.00	1.00		0.95	1.00
Frpb, ped/bikes	1.00		1.00					1.00	0.98		1.00	0.98
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	1.00
Frt	1.00		0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	1770		1583					1845	1359		3539	1547
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	1770		1583					1845	1359		3539	1547
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)	438	0	568	0	0	0	0	1062	222	0	761	348
RTOR Reduction (vph)	0	0	142	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	438	0	426	0	0	0	0	1062	222	0	761	348
Confl. Peds. (#/hr)			3						2			6
Confl. Bikes (#/hr)			4						4			
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	3%	16%	2%	2%	2%
Turn Type	Prot		Prot					NA	Perm		NA	Free
Protected Phases	4		4					2			6	
Permitted Phases									2			Free
Actuated Green, G (s)	29.6		29.6					63.9	63.9		62.4	100.0
Effective Green, g (s)	29.6		29.6					62.4	62.4		62.4	100.0
Actuated g/C Ratio	0.30		0.30					0.62	0.62		0.62	1.00
Clearance Time (s)	4.0		4.0					2.5	2.5		4.0	
Vehicle Extension (s)	3.0		3.0					4.0	4.0		4.0	
Lane Grp Cap (vph)	523		468					1151	848		2208	1547
v/s Ratio Prot	0.25		c0.27					c0.58			0.22	
v/s Ratio Perm									0.16			0.22
v/c Ratio	0.84		0.91					0.92	0.26		0.34	0.22
Uniform Delay, d1	32.9		33.9					16.7	8.4		9.0	0.0
Progression Factor	1.00		1.00					0.97	0.75		1.47	1.00
Incremental Delay, d2	11.2		21.4					12.3	0.7		0.3	0.3
Delay (s)	44.1		55.3					28.5	7.0		13.5	0.3
Level of Service	D		E					C	A		B	A
Approach Delay (s)		50.4			0.0			24.8			9.4	
Approach LOS		D			A			C			A	

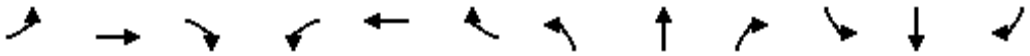
Intersection Summary			
HCM 2000 Control Delay	27.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	164	98	199	11	182	258	400	752	14	105	787	329
Future Volume (vph)	164	98	199	11	182	258	400	752	14	105	787	329
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.99
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	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1845	1583	1770	1863	1540	3433	3463		1770	3539	1561
Flt Permitted	0.34	1.00	1.00	0.69	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	630	1845	1583	1286	1863	1540	3433	3463		1770	3539	1561
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)	173	103	209	12	192	272	421	792	15	111	828	346
RTOR Reduction (vph)	0	0	138	0	0	80	0	1	0	0	0	137
Lane Group Flow (vph)	173	103	71	12	192	192	421	806	0	111	828	209
Confl. Peds. (#/hr)						1						3
Heavy Vehicles (%)	3%	3%	2%	2%	2%	4%	2%	4%	2%	2%	2%	2%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8						6
Actuated Green, G (s)	29.9	24.9	37.9	18.2	17.2	26.4	13.0	49.4		9.2	46.1	54.8
Effective Green, g (s)	29.9	25.4	33.9	18.2	17.7	26.4	11.0	48.4		9.2	46.6	52.8
Actuated g/C Ratio	0.30	0.25	0.34	0.18	0.18	0.26	0.11	0.48		0.09	0.47	0.53
Clearance Time (s)	4.0	4.5	2.0	4.0	4.5	4.0	2.0	3.0		4.0	4.5	4.0
Vehicle Extension (s)	1.0	1.2	1.2	1.0	1.2	1.0	1.2	1.2		1.0	1.2	1.0
Lane Grp Cap (vph)	285	468	536	238	329	406	377	1676		162	1649	824
v/s Ratio Prot	c0.05	0.06	0.01	0.00	0.10	0.04	c0.12	0.23		0.06	c0.23	0.02
v/s Ratio Perm	c0.13		0.03	0.01		0.08						0.11
v/c Ratio	0.61	0.22	0.13	0.05	0.58	0.47	1.12	0.48		0.69	0.50	0.25
Uniform Delay, d1	27.8	29.5	22.9	33.7	37.8	30.9	44.5	17.4		44.0	18.6	12.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.13	0.62	0.57
Incremental Delay, d2	2.5	0.1	0.0	0.0	1.7	0.3	81.8	1.0		7.6	0.9	0.0
Delay (s)	30.3	29.6	22.9	33.7	39.5	31.3	126.3	18.3		57.6	12.5	7.3
Level of Service	C	C	C	C	D	C	F	B		E	B	A
Approach Delay (s)		27.0			34.6			55.4			15.0	
Approach LOS		C			C			E			B	

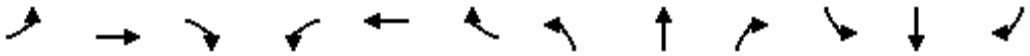
Intersection Summary			
HCM 2000 Control Delay	33.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	633	126	101	933	454	121	202	90	378	243	54
Future Volume (vph)	52	633	126	101	933	454	121	202	90	378	243	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85		0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1770	3411		1752	3438	1549		1778		1770	1801	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (perm)	1770	3411		1752	3438	1549		1778		1770	1801	
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)	56	681	135	109	1003	488	130	217	97	406	261	58
RTOR Reduction (vph)	0	13	0	0	0	189	0	8	0	0	7	0
Lane Group Flow (vph)	56	803	0	109	1003	299	0	436	0	406	312	0
Confl. Peds. (#/hr)						1						
Confl. Bikes (#/hr)			1									2
Heavy Vehicles (%)	2%	3%	2%	3%	5%	2%	2%	2%	3%	2%	2%	4%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6						
Actuated Green, G (s)	4.1	28.4		8.1	32.4	32.4		30.5		29.2	29.2	
Effective Green, g (s)	4.1	29.4		8.1	33.4	33.4		30.5		29.2	29.2	
Actuated g/C Ratio	0.04	0.26		0.07	0.30	0.30		0.27		0.26	0.26	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0		4.0		4.0	4.0	
Vehicle Extension (s)	1.5	1.5		1.5	1.5	1.5		1.5		1.5	1.5	
Lane Grp Cap (vph)	64	885		125	1014	457		479		456	464	
v/s Ratio Prot	0.03	0.24		c0.06	c0.29			c0.25		c0.23	0.17	
v/s Ratio Perm						0.19						
v/c Ratio	0.88	0.91		0.87	0.99	0.65		0.91		0.89	0.67	
Uniform Delay, d1	54.3	40.6		52.0	39.7	34.9		40.0		40.5	37.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	68.2	12.6		43.0	25.3	2.6		21.0		18.7	3.0	
Delay (s)	122.5	53.2		95.1	65.0	37.4		61.0		59.1	40.7	
Level of Service	F	D		F	E	D		E		E	D	
Approach Delay (s)		57.6			58.6			61.0			51.0	
Approach LOS		E			E			E			D	

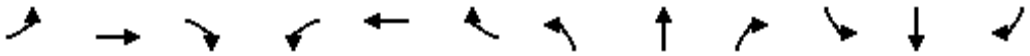
Intersection Summary			
HCM 2000 Control Delay	57.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	113.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	86.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	3	34	11	2	31	50	1431	6	50	1150	16
Future Volume (vph)	27	3	34	11	2	31	50	1431	6	50	1150	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.93		1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.86		1.00	0.86		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1497		1770	1564		1770	3537		1770	3531	
Flt Permitted	0.54	1.00		1.00	1.00		0.18	1.00		0.12	1.00	
Satd. Flow (perm)	1007	1497		1863	1564		342	3537		225	3531	
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)	29	3	37	12	2	33	54	1539	6	54	1237	17
RTOR Reduction (vph)	0	33	0	0	32	0	0	0	0	0	1	0
Lane Group Flow (vph)	29	7	0	12	3	0	54	1545	0	54	1253	0
Confl. Peds. (#/hr)			44						1			
Confl. Bikes (#/hr)			1			2			1			1
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	11.9	11.9		3.8	3.8		75.9	71.2		75.9	71.2	
Effective Green, g (s)	11.5	11.9		3.8	3.8		75.1	71.8		75.1	71.8	
Actuated g/C Ratio	0.12	0.12		0.04	0.04		0.75	0.72		0.75	0.72	
Clearance Time (s)	3.6	4.0		4.0	4.0		3.6	4.6		3.6	4.6	
Vehicle Extension (s)	2.5	2.5		2.0	2.0		2.5	3.0		2.5	3.0	
Lane Grp Cap (vph)	147	178		70	59		318	2539		235	2535	
v/s Ratio Prot	c0.01	0.00			0.00		0.01	c0.44		c0.01	0.35	
v/s Ratio Perm	c0.01			0.01			0.12			0.16		
v/c Ratio	0.20	0.04		0.17	0.06		0.17	0.61		0.23	0.49	
Uniform Delay, d1	39.9	39.0		46.6	46.4		4.1	7.1		5.4	6.2	
Progression Factor	1.00	1.00		1.00	1.00		0.72	0.68		1.00	1.00	
Incremental Delay, d2	0.5	0.1		0.4	0.1		0.1	0.8		0.4	0.7	
Delay (s)	40.4	39.1		47.0	46.5		3.1	5.6		5.8	6.9	
Level of Service	D	D		D	D		A	A		A	A	
Approach Delay (s)		39.6			46.6			5.5			6.8	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	64.2%	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)	162	126	107	98	153	251	101	1071	94	214	861	136
Future Volume (vph)	162	126	107	98	153	251	101	1071	94	214	861	136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	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	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1546	1770	1863	1583	1770	3488		1770	3455	
Flt Permitted	0.31	1.00	1.00	0.67	1.00	1.00	0.18	1.00		0.09	1.00	
Satd. Flow (perm)	583	1863	1546	1249	1863	1583	344	3488		161	3455	
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)	174	135	115	105	165	270	109	1152	101	230	926	146
RTOR Reduction (vph)	0	0	87	0	0	124	0	5	0	0	10	0
Lane Group Flow (vph)	174	135	28	105	165	146	109	1248	0	230	1062	0
Confl. Peds. (#/hr)			13						3			2
Confl. Bikes (#/hr)			7						4			2
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6	7	3	8		7	4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	29.6	17.1	24.3	21.4	12.9	24.0	53.1	45.9		61.3	50.2	
Effective Green, g (s)	29.8	17.3	24.7	21.4	12.9	25.2	53.5	46.5		62.2	50.8	
Actuated g/C Ratio	0.30	0.17	0.25	0.21	0.13	0.25	0.54	0.46		0.62	0.51	
Clearance Time (s)	4.2	4.2	4.2	4.0	4.0	4.6	4.2	4.6		4.6	4.6	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	326	322	443	311	240	398	289	1621		288	1755	
v/s Ratio Prot	c0.07	0.07	0.00	0.03	c0.09	0.04	0.03	0.36		c0.09	0.31	
v/s Ratio Perm	0.09		0.01	0.04		0.05	0.17			c0.40		
v/c Ratio	0.53	0.42	0.06	0.34	0.69	0.37	0.38	0.77		0.80	0.61	
Uniform Delay, d1	27.8	36.9	28.8	32.8	41.6	30.8	12.8	22.3		24.3	17.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.72	0.65	
Incremental Delay, d2	0.8	0.3	0.0	0.2	6.4	0.2	0.3	3.6		12.3	1.4	
Delay (s)	28.6	37.2	28.8	33.1	48.0	31.0	13.1	25.9		54.1	12.8	
Level of Service	C	D	C	C	D	C	B	C		D	B	
Approach Delay (s)		31.4			36.6			24.9			20.1	
Approach LOS		C			D			C			C	

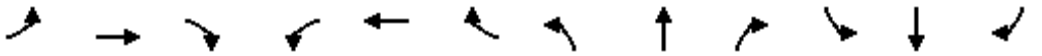
Intersection Summary			
HCM 2000 Control Delay	25.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1	6	58	2	396	6	781	58	225	613	7
Future Volume (vph)	10	1	6	58	2	396	6	781	58	225	613	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.95			0.88		1.00	0.99		1.00	1.00	
Flt Protected		0.97			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1726			1634		1770	3502		1770	3534	
Flt Permitted		0.75			0.96		0.40	1.00		0.18	1.00	
Satd. Flow (perm)		1326			1577		747	3502		326	3534	
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)	11	1	6	62	2	421	6	831	62	239	652	7
RTOR Reduction (vph)	0	4	0	0	227	0	0	7	0	0	1	0
Lane Group Flow (vph)	0	14	0	0	258	0	6	886	0	239	658	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		15.8			15.8		25.3	24.5		37.0	32.2	
Effective Green, g (s)		15.8			15.8		25.3	25.0		37.0	32.7	
Actuated g/C Ratio		0.26			0.26		0.41	0.41		0.60	0.53	
Clearance Time (s)		4.0			4.0		4.0	4.5		4.0	4.5	
Vehicle Extension (s)		4.0			4.0		2.0	2.5		2.0	2.5	
Lane Grp Cap (vph)		341			406		321	1428		396	1885	
v/s Ratio Prot							0.00	0.25		c0.08	0.19	
v/s Ratio Perm		0.01			c0.16		0.01			c0.28		
v/c Ratio		0.04			0.64		0.02	0.62		0.60	0.35	
Uniform Delay, d1		17.1			20.2		10.6	14.4		7.8	8.2	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			3.6		0.0	0.7		1.8	0.1	
Delay (s)		17.1			23.8		10.6	15.1		9.6	8.3	
Level of Service		B			C		B	B		A	A	
Approach Delay (s)		17.1			23.8			15.1			8.6	
Approach LOS		B			C			B			A	

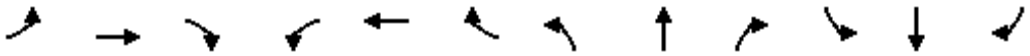
Intersection Summary			
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	61.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	259	968	89	236	1260	183	83	485	262	126	421	155
Future Volume (vph)	259	968	89	236	1260	183	83	485	262	126	421	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3403		1770	3472		1770	1863	1583	1770	1863	1583
Flt Permitted	0.13	1.00		0.12	1.00		0.26	1.00	1.00	0.18	1.00	1.00
Satd. Flow (perm)	239	3403		226	3472		487	1863	1583	341	1863	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	270	1008	93	246	1312	191	86	505	273	131	439	161
RTOR Reduction (vph)	0	8	0	0	14	0	0	0	158	0	0	107
Lane Group Flow (vph)	270	1093	0	246	1490	0	86	505	115	131	439	54
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8		8	4		4
Actuated Green, G (s)	39.2	31.7		42.8	33.5		27.5	27.5	27.5	27.5	27.5	27.5
Effective Green, g (s)	38.2	32.2		41.8	34.0		27.0	27.0	27.0	27.0	27.0	27.0
Actuated g/C Ratio	0.48	0.40		0.52	0.42		0.34	0.34	0.34	0.34	0.34	0.34
Clearance Time (s)	3.5	4.5		3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.5	2.5	2.5	2.5	2.5	2.5
Lane Grp Cap (vph)	248	1369		287	1475		164	628	534	115	628	534
v/s Ratio Prot	c0.10	0.32		c0.09	c0.43			0.27			0.24	
v/s Ratio Perm	0.42			0.35			0.18		0.07	c0.38		0.03
v/c Ratio	1.09	0.80		0.86	1.01		0.52	0.80	0.21	1.14	0.70	0.10
Uniform Delay, d1	18.7	21.0		16.5	23.0		21.3	24.1	18.9	26.5	23.0	18.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	82.8	3.5		20.8	25.9		2.3	7.2	0.1	126.2	3.1	0.1
Delay (s)	101.6	24.6		37.3	48.9		23.6	31.3	19.1	152.7	26.1	18.2
Level of Service	F	C		D	D		C	C	B	F	C	B
Approach Delay (s)		39.7			47.3			26.7			47.1	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	41.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	100.9%	ICU Level of Service	G
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)	173	91	42	76	144	239	48	1244	43	210	1566	187
Future Volume (vph)	173	91	42	76	144	239	48	1244	43	210	1566	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.97		1.00	0.96	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected		0.97	1.00		0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1786	1533		1819	1496	1752	3453		1770	3440	
Flt Permitted		0.97	1.00		0.98	1.00	0.08	1.00		0.07	1.00	
Satd. Flow (perm)		1786	1533		1819	1496	148	3453		138	3440	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	175	92	42	77	145	241	48	1257	43	212	1582	189
RTOR Reduction (vph)	0	0	35	0	0	204	0	2	0	0	6	0
Lane Group Flow (vph)	0	267	7	0	222	37	48	1298	0	212	1765	0
Confl. Peds. (#/hr)			9			9			3			4
Confl. Bikes (#/hr)			4			7			3			1
Heavy Vehicles (%)	3%	3%	2%	2%	3%	4%	3%	4%	2%	2%	3%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8	2			6		
Actuated Green, G (s)		20.4	20.4		17.7	17.7	54.7	50.5		66.2	58.5	
Effective Green, g (s)		20.4	20.4		17.7	17.7	53.7	50.7		65.7	58.7	
Actuated g/C Ratio		0.18	0.18		0.15	0.15	0.46	0.44		0.56	0.50	
Clearance Time (s)		4.0	4.0		4.0	4.0	3.5	4.2		3.5	4.2	
Vehicle Extension (s)		1.2	1.2		1.2	1.2	1.0	1.2		1.0	1.2	
Lane Grp Cap (vph)		312	268		276	227	119	1502		241	1733	
v/s Ratio Prot		c0.15			c0.12		0.01	0.38		c0.09	c0.51	
v/s Ratio Perm			0.00			0.02	0.17			0.41		
v/c Ratio		0.86	0.03		0.80	0.16	0.40	0.86		0.88	1.02	
Uniform Delay, d1		46.6	39.8		47.7	42.9	26.7	29.8		32.6	28.9	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		19.3	0.0		14.7	0.1	0.8	5.3		27.7	26.4	
Delay (s)		65.9	39.8		62.4	43.1	27.5	35.0		60.3	55.3	
Level of Service		E	D		E	D	C	D		E	E	
Approach Delay (s)		62.4			52.4			34.8			55.8	
Approach LOS		E			D			C			E	

Intersection Summary			
HCM 2000 Control Delay	49.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	116.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	94.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

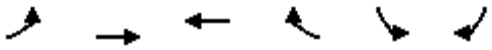
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	337	0	417	0	0	0	0	1763	211	467	1848	0
Future Volume (vph)	337	0	417	0	0	0	0	1763	211	467	1848	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5	4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00					0.95	1.00	0.97	0.95	
Frpb, ped/bikes		1.00	1.00					1.00	0.97	1.00	1.00	
Flpb, ped/bikes		1.00	1.00					1.00	1.00	1.00	1.00	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1752	1568					3539	1330	3400	3539	
Flt Permitted		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1752	1568					3539	1330	3400	3539	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	344	0	426	0	0	0	0	1799	215	477	1886	0
RTOR Reduction (vph)	0	0	30	0	0	0	0	0	43	0	0	0
Lane Group Flow (vph)	0	344	396	0	0	0	0	1799	172	477	1886	0
Confl. Peds. (#/hr)			2						9			7
Confl. Bikes (#/hr)			1			8						
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	2%	2%	18%	3%	2%	2%
Turn Type	Split	NA	Prot					NA	Perm	Prot	NA	
Protected Phases	4	4	4					2		1	6	
Permitted Phases									2			
Actuated Green, G (s)		27.7	27.7					55.8	55.8	16.0	74.8	
Effective Green, g (s)		25.7	27.2					55.8	55.8	15.0	74.8	
Actuated g/C Ratio		0.23	0.25					0.51	0.51	0.14	0.68	
Clearance Time (s)		3.5	3.5					4.0	4.0	3.0	4.0	
Vehicle Extension (s)		2.0	2.0					3.5	3.5	2.0	4.0	
Lane Grp Cap (vph)		409	387					1795	674	463	2406	
v/s Ratio Prot		0.20	c0.25					c0.51		c0.14	0.53	
v/s Ratio Perm									0.13			
v/c Ratio		0.84	1.02					1.00	0.26	1.03	0.78	
Uniform Delay, d1		40.2	41.4					27.1	15.3	47.5	12.1	
Progression Factor		1.00	1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2		13.9	51.7					21.8	0.9	49.8	2.6	
Delay (s)		54.1	93.1					48.9	16.3	97.3	14.7	
Level of Service		D	F					D	B	F	B	
Approach Delay (s)		75.7			0.0			45.4			31.4	
Approach LOS		E			A			D			C	

Intersection Summary			
HCM 2000 Control Delay	43.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	92.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	211	675	1726	374	0	2322
Future Volume (vph)	211	675	1726	374	0	2322
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0		4.0
Lane Util. Factor	0.97	0.88	0.95	1.00		0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	3433	2787	3539	1545		3539
Flt Permitted	0.95	1.00	1.00	1.00		1.00
Satd. Flow (perm)	3433	2787	3539	1545		3539
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	218	696	1779	386	0	2394
RTOR Reduction (vph)	0	8	0	0	0	0
Lane Group Flow (vph)	218	688	1779	386	0	2394
Confl. Peds. (#/hr)				9		
Confl. Bikes (#/hr)		26				
Turn Type	Prot	custom	NA	Free		NA
Protected Phases	8	8 1	2			6
Permitted Phases				Free		
Actuated Green, G (s)	13.5	34.5	58.5	100.0		81.5
Effective Green, g (s)	12.5	30.5	58.5	100.0		79.5
Actuated g/C Ratio	0.12	0.30	0.58	1.00		0.80
Clearance Time (s)	3.0		4.0			2.0
Vehicle Extension (s)	2.0		4.0			4.0
Lane Grp Cap (vph)	429	850	2070	1545		2813
v/s Ratio Prot	0.06	c0.25	0.50			c0.68
v/s Ratio Perm				0.25		
v/c Ratio	0.51	0.81	0.86	0.25		0.85
Uniform Delay, d1	40.9	32.1	17.3	0.0		6.5
Progression Factor	1.00	1.00	1.00	1.00		1.09
Incremental Delay, d2	0.3	5.4	4.9	0.4		2.7
Delay (s)	41.2	37.5	22.2	0.4		9.8
Level of Service	D	D	C	A		A
Approach Delay (s)	38.4		18.4			9.8
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	0.87		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		

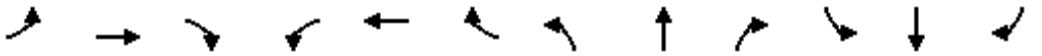
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	33	442	494	17	8	40
Future Volume (Veh/h)	33	442	494	17	8	40
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	37	497	555	19	9	45
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	574				1136	564
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	574				1136	564
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				96	91
cM capacity (veh/h)	999				215	525

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	534	574	54
Volume Left	37	0	9
Volume Right	0	19	45
cSH	999	1700	423
Volume to Capacity	0.04	0.34	0.13
Queue Length 95th (ft)	3	0	11
Control Delay (s)	1.0	0.0	14.7
Lane LOS	A		B
Approach Delay (s)	1.0	0.0	14.7
Approach LOS			B

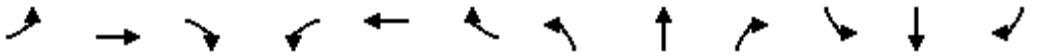
Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	185	1155	151	60	1298	260	183	27	89	209	22	98
Future Volume (vph)	185	1155	151	60	1298	260	183	27	89	209	22	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		5.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	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	0.98		1.00	0.97		1.00	0.88			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.96	1.00
Satd. Flow (prot)	1770	3479		1770	3451		1770	1648			1782	1556
Flt Permitted	0.07	1.00		0.14	1.00		0.95	1.00			0.96	1.00
Satd. Flow (perm)	128	3479		266	3451		1770	1648			1782	1556
Peak-hour factor, PHF	0.90	0.90	0.92	0.92	0.90	0.90	0.92	0.92	0.92	0.90	0.92	0.90
Adj. Flow (vph)	206	1283	164	65	1442	289	199	29	97	232	24	109
RTOR Reduction (vph)	0	9	0	0	15	0	0	66	0	0	0	95
Lane Group Flow (vph)	206	1438	0	65	1716	0	199	60	0	0	256	14
Confl. Peds. (#/hr)												1
Confl. Bikes (#/hr)												2
Turn Type	pm+pt	NA		Perm	NA		Split	NA		Split	NA	Perm
Protected Phases	7	4			8		2	2		6	6	
Permitted Phases	4			8								6
Actuated Green, G (s)	69.8	69.8		55.0	55.0		15.2	15.2			15.0	15.0
Effective Green, g (s)	68.8	70.8		55.0	56.0		15.2	15.2			15.0	15.0
Actuated g/C Ratio	0.61	0.63		0.49	0.50		0.13	0.13			0.13	0.13
Clearance Time (s)	3.0	5.0		5.0	5.0		4.0	4.0			4.0	4.0
Vehicle Extension (s)	2.0	3.0		3.0	3.0		3.0	3.0			4.0	4.0
Lane Grp Cap (vph)	234	2179		129	1710		238	221			236	206
v/s Ratio Prot	c0.08	0.41			c0.50		c0.11	0.04			c0.14	
v/s Ratio Perm	0.45			0.24								0.01
v/c Ratio	0.88	0.66		0.50	1.00		0.84	0.27			1.08	0.07
Uniform Delay, d1	34.0	13.4		19.7	28.5		47.7	43.9			49.0	42.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	28.9	0.8		3.1	22.7		21.7	0.7			83.0	0.2
Delay (s)	62.8	14.2		22.8	51.2		69.4	44.6			132.0	43.1
Level of Service	E	B		C	D		E	D			F	D
Approach Delay (s)		20.3			50.1			59.8			105.4	
Approach LOS		C			D			E			F	

Intersection Summary			
HCM 2000 Control Delay	43.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	113.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	92.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



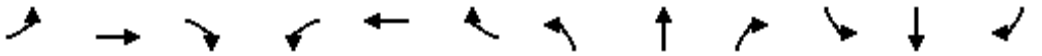
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	116	63	314	188	136	61	996	288	151	898	56
Future Volume (vph)	81	116	63	314	188	136	61	996	288	151	898	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6		4.6	4.6		4.0	4.2		4.0	4.2	4.2
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes		0.99		1.00	0.99		1.00	0.99		1.00	1.00	0.94
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt		0.97		1.00	0.94		1.00	0.97		1.00	1.00	0.85
Flt Protected		0.98		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1754		1770	1724		1770	3376		1770	3539	1495
Flt Permitted		0.76		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1359		1770	1724		1770	3376		1770	3539	1495
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	90	129	70	349	209	151	68	1107	320	168	998	62
RTOR Reduction (vph)	0	0	0	0	24	0	0	24	0	0	0	36
Lane Group Flow (vph)	0	289	0	349	336	0	68	1403	0	168	998	26
Confl. Peds. (#/hr)	10		10			10			10			10
Confl. Bikes (#/hr)			8			13			20			12
Turn Type	Perm	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4											6
Actuated Green, G (s)		19.4		19.4	43.4		7.2	43.4		10.4	46.6	46.6
Effective Green, g (s)		19.4		19.4	43.4		7.2	43.4		10.4	46.6	46.6
Actuated g/C Ratio		0.18		0.18	0.39		0.07	0.39		0.09	0.42	0.42
Clearance Time (s)		4.6		4.6	4.6		4.0	4.2		4.0	4.2	4.2
Vehicle Extension (s)		2.0		2.0	2.5		2.0	4.0		2.0	4.0	4.0
Lane Grp Cap (vph)		239		312	680		115	1331		167	1499	633
v/s Ratio Prot				c0.20	0.20		0.04	c0.42		c0.09	c0.28	
v/s Ratio Perm		c0.21										0.02
v/c Ratio		1.21		1.12	0.49		0.59	1.05		1.01	0.67	0.04
Uniform Delay, d1		45.3		45.3	25.1		50.0	33.3		49.8	25.4	18.6
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		126.5		86.8	0.4		5.3	40.2		71.2	2.4	0.1
Delay (s)		171.8		132.1	25.5		55.3	73.5		121.0	27.8	18.7
Level of Service		F		F	C		E	E		F	C	B
Approach Delay (s)		171.8			78.0			72.7			40.1	
Approach LOS		F			E			E			D	

Intersection Summary			
HCM 2000 Control Delay	70.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	17.4
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

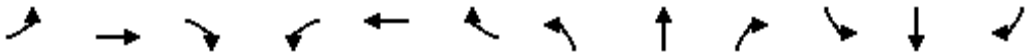
Appendix F

Intersection Level of Service Technical Calculations
Pipeline With Project Conditions



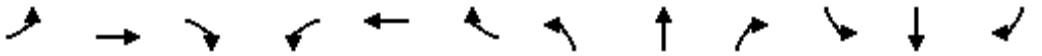
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	166	0	347	0	880	353	0	894	375
Future Volume (vph)	0	0	0	166	0	347	0	880	353	0	894	375
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				1.00		1.00		0.95	1.00		1.00	1.00
Frpb, ped/bikes				1.00		1.00		1.00	0.98		1.00	0.97
Flpb, ped/bikes				1.00		1.00		1.00	1.00		1.00	1.00
Frt				1.00		0.85		1.00	0.85		1.00	0.85
Flt Protected				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)				1703		1524		3539	1550		1863	1514
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				1703		1524		3539	1550		1863	1514
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)	0	0	0	175	0	365	0	926	372	0	941	395
RTOR Reduction (vph)	0	0	0	0	0	184	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	175	0	181	0	926	372	0	941	395
Confl. Peds. (#/hr)									2			5
Confl. Bikes (#/hr)												4
Heavy Vehicles (%)	2%	2%	2%	6%	2%	6%	2%	2%	2%	2%	2%	4%
Turn Type				Prot		Prot		NA	Free		NA	Perm
Protected Phases				8		8		2			6	
Permitted Phases									Free			6
Actuated Green, G (s)				14.8		14.8		77.7	100.0		77.7	77.7
Effective Green, g (s)				14.3		14.3		77.7	100.0		77.7	77.7
Actuated g/C Ratio				0.14		0.14		0.78	1.00		0.78	0.78
Clearance Time (s)				3.5		3.5		4.0			4.0	4.0
Vehicle Extension (s)				2.0		2.0		4.0			4.0	4.0
Lane Grp Cap (vph)				243		217		2749	1550		1447	1176
v/s Ratio Prot				0.10		c0.12		0.26			c0.51	
v/s Ratio Perm									0.24			0.26
v/c Ratio				0.72		0.83		0.34	0.24		0.65	0.34
Uniform Delay, d1				40.9		41.7		3.4	0.0		5.0	3.4
Progression Factor				1.00		1.00		0.77	1.00		1.73	1.04
Incremental Delay, d2				8.6		22.2		0.2	0.3		2.1	0.7
Delay (s)				49.5		63.9		2.8	0.3		10.8	4.2
Level of Service				D		E		A	A		B	A
Approach Delay (s)		0.0			59.2			2.1			8.8	
Approach LOS		A			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	62.9%	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)	538	0	532	0	0	0	0	703	136	0	705	356
Future Volume (vph)	538	0	532	0	0	0	0	703	136	0	705	356
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	1.00		1.00					1.00	1.00		0.95	1.00
Frpb, ped/bikes	1.00		1.00					1.00	0.98		1.00	0.98
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	1.00
Frt	1.00		0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	1736		1553					1845	1347		3539	1547
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	1736		1553					1845	1347		3539	1547
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	549	0	543	0	0	0	0	717	139	0	719	363
RTOR Reduction (vph)	0	0	96	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	549	0	447	0	0	0	0	717	139	0	719	363
Confl. Peds. (#/hr)			3						2			6
Confl. Bikes (#/hr)			4						4			
Heavy Vehicles (%)	4%	2%	4%	2%	2%	2%	2%	3%	17%	2%	2%	2%
Turn Type	Prot		Prot					NA	Perm		NA	Free
Protected Phases	4		4					2			6	
Permitted Phases									2			Free
Actuated Green, G (s)	37.4		37.4					54.6	54.6		54.6	100.0
Effective Green, g (s)	37.4		37.4					54.6	54.6		54.6	100.0
Actuated g/C Ratio	0.37		0.37					0.55	0.55		0.55	1.00
Clearance Time (s)	4.0		4.0					4.0	4.0		4.0	
Vehicle Extension (s)	3.0		3.0					4.0	4.0		4.0	
Lane Grp Cap (vph)	649		580					1007	735		1932	1547
v/s Ratio Prot	c0.32		0.29					c0.39			0.20	
v/s Ratio Perm									0.10			0.23
v/c Ratio	0.85		0.77					0.71	0.19		0.37	0.23
Uniform Delay, d1	28.7		27.5					16.9	11.5		12.9	0.0
Progression Factor	1.00		1.00					1.89	1.76		0.97	1.00
Incremental Delay, d2	9.9		6.3					2.7	0.4		0.4	0.3
Delay (s)	38.6		33.8					34.5	20.6		13.0	0.3
Level of Service	D		C					C	C		B	A
Approach Delay (s)		36.2			0.0			32.3			8.7	
Approach LOS		D			A			C			A	

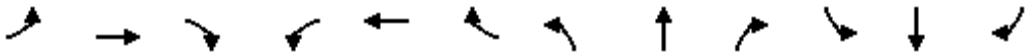
Intersection Summary			
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	212	107	157	11	56	67	148	564	16	277	795	141
Future Volume (vph)	212	107	157	11	56	67	148	564	16	277	795	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	0.99
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	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1719	1863	1583	1770	1863	1535	3433	3427		1752	3505	1560
Flt Permitted	0.62	1.00	1.00	0.69	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1114	1863	1583	1280	1863	1535	3433	3427		1752	3505	1560
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	214	108	159	11	57	68	149	570	16	280	803	142
RTOR Reduction (vph)	0	0	123	0	0	32	0	2	0	0	0	48
Lane Group Flow (vph)	214	108	36	11	57	36	149	584	0	280	803	94
Confl. Peds. (#/hr)						1						3
Heavy Vehicles (%)	5%	2%	2%	2%	2%	5%	2%	5%	2%	3%	3%	2%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8						6
Actuated Green, G (s)	15.5	15.5	22.7	8.8	8.3	53.5	7.2	23.0		45.2	59.5	68.5
Effective Green, g (s)	14.5	16.0	22.7	8.8	8.8	53.5	7.2	22.0		45.2	60.0	66.5
Actuated g/C Ratio	0.14	0.16	0.23	0.09	0.09	0.54	0.07	0.22		0.45	0.60	0.66
Clearance Time (s)	3.0	4.5	4.0	4.0	4.5	4.0	4.0	3.0		4.0	4.5	3.0
Vehicle Extension (s)	1.0	1.2	1.2	1.0	1.2	1.0	1.2	1.2		1.0	1.2	1.0
Lane Grp Cap (vph)	209	298	359	116	163	821	247	753		791	2103	1037
v/s Ratio Prot	c0.08	0.06	0.01	0.00	c0.03	0.02	c0.04	c0.17		0.16	c0.23	0.01
v/s Ratio Perm	c0.07		0.02	0.01		0.00						0.05
v/c Ratio	1.02	0.36	0.10	0.09	0.35	0.04	0.60	0.78		0.35	0.38	0.09
Uniform Delay, d1	42.4	37.5	30.6	41.9	42.9	11.1	45.0	36.7		17.9	10.4	6.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		0.70	1.10	1.12
Incremental Delay, d2	68.6	0.3	0.0	0.1	0.5	0.0	2.8	4.6		1.1	0.5	0.0
Delay (s)	111.0	37.7	30.6	42.1	43.4	11.1	47.9	41.2		13.5	11.9	6.7
Level of Service	F	D	C	D	D	B	D	D		B	B	A
Approach Delay (s)		68.0			27.1			42.6			11.6	
Approach LOS		E			C			D			B	

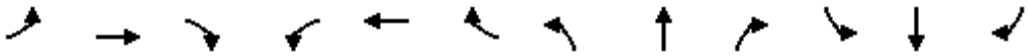
Intersection Summary			
HCM 2000 Control Delay	31.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	747	156	78	532	410	149	221	106	341	244	25
Future Volume (vph)	55	747	156	78	532	410	149	221	106	341	244	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85		0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98		0.95	1.00	
Satd. Flow (prot)	1770	3407		1752	3438	1548		1775		1770	1831	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98		0.95	1.00	
Satd. Flow (perm)	1770	3407		1752	3438	1548		1775		1770	1831	
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)	58	786	164	82	560	432	157	233	112	359	257	26
RTOR Reduction (vph)	0	13	0	0	0	268	0	8	0	0	3	0
Lane Group Flow (vph)	58	937	0	82	560	164	0	494	0	359	280	0
Confl. Peds. (#/hr)						1						
Confl. Bikes (#/hr)			1									2
Heavy Vehicles (%)	2%	3%	2%	3%	5%	2%	2%	2%	3%	2%	2%	4%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6						
Actuated Green, G (s)	6.6	36.1		7.1	36.6	36.6		37.3		28.7	28.7	
Effective Green, g (s)	6.6	37.1		7.1	37.6	37.6		37.3		28.7	28.7	
Actuated g/C Ratio	0.05	0.29		0.06	0.30	0.30		0.30		0.23	0.23	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0		4.0		4.0	4.0	
Vehicle Extension (s)	1.5	1.5		1.5	1.5	1.5		1.5		1.5	1.5	
Lane Grp Cap (vph)	92	1001		98	1024	461		524		402	416	
v/s Ratio Prot	0.03	c0.28		c0.05	0.16			c0.28		c0.20	0.15	
v/s Ratio Perm						0.11						
v/c Ratio	0.63	0.94		0.84	0.55	0.36		0.94		0.89	0.67	
Uniform Delay, d1	58.6	43.4		59.0	37.2	34.8		43.4		47.3	44.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	9.9	15.1		41.7	0.3	0.2		25.5		20.9	3.4	
Delay (s)	68.5	58.5		100.7	37.5	35.0		68.9		68.2	47.8	
Level of Service	E	E		F	D	C		E		E	D	
Approach Delay (s)		59.1			41.3			68.9			59.2	
Approach LOS		E			D			E			E	

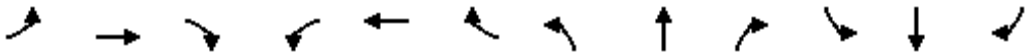
Intersection Summary			
HCM 2000 Control Delay	54.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	126.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	88.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	1	82	6	0	14	33	1031	19	25	1146	16
Future Volume (vph)	76	1	82	6	0	14	33	1031	19	25	1146	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.93		1.00	0.97		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.85		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1472		1770	1535		1770	3528		1770	3531	
Flt Permitted	0.67	1.00		1.00	1.00		0.18	1.00		0.21	1.00	
Satd. Flow (perm)	1242	1472		1863	1535		331	3528		389	3531	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	86	1	93	7	0	16	38	1172	22	28	1302	18
RTOR Reduction (vph)	0	84	0	0	16	0	0	0	0	0	0	0
Lane Group Flow (vph)	86	10	0	7	0	0	38	1194	0	28	1320	0
Confl. Peds. (#/hr)			44						1			
Confl. Bikes (#/hr)			1			2			1			1
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	9.6	9.6		2.4	2.4		78.6	75.9		77.8	75.5	
Effective Green, g (s)	9.2	9.6		2.4	2.4		77.8	76.5		77.0	76.1	
Actuated g/C Ratio	0.09	0.10		0.02	0.02		0.78	0.76		0.77	0.76	
Clearance Time (s)	3.6	4.0		4.0	4.0		3.6	4.6		3.6	4.6	
Vehicle Extension (s)	2.5	2.5		2.0	2.0		2.5	3.0		2.5	3.0	
Lane Grp Cap (vph)	131	141		44	36		290	2698		325	2687	
v/s Ratio Prot	c0.02	0.01			0.00		c0.00	0.34		0.00	c0.37	
v/s Ratio Perm	c0.04			0.00			0.10			0.06		
v/c Ratio	0.66	0.07		0.16	0.01		0.13	0.44		0.09	0.49	
Uniform Delay, d1	43.9	41.1		47.8	47.6		6.1	4.2		5.3	4.6	
Progression Factor	1.00	1.00		1.00	1.00		0.51	0.54		1.00	1.00	
Incremental Delay, d2	10.1	0.2		0.6	0.0		0.1	0.5		0.1	0.6	
Delay (s)	54.0	41.3		48.4	47.7		3.3	2.7		5.4	5.2	
Level of Service	D	D		D	D		A	A		A	A	
Approach Delay (s)		47.4			47.9			2.7			5.2	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		

