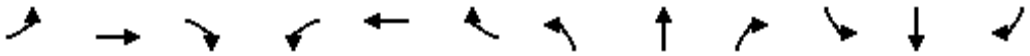
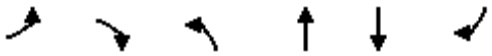


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	13	59	77	60	29	39	34	75	84	8	31	6
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	16	72	94	73	35	48	41	91	102	10	38	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	352	338	41	416	290	143	45			194		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	352	338	41	416	290	143	45			194		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	87	91	83	94	95	97			99		
cM capacity (veh/h)	535	567	1035	440	603	910	1563			1379		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	182	156	235	55
Volume Left	16	73	41	10
Volume Right	94	48	102	7
cSH	735	563	1563	1379
Volume to Capacity	0.25	0.28	0.03	0.01
Queue Length 95th (ft)	24	28	2	1
Control Delay (s)	11.5	13.8	1.5	1.4
Lane LOS	B	B	A	A
Approach Delay (s)	11.5	13.8	1.5	1.4
Approach LOS	B	B		

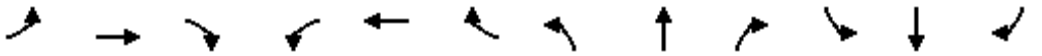
Intersection Summary				
Average Delay	7.4			
Intersection Capacity Utilization	40.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	48	430	375	159	114	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	1599	1805	1900	1808	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1787	1599	1805	1900	1808	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	50	448	391	166	119	48
RTOR Reduction (vph)	0	364	0	0	26	0
Lane Group Flow (vph)	50	84	391	166	141	0
Heavy Vehicles (%)	1%	1%	0%	0%	1%	1%
Turn Type		Perm	Prot			
Protected Phases	2		3	8	4	
Permitted Phases		2				
Actuated Green, G (s)	8.0	8.0	15.0	26.4	6.9	
Effective Green, g (s)	8.0	8.0	15.5	26.9	7.4	
Actuated g/C Ratio	0.19	0.19	0.36	0.63	0.17	
Clearance Time (s)	4.0	4.0	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	2.0	2.0	2.5	2.5	
Lane Grp Cap (vph)	333	298	652	1191	312	
v/s Ratio Prot	0.03		c0.22	0.09	c0.08	
v/s Ratio Perm		c0.05				
v/c Ratio	0.15	0.28	0.60	0.14	0.45	
Uniform Delay, d1	14.6	15.0	11.2	3.3	15.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.2	1.0	0.0	0.8	
Delay (s)	14.7	15.2	12.2	3.3	16.7	
Level of Service	B	B	B	A	B	
Approach Delay (s)	15.1			9.5	16.7	
Approach LOS	B			A	B	

Intersection Summary			
HCM Average Control Delay	12.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	42.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	44.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	112	740	656	235	432	108	482	352	247	120	350	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.94	0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3610	1615	1805	3502		5090	3610	1615	1787	3490	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1805	3610	1615	1805	3502		5090	3610	1615	1787	3490	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	117	771	683	245	450	112	502	367	257	125	365	68
RTOR Reduction (vph)	0	0	297	0	19	0	0	0	167	0	13	0
Lane Group Flow (vph)	117	771	386	245	543	0	502	367	90	125	420	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	11.4	28.0	28.0	14.5	31.1		17.0	38.7	38.7	11.8	33.5	
Effective Green, g (s)	12.9	29.5	29.5	16.0	32.6		18.5	40.2	40.2	13.3	35.0	
Actuated g/C Ratio	0.11	0.26	0.26	0.14	0.28		0.16	0.35	0.35	0.12	0.30	
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		5.5	5.5	5.5	5.5	5.5	
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		2.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	202	926	414	251	993		819	1262	565	207	1062	
v/s Ratio Prot	0.06	0.21		c0.14	c0.16		c0.10	0.10		0.07	c0.12	
v/s Ratio Perm			c0.24						0.06			
v/c Ratio	0.58	0.83	0.93	0.98	0.55		0.61	0.29	0.16	0.60	0.40	
Uniform Delay, d1	48.5	40.4	41.8	49.3	34.9		44.9	27.1	25.8	48.3	31.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.5	6.5	27.7	49.5	0.6		3.4	0.6	0.6	3.4	0.2	
Delay (s)	51.0	46.9	69.4	98.8	35.6		48.3	27.7	26.4	51.7	31.9	
Level of Service	D	D	E	F	D		D	C	C	D	C	
Approach Delay (s)		57.0			54.8			36.6			36.3	
Approach LOS		E			D			D			D	

Intersection Summary			
HCM Average Control Delay	48.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	115.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

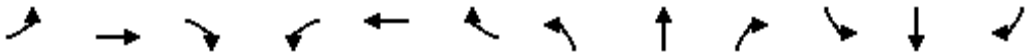
Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #4 Larch Rd/Tracy Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.484
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	12.3
Optimal Cycle:	0	Level Of Service:	B

Street Name:	Tracy Blvd						Larch Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 0	1	1 0	0 1	0	0 0	1! 0	0	0 1	0 0	1
Volume Module:												
Base Vol:	65	148	115	2	89	6	7	77	69	151	65	15
Growth 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
Initial Bse:	65	148	115	2	89	6	7	77	69	151	65	15
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	65	148	115	2	89	6	7	77	69	151	65	15
User 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
PHF Adj:	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
PHF Volume:	76	174	135	2	105	7	8	91	81	178	76	18
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	76	174	135	2	105	7	8	91	81	178	76	18
PCE 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
MLF 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
FinalVolume:	76	174	135	2	105	7	8	91	81	178	76	18
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.00	1.00	1.00	0.94	0.06	0.05	0.50	0.45	0.70	0.30	1.00
Final Sat.:	495	532	592	466	472	32	25	280	251	367	158	614
Capacity Analysis Module:												
Vol/Sat:	0.15	0.33	0.23	0.01	0.22	0.22	0.32	0.32	0.32	0.48	0.48	0.03
Crit Moves:		****			****			****			****	
Delay/Veh:	10.9	12.1	10.1	9.9	11.1	11.1	11.8	11.8	11.8	15.0	15.0	8.4
Delay 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
AdjDel/Veh:	10.9	12.1	10.1	9.9	11.1	11.1	11.8	11.8	11.8	15.0	15.0	8.4
LOS by Move:	B	B	B	A	B	B	B	B	B	B	B	A
ApproachDel:		11.2			11.1			11.8			14.5	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		11.2			11.1			11.8			14.5	
LOS by Appr:		B			B			B			B	
AllWayAvgQ:	0.2	0.4	0.3	0.0	0.2	0.2	0.4	0.4	0.4	0.8	0.8	0.0

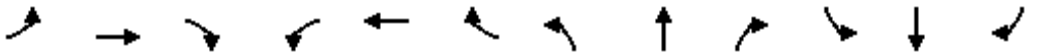
Note: Queue reported is the number of cars per lane.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	380	4	113	127	309	0	0	309	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	
Lane Util. Factor					1.00		1.00	0.95			0.95	
Frt					0.97		1.00	1.00			0.96	
Flt Protected					0.96		0.95	1.00			1.00	
Satd. Flow (prot)					1706		1736	3471			3312	
Flt Permitted					0.96		0.95	1.00			1.00	
Satd. Flow (perm)					1706		1736	3471			3312	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	404	4	120	135	329	0	0	329	107
RTOR Reduction (vph)	0	0	0	0	8	0	0	0	0	0	35	0
Lane Group Flow (vph)	0	0	0	0	520	0	135	329	0	0	401	0
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	4%	4%	4%	5%	5%	5%
Turn Type				Perm			Prot					
Protected Phases					8		5	2			6	
Permitted Phases				8								
Actuated Green, G (s)					29.8		11.1	31.4			16.3	
Effective Green, g (s)					29.8		11.1	32.3			17.2	
Actuated g/C Ratio					0.43		0.16	0.46			0.25	
Clearance Time (s)					4.0		4.0	4.9			4.9	
Vehicle Extension (s)					3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)					725		275	1599			813	
v/s Ratio Prot							c0.08	0.09			c0.12	
v/s Ratio Perm					0.30							
v/c Ratio					0.72		0.49	0.21			0.49	
Uniform Delay, d1					16.7		26.9	11.3			22.7	
Progression Factor					1.00		1.00	1.00			1.00	
Incremental Delay, d2					3.4		1.4	0.1			0.5	
Delay (s)					20.1		28.3	11.3			23.2	
Level of Service					C		C	B			C	
Approach Delay (s)		0.0			20.1			16.3			23.2	
Approach LOS		A			C			B			C	

Intersection Summary			
HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	70.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

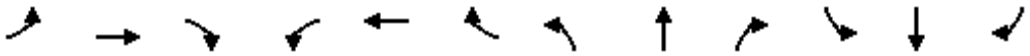
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	10	159	0	0	0	0	366	263	117	572	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		1.00						0.95		1.00	0.95	
Frt		0.91						0.94		1.00	1.00	
Flt Protected		0.99						1.00		0.95	1.00	
Satd. Flow (prot)		1608						3317		1752	3505	
Flt Permitted		0.99						1.00		0.95	1.00	
Satd. Flow (perm)		1608						3317		1752	3505	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	74	11	167	0	0	0	0	385	277	123	602	0
RTOR Reduction (vph)	0	68	0	0	0	0	0	137	0	0	0	0
Lane Group Flow (vph)	0	184	0	0	0	0	0	525	0	123	602	0
Heavy Vehicles (%)	6%	6%	6%	0%	0%	0%	2%	2%	2%	3%	3%	3%
Turn Type	Perm									Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4											
Actuated Green, G (s)		13.9						15.4		7.7	27.1	
Effective Green, g (s)		14.8						16.3		7.7	28.0	
Actuated g/C Ratio		0.29						0.32		0.15	0.55	
Clearance Time (s)		4.9						4.9		4.0	4.9	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		468						1064		266	1932	
v/s Ratio Prot								c0.16		c0.07	0.17	
v/s Ratio Perm		0.11										
v/c Ratio		0.39						0.49		0.46	0.31	
Uniform Delay, d1		14.4						13.9		19.7	6.2	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		0.5						0.4		1.3	0.1	
Delay (s)		15.0						14.3		20.9	6.3	
Level of Service		B						B		C	A	
Approach Delay (s)		15.0			0.0			14.3			8.8	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM Average Control Delay	11.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	50.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

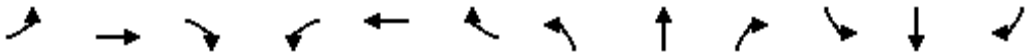
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	212	573	156	134	408	138	207	468	171	157	532	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	0.96		1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3494		1787	3439		1787	3431		1787	3450	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	3494		1787	3439		1787	3431		1787	3450	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	223	603	164	141	429	145	218	493	180	165	560	169
RTOR Reduction (vph)	0	25	0	0	35	0	0	33	0	0	26	0
Lane Group Flow (vph)	223	742	0	141	539	0	218	640	0	165	703	0
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	14.7	23.0		11.0	19.3		14.6	31.2		12.3	28.9	
Effective Green, g (s)	15.2	24.0		11.5	20.3		15.1	31.7		12.8	29.4	
Actuated g/C Ratio	0.16	0.25		0.12	0.21		0.16	0.33		0.13	0.31	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	1.0	3.0		1.0	3.0		1.0	3.0		1.0	3.0	
Lane Grp Cap (vph)	286	874		214	727		281	1133		238	1057	
v/s Ratio Prot	c0.12	c0.21		0.08	0.16		c0.12	0.19		0.09	c0.20	
v/s Ratio Perm												
v/c Ratio	0.78	0.85		0.66	0.74		0.78	0.57		0.69	0.67	
Uniform Delay, d1	38.8	34.3		40.4	35.4		38.8	26.5		39.7	29.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.6	7.7		5.5	4.1		11.5	2.0		6.9	3.3	
Delay (s)	50.4	42.0		45.9	39.5		50.4	28.5		46.6	32.3	
Level of Service	D	D		D	D		D	C		D	C	
Approach Delay (s)		43.9			40.7			33.9			35.0	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	38.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	96.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	72.9%	ICU Level of Service	C
Analysis Period (min)	15		

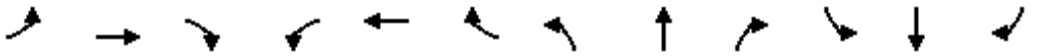
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	75	5	87	4	8	3	43	28	9	1	35	43
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	94	6	109	5	10	4	54	35	11	1	44	54
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	230	227	71	333	248	41	98			46		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	230	227	71	333	248	41	98			46		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	87	99	89	99	98	100	96			100		
cM capacity (veh/h)	696	649	995	536	634	1036	1489			1568		

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	94	115	19	100	99
Volume Left	94	0	5	54	1
Volume Right	0	109	4	11	54
cSH	696	967	653	1489	1568
Volume to Capacity	0.13	0.12	0.03	0.04	0.00
Queue Length 95th (ft)	12	10	2	3	0
Control Delay (s)	11.0	9.2	10.7	4.2	0.1
Lane LOS	B	A	B	A	A
Approach Delay (s)	10.0		10.7	4.2	0.1
Approach LOS	B		B		

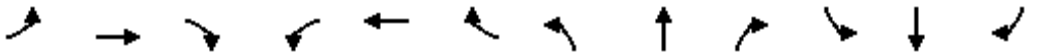
Intersection Summary				
Average Delay	6.4			
Intersection Capacity Utilization	28.6%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	642	86	46	414	52	98	124	45	117	135	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	3546		1805	3550		1805	1900	1615	1805	1900	1615
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1805	3546		1805	3550		1805	1900	1615	1805	1900	1615
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)	109	705	95	51	455	57	108	136	49	129	148	87
RTOR Reduction (vph)	0	9	0	0	9	0	0	0	43	0	0	75
Lane Group Flow (vph)	109	791	0	51	503	0	108	136	6	129	148	12
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	5.8	23.9		3.2	21.3		5.8	7.1	7.1	6.3	7.6	7.6
Effective Green, g (s)	6.3	24.4		3.7	21.8		6.3	7.6	7.6	6.8	8.1	8.1
Actuated g/C Ratio	0.11	0.42		0.06	0.37		0.11	0.13	0.13	0.12	0.14	0.14
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	1.0	3.0		1.0	3.0		1.0	2.0	2.0	1.0	2.0	2.0
Lane Grp Cap (vph)	194	1479		114	1323		194	247	210	210	263	224
v/s Ratio Prot	c0.06	c0.22		0.03	0.14		0.06	0.07		c0.07	c0.08	
v/s Ratio Perm									0.00			0.01
v/c Ratio	0.56	0.53		0.45	0.38		0.56	0.55	0.03	0.61	0.56	0.05
Uniform Delay, d1	24.8	12.8		26.4	13.4		24.8	23.8	22.2	24.6	23.5	21.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.2	0.4		1.0	0.2		2.0	1.5	0.0	3.7	1.6	0.0
Delay (s)	27.0	13.2		27.4	13.6		26.7	25.4	22.3	28.3	25.2	21.9
Level of Service	C	B		C	B		C	C	C	C	C	C
Approach Delay (s)		14.8			14.9			25.3			25.5	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	18.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	58.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		

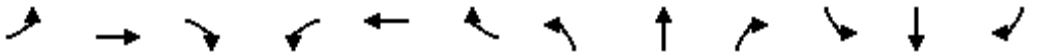
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	478	802	754	298	387	235	253	810	89	284	698	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	5187	1615	3502	5187	1615	3502	3610	1615	3502	3610	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3502	5187	1615	3502	5187	1615	3502	3610	1615	3502	3610	1615
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	498	835	785	310	403	245	264	844	93	296	727	85
RTOR Reduction (vph)	0	0	0	0	0	194	0	0	35	0	0	39
Lane Group Flow (vph)	498	835	785	310	403	51	264	844	58	296	727	46
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot		Free	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			Free			6			4			8
Actuated Green, G (s)	19.0	27.6	130.0	16.3	24.9	24.9	15.1	48.2	48.2	15.9	49.0	49.0
Effective Green, g (s)	20.0	29.6	130.0	17.3	26.9	26.9	16.1	50.2	50.2	16.9	51.0	51.0
Actuated g/C Ratio	0.15	0.23	1.00	0.13	0.21	0.21	0.12	0.39	0.39	0.13	0.39	0.39
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	539	1181	1615	466	1073	334	434	1394	624	455	1416	634
v/s Ratio Prot	c0.14	c0.16		0.09	0.08		0.08	c0.23		c0.08	0.20	
v/s Ratio Perm			c0.49			0.03			0.04			0.03
v/c Ratio	0.92	0.71	0.49	0.67	0.38	0.15	0.61	0.61	0.09	0.65	0.51	0.07
Uniform Delay, d1	54.2	46.2	0.0	53.6	44.3	42.2	54.0	32.0	25.4	53.7	30.1	24.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	21.7	2.0	1.0	3.6	0.2	0.2	2.4	2.0	0.3	3.3	1.3	0.2
Delay (s)	75.9	48.2	1.0	57.2	44.5	42.4	56.4	33.9	25.7	57.1	31.4	24.9
Level of Service	E	D	A	E	D	D	E	C	C	E	C	C
Approach Delay (s)		37.2			48.1			38.2			37.8	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM Average Control Delay	39.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		

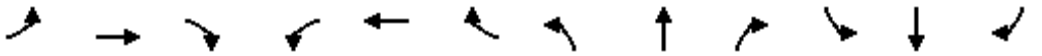
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	614	300	247	529	152	262	516	93	190	614	300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	3610	1615	3502	3610	1615	3502	3610	1615	3502	3610	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3502	3610	1615	3502	3610	1615	3502	3610	1615	3502	3610	1615
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	198	640	312	257	551	158	273	538	97	198	640	312
RTOR Reduction (vph)	0	0	147	0	0	75	0	0	63	0	0	106
Lane Group Flow (vph)	198	640	165	257	551	83	273	538	34	198	640	206
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	10.6	41.5	41.5	12.4	43.3	43.3	12.7	25.5	25.5	10.6	23.4	23.4
Effective Green, g (s)	11.1	43.0	43.0	12.9	44.8	44.8	13.2	27.0	27.0	11.1	24.9	24.9
Actuated g/C Ratio	0.10	0.39	0.39	0.12	0.41	0.41	0.12	0.25	0.25	0.10	0.23	0.23
Clearance Time (s)	4.5	5.5	5.5	4.5	5.5	5.5	4.5	5.5	5.5	4.5	5.5	5.5
Vehicle Extension (s)	2.0	2.5	2.5	2.0	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	353	1411	631	411	1470	658	420	886	396	353	817	366
v/s Ratio Prot	0.06	c0.18		c0.07	0.15		c0.08	0.15		0.06	c0.18	
v/s Ratio Perm			0.10			0.05			0.02			0.13
v/c Ratio	0.56	0.45	0.26	0.63	0.37	0.13	0.65	0.61	0.09	0.56	0.78	0.56
Uniform Delay, d1	47.1	24.8	22.7	46.2	22.8	20.4	46.2	36.8	32.0	47.1	40.0	37.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	1.1	1.0	2.1	0.7	0.4	2.7	0.8	0.0	1.2	4.6	1.2
Delay (s)	48.3	25.9	23.7	48.4	23.5	20.8	48.9	37.6	32.0	48.3	44.6	38.9
Level of Service	D	C	C	D	C	C	D	D	C	D	D	D
Approach Delay (s)		29.2			29.7			40.4			43.7	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	35.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		

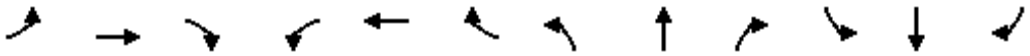
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	79	588	102	75	559	39	121	133	45	71	129	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1787	3495		1805	3575		1787	1810		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1787	3495		1805	3575		1787	1810		1770	1863	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)	90	668	116	85	635	44	138	151	51	81	147	107
RTOR Reduction (vph)	0	11	0	0	4	0	0	14	0	0	0	92
Lane Group Flow (vph)	90	773	0	85	675	0	138	188	0	81	147	15
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	1%	1%	1%	2%	2%	2%
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases												4
Actuated Green, G (s)	7.6	47.2		7.4	47.0		11.8	16.6		7.8	12.6	12.6
Effective Green, g (s)	7.6	47.7		7.4	47.5		11.8	17.1		7.8	13.1	13.1
Actuated g/C Ratio	0.08	0.50		0.08	0.49		0.12	0.18		0.08	0.14	0.14
Clearance Time (s)	4.0	4.5		4.0	4.5		4.0	4.5		4.0	4.5	4.5
Vehicle Extension (s)	2.0	5.0		2.0	3.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	141	1737		139	1769		220	322		144	254	216
v/s Ratio Prot	c0.05	c0.22		0.05	0.19		c0.08	c0.10		0.05	0.08	
v/s Ratio Perm												0.01
v/c Ratio	0.64	0.45		0.61	0.38		0.63	0.58		0.56	0.58	0.07
Uniform Delay, d1	42.9	15.6		42.9	15.1		40.0	36.2		42.5	38.9	36.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	6.8	0.8		5.5	0.6		4.0	1.7		3.0	2.0	0.1
Delay (s)	49.7	16.4		48.4	15.7		44.0	37.9		45.4	40.8	36.2
Level of Service	D	B		D	B		D	D		D	D	D
Approach Delay (s)		19.9			19.4			40.4			40.5	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM Average Control Delay	25.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	96.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		

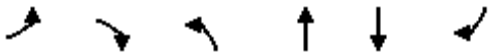
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	36	42	89	16	22	11	35	69	4	44	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	11	40	47	99	18	24	12	39	77	4	49	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	198	203	54	231	169	77	59			116		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	198	203	54	231	169	77	59			116		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	94	95	85	98	98	99			100		
cM capacity (veh/h)	726	689	1019	658	719	989	1545			1473		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	98	141	128	63
Volume Left	11	99	12	4
Volume Right	47	24	77	10
cSH	821	707	1545	1473
Volume to Capacity	0.12	0.20	0.01	0.00
Queue Length 95th (ft)	10	19	1	0
Control Delay (s)	10.0	11.4	0.8	0.5
Lane LOS	A	B	A	A
Approach Delay (s)	10.0	11.4	0.8	0.5
Approach LOS	A	B		

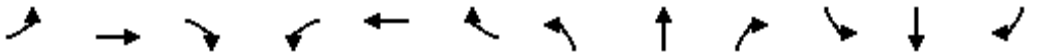
Intersection Summary				
Average Delay	6.3			
Intersection Capacity Utilization	29.9%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	49	654	532	69	91	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.94	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	1599	1805	1900	1770	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1787	1599	1805	1900	1770	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	50	667	543	70	93	72
RTOR Reduction (vph)	0	551	0	0	50	0
Lane Group Flow (vph)	50	116	543	70	115	0
Heavy Vehicles (%)	1%	1%	0%	0%	1%	1%
Turn Type		Perm	Prot			
Protected Phases	2		3	8	4	
Permitted Phases		2				
Actuated Green, G (s)	8.5	8.5	20.7	31.9	6.7	
Effective Green, g (s)	8.5	8.5	21.2	32.4	7.2	
Actuated g/C Ratio	0.17	0.17	0.43	0.66	0.15	
Clearance Time (s)	4.0	4.0	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	2.0	2.0	2.5	2.5	
Lane Grp Cap (vph)	311	278	783	1259	261	
v/s Ratio Prot	0.03		c0.30	0.04	c0.06	
v/s Ratio Perm		c0.07				
v/c Ratio	0.16	0.42	0.69	0.06	0.44	
Uniform Delay, d1	17.2	18.0	11.2	2.9	19.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.4	2.2	0.0	0.9	
Delay (s)	17.3	18.4	13.4	2.9	19.9	
Level of Service	B	B	B	A	B	
Approach Delay (s)	18.3			12.2	19.9	
Approach LOS	B			B	B	

Intersection Summary			
HCM Average Control Delay	16.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	48.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	56.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	91	549	556	171	413	129	516	390	123	183	464	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.94	0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3610	1615	1805	3481		5090	3610	1615	1787	3485	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1805	3610	1615	1805	3481		5090	3610	1615	1787	3485	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	94	566	573	176	426	133	532	402	127	189	478	95
RTOR Reduction (vph)	0	0	359	0	31	0	0	0	101	0	18	0
Lane Group Flow (vph)	94	566	214	176	528	0	532	402	26	189	555	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	7.3	19.2	19.2	11.6	23.5		12.4	15.1	15.1	11.9	14.6	
Effective Green, g (s)	8.8	20.7	20.7	13.1	25.0		13.9	16.6	16.6	13.4	16.1	
Actuated g/C Ratio	0.11	0.26	0.26	0.16	0.31		0.17	0.21	0.21	0.17	0.20	
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		5.5	5.5	5.5	5.5	5.5	
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		2.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	199	936	419	296	1091		887	751	336	300	703	
v/s Ratio Prot	0.05	c0.16		c0.10	0.15		0.10	0.11		c0.11	c0.16	
v/s Ratio Perm			0.13						0.02			
v/c Ratio	0.47	0.60	0.51	0.59	0.48		0.60	0.54	0.08	0.63	0.79	
Uniform Delay, d1	33.3	26.0	25.2	30.9	22.2		30.4	28.2	25.4	30.9	30.2	
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	0.6	1.1	1.1	2.1	0.3		0.7	0.7	0.1	3.1	5.9	
Delay (s)	34.0	27.1	26.3	33.0	22.5		31.1	28.9	25.5	34.0	36.1	
Level of Service	C	C	C	C	C		C	C	C	C	D	
Approach Delay (s)		27.2			25.0			29.6			35.6	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM Average Control Delay	29.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	79.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	69.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

