WCE

Whipple Consulting Engineers, Inc.

WCE No. 14-1166
October 20, 2015

City of Spokane Valley
11707 E Sprague Avenue Suite 106
Spokane Valley WA 99206

Attn: Gabe Gallinger, P.E.
Sean Messner, P.E.

Re Painted Hills Traffic Impact Analysis – Response to Traffic Count Comments AM peak hour recounts, on October 8th, 2015, and October 20, 2015.

Dear Sean
As noted in our October 15, 2015 letter regarding the PM counts we have completed the AM counts of the 7 intersections specified in your letter. As an addendum to the October 15, 2015 letter we offer the following:

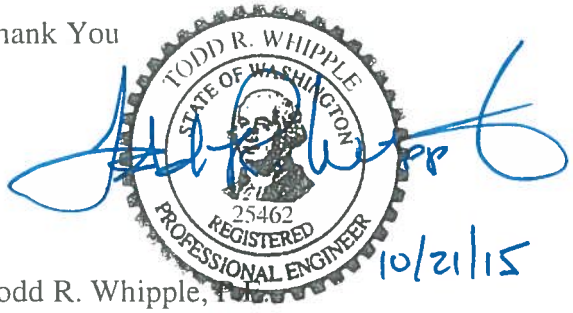
From these updated traffic counts we updated the Level of service calculations for the AM Peak hour and have provided the study level of service tables with a comparison column. As shown on the provided tables. The October counts have resulted in changes to some of the levels of service. The AM peak hour calculations are attached to this letter.

With the provided traffic count data and level of service calculations we do not see any reason why you cannot complete your review of Painted hills Traffic Impact Analysis, considering that the updated AM counts have resulted in no change to the proposed mitigation.

Following your full review and comment of the document we will submit the entire revised document for review and approval.

If you have any questions or comments in regard to this letter please feel free to contact us at (509) 893-2617.

Thank You



10/21/15

Todd R. Whipple, P.E.

TRW/bng
Encl: Raw AM Traffic Counts
Level of Service Tables
Level of service Calculations.

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Civil, Structural, Traffic, Survey, Landscape Architecture and Entitlements

RAW TRAFFIC COUNTS

PROJECT: Painted Hills GC
JOB NO. 13-1166
INTERSECTION: 32nd & University

Whipple Consulting Engineers, Inc
TRAFFIC COUNT REDUCTION WORKSHEET

DATE OF COUNT: 10/20/2015
Counter: JDK
Analyst: BNG

AM PEAK HOURS

15 Minute Period Beginning @

APPROACH	MOVEMENT	6:30		6:45		7:00		7:15		7:30		7:45		8:00		8:15		8:30		8:45		9:00		9:15	
		pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk
Eastbound	Left			0		1		0		1		2		1											
	Through			20		38		38		26	1	35		25											
	Right			0		0		1		0		2	1	2											
	App. Total	0	0	20	0	39	0	39	0	27	1	39	1	28	0	0	0	0	0	0	0	0	0	0	0
	Pct Trucks				0		0		0		0.036		0.025		0										
Westbound	Left			4		4		7		3	1	6		15											
	Through			63		94		116		124		113		88											
	Right			11		5	1	24	1	26	2	28		29	1										
	App. Total	0	0	78	0	103	1	147	1	153	3	147	0	132	1	0	0	0	0	0	0	0	0	0	0
	Pct Trucks				0		0.01		0.007		0.019		0		0.008										
Northbound	Left			5		1		4		7		4		4											
	Through			12		13		22		19		19		13											
	Right			11		18		10	1	19		13		16	1										
	App. Total	0	0	28	0	32	0	36	1	45	0	36	0	33	1	0	0	0	0	0	0	0	0	0	0
	Pct Trucks				0		0		0.027		0		0		0.029										
Southbound	Left			6		17	3	10	2	19	2	11		16	1										
	Through			3		6	1	4		15		13	1	13											
	Right			0		0		0	1	1		1		1											
	App. Total	0	0	9	0	23	4	14	3	35	2	25	1	30	1	0	0	0	0	0	0	0	0	0	0
	Pct Trucks				0		0.148		0.176		0.054		0.038		0.032										
Total Intersection Volume		0	0	135	0	197	5	236	5	260	6	247	2	223	3	0	0	0	0	0	0	0	0	0	0
Intersection Pct Trucks				0.0%		2.5%		2.1%		2.3%		0.8%		1.3%											

Intersection Total One Hour Volumes		Pct Trucks
6:30 AM	578	1.7%
6:45 AM	844	1.9%
7:00 AM	958	1.9%
7:15 AM	982	1.6%
7:30 AM	741	1.5%
7:45 AM	475	1.1%

Intersection Total One Hour Volumes		Pct Trucks
8:00 AM	226	1.3%
8:15 AM	0	
8:30 AM	0	

Notes:

PROJECT: Painted Hills GC
JOB NO. 13-1166
INTERSECTION: 32nd & University

Data Transfer
Intersection No. 1

DATE OF COUNT: 10/20/2015
Counter Analyst
JDK BNG

Whipple Consulting Engineers, Inc
AM PEAK HOUR BREAKDOWN

APPROACH	MOVEMENT	7:15		7:30		7:45		8:00				Pct
		pass	trk	pass	trk	pass	trk	pass	trk	TOTAL	P.H.F.	Trucks
Eastbound	Left	0		1		2		1		4	0.50	0%
	Through	38		26	1	35		25		125	0.82	1%
	Right	1		0		2	1	2		6	0.50	17%
	App. Total	39	0	27	1	39	1	28	0	135	0.84	
	Pct Trucks		0		0.035714		0.025		0			
Westbound	Left	7		3	1	6		15		32	0.53	3%
	Through	116		124		113		88		441	0.89	0%
	Right	24	1	26	2	28		29	1	111	0.93	4%
	App. Total	147	1	153	3	147	0	132	1	584	0.94	
	Pct Trucks		0.006757		0.019231		0		0.007519			
Northbound	Left	4		7		4		4		19	0.68	0%
	Through	22		19		19		13		73	0.83	0%
	Right	10	1	19		13		16	1	60	0.79	3%
	App. Total	36	1	45	0	36	0	33	1	152	0.84	
	Pct Trucks		0.027027		0		0		0.029412			
Southbound	Left	10	2	19	2	11		16	1	61	0.73	8%
	Through	4		15		13	1	13		46	0.77	2%
	Right	0	1	1		1		1		4	1.00	25%
	App. Total	14	3	35	2	25	1	30	1	111	0.75	
	Pct Trucks		0.176471		0.054054		0.038462		0.032258			
Total Intersection Volume		236	5	260	6	247	2	223	3	**982**	**0.92**	
Intersection Pct Trucks			2.1%		2.3%		0.8%		1.3%			

Pedestrian Calls

APPROACH	MOVEMENT	7:15		7:30		7:45		8:00		
		ped	bike	ped	bike	ped	bike	ped	bike	TOTAL
Eastbound	Through									0
Westbound	Through									0
N orthbound	Through			1		1		1		3
Southbound	Through									0
	App. Total	0	0	1	0	1	0	1	0	3

PROJECT: Painted Hills GC
JOB NO. 13-1166
INTERSECTION: Dishman-Mica & Universty/Schafer

Whipple Consulting Engineers, Inc
TRAFFIC COUNT REDUCTION WORKSHEET

DATE OF COUNT: 10/20/2015
Counter: RMA
Analyst: BNG

AM PEAK HOURS

APPROACH	MOVEMENT	15 Minute Period Beginning @ 6:30		6:45		7:00		7:15		7:30		7:45		8:00		8:15		8:30		8:45		9:00		9:15	
		pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk
Eastbound	Left			0		0		1		0		0		0											
	Through			22		21	1	29	3	22	4	45	1	26	1										
	Right			7	2	7		10		7		11		8	1										
	App. Total	0	0	29	2	28	1	40	3	29	4	56	1	34	2	0	0	0	0	0	0	0	0	0	0
	Pct Trucks				0.065		0.034		0.07		0.121		0.018		0.056										
Westbound	Left			0		0		1		1		8		4											
	Through			58	2	81		89	1	116	1	86	4	67	1										
	Right			7		2		7		4		4	1	5											
	App. Total	0	0	65	2	83	0	97	1	121	1	98	5	76	1	0	0	0	0	0	0	0	0	0	0
	Pct Trucks				0.03		0		0.01		0.008		0.049		0.013										
Northbound	Left			38		54		57		56		46		26											
	Through			14		19		23		26		26	1	18											
	Right			1		2		4		6		10		3											
	App. Total	0	0	53	0	75	0	84	0	88	0	82	1	47	0	0	0	0	0	0	0	0	0	0	0
	Pct Trucks				0		0		0		0		0.012		0										
Southbound	Left			2	1	1		2		6		5		4											
	Through			4		9	1	7		4	1	15		18											
	Right			1		1		4		5		1		1											
	App. Total	0	0	7	1	11	1	13	0	15	1	21	0	23	0	0	0	0	0	0	0	0	0	0	0
	Pct Trucks				0.125		0.083		0		0.063		0		0										
Total Intersection Volume		0	0	154	5	197	2	234	4	253	6	257	7	180	3	0	0	0	0	0	0	0	0	0	0
Intersection Pct Trucks				3.1%		1.0%		1.7%		2.3%		2.7%		1.6%											

Intersection Total One Hour Volumes		Pct Trucks
6:30 AM	596	1.8%
6:45 AM	855	2.0%
7:00 AM	960	2.0%
7:15 AM	944	2.1%
7:30 AM	706	2.3%
7:45 AM	447	2.2%

Intersection Total One Hour Volumes		Pct Trucks
8:00 AM	183	1.6%
8:15 AM	0	
8:30 AM	0	

Notes:

PROJECT: Painted Hills GC
JOB NO. 13-1166
INTERSECTION: Dishman-Mica & University/Schafer

Data Transfer
Intersection No. 1

DATE OF COUNT: 10/20/2015
Counter Analyst
RMA BNG

Whipple Consulting Engineers, Inc
AM PEAK HOUR BREAKDOWN

APPROACH	MOVEMENT	7:00		7:15		7:30		7:45				Pct
		pass	trk	pass	trk	pass	trk	pass	trk	TOTAL	P.H.F.	Trucks
Eastbound	Left	0		1		0		0		1	0.25	0%
	Through	21	1	29	3	22	4	45	1	126	0.68	7%
	Right	7		10		7		11		35	0.80	0%
	App. Total	28	1	40	3	29	4	56	1	162	0.71	
	Pct Trucks		0.034483		0.069767		0.121212		0.017544			
Westbound	Left	0		1		1		8		10	0.31	0%
	Through	81		89	1	116	1	86	4	378	0.81	2%
	Right	2		7		4		4	1	18	0.64	6%
	App. Total	83	0	97	1	121	1	98	5	406	0.83	
	Pct Trucks		0		0.010204		0.008197		0.048544			
Northbound	Left	54		57		56		46		213	0.93	0%
	Through	19		23		26		26	1	95	0.88	1%
	Right	2		4		6		10		22	0.55	0%
	App. Total	75	0	84	0	88	0	82	1	330	0.94	
	Pct Trucks		0		0		0		0.012048			
Southbound	Left	1		2		6		5		14	0.58	0%
	Through	9	1	7		4	1	15		37	0.62	5%
	Right	1		4		5		1		11	0.55	0%
	App. Total	11	1	13	0	15	1	21	0	62	0.74	
	Pct Trucks		0.083333		0		0.0625		0			
Total Intersection Volume		197	2	234	4	253	6	257	7	960	0.91	
Intersection Pct Trucks			1.0%		1.7%		2.3%		2.7%			

Pedestrian Calls

APPROACH	MOVEMENT	7:00		7:15		7:30		7:45		
		ped	bike	ped	bike	ped	bike	ped	bike	TOTAL
Eastbound	Through									0
Westbound	Through									0
N orthbound	Through									0
Southbound	Through									0
	App. Total	0	0	0	0	0	0	0	0	0

PROJECT: Painted Hills GC
JOB NO. 13-1166
INTERSECTION: 32nd & Bowdish

Whipple Consulting Engineers, Inc
TRAFFIC COUNT REDUCTION WORKSHEET

DATE OF COUNT: 10/8/2015
Counter: CEL
Analyst: BNG

AM PEAK HOURS

APPROACH	MOVEMENT	15 Minute Period Beginning @ 6:30		6:45		7:00		7:15		7:30		7:45		8:00		8:15		8:30		8:45		9:00		9:15	
		pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk
Eastbound	Left			4		9		6	1	13		22		15											
	Through			49		91	1	91	2	125	1	92	9	90	1										
	Right			1		10		7		8		9		17											
	App. Total	0	0	54	0	110	1	104	3	146	1	123	9	122	1	0	0	0	0	0	0	0	0	0	0
	Pct Trucks				0		0.009		0.028		0.007		0.068		0.008										
Westbound	Left			4		5		5		8		5		2											
	Through			30	1	76	1	48	1	56	4	64	3	37	1										
	Right			2		2		1		1	1	3		0	1										
	App. Total	0	0	36	1	83	1	54	1	65	5	72	3	39	2	0	0	0	0	0	0	0	0	0	0
	Pct Trucks				0.027		0.012		0.018		0.071		0.04		0.049										
Northbound	Left			0		1		13		14		22	2	13											
	Through			3		7	1	5		12		19		4											
	Right			2		9		6		9		4		5											
	App. Total	0	0	5	0	17	1	24	0	35	0	45	2	22	0	0	0	0	0	0	0	0	0	0	0
	Pct Trucks				0		0.056		0		0		0.043		0										
Southbound	Left			18		15		20		21		17		9											
	Through			19		25		24		33		26	1	19											
	Right			11		15		15		29	1	32		27											
	App. Total	0	0	48	0	55	0	59	0	83	1	75	1	55	0	0	0	0	0	0	0	0	0	0	0
	Pct Trucks				0		0		0		0.012		0.013		0										
Total Intersection Volume		0	0	143	1	265	3	241	4	329	7	315	15	238	3	0	0	0	0	0	0	0	0	0	0
Intersection Pct Trucks				0.7%		1.1%		1.6%		2.1%		4.5%		1.2%											

Intersection Total One Hour Volumes		Pct Trucks
6:30 AM	657	1.2%
6:45 AM	993	1.5%
7:00 AM	1179	2.5%
7:15 AM	1152	2.5%
7:30 AM	907	2.8%
7:45 AM	571	3.2%

Intersection Total One Hour Volumes		Pct Trucks
8:00 AM	241	1.2%
8:15 AM	0	
8:30 AM	0	

Notes:

PROJECT: Painted Hills GC
JOB NO. 13-1166
INTERSECTION: 32nd & Bowdish

Data Transfer
Intersection No. 1

DATE OF COUNT: 10/8/2015
Counter
CEL

Analyst
BNG

Whipple Consulting Engineers, Inc
AM PEAK HOUR BREAKDOWN

APPROACH	MOVEMENT	7:00		7:15		7:30		7:45				Pct
		pass	trk	pass	trk	pass	trk	pass	trk	TOTAL	P.H.F.	Trucks
Eastbound	Left	9		6	1	13		22		51	0.58	2%
	Through	91	1	91	2	125	1	92	9	412	0.82	3%
	Right	10		7		8		9		34	0.85	0%
	App. Total	110	1	104	3	146	1	123	9	497	0.85	
	Pct Trucks		0.009009		0.028037		0.006803		0.068182			
Westbound	Left	5		5		8		5		23	0.72	0%
	Through	76	1	48	1	56	4	64	3	253	0.82	4%
	Right	2		1		1	1	3		8	0.67	13%
	App. Total	83	1	54	1	65	5	72	3	284	0.85	
	Pct Trucks		0.011905		0.018182		0.071429		0.04			
Northbound	Left	1		13		14		22	2	52	0.54	4%
	Through	7	1	5		12		19		44	0.58	2%
	Right	9		6		9		4		28	0.78	0%
	App. Total	17	1	24	0	35	0	45	2	124	0.66	
	Pct Trucks		0.055556		0		0		0.042553			
Southbound	Left	15		20		21		17		73	0.87	0%
	Through	25		24		33		26	1	109	0.83	1%
	Right	15		15		29	1	32		92	0.72	1%
	App. Total	55	0	59	0	83	1	75	1	274	0.82	
	Pct Trucks		0		0		0.011905		0.013158			
Total Intersection Volume		265	3	241	4	329	7	315	15	**1179**	**0.88**	
Intersection Pct Trucks			1.1%		1.6%		2.1%		4.5%			

Pedestrian Calls

APPROACH	MOVEMENT	7:15		7:30		7:45		8:00		
		ped	bike	ped	bike	ped	bike	ped	bike	TOTAL
Eastbound	Through									0
Westbound	Through									0
N orthbound	Through									0
Southbound	Through									0
	App. Total	0	0	0	0	0	0	0	0	0