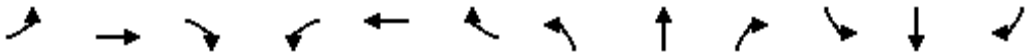
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	231	131	140	67	135	143	121	698	52	118	961	179
Future Volume (vph)	231	131	140	67	135	143	121	698	52	118	961	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	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	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1566	1770	1863	1564	1770	3497		1770	3444	
Flt Permitted	0.35	1.00	1.00	0.66	1.00	1.00	0.11	1.00		0.26	1.00	
Satd. Flow (perm)	661	1863	1566	1234	1863	1564	212	3497		485	3444	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	262	149	159	76	153	162	138	793	59	134	1092	203
RTOR Reduction (vph)	0	0	52	0	0	85	0	4	0	0	12	0
Lane Group Flow (vph)	263	149	107	76	153	78	138	848	0	134	1283	0
Confl. Peds. (#/hr)			2			4						
Confl. Bikes (#/hr)						1			2			4
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6	7	3	8		7	4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	28.0	21.6	28.5	15.8	13.4	19.0	59.9	53.0		57.7	52.1	
Effective Green, g (s)	28.2	21.8	28.9	15.8	13.4	20.2	60.3	53.6		58.9	52.7	
Actuated g/C Ratio	0.28	0.22	0.29	0.16	0.13	0.20	0.60	0.54		0.59	0.53	
Clearance Time (s)	4.2	4.2	4.2	4.0	4.0	4.6	4.2	4.6		4.6	4.6	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	306	406	452	207	249	315	238	1874		365	1814	
v/s Ratio Prot	c0.09	0.08	0.02	0.01	0.08	0.02	c0.04	0.24		0.02	c0.37	
v/s Ratio Perm	c0.15		0.05	0.05		0.03	0.31			0.19		
v/c Ratio	0.86	0.37	0.24	0.37	0.61	0.25	0.58	0.45		0.37	0.71	
Uniform Delay, d1	31.8	33.2	27.1	37.1	40.9	33.5	30.2	14.2		17.6	17.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		0.59	0.79	
Incremental Delay, d2	20.0	0.2	0.1	0.4	3.1	0.1	2.1	0.8		0.2	2.2	
Delay (s)	51.7	33.4	27.2	37.5	44.0	33.7	32.3	15.0		10.7	16.3	
Level of Service	D	C	C	D	D	C	C	B		B	B	
Approach Delay (s)		40.1			38.5			17.4			15.8	
Approach LOS		D			D			B			B	

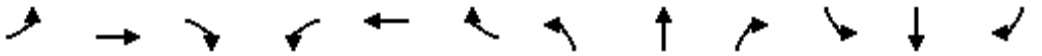
Intersection Summary			
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	74.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



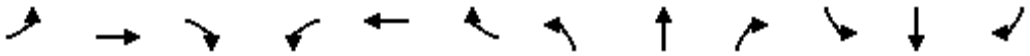
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	1	44	0	216	0	490	45	261	610	1
Future Volume (vph)	0	0	1	44	0	216	0	490	45	261	610	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00			0.95		1.00	0.95	
Frt		0.86			0.89			0.99		1.00	1.00	
Flt Protected		1.00			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		1611			1637			3495		1770	3538	
Flt Permitted		1.00			0.95			1.00		0.95	1.00	
Satd. Flow (perm)		1611			1560			3495		1770	3538	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	0	1	48	0	237	0	538	49	287	670	1
RTOR Reduction (vph)	0	1	0	0	187	0	0	10	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	98	0	0	577	0	287	671	0
Heavy Vehicles (%)	2%	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type		NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2			6								
Actuated Green, G (s)		9.3			9.3			14.1		15.3	33.4	
Effective Green, g (s)		9.3			9.3			14.6		15.3	33.9	
Actuated g/C Ratio		0.18			0.18			0.29		0.30	0.66	
Clearance Time (s)		4.0			4.0			4.5		4.0	4.5	
Vehicle Extension (s)		4.0			4.0			2.5		2.0	2.5	
Lane Grp Cap (vph)		292			283			996		528	2342	
v/s Ratio Prot		0.00						c0.17		c0.16	0.19	
v/s Ratio Perm					c0.06							
v/c Ratio		0.00			0.34			0.58		0.54	0.29	
Uniform Delay, d1		17.1			18.3			15.7		15.0	3.6	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.0			1.0			0.7		0.6	0.0	
Delay (s)		17.1			19.3			16.3		15.6	3.7	
Level of Service		B			B			B		B	A	
Approach Delay (s)		17.1			19.3			16.3			7.2	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	51.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.9%	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)	155	733	101	174	1040	84	53	309	183	135	507	95
Future Volume (vph)	155	733	101	174	1040	84	53	309	183	135	507	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.5		3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3416		1770	3465		1752	1863	1583	1752	1863	1583
Flt Permitted	0.11	1.00		0.12	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	204	3416		228	3465		1752	1863	1583	1752	1863	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	161	764	105	181	1083	88	55	322	191	141	528	99
RTOR Reduction (vph)	0	10	0	0	5	0	0	0	155	0	0	64
Lane Group Flow (vph)	161	859	0	181	1166	0	55	322	36	141	528	35
Heavy Vehicles (%)	2%	4%	2%	2%	3%	3%	3%	2%	2%	3%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2			6					8			4
Actuated Green, G (s)	43.8	36.5		48.2	38.7		21.5	21.5	21.5	31.7	31.7	31.7
Effective Green, g (s)	43.8	36.5		48.2	38.7		21.5	21.5	21.5	31.7	31.7	31.7
Actuated g/C Ratio	0.38	0.32		0.42	0.34		0.19	0.19	0.19	0.28	0.28	0.28
Clearance Time (s)	3.5	4.5		3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.5	2.5	2.5	2.5	2.5	2.5
Lane Grp Cap (vph)	178	1091		224	1174		329	350	298	486	517	439
v/s Ratio Prot	0.06	0.25		c0.07	c0.34		0.03	c0.17		0.08	c0.28	
v/s Ratio Perm	0.29			0.27					0.02			0.02
v/c Ratio	0.90	0.79		0.81	0.99		0.17	0.92	0.12	0.29	1.02	0.08
Uniform Delay, d1	28.9	35.3		24.9	37.6		38.8	45.5	38.5	32.4	41.2	30.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	40.5	4.1		17.9	24.5		0.2	28.7	0.1	0.2	45.1	0.1
Delay (s)	69.4	39.4		42.8	62.1		39.0	74.2	38.6	32.7	86.3	30.5
Level of Service	E	D		D	E		D	E	D	C	F	C
Approach Delay (s)		44.1			59.5			58.8			69.3	
Approach LOS		D			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	57.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	114.2	Sum of lost time (s)	15.0
Intersection Capacity Utilization	83.8%	ICU Level of Service	E
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)	179	51	45	76	89	127	40	943	30	105	1166	67
Future Volume (vph)	179	51	45	76	89	127	40	943	30	105	1166	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.97		1.00	0.97	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.96	1.00		0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1776	1544		1811	1506	1752	3454		1770	3473	
Flt Permitted		0.96	1.00		0.98	1.00	0.13	1.00		0.15	1.00	
Satd. Flow (perm)		1776	1544		1811	1506	236	3454		277	3473	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	203	58	51	86	101	144	45	1072	34	119	1325	76
RTOR Reduction (vph)	0	0	41	0	0	121	0	3	0	0	5	0
Lane Group Flow (vph)	0	261	10	0	187	23	45	1103	0	119	1396	0
Confl. Peds. (#/hr)			9			9			3			4
Confl. Bikes (#/hr)			4			7			3			1
Heavy Vehicles (%)	3%	3%	2%	2%	3%	4%	3%	4%	2%	2%	3%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8	2			6		
Actuated Green, G (s)		13.1	13.1		11.0	11.0	31.8	31.8		31.8	31.8	
Effective Green, g (s)		13.1	13.1		11.0	11.0	31.3	32.0		31.3	32.0	
Actuated g/C Ratio		0.19	0.19		0.16	0.16	0.46	0.47		0.46	0.47	
Clearance Time (s)		4.0	4.0		4.0	4.0	3.5	4.2		3.5	4.2	
Vehicle Extension (s)		1.2	1.2		1.2	1.2	1.0	1.2		1.0	1.2	
Lane Grp Cap (vph)		341	297		292	243	108	1623		127	1631	
v/s Ratio Prot		c0.15			c0.10			0.32			0.40	
v/s Ratio Perm			0.01			0.02	0.19			c0.43		
v/c Ratio		0.77	0.03		0.64	0.10	0.42	0.68		0.94	0.86	
Uniform Delay, d1		26.0	22.4		26.7	24.3	12.3	14.1		17.5	16.0	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		8.9	0.0		3.6	0.1	0.9	2.3		59.5	6.0	
Delay (s)		34.9	22.4		30.3	24.4	13.2	16.4		76.9	22.0	
Level of Service		C	C		C	C	B	B		E	C	
Approach Delay (s)		32.9			27.7			16.3			26.3	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	68.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

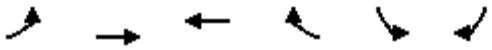
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	240	0	411	0	0	0	0	1237	241	574	1248	0
Future Volume (vph)	240	0	411	0	0	0	0	1237	241	574	1248	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00					0.95	1.00	0.97	0.95	
Frpb, ped/bikes		1.00	1.00					1.00	0.97	1.00	1.00	
Flpb, ped/bikes		1.00	1.00					1.00	1.00	1.00	1.00	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1752	1568					3539	1332	3400	3539	
Flt Permitted		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1752	1568					3539	1332	3400	3539	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	282	0	484	0	0	0	0	1455	284	675	1468	0
RTOR Reduction (vph)	0	0	37	0	0	0	0	0	77	0	0	0
Lane Group Flow (vph)	0	282	447	0	0	0	0	1455	207	675	1468	0
Confl. Peds. (#/hr)			2						9			7
Confl. Bikes (#/hr)			1			8						
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	2%	2%	18%	3%	2%	2%
Turn Type	Split	NA	Prot					NA	Perm	Prot	NA	
Protected Phases	4	4	4					2		1	6	
Permitted Phases									2			
Actuated Green, G (s)		29.0	29.0					41.0	41.0	22.0	65.0	
Effective Green, g (s)		27.0	27.0					41.0	41.0	20.0	65.0	
Actuated g/C Ratio		0.27	0.27					0.41	0.41	0.20	0.65	
Clearance Time (s)		2.0	2.0					4.0	4.0	2.0	4.0	
Vehicle Extension (s)		3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		473	423					1450	546	680	2300	
v/s Ratio Prot		0.16	c0.28					c0.41		c0.20	0.41	
v/s Ratio Perm									0.16			
v/c Ratio		0.60	1.06					1.00	0.38	0.99	0.64	
Uniform Delay, d1		31.8	36.5					29.5	20.6	39.9	10.5	
Progression Factor		1.00	1.00					0.81	0.72	1.00	1.00	
Incremental Delay, d2		2.0	59.4					23.5	1.8	32.5	1.4	
Delay (s)		33.8	95.9					47.5	16.7	72.4	11.8	
Level of Service		C	F					D	B	E	B	
Approach Delay (s)		73.0			0.0			42.5			30.9	
Approach LOS		E			A			D			C	

Intersection Summary			
HCM 2000 Control Delay	42.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	176	375	1206	272	0	1892
Future Volume (vph)	176	375	1206	272	0	1892
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0		4.0
Lane Util. Factor	0.97	0.88	0.95	1.00		0.95
Frpb, ped/bikes	1.00	0.95	1.00	0.98		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	3433	2660	3539	1545		3539
Flt Permitted	0.95	1.00	1.00	1.00		1.00
Satd. Flow (perm)	3433	2660	3539	1545		3539
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	207	441	1419	320	0	2226
RTOR Reduction (vph)	0	73	0	0	0	0
Lane Group Flow (vph)	207	368	1419	320	0	2226
Confl. Peds. (#/hr)				9		
Confl. Bikes (#/hr)		26				
Turn Type	Prot	Perm	NA	Free		NA
Protected Phases	8		2			6
Permitted Phases		8		Free		
Actuated Green, G (s)	7.9	7.9	25.1	40.0		27.1
Effective Green, g (s)	6.9	6.9	25.1	40.0		25.1
Actuated g/C Ratio	0.17	0.17	0.63	1.00		0.63
Clearance Time (s)	3.0	3.0	4.0			2.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	592	458	2220	1545		2220
v/s Ratio Prot	0.06		0.40			c0.63
v/s Ratio Perm		c0.14		0.21		
v/c Ratio	0.35	0.80	0.64	0.21		1.00
Uniform Delay, d1	14.6	15.9	4.6	0.0		7.4
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.4	9.9	1.4	0.3		19.7
Delay (s)	14.9	25.8	6.1	0.3		27.2
Level of Service	B	C	A	A		C
Approach Delay (s)	22.3		5.0			27.2
Approach LOS	C		A			C

Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.0%	ICU Level of Service	B
Analysis Period (min)	15		

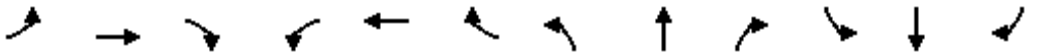
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	310	284	15	55	31
Future Volume (Veh/h)	10	310	284	15	55	31
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	12	378	346	18	67	38
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	364				757	355
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	364				757	355
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				82	94
cM capacity (veh/h)	1195				372	689

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	390	364	105
Volume Left	12	0	67
Volume Right	0	18	38
cSH	1195	1700	446
Volume to Capacity	0.01	0.21	0.24
Queue Length 95th (ft)	1	0	23
Control Delay (s)	0.3	0.0	15.5
Lane LOS	A		C
Approach Delay (s)	0.3	0.0	15.5
Approach LOS			C

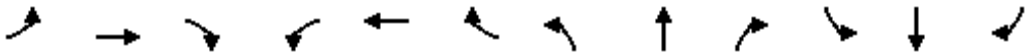
Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	795	68	27	677	134	38	5	18	303	9	175
Future Volume (vph)	71	795	68	27	677	134	38	5	18	303	9	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		5.0	5.0		4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	0.88			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1770	3497		1770	3443		1770	1639			1777	1583
Flt Permitted	0.16	1.00		0.22	1.00		0.44	1.00			0.95	1.00
Satd. Flow (perm)	297	3497		418	3443		828	1639			1777	1583
Peak-hour factor, PHF	0.93	0.93	0.92	0.92	0.93	0.93	0.92	0.92	0.92	0.93	0.92	0.93
Adj. Flow (vph)	76	855	74	29	728	144	41	5	20	326	10	188
RTOR Reduction (vph)	0	8	0	0	19	0	0	18	0	0	0	127
Lane Group Flow (vph)	76	921	0	29	853	0	41	7	0	0	336	61
Confl. Peds. (#/hr)						2						
Confl. Bikes (#/hr)												6
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Split	NA	Prot
Protected Phases	7	4			8			2		6	6	6
Permitted Phases	4			8			2					
Actuated Green, G (s)	35.4	35.4		30.0	30.0		9.0	9.0			27.6	27.6
Effective Green, g (s)	35.4	35.4		30.0	30.0		9.0	9.0			27.6	27.6
Actuated g/C Ratio	0.42	0.42		0.35	0.35		0.11	0.11			0.32	0.32
Clearance Time (s)	3.0	5.0		5.0	5.0		4.0	4.0			4.0	4.0
Vehicle Extension (s)	2.0	3.0		3.0	3.0		3.0	3.0			4.0	4.0
Lane Grp Cap (vph)	165	1456		147	1215		87	173			577	514
v/s Ratio Prot	0.01	c0.26			c0.25			0.00			c0.19	0.04
v/s Ratio Perm	0.18			0.07			c0.05					
v/c Ratio	0.46	0.63		0.20	0.70		0.47	0.04			0.58	0.12
Uniform Delay, d1	17.0	19.7		19.1	23.7		35.8	34.1			23.9	20.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	0.7	0.9		0.7	1.9		4.0	0.1			4.3	0.5
Delay (s)	17.8	20.6		19.8	25.5		39.8	34.2			28.2	20.6
Level of Service	B	C		B	C		D	C			C	C
Approach Delay (s)		20.3			25.3			37.7			25.5	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	23.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		

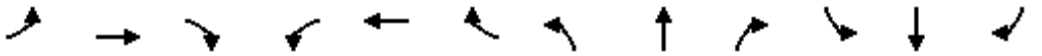
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	175	22	251	165	119	24	821	286	156	791	53
Future Volume (vph)	40	175	22	251	165	119	24	821	286	156	791	53
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		4.0	4.2		4.0	4.2	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.99		1.00	0.94		1.00	0.96		1.00	0.99	
Flt Protected		0.99		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1815		1770	1725		1770	3362		1770	3495	
Flt Permitted		0.87		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1601		1770	1725		1770	3362		1770	3495	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	44	194	24	279	183	132	27	912	318	173	879	59
RTOR Reduction (vph)	0	0	0	0	26	0	0	35	0	0	4	0
Lane Group Flow (vph)	0	262	0	279	289	0	27	1195	0	173	934	0
Confl. Peds. (#/hr)	10		10			10			10			10
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Perm	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4											
Actuated Green, G (s)		14.4		15.8	34.8		4.2	42.0		10.4	48.2	
Effective Green, g (s)		14.4		15.8	34.8		4.2	42.0		10.4	48.2	
Actuated g/C Ratio		0.14		0.16	0.35		0.04	0.42		0.10	0.48	
Clearance Time (s)		4.6		4.6	4.6		4.0	4.2		4.0	4.2	
Vehicle Extension (s)		2.0		2.0	2.5		2.0	4.0		2.0	4.0	
Lane Grp Cap (vph)		230		279	600		74	1412		184	1684	
v/s Ratio Prot				c0.16	0.17		0.02	c0.36		c0.10	0.27	
v/s Ratio Perm		c0.16										
v/c Ratio		1.14		1.00	0.48		0.36	0.85		0.94	0.55	
Uniform Delay, d1		42.8		42.1	25.5		46.6	26.1		44.5	18.3	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		102.0		53.9	0.4		1.1	6.4		48.8	1.3	
Delay (s)		144.8		96.0	26.0		47.7	32.5		93.3	19.6	
Level of Service		F		F	C		D	C		F	B	
Approach Delay (s)		144.8			58.9			32.9			31.1	
Approach LOS		F			E			C			C	

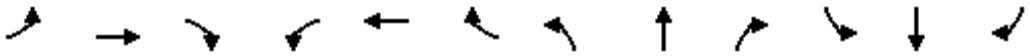
Intersection Summary			
HCM 2000 Control Delay	46.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.4
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



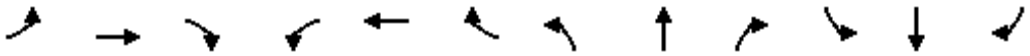
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	175	0	336	0	912	482	0	859	592
Future Volume (vph)	0	0	0	175	0	336	0	912	482	0	859	592
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				1.00		1.00		0.95	1.00		1.00	1.00
Frpb, ped/bikes				1.00		1.00		1.00	0.98		1.00	1.00
Flpb, ped/bikes				1.00		1.00		1.00	1.00		1.00	1.00
Frt				1.00		0.85		1.00	0.85		1.00	0.85
Flt Protected				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)				1736		1553		3539	1550		1845	1538
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				1736		1553		3539	1550		1845	1538
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)	0	0	0	184	0	354	0	960	507	0	904	623
RTOR Reduction (vph)	0	0	0	0	0	93	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	184	0	261	0	960	507	0	904	623
Confl. Peds. (#/hr)									2			5
Confl. Bikes (#/hr)												4
Heavy Vehicles (%)	2%	2%	2%	4%	2%	4%	2%	2%	2%	2%	3%	5%
Turn Type				Prot		Prot		NA	Free		NA	Prot
Protected Phases				8		8		2			6	6
Permitted Phases									Free			
Actuated Green, G (s)				21.1		21.1		71.4	100.0		71.4	71.4
Effective Green, g (s)				20.6		20.6		71.4	100.0		71.4	71.4
Actuated g/C Ratio				0.21		0.21		0.71	1.00		0.71	0.71
Clearance Time (s)				3.5		3.5		4.0			4.0	4.0
Vehicle Extension (s)				2.0		2.0		4.0			4.0	4.0
Lane Grp Cap (vph)				357		319		2526	1550		1317	1098
v/s Ratio Prot				0.11		c0.17		0.27			c0.49	0.41
v/s Ratio Perm									0.33			
v/c Ratio				0.52		0.82		0.38	0.33		0.69	0.57
Uniform Delay, d1				35.3		37.9		5.6	0.0		8.0	6.9
Progression Factor				1.00		1.00		0.77	1.00		1.35	1.36
Incremental Delay, d2				0.5		14.3		0.2	0.2		2.1	1.5
Delay (s)				35.8		52.2		4.5	0.2		12.9	10.8
Level of Service				D		D		A	A		B	B
Approach Delay (s)		0.0			46.6			3.1			12.0	
Approach LOS		A			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	61.6%	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)	407	0	534	0	0	0	0	993	206	0	710	324
Future Volume (vph)	407	0	534	0	0	0	0	993	206	0	710	324
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0		4.0	4.0
Lane Util. Factor	1.00		1.00					1.00	1.00		0.95	1.00
Frpb, ped/bikes	1.00		1.00					1.00	0.98		1.00	0.98
Flpb, ped/bikes	1.00		1.00					1.00	1.00		1.00	1.00
Frt	1.00		0.85					1.00	0.85		1.00	0.85
Flt Protected	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)	1770		1583					1845	1359		3539	1547
Flt Permitted	0.95		1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)	1770		1583					1845	1359		3539	1547
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)	438	0	574	0	0	0	0	1068	222	0	763	348
RTOR Reduction (vph)	0	0	141	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	438	0	433	0	0	0	0	1068	222	0	763	348
Confl. Peds. (#/hr)			3						2			6
Confl. Bikes (#/hr)			4						4			
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	3%	16%	2%	2%	2%
Turn Type	Prot		Prot					NA	Perm		NA	Free
Protected Phases	4		4					2			6	
Permitted Phases									2			Free
Actuated Green, G (s)	29.8		29.8					63.7	63.7		62.2	100.0
Effective Green, g (s)	29.8		29.8					62.2	62.2		62.2	100.0
Actuated g/C Ratio	0.30		0.30					0.62	0.62		0.62	1.00
Clearance Time (s)	4.0		4.0					2.5	2.5		4.0	
Vehicle Extension (s)	3.0		3.0					4.0	4.0		4.0	
Lane Grp Cap (vph)	527		471					1147	845		2201	1547
v/s Ratio Prot	0.25		c0.27					c0.58			0.22	
v/s Ratio Perm									0.16			0.22
v/c Ratio	0.83		0.92					0.93	0.26		0.35	0.22
Uniform Delay, d1	32.8		33.9					17.0	8.5		9.1	0.0
Progression Factor	1.00		1.00					0.98	0.76		1.46	1.00
Incremental Delay, d2	10.7		22.8					13.2	0.7		0.3	0.3
Delay (s)	43.5		56.8					29.8	7.1		13.7	0.3
Level of Service	D		E					C	A		B	A
Approach Delay (s)		51.0			0.0			25.9			9.5	
Approach LOS		D			A			C			A	

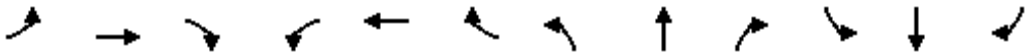
Intersection Summary			
HCM 2000 Control Delay	28.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	164	98	199	11	182	262	402	757	14	105	796	329
Future Volume (vph)	164	98	199	11	182	262	402	757	14	105	796	329
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.99
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	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1845	1583	1770	1863	1540	3433	3463		1770	3539	1561
Flt Permitted	0.34	1.00	1.00	0.69	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	630	1845	1583	1286	1863	1540	3433	3463		1770	3539	1561
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)	173	103	209	12	192	276	423	797	15	111	838	346
RTOR Reduction (vph)	0	0	138	0	0	79	0	1	0	0	0	137
Lane Group Flow (vph)	173	103	71	12	192	197	423	811	0	111	838	209
Confl. Peds. (#/hr)						1						3
Heavy Vehicles (%)	3%	3%	2%	2%	2%	4%	2%	4%	2%	2%	2%	2%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8						6
Actuated Green, G (s)	29.9	24.9	37.9	18.2	17.2	26.4	13.0	49.4		9.2	46.1	54.8
Effective Green, g (s)	29.9	25.4	33.9	18.2	17.7	26.4	11.0	48.4		9.2	46.6	52.8
Actuated g/C Ratio	0.30	0.25	0.34	0.18	0.18	0.26	0.11	0.48		0.09	0.47	0.53
Clearance Time (s)	4.0	4.5	2.0	4.0	4.5	4.0	2.0	3.0		4.0	4.5	4.0
Vehicle Extension (s)	1.0	1.2	1.2	1.0	1.2	1.0	1.2	1.2		1.0	1.2	1.0
Lane Grp Cap (vph)	285	468	536	238	329	406	377	1676		162	1649	824
v/s Ratio Prot	c0.05	0.06	0.01	0.00	0.10	0.04	c0.12	0.23		0.06	c0.24	0.02
v/s Ratio Perm	c0.13		0.03	0.01		0.08						0.11
v/c Ratio	0.61	0.22	0.13	0.05	0.58	0.48	1.12	0.48		0.69	0.51	0.25
Uniform Delay, d1	27.8	29.5	22.9	33.7	37.8	31.1	44.5	17.4		44.0	18.7	12.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.13	0.62	0.57
Incremental Delay, d2	2.5	0.1	0.0	0.0	1.7	0.3	83.7	1.0		7.6	0.9	0.0
Delay (s)	30.3	29.6	22.9	33.7	39.5	31.4	128.2	18.4		57.5	12.6	7.4
Level of Service	C	C	C	C	D	C	F	B		E	B	A
Approach Delay (s)		27.0			34.7			56.0			15.0	
Approach LOS		C			C			E			B	

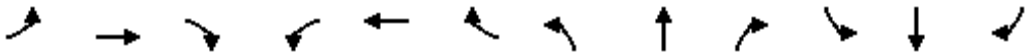
Intersection Summary			
HCM 2000 Control Delay	33.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	645	126	102	940	459	121	202	92	387	243	54
Future Volume (vph)	52	645	126	102	940	459	121	202	92	387	243	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85		0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1770	3413		1752	3438	1548		1777		1770	1801	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (perm)	1770	3413		1752	3438	1548		1777		1770	1801	
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)	56	694	135	110	1011	494	130	217	99	416	261	58
RTOR Reduction (vph)	0	13	0	0	0	193	0	8	0	0	7	0
Lane Group Flow (vph)	56	816	0	110	1011	301	0	438	0	416	312	0
Confl. Peds. (#/hr)						1						
Confl. Bikes (#/hr)			1									2
Heavy Vehicles (%)	2%	3%	2%	3%	5%	2%	2%	2%	3%	2%	2%	4%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6						
Actuated Green, G (s)	6.4	32.5		9.4	35.5	35.5		30.2		29.9	29.9	
Effective Green, g (s)	6.4	33.5		9.4	36.5	36.5		30.2		29.9	29.9	
Actuated g/C Ratio	0.05	0.28		0.08	0.31	0.31		0.25		0.25	0.25	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0		4.0		4.0	4.0	
Vehicle Extension (s)	1.5	1.5		1.5	1.5	1.5		1.5		1.5	1.5	
Lane Grp Cap (vph)	95	960		138	1054	474		450		444	452	
v/s Ratio Prot	0.03	0.24		c0.06	c0.29			c0.25		c0.24	0.17	
v/s Ratio Perm						0.19						
v/c Ratio	0.59	0.85		0.80	0.96	0.64		0.97		0.94	0.69	
Uniform Delay, d1	55.0	40.4		53.9	40.5	35.5		44.0		43.6	40.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	5.9	7.0		25.0	18.3	2.1		35.1		27.0	3.7	
Delay (s)	60.9	47.4		78.8	58.8	37.6		79.0		70.6	44.0	
Level of Service	E	D		E	E	D		E		E	D	
Approach Delay (s)		48.3			53.7			79.0			59.1	
Approach LOS		D			D			E			E	

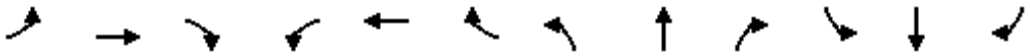
Intersection Summary			
HCM 2000 Control Delay	56.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	119.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	87.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	3	47	11	2	31	50	1431	61	74	1150	16
Future Volume (vph)	56	3	47	11	2	31	50	1431	61	74	1150	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.93		1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.86		1.00	0.86		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1490		1770	1564		1770	3514		1770	3531	
Flt Permitted	0.54	1.00		1.00	1.00		0.18	1.00		0.10	1.00	
Satd. Flow (perm)	1007	1490		1863	1564		333	3514		189	3531	
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)	60	3	51	12	2	33	54	1539	66	80	1237	17
RTOR Reduction (vph)	0	44	0	0	32	0	0	2	0	0	1	0
Lane Group Flow (vph)	60	10	0	12	3	0	54	1603	0	80	1253	0
Confl. Peds. (#/hr)			44						1			
Confl. Bikes (#/hr)			1			2			1			1
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	14.2	14.2		3.8	3.8		73.2	68.4		74.0	68.8	
Effective Green, g (s)	13.8	14.2		3.8	3.8		72.4	69.0		73.2	69.4	
Actuated g/C Ratio	0.14	0.14		0.04	0.04		0.72	0.69		0.73	0.69	
Clearance Time (s)	3.6	4.0		4.0	4.0		3.6	4.6		3.6	4.6	
Vehicle Extension (s)	2.5	2.5		2.0	2.0		2.5	3.0		2.5	3.0	
Lane Grp Cap (vph)	187	211		70	59		304	2424		214	2450	
v/s Ratio Prot	c0.02	0.01			0.00		0.01	c0.46		c0.02	0.35	
v/s Ratio Perm	c0.02			0.01			0.12			0.26		
v/c Ratio	0.32	0.05		0.17	0.06		0.18	0.66		0.37	0.51	
Uniform Delay, d1	38.5	37.1		46.6	46.4		4.9	8.8		7.7	7.3	
Progression Factor	1.00	1.00		1.00	1.00		0.69	0.67		1.00	1.00	
Incremental Delay, d2	0.7	0.1		0.4	0.1		0.1	1.0		0.8	0.8	
Delay (s)	39.2	37.1		47.0	46.5		3.5	6.9		8.5	8.0	
Level of Service	D	D		D	D		A	A		A	A	
Approach Delay (s)		38.2			46.6			6.8			8.1	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		

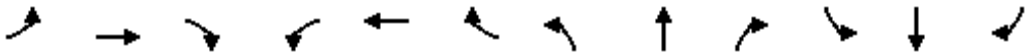
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	164	128	107	99	154	251	101	1124	97	214	889	137
Future Volume (vph)	164	128	107	99	154	251	101	1124	97	214	889	137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	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	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1546	1770	1863	1583	1770	3489		1770	3457	
Flt Permitted	0.31	1.00	1.00	0.67	1.00	1.00	0.17	1.00		0.08	1.00	
Satd. Flow (perm)	579	1863	1546	1246	1863	1583	323	3489		148	3457	
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)	176	138	115	106	166	270	109	1209	104	230	956	147
RTOR Reduction (vph)	0	0	86	0	0	122	0	5	0	0	9	0
Lane Group Flow (vph)	176	138	29	106	166	148	109	1308	0	230	1094	0
Confl. Peds. (#/hr)			13						3			2
Confl. Bikes (#/hr)			7						4			2
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6	7	3	8		7	4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	29.7	17.2	24.4	21.4	12.9	24.0	53.0	45.8		61.2	50.1	
Effective Green, g (s)	29.9	17.4	24.8	21.4	12.9	25.2	53.4	46.4		62.1	50.7	
Actuated g/C Ratio	0.30	0.17	0.25	0.21	0.13	0.25	0.53	0.46		0.62	0.51	
Clearance Time (s)	4.2	4.2	4.2	4.0	4.0	4.6	4.2	4.6		4.6	4.6	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	327	324	445	311	240	398	279	1618		281	1752	
v/s Ratio Prot	c0.07	0.07	0.00	0.03	c0.09	0.04	0.03	0.37		c0.10	0.32	
v/s Ratio Perm	0.09		0.01	0.04		0.05	0.18			c0.41		
v/c Ratio	0.54	0.43	0.06	0.34	0.69	0.37	0.39	0.81		0.82	0.62	
Uniform Delay, d1	27.7	36.8	28.7	32.9	41.6	30.9	13.1	23.0		26.3	17.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.84	0.62	
Incremental Delay, d2	0.9	0.3	0.0	0.2	6.8	0.2	0.3	4.5		14.6	1.5	
Delay (s)	28.6	37.2	28.8	33.1	48.4	31.1	13.4	27.5		63.0	12.5	
Level of Service	C	D	C	C	D	C	B	C		E	B	
Approach Delay (s)		31.4			36.8			26.4			21.2	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		

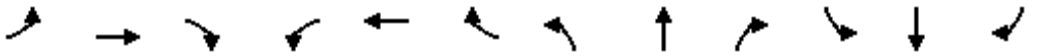
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1	6	58	2	396	6	837	58	225	642	7
Future Volume (vph)	10	1	6	58	2	396	6	837	58	225	642	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.95			0.88		1.00	0.99		1.00	1.00	
Flt Protected		0.97			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1726			1634		1770	3505		1770	3534	
Flt Permitted		0.73			0.96		0.39	1.00		0.16	1.00	
Satd. Flow (perm)		1296			1576		725	3505		301	3534	
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)	11	1	6	62	2	421	6	890	62	239	683	7
RTOR Reduction (vph)	0	4	0	0	229	0	0	6	0	0	1	0
Lane Group Flow (vph)	0	14	0	0	256	0	6	946	0	239	689	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		15.9			15.9		27.2	26.4		38.9	34.1	
Effective Green, g (s)		15.9			15.9		27.2	26.9		38.9	34.6	
Actuated g/C Ratio		0.25			0.25		0.43	0.42		0.61	0.55	
Clearance Time (s)		4.0			4.0		4.0	4.5		4.0	4.5	
Vehicle Extension (s)		4.0			4.0		2.0	2.5		2.0	2.5	
Lane Grp Cap (vph)		325			395		324	1489		382	1931	
v/s Ratio Prot							0.00	0.27		c0.08	0.19	
v/s Ratio Perm		0.01			c0.16		0.01			c0.30		
v/c Ratio		0.04			0.65		0.02	0.64		0.63	0.36	
Uniform Delay, d1		17.9			21.2		10.3	14.3		8.2	8.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			4.1		0.0	0.8		2.3	0.1	
Delay (s)		18.0			25.2		10.3	15.1		10.5	8.2	
Level of Service		B			C		B	B		B	A	
Approach Delay (s)		18.0			25.2			15.1			8.8	
Approach LOS		B			C			B			A	

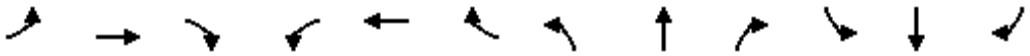
Intersection Summary			
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	63.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	265	968	89	236	1260	213	83	504	262	142	431	158
Future Volume (vph)	265	968	89	236	1260	213	83	504	262	142	431	158
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3403		1770	3462		1770	1863	1583	1770	1863	1583
Flt Permitted	0.13	1.00		0.12	1.00		0.25	1.00	1.00	0.16	1.00	1.00
Satd. Flow (perm)	239	3403		226	3462		465	1863	1583	297	1863	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	276	1008	93	246	1312	222	86	525	273	148	449	165
RTOR Reduction (vph)	0	8	0	0	17	0	0	0	158	0	0	109
Lane Group Flow (vph)	276	1093	0	246	1518	0	86	525	115	148	449	56
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8		8	4		4
Actuated Green, G (s)	39.2	31.7		42.8	33.5		27.5	27.5	27.5	27.5	27.5	27.5
Effective Green, g (s)	38.2	32.2		41.8	34.0		27.0	27.0	27.0	27.0	27.0	27.0
Actuated g/C Ratio	0.48	0.40		0.52	0.42		0.34	0.34	0.34	0.34	0.34	0.34
Clearance Time (s)	3.5	4.5		3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.5	2.5	2.5	2.5	2.5	2.5
Lane Grp Cap (vph)	248	1369		287	1471		156	628	534	100	628	534
v/s Ratio Prot	c0.10	0.32		c0.09	c0.44			0.28			0.24	
v/s Ratio Perm	0.43			0.35			0.19		0.07	c0.50		0.04
v/c Ratio	1.11	0.80		0.86	1.03		0.55	0.84	0.21	1.48	0.71	0.10
Uniform Delay, d1	18.7	21.0		16.5	23.0		21.6	24.5	18.9	26.5	23.1	18.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	90.8	3.5		20.8	32.0		3.3	9.3	0.1	261.8	3.6	0.1
Delay (s)	109.6	24.6		37.3	55.0		24.9	33.7	19.1	288.3	26.7	18.3
Level of Service	F	C		D	E		C	C	B	F	C	B
Approach Delay (s)		41.6			52.6			28.3			75.7	
Approach LOS		D			D			C			E	

Intersection Summary			
HCM 2000 Control Delay	48.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	104.0%	ICU Level of Service	G
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)	189	98	42	76	156	239	48	1260	43	210	1595	216
Future Volume (vph)	189	98	42	76	156	239	48	1260	43	210	1595	216
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.97		1.00	0.96	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected		0.97	1.00		0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1786	1532		1821	1495	1752	3453		1770	3432	
Flt Permitted		0.97	1.00		0.98	1.00	0.07	1.00		0.07	1.00	
Satd. Flow (perm)		1786	1532		1821	1495	137	3453		128	3432	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	191	99	42	77	158	241	48	1273	43	212	1611	218
RTOR Reduction (vph)	0	0	35	0	0	175	0	2	0	0	8	0
Lane Group Flow (vph)	0	290	7	0	235	66	48	1314	0	212	1821	0
Confl. Peds. (#/hr)			9			9			3			4
Confl. Bikes (#/hr)			4			7			3			1
Heavy Vehicles (%)	3%	3%	2%	2%	3%	4%	3%	4%	2%	2%	3%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8	2			6		
Actuated Green, G (s)		20.7	20.7		18.1	18.1	57.1	54.5		70.3	64.2	
Effective Green, g (s)		20.7	20.7		18.1	18.1	56.1	54.7		69.8	64.4	
Actuated g/C Ratio		0.17	0.17		0.15	0.15	0.46	0.45		0.58	0.53	
Clearance Time (s)		4.0	4.0		4.0	4.0	3.5	4.2		3.5	4.2	
Vehicle Extension (s)		1.2	1.2		1.2	1.2	1.0	1.2		1.0	1.2	
Lane Grp Cap (vph)		304	261		271	223	91	1557		233	1822	
v/s Ratio Prot		c0.16			c0.13		0.01	0.38		c0.09	c0.53	
v/s Ratio Perm			0.00			0.04	0.23			0.43		
v/c Ratio		0.95	0.03		0.87	0.29	0.53	0.84		0.91	1.00	
Uniform Delay, d1		49.8	41.9		50.4	45.9	28.6	29.5		35.2	28.4	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		38.8	0.0		23.3	0.3	2.5	4.2		34.5	20.8	
Delay (s)		88.7	41.9		73.8	46.2	31.1	33.7		69.8	49.2	
Level of Service		F	D		E	D	C	C		E	D	
Approach Delay (s)		82.8			59.8			33.6			51.3	
Approach LOS		F			E			C			D	

Intersection Summary			
HCM 2000 Control Delay	49.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	121.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	97.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

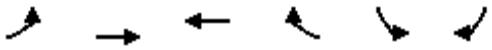
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	337	0	417	0	0	0	0	1778	228	467	1906	0
Future Volume (vph)	337	0	417	0	0	0	0	1778	228	467	1906	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5	4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00					0.95	1.00	0.97	0.95	
Frpb, ped/bikes		1.00	1.00					1.00	0.97	1.00	1.00	
Flpb, ped/bikes		1.00	1.00					1.00	1.00	1.00	1.00	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1752	1568					3539	1330	3400	3539	
Flt Permitted		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1752	1568					3539	1330	3400	3539	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	344	0	426	0	0	0	0	1814	233	477	1945	0
RTOR Reduction (vph)	0	0	30	0	0	0	0	0	46	0	0	0
Lane Group Flow (vph)	0	344	396	0	0	0	0	1814	187	477	1945	0
Confl. Peds. (#/hr)			2						9			7
Confl. Bikes (#/hr)			1			8						
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	2%	2%	18%	3%	2%	2%
Turn Type	Split	NA	Prot					NA	Perm	Prot	NA	
Protected Phases	4	4	4					2		1	6	
Permitted Phases									2			
Actuated Green, G (s)		27.7	27.7					55.8	55.8	16.0	74.8	
Effective Green, g (s)		25.7	27.2					55.8	55.8	15.0	74.8	
Actuated g/C Ratio		0.23	0.25					0.51	0.51	0.14	0.68	
Clearance Time (s)		3.5	3.5					4.0	4.0	3.0	4.0	
Vehicle Extension (s)		2.0	2.0					3.5	3.5	2.0	4.0	
Lane Grp Cap (vph)		409	387					1795	674	463	2406	
v/s Ratio Prot		0.20	c0.25					c0.51		c0.14	0.55	
v/s Ratio Perm									0.14			
v/c Ratio		0.84	1.02					1.01	0.28	1.03	0.81	
Uniform Delay, d1		40.2	41.4					27.1	15.5	47.5	12.5	
Progression Factor		1.00	1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2		13.9	51.7					23.9	1.0	49.8	3.0	
Delay (s)		54.1	93.1					51.0	16.6	97.3	15.6	
Level of Service		D	F					D	B	F	B	
Approach Delay (s)		75.7			0.0			47.1			31.7	
Approach LOS		E			A			D			C	