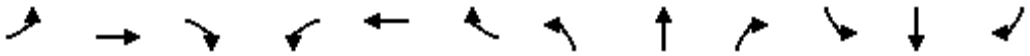
Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #4 Larch Rd/Tracy Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.288
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	10.3
Optimal Cycle:	0	Level Of Service:	B

Street Name:	Tracy Blvd						Larch Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 0	1	1 0	0 1	0	0 0	1! 0	0	0 1	0 0	1
Volume Module:												
Base Vol:	80	114	67	8	89	9	8	46	69	92	44	2
Growth 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
Initial Bse:	80	114	67	8	89	9	8	46	69	92	44	2
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	80	114	67	8	89	9	8	46	69	92	44	2
User 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
PHF Adj:	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
PHF Volume:	93	133	78	9	103	10	9	53	80	107	51	2
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	93	133	78	9	103	10	9	53	80	107	51	2
PCE 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
MLF 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
FinalVolume:	93	133	78	9	103	10	9	53	80	107	51	2
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.00	1.00	1.00	0.91	0.09	0.07	0.37	0.56	0.68	0.32	1.00
Final Sat.:	538	583	656	524	520	53	40	228	341	371	178	649
Capacity Analysis Module:												
Vol/Sat:	0.17	0.23	0.12	0.02	0.20	0.20	0.24	0.24	0.24	0.29	0.29	0.00
Crit Moves:		****			****			****			****	
Delay/Veh:	10.4	10.3	8.6	9.3	10.0	10.0	10.2	10.2	10.2	11.3	11.3	7.9
Delay 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
AdjDel/Veh:	10.4	10.3	8.6	9.3	10.0	10.0	10.2	10.2	10.2	11.3	11.3	7.9
LOS by Move:	B	B	A	A	B	B	B	B	B	B	B	A
ApproachDel:	9.9			10.0			10.2			11.3		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	9.9			10.0			10.2			11.3		
LOS by Appr:	A			A			B			B		
AllWayAvgQ:	0.2	0.3	0.1	0.0	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.0

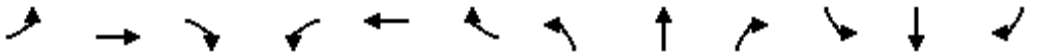
Note: Queue reported is the number of cars per lane.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	344	4	108	208	262	0	0	279	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	
Lane Util. Factor					1.00		1.00	0.95			0.95	
Frt					0.97		1.00	1.00			0.96	
Flt Protected					0.96		0.95	1.00			1.00	
Satd. Flow (prot)					1704		1736	3471			3297	
Flt Permitted					0.96		0.95	1.00			1.00	
Satd. Flow (perm)					1704		1736	3471			3297	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	362	4	114	219	276	0	0	294	111
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	0	0	43	0
Lane Group Flow (vph)	0	0	0	0	471	0	219	276	0	0	362	0
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	4%	4%	4%	5%	5%	5%
Turn Type				Perm			Prot					
Protected Phases					8		5	2			6	
Permitted Phases				8								
Actuated Green, G (s)					26.4		14.8	35.0			16.2	
Effective Green, g (s)					26.4		14.8	35.9			17.1	
Actuated g/C Ratio					0.38		0.21	0.51			0.24	
Clearance Time (s)					4.0		4.0	4.9			4.9	
Vehicle Extension (s)					3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)					640		365	1773			802	
v/s Ratio Prot							c0.13	0.08			c0.11	
v/s Ratio Perm					0.28							
v/c Ratio					0.74		0.60	0.16			0.45	
Uniform Delay, d1					18.9		25.1	9.1			22.6	
Progression Factor					1.00		1.00	1.00			1.00	
Incremental Delay, d2					4.4		2.7	0.0			0.4	
Delay (s)					23.3		27.7	9.2			23.0	
Level of Service					C		C	A			C	
Approach Delay (s)		0.0			23.3			17.4			23.0	
Approach LOS		A			C			B			C	

Intersection Summary			
HCM Average Control Delay	21.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	70.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

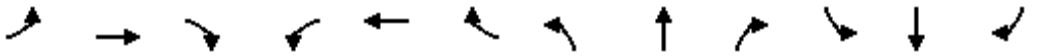
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	86	9	183	0	0	0	0	384	292	95	528	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		1.00						0.95		1.00	0.95	
Frt		0.91						0.94		1.00	1.00	
Flt Protected		0.98						1.00		0.95	1.00	
Satd. Flow (prot)		1609						3310		1752	3505	
Flt Permitted		0.98						1.00		0.95	1.00	
Satd. Flow (perm)		1609						3310		1752	3505	
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)	95	10	201	0	0	0	0	422	321	104	580	0
RTOR Reduction (vph)	0	64	0	0	0	0	0	143	0	0	0	0
Lane Group Flow (vph)	0	242	0	0	0	0	0	600	0	104	580	0
Heavy Vehicles (%)	6%	6%	6%	0%	0%	0%	2%	2%	2%	3%	3%	3%
Turn Type	Perm									Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4											
Actuated Green, G (s)		16.2						17.6		7.4	29.0	
Effective Green, g (s)		17.1						18.5		7.4	29.9	
Actuated g/C Ratio		0.31						0.34		0.13	0.54	
Clearance Time (s)		4.9						4.9		4.0	4.9	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		500						1113		236	1905	
v/s Ratio Prot								c0.18		c0.06	0.17	
v/s Ratio Perm		0.15										
v/c Ratio		0.48						0.54		0.44	0.30	
Uniform Delay, d1		15.4						14.8		21.9	6.9	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		0.7						0.5		1.3	0.1	
Delay (s)		16.1						15.3		23.2	7.0	
Level of Service		B						B		C	A	
Approach Delay (s)		16.1			0.0			15.3			9.4	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM Average Control Delay	13.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

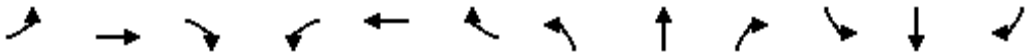
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	189	406	153	127	310	122	221	473	100	188	565	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.96		1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3462		1787	3423		1787	3481		1787	3456	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	3462		1787	3423		1787	3481		1787	3456	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	195	419	158	131	320	126	228	488	103	194	582	164
RTOR Reduction (vph)	0	41	0	0	46	0	0	15	0	0	22	0
Lane Group Flow (vph)	195	536	0	131	400	0	228	576	0	194	724	0
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	13.6	19.6		10.5	16.5		15.0	33.7		13.7	32.4	
Effective Green, g (s)	14.1	20.6		11.0	17.5		15.5	34.2		14.2	32.9	
Actuated g/C Ratio	0.15	0.21		0.11	0.18		0.16	0.36		0.15	0.34	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	1.0	3.0		1.0	3.0		1.0	3.0		1.0	3.0	
Lane Grp Cap (vph)	265	743		205	624		289	1240		264	1184	
v/s Ratio Prot	c0.11	c0.15		0.07	0.12		c0.13	0.17		0.11	c0.21	
v/s Ratio Perm												
v/c Ratio	0.74	0.72		0.64	0.64		0.79	0.46		0.73	0.61	
Uniform Delay, d1	39.2	35.0		40.6	36.3		38.7	23.8		39.1	26.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.8	3.5		4.7	2.3		12.4	1.3		8.8	2.4	
Delay (s)	48.0	38.5		45.3	38.6		51.0	25.1		47.9	28.6	
Level of Service	D	D		D	D		D	C		D	C	
Approach Delay (s)		40.9			40.1			32.3			32.6	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	36.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	96.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		

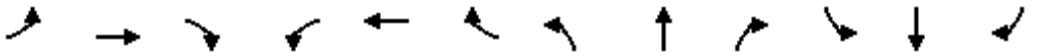
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	3	47	2	5	1	33	26	2	3	32	18
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	37	3	50	2	5	1	35	28	2	3	34	19
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	153	150	44	201	159	29	53			30		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	153	150	44	201	159	29	53			30		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	100	95	100	99	100	98			100		
cM capacity (veh/h)	796	725	1029	709	719	1052	1546			1590		

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	37	53	9	65	56
Volume Left	37	0	2	35	3
Volume Right	0	50	1	2	19
cSH	796	1004	746	1546	1590
Volume to Capacity	0.05	0.05	0.01	0.02	0.00
Queue Length 95th (ft)	4	4	1	2	0
Control Delay (s)	9.7	8.8	9.9	4.1	0.4
Lane LOS	A	A	A	A	A
Approach Delay (s)	9.2		9.9	4.1	0.4
Approach LOS	A		A		

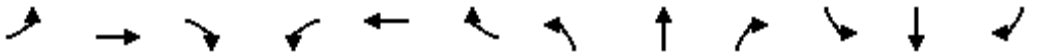
Intersection Summary				
Average Delay	5.5			
Intersection Capacity Utilization	22.8%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	53	494	103	35	388	42	77	78	28	83	118	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	3517		1805	3557		1805	1900	1615	1805	1900	1615
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1805	3517		1805	3557		1805	1900	1615	1805	1900	1615
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)	61	568	118	40	446	48	89	90	32	95	136	76
RTOR Reduction (vph)	0	15	0	0	7	0	0	0	28	0	0	65
Lane Group Flow (vph)	61	671	0	40	487	0	89	90	4	95	136	11
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	3.5	23.1		2.0	21.6		5.6	7.3	7.3	5.8	7.5	7.5
Effective Green, g (s)	4.0	23.6		2.5	22.1		6.1	7.8	7.8	6.3	8.0	8.0
Actuated g/C Ratio	0.07	0.42		0.04	0.39		0.11	0.14	0.14	0.11	0.14	0.14
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	1.0	3.0		1.0	3.0		1.0	2.0	2.0	1.0	2.0	2.0
Lane Grp Cap (vph)	128	1477		80	1399		196	264	224	202	270	230
v/s Ratio Prot	c0.03	c0.19		0.02	0.14		0.05	0.05		c0.05	c0.07	
v/s Ratio Perm									0.00			0.01
v/c Ratio	0.48	0.45		0.50	0.35		0.45	0.34	0.02	0.47	0.50	0.05
Uniform Delay, d1	25.1	11.7		26.2	12.0		23.5	21.9	20.9	23.4	22.3	20.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	0.2		1.8	0.2		0.6	0.3	0.0	0.6	0.5	0.0
Delay (s)	26.1	11.9		28.0	12.1		24.1	22.2	20.9	24.0	22.8	20.8
Level of Service	C	B		C	B		C	C	C	C	C	C
Approach Delay (s)		13.1			13.3			22.8			22.7	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	15.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	56.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.2%	ICU Level of Service	A
Analysis Period (min)	15		

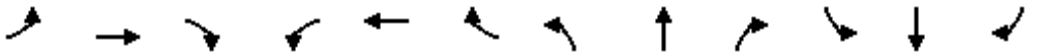
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	403	563	294	250	474	319	571	959	99	292	909	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	5187	1615	3502	5187	1615	3502	3610	1615	3502	3610	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3502	5187	1615	3502	5187	1615	3502	3610	1615	3502	3610	1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	415	580	303	258	489	329	589	989	102	301	937	149
RTOR Reduction (vph)	0	0	0	0	0	231	0	0	41	0	0	69
Lane Group Flow (vph)	415	580	303	258	489	98	589	989	61	301	937	80
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot		Free	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			Free			6			4			8
Actuated Green, G (s)	14.5	18.1	96.2	12.2	15.8	15.8	15.1	30.9	30.9	13.0	28.8	28.8
Effective Green, g (s)	15.5	20.1	96.2	13.2	17.8	17.8	16.1	32.9	32.9	14.0	30.8	30.8
Actuated g/C Ratio	0.16	0.21	1.00	0.14	0.19	0.19	0.17	0.34	0.34	0.15	0.32	0.32
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	564	1084	1615	481	960	299	586	1235	552	510	1156	517
v/s Ratio Prot	c0.12	c0.11		0.07	0.09		c0.17	c0.27		0.09	0.26	
v/s Ratio Perm			c0.19			0.06			0.04			0.05
v/c Ratio	0.74	0.54	0.19	0.54	0.51	0.33	1.01	0.80	0.11	0.59	0.81	0.16
Uniform Delay, d1	38.4	33.9	0.0	38.7	35.3	34.0	40.0	28.7	21.6	38.4	30.0	23.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.0	0.5	0.3	1.2	0.4	0.6	38.4	3.8	0.1	1.8	4.4	0.1
Delay (s)	43.4	34.4	0.3	39.8	35.7	34.7	78.5	32.5	21.7	40.3	34.4	23.5
Level of Service	D	C	A	D	D	C	E	C	C	D	C	C
Approach Delay (s)		29.3			36.4			48.0			34.5	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM Average Control Delay	37.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	96.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		

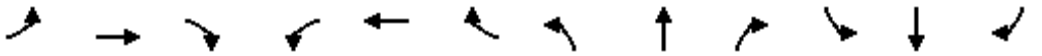
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	175	532	262	121	507	128	282	364	89	107	396	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	3610	1615	3502	3610	1615	3502	3610	1615	3502	3610	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3502	3610	1615	3502	3610	1615	3502	3610	1615	3502	3610	1615
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	182	554	273	126	528	133	294	379	93	111	412	151
RTOR Reduction (vph)	0	0	146	0	0	68	0	0	68	0	0	71
Lane Group Flow (vph)	182	554	127	126	528	65	294	379	25	111	412	80
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	8.8	18.1	18.1	7.7	17.0	17.0	11.3	17.8	17.8	7.2	13.7	13.7
Effective Green, g (s)	9.3	19.6	19.6	8.2	18.5	18.5	11.8	19.3	19.3	7.7	15.2	15.2
Actuated g/C Ratio	0.13	0.28	0.28	0.12	0.26	0.26	0.17	0.27	0.27	0.11	0.21	0.21
Clearance Time (s)	4.5	5.5	5.5	4.5	5.5	5.5	4.5	5.5	5.5	4.5	5.5	5.5
Vehicle Extension (s)	2.0	2.5	2.5	2.0	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	460	999	447	406	943	422	584	984	440	381	775	347
v/s Ratio Prot	c0.05	c0.15		0.04	0.15		c0.08	0.10		0.03	c0.11	
v/s Ratio Perm			0.08			0.04			0.02			0.05
v/c Ratio	0.40	0.55	0.28	0.31	0.56	0.15	0.50	0.39	0.06	0.29	0.53	0.23
Uniform Delay, d1	28.2	21.9	20.1	28.7	22.6	20.1	26.8	20.9	19.0	29.0	24.6	23.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.5	0.3	0.2	0.6	0.1	0.2	0.1	0.0	0.2	0.4	0.1
Delay (s)	28.4	22.4	20.3	28.9	23.2	20.3	27.1	21.0	19.0	29.2	25.0	23.1
Level of Service	C	C	C	C	C	C	C	C	B	C	C	C
Approach Delay (s)		22.9			23.6			23.1			25.3	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	23.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	70.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		

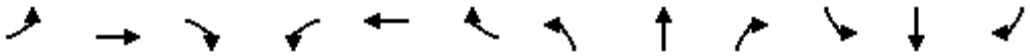
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	52	509	90	54	509	55	98	111	32	81	117	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	3528		1787	3522		1787	1817		1805	1900	1615
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1805	3528		1787	3522		1787	1817		1805	1900	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	53	519	92	55	519	56	100	113	33	83	119	85
RTOR Reduction (vph)	0	12	0	0	6	0	0	10	0	0	0	74
Lane Group Flow (vph)	53	599	0	55	569	0	100	136	0	83	119	11
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases												4
Actuated Green, G (s)	3.7	22.8		3.8	22.9		6.5	7.5		6.0	7.0	7.0
Effective Green, g (s)	3.7	23.3		3.8	23.4		6.5	8.0		6.0	7.5	7.5
Actuated g/C Ratio	0.06	0.41		0.07	0.41		0.11	0.14		0.11	0.13	0.13
Clearance Time (s)	4.0	4.5		4.0	4.5		4.0	4.5		4.0	4.5	4.5
Vehicle Extension (s)	2.0	5.0		2.0	3.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	117	1440		119	1443		203	255		190	250	212
v/s Ratio Prot	0.03	c0.17		c0.03	0.16		c0.06	c0.07		0.05	0.06	
v/s Ratio Perm												0.01
v/c Ratio	0.45	0.42		0.46	0.39		0.49	0.53		0.44	0.48	0.05
Uniform Delay, d1	25.7	12.0		25.7	11.9		23.8	22.8		24.0	23.0	21.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.0	0.4		1.0	0.2		0.7	1.1		0.6	0.5	0.0
Delay (s)	26.7	12.5		26.7	12.0		24.4	23.9		24.6	23.5	21.7
Level of Service	C	B		C	B		C	C		C	C	C
Approach Delay (s)		13.6			13.3			24.1			23.3	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	16.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	57.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		

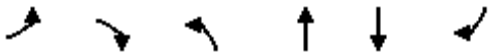
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	60	80	70	30	40	40	80	90	10	40	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	24	73	98	85	37	49	49	98	110	12	49	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	396	384	55	463	335	152	61			207		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	396	384	55	463	335	152	61			207		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	86	90	79	94	95	97			99		
cM capacity (veh/h)	494	530	1018	402	565	899	1542			1364		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	195	171	256	73
Volume Left	24	85	49	12
Volume Right	98	49	110	12
cSH	689	515	1542	1364
Volume to Capacity	0.28	0.33	0.03	0.01
Queue Length 95th (ft)	29	36	2	1
Control Delay (s)	12.3	15.4	1.6	1.3
Lane LOS	B	C	A	A
Approach Delay (s)	12.3	15.4	1.6	1.3
Approach LOS	B	C		

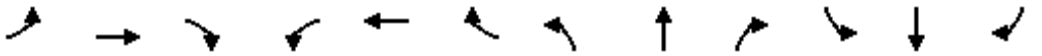
Intersection Summary				
Average Delay	8.0			
Intersection Capacity Utilization	43.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	50	450	400	170	120	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	1599	1805	1900	1807	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1787	1599	1805	1900	1807	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	52	469	417	177	125	52
RTOR Reduction (vph)	0	384	0	0	27	0
Lane Group Flow (vph)	52	85	417	177	151	0
Heavy Vehicles (%)	1%	1%	0%	0%	1%	1%
Turn Type		Perm	Prot			
Protected Phases	2		3	8	4	
Permitted Phases		2				
Actuated Green, G (s)	8.1	8.1	16.5	28.2	7.2	
Effective Green, g (s)	8.1	8.1	17.0	28.7	7.7	
Actuated g/C Ratio	0.18	0.18	0.38	0.64	0.17	
Clearance Time (s)	4.0	4.0	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	2.0	2.0	2.5	2.5	
Lane Grp Cap (vph)	323	289	685	1217	311	
v/s Ratio Prot	0.03		c0.23	0.09	c0.08	
v/s Ratio Perm		c0.05				
v/c Ratio	0.16	0.29	0.61	0.15	0.48	
Uniform Delay, d1	15.5	15.9	11.2	3.2	16.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.2	1.1	0.0	0.9	
Delay (s)	15.6	16.1	12.3	3.2	17.6	
Level of Service	B	B	B	A	B	
Approach Delay (s)	16.0			9.6	17.6	
Approach LOS	B			A	B	

Intersection Summary			
HCM Average Control Delay	13.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	44.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	46.5%	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												
Volume (vph)	120	750	660	260	440	110	490	390	280	130	380	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.94	0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3610	1615	1805	3501		5090	3610	1615	1787	3491	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1805	3610	1615	1805	3501		5090	3610	1615	1787	3491	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	125	781	688	271	458	115	510	406	292	135	396	73
RTOR Reduction (vph)	0	0	280	0	19	0	0	0	192	0	13	0
Lane Group Flow (vph)	125	781	408	271	554	0	510	406	100	135	456	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	11.7	28.5	28.5	14.5	31.3		16.5	37.9	37.9	12.1	33.5	
Effective Green, g (s)	13.2	30.0	30.0	16.0	32.8		18.0	39.4	39.4	13.6	35.0	
Actuated g/C Ratio	0.11	0.26	0.26	0.14	0.29		0.16	0.34	0.34	0.12	0.30	
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		5.5	5.5	5.5	5.5	5.5	
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		2.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	207	942	421	251	999		797	1237	553	211	1062	
v/s Ratio Prot	0.07	0.22		c0.15	c0.16		c0.10	0.11		0.08	c0.13	
v/s Ratio Perm			c0.25						0.06			
v/c Ratio	0.60	0.83	0.97	1.08	0.55		0.64	0.33	0.18	0.64	0.43	
Uniform Delay, d1	48.4	40.1	42.0	49.5	34.9		45.5	28.0	26.5	48.4	32.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.4	6.1	35.3	79.6	0.7		3.9	0.7	0.7	4.6	0.3	
Delay (s)	51.8	46.2	77.4	129.1	35.6		49.4	28.7	27.2	53.0	32.3	
Level of Service	D	D	E	F	D		D	C	C	D	C	
Approach Delay (s)		60.1			65.6			37.1			36.9	
Approach LOS		E			E			D			D	

Intersection Summary			
HCM Average Control Delay	51.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	115.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

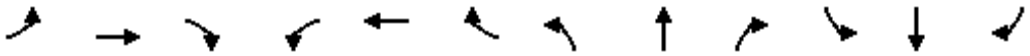
Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #4 Larch Rd/Tracy Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.524
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	12.8
Optimal Cycle:	0	Level Of Service:	B

Street Name:	Tracy Blvd						Larch Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 0	1	1 0	0 1	0	0 0	1! 0	0	0 1	0 0	1
Volume Module:												
Base Vol:	70	150	120	10	90	10	10	80	70	160	70	20
Growth 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
Initial Bse:	70	150	120	10	90	10	10	80	70	160	70	20
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	70	150	120	10	90	10	10	80	70	160	70	20
User 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
PHF Adj:	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
PHF Volume:	82	176	141	12	106	12	12	94	82	188	82	24
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	82	176	141	12	106	12	12	94	82	188	82	24
PCE 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
MLF 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
FinalVolume:	82	176	141	12	106	12	12	94	82	188	82	24
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.00	1.00	1.00	0.90	0.10	0.06	0.50	0.44	0.70	0.30	1.00
Final Sat.:	483	519	576	456	445	49	34	271	237	359	157	601
Capacity Analysis Module:												
Vol/Sat:	0.17	0.34	0.25	0.03	0.24	0.24	0.35	0.35	0.35	0.52	0.52	0.04
Crit Moves:		****				****			****		****	
Delay/Veh:	11.3	12.6	10.5	10.2	11.4	11.4	12.4	12.4	12.4	16.2	16.2	8.6
Delay 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
AdjDel/Veh:	11.3	12.6	10.5	10.2	11.4	11.4	12.4	12.4	12.4	16.2	16.2	8.6
LOS by Move:	B	B	B	B	B	B	B	B	B	C	C	A
ApproachDel:		11.6			11.3			12.4			15.6	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		11.6			11.3			12.4			15.6	
LOS by Appr:		B			B			B			C	
AllWayAvgQ:	0.2	0.5	0.3	0.0	0.3	0.3	0.5	0.5	0.5	1.0	1.0	0.0

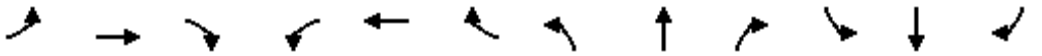
Note: Queue reported is the number of cars per lane.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	390	0	120	130	310	0	0	310	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	
Lane Util. Factor					1.00		1.00	0.95			0.95	
Frt					0.97		1.00	1.00			0.96	
Flt Protected					0.96		0.95	1.00			1.00	
Satd. Flow (prot)					1704		1736	3471			3303	
Flt Permitted					0.96		0.95	1.00			1.00	
Satd. Flow (perm)					1704		1736	3471			3303	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	415	0	128	138	330	0	0	330	117
RTOR Reduction (vph)	0	0	0	0	8	0	0	0	0	0	40	0
Lane Group Flow (vph)	0	0	0	0	535	0	138	330	0	0	407	0
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	4%	4%	4%	5%	5%	5%
Turn Type				Perm			Prot					
Protected Phases					8		5	2			6	
Permitted Phases				8								
Actuated Green, G (s)					31.9		11.3	31.7			16.4	
Effective Green, g (s)					31.9		11.3	32.6			17.3	
Actuated g/C Ratio					0.44		0.16	0.45			0.24	
Clearance Time (s)					4.0		4.0	4.9			4.9	
Vehicle Extension (s)					3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)					750		271	1561			788	
v/s Ratio Prot							c0.08	0.10			c0.12	
v/s Ratio Perm					0.31							
v/c Ratio					0.71		0.51	0.21			0.52	
Uniform Delay, d1					16.6		28.1	12.1			24.0	
Progression Factor					1.00		1.00	1.00			1.00	
Incremental Delay, d2					3.2		1.5	0.1			0.6	
Delay (s)					19.8		29.6	12.2			24.5	
Level of Service					B		C	B			C	
Approach Delay (s)		0.0			19.8			17.3			24.5	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	20.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	72.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		