PROJECT: Painted Hills GC
JOB NO. 13-1166
INTERSECTION: Dishman-Mica & Bowdish

Whipple Consulting Engineers, Inc
TRAFFIC COUNT REDUCTION WORKSHEET

DATE OF COUNT: 10/8/2015
Counter: RMA
Analyst: BNG

AM PEAK HOURS

APPROACH	MOVEMENT	15 Minute Period Beginning @ 6:30		6:45		7:00		7:15		7:30		7:45		8:00		8:15		8:30		8:45		9:00		9:15	
		pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk
Eastbound	Left					0		3		2		0		1		1									
	Through					16		30	1	32	1	27		22		22									
	Right					4		10		6	1	7		7		7	1								
	App. Total	0	0	0	0	20	0	43	1	40	2	34	0	30	0	30	1	0	0	0	0	0	0	0	0
	Pct Trucks						0		0.023		0.048		0		0		0.032								
Westbound	Left					1		0		4		1		4		8	1								
	Through					46	3	73		72	2	60	1	60	1	53	1								
	Right							3		10		0		7		5									
	App. Total	0	0	0	0	47	3	76	0	86	2	61	1	71	1	66	2	0	0	0	0	0	0	0	0
	Pct Trucks						0.06		0		0.023		0.016		0.014		0.029								
Northbound	Left					21		26		33		23		30		14									
	Through					24		29		40		45	1	28		16									
	Right					4		4	1	3		3		5		4									
	App. Total	0	0	0	0	49	0	59	1	76	0	71	1	63	0	34	0	0	0	0	0	0	0	0	0
	Pct Trucks						0		0.017		0		0.014		0		0								
Southbound	Left					5	1	4		7		6		4		0									
	Through					7		7		12		25		15		6									
	Right					6		1		3		1		2		2									
	App. Total	0	0	0	0	18	1	12	0	22	0	32	0	21	0	8	0	0	0	0	0	0	0	0	0
	Pct Trucks						0.053		0		0		0		0		0								
Total Intersection Volume		0	0	0	0	134	4	190	2	224	4	198	2	185	1	138	3	0	0	0	0	0	0	0	0
Intersection Pct Trucks						2.9%		1.0%		1.8%		1.0%		0.5%		2.1%									

Intersection Total One Hour Volumes		Pct Trucks
6:30 AM	330	1.8%
6:45 AM	558	1.8%
7:00 AM	758	1.6%
7:15 AM	806	1.1%
7:30 AM	755	1.3%
7:45 AM	527	1.1%

Intersection Total One Hour Volumes		Pct Trucks
8:00 AM	327	1.2%
8:15 AM	141	2.1%
8:30 AM	0	

Notes:

PROJECT: Painted Hills GC
JOB NO. 13-1166
INTERSECTION: Dishman-Mica & Bowdish

Data Transfer
Intersection No. 1

DATE OF COUNT: 10/8/2015
Counter Analyst
RMA BNG

Whipple Consulting Engineers, Inc
AM PEAK HOUR BREAKDOWN

APPROACH	MOVEMENT	7:15		7:30		7:45		8:00		TOTAL	P.H.F.	Pct Trucks
		pass	trk	pass	trk	pass	trk	pass	trk			
Eastbound	Left	3		2		0		1		6	0.50	0%
	Through	30	1	32	1	27		22		113	0.86	2%
	Right	10		6	1	7		7		31	0.78	3%
	App. Total	43	1	40	2	34	0	30	0	150	0.85	
	Pct Trucks		0.022727		0.047619		0		0			
Westbound	Left	0		4		1		4		9	0.56	0%
	Through	73		72	2	60	1	60	1	269	0.91	1%
	Right	3		10		0		7		20	0.50	0%
	App. Total	76	0	86	2	61	1	71	1	298	0.85	
	Pct Trucks		0		0.022727		0.016129		0.013889			
Northbound	Left	26		33		23		30		112	0.85	0%
	Through	29		40		45	1	28		143	0.78	1%
	Right	4	1	3		3		5		16	0.80	6%
	App. Total	59	1	76	0	71	1	63	0	271	0.89	
	Pct Trucks		0.016667		0		0.013889		0			
Southbound	Left	4		7		6		4		21	0.75	0%
	Through	7		12		25		15		59	0.59	0%
	Right	1		3		1		2		7	0.58	0%
	App. Total	12	0	22	0	32	0	21	0	87	0.68	
	Pct Trucks		0		0		0		0			
Total Intersection Volume		190	2	224	4	198	2	185	1	**806**	**0.88**	
Intersection Pct Trucks			1.0%		1.8%		1.0%		0.5%			

Pedestrian Calls

APPROACH	MOVEMENT	7:30		7:45		8:00		8:15		TOTAL
		ped	bike	ped	bike	ped	bike	ped	bike	
Eastbound	Through									0
Westbound	Through									0
N orthbound	Through	1								1
Southbound	Through									0
	App. Total	1	0	0	0	0	0	0	0	1

PROJECT: Barker & Sprague CPA
JOB NO. 13-1166
INTERSECTION: Dishman-Mica & Thorpe

Whipple Consulting Engineers, Inc
TRAFFIC COUNT REDUCTION WORKSHEET

DATE OF COUNT: 10/8/2015
Counter: CEL
Analyst: BNG

AM PEAK HOURS

APPROACH	MOVEMENT	15 Minute Period Beginning @ 6:30		6:45		7:00		7:15		7:30		7:45		8:00		8:15		8:30		8:45		9:00		9:15	
		pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk
Eastbound	Left																								
	Through																								
	Right																								
	App. Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pct Trucks																								
Westbound	Left					1		1		3		2		0		1									
	Through																								
	Right					13	1	21		21		23		8		15									
	App. Total	0	0	0	0	14	1	22	0	24	0	25	0	8	0	16	0	0	0	0	0	0	0	0	0
	Pct Trucks						0.067		0		0		0		0		0								
Northbound	Left																								
	Through					35	2	50	1	70	4	40	1	51	1	43	4								
	Right					3		3		3		3		3		1	1								
	App. Total	0	0	0	0	38	2	53	1	73	4	43	1	54	1	44	5	0	0	0	0	0	0	0	0
	Pct Trucks						0.05		0.019		0.052		0.023		0.018		0.102								
Southbound	Left					8		10		5	1	9		9		9									
	Through					22	1	25	2	34	2	23	2	23		16	1								
	Right																								
	App. Total	0	0	0	0	30	1	35	2	39	3	32	2	32	0	25	1	0	0	0	0	0	0	0	0
	Pct Trucks						0.032		0.054		0.071		0.059		0		0.038								
Total Intersection Volume		0	0	0	0	82	4	110	3	136	7	100	3	94	1	85	6	0	0	0	0	0	0	0	0
Intersection Pct Trucks						4.7%		2.7%		4.9%		2.9%		1.1%		6.6%									

Intersection Total One Hour Volumes		Pct Trucks
6:30 AM	199	3.5%
6:45 AM	342	4.1%
7:00 AM	445	3.8%
7:15 AM	454	3.1%
7:30 AM	432	3.9%
7:45 AM	289	3.5%

Intersection Total One Hour Volumes		Pct Trucks
8:00 AM	186	3.8%
8:15 AM	91	6.6%
8:30 AM	0	

Notes:

PROJECT: Barker & Sprague CPA
JOB NO. 13-1166
INTERSECTION: Dishman-Mica & Thorpe

Data Transfer
Intersection No. 1

DATE OF COUNT: 10/8/2015
Counter Analyst
CEL BNG

Whipple Consulting Engineers, Inc
AM PEAK HOUR BREAKDOWN

APPROACH	MOVEMENT	7:15		7:30		7:45		8:00				Pct
		pass	trk	pass	trk	pass	trk	pass	trk	TOTAL	P.H.F.	Trucks
Eastbound	Left									0		
	Through									0		
	Right									0		
	App. Total	0	0	0	0	0	0	0	0	0		
	Pct Trucks											
Westbound	Left	1		3		2		0		6	0.50	0%
	Through									0		
	Right	21		21		23		8		73	0.79	0%
	App. Total	22	0	24	0	25	0	8	0	79	0.79	
	Pct Trucks		0		0		0		0			
Northbound	Left									0		
	Through	50	1	70	4	40	1	51	1	218	0.74	3%
	Right	3		3		3		3		12	1.00	0%
	App. Total	53	1	73	4	43	1	54	1	230	0.75	
	Pct Trucks		0.018519		0.051948		0.022727		0.018182			
Southbound	Left	10		5	1	9		9		34	0.85	3%
	Through	25	2	34	2	23	2	23		111	0.77	5%
	Right									0		
	App. Total	35	2	39	3	32	2	32	0	145	0.86	
	Pct Trucks		0.054054		0.071429		0.058824		0			
Total Intersection Volume		110	3	136	7	100	3	94	1	454	0.79	
Intersection Pct Trucks			2.7%		4.9%		2.9%		1.1%			

Pedestrian Calls

APPROACH	MOVEMENT	7:15		7:30		7:45		8:00		
		ped	bike	ped	bike	ped	bike	ped	bike	TOTAL
Eastbound	Through									0
Westbound	Through									0
N orthbound	Through									0
Southbound	Through									0
	App. Total	0	0	0	0	0	0	0	0	0

PROJECT: Painted Hills GC
JOB NO. 13-1166
INTERSECTION: 32nd Avenue & Pines Road

Whipple Consulting Engineers, Inc
TRAFFIC COUNT REDUCTION WORKSHEET

DATE OF COUNT: 10/8/2015
Counter: JDK
Analyst: BNG

AM PEAK HOURS

APPROACH	MOVEMENT	15 Minute Period Beginning @																							
		6:30		6:45		7:00		7:15		7:30		7:45		8:00		8:15		8:30		8:45		9:00		9:15	
		pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk
Eastbound	Left					7		3		5		2		5		4									
	Through					74	1	82	1	67	3	97	6	87	1	46									
	Right					1		0		0		1		2		4									
	App. Total	0	0	0	0	82	1	85	1	72	3	100	6	94	1	54	0	0	0	0	0	0	0	0	0
	Pct Trucks						0.012		0.012		0.04		0.057		0.011		0								
Westbound	Left					3		7		8		9	1	13		11									
	Through					75		93	2	93		94	7	100	1	48	2								
	Right					2		8	1	16	1	11	1	15		6									
	App. Total	0	0	0	0	80	0	108	3	117	1	114	9	128	1	65	2	0	0	0	0	0	0	0	0
	Pct Trucks						0		0.027		0.008		0.073		0.008		0.03								
Northbound	Left					9		13		13		8		9		10									
	Through					11		14		14		11		11		9									
	Right					9		14		22	3	29		31		15	1								
	App. Total	0	0	0	0	29	0	41	0	49	3	48	0	51	0	34	1	0	0	0	0	0	0	0	0
	Pct Trucks						0		0		0.058		0		0		0.029								
Southbound	Left					17		24		30	2	54	1	70		14									
	Through					3		10		2		10		11		5									
	Right					6		7		12		4		8		7									
	App. Total	0	0	0	0	26	0	41	0	44	2	68	1	89	0	26	0	0	0	0	0	0	0	0	0
	Pct Trucks						0		0		0.043		0.014		0		0								
Total Intersection Volume		0	0	0	0	217	1	275	4	282	9	330	16	362	2	179	3	0	0	0	0	0	0	0	0
Intersection Pct Trucks						0.5%		1.4%		3.1%		4.6%		0.5%		1.6%									

Intersection Total One Hour Volumes		Pct Trucks
6:30 AM	497	1.0%
6:45 AM	788	1.8%
7:00 AM	1134	2.6%
7:15 AM	1280	2.4%
7:30 AM	1183	2.5%
7:45 AM	892	2.4%

Intersection Total One Hour Volumes		Pct Trucks
8:00 AM	546	0.9%
8:15 AM	182	1.6%
8:30 AM	0	

Notes:

PROJECT: Painted Hills GC
JOB NO. 13-1166
INTERSECTION: 32nd Avenue & Pines Road

Data Transfer
Intersection No. 1

DATE OF COUNT: 10/8/2015
Counter Analyst
JDK BNG

Whipple Consulting Engineers, Inc
AM PEAK HOUR BREAKDOWN

APPROACH	MOVEMENT	7:15		7:30		7:45		8:00				Pct
		pass	trk	pass	trk	pass	trk	pass	trk	TOTAL	P.H.F.	Trucks
Eastbound	Left	3		5		2		5		15	0.75	0%
	Through	82	1	67	3	97	6	87	1	344	0.83	3%
	Right	0		0		1		2		3	0.38	0%
	App. Total	85	1	72	3	100	6	94	1	362	0.85	
	Pct Trucks		0.011628		0.04		0.056604		0.010526			
Westbound	Left	7		8		9	1	13		38	0.73	3%
	Through	93	2	93		94	7	100	1	390	0.97	3%
	Right	8	1	16	1	11	1	15		53	0.78	6%
	App. Total	108	3	117	1	114	9	128	1	481	0.93	
	Pct Trucks		0.027027		0.008475		0.073171		0.007752			
Northbound	Left	13		13		8		9		43	0.83	0%
	Through	14		14		11		11		50	0.89	0%
	Right	14		22	3	29		31		99	0.80	3%
	App. Total	41	0	49	3	48	0	51	0	192	0.92	
	Pct Trucks		0		0.057692		0		0			
Southbound	Left	24		30	2	54	1	70		181	0.65	2%
	Through	10		2		10		11		33	0.75	0%
	Right	7		12		4		8		31	0.65	0%
	App. Total	41	0	44	2	68	1	89	0	245	0.69	
	Pct Trucks		0		0.043478		0.014493		0			
Total Intersection Volume		275	4	282	9	330	16	362	2	**1280**	**0.88**	
Intersection Pct Trucks			1.4%		3.1%		4.6%		0.5%			

Pedestrian Calls

APPROACH	MOVEMENT	7:15		7:30		7:45		8:00		
		ped	bike	ped	bike	ped	bike	ped	bike	TOTAL
Eastbound	Through	6		9		3		2		20
Westbound	Through	2		5		6		5		18
N orthbound	Through	4		5		8		8		25
Southbound	Through	4		6		3				13
	App. Total	16	0	25	0	20	0	15	0	76

PROJECT: Painted Hills GC
JOB NO. 13-1166
INTERSECTION: 32nd & HWY 27

Whipple Consulting Engineers, Inc
TRAFFIC COUNT REDUCTION WORKSHEET

DATE OF COUNT: 10/8/2015
Counter: BNG
Analyst: BNG

AM PEAK HOURS

APPROACH	MOVEMENT	15 Minute Period Beginning @																							
		6:30		6:45		7:00		7:15		7:30		7:45		8:00		8:15		8:30		8:45		9:00		9:15	
		pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk
Eastbound	Left					9		28	1	31		36		28	1	25	1								
	Through					37	1	45		55	2	55	2	59	3	44									
	Right					13		13		12	1	6	2	21		18	1								
	App. Total	0	0	0	0	59	1	86	1	98	3	97	4	108	4	87	2	0	0	0	0	0	0	0	0
	Pct Trucks						0.017		0.011		0.03		0.04		0.036		0.022								
Westbound	Left					7		17	1	13	2	21		5		10	2								
	Through					37		48	3	36		48	2	54		30	1								
	Right					5		11		20	1	22		12		16									
	App. Total	0	0	0	0	49	0	76	4	69	3	91	2	71	0	56	3	0	0	0	0	0	0	0	0
	Pct Trucks						0		0.05		0.042		0.022		0		0.051								
Northbound	Left					16		35	1	21	2	24		31		22									
	Through					38		67		82	1	46	5	56	1	46	2								
	Right					25		23		48	1	24		30		31									
	App. Total	0	0	0	0	79	0	125	1	151	4	94	5	117	1	99	2	0	0	0	0	0	0	0	0
	Pct Trucks						0		0.008		0.026		0.051		0.008		0.02								
Southbound	Left					1		3		7		8		4		5									
	Through					20	1	22	2	18	1	15	1	19		21	2								
	Right					4		14		15	2	16	3	22		8									
	App. Total	0	0	0	0	25	1	39	2	40	3	39	4	45	0	34	2	0	0	0	0	0	0	0	0
	Pct Trucks						0.038		0.049		0.07		0.093		0		0.056								
Total Intersection Volume		0	0	0	0	212	2	326	8	358	13	321	15	341	5	276	9	0	0	0	0	0	0	0	0
Intersection Pct Trucks						0.9%		2.4%		3.5%		4.5%		1.4%		3.2%									

Intersection Total One Hour Volumes		Pct Trucks
6:30 AM	548	1.8%
6:45 AM	919	2.5%
7:00 AM	1255	3.0%
7:15 AM	1387	3.0%
7:30 AM	1338	3.1%
7:45 AM	967	3.0%

Intersection Total One Hour Volumes		Pct Trucks
8:00 AM	631	2.2%
8:15 AM	285	3.2%
8:30 AM	0	

Notes:

PROJECT: Painted Hills GC
JOB NO. 13-1166
INTERSECTION: 32nd & HWY 27

Data Transfer
Intersection No. 1

DATE OF COUNT: 10/8/2015
Counter Analyst
BNG BNG

Whipple Consulting Engineers, Inc
AM PEAK HOUR BREAKDOWN

APPROACH	MOVEMENT	7:15		7:30		7:45		8:00				Pct
		pass	trk	pass	trk	pass	trk	pass	trk	TOTAL	P.H.F.	Trucks
Eastbound	Left	28	1	31		36		28	1	125	0.87	2%
	Through	45		55	2	55	2	59	3	221	0.89	3%
	Right	13		12	1	6	2	21		55	0.65	5%
	App. Total	86	1	98	3	97	4	108	4	401	0.90	
	Pct Trucks		0.011494		0.029703		0.039604		0.035714			
Westbound	Left	17	1	13	2	21		5		59	0.70	5%
	Through	48	3	36		48	2	54		191	0.88	3%
	Right	11		20	1	22		12		66	0.75	2%
	App. Total	76	4	69	3	91	2	71	0	316	0.85	
	Pct Trucks		0.05		0.041667		0.021505		0			
Northbound	Left	35	1	21	2	24		31		114	0.79	3%
	Through	67		82	1	46	5	56	1	258	0.78	3%
	Right	23		48	1	24		30		126	0.64	1%
	App. Total	125	1	151	4	94	5	117	1	498	0.80	
	Pct Trucks		0.007937		0.025806		0.050505		0.008475			
Southbound	Left	3		7		8		4		22	0.69	0%
	Through	22	2	18	1	15	1	19		78	0.81	5%
	Right	14		15	2	16	3	22		72	0.82	7%
	App. Total	39	2	40	3	39	4	45	0	172	0.96	
	Pct Trucks		0.04878		0.069767		0.093023		0			
Total Intersection Volume		326	8	358	13	321	15	341	5	**1387**	**0.93**	
Intersection Pct Trucks			2.4%		3.5%		4.5%		1.4%			

Pedestrian Calls

APPROACH	MOVEMENT	7:15		7:30		7:45		8:00		
		ped	bike	ped	bike	ped	bike	ped	bike	TOTAL
Eastbound	Through									0
Westbound	Through									0
N orthbound	Through	1		3						4
Southbound	Through									0
	App. Total	1	0	3	0	0	0	0	0	4

PROJECT: Painted Hills GC
JOB NO. 13-1166
INTERSECTION: 32nd & Evergreen

Whipple Consulting Engineers, Inc
TRAFFIC COUNT REDUCTION WORKSHEET

DATE OF COUNT: 1/27/2015

Counter: BNG
Analyst: BNG

AM PEAK HOURS

15 Minute Period Beginning @

APPROACH	MOVEMENT	6:30		6:45		7:00		7:15		7:30		7:45		8:00		8:15		8:30		8:45		9:00		9:15	
		pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk
Eastbound	Left					19	1	35		50	3	55		44	1	39		32	1	29	1				
	Through					33	1	34		46	2	43	1	48		45		35	1	49					
	Right															2									
	App. Total	0	0	0	0	52	2	69	0	96	5	98	1	92	1	86	0	67	2	78	1	0	0	0	0
	Pct Trucks						0.037		0		0.05		0.01		0.011		0		0.029		0.013				
Westbound	Left																								
	Through					46		40		52	2	44		47	3	40	4	30		44					
	Right					8		7		6		3		8		4		2		2					
	App. Total	0	0	0	0	54	0	47	0	58	2	47	0	55	3	44	4	32	0	46	0	0	0	0	0
	Pct Trucks						0		0		0.033		0		0.052		0.083		0		0				
Northbound	Left																								
	Through																								
	Right																								
	App. Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pct Trucks																								
Southbound	Left					1				2		1		2				1	1						
	Through																								
	Right					21		13	3	30		24	1	25		15	3	13	1	25	1				
	App. Total	0	0	0	0	22	0	13	3	32	0	25	1	27	0	15	3	14	2	25	1	0	0	0	0
	Pct Trucks						0		0.188		0		0.038		0		0.167		0.125		0.038				
Total Intersection Volume		0	0	0	0	128	2	129	3	186	7	170	2	174	4	145	7	113	4	149	2	0	0	0	0
Intersection Pct Trucks						1.5%		2.3%		3.6%		1.2%		2.2%		4.6%		3.4%		1.3%					

Intersection Total One Hour Volumes		Pct Trucks
6:30 AM	262	1.9%
6:45 AM	455	2.6%
7:00 AM	627	2.2%
7:15 AM	675	2.4%
7:30 AM	695	2.9%
7:45 AM	619	2.7%

Intersection Total One Hour Volumes		Pct Trucks
8:00 AM	598	2.8%
8:15 AM	420	3.1%
8:30 AM	268	2.2%

Notes:

PROJECT: Painted Hills GC
JOB NO. 13-1166
INTERSECTION: 32nd & Evergreen

Data Transfer
Intersection No. 1

DATE OF COUNT: 1/27/2015
Counter Analyst
BNG BNG

Whipple Consulting Engineers, Inc
AM PEAK HOUR BREAKDOWN

APPROACH	MOVEMENT	7:30		7:45		8:00		8:15		TOTAL	P.H.F.	Pct Trucks
		pass	trk	pass	trk	pass	trk	pass	trk			
Eastbound	Left	50	3	55		44	1	39		192	0.87	2%
	Through	46	2	43	1	48		45		185	0.96	2%
	Right							2		2	0.25	0%
	App. Total	96	5	98	1	92	1	86	0	379	0.94	
	Pct Trucks		0.049505		0.010101		0.010753		0			
Westbound	Left									0		
	Through	52	2	44		47	3	40	4	192	0.89	5%
	Right	6		3		8		4		21	0.66	0%
	App. Total	58	2	47	0	55	3	44	4	213	0.89	
	Pct Trucks		0.033333		0		0.051724		0.083333			
Northbound	Left									0		
	Through									0		
	Right									0		
	App. Total	0	0	0	0	0	0	0	0	0		
	Pct Trucks											
Southbound	Left	2		1		2				5	0.63	0%
	Through									0		
	Right	30		24	1	25		15	3	98	0.82	4%
	App. Total	32	0	25	1	27	0	15	3	103	0.80	
	Pct Trucks		0		0.038462		0		0.166667			
Total Intersection Volume		186	7	170	2	174	4	145	7	695	0.90	
Intersection Pct Trucks			3.6%		1.2%		2.2%		4.6%			

Pedestrian Calls

APPROACH	MOVEMENT	7:30		7:45		8:00		8:15		TOTAL
		ped	bike	ped	bike	ped	bike	ped	bike	
Eastbound	Through									0
Westbound	Through									0
N orthbound	Through									0
Southbound	Through									0
	App. Total	0	0	0	0	0	0	0	0	0

PROJECT: Painted Hills GC
JOB NO. 13-1166
INTERSECTION: 32nd & Sullivan

Whipple Consulting Engineers, Inc
TRAFFIC COUNT REDUCTION WORKSHEET

DATE OF COUNT: 1/27/2015
Counter: JDK
Analyst: BNG

AM PEAK HOURS

APPROACH	MOVEMENT	15 Minute Period Beginning @ 6:30		6:45		7:00		7:15		7:30		7:45		8:00		8:15		8:30		8:45		9:00		9:15	
		pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk	pass	trk
Eastbound	Left					33	1	26	2	56	1	38	1	38	1	46		26	1	45	1				
	Through											1		4						1					
	Right					1				1						3		1							
	App. Total	0	0	0	0	34	1	26	2	57	1	39	1	42	1	49	0	27	1	46	1	0	0	0	0
	Pct Trucks						0.029		0.071		0.017		0.025		0.023		0		0.036		0.021				
Westbound	Left																								
	Through																								
	Right																								
	App. Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Pct Trucks																								
Northbound	Left					4		5		4		4		2		4		7		6					
	Through					13		19		26		21		12		15		26		14	1				
	Right																								
	App. Total	0	0	0	0	17	0	24	0	30	0	25	0	14	0	19	0	33	0	20	1	0	0	0	0
	Pct Trucks						0		0		0		0		0		0		0		0.048				
Southbound	Left																								
	Through					2		8		5		6		5		6		4		13	1				
	Right					33	1	30		44	3	27	1	36	4	23	4	28		27	3				
	App. Total	0	0	0	0	35	1	38	0	49	3	33	1	41	4	29	4	32	0	40	4	0	0	0	0
	Pct Trucks						0.028		0		0.058		0.029		0.089		0.121		0		0.091				
Total Intersection Volume		0	0	0	0	86	2	88	2	136	4	97	2	97	5	97	4	92	1	106	6	0	0	0	0
Intersection Pct Trucks						2.3%		2.2%		2.9%		2.0%		4.9%		4.0%		1.1%		5.4%					

Intersection Total One Hour Volumes		Pct Trucks
6:30 AM	178	2.2%
6:45 AM	318	2.5%
7:00 AM	417	2.4%
7:15 AM	431	3.0%
7:30 AM	442	3.4%
7:45 AM	395	3.0%

Intersection Total One Hour Volumes		Pct Trucks
8:00 AM	408	3.9%
8:15 AM	306	3.6%
8:30 AM	205	3.4%

Notes:

PROJECT: Painted Hills GC
JOB NO. 13-1166
INTERSECTION: 32nd & Sullivan

Data Transfer
Intersection No. 1

DATE OF COUNT: 1/27/2015
Counter Analyst
JDK BNG

Whipple Consulting Engineers, Inc
AM PEAK HOUR BREAKDOWN

APPROACH	MOVEMENT	7:30		7:45		8:00		8:15				Pct
		pass	trk	pass	trk	pass	trk	pass	trk	TOTAL	P.H.F.	Trucks
Eastbound	Left	56	1	38	1	38	1	46		181	0.79	2%
	Through			1		4				5	0.31	0%
	Right	1						3		4	0.33	0%
	App. Total	57	1	39	1	42	1	49	0	190	0.82	
	Pct Trucks		0.017241		0.025		0.023256		0			
Westbound	Left									0		
	Through									0		
	Right									0		
	App. Total	0	0	0	0	0	0	0	0	0		
	Pct Trucks											
Northbound	Left	4		4		2		4		14	0.88	0%
	Through	26		21		12		15		74	0.71	0%
	Right									0		
	App. Total	30	0	25	0	14	0	19	0	88	0.73	
	Pct Trucks		0		0		0		0			
Southbound	Left									0		
	Through	5		6		5		6		22	0.92	0%
	Right	44	3	27	1	36	4	23	4	142	0.76	8%
	App. Total	49	3	33	1	41	4	29	4	164	0.79	
	Pct Trucks		0.057692		0.029412		0.088889		0.121212			
Total Intersection Volume		136	4	97	2	97	5	97	4	442	0.79	
Intersection Pct Trucks			2.9%		2.0%		4.9%		4.0%			

Pedestrian Calls

APPROACH	MOVEMENT	7:30		7:45		8:00		8:15		
		ped	bike	ped	bike	ped	bike	ped	bike	TOTAL
Eastbound	Through									0
Westbound	Through									0
N orthbound	Through									0
Southbound	Through									0
	App. Total	0	0	0	0	0	0	0	0	0

LEVEL OF SERVICE TABLES

Existing Level of Service and Traffic Analysis

The existing levels of service at the existing intersections were calculated using the methods from the *2010 Highway Capacity Manual* as implemented in Synchro, *version 9 - Build 902*. The existing levels of service for the intersections within the study area are summarized on the following table. The existing traffic volumes used for this report are shown on Figures 3 & 4.

Table 2 - Existing Intersections Levels of Service

INTERSECTION (S)ignalized (U)nsignalized		AM Peak Hour				PM Peak Hour	
		Original Counts		Updated Counts		Updated Counts	
		Delay (sec)	LOS	*Delay (sec)*	*LOS*	*Delay (sec)*	*LOS*
32nd Ave & University Rd	S	13.6	B	13.0	B	14.0	B
Dishman-Mica Rd & University/Schafer Rd	S	17.8	B	17.5	B	18.8	B
32nd Ave & Bowdish Rd	S	16.2	B	13.1	B	14.3	B
Dishman-Mica Rd & Bowdish Rd	S	13.8	B	13.8	B	12.3	B
Dishman-Mica Rd & Thorpe Rd	U	10.1	B	10.7	B	10.5	B
16th Ave & Pines Rd	U	19.5	C	19.5	C	29.3	D
16th Ave & SR 27	S	37.2	D	37.2	D	36.0	D
32nd Ave & Pines Rd	S	24.4	C	22.2	C	20.4	C
Madison Rd & Thorpe Rd	U	11.0	B	11.0	B	9.5	A
32nd Ave & SR 27	S	25.3	C	19.5	B	29.7	C
32nd Ave & Evergreen Rd	U	10.6	B	10.6	B	14.2	B
32nd Ave & Sullivan Rd	U	11.1	B	11.1	B	12.1	B

The City of Spokane Valley and WSDOT have established level of service D as the minimum acceptable level for signalized intersections and level of service E for unsignalized intersections.

As shown above the existing intersections within the study area are currently operating within acceptable levels of service.

FUTURE YEAR TRAFFIC IMPACT ANALYSIS

Future Year Traffic Impact Analysis
Level of service calculations for the Year 2020 & 2040 conditions assumed that the existing traffic volumes as shown on Figures 3 & 4 experience an increase above the 2015 volumes at the established background rate. Two scenarios were examined for the year 2020 (buildout) analysis, as well as the horizon year 2040 (planning level study). The first scenario assumes that the development has not moved forward and analyzes the scoped intersections with the background growth rate and the background project trips. The second scenario assumes that the development has moved forward to completion and is builtout. The scenario analyzes the scoped intersections with the background growth rate, the background projects, and the project trips. These scenarios will allow a determination to be made of what the future conditions may be with and without the project.

Year 2020 without the Project, with the Background Projects
This scenario assumes that the development has not moved forward and the background projects have been completed. The traffic volumes for this condition include the existing traffic, as shown on Figures 3 & 4 multiplied by the background growth rate, plus the traffic from the original background projects as shown on Figures 5 & 6. Please see Figures 10 & 11 for the traffic volumes used for this scenario. A summary of the level of service results are shown in the following table.

For this analysis there were no left turns

Table 13 - Year 2020 Levels of Service, without the Project, with the Background Projects

INTERSECTION	(S)ignalized (U)nsignalized	AM Peak Hour				PM Peak Hour	
		Original Counts		Updated Counts		Updated Counts	
		Delay (sec)	LOS	Delay (sec)	LOS	*Delay (sec)*	*LOS*
32nd Ave & University Rd	S	14.7	B	13.2	B	14.3	B
Dishman-Mica Rd & University/Schafer Rd	S	18.0	B	18.1	B	20.1	C
32nd Ave & Bowdish Rd	S	16.8	B	14.1	B	15.2	B
Dishman-Mica Rd & Bowdish Rd	S	14.3	B	14.5	B	13.1	B
Dishman-Mica Rd & Thorpe Rd	U	10.3	B	11.1	B	10.9	B
16th Ave & Pines Rd	U	20.7	C	20.7	C	43.6	E
16th Ave & SR 27	S	39.0	D	39.0	D	39.0	D
32nd Ave & Pines Rd	S	25.8	C	24.1	C	25.8	C
Madison Rd & Thorpe Rd	U	11.3	B	11.3	B	9.8	A
32nd Ave & SR 27	S	27.1	C	22.6	C	34.7	C
32nd Ave & Evergreen Rd	U	10.8	B	10.8	B	16.1	C
32nd Ave & Sullivan Rd	U	11.4	B	11.4	B	12.9	B

City of Spokane Valley and WSDOT have established level of service D as the minimum acceptable level for signalized intersections and level of service E for unsignalized intersections.

Year 2020 with the Project, with the Background Projects

This scenario assumes that the development has moved forward to completion and the background projects have been completed. The traffic volumes for this condition include the existing traffic, as shown on Figures 10 & 11, plus the project trips as shown on Figures 7 & 8. Please see Figures 12 & 13 for the traffic volumes used for this scenario. A summary of the level of service results are shown in the following table.