Intersection Summary			
HCM 2000 Control Delay	44.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	92.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	242	675	1741	374	0	2350
Future Volume (vph)	242	675	1741	374	0	2350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0		4.0
Lane Util. Factor	0.97	0.88	0.95	1.00		0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	3433	2787	3539	1545		3539
Flt Permitted	0.95	1.00	1.00	1.00		1.00
Satd. Flow (perm)	3433	2787	3539	1545		3539
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	249	696	1795	386	0	2423
RTOR Reduction (vph)	0	8	0	0	0	0
Lane Group Flow (vph)	249	688	1795	386	0	2423
Confl. Peds. (#/hr)				9		
Confl. Bikes (#/hr)		26				
Turn Type	Prot	custom	NA	Free		NA
Protected Phases	8	8 1	2			6
Permitted Phases				Free		
Actuated Green, G (s)	13.7	34.7	58.3	100.0		81.3
Effective Green, g (s)	12.7	30.7	58.3	100.0		79.3
Actuated g/C Ratio	0.13	0.31	0.58	1.00		0.79
Clearance Time (s)	3.0		4.0			2.0
Vehicle Extension (s)	2.0		4.0			4.0
Lane Grp Cap (vph)	435	855	2063	1545		2806
v/s Ratio Prot	0.07	c0.25	0.51			c0.68
v/s Ratio Perm				0.25		
v/c Ratio	0.57	0.80	0.87	0.25		0.86
Uniform Delay, d1	41.1	31.9	17.6	0.0		6.8
Progression Factor	1.00	1.00	1.00	1.00		1.09
Incremental Delay, d2	1.1	5.2	5.4	0.4		3.0
Delay (s)	42.2	37.1	23.0	0.4		10.4
Level of Service	D	D	C	A		B
Approach Delay (s)	38.5		19.0			10.4
Approach LOS	D		B			B

Intersection Summary			
HCM 2000 Control Delay	18.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		

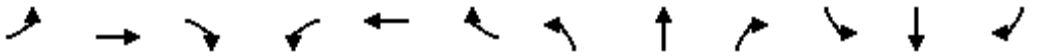
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	38	442	494	59	30	42
Future Volume (Veh/h)	38	442	494	59	30	42
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	43	497	555	66	34	47
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	621				1171	588
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	621				1171	588
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				83	91
cM capacity (veh/h)	960				203	509

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	540	621	81
Volume Left	43	0	34
Volume Right	0	66	47
cSH	960	1700	312
Volume to Capacity	0.04	0.37	0.26
Queue Length 95th (ft)	4	0	25
Control Delay (s)	1.2	0.0	20.5
Lane LOS	A		C
Approach Delay (s)	1.2	0.0	20.5
Approach LOS			C

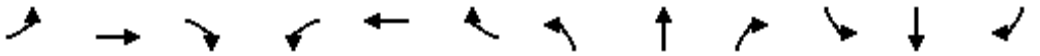
Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	187	1155	151	60	1298	262	183	27	89	212	22	101
Future Volume (vph)	187	1155	151	60	1298	262	183	27	89	212	22	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		5.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	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	0.98		1.00	0.97		1.00	0.88			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.96	1.00
Satd. Flow (prot)	1770	3479		1770	3450		1770	1648			1782	1556
Flt Permitted	0.07	1.00		0.14	1.00		0.95	1.00			0.96	1.00
Satd. Flow (perm)	128	3479		266	3450		1770	1648			1782	1556
Peak-hour factor, PHF	0.90	0.90	0.92	0.92	0.90	0.90	0.92	0.92	0.92	0.90	0.92	0.90
Adj. Flow (vph)	208	1283	164	65	1442	291	199	29	97	236	24	112
RTOR Reduction (vph)	0	9	0	0	15	0	0	65	0	0	0	97
Lane Group Flow (vph)	208	1438	0	65	1718	0	199	61	0	0	260	15
Confl. Peds. (#/hr)												1
Confl. Bikes (#/hr)												2
Turn Type	pm+pt	NA		Perm	NA		Split	NA		Split	NA	Perm
Protected Phases	7	4			8		2	2		6	6	
Permitted Phases	4			8								6
Actuated Green, G (s)	69.9	69.9		55.1	55.1		15.2	15.2			15.0	15.0
Effective Green, g (s)	68.9	70.9		55.1	56.1		15.2	15.2			15.0	15.0
Actuated g/C Ratio	0.61	0.63		0.49	0.50		0.13	0.13			0.13	0.13
Clearance Time (s)	3.0	5.0		5.0	5.0		4.0	4.0			4.0	4.0
Vehicle Extension (s)	2.0	3.0		3.0	3.0		3.0	3.0			4.0	4.0
Lane Grp Cap (vph)	234	2180		129	1711		237	221			236	206
v/s Ratio Prot	c0.08	0.41			c0.50		c0.11	0.04			c0.15	
v/s Ratio Perm	0.45			0.24								0.01
v/c Ratio	0.89	0.66		0.50	1.00		0.84	0.28			1.10	0.07
Uniform Delay, d1	34.2	13.4		19.7	28.5		47.8	44.0			49.0	43.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	30.1	0.7		3.1	22.8		22.2	0.7			88.5	0.2
Delay (s)	64.3	14.2		22.8	51.3		69.9	44.7			137.5	43.2
Level of Service	E	B		C	D		E	D			F	D
Approach Delay (s)		20.5			50.3			60.1			109.1	
Approach LOS		C			D			E			F	

Intersection Summary			
HCM 2000 Control Delay	44.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	113.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	92.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



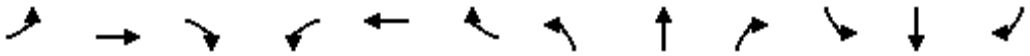
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	116	63	314	188	136	61	1012	288	151	928	56
Future Volume (vph)	81	116	63	314	188	136	61	1012	288	151	928	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6		4.6	4.6		4.0	4.2		4.0	4.2	4.2
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes		0.99		1.00	0.99		1.00	0.99		1.00	1.00	0.94
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt		0.97		1.00	0.94		1.00	0.97		1.00	1.00	0.85
Flt Protected		0.98		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1754		1770	1724		1770	3378		1770	3539	1495
Flt Permitted		0.76		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1359		1770	1724		1770	3378		1770	3539	1495
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	90	129	70	349	209	151	68	1124	320	168	1031	62
RTOR Reduction (vph)	0	0	0	0	24	0	0	24	0	0	0	36
Lane Group Flow (vph)	0	289	0	349	336	0	68	1420	0	168	1031	26
Confl. Peds. (#/hr)	10		10			10			10			10
Confl. Bikes (#/hr)			8			13			20			12
Turn Type	Perm	NA		Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4											6
Actuated Green, G (s)		19.4		19.4	43.4		7.2	43.4		10.4	46.6	46.6
Effective Green, g (s)		19.4		19.4	43.4		7.2	43.4		10.4	46.6	46.6
Actuated g/C Ratio		0.18		0.18	0.39		0.07	0.39		0.09	0.42	0.42
Clearance Time (s)		4.6		4.6	4.6		4.0	4.2		4.0	4.2	4.2
Vehicle Extension (s)		2.0		2.0	2.5		2.0	4.0		2.0	4.0	4.0
Lane Grp Cap (vph)		239		312	680		115	1332		167	1499	633
v/s Ratio Prot				c0.20	0.20		0.04	c0.42		c0.09	c0.29	
v/s Ratio Perm		c0.21										0.02
v/c Ratio		1.21		1.12	0.49		0.59	1.07		1.01	0.69	0.04
Uniform Delay, d1		45.3		45.3	25.1		50.0	33.3		49.8	25.8	18.6
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		126.5		86.8	0.4		5.3	44.4		71.2	2.6	0.1
Delay (s)		171.8		132.1	25.5		55.3	77.7		121.0	28.4	18.7
Level of Service		F		F	C		E	E		F	C	B
Approach Delay (s)		171.8			78.0			76.7			40.2	
Approach LOS		F			E			E			D	

Intersection Summary			
HCM 2000 Control Delay	72.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	17.4
Intersection Capacity Utilization	95.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Appendix F

Intersection Level of Service Technical Calculations
Cumulative Conditions

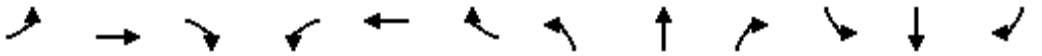


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	300	0	340	0	1220	370	0	1120	460
Future Volume (vph)	0	0	0	300	0	340	0	1220	370	0	1120	460
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	
Lane Util. Factor				0.97		0.88		0.95	1.00		0.95	
Frpb, ped/bikes				1.00		1.00		1.00	0.98		0.99	
Flpb, ped/bikes				1.00		1.00		1.00	1.00		1.00	
Frt				1.00		0.85		1.00	0.85		0.96	
Flt Protected				0.95		1.00		1.00	1.00		1.00	
Satd. Flow (prot)				3303		2682		3539	1550		3341	
Flt Permitted				0.95		1.00		1.00	1.00		1.00	
Satd. Flow (perm)				3303		2682		3539	1550		3341	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	312	0	354	0	1271	385	0	1167	479
RTOR Reduction (vph)	0	0	0	0	0	170	0	0	0	0	23	0
Lane Group Flow (vph)	0	0	0	313	0	184	0	1271	385	0	1623	0
Confl. Peds. (#/hr)									2			5
Confl. Bikes (#/hr)												4
Heavy Vehicles (%)	2%	2%	2%	6%	2%	6%	2%	2%	2%	2%	2%	4%
Turn Type				Prot		Prot		NA	Free		NA	
Protected Phases				8		8		2			6	
Permitted Phases									Free			
Actuated Green, G (s)				13.9		13.9		78.6	100.0		78.6	
Effective Green, g (s)				13.4		13.4		78.6	100.0		78.6	
Actuated g/C Ratio				0.13		0.13		0.79	1.00		0.79	
Clearance Time (s)				3.5		3.5		4.0			4.0	
Vehicle Extension (s)				2.0		2.0		4.0			4.0	
Lane Grp Cap (vph)				442		359		2781	1550		2626	
v/s Ratio Prot				c0.09		0.07		0.36			c0.49	
v/s Ratio Perm									0.25			
v/c Ratio				0.71		0.51		0.46	0.25		0.62	
Uniform Delay, d1				41.4		40.3		3.6	0.0		4.5	
Progression Factor				1.00		1.00		0.50	1.00		0.21	
Incremental Delay, d2				4.2		0.5		0.5	0.3		0.8	
Delay (s)				45.6		40.8		2.2	0.3		1.8	
Level of Service				D		D		A	A		A	
Approach Delay (s)		0.0			43.1			1.8			1.8	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	61.1%	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)	670	0	580	0	0	0	0	920	270	0	980	440
Future Volume (vph)	670	0	580	0	0	0	0	920	270	0	980	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0			4.0	4.0
Lane Util. Factor	0.97		0.88					0.95			0.95	1.00
Frpb, ped/bikes	1.00		1.00					0.99			1.00	0.98
Flpb, ped/bikes	1.00		1.00					1.00			1.00	1.00
Frt	1.00		0.85					0.97			1.00	0.85
Flt Protected	0.95		1.00					1.00			1.00	1.00
Satd. Flow (prot)	3367		2733					3267			3539	1547
Flt Permitted	0.95		1.00					1.00			1.00	1.00
Satd. Flow (perm)	3367		2733					3267			3539	1547
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	698	0	604	0	0	0	0	958	281	0	1021	458
RTOR Reduction (vph)	0	0	96	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	698	0	508	0	0	0	0	1239	0	0	1021	458
Confl. Peds. (#/hr)			3						2			6
Confl. Bikes (#/hr)			4						4			
Heavy Vehicles (%)	4%	2%	4%	2%	2%	2%	2%	3%	17%	2%	2%	2%
Turn Type	Prot		Prot					NA			NA	Free
Protected Phases	4		4					2			6	
Permitted Phases												Free
Actuated Green, G (s)	29.5		29.5					62.5			62.5	100.0
Effective Green, g (s)	29.5		29.5					62.5			62.5	100.0
Actuated g/C Ratio	0.29		0.29					0.62			0.62	1.00
Clearance Time (s)	4.0		4.0					4.0			4.0	
Vehicle Extension (s)	3.0		3.0					4.0			4.0	
Lane Grp Cap (vph)	993		806					2041			2211	1547
v/s Ratio Prot	c0.21		0.19					c0.38			0.29	
v/s Ratio Perm												0.30
v/c Ratio	0.70		0.63					0.61			0.46	0.30
Uniform Delay, d1	31.4		30.5					11.3			9.9	0.0
Progression Factor	1.00		1.00					0.98			0.95	1.00
Incremental Delay, d2	2.3		1.6					0.3			0.6	0.4
Delay (s)	33.6		32.1					11.5			9.9	0.4
Level of Service	C		C					B			A	A
Approach Delay (s)		32.9			0.0			11.5			7.0	
Approach LOS		C			A			B			A	

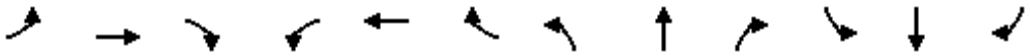
Intersection Summary			
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	320	110	205	30	60	80	205	790	40	300	1000	260
Future Volume (vph)	320	110	205	30	60	80	205	790	40	300	1000	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
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	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1719	1863	1583	1770	1863	1536	3433	3438	1583	1752	3505	1561
Flt Permitted	0.72	1.00	1.00	0.63	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1296	1863	1583	1183	1863	1536	3433	3438	1583	1752	3505	1561
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	333	115	214	31	62	83	214	823	42	312	1042	271
RTOR Reduction (vph)	0	0	128	0	0	32	0	0	31	0	0	89
Lane Group Flow (vph)	333	115	86	31	63	51	214	823	11	313	1042	182
Confl. Peds. (#/hr)						1						3
Heavy Vehicles (%)	5%	2%	2%	2%	2%	5%	2%	5%	2%	3%	3%	2%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	Prot	NA	Perm	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	21.0	12.4	20.9	9.4	6.3	49.7	8.5	25.6	25.6	43.4	59.0	69.2
Effective Green, g (s)	20.0	12.9	20.9	9.4	6.8	49.7	8.5	24.6	25.6	43.4	59.5	67.2
Actuated g/C Ratio	0.20	0.13	0.21	0.09	0.07	0.50	0.08	0.25	0.26	0.43	0.60	0.67
Clearance Time (s)	3.0	4.5	4.0	4.0	4.5	4.0	4.0	3.0	3.0	4.0	4.5	3.0
Vehicle Extension (s)	1.0	1.2	1.2	1.0	1.2	1.0	1.2	1.2	1.2	1.0	1.2	1.0
Lane Grp Cap (vph)	298	240	330	129	126	763	291	845	405	760	2085	1048
v/s Ratio Prot	c0.10	0.06	0.02	0.01	0.03	0.03	c0.06	c0.24		0.18	c0.30	0.02
v/s Ratio Perm	c0.12		0.03	0.02		0.00			0.01			0.10
v/c Ratio	1.12	0.48	0.26	0.24	0.50	0.07	0.74	0.97	0.03	0.41	0.50	0.17
Uniform Delay, d1	38.4	40.4	33.1	43.6	45.0	13.1	44.7	37.4	27.9	19.5	11.7	6.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.81	1.98
Incremental Delay, d2	87.5	0.6	0.2	0.4	1.1	0.0	8.1	24.4	0.0	1.5	0.8	0.0
Delay (s)	125.9	41.0	33.2	44.0	46.1	13.1	52.7	61.8	27.9	21.0	10.2	12.1
Level of Service	F	D	C	D	D	B	D	E	C	C	B	B
Approach Delay (s)		81.2			30.3			58.7			12.6	
Approach LOS		F			C			E			B	

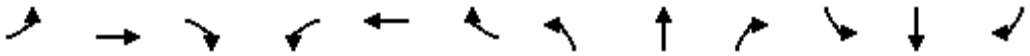
Intersection Summary			
HCM 2000 Control Delay	40.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	72.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	765	180	65	565	335	190	190	115	280	240	30
Future Volume (vph)	60	765	180	65	565	335	190	190	115	280	240	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85		0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98		0.95	1.00	
Satd. Flow (prot)	1770	3397		1752	3438	1549		1766		1770	1825	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98		0.95	1.00	
Satd. Flow (perm)	1770	3397		1752	3438	1549		1766		1770	1825	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	765	180	65	565	335	190	190	115	280	240	30
RTOR Reduction (vph)	0	15	0	0	0	220	0	8	0	0	4	0
Lane Group Flow (vph)	60	930	0	65	565	115	0	487	0	280	266	0
Confl. Peds. (#/hr)						1						
Confl. Bikes (#/hr)			1									2
Heavy Vehicles (%)	2%	3%	2%	3%	5%	2%	2%	2%	3%	2%	2%	4%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6						
Actuated Green, G (s)	5.3	32.2		5.0	31.9	31.9		33.6		21.0	21.0	
Effective Green, g (s)	5.3	33.2		5.0	32.9	32.9		33.6		21.0	21.0	
Actuated g/C Ratio	0.05	0.31		0.05	0.30	0.30		0.31		0.19	0.19	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0		4.0		4.0	4.0	
Vehicle Extension (s)	1.5	1.5		1.5	1.5	1.5		1.5		1.5	1.5	
Lane Grp Cap (vph)	86	1036		80	1039	468		545		341	352	
v/s Ratio Prot	0.03	c0.27		c0.04	0.16			c0.28		c0.16	0.15	
v/s Ratio Perm						0.07						
v/c Ratio	0.70	0.90		0.81	0.54	0.24		0.89		0.82	0.76	
Uniform Delay, d1	51.0	36.2		51.4	31.7	28.6		35.9		42.1	41.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	18.0	10.0		42.6	0.3	0.1		16.5		14.0	8.0	
Delay (s)	69.0	46.2		94.1	32.0	28.7		52.4		56.1	49.4	
Level of Service	E	D		F	C	C		D		E	D	
Approach Delay (s)		47.5			35.0			52.4			52.8	
Approach LOS		D			D			D			D	

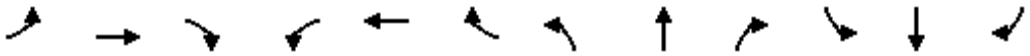
Intersection Summary			
HCM 2000 Control Delay	45.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	108.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	86.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	20	60	550	20	15	40	950	630	15	1010	20
Future Volume (vph)	30	20	60	550	20	15	40	950	630	15	1010	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.95		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.89		1.00	0.94		1.00	0.94		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1565		1770	1733		1770	3297		1770	3527	
Flt Permitted	0.73	1.00		0.70	1.00		0.17	1.00		0.10	1.00	
Satd. Flow (perm)	1368	1565		1313	1733		318	3297		184	3527	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	20	60	550	20	15	40	950	630	15	1010	20
RTOR Reduction (vph)	0	34	0	0	9	0	0	107	0	0	1	0
Lane Group Flow (vph)	30	46	0	550	26	0	40	1473	0	15	1029	0
Confl. Peds. (#/hr)			44						1			
Confl. Bikes (#/hr)			1			2			1			1
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	43.8	43.4		38.0	38.0		44.2	43.2		41.7	41.7	
Effective Green, g (s)	43.4	43.4		38.0	38.0		43.8	43.8		41.3	42.3	
Actuated g/C Ratio	0.43	0.43		0.38	0.38		0.44	0.44		0.41	0.42	
Clearance Time (s)	3.6	4.0		4.0	4.0		3.6	4.6		3.6	4.6	
Vehicle Extension (s)	2.5	2.5		2.0	2.0		2.5	3.0		2.5	3.0	
Lane Grp Cap (vph)	599	679		498	658		172	1444		88	1491	
v/s Ratio Prot	0.00	c0.03			0.01		0.01	c0.45		0.00	c0.29	
v/s Ratio Perm	0.02			c0.42			0.10			0.07		
v/c Ratio	0.05	0.07		1.10	0.04		0.23	1.02		0.17	0.69	
Uniform Delay, d1	16.4	16.5		31.0	19.5		28.3	28.1		24.1	23.5	
Progression Factor	1.00	1.00		0.90	0.52		0.59	0.61		0.78	0.79	
Incremental Delay, d2	0.0	0.0		67.5	0.0		0.4	25.4		0.6	2.5	
Delay (s)	16.4	16.5		95.2	10.1		17.1	42.6		19.5	21.1	
Level of Service	B	B		F	B		B	D		B	C	
Approach Delay (s)		16.5			90.1			42.0			21.1	
Approach LOS		B			F			D			C	

Intersection Summary			
HCM 2000 Control Delay	43.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	90.3%	ICU Level of Service	E
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)	260	135	110	80	145	180	90	1170	60	150	1270	180
Future Volume (vph)	260	135	110	80	145	180	90	1170	60	150	1270	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	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	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1565	1770	1863	1567	1770	3510		1770	3464	
Flt Permitted	0.37	1.00	1.00	0.67	1.00	1.00	0.10	1.00		0.15	1.00	
Satd. Flow (perm)	683	1863	1565	1249	1863	1567	179	3510		271	3464	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	260	135	110	80	145	180	90	1170	60	150	1270	180
RTOR Reduction (vph)	0	0	86	0	0	47	0	3	0	0	8	0
Lane Group Flow (vph)	260	135	24	80	145	133	90	1227	0	150	1442	0
Confl. Peds. (#/hr)			2			4						
Confl. Bikes (#/hr)						1			2			4
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6	7	3	8		7	4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	23.8	17.4	21.6	15.4	13.0	21.5	58.5	54.3		67.4	59.0	
Effective Green, g (s)	24.0	17.6	22.0	15.4	13.0	22.7	58.9	54.9		68.0	59.6	
Actuated g/C Ratio	0.24	0.18	0.22	0.15	0.13	0.23	0.59	0.55		0.68	0.60	
Clearance Time (s)	4.2	4.2	4.2	4.0	4.0	4.6	4.2	4.6		4.6	4.6	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	240	327	344	204	242	355	175	1926		320	2064	
v/s Ratio Prot	c0.08	0.07	0.00	0.01	0.08	0.03	0.02	0.35		c0.04	c0.42	
v/s Ratio Perm	c0.18		0.01	0.05		0.05	0.28			0.28		
v/c Ratio	1.08	0.41	0.07	0.39	0.60	0.37	0.51	0.64		0.47	0.70	
Uniform Delay, d1	37.2	36.6	30.9	37.6	41.0	32.6	30.4	15.6		22.0	14.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		0.70	0.48	
Incremental Delay, d2	82.1	0.3	0.0	0.5	2.7	0.2	1.1	1.6		0.2	1.2	
Delay (s)	119.2	36.9	30.9	38.1	43.7	32.9	31.4	17.3		15.7	7.9	
Level of Service	F	D	C	D	D	C	C	B		B	A	
Approach Delay (s)		78.0			37.8			18.2			8.7	
Approach LOS		E			D			B			A	

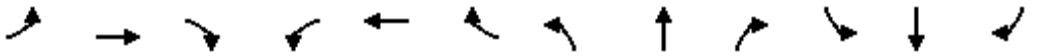
Intersection Summary			
HCM 2000 Control Delay	24.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	82.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00			0.95		1.00	0.95	
Frt		0.86			0.88			0.99		1.00	1.00	
Flt Protected		1.00			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		1611			1633			3513		1770	3537	
Flt Permitted		1.00			0.95			1.00		0.95	1.00	
Satd. Flow (perm)		1611			1563			3513		1770	3537	
Volume (vph)	0	0	5	40	0	240	0	980	50	290	1040	5
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	5	40	0	240	0	980	50	290	1040	5
RTOR Reduction (vph)	0	4	0	0	178	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	1	0	0	102	0	0	1027	0	290	1045	0
Heavy Vehicles (%)	2%	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2			6								
Actuated Green, G (s)		8.5			8.5			29.1		12.1	45.2	
Effective Green, g (s)		8.5			8.5			29.6		12.1	45.7	
Actuated g/C Ratio		0.14			0.14			0.48		0.19	0.73	
Clearance Time (s)		4.0			4.0			4.5		4.0	4.5	
Vehicle Extension (s)		4.0			4.0			2.5		2.0	2.5	
Lane Grp Cap (vph)		220			214			1672		344	2599	
v/s Ratio Prot		0.00						c0.29		c0.16	0.30	
v/s Ratio Perm					c0.07							
v/c Ratio		0.00			0.48			0.61		0.84	0.40	
Uniform Delay, d1		23.2			24.8			12.1		24.1	3.1	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.0			2.3			0.6		16.3	0.1	
Delay (s)		23.2			27.1			12.7		40.4	3.2	
Level of Service		C			C			B		D	A	
Approach Delay (s)		23.2			27.1			12.7			11.3	
Approach LOS		C			C			B			B	

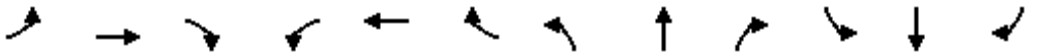
Intersection Summary			
HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	62.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



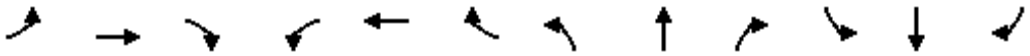
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	660	70	140	750	45	70	515	140	65	630	135
Future Volume (vph)	125	660	70	140	750	45	70	515	140	65	630	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.5		3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3428		1770	3475		1752	1863	1583	1752	1863	1583
Flt Permitted	0.15	1.00		0.18	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	274	3428		332	3475		1752	1863	1583	1752	1863	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	130	688	73	146	781	47	73	536	146	68	656	141
RTOR Reduction (vph)	0	7	0	0	4	0	0	0	88	0	0	80
Lane Group Flow (vph)	130	754	0	146	824	0	73	536	58	68	656	61
Heavy Vehicles (%)	2%	4%	2%	2%	3%	3%	3%	2%	2%	3%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6					8			4
Actuated Green, G (s)	37.4	29.4		38.0	29.7		5.4	38.8	38.8	5.4	38.8	38.8
Effective Green, g (s)	37.4	29.4		38.0	29.7		5.4	38.8	38.8	5.4	38.8	38.8
Actuated g/C Ratio	0.39	0.30		0.39	0.31		0.06	0.40	0.40	0.06	0.40	0.40
Clearance Time (s)	3.5	4.5		3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.5	2.5	2.0	2.5	2.5
Lane Grp Cap (vph)	229	1040		253	1065		97	745	633	97	745	633
v/s Ratio Prot	0.05	0.22		c0.05	c0.24		c0.04	0.29		0.04	c0.35	
v/s Ratio Perm	0.17			0.18					0.04			0.04
v/c Ratio	0.57	0.73		0.58	0.77		0.75	0.72	0.09	0.70	0.88	0.10
Uniform Delay, d1	21.5	30.1		21.0	30.5		45.1	24.5	18.1	45.0	26.9	18.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9	2.7		2.0	3.8		24.9	3.1	0.0	17.0	11.7	0.0
Delay (s)	23.4	32.9		23.0	34.3		70.0	27.6	18.1	62.0	38.7	18.2
Level of Service	C	C		C	C		E	C	B	E	D	B
Approach Delay (s)		31.5			32.6			29.9			37.1	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	32.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	96.9	Sum of lost time (s)	15.0
Intersection Capacity Utilization	79.9%	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)	125	75	60	90	175	20	50	695	20	90	935	15
Future Volume (vph)	125	75	60	90	175	20	50	695	20	90	935	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.97		1.00	0.97	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected		0.97	1.00		0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1789	1535		1820	1501	1752	3456		1770	3495	
Flt Permitted		0.97	1.00		0.98	1.00	0.26	1.00		0.26	1.00	
Satd. Flow (perm)		1789	1535		1820	1501	473	3456		478	3495	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	125	75	60	90	175	20	50	695	20	90	935	15
RTOR Reduction (vph)	0	0	51	0	0	16	0	2	0	0	1	0
Lane Group Flow (vph)	0	200	9	0	265	4	50	713	0	90	949	0
Confl. Peds. (#/hr)			9			9			3			4
Confl. Bikes (#/hr)			4			7			3			1
Heavy Vehicles (%)	3%	3%	2%	2%	3%	4%	3%	4%	2%	2%	3%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8	2			6		
Actuated Green, G (s)		14.8	14.8		17.6	17.6	47.1	46.4		49.0	49.0	
Effective Green, g (s)		14.8	14.8		17.6	17.6	46.6	46.6		48.5	49.2	
Actuated g/C Ratio		0.15	0.15		0.18	0.18	0.47	0.47		0.48	0.49	
Clearance Time (s)		4.0	4.0		4.0	4.0	3.5	4.2		3.5	4.2	
Vehicle Extension (s)		1.2	1.2		1.2	1.2	1.0	1.2		1.0	1.2	
Lane Grp Cap (vph)		264	227		320	264	251	1610		296	1719	
v/s Ratio Prot		c0.11			c0.15		0.00	c0.21		0.02	c0.27	
v/s Ratio Perm			0.01			0.00	0.09			0.13		
v/c Ratio		0.76	0.04		0.83	0.01	0.20	0.44		0.30	0.55	
Uniform Delay, d1		40.9	36.5		39.7	34.0	19.7	18.0		15.1	17.7	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		0.42	0.49	
Incremental Delay, d2		10.5	0.0		15.3	0.0	0.1	0.9		0.2	1.0	
Delay (s)		51.4	36.5		55.0	34.0	19.9	18.9		6.6	9.7	
Level of Service		D	D		E	C	B	B		A	A	
Approach Delay (s)		47.9			53.6			18.9			9.4	
Approach LOS		D			D			B			A	

Intersection Summary					
HCM 2000 Control Delay	22.1	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.66				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	70.6%	ICU Level of Service		C	
Analysis Period (min)	15				
c Critical Lane Group					



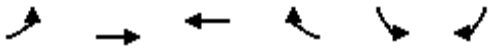
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	340	0	520	0	0	0	0	965	310	460	1050	0
Future Volume (vph)	340	0	520	0	0	0	0	965	310	460	1050	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00					0.95	1.00	0.97	0.95	
Frpb, ped/bikes		1.00	1.00					1.00	0.97	1.00	1.00	
Flpb, ped/bikes		1.00	1.00					1.00	1.00	1.00	1.00	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1752	1568					3539	1332	3400	3539	
Flt Permitted		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1752	1568					3539	1332	3400	3539	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	400	0	612	0	0	0	0	1135	365	541	1235	0
RTOR Reduction (vph)	0	0	35	0	0	0	0	0	127	0	0	0
Lane Group Flow (vph)	0	400	577	0	0	0	0	1135	238	541	1235	0
Confl. Peds. (#/hr)			2						9			7
Confl. Bikes (#/hr)			1			8						
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	2%	2%	18%	3%	2%	2%
Turn Type	Split	NA	Prot					NA	Perm	Prot	NA	
Protected Phases	4	4	4					2		1	6	
Permitted Phases									2			
Actuated Green, G (s)		39.0	39.0					34.0	34.0	19.0	55.0	
Effective Green, g (s)		37.0	37.0					34.0	34.0	17.0	55.0	
Actuated g/C Ratio		0.37	0.37					0.34	0.34	0.17	0.55	
Clearance Time (s)		2.0	2.0					4.0	4.0	2.0	4.0	
Vehicle Extension (s)		3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		648	580					1203	452	578	1946	
v/s Ratio Prot		0.23	c0.37					c0.32		c0.16	0.35	
v/s Ratio Perm									0.18			
v/c Ratio		0.62	1.00					0.94	0.53	0.94	0.63	
Uniform Delay, d1		25.7	31.4					32.1	26.5	41.0	15.6	
Progression Factor		1.00	1.00					0.40	0.29	0.98	0.98	
Incremental Delay, d2		1.8	36.0					8.0	1.9	16.9	1.1	
Delay (s)		27.5	67.4					21.0	9.5	57.0	16.2	
Level of Service		C	E					C	A	E	B	
Approach Delay (s)		51.6			0.0			18.2			28.7	
Approach LOS		D			A			B			C	

Intersection Summary			
HCM 2000 Control Delay	30.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.6%	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)	0	0	0	185	0	290	0	1075	230	0	1325	540
Future Volume (vph)	0	0	0	185	0	290	0	1075	230	0	1325	540
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	
Lane Util. Factor				0.97		0.88		0.95	1.00		0.95	
Frpb, ped/bikes				1.00		1.00		1.00	0.98		1.00	
Flpb, ped/bikes				1.00		1.00		1.00	1.00		1.00	
Frt				1.00		0.85		1.00	0.85		0.96	
Flt Protected				0.95		1.00		1.00	1.00		1.00	
Satd. Flow (prot)				3433		2787		3539	1545		3394	
Flt Permitted				0.95		1.00		1.00	1.00		1.00	
Satd. Flow (perm)				3433		2787		3539	1545		3394	
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.92	0.85	0.92	0.85	0.85	0.85	0.85	0.92
Adj. Flow (vph)	0	0	0	218	0	341	0	1265	271	0	1559	587
RTOR Reduction (vph)	0	0	0	0	0	9	0	0	0	0	35	0
Lane Group Flow (vph)	0	0	0	218	0	332	0	1265	271	0	2111	0
Confl. Peds. (#/hr)									9			
Confl. Bikes (#/hr)						26						
Turn Type				Prot		custom		NA	Free		NA	
Protected Phases				8		8 1		2			6	
Permitted Phases									Free			
Actuated Green, G (s)				11.6		52.6		40.4	100.0		83.4	
Effective Green, g (s)				10.6		48.6		40.4	100.0		81.4	
Actuated g/C Ratio				0.11		0.49		0.40	1.00		0.81	
Clearance Time (s)				3.0				4.0			2.0	
Vehicle Extension (s)				3.0				3.0			3.0	
Lane Grp Cap (vph)				363		1354		1429	1545		2762	
v/s Ratio Prot				c0.06		0.12		c0.36			c0.62	
v/s Ratio Perm									0.18			
v/c Ratio				0.60		0.25		0.89	0.18		0.76	
Uniform Delay, d1				42.7		15.0		27.6	0.0		4.6	
Progression Factor				1.00		1.00		0.30	1.00		0.94	
Incremental Delay, d2				2.8		0.1		4.3	0.1		0.6	
Delay (s)				45.5		15.1		12.6	0.1		4.9	
Level of Service				D		B		B	A		A	
Approach Delay (s)		0.0			26.9			10.4			4.9	
Approach LOS		A			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		

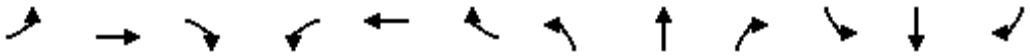
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	20	350	400	10	40	20
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	20	350	400	10	40	20
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		1156				
pX, platoon unblocked					0.97	
vC, conflicting volume	410				795	405
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	410				789	405
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				88	97
cM capacity (veh/h)	1149				343	646

Direction, Lane #	EB 1	WB 1	SB 1	SB 2
Volume Total	370	410	40	20
Volume Left	20	0	40	0
Volume Right	0	10	0	20
cSH	1149	1700	343	646
Volume to Capacity	0.02	0.24	0.12	0.03
Queue Length 95th (ft)	1	0	10	2
Control Delay (s)	0.6	0.0	16.9	10.8
Lane LOS	A		C	B
Approach Delay (s)	0.6	0.0	14.8	
Approach LOS			B	

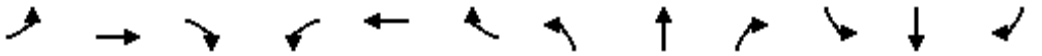
Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	530	695	515	470	70	690	405	295	280	455	20
Future Volume (vph)	20	530	695	515	470	70	690	405	295	280	455	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	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	0.98		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	3433	3463		3433	3539	1583	1770	3514	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	3433	3463		3433	3539	1583	1770	3514	
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)	21	558	732	542	495	74	726	426	311	295	479	21
RTOR Reduction (vph)	0	0	49	0	11	0	0	0	224	0	3	0
Lane Group Flow (vph)	21	558	683	542	558	0	726	426	87	295	497	0
Confl. Peds. (#/hr)						2						
Confl. Bikes (#/hr)												6
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	1	6	7	5	2		7	4		3		
Permitted Phases			6						4		8	
Actuated Green, G (s)	2.0	25.9	49.5	16.7	40.6		23.6	25.4	25.4	16.0	17.8	
Effective Green, g (s)	2.0	25.9	49.5	16.7	40.6		23.6	25.4	25.4	16.0	17.8	
Actuated g/C Ratio	0.02	0.26	0.50	0.17	0.41		0.24	0.25	0.25	0.16	0.18	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	35	916	783	573	1405		810	898	402	283	625	
v/s Ratio Prot	0.01	0.16	c0.21	c0.16	0.16		c0.21	0.12		c0.17		
v/s Ratio Perm			0.23						0.06		0.14	
v/c Ratio	0.60	0.61	0.87	0.95	0.40		0.90	0.47	0.22	1.04	0.79	
Uniform Delay, d1	48.6	32.6	22.4	41.2	21.0		37.0	31.6	29.4	42.0	39.4	
Progression Factor	1.00	1.00	1.00	1.12	0.14		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	24.7	3.0	10.5	16.6	0.5		12.5	0.4	0.3	65.0	6.9	
Delay (s)	73.3	35.6	32.9	62.9	3.5		49.5	32.0	29.7	107.0	46.3	
Level of Service	E	D	C	E	A		D	C	C	F	D	
Approach Delay (s)		34.7			32.5			40.2			68.8	
Approach LOS		C			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	41.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	80.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



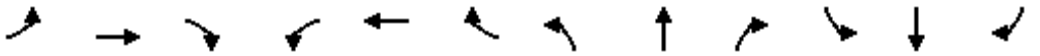
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	230	50	290	220	130	60	610	150	160	940	60
Future Volume (vph)	60	230	50	290	220	130	60	610	150	160	940	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes		1.00		1.00	0.99		1.00	0.99		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		0.98		1.00	0.94		1.00	0.97		1.00	1.00	0.85
Flt Protected		0.99		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1803		1770	1745		1752	3335		1770	3471	1511
Flt Permitted		0.88		0.33	1.00		0.18	1.00		0.19	1.00	1.00
Satd. Flow (perm)		1596		618	1745		332	3335		356	3471	1511
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	230	50	290	220	130	60	610	150	160	940	60
RTOR Reduction (vph)	0	9	0	0	31	0	0	28	0	0	0	38
Lane Group Flow (vph)	0	331	0	290	319	0	60	732	0	160	940	22
Confl. Peds. (#/hr)						6			7			14
Confl. Bikes (#/hr)			3			8						
Heavy Vehicles (%)	2%	2%	3%	2%	2%	2%	3%	5%	2%	2%	4%	2%
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		17.5		27.6	27.6		25.5	22.2		31.1	25.0	25.0
Effective Green, g (s)		17.5		27.6	27.6		25.5	22.2		31.1	25.0	25.0
Actuated g/C Ratio		0.26		0.41	0.41		0.38	0.33		0.46	0.37	0.37
Clearance Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)		2.0		4.0	4.0		2.0	4.0		2.0	4.0	4.0
Lane Grp Cap (vph)		411		354	709		193	1090		290	1277	556
v/s Ratio Prot				c0.07	0.18		0.02	0.22		c0.05	c0.27	
v/s Ratio Perm		0.21		c0.26			0.10			0.20		0.01
v/c Ratio		0.81		0.82	0.45		0.31	0.67		0.55	0.74	0.04
Uniform Delay, d1		23.6		18.5	14.6		14.4	19.7		12.3	18.6	13.8
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		10.4		14.4	0.6		0.3	1.8		1.3	2.4	0.0
Delay (s)		34.0		32.9	15.3		14.8	21.5		13.6	21.0	13.8
Level of Service		C		C	B		B	C		B	C	B
Approach Delay (s)		34.0			23.3			21.0			19.6	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	67.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	394	342	1116	0	0	1385
Future Volume (vph)	394	342	1116	0	0	1385
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0			4.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3433	1583	3539			3539
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3433	1583	3539			3539
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	394	342	1116	0	0	1385
RTOR Reduction (vph)	0	44	0	0	0	0
Lane Group Flow (vph)	394	298	1116	0	0	1385
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	12.7	12.7	23.6			23.6
Effective Green, g (s)	12.7	12.7	23.6			23.6
Actuated g/C Ratio	0.29	0.29	0.53			0.53
Clearance Time (s)	4.0	4.0	4.0			4.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	984	453	1885			1885
v/s Ratio Prot	0.11		0.32			c0.39
v/s Ratio Perm		c0.19				
v/c Ratio	0.40	0.66	0.59			0.73
Uniform Delay, d1	12.7	13.9	7.1			7.9
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.3	3.4	0.5			1.5
Delay (s)	13.0	17.3	7.6			9.5
Level of Service	B	B	A			A
Approach Delay (s)	15.0		7.6			9.5
Approach LOS	B		A			A

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	44.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		