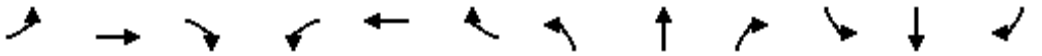
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	0	160	0	0	0	0	360	270	120	580	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		1.00						0.95		1.00	0.95	
Frt		0.91						0.94		1.00	1.00	
Flt Protected		0.98						1.00		0.95	1.00	
Satd. Flow (prot)		1604						3312		1752	3505	
Flt Permitted		0.98						1.00		0.95	1.00	
Satd. Flow (perm)		1604						3312		1752	3505	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	84	0	168	0	0	0	0	379	284	126	611	0
RTOR Reduction (vph)	0	69	0	0	0	0	0	145	0	0	0	0
Lane Group Flow (vph)	0	183	0	0	0	0	0	518	0	126	611	0
Heavy Vehicles (%)	6%	6%	6%	0%	0%	0%	2%	2%	2%	3%	3%	3%
Turn Type	Perm									Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4											
Actuated Green, G (s)		13.9						15.3		7.8	27.1	
Effective Green, g (s)		14.8						16.2		7.8	28.0	
Actuated g/C Ratio		0.29						0.32		0.15	0.55	
Clearance Time (s)		4.9						4.9		4.0	4.9	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		467						1056		269	1932	
v/s Ratio Prot								c0.16		c0.07	0.17	
v/s Ratio Perm		0.11										
v/c Ratio		0.39						0.49		0.47	0.32	
Uniform Delay, d1		14.4						14.0		19.6	6.2	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		0.5						0.4		1.3	0.1	
Delay (s)		14.9						14.3		20.9	6.3	
Level of Service		B						B		C	A	
Approach Delay (s)		14.9			0.0			14.3			8.8	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM Average Control Delay	12.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	50.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		

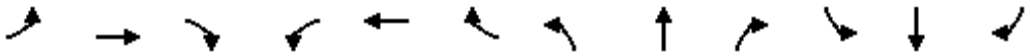
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	220	580	160	140	410	140	210	470	180	160	540	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	0.96		1.00	0.96		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3493		1787	3438		1787	3426		1787	3446	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	3493		1787	3438		1787	3426		1787	3446	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	232	611	168	147	432	147	221	495	189	168	568	179
RTOR Reduction (vph)	0	26	0	0	35	0	0	35	0	0	28	0
Lane Group Flow (vph)	232	754	0	147	544	0	221	649	0	168	719	0
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	15.0	23.0		11.3	19.3		14.8	30.8		12.4	28.4	
Effective Green, g (s)	15.5	24.0		11.8	20.3		15.3	31.3		12.9	28.9	
Actuated g/C Ratio	0.16	0.25		0.12	0.21		0.16	0.33		0.13	0.30	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	1.0	3.0		1.0	3.0		1.0	3.0		1.0	3.0	
Lane Grp Cap (vph)	291	873		220	727		285	1117		240	1037	
v/s Ratio Prot	c0.13	c0.22		0.08	0.16		c0.12	0.19		0.09	c0.21	
v/s Ratio Perm												
v/c Ratio	0.80	0.86		0.67	0.75		0.78	0.58		0.70	0.69	
Uniform Delay, d1	38.7	34.4		40.2	35.5		38.7	26.9		39.7	29.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	13.2	8.8		5.8	4.2		11.4	2.2		7.0	3.8	
Delay (s)	51.9	43.3		46.1	39.7		50.1	29.1		46.7	33.5	
Level of Service	D	D		D	D		D	C		D	C	
Approach Delay (s)		45.2			41.0			34.2			35.9	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM Average Control Delay	39.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	96.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		

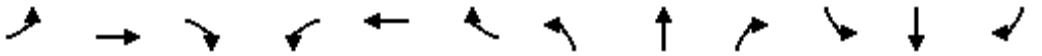
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	80	10	90	10	10	10	50	30	10	10	40	50
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	100	12	112	12	12	12	62	38	12	12	50	62
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	294	281	81	394	306	44	112			50		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	294	281	81	394	306	44	112			50		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	84	98	89	97	98	99	96			99		
cM capacity (veh/h)	617	597	981	477	580	1032	1471			1563		

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	100	125	38	112	125
Volume Left	100	0	12	62	12
Volume Right	0	112	12	12	62
cSH	617	922	627	1471	1563
Volume to Capacity	0.16	0.14	0.06	0.04	0.01
Queue Length 95th (ft)	14	12	5	3	1
Control Delay (s)	12.0	9.5	11.1	4.3	0.8
Lane LOS	B	A	B	A	A
Approach Delay (s)	10.6		11.1	4.3	0.8
Approach LOS	B		B		

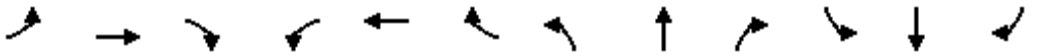
Intersection Summary				
Average Delay	6.8			
Intersection Capacity Utilization	29.4%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	650	90	50	420	60	100	130	50	120	140	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	3544		1805	3542		1805	1900	1615	1805	1900	1615
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1805	3544		1805	3542		1805	1900	1615	1805	1900	1615
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)	110	714	99	55	462	66	110	143	55	132	154	88
RTOR Reduction (vph)	0	9	0	0	11	0	0	0	48	0	0	76
Lane Group Flow (vph)	110	804	0	55	517	0	110	143	7	132	154	12
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	5.9	24.2		3.3	21.6		5.9	7.3	7.3	6.4	7.8	7.8
Effective Green, g (s)	6.4	24.7		3.8	22.1		6.4	7.8	7.8	6.9	8.3	8.3
Actuated g/C Ratio	0.11	0.42		0.06	0.37		0.11	0.13	0.13	0.12	0.14	0.14
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	1.0	3.0		1.0	3.0		1.0	2.0	2.0	1.0	2.0	2.0
Lane Grp Cap (vph)	195	1479		116	1322		195	250	213	210	266	226
v/s Ratio Prot	c0.06	c0.23		0.03	0.15		0.06	0.08		c0.07	c0.08	
v/s Ratio Perm									0.00			0.01
v/c Ratio	0.56	0.54		0.47	0.39		0.56	0.57	0.03	0.63	0.58	0.05
Uniform Delay, d1	25.1	13.0		26.7	13.6		25.1	24.1	22.4	24.9	23.8	22.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.2	0.4		1.1	0.2		2.2	2.0	0.0	4.2	1.9	0.0
Delay (s)	27.3	13.4		27.8	13.8		27.3	26.1	22.4	29.1	25.7	22.1
Level of Service	C	B		C	B		C	C	C	C	C	C
Approach Delay (s)		15.1			15.1			25.9			26.1	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	59.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.7%	ICU Level of Service	A
Analysis Period (min)	15		

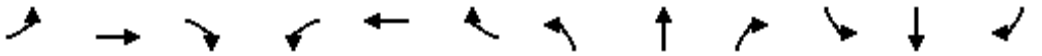
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	480	830	760	350	390	240	260	980	170	290	810	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	5187	1615	3502	5187	1615	3502	3610	1615	3502	3610	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3502	5187	1615	3502	5187	1615	3502	3610	1615	3502	3610	1615
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	500	865	792	365	406	250	271	1021	177	302	844	94
RTOR Reduction (vph)	0	0	0	0	0	195	0	0	56	0	0	38
Lane Group Flow (vph)	500	865	792	365	406	55	271	1021	121	302	844	56
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot		Free	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			Free			6			4			8
Actuated Green, G (s)	19.0	28.3	130.0	17.5	26.8	26.8	15.2	46.1	46.1	16.1	47.0	47.0
Effective Green, g (s)	20.0	30.3	130.0	18.5	28.8	28.8	16.2	48.1	48.1	17.1	49.0	49.0
Actuated g/C Ratio	0.15	0.23	1.00	0.14	0.22	0.22	0.12	0.37	0.37	0.13	0.38	0.38
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	539	1209	1615	498	1149	358	436	1336	598	461	1361	609
v/s Ratio Prot	c0.14	c0.17		0.10	0.08		0.08	c0.28		c0.09	0.23	
v/s Ratio Perm			c0.49			0.03			0.07			0.03
v/c Ratio	0.93	0.72	0.49	0.73	0.35	0.15	0.62	0.76	0.20	0.66	0.62	0.09
Uniform Delay, d1	54.3	45.9	0.0	53.4	42.7	40.8	54.0	36.0	27.9	53.6	32.9	26.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	22.2	2.0	1.1	5.5	0.2	0.2	2.7	4.2	0.8	3.3	2.1	0.3
Delay (s)	76.5	47.9	1.1	58.9	42.9	41.0	56.7	40.2	28.6	57.0	35.1	26.4
Level of Service	E	D	A	E	D	D	E	D	C	E	D	C
Approach Delay (s)		37.3			48.2			41.8			39.8	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM Average Control Delay	40.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

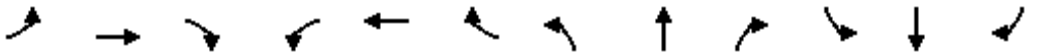
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	200	640	370	250	540	160	270	520	100	200	620	320
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	3610	1615	3502	3610	1615	3502	3610	1615	3502	3610	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3502	3610	1615	3502	3610	1615	3502	3610	1615	3502	3610	1615
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	208	667	385	260	562	167	281	542	104	208	646	333
RTOR Reduction (vph)	0	0	176	0	0	79	0	0	67	0	0	111
Lane Group Flow (vph)	208	667	209	260	562	88	281	542	37	208	646	222
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	10.9	41.0	41.0	12.5	42.6	42.6	12.8	25.6	25.6	10.9	23.7	23.7
Effective Green, g (s)	11.4	42.5	42.5	13.0	44.1	44.1	13.3	27.1	27.1	11.4	25.2	25.2
Actuated g/C Ratio	0.10	0.39	0.39	0.12	0.40	0.40	0.12	0.25	0.25	0.10	0.23	0.23
Clearance Time (s)	4.5	5.5	5.5	4.5	5.5	5.5	4.5	5.5	5.5	4.5	5.5	5.5
Vehicle Extension (s)	2.0	2.5	2.5	2.0	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	363	1395	624	414	1447	647	423	889	398	363	827	370
v/s Ratio Prot	0.06	c0.18		c0.07	0.16		c0.08	0.15		0.06	c0.18	
v/s Ratio Perm			0.13			0.05			0.02			0.14
v/c Ratio	0.57	0.48	0.33	0.63	0.39	0.14	0.66	0.61	0.09	0.57	0.78	0.60
Uniform Delay, d1	47.0	25.4	23.8	46.2	23.4	20.9	46.2	36.8	32.0	47.0	39.8	37.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	1.2	1.4	2.1	0.8	0.4	3.0	0.8	0.0	1.4	4.5	1.7
Delay (s)	48.3	26.6	25.2	48.3	24.2	21.3	49.3	37.6	32.0	48.3	44.3	39.6
Level of Service	D	C	C	D	C	C	D	D	C	D	D	D
Approach Delay (s)		29.8			30.0			40.5			43.7	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	35.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.0%	ICU Level of Service	B
Analysis Period (min)	15		

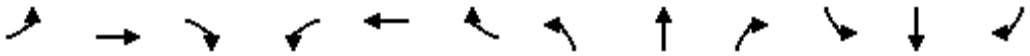
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	590	110	80	560	40	130	140	50	80	130	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1787	3490		1805	3574		1787	1807		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1787	3490		1805	3574		1787	1807		1770	1863	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)	91	670	125	91	636	45	148	159	57	91	148	114
RTOR Reduction (vph)	0	11	0	0	4	0	0	16	0	0	0	96
Lane Group Flow (vph)	91	784	0	91	677	0	148	200	0	91	148	18
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	1%	1%	1%	2%	2%	2%
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases												4
Actuated Green, G (s)	7.6	46.3		7.6	46.3		12.3	16.9		8.2	12.8	12.8
Effective Green, g (s)	7.6	46.8		7.6	46.8		12.3	17.4		8.2	13.3	13.3
Actuated g/C Ratio	0.08	0.49		0.08	0.49		0.13	0.18		0.09	0.14	0.14
Clearance Time (s)	4.0	4.5		4.0	4.5		4.0	4.5		4.0	4.5	4.5
Vehicle Extension (s)	2.0	5.0		2.0	3.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	141	1701		143	1742		229	328		151	258	219
v/s Ratio Prot	c0.05	c0.22		0.05	0.19		c0.08	c0.11		0.05	0.08	
v/s Ratio Perm												0.01
v/c Ratio	0.65	0.46		0.64	0.39		0.65	0.61		0.60	0.57	0.08
Uniform Delay, d1	42.9	16.3		42.9	15.6		39.8	36.2		42.3	38.7	36.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	7.4	0.9		6.6	0.7		4.6	2.4		4.6	1.9	0.1
Delay (s)	50.3	17.2		49.5	16.2		44.4	38.6		46.9	40.6	36.1
Level of Service	D	B		D	B		D	D		D	D	D
Approach Delay (s)		20.6			20.1			40.9			40.8	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	26.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	96.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		

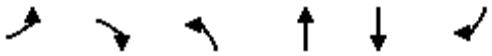
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	40	50	90	20	30	20	40	70	10	50	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	22	44	56	100	22	33	22	44	78	11	56	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	256	250	61	289	217	83	67			122		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	256	250	61	289	217	83	67			122		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	93	94	83	97	97	99			99		
cM capacity (veh/h)	650	642	1010	587	670	982	1535			1465		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	122	156	144	78
Volume Left	22	100	22	11
Volume Right	56	33	78	11
cSH	771	655	1535	1465
Volume to Capacity	0.16	0.24	0.01	0.01
Queue Length 95th (ft)	14	23	1	1
Control Delay (s)	10.5	12.2	1.2	1.1
Lane LOS	B	B	A	A
Approach Delay (s)	10.5	12.2	1.2	1.1
Approach LOS	B	B		

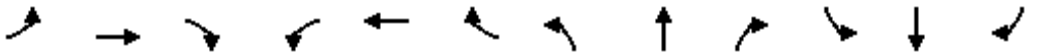
Intersection Summary				
Average Delay	6.9			
Intersection Capacity Utilization	31.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	50	680	550	80	100	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.94	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	1599	1805	1900	1768	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1787	1599	1805	1900	1768	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	51	694	561	82	102	82
RTOR Reduction (vph)	0	577	0	0	50	0
Lane Group Flow (vph)	51	117	561	82	134	0
Heavy Vehicles (%)	1%	1%	0%	0%	1%	1%
Turn Type		Perm	Prot			
Protected Phases	2		3	8	4	
Permitted Phases		2				
Actuated Green, G (s)	8.5	8.5	20.3	33.6	8.8	
Effective Green, g (s)	8.5	8.5	20.8	34.1	9.3	
Actuated g/C Ratio	0.17	0.17	0.41	0.67	0.18	
Clearance Time (s)	4.0	4.0	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	2.0	2.0	2.5	2.5	
Lane Grp Cap (vph)	300	269	742	1280	325	
v/s Ratio Prot	0.03		c0.31	0.04	c0.08	
v/s Ratio Perm		c0.07				
v/c Ratio	0.17	0.43	0.76	0.06	0.41	
Uniform Delay, d1	18.0	18.9	12.7	2.8	18.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.4	3.9	0.0	0.6	
Delay (s)	18.1	19.3	16.7	2.8	18.9	
Level of Service	B	B	B	A	B	
Approach Delay (s)	19.2			14.9	18.9	
Approach LOS	B			B	B	

Intersection Summary			
HCM Average Control Delay	17.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	50.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	58.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	550	560	200	420	130	530	420	160	190	500	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.94	0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3610	1615	1805	3482		5090	3610	1615	1787	3485	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1805	3610	1615	1805	3482		5090	3610	1615	1787	3485	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	103	567	577	206	433	134	546	433	165	196	515	103
RTOR Reduction (vph)	0	0	343	0	31	0	0	0	130	0	19	0
Lane Group Flow (vph)	103	567	234	206	536	0	546	433	35	196	599	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	7.8	19.3	19.3	12.4	23.9		12.7	15.6	15.6	12.2	15.1	
Effective Green, g (s)	9.3	20.8	20.8	13.9	25.4		14.2	17.1	17.1	13.7	16.6	
Actuated g/C Ratio	0.11	0.26	0.26	0.17	0.31		0.17	0.21	0.21	0.17	0.20	
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		5.5	5.5	5.5	5.5	5.5	
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		2.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	206	921	412	308	1085		887	757	339	300	710	
v/s Ratio Prot	0.06	c0.16		c0.11	0.15		0.11	0.12		c0.11	c0.17	
v/s Ratio Perm			0.14						0.02			
v/c Ratio	0.50	0.62	0.57	0.67	0.49		0.62	0.57	0.10	0.65	0.84	
Uniform Delay, d1	33.9	26.8	26.4	31.6	22.8		31.1	28.9	26.0	31.7	31.2	
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	1.2	1.8	4.2	0.4		0.9	1.0	0.1	3.9	9.0	
Delay (s)	34.6	28.0	28.2	35.9	23.2		32.0	30.0	26.1	35.5	40.2	
Level of Service	C	C	C	D	C		C	C	C	D	D	
Approach Delay (s)		28.7			26.6			30.4			39.1	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM Average Control Delay	30.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	81.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

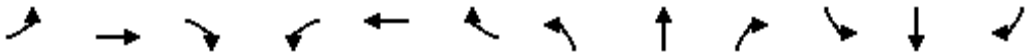
Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #4 Larch Rd/Tracy Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.323
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	10.6
Optimal Cycle:	0	Level Of Service:	B

Street Name:	Tracy Blvd						Larch Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 0	1	1 0	0 1	0	0 0	1! 0	0	0	1 0	0 1
Volume Module:												
Base Vol:	90	120	70	10	90	10	10	50	70	100	50	10
Growth 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
Initial Bse:	90	120	70	10	90	10	10	50	70	100	50	10
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	90	120	70	10	90	10	10	50	70	100	50	10
User 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
PHF Adj:	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
PHF Volume:	105	140	81	12	105	12	12	58	81	116	58	12
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	105	140	81	12	105	12	12	58	81	116	58	12
PCE 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
MLF 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
FinalVolume:	105	140	81	12	105	12	12	58	81	116	58	12
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.00	1.00	1.00	0.90	0.10	0.08	0.38	0.54	0.67	0.33	1.00
Final Sat.:	527	569	639	510	502	56	46	228	319	360	180	636
Capacity Analysis Module:												
Vol/Sat:	0.20	0.25	0.13	0.02	0.21	0.21	0.25	0.25	0.25	0.32	0.32	0.02
Crit Moves:		****			****			****			****	
Delay/Veh:	10.8	10.7	8.8	9.5	10.3	10.3	10.6	10.6	10.6	11.9	11.9	8.1
Delay 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
AdjDel/Veh:	10.8	10.7	8.8	9.5	10.3	10.3	10.6	10.6	10.6	11.9	11.9	8.1
LOS by Move:	B	B	A	A	B	B	B	B	B	B	B	A
ApproachDel:		10.3			10.2			10.6			11.6	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		10.3			10.2			10.6			11.6	
LOS by Appr:		B			B			B			B	
AllWayAvgQ:	0.2	0.3	0.1	0.0	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.0

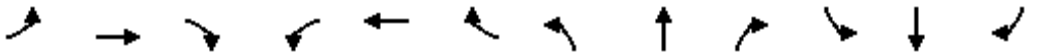
Note: Queue reported is the number of cars per lane.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	350	0	110	210	270	0	0	280	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	
Lane Util. Factor					1.00		1.00	0.95			0.95	
Frt					0.97		1.00	1.00			0.96	
Flt Protected					0.96		0.95	1.00			1.00	
Satd. Flow (prot)					1754		1787	3574			3423	
Flt Permitted					0.96		0.95	1.00			1.00	
Satd. Flow (perm)					1754		1787	3574			3423	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	368	0	116	221	284	0	0	295	116
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	0	0	46	0
Lane Group Flow (vph)	0	0	0	0	475	0	221	284	0	0	365	0
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type				Perm			Prot					
Protected Phases					8		5	2			6	
Permitted Phases				8								
Actuated Green, G (s)					25.5		14.5	34.7			16.2	
Effective Green, g (s)					25.5		14.5	35.6			17.1	
Actuated g/C Ratio					0.37		0.21	0.52			0.25	
Clearance Time (s)					4.0		4.0	4.9			4.9	
Vehicle Extension (s)					3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)					647		375	1841			847	
v/s Ratio Prot							c0.12	0.08			c0.11	
v/s Ratio Perm					0.27							
v/c Ratio					0.73		0.59	0.15			0.43	
Uniform Delay, d1					18.9		24.6	8.8			21.9	
Progression Factor					1.00		1.00	1.00			1.00	
Incremental Delay, d2					4.3		2.4	0.0			0.4	
Delay (s)					23.2		27.0	8.9			22.3	
Level of Service					C		C	A			C	
Approach Delay (s)		0.0			23.2			16.8			22.3	
Approach LOS		A			C			B			C	

Intersection Summary			
HCM Average Control Delay	20.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	69.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		

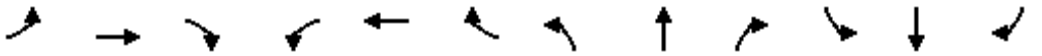
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	0	190	0	0	0	0	390	300	100	530	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		1.00						0.95		1.00	0.95	
Frt		0.91						0.93		1.00	1.00	
Flt Protected		0.98						1.00		0.95	1.00	
Satd. Flow (prot)		1682						3341		1787	3574	
Flt Permitted		0.98						1.00		0.95	1.00	
Satd. Flow (perm)		1682						3341		1787	3574	
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)	99	0	209	0	0	0	0	429	330	110	582	0
RTOR Reduction (vph)	0	71	0	0	0	0	0	144	0	0	0	0
Lane Group Flow (vph)	0	237	0	0	0	0	0	615	0	110	582	0
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	1%	1%	1%	1%	1%	1%
Turn Type	Perm									Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4											
Actuated Green, G (s)		16.1						17.7		7.5	29.2	
Effective Green, g (s)		17.0						18.6		7.5	30.1	
Actuated g/C Ratio		0.31						0.34		0.14	0.55	
Clearance Time (s)		4.9						4.9		4.0	4.9	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		519						1128		243	1952	
v/s Ratio Prot								c0.18		c0.06	0.16	
v/s Ratio Perm		0.14										
v/c Ratio		0.46						0.54		0.45	0.30	
Uniform Delay, d1		15.3						14.8		21.9	6.8	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		0.6						0.5		1.3	0.1	
Delay (s)		16.0						15.4		23.3	6.9	
Level of Service		B						B		C	A	
Approach Delay (s)		16.0			0.0			15.4			9.5	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM Average Control Delay	13.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	55.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		

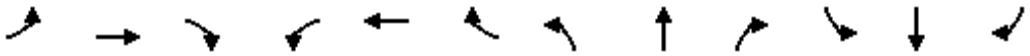
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	420	160	130	320	130	230	480	110	190	570	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.96		1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3461		1787	3419		1787	3475		1787	3457	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	3461		1787	3419		1787	3475		1787	3457	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	196	433	165	134	330	134	237	495	113	196	588	165
RTOR Reduction (vph)	0	41	0	0	48	0	0	17	0	0	23	0
Lane Group Flow (vph)	196	557	0	134	416	0	237	591	0	196	730	0
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	13.6	19.9		10.6	16.9		15.4	33.2		13.8	31.6	
Effective Green, g (s)	14.1	20.9		11.1	17.9		15.9	33.7		14.3	32.1	
Actuated g/C Ratio	0.15	0.22		0.12	0.19		0.17	0.35		0.15	0.33	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	1.0	3.0		1.0	3.0		1.0	3.0		1.0	3.0	
Lane Grp Cap (vph)	265	753		207	638		296	1220		266	1156	
v/s Ratio Prot	c0.11	c0.16		0.07	0.12		c0.13	0.17		0.11	c0.21	
v/s Ratio Perm												
v/c Ratio	0.74	0.74		0.65	0.65		0.80	0.48		0.74	0.63	
Uniform Delay, d1	39.2	35.0		40.6	36.2		38.5	24.4		39.1	27.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.0	3.8		5.1	2.4		13.6	1.4		8.8	2.6	
Delay (s)	48.2	38.8		45.7	38.6		52.1	25.7		47.9	29.6	
Level of Service	D	D		D	D		D	C		D	C	
Approach Delay (s)		41.1			40.2			33.1			33.4	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	36.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	96.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
Analysis Period (min)	15		

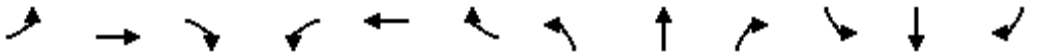
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	10	50	10	10	10	40	30	10	10	40	20
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	43	11	53	11	11	11	43	32	11	11	43	21
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	213	202	53	255	207	37	64			43		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	213	202	53	255	207	37	64			43		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	98	95	98	98	99	97			99		
cM capacity (veh/h)	711	672	1017	640	669	1041	1532			1573		

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	43	64	32	85	74
Volume Left	43	0	11	43	11
Volume Right	0	53	11	11	21
cSH	711	937	747	1532	1573
Volume to Capacity	0.06	0.07	0.04	0.03	0.01
Queue Length 95th (ft)	5	5	3	2	1
Control Delay (s)	10.4	9.1	10.0	3.8	1.1
Lane LOS	B	A	B	A	A
Approach Delay (s)	9.6		10.0	3.8	1.1
Approach LOS	A		B		