Table 14 - Year 2020 Levels of Service, with the Project, with the Background Projects

INTERSECTION (S)ignalized (U)nsignalized		AM Peak Hour				PM Peak Hour	
		Original Counts		Updated Counts		Updated Counts	
		Delay (sec)	LOS	Delay (sec)	LOS	*Delay (sec)*	*LOS*
32nd Ave & University Rd	S	14.8	B	14.9	B	14.6	B
Dishman-Mica Rd & University/Schafer Rd	S	19.1	B	19.7	B	22.4	C
32nd Ave & Bowdish Rd	S	17.7	B	14.5	B	16.1	B
Dishman-Mica Rd & Bowdish Rd	S	16.3	B	18.2	B	14.5	B
Dishman-Mica Rd & Sundown Dr (Proposed)	U	11.8	B	12.4	B	10.8	B
Dishman-Mica Rd & Thorpe Rd	U	10.7	B	11.5	B	11.5	B
16th Ave & Pines Rd	U	21.4	C	21.4	C	**61.0**	**F**
16th Ave & SR 27	S	40.8	D	40.8	D	40.2	D
32nd Ave & Pines Rd	S	30.9	C	30.3	C	36.2	D
Madison Rd & Painted Hills Ave (Proposed)	U	10.9	B	10.9	B	10.6	B
Madison Rd & 41st Ave (Proposed)	U	10.6	B	11.1	B	10.3	B
Madison Rd & 43rd Ave (Proposed)	U	10.3	B	10.3	B	10.0	A
Madison Rd & 44th Ave (Proposed)	U	9.6	A	9.6	A	9.5	A
Madison Rd & Thorpe Rd	U	11.5	B	12.1	B	10.2	B
32nd Ave & SR 27	S	28.1	C	22.1	C	36.9	D
32nd Ave & Evergreen Rd	U	11.1	B	11.1	B	17.1	C
32nd Ave & Sullivan Rd	U	11.7	B	11.7	B	13.2	B

City of Spokane Valley and WSDOT have established level of service D as the minimum acceptable level for signalized intersections and level of service E for unsignalized intersections.

For the year 2020 with the project the study area intersections as shown in Table 14 are anticipated to perform at an acceptable level of service

Horizon Year 2040 without the Project, with the Background Projects (Planning Level)

This scenario assumes that the development has not moved forward and the background projects have been completed. The traffic volumes for this condition include the existing traffic, as shown on Figures 3 & 4 multiplied by the background growth rate, plus the traffic from the original background projects as shown on Figures 5 & 6. Please see Figures 14 & 15 for the traffic volumes used for this scenario. A summary of the level of service results are shown in the following table.

Table 15 - Year 2040 Levels of Service, without the Project, with the Background Projects

INTERSECTION (S)ignalized (U)nsignalized		AM Peak Hour				PM Peak Hour	
		Original Counts		Updated Counts		Updated Counts	
		Delay (sec)	LOS	Delay (sec)	LOS	*Delay (sec)*	*LOS*
32nd Ave & University Rd	S	15.4	B	14.9	B	15.0	B
Dishman-Mica Rd & University/Schafer Rd	S	22.6	C	21.3	C	21.6	C
32nd Ave & Bowdish Rd	S	23.7	C	20.8	C	20.6	C
Dishman-Mica Rd & Bowdish Rd	S	16.9	B	18.3	B	15.0	B
Dishman-Mica Rd & Thorpe Rd	U	11.3	B	12.3	B	11.9	B
16th Ave & Pines Rd • IMP : Remove SB Approach	U	**60.0** (24.4)	**F** (D)	**60.0**	**F**	**ERR**	**F**
16th Ave & SR 27 • Redirected Volumes	S	**57.2** (45.4)	**E** (D)	**57.2**	**E**	51.7	D
32nd Ave & Pines Rd	S	36.5	D	30.6	C	51.6	D
Madison Rd & Thorpe Rd	U	12.8	B	12.8	B	10.5	B
32nd Ave & SR 27	S	35.1	D	27.8	C	43.9	D
32nd Ave & Evergreen Rd	U	12.4	B	12.4	B	24.3	C
32nd Ave & Sullivan Rd	U	13.3	B	13.3	B	15.9	C

City of Spokane Valley and WSDOT have established level of service D as the minimum acceptable level for signalized intersections and level of service E for unsignalized intersections.

For the year 2040 without the project, most of the study area intersections as shown in Table 15 are anticipated to perform at an acceptable level of service. 16th Avenue & Pines Road has delays that are beyond the agency standard, giving it a level of service F in the AM & PM peak hours. Also, 16th Avenue & State Route 27 has delays that are beyond the agency standard, giving it a level of service E during the AM peak hour.

The intersections levels of service for 16th Avenue & Pines Road and 16th Avenue & State Route 27, can be improved, as well as resolve some of the safety concerns, for the intersection of 16th Avenue & Pines Road. The intersection may be returned to an acceptable level of service by removing the southbound lane and redirecting those trips to the intersection of 16th Avenue & State Route 27. However, this improvement is borderline, and may result further congestion, and

Horizon Year 2040 with the Project, with the Background Projects

This scenario assumes that the development has moved forward to completion and the background projects have been completed. The traffic volumes for this condition include the future traffic, as shown on Figures 14 & 15, plus the project trips as shown on Figures 7 & 8. Please see Figures 16 & 17 for the traffic volumes used for this scenario. A summary of the level of service results are shown in the following table.

Table 16 - Year 2040 Levels of Service, with the Project, with the Background Projects

INTERSECTION	(S)ignalized (U)nsignalized (R)oundabout	AM Peak Hour				PM Peak Hour	
		Original Counts		Updated Counts		Updated Counts	
		Delay (sec)	LOS	Delay (sec)	LOS	*Delay (sec)*	*LOS*
32nd Ave & University Rd	S	15.6	B	15.1	B	15.4	B
Dishman-Mica Rd & University/Schafer Rd	S	23.3	C	23.6	C	24.5	C
32nd Ave & Bowdish Rd	S	26.0	C	21.5	C	22.7	C
Dishman-Mica Rd & Bowdish Rd	S	21.6	C	18.5	B	17.7	B
Dishman-Mica Rd & Sundown Dr (Proposed)	U	13.0	B	13.0	B	11.4	B
Dishman-Mica Rd & Thorpe Rd	U	11.8	B	12.3	B	12.8	B
16th Ave & Pines Rd • IMP : Remove SB Approach • ALT IMP : Traffic Circle	U (U) (R)	**90.1** (28.1) (10.1)	**F** (D) (B)	**90.1**	**F**	**ERR**	**F**
16th Ave & SR 27 • Redirected Volumes • ALT IMP : Roundabout	S (S) (R)	**61.7** (47.2) (12.5)	**E** (D) (B)	**61.7**	**E**	53.1	D
32nd Ave & Pines Rd	S	47.3	D	42.7	D	**77.6**	**E**
Madison Rd & Painted Hills Ave (Proposed)	U	11.5	B	11.5	B	11.1	B
Madison Rd & 41st Ave (Proposed)	U	11.1	B	11.1	B	10.8	B
Madison Rd & 43rd Ave (Proposed)	U	10.9	B	10.9	B	10.4	B
Madison Rd & 44th Ave (Proposed)	U	9.9	A	9.9	A	9.8	A
Madison Rd & Thorpe Rd	U	13.2	B	13.2	B	10.9	B
32nd Ave & SR 27	S	36.4	D	29.6	C	46.6	D
32nd Ave & Evergreen Rd	U	12.8	B	12.8	B	27.0	D
32nd Ave & Sullivan Rd	U	13.8	B	13.8	B	16.4	C

City of Spokane Valley and WSDOT have established level of service D as the minimum acceptable level for signalized intersections and level of service E for unsignalized and roundabout intersections.

For the horizon year 2040 with the project, most of the study area intersections as shown in Table 16 are anticipated to perform at an acceptable level of service. Except, for the intersection of 16th Avenue & Pines Road which has exceeded the agency standard at level of service F in the AM & PM peak hours. Also, 16th Avenue & State Route 27 has exceeded the agency standard at level of service E during the AM peak hour. The removal of the southbound approach previously suggested only goes so far in reducing traffic safety conflicts and improving the intersection level of service. A solution that was proposed nearly 10 years ago was the installation of a two-lane roundabout at 16th Avenue & State Route 27, with a traffic circle at 16th

LEVEL OF SERVICE
CALCULATIONS
EXISTING CONDITIONS

HCM 2010 Research does not support Non-NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	125	6	32	441	111	19	73	60	61	46	4
Future Volume (vph)	4	125	6	32	441	111	19	73	60	61	46	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		4.0	5.0		4.0	5.0	
Lane Util. Factor		0.95			0.95		1.00	0.95		1.00	0.95	
Frt		0.99			0.97		1.00	0.93		1.00	0.99	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3509			3429		1770	3300		1770	3500	
Flt Permitted		0.94			0.93		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		3304			3210		1770	3300		1770	3500	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	136	7	35	479	121	21	79	65	66	50	4
RTOR Reduction (vph)	0	4	0	0	19	0	0	51	0	0	3	0
Lane Group Flow (vph)	0	143	0	0	616	0	21	93	0	66	51	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4								
Actuated Green, G (s)		21.0			21.0		1.2	10.8		4.8	14.4	
Effective Green, g (s)		21.0			21.0		1.2	10.8		4.8	14.4	
Actuated g/C Ratio		0.42			0.42		0.02	0.21		0.09	0.28	
Clearance Time (s)		5.0			5.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)		5.0			5.0		4.0	5.0		4.0	5.0	
Lane Grp Cap (vph)		1371			1332		41	704		167	996	
v/s Ratio Prot							0.01	c0.03		c0.04	c0.01	
v/s Ratio Perm		0.04			c0.19							
v/c Ratio		0.10			0.46		0.51	0.13		0.40	0.05	
Uniform Delay, d1		9.1			10.7		24.4	16.1		21.5	13.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			0.5		13.6	0.2		2.1	0.0	
Delay (s)		9.1			11.2		38.0	16.3		23.6	13.2	
Level of Service		A			B		D	B		C	B	
Approach Delay (s)		9.1			11.2			19.1			18.9	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	13.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	50.6	Sum of lost time (s)	14.0
Intersection Capacity Utilization	43.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 2010 analysis does not support custom phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	126	35	10	378	18	213	95	22	14	37	11
Future Volume (vph)	1	126	35	10	378	18	213	95	22	14	37	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0		4.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	3515		1770	1810		1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	3515		1770	1810		1770	1863	1583
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)	1	138	38	11	415	20	234	104	24	15	41	12
RTOR Reduction (vph)	0	0	28	0	3	0	0	6	0	0	0	11
Lane Group Flow (vph)	1	138	10	11	432	0	234	122	0	15	41	1
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	custom
Protected Phases	1	6		5	2		7	4		3		
Permitted Phases			6								8	8
Actuated Green, G (s)	0.9	14.5	14.5	1.0	14.6		14.8	18.0		1.1	4.3	4.3
Effective Green, g (s)	0.9	14.5	14.5	1.0	14.6		14.8	18.0		1.1	4.3	4.3
Actuated g/C Ratio	0.02	0.27	0.27	0.02	0.27		0.27	0.33		0.02	0.08	0.08
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Grp Cap (vph)	29	494	420	32	939		479	596		35	146	124
v/s Ratio Prot	0.00	0.07		c0.01	c0.12		c0.13	c0.07		0.01		
v/s Ratio Perm			0.01								0.02	0.00
v/c Ratio	0.03	0.28	0.02	0.34	0.46		0.49	0.20		0.43	0.28	0.01
Uniform Delay, d1	26.4	15.9	14.8	26.5	16.7		16.7	13.2		26.4	23.7	23.2
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	0.7	0.4	0.0	8.6	0.5		1.1	0.2		11.1	1.4	0.0
Delay (s)	27.1	16.3	14.9	35.1	17.2		17.8	13.4		37.5	25.1	23.2
Level of Service	C	B	B	D	B		B	B		D	C	C
Approach Delay (s)		16.1			17.6			16.2			27.5	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	17.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	54.6	Sum of lost time (s)	20.0
Intersection Capacity Utilization	39.5%	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 (veh/h)	51	412	34	23	253	8	52	44	28	73	109	92
Future Volume (veh/h)	51	412	34	23	253	8	52	44	28	73	109	92
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	58	468	39	26	288	9	59	50	32	83	124	105
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	495	661	55	333	671	21	256	204	102	190	215	154
Arrive On Green	0.03	0.39	0.39	0.02	0.37	0.37	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	1774	1696	141	1774	1797	56	510	728	364	315	769	550
Grp Volume(v), veh/h	58	0	507	26	0	297	141	0	0	312	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1838	1774	0	1853	1602	0	0	1633	0	0
Q Serve(g_s), s	0.9	0.0	10.4	0.4	0.0	5.4	0.0	0.0	0.0	4.2	0.0	0.0
Cycle Q Clear(g_c), s	0.9	0.0	10.4	0.4	0.0	5.4	2.8	0.0	0.0	7.5	0.0	0.0
Prop In Lane	1.00		0.08	1.00		0.03	0.42		0.23	0.27		0.34
Lane Grp Cap(c), veh/h	495	0	716	333	0	692	562	0	0	559	0	0
V/C Ratio(X)	0.12	0.00	0.71	0.08	0.00	0.43	0.25	0.00	0.00	0.56	0.00	0.00
Avail Cap(c_a), veh/h	1166	0	983	1032	0	991	927	0	0	965	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.5	0.0	11.5	9.5	0.0	10.5	12.6	0.0	0.0	14.2	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	2.0	0.1	0.0	0.6	0.3	0.0	0.0	1.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	5.6	0.2	0.0	2.8	1.4	0.0	0.0	3.6	0.0	0.0
LnGrp Delay(d),s/veh	8.6	0.0	13.5	9.6	0.0	11.1	13.0	0.0	0.0	15.5	0.0	0.0
LnGrp LOS	A		B	A		B	B			B		
Approach Vol, veh/h		565			323			141			312	
Approach Delay, s/veh		13.0			11.0			13.0			15.5	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.5	21.8		17.6	4.8	22.5		17.6
Change Period (Y+Rc), s	4.0	5.0		5.0	4.0	5.0		5.0
Max Green Setting (Gmax), s	18.5	24.0		24.0	18.5	24.0		24.0
Max Q Clear Time (g_c+I1), s	2.9	7.4		4.8	2.4	12.4		9.5
Green Ext Time (p_c), s	0.1	6.3		3.8	0.0	5.0		3.4

Intersection Summary	
HCM 2010 Ctrl Delay	13.1
HCM 2010 LOS	B

HCM 2010 Research does not support Non-NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	113	31	9	269	20	112	143	16	21	59	7
Future Volume (vph)	6	113	31	9	269	20	112	143	16	21	59	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.5		4.0	5.5			5.0			5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	0.97		1.00	0.99			0.99			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99	1.00
Satd. Flow (prot)	1770	1803		1770	1843			1811			1839	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.83			0.88	1.00
Satd. Flow (perm)	1770	1803		1770	1843			1527			1635	1583
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)	7	128	35	10	306	23	127	162	18	24	67	8
RTOR Reduction (vph)	0	13	0	0	4	0	0	2	0	0	0	5
Lane Group Flow (vph)	7	150	0	10	325	0	0	306	0	0	91	3
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	1	6		5	2			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	1.1	13.7		1.1	13.7			16.5			16.5	16.5
Effective Green, g (s)	1.1	13.7		1.1	13.7			16.5			16.5	16.5
Actuated g/C Ratio	0.02	0.30		0.02	0.30			0.36			0.36	0.36
Clearance Time (s)	4.0	5.5		4.0	5.5			5.0			5.0	5.0
Vehicle Extension (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Grp Cap (vph)	42	539		42	551			550			589	570
v/s Ratio Prot	0.00	0.08		c0.01	c0.18							
v/s Ratio Perm								c0.20			0.06	0.00
v/c Ratio	0.17	0.28		0.24	0.59			0.56			0.15	0.01
Uniform Delay, d1	21.9	12.3		21.9	13.7			11.7			9.9	9.4
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	2.6	0.4		4.0	1.9			1.5			0.2	0.0
Delay (s)	24.5	12.7		25.9	15.6			13.2			10.1	9.4
Level of Service	C	B		C	B			B			B	A
Approach Delay (s)		13.1			15.9			13.2			10.0	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	13.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	45.8	Sum of lost time (s)	14.5
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	2.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	6	73	218	12	34	111
Future Vol, veh/h	6	73	218	12	34	111
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	92	276	15	43	141