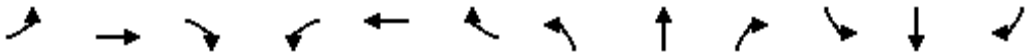
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	302	0	184	0	0	0	0	1181	339	609	1280	0
Future Volume (vph)	302	0	184	0	0	0	0	1181	339	609	1280	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor	0.97		1.00					0.95	1.00	0.97	0.95	
Frt	1.00		0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433		1583					3539	1583	3433	3539	
Flt Permitted	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433		1583					3539	1583	3433	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	302	0	184	0	0	0	0	1181	339	609	1280	0
RTOR Reduction (vph)	0	0	68	0	0	0	0	0	178	0	0	0
Lane Group Flow (vph)	302	0	116	0	0	0	0	1181	161	609	1280	0
Turn Type	Perm		Prot					NA	Perm	Prot	NA	
Protected Phases			8					2		1	6	
Permitted Phases	8		8						2			
Actuated Green, G (s)	11.2		11.2					27.0	27.0	13.8	44.8	
Effective Green, g (s)	11.2		11.2					27.0	27.0	13.8	44.8	
Actuated g/C Ratio	0.17		0.17					0.42	0.42	0.22	0.70	
Clearance Time (s)	4.0		4.0					4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	600		277					1493	667	740	2477	
v/s Ratio Prot			0.07					c0.33		c0.18	0.36	
v/s Ratio Perm	c0.09								0.10			
v/c Ratio	0.50		0.42					0.79	0.24	0.82	0.52	
Uniform Delay, d1	23.9		23.5					16.1	11.9	23.9	4.5	
Progression Factor	1.00		1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7		1.0					2.9	0.2	7.4	0.2	
Delay (s)	24.6		24.5					19.0	12.1	31.3	4.7	
Level of Service	C		C					B	B	C	A	
Approach Delay (s)		24.5			0.0			17.5			13.3	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	64.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.6%	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	20	20	40	20	100	20	1410	20	60	1415	30
Future Volume (vph)	30	20	20	40	20	100	20	1410	20	60	1415	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00	0.96	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	1.00	0.93		1.00	0.88		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1708		1770	1590		1770	3539	1527	1770	3539	1527
Flt Permitted	0.63	1.00		0.73	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1166	1708		1359	1590		1770	3539	1527	1770	3539	1527
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)	32	21	21	42	21	105	21	1484	21	63	1489	32
RTOR Reduction (vph)	0	16	0	0	80	0	0	0	9	0	0	12
Lane Group Flow (vph)	32	26	0	42	46	0	21	1484	12	63	1489	20
Confl. Peds. (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases		6			2		7	4		3	8	
Permitted Phases	6			2					4			8
Actuated Green, G (s)	23.6	23.6		23.6	23.6		2.4	56.4	56.4	8.0	62.0	62.0
Effective Green, g (s)	23.6	23.6		23.6	23.6		2.4	56.4	56.4	8.0	62.0	62.0
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.02	0.56	0.56	0.08	0.62	0.62
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	275	403		320	375		42	1995	861	141	2194	946
v/s Ratio Prot		0.02			0.03		0.01	c0.42		0.04	c0.42	
v/s Ratio Perm	0.03			c0.03					0.01			0.01
v/c Ratio	0.12	0.06		0.13	0.12		0.50	0.74	0.01	0.45	0.68	0.02
Uniform Delay, d1	30.0	29.6		30.1	30.1		48.2	16.4	9.6	43.9	12.5	7.3
Progression Factor	1.00	1.00		1.00	1.00		1.04	0.67	8.71	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.1		0.8	0.7		7.6	2.1	0.0	2.2	1.7	0.0
Delay (s)	30.2	29.7		31.0	30.7		57.8	13.1	83.5	46.1	14.2	7.4
Level of Service	C	C		C	C		E	B	F	D	B	A
Approach Delay (s)		29.9			30.8			14.7			15.3	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

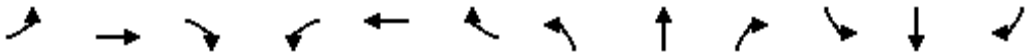
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	645	15	755	705	15	785
Future Volume (vph)	645	15	755	705	15	785
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		0.97	1.00	1.00	0.88
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3527		3433	1863	1770	2787
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3527		3433	1863	1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	701	16	821	766	16	853
RTOR Reduction (vph)	1	0	0	0	0	51
Lane Group Flow (vph)	716	0	821	766	16	802
Turn Type	NA		Prot	NA	Prot	pm+ov
Protected Phases	4		3	8	2	3
Permitted Phases						2
Actuated Green, G (s)	49.1		35.9	89.0	3.0	38.9
Effective Green, g (s)	49.1		35.9	89.0	3.0	38.9
Actuated g/C Ratio	0.49		0.36	0.89	0.03	0.39
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1731		1232	1658	53	1195
v/s Ratio Prot	0.20		0.24	c0.41	0.01	c0.24
v/s Ratio Perm						0.05
v/c Ratio	0.41		0.67	0.46	0.30	0.67
Uniform Delay, d1	16.3		27.0	1.0	47.5	25.3
Progression Factor	0.38		0.57	0.59	0.91	0.79
Incremental Delay, d2	0.7		1.1	0.7	2.2	1.0
Delay (s)	6.8		16.5	1.3	45.2	21.1
Level of Service	A		B	A	D	C
Approach Delay (s)	6.8			9.1	21.5	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

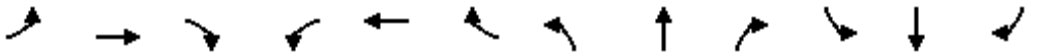
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	240	505	955	270	485	745
Future Volume (vph)	240	505	955	270	485	745
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	0.99	1.00	0.96	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1572	3539	1527	1770	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1572	3539	1527	1770	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	253	532	1005	284	511	784
RTOR Reduction (vph)	0	11	0	173	0	0
Lane Group Flow (vph)	253	521	1005	111	511	784
Confl. Peds. (#/hr)		5		5		
Turn Type	Prot	pm+ov	NA	Perm	Prot	NA
Protected Phases	8	1	2		1	6
Permitted Phases		8		2		
Actuated Green, G (s)	18.8	48.8	39.2	39.2	30.0	73.2
Effective Green, g (s)	18.8	48.8	39.2	39.2	30.0	73.2
Actuated g/C Ratio	0.19	0.49	0.39	0.39	0.30	0.73
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	332	830	1387	598	531	2590
v/s Ratio Prot	c0.14	0.19	c0.28		c0.29	0.22
v/s Ratio Perm		0.14		0.07		
v/c Ratio	0.76	0.63	0.72	0.19	0.96	0.30
Uniform Delay, d1	38.5	18.9	25.8	19.9	34.4	4.6
Progression Factor	0.63	0.39	0.55	0.38	1.00	1.00
Incremental Delay, d2	9.0	1.4	2.4	0.5	29.5	0.3
Delay (s)	33.3	8.8	16.5	8.0	64.0	4.9
Level of Service	C	A	B	A	E	A
Approach Delay (s)	16.7		14.6			28.2
Approach LOS	B		B			C

Intersection Summary			
HCM 2000 Control Delay	20.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.5%	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)	0	0	0	270	0	320	0	1230	600	0	1010	750
Future Volume (vph)	0	0	0	270	0	320	0	1230	600	0	1010	750
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	
Lane Util. Factor				0.97		0.88		0.95	1.00		0.95	
Frpb, ped/bikes				1.00		1.00		1.00	0.98		0.99	
Flpb, ped/bikes				1.00		1.00		1.00	1.00		1.00	
Frt				1.00		0.85		1.00	0.85		0.94	
Flt Protected				0.95		1.00		1.00	1.00		1.00	
Satd. Flow (prot)				3367		2733		3539	1550		3220	
Flt Permitted				0.95		1.00		1.00	1.00		1.00	
Satd. Flow (perm)				3367		2733		3539	1550		3220	
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)	0	0	0	284	0	337	0	1295	632	0	1063	789
RTOR Reduction (vph)	0	0	0	0	0	205	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	284	0	132	0	1295	632	0	1852	0
Confl. Peds. (#/hr)									2			5
Confl. Bikes (#/hr)												4
Heavy Vehicles (%)	2%	2%	2%	4%	2%	4%	2%	2%	2%	2%	3%	5%
Turn Type				Prot		Prot		NA	Free		NA	
Protected Phases				8		8		2			6	
Permitted Phases									Free			
Actuated Green, G (s)				11.4		11.4		81.1	100.0		81.1	
Effective Green, g (s)				10.9		10.9		81.1	100.0		81.1	
Actuated g/C Ratio				0.11		0.11		0.81	1.00		0.81	
Clearance Time (s)				3.5		3.5		4.0			4.0	
Vehicle Extension (s)				3.0		3.0		3.0			3.0	
Lane Grp Cap (vph)				367		297		2870	1550		2611	
v/s Ratio Prot				c0.08		0.05		0.37			c0.58	
v/s Ratio Perm									0.41			
v/c Ratio				0.77		0.44		0.45	0.41		0.71	
Uniform Delay, d1				43.4		41.7		2.8	0.0		4.2	
Progression Factor				1.00		1.00		1.19	1.00		0.42	
Incremental Delay, d2				9.8		1.1		0.4	0.6		1.1	
Delay (s)				53.1		42.8		3.7	0.6		2.8	
Level of Service				D		D		A	A		A	
Approach Delay (s)		0.0			47.5			2.7			2.8	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	66.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



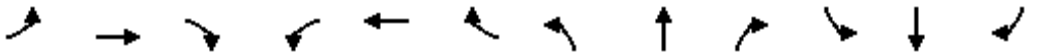
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	520	0	650	0	0	0	0	1310	290	0	910	370
Future Volume (vph)	520	0	650	0	0	0	0	1310	290	0	910	370
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					2.5			4.0	4.0
Lane Util. Factor	0.97		0.88					0.95			0.95	1.00
Frpb, ped/bikes	1.00		1.00					1.00			1.00	0.98
Flpb, ped/bikes	1.00		1.00					1.00			1.00	1.00
Frt	1.00		0.85					0.97			1.00	0.85
Flt Protected	0.95		1.00					1.00			1.00	1.00
Satd. Flow (prot)	3433		2787					3319			3539	1547
Flt Permitted	0.95		1.00					1.00			1.00	1.00
Satd. Flow (perm)	3433		2787					3319			3539	1547
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)	547	0	684	0	0	0	0	1379	305	0	958	389
RTOR Reduction (vph)	0	0	208	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	547	0	476	0	0	0	0	1684	0	0	958	389
Confl. Peds. (#/hr)			3						2			6
Confl. Bikes (#/hr)			4						4			
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	3%	16%	2%	2%	2%
Turn Type	Prot		Prot					NA			NA	Free
Protected Phases	4		4					2			6	
Permitted Phases												Free
Actuated Green, G (s)	23.1		23.1					70.4			68.9	100.0
Effective Green, g (s)	23.1		23.1					70.4			68.9	100.0
Actuated g/C Ratio	0.23		0.23					0.70			0.69	1.00
Clearance Time (s)	4.0		4.0					2.5			4.0	
Vehicle Extension (s)	3.0		3.0					3.0			3.0	
Lane Grp Cap (vph)	793		643					2336			2438	1547
v/s Ratio Prot	0.16		c0.17					c0.51			0.27	
v/s Ratio Perm												0.25
v/c Ratio	0.69		0.74					0.72			0.39	0.25
Uniform Delay, d1	35.2		35.7					8.9			6.6	0.0
Progression Factor	1.00		1.00					0.40			0.64	1.00
Incremental Delay, d2	2.5		4.6					1.3			0.3	0.3
Delay (s)	37.7		40.3					4.9			4.6	0.3
Level of Service	D		D					A			A	A
Approach Delay (s)		39.1			0.0			4.9			3.3	
Approach LOS		D			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	67.0%	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)	250	90	225	50	180	270	465	1070	50	120	1030	400
Future Volume (vph)	250	90	225	50	180	270	465	1070	50	120	1030	400
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	4.0	4.5	4.0	4.0	4.0	3.0	4.0		4.0	4.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.99
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	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1845	1583	1770	1863	1537	3433	3451		1770	3539	1561
Flt Permitted	0.54	1.00	1.00	0.70	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	999	1845	1583	1295	1863	1537	3433	3451		1770	3539	1561
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)	263	95	237	53	189	284	489	1126	53	126	1084	421
RTOR Reduction (vph)	0	0	164	0	0	60	0	3	0	0	0	175
Lane Group Flow (vph)	263	95	73	53	189	224	489	1176	0	126	1084	246
Confl. Peds. (#/hr)						1						3
Heavy Vehicles (%)	3%	3%	2%	2%	2%	4%	2%	4%	2%	2%	2%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8						6
Actuated Green, G (s)	37.4	30.6	30.6	30.2	27.0	35.0	14.0	42.7		8.0	36.2	43.0
Effective Green, g (s)	35.4	31.1	30.6	30.2	27.5	35.0	14.0	41.7		8.0	36.7	41.0
Actuated g/C Ratio	0.35	0.31	0.31	0.30	0.28	0.35	0.14	0.42		0.08	0.37	0.41
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5	4.0	3.0	3.0		4.0	4.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	397	573	484	406	512	537	480	1439		141	1298	718
v/s Ratio Prot	c0.04	0.05		0.00	0.10	0.03	c0.14	0.34		0.07	c0.31	0.02
v/s Ratio Perm	c0.20		0.05	0.04		0.11						0.14
v/c Ratio	0.66	0.17	0.15	0.13	0.37	0.42	1.02	0.82		0.89	0.84	0.34
Uniform Delay, d1	30.7	25.0	25.2	25.4	29.3	24.7	43.0	25.8		45.6	28.9	20.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.02	0.72	0.40
Incremental Delay, d2	4.1	0.6	0.7	0.1	2.0	0.5	45.9	5.2		40.9	5.6	0.2
Delay (s)	34.9	25.6	25.9	25.5	31.3	25.3	88.9	31.0		87.4	26.5	8.3
Level of Service	C	C	C	C	C	C	F	C		F	C	A
Approach Delay (s)		29.8			27.5			48.0			26.5	
Approach LOS		C			C			D			C	

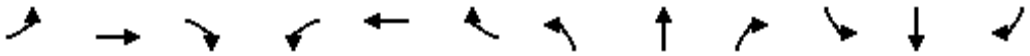
Intersection Summary			
HCM 2000 Control Delay	35.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	715	160	85	1095	385	190	210	65	315	230	60
Future Volume (vph)	60	715	160	85	1095	385	190	210	65	315	230	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85		0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98		0.95	1.00	1.00
Satd. Flow (prot)	1770	3429		1770	3471	1568		1788		1770	1863	1563
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98		0.95	1.00	1.00
Satd. Flow (perm)	1770	3429		1770	3471	1568		1788		1770	1863	1563
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	715	160	85	1095	385	190	210	65	315	230	60
RTOR Reduction (vph)	0	14	0	0	0	105	0	4	0	0	0	48
Lane Group Flow (vph)	60	861	0	85	1095	280	0	461	0	315	230	12
Confl. Peds. (#/hr)									1			1
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	2%	2%	2%	2%	4%	3%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6						4
Actuated Green, G (s)	5.0	37.5		8.7	41.2	41.2		34.6		25.7	25.7	25.7
Effective Green, g (s)	5.0	38.5		8.7	42.2	42.2		34.6		25.7	25.7	25.7
Actuated g/C Ratio	0.04	0.31		0.07	0.34	0.34		0.28		0.21	0.21	0.21
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0		4.0		4.0	4.0	4.0
Vehicle Extension (s)	1.5	1.5		1.5	1.5	1.5		1.5		1.5	1.5	1.5
Lane Grp Cap (vph)	71	1068		124	1186	535		500		368	387	325
v/s Ratio Prot	0.03	0.25		c0.05	c0.32			c0.26		c0.18	0.12	
v/s Ratio Perm						0.18						0.01
v/c Ratio	0.85	0.81		0.69	0.92	0.52		0.92		0.86	0.59	0.04
Uniform Delay, d1	58.9	39.1		56.1	39.1	32.6		43.1		47.1	44.2	39.0
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	55.0	4.3		11.8	11.7	0.4		22.2		16.8	1.6	0.0
Delay (s)	113.9	43.4		67.9	50.8	33.0		65.3		64.0	45.8	39.1
Level of Service	F	D		E	D	C		E		E	D	D
Approach Delay (s)		47.9			47.3			65.3			54.6	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	51.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	123.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	90.5%	ICU Level of Service	E
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	20	40	685	20	35	50	1400	620	75	1040	20
Future Volume (vph)	30	20	40	685	20	35	50	1400	620	75	1040	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.90		1.00	0.90		1.00	0.95		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1657		1770	1668		1770	3345		1770	3528	
Flt Permitted	0.95	1.00		0.72	1.00		0.95	1.00		0.11	1.00	
Satd. Flow (perm)	1770	1657		1337	1668		1770	3345		197	3528	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	20	40	685	20	35	50	1400	620	75	1040	20
RTOR Reduction (vph)	0	24	0	0	23	0	0	49	0	0	1	0
Lane Group Flow (vph)	30	36	0	685	32	0	50	1971	0	75	1059	0
Confl. Peds. (#/hr)			3			2			4			
Confl. Bikes (#/hr)			3			1			1			1
Turn Type	Prot	NA		Perm	NA		Prot	NA		pm+pt	NA	
Protected Phases	5	2			6		3	8		7	4	
Permitted Phases				6						4		
Actuated Green, G (s)	1.8	40.4		35.0	35.0		7.1	45.0		40.3	40.3	
Effective Green, g (s)	1.4	40.4		35.0	35.0		6.7	45.6		39.9	40.9	
Actuated g/C Ratio	0.01	0.40		0.35	0.35		0.07	0.46		0.40	0.41	
Clearance Time (s)	3.6	4.0		4.0	4.0		3.6	4.6		3.6	4.6	
Vehicle Extension (s)	2.5	2.5		2.0	2.0		2.5	3.0		2.5	3.0	
Lane Grp Cap (vph)	24	669		467	583		118	1525		110	1442	
v/s Ratio Prot	c0.02	0.02			0.02		0.03	c0.59		0.01	c0.30	
v/s Ratio Perm				c0.51						0.26		
v/c Ratio	1.25	0.05		1.47	0.06		0.42	1.29		0.68	0.73	
Uniform Delay, d1	49.3	18.2		32.5	21.5		44.8	27.2		30.1	25.0	
Progression Factor	1.00	1.00		0.96	0.97		0.86	0.77		0.72	0.75	
Incremental Delay, d2	269.2	0.0		219.0	0.0		1.0	134.5		12.2	2.7	
Delay (s)	318.5	18.2		250.2	21.0		39.7	155.3		33.9	21.5	
Level of Service	F	B		F	C		D	F		C	C	
Approach Delay (s)		118.3			233.2			152.5			22.3	
Approach LOS		F			F			F			C	

Intersection Summary			
HCM 2000 Control Delay	129.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.36		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	113.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

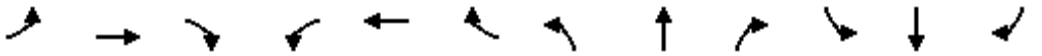
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	135	70	100	155	370	70	1470	100	250	1325	190
Future Volume (vph)	180	135	70	100	155	370	70	1470	100	250	1325	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	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	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1537	1770	1863	1583	1770	3499		1770	3462	
Flt Permitted	0.45	1.00	1.00	0.51	1.00	1.00	0.12	1.00		0.07	1.00	
Satd. Flow (perm)	843	1863	1537	953	1863	1583	214	3499		125	3462	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	180	135	70	100	155	370	70	1470	100	250	1325	190
RTOR Reduction (vph)	0	0	58	0	0	48	0	4	0	0	8	0
Lane Group Flow (vph)	180	135	12	100	155	322	70	1566	0	250	1507	0
Confl. Peds. (#/hr)			13						3			2
Confl. Bikes (#/hr)			7						4			2
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6	7	3	8		7	4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	17.7	13.3	16.7	16.5	12.7	23.0	58.6	55.2		70.1	62.5	
Effective Green, g (s)	18.1	13.5	17.1	16.5	12.7	24.2	59.0	55.8		70.7	63.1	
Actuated g/C Ratio	0.18	0.14	0.17	0.16	0.13	0.24	0.59	0.56		0.71	0.63	
Clearance Time (s)	4.2	4.2	4.2	4.0	4.0	4.6	4.2	4.6		4.6	4.6	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	195	251	262	188	236	383	182	1952		267	2184	
v/s Ratio Prot	c0.04	0.07	0.00	0.02	0.08	0.09	0.01	0.45		c0.10	0.44	
v/s Ratio Perm	c0.12		0.01	0.07		0.11	0.21			c0.56		
v/c Ratio	0.92	0.54	0.05	0.53	0.66	0.84	0.38	0.80		0.94	0.69	
Uniform Delay, d1	41.7	40.3	34.6	40.7	41.6	36.1	10.8	17.7		30.5	12.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.17	0.40	
Incremental Delay, d2	42.5	1.1	0.0	1.4	4.9	14.7	0.5	3.6		16.0	0.5	
Delay (s)	84.3	41.5	34.7	42.1	46.5	50.8	11.3	21.3		51.6	5.3	
Level of Service	F	D	C	D	D	D	B	C		D	A	
Approach Delay (s)		60.2			48.3			20.9			11.9	
Approach LOS		E			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	24.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	89.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

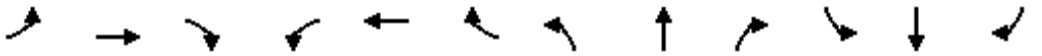
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.95			0.88		1.00	0.99		1.00	1.00	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1728			1636		1770	3518		1770	3534	
Flt Permitted		0.77			0.96		0.27	1.00		0.12	1.00	
Satd. Flow (perm)		1352			1574		505	3518		219	3534	
Volume (vph)	10	5	10	60	5	390	10	1190	50	290	1045	10
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	10	5	10	60	5	390	10	1190	50	290	1045	10
RTOR Reduction (vph)	0	8	0	0	170	0	0	4	0	0	1	0
Lane Group Flow (vph)	0	17	0	0	285	0	10	1236	0	290	1054	0
Turn Type	Perm			Perm			pm+pt			pm+pt		
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		15.6			15.6		30.3	29.6		43.2	38.5	
Effective Green, g (s)		15.6			15.6		30.8	30.1		43.7	39.0	
Actuated g/C Ratio		0.23			0.23		0.46	0.45		0.65	0.58	
Clearance Time (s)		4.0			4.0		4.0	4.5		4.0	4.5	
Vehicle Extension (s)		4.0			4.0		2.0	2.5		2.0	2.5	
Lane Grp Cap (vph)		313			365		244	1573		363	2048	
v/s Ratio Prot							0.00	0.35		c0.11	0.30	
v/s Ratio Perm		0.01			c0.18		0.02			c0.41		
v/c Ratio		0.06			0.78		0.04	0.79		0.80	0.51	
Uniform Delay, d1		20.1			24.3		10.0	15.9		14.7	8.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			11.0		0.0	2.6		10.9	0.2	
Delay (s)		20.2			35.2		10.0	18.4		25.6	8.6	
Level of Service		C			D		A	B		C	A	
Approach Delay (s)		20.2			35.2			18.4			12.3	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM Average Control Delay	18.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	67.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



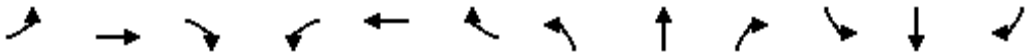
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	710	80	220	780	95	90	620	290	145	590	105
Future Volume (vph)	145	710	80	220	780	95	90	620	290	145	590	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.5	4.0	4.0	4.5	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3396		1770	3482		1770	1863	1583	1770	1863	1583
Flt Permitted	0.14	1.00		0.12	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	257	3396		226	3482		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	151	740	83	229	812	99	94	646	302	151	615	109
RTOR Reduction (vph)	0	8	0	0	8	0	0	0	149	0	0	66
Lane Group Flow (vph)	151	815	0	229	904	0	94	646	153	151	615	43
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6					8			4
Actuated Green, G (s)	37.0	29.5		44.7	33.7		8.0	39.8	39.8	11.0	42.8	42.8
Effective Green, g (s)	36.0	30.0		44.2	34.2		7.5	39.3	39.3	10.5	42.3	42.3
Actuated g/C Ratio	0.33	0.28		0.41	0.32		0.07	0.37	0.37	0.10	0.39	0.39
Clearance Time (s)	3.5	4.5		3.5	4.5		4.0	3.5	3.5	4.0	3.5	3.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		3.0	2.5	2.5	3.0	2.5	2.5
Lane Grp Cap (vph)	184	947		253	1107		123	681	578	172	733	622
v/s Ratio Prot	0.05	0.24		c0.09	0.26		0.05	c0.35		c0.09	c0.33	
v/s Ratio Perm	0.22			c0.28					0.10			0.03
v/c Ratio	0.82	0.86		0.91	0.82		0.76	0.95	0.26	0.88	0.84	0.07
Uniform Delay, d1	28.0	36.8		25.5	33.8		49.1	33.1	24.0	47.9	29.5	20.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	23.4	8.3		31.9	5.0		24.1	22.4	0.2	36.0	8.2	0.0
Delay (s)	51.5	45.1		57.4	38.8		73.2	55.5	24.1	83.9	37.7	20.4
Level of Service	D	D		E	D		E	E	C	F	D	C
Approach Delay (s)		46.1			42.5			48.0			43.5	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	45.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	107.5	Sum of lost time (s)	16.5
Intersection Capacity Utilization	88.8%	ICU Level of Service	E
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)	95	170	50	70	245	120	60	795	40	70	1105	20
Future Volume (vph)	95	170	50	70	245	120	60	795	40	70	1105	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.97		1.00	0.96	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected		0.98	1.00		0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1824	1530		1842	1501	1770	3436		1770	3527	
Flt Permitted		0.98	1.00		0.99	1.00	0.11	1.00		0.26	1.00	
Satd. Flow (perm)		1824	1530		1842	1501	200	3436		480	3527	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	95	170	50	70	245	120	60	795	40	70	1105	20
RTOR Reduction (vph)	0	0	41	0	0	96	0	4	0	0	1	0
Lane Group Flow (vph)	0	265	9	0	315	24	60	831	0	70	1124	0
Confl. Peds. (#/hr)			10			8			16			9
Confl. Bikes (#/hr)			6			18			3			7
Heavy Vehicles (%)	3%	2%	2%	2%	2%	3%	2%	4%	4%	2%	2%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8	2			6		
Actuated Green, G (s)		17.4	17.4		19.8	19.8	40.1	40.1		45.0	44.3	
Effective Green, g (s)		17.4	17.4		19.8	19.8	39.6	40.3		44.5	44.5	
Actuated g/C Ratio		0.17	0.17		0.20	0.20	0.40	0.40		0.44	0.44	
Clearance Time (s)		4.0	4.0		4.0	4.0	3.5	4.2		3.5	4.2	
Vehicle Extension (s)		1.2	1.2		1.2	1.2	1.0	1.2		1.0	1.2	
Lane Grp Cap (vph)		317	266		364	297	115	1384		297	1569	
v/s Ratio Prot		c0.15			c0.17		0.01	c0.24		0.02	c0.32	
v/s Ratio Perm			0.01			0.02	0.19			0.09		
v/c Ratio		0.84	0.03		0.87	0.08	0.52	0.60		0.24	0.72	
Uniform Delay, d1		39.9	34.3		38.8	32.7	22.9	23.5		23.4	22.6	
Progression Factor		1.00	1.00		1.00	1.00	0.46	0.46		0.58	0.62	
Incremental Delay, d2		16.4	0.0		18.3	0.0	1.2	1.2		0.1	2.4	
Delay (s)		56.3	34.3		57.1	32.7	11.8	12.1		13.7	16.3	
Level of Service		E	C		E	C	B	B		B	B	
Approach Delay (s)		52.9			50.4			12.1			16.2	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	24.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



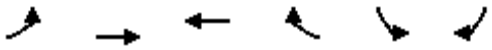
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	260	0	540	0	0	0	0	1270	170	300	1170	0
Future Volume (vph)	260	0	540	0	0	0	0	1270	170	300	1170	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5		5.5					4.0	4.0	5.0	4.0	
Lane Util. Factor	1.00		1.00					0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00		1.00					1.00	0.97	1.00	1.00	
Flpb, ped/bikes	1.00		1.00					1.00	1.00	1.00	1.00	
Frt	1.00		0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1752		1568					3539	1332	3400	3539	
Flt Permitted	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1752		1568					3539	1332	3400	3539	
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)	268	0	557	0	0	0	0	1309	175	309	1206	0
RTOR Reduction (vph)	0	0	39	0	0	0	0	0	45	0	0	0
Lane Group Flow (vph)	268	0	518	0	0	0	0	1309	130	309	1206	0
Confl. Peds. (#/hr)			2						9			7
Confl. Bikes (#/hr)			1			8						
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	2%	2%	18%	3%	2%	2%
Turn Type	Prot		Prot					NA	Perm	Prot	NA	
Protected Phases	4		4					2		1	6	
Permitted Phases									2			
Actuated Green, G (s)	35.5		35.5					42.2	42.2	11.8	57.0	
Effective Green, g (s)	35.5		33.5					42.2	42.2	9.8	57.0	
Actuated g/C Ratio	0.36		0.34					0.42	0.42	0.10	0.57	
Clearance Time (s)	3.5		3.5					4.0	4.0	3.0	4.0	
Vehicle Extension (s)	2.0		2.0					3.5	3.5	2.0	4.0	
Lane Grp Cap (vph)	621		525					1493	562	333	2017	
v/s Ratio Prot	0.15		c0.33					c0.37		c0.09	0.34	
v/s Ratio Perm									0.10			
v/c Ratio	0.43		0.99					0.88	0.23	0.93	0.60	
Uniform Delay, d1	24.6		33.0					26.5	18.5	44.7	14.0	
Progression Factor	1.00		1.00					0.68	0.87	1.06	0.65	
Incremental Delay, d2	0.2		35.3					5.0	0.6	24.0	0.9	
Delay (s)	24.7		68.3					23.1	16.7	71.5	10.0	
Level of Service	C		E					C	B	E	A	
Approach Delay (s)		54.2			0.0			22.4			22.5	
Approach LOS		D			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	73.9%	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)	0	0	0	185	0	540	0	1240	290	0	1285	480
Future Volume (vph)	0	0	0	185	0	540	0	1240	290	0	1285	480
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	
Lane Util. Factor				0.97		0.88		0.95	1.00		0.95	
Frpb, ped/bikes				1.00		1.00		1.00	0.98		1.00	
Flpb, ped/bikes				1.00		1.00		1.00	1.00		1.00	
Frt				1.00		0.85		1.00	0.85		0.96	
Flt Protected				0.95		1.00		1.00	1.00		1.00	
Satd. Flow (prot)				3433		2787		3539	1545		3403	
Flt Permitted				0.95		1.00		1.00	1.00		1.00	
Satd. Flow (perm)				3433		2787		3539	1545		3403	
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.92	0.85	0.92	0.85	0.85	0.85	0.85	0.92
Adj. Flow (vph)	0	0	0	218	0	635	0	1459	341	0	1512	522
RTOR Reduction (vph)	0	0	0	0	0	8	0	0	0	0	31	0
Lane Group Flow (vph)	0	0	0	218	0	627	0	1459	341	0	2003	0
Confl. Peds. (#/hr)									9			
Confl. Bikes (#/hr)						26						
Turn Type				Prot		custom		NA	Free		NA	
Protected Phases				8		8 1		2			6	
Permitted Phases									Free			
Actuated Green, G (s)				12.6		48.6		44.4	100.0		82.4	
Effective Green, g (s)				11.6		44.6		44.4	100.0		80.4	
Actuated g/C Ratio				0.12		0.45		0.44	1.00		0.80	
Clearance Time (s)				3.0				4.0			2.0	
Vehicle Extension (s)				3.0				3.0			3.0	
Lane Grp Cap (vph)				398		1243		1571	1545		2736	
v/s Ratio Prot				c0.06		0.22		c0.41			c0.59	
v/s Ratio Perm									0.22			
v/c Ratio				0.55		0.50		0.93	0.22		0.73	
Uniform Delay, d1				41.7		19.8		26.3	0.0		4.7	
Progression Factor				1.00		1.00		0.54	1.00		1.35	
Incremental Delay, d2				1.5		0.3		8.3	0.2		1.1	
Delay (s)				43.3		20.1		22.6	0.2		7.4	
Level of Service				D		C		C	A		A	
Approach Delay (s)		0.0			26.0			18.3			7.4	
Approach LOS		A			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

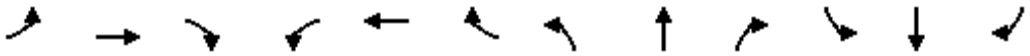
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	20	480	520	25	20	10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	20	480	520	25	20	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		1154				
pX, platoon unblocked					0.98	
vC, conflicting volume	545				1052	532
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	545				1054	532
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				92	98
cM capacity (veh/h)	1024				240	547

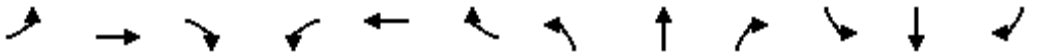
Direction, Lane #	EB 1	WB 1	SB 1	SB 2
Volume Total	500	545	20	10
Volume Left	20	0	20	0
Volume Right	0	25	0	10
cSH	1024	1700	240	547
Volume to Capacity	0.02	0.32	0.08	0.02
Queue Length 95th (ft)	1	0	7	1
Control Delay (s)	0.6	0.0	21.4	11.7
Lane LOS	A		C	B
Approach Delay (s)	0.6	0.0	18.1	
Approach LOS			C	

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	710	810	720	810	120	885	575	420	120	425	10
Future Volume (vph)	10	710	810	720	810	120	885	575	420	120	425	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	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	0.98		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1568	3433	3462		3433	3539	1555	1770	3525	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1568	3433	3462		3433	3539	1555	1770	3525	
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)	11	747	853	758	853	126	932	605	442	126	447	11
RTOR Reduction (vph)	0	0	49	0	11	0	0	0	295	0	2	0
Lane Group Flow (vph)	11	747	804	758	968	0	932	605	147	126	456	0
Confl. Peds. (#/hr)			5			5			5			5
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	1	6	7	5	2		7	4		3		
Permitted Phases			6						4		8	
Actuated Green, G (s)	0.8	28.0	49.9	17.0	44.2		21.9	29.4	29.4	9.6	17.1	
Effective Green, g (s)	0.8	28.0	49.9	17.0	44.2		21.9	29.4	29.4	9.6	17.1	
Actuated g/C Ratio	0.01	0.28	0.50	0.17	0.44		0.22	0.29	0.29	0.10	0.17	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	14	990	782	583	1530		751	1040	457	169	602	
v/s Ratio Prot	0.01	0.21	c0.23	c0.22	0.28		c0.27	0.17		0.07		
v/s Ratio Perm			0.29						0.09		c0.13	
v/c Ratio	0.79	0.75	1.03	1.30	0.63		1.24	0.58	0.32	0.75	0.76	
Uniform Delay, d1	49.5	32.9	25.1	41.5	21.6		39.0	30.1	27.5	44.0	39.5	
Progression Factor	1.00	1.00	1.00	0.70	0.85		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	130.6	5.3	39.5	145.4	1.7		119.6	0.8	0.4	16.3	5.4	
Delay (s)	180.1	38.2	64.6	174.4	20.0		158.7	30.9	27.9	60.3	44.9	
Level of Service	F	D	E	F	B		F	C	C	E	D	
Approach Delay (s)		53.1			87.4			90.4			48.2	
Approach LOS		D			F			F			D	

Intersection Summary			
HCM 2000 Control Delay	75.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	95.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



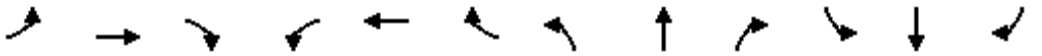
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	190	80	430	300	160	80	680	360	120	970	110
Future Volume (vph)	50	190	80	430	300	160	80	680	360	120	970	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes		0.99		1.00	0.99		1.00	0.98		1.00	1.00	0.93
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt		0.97		1.00	0.95		1.00	0.95		1.00	1.00	0.85
Flt Protected		0.99		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1775		1770	1749		1770	3233		1770	3539	1480
Flt Permitted		0.87		0.28	1.00		0.13	1.00		0.14	1.00	1.00
Satd. Flow (perm)		1552		515	1749		237	3233		267	3539	1480
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	190	80	430	300	160	80	680	360	120	970	110
RTOR Reduction (vph)	0	12	0	0	20	0	0	68	0	0	0	61
Lane Group Flow (vph)	0	308	0	430	440	0	80	972	0	120	970	49
Confl. Peds. (#/hr)			2			4			13			16
Confl. Bikes (#/hr)			10			21			4			2
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	2%	2%
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		22.0		45.0	45.0		36.2	36.2		38.2	38.2	38.2
Effective Green, g (s)		22.0		45.0	45.0		36.2	36.2		38.2	38.2	38.2
Actuated g/C Ratio		0.22		0.45	0.45		0.36	0.36		0.38	0.38	0.38
Clearance Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)		2.0		4.0	4.0		2.0	4.0		2.0	4.0	4.0
Lane Grp Cap (vph)		341		470	787		159	1170		204	1351	565
v/s Ratio Prot				c0.17	0.25		0.02	c0.30		0.04	c0.27	
v/s Ratio Perm		0.20		c0.24			0.16			0.18		0.03
v/c Ratio		0.90		0.91	0.56		0.50	0.83		0.59	0.72	0.09
Uniform Delay, d1		37.9		22.5	20.2		24.5	29.1		36.1	26.3	19.8
Progression Factor		1.00		1.00	1.00		1.00	1.00		0.38	0.31	0.11
Incremental Delay, d2		25.3		22.6	1.1		0.9	6.9		2.0	2.4	0.2
Delay (s)		63.2		45.1	21.3		25.5	36.0		15.7	10.4	2.4
Level of Service		E		D	C		C	D		B	B	A
Approach Delay (s)		63.2			32.8			35.3			10.2	
Approach LOS		E			C			D			B	

Intersection Summary			
HCM 2000 Control Delay	28.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	94.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	430	454	1461	0	0	1484
Future Volume (vph)	430	454	1461	0	0	1484
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0			4.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3433	1583	3539			3539
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3433	1583	3539			3539
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	430	454	1461	0	0	1484
RTOR Reduction (vph)	0	15	0	0	0	0
Lane Group Flow (vph)	430	439	1461	0	0	1484
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	19.0	19.0	31.1			31.1
Effective Green, g (s)	19.0	19.0	31.1			31.1
Actuated g/C Ratio	0.33	0.33	0.54			0.54
Clearance Time (s)	4.0	4.0	4.0			4.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1122	517	1894			1894
v/s Ratio Prot	0.13		0.41			c0.42
v/s Ratio Perm		c0.28				
v/c Ratio	0.38	0.85	0.77			0.78
Uniform Delay, d1	15.0	18.2	10.7			10.8
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.2	12.3	3.1			3.3
Delay (s)	15.3	30.5	13.8			14.1
Level of Service	B	C	B			B
Approach Delay (s)	23.1		13.8			14.1
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	58.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	121.9%	ICU Level of Service	H
Analysis Period (min)	15		

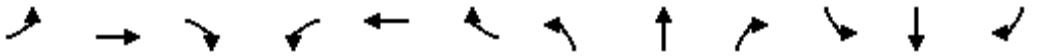
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	452	0	271	0	0	0	0	1270	397	604	1310	0
Future Volume (vph)	452	0	271	0	0	0	0	1270	397	604	1310	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor	0.97		1.00					0.95	1.00	0.97	0.95	
Frt	1.00		0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433		1583					3539	1583	3433	3539	
Flt Permitted	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433		1583					3539	1583	3433	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	452	0	271	0	0	0	0	1270	397	604	1310	0
RTOR Reduction (vph)	0	0	62	0	0	0	0	0	196	0	0	0
Lane Group Flow (vph)	452	0	209	0	0	0	0	1270	201	604	1310	0
Turn Type	Perm		Prot					NA	Perm	Prot	NA	
Protected Phases			8					2		1	6	
Permitted Phases	8		8						2			
Actuated Green, G (s)	13.8		13.8					28.3	28.3	13.8	46.1	
Effective Green, g (s)	13.8		13.8					28.3	28.3	13.8	46.1	
Actuated g/C Ratio	0.20		0.20					0.42	0.42	0.20	0.68	
Clearance Time (s)	4.0		4.0					4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	697		321					1475	659	697	2402	
v/s Ratio Prot			c0.13					c0.36		c0.18	0.37	
v/s Ratio Perm	0.13								0.13			
v/c Ratio	0.65		0.65					0.86	0.31	0.87	0.55	
Uniform Delay, d1	24.8		24.8					18.0	13.2	26.2	5.6	
Progression Factor	1.00		1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.1		4.7					6.8	1.2	11.0	0.9	
Delay (s)	26.9		29.5					24.8	14.4	37.2	6.5	
Level of Service	C		C					C	B	D	A	
Approach Delay (s)		27.9			0.0			22.4			16.1	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	20.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	67.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	121.9%	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)	30	10	20	20	10	50	20	1565	30	90	1475	30
Future Volume (vph)	30	10	20	20	10	50	20	1565	30	90	1475	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00	0.96	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	1.00	0.90		1.00	0.88		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1660		1770	1592		1770	3539	1527	1770	3539	1527
Flt Permitted	0.72	1.00		0.74	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1332	1660		1372	1592		1770	3539	1527	1770	3539	1527
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)	32	11	21	21	11	53	21	1647	32	95	1553	32
RTOR Reduction (vph)	0	20	0	0	49	0	0	0	9	0	0	7
Lane Group Flow (vph)	32	12	0	21	15	0	21	1647	23	95	1553	25
Confl. Peds. (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases		6			2		7	4		3	8	
Permitted Phases	6			2					4			8
Actuated Green, G (s)	6.9	6.9		6.9	6.9		3.2	70.7	70.7	10.4	77.9	77.9
Effective Green, g (s)	6.9	6.9		6.9	6.9		3.2	70.7	70.7	10.4	77.9	77.9
Actuated g/C Ratio	0.07	0.07		0.07	0.07		0.03	0.71	0.71	0.10	0.78	0.78
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	91	114		94	109		56	2502	1079	184	2756	1189
v/s Ratio Prot		0.01			0.01		0.01	c0.47		0.05	c0.44	
v/s Ratio Perm	c0.02			0.02					0.01			0.02
v/c Ratio	0.35	0.11		0.22	0.13		0.38	0.66	0.02	0.52	0.56	0.02
Uniform Delay, d1	44.4	43.7		44.0	43.7		47.4	8.0	4.4	42.4	4.4	2.5
Progression Factor	1.00	1.00		1.00	1.00		0.97	1.05	2.32	1.00	1.00	1.00
Incremental Delay, d2	2.3	0.4		1.2	0.6		3.3	1.1	0.0	2.4	0.8	0.0
Delay (s)	46.8	44.1		45.2	44.3		49.2	9.5	10.1	44.9	5.2	2.5
Level of Service	D	D		D	D		D	A	B	D	A	A
Approach Delay (s)		45.4			44.5			10.0			7.4	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	835	5	805	715	5	785
Future Volume (vph)	835	5	805	715	5	785
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		0.97	1.00	1.00	0.88
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3536		3433	1863	1770	2784
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3536		3433	1863	1770	2784
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	879	5	847	753	5	826
RTOR Reduction (vph)	1	0	0	0	0	0
Lane Group Flow (vph)	883	0	847	753	5	826
Confl. Peds. (#/hr)		5				5
Turn Type	NA		Prot	NA	Prot	pm+ov
Protected Phases	4		3	8	2	3
Permitted Phases						2
Actuated Green, G (s)	49.0		37.7	90.7	1.3	39.0
Effective Green, g (s)	49.0		37.7	90.7	1.3	39.0
Actuated g/C Ratio	0.49		0.38	0.91	0.01	0.39
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1732		1294	1689	23	1197
v/s Ratio Prot	c0.25		0.25	0.40	0.00	c0.26
v/s Ratio Perm						0.04
v/c Ratio	0.51		0.65	0.45	0.22	0.69
Uniform Delay, d1	17.3		25.8	0.7	48.8	25.5
Progression Factor	0.35		0.84	0.01	0.97	0.70
Incremental Delay, d2	0.9		1.0	0.7	0.4	0.2
Delay (s)	6.9		22.6	0.7	47.6	17.9
Level of Service	A		C	A	D	B
Approach Delay (s)	6.9			12.3	18.0	
Approach LOS	A			B	B	