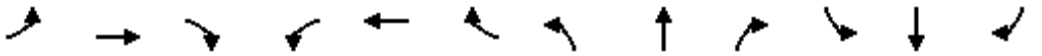
Intersection Summary				
Average Delay	5.9			
Intersection Capacity Utilization	26.1%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	500	110	40	390	50	80	80	30	90	120	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	3513		1805	3549		1805	1900	1615	1805	1900	1615
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1805	3513		1805	3549		1805	1900	1615	1805	1900	1615
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)	69	575	126	46	448	57	92	92	34	103	138	80
RTOR Reduction (vph)	0	17	0	0	9	0	0	0	29	0	0	69
Lane Group Flow (vph)	69	684	0	46	496	0	92	92	5	103	138	11
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	3.6	22.0		3.2	21.6		5.6	7.2	7.2	5.9	7.5	7.5
Effective Green, g (s)	4.1	22.5		3.7	22.1		6.1	7.7	7.7	6.4	8.0	8.0
Actuated g/C Ratio	0.07	0.40		0.07	0.39		0.11	0.14	0.14	0.11	0.14	0.14
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	1.0	3.0		1.0	3.0		1.0	2.0	2.0	1.0	2.0	2.0
Lane Grp Cap (vph)	131	1404		119	1393		196	260	221	205	270	229
v/s Ratio Prot	c0.04	c0.19		0.03	0.14		0.05	0.05		c0.06	c0.07	
v/s Ratio Perm									0.00			0.01
v/c Ratio	0.53	0.49		0.39	0.36		0.47	0.35	0.02	0.50	0.51	0.05
Uniform Delay, d1	25.2	12.6		25.2	12.1		23.6	22.0	21.0	23.5	22.3	20.9
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	1.8	0.3		0.8	0.2		0.6	0.3	0.0	0.7	0.7	0.0
Delay (s)	26.9	12.9		26.0	12.2		24.2	22.3	21.1	24.2	23.0	20.9
Level of Service	C	B		C	B		C	C	C	C	C	C
Approach Delay (s)		14.1			13.4			22.9			22.9	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	16.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	56.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.0%	ICU Level of Service	A
Analysis Period (min)	15		

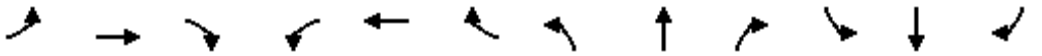
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	410	590	300	310	480	320	580	1130	180	300	1020	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	5187	1615	3502	5187	1615	3502	3610	1615	3502	3610	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3502	5187	1615	3502	5187	1615	3502	3610	1615	3502	3610	1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	423	608	309	320	495	330	598	1165	186	309	1052	155
RTOR Reduction (vph)	0	0	0	0	0	226	0	0	63	0	0	63
Lane Group Flow (vph)	423	608	309	320	495	104	598	1165	123	309	1052	92
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot		Free	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			Free			6			4			8
Actuated Green, G (s)	14.6	17.8	98.2	13.3	16.5	16.5	15.0	31.9	31.9	13.2	30.1	30.1
Effective Green, g (s)	15.6	19.8	98.2	14.3	18.5	18.5	16.0	33.9	33.9	14.2	32.1	32.1
Actuated g/C Ratio	0.16	0.20	1.00	0.15	0.19	0.19	0.16	0.35	0.35	0.14	0.33	0.33
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	556	1046	1615	510	977	304	571	1246	558	506	1180	528
v/s Ratio Prot	c0.12	c0.12		0.09	0.10		c0.17	c0.32		0.09	0.29	
v/s Ratio Perm			c0.19			0.06			0.08			0.06
v/c Ratio	0.76	0.58	0.19	0.63	0.51	0.34	1.05	0.93	0.22	0.61	0.89	0.18
Uniform Delay, d1	39.5	35.5	0.0	39.4	35.8	34.6	41.1	31.1	22.8	39.4	31.4	23.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.1	0.8	0.3	2.4	0.4	0.7	50.6	12.8	0.2	2.2	8.8	0.2
Delay (s)	45.6	36.3	0.3	41.9	36.2	35.2	91.7	43.9	23.0	41.6	40.2	23.8
Level of Service	D	D	A	D	D	D	F	D	C	D	D	C
Approach Delay (s)		30.9			37.5			56.6			38.8	
Approach LOS		C			D			E			D	

Intersection Summary			
HCM Average Control Delay	42.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	98.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

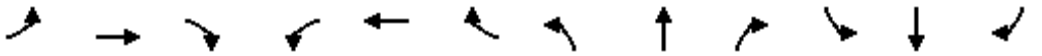
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	560	330	130	520	130	290	370	90	110	400	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	3610	1615	3502	3610	1615	3502	3610	1615	3502	3610	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3502	3610	1615	3502	3610	1615	3502	3610	1615	3502	3610	1615
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	198	583	344	135	542	135	302	385	94	115	417	177
RTOR Reduction (vph)	0	0	173	0	0	67	0	0	68	0	0	83
Lane Group Flow (vph)	198	583	171	135	542	68	302	385	26	115	417	94
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	9.3	19.4	19.4	8.0	18.1	18.1	11.8	18.7	18.7	7.4	14.3	14.3
Effective Green, g (s)	9.8	20.9	20.9	8.5	19.6	19.6	12.3	20.2	20.2	7.9	15.8	15.8
Actuated g/C Ratio	0.13	0.28	0.28	0.12	0.27	0.27	0.17	0.27	0.27	0.11	0.21	0.21
Clearance Time (s)	4.5	5.5	5.5	4.5	5.5	5.5	4.5	5.5	5.5	4.5	5.5	5.5
Vehicle Extension (s)	2.0	2.5	2.5	2.0	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	467	1027	459	405	963	431	586	992	444	376	776	347
v/s Ratio Prot	c0.06	c0.16		0.04	0.15		c0.09	0.11		0.03	c0.12	
v/s Ratio Perm			0.11			0.04			0.02			0.06
v/c Ratio	0.42	0.57	0.37	0.33	0.56	0.16	0.52	0.39	0.06	0.31	0.54	0.27
Uniform Delay, d1	29.3	22.4	21.0	29.9	23.3	20.6	27.9	21.6	19.6	30.3	25.6	24.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.6	0.4	0.2	0.6	0.1	0.3	0.1	0.0	0.2	0.4	0.2
Delay (s)	29.5	23.0	21.4	30.1	23.9	20.8	28.2	21.7	19.7	30.4	26.0	24.2
Level of Service	C	C	C	C	C	C	C	C	B	C	C	C
Approach Delay (s)		23.7			24.4			24.0			26.3	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	24.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	73.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.1%	ICU Level of Service	A
Analysis Period (min)	15		

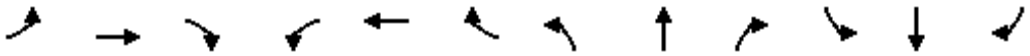
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	510	100	60	510	60	100	120	40	90	120	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.98		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	3521		1787	3518		1787	1810		1805	1900	1615
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1805	3521		1787	3518		1787	1810		1805	1900	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	61	520	102	61	520	61	102	122	41	92	122	92
RTOR Reduction (vph)	0	14	0	0	8	0	0	12	0	0	0	79
Lane Group Flow (vph)	61	608	0	61	573	0	102	151	0	92	122	13
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases												4
Actuated Green, G (s)	3.9	23.1		3.9	23.1		6.6	8.0		6.3	7.7	7.7
Effective Green, g (s)	3.9	23.6		3.9	23.6		6.6	8.5		6.3	8.2	8.2
Actuated g/C Ratio	0.07	0.40		0.07	0.40		0.11	0.15		0.11	0.14	0.14
Clearance Time (s)	4.0	4.5		4.0	4.5		4.0	4.5		4.0	4.5	4.5
Vehicle Extension (s)	2.0	5.0		2.0	3.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	121	1425		120	1424		202	264		195	267	227
v/s Ratio Prot	0.03	c0.17		c0.03	0.16		c0.06	c0.08		0.05	0.06	
v/s Ratio Perm												0.01
v/c Ratio	0.50	0.43		0.51	0.40		0.50	0.57		0.47	0.46	0.06
Uniform Delay, d1	26.3	12.5		26.3	12.3		24.3	23.2		24.4	23.0	21.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.2	0.4		1.2	0.2		0.7	1.9		0.7	0.5	0.0
Delay (s)	27.5	12.9		27.5	12.5		25.0	25.1		25.1	23.5	21.7
Level of Service	C	B		C	B		C	C		C	C	C
Approach Delay (s)		14.2			13.9			25.1			23.4	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	17.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	58.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		

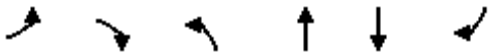
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	60	80	70	30	47	40	130	90	14	63	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	24	73	98	85	37	57	49	159	110	17	77	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	504	483	83	562	434	213	89			268		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	504	483	83	562	434	213	89			268		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	84	90	75	93	93	97			99		
cM capacity (veh/h)	409	464	982	337	495	832	1506			1295		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	195	179	317	106
Volume Left	24	85	49	17
Volume Right	98	57	110	12
cSH	616	453	1506	1295
Volume to Capacity	0.32	0.40	0.03	0.01
Queue Length 95th (ft)	34	47	3	1
Control Delay (s)	13.5	18.1	1.4	1.3
Lane LOS	B	C	A	A
Approach Delay (s)	13.5	18.1	1.4	1.3
Approach LOS	B	C		

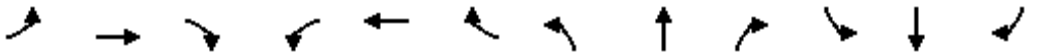
Intersection Summary				
Average Delay	8.1			
Intersection Capacity Utilization	46.7%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	50	450	400	220	143	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.97	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	1599	1805	1900	1815	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1787	1599	1805	1900	1815	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	52	469	417	229	149	52
RTOR Reduction (vph)	0	391	0	0	20	0
Lane Group Flow (vph)	52	78	417	229	181	0
Heavy Vehicles (%)	1%	1%	0%	0%	1%	1%
Turn Type		Perm	Prot			
Protected Phases	2		3	8	4	
Permitted Phases		2				
Actuated Green, G (s)	7.9	7.9	16.3	30.8	10.0	
Effective Green, g (s)	7.9	7.9	16.8	31.3	10.5	
Actuated g/C Ratio	0.17	0.17	0.36	0.66	0.22	
Clearance Time (s)	4.0	4.0	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	2.0	2.0	2.5	2.5	
Lane Grp Cap (vph)	299	268	642	1260	404	
v/s Ratio Prot	0.03		c0.23	0.12	c0.10	
v/s Ratio Perm		c0.05				
v/c Ratio	0.17	0.29	0.65	0.18	0.45	
Uniform Delay, d1	16.9	17.2	12.7	3.0	15.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.2	1.7	0.1	0.6	
Delay (s)	17.0	17.4	14.4	3.1	16.4	
Level of Service	B	B	B	A	B	
Approach Delay (s)	17.4			10.4	16.4	
Approach LOS	B			B	B	

Intersection Summary			
HCM Average Control Delay	14.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	47.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	47.7%	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												
Volume (vph)	121	750	660	260	440	112	490	429	280	131	398	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.94	0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3610	1615	1805	3500		5090	3610	1615	1787	3493	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1805	3610	1615	1805	3500		5090	3610	1615	1787	3493	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	126	781	688	271	458	117	510	447	292	136	415	74
RTOR Reduction (vph)	0	0	273	0	19	0	0	0	192	0	13	0
Lane Group Flow (vph)	126	781	415	271	556	0	510	447	100	136	476	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	11.8	28.5	28.5	14.5	31.2		16.5	37.9	37.9	12.1	33.5	
Effective Green, g (s)	13.3	30.0	30.0	16.0	32.7		18.0	39.4	39.4	13.6	35.0	
Actuated g/C Ratio	0.12	0.26	0.26	0.14	0.28		0.16	0.34	0.34	0.12	0.30	
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		5.5	5.5	5.5	5.5	5.5	
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		2.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	209	942	421	251	995		797	1237	553	211	1063	
v/s Ratio Prot	0.07	0.22		c0.15	c0.16		c0.10	0.12		0.08	c0.14	
v/s Ratio Perm			c0.26						0.06			
v/c Ratio	0.60	0.83	0.98	1.08	0.56		0.64	0.36	0.18	0.64	0.45	
Uniform Delay, d1	48.3	40.1	42.3	49.5	35.0		45.5	28.4	26.5	48.4	32.2	
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	3.3	6.1	39.5	79.6	0.7		3.9	0.8	0.7	5.0	0.3	
Delay (s)	51.7	46.2	81.8	129.1	35.7		49.4	29.2	27.2	53.4	32.5	
Level of Service	D	D	F	F	D		D	C	C	D	C	
Approach Delay (s)		62.0			65.6			37.0			37.1	
Approach LOS		E			E			D			D	

Intersection Summary			
HCM Average Control Delay	51.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	115.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

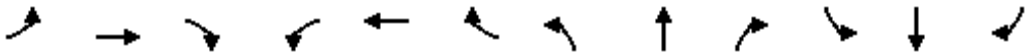
Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #4 Larch Rd/Tracy Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.662
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	16.8
Optimal Cycle:	0	Level Of Service:	C

Street Name:	Tracy Blvd						Larch Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 0	1	1 0	0 1	0	0 0	1! 0	0	0 1	0 0	1
Volume Module:												
Base Vol:	70	150	120	10	90	10	10	80	70	160	70	20
Growth 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
Initial Bse:	70	150	120	10	90	10	10	80	70	160	70	20
Added Vol:	7	125	0	13	57	0	0	0	4	0	0	30
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	77	275	120	23	147	10	10	80	74	160	70	50
User 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
PHF Adj:	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
PHF Volume:	91	324	141	27	173	12	12	94	87	188	82	59
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	91	324	141	27	173	12	12	94	87	188	82	59
PCE 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
MLF 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
FinalVolume:	91	324	141	27	173	12	12	94	87	188	82	59
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.00	1.00	1.00	0.94	0.06	0.06	0.49	0.45	0.70	0.30	1.00
Final Sat.:	454	489	536	427	432	29	29	232	214	322	141	528
Capacity Analysis Module:												
Vol/Sat:	0.20	0.66	0.26	0.06	0.40	0.40	0.41	0.41	0.41	0.59	0.59	0.11
Crit Moves:		****			****			****			****	
Delay/Veh:	12.3	22.3	11.4	11.1	14.5	14.5	14.6	14.6	14.6	19.6	19.6	10.0
Delay 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
AdjDel/Veh:	12.3	22.3	11.4	11.1	14.5	14.5	14.6	14.6	14.6	19.6	19.6	10.0
LOS by Move:	B	C	B	B	B	B	B	B	B	C	C	A
ApproachDel:	17.9			14.1			14.6			17.9		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	17.9			14.1			14.6			17.9		
LOS by Appr:	C			B			B			C		
AllWayAvgQ:	0.2	1.7	0.3	0.1	0.6	0.6	0.6	0.6	0.6	1.2	1.2	0.1

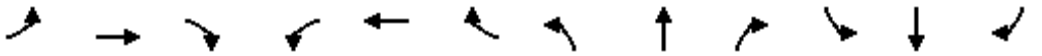
Note: Queue reported is the number of cars per lane.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	390	0	137	130	426	0	0	369	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	
Lane Util. Factor					1.00		1.00	0.95			0.95	
Frt					0.96		1.00	1.00			0.97	
Flt Protected					0.96		0.95	1.00			1.00	
Satd. Flow (prot)					1700		1736	3471			3318	
Flt Permitted					0.96		0.95	1.00			1.00	
Satd. Flow (perm)					1700		1736	3471			3318	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	415	0	146	138	453	0	0	393	119
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	0	0	31	0
Lane Group Flow (vph)	0	0	0	0	552	0	138	453	0	0	481	0
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	4%	4%	4%	5%	5%	5%
Turn Type				Perm			Prot					
Protected Phases					8		5	2			6	
Permitted Phases				8								
Actuated Green, G (s)					33.7		11.5	33.1			17.6	
Effective Green, g (s)					33.7		11.5	34.0			18.5	
Actuated g/C Ratio					0.45		0.15	0.45			0.24	
Clearance Time (s)					4.0		4.0	4.9			4.9	
Vehicle Extension (s)					3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)					757		264	1559			811	
v/s Ratio Prot							c0.08	0.13			c0.14	
v/s Ratio Perm					0.32							
v/c Ratio					0.73		0.52	0.29			0.59	
Uniform Delay, d1					17.2		29.6	13.2			25.3	
Progression Factor					1.00		1.00	1.00			1.00	
Incremental Delay, d2					3.5		1.9	0.1			1.2	
Delay (s)					20.8		31.4	13.3			26.4	
Level of Service					C		C	B			C	
Approach Delay (s)		0.0			20.8			17.5			26.4	
Approach LOS		A			C			B			C	

Intersection Summary			
HCM Average Control Delay	21.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	75.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		

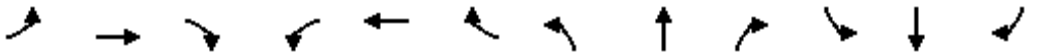
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	84	0	160	0	0	0	0	472	270	128	631	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		1.00						0.95		1.00	0.95	
Frt		0.91						0.95		1.00	1.00	
Flt Protected		0.98						1.00		0.95	1.00	
Satd. Flow (prot)		1606						3346		1752	3505	
Flt Permitted		0.98						1.00		0.95	1.00	
Satd. Flow (perm)		1606						3346		1752	3505	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	88	0	168	0	0	0	0	497	284	135	664	0
RTOR Reduction (vph)	0	70	0	0	0	0	0	79	0	0	0	0
Lane Group Flow (vph)	0	186	0	0	0	0	0	702	0	135	664	0
Heavy Vehicles (%)	6%	6%	6%	0%	0%	0%	2%	2%	2%	3%	3%	3%
Turn Type	Perm									Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4											
Actuated Green, G (s)		12.6						18.9		8.2	31.1	
Effective Green, g (s)		13.5						19.8		8.2	32.0	
Actuated g/C Ratio		0.25						0.37		0.15	0.60	
Clearance Time (s)		4.9						4.9		4.0	4.9	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		405						1238		269	2096	
v/s Ratio Prot								c0.21		c0.08	0.19	
v/s Ratio Perm		0.12										
v/c Ratio		0.46						0.57		0.50	0.32	
Uniform Delay, d1		16.9						13.4		20.8	5.3	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		0.8						0.6		1.5	0.1	
Delay (s)		17.8						14.0		22.2	5.4	
Level of Service		B						B		C	A	
Approach Delay (s)		17.8			0.0			14.0			8.3	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM Average Control Delay	12.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	53.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		

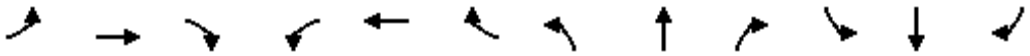
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	222	580	160	140	410	148	210	557	180	163	579	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	0.96		1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3493		1787	3432		1787	3444		1787	3452	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	3493		1787	3432		1787	3444		1787	3452	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	234	611	168	147	432	156	221	586	189	172	609	180
RTOR Reduction (vph)	0	25	0	0	39	0	0	28	0	0	25	0
Lane Group Flow (vph)	234	754	0	147	549	0	221	747	0	172	764	0
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	15.1	23.1		11.3	19.3		14.8	30.5		12.6	28.3	
Effective Green, g (s)	15.6	24.1		11.8	20.3		15.3	31.0		13.1	28.8	
Actuated g/C Ratio	0.16	0.25		0.12	0.21		0.16	0.32		0.14	0.30	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	1.0	3.0		1.0	3.0		1.0	3.0		1.0	3.0	
Lane Grp Cap (vph)	293	877		220	726		285	1112		244	1036	
v/s Ratio Prot	c0.13	c0.22		0.08	0.16		c0.12	0.22		0.10	c0.22	
v/s Ratio Perm												
v/c Ratio	0.80	0.86		0.67	0.76		0.78	0.67		0.70	0.74	
Uniform Delay, d1	38.7	34.3		40.2	35.5		38.7	28.1		39.6	30.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	13.2	8.4		5.8	4.5		11.4	3.2		7.3	4.7	
Delay (s)	51.9	42.7		46.1	40.0		50.1	31.3		47.0	34.9	
Level of Service	D	D		D	D		D	C		D	C	
Approach Delay (s)		44.8			41.3			35.5			37.0	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM Average Control Delay	39.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	96.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		

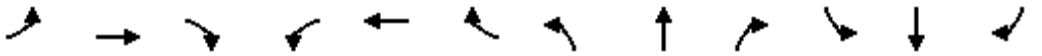
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	80	10	103	10	10	10	80	30	10	10	40	50
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	100	12	129	12	12	12	100	38	12	12	50	62
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	369	356	81	485	381	44	112			50		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	369	356	81	485	381	44	112			50		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	81	98	87	97	98	99	93			99		
cM capacity (veh/h)	539	528	981	399	513	1032	1471			1563		

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	100	141	38	150	125
Volume Left	100	0	12	100	12
Volume Right	0	129	12	12	62
cSH	539	912	553	1471	1563
Volume to Capacity	0.19	0.15	0.07	0.07	0.01
Queue Length 95th (ft)	17	14	5	5	1
Control Delay (s)	13.2	9.7	12.0	5.3	0.8
Lane LOS	B	A	B	A	A
Approach Delay (s)	11.1		12.0	5.3	0.8
Approach LOS	B		B		

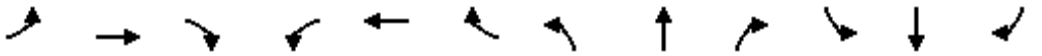
Intersection Summary				
Average Delay	7.3			
Intersection Capacity Utilization	31.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	653	90	50	426	60	100	153	50	120	150	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	3544		1805	3543		1805	1900	1615	1805	1900	1615
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1805	3544		1805	3543		1805	1900	1615	1805	1900	1615
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)	110	718	99	55	468	66	110	168	55	132	165	88
RTOR Reduction (vph)	0	10	0	0	11	0	0	0	44	0	0	68
Lane Group Flow (vph)	110	807	0	55	523	0	110	168	11	132	165	20
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	6.2	21.9		3.5	19.2		6.2	11.5	11.5	6.8	12.1	12.1
Effective Green, g (s)	6.7	22.4		4.0	19.7		6.7	12.0	12.0	7.3	12.6	12.6
Actuated g/C Ratio	0.11	0.36		0.06	0.32		0.11	0.19	0.19	0.12	0.20	0.20
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	1.0	3.0		1.0	3.0		1.0	2.0	2.0	1.0	2.0	2.0
Lane Grp Cap (vph)	196	1287		117	1131		196	370	314	214	388	330
v/s Ratio Prot	c0.06	c0.23		0.03	0.15		0.06	c0.09		c0.07	0.09	
v/s Ratio Perm									0.01			0.01
v/c Ratio	0.56	0.63		0.47	0.46		0.56	0.45	0.03	0.62	0.43	0.06
Uniform Delay, d1	26.1	16.2		27.8	16.8		26.1	22.0	20.2	25.9	21.4	19.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.2	1.0		1.1	0.3		2.2	0.3	0.0	3.7	0.3	0.0
Delay (s)	28.3	17.2		28.9	17.1		28.3	22.3	20.2	29.6	21.7	19.8
Level of Service	C	B		C	B		C	C	C	C	C	B
Approach Delay (s)		18.5			18.2			23.9			23.9	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	20.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	61.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

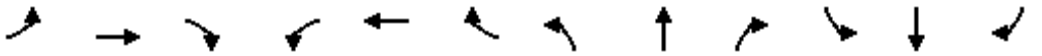
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	483	830	760	350	390	243	260	1000	170	291	819	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	5187	1615	3502	5187	1615	3502	3610	1615	3502	3610	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3502	5187	1615	3502	5187	1615	3502	3610	1615	3502	3610	1615
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	503	865	792	365	406	253	271	1042	177	303	853	95
RTOR Reduction (vph)	0	0	0	0	0	197	0	0	55	0	0	38
Lane Group Flow (vph)	503	865	792	365	406	56	271	1042	122	303	853	57
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot		Free	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			Free			6			4			8
Actuated Green, G (s)	19.0	28.3	130.0	17.5	26.8	26.8	15.2	46.1	46.1	16.1	47.0	47.0
Effective Green, g (s)	20.0	30.3	130.0	18.5	28.8	28.8	16.2	48.1	48.1	17.1	49.0	49.0
Actuated g/C Ratio	0.15	0.23	1.00	0.14	0.22	0.22	0.12	0.37	0.37	0.13	0.38	0.38
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	539	1209	1615	498	1149	358	436	1336	598	461	1361	609
v/s Ratio Prot	c0.14	c0.17		0.10	0.08		0.08	c0.29		c0.09	0.24	
v/s Ratio Perm			c0.49			0.03			0.08			0.04
v/c Ratio	0.93	0.72	0.49	0.73	0.35	0.16	0.62	0.78	0.20	0.66	0.63	0.09
Uniform Delay, d1	54.3	45.9	0.0	53.4	42.7	40.8	54.0	36.3	27.9	53.7	33.0	26.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	23.3	2.0	1.1	5.5	0.2	0.2	2.7	4.6	0.8	3.4	2.2	0.3
Delay (s)	77.7	47.9	1.1	58.9	42.9	41.0	56.7	40.8	28.7	57.0	35.2	26.5
Level of Service	E	D	A	E	D	D	E	D	C	E	D	C
Approach Delay (s)		37.7			48.1			42.3			39.8	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM Average Control Delay	41.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		