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	511	284	0	0	291	0
Stage 1	284	-	-	-	-	-
Stage 2	227	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	523	755	-	-	1271	-
Stage 1	764	-	-	-	-	-
Stage 2	811	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	504	755	-	-	1271	-
Mov Cap-2 Maneuver	504	-	-	-	-	-
Stage 1	764	-	-	-	-	-
Stage 2	781	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.7	0	1.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	727	1271	-
HCM Lane V/C Ratio	-	-	0.138	0.034	-
HCM Control Delay (s)	-	-	10.7	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	344	3	38	390	53	43	50	99	181	33	31
Future Volume (veh/h)	15	344	3	38	390	53	43	50	99	181	33	31
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	17	391	3	43	443	60	49	57	112	206	38	35
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	392	925	7	483	823	112	328	81	159	351	207	191
Arrive On Green	0.01	0.50	0.50	0.02	0.51	0.51	0.03	0.14	0.14	0.12	0.23	0.23
Sat Flow, veh/h	1774	1846	14	1774	1607	218	1774	562	1105	1774	894	823
Grp Volume(v), veh/h	17	0	394	43	0	503	49	0	169	206	0	73
Grp Sat Flow(s),veh/h/ln	1774	0	1860	1774	0	1824	1774	0	1668	1774	0	1717
Q Serve(g_s), s	0.4	0.0	12.0	1.1	0.0	16.7	2.1	0.0	8.7	8.4	0.0	3.1
Cycle Q Clear(g_c), s	0.4	0.0	12.0	1.1	0.0	16.7	2.1	0.0	8.7	8.4	0.0	3.1
Prop In Lane	1.00		0.01	1.00		0.12	1.00		0.66	1.00		0.48
Lane Grp Cap(c), veh/h	392	0	932	483	0	935	328	0	240	351	0	398
V/C Ratio(X)	0.04	0.00	0.42	0.09	0.00	0.54	0.15	0.00	0.70	0.59	0.00	0.18
Avail Cap(c_a), veh/h	767	0	932	1035	0	935	665	0	594	631	0	478
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.2	0.0	14.2	11.3	0.0	14.7	31.3	0.0	36.6	26.6	0.0	27.7
Incr Delay (d2), s/veh	0.0	0.0	1.4	0.1	0.0	2.2	0.2	0.0	7.8	1.6	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	6.5	0.5	0.0	9.0	1.0	0.0	4.5	4.2	0.0	1.5
LnGrp Delay(d),s/veh	12.2	0.0	15.6	11.4	0.0	17.0	31.5	0.0	44.4	28.2	0.0	28.2
LnGrp LOS	B		B	B		B	C		D	C		C
Approach Vol, veh/h		411			546			218			279	
Approach Delay, s/veh		15.5			16.5			41.5			28.2	
Approach LOS		B			B			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.5	51.0	15.3	17.9	6.6	50.0	7.4	25.8
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0
Max Green Setting (Gmax), s	20.0	30.0	25.0	32.0	30.0	45.0	20.0	25.0
Max Q Clear Time (g_c+I1), s	2.4	18.7	10.4	10.7	3.1	14.0	4.1	5.1
Green Ext Time (p_c), s	0.0	6.7	0.5	2.5	0.1	12.4	0.1	2.4

Intersection Summary	
HCM 2010 Ctrl Delay	22.2
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	221	55	59	191	66	114	258	126	22	78	72
Future Volume (veh/h)	125	221	55	59	191	66	114	258	126	22	78	72
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	134	238	59	63	205	71	123	277	135	24	84	77
Adj No. of Lanes	1	2	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	179	818	199	105	328	114	165	484	230	51	264	218
Arrive On Green	0.10	0.29	0.29	0.06	0.25	0.25	0.09	0.21	0.21	0.03	0.14	0.14
Sat Flow, veh/h	1774	2825	686	1774	1323	458	1774	2331	1106	1774	1840	1524
Grp Volume(v), veh/h	134	147	150	63	0	276	123	208	204	24	80	81
Grp Sat Flow(s),veh/h/ln	1774	1770	1742	1774	0	1782	1774	1770	1668	1774	1770	1594
Q Serve(g_s), s	3.5	3.1	3.2	1.7	0.0	6.6	3.3	5.1	5.3	0.6	2.0	2.2
Cycle Q Clear(g_c), s	3.5	3.1	3.2	1.7	0.0	6.6	3.3	5.1	5.3	0.6	2.0	2.2
Prop In Lane	1.00		0.39	1.00		0.26	1.00		0.66	1.00		0.96
Lane Grp Cap(c), veh/h	179	513	504	105	0	441	165	367	346	51	253	228
V/C Ratio(X)	0.75	0.29	0.30	0.60	0.00	0.63	0.75	0.57	0.59	0.47	0.32	0.35
Avail Cap(c_a), veh/h	920	1469	1446	920	0	1479	1105	1469	1384	1105	1469	1323
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.1	13.3	13.3	22.1	0.0	16.1	21.3	17.1	17.2	23.0	18.5	18.6
Incr Delay (d2), s/veh	6.1	0.3	0.3	5.4	0.0	1.5	6.6	1.0	1.2	6.8	0.6	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	1.6	1.6	1.0	0.0	3.4	1.9	2.6	2.5	0.4	1.0	1.0
LnGrp Delay(d),s/veh	27.1	13.6	13.6	27.5	0.0	17.6	27.9	18.2	18.4	29.8	19.1	19.4
LnGrp LOS	C	B	B	C		B	C	B	B	C	B	B
Approach Vol, veh/h		431			339			535			185	
Approach Delay, s/veh		17.8			19.4			20.5			20.6	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.9	15.5	7.3	18.5	10.0	12.4	9.4	16.4
Change Period (Y+Rc), s	5.5	5.5	4.5	4.5	5.5	5.5	4.5	4.5
Max Green Setting (Gmax), s	30.0	40.0	25.0	40.0	30.0	40.0	25.0	40.0
Max Q Clear Time (g_c+I1), s	2.6	7.3	3.7	5.2	5.3	4.2	5.5	8.6
Green Ext Time (p_c), s	0.0	2.7	0.1	3.6	0.3	2.7	0.3	3.6

Intersection Summary	
HCM 2010 Ctrl Delay	19.5
HCM 2010 LOS	B

YEAR 2020

LEVEL OF SERVICE CALCULATIONS

WITHOUT PROJECT

HCM 2010 Research does not support Non-NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	137	6	34	485	117	20	79	63	64	50	4
Future Volume (vph)	4	137	6	34	485	117	20	79	63	64	50	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		4.0	5.0		4.0	5.0	
Lane Util. Factor		0.95			0.95		1.00	0.95		1.00	0.95	
Frt		0.99			0.97		1.00	0.93		1.00	0.99	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3512			3432		1770	3305		1770	3503	
Flt Permitted		0.94			0.93		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		3307			3212		1770	3305		1770	3503	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	149	7	37	527	127	22	86	68	70	54	4
RTOR Reduction (vph)	0	3	0	0	17	0	0	54	0	0	3	0
Lane Group Flow (vph)	0	157	0	0	674	0	22	100	0	70	55	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4								
Actuated Green, G (s)		22.4			22.4		1.3	10.9		4.9	14.5	
Effective Green, g (s)		22.4			22.4		1.3	10.9		4.9	14.5	
Actuated g/C Ratio		0.43			0.43		0.02	0.21		0.09	0.28	
Clearance Time (s)		5.0			5.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)		5.0			5.0		4.0	5.0		4.0	5.0	
Lane Grp Cap (vph)		1419			1378		44	690		166	973	
v/s Ratio Prot							0.01	c0.03		c0.04	c0.02	
v/s Ratio Perm		0.05			c0.21							
v/c Ratio		0.11			0.49		0.50	0.15		0.42	0.06	
Uniform Delay, d1		8.9			10.8		25.1	16.8		22.3	13.8	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			0.6		11.7	0.2		2.4	0.1	
Delay (s)		9.0			11.3		36.8	17.1		24.7	13.9	
Level of Service		A			B		D	B		C	B	
Approach Delay (s)		9.0			11.3			19.5			19.8	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	13.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	52.2	Sum of lost time (s)	14.0
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 2010 analysis does not support custom phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	139	37	11	407	19	225	100	23	16	39	12
Future Volume (vph)	1	139	37	11	407	19	225	100	23	16	39	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0		4.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	3515		1770	1811		1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	3515		1770	1811		1770	1863	1583
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)	1	153	41	12	447	21	247	110	25	18	43	13
RTOR Reduction (vph)	0	0	30	0	3	0	0	6	0	0	0	12
Lane Group Flow (vph)	1	153	11	12	465	0	247	129	0	18	43	1
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	custom
Protected Phases	1	6		5	2		7	4		3		
Permitted Phases			6								8	8
Actuated Green, G (s)	0.9	14.9	14.9	1.1	15.1		15.7	18.9		1.1	4.3	4.3
Effective Green, g (s)	0.9	14.9	14.9	1.1	15.1		15.7	18.9		1.1	4.3	4.3
Actuated g/C Ratio	0.02	0.27	0.27	0.02	0.27		0.28	0.34		0.02	0.08	0.08
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Grp Cap (vph)	28	495	421	34	947		496	611		34	143	121
v/s Ratio Prot	0.00	0.08		c0.01	c0.13		c0.14	c0.07		0.01		
v/s Ratio Perm			0.01								0.02	0.00
v/c Ratio	0.04	0.31	0.03	0.35	0.49		0.50	0.21		0.53	0.30	0.01
Uniform Delay, d1	27.1	16.4	15.2	27.1	17.2		16.9	13.2		27.2	24.4	23.9
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	0.7	0.5	0.0	8.4	0.5		1.1	0.2		18.0	1.6	0.0
Delay (s)	27.8	16.9	15.2	35.5	17.8		17.9	13.5		45.2	26.0	23.9
Level of Service	C	B	B	D	B		B	B		D	C	C
Approach Delay (s)		16.6			18.2			16.4			30.3	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	56.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	41.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	442	36	24	289	8	55	48	30	77	116	97
Future Volume (veh/h)	54	442	36	24	289	8	55	48	30	77	116	97
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	61	502	41	27	328	9	62	55	34	88	132	110
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	469	678	55	311	689	19	248	207	101	188	221	156
Arrive On Green	0.04	0.40	0.40	0.02	0.38	0.38	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	1774	1699	139	1774	1804	50	492	719	352	321	765	543
Grp Volume(v), veh/h	61	0	543	27	0	337	151	0	0	330	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1838	1774	0	1854	1563	0	0	1629	0	0
Q Serve(g_s), s	1.0	0.0	12.0	0.4	0.0	6.5	0.0	0.0	0.0	5.1	0.0	0.0
Cycle Q Clear(g_c), s	1.0	0.0	12.0	0.4	0.0	6.5	3.2	0.0	0.0	8.4	0.0	0.0
Prop In Lane	1.00		0.08	1.00		0.03	0.41		0.23	0.27		0.33
Lane Grp Cap(c), veh/h	469	0	733	311	0	708	557	0	0	565	0	0
V/C Ratio(X)	0.13	0.00	0.74	0.09	0.00	0.48	0.27	0.00	0.00	0.58	0.00	0.00
Avail Cap(c_a), veh/h	1095	0	927	967	0	935	866	0	0	908	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.8	0.0	12.2	10.0	0.0	11.1	13.2	0.0	0.0	15.0	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	2.9	0.1	0.0	0.7	0.4	0.0	0.0	1.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	6.6	0.2	0.0	3.4	1.6	0.0	0.0	4.1	0.0	0.0
LnGrp Delay(d),s/veh	9.0	0.0	15.1	10.2	0.0	11.8	13.5	0.0	0.0	16.3	0.0	0.0
LnGrp LOS	A		B	B		B	B			B		
Approach Vol, veh/h		604			364			151			330	
Approach Delay, s/veh		14.5			11.7			13.5			16.3	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.7	23.2		18.7	4.9	24.0		18.7
Change Period (Y+Rc), s	4.0	5.0		5.0	4.0	5.0		5.0
Max Green Setting (Gmax), s	18.5	24.0		24.0	18.5	24.0		24.0
Max Q Clear Time (g_c+I1), s	3.0	8.5		5.2	2.4	14.0		10.4
Green Ext Time (p_c), s	0.1	6.6		4.1	0.0	5.0		3.5

Intersection Summary	
HCM 2010 Ctrl Delay	14.1
HCM 2010 LOS	B

HCM 2010 Research does not support Non-NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	124	33	10	294	24	118	151	17	23	62	7
Future Volume (vph)	6	124	33	10	294	24	118	151	17	23	62	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.5		4.0	5.5			5.0			5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	0.97		1.00	0.99			0.99			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99	1.00
Satd. Flow (prot)	1770	1803		1770	1842			1811			1838	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.82			0.87	1.00
Satd. Flow (perm)	1770	1803		1770	1842			1520			1618	1583
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)	7	141	38	11	334	27	134	172	19	26	70	8
RTOR Reduction (vph)	0	12	0	0	4	0	0	2	0	0	0	5
Lane Group Flow (vph)	7	167	0	11	357	0	0	323	0	0	96	3
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	1	6		5	2			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	1.0	14.4		1.1	14.5			16.6			16.6	16.6
Effective Green, g (s)	1.0	14.4		1.1	14.5			16.6			16.6	16.6
Actuated g/C Ratio	0.02	0.31		0.02	0.31			0.36			0.36	0.36
Clearance Time (s)	4.0	5.5		4.0	5.5			5.0			5.0	5.0
Vehicle Extension (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Grp Cap (vph)	37	557		41	573			541			576	563
v/s Ratio Prot	0.00	0.09		c0.01	c0.19							
v/s Ratio Perm								c0.21			0.06	0.00
v/c Ratio	0.19	0.30		0.27	0.62			0.60			0.17	0.01
Uniform Delay, d1	22.4	12.3		22.4	13.7			12.3			10.3	9.7
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	3.4	0.4		4.8	2.4			2.1			0.2	0.0
Delay (s)	25.8	12.7		27.1	16.1			14.3			10.5	9.7
Level of Service	C	B		C	B			B			B	A
Approach Delay (s)		13.2			16.4			14.3			10.4	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	14.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	46.6	Sum of lost time (s)	14.5
Intersection Capacity Utilization	48.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	2.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	6	89	230	13	44	117
Future Vol, veh/h	6	89	230	13	44	117
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	113	291	16	56	148

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	558	299	0	0	308	0
Stage 1	299	-	-	-	-	-
Stage 2	259	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	491	741	-	-	1253	-
Stage 1	752	-	-	-	-	-
Stage 2	784	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	467	741	-	-	1253	-
Mov Cap-2 Maneuver	467	-	-	-	-	-
Stage 1	752	-	-	-	-	-
Stage 2	746	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.1	0	2.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	715	1253	-
HCM Lane V/C Ratio	-	-	0.168	0.044	-
HCM Control Delay (s)	-	-	11.1	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	369	3	44	431	56	45	63	113	191	39	33
Future Volume (veh/h)	16	369	3	44	431	56	45	63	113	191	39	33
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	18	419	3	50	490	64	51	72	128	217	44	38
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	335	892	6	443	803	105	352	99	176	355	234	202
Arrive On Green	0.01	0.48	0.48	0.03	0.50	0.50	0.03	0.16	0.16	0.12	0.25	0.25
Sat Flow, veh/h	1774	1847	13	1774	1615	211	1774	603	1071	1774	924	798
Grp Volume(v), veh/h	18	0	422	50	0	554	51	0	200	217	0	82
Grp Sat Flow(s),veh/h/ln	1774	0	1860	1774	0	1826	1774	0	1674	1774	0	1722
Q Serve(g_s), s	0.5	0.0	14.1	1.3	0.0	20.4	2.2	0.0	10.6	9.0	0.0	3.5
Cycle Q Clear(g_c), s	0.5	0.0	14.1	1.3	0.0	20.4	2.2	0.0	10.6	9.0	0.0	3.5
Prop In Lane	1.00		0.01	1.00		0.12	1.00		0.64	1.00		0.46
Lane Grp Cap(c), veh/h	335	0	898	443	0	908	352	0	275	355	0	436
V/C Ratio(X)	0.05	0.00	0.47	0.11	0.00	0.61	0.14	0.00	0.73	0.61	0.00	0.19
Avail Cap(c_a), veh/h	695	0	898	966	0	908	673	0	575	613	0	462
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.0	0.0	16.1	12.7	0.0	16.9	30.9	0.0	37.0	26.5	0.0	27.3
Incr Delay (d2), s/veh	0.1	0.0	1.8	0.1	0.0	3.0	0.2	0.0	7.7	1.7	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	7.7	0.7	0.0	10.9	1.1	0.0	5.5	4.5	0.0	1.7
LnGrp Delay(d),s/veh	14.1	0.0	17.9	12.8	0.0	20.0	31.1	0.0	44.6	28.2	0.0	27.7
LnGrp LOS	B		B	B		B	C		D	C		C
Approach Vol, veh/h		440			604			251			299	
Approach Delay, s/veh		17.7			19.4			41.9			28.1	
Approach LOS		B			B			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.6	51.4	15.9	20.3	7.0	50.0	7.6	28.6
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0
Max Green Setting (Gmax), s	20.0	30.0	25.0	32.0	30.0	45.0	20.0	25.0
Max Q Clear Time (g_c+I1), s	2.5	22.4	11.0	12.6	3.3	16.1	4.2	5.5
Green Ext Time (p_c), s	0.0	5.2	0.5	2.8	0.1	13.3	0.1	2.8