Intersection Summary			
HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	380	485	945	350	535	1035
Future Volume (vph)	380	485	945	350	535	1035
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	0.99	1.00	0.96	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1572	3539	1527	1770	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1572	3539	1527	1770	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	400	511	995	368	563	1089
RTOR Reduction (vph)	0	6	0	254	0	0
Lane Group Flow (vph)	400	505	995	114	563	1089
Confl. Peds. (#/hr)		5		5		
Turn Type	Prot	pm+ov	NA	Perm	Prot	NA
Protected Phases	8	1	2		1	6
Permitted Phases		8		2		
Actuated Green, G (s)	23.0	57.0	31.0	31.0	34.0	69.0
Effective Green, g (s)	23.0	57.0	31.0	31.0	34.0	69.0
Actuated g/C Ratio	0.23	0.57	0.31	0.31	0.34	0.69
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	407	958	1097	473	601	2441
v/s Ratio Prot	c0.23	0.18	c0.28		c0.32	0.31
v/s Ratio Perm		0.14		0.07		
v/c Ratio	0.98	0.53	0.91	0.24	0.94	0.45
Uniform Delay, d1	38.3	13.2	33.1	25.7	32.0	6.9
Progression Factor	0.75	0.69	0.43	0.40	1.00	1.00
Incremental Delay, d2	37.1	0.5	1.4	0.1	22.2	0.6
Delay (s)	65.7	9.6	15.6	10.4	54.1	7.5
Level of Service	E	A	B	B	D	A
Approach Delay (s)	34.2		14.2			23.4
Approach LOS	C		B			C

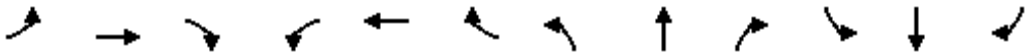
Intersection Summary			
HCM 2000 Control Delay	22.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Appendix F

Intersection Level of Service Technical Calculations Cumulative With Project Conditions

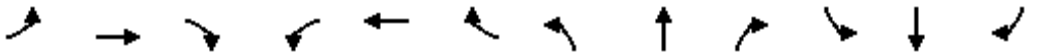
HCM Signalized Intersection Capacity Analysis
1: Old Redwood & 101 NB On Ramp/101 NB On-Off Ramp

3/10/2017



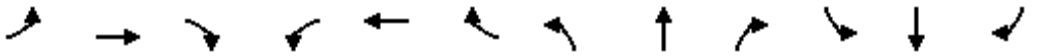
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	300	0	340	0	1220	370	0	1120	460
Future Volume (vph)	0	0	0	300	0	340	0	1220	370	0	1120	460
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	
Lane Util. Factor				0.97		0.88		0.95	1.00		0.95	
Frpb, ped/bikes				1.00		1.00		1.00	0.98		0.99	
Flpb, ped/bikes				1.00		1.00		1.00	1.00		1.00	
Frt				1.00		0.85		1.00	0.85		0.96	
Flt Protected				0.95		1.00		1.00	1.00		1.00	
Satd. Flow (prot)				3303		2682		3539	1550		3341	
Flt Permitted				0.95		1.00		1.00	1.00		1.00	
Satd. Flow (perm)				3303		2682		3539	1550		3341	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	312	0	354	0	1271	385	0	1167	479
RTOR Reduction (vph)	0	0	0	0	0	170	0	0	0	0	23	0
Lane Group Flow (vph)	0	0	0	313	0	184	0	1271	385	0	1623	0
Confl. Peds. (#/hr)									2			5
Confl. Bikes (#/hr)												4
Heavy Vehicles (%)	2%	2%	2%	6%	2%	6%	2%	2%	2%	2%	2%	4%
Turn Type				Prot		Prot		NA	Free		NA	
Protected Phases				8		8		2			6	
Permitted Phases									Free			
Actuated Green, G (s)				13.9		13.9		78.6	100.0		78.6	
Effective Green, g (s)				13.4		13.4		78.6	100.0		78.6	
Actuated g/C Ratio				0.13		0.13		0.79	1.00		0.79	
Clearance Time (s)				3.5		3.5		4.0			4.0	
Vehicle Extension (s)				2.0		2.0		4.0			4.0	
Lane Grp Cap (vph)				442		359		2781	1550		2626	
v/s Ratio Prot				c0.09		0.07		0.36			c0.49	
v/s Ratio Perm									0.25			
v/c Ratio				0.71		0.51		0.46	0.25		0.62	
Uniform Delay, d1				41.4		40.3		3.6	0.0		4.5	
Progression Factor				1.00		1.00		0.50	1.00		0.21	
Incremental Delay, d2				4.2		0.5		0.5	0.3		0.8	
Delay (s)				45.6		40.8		2.2	0.3		1.8	
Level of Service				D		D		A	A		A	
Approach Delay (s)		0.0			43.1			1.8			1.8	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	61.1%	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)	670	0	580	0	0	0	0	920	270	0	980	440
Future Volume (vph)	670	0	580	0	0	0	0	920	270	0	980	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0			4.0	4.0
Lane Util. Factor	0.97		0.88					0.95			0.95	1.00
Frpb, ped/bikes	1.00		1.00					0.99			1.00	0.98
Flpb, ped/bikes	1.00		1.00					1.00			1.00	1.00
Frt	1.00		0.85					0.97			1.00	0.85
Flt Protected	0.95		1.00					1.00			1.00	1.00
Satd. Flow (prot)	3367		2733					3267			3539	1547
Flt Permitted	0.95		1.00					1.00			1.00	1.00
Satd. Flow (perm)	3367		2733					3267			3539	1547
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	698	0	604	0	0	0	0	958	281	0	1021	458
RTOR Reduction (vph)	0	0	96	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	698	0	508	0	0	0	0	1239	0	0	1021	458
Confl. Peds. (#/hr)			3						2			6
Confl. Bikes (#/hr)			4						4			
Heavy Vehicles (%)	4%	2%	4%	2%	2%	2%	2%	3%	17%	2%	2%	2%
Turn Type	Prot		Prot					NA			NA	Free
Protected Phases	4		4					2			6	
Permitted Phases												Free
Actuated Green, G (s)	29.5		29.5					62.5			62.5	100.0
Effective Green, g (s)	29.5		29.5					62.5			62.5	100.0
Actuated g/C Ratio	0.29		0.29					0.62			0.62	1.00
Clearance Time (s)	4.0		4.0					4.0			4.0	
Vehicle Extension (s)	3.0		3.0					4.0			4.0	
Lane Grp Cap (vph)	993		806					2041			2211	1547
v/s Ratio Prot	c0.21		0.19					c0.38			0.29	
v/s Ratio Perm												0.30
v/c Ratio	0.70		0.63					0.61			0.46	0.30
Uniform Delay, d1	31.4		30.5					11.3			9.9	0.0
Progression Factor	1.00		1.00					0.98			0.95	1.00
Incremental Delay, d2	2.3		1.6					0.3			0.6	0.4
Delay (s)	33.6		32.1					11.5			9.9	0.4
Level of Service	C		C					B			A	A
Approach Delay (s)		32.9			0.0			11.5			7.0	
Approach LOS		C			A			B			A	

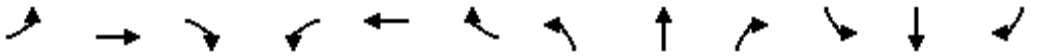
Intersection Summary			
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	320	110	210	30	60	80	210	790	40	300	1000	260
Future Volume (vph)	320	110	210	30	60	80	210	790	40	300	1000	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
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	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1719	1863	1583	1770	1863	1536	3433	3438	1583	1752	3505	1561
Flt Permitted	0.72	1.00	1.00	0.63	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1296	1863	1583	1183	1863	1536	3433	3438	1583	1752	3505	1561
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	333	115	219	31	62	83	219	823	42	312	1042	271
RTOR Reduction (vph)	0	0	128	0	0	32	0	0	31	0	0	89
Lane Group Flow (vph)	333	115	91	31	63	51	219	823	11	313	1042	182
Confl. Peds. (#/hr)						1						3
Heavy Vehicles (%)	5%	2%	2%	2%	2%	5%	2%	5%	2%	3%	3%	2%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	Prot	NA	Perm	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	21.0	12.4	20.9	9.4	6.3	49.8	8.5	25.5	25.5	43.5	59.0	69.2
Effective Green, g (s)	20.0	12.9	20.9	9.4	6.8	49.8	8.5	24.5	25.5	43.5	59.5	67.2
Actuated g/C Ratio	0.20	0.13	0.21	0.09	0.07	0.50	0.08	0.24	0.26	0.44	0.60	0.67
Clearance Time (s)	3.0	4.5	4.0	4.0	4.5	4.0	4.0	3.0	3.0	4.0	4.5	3.0
Vehicle Extension (s)	1.0	1.2	1.2	1.0	1.2	1.0	1.2	1.2	1.2	1.0	1.2	1.0
Lane Grp Cap (vph)	298	240	330	129	126	764	291	842	403	762	2085	1048
v/s Ratio Prot	c0.10	0.06	0.02	0.01	0.03	0.03	c0.06	c0.24		0.18	c0.30	0.02
v/s Ratio Perm	c0.12		0.03	0.02		0.00			0.01			0.10
v/c Ratio	1.12	0.48	0.28	0.24	0.50	0.07	0.75	0.98	0.03	0.41	0.50	0.17
Uniform Delay, d1	38.4	40.4	33.2	43.6	45.0	13.0	44.7	37.5	27.9	19.4	11.7	6.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.81	1.99
Incremental Delay, d2	87.5	0.6	0.2	0.4	1.1	0.0	9.4	25.2	0.0	1.5	0.8	0.0
Delay (s)	125.9	41.0	33.4	44.0	46.1	13.1	54.1	62.7	28.0	20.9	10.2	12.1
Level of Service	F	D	C	D	D	B	D	E	C	C	B	B
Approach Delay (s)		80.9			30.2			59.6			12.6	
Approach LOS		F			C			E			B	

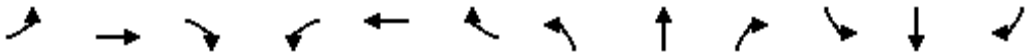
Intersection Summary			
HCM 2000 Control Delay	40.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	72.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	770	180	70	570	340	190	190	120	280	240	30
Future Volume (vph)	60	770	180	70	570	340	190	190	120	280	240	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85		0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98		0.95	1.00	
Satd. Flow (prot)	1770	3398		1752	3438	1549		1765		1770	1825	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98		0.95	1.00	
Satd. Flow (perm)	1770	3398		1752	3438	1549		1765		1770	1825	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	770	180	70	570	340	190	190	120	280	240	30
RTOR Reduction (vph)	0	15	0	0	0	223	0	9	0	0	4	0
Lane Group Flow (vph)	60	935	0	70	570	117	0	491	0	280	266	0
Confl. Peds. (#/hr)						1						
Confl. Bikes (#/hr)			1									2
Heavy Vehicles (%)	2%	3%	2%	3%	5%	2%	2%	2%	3%	2%	2%	4%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6						
Actuated Green, G (s)	5.3	32.1		5.0	31.8	31.8		34.2		21.0	21.0	
Effective Green, g (s)	5.3	33.1		5.0	32.8	32.8		34.2		21.0	21.0	
Actuated g/C Ratio	0.05	0.30		0.05	0.30	0.30		0.31		0.19	0.19	
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0		4.0		4.0	4.0	
Vehicle Extension (s)	1.5	1.5		1.5	1.5	1.5		1.5		1.5	1.5	
Lane Grp Cap (vph)	85	1029		80	1031	464		552		340	350	
v/s Ratio Prot	0.03	c0.28		c0.04	0.17			c0.28		c0.16	0.15	
v/s Ratio Perm						0.08						
v/c Ratio	0.71	0.91		0.88	0.55	0.25		0.89		0.82	0.76	
Uniform Delay, d1	51.2	36.6		51.8	32.1	29.0		35.8		42.4	41.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	19.5	11.2		58.9	0.4	0.1		15.7		14.2	8.2	
Delay (s)	70.7	47.8		110.8	32.5	29.1		51.4		56.5	49.9	
Level of Service	E	D		F	C	C		D		E	D	
Approach Delay (s)		49.2			36.9			51.4			53.3	
Approach LOS		D			D			D			D	

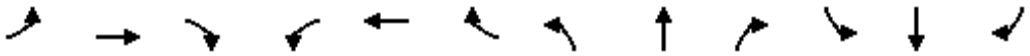
Intersection Summary			
HCM 2000 Control Delay	46.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	109.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	87.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	20	60	580	20	20	40	950	640	20	1010	20
Future Volume (vph)	30	20	60	580	20	20	40	950	640	20	1010	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.95		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.89		1.00	0.93		1.00	0.94		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1565		1770	1712		1770	3295		1770	3527	
Flt Permitted	0.73	1.00		0.70	1.00		0.17	1.00		0.10	1.00	
Satd. Flow (perm)	1362	1565		1313	1712		318	3295		184	3527	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	20	60	580	20	20	40	950	640	20	1010	20
RTOR Reduction (vph)	0	34	0	0	12	0	0	111	0	0	1	0
Lane Group Flow (vph)	30	46	0	580	28	0	40	1479	0	20	1029	0
Confl. Peds. (#/hr)			44						1			
Confl. Bikes (#/hr)			1			2			1			1
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	43.8	43.4		38.0	38.0		44.2	43.2		41.7	41.7	
Effective Green, g (s)	43.4	43.4		38.0	38.0		43.8	43.8		41.3	42.3	
Actuated g/C Ratio	0.43	0.43		0.38	0.38		0.44	0.44		0.41	0.42	
Clearance Time (s)	3.6	4.0		4.0	4.0		3.6	4.6		3.6	4.6	
Vehicle Extension (s)	2.5	2.5		2.0	2.0		2.5	3.0		2.5	3.0	
Lane Grp Cap (vph)	596	679		498	650		172	1443		88	1491	
v/s Ratio Prot	0.00	c0.03			0.02		0.01	c0.45		0.00	c0.29	
v/s Ratio Perm	0.02			c0.44			0.10			0.09		
v/c Ratio	0.05	0.07		1.16	0.04		0.23	1.02		0.23	0.69	
Uniform Delay, d1	16.4	16.5		31.0	19.5		28.3	28.1		24.2	23.5	
Progression Factor	1.00	1.00		0.87	0.53		0.59	0.60		0.79	0.79	
Incremental Delay, d2	0.0	0.0		90.6	0.0		0.4	26.6		0.9	2.5	
Delay (s)	16.4	16.5		117.5	10.3		17.0	43.4		19.9	21.1	
Level of Service	B	B		F	B		B	D		B	C	
Approach Delay (s)		16.5			110.6			42.8			21.1	
Approach LOS		B			F			D			C	

Intersection Summary			
HCM 2000 Control Delay	47.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	92.3%	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)	260	140	110	80	150	180	90	1180	60	150	1300	180
Future Volume (vph)	260	140	110	80	150	180	90	1180	60	150	1300	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	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	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1565	1770	1863	1567	1770	3510		1770	3465	
Flt Permitted	0.36	1.00	1.00	0.67	1.00	1.00	0.09	1.00		0.14	1.00	
Satd. Flow (perm)	671	1863	1565	1244	1863	1567	165	3510		264	3465	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	260	140	110	80	150	180	90	1180	60	150	1300	180
RTOR Reduction (vph)	0	0	85	0	0	47	0	3	0	0	8	0
Lane Group Flow (vph)	260	140	25	80	150	133	90	1237	0	150	1472	0
Confl. Peds. (#/hr)			2			4						
Confl. Bikes (#/hr)						1			2			4
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6	7	3	8		7	4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	24.1	17.7	21.9	15.7	13.3	21.8	58.2	54.0		67.1	58.7	
Effective Green, g (s)	24.3	17.9	22.3	15.7	13.3	23.0	58.6	54.6		67.7	59.3	
Actuated g/C Ratio	0.24	0.18	0.22	0.16	0.13	0.23	0.59	0.55		0.68	0.59	
Clearance Time (s)	4.2	4.2	4.2	4.0	4.0	4.6	4.2	4.6		4.6	4.6	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	239	333	348	207	247	360	167	1916		315	2054	
v/s Ratio Prot	c0.08	0.08	0.00	0.01	0.08	0.03	0.02	0.35		c0.04	c0.42	
v/s Ratio Perm	c0.19		0.01	0.05		0.05	0.29			0.28		
v/c Ratio	1.09	0.42	0.07	0.39	0.61	0.37	0.54	0.65		0.48	0.72	
Uniform Delay, d1	36.9	36.4	30.7	37.3	40.9	32.4	32.2	15.9		22.8	14.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		0.73	0.49	
Incremental Delay, d2	83.6	0.3	0.0	0.4	2.9	0.2	1.7	1.7		0.2	1.3	
Delay (s)	120.6	36.8	30.7	37.8	43.8	32.6	33.9	17.6		16.9	8.3	
Level of Service	F	D	C	D	D	C	C	B		B	A	
Approach Delay (s)		78.2			37.7			18.7			9.1	
Approach LOS		E			D			B			A	

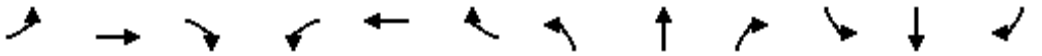
Intersection Summary			
HCM 2000 Control Delay	24.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	84.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00			0.95		1.00	0.95	
Frt		0.86			0.88			0.99		1.00	1.00	
Flt Protected		1.00			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		1611			1633			3514		1770	3537	
Flt Permitted		1.00			0.95			1.00		0.95	1.00	
Satd. Flow (perm)		1611			1563			3514		1770	3537	
Volume (vph)	0	0	5	40	0	240	0	990	50	290	1070	5
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	5	40	0	240	0	990	50	290	1070	5
RTOR Reduction (vph)	0	4	0	0	178	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	1	0	0	102	0	0	1037	0	290	1075	0
Heavy Vehicles (%)	2%	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2			6								
Actuated Green, G (s)		8.5			8.5			29.4		12.1	45.5	
Effective Green, g (s)		8.5			8.5			29.9		12.1	46.0	
Actuated g/C Ratio		0.14			0.14			0.48		0.19	0.74	
Clearance Time (s)		4.0			4.0			4.5		4.0	4.5	
Vehicle Extension (s)		4.0			4.0			2.5		2.0	2.5	
Lane Grp Cap (vph)		219			213			1681		343	2603	
v/s Ratio Prot		0.00						c0.30		c0.16	0.30	
v/s Ratio Perm					c0.07							
v/c Ratio		0.00			0.48			0.62		0.85	0.41	
Uniform Delay, d1		23.3			25.0			12.1		24.3	3.1	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.0			2.3			0.6		16.5	0.1	
Delay (s)		23.3			27.3			12.6		40.8	3.2	
Level of Service		C			C			B		D	A	
Approach Delay (s)		23.3			27.3			12.6			11.2	
Approach LOS		C			C			B			B	

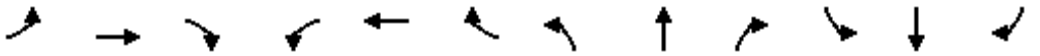
Intersection Summary			
HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	62.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



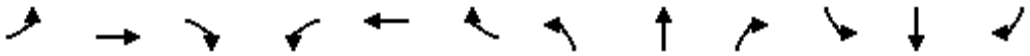
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	660	70	140	750	50	70	520	140	70	650	140
Future Volume (vph)	130	660	70	140	750	50	70	520	140	70	650	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.5		3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3428		1770	3472		1752	1863	1583	1752	1863	1583
Flt Permitted	0.14	1.00		0.17	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	260	3428		320	3472		1752	1863	1583	1752	1863	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	135	688	73	146	781	52	73	542	146	73	677	146
RTOR Reduction (vph)	0	7	0	0	4	0	0	0	87	0	0	80
Lane Group Flow (vph)	135	754	0	146	829	0	73	542	59	73	677	66
Heavy Vehicles (%)	2%	4%	2%	2%	3%	3%	3%	2%	2%	3%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6					8			4
Actuated Green, G (s)	37.4	29.3		38.2	29.7		5.5	40.0	40.0	5.5	40.0	40.0
Effective Green, g (s)	37.4	29.3		38.2	29.7		5.5	40.0	40.0	5.5	40.0	40.0
Actuated g/C Ratio	0.38	0.30		0.39	0.30		0.06	0.41	0.41	0.06	0.41	0.41
Clearance Time (s)	3.5	4.5		3.5	4.5		3.5	3.5	3.5	3.5	3.5	3.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		2.0	2.5	2.5	2.0	2.5	2.5
Lane Grp Cap (vph)	223	1021		249	1049		98	758	644	98	758	644
v/s Ratio Prot	0.05	0.22		c0.05	c0.24		c0.04	0.29		0.04	c0.36	
v/s Ratio Perm	0.18			0.18					0.04			0.04
v/c Ratio	0.61	0.74		0.59	0.79		0.74	0.72	0.09	0.74	0.89	0.10
Uniform Delay, d1	22.3	31.1		21.6	31.4		45.7	24.4	18.0	45.7	27.2	18.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.2	3.0		2.3	4.4		23.2	3.0	0.0	23.2	12.9	0.1
Delay (s)	25.5	34.1		23.9	35.8		68.9	27.4	18.0	68.9	40.0	18.1
Level of Service	C	C		C	D		E	C	B	E	D	B
Approach Delay (s)		32.8			34.0			29.6			38.8	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	34.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	98.3	Sum of lost time (s)	15.0
Intersection Capacity Utilization	81.4%	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)	130	90	60	90	180	20	50	700	20	90	940	20
Future Volume (vph)	130	90	60	90	180	20	50	700	20	90	940	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.97		1.00	0.97	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected		0.97	1.00		0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1792	1536		1820	1501	1752	3456		1770	3492	
Flt Permitted		0.97	1.00		0.98	1.00	0.25	1.00		0.25	1.00	
Satd. Flow (perm)		1792	1536		1820	1501	460	3456		465	3492	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	130	90	60	90	180	20	50	700	20	90	940	20
RTOR Reduction (vph)	0	0	51	0	0	16	0	2	0	0	1	0
Lane Group Flow (vph)	0	220	9	0	270	4	50	718	0	90	959	0
Confl. Peds. (#/hr)			9			9			3			4
Confl. Bikes (#/hr)			4			7			3			1
Heavy Vehicles (%)	3%	3%	2%	2%	3%	4%	3%	4%	2%	2%	3%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8	2			6		
Actuated Green, G (s)		15.6	15.6		17.7	17.7	46.2	45.5		48.2	48.2	
Effective Green, g (s)		15.6	15.6		17.7	17.7	45.7	45.7		47.7	48.4	
Actuated g/C Ratio		0.16	0.16		0.18	0.18	0.46	0.46		0.48	0.48	
Clearance Time (s)		4.0	4.0		4.0	4.0	3.5	4.2		3.5	4.2	
Vehicle Extension (s)		1.2	1.2		1.2	1.2	1.0	1.2		1.0	1.2	
Lane Grp Cap (vph)		279	239		322	265	239	1579		287	1690	
v/s Ratio Prot		c0.12			c0.15		0.00	c0.21		0.02	c0.27	
v/s Ratio Perm			0.01			0.00	0.09			0.13		
v/c Ratio		0.79	0.04		0.84	0.01	0.21	0.45		0.31	0.57	
Uniform Delay, d1		40.6	35.8		39.8	33.9	20.8	18.6		15.6	18.4	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		0.41	0.49	
Incremental Delay, d2		12.7	0.0		16.4	0.0	0.2	0.9		0.2	1.1	
Delay (s)		53.3	35.9		56.2	34.0	20.9	19.6		6.6	10.0	
Level of Service		D	D		E	C	C	B		A	B	
Approach Delay (s)		49.6			54.7			19.6			9.8	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	23.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



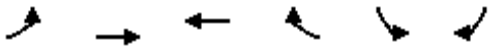
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	340	0	520	0	0	0	0	980	310	460	1060	0
Future Volume (vph)	340	0	520	0	0	0	0	980	310	460	1060	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00					0.95	1.00	0.97	0.95	
Frpb, ped/bikes		1.00	1.00					1.00	0.97	1.00	1.00	
Flpb, ped/bikes		1.00	1.00					1.00	1.00	1.00	1.00	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1752	1568					3539	1332	3400	3539	
Flt Permitted		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1752	1568					3539	1332	3400	3539	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	400	0	612	0	0	0	0	1153	365	541	1247	0
RTOR Reduction (vph)	0	0	35	0	0	0	0	0	125	0	0	0
Lane Group Flow (vph)	0	400	577	0	0	0	0	1153	240	541	1247	0
Confl. Peds. (#/hr)			2						9			7
Confl. Bikes (#/hr)			1			8						
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	2%	2%	18%	3%	2%	2%
Turn Type	Split	NA	Prot					NA	Perm	Prot	NA	
Protected Phases	4	4	4					2		1	6	
Permitted Phases									2			
Actuated Green, G (s)		39.0	39.0					34.0	34.0	19.0	55.0	
Effective Green, g (s)		37.0	37.0					34.0	34.0	17.0	55.0	
Actuated g/C Ratio		0.37	0.37					0.34	0.34	0.17	0.55	
Clearance Time (s)		2.0	2.0					4.0	4.0	2.0	4.0	
Vehicle Extension (s)		3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		648	580					1203	452	578	1946	
v/s Ratio Prot		0.23	c0.37					c0.33		c0.16	0.35	
v/s Ratio Perm									0.18			
v/c Ratio		0.62	1.00					0.96	0.53	0.94	0.64	
Uniform Delay, d1		25.7	31.4					32.3	26.6	41.0	15.6	
Progression Factor		1.00	1.00					0.41	0.28	0.98	0.97	
Incremental Delay, d2		1.8	36.0					9.9	2.0	16.8	1.1	
Delay (s)		27.5	67.4					23.3	9.5	56.8	16.3	
Level of Service		C	E					C	A	E	B	
Approach Delay (s)		51.6			0.0			20.0			28.6	
Approach LOS		D			A			B			C	

Intersection Summary			
HCM 2000 Control Delay	30.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.0%	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	0	190	0	290	0	1090	230	0	1330	540
Future Volume (vph)	0	0	0	190	0	290	0	1090	230	0	1330	540
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	
Lane Util. Factor				0.97		0.88		0.95	1.00		0.95	
Frpb, ped/bikes				1.00		1.00		1.00	0.98		1.00	
Flpb, ped/bikes				1.00		1.00		1.00	1.00		1.00	
Frt				1.00		0.85		1.00	0.85		0.96	
Flt Protected				0.95		1.00		1.00	1.00		1.00	
Satd. Flow (prot)				3433		2787		3539	1545		3394	
Flt Permitted				0.95		1.00		1.00	1.00		1.00	
Satd. Flow (perm)				3433		2787		3539	1545		3394	
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.92	0.85	0.92	0.85	0.85	0.85	0.85	0.92
Adj. Flow (vph)	0	0	0	224	0	341	0	1282	271	0	1565	587
RTOR Reduction (vph)	0	0	0	0	0	9	0	0	0	0	35	0
Lane Group Flow (vph)	0	0	0	224	0	332	0	1282	271	0	2117	0
Confl. Peds. (#/hr)									9			
Confl. Bikes (#/hr)						26						
Turn Type				Prot		custom		NA	Free		NA	
Protected Phases				8		8 1		2			6	
Permitted Phases									Free			
Actuated Green, G (s)				11.8		52.8		40.2	100.0		83.2	
Effective Green, g (s)				10.8		48.8		40.2	100.0		81.2	
Actuated g/C Ratio				0.11		0.49		0.40	1.00		0.81	
Clearance Time (s)				3.0				4.0			2.0	
Vehicle Extension (s)				3.0				3.0			3.0	
Lane Grp Cap (vph)				370		1360		1422	1545		2755	
v/s Ratio Prot				c0.07		0.12		c0.36			c0.62	
v/s Ratio Perm									0.18			
v/c Ratio				0.61		0.24		0.90	0.18		0.77	
Uniform Delay, d1				42.6		14.9		28.0	0.0		4.7	
Progression Factor				1.00		1.00		0.29	1.00		0.94	
Incremental Delay, d2				2.8		0.1		4.9	0.1		0.6	
Delay (s)				45.4		15.0		13.1	0.1		5.0	
Level of Service				D		B		B	A		A	
Approach Delay (s)		0.0			27.0			10.8			5.0	
Approach LOS		A			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

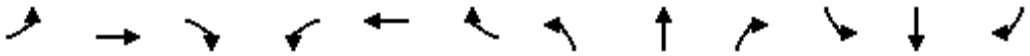
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	25	350	400	20	60	25
Future Volume (Veh/h)	25	350	400	20	60	25
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	30	427	488	24	73	30
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	512				987	500
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	512				987	500
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				73	95
cM capacity (veh/h)	1053				267	571

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	457	512	103
Volume Left	30	0	73
Volume Right	0	24	30
cSH	1053	1700	316
Volume to Capacity	0.03	0.30	0.33
Queue Length 95th (ft)	2	0	35
Control Delay (s)	0.9	0.0	21.8
Lane LOS	A		C
Approach Delay (s)	0.9	0.0	21.8
Approach LOS			C

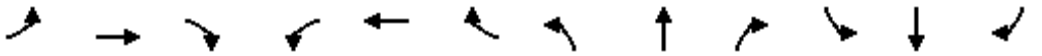
Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	530	700	520	470	70	700	410	310	280	460	20
Future Volume (vph)	20	530	700	520	470	70	700	410	310	280	460	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	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	0.98		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	3433	3463		3433	3539	1583	1770	3514	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	3433	3463		3433	3539	1583	1770	3514	
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)	21	558	737	547	495	74	737	432	326	295	484	21
RTOR Reduction (vph)	0	0	49	0	11	0	0	0	224	0	3	0
Lane Group Flow (vph)	21	558	688	547	558	0	737	432	103	295	502	0
Confl. Peds. (#/hr)						2						
Confl. Bikes (#/hr)												6
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	1	6	7	5	2		7	4		3		
Permitted Phases			6						4		8	
Actuated Green, G (s)	2.0	26.0	49.7	16.5	40.5		23.7	25.5	25.5	16.0	17.8	
Effective Green, g (s)	2.0	26.0	49.7	16.5	40.5		23.7	25.5	25.5	16.0	17.8	
Actuated g/C Ratio	0.02	0.26	0.50	0.16	0.40		0.24	0.26	0.26	0.16	0.18	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	35	920	786	566	1402		813	902	403	283	625	
v/s Ratio Prot	0.01	0.16	c0.21	c0.16	0.16		c0.21	0.12		c0.17		
v/s Ratio Perm			0.23						0.06		0.14	
v/c Ratio	0.60	0.61	0.87	0.97	0.40		0.91	0.48	0.25	1.04	0.80	
Uniform Delay, d1	48.6	32.5	22.4	41.5	21.1		37.1	31.6	29.7	42.0	39.4	
Progression Factor	1.00	1.00	1.00	1.12	0.14		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	24.7	3.0	10.7	20.5	0.5		13.6	0.4	0.3	65.0	7.4	
Delay (s)	73.3	35.5	33.1	67.1	3.5		50.7	32.0	30.0	107.0	46.8	
Level of Service	E	D	C	E	A		D	C	C	F	D	
Approach Delay (s)		34.7			34.7			40.8			69.0	
Approach LOS		C			C			D			E	

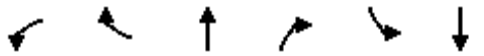
Intersection Summary			
HCM 2000 Control Delay	42.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	230	50	290	220	130	60	640	150	160	950	60
Future Volume (vph)	60	230	50	290	220	130	60	640	150	160	950	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes		1.00		1.00	0.99		1.00	0.99		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		0.98		1.00	0.94		1.00	0.97		1.00	1.00	0.85
Flt Protected		0.99		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1803		1770	1745		1752	3339		1770	3471	1511
Flt Permitted		0.88		0.33	1.00		0.18	1.00		0.18	1.00	1.00
Satd. Flow (perm)		1595		616	1745		329	3339		331	3471	1511
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	230	50	290	220	130	60	640	150	160	950	60
RTOR Reduction (vph)	0	9	0	0	31	0	0	26	0	0	0	38
Lane Group Flow (vph)	0	331	0	290	319	0	60	764	0	160	950	22
Confl. Peds. (#/hr)						6			7			14
Confl. Bikes (#/hr)			3			8						
Heavy Vehicles (%)	2%	2%	3%	2%	2%	2%	3%	5%	2%	2%	4%	2%
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		17.5		27.6	27.6		25.7	22.4		31.3	25.2	25.2
Effective Green, g (s)		17.5		27.6	27.6		25.7	22.4		31.3	25.2	25.2
Actuated g/C Ratio		0.26		0.41	0.41		0.38	0.33		0.46	0.37	0.37
Clearance Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)		2.0		4.0	4.0		2.0	4.0		2.0	4.0	4.0
Lane Grp Cap (vph)		409		353	707		193	1098		281	1284	559
v/s Ratio Prot				c0.07	0.18		0.02	0.23		c0.05	c0.27	
v/s Ratio Perm		0.21		c0.26			0.10			0.21		0.01
v/c Ratio		0.81		0.82	0.45		0.31	0.70		0.57	0.74	0.04
Uniform Delay, d1		23.7		18.7	14.7		14.4	19.9		12.5	18.6	13.7
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		10.6		14.8	0.6		0.3	2.1		1.6	2.4	0.0
Delay (s)		34.4		33.5	15.4		14.8	22.0		14.0	21.0	13.8
Level of Service		C		C	B		B	C		B	C	B
Approach Delay (s)		34.4			23.6			21.5			19.7	
Approach LOS		C			C			C			B	

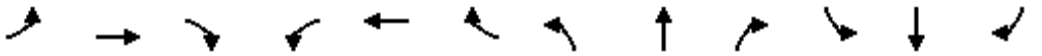
Intersection Summary			
HCM 2000 Control Delay	22.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	68.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	399	342	1146	0	0	1400
Future Volume (vph)	399	342	1146	0	0	1400
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0			4.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3433	1583	3539			3539
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3433	1583	3539			3539
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	399	342	1146	0	0	1400
RTOR Reduction (vph)	0	41	0	0	0	0
Lane Group Flow (vph)	399	301	1146	0	0	1400
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	12.8	12.8	23.7			23.7
Effective Green, g (s)	12.8	12.8	23.7			23.7
Actuated g/C Ratio	0.29	0.29	0.53			0.53
Clearance Time (s)	4.0	4.0	4.0			4.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	987	455	1884			1884
v/s Ratio Prot	0.12		0.32			c0.40
v/s Ratio Perm		c0.19				
v/c Ratio	0.40	0.66	0.61			0.74
Uniform Delay, d1	12.8	13.9	7.2			8.0
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.3	3.6	0.6			1.6
Delay (s)	13.0	17.6	7.8			9.7
Level of Service	B	B	A			A
Approach Delay (s)	15.1		7.8			9.7
Approach LOS	B		A			A

Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	44.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		

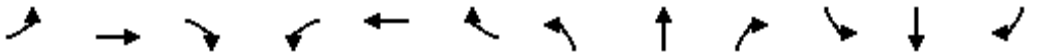
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	302	0	189	0	0	0	0	1216	374	609	1300	0
Future Volume (vph)	302	0	189	0	0	0	0	1216	374	609	1300	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor	0.97		1.00					0.95	1.00	0.97	0.95	
Frt	1.00		0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433		1583					3539	1583	3433	3539	
Flt Permitted	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433		1583					3539	1583	3433	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	302	0	189	0	0	0	0	1216	374	609	1300	0
RTOR Reduction (vph)	0	0	64	0	0	0	0	0	190	0	0	0
Lane Group Flow (vph)	302	0	125	0	0	0	0	1216	184	609	1300	0
Turn Type	Perm		Prot					NA	Perm	Prot	NA	
Protected Phases			8					2		1	6	
Permitted Phases	8		8						2			
Actuated Green, G (s)	11.2		11.2					27.4	27.4	13.8	45.2	
Effective Green, g (s)	11.2		11.2					27.4	27.4	13.8	45.2	
Actuated g/C Ratio	0.17		0.17					0.43	0.43	0.21	0.70	
Clearance Time (s)	4.0		4.0					4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	597		275					1505	673	735	2483	
v/s Ratio Prot			0.08					c0.34		c0.18	0.37	
v/s Ratio Perm	c0.09								0.12			
v/c Ratio	0.51		0.45					0.81	0.27	0.83	0.52	
Uniform Delay, d1	24.1		23.9					16.2	12.0	24.2	4.5	
Progression Factor	1.00		1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7		1.2					3.3	0.2	7.7	0.2	
Delay (s)	24.8		25.0					19.5	12.2	31.8	4.7	
Level of Service	C		C					B	B	C	A	
Approach Delay (s)		24.9			0.0			17.8			13.4	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	64.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.6%	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	20	20	40	20	100	20	1480	20	60	1440	30
Future Volume (vph)	30	20	20	40	20	100	20	1480	20	60	1440	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00	0.96	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	1.00	0.93		1.00	0.88		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1708		1770	1590		1770	3539	1527	1770	3539	1527
Flt Permitted	0.63	1.00		0.73	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1166	1708		1359	1590		1770	3539	1527	1770	3539	1527
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)	32	21	21	42	21	105	21	1558	21	63	1516	32
RTOR Reduction (vph)	0	16	0	0	80	0	0	0	9	0	0	12
Lane Group Flow (vph)	32	26	0	42	46	0	21	1558	12	63	1516	20
Confl. Peds. (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases		6			2		7	4		3	8	
Permitted Phases	6			2					4			8
Actuated Green, G (s)	23.6	23.6		23.6	23.6		2.4	56.4	56.4	8.0	62.0	62.0
Effective Green, g (s)	23.6	23.6		23.6	23.6		2.4	56.4	56.4	8.0	62.0	62.0
Actuated g/C Ratio	0.24	0.24		0.24	0.24		0.02	0.56	0.56	0.08	0.62	0.62
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	275	403		320	375		42	1995	861	141	2194	946
v/s Ratio Prot		0.02			0.03		0.01	c0.44		0.04	c0.43	
v/s Ratio Perm	0.03			c0.03					0.01			0.01
v/c Ratio	0.12	0.06		0.13	0.12		0.50	0.78	0.01	0.45	0.69	0.02
Uniform Delay, d1	30.0	29.6		30.1	30.1		48.2	17.0	9.6	43.9	12.6	7.3
Progression Factor	1.00	1.00		1.00	1.00		1.02	0.65	5.64	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.1		0.8	0.7		7.4	2.5	0.0	2.2	1.8	0.0
Delay (s)	30.2	29.7		31.0	30.7		56.6	13.5	54.1	46.1	14.4	7.4
Level of Service	C	C		C	C		E	B	D	D	B	A
Approach Delay (s)		29.9			30.8			14.6			15.5	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	650	20	780	710	20	850
Future Volume (vph)	650	20	780	710	20	850
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		0.97	1.00	1.00	0.88
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3523		3433	1863	1770	2787
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3523		3433	1863	1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	707	22	848	772	22	924
RTOR Reduction (vph)	2	0	0	0	0	47
Lane Group Flow (vph)	727	0	848	772	22	877
Turn Type	NA		Prot	NA	Prot	pm+ov
Protected Phases	4		3	8	2	3
Permitted Phases						2
Actuated Green, G (s)	45.9		38.9	88.8	3.2	42.1
Effective Green, g (s)	45.9		38.9	88.8	3.2	42.1
Actuated g/C Ratio	0.46		0.39	0.89	0.03	0.42
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1617		1335	1654	56	1284
v/s Ratio Prot	0.21		0.25	c0.41	0.01	c0.27
v/s Ratio Perm						0.05
v/c Ratio	0.45		0.64	0.47	0.39	0.68
Uniform Delay, d1	18.4		24.8	1.1	47.4	23.5
Progression Factor	0.41		0.53	0.67	0.89	0.89
Incremental Delay, d2	0.8		0.8	0.7	3.4	1.1
Delay (s)	8.3		14.0	1.4	45.4	22.0
Level of Service	A		B	A	D	C
Approach Delay (s)	8.3			8.0	22.6	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.0%	ICU Level of Service	B
Analysis Period (min)	15		