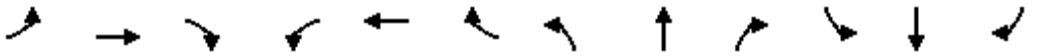
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	205	640	370	250	540	170	270	574	100	204	644	322
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	3610	1615	3502	3610	1615	3502	3610	1615	3502	3610	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3502	3610	1615	3502	3610	1615	3502	3610	1615	3502	3610	1615
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	214	667	385	260	562	177	281	598	104	212	671	335
RTOR Reduction (vph)	0	0	177	0	0	84	0	0	60	0	0	108
Lane Group Flow (vph)	214	667	208	260	562	93	281	598	44	212	671	227
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	11.1	40.8	40.8	12.5	42.2	42.2	12.8	25.7	25.7	11.0	23.9	23.9
Effective Green, g (s)	11.6	42.3	42.3	13.0	43.7	43.7	13.3	27.2	27.2	11.5	25.4	25.4
Actuated g/C Ratio	0.11	0.38	0.38	0.12	0.40	0.40	0.12	0.25	0.25	0.10	0.23	0.23
Clearance Time (s)	4.5	5.5	5.5	4.5	5.5	5.5	4.5	5.5	5.5	4.5	5.5	5.5
Vehicle Extension (s)	2.0	2.5	2.5	2.0	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	369	1388	621	414	1434	642	423	893	399	366	834	373
v/s Ratio Prot	0.06	c0.18		c0.07	0.16		c0.08	0.17		0.06	c0.19	
v/s Ratio Perm			0.13			0.06			0.03			0.14
v/c Ratio	0.58	0.48	0.34	0.63	0.39	0.14	0.66	0.67	0.11	0.58	0.80	0.61
Uniform Delay, d1	46.9	25.6	23.9	46.2	23.7	21.2	46.2	37.3	32.0	46.9	40.0	37.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	1.2	1.5	2.1	0.8	0.5	3.0	1.5	0.0	1.4	5.4	1.9
Delay (s)	48.3	26.7	25.4	48.3	24.5	21.7	49.3	38.8	32.1	48.3	45.3	39.8
Level of Service	D	C	C	D	C	C	D	D	C	D	D	D
Approach Delay (s)		30.0			30.2			41.1			44.3	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	36.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		

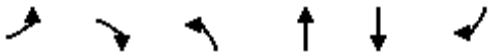
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	592	110	80	565	42	130	152	50	81	135	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1787	3490		1805	3572		1787	1811		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1787	3490		1805	3572		1787	1811		1770	1863	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)	91	673	125	91	642	48	148	173	57	92	153	114
RTOR Reduction (vph)	0	11	0	0	4	0	0	14	0	0	0	92
Lane Group Flow (vph)	91	787	0	91	686	0	148	216	0	92	153	22
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	1%	1%	1%	2%	2%	2%
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases												4
Actuated Green, G (s)	7.6	45.5		7.6	45.5		12.3	17.6		8.3	13.6	13.6
Effective Green, g (s)	7.6	46.0		7.6	46.0		12.3	18.1		8.3	14.1	14.1
Actuated g/C Ratio	0.08	0.48		0.08	0.48		0.13	0.19		0.09	0.15	0.15
Clearance Time (s)	4.0	4.5		4.0	4.5		4.0	4.5		4.0	4.5	4.5
Vehicle Extension (s)	2.0	5.0		2.0	3.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	141	1672		143	1712		229	341		153	274	233
v/s Ratio Prot	c0.05	c0.23		0.05	0.19		c0.08	c0.12		0.05	0.08	
v/s Ratio Perm												0.01
v/c Ratio	0.65	0.47		0.64	0.40		0.65	0.63		0.60	0.56	0.09
Uniform Delay, d1	42.9	16.8		42.9	16.1		39.8	35.9		42.3	38.1	35.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	7.4	1.0		6.6	0.7		4.6	2.8		4.5	1.4	0.1
Delay (s)	50.3	17.8		49.5	16.8		44.4	38.7		46.8	39.5	35.5
Level of Service	D	B		D	B		D	D		D	D	D
Approach Delay (s)		21.1			20.6			41.0			40.1	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	26.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	96.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		

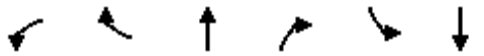
c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	71	155	180	110	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	77	168	196	120	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	652	120	120			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	652	120	120			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	92	89			
cM capacity (veh/h)	383	932	1468			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	77	168	196	120	0
Volume Left	0	168	0	0	0
Volume Right	77	0	0	0	0
cSH	932	1468	1700	1700	1700
Volume to Capacity	0.08	0.11	0.12	0.07	0.00
Queue Length 95th (ft)	7	10	0	0	0
Control Delay (s)	9.2	7.8	0.0	0.0	0.0
Lane LOS	A	A			
Approach Delay (s)	9.2	3.6		0.0	
Approach LOS	A				

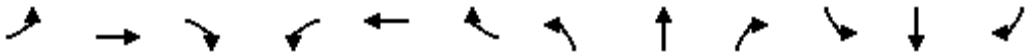
Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	26.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	26	0	140	58	0	60
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	28	0	152	63	0	65
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	249	184			215	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	249	184			215	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	100			100	
cM capacity (veh/h)	740	859			1355	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	28	215	65
Volume Left	28	0	0
Volume Right	0	63	0
cSH	740	1700	1355
Volume to Capacity	0.04	0.13	0.00
Queue Length 95th (ft)	3	0	0
Control Delay (s)	10.1	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.1	0.0	0.0
Approach LOS	B		

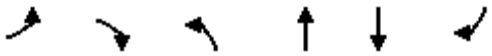
Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	20.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	40	50	90	20	330	20	153	70	125	104	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	22	44	56	100	22	367	22	170	78	139	116	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1030	691	121	730	658	209	127			248		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1030	691	121	730	658	209	127			248		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	79	86	94	62	93	56	98			89		
cM capacity (veh/h)	104	326	936	261	341	837	1460			1318		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	122	489	270	266
Volume Left	22	100	22	139
Volume Right	56	367	78	11
cSH	298	552	1460	1318
Volume to Capacity	0.41	0.89	0.02	0.11
Queue Length 95th (ft)	48	254	1	9
Control Delay (s)	25.2	43.0	0.7	4.6
Lane LOS	D	E	A	A
Approach Delay (s)	25.2	43.0	0.7	4.6
Approach LOS	D	E		

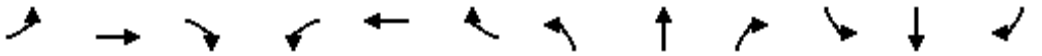
Intersection Summary				
Average Delay	22.3			
Intersection Capacity Utilization	69.5%	ICU Level of Service	C	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	50	680	550	193	154	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	1599	1805	1900	1794	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1787	1599	1805	1900	1794	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	51	694	561	197	157	82
RTOR Reduction (vph)	0	581	0	0	31	0
Lane Group Flow (vph)	51	113	561	197	208	0
Heavy Vehicles (%)	1%	1%	0%	0%	1%	1%
Turn Type		Perm	Prot			
Protected Phases	2		3	8	4	
Permitted Phases		2				
Actuated Green, G (s)	8.6	8.6	20.3	35.8	11.0	
Effective Green, g (s)	8.6	8.6	20.8	36.3	11.5	
Actuated g/C Ratio	0.16	0.16	0.39	0.69	0.22	
Clearance Time (s)	4.0	4.0	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	2.0	2.0	2.5	2.5	
Lane Grp Cap (vph)	291	260	710	1304	390	
v/s Ratio Prot	0.03		c0.31	0.10	c0.12	
v/s Ratio Perm		c0.07				
v/c Ratio	0.18	0.43	0.79	0.15	0.53	
Uniform Delay, d1	19.1	20.0	14.1	2.9	18.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.4	5.6	0.0	1.1	
Delay (s)	19.2	20.4	19.7	2.9	19.4	
Level of Service	B	C	B	A	B	
Approach Delay (s)	20.3			15.4	19.4	
Approach LOS	C			B	B	

Intersection Summary			
HCM Average Control Delay	18.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	52.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	103	550	560	200	420	136	530	507	160	193	541	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.94	0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3610	1615	1805	3478		5090	3610	1615	1787	3489	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1805	3610	1615	1805	3478		5090	3610	1615	1787	3489	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	106	567	577	206	433	140	546	523	165	199	558	105
RTOR Reduction (vph)	0	0	342	0	32	0	0	0	130	0	17	0
Lane Group Flow (vph)	106	567	235	206	541	0	546	523	35	199	646	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	7.9	19.3	19.3	12.4	23.8		12.7	15.6	15.6	12.3	15.2	
Effective Green, g (s)	9.4	20.8	20.8	13.9	25.3		14.2	17.1	17.1	13.8	16.7	
Actuated g/C Ratio	0.12	0.25	0.25	0.17	0.31		0.17	0.21	0.21	0.17	0.20	
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5		5.5	5.5	5.5	5.5	5.5	
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		2.0	3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	208	920	412	307	1078		886	757	338	302	714	
v/s Ratio Prot	0.06	c0.16		c0.11	0.16		0.11	0.14		c0.11	c0.18	
v/s Ratio Perm			0.15						0.02			
v/c Ratio	0.51	0.62	0.57	0.67	0.50		0.62	0.69	0.10	0.66	0.90	
Uniform Delay, d1	33.9	26.9	26.5	31.7	23.0		31.2	29.8	26.1	31.7	31.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	1.2	1.9	4.5	0.4		0.9	2.7	0.1	3.9	14.8	
Delay (s)	34.7	28.1	28.4	36.2	23.4		32.1	32.5	26.2	35.6	46.5	
Level of Service	C	C	C	D	C		C	C	C	D	D	
Approach Delay (s)		28.8			26.8			31.5			44.0	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM Average Control Delay	32.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	81.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	74.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

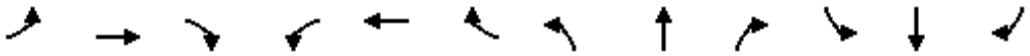
Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #4 Larch Rd/Tracy Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	2.575
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	340.2
Optimal Cycle:	0	Level Of Service:	F

Street Name:	Tracy Blvd						Larch Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 0	1	1 0	0 1	0	0 0	1! 0	0	0 1	0 0	1
Volume Module:												
Base Vol:	90	120	70	10	90	10	10	50	70	100	50	10
Growth 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
Initial Bse:	90	120	70	10	90	10	10	50	70	100	50	10
Added Vol:	300	808	0	32	332	0	0	0	115	0	0	67
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	390	928	70	42	422	10	10	50	185	100	50	77
User 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
PHF Adj:	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
PHF Volume:	453	1079	81	49	491	12	12	58	215	116	58	90
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	453	1079	81	49	491	12	12	58	215	116	58	90
PCE 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
MLF 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
FinalVolume:	453	1079	81	49	491	12	12	58	215	116	58	90
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.00	1.00	1.00	0.98	0.02	0.04	0.20	0.76	0.67	0.33	1.00
Final Sat.:	396	419	452	399	416	10	18	88	324	253	127	427
Capacity Analysis Module:												
Vol/Sat:	1.15	2.57	0.18	0.12	1.18	1.18	0.66	0.66	0.66	0.46	0.46	0.21
Crit Moves:	****					****		****			****	
Delay/Veh:	119.8	733	12.3	12.9	129	129.0	26.1	26.1	26.1	19.5	19.5	13.1
Delay 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
AdjDel/Veh:	119.8	733	12.3	12.9	129	129.0	26.1	26.1	26.1	19.5	19.5	13.1
LOS by Move:	F	F	B	B	F	F	D	D	D	C	C	B
ApproachDel:	524.1			118.7			26.1			17.3		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	524.1			118.7			26.1			17.3		
LOS by Appr:	F			F			D			C		
AllWayAvgQ:	11.9	84.0	0.2	0.1	13.9	13.9	1.8	1.8	1.8	0.8	0.8	0.3

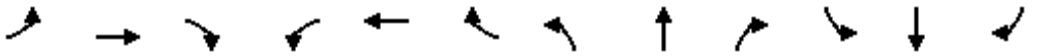
Note: Queue reported is the number of cars per lane.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	350	0	813	210	675	0	0	668	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	
Lane Util. Factor					1.00		1.00	0.95			0.95	
Frt					0.91		1.00	1.00			0.97	
Flt Protected					0.99		0.95	1.00			1.00	
Satd. Flow (prot)					1678		1787	3574			3466	
Flt Permitted					0.99		0.95	1.00			1.00	
Satd. Flow (perm)					1678		1787	3574			3466	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	368	0	856	221	711	0	0	703	178
RTOR Reduction (vph)	0	0	0	0	70	0	0	0	0	0	22	0
Lane Group Flow (vph)	0	0	0	0	1154	0	221	711	0	0	859	0
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type				Perm			Prot					
Protected Phases					8		5	2			6	
Permitted Phases				8								
Actuated Green, G (s)					36.5		16.4	50.2			29.8	
Effective Green, g (s)					36.5		16.4	51.1			30.7	
Actuated g/C Ratio					0.38		0.17	0.53			0.32	
Clearance Time (s)					4.0		4.0	4.9			4.9	
Vehicle Extension (s)					3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)					641		307	1910			1113	
v/s Ratio Prot							c0.12	0.20			c0.25	
v/s Ratio Perm					0.69							
v/c Ratio					1.80		0.72	0.37			0.77	
Uniform Delay, d1					29.5		37.4	12.9			29.3	
Progression Factor					1.00		1.00	1.00			1.00	
Incremental Delay, d2					366.4		7.9	0.1			3.4	
Delay (s)					396.0		45.3	13.1			32.7	
Level of Service					F		D	B			C	
Approach Delay (s)		0.0			396.0			20.7			32.7	
Approach LOS		A			F			C			C	

Intersection Summary			
HCM Average Control Delay	175.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	95.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	114.9%	ICU Level of Service	H
Analysis Period (min)	15		

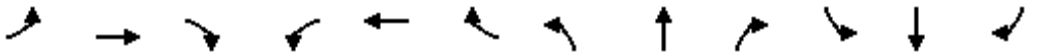
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	244	0	190	0	0	0	0	641	300	369	649	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		1.00						0.95		1.00	0.95	
Frt		0.94						0.95		1.00	1.00	
Flt Protected		0.97						1.00		0.95	1.00	
Satd. Flow (prot)		1722						3403		1787	3574	
Flt Permitted		0.97						1.00		0.95	1.00	
Satd. Flow (perm)		1722						3403		1787	3574	
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)	268	0	209	0	0	0	0	704	330	405	713	0
RTOR Reduction (vph)	0	27	0	0	0	0	0	56	0	0	0	0
Lane Group Flow (vph)	0	450	0	0	0	0	0	978	0	405	713	0
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	1%	1%	1%	1%	1%	1%
Turn Type	Perm									Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4											
Actuated Green, G (s)		27.6						33.4		21.3	58.7	
Effective Green, g (s)		28.5						34.3		21.3	59.6	
Actuated g/C Ratio		0.30						0.36		0.22	0.62	
Clearance Time (s)		4.9						4.9		4.0	4.9	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		511						1215		396	2217	
v/s Ratio Prot								c0.29		c0.23	0.20	
v/s Ratio Perm		0.26										
v/c Ratio		0.88						0.80		1.02	0.32	
Uniform Delay, d1		32.2						27.9		37.4	8.7	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		16.2						4.0		51.1	0.1	
Delay (s)		48.4						31.9		88.5	8.7	
Level of Service		D						C		F	A	
Approach Delay (s)		48.4			0.0			31.9			37.6	
Approach LOS		D			A			C			D	

Intersection Summary			
HCM Average Control Delay	37.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	96.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	114.9%	ICU Level of Service	H
Analysis Period (min)	15		

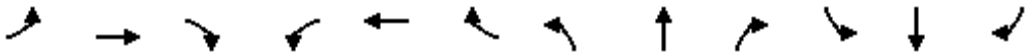
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	196	420	160	130	320	147	230	675	110	198	662	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.95		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3461		1787	3405		1787	3499		1787	3468	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	3461		1787	3405		1787	3499		1787	3468	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	202	433	165	134	330	152	237	696	113	204	682	168
RTOR Reduction (vph)	0	41	0	0	59	0	0	11	0	0	19	0
Lane Group Flow (vph)	202	557	0	134	423	0	237	798	0	204	831	0
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	13.8	20.1		10.6	16.9		15.4	32.7		14.1	31.4	
Effective Green, g (s)	14.3	21.1		11.1	17.9		15.9	33.2		14.6	31.9	
Actuated g/C Ratio	0.15	0.22		0.12	0.19		0.17	0.35		0.15	0.33	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	1.0	3.0		1.0	3.0		1.0	3.0		1.0	3.0	
Lane Grp Cap (vph)	269	761		207	635		296	1210		272	1152	
v/s Ratio Prot	c0.11	c0.16		0.07	0.12		c0.13	0.23		0.11	c0.24	
v/s Ratio Perm												
v/c Ratio	0.75	0.73		0.65	0.67		0.80	0.66		0.75	0.72	
Uniform Delay, d1	39.1	34.8		40.6	36.3		38.5	26.6		39.0	28.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.0	3.6		5.1	2.7		13.6	2.8		9.9	3.9	
Delay (s)	49.1	38.5		45.7	38.9		52.1	29.4		48.8	32.1	
Level of Service	D	D		D	D		D	C		D	C	
Approach Delay (s)		41.2			40.4			34.6			35.3	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM Average Control Delay	37.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	96.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	74.0%	ICU Level of Service	D
Analysis Period (min)	15		

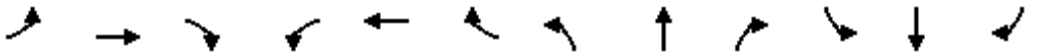
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	10	82	10	10	10	107	30	10	10	40	20
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	43	11	87	11	11	11	114	32	11	11	43	21
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	355	345	53	432	350	37	64			43		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	355	345	53	432	350	37	64			43		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	92	98	91	98	98	99	93			99		
cM capacity (veh/h)	550	533	1017	454	531	1041	1532			1573		

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	43	98	32	156	74
Volume Left	43	0	11	114	11
Volume Right	0	87	11	11	21
cSH	550	926	594	1532	1573
Volume to Capacity	0.08	0.11	0.05	0.07	0.01
Queue Length 95th (ft)	6	9	4	6	1
Control Delay (s)	12.1	9.3	11.4	5.6	1.1
Lane LOS	B	A	B	A	A
Approach Delay (s)	10.2		11.4	5.6	1.1
Approach LOS	B		B		

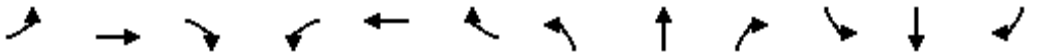
Intersection Summary				
Average Delay	6.8			
Intersection Capacity Utilization	29.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	506	110	40	402	50	80	131	30	90	144	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	3514		1805	3551		1805	1900	1615	1805	1900	1615
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1805	3514		1805	3551		1805	1900	1615	1805	1900	1615
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)	69	582	126	46	462	57	92	151	34	103	166	80
RTOR Reduction (vph)	0	17	0	0	9	0	0	0	29	0	0	65
Lane Group Flow (vph)	69	691	0	46	510	0	92	151	5	103	166	15
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	3.5	21.0		3.1	20.6		5.5	7.6	7.6	5.8	7.9	7.9
Effective Green, g (s)	4.0	21.5		3.6	21.1		6.0	8.1	8.1	6.3	8.4	8.4
Actuated g/C Ratio	0.07	0.39		0.06	0.38		0.11	0.15	0.15	0.11	0.15	0.15
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	1.0	3.0		1.0	3.0		1.0	2.0	2.0	1.0	2.0	2.0
Lane Grp Cap (vph)	130	1361		117	1350		195	277	236	205	288	244
v/s Ratio Prot	c0.04	c0.20		0.03	0.14		0.05	0.08		c0.06	c0.09	
v/s Ratio Perm									0.00			0.01
v/c Ratio	0.53	0.51		0.39	0.38		0.47	0.55	0.02	0.50	0.58	0.06
Uniform Delay, d1	24.8	13.0		24.9	12.5		23.3	22.0	20.3	23.1	21.9	20.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	0.3		0.8	0.2		0.7	1.2	0.0	0.7	1.7	0.0
Delay (s)	26.9	13.3		25.7	12.6		23.9	23.2	20.3	23.8	23.6	20.2
Level of Service	C	B		C	B		C	C	C	C	C	C
Approach Delay (s)		14.5			13.7			23.1			22.9	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	17.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	55.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		

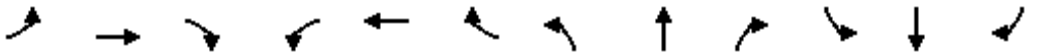
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	416	590	300	310	480	326	580	1176	180	303	1042	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	5187	1615	3502	5187	1615	3502	3610	1615	3502	3610	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3502	5187	1615	3502	5187	1615	3502	3610	1615	3502	3610	1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	429	608	309	320	495	336	598	1212	186	312	1074	158
RTOR Reduction (vph)	0	0	0	0	0	226	0	0	60	0	0	63
Lane Group Flow (vph)	429	608	309	320	495	110	598	1212	126	312	1074	95
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot		Free	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			Free			6			4			8
Actuated Green, G (s)	14.6	17.9	98.3	13.3	16.6	16.6	15.0	31.9	31.9	13.2	30.1	30.1
Effective Green, g (s)	15.6	19.9	98.3	14.3	18.6	18.6	16.0	33.9	33.9	14.2	32.1	32.1
Actuated g/C Ratio	0.16	0.20	1.00	0.15	0.19	0.19	0.16	0.34	0.34	0.14	0.33	0.33
Clearance Time (s)	5.0	6.0		5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	556	1050	1615	509	981	306	570	1245	557	506	1179	527
v/s Ratio Prot	c0.12	c0.12		0.09	0.10		c0.17	c0.34		0.09	0.30	
v/s Ratio Perm			c0.19			0.07			0.08			0.06
v/c Ratio	0.77	0.58	0.19	0.63	0.50	0.36	1.05	0.97	0.23	0.62	0.91	0.18
Uniform Delay, d1	39.6	35.4	0.0	39.5	35.7	34.7	41.1	31.8	22.9	39.5	31.7	23.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.6	0.8	0.3	2.4	0.4	0.7	51.2	19.3	0.2	2.2	10.6	0.2
Delay (s)	46.2	36.2	0.3	41.9	36.1	35.4	92.4	51.1	23.1	41.7	42.3	23.9
Level of Service	D	D	A	D	D	D	F	D	C	D	D	C
Approach Delay (s)		31.1			37.5			60.8			40.3	
Approach LOS		C			D			E			D	

Intersection Summary			
HCM Average Control Delay	44.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	98.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.8%	ICU Level of Service	D
Analysis Period (min)	15		

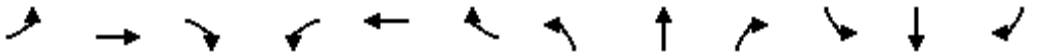
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	202	560	330	130	520	152	290	490	90	120	457	176
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	3610	1615	3502	3610	1615	3502	3610	1615	3502	3610	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3502	3610	1615	3502	3610	1615	3502	3610	1615	3502	3610	1615
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	210	583	344	135	542	158	302	510	94	125	476	183
RTOR Reduction (vph)	0	0	174	0	0	79	0	0	54	0	0	73
Lane Group Flow (vph)	210	583	170	135	542	79	302	510	40	125	476	110
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	9.8	20.0	20.0	8.1	18.3	18.3	12.0	20.3	20.3	7.7	16.0	16.0
Effective Green, g (s)	10.3	21.5	21.5	8.6	19.8	19.8	12.5	21.8	21.8	8.2	17.5	17.5
Actuated g/C Ratio	0.14	0.28	0.28	0.11	0.26	0.26	0.16	0.29	0.29	0.11	0.23	0.23
Clearance Time (s)	4.5	5.5	5.5	4.5	5.5	5.5	4.5	5.5	5.5	4.5	5.5	5.5
Vehicle Extension (s)	2.0	2.5	2.5	2.0	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	474	1020	456	396	939	420	575	1034	463	377	830	371
v/s Ratio Prot	c0.06	c0.16		0.04	0.15		c0.09	0.14		0.04	c0.13	
v/s Ratio Perm			0.11			0.05			0.02			0.07
v/c Ratio	0.44	0.57	0.37	0.34	0.58	0.19	0.53	0.49	0.09	0.33	0.57	0.30
Uniform Delay, d1	30.3	23.4	21.9	31.1	24.5	21.9	29.1	22.6	19.9	31.4	26.0	24.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.6	0.4	0.2	0.7	0.2	0.4	0.1	0.0	0.2	0.6	0.2
Delay (s)	30.5	24.0	22.3	31.3	25.2	22.1	29.5	22.7	19.9	31.6	26.6	24.4
Level of Service	C	C	C	C	C	C	C	C	B	C	C	C
Approach Delay (s)		24.7			25.6			24.7			26.9	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	25.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	76.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		

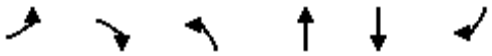
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	515	100	60	521	65	100	147	40	93	133	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.98		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	3522		1787	3515		1787	1821		1805	1900	1615
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1805	3522		1787	3515		1787	1821		1805	1900	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	61	526	102	61	532	66	102	150	41	95	136	92
RTOR Reduction (vph)	0	14	0	0	8	0	0	9	0	0	0	67
Lane Group Flow (vph)	61	614	0	61	590	0	102	182	0	95	136	25
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases												4
Actuated Green, G (s)	4.0	20.2		4.0	20.2		6.8	11.7		6.6	11.5	11.5
Effective Green, g (s)	4.0	20.7		4.0	20.7		6.8	12.2		6.6	12.0	12.0
Actuated g/C Ratio	0.07	0.35		0.07	0.35		0.11	0.21		0.11	0.20	0.20
Clearance Time (s)	4.0	4.5		4.0	4.5		4.0	4.5		4.0	4.5	4.5
Vehicle Extension (s)	2.0	5.0		2.0	3.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	121	1225		120	1223		204	373		200	383	326
v/s Ratio Prot	0.03	c0.17		c0.03	0.17		c0.06	c0.10		0.05	0.07	
v/s Ratio Perm												0.02
v/c Ratio	0.50	0.50		0.51	0.48		0.50	0.49		0.47	0.36	0.08
Uniform Delay, d1	26.8	15.3		26.8	15.2		24.8	20.9		24.8	20.4	19.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.2	0.7		1.2	0.3		0.7	0.4		0.6	0.2	0.0
Delay (s)	28.0	16.0		28.0	15.5		25.5	21.3		25.5	20.6	19.3
Level of Service	C	B		C	B		C	C		C	C	B
Approach Delay (s)		17.1			16.7			22.7			21.7	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	59.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
Analysis Period (min)	15		