Intersection Summary	
HCM 2010 Ctrl Delay	24.1
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	132	242	63	69	208	81	136	309	151	26	94	76
Future Volume (veh/h)	132	242	63	69	208	81	136	309	151	26	94	76
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	152	278	72	79	239	93	156	355	174	30	108	87
Adj No. of Lanes	1	2	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	200	910	232	110	351	137	206	545	263	59	295	219
Arrive On Green	0.11	0.33	0.33	0.06	0.27	0.27	0.12	0.24	0.24	0.03	0.15	0.15
Sat Flow, veh/h	1774	2795	711	1774	1278	497	1774	2318	1117	1774	1940	1439
Grp Volume(v), veh/h	152	174	176	79	0	332	156	270	259	30	98	97
Grp Sat Flow(s),veh/h/ln	1774	1770	1737	1774	0	1775	1774	1770	1666	1774	1770	1609
Q Serve(g_s), s	4.8	4.3	4.4	2.5	0.0	9.7	5.0	8.0	8.2	1.0	2.9	3.2
Cycle Q Clear(g_c), s	4.8	4.3	4.4	2.5	0.0	9.7	5.0	8.0	8.2	1.0	2.9	3.2
Prop In Lane	1.00		0.41	1.00		0.28	1.00		0.67	1.00		0.89
Lane Grp Cap(c), veh/h	200	576	566	110	0	488	206	416	392	59	270	245
V/C Ratio(X)	0.76	0.30	0.31	0.72	0.00	0.68	0.76	0.65	0.66	0.51	0.36	0.40
Avail Cap(c_a), veh/h	763	1218	1195	763	0	1221	916	1218	1146	916	1218	1107
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.0	14.7	14.7	26.8	0.0	18.8	24.9	20.1	20.1	27.6	22.1	22.2
Incr Delay (d2), s/veh	5.8	0.3	0.3	8.5	0.0	1.7	5.6	1.3	1.4	6.8	0.7	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	2.1	2.1	1.5	0.0	4.9	2.7	4.0	3.9	0.6	1.5	1.5
LnGrp Delay(d),s/veh	30.8	15.0	15.0	35.2	0.0	20.5	30.5	21.3	21.6	34.4	22.8	23.1
LnGrp LOS	C	B	B	D		C	C	C	C	C	C	C
Approach Vol, veh/h		502			411			685			225	
Approach Delay, s/veh		19.8			23.3			23.5			24.5	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.4	19.2	8.1	23.4	12.2	14.4	11.1	20.5
Change Period (Y+Rc), s	5.5	5.5	4.5	4.5	5.5	5.5	4.5	4.5
Max Green Setting (Gmax), s	30.0	40.0	25.0	40.0	30.0	40.0	25.0	40.0
Max Q Clear Time (g_c+I1), s	3.0	10.2	4.5	6.4	7.0	5.2	6.8	11.7
Green Ext Time (p_c), s	0.0	3.5	0.2	4.5	0.4	3.5	0.4	4.3

Intersection Summary	
HCM 2010 Ctrl Delay	22.6
HCM 2010 LOS	C

YEAR 2020

LEVEL OF SERVICE CALCULATIONS

WITH PROJECT

HCM 2010 Research does not support Non-NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	140	6	34	491	125	20	89	63	65	56	4
Future Volume (vph)	4	140	6	34	491	125	20	89	63	65	56	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		4.0	5.0		4.0	5.0	
Lane Util. Factor		0.95			0.95		1.00	0.95		1.00	0.95	
Frt		0.99			0.97		1.00	0.94		1.00	0.99	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3513			3428		1770	3320		1770	3502	
Flt Permitted		0.94			0.93		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		3295			3202		1770	3320		1770	3502	
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)	5	165	7	40	578	147	24	105	74	76	66	5
RTOR Reduction (vph)	0	3	0	0	18	0	0	59	0	0	3	0
Lane Group Flow (vph)	0	174	0	0	747	0	24	120	0	76	68	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4								
Actuated Green, G (s)		24.3			24.3		1.4	12.0		7.0	17.6	
Effective Green, g (s)		24.3			24.3		1.4	12.0		7.0	17.6	
Actuated g/C Ratio		0.42			0.42		0.02	0.21		0.12	0.31	
Clearance Time (s)		5.0			5.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)		5.0			5.0		4.0	5.0		4.0	5.0	
Lane Grp Cap (vph)		1397			1357		43	695		216	1075	
v/s Ratio Prot							0.01	c0.04		c0.04	0.02	
v/s Ratio Perm		0.05			c0.23							
v/c Ratio		0.12			0.55		0.56	0.17		0.35	0.06	
Uniform Delay, d1		10.0			12.4		27.6	18.6		23.1	14.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			0.8		17.9	0.2		1.4	0.1	
Delay (s)		10.1			13.2		45.6	18.8		24.4	14.1	
Level of Service		B			B		D	B		C	B	
Approach Delay (s)		10.1			13.2			22.0			19.4	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	57.3	Sum of lost time (s)	14.0
Intersection Capacity Utilization	46.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 2010 analysis does not support custom phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	169	37	11	519	29	225	100	23	22	39	12
Future Volume (vph)	1	169	37	11	519	29	225	100	23	22	39	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0		4.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	3511		1770	1811		1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	3511		1770	1811		1770	1863	1583
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)	1	199	44	13	611	34	265	118	27	26	46	14
RTOR Reduction (vph)	0	0	30	0	3	0	0	6	0	0	0	13
Lane Group Flow (vph)	1	199	14	13	642	0	265	139	0	26	46	1
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	custom
Protected Phases	1	6		5	2		7	4		3		
Permitted Phases			6								8	8
Actuated Green, G (s)	1.0	19.7	19.7	1.1	19.8		17.9	19.7		2.7	4.5	4.5
Effective Green, g (s)	1.0	19.7	19.7	1.1	19.8		17.9	19.7		2.7	4.5	4.5
Actuated g/C Ratio	0.02	0.31	0.31	0.02	0.31		0.28	0.31		0.04	0.07	0.07
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Grp Cap (vph)	28	580	493	30	1099		501	564		75	132	112
v/s Ratio Prot	0.00	0.11		c0.01	c0.18		c0.15	c0.08		0.01		
v/s Ratio Perm			0.01								0.02	0.00
v/c Ratio	0.04	0.34	0.03	0.43	0.58		0.53	0.25		0.35	0.35	0.01
Uniform Delay, d1	30.6	16.8	15.1	30.7	18.2		19.1	16.2		29.4	28.0	27.3
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	0.7	0.5	0.0	13.1	0.9		1.3	0.3		3.8	2.2	0.0
Delay (s)	31.3	17.2	15.1	43.8	19.2		20.4	16.5		33.2	30.1	27.3
Level of Service	C	B	B	D	B		C	B		C	C	C
Approach Delay (s)		16.9			19.7			19.0			30.6	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	63.2	Sum of lost time (s)	20.0
Intersection Capacity Utilization	44.4%	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 (veh/h)	54	445	37	27	298	12	60	58	37	79	121	97
Future Volume (veh/h)	54	445	37	27	298	12	60	58	37	79	121	97
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	61	506	42	31	339	14	68	66	42	90	138	110
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	455	676	56	307	681	28	237	217	110	188	228	156
Arrive On Green	0.04	0.40	0.40	0.02	0.38	0.38	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	1774	1697	141	1774	1776	73	459	738	375	323	778	531
Grp Volume(v), veh/h	61	0	548	31	0	353	176	0	0	338	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1838	1774	0	1850	1572	0	0	1632	0	0
Q Serve(g_s), s	1.0	0.0	12.5	0.5	0.0	7.1	0.0	0.0	0.0	4.9	0.0	0.0
Cycle Q Clear(g_c), s	1.0	0.0	12.5	0.5	0.0	7.1	3.9	0.0	0.0	8.8	0.0	0.0
Prop In Lane	1.00		0.08	1.00		0.04	0.39		0.24	0.27		0.33
Lane Grp Cap(c), veh/h	455	0	732	307	0	709	564	0	0	572	0	0
V/C Ratio(X)	0.13	0.00	0.75	0.10	0.00	0.50	0.31	0.00	0.00	0.59	0.00	0.00
Avail Cap(c_a), veh/h	1065	0	906	943	0	911	851	0	0	887	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.1	0.0	12.6	10.3	0.0	11.4	13.5	0.0	0.0	15.2	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	3.2	0.1	0.0	0.8	0.4	0.0	0.0	1.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	6.9	0.3	0.0	3.7	1.9	0.0	0.0	4.3	0.0	0.0
LnGrp Delay(d),s/veh	9.2	0.0	15.8	10.4	0.0	12.2	13.9	0.0	0.0	16.5	0.0	0.0
LnGrp LOS	A		B	B		B	B			B		
Approach Vol, veh/h		609			384			176			338	
Approach Delay, s/veh		15.1			12.1			13.9			16.5	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.7	23.7		19.3	5.0	24.4		19.3
Change Period (Y+Rc), s	4.0	5.0		5.0	4.0	5.0		5.0
Max Green Setting (Gmax), s	18.5	24.0		24.0	18.5	24.0		24.0
Max Q Clear Time (g_c+I1), s	3.0	9.1		5.9	2.5	14.5		10.8
Green Ext Time (p_c), s	0.1	6.7		4.3	0.0	4.9		3.7

Intersection Summary	
HCM 2010 Ctrl Delay	14.5
HCM 2010 LOS	B

HCM 2010 Research does not support Non-NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	160	33	39	416	46	118	151	28	31	62	7
Future Volume (vph)	6	160	33	39	416	46	118	151	28	31	62	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.5		4.0	5.5			5.0			5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	0.97		1.00	0.99			0.99			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	1.00
Satd. Flow (prot)	1770	1815		1770	1835			1803			1832	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.82			0.85	1.00
Satd. Flow (perm)	1770	1815		1770	1835			1514			1582	1583
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	7	184	38	45	478	53	136	174	32	36	71	8
RTOR Reduction (vph)	0	9	0	0	6	0	0	4	0	0	0	5
Lane Group Flow (vph)	7	213	0	45	525	0	0	338	0	0	107	3
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	1	6		5	2			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	1.2	17.4		3.1	19.3			16.4			16.4	16.4
Effective Green, g (s)	1.2	17.4		3.1	19.3			16.4			16.4	16.4
Actuated g/C Ratio	0.02	0.34		0.06	0.38			0.32			0.32	0.32
Clearance Time (s)	4.0	5.5		4.0	5.5			5.0			5.0	5.0
Vehicle Extension (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Grp Cap (vph)	41	614		106	689			483			504	505
v/s Ratio Prot	0.00	0.12		c0.03	c0.29							
v/s Ratio Perm								c0.22			0.07	0.00
v/c Ratio	0.17	0.35		0.42	0.76			0.70			0.21	0.01
Uniform Delay, d1	24.6	12.7		23.3	14.0			15.3			12.8	11.9
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	2.7	0.5		3.7	5.3			4.7			0.3	0.0
Delay (s)	27.3	13.2		27.0	19.4			20.1			13.1	11.9
Level of Service	C	B		C	B			C			B	B
Approach Delay (s)		13.6			19.9			20.1			13.0	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	18.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	51.4	Sum of lost time (s)	14.5
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	2.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	8	132	358	2	37	180
Future Vol, veh/h	8	132	358	2	37	180
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	143	389	2	40	196

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	666	390	0	0	391	0
Stage 1	390	-	-	-	-	-
Stage 2	276	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	425	658	-	-	1168	-
Stage 1	684	-	-	-	-	-
Stage 2	771	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	409	658	-	-	1168	-
Mov Cap-2 Maneuver	409	-	-	-	-	-
Stage 1	684	-	-	-	-	-
Stage 2	742	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.4	0	1.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	636	1168	-
HCM Lane V/C Ratio	-	-	0.239	0.034	-
HCM Control Delay (s)	-	-	12.4	8.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.9	0.1	-

Intersection	
Int Delay, s/veh	3.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	10	104	232	14	51	126
Future Vol, veh/h	10	104	232	14	51	126
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	132	294	18	65	159

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	592	303	0	0	311	0
Stage 1	303	-	-	-	-	-
Stage 2	289	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	469	737	-	-	1249	-
Stage 1	749	-	-	-	-	-
Stage 2	760	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	442	737	-	-	1249	-
Mov Cap-2 Maneuver	442	-	-	-	-	-
Stage 1	749	-	-	-	-	-
Stage 2	717	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.5	0	2.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	696	1249	-
HCM Lane V/C Ratio	-	-	0.207	0.052	-
HCM Control Delay (s)	-	-	11.5	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.8	0.2	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	376	8	61	434	56	58	89	169	191	46	33
Future Volume (veh/h)	16	376	8	61	434	56	58	89	169	191	46	33
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	19	453	10	73	523	67	70	107	204	230	55	40
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	261	793	17	368	748	96	435	127	243	328	298	217
Arrive On Green	0.01	0.44	0.44	0.04	0.46	0.46	0.04	0.22	0.22	0.12	0.30	0.30
Sat Flow, veh/h	1774	1816	40	1774	1619	207	1774	574	1095	1774	1004	730
Grp Volume(v), veh/h	19	0	463	73	0	590	70	0	311	230	0	95
Grp Sat Flow(s),veh/h/ln	1774	0	1856	1774	0	1826	1774	0	1669	1774	0	1734
Q Serve(g_s), s	0.6	0.0	19.3	2.3	0.0	26.5	3.1	0.0	18.4	9.8	0.0	4.2
Cycle Q Clear(g_c), s	0.6	0.0	19.3	2.3	0.0	26.5	3.1	0.0	18.4	9.8	0.0	4.2
Prop In Lane	1.00		0.02	1.00		0.11	1.00		0.66	1.00		0.42
Lane Grp Cap(c), veh/h	261	0	810	368	0	844	435	0	370	328	0	515
V/C Ratio(X)	0.07	0.00	0.57	0.20	0.00	0.70	0.16	0.00	0.84	0.70	0.00	0.18
Avail Cap(c_a), veh/h	583	0	810	817	0	844	701	0	518	546	0	515
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.6	0.0	21.8	16.7	0.0	22.0	29.0	0.0	38.4	26.8	0.0	26.9
Incr Delay (d2), s/veh	0.1	0.0	2.9	0.3	0.0	4.8	0.2	0.0	12.5	2.7	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	10.6	1.1	0.0	14.4	1.5	0.0	9.7	5.0	0.0	2.1
LnGrp Delay(d),s/veh	18.8	0.0	24.7	17.0	0.0	26.8	29.1	0.0	50.8	29.5	0.0	27.3
LnGrp LOS	B		C	B		C	C		D	C		C
Approach Vol, veh/h		482			663			381			325	
Approach Delay, s/veh		24.5			25.7			46.9			28.8	
Approach LOS		C			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.8	52.7	16.8	27.8	8.4	50.0	9.0	35.6
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0
Max Green Setting (Gmax), s	20.0	30.0	25.0	32.0	30.0	45.0	20.0	25.0
Max Q Clear Time (g_c+I1), s	2.6	28.5	11.8	20.4	4.3	21.3	5.1	6.2
Green Ext Time (p_c), s	0.0	1.2	0.5	2.5	0.2	13.0	0.1	4.2

Intersection Summary	
HCM 2010 Ctrl Delay	30.3
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	19	0	0	225	120	4
Future Vol, veh/h	19	0	0	225	120	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	0	0	245	130	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	375	130	130	0	-	0
Stage 1	130	-	-	-	-	-
Stage 2	245	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	626	920	1455	-	-	0
Stage 1	896	-	-	-	-	0
Stage 2	796	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	626	920	1455	-	-	-
Mov Cap-2 Maneuver	626	-	-	-	-	-
Stage 1	896	-	-	-	-	-
Stage 2	796	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT
Capacity (veh/h)	1455	-	626	-
HCM Lane V/C Ratio	-	-	0.033	-
HCM Control Delay (s)	0	-	10.9	-
HCM Lane LOS	A	-	B	-
HCM 95th %tile Q(veh)	0	-	0.1	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	29	3	1	232	133	10
Future Vol, veh/h	29	3	1	232	133	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	3	1	252	145	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	399	145	145	0	-	0
Stage 1	145	-	-	-	-	-
Stage 2	254	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	607	902	1437	-	-	0
Stage 1	882	-	-	-	-	0
Stage 2	788	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	606	902	1437	-	-	-
Mov Cap-2 Maneuver	606	-	-	-	-	-
Stage 1	882	-	-	-	-	-
Stage 2	787	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT
Capacity (veh/h)	1437	-	625	-
HCM Lane V/C Ratio	0.001	-	0.056	-
HCM Control Delay (s)	7.5	0	11.1	-
HCM Lane LOS	A	A	B	-
HCM 95th %tile Q(veh)	0	-	0.2	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	35	3	1	162	102	11
Future Vol, veh/h	35	3	1	162	102	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	38	3	1	176	111	12