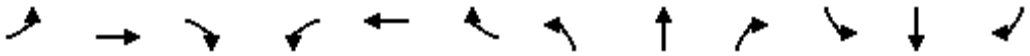
c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	240	510	960	270	490	750
Future Volume (vph)	240	510	960	270	490	750
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	0.99	1.00	0.96	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1572	3539	1527	1770	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1572	3539	1527	1770	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	253	537	1011	284	516	789
RTOR Reduction (vph)	0	11	0	173	0	0
Lane Group Flow (vph)	253	526	1011	111	516	789
Confl. Peds. (#/hr)		5		5		
Turn Type	Prot	pm+ov	NA	Perm	Prot	NA
Protected Phases	8	1	2		1	6
Permitted Phases		8		2		
Actuated Green, G (s)	18.8	48.8	39.2	39.2	30.0	73.2
Effective Green, g (s)	18.8	48.8	39.2	39.2	30.0	73.2
Actuated g/C Ratio	0.19	0.49	0.39	0.39	0.30	0.73
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	332	830	1387	598	531	2590
v/s Ratio Prot	c0.14	0.19	c0.29		c0.29	0.22
v/s Ratio Perm		0.14		0.07		
v/c Ratio	0.76	0.63	0.73	0.19	0.97	0.30
Uniform Delay, d1	38.5	19.0	25.9	19.9	34.6	4.6
Progression Factor	0.64	0.41	0.55	0.38	1.00	1.00
Incremental Delay, d2	9.0	1.4	2.4	0.5	31.7	0.3
Delay (s)	33.6	9.1	16.6	8.1	66.3	4.9
Level of Service	C	A	B	A	E	A
Approach Delay (s)	17.0		14.7			29.2
Approach LOS	B		B			C

Intersection Summary			
HCM 2000 Control Delay	20.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

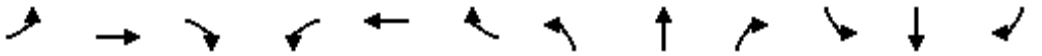
HCM Signalized Intersection Capacity Analysis
1: Old Redwood & 101 NB On Ramp/101 NB On-Off Ramp

3/10/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	270	0	320	0	1230	600	0	1010	750
Future Volume (vph)	0	0	0	270	0	320	0	1230	600	0	1010	750
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	
Lane Util. Factor				0.97		0.88		0.95	1.00		0.95	
Frpb, ped/bikes				1.00		1.00		1.00	0.98		0.99	
Flpb, ped/bikes				1.00		1.00		1.00	1.00		1.00	
Frt				1.00		0.85		1.00	0.85		0.94	
Flt Protected				0.95		1.00		1.00	1.00		1.00	
Satd. Flow (prot)				3367		2733		3539	1550		3220	
Flt Permitted				0.95		1.00		1.00	1.00		1.00	
Satd. Flow (perm)				3367		2733		3539	1550		3220	
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)	0	0	0	284	0	337	0	1295	632	0	1063	789
RTOR Reduction (vph)	0	0	0	0	0	205	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	284	0	132	0	1295	632	0	1852	0
Confl. Peds. (#/hr)									2			5
Confl. Bikes (#/hr)												4
Heavy Vehicles (%)	2%	2%	2%	4%	2%	4%	2%	2%	2%	2%	3%	5%
Turn Type				Prot		Prot		NA	Free		NA	
Protected Phases				8		8		2			6	
Permitted Phases									Free			
Actuated Green, G (s)				11.4		11.4		81.1	100.0		81.1	
Effective Green, g (s)				10.9		10.9		81.1	100.0		81.1	
Actuated g/C Ratio				0.11		0.11		0.81	1.00		0.81	
Clearance Time (s)				3.5		3.5		4.0			4.0	
Vehicle Extension (s)				3.0		3.0		3.0			3.0	
Lane Grp Cap (vph)				367		297		2870	1550		2611	
v/s Ratio Prot				c0.08		0.05		0.37			c0.58	
v/s Ratio Perm									0.41			
v/c Ratio				0.77		0.44		0.45	0.41		0.71	
Uniform Delay, d1				43.4		41.7		2.8	0.0		4.2	
Progression Factor				1.00		1.00		1.19	1.00		0.42	
Incremental Delay, d2				9.8		1.1		0.4	0.6		1.1	
Delay (s)				53.1		42.8		3.7	0.6		2.8	
Level of Service				D		D		A	A		A	
Approach Delay (s)		0.0			47.5			2.7			2.8	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	66.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



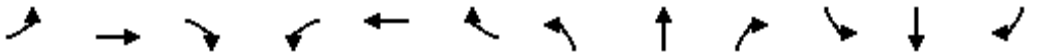
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	520	0	650	0	0	0	0	1310	290	0	910	370
Future Volume (vph)	520	0	650	0	0	0	0	1310	290	0	910	370
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					2.5			4.0	4.0
Lane Util. Factor	0.97		0.88					0.95			0.95	1.00
Frpb, ped/bikes	1.00		1.00					1.00			1.00	0.98
Flpb, ped/bikes	1.00		1.00					1.00			1.00	1.00
Frt	1.00		0.85					0.97			1.00	0.85
Flt Protected	0.95		1.00					1.00			1.00	1.00
Satd. Flow (prot)	3433		2787					3319			3539	1547
Flt Permitted	0.95		1.00					1.00			1.00	1.00
Satd. Flow (perm)	3433		2787					3319			3539	1547
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)	547	0	684	0	0	0	0	1379	305	0	958	389
RTOR Reduction (vph)	0	0	208	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	547	0	476	0	0	0	0	1684	0	0	958	389
Confl. Peds. (#/hr)			3						2			6
Confl. Bikes (#/hr)			4						4			
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	3%	16%	2%	2%	2%
Turn Type	Prot		Prot					NA			NA	Free
Protected Phases	4		4					2			6	
Permitted Phases												Free
Actuated Green, G (s)	23.1		23.1					70.4			68.9	100.0
Effective Green, g (s)	23.1		23.1					70.4			68.9	100.0
Actuated g/C Ratio	0.23		0.23					0.70			0.69	1.00
Clearance Time (s)	4.0		4.0					2.5			4.0	
Vehicle Extension (s)	3.0		3.0					3.0			3.0	
Lane Grp Cap (vph)	793		643					2336			2438	1547
v/s Ratio Prot	0.16		c0.17					c0.51			0.27	
v/s Ratio Perm												0.25
v/c Ratio	0.69		0.74					0.72			0.39	0.25
Uniform Delay, d1	35.2		35.7					8.9			6.6	0.0
Progression Factor	1.00		1.00					0.40			0.64	1.00
Incremental Delay, d2	2.5		4.6					1.3			0.3	0.3
Delay (s)	37.7		40.3					4.9			4.6	0.3
Level of Service	D		D					A			A	A
Approach Delay (s)		39.1			0.0			4.9			3.3	
Approach LOS		D			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	67.0%	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)	250	90	230	50	180	270	470	1070	50	120	1030	400
Future Volume (vph)	250	90	230	50	180	270	470	1070	50	120	1030	400
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	4.0	4.5	4.0	4.0	4.0	3.0	4.0		4.0	4.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.99
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	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1845	1583	1770	1863	1537	3433	3451		1770	3539	1561
Flt Permitted	0.54	1.00	1.00	0.70	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	999	1845	1583	1295	1863	1537	3433	3451		1770	3539	1561
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)	263	95	242	53	189	284	495	1126	53	126	1084	421
RTOR Reduction (vph)	0	0	168	0	0	60	0	3	0	0	0	175
Lane Group Flow (vph)	263	95	74	53	189	224	495	1176	0	126	1084	246
Confl. Peds. (#/hr)						1						3
Heavy Vehicles (%)	3%	3%	2%	2%	2%	4%	2%	4%	2%	2%	2%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8						6
Actuated Green, G (s)	37.4	30.6	30.6	30.2	27.0	35.0	14.0	42.7		8.0	36.2	43.0
Effective Green, g (s)	35.4	31.1	30.6	30.2	27.5	35.0	14.0	41.7		8.0	36.7	41.0
Actuated g/C Ratio	0.35	0.31	0.31	0.30	0.28	0.35	0.14	0.42		0.08	0.37	0.41
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5	4.0	3.0	3.0		4.0	4.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	397	573	484	406	512	537	480	1439		141	1298	718
v/s Ratio Prot	c0.04	0.05		0.00	0.10	0.03	c0.14	0.34		0.07	c0.31	0.02
v/s Ratio Perm	c0.20		0.05	0.04		0.11						0.14
v/c Ratio	0.66	0.17	0.15	0.13	0.37	0.42	1.03	0.82		0.89	0.84	0.34
Uniform Delay, d1	30.7	25.0	25.3	25.4	29.3	24.7	43.0	25.8		45.6	28.9	20.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.02	0.72	0.40
Incremental Delay, d2	4.1	0.6	0.7	0.1	2.0	0.5	49.3	5.2		40.9	5.6	0.2
Delay (s)	34.9	25.6	25.9	25.5	31.3	25.3	92.3	31.0		87.4	26.5	8.3
Level of Service	C	C	C	C	C	C	F	C		F	C	A
Approach Delay (s)		29.8			27.5			49.2			26.5	
Approach LOS		C			C			D			C	

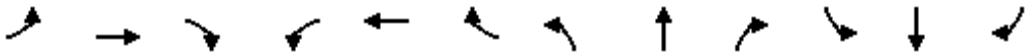
Intersection Summary			
HCM 2000 Control Delay	35.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	91.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	720	160	90	1100	390	190	210	70	320	230	60
Future Volume (vph)	60	720	160	90	1100	390	190	210	70	320	230	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85		0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98		0.95	1.00	1.00
Satd. Flow (prot)	1770	3429		1770	3471	1568		1786		1770	1863	1563
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.98		0.95	1.00	1.00
Satd. Flow (perm)	1770	3429		1770	3471	1568		1786		1770	1863	1563
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	720	160	90	1100	390	190	210	70	320	230	60
RTOR Reduction (vph)	0	13	0	0	0	107	0	4	0	0	0	47
Lane Group Flow (vph)	60	867	0	90	1100	283	0	466	0	320	230	13
Confl. Peds. (#/hr)									1			1
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	2%	2%	2%	2%	4%	3%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases						6						4
Actuated Green, G (s)	5.0	37.3		8.9	41.2	41.2		35.2		26.2	26.2	26.2
Effective Green, g (s)	5.0	38.3		8.9	42.2	42.2		35.2		26.2	26.2	26.2
Actuated g/C Ratio	0.04	0.31		0.07	0.34	0.34		0.28		0.21	0.21	0.21
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0		4.0		4.0	4.0	4.0
Vehicle Extension (s)	1.5	1.5		1.5	1.5	1.5		1.5		1.5	1.5	1.5
Lane Grp Cap (vph)	71	1054		126	1175	531		504		372	391	328
v/s Ratio Prot	0.03	0.25		c0.05	c0.32			c0.26		c0.18	0.12	
v/s Ratio Perm						0.18						0.01
v/c Ratio	0.85	0.82		0.71	0.94	0.53		0.92		0.86	0.59	0.04
Uniform Delay, d1	59.4	40.0		56.6	39.9	33.2		43.4		47.4	44.3	39.2
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	55.0	5.0		14.7	13.4	0.5		22.4		17.4	1.5	0.0
Delay (s)	114.4	45.0		71.3	53.3	33.8		65.8		64.9	45.8	39.2
Level of Service	F	D		E	D	C		E		E	D	D
Approach Delay (s)		49.5			49.5			65.8			55.2	
Approach LOS		D			D			E			E	

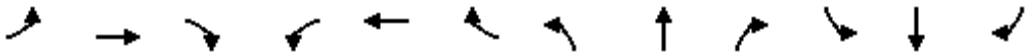
Intersection Summary			
HCM 2000 Control Delay	52.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	124.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	91.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	20	40	700	20	40	50	1400	650	80	1040	20
Future Volume (vph)	30	20	40	700	20	40	50	1400	650	80	1040	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.90		1.00	0.90		1.00	0.95		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1657		1770	1659		1770	3339		1770	3528	
Flt Permitted	0.95	1.00		0.72	1.00		0.95	1.00		0.11	1.00	
Satd. Flow (perm)	1770	1657		1337	1659		1770	3339		197	3528	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	20	40	700	20	40	50	1400	650	80	1040	20
RTOR Reduction (vph)	0	24	0	0	26	0	0	53	0	0	1	0
Lane Group Flow (vph)	30	36	0	700	34	0	50	1997	0	80	1059	0
Confl. Peds. (#/hr)			3			2			4			
Confl. Bikes (#/hr)			3			1			1			1
Turn Type	Prot	NA		Perm	NA		Prot	NA		pm+pt	NA	
Protected Phases	5	2			6		3	8		7	4	
Permitted Phases				6						4		
Actuated Green, G (s)	1.8	40.4		35.0	35.0		7.1	45.0		40.3	40.3	
Effective Green, g (s)	1.4	40.4		35.0	35.0		6.7	45.6		39.9	40.9	
Actuated g/C Ratio	0.01	0.40		0.35	0.35		0.07	0.46		0.40	0.41	
Clearance Time (s)	3.6	4.0		4.0	4.0		3.6	4.6		3.6	4.6	
Vehicle Extension (s)	2.5	2.5		2.0	2.0		2.5	3.0		2.5	3.0	
Lane Grp Cap (vph)	24	669		467	580		118	1522		110	1442	
v/s Ratio Prot	c0.02	0.02			0.02		0.03	c0.60		0.01	c0.30	
v/s Ratio Perm				c0.52						0.28		
v/c Ratio	1.25	0.05		1.50	0.06		0.42	1.31		0.73	0.73	
Uniform Delay, d1	49.3	18.2		32.5	21.6		44.8	27.2		31.2	25.0	
Progression Factor	1.00	1.00		0.93	0.94		0.87	0.76		0.73	0.75	
Incremental Delay, d2	269.2	0.0		233.0	0.0		1.0	143.2		16.6	2.7	
Delay (s)	318.5	18.2		263.2	20.2		39.8	163.9		39.3	21.5	
Level of Service	F	B		F	C		D	F		D	C	
Approach Delay (s)		118.3			244.0			161.0			22.7	
Approach LOS		F			F			F			C	

Intersection Summary			
HCM 2000 Control Delay	136.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.39		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	118.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



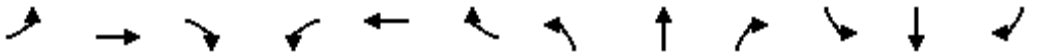
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	140	70	100	160	370	70	1500	100	250	1340	190
Future Volume (vph)	180	140	70	100	160	370	70	1500	100	250	1340	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	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	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1537	1770	1863	1583	1770	3500		1770	3463	
Flt Permitted	0.44	1.00	1.00	0.50	1.00	1.00	0.11	1.00		0.07	1.00	
Satd. Flow (perm)	824	1863	1537	931	1863	1583	206	3500		125	3463	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	180	140	70	100	160	370	70	1500	100	250	1340	190
RTOR Reduction (vph)	0	0	58	0	0	48	0	4	0	0	8	0
Lane Group Flow (vph)	180	140	12	100	160	322	70	1596	0	250	1522	0
Confl. Peds. (#/hr)			13						3			2
Confl. Bikes (#/hr)			7						4			2
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6	7	3	8		7	4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	18.0	13.6	17.0	16.8	13.0	23.3	58.3	54.9		69.8	62.2	
Effective Green, g (s)	18.4	13.8	17.4	16.8	13.0	24.5	58.7	55.5		70.4	62.8	
Actuated g/C Ratio	0.18	0.14	0.17	0.17	0.13	0.24	0.59	0.56		0.70	0.63	
Clearance Time (s)	4.2	4.2	4.2	4.0	4.0	4.6	4.2	4.6		4.6	4.6	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	195	257	267	188	242	387	177	1942		267	2174	
v/s Ratio Prot	c0.04	0.08	0.00	0.02	0.09	0.09	0.01	0.46		c0.10	0.44	
v/s Ratio Perm	c0.13		0.01	0.07		0.11	0.22			c0.56		
v/c Ratio	0.92	0.54	0.05	0.53	0.66	0.83	0.40	0.82		0.94	0.70	
Uniform Delay, d1	41.7	40.2	34.4	40.7	41.4	35.8	11.2	18.2		30.7	12.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.16	0.41	
Incremental Delay, d2	42.5	1.3	0.0	1.4	5.2	13.6	0.5	4.1		14.5	0.5	
Delay (s)	84.2	41.4	34.4	42.1	46.6	49.5	11.7	22.3		50.2	5.5	
Level of Service	F	D	C	D	D	D	B	C		D	A	
Approach Delay (s)		59.9			47.6			21.8			11.8	
Approach LOS		E			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	24.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	90.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

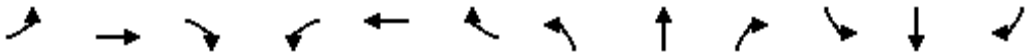
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frt		0.95			0.88		1.00	0.99		1.00	1.00	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1728			1636		1770	3518		1770	3534	
Flt Permitted		0.77			0.96		0.27	1.00		0.12	1.00	
Satd. Flow (perm)		1351			1574		498	3518		217	3534	
Volume (vph)	10	5	10	60	5	390	10	1220	50	290	1060	10
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	10	5	10	60	5	390	10	1220	50	290	1060	10
RTOR Reduction (vph)	0	8	0	0	169	0	0	4	0	0	1	0
Lane Group Flow (vph)	0	17	0	0	286	0	10	1266	0	290	1069	0
Turn Type	Perm			Perm			pm+pt			pm+pt		
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		15.7			15.7		30.6	29.9		43.6	38.9	
Effective Green, g (s)		15.7			15.7		31.1	30.4		44.1	39.4	
Actuated g/C Ratio		0.23			0.23		0.46	0.45		0.65	0.58	
Clearance Time (s)		4.0			4.0		4.0	4.5		4.0	4.5	
Vehicle Extension (s)		4.0			4.0		2.0	2.5		2.0	2.5	
Lane Grp Cap (vph)		313			364		242	1577		363	2054	
v/s Ratio Prot							0.00	0.36		c0.11	0.30	
v/s Ratio Perm		0.01			c0.18		0.02			c0.41		
v/c Ratio		0.06			0.79		0.04	0.80		0.80	0.52	
Uniform Delay, d1		20.3			24.5		10.0	16.1		15.1	8.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			11.2		0.0	3.0		10.9	0.2	
Delay (s)		20.4			35.7		10.0	19.1		26.0	8.7	
Level of Service		C			D		B	B		C	A	
Approach Delay (s)		20.4			35.7			19.0			12.4	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM Average Control Delay	18.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	67.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	90.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



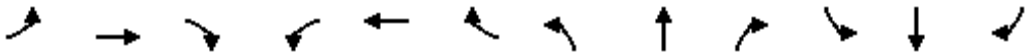
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	710	80	220	780	100	90	640	290	150	600	110
Future Volume (vph)	150	710	80	220	780	100	90	640	290	150	600	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.5	4.0	4.0	4.5	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3396		1770	3479		1770	1863	1583	1770	1863	1583
Flt Permitted	0.14	1.00		0.12	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	262	3396		230	3479		1770	1863	1583	1770	1863	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	156	740	83	229	812	104	94	667	302	156	625	115
RTOR Reduction (vph)	0	8	0	0	9	0	0	0	146	0	0	69
Lane Group Flow (vph)	156	815	0	229	908	0	94	667	156	156	625	46
Heavy Vehicles (%)	2%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6					8			4
Actuated Green, G (s)	36.4	28.9		44.1	33.1		8.6	41.0	41.0	11.0	43.4	43.4
Effective Green, g (s)	35.4	29.4		43.6	33.6		8.1	40.5	40.5	10.5	42.9	42.9
Actuated g/C Ratio	0.33	0.27		0.40	0.31		0.07	0.37	0.37	0.10	0.40	0.40
Clearance Time (s)	3.5	4.5		3.5	4.5		4.0	3.5	3.5	4.0	3.5	3.5
Vehicle Extension (s)	2.0	4.0		2.0	4.0		3.0	2.5	2.5	3.0	2.5	2.5
Lane Grp Cap (vph)	183	923		252	1081		132	697	593	171	739	628
v/s Ratio Prot	0.06	0.24		c0.09	0.26		0.05	c0.36		c0.09	0.34	
v/s Ratio Perm	0.22			c0.27					0.10			0.03
v/c Ratio	0.85	0.88		0.91	0.84		0.71	0.96	0.26	0.91	0.85	0.07
Uniform Delay, d1	29.0	37.7		25.8	34.7		48.9	33.0	23.5	48.3	29.6	20.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	28.9	10.2		32.5	6.2		16.6	23.7	0.2	44.2	8.7	0.0
Delay (s)	57.9	48.0		58.4	41.0		65.4	56.7	23.6	92.5	38.3	20.3
Level of Service	E	D		E	D		E	E	C	F	D	C
Approach Delay (s)		49.5			44.5			48.1			45.4	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	46.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	108.1	Sum of lost time (s)	16.5
Intersection Capacity Utilization	90.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



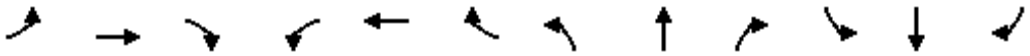
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	180	50	70	260	120	60	800	40	70	1110	40
Future Volume (vph)	100	180	50	70	260	120	60	800	40	70	1110	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.97		1.00	0.96	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.98	1.00		0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1824	1531		1843	1501	1770	3436		1770	3515	
Flt Permitted		0.98	1.00		0.99	1.00	0.11	1.00		0.25	1.00	
Satd. Flow (perm)		1824	1531		1843	1501	208	3436		461	3515	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	100	180	50	70	260	120	60	800	40	70	1110	40
RTOR Reduction (vph)	0	0	41	0	0	96	0	4	0	0	2	0
Lane Group Flow (vph)	0	280	9	0	330	24	60	836	0	70	1148	0
Confl. Peds. (#/hr)			10			8			16			9
Confl. Bikes (#/hr)			6			18			3			7
Heavy Vehicles (%)	3%	2%	2%	2%	2%	3%	2%	4%	4%	2%	2%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8	2			6		
Actuated Green, G (s)		18.0	18.0		20.3	20.3	38.6	38.6		43.9	43.2	
Effective Green, g (s)		18.0	18.0		20.3	20.3	38.1	38.8		43.4	43.4	
Actuated g/C Ratio		0.18	0.18		0.20	0.20	0.38	0.39		0.43	0.43	
Clearance Time (s)		4.0	4.0		4.0	4.0	3.5	4.2		3.5	4.2	
Vehicle Extension (s)		1.2	1.2		1.2	1.2	1.0	1.2		1.0	1.2	
Lane Grp Cap (vph)		328	275		374	304	115	1333		290	1525	
v/s Ratio Prot		c0.15			c0.18		0.01	c0.24		0.02	c0.33	
v/s Ratio Perm			0.01			0.02	0.19			0.09		
v/c Ratio		0.85	0.03		0.88	0.08	0.52	0.63		0.24	0.75	
Uniform Delay, d1		39.7	33.8		38.7	32.3	24.2	24.8		24.7	23.8	
Progression Factor		1.00	1.00		1.00	1.00	0.43	0.45		0.57	0.61	
Incremental Delay, d2		18.3	0.0		20.4	0.0	1.2	1.3		0.1	2.9	
Delay (s)		58.0	33.8		59.1	32.3	11.7	12.6		14.2	17.4	
Level of Service		E	C		E	C	B	B		B	B	
Approach Delay (s)		54.4			52.0			12.5			17.2	
Approach LOS		D			D			B			B	

Intersection Summary					
HCM 2000 Control Delay	25.4	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.81				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	81.9%	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)	260	0	540	0	0	0	0	1280	170	300	1200	0
Future Volume (vph)	260	0	540	0	0	0	0	1280	170	300	1200	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5		5.5					4.0	4.0	5.0	4.0	
Lane Util. Factor	1.00		1.00					0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00		1.00					1.00	0.97	1.00	1.00	
Flpb, ped/bikes	1.00		1.00					1.00	1.00	1.00	1.00	
Frt	1.00		0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1752		1568					3539	1332	3400	3539	
Flt Permitted	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1752		1568					3539	1332	3400	3539	
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)	268	0	557	0	0	0	0	1320	175	309	1237	0
RTOR Reduction (vph)	0	0	36	0	0	0	0	0	45	0	0	0
Lane Group Flow (vph)	268	0	521	0	0	0	0	1320	130	309	1237	0
Confl. Peds. (#/hr)			2						9			7
Confl. Bikes (#/hr)			1			8						
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	2%	2%	18%	3%	2%	2%
Turn Type	Prot		Prot					NA	Perm	Prot	NA	
Protected Phases	4		4					2		1	6	
Permitted Phases									2			
Actuated Green, G (s)	35.7		35.7					42.0	42.0	11.8	56.8	
Effective Green, g (s)	35.7		33.7					42.0	42.0	9.8	56.8	
Actuated g/C Ratio	0.36		0.34					0.42	0.42	0.10	0.57	
Clearance Time (s)	3.5		3.5					4.0	4.0	3.0	4.0	
Vehicle Extension (s)	2.0		2.0					3.5	3.5	2.0	4.0	
Lane Grp Cap (vph)	625		528					1486	559	333	2010	
v/s Ratio Prot	0.15		c0.33					c0.37		c0.09	0.35	
v/s Ratio Perm									0.10			
v/c Ratio	0.43		0.99					0.89	0.23	0.93	0.62	
Uniform Delay, d1	24.4		32.9					26.8	18.6	44.7	14.3	
Progression Factor	1.00		1.00					0.70	0.89	1.06	0.65	
Incremental Delay, d2	0.2		35.1					5.6	0.6	23.7	1.0	
Delay (s)	24.6		68.0					24.3	17.1	71.2	10.3	
Level of Service	C		E					C	B	E	B	
Approach Delay (s)		53.9			0.0			23.4			22.5	
Approach LOS		D			A			C			C	

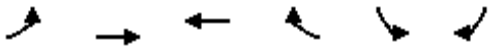
Intersection Summary			
HCM 2000 Control Delay	29.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	200	0	540	0	1250	290	0	1300	480
Future Volume (vph)	0	0	0	200	0	540	0	1250	290	0	1300	480
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0		4.0	4.0		4.0	
Lane Util. Factor				0.97		0.88		0.95	1.00		0.95	
Frpb, ped/bikes				1.00		1.00		1.00	0.98		1.00	
Flpb, ped/bikes				1.00		1.00		1.00	1.00		1.00	
Frt				1.00		0.85		1.00	0.85		0.96	
Flt Protected				0.95		1.00		1.00	1.00		1.00	
Satd. Flow (prot)				3433		2787		3539	1545		3404	
Flt Permitted				0.95		1.00		1.00	1.00		1.00	
Satd. Flow (perm)				3433		2787		3539	1545		3404	
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.92	0.85	0.92	0.85	0.85	0.85	0.85	0.92
Adj. Flow (vph)	0	0	0	235	0	635	0	1471	341	0	1529	522
RTOR Reduction (vph)	0	0	0	0	0	8	0	0	0	0	30	0
Lane Group Flow (vph)	0	0	0	235	0	627	0	1471	341	0	2021	0
Confl. Peds. (#/hr)									9			
Confl. Bikes (#/hr)						26						
Turn Type				Prot		custom		NA	Free		NA	
Protected Phases				8		8 1		2			6	
Permitted Phases									Free			
Actuated Green, G (s)				12.9		48.9		44.1	100.0		82.1	
Effective Green, g (s)				11.9		44.9		44.1	100.0		80.1	
Actuated g/C Ratio				0.12		0.45		0.44	1.00		0.80	
Clearance Time (s)				3.0				4.0			2.0	
Vehicle Extension (s)				3.0				3.0			3.0	
Lane Grp Cap (vph)				408		1251		1560	1545		2726	
v/s Ratio Prot				c0.07		0.23		c0.42			c0.59	
v/s Ratio Perm									0.22			
v/c Ratio				0.58		0.50		0.94	0.22		0.74	
Uniform Delay, d1				41.7		19.6		26.7	0.0		4.9	
Progression Factor				1.00		1.00		0.55	1.00		1.36	
Incremental Delay, d2				2.0		0.3		9.6	0.2		1.2	
Delay (s)				43.6		19.9		24.3	0.2		7.8	
Level of Service				D		B		C	A		A	
Approach Delay (s)		0.0			26.3			19.8			7.8	
Approach LOS		A			C			B			A	

Intersection Summary			
HCM 2000 Control Delay	15.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		

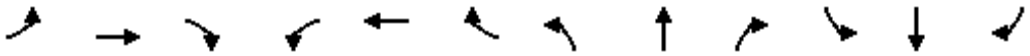
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	25	480	520	60	30	15
Future Volume (Veh/h)	25	480	520	60	30	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	28	539	584	67	34	17
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	651				1212	618
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	651				1212	618
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				83	97
cM capacity (veh/h)	935				195	490

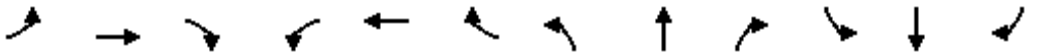
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	567	651	51
Volume Left	28	0	34
Volume Right	0	67	17
cSH	935	1700	244
Volume to Capacity	0.03	0.38	0.21
Queue Length 95th (ft)	2	0	19
Control Delay (s)	0.8	0.0	23.6
Lane LOS	A		C
Approach Delay (s)	0.8	0.0	23.6
Approach LOS			C

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		



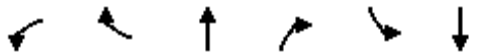
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	710	820	730	810	120	890	580	430	120	430	10
Future Volume (vph)	10	710	820	730	810	120	890	580	430	120	430	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	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	0.98		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1568	3433	3462		3433	3539	1555	1770	3525	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1568	3433	3462		3433	3539	1555	1770	3525	
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)	11	747	863	768	853	126	937	611	453	126	453	11
RTOR Reduction (vph)	0	0	49	0	11	0	0	0	295	0	2	0
Lane Group Flow (vph)	11	747	814	768	968	0	937	611	158	126	462	0
Confl. Peds. (#/hr)			5			5			5			5
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	1	6	7	5	2		7	4		3		
Permitted Phases			6						4		8	
Actuated Green, G (s)	0.8	28.0	49.8	17.0	44.2		21.8	29.4	29.4	9.6	17.2	
Effective Green, g (s)	0.8	28.0	49.8	17.0	44.2		21.8	29.4	29.4	9.6	17.2	
Actuated g/C Ratio	0.01	0.28	0.50	0.17	0.44		0.22	0.29	0.29	0.10	0.17	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	14	990	780	583	1530		748	1040	457	169	606	
v/s Ratio Prot	0.01	0.21	c0.23	c0.22	0.28		c0.27	0.17		0.07		
v/s Ratio Perm			0.29						0.10		c0.13	
v/c Ratio	0.79	0.75	1.04	1.32	0.63		1.25	0.59	0.35	0.75	0.76	
Uniform Delay, d1	49.5	32.9	25.1	41.5	21.6		39.1	30.1	27.7	44.0	39.5	
Progression Factor	1.00	1.00	1.00	0.70	0.85		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	130.6	5.3	44.1	152.8	1.7		124.6	0.9	0.5	16.3	5.7	
Delay (s)	180.1	38.2	69.2	181.8	20.0		163.7	31.0	28.2	60.3	45.1	
Level of Service	F	D	E	F	B		F	C	C	E	D	
Approach Delay (s)		55.7			91.1			92.5			48.4	
Approach LOS		E			F			F			D	

Intersection Summary			
HCM 2000 Control Delay	77.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	96.4%	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)	50	190	80	430	300	160	80	700	360	120	1000	110
Future Volume (vph)	50	190	80	430	300	160	80	700	360	120	1000	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes		0.99		1.00	0.99		1.00	0.98		1.00	1.00	0.93
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt		0.97		1.00	0.95		1.00	0.95		1.00	1.00	0.85
Flt Protected		0.99		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1775		1770	1749		1770	3237		1770	3539	1480
Flt Permitted		0.87		0.28	1.00		0.13	1.00		0.13	1.00	1.00
Satd. Flow (perm)		1552		515	1749		237	3237		249	3539	1480
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	190	80	430	300	160	80	700	360	120	1000	110
RTOR Reduction (vph)	0	12	0	0	20	0	0	64	0	0	0	61
Lane Group Flow (vph)	0	308	0	430	440	0	80	996	0	120	1000	49
Confl. Peds. (#/hr)			2			4			13			16
Confl. Bikes (#/hr)			10			21			4			2
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	2%	2%
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		22.0		45.0	45.0		36.2	36.2		38.2	38.2	38.2
Effective Green, g (s)		22.0		45.0	45.0		36.2	36.2		38.2	38.2	38.2
Actuated g/C Ratio		0.22		0.45	0.45		0.36	0.36		0.38	0.38	0.38
Clearance Time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)		2.0		4.0	4.0		2.0	4.0		2.0	4.0	4.0
Lane Grp Cap (vph)		341		470	787		159	1171		198	1351	565
v/s Ratio Prot				c0.17	0.25		0.02	c0.31		0.04	c0.28	
v/s Ratio Perm		0.20		c0.24			0.16			0.19		0.03
v/c Ratio		0.90		0.91	0.56		0.50	0.85		0.61	0.74	0.09
Uniform Delay, d1		37.9		22.5	20.2		24.8	29.4		36.6	26.6	19.8
Progression Factor		1.00		1.00	1.00		1.00	1.00		0.35	0.27	0.07
Incremental Delay, d2		25.3		22.6	1.1		0.9	7.8		2.4	2.5	0.2
Delay (s)		63.2		45.1	21.3		25.7	37.2		15.3	9.7	1.5
Level of Service		E		D	C		C	D		B	A	A
Approach Delay (s)		63.2			32.8			36.4			9.5	
Approach LOS		E			C			D			A	

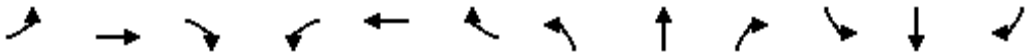
Intersection Summary			
HCM 2000 Control Delay	28.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	94.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	445	454	1481	0	0	1509
Future Volume (vph)	445	454	1481	0	0	1509
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0			4.0
Lane Util. Factor	0.97	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	3433	1583	3539			3539
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	3433	1583	3539			3539
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	445	454	1481	0	0	1509
RTOR Reduction (vph)	0	15	0	0	0	0
Lane Group Flow (vph)	445	439	1481	0	0	1509
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	19.1	19.1	31.1			31.1
Effective Green, g (s)	19.1	19.1	31.1			31.1
Actuated g/C Ratio	0.33	0.33	0.53			0.53
Clearance Time (s)	4.0	4.0	4.0			4.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1126	519	1891			1891
v/s Ratio Prot	0.13		0.42			c0.43
v/s Ratio Perm		c0.28				
v/c Ratio	0.40	0.85	0.78			0.80
Uniform Delay, d1	15.1	18.2	10.9			11.0
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.2	12.1	3.3			3.6
Delay (s)	15.3	30.3	14.2			14.6
Level of Service	B	C	B			B
Approach Delay (s)	22.9		14.2			14.6
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	58.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	123.5%	ICU Level of Service	H
Analysis Period (min)	15		

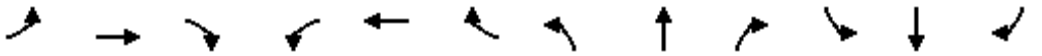
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	452	0	276	0	0	0	0	1295	417	604	1350	0
Future Volume (vph)	452	0	276	0	0	0	0	1295	417	604	1350	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor	0.97		1.00					0.95	1.00	0.97	0.95	
Frt	1.00		0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433		1583					3539	1583	3433	3539	
Flt Permitted	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433		1583					3539	1583	3433	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	452	0	276	0	0	0	0	1295	417	604	1350	0
RTOR Reduction (vph)	0	0	62	0	0	0	0	0	202	0	0	0
Lane Group Flow (vph)	452	0	214	0	0	0	0	1295	215	604	1350	0
Turn Type	Perm		Prot					NA	Perm	Prot	NA	
Protected Phases			8					2		1	6	
Permitted Phases	8		8						2			
Actuated Green, G (s)	13.8		13.8					28.3	28.3	13.8	46.1	
Effective Green, g (s)	13.8		13.8					28.3	28.3	13.8	46.1	
Actuated g/C Ratio	0.20		0.20					0.42	0.42	0.20	0.68	
Clearance Time (s)	4.0		4.0					4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	697		321					1475	659	697	2402	
v/s Ratio Prot			c0.14					c0.37		c0.18	0.38	
v/s Ratio Perm	0.13								0.14			
v/c Ratio	0.65		0.67					0.88	0.33	0.87	0.56	
Uniform Delay, d1	24.8		24.9					18.2	13.4	26.2	5.7	
Progression Factor	1.00		1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.1		5.2					7.7	1.3	11.0	1.0	
Delay (s)	26.9		30.1					25.9	14.7	37.2	6.6	
Level of Service	C		C					C	B	D	A	
Approach Delay (s)		28.1			0.0			23.2			16.1	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	20.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	67.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	123.5%	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)	30	10	20	20	10	50	20	1610	30	90	1520	30
Future Volume (vph)	30	10	20	20	10	50	20	1610	30	90	1520	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00	0.96	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	1.00	0.90		1.00	0.88		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1660		1770	1592		1770	3539	1527	1770	3539	1527
Flt Permitted	0.72	1.00		0.74	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1332	1660		1372	1592		1770	3539	1527	1770	3539	1527
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)	32	11	21	21	11	53	21	1695	32	95	1600	32
RTOR Reduction (vph)	0	20	0	0	49	0	0	0	9	0	0	7
Lane Group Flow (vph)	32	12	0	21	15	0	21	1695	23	95	1600	25
Confl. Peds. (#/hr)			5			5			5			5
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases		6			2		7	4		3	8	
Permitted Phases	6			2					4			8
Actuated Green, G (s)	6.9	6.9		6.9	6.9		3.2	70.7	70.7	10.4	77.9	77.9
Effective Green, g (s)	6.9	6.9		6.9	6.9		3.2	70.7	70.7	10.4	77.9	77.9
Actuated g/C Ratio	0.07	0.07		0.07	0.07		0.03	0.71	0.71	0.10	0.78	0.78
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	91	114		94	109		56	2502	1079	184	2756	1189
v/s Ratio Prot		0.01			0.01		0.01	c0.48		0.05	c0.45	
v/s Ratio Perm	c0.02			0.02					0.01			0.02
v/c Ratio	0.35	0.11		0.22	0.13		0.38	0.68	0.02	0.52	0.58	0.02
Uniform Delay, d1	44.4	43.7		44.0	43.7		47.4	8.2	4.4	42.4	4.5	2.5
Progression Factor	1.00	1.00		1.00	1.00		0.99	0.99	1.63	1.00	1.00	1.00
Incremental Delay, d2	2.3	0.4		1.2	0.6		3.3	1.2	0.0	2.4	0.9	0.0
Delay (s)	46.8	44.1		45.2	44.3		50.3	9.3	7.1	44.9	5.4	2.5
Level of Service	D	D		D	D		D	A	A	D	A	A
Approach Delay (s)		45.4			44.5			9.7			7.5	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	840	10	850	720	10	830
Future Volume (vph)	840	10	850	720	10	830
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		0.97	1.00	1.00	0.88
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3531		3433	1863	1770	2784
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3531		3433	1863	1770	2784
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	884	11	895	758	11	874
RTOR Reduction (vph)	1	0	0	0	0	0
Lane Group Flow (vph)	894	0	895	758	11	874
Confl. Peds. (#/hr)		5				5
Turn Type	NA		Prot	NA	Prot	pm+ov
Protected Phases	4		3	8	2	3
Permitted Phases						2
Actuated Green, G (s)	46.5		40.0	90.5	1.5	41.5
Effective Green, g (s)	46.5		40.0	90.5	1.5	41.5
Actuated g/C Ratio	0.46		0.40	0.90	0.02	0.42
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1641		1373	1686	26	1266
v/s Ratio Prot	c0.25		0.26	0.41	0.01	c0.28
v/s Ratio Perm						0.04
v/c Ratio	0.55		0.65	0.45	0.42	0.69
Uniform Delay, d1	19.2		24.3	0.8	48.8	24.0
Progression Factor	0.39		0.83	0.01	0.93	0.77
Incremental Delay, d2	1.1		1.0	0.7	3.0	0.5
Delay (s)	8.6		21.1	0.7	48.3	18.9
Level of Service	A		C	A	D	B
Approach Delay (s)	8.6			11.7	19.3	
Approach LOS	A			B	B	

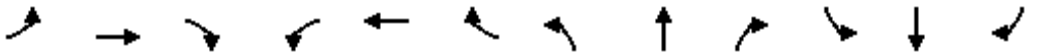
Intersection Summary			
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	380	490	950	350	540	1040
Future Volume (vph)	380	490	950	350	540	1040
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	0.99	1.00	0.96	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1572	3539	1527	1770	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1572	3539	1527	1770	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	400	516	1000	368	568	1095
RTOR Reduction (vph)	0	6	0	254	0	0
Lane Group Flow (vph)	400	510	1000	114	568	1095
Confl. Peds. (#/hr)		5		5		
Turn Type	Prot	pm+ov	NA	Perm	Prot	NA
Protected Phases	8	1	2		1	6
Permitted Phases		8		2		
Actuated Green, G (s)	23.0	57.0	31.0	31.0	34.0	69.0
Effective Green, g (s)	23.0	57.0	31.0	31.0	34.0	69.0
Actuated g/C Ratio	0.23	0.57	0.31	0.31	0.34	0.69
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	407	958	1097	473	601	2441
v/s Ratio Prot	c0.23	0.18	c0.28		c0.32	0.31
v/s Ratio Perm		0.14		0.07		
v/c Ratio	0.98	0.53	0.91	0.24	0.95	0.45
Uniform Delay, d1	38.3	13.3	33.2	25.7	32.1	7.0
Progression Factor	0.75	0.69	0.43	0.40	1.00	1.00
Incremental Delay, d2	37.1	0.5	1.5	0.1	23.8	0.6
Delay (s)	65.8	9.7	15.7	10.4	55.9	7.6
Level of Service	E	A	B	B	E	A
Approach Delay (s)	34.2		14.3			24.1
Approach LOS	C		B			C