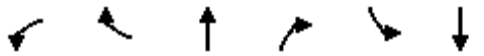
c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	364	875	140	110	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	396	951	152	120	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2174	120	120			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2174	120	120			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	58	35			
cM capacity (veh/h)	18	932	1468			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	396	951	152	120	0
Volume Left	0	951	0	0	0
Volume Right	396	0	0	0	0
cSH	932	1468	1700	1700	1700
Volume to Capacity	0.42	0.65	0.09	0.07	0.00
Queue Length 95th (ft)	54	128	0	0	0
Control Delay (s)	11.7	11.8	0.0	0.0	0.0
Lane LOS	B	B			
Approach Delay (s)	11.7	10.2		0.0	
Approach LOS	B				

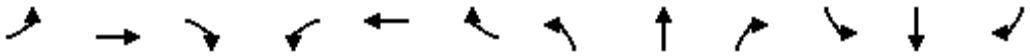
Intersection Summary			
Average Delay	9.8		
Intersection Capacity Utilization	84.3%	ICU Level of Service	E
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	168	0	90	413	0	70
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	183	0	98	449	0	76
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	398	322			547	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	398	322			547	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	70	100			100	
cM capacity (veh/h)	607	719			1023	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	183	547	76
Volume Left	183	0	0
Volume Right	0	449	0
cSH	607	1700	1023
Volume to Capacity	0.30	0.32	0.00
Queue Length 95th (ft)	32	0	0
Control Delay (s)	13.5	0.0	0.0
Lane LOS	B		
Approach Delay (s)	13.5	0.0	0.0
Approach LOS	B		

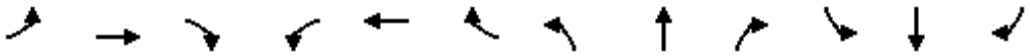
Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	46.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	60	80	70	30	47	40	130	90	14	63	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	24	73	98	85	37	57	49	159	110	17	77	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	504	483	83	562	434	213	89			268		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	504	483	83	562	434	213	89			268		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	84	90	75	93	93	97			99		
cM capacity (veh/h)	409	464	982	337	495	832	1506			1295		

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total	195	122	57	317	106
Volume Left	24	85	0	49	17
Volume Right	98	0	57	110	12
cSH	616	373	832	1506	1295
Volume to Capacity	0.32	0.33	0.07	0.03	0.01
Queue Length 95th (ft)	34	35	6	3	1
Control Delay (s)	13.5	19.3	9.6	1.4	1.3
Lane LOS	B	C	A	A	A
Approach Delay (s)	13.5	16.2		1.4	1.3
Approach LOS	B	C			

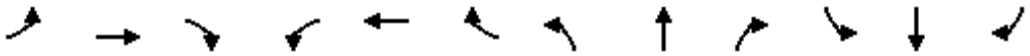
Intersection Summary				
Average Delay	7.7			
Intersection Capacity Utilization	43.8%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	80	74	160	70	50	77	275	120	23	147	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.94			1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected		1.00			0.97	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1727			1732	1524	1641	1727	1468	1583	1650	
Flt Permitted		0.98			0.71	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1691			1275	1524	1641	1727	1468	1583	1650	
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)	12	94	87	188	82	59	91	324	141	27	173	12
RTOR Reduction (vph)	0	53	0	0	0	31	0	0	88	0	4	0
Lane Group Flow (vph)	0	140	0	0	270	28	91	324	53	27	181	0
Heavy Vehicles (%)	3%	3%	3%	6%	6%	6%	10%	10%	10%	14%	14%	14%
Turn Type	Perm			Perm		Perm	Prot		Perm	Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8			2			
Actuated Green, G (s)		15.2			15.2	15.2	4.3	17.0	17.0	1.2	13.9	
Effective Green, g (s)		15.2			15.2	15.2	4.3	17.0	17.0	1.2	13.9	
Actuated g/C Ratio		0.33			0.33	0.33	0.09	0.37	0.37	0.03	0.31	
Clearance Time (s)		4.0			4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		566			427	510	155	647	550	42	505	
v/s Ratio Prot							c0.06	c0.19		0.02	0.11	
v/s Ratio Perm		0.08			c0.21	0.02			0.04			
v/c Ratio		0.25			0.63	0.05	0.59	0.50	0.10	0.64	0.36	
Uniform Delay, d1		10.9			12.7	10.2	19.7	10.9	9.2	21.9	12.3	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.2			3.0	0.0	5.6	0.6	0.1	29.0	0.4	
Delay (s)		11.2			15.8	10.3	25.3	11.5	9.3	50.9	12.7	
Level of Service		B			B	B	C	B	A	D	B	
Approach Delay (s)		11.2			14.8			13.2			17.6	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	14.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	45.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

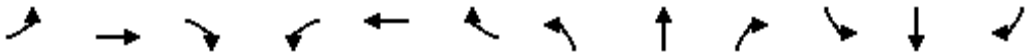
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	390	0	137	130	426	0	0	369	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0			4.0	
Lane Util. Factor					0.95	0.95	1.00	0.95			0.95	
Frt					0.99	0.85	1.00	1.00			0.97	
Flt Protected					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					1647	1475	1736	3471			3318	
Flt Permitted					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (perm)					1647	1475	1736	3471			3318	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	415	0	146	138	453	0	0	393	119
RTOR Reduction (vph)	0	0	0	0	1	53	0	0	0	0	32	0
Lane Group Flow (vph)	0	0	0	0	429	78	138	453	0	0	480	0
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	4%	4%	4%	5%	5%	5%
Turn Type				Perm		Perm	Prot					
Protected Phases					8		5	2			6	
Permitted Phases				8		8						
Actuated Green, G (s)					23.6	23.6	8.6	29.0			16.4	
Effective Green, g (s)					23.6	23.6	8.6	29.9			17.3	
Actuated g/C Ratio					0.38	0.38	0.14	0.49			0.28	
Clearance Time (s)					4.0	4.0	4.0	4.9			4.9	
Vehicle Extension (s)					3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)					632	566	243	1688			933	
v/s Ratio Prot							c0.08	0.13			c0.14	
v/s Ratio Perm					0.26	0.05						
v/c Ratio					0.68	0.14	0.57	0.27			0.51	
Uniform Delay, d1					15.8	12.3	24.7	9.3			18.6	
Progression Factor					1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2					2.9	0.1	3.0	0.1			0.5	
Delay (s)					18.7	12.4	27.7	9.4			19.0	
Level of Service					B	B	C	A			B	
Approach Delay (s)		0.0			17.2			13.7			19.0	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM Average Control Delay	16.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	61.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
Analysis Period (min)	15		

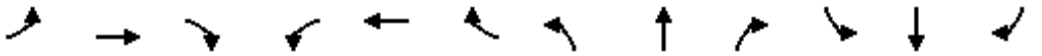
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	40	50	90	20	330	20	153	70	125	104	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	22	44	56	100	22	367	22	170	78	139	116	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1030	691	121	730	658	209	127			248		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1030	691	121	730	658	209	127			248		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	79	86	94	62	93	56	98			89		
cM capacity (veh/h)	104	326	936	261	341	837	1460			1318		

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total	122	122	367	270	266
Volume Left	22	100	0	22	139
Volume Right	56	0	367	78	11
cSH	298	273	837	1460	1318
Volume to Capacity	0.41	0.45	0.44	0.02	0.11
Queue Length 95th (ft)	48	55	56	1	9
Control Delay (s)	25.2	28.5	12.6	0.7	4.6
Lane LOS	D	D	B	A	A
Approach Delay (s)	25.2	16.6		0.7	4.6
Approach LOS	D	C			

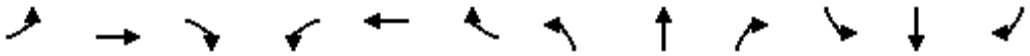
Intersection Summary				
Average Delay	11.0			
Intersection Capacity Utilization	50.1%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	50	185	100	50	77	390	928	70	42	422	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.90			1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00			0.97	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1703			1785	1568	1787	1881	1599	1787	1874	
Flt Permitted		0.99			0.39	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1683			723	1568	1787	1881	1599	1787	1874	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	12	58	215	116	58	90	453	1079	81	49	491	12
RTOR Reduction (vph)	0	108	0	0	0	40	0	0	24	0	1	0
Lane Group Flow (vph)	0	177	0	0	174	50	453	1079	57	49	502	0
Heavy Vehicles (%)	0%	0%	0%	3%	3%	3%	1%	1%	1%	1%	1%	2%
Turn Type	Perm			Perm		Perm	Prot		Perm	Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8			2			
Actuated Green, G (s)		23.9			23.9	23.9	28.7	62.3	62.3	3.1	36.7	
Effective Green, g (s)		23.9			23.9	23.9	28.7	62.3	62.3	3.1	36.7	
Actuated g/C Ratio		0.24			0.24	0.24	0.28	0.62	0.62	0.03	0.36	
Clearance Time (s)		4.0			4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		397			171	370	506	1157	983	55	679	
v/s Ratio Prot							c0.25	c0.57		0.03	0.27	
v/s Ratio Perm		0.10			c0.24	0.03			0.04			
v/c Ratio		0.44			1.02	0.13	0.90	0.93	0.06	0.89	0.74	
Uniform Delay, d1		33.0			38.7	30.5	34.9	17.6	7.8	48.9	28.1	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.8			73.5	0.2	18.1	13.3	0.0	82.3	4.2	
Delay (s)		33.8			112.2	30.7	53.0	30.9	7.8	131.2	32.4	
Level of Service		C			F	C	D	C	A	F	C	
Approach Delay (s)		33.8			84.4			35.9			41.2	
Approach LOS		C			F			D			D	

Intersection Summary			
HCM Average Control Delay	41.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	101.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	88.2%	ICU Level of Service	E
Analysis Period (min)	15		

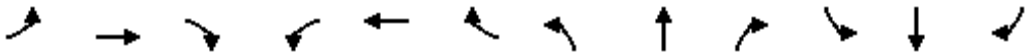
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	350	0	813	210	675	0	0	668	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0			4.0	
Lane Util. Factor					0.95	0.95	1.00	0.95			0.95	
Frt					0.94	0.85	1.00	1.00			0.97	
Flt Protected					0.97	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					1628	1519	1787	3574			3466	
Flt Permitted					0.97	1.00	0.95	1.00			1.00	
Satd. Flow (perm)					1628	1519	1787	3574			3466	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	368	0	856	221	711	0	0	703	178
RTOR Reduction (vph)	0	0	0	0	27	128	0	0	0	0	23	0
Lane Group Flow (vph)	0	0	0	0	606	463	221	711	0	0	858	0
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type				Perm		Perm	Prot					
Protected Phases					8		5	2			6	
Permitted Phases				8		8						
Actuated Green, G (s)					31.1	31.1	14.9	39.1			20.2	
Effective Green, g (s)					31.1	31.1	14.9	40.0			21.1	
Actuated g/C Ratio					0.39	0.39	0.19	0.51			0.27	
Clearance Time (s)					4.0	4.0	4.0	4.9			4.9	
Vehicle Extension (s)					3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)					640	597	337	1807			925	
v/s Ratio Prot							c0.12	0.20			c0.25	
v/s Ratio Perm					0.37	0.30						
v/c Ratio					0.95	0.78	0.66	0.39			0.93	
Uniform Delay, d1					23.2	21.0	29.7	12.1			28.3	
Progression Factor					1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2					23.1	6.3	4.5	0.1			14.8	
Delay (s)					46.3	27.2	34.3	12.2			43.1	
Level of Service					D	C	C	B			D	
Approach Delay (s)		0.0			37.1			17.4			43.1	
Approach LOS		A			D			B			D	

Intersection Summary			
HCM Average Control Delay	32.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	79.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.9%	ICU Level of Service	E
Analysis Period (min)	15		

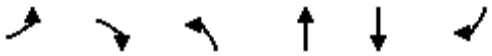
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	1040	740	180	410	40	690	90	430	10	40	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	1130	804	196	446	43	750	98	467	11	43	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2168	2136	49	3272	1908	332	54			565		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2168	2136	49	3272	1908	332	54			565		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	0	22	0	0	94	52			99		
cM capacity (veh/h)	0	25	1025	0	35	715	1551			1007		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	1967	685	1315	65
Volume Left	33	196	750	11
Volume Right	804	43	467	11
cSH	0	0	1551	1007
Volume to Capacity	Err	Err	0.48	0.01
Queue Length 95th (ft)	Err	Err	68	1
Control Delay (s)	Err	Err	8.4	1.5
Lane LOS	F	F	A	A
Approach Delay (s)	Err	Err	8.4	1.5
Approach LOS	F	F		

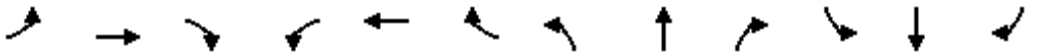
Intersection Summary				
Average Delay	Err			
Intersection Capacity Utilization	221.4%	ICU Level of Service	H	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	240	340	280	1070	1210	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	1599	1805	3610	3537	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1787	1599	1805	3610	3537	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	250	354	292	1115	1260	94
RTOR Reduction (vph)	0	290	0	0	8	0
Lane Group Flow (vph)	250	64	292	1115	1346	0
Heavy Vehicles (%)	1%	1%	0%	0%	1%	1%
Turn Type		Perm	Prot			
Protected Phases	2		3	8	4	
Permitted Phases		2				
Actuated Green, G (s)	11.8	11.8	13.5	45.0	27.0	
Effective Green, g (s)	11.8	11.8	14.0	45.5	27.5	
Actuated g/C Ratio	0.18	0.18	0.21	0.70	0.42	
Clearance Time (s)	4.0	4.0	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	2.0	2.0	2.5	2.5	
Lane Grp Cap (vph)	323	289	387	2515	1490	
v/s Ratio Prot	c0.14		c0.16	0.31	c0.38	
v/s Ratio Perm		0.04				
v/c Ratio	0.77	0.22	0.75	0.44	0.90	
Uniform Delay, d1	25.5	22.8	24.0	4.3	17.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	10.1	0.1	7.2	0.1	8.0	
Delay (s)	35.6	23.0	31.3	4.4	25.7	
Level of Service	D	C	C	A	C	
Approach Delay (s)	28.2			10.0	25.7	
Approach LOS	C			B	C	

Intersection Summary			
HCM Average Control Delay	19.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	65.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	1020	1100	240	650	120	490	840	360	250	850	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	5187	1615	3502	5187	1615	3502	5187	1615	3467	5136	1599
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3502	5187	1615	3502	5187	1615	3502	5187	1615	3467	5136	1599
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	125	1062	1146	250	677	125	510	875	375	260	885	115
RTOR Reduction (vph)	0	0	0	0	0	90	0	0	93	0	0	79
Lane Group Flow (vph)	125	1062	1146	250	677	35	510	875	282	260	885	36
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%
Turn Type	Prot		Free	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8			2			6
Actuated Green, G (s)	6.4	30.0	110.0	6.0	29.6	29.6	19.0	42.6	42.6	9.4	33.0	33.0
Effective Green, g (s)	7.9	31.5	110.0	7.5	31.1	31.1	20.5	44.1	44.1	10.9	34.5	34.5
Actuated g/C Ratio	0.07	0.29	1.00	0.07	0.28	0.28	0.19	0.40	0.40	0.10	0.31	0.31
Clearance Time (s)	5.5	5.5		5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Vehicle Extension (s)	2.0	3.0		2.0	3.0	3.0	2.0	3.0	3.0	2.0	3.0	3.0
Lane Grp Cap (vph)	252	1485	1615	239	1467	457	653	2080	647	344	1611	502
v/s Ratio Prot	0.04	0.20		0.07	0.13		0.15	0.17		0.07	0.17	
v/s Ratio Perm			c0.71			0.02			0.17			0.02
v/c Ratio	0.50	0.72	0.71	1.05	0.46	0.08	0.78	0.42	0.44	0.76	0.55	0.07
Uniform Delay, d1	49.1	35.2	0.0	51.2	32.5	28.9	42.6	23.7	23.9	48.3	31.3	26.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	1.7	2.7	70.8	0.2	0.1	9.0	0.6	2.1	8.1	0.4	0.1
Delay (s)	49.7	36.9	2.7	122.0	32.8	29.0	51.6	24.4	26.1	56.4	31.7	26.6
Level of Service	D	D	A	F	C	C	D	C	C	E	C	C
Approach Delay (s)		20.8			53.5			32.6			36.3	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM Average Control Delay	32.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

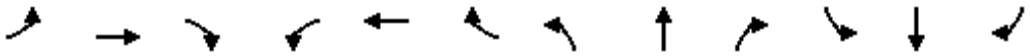
Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #4 Larch Rd/Tracy Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	3.364
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	613.1
Optimal Cycle:	0	Level Of Service:	F

Street Name:	Tracy Blvd						Larch Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 0	1	1 0	0 1	0	0 0	1! 0	0	0	1 0	0 1
Volume Module:												
Base Vol:	480	190	140	10	100	10	10	630	840	220	140	20
Growth 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
Initial Bse:	480	190	140	10	100	10	10	630	840	220	140	20
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	480	190	140	10	100	10	10	630	840	220	140	20
User 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
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	505	200	147	11	105	11	11	663	884	232	147	21
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	505	200	147	11	105	11	11	663	884	232	147	21
PCE 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
MLF 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
FinalVolume:	505	200	147	11	105	11	11	663	884	232	147	21
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.00	1.00	1.00	0.91	0.09	0.01	0.42	0.57	0.61	0.39	1.00
Final Sat.:	399	421	457	356	343	34	3	197	263	254	162	467
Capacity Analysis Module:												
Vol/Sat:	1.27	0.48	0.32	0.03	0.31	0.31	3.36	3.36	3.36	0.91	0.91	0.05
Crit Moves:	****				****		****				****	
Delay/Veh:	165.1	18.7	14.2	12.9	16.1	16.1	1084	1084	1084	54.1	54.1	10.7
Delay 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
AdjDel/Veh:	165.1	18.7	14.2	12.9	16.1	16.1	1084	1084	1084	54.1	54.1	10.7
LOS by Move:	F	C	B	B	C	C	F	F	F	F	F	B
ApproachDel:	104.7			15.8			1084.0			51.8		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	104.7			15.8			1084.0			51.8		
LOS by Appr:	F			C			F			F		
AllWayAvgQ:	17.0	0.9	0.5	0.0	0.4	0.4	138	138	138.1	4.9	4.9	0.0

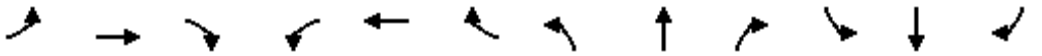
Note: Queue reported is the number of cars per lane.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	470	0	450	360	460	0	0	1090	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	
Lane Util. Factor					1.00		1.00	0.95			0.95	
Frt					0.93		1.00	1.00			0.98	
Flt Protected					0.98		0.95	1.00			1.00	
Satd. Flow (prot)					1680		1752	3505			3471	
Flt Permitted					0.98		0.95	1.00			1.00	
Satd. Flow (perm)					1680		1752	3505			3471	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	500	0	479	383	489	0	0	1160	170
RTOR Reduction (vph)	0	0	0	0	32	0	0	0	0	0	11	0
Lane Group Flow (vph)	0	0	0	0	947	0	383	489	0	0	1319	0
Heavy Vehicles (%)	0%	0%	0%	3%	3%	3%	3%	3%	3%	2%	2%	2%
Turn Type				Perm			Prot					
Protected Phases					8		5	2			6	
Permitted Phases				8								
Actuated Green, G (s)					36.0		21.0	65.1			40.1	
Effective Green, g (s)					36.0		21.0	66.0			41.0	
Actuated g/C Ratio					0.33		0.19	0.60			0.37	
Clearance Time (s)					4.0		4.0	4.9			4.9	
Vehicle Extension (s)					3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)					550		334	2103			1294	
v/s Ratio Prot							c0.22	0.14			c0.38	
v/s Ratio Perm					0.56							
v/c Ratio					1.72		1.15	0.23			1.02	
Uniform Delay, d1					37.0		44.5	10.2			34.5	
Progression Factor					1.00		1.00	1.00			1.00	
Incremental Delay, d2					332.8		95.2	0.1			30.0	
Delay (s)					369.8		139.7	10.3			64.5	
Level of Service					F		F	B			E	
Approach Delay (s)		0.0			369.8			67.1			64.5	
Approach LOS		A			F			E			E	

Intersection Summary			
HCM Average Control Delay	159.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	124.6%	ICU Level of Service	H
Analysis Period (min)	15		

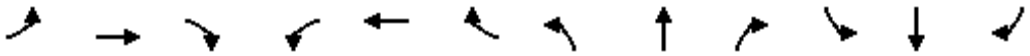
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	0	520	0	0	0	0	700	450	760	800	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		1.00						0.95		1.00	0.95	
Frt		0.89						0.94		1.00	1.00	
Flt Protected		0.99						1.00		0.95	1.00	
Satd. Flow (prot)		1627						3331		1787	3574	
Flt Permitted		0.99						1.00		0.95	1.00	
Satd. Flow (perm)		1627						3331		1787	3574	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	126	0	547	0	0	0	0	737	474	800	842	0
RTOR Reduction (vph)	0	132	0	0	0	0	0	102	0	0	0	0
Lane Group Flow (vph)	0	541	0	0	0	0	0	1109	0	800	842	0
Heavy Vehicles (%)	3%	3%	3%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Turn Type	Perm									Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4											
Actuated Green, G (s)		30.1						37.7		21.0	62.7	
Effective Green, g (s)		31.0						38.6		21.0	63.6	
Actuated g/C Ratio		0.30						0.38		0.20	0.62	
Clearance Time (s)		4.9						4.9		4.0	4.9	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		492						1253		366	2215	
v/s Ratio Prot								c0.33		c0.45	0.24	
v/s Ratio Perm		0.33										
v/c Ratio		1.10						0.88		2.19	0.38	
Uniform Delay, d1		35.8						29.9		40.8	9.7	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		70.6						7.8		542.5	0.1	
Delay (s)		106.4						37.7		583.3	9.8	
Level of Service		F						D		F	A	
Approach Delay (s)		106.4			0.0			37.7			289.2	
Approach LOS		F			A			D			F	

Intersection Summary			
HCM Average Control Delay	167.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.26		
Actuated Cycle Length (s)	102.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	124.6%	ICU Level of Service	H
Analysis Period (min)	15		

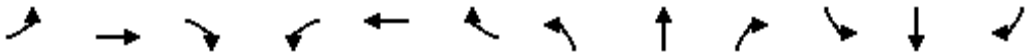
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	220	430	410	90	260	170	370	640	120	260	730	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.93		1.00	0.94		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3346		1787	3362		1787	3490		1787	3504	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	3346		1787	3362		1787	3490		1787	3504	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	232	453	432	95	274	179	389	674	126	274	768	116
RTOR Reduction (vph)	0	174	0	0	121	0	0	14	0	0	11	0
Lane Group Flow (vph)	232	711	0	95	332	0	389	786	0	274	873	0
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	15.0	23.0		7.7	15.7		19.0	30.0		16.8	27.8	
Effective Green, g (s)	15.5	24.0		8.2	16.7		19.5	30.5		17.3	28.3	
Actuated g/C Ratio	0.16	0.25		0.09	0.17		0.20	0.32		0.18	0.29	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	1.0	3.0		1.0	3.0		1.0	3.0		1.0	3.0	
Lane Grp Cap (vph)	291	837		153	585		363	1109		322	1033	
v/s Ratio Prot	c0.13	c0.21		0.05	0.10		c0.22	0.23		0.15	c0.25	
v/s Ratio Perm												
v/c Ratio	0.80	0.85		0.62	0.57		1.07	0.71		0.85	0.84	
Uniform Delay, d1	38.7	34.3		42.4	36.3		38.2	28.8		38.1	31.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	13.2	8.1		5.5	1.3		67.6	3.8		18.3	8.5	
Delay (s)	51.9	42.3		47.9	37.6		105.9	32.7		56.4	40.3	
Level of Service	D	D		D	D		F	C		E	D	
Approach Delay (s)		44.3			39.4			56.6			44.1	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM Average Control Delay	47.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	96.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.6%	ICU Level of Service	E
Analysis Period (min)	15		

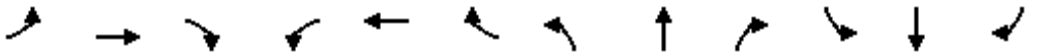
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	410	10	350	10	10	10	110	40	10	10	40	50
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	446	11	380	11	11	11	120	43	11	11	43	54
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	397	386	71	766	408	49	98			54		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	397	386	71	766	408	49	98			54		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	13	98	62	94	98	99	92			99		
cM capacity (veh/h)	513	502	995	183	490	1025	1489			1557		

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	446	391	33	174	109
Volume Left	446	0	11	120	11
Volume Right	0	380	11	11	54
cSH	513	968	353	1489	1557
Volume to Capacity	0.87	0.40	0.09	0.08	0.01
Queue Length 95th (ft)	234	50	8	7	1
Control Delay (s)	42.5	11.2	16.2	5.4	0.8
Lane LOS	E	B	C	A	A
Approach Delay (s)	27.9		16.2	5.4	0.8
Approach LOS	D		C		