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	289	111	111	0	-	0
Stage 1	111	-	-	-	-	-
Stage 2	178	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	702	942	1479	-	-	0
Stage 1	914	-	-	-	-	0
Stage 2	853	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	701	942	1479	-	-	-
Mov Cap-2 Maneuver	701	-	-	-	-	-
Stage 1	914	-	-	-	-	-
Stage 2	852	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT
Capacity (veh/h)	1479	-	715	-
HCM Lane V/C Ratio	0.001	-	0.058	-
HCM Control Delay (s)	7.4	0	10.3	-
HCM Lane LOS	A	A	B	-
HCM 95th %tile Q(veh)	0	-	0.2	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	12	12	4	151	101	4
Future Vol, veh/h	12	12	4	151	101	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	13	4	164	110	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	283	110	110	0	-	0
Stage 1	110	-	-	-	-	-
Stage 2	173	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	707	943	1480	-	-	0
Stage 1	915	-	-	-	-	0
Stage 2	857	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	705	943	1480	-	-	-
Mov Cap-2 Maneuver	705	-	-	-	-	-
Stage 1	915	-	-	-	-	-
Stage 2	854	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.6	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT
Capacity (veh/h)	1480	-	807	-
HCM Lane V/C Ratio	0.003	-	0.032	-
HCM Control Delay (s)	7.4	0	9.6	-
HCM Lane LOS	A	A	A	-
HCM 95th %tile Q(veh)	0	-	0.1	-

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	86	0	15	0	0	0	62	79	0	0	31	75
Future Vol, veh/h	86	0	15	0	0	0	62	79	0	0	31	75
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	92	82	92	92	92	82	82	92	92	82	82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	105	0	18	0	0	0	76	96	0	0	38	91

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	332	332	84	341	377	96	129	0	0	96	0	0
Stage 1	84	84	-	248	248	-	-	-	-	-	-	-
Stage 2	248	248	-	93	129	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	621	588	975	613	555	960	1457	-	-	1498	-	-
Stage 1	924	825	-	756	701	-	-	-	-	-	-	-
Stage 2	756	701	-	914	789	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	595	556	975	576	524	960	1457	-	-	1498	-	-
Mov Cap-2 Maneuver	595	556	-	576	524	-	-	-	-	-	-	-
Stage 1	873	825	-	714	662	-	-	-	-	-	-	-
Stage 2	714	662	-	897	789	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.1	0	3.3	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1457	-	-	632	-	1498	-	-
HCM Lane V/C Ratio	0.052	-	-	0.195	-	-	-	-
HCM Control Delay (s)	7.6	0	-	12.1	0	0	-	-
HCM Lane LOS	A	A	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.7	-	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	148	280	69	69	223	81	139	309	151	26	94	78
Future Volume (veh/h)	148	280	69	69	223	81	139	309	151	26	94	78
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	159	301	74	74	240	87	149	332	162	28	101	84
Adj No. of Lanes	1	2	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	209	941	228	107	360	130	197	522	250	56	277	211
Arrive On Green	0.12	0.33	0.33	0.06	0.28	0.28	0.11	0.22	0.22	0.03	0.14	0.14
Sat Flow, veh/h	1774	2827	684	1774	1306	473	1774	2324	1112	1774	1915	1459
Grp Volume(v), veh/h	159	187	188	74	0	327	149	251	243	28	93	92
Grp Sat Flow(s),veh/h/ln	1774	1770	1742	1774	0	1779	1774	1770	1667	1774	1770	1605
Q Serve(g_s), s	5.0	4.5	4.6	2.3	0.0	9.3	4.6	7.3	7.5	0.9	2.7	3.0
Cycle Q Clear(g_c), s	5.0	4.5	4.6	2.3	0.0	9.3	4.6	7.3	7.5	0.9	2.7	3.0
Prop In Lane	1.00		0.39	1.00		0.27	1.00		0.67	1.00		0.91
Lane Grp Cap(c), veh/h	209	589	580	107	0	490	197	397	374	56	256	232
V/C Ratio(X)	0.76	0.32	0.32	0.69	0.00	0.67	0.75	0.63	0.65	0.50	0.36	0.40
Avail Cap(c_a), veh/h	778	1241	1222	778	0	1248	933	1241	1169	933	1241	1126
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.4	14.2	14.2	26.3	0.0	18.3	24.6	20.0	20.1	27.2	22.0	22.1
Incr Delay (d2), s/veh	5.6	0.3	0.3	7.6	0.0	1.6	5.8	1.2	1.4	6.8	0.7	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	2.2	2.2	1.4	0.0	4.8	2.6	3.7	3.6	0.5	1.4	1.4
LnGrp Delay(d),s/veh	29.9	14.5	14.6	33.9	0.0	19.9	30.4	21.2	21.5	34.0	22.8	23.1
LnGrp LOS	C	B	B	C		B	C	C	C	C	C	C
Approach Vol, veh/h		534			401			643			213	
Approach Delay, s/veh		19.1			22.5			23.4			24.4	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.3	18.3	8.0	23.5	11.8	13.8	11.2	20.2
Change Period (Y+Rc), s	5.5	5.5	4.5	4.5	5.5	5.5	4.5	4.5
Max Green Setting (Gmax), s	30.0	40.0	25.0	40.0	30.0	40.0	25.0	40.0
Max Q Clear Time (g_c+I1), s	2.9	9.5	4.3	6.6	6.6	5.0	7.0	11.3
Green Ext Time (p_c), s	0.0	3.2	0.1	4.6	0.4	3.3	0.4	4.5

Intersection Summary	
HCM 2010 Ctrl Delay	22.1
HCM 2010 LOS	C

YEAR 2040

LEVEL OF SERVICE CALCULATIONS

WITHOUT PROJECT

HCM 2010 Research does not support Non-NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	171	8	42	603	146	25	99	79	80	62	5
Future Volume (vph)	5	171	8	42	603	146	25	99	79	80	62	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		4.0	5.0		4.0	5.0	
Lane Util. Factor		0.95			0.95		1.00	0.95		1.00	0.95	
Frt		0.99			0.97		1.00	0.93		1.00	0.99	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3511			3432		1770	3304		1770	3502	
Flt Permitted		0.94			0.93		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		3294			3194		1770	3304		1770	3502	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	186	9	46	655	159	27	108	86	87	67	5
RTOR Reduction (vph)	0	3	0	0	17	0	0	69	0	0	4	0
Lane Group Flow (vph)	0	197	0	0	843	0	27	125	0	87	68	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4								
Actuated Green, G (s)		26.6			26.6		2.9	11.4		7.3	15.8	
Effective Green, g (s)		26.6			26.6		2.9	11.4		7.3	15.8	
Actuated g/C Ratio		0.45			0.45		0.05	0.19		0.12	0.27	
Clearance Time (s)		5.0			5.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)		5.0			5.0		4.0	5.0		4.0	5.0	
Lane Grp Cap (vph)		1477			1432		86	635		217	933	
v/s Ratio Prot							0.02	c0.04		c0.05	0.02	
v/s Ratio Perm		0.06			c0.26							
v/c Ratio		0.13			0.59		0.31	0.20		0.40	0.07	
Uniform Delay, d1		9.6			12.3		27.2	20.1		24.0	16.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			1.0		2.8	0.3		1.7	0.1	
Delay (s)		9.7			13.2		30.1	20.4		25.6	16.3	
Level of Service		A			B		C	C		C	B	
Approach Delay (s)		9.7			13.2			21.6			21.4	
Approach LOS		A			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	59.3	Sum of lost time (s)	14.0
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 2010 analysis does not support custom phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	174	46	13	506	24	280	125	29	20	49	14
Future Volume (vph)	1	174	46	13	506	24	280	125	29	20	49	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0		4.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	3515		1770	1810		1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	3515		1770	1810		1770	1863	1583
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)	1	191	51	14	556	26	308	137	32	22	54	15
RTOR Reduction (vph)	0	0	37	0	3	0	0	6	0	0	0	14
Lane Group Flow (vph)	1	191	14	14	579	0	308	163	0	22	54	1
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	custom
Protected Phases	1	6		5	2		7	4		3		
Permitted Phases			6								8	8
Actuated Green, G (s)	1.0	17.3	17.3	1.2	17.5		21.3	25.3		1.3	5.3	5.3
Effective Green, g (s)	1.0	17.3	17.3	1.2	17.5		21.3	25.3		1.3	5.3	5.3
Actuated g/C Ratio	0.02	0.27	0.27	0.02	0.27		0.33	0.39		0.02	0.08	0.08
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Grp Cap (vph)	27	495	420	32	944		579	703		35	151	128
v/s Ratio Prot	0.00	0.10		c0.01	c0.16		c0.17	0.09		0.01		
v/s Ratio Perm			0.01								c0.03	0.00
v/c Ratio	0.04	0.39	0.03	0.44	0.61		0.53	0.23		0.63	0.36	0.01
Uniform Delay, d1	31.6	19.6	17.7	31.6	20.8		17.8	13.4		31.7	28.3	27.5
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	0.8	0.7	0.0	12.5	1.4		1.2	0.2		33.9	2.0	0.0
Delay (s)	32.3	20.2	17.7	44.1	22.2		19.0	13.6		65.5	30.3	27.5
Level of Service	C	C	B	D	C		B	B		E	C	C
Approach Delay (s)		19.8			22.7			17.1			38.3	
Approach LOS		B			C			B			D	

Intersection Summary				
HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	65.1	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	46.9%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	67	549	45	30	360	11	68	59	37	96	145	121
Future Volume (veh/h)	67	549	45	30	360	11	68	59	37	96	145	121
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	76	624	51	34	409	12	77	67	42	109	165	138
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	407	699	57	219	701	21	236	196	100	191	238	176
Arrive On Green	0.04	0.41	0.41	0.02	0.39	0.39	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1774	1699	139	1774	1801	53	457	612	312	346	744	549
Grp Volume(v), veh/h	76	0	675	34	0	421	186	0	0	412	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1838	1774	0	1853	1381	0	0	1639	0	0
Q Serve(g_s), s	1.4	0.0	19.4	0.7	0.0	10.2	0.0	0.0	0.0	7.4	0.0	0.0
Cycle Q Clear(g_c), s	1.4	0.0	19.4	0.7	0.0	10.2	5.3	0.0	0.0	12.7	0.0	0.0
Prop In Lane	1.00		0.08	1.00		0.03	0.41		0.23	0.26		0.33
Lane Grp Cap(c), veh/h	407	0	756	219	0	721	532	0	0	605	0	0
V/C Ratio(X)	0.19	0.00	0.89	0.16	0.00	0.58	0.35	0.00	0.00	0.68	0.00	0.00
Avail Cap(c_a), veh/h	908	0	779	759	0	785	675	0	0	768	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	10.5	0.0	15.5	13.1	0.0	13.7	14.7	0.0	0.0	17.2	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	12.8	0.3	0.0	1.2	0.6	0.0	0.0	2.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	12.4	0.3	0.0	5.4	2.3	0.0	0.0	6.1	0.0	0.0
LnGrp Delay(d),s/veh	10.7	0.0	28.4	13.4	0.0	14.9	15.3	0.0	0.0	19.5	0.0	0.0
LnGrp LOS	B		C	B		B	B			B		
Approach Vol, veh/h		751			455			186			412	
Approach Delay, s/veh		26.6			14.8			15.3			19.5	
Approach LOS		C			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.5	27.0		23.1	5.2	28.3		23.1
Change Period (Y+Rc), s	4.0	5.0		5.0	4.0	5.0		5.0
Max Green Setting (Gmax), s	18.5	24.0		24.0	18.5	24.0		24.0
Max Q Clear Time (g_c+I1), s	3.4	12.2		7.3	2.7	21.4		14.7
Green Ext Time (p_c), s	0.1	7.0		5.0	0.0	1.9		3.5

Intersection Summary	
HCM 2010 Ctrl Delay	20.8
HCM 2010 LOS	C

HCM 2010 Research does not support Non-NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	154	41	12	365	30	147	188	21	29	78	9
Future Volume (vph)	8	154	41	12	365	30	147	188	21	29	78	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.5		4.0	5.5			5.0			5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	0.97		1.00	0.99			0.99			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99	1.00
Satd. Flow (prot)	1770	1804		1770	1842			1811			1838	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.81			0.87	1.00
Satd. Flow (perm)	1770	1804		1770	1842			1498			1613	1583
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)	9	175	47	14	415	34	167	214	24	33	89	10
RTOR Reduction (vph)	0	11	0	0	4	0	0	3	0	0	0	7
Lane Group Flow (vph)	9	211	0	14	445	0	0	402	0	0	122	3
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	1	6		5	2			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	1.1	16.4		1.2	16.5			16.5			16.5	16.5
Effective Green, g (s)	1.1	16.4		1.2	16.5			16.5			16.5	16.5
Actuated g/C Ratio	0.02	0.34		0.02	0.34			0.34			0.34	0.34
Clearance Time (s)	4.0	5.5		4.0	5.5			5.0			5.0	5.0
Vehicle Extension (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Grp Cap (vph)	40	608		43	625			508			547	537
v/s Ratio Prot	0.01	0.12		c0.01	c0.24							
v/s Ratio Perm								c0.27			0.08	0.00
v/c Ratio	0.23	0.35		0.33	0.71			0.79			0.22	0.01
Uniform Delay, d1	23.3	12.1		23.3	14.0			14.5			11.5	10.6
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	3.9	0.5		5.9	4.1			8.7			0.3	0.0
Delay (s)	27.2	12.6		29.2	18.1			23.2			11.8	10.6
Level of Service	C	B		C	B			C			B	B
Approach Delay (s)		13.1			18.4			23.2			11.7	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	18.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	48.6	Sum of lost time (s)	14.5
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	3.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	8	110	287	16	55	146
Future Vol, veh/h	8	110	287	16	55	146
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	139	363	20	70	185

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	697	373	0	0	384	0
Stage 1	373	-	-	-	-	-
Stage 2	324	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	407	673	-	-	1174	-
Stage 1	696	-	-	-	-	-
Stage 2	733	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	380	673	-	-	1174	-
Mov Cap-2 Maneuver	380	-	-	-	-	-
Stage 1	696	-	-	-	-	-
Stage 2	685	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.3	0	2.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	640	1174	-
HCM Lane V/C Ratio	-	-	0.233	0.059	-
HCM Control Delay (s)	-	-	12.3	8.3	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.9	0.2	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	459	4	55	536	70	57	79	141	238	49	41
Future Volume (veh/h)	20	459	4	55	536	70	57	79	141	238	49	41
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	23	522	5	62	609	80	65	90	160	270	56	47
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	206	827	8	332	755	99	386	112	199	373	269	225
Arrive On Green	0.01	0.45	0.45	0.03	0.47	0.47	0.04	0.19	0.19	0.14	0.29	0.29
Sat Flow, veh/h	1774	1842	18	1774	1613	212	1774	603	1071	1774	937	787
Grp Volume(v), veh/h	23	0	527	62	0	689	65	0	250	270	0	103
Grp Sat Flow(s),veh/h/ln	1774	0	1860	1774	0	1825	1774	0	1674	1774	0	1724
Q Serve(g_s), s	0.7	0.0	21.8	1.9	0.0	32.4	2.9	0.0	14.3	11.7	0.0	4.5
Cycle Q Clear(g_c), s	0.7	0.0	21.8	1.9	0.0	32.4	2.9	0.0	14.3	11.7	0.0	4.5
Prop In Lane	1.00		0.01	1.00		0.12	1.00		0.64	1.00		0.46
Lane Grp Cap(c), veh/h	206	0	835	332	0	854	386	0	311	373	0	494
V/C Ratio(X)	0.11	0.00	0.63	0.19	0.00	0.81	0.17	0.00	0.80	0.72	0.00	0.21
Avail Cap(c_a), veh/h	535	0	835	804	0	854	665	0	534	563	0	494
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.4	0.0	21.2	16.5	0.0	22.8	31.0	0.0	39.0	26.8	0.0	27.1
Incr Delay (d2), s/veh	0.2	0.0	3.6	0.3	0.0	8.1	0.2	0.0	9.8	2.7	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	12.0	0.9	0.0	18.2	1.5	0.0	7.4	6.0	0.0	2.2
LnGrp Delay(d),s/veh	19.7	0.0	24.8	16.8	0.0	30.9	31.2	0.0	48.9	29.5	0.0	27.6
LnGrp LOS	B		C	B		C	C		D	C		C
Approach Vol, veh/h		550			751			315			373	
Approach Delay, s/veh		24.6			29.7			45.2			29.0	
Approach LOS		C			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.9	51.9	18.8	23.6	7.8	50.0	8.7	33.7
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0
Max Green Setting (Gmax), s	20.0	30.0	25.0	32.0	30.0	45.0	20.0	25.0
Max Q Clear Time (g_c+I1), s	2.7	34.4	13.7	16.3	3.9	23.8	4.9	6.5
Green Ext Time (p_c), s	0.0	0.0	0.6	2.3	0.1	13.9	0.1	3.5