Intersection Summary			
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Appendix F

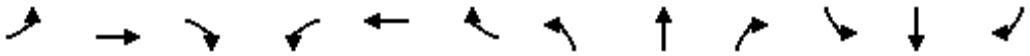
Intersection Level of Service Technical Calculations
Cumulative With Project Conditions
– Mitigated



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	20	60	580	20	20	40	950	640	20	1010	20
Future Volume (vph)	30	20	60	580	20	20	40	950	640	20	1010	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		0.97	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.95		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.89		1.00	0.93		1.00	0.94		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1565		3433	1711		1770	3295		1770	3527	
Flt Permitted	0.73	1.00		0.70	1.00		0.22	1.00		0.08	1.00	
Satd. Flow (perm)	1362	1565		2548	1711		405	3295		146	3527	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	20	60	580	20	20	40	950	640	20	1010	20
RTOR Reduction (vph)	0	41	0	0	15	0	0	101	0	0	1	0
Lane Group Flow (vph)	30	39	0	580	25	0	40	1489	0	20	1029	0
Confl. Peds. (#/hr)			44						1			
Confl. Bikes (#/hr)			1			2			1			1
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2			6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	32.4	32.0		26.5	26.5		55.5	54.5		52.4	52.4	
Effective Green, g (s)	32.0	32.0		26.5	26.5		55.1	55.1		52.0	53.0	
Actuated g/C Ratio	0.32	0.32		0.26	0.26		0.55	0.55		0.52	0.53	
Clearance Time (s)	3.6	4.0		4.0	4.0		3.6	4.6		3.6	4.6	
Vehicle Extension (s)	2.5	2.5		2.0	2.0		2.5	3.0		2.5	3.0	
Lane Grp Cap (vph)	441	500		675	453		264	1815		90	1869	
v/s Ratio Prot	0.00	c0.03			0.01		0.00	c0.45		0.00	c0.29	
v/s Ratio Perm	0.02			c0.23			0.08			0.11		
v/c Ratio	0.07	0.08		0.86	0.06		0.15	0.82		0.22	0.55	
Uniform Delay, d1	23.6	23.7		35.0	27.4		17.1	18.4		19.5	15.6	
Progression Factor	1.00	1.00		0.58	0.45		0.58	0.51		0.77	0.71	
Incremental Delay, d2	0.0	0.0		8.3	0.0		0.1	3.1		0.9	1.1	
Delay (s)	23.7	23.8		28.6	12.4		10.1	12.4		15.9	12.2	
Level of Service	C	C		C	B		B	B		B	B	
Approach Delay (s)		23.7			27.6			12.4			12.3	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	76.7%	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)	30	20	40	700	20	40	50	1400	650	80	1040	20
Future Volume (vph)	30	20	40	700	20	40	50	1400	650	80	1040	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		2.4	4.0	
Lane Util. Factor	1.00	1.00		0.97	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.90		1.00	0.90		1.00	0.95		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1655		3433	1658		1770	3337		1770	3528	
Flt Permitted	0.95	1.00		0.72	1.00		0.95	1.00		0.07	1.00	
Satd. Flow (perm)	1770	1655		2594	1658		1770	3337		133	3528	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	20	40	700	20	40	50	1400	650	80	1040	20
RTOR Reduction (vph)	0	28	0	0	30	0	0	45	0	0	1	0
Lane Group Flow (vph)	30	32	0	700	30	0	50	2005	0	80	1059	0
Confl. Peds. (#/hr)			3			2			4			
Confl. Bikes (#/hr)			3			1			1			1
Turn Type	Prot	NA		Perm	NA		Prot	NA		pm+pt	NA	
Protected Phases	5	2			6		3	8		7	4	
Permitted Phases				6						4		
Actuated Green, G (s)	2.7	36.3		30.0	30.0		12.5	70.1		59.0	59.0	
Effective Green, g (s)	2.3	36.3		30.0	30.0		12.1	70.7		58.6	59.6	
Actuated g/C Ratio	0.02	0.30		0.25	0.25		0.10	0.59		0.49	0.50	
Clearance Time (s)	3.6	4.0		4.0	4.0		3.6	4.6		2.0	4.6	
Vehicle Extension (s)	2.5	2.5		2.0	2.0		2.5	3.0		2.5	3.0	
Lane Grp Cap (vph)	33	500		648	414		178	1966		100	1752	
v/s Ratio Prot	c0.02	0.02			0.02		0.03	c0.60		c0.02	0.30	
v/s Ratio Perm				c0.27						0.37		
v/c Ratio	0.91	0.06		1.08	0.07		0.28	1.02		0.80	0.60	
Uniform Delay, d1	58.7	29.8		45.0	34.4		49.9	24.6		31.2	21.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	118.0	0.0		59.0	0.0		0.6	25.5		34.4	1.6	
Delay (s)	176.7	29.8		104.0	34.4		50.6	50.1		65.5	23.3	
Level of Service	F	C		F	C		D	D		E	C	
Approach Delay (s)		78.8			98.5			50.1			26.2	
Approach LOS		E			F			D			C	

Intersection Summary			
HCM 2000 Control Delay	53.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	99.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Appendix F

Freeway Analysis Technical Calculations

Sid Commons Freeway Analysis

Freeway Segment	Direction	Existing				Project Trips	Existing Plus Project			Pipeline Trips	Pipeline			Pipeline Plus Project		
		Capacity	Volume	V/C	LOS		Volume	V/C	LOS		Volume	V/C	LOS	Volume	V/C	LOS
Petaluma Boulevard to Lakeville Highway	NB	4400	2,987	0.68	B	31	3,018	0.69	B	430	3,417	0.78	C	3,448	0.78	C
	SB	4400	2,023	0.46	A	17	2,040	0.46	A	481	2,504	0.57	A	2,521	0.57	A
Lakeville Highway to Washington Street	NB	4400	3,429	0.78	C	31	3,460	0.79	C	299	3,728	0.85	D	3,759	0.85	D
	SB	4400	2,472	0.56	A	17	2,489	0.57	A	371	2,843	0.65	B	2,860	0.65	B
Washington Street to Old Redwood Hwy	NB	4400	3,557	0.81	D	0	3,557	0.81	D	209	3,766	0.86	D	3,766	0.86	D
	SB	4400	2,999	0.68	B	0	2,999	0.68	B	220	3,219	0.73	C	3,219	0.73	C

Freeway Segment	Direction	Cumulative				Cumulative Project[1]	Cumulative Plus Project		
		Capacity	Volume	V/C	LOS		Volume	V/C	LOS
Petaluma Boulevard to Lakeville Highway	NB	5,500	4,180	0.76	C	30	4,210	0.77	C
	SB	5,500	2,850	0.52	A	20	2,870	0.52	A
Lakeville Highway to Washington Street	NB	5,500	4,780	0.87	D	30	4,810	0.87	D
	SB	5,500	3,610	0.66	B	20	3,630	0.66	B
Washington Street to Rainier Avenue	NB	5,500	4,900	0.89	D	15	4,920	0.89	D
	SB	5,500	3,980	0.72	C	20	4,000	0.73	C
Rainier Avenue to Old Redwood Highway	NB	5,500	4,660	0.85	D	5	4,670	0.85	D
	SB	5,500	3,790	0.69	B	5	3,800	0.69	B

Notes:

1. "Cumulative Project" trips include the Rainier interchange.

Source: Fehr & Peers, March 2017

Appendix 14B

Update of Existing Traffic Volumes and Intersection Operations

Fehr & Peers, April 13, 2016

FEHR PEERS

April 13, 2016

Scott Gregory
Lamphier-Gregory
1944 Embarcadero
Oakland, CA 94606

Re: Update of Existing Traffic Volumes and Intersection Operations from 2013 Study

Dear Scott:

This memorandum compares the existing conditions (volumes and level of service) from the 2013 Sid Commons transportation study (based on data from 2007) to the 2015 conditions at the same intersections. This memorandum details the data collection from 2015, presents and compares intersection volumes from 2007 and 2015, and presents and compares intersection level of service (LOS) from the 2013 study and the LOS for the study intersections based on 2015 data. It then presents our recommendation regarding a potential update of the ADEIR transportation section.

DATA COLLECTION

AM and PM peak period intersection turning movement counts were collected on Tuesday, November 17th, 2015 during the AM peak period (7:00 AM to 9:00 AM) and the PM peak period (4:00 PM to 6:00 PM) at the following 13 study intersections:

1. US 101 Northbound Ramps / Old Redwood Highway
2. US 101 Southbound Ramps / Old Redwood Highway
3. Petaluma Boulevard North / Stony Point Road / Industrial Avenue
4. Petaluma Boulevard North / Corona Road / Skillman Lane
5. Petaluma Boulevard North / Shasta Avenue / Sycamore Lane
6. Petaluma Boulevard North / West Payran Street / Magnolia Avenue
7. Petaluma Boulevard North / Lakeville Street
8. Petaluma Boulevard / Washington Street / Bodega Avenue
9. East Washington Street / Payran Street
10. East Washington Street / US 101 Southbound Ramps
11. East Washington Street / US 101 Northbound Ramps
12. West Payran Street / Graylawn Avenue
13. North McDowell Boulevard / Rainier Avenue

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VOLUME COMPARISON

Between the volumes recorded in 2007 and in 2015, there was an average increase of one percent in the AM peak hour and decrease of eight percent in the PM peak hour across all 13 intersections. **Table 1** details the total volume in 2007 and 2015 as well as the change from 2007 to 2015 at each intersection.

Two intersections increased in volume across both peak periods, eight intersections decreased in volume across both peak periods, and three intersections increased in one peak period and decreased in the other. Detailed volume differences on a movement-by-movement basis are attached at the end of this memorandum (**Attachment 1**).

Intersection volumes at Petaluma Boulevard North / Corona Road increased consistently across both peak periods, with a four percent increase in the AM peak hour and a six percent increase in the PM peak hour. Petaluma Boulevard North / Lakeville Street had the largest consistent increase in volume, with a 33 percent increase in the AM peak period and a 13 percent increase in the PM peak period. West Payran Street / Graylawn Avenue had a 37 percent increase in the AM peak period but a two percent decrease in the PM peak period. The increases at Petaluma Boulevard North / Lakeville Street and at West Payran Street / Graylawn Avenue in the AM peak hour may be related to cut-through traffic from vehicles using Petaluma Boulevard to avoid congestion on US-101 through Petaluma. The volume increases at Petaluma Boulevard / Lakeville Street are exclusively due to the northbound and southbound through movements. The volume increases at West Payran Street / Graylawn Avenue are exclusively due to the eastbound and westbound through movements.

TABLE 1: INTERSECTION VOLUMES COMPARISON

Intersection	Total Intersection Volume				Change from 2007 to 2015			
	2007		2015		Count		Percent Change[1]	
	AM	PM	AM	PM	AM	PM	AM	PM
1) US 101 Northbound Ramps / Old Redwood Hwy	2,867	3,178	2,780	3,113	-87	-65	-3%	-2%
2) US 101 Southbound Ramps / Old Redwood Hwy	2,827	2,989	2,736	2,799	-91	-190	-3%	-6%
3) Petaluma Boulevard North / Stony Point	2,389	3,092	2,309	2,718	-80	-374	-3%	-12%

Intersection	Total Intersection Volume				Change from 2007 to 2015			
	2007		2015		Count		Percent Change[1]	
	AM	PM	AM	PM	AM	PM	AM	PM
4) Petaluma Boulevard North / Corona Road	2,794	3,034	2,915	3,229	121	195	4%	6%
5) Petaluma Boulevard North / Shasta Avenue	2,144	2,522	2,124	2,502	-20	-20	-1%	-1%
6) Petaluma Boulevard North / West Payran St	2,616	2,961	2,714	2,937	98	-24	4%	-1%
7) Petaluma Boulevard North / Lakeville Street	1,347	1,832	1,789	2,067	442	235	33%	13%
8) Petaluma Boulevard / Washington Street	2,963	3,726	2,867	2,856	-96	-870	-3%	-23%
9) East Washington Street / Payran Street	2,289	3,007	2,355	2,548	66	-459	3%	-15%
10) East Washington / US 101 Southbound Ramps	3,191	3,626	3,048	3,204	-143	-422	-4%	-12%
11) East Washington / US 101 Northbound Ramps[2]	3,165	3,882	3,109	3,379	-56	-503	-2%	-13%
12) West Payran Street / Graylawn Avenue	586	908	802	890	216	-18	37%	-2%
13) North McDowell Boulevard / Rainier Avenue[3]	1,744	2,527	1,680	2,122	-64	-405	-4%	-16%
TOTAL	**30,922**	**37,284**	**31,228**	**34,364**	**306**	**-2,920**	**1%**	**-8%**

Notes:

1. The color scale indicates percent change in volume, with red indicating a higher increase, yellow indicating minimal change, and green indicating a higher decrease.
2. Since 2007, the southbound left lane onto the freeway has been removed and the southbound left movement is prohibited. It has been replaced with a southbound slip lane to the right south of the intersection. The 2015 southbound right and 2007 southbound left movements are comparable for the sake of this evaluation.
3. There is now a south leg of the intersection extending from Rainier Avenue to a cul-de-sac to the south. Vehicles into and out of this fourth leg are included in the 2015 volumes.

Source: Fehr & Peers, 2015.

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LEVEL OF SERVICE COMPARISON

The LOS analysis from 2013 was updated with the 2015 volumes presented in the previous section. Generally, no model inputs (such as lane configurations and signal timings, among others) were updated for the 2015 analysis other than the traffic volumes. Specific instances where changes were made are noted in **Table 2**, which details the LOS for each intersection using the 2007 volumes and the 2015 volumes. Compared to the LOS results using the 2007 volumes presented in the 2013 Sid Commons transportation study, the LOS (2015 volumes) improved in one or both peak hours at four intersections, stayed the same at seven intersections during both peak hours, was worse at one intersection in one or both peak hours, and could not be analyzed at one intersection.

TABLE 2: INTERSECTION LOS COMPARISON

Intersection	Traffic Control	Peak Hour	2007		2015[1]	
			Delay	LOS	Delay	LOS
1) US 101 Northbound Ramps / Old Redwood Hwy	Signal	AM	12	B	20	B
		PM	12	B	*8*	*A*
2) US 101 Southbound Ramps / Old Redwood Hwy	Signal	AM	25	C	30	C
		PM	25	C	23	C
3) Petaluma Boulevard North / Stony Point	Signal	AM	28	C	31	C
		PM	31	C	33	C
4) Petaluma Boulevard North / Corona Road	Signal	AM	40	D	46	D
		PM	40	D	50	D
5) Petaluma Boulevard North / Shasta Avenue	Signal	AM	6	A	6	A
		PM	7	A	8	A
6) Petaluma Boulevard North / West Payran St	Signal	AM	21	C	22	C
		PM	22	C	26	C
7) Petaluma Boulevard North / Lakeville Street	Signal	AM	11	B	11	B
		PM	12	B	11	B
8) Petaluma Boulevard / Washington Street	Signal	AM	45	D	*34*	*C*
		PM	24	C	*18*	*B*
9) East Washington Street / Payran Street	Signal	AM	17	B	**24**	**C**
		PM	26	C	30	C
		AM	40	D	*34*	*C*

Intersection	Traffic Control	Peak Hour	2007		2015[1]	
			Delay	LOS	Delay	LOS
10) East Washington / US 101 Southbound Ramps	Signal	PM	28	C	25	C
11) East Washington / US 101 Northbound Ramps[2]	Signal	AM	14	B	*6*	*A*
		PM	17	B	*8*	*A*
12) West Payran Street / Graylawn Avenue	SSSC	AM	12	B	14	B
		PM	13	B	14	B
13) North McDowell Boulevard / Rainier Avenue[3]	Signal	AM	11	B	N/A	N/A
		PM	10	B	N/A	N/A

Notes:

1. **Bold** indicates worsened LOS, and *red italic* indicates an improved LOS.
2. Since 2007, the southbound left lane onto the freeway has been removed and the southbound left movement is prohibited. It has been replaced with a southbound slip lane to the right south of the intersection. The 2015 southbound right volume has been added to the southbound through movement volume, and the signal timing was optimized. As a result, it is not a direct comparison to the 2013 study. Additionally, the signal phasing and other inputs have very likely changed with the new on-ramp.
3. There is now a south leg of the intersection extending from Rainier Avenue to a cul-de-sac to the south which did not exist when the 2013 model was calibrated. This draft-level analysis did not include a site visit to verify new lane configurations and signal timing, and therefore LOS could not be calculated accurately at this time.

Source: Fehr & Peers, 2015.

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SUMMARY

The volume and LOS comparison between 2007 and 2015 indicates that there is no uniform pattern of growth in the study intersections. The intersection of Petaluma Boulevard North / Corona Road (#4) shows an increase in volume during both peak hours, but the volume increase does not change the level of service. The intersection with the highest consistent increase in volume, Petaluma Boulevard North / Lakeville Street (#6), shows increases of 33 percent in the AM peak hour and 13 percent in the PM peak hour. The intersection level of service does not degrade due to this volume increase.

Updates to the traffic volumes could theoretically affect the Existing Plus Project and Background Plus Project scenarios (but not Cumulative Conditions) in the Sid Commons traffic study. In the 2013 study, all intersections operated at an acceptable levels of service, and none were significantly impacted by the addition of Project traffic under Existing Plus Project Conditions. Under Background Plus Project Conditions, three intersections were projected to operate at unacceptable levels of service (though none were significantly impacted by the addition of Project traffic):

- (#8) Petaluma Boulevard / Washington Street (PM peak hour)
- (#10) East Washington Street / US 101 Northbound Ramps (AM and PM peak hours)
- (#11) East Washington Street / US 101 Southbound Ramps (PM peak hour)

Each of these three locations show a volume decrease during both peak hours and either an improvement or no change in LOS between 2007 and 2015. Therefore, new significant impacts would be unlikely to be discovered with the updated volumes for either the Existing Plus Project or the Background Plus Project scenarios.

With volumes decreasing at eight intersections and LOS improving or staying the same at eleven intersections, updating the volumes to 2015 data would generally improve conditions compared to the 2013 Sid Commons transportation study at many of these intersections.

RECOMMENDATION

The 2015 volumes are more likely to reflect current circulation and traffic conditions with recent development and roadway changes, which would be valuable information for members of the public reviewing the Project and decision makers evaluating the Project; however, updating the volumes would also improve conditions at several intersections and would be more likely to show

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fewer impacts due to the volume reductions and other adjustments. Therefore using the previous volumes provides a conservative analysis of the study intersections.

There are several options for including this new data in the transportation chapter. The 2015 turning movement data and the comparison to 2007 data could be included as an appendix to show that volumes have not increased and levels of service have not changed. If they are not included, they could be used as a response to a comment about concerns regarding the age of the data, should one arise.

As a result of this analysis, we recommend using the previous volumes, which provide a conservative analysis, and including this letter as an appendix to the EIR. It should be noted in the EIR that there have been transportation network changes since the time of data collection that are not accounted for with the older data; while these changes are not anticipated to create additional impacts, it may be confusing for readers familiar with the transportation network.

This concludes our analysis of the traffic volume update and our recommendation for how to proceed. Please call Dan Hennessey at (415) 348-0300 with any questions.

Sincerely,

FEHR & PEERS

Dan Hennessey, PE
Senior Transportation Engineer

Intersection	Turning Movement		Intersection	Turning Movement	Existing 2007 AM		Existing 2007 PM		Existing 2015 AM		Existing 2015 PM		Existing 2007 VS 2015 Change AM		Change PM		Percent Change AM		Percent Change PM		Annual Growth Rate AM		Annual Growth Rate PM	
1) US 101 Northbound Ramps/Old Redwood Hwy	NB	LT	1	NBL	0		0		0		0		0		0		-		-		-		-	
		TH	1	NBT	855		879		950		845		95		-34		11%		-4%		5.4%		-2.0%	
		RT	1	NBR	335		470		377		564		42		94		13%		20%		6.1%		9.5%	
	SB	LT	1	SBL	0		0		0		0		0		0		-		-		-		-	
		TH	1	SBT	855		802		601		690		-254		-112		-30%		-14%		-16.2%		-7.2%	
		RT	1	SBR	359	2867	577	3178	340	2780	706	3113	-19	-87	129	-65	-5%	-3.0%	22%	-2.0%	-2.7%	-1.5%	10.6%	-1.0%
	EB	LT	1	EBL	0		0		0		0		0		0		-		-		-		-	
		TH	1	EBT	0		0		0		0		0		0		-		-		-		-	
		RT	1	EBR	0		0		0		0		0		0		-		-		-		-	
	WB	LT	1	WBL	144		150		112		77		-32		-73		-22%		-49%		-11.8%		-28.4%	
		TH	1	WBT	0		0		0		0		0		0		-		-		-		-	
		RT	1	WBR	319		300		400		231		81		-69		25%		-23%		12.0%		-12.3%	
2) US 101 Southbound Ramps/Old Redwood Hwy	NB	LT	2	NBL	0		0		0		0		0		0		-		-		-		-	
		TH	2	NBT	659		959		718		951		59		-8		9%		-1%		4.4%		-0.4%	
		RT	2	NBR	118		180		91		136		-27		-44		-23%		-24%		-12.2%		-13.1%	
	SB	LT	2	SBL	0		0		0		0		0		0		-		-		-		-	
		TH	2	SBT	668		665		485		431		-183		-234		-27%		-35%		-14.8%		-19.5%	
		RT	2	SBR	331	2827	287	2989	216	2736	338	2799	-115	-91	51	-190	-35%	-3%	18%	-6.4%	-19.2%	-1.6%	8.5%	-3.2%
	EB	LT	2	EBL	531		390		619		438		88		48		17%		12%		8.0%		6.0%	
		TH	2	EBT	0		0		0		0		0		0		-		-		-		-	
		RT	2	EBR	520		508		607		505		87		-3		17%		-1%		8.0%		-0.3%	
	WB	LT	2	WBL	0		0		0		0		0		0		-		-		-		-	
		TH	2	WBT	0		0		0		0		0		0		-		-		-		-	
		RT	2	WBR	0		0		0		0		0		0		-		-		-		-	
3) Petaluma Boulevard North/Stony Point	NB	LT	3	NBL	127		379		145		375		18		-4		14%		-1%		6.9%		-0.5%	
		TH	3	NBT	521		725		501		716		-20		-9		-4%		-1%		-1.9%		-0.6%	
		RT	3	NBR	16		14		14		6		-2		-8		-13%		-57%		-6.5%		-34.5%	
	SB	LT	3	SBL	272		102		106		57		-166		-45		-61%		-44%		-37.6%		-25.2%	
		TH	3	SBT	773		752		705		622		-68		-130		-9%		-17%		-4.5%		-9.1%	
		RT	3	SBR	124	2389	308	3092	110	2309	239	2718	-14	-80	-69	-374	-11%	-3%	-22%	-12%	-5.8%	-1.7%	-11.9%	-6.2%
	EB	LT	3	EBL	197		142		187		122		-10		-20		-5%		-14%		-2.6%		-7.3%	
		TH	3	EBT	96		74		131		77		35		3		36%		4%		16.8%		2.0%	
		RT	3	EBR	144		176		269		175		125		-1		87%		-1%		36.7%		-0.3%	
	WB	LT	3	WBL	11		11		7		12		-4		1		-36%		9%		-20.2%		4.4%	
		TH	3	WBT	44		156		73		198		29		42		66%		27%		28.8%		12.7%	
		RT	3	WBR	64		253		61		119		-3		-134		-5%		-53%		-2.4%		-31.4%	

Intersection	Turning Movement		Intersection	Turning Movement	Existing 2007				Existing 2015				Existing 2007 VS 2015									
													Change				Percent Change				Annual Growth Rate			
					AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
4) Petaluma Boulevard North/Corona Road	NB	LT	4	NBL	148		120		152		162		4		42		3%		35%		1.3%		16.2%	
		TH	4	NBT	208		173		239		190		31		17		15%		10%		7.2%		4.8%	
		RT	4	NBR	75		41		48		44		-27		3		-36%		7%		-20.0%		3.6%	
	SB	LT	4	SBL	302		330		320		380		18		50		6%		15%		2.9%		7.3%	
		TH	4	SBT	231		211		139		170		-92		-41		-40%		-19%		-22.4%		-10.2%	
		RT	4	SBR	25	2794	54	3034	25	2915	40	3229	0	121	-14	195	0%	4.3%	-26%	6.4%	0.0%	2.1%	-13.9%	3.2%
	EB	LT	4	EBL	55		52		49		48		-6		-4		-11%		-8%		-5.6%		-3.9%	
		TH	4	EBT	712		576		754		641		42		65		6%		11%		2.9%		5.5%	
		RT	4	EBR	155		125		169		120		14		-5		9%		-4%		4.4%		-2.0%	
	WB	LT	4	WBL	39		55		59		52		20		-3		51%		-5%		23.0%		-2.8%	
		TH	4	WBT	468		886		482		883		14		-3		3%		0%		1.5%		-0.2%	
		RT	4	WBR	376		411		479		499		103		88		27%		21%		12.9%		10.2%	
5) Petaluma Boulevard North/Shasta Avenue	NB	LT	5	NBL	33		50		25		55		-8		5		-24%		10%		-13.0%		4.9%	
		TH	5	NBT	919		1295		970		1292		51		-3		6%		0%		2.7%		-0.1%	
		RT	5	NBR	6		6		4		6		-2		0		-33%		0%		-18.4%		0.0%	
	SB	LT	5	SBL	19		50		19		34		0		-16		0%		-32%		0.0%		-17.5%	
		TH	5	SBT	1048		997		981		971		-67		-26		-6%		-3%		-3.2%		-1.3%	
		RT	5	SBR	16	2144	16	2522	18	2124	33	2502	2	-20	17	-20	13%	-0.9%	106%	-0.8%	6.1%	-0.5%	43.6%	-0.4%
	EB	LT	5	EBL	25		27		22		42		-3		15		-12%		56%		-6.2%		24.7%	
		TH	5	EBT	1		3		2		1		1		-2		100%		-67%		41.4%		-42.3%	
		RT	5	EBR	57		34		42		28		-15		-6		-26%		-18%		-14.2%		-9.3%	
	WB	LT	5	WBL	6		11		9		9		3		-2		50%		-18%		22.5%		-9.5%	
		TH	5	WBT	0		2		0		2		0		0		-		0%		-		0.0%	
		RT	5	WBR	14		31		32		29		18		-2		129%		-6%		51.2%		-3.3%	
6) Petaluma Boulevard North/West Payran St	NB	LT	6	NBL	90		69		41		52		-49		-17		-54%		-25%		-32.5%		-13.2%	
		TH	6	NBT	592		980		637		962		45		-18		8%		-2%		3.7%		-0.9%	
		RT	6	NBR	51		94		61		125		10		31		20%		33%		9.4%		15.3%	
	SB	LT	6	SBL	94		182		158		209		64		27		68%		15%		29.6%		7.2%	
		TH	6	SBT	839		746		773		673		-66		-73		-8%		-10%		-4.0%		-5.0%	
		RT	6	SBR	171	2616	130	2961	142	2714	90	2937	-29	98	-40	-24	-17%	4%	-31%	-1%	-8.9%	1.9%	-16.8%	-0.4%
	EB	LT	6	EBL	228		156		202		153		-26		-3		-11%		-2%		-5.9%		-1.0%	
		TH	6	EBT	118		101		191		123		73		22		62%		22%		27.2%		10.4%	
		RT	6	EBR	117		69		77		41		-40		-28		-34%		-41%		-18.9%		-22.9%	
	WB	LT	6	WBL	63		98		89		82		26		-16		41%		-16%		18.9%		-8.5%	
		TH	6	WBT	125		124		177		203		52		79		42%		64%		19.0%		27.9%	
		RT	6	WBR	128		212		166		224		38		12		30%		6%		13.9%		2.8%	

Intersection	Turning Movement		Intersection	Turning Movement	Existing 2007				Existing 2015				Existing 2007 VS 2015									
													Change				Percent Change				Annual Growth Rate			
					AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
7) Petaluma Boulevard North/Lakeville Street	NB	LT	7	NBL	0		6		1		1		1		-5		-		-83%		-		-59.2%	
		TH	7	NBT	389		696		601		887		212		191		54%		27%		24.3%		12.9%	
		RT	7	NBR	41		48		69		77		28		29		68%		60%		29.7%		26.7%	
	SB	LT	7	SBL	222		166		190		121		-32		-45		-14%		-27%		-7.5%		-14.6%	
		TH	7	SBT	492		500		767		658		275		158		56%		32%		24.9%		14.7%	
		RT	7	SBR	1	1347	7	1832	1	1789	1	2067	0	442	-6	235	0%	33%	-86%	13%	0.0%	15.2%	-62.2%	6.2%
	EB	LT	7	EBL	0		10		1		4		1		-6		-		-60%		-		-36.8%	
		TH	7	EBT	0		1		0		2		0		1		-		100%		-		41.4%	
		RT	7	EBR	1		6		0		1		-1		-5		-100%		-83%		######		-59.2%	
	WB	LT	7	WBL	35		51		45		62		10		11		29%		22%		13.4%		10.3%	
		TH	7	WBT	0		2		2		0		2		-2		-		-100%		-		######	
		RT	7	WBR	166		339		112		253		-54		-86		-33%		-25%		-17.9%		-13.6%	
8) Petaluma Boulevard/Washington Street	NB	LT	8	NBL	30		68		34		49		4		-19		13%		-28%		6.5%		-15.1%	
		TH	8	NBT	257		423		240		366		-17		-57		-7%		-13%		-3.4%		-7.0%	
		RT	8	NBR	142		207		111		130		-31		-77		-22%		-37%		-11.6%		-20.8%	
	SB	LT	8	SBL	32		67		51		82		19		15		59%		22%		26.2%		10.6%	
		TH	8	SBT	434		359		344		284		-90		-75		-21%		-21%		-11.0%		-11.1%	
		RT	8	SBR	62	2963	131	3726	314	2867	287	2856	252	-96	156	-870	406%	-3%	119%	-23%	######	-1.6%	48.0%	-12.4%
	EB	LT	8	EBL	138		229		243		270		105		41		76%		18%		32.7%		8.6%	
		TH	8	EBT	641		816		600		458		-41		-358		-6%		-44%		-3.3%		-25.1%	
		RT	8	EBR	92		64		95		80		3		16		3%		25%		1.6%		11.8%	
	WB	LT	8	WBL	147		167		127		139		-20		-28		-14%		-17%		-7.1%		-8.8%	
		TH	8	WBT	953		1097		613		561		-340		-536		-36%		-49%		-19.8%		-28.5%	
		RT	8	WBR	35		98		95		150		60		52		171%		53%		64.8%		23.7%	
9) East Washington Street/Payran Street	NB	LT	9	NBL	40		48		20		24		-20		-24		-50%		-50%		-29.3%		-29.3%	
		TH	9	NBT	696		941		577		635		-119		-306		-17%		-33%		-8.9%		-17.9%	
		RT	9	NBR	12		27		62		59		50		32		417%		119%		######		47.8%	
	SB	LT	9	SBL	64		98		82		60		18		-38		28%		-39%		13.2%		-21.8%	
		TH	9	SBT	1016		1187		823		856		-193		-331		-19%		-28%		-10.0%		-15.1%	
		RT	9	SBR	41	2289	127	3007	82	2355	101	2548	41	66	-26	-459	100%	2.9%	-20%	-15.3%	41.4%	1.4%	-10.8%	-7.9%
	EB	LT	9	EBL	120		125		152		145		32		20		27%		16%		12.5%		7.7%	
		TH	9	EBT	31		82		149		147		118		65		381%		79%		######		33.9%	
		RT	9	EBR	45		42		37		40		-8		-2		-18%		-5%		-9.3%		-2.4%	
	WB	LT	9	WBL	67		52		76		74		9		22		13%		42%		6.5%		19.3%	
		TH	9	WBT	80		135		143		221		63		86		79%		64%		33.7%		27.9%	
		RT	9	WBR	77		143		152		186		75		43		97%		30%		40.5%		14.0%	

Intersection	Turning Movement		Intersection	Turning Movement	Existing 2007 AM		Existing 2007 PM		Existing 2015 AM		Existing 2015 PM		Existing 2007 VS 2015 Change AM		Change PM		Percent Change AM		Percent Change PM		Annual Growth Rate AM		Annual Growth Rate PM	
10) East Washington / US 101 Southbound Ramps	NB	LT	10	NBL	0		0		0		0		0		0		-		-		-		-	
		TH	10	NBT	943		1243		949		1171		6		-72		1%		-6%		0.3%		-2.9%	
		RT	10	NBR	184		130		168		132		-16		2		-9%		2%		-4.4%		0.8%	
	SB	LT	10	SBL	499		289		376		200		-123		-89		-25%		-31%		-13.2%		-16.8%	
		TH	10	SBT	970		1319		927		999		-43		-320		-4%		-24%		-2.2%		-13.0%	
		RT	10	SBR	0	3191	0	3626	0	3048	0	3204	0	-143	0	-422	-	-4.5%	-	-11.6%	-	-2.3%	-	-6.0%
	EB	LT	10	EBL	219		289		230		329		11		40		5%		14%		2.5%		6.7%	
		TH	10	EBT	0		0		0		2		0		2		-		-		-		-	
		RT	10	EBR	376		356		398		371		22		15		6%		4%		2.9%		2.1%	
	WB	LT	10	WBL	0		0		0		0		0		0		-		-		-		-	
		TH	10	WBT	0		0		0		0		0		0		-		-		-		-	
		RT	10	WBR	0		0		0		0		0		0		-		-		-		-	
11) East Eashington/US 101 Northbound Ramps	NB	LT	11	NBL	0		0		0		0		0		0		-		-		-		-	
		TH	11	NBT	916		1226		871		1160		-45		-66		-5%		-5%		-2.5%		-2.7%	
		RT	11	NBR	246		306		341		323		95		17		39%		6%		17.7%		2.7%	
	SB	LT	11	SBL	246		218		331		314		85		96		35%		44%		16.0%		20.0%	
		TH	11	SBT	1343		1458		1194		1087		-149		-371		-11%		-25%		-5.7%		-13.7%	
		RT	11	SBR	0	3165	0	3882	0	3109	0	3379	0	-56	0	-503	-	-2%	-	-13%	-	-0.9%	-	-6.7%
	EB	LT	11	EBL	0		0		0		0		0		0		-		-		-		-	
		TH	11	EBT	0		0		0		0		0		0		-		-		-		-	
		RT	11	EBR	0		0		0		0		0		0		-		-		-		-	
	WB	LT	11	WBL	126		150		102		128		-24		-22		-19%		-15%		-10.0%		-7.6%	
		TH	11	WBT	0		0		0		0		0		0		-		-		-		-	
		RT	11	WBR	288		524		270		367		-18		-157		-6%		-30%		-3.2%		-16.3%	
12) West Payran Street / Graylawn Avenue	NB	LT	12	NBL	0		0		0		0		0		0		-		-		-		-	
		TH	12	NBT	0		0		0		0		0		0		-		-		-		-	
		RT	12	NBR	0		0		0		0		0		0		-		-		-		-	
	SB	LT	12	SBL	12		8		19		9		7		1		58%		13%		25.8%		6.1%	
		TH	12	SBT	0		0		0		0		0		0		-		-		-		-	
		RT	12	SBR	27	586	40	908	44	802	22	890	17	216	-18	-18	63%	37%	-45%	-2%	27.7%	17.0%	-25.8%	-1.0%
	EB	LT	12	EBL	9		33		20		27		11		-6		122%		-18%		49.1%		-9.5%	
		TH	12	EBT	274		385		351		370		77		-15		28%		-4%		13.2%		-2.0%	
		RT	12	EBR	0		0		0		0		0		0		-		-		-		-	
	WB	LT	12	WBL	0		0		0		0		0		0		-		-		-		-	
		TH	12	WBT	259		425		360		442		101		17		39%		4%		17.9%		2.0%	
		RT	12	WBR	5		17		8		20		3		3		60%		18%		26.5%		8.5%	

															Existing 2007 VS 2015									
Intersection	Turning Movement		Intersection	Turning Movement	Existing 2007				Existing 2015				Change				Percent Change				Annual Growth Rate			
					AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
13) North McDowell Boulevard / Rainier Avenue	NB	LT	13	NBL	0		0		27		14		27		14		-		-		-		-	
		TH	13	NBT	0		0		13		697		13		697		-		-		-		-	
		RT	13	NBR	0		0		8		122		8		122		-		-		-		-	
	SB	LT	13	SBL	237		109		216		137		-21		28		-9%		26%		-4.5%		12.1%	
		TH	13	SBT	0		0		28		797		28		797		-		-		-		-	
		RT	13	SBR	165		87		125		30		-40		-57		-24%		-66%		-13.0%		-41.3%	
	EB	LT	13	EBL	59	1744	173	2527	76	1680	48	2122	17	-64	-125	-405	29%	-4%	-72%	-16%	13.5%	-1.9%	-47.3%	-8.4%
		TH	13	EBT	639		939		616		31		-23		-908		-4%		-97%		-1.8%		-81.8%	
		RT	13	EBR	0		0		30		12		30		12		-		-		-		-	
	WB	LT	13	WBL	0		0		5		115		5		115		-		-		-		-	
		TH	13	WBT	573		1064		489		31		-84		-1033		-15%		-97%		-7.6%		-82.9%	
		RT	13	WBR	71		155		47		88		-24		-67		-34%		-43%		-18.6%		-24.7%	

Appendix 14C

Graylawn Data Collection Summary and Roadway Capacity Analysis Memo

Fehr & Peers, April 13, 2016

FEHR PEERS

April 13, 2016

Scott Gregory
Lamphier-Gregory
1944 Embarcadero
Oakland, CA 94606

Re: Graylawn Data Collection Summary and Roadway Capacity Analysis

Dear Scott:

This memorandum summarizes the data collection of traffic counts along Graylawn Avenue to assess the existing traffic volumes and remaining capacity, as well as the Project's potential contribution to daily and peak hour volumes on Graylawn Avenue.

DATA COLLECTION

One 72-hour roadway count on Graylawn Avenue was collected to determine the existing average daily traffic (ADT) volumes on the street. The count was conducted between November 17, 2015 and November 19, 2015, three days during a mid-week period (Tuesday, Wednesday, and Thursday) when schools in Petaluma are in session. Data was collected between West Payran Street and Betty Court. **Table 1** summarizes the data collection for each of the three days individually, as well as for the average of the three days. The two-way ADT for the street section ranged between 938 vehicles per day and 979 vehicles per day, and the average was 954 vehicles per day. All traffic count data are attached to the end of this memorandum (**Attachment 1**).

TABLE 1: GRAYLAWN AVENUE COUNTS SUMMARY

Period	Tuesday (11/17/15)	Wednesday (11/18/15)	Thursday (11/19/15)	Three-Day Average
Daily	944	938	979	954
AM Peak Hour	91 (7:30 AM)	81 (7:45 AM)	90 (7:45 AM)	87
PM Peak Hour	90 (2:30 PM)	83 (3:15 PM)	85 (3:00 PM)	86

Source: Fehr & Peers, 2015.

FEHR PEERS

ROADWAY CAPACITY ANALYSIS

According to the City of Petaluma "Street Design and Construction Standards & Specifications (1999), the available roadway link level daily capacity for Graylawn Avenue is 2,000 vehicles per day. As such, the existing utilization of the roadway is approximately 48 percent, leaving capacity for approximately 1,050 vehicles.

From the transportation impact analysis, the daily vehicle trip generation for the Sid Commons project was estimated to be 1,846 vehicles trips. This analysis assumes that Shasta Avenue and Rainier Avenue have not been extended. As a result, all vehicle trips must access the project via Graylawn Avenue, which would increase the ADT to 2,800 vehicles per day, as detailed in **Table 2**.

TABLE 2: GRAYLAWN AVENUE COUNTS AND PROJECT TRIPS SUMMARY

Period	Three-Day Average	Project Trips	Existing Plus Project Trips
Daily	954	1,846	2,800
AM Peak Hour	87	143	230
PM Peak Hour	86	174	260

Source: Fehr & Peers, 2015.

At 2,800 daily vehicles on Graylawn Avenue (approximately 1,400 in each direction), current residents living along and off of Graylawn Avenue would notice a significant increase (more than 190 percent) in daily vehicle traffic. Turning movements to and from Jess Avenue, Bernice Court, Cordelia Drive, Betty Court, and the many driveways along Graylawn Avenue would experience more delay, though likely not enough to affect operations through the corridor and at these adjoining side streets.