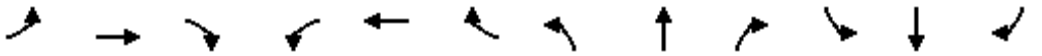
Intersection Summary				
Average Delay	21.6			
Intersection Capacity Utilization	51.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	550	50	50	140	60	100	260	50	270	300	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	3565		1805	3448		1805	1900	1615	1805	1900	1615
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1805	3565		1805	3448		1805	1900	1615	1805	1900	1615
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)	109	598	54	54	152	65	109	283	54	293	326	87
RTOR Reduction (vph)	0	7	0	0	50	0	0	0	29	0	0	27
Lane Group Flow (vph)	109	645	0	54	167	0	109	283	25	293	326	60
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	6.7	19.3		3.7	16.3		6.7	15.9	15.9	15.3	24.5	24.5
Effective Green, g (s)	7.2	19.8		4.2	16.8		7.2	16.4	16.4	15.8	25.0	25.0
Actuated g/C Ratio	0.10	0.27		0.06	0.23		0.10	0.23	0.23	0.22	0.35	0.35
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	1.0	3.0		1.0	3.0		1.0	2.0	2.0	1.0	2.0	2.0
Lane Grp Cap (vph)	180	978		105	802		180	432	367	395	658	559
v/s Ratio Prot	c0.06	c0.18		0.03	0.05		0.06	c0.15		c0.16	0.17	
v/s Ratio Perm									0.02			0.04
v/c Ratio	0.61	0.66		0.51	0.21		0.61	0.66	0.07	0.74	0.50	0.11
Uniform Delay, d1	31.1	23.2		33.0	22.3		31.1	25.3	21.9	26.3	18.6	16.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.9	1.6		1.8	0.1		3.9	2.7	0.0	6.4	0.2	0.0
Delay (s)	35.0	24.8		34.8	22.5		35.0	28.1	21.9	32.7	18.8	16.0
Level of Service	D	C		C	C		D	C	C	C	B	B
Approach Delay (s)		26.3			24.9			29.0			24.3	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	26.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	72.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.8%	ICU Level of Service	B
Analysis Period (min)	15		

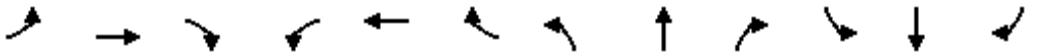
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	600	1200	220	480	740	360	130	1610	310	460	1540	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	5187	1615	3502	5187	1615	3502	5187	1615	3502	5187	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3502	5187	1615	3502	5187	1615	3502	5187	1615	3502	5187	1615
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	625	1250	229	500	771	375	135	1677	323	479	1604	94
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	88	0	0	28
Lane Group Flow (vph)	625	1250	229	500	771	375	135	1677	235	479	1604	66
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot		Free	Prot		Free	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			Free			Free			4			8
Actuated Green, G (s)	25.0	39.5	150.0	21.0	35.5	150.0	8.8	48.5	48.5	19.0	58.7	58.7
Effective Green, g (s)	26.0	41.5	150.0	22.0	37.5	150.0	9.8	50.5	50.5	20.0	60.7	60.7
Actuated g/C Ratio	0.17	0.28	1.00	0.15	0.25	1.00	0.07	0.34	0.34	0.13	0.40	0.40
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	607	1435	1615	514	1297	1615	229	1746	544	467	2099	654
v/s Ratio Prot	c0.18	c0.24		0.14	0.15		0.04	c0.32		c0.14	0.31	
v/s Ratio Perm			0.14			0.23			0.15			0.04
v/c Ratio	1.03	0.87	0.14	0.97	0.59	0.23	0.59	0.96	0.43	1.03	0.76	0.10
Uniform Delay, d1	62.0	51.7	0.0	63.7	49.6	0.0	68.1	48.8	38.6	65.0	38.5	27.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	44.3	6.1	0.2	32.6	0.7	0.3	3.8	14.0	2.5	48.4	2.7	0.3
Delay (s)	106.3	57.8	0.2	96.3	50.3	0.3	72.0	62.8	41.1	113.4	41.2	28.0
Level of Service	F	E	A	F	D	A	E	E	D	F	D	C
Approach Delay (s)		65.9			52.9			60.1			56.5	
Approach LOS		E			D			E			E	

Intersection Summary			
HCM Average Control Delay	59.2	HCM Level of Service	E
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	94.4%	ICU Level of Service	F
Analysis Period (min)	15		

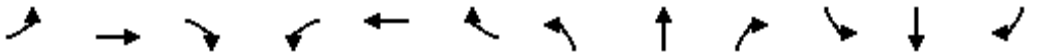
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	360	620	610	190	370	160	590	590	100	200	740	500
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	3610	1615	3502	3610	1615	3502	3610	1615	3502	3610	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3502	3610	1615	3502	3610	1615	3502	3610	1615	3502	3610	1615
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	375	646	635	198	385	167	615	615	104	208	771	521
RTOR Reduction (vph)	0	0	231	0	0	114	0	0	56	0	0	143
Lane Group Flow (vph)	375	646	404	198	385	53	615	615	48	208	771	378
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	15.4	38.4	38.4	10.6	33.6	33.6	15.5	30.1	30.1	10.9	25.5	25.5
Effective Green, g (s)	15.9	39.9	39.9	11.1	35.1	35.1	16.0	31.6	31.6	11.4	27.0	27.0
Actuated g/C Ratio	0.14	0.36	0.36	0.10	0.32	0.32	0.15	0.29	0.29	0.10	0.25	0.25
Clearance Time (s)	4.5	5.5	5.5	4.5	5.5	5.5	4.5	5.5	5.5	4.5	5.5	5.5
Vehicle Extension (s)	2.0	2.5	2.5	2.0	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	506	1309	586	353	1152	515	509	1037	464	363	886	396
v/s Ratio Prot	c0.11	0.18		0.06	0.11		c0.18	0.17		0.06	0.21	
v/s Ratio Perm			c0.25			0.03			0.03			c0.23
v/c Ratio	0.74	0.49	0.69	0.56	0.33	0.10	1.21	0.59	0.10	0.57	0.87	0.96
Uniform Delay, d1	45.1	27.2	29.8	47.1	28.5	26.4	47.0	33.7	28.8	47.0	39.8	40.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.1	1.3	6.5	1.2	0.8	0.4	111.0	0.6	0.0	1.4	9.0	33.3
Delay (s)	50.2	28.5	36.3	48.3	29.3	26.8	158.0	34.3	28.8	48.3	48.9	74.2
Level of Service	D	C	D	D	C	C	F	C	C	D	D	E
Approach Delay (s)		36.4			33.8			90.9			57.6	
Approach LOS		D			C			F			E	

Intersection Summary			
HCM Average Control Delay	56.0	HCM Level of Service	E
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		

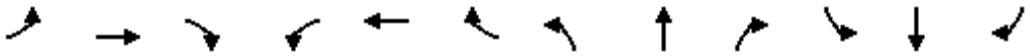
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	590	110	120	350	40	130	140	120	80	130	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.98		1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1787	3490		1805	3555		1787	1751		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1787	3490		1805	3555		1787	1751		1770	1863	1583
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)	87	641	120	130	380	43	141	152	130	87	141	109
RTOR Reduction (vph)	0	12	0	0	7	0	0	35	0	0	0	91
Lane Group Flow (vph)	87	749	0	130	416	0	141	247	0	87	141	18
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	1%	1%	1%	2%	2%	2%
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases												4
Actuated Green, G (s)	7.5	42.1		9.6	44.2		11.9	19.2		8.1	15.4	15.4
Effective Green, g (s)	7.5	42.6		9.6	44.7		11.9	19.7		8.1	15.9	15.9
Actuated g/C Ratio	0.08	0.44		0.10	0.47		0.12	0.21		0.08	0.17	0.17
Clearance Time (s)	4.0	4.5		4.0	4.5		4.0	4.5		4.0	4.5	4.5
Vehicle Extension (s)	2.0	5.0		2.0	3.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	140	1549		181	1655		222	359		149	309	262
v/s Ratio Prot	0.05	c0.21		c0.07	0.12		c0.08	c0.14		0.05	0.08	
v/s Ratio Perm												0.01
v/c Ratio	0.62	0.48		0.72	0.25		0.64	0.69		0.58	0.46	0.07
Uniform Delay, d1	42.9	18.9		41.9	15.5		40.0	35.3		42.3	36.1	33.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	6.0	1.1		10.7	0.4		4.3	4.3		3.7	0.4	0.0
Delay (s)	48.9	20.0		52.6	15.9		44.3	39.6		46.1	36.5	33.8
Level of Service	D	B		D	B		D	D		D	D	C
Approach Delay (s)		23.0			24.5			41.2			38.1	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	29.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	96.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	58.9%	ICU Level of Service	B
Analysis Period (min)	15		

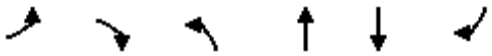
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	1020	700	210	390	160	660	80	410	20	50	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	1109	761	228	424	174	717	87	446	22	54	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2234	2071	60	3163	1853	310	65			533		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2234	2071	60	3163	1853	310	65			533		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	0	25	0	0	76	53			98		
cM capacity (veh/h)	0	29	1011	0	39	735	1537			1035		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	1902	826	1250	87
Volume Left	33	228	717	22
Volume Right	761	174	446	11
cSH	0	0	1537	1035
Volume to Capacity	Err	Err	0.47	0.02
Queue Length 95th (ft)	Err	Err	64	2
Control Delay (s)	Err	Err	8.1	2.3
Lane LOS	F	F	A	A
Approach Delay (s)	Err	Err	8.1	2.3
Approach LOS	F	F		

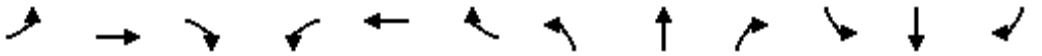
Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	222.5%	ICU Level of Service	H
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	250	560	440	1010	1190	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	1599	1805	3610	3529	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1787	1599	1805	3610	3529	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	255	571	449	1031	1214	112
RTOR Reduction (vph)	0	367	0	0	8	0
Lane Group Flow (vph)	255	204	449	1031	1318	0
Heavy Vehicles (%)	1%	1%	0%	0%	1%	1%
Turn Type		Perm	Prot			
Protected Phases	2		3	8	4	
Permitted Phases		2				
Actuated Green, G (s)	14.0	14.0	20.2	54.6	29.9	
Effective Green, g (s)	14.0	14.0	20.7	55.1	30.4	
Actuated g/C Ratio	0.18	0.18	0.27	0.71	0.39	
Clearance Time (s)	4.0	4.0	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	2.0	2.0	2.5	2.5	
Lane Grp Cap (vph)	324	290	485	2580	1391	
v/s Ratio Prot	c0.14		c0.25	0.29	c0.37	
v/s Ratio Perm		0.13				
v/c Ratio	0.79	0.70	0.93	0.40	0.95	
Uniform Delay, d1	30.1	29.6	27.5	4.4	22.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	11.0	6.2	23.3	0.1	13.4	
Delay (s)	41.2	35.8	50.8	4.5	36.0	
Level of Service	D	D	D	A	D	
Approach Delay (s)	37.5			18.5	36.0	
Approach LOS	D			B	D	

Intersection Summary			
HCM Average Control Delay	29.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	77.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	830	1000	180	630	140	520	910	240	310	970	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	5187	1615	3502	5187	1615	3502	5187	1615	3467	5136	1599
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3502	5187	1615	3502	5187	1615	3502	5187	1615	3467	5136	1599
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	103	856	1031	186	649	144	536	938	247	320	1000	144
RTOR Reduction (vph)	0	0	0	0	0	101	0	0	112	0	0	99
Lane Group Flow (vph)	103	856	1031	186	649	43	536	938	135	320	1000	45
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%
Turn Type	Prot		Free	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8			2			6
Actuated Green, G (s)	4.6	22.2	84.8	6.1	23.7	23.7	9.6	23.6	23.6	10.9	24.9	24.9
Effective Green, g (s)	6.1	23.7	84.8	7.6	25.2	25.2	11.1	25.1	25.1	12.4	26.4	26.4
Actuated g/C Ratio	0.07	0.28	1.00	0.09	0.30	0.30	0.13	0.30	0.30	0.15	0.31	0.31
Clearance Time (s)	5.5	5.5		5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Vehicle Extension (s)	2.0	3.0		2.0	3.0	3.0	2.0	3.0	3.0	2.0	3.0	3.0
Lane Grp Cap (vph)	252	1450	1615	314	1541	480	458	1535	478	507	1599	498
v/s Ratio Prot	0.03	0.17		0.05	0.13		c0.15	0.18		0.09	0.19	
v/s Ratio Perm			c0.64			0.03			0.08			0.03
v/c Ratio	0.41	0.59	0.64	0.59	0.42	0.09	1.17	0.61	0.28	0.63	0.63	0.09
Uniform Delay, d1	37.6	26.4	0.0	37.1	23.9	21.5	36.9	25.7	22.9	34.0	25.0	20.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.6	1.9	2.0	0.2	0.1	97.8	0.7	0.3	1.9	0.8	0.1
Delay (s)	38.0	27.0	1.9	39.1	24.1	21.6	134.7	26.4	23.3	35.9	25.7	20.8
Level of Service	D	C	A	D	C	C	F	C	C	D	C	C
Approach Delay (s)		14.6			26.6			59.7			27.5	
Approach LOS		B			C			E			C	

Intersection Summary			
HCM Average Control Delay	32.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	84.8	Sum of lost time (s)	4.0
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

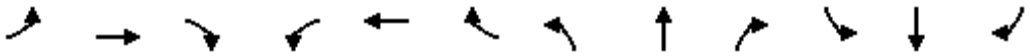
Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #4 Larch Rd/Tracy Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	3.207
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	576.3
Optimal Cycle:	0	Level Of Service:	F

Street Name:	Tracy Blvd						Larch Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 0	1	1 0	0 1	0	0 0	1! 0	0	0	1 0	0 1
Volume Module:												
Base Vol:	630	330	100	10	110	10	10	600	850	160	120	20
Growth 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
Initial Bse:	630	330	100	10	110	10	10	600	850	160	120	20
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	630	330	100	10	110	10	10	600	850	160	120	20
User 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
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	663	347	105	11	116	11	11	632	895	168	126	21
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	663	347	105	11	116	11	11	632	895	168	126	21
PCE 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
MLF 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
FinalVolume:	663	347	105	11	116	11	11	632	895	168	126	21
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.00	1.00	1.00	0.92	0.08	0.01	0.41	0.58	0.57	0.43	1.00
Final Sat.:	411	435	470	365	356	32	3	197	279	235	176	461
Capacity Analysis Module:												
Vol/Sat:	1.62	0.80	0.22	0.03	0.33	0.33	3.21	3.21	3.21	0.72	0.72	0.05
Crit Moves:	****					****	****			****		
Delay/Veh:	309.8	36.5	12.4	12.6	16.0	16.0	1014	1014	1014	30.3	30.3	10.8
Delay 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
AdjDel/Veh:	309.8	36.5	12.4	12.6	16.0	16.0	1014	1014	1014	30.3	30.3	10.8
LOS by Move:	F	E	B	B	C	C	F	F	F	D	D	B
ApproachDel:	196.6			15.8			1014.4			29.0		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	196.6			15.8			1014.4			29.0		
LOS by Appr:	F			C			F			D		
AllWayAvgQ:	34.0	3.1	0.3	0.0	0.5	0.5	134	134	133.6	2.2	2.2	0.0

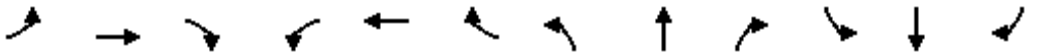
Note: Queue reported is the number of cars per lane.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	430	0	650	440	510	0	0	1080	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	
Lane Util. Factor					1.00		1.00	0.95			0.95	
Frt					0.92		1.00	1.00			0.98	
Flt Protected					0.98		0.95	1.00			1.00	
Satd. Flow (prot)					1695		1787	3574			3501	
Flt Permitted					0.98		0.95	1.00			1.00	
Satd. Flow (perm)					1695		1787	3574			3501	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	453	0	684	463	537	0	0	1137	179
RTOR Reduction (vph)	0	0	0	0	49	0	0	0	0	0	11	0
Lane Group Flow (vph)	0	0	0	0	1088	0	463	537	0	0	1305	0
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type				Perm			Prot					
Protected Phases					8		5	2			6	
Permitted Phases				8								
Actuated Green, G (s)					36.0		21.0	65.1			40.1	
Effective Green, g (s)					36.0		21.0	66.0			41.0	
Actuated g/C Ratio					0.33		0.19	0.60			0.37	
Clearance Time (s)					4.0		4.0	4.9			4.9	
Vehicle Extension (s)					3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)					555		341	2144			1305	
v/s Ratio Prot							c0.26	0.15			c0.37	
v/s Ratio Perm					0.64							
v/c Ratio					1.96		1.36	0.25			1.00	
Uniform Delay, d1					37.0		44.5	10.4			34.5	
Progression Factor					1.00		1.00	1.00			1.00	
Incremental Delay, d2					438.6		179.0	0.1			24.7	
Delay (s)					475.6		223.5	10.4			59.2	
Level of Service					F		F	B			E	
Approach Delay (s)		0.0			475.6			109.1			59.2	
Approach LOS		A			F			F			E	

Intersection Summary			
HCM Average Control Delay	210.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.43		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	133.4%	ICU Level of Service	H
Analysis Period (min)	15		

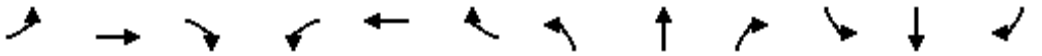
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	0	540	0	0	0	0	760	480	760	750	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		1.00						0.95		1.00	0.95	
Frt		0.90						0.94		1.00	1.00	
Flt Protected		0.99						1.00		0.95	1.00	
Satd. Flow (prot)		1672						3367		1787	3574	
Flt Permitted		0.99						1.00		0.95	1.00	
Satd. Flow (perm)		1672						3367		1787	3574	
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)	207	0	587	0	0	0	0	826	522	826	815	0
RTOR Reduction (vph)	0	97	0	0	0	0	0	96	0	0	0	0
Lane Group Flow (vph)	0	697	0	0	0	0	0	1252	0	826	815	0
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	1%	1%	1%	1%	1%	1%
Turn Type	Perm									Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4											
Actuated Green, G (s)		30.1						40.1		21.0	65.1	
Effective Green, g (s)		31.0						41.0		21.0	66.0	
Actuated g/C Ratio		0.30						0.39		0.20	0.63	
Clearance Time (s)		4.9						4.9		4.0	4.9	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		494						1315		357	2247	
v/s Ratio Prot								c0.37		c0.46	0.23	
v/s Ratio Perm		0.42										
v/c Ratio		1.41						0.95		2.31	0.36	
Uniform Delay, d1		37.0						31.1		42.0	9.4	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		196.5						14.9		599.9	0.1	
Delay (s)		233.5						45.9		641.9	9.5	
Level of Service		F						D		F	A	
Approach Delay (s)		233.5			0.0			45.9			327.8	
Approach LOS		F			A			D			F	

Intersection Summary			
HCM Average Control Delay	207.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.41		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	133.4%	ICU Level of Service	H
Analysis Period (min)	15		

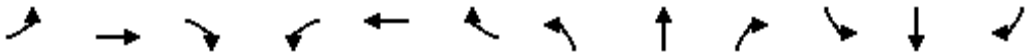
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	200	270	410	80	160	160	380	690	50	290	760	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.91		1.00	0.93		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3283		1787	3306		1787	3538		1787	3507	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	3283		1787	3306		1787	3538		1787	3507	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	206	278	423	82	165	165	392	711	52	299	784	113
RTOR Reduction (vph)	0	298	0	0	144	0	0	4	0	0	10	0
Lane Group Flow (vph)	206	403	0	82	186	0	392	759	0	299	887	0
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	14.0	18.2		7.0	11.2		19.0	34.7		17.6	33.3	
Effective Green, g (s)	14.5	19.2		7.5	12.2		19.5	35.2		18.1	33.8	
Actuated g/C Ratio	0.15	0.20		0.08	0.13		0.20	0.37		0.19	0.35	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	1.0	3.0		1.0	3.0		1.0	3.0		1.0	3.0	
Lane Grp Cap (vph)	273	657		140	420		363	1297		337	1235	
v/s Ratio Prot	c0.11	c0.12		0.05	0.06		c0.22	0.21		0.17	c0.25	
v/s Ratio Perm												
v/c Ratio	0.75	0.61		0.59	0.44		1.08	0.58		0.89	0.72	
Uniform Delay, d1	39.0	35.0		42.7	38.8		38.2	24.5		38.0	27.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.0	1.7		4.0	0.7		70.3	1.9		22.7	3.6	
Delay (s)	49.1	36.7		46.7	39.5		108.5	26.4		60.7	30.6	
Level of Service	D	D		D	D		F	C		E	C	
Approach Delay (s)		39.5			40.9			54.3			38.1	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM Average Control Delay	43.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	96.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.0%	ICU Level of Service	E
Analysis Period (min)	15		

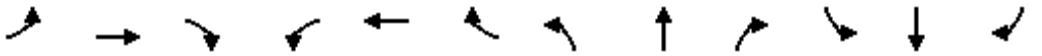
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	370	10	310	10	10	10	110	40	10	10	40	20
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	394	11	330	11	11	11	117	43	11	11	43	21
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	372	362	53	691	367	48	64			53		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	372	362	53	691	367	48	64			53		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	26	98	68	95	98	99	92			99		
cM capacity (veh/h)	535	520	1017	225	518	1027	1532			1559		

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	394	340	32	170	74
Volume Left	394	0	11	117	11
Volume Right	0	330	11	11	21
cSH	535	988	408	1532	1559
Volume to Capacity	0.74	0.34	0.08	0.08	0.01
Queue Length 95th (ft)	155	39	6	6	1
Control Delay (s)	28.2	10.6	14.6	5.4	1.1
Lane LOS	D	B	B	A	A
Approach Delay (s)	20.0		14.6	5.4	1.1
Approach LOS	C		B		

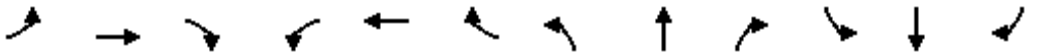
Intersection Summary				
Average Delay	16.0			
Intersection Capacity Utilization	49.3%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	400	70	40	110	50	80	230	30	230	290	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	3529		1805	3442		1805	1900	1615	1805	1900	1615
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1805	3529		1805	3442		1805	1900	1615	1805	1900	1615
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)	65	435	76	43	120	54	87	250	33	250	315	76
RTOR Reduction (vph)	0	16	0	0	41	0	0	0	20	0	0	25
Lane Group Flow (vph)	65	495	0	43	133	0	87	250	13	250	315	51
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	3.8	15.7		3.3	15.2		5.9	14.6	14.6	12.7	21.4	21.4
Effective Green, g (s)	4.3	16.2		3.8	15.7		6.4	15.1	15.1	13.2	21.9	21.9
Actuated g/C Ratio	0.07	0.25		0.06	0.24		0.10	0.23	0.23	0.21	0.34	0.34
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	1.0	3.0		1.0	3.0		1.0	2.0	2.0	1.0	2.0	2.0
Lane Grp Cap (vph)	121	889		107	840		180	446	379	371	647	550
v/s Ratio Prot	c0.04	c0.14		0.02	0.04		0.05	0.13		c0.14	c0.17	
v/s Ratio Perm									0.01			0.03
v/c Ratio	0.54	0.56		0.40	0.16		0.48	0.56	0.03	0.67	0.49	0.09
Uniform Delay, d1	29.0	20.9		29.2	19.1		27.4	21.7	19.0	23.6	16.8	14.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.3	0.8		0.9	0.1		0.7	1.0	0.0	3.8	0.2	0.0
Delay (s)	31.3	21.7		30.1	19.2		28.1	22.6	19.0	27.3	17.0	14.5
Level of Service	C	C		C	B		C	C	B	C	B	B
Approach Delay (s)		22.8			21.3			23.6			20.7	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	22.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	64.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		

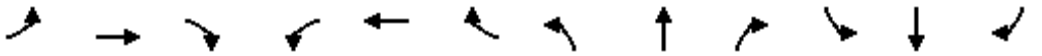
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	520	960	90	430	830	450	450	1780	320	470	1750	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	5187	1615	3502	5187	1615	3502	5187	1615	3502	5187	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3502	5187	1615	3502	5187	1615	3502	5187	1615	3502	5187	1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	536	990	93	443	856	464	464	1835	330	485	1804	155
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	81	0	0	41
Lane Group Flow (vph)	536	990	93	443	856	464	464	1835	249	485	1804	114
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot		Free	Prot		Free	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			Free			Free			4			8
Actuated Green, G (s)	22.0	33.9	145.4	20.4	32.3	145.4	18.0	50.1	50.1	19.0	51.1	51.1
Effective Green, g (s)	23.0	35.9	145.4	21.4	34.3	145.4	19.0	52.1	52.1	20.0	53.1	53.1
Actuated g/C Ratio	0.16	0.25	1.00	0.15	0.24	1.00	0.13	0.36	0.36	0.14	0.37	0.37
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	554	1281	1615	515	1224	1615	458	1859	579	482	1894	590
v/s Ratio Prot	c0.15	c0.19		0.13	0.17		0.13	c0.35		c0.14	0.35	
v/s Ratio Perm			0.06			c0.29			0.15			0.07
v/c Ratio	0.97	0.77	0.06	0.86	0.70	0.29	1.01	0.99	0.43	1.01	0.95	0.19
Uniform Delay, d1	60.8	51.0	0.0	60.5	50.8	0.0	63.2	46.3	35.4	62.7	44.9	31.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	29.8	3.0	0.1	13.7	1.8	0.4	45.4	17.7	0.5	42.5	11.4	0.2
Delay (s)	90.6	53.9	0.1	74.2	52.6	0.4	108.6	64.0	35.9	105.2	56.3	31.7
Level of Service	F	D	A	E	D	A	F	E	D	F	E	C
Approach Delay (s)		63.0			44.3			68.4			64.5	
Approach LOS		E			D			E			E	