Intersection Summary	
HCM 2010 Ctrl Delay	30.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	163	298	93	74	283	84	171	397	152	28	120	93
Future Volume (veh/h)	163	298	93	74	283	84	171	397	152	28	120	93
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	187	343	107	85	325	97	197	456	175	32	138	107
Adj No. of Lanes	1	2	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	234	1014	312	112	429	128	245	651	248	57	302	218
Arrive On Green	0.13	0.38	0.38	0.06	0.31	0.31	0.14	0.26	0.26	0.03	0.15	0.15
Sat Flow, veh/h	1774	2668	820	1774	1379	411	1774	2509	955	1774	1963	1419
Grp Volume(v), veh/h	187	226	224	85	0	422	197	321	310	32	123	122
Grp Sat Flow(s),veh/h/ln	1774	1770	1718	1774	0	1790	1774	1770	1694	1774	1770	1612
Q Serve(g_s), s	7.7	6.8	7.0	3.6	0.0	16.0	8.1	12.4	12.5	1.3	4.8	5.2
Cycle Q Clear(g_c), s	7.7	6.8	7.0	3.6	0.0	16.0	8.1	12.4	12.5	1.3	4.8	5.2
Prop In Lane	1.00		0.48	1.00		0.23	1.00		0.56	1.00		0.88
Lane Grp Cap(c), veh/h	234	672	653	112	0	557	245	459	440	57	272	248
V/C Ratio(X)	0.80	0.34	0.34	0.76	0.00	0.76	0.80	0.70	0.71	0.56	0.45	0.49
Avail Cap(c_a), veh/h	588	938	911	588	0	949	705	938	898	705	938	855
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.8	16.6	16.7	34.8	0.0	23.4	31.5	25.3	25.3	36.0	29.1	29.2
Incr Delay (d2), s/veh	6.2	0.3	0.3	10.0	0.0	2.1	6.1	1.4	1.6	8.2	1.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	3.4	3.4	2.1	0.0	8.2	4.4	6.2	6.1	0.8	2.4	2.4
LnGrp Delay(d),s/veh	38.0	16.9	17.0	44.8	0.0	25.5	37.6	26.7	26.9	44.2	30.1	30.5
LnGrp LOS	D	B	B	D		C	D	C	C	D	C	C
Approach Vol, veh/h		637			507			828			277	
Approach Delay, s/veh		23.1			28.8			29.4			31.9	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.9	25.1	9.3	33.2	15.9	17.1	14.4	28.0
Change Period (Y+Rc), s	5.5	5.5	4.5	4.5	5.5	5.5	4.5	4.5
Max Green Setting (Gmax), s	30.0	40.0	25.0	40.0	30.0	40.0	25.0	40.0
Max Q Clear Time (g_c+I1), s	3.3	14.5	5.6	9.0	10.1	7.2	9.7	18.0
Green Ext Time (p_c), s	0.0	4.2	0.2	6.0	0.5	4.4	0.4	5.5

Intersection Summary	
HCM 2010 Ctrl Delay	27.8
HCM 2010 LOS	C

YEAR 2040

LEVEL OF SERVICE CALCULATIONS

WITH PROJECT

HCM 2010 Research does not support Non-NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	174	8	42	609	154	25	109	79	81	68	5
Future Volume (vph)	5	174	8	42	609	154	25	109	79	81	68	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		4.0	5.0		4.0	5.0	
Lane Util. Factor		0.95			0.95		1.00	0.95		1.00	0.95	
Frt		0.99			0.97		1.00	0.94		1.00	0.99	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3511			3429		1770	3315		1770	3506	
Flt Permitted		0.94			0.93		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		3294			3192		1770	3315		1770	3506	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	189	9	46	662	167	27	118	86	88	74	5
RTOR Reduction (vph)	0	3	0	0	18	0	0	70	0	0	4	0
Lane Group Flow (vph)	0	200	0	0	857	0	27	134	0	88	75	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4								
Actuated Green, G (s)		26.8			26.8		2.9	11.4		7.4	15.9	
Effective Green, g (s)		26.8			26.8		2.9	11.4		7.4	15.9	
Actuated g/C Ratio		0.45			0.45		0.05	0.19		0.12	0.27	
Clearance Time (s)		5.0			5.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)		5.0			5.0		4.0	5.0		4.0	5.0	
Lane Grp Cap (vph)		1481			1435		86	634		219	935	
v/s Ratio Prot							0.02	c0.04		c0.05	0.02	
v/s Ratio Perm		0.06			c0.27							
v/c Ratio		0.14			0.60		0.31	0.21		0.40	0.08	
Uniform Delay, d1		9.6			12.3		27.4	20.3		24.1	16.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			1.0		2.8	0.4		1.6	0.1	
Delay (s)		9.7			13.4		30.2	20.7		25.7	16.5	
Level of Service		A			B		C	C		C	B	
Approach Delay (s)		9.7			13.4			21.8			21.3	
Approach LOS		A			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	59.6	Sum of lost time (s)	14.0
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 2010 analysis does not support custom phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	204	46	13	618	34	280	125	29	26	49	14
Future Volume (vph)	1	204	46	13	618	34	280	125	29	26	49	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0		4.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	3512		1770	1810		1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	3512		1770	1810		1770	1863	1583
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)	1	240	54	15	727	40	329	147	34	31	58	16
RTOR Reduction (vph)	0	0	36	0	3	0	0	6	0	0	0	14
Lane Group Flow (vph)	1	240	18	15	764	0	329	175	0	31	58	2
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	custom
Protected Phases	1	6		5	2		7	4		3		
Permitted Phases			6								8	8
Actuated Green, G (s)	1.1	25.1	25.1	1.4	25.4		20.4	25.2		3.3	8.1	8.1
Effective Green, g (s)	1.1	25.1	25.1	1.4	25.4		20.4	25.2		3.3	8.1	8.1
Actuated g/C Ratio	0.01	0.33	0.33	0.02	0.34		0.27	0.34		0.04	0.11	0.11
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0		4.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Grp Cap (vph)	25	623	529	33	1189		481	608		77	201	170
v/s Ratio Prot	0.00	0.13		c0.01	c0.22		c0.19	c0.10		0.02		
v/s Ratio Perm			0.01								0.03	0.00
v/c Ratio	0.04	0.39	0.03	0.45	0.64		0.68	0.29		0.40	0.29	0.01
Uniform Delay, d1	36.4	19.1	16.8	36.4	21.0		24.4	18.3		34.9	30.8	29.9
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	0.9	0.5	0.0	13.0	1.3		4.3	0.4		4.6	1.1	0.0
Delay (s)	37.3	19.6	16.8	49.4	22.3		28.8	18.7		39.5	31.9	29.9
Level of Service	D	B	B	D	C		C	B		D	C	C
Approach Delay (s)		19.2			22.8			25.2			33.8	
Approach LOS		B			C			C			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)	75.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	50.3%	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 (veh/h)	67	552	46	33	369	15	73	69	44	98	150	121
Future Volume (veh/h)	67	552	46	33	369	15	73	69	44	98	150	121
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	76	627	52	38	419	17	83	78	50	111	170	138
Adj No. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	394	695	58	216	692	28	228	205	107	193	243	175
Arrive On Green	0.04	0.41	0.41	0.02	0.39	0.39	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1774	1697	141	1774	1778	72	435	634	332	350	754	542
Grp Volume(v), veh/h	76	0	679	38	0	436	211	0	0	419	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1838	1774	0	1850	1400	0	0	1646	0	0
Q Serve(g_s), s	1.5	0.0	19.8	0.7	0.0	10.8	0.0	0.0	0.0	6.7	0.0	0.0
Cycle Q Clear(g_c), s	1.5	0.0	19.8	0.7	0.0	10.8	6.2	0.0	0.0	12.9	0.0	0.0
Prop In Lane	1.00		0.08	1.00		0.04	0.39		0.24	0.26		0.33
Lane Grp Cap(c), veh/h	394	0	752	216	0	720	539	0	0	611	0	0
V/C Ratio(X)	0.19	0.00	0.90	0.18	0.00	0.61	0.39	0.00	0.00	0.69	0.00	0.00
Avail Cap(c_a), veh/h	889	0	770	746	0	775	673	0	0	762	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	10.7	0.0	15.9	13.3	0.0	14.0	15.0	0.0	0.0	17.3	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	14.1	0.4	0.0	1.5	0.7	0.0	0.0	2.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	12.9	0.4	0.0	5.8	2.7	0.0	0.0	6.3	0.0	0.0
LnGrp Delay(d),s/veh	11.0	0.0	29.9	13.7	0.0	15.5	15.7	0.0	0.0	19.7	0.0	0.0
LnGrp LOS	B		C	B		B	B			B		
Approach Vol, veh/h		755			474			211			419	
Approach Delay, s/veh		28.0			15.4			15.7			19.7	
Approach LOS		C			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.5	27.3		23.5	5.4	28.5		23.5
Change Period (Y+Rc), s	4.0	5.0		5.0	4.0	5.0		5.0
Max Green Setting (Gmax), s	18.5	24.0		24.0	18.5	24.0		24.0
Max Q Clear Time (g_c+I1), s	3.5	12.8		8.2	2.7	21.8		14.9
Green Ext Time (p_c), s	0.1	6.8		5.1	0.0	1.6		3.6

Intersection Summary	
HCM 2010 Ctrl Delay	21.5
HCM 2010 LOS	C

HCM 2010 Research does not support Non-NEMA phasing.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	190	41	41	287	52	147	188	32	37	78	9
Future Volume (vph)	8	190	41	41	287	52	147	188	32	37	78	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.5		4.0	5.5			5.0			5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	0.97		1.00	0.98			0.99			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	1.00
Satd. Flow (prot)	1770	1813		1770	1820			1805			1833	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.81			0.83	1.00
Satd. Flow (perm)	1770	1813		1770	1820			1494			1548	1583
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)	9	216	47	47	326	59	167	214	36	42	89	10
RTOR Reduction (vph)	0	10	0	0	9	0	0	3	0	0	0	7
Lane Group Flow (vph)	9	253	0	47	376	0	0	414	0	0	131	3
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	Perm
Protected Phases	1	6		5	2			4			4	
Permitted Phases							4			4		4
Actuated Green, G (s)	1.1	15.1		3.0	17.0			16.7			16.7	16.7
Effective Green, g (s)	1.1	15.1		3.0	17.0			16.7			16.7	16.7
Actuated g/C Ratio	0.02	0.31		0.06	0.34			0.34			0.34	0.34
Clearance Time (s)	4.0	5.5		4.0	5.5			5.0			5.0	5.0
Vehicle Extension (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Grp Cap (vph)	39	555		107	627			506			524	536
v/s Ratio Prot	0.01	0.14		c0.03	c0.21							
v/s Ratio Perm								c0.28			0.08	0.00
v/c Ratio	0.23	0.46		0.44	0.60			0.82			0.25	0.01
Uniform Delay, d1	23.7	13.8		22.3	13.3			14.9			11.8	10.8
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	4.1	0.8		3.9	1.8			10.4			0.3	0.0
Delay (s)	27.8	14.6		26.2	15.1			25.3			12.1	10.8
Level of Service	C	B		C	B			C			B	B
Approach Delay (s)		15.0			16.4			25.3			12.0	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	18.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	49.3	Sum of lost time (s)	14.5
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	3.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	12	125	289	17	62	155
Future Vol, veh/h	12	125	289	17	62	155
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	145	336	20	72	180

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	670	346	0	0	356	0
Stage 1	346	-	-	-	-	-
Stage 2	324	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	422	697	-	-	1203	-
Stage 1	716	-	-	-	-	-
Stage 2	733	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	394	697	-	-	1203	-
Mov Cap-2 Maneuver	394	-	-	-	-	-
Stage 1	716	-	-	-	-	-
Stage 2	684	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.3	0	2.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	653	1203	-
HCM Lane V/C Ratio	-	-	0.244	0.06	-
HCM Control Delay (s)	-	-	12.3	8.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1	0.2	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	466	9	72	539	70	70	105	197	238	56	41
Future Volume (veh/h)	20	466	9	72	539	70	70	105	197	238	56	41
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	24	561	11	87	649	84	84	127	237	287	67	49
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	126	732	14	257	699	90	465	143	267	346	334	244
Arrive On Green	0.01	0.40	0.40	0.04	0.43	0.43	0.05	0.25	0.25	0.14	0.33	0.33
Sat Flow, veh/h	1774	1821	36	1774	1617	209	1774	583	1088	1774	1001	732
Grp Volume(v), veh/h	24	0	572	87	0	733	84	0	364	287	0	116
Grp Sat Flow(s),veh/h/ln	1774	0	1856	1774	0	1826	1774	0	1671	1774	0	1734
Q Serve(g_s), s	0.9	0.0	29.8	3.1	0.0	42.6	3.9	0.0	23.5	12.9	0.0	5.4
Cycle Q Clear(g_c), s	0.9	0.0	29.8	3.1	0.0	42.6	3.9	0.0	23.5	12.9	0.0	5.4
Prop In Lane	1.00		0.02	1.00		0.11	1.00		0.65	1.00		0.42
Lane Grp Cap(c), veh/h	126	0	746	257	0	789	465	0	410	346	0	579
V/C Ratio(X)	0.19	0.00	0.77	0.34	0.00	0.93	0.18	0.00	0.89	0.83	0.00	0.20
Avail Cap(c_a), veh/h	418	0	746	653	0	789	693	0	477	496	0	579
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.5	0.0	28.9	22.2	0.0	30.1	29.2	0.0	40.8	27.5	0.0	26.6
Incr Delay (d2), s/veh	0.7	0.0	7.4	0.8	0.0	18.7	0.2	0.0	18.9	7.8	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	16.8	1.6	0.0	25.5	1.9	0.0	13.0	7.1	0.0	2.6
LnGrp Delay(d),s/veh	27.2	0.0	36.4	23.0	0.0	48.9	29.4	0.0	59.7	35.4	0.0	27.0
LnGrp LOS	C		D	C		D	C		E	D		C
Approach Vol, veh/h		596			820			448			403	
Approach Delay, s/veh		36.0			46.1			54.0			33.0	
Approach LOS		D			D			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.1	53.4	20.0	32.5	9.5	50.0	10.1	42.4
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0
Max Green Setting (Gmax), s	20.0	30.0	25.0	32.0	30.0	45.0	20.0	25.0
Max Q Clear Time (g_c+I1), s	2.9	44.6	14.9	25.5	5.1	31.8	5.9	7.4
Green Ext Time (p_c), s	0.0	0.0	0.6	1.9	0.2	10.2	0.1	4.9

Intersection Summary	
HCM 2010 Ctrl Delay	42.7
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	180	339	85	85	274	101	173	385	188	33	117	97
Future Volume (veh/h)	180	339	85	85	274	101	173	385	188	33	117	97
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	207	390	98	98	315	116	199	443	216	38	134	111
Adj No. of Lanes	1	2	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	253	1082	269	129	409	151	245	595	288	63	295	227
Arrive On Green	0.14	0.39	0.39	0.07	0.31	0.31	0.14	0.26	0.26	0.04	0.15	0.15
Sat Flow, veh/h	1774	2810	699	1774	1300	479	1774	2315	1119	1774	1907	1466
Grp Volume(v), veh/h	207	244	244	98	0	431	199	338	321	38	124	121
Grp Sat Flow(s),veh/h/ln	1774	1770	1739	1774	0	1778	1774	1770	1665	1774	1770	1604
Q Serve(g_s), s	9.1	7.9	8.0	4.3	0.0	17.6	8.7	14.0	14.2	1.7	5.1	5.5
Cycle Q Clear(g_c), s	9.1	7.9	8.0	4.3	0.0	17.6	8.7	14.0	14.2	1.7	5.1	5.5
Prop In Lane	1.00		0.40	1.00		0.27	1.00		0.67	1.00		0.91
Lane Grp Cap(c), veh/h	253	681	670	129	0	560	245	455	428	63	274	248
V/C Ratio(X)	0.82	0.36	0.36	0.76	0.00	0.77	0.81	0.74	0.75	0.60	0.45	0.49
Avail Cap(c_a), veh/h	554	884	869	554	0	888	665	884	832	665	884	801
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.3	17.6	17.6	36.5	0.0	24.8	33.5	27.3	27.4	38.1	30.8	31.0
Incr Delay (d2), s/veh	6.4	0.3	0.3	8.9	0.0	2.3	6.4	1.8	2.0	8.8	1.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	3.9	3.9	2.4	0.0	9.0	4.7	7.1	6.8	1.0	2.5	2.6
LnGrp Delay(d),s/veh	39.7	17.9	17.9	45.4	0.0	27.1	39.9	29.1	29.4	46.9	31.8	32.2
LnGrp LOS	D	B	B	D		C	D	C	C	D	C	C
Approach Vol, veh/h		695			529			858			283	
Approach Delay, s/veh		24.4			30.5			31.7			34.0	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.4	26.1	10.3	35.3	16.6	17.9	15.9	29.7
Change Period (Y+Rc), s	5.5	5.5	4.5	4.5	5.5	5.5	4.5	4.5
Max Green Setting (Gmax), s	30.0	40.0	25.0	40.0	30.0	40.0	25.0	40.0
Max Q Clear Time (g_c+I1), s	3.7	16.2	6.3	10.0	10.7	7.5	11.1	19.6
Green Ext Time (p_c), s	0.1	4.4	0.2	6.3	0.5	4.6	0.5	5.7

Intersection Summary	
HCM 2010 Ctrl Delay	29.6
HCM 2010 LOS	C