The transportation impact analysis indicates that the intersection of Graylawn Avenue / Payran Street operates at LOS B during both peak hours without the Project and would operate at LOS C in both peak hours with the Project in both Existing and Background scenarios.[1] Because the intersection can adequately handle the additional traffic during both peak hours (and the intersection capacity, rather than the roadway segment capacity, would be the potential constraint coming into or exiting the Graylawn Avenue neighborhood), it is unlikely that the additional traffic

[1] Both the Existing Plus Project and Background scenarios assume that Shasta Avenue and Rainier Avenue have not been extended and therefore route all trips to/from the Project Site via Graylawn.

FEHR PEERS

due to the Project would result in noticeable vehicle operations changes for current drivers along Graylawn Avenue and its adjoining side streets. Volumes at each of these intersections would be lower than at the Graylawn Avenue / Payran Street intersection, which has been shown to operate acceptably both with and without the Project.

All Cumulative Conditions analysis assumes that the Shasta Avenue extension is completed and all four of the Project's driveways along Shasta Avenue are available for access. Two sets of Cumulative Conditions analysis was completed: both with and without the Rainier Avenue Extension and Interchange. Without the Rainier Avenue Extension and Interchange, the intersection operates unacceptably both with and without the Project, and the mitigation is to signalize the intersection. The City should undertake regular monitoring of actual traffic conditions and accident data and re-evaluate warrants to determine the appropriate implementations schedule for signalization. With the Rainier Avenue Extension and Interchange, the intersection operates acceptably both with and without the Project.

For the Existing Plus Project daily ADT volume to be less than or equal to the estimated roadway capacity, the Project could be a maximum of 149 units, which would produce 1,046 daily trips. The Project would generate 78 AM peak hour trips and 100 PM peak hour trips with the decreased development intensity.

This concludes our analysis of the existing utilization and capacity of Graylawn Avenue, as well as analysis of the roadway with the proposed project. Please call Dan Hennessey at (415) 348-0300 with any questions.

Sincerely,

FEHR & PEERS

Dan Hennessey, PE
Senior Transportation Engineer

Prepared by NDS/ATD

VOLUME

Graylawn Avenue between West Payran Street and Betty Court

Day: Tuesday
Date: 11/17/2015

City: Petaluma
Project #: 15-7889-001

DAILY TOTALS	NB	SB	EB	WB	Total
	466	478	0	0	944

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	3		1		0	0	4		12:00	2		6		0	0	8	
00:15	2		0		0	0	2		12:15	5		7		0	0	12	
00:30	0		1		0	0	1		12:30	3		2		0	0	5	
00:45	0	5	0	2	0	0	0	7	12:45	13	23	14	29	0	0	27	52
01:00	0		0		0	0	0		13:00	6		7		0	0	13	
01:15	1		1		0	0	2		13:15	10		5		0	0	15	
01:30	2		0		0	0	2		13:30	6		8		0	0	14	
01:45	0	3	2	3	0	0	2	6	13:45	4	26	8	28	0	0	12	54
02:00	1		0		0	0	1		14:00	7		10		0	0	17	
02:15	0		1		0	0	1		14:15	5		6		0	0	11	
02:30	0		1		0	0	1		14:30	5		10		0	0	15	
02:45	0	1	0	2	0	0	0	3	14:45	3	20	9	35	0	0	12	55
03:00	1		0		0	0	1		15:00	17		11		0	0	28	
03:15	0		1		0	0	1		15:15	13		9		0	0	22	
03:30	1		0		0	0	1		15:30	16		4		0	0	20	
03:45	0	2	0	1	0	0	0	3	15:45	13	59	7	31	0	0	20	90
04:00	0		0		0	0	0		16:00	11		7		0	0	18	
04:15	0		1		0	0	1		16:15	10		10		0	0	20	
04:30	0		1		0	0	1		16:30	12		9		0	0	21	
04:45	1	1	6	8	0	0	7	9	16:45	10	43	10	36	0	0	20	79
05:00	0		1		0	0	1		17:00	11		4		0	0	15	
05:15	1		6		0	0	7		17:15	10		10		0	0	20	
05:30	0		4		0	0	4		17:30	8		3		0	0	11	
05:45	1	2	6	17	0	0	7	19	17:45	9	38	8	25	0	0	17	63
06:00	1		6		0	0	7		18:00	10		8		0	0	18	
06:15	1		8		0	0	9		18:15	16		3		0	0	19	
06:30	0		7		0	0	7		18:30	11		2		0	0	13	
06:45	1	3	6	27	0	0	7	30	18:45	7	44	4	17	0	0	11	61
07:00	4		9		0	0	13		19:00	6		5		0	0	11	
07:15	3		10		0	0	13		19:15	8		2		0	0	10	
07:30	6		8		0	0	14		19:30	4		3		0	0	7	
07:45	3	16	21	48	0	0	24	64	19:45	10	28	7	17	0	0	17	45
08:00	5		20		0	0	25		20:00	6		4		0	0	10	
08:15	16		12		0	0	28		20:15	6		3		0	0	9	
08:30	5		9		0	0	14		20:30	6		4		0	0	10	
08:45	6	32	4	45	0	0	10	77	20:45	5	23	4	15	0	0	9	38
09:00	6		5		0	0	11		21:00	5		1		0	0	6	
09:15	0		6		0	0	6		21:15	5		1		0	0	6	
09:30	6		9		0	0	15		21:30	5		2		0	0	7	
09:45	8	20	4	24	0	0	12	44	21:45	6	21	2	6	0	0	8	27
10:00	5		10		0	0	15		22:00	2		2		0	0	4	
10:15	4		7		0	0	11		22:15	2		2		0	0	4	
10:30	1		4		0	0	5		22:30	2		0		0	0	2	
10:45	4	14	4	25	0	0	8	39	22:45	3	9	1	5	0	0	4	14
11:00	3		5		0	0	8		23:00	1		0		0	0	1	
11:15	7		7		0	0	14		23:15	1		1		0	0	2	
11:30	8		4		0	0	12		23:30	2		0		0	0	2	
11:45	9	27	13	29	0	0	22	56	23:45	2	6	2	3	0	0	4	9
TOTALS		126		231				357	TOTALS		340		247				587
SPLIT %		35.3%		64.7%				37.8%	SPLIT %		57.9%		42.1%				62.2%

DAILY TOTALS	NB	SB	EB	WB	Total
	466	478	0	0	944

AM Peak Hour	08:15	07:45			07:30	PM Peak Hour	15:00	14:30			15:00
AM Pk Volume	33	62			91	PM Pk Volume	59	39			90
Pk Hr Factor	0.516	0.738			0.813	Pk Hr Factor	0.868	0.886			0.804
7 - 9 Volume	48	93	0	0	141	4 - 6 Volume	81	61	0	0	142
7 - 9 Peak Hour	08:00	07:45			07:30	4 - 6 Peak Hour	16:00	16:00			16:00
7 - 9 Pk Volume	32	62	0	0	91	4 - 6 Pk Volume	43	36	0	0	79
Pk Hr Factor	0.500	0.738	0.000	0.000	0.813	Pk Hr Factor	0.896	0.900	0.000	0.000	0.940

Prepared by NDS/ATD

VOLUME

Graylawn Avenue between West Payran Street and Betty Court

Day: Wednesday
Date: 11/18/2015

City: Petaluma
Project #: 15-7889-001

DAILY TOTALS	NB	SB	EB	WB	Total
	464	474	0	0	938

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	0		0		0	0	0		12:00	8		5		0	0	13	
00:15	1		0		0	0	1		12:15	7		5		0	0	12	
00:30	1		0		0	0	1		12:30	6		7		0	0	13	
00:45	1	3	2	2	0	0	3	5	12:45	4	25	5	22	0	0	9	47
01:00	0		0		0	0	0		13:00	5		2		0	0	7	
01:15	1		1		0	0	2		13:15	2		5		0	0	7	
01:30	0		0		0	0	0		13:30	7		4		0	0	11	
01:45	2	3	2	3	0	0	4	6	13:45	10	24	7	18	0	0	17	42
02:00	0		1		0	0	1		14:00	7		8		0	0	15	
02:15	0		0		0	0	0		14:15	9		11		0	0	20	
02:30	0		0		0	0	0		14:30	5		9		0	0	14	
02:45	1	1	0	1	0	0	1	2	14:45	3	24	11	39	0	0	14	63
03:00	0		0		0	0	0		15:00	14		7		0	0	21	
03:15	0		0		0	0	0		15:15	15		9		0	0	24	
03:30	1		1		0	0	2		15:30	14		5		0	0	19	
03:45	0	1	0	1	0	0	0	2	15:45	11	54	7	28	0	0	18	82
04:00	0		0		0	0	0		16:00	12		10		0	0	22	
04:15	0		1		0	0	1		16:15	8		9		0	0	17	
04:30	0		1		0	0	1		16:30	9		7		0	0	16	
04:45	1	1	3	5	0	0	4	6	16:45	10	39	8	34	0	0	18	73
05:00	0		2		0	0	2		17:00	10		6		0	0	16	
05:15	0		5		0	0	5		17:15	19		6		0	0	25	
05:30	0		4		0	0	4		17:30	8		5		0	0	13	
05:45	1	1	3	14	0	0	4	15	17:45	14	51	12	29	0	0	26	80
06:00	1		2		0	0	3		18:00	13		5		0	0	18	
06:15	1		3		0	0	4		18:15	7		2		0	0	9	
06:30	1		9		0	0	10		18:30	10		7		0	0	17	
06:45	1	4	4	18	0	0	5	22	18:45	8	38	8	22	0	0	16	60
07:00	0		9		0	0	9		19:00	5		1		0	0	6	
07:15	3		11		0	0	14		19:15	5		2		0	0	7	
07:30	3		10		0	0	13		19:30	12		6		0	0	18	
07:45	5	11	19	49	0	0	24	60	19:45	7	29	6	15	0	0	13	44
08:00	2		17		0	0	19		20:00	7		6		0	0	13	
08:15	8		11		0	0	19		20:15	5		7		0	0	12	
08:30	12		7		0	0	19		20:30	6		1		0	0	7	
08:45	4	26	10	45	0	0	14	71	20:45	13	31	2	16	0	0	15	47
09:00	5		7		0	0	12		21:00	2		4		0	0	6	
09:15	5		8		0	0	13		21:15	5		3		0	0	8	
09:30	4		8		0	0	12		21:30	4		3		0	0	7	
09:45	4	18	1	24	0	0	5	42	21:45	5	16	4	14	0	0	9	30
10:00	6		7		0	0	13		22:00	4		2		0	0	6	
10:15	6		10		0	0	16		22:15	4		2		0	0	6	
10:30	9		7		0	0	16		22:30	4		1		0	0	5	
10:45	5	26	5	29	0	0	10	55	22:45	1	13	1	6	0	0	2	19
11:00	2		8		0	0	10		23:00	4		1		0	0	5	
11:15	5		9		0	0	14		23:15	3		2		0	0	5	
11:30	3		8		0	0	11		23:30	2		2		0	0	4	
11:45	5	15	9	34	0	0	14	49	23:45	1	10	1	6	0	0	2	16
TOTALS		110		225				**335**	**TOTALS**		354		249				**603**
SPLIT %		32.8%		67.2%				**35.7%**	**SPLIT %**		58.7%		41.3%				**64.3%**

DAILY TOTALS	NB	SB	EB	WB	Total
	464	474	0	0	938

AM Peak Hour	08:15	07:15			**07:45**	**PM Peak Hour**	15:00	14:00			**15:15**
AM Pk Volume	29	57			**81**	**PM Pk Volume**	54	39			**83**
Pk Hr Factor	0.604	0.750			**0.844**	**Pk Hr Factor**	0.900	0.886			**0.865**
7 - 9 Volume	37	94	0	0	**131**	**4 - 6 Volume**	90	63	0	0	**153**
7 - 9 Peak Hour	07:45	07:15			**07:45**	**4 - 6 Peak Hour**	17:00	16:00			**17:00**
7 - 9 Pk Volume	27	57	0	0	**81**	**4 - 6 Pk Volume**	51	34	0	0	**80**
Pk Hr Factor	0.563	0.750	0.000	0.000	**0.844**	**Pk Hr Factor**	0.671	0.850	0.000	0.000	**0.769**

Prepared by NDS/ATD

VOLUME

Graylawn Avenue between West Payran Street and Betty Court

Day: Thursday
Date: 11/19/2015

City: Petaluma
Project #: 15-7889-001

DAILY TOTALS	NB	SB	EB	WB	Total
	488	491	0	0	979

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	2		1		0	0	3		12:00	7		5		0	0	12	
00:15	2		0		0	0	2		12:15	6		6		0	0	12	
00:30	1		1		0	0	2		12:30	7		6		0	0	13	
00:45	1	6	1	3	0	0	2	9	12:45	9	29	8	25	0	0	17	54
01:00	0		0		0	0	0		13:00	6		6		0	0	12	
01:15	1		1		0	0	2		13:15	6		7		0	0	13	
01:30	1		0		0	0	1		13:30	7		5		0	0	12	
01:45	1	3	1	2	0	0	2	5	13:45	6	25	6	24	0	0	12	49
02:00	1		1		0	0	2		14:00	6		10		0	0	16	
02:15	0		1		0	0	1		14:15	8		8		0	0	16	
02:30	0		1		0	0	1		14:30	4		10		0	0	14	
02:45	1	2	0	3	0	0	1	5	14:45	3	21	11	39	0	0	14	60
03:00	1		0		0	0	1		15:00	16		9		0	0	25	
03:15	0		1		0	0	1		15:15	15		9		0	0	24	
03:30	1		1		0	0	2		15:30	15		6		0	0	21	
03:45	0	2	0	2	0	0	0	4	15:45	10	56	5	29	0	0	15	85
04:00	0		0		0	0	0		16:00	12		8		0	0	20	
04:15	0		1		0	0	1		16:15	8		10		0	0	18	
04:30	0		1		0	0	1		16:30	12		8		0	0	20	
04:45	1	1	7	9	0	0	8	10	16:45	9	41	8	34	0	0	17	75
05:00	0		2		0	0	2		17:00	11		6		0	0	17	
05:15	1		6		0	0	7		17:15	13		8		0	0	21	
05:30	0		3		0	0	3		17:30	8		3		0	0	11	
05:45	1	2	6	17	0	0	7	19	17:45	11	43	10	27	0	0	21	70
06:00	1		6		0	0	7		18:00	14		6		0	0	20	
06:15	1		6		0	0	7		18:15	13		2		0	0	15	
06:30	1		8		0	0	9		18:30	11		3		0	0	14	
06:45	1	4	4	24	0	0	5	28	18:45	8	46	6	17	0	0	14	63
07:00	2		10		0	0	12		19:00	4		2		0	0	6	
07:15	3		10		0	0	13		19:15	6		2		0	0	8	
07:30	6		9		0	0	15		19:30	9		5		0	0	14	
07:45	2	13	23	52	0	0	25	65	19:45	10	29	7	16	0	0	17	45
08:00	4		19		0	0	23		20:00	8		6		0	0	14	
08:15	13		10		0	0	23		20:15	6		2		0	0	8	
08:30	10		9		0	0	19		20:30	6		2		0	0	8	
08:45	6	33	9	47	0	0	15	80	20:45	10	30	3	13	0	0	13	43
09:00	4		6		0	0	10		21:00	3		2		0	0	5	
09:15	3		8		0	0	11		21:15	7		3		0	0	10	
09:30	6		9		0	0	15		21:30	7		3		0	0	10	
09:45	7	20	4	27	0	0	11	47	21:45	7	24	1	9	0	0	8	33
10:00	5		9		0	0	14		22:00	5		2		0	0	7	
10:15	6		10		0	0	16		22:15	2		1		0	0	3	
10:30	3		5		0	0	8		22:30	2		1		0	0	3	
10:45	4	18	5	29	0	0	9	47	22:45	1	10	1	5	0	0	2	15
11:00	3		7		0	0	10		23:00	3		1		0	0	4	
11:15	7		8		0	0	15		23:15	1		1		0	0	2	
11:30	6		6		0	0	12		23:30	2		1		0	0	3	
11:45	7	23	11	32	0	0	18	55	23:45	1	7	3	6	0	0	4	13
TOTALS		127		247				374	TOTALS		361		244				605
SPLIT %		34.0%		66.0%				38.2%	SPLIT %		59.7%		40.3%				61.8%

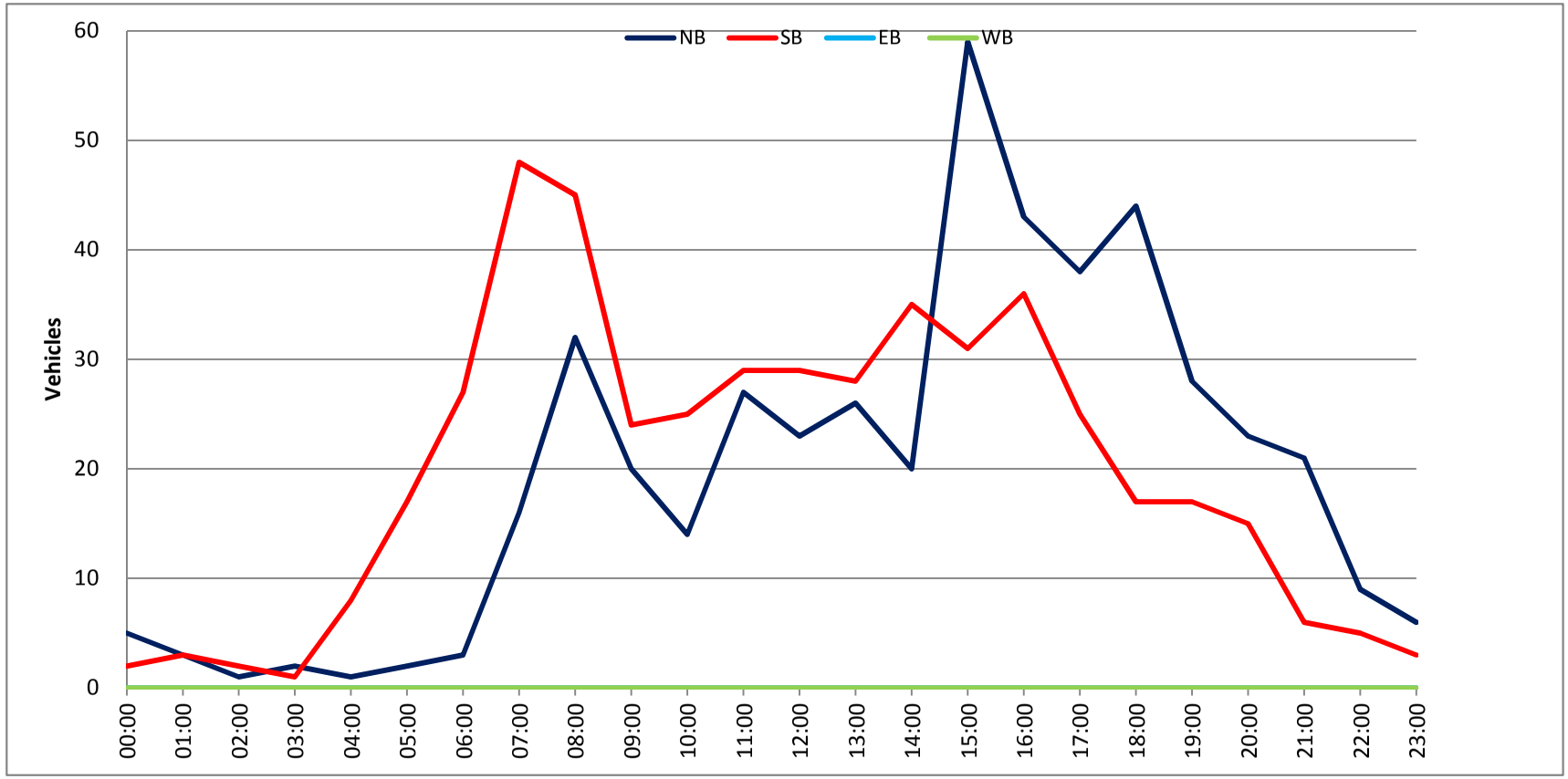
DAILY TOTALS	NB	SB	EB	WB	Total
	488	491	0	0	979

AM Peak Hour	08:00	07:15			07:45	PM Peak Hour	15:00	14:00			15:00
AM Pk Volume	33	61			90	PM Pk Volume	56	39			85
Pk Hr Factor	0.635	0.663			0.900	Pk Hr Factor	0.875	0.886			0.850
7 - 9 Volume	46	99	0	0	145	4 - 6 Volume	84	61	0	0	145
7 - 9 Peak Hour	08:00	07:15			07:45	4 - 6 Peak Hour	16:30	16:00			16:00
7 - 9 Pk Volume	33	61	0	0	90	4 - 6 Pk Volume	45	34	0	0	75
Pk Hr Factor	0.635	0.663	0.000	0.000	0.900	Pk Hr Factor	0.865	0.850	0.000	0.000	0.938

Prepared by NDS/ATD

Project #: 15-7889-001 **City:** Petaluma

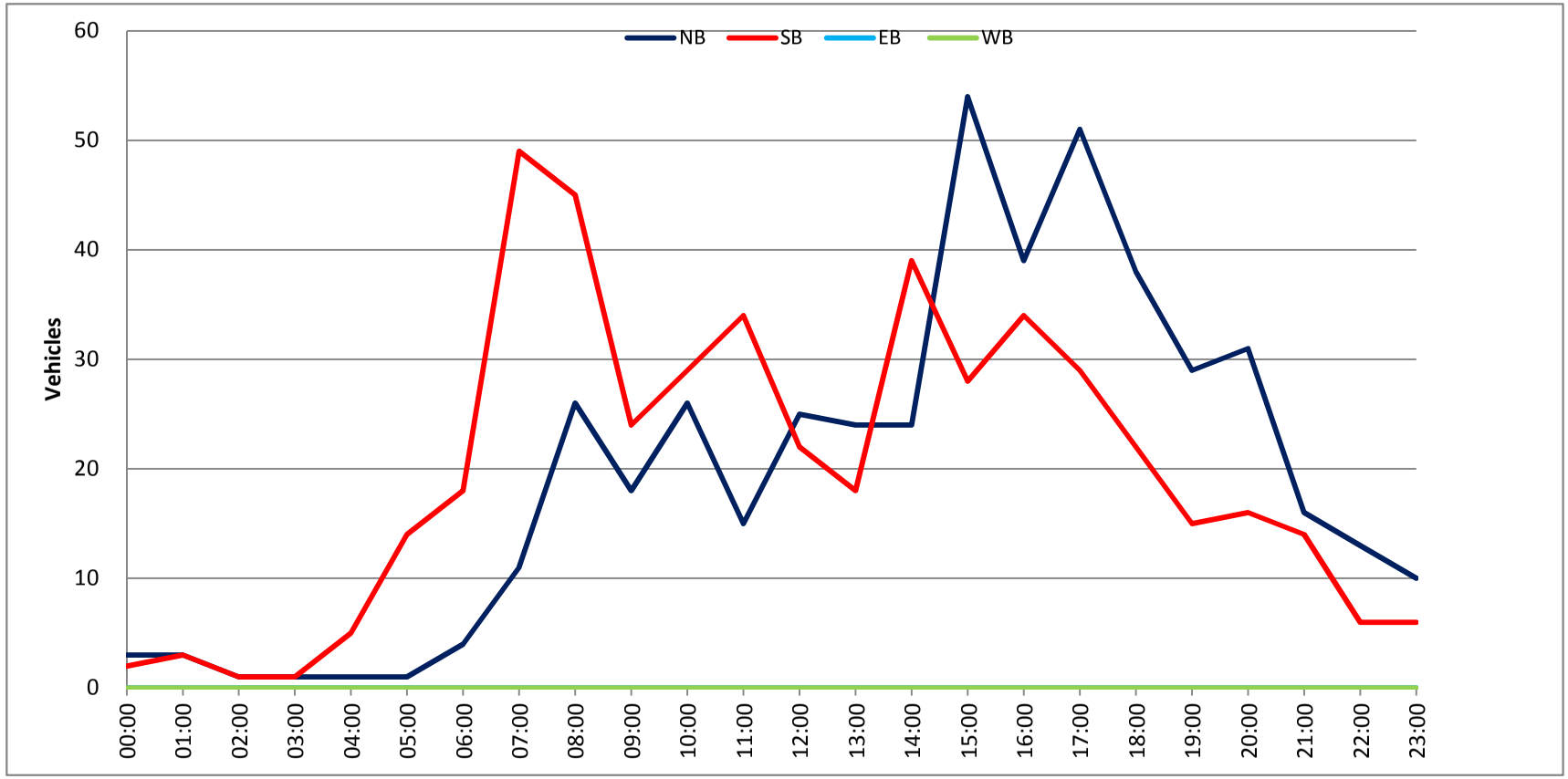
Location: Graylawn Avenue between West Payran **Date:** 11/17/2015



Prepared by NDS/ATD

Project #: 15-7889-001 **City:** Petaluma

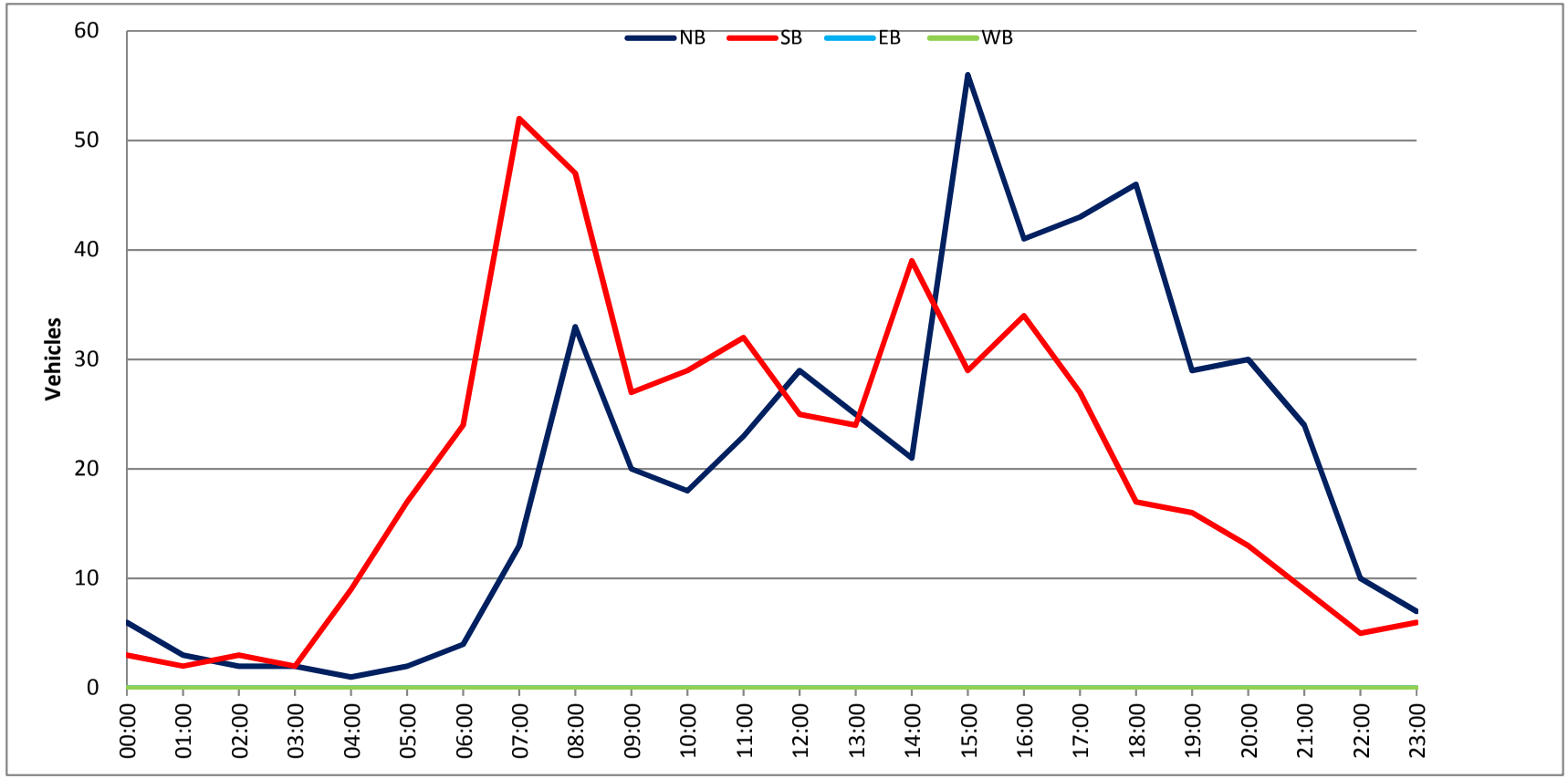
Location: Graylawn Avenue between West Payran **Date:** 11/18/2015



Prepared by NDS/ATD

Project #: 15-7889-001 **City:** Petaluma

Location: Graylawn Avenue between West Payran **Date:** 11/19/2015



Appendix 14D

2016 Sid Commons DEIR Updated Assumptions and Scenarios

Fehr & Peers, August 7, 2016

FEHR PEERS

August 07, 2016

Scott Gregory
Lamphier-Gregory
1944 Embarcadero
Oakland, CA 94606

Re: 2016 Sid Commons DEIR Update Assumptions and Scenarios

Dear Scott:

This memorandum summarizes the assumptions for the Transportation Chapter of the Administrative Draft Environmental Impact Report (ADEIR) for the Sid Commons Project (Project). The transportation assumptions described in this memorandum include the project description, project site access, analysis scenarios, and additional traffic considerations regarding the proposed Shasta Avenue extension across the railroad tracks to Graylawn Avenue ("Shasta extension to Graylawn")[1]. Through the scope of work dated April 27, 2016, Fehr & Peers is under contract to update the 2013/14 ADEIR Transportation Chapter with a new Pipeline conditions and with the addition of the intersection of East Washington Street/Lakeville Street. An adjustment to the scope of work and fee would be required if the City and Project Team request new scenarios not covered under the current contract.

PROJECT DESCRIPTION & SITE PLAN

Based on the Site Plan provided by Lamphier-Gregory dated June 2, 2016, the current project description includes 278 total dwelling units in 14 buildings on 28.7 acres and provides 445 parking spaces. The Project is proposed as a two phase project, however, all Plus Project scenarios are to assume both Phase 1 and Phase 2 are fully built.

Fehr & Peers analyzed two different iterations of the Project in 2008 and 2013. This includes iterations of the Project with 312 dwelling units in 2008 and 282 dwelling units in May of 2013. Based on our conversations with the Project Team, Fehr & Peers will update the Project's trip generation table in the ADEIR to reflect the new project size (278 units) but use the traffic analysis prepared for the 2008 iteration of the project (312 units). This approach will allow Fehr & Peers to use available information and remain within the current scope of work. We will add a footnote to the ADEIR that the analysis based on the 312 units represents a more conservative analysis than the Project currently being considered.

[1] The "Shasta extension to Graylawn" is different from the proposed extension of Shasta Avenue to the Rainier Avenue extension ("Shasta extension to Rainier") along the railroad right-of-way as envisioned under the City's General Plan.

FEHR PEERS

PROJECT SITE ACCESS

As shown on **Figure 1**, the Project proposes to provide access via two roadways: Graylawn Avenue and the Shasta extension to Graylawn. However, the analysis prepared by Fehr & Peers in May of 2013 included Project access via Graylawn Avenue only (100% of vehicle trips) for near-term (Existing and Pipeline) Plus Project scenarios. Prior analysis from 2008 had assumed Project traffic to be split between Graylawn Avenue and the proposed Shasta extension to Graylawn. Lamphier-Gregory has provided direction that our current work should assume access via both access points for all Plus Project Scenarios. Based the trip distribution assumptions developed for Sid Commons in 2008, approximately two-thirds of vehicles would use the proposed Shasta extension to Graylawn and one-third would use Graylawn Avenue. The Project access and analysis scenario assumptions are described further in the following section and summarized in **Table 1.**

Fehr & Peers previously submitted a Graylawn Avenue Roadway Capacity Analysis memo dated April 13, 2016, which studied a Graylawn Avenue access-only scenario for informational purposes only. This analysis will be used in the current ADEIR relative to traffic on Graylawn, and will likely help formulate a Project Alternative for use in the Draft EIR.

ANALYSIS SCENARIOS

The following analysis scenarios will be included in the ADEIR chapter:

- ***Existing Conditions*** – No change to this scenario, except the addition of the intersection of East Washington Street / Lakeville Street (included in the April 27 scope of work).
- ***Existing Plus Project*** (Shasta & Graylawn Access) – This scenario was not included in the May 2013 work by Fehr & Peers, nor is it addressed on our April 27, 2016 scope of work. Therefore, based on discussions with Lamphier-Gregory, Fehr & Peers will present the results from the 2008 analysis that included both the Shasta & Graylawn access routes. This analysis includes more housing units (312) than the current Project (278) or the Project analyzed in May 2013 (282).
- ***Pipeline (Near-Term) No Project*** – Fehr & Peers' scope of work includes an update to the Pipeline conditions to account for a new Pipeline Project list. The Rainier Crosstown Connector is not assumed to be included in this Pipeline analysis, even though it is a current City project, due to the uncertain timing for the construction.
- ***Pipeline Plus Project*** (Shasta/Graylawn Access) – Fehr & Peers' scope of work includes an update to the Pipeline Plus Project conditions, which will include the Shasta & Graylawn Access with 312 units based on the 2008 analysis.

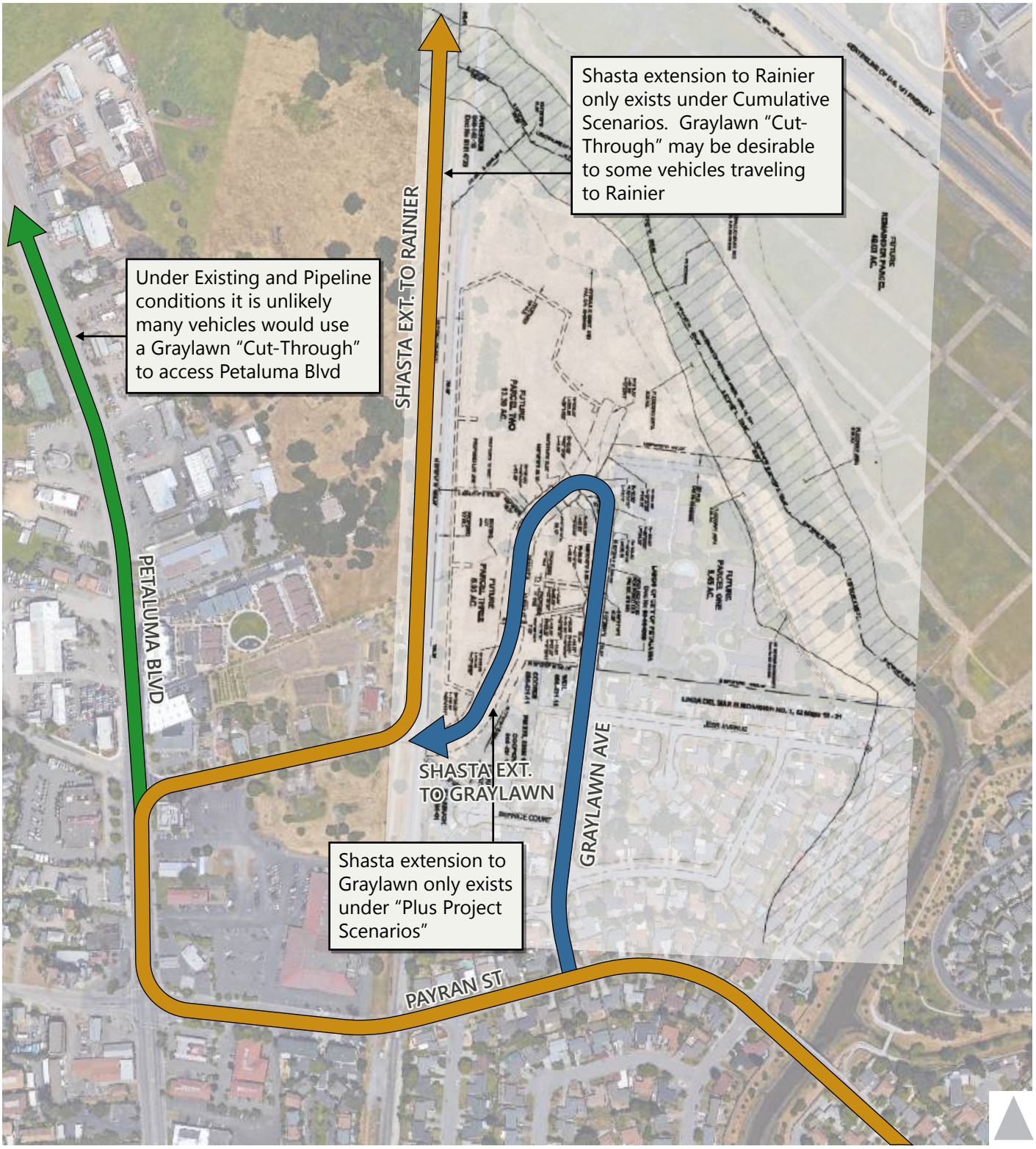


Figure 1

Project Site Access

- ***Cumulative (Rainier Full Interchange) No Project*** – No change to this scenario, except the addition of the intersection of East Washington Street / Lakeville Street (included in the April 27 scope of work). This scenario includes full buildout of the Petaluma General Plan, which includes a full interchange at 101/Rainier Avenue. Cumulative traffic volumes are based on the Petaluma General Plan (2008) projections. 2008 population and employment growth forecasts are higher than more recent projections and therefore represent a more conservative approach.
- ***Cumulative (Rainier Full Interchange) Plus Project*** (with Shasta/Graylawn Access) – Fehr & Peers proposes to present the 2008 Cumulative Plus Project analysis, which includes 312 units, for consistency with the Existing and Pipeline scenarios.

Intersection signal timing for Existing conditions will be consistent with previous versions of the ADEIR. Signal timing for Pipeline and Cumulative conditions are assumed to be updated where necessary to reflect regular City intersection monitoring and adjustments. Additionally, specific intersection geometry changes at the following intersections will be provided by the City to be assumed under Pipeline and Cumulative scenarios:

- East Washington Street / Lakeville Street
- North McDowell Boulevard / Rainier Avenue
- US 101 SB Ramps / East Washington Street
- US 101 NB Ramps / East Washington Street

Fehr & Peers assumes that the above scenarios are comprehensive. Specifically, the updated ADEIR will not include Plus Project scenarios without the Shasta Avenue access point nor cumulative scenarios with just the Rainier Avenue extension but no interchange. **Table 1** shows all analysis scenarios, including those previously studied. Any scenarios not presented in the below table would require additional scope of work to complete.[3]

SHASTA EXTENSION TO GRAYLAWN CONSIDERATIONS

The Shasta extension to Graylawn through the Project Site would allow vehicles to use Graylawn Avenue to travel between Payran Street and Shasta Avenue and Petaluma Boulevard. Under Existing Plus Project and Pipeline Plus Project conditions when there would be no Rainier Avenue Extension, this cut through is unlikely to induce significant traffic demand to Petaluma Boulevard compared to the more direct route to continue on Payran Street. As shown on **Figure 1**, under Cumulative Plus Project conditions when the Shasta extension to Rainier would be open, some drivers may use the route to avoid traveling through Petaluma Boulevard. If requested by the City, Fehr & Peers will prepare a scope of work to determine the number of vehicle using this route with the City's travel demand model and adjust the cumulative traffic analysis results accordingly.

[3] If requested, Fehr & Peers can prepare a scope of work and fee to update sections of the ADEIR not anticipated in the April 27 scope of work, such as the Project's travel demand presented in the ADEIR or new analysis scenarios.

FEHR & PEERS

The feasibility of the Shasta extension to Graylawn is currently unknown due to the constraints associated with constructing a new railroad crossing. Therefore, the City is interested in evaluating a Project Alternative that would include fewer residential units and access only via Graylawn Avenue. The previous draft EIR analysis (2013) identified four cumulatively significant intersection impacts with the Graylawn Avenue only option. If requested by the City, Fehr & Peers will prepare a scope of work to conduct a sensitivity analysis to determine whether a smaller project alternative would continue to create cumulatively significant impacts at these locations.

This concludes our summary of project assumptions and analysis scenarios as they pertain to transportation for the Project. Please call Mike Hawkins or Matt Goyne at (415) 348-0300 with any questions.

Sincerely,

FEHR & PEERS

Mike Hawkins, PE
Transportation Engineer

Matt Goyne, PE
Associate

FEHR PEERS

TABLE 1 – SID COMMONS ANALYSIS SCENARIOS					
Project Scenario	**Access Assumption**	**Presented in 2013/14 EIR as prepared by F&P**	**Presented in 2013/14 EIR as prepared by L-G**	**Included in 04/27/16 F&P Scope**	**2016 EIR Update**
Existing	N/A	X	X		X
Existing Plus Project	Graylawn & Shasta (312 units)		Text only		X
Existing Plus Project	Graylawn only (282 units)	X	Results only		
Pipeline No Project	N/A	X	X	X[1]	X
Pipeline Plus Project	Graylawn & Shasta (312 units)		Text only		X
Pipeline Plus Project	Graylawn only (282 units)	X	Results only	X	
Cumulative (No Rainier) No Project	No connection between Graylawn & Shasta or Shasta & Rainier	X			
Cumulative (No Rainier) Plus Project	Graylawn & Shasta	X			
Cumulative (With Rainier Interchange) No Project	Includes Shasta extension to Rainier	X	X		X
Cumulative (With Rainier Interchange) Plus Project	Graylawn & Shasta	X	X		X

Notes:

1. Includes new Pipeline project list.

Source: Fehr & Peers, 2016.