Intersection Summary			
HCM Average Control Delay	61.2	HCM Level of Service	E
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	145.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	92.0%	ICU Level of Service	F
Analysis Period (min)	15		

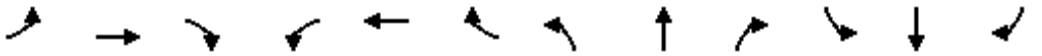
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	340	540	570	60	350	140	610	480	90	110	530	350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	3610	1615	3502	3610	1615	3502	3610	1615	3502	3610	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3502	3610	1615	3502	3610	1615	3502	3610	1615	3502	3610	1615
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	354	562	594	62	365	146	635	500	94	115	552	365
RTOR Reduction (vph)	0	0	306	0	0	117	0	0	48	0	0	124
Lane Group Flow (vph)	354	562	288	62	365	29	635	500	46	115	552	241
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	14.0	25.4	25.4	5.2	16.6	16.6	20.6	33.7	33.7	7.7	20.8	20.8
Effective Green, g (s)	14.5	26.9	26.9	5.7	18.1	18.1	21.1	35.2	35.2	8.2	22.3	22.3
Actuated g/C Ratio	0.16	0.29	0.29	0.06	0.20	0.20	0.23	0.38	0.38	0.09	0.24	0.24
Clearance Time (s)	4.5	5.5	5.5	4.5	5.5	5.5	4.5	5.5	5.5	4.5	5.5	5.5
Vehicle Extension (s)	2.0	2.5	2.5	2.0	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	552	1056	472	217	710	318	803	1381	618	312	875	391
v/s Ratio Prot	c0.10	0.16		0.02	0.10		c0.18	0.14		0.03	c0.15	
v/s Ratio Perm			c0.18			0.02			0.03			0.15
v/c Ratio	0.64	0.53	0.61	0.29	0.51	0.09	0.79	0.36	0.08	0.37	0.63	0.62
Uniform Delay, d1	36.3	27.3	28.0	41.2	33.0	30.2	33.4	20.4	18.1	39.5	31.2	31.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9	0.4	1.9	0.3	0.5	0.1	5.0	0.1	0.0	0.3	1.1	2.0
Delay (s)	38.2	27.7	29.9	41.5	33.5	30.3	38.4	20.4	18.1	39.7	32.3	33.1
Level of Service	D	C	C	D	C	C	D	C	B	D	C	C
Approach Delay (s)		31.0			33.5			29.5			33.4	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	31.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	92.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		

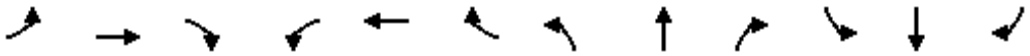
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	510	100	90	310	60	100	120	110	90	120	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.98		1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	3521		1787	3488		1787	1746		1805	1900	1615
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1805	3521		1787	3488		1787	1746		1805	1900	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	61	520	102	92	316	61	102	122	112	92	122	92
RTOR Reduction (vph)	0	15	0	0	14	0	0	30	0	0	0	73
Lane Group Flow (vph)	61	607	0	92	363	0	102	204	0	92	122	19
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases												4
Actuated Green, G (s)	4.2	21.7		6.6	24.1		6.9	13.1		6.6	12.8	12.8
Effective Green, g (s)	4.2	22.2		6.6	24.6		6.9	13.6		6.6	13.3	13.3
Actuated g/C Ratio	0.06	0.34		0.10	0.38		0.11	0.21		0.10	0.20	0.20
Clearance Time (s)	4.0	4.5		4.0	4.5		4.0	4.5		4.0	4.5	4.5
Vehicle Extension (s)	2.0	5.0		2.0	3.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	117	1203		181	1320		190	365		183	389	330
v/s Ratio Prot	0.03	c0.17		c0.05	0.10		c0.06	c0.12		0.05	0.06	
v/s Ratio Perm												0.01
v/c Ratio	0.52	0.50		0.51	0.28		0.54	0.56		0.50	0.31	0.06
Uniform Delay, d1	29.4	17.0		27.7	14.0		27.5	23.0		27.6	22.0	20.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.9	0.7		0.8	0.1		1.5	1.1		0.8	0.2	0.0
Delay (s)	31.4	17.7		28.5	14.1		29.0	24.1		28.4	22.1	20.8
Level of Service	C	B		C	B		C	C		C	C	C
Approach Delay (s)		18.9			16.9			25.6			23.6	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	20.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

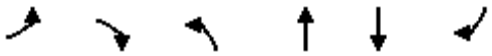
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	1040	740	180	410	52	690	171	430	19	100	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	1130	804	196	446	57	750	186	467	21	109	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2354	2309	114	3445	2080	420	120			653		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2354	2309	114	3445	2080	420	120			653		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	0	15	0	0	91	49			98		
cM capacity (veh/h)	0	19	944	0	26	638	1468			934		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	1967	698	1403	140
Volume Left	33	196	750	21
Volume Right	804	57	467	11
cSH	0	0	1468	934
Volume to Capacity	Err	Err	0.51	0.02
Queue Length 95th (ft)	Err	Err	76	2
Control Delay (s)	Err	Err	9.2	1.5
Lane LOS	F	F	A	A
Approach Delay (s)	Err	Err	9.2	1.5
Approach LOS	F	F		

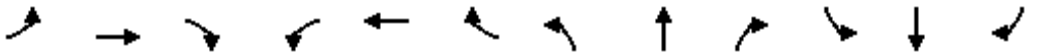
Intersection Summary				
Average Delay		Err		
Intersection Capacity Utilization		226.4%	ICU Level of Service	H
Analysis Period (min)		15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	240	340	280	1151	1270	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	1599	1805	3610	3539	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1787	1599	1805	3610	3539	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	250	354	292	1199	1323	94
RTOR Reduction (vph)	0	291	0	0	7	0
Lane Group Flow (vph)	250	63	292	1199	1410	0
Heavy Vehicles (%)	1%	1%	0%	0%	1%	1%
Turn Type		Perm	Prot			
Protected Phases	2		3	8	4	
Permitted Phases		2				
Actuated Green, G (s)	11.8	11.8	13.6	45.8	27.7	
Effective Green, g (s)	11.8	11.8	14.1	46.3	28.2	
Actuated g/C Ratio	0.18	0.18	0.21	0.70	0.43	
Clearance Time (s)	4.0	4.0	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	2.0	2.0	2.5	2.5	
Lane Grp Cap (vph)	319	285	385	2529	1510	
v/s Ratio Prot	c0.14		c0.16	0.33	c0.40	
v/s Ratio Perm		0.04				
v/c Ratio	0.78	0.22	0.76	0.47	0.93	
Uniform Delay, d1	25.9	23.2	24.4	4.4	18.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	11.0	0.1	7.4	0.1	10.9	
Delay (s)	37.0	23.4	31.8	4.5	28.9	
Level of Service	D	C	C	A	C	
Approach Delay (s)	29.0			9.9	28.9	
Approach LOS	C			A	C	

Intersection Summary			
HCM Average Control Delay	20.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	66.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	122	1020	1100	240	650	124	490	902	360	253	896	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	5187	1615	3502	5187	1615	3502	5187	1615	3467	5136	1599
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3502	5187	1615	3502	5187	1615	3502	5187	1615	3467	5136	1599
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	127	1062	1146	250	677	129	510	940	375	264	933	117
RTOR Reduction (vph)	0	0	0	0	0	93	0	0	92	0	0	80
Lane Group Flow (vph)	127	1062	1146	250	677	36	510	940	283	264	933	37
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%
Turn Type	Prot		Free	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8			2			6
Actuated Green, G (s)	6.4	30.0	110.0	6.0	29.6	29.6	18.9	42.5	42.5	9.5	33.1	33.1
Effective Green, g (s)	7.9	31.5	110.0	7.5	31.1	31.1	20.4	44.0	44.0	11.0	34.6	34.6
Actuated g/C Ratio	0.07	0.29	1.00	0.07	0.28	0.28	0.19	0.40	0.40	0.10	0.31	0.31
Clearance Time (s)	5.5	5.5		5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Vehicle Extension (s)	2.0	3.0		2.0	3.0	3.0	2.0	3.0	3.0	2.0	3.0	3.0
Lane Grp Cap (vph)	252	1485	1615	239	1467	457	649	2075	646	347	1616	503
v/s Ratio Prot	0.04	0.20		0.07	0.13		0.15	0.18		0.08	0.18	
v/s Ratio Perm			c0.71			0.02			0.17			0.02
v/c Ratio	0.50	0.72	0.71	1.05	0.46	0.08	0.79	0.45	0.44	0.76	0.58	0.07
Uniform Delay, d1	49.2	35.2	0.0	51.2	32.5	28.9	42.7	24.2	24.0	48.2	31.6	26.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	1.7	2.7	70.8	0.2	0.1	9.3	0.7	2.1	8.6	0.5	0.1
Delay (s)	49.7	36.9	2.7	122.0	32.8	29.0	52.0	24.9	26.1	56.8	32.1	26.5
Level of Service	D	D	A	F	C	C	D	C	C	E	C	C
Approach Delay (s)		20.8			53.4			32.7			36.5	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM Average Control Delay	32.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

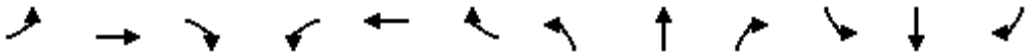
Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #4 Larch Rd/Tracy Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	3.881
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	668.7
Optimal Cycle:	0	Level Of Service:	F

Street Name:	Tracy Blvd						Larch Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 0	1	1 0	0 1	0	0 0	1! 0	0	0 1	0 0	1
Volume Module:												
Base Vol:	480	190	140	10	100	10	10	630	840	220	140	20
Growth 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
Initial Bse:	480	190	140	10	100	10	10	630	840	220	140	20
Added Vol:	12	201	0	35	149	0	0	0	9	0	0	48
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	492	391	140	45	249	10	10	630	849	220	140	68
User 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
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	518	412	147	47	262	11	11	663	894	232	147	72
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	518	412	147	47	262	11	11	663	894	232	147	72
PCE 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
MLF 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
FinalVolume:	518	412	147	47	262	11	11	663	894	232	147	72
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.00	1.00	1.00	0.96	0.04	0.01	0.42	0.57	0.61	0.39	1.00
Final Sat.:	356	375	403	350	355	14	3	171	230	230	146	417
Capacity Analysis Module:												
Vol/Sat:	1.45	1.10	0.37	0.14	0.74	0.74	3.88	3.88	3.88	1.01	1.01	0.17
Crit Moves:	****				****			****			****	
Delay/Veh:	244.5	106	16.6	14.5	35.2	35.2	1320	1320	1320	79.2	79.2	13.0
Delay 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
AdjDel/Veh:	244.5	106	16.6	14.5	35.2	35.2	1320	1320	1320	79.2	79.2	13.0
LOS by Move:	F	F	C	B	E	E	F	F	F	F	F	B
ApproachDel:	160.4			32.1			1320.3			68.7		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	160.4			32.1			1320.3			68.7		
LOS by Appr:	F			D			F			F		
AllWayAvgQ:	22.9	9.8	0.6	0.2	2.3	2.3	147	147	146.8	7.0	7.0	0.2

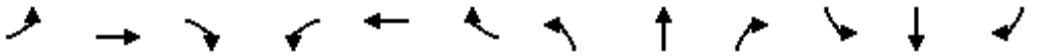
Note: Queue reported is the number of cars per lane.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	470	0	478	360	645	0	0	1243	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	
Lane Util. Factor					1.00		1.00	0.95			0.95	
Frt					0.93		1.00	1.00			0.98	
Flt Protected					0.98		0.95	1.00			1.00	
Satd. Flow (prot)					1677		1752	3539			3477	
Flt Permitted					0.98		0.95	1.00			1.00	
Satd. Flow (perm)					1677		1752	3539			3477	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	500	0	509	383	686	0	0	1322	176
RTOR Reduction (vph)	0	0	0	0	34	0	0	0	0	0	9	0
Lane Group Flow (vph)	0	0	0	0	975	0	383	686	0	0	1489	0
Heavy Vehicles (%)	0%	0%	0%	3%	3%	3%	3%	2%	3%	2%	2%	2%
Turn Type				Perm			Prot					
Protected Phases					8		5	2			6	
Permitted Phases				8								
Actuated Green, G (s)					36.0		21.0	65.1			40.1	
Effective Green, g (s)					36.0		21.0	66.0			41.0	
Actuated g/C Ratio					0.33		0.19	0.60			0.37	
Clearance Time (s)					4.0		4.0	4.9			4.9	
Vehicle Extension (s)					3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)					549		334	2123			1296	
v/s Ratio Prot							c0.22	0.19			c0.43	
v/s Ratio Perm					0.58							
v/c Ratio					1.78		1.15	0.32			1.15	
Uniform Delay, d1					37.0		44.5	10.9			34.5	
Progression Factor					1.00		1.00	1.00			1.00	
Incremental Delay, d2					356.8		95.2	0.1			76.3	
Delay (s)					393.8		139.7	11.0			110.8	
Level of Service					F		F	B			F	
Approach Delay (s)		0.0			393.8			57.1			110.8	
Approach LOS		A			F			E			F	

Intersection Summary			
HCM Average Control Delay	174.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.38		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	131.0%	ICU Level of Service	H
Analysis Period (min)	15		

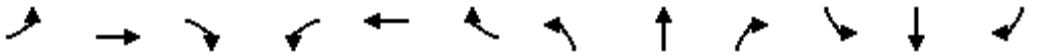
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	126	0	520	0	0	0	0	879	450	781	933	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		1.00						0.95		1.00	0.95	
Frt		0.89						0.95		1.00	1.00	
Flt Protected		0.99						1.00		0.95	1.00	
Satd. Flow (prot)		1628						3359		1787	3574	
Flt Permitted		0.99						1.00		0.95	1.00	
Satd. Flow (perm)		1628						3359		1787	3574	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	133	0	547	0	0	0	0	925	474	822	982	0
RTOR Reduction (vph)	0	98	0	0	0	0	0	62	0	0	0	0
Lane Group Flow (vph)	0	582	0	0	0	0	0	1337	0	822	982	0
Heavy Vehicles (%)	3%	3%	3%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Turn Type	Perm									Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4											
Actuated Green, G (s)		30.1						40.1		21.0	65.1	
Effective Green, g (s)		31.0						41.0		21.0	66.0	
Actuated g/C Ratio		0.30						0.39		0.20	0.63	
Clearance Time (s)		4.9						4.9		4.0	4.9	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		481						1312		357	2247	
v/s Ratio Prot								c0.40		c0.46	0.27	
v/s Ratio Perm		0.36										
v/c Ratio		1.21						1.02		2.30	0.44	
Uniform Delay, d1		37.0						32.0		42.0	10.0	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		112.6						29.7		594.9	0.1	
Delay (s)		149.6						61.7		636.9	10.1	
Level of Service		F						E		F	B	
Approach Delay (s)		149.6			0.0			61.7			295.7	
Approach LOS		F			A			E			F	

Intersection Summary			
HCM Average Control Delay	185.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	131.0%	ICU Level of Service	H
Analysis Period (min)	15		

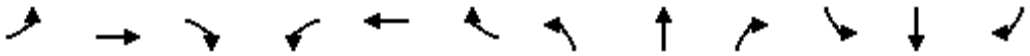
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	224	430	410	90	260	182	370	779	120	269	833	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.93		1.00	0.94		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3346		1787	3353		1787	3503		1787	3510	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	3346		1787	3353		1787	3503		1787	3510	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	236	453	432	95	274	192	389	820	126	283	877	119
RTOR Reduction (vph)	0	174	0	0	143	0	0	11	0	0	10	0
Lane Group Flow (vph)	236	711	0	95	323	0	389	935	0	283	986	0
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	15.2	22.9		7.7	15.4		19.0	29.8		17.1	27.9	
Effective Green, g (s)	15.7	23.9		8.2	16.4		19.5	30.3		17.6	28.4	
Actuated g/C Ratio	0.16	0.25		0.09	0.17		0.20	0.32		0.18	0.30	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	1.0	3.0		1.0	3.0		1.0	3.0		1.0	3.0	
Lane Grp Cap (vph)	295	833		153	573		363	1106		328	1038	
v/s Ratio Prot	c0.13	c0.21		0.05	0.10		c0.22	0.27		0.16	c0.28	
v/s Ratio Perm												
v/c Ratio	0.80	0.85		0.62	0.56		1.07	0.85		0.86	0.95	
Uniform Delay, d1	38.6	34.4		42.4	36.5		38.2	30.7		38.0	33.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	13.6	8.5		5.5	1.3		67.6	8.0		19.6	18.2	
Delay (s)	52.2	42.8		47.9	37.8		105.9	38.6		57.6	51.3	
Level of Service	D	D		D	D		F	D		E	D	
Approach Delay (s)		44.8			39.5			58.2			52.7	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM Average Control Delay	50.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	96.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.5%	ICU Level of Service	E
Analysis Period (min)	15		

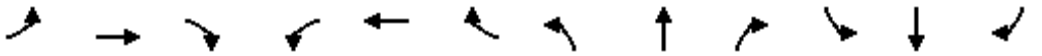
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	410	10	385	10	10	10	158	40	10	10	40	50
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	446	11	418	11	11	11	172	43	11	11	43	54
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	501	490	71	909	512	49	98			54		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	501	490	71	909	512	49	98			54		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	97	58	92	97	99	88			99		
cM capacity (veh/h)	424	422	995	133	411	1025	1489			1557		

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	446	429	33	226	109
Volume Left	446	0	11	172	11
Volume Right	0	418	11	11	54
cSH	424	962	275	1489	1557
Volume to Capacity	1.05	0.45	0.12	0.12	0.01
Queue Length 95th (ft)	359	58	10	10	1
Control Delay (s)	89.4	11.7	19.9	6.1	0.8
Lane LOS	F	B	C	A	A
Approach Delay (s)	51.3		19.9	6.1	0.8
Approach LOS	F		C		

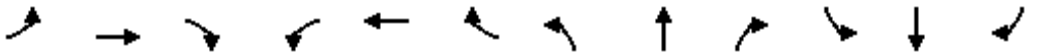
Intersection Summary				
Average Delay	37.8			
Intersection Capacity Utilization	54.2%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	557	50	50	149	60	100	297	50	270	327	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	3566		1805	3455		1805	1900	1615	1805	1900	1615
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1805	3566		1805	3455		1805	1900	1615	1805	1900	1615
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)	109	605	54	54	162	65	109	323	54	293	355	87
RTOR Reduction (vph)	0	7	0	0	49	0	0	0	25	0	0	25
Lane Group Flow (vph)	109	652	0	54	178	0	109	323	29	293	355	62
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	6.8	19.5		3.8	16.5		6.8	17.5	17.5	15.3	26.0	26.0
Effective Green, g (s)	7.3	20.0		4.3	17.0		7.3	18.0	18.0	15.8	26.5	26.5
Actuated g/C Ratio	0.10	0.27		0.06	0.23		0.10	0.24	0.24	0.21	0.36	0.36
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	1.0	3.0		1.0	3.0		1.0	2.0	2.0	1.0	2.0	2.0
Lane Grp Cap (vph)	178	962		105	793		178	462	392	385	679	578
v/s Ratio Prot	c0.06	c0.18		0.03	0.05		0.06	c0.17		c0.16	0.19	
v/s Ratio Perm									0.02			0.04
v/c Ratio	0.61	0.68		0.51	0.22		0.61	0.70	0.07	0.76	0.52	0.11
Uniform Delay, d1	32.0	24.2		33.9	23.2		32.0	25.6	21.6	27.4	18.8	15.9
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	4.3	1.9		1.8	0.1		4.3	3.7	0.0	7.8	0.3	0.0
Delay (s)	36.4	26.1		35.7	23.3		36.4	29.3	21.7	35.2	19.1	15.9
Level of Service	D	C		D	C		D	C	C	D	B	B
Approach Delay (s)		27.5			25.7			30.0			25.1	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	27.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	74.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		

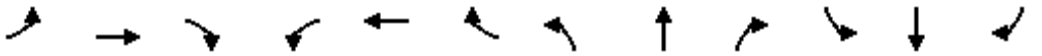
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	605	1200	220	480	740	364	130	1643	310	463	1564	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	5187	1615	3502	5187	1615	3502	5187	1615	3502	5187	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3502	5187	1615	3502	5187	1615	3502	5187	1615	3502	5187	1615
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	630	1250	229	500	771	379	135	1711	323	482	1629	97
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	86	0	0	29
Lane Group Flow (vph)	630	1250	229	500	771	379	135	1711	237	482	1629	68
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot		Free	Prot		Free	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			Free			Free			4			8
Actuated Green, G (s)	25.0	39.5	150.0	21.0	35.5	150.0	8.8	48.5	48.5	19.0	58.7	58.7
Effective Green, g (s)	26.0	41.5	150.0	22.0	37.5	150.0	9.8	50.5	50.5	20.0	60.7	60.7
Actuated g/C Ratio	0.17	0.28	1.00	0.15	0.25	1.00	0.07	0.34	0.34	0.13	0.40	0.40
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	607	1435	1615	514	1297	1615	229	1746	544	467	2099	654
v/s Ratio Prot	c0.18	c0.24		0.14	0.15		0.04	c0.33		c0.14	0.31	
v/s Ratio Perm			0.14			0.23			0.15			0.04
v/c Ratio	1.04	0.87	0.14	0.97	0.59	0.23	0.59	0.98	0.44	1.03	0.78	0.10
Uniform Delay, d1	62.0	51.7	0.0	63.7	49.6	0.0	68.1	49.2	38.7	65.0	38.8	27.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	46.7	6.1	0.2	32.6	0.7	0.3	3.8	17.3	2.5	50.2	2.9	0.3
Delay (s)	108.7	57.8	0.2	96.3	50.3	0.3	72.0	66.5	41.2	115.2	41.6	28.1
Level of Service	F	E	A	F	D	A	E	E	D	F	D	C
Approach Delay (s)		66.7			52.7			63.1			57.1	
Approach LOS		E			D			E			E	

Intersection Summary			
HCM Average Control Delay	60.3	HCM Level of Service	E
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		

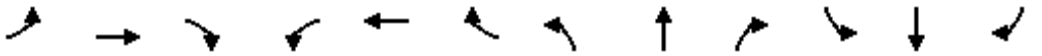
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	369	620	610	190	370	175	590	676	100	211	804	506
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	3610	1615	3502	3610	1615	3502	3610	1615	3502	3610	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3502	3610	1615	3502	3610	1615	3502	3610	1615	3502	3610	1615
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	384	646	635	198	385	182	615	704	104	220	838	527
RTOR Reduction (vph)	0	0	230	0	0	124	0	0	49	0	0	133
Lane Group Flow (vph)	384	646	405	198	385	58	615	704	55	220	838	394
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	15.5	38.4	38.4	10.6	33.5	33.5	15.5	29.7	29.7	11.3	25.5	25.5
Effective Green, g (s)	16.0	39.9	39.9	11.1	35.0	35.0	16.0	31.2	31.2	11.8	27.0	27.0
Actuated g/C Ratio	0.15	0.36	0.36	0.10	0.32	0.32	0.15	0.28	0.28	0.11	0.25	0.25
Clearance Time (s)	4.5	5.5	5.5	4.5	5.5	5.5	4.5	5.5	5.5	4.5	5.5	5.5
Vehicle Extension (s)	2.0	2.5	2.5	2.0	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	509	1309	586	353	1149	514	509	1024	458	376	886	396
v/s Ratio Prot	c0.11	0.18		0.06	0.11		c0.18	0.20		0.06	0.23	
v/s Ratio Perm			c0.25			0.04			0.03			c0.24
v/c Ratio	0.75	0.49	0.69	0.56	0.34	0.11	1.21	0.69	0.12	0.59	0.95	1.00
Uniform Delay, d1	45.1	27.2	29.8	47.1	28.6	26.5	47.0	35.1	29.2	46.8	40.8	41.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.6	1.3	6.6	1.2	0.8	0.4	111.0	1.5	0.0	1.5	18.1	43.7
Delay (s)	50.7	28.5	36.4	48.3	29.4	27.0	158.0	36.6	29.3	48.3	58.9	85.1
Level of Service	D	C	D	D	C	C	F	D	C	D	E	F
Approach Delay (s)		36.6			33.7			88.5			66.2	
Approach LOS		D			C			F			E	

Intersection Summary			
HCM Average Control Delay	58.4	HCM Level of Service	E
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		

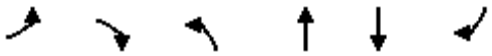
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	596	110	120	358	44	130	159	120	83	144	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.98		1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1787	3490		1805	3551		1787	1760		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1787	3490		1805	3551		1787	1760		1770	1863	1583
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)	87	648	120	130	389	48	141	173	130	90	157	109
RTOR Reduction (vph)	0	13	0	0	8	0	0	31	0	0	0	83
Lane Group Flow (vph)	87	755	0	130	429	0	141	272	0	90	157	26
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	1%	1%	1%	2%	2%	2%
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases												4
Actuated Green, G (s)	7.5	40.9		9.6	43.0		11.9	20.3		8.2	16.6	16.6
Effective Green, g (s)	7.5	41.4		9.6	43.5		11.9	20.8		8.2	17.1	17.1
Actuated g/C Ratio	0.08	0.43		0.10	0.45		0.12	0.22		0.09	0.18	0.18
Clearance Time (s)	4.0	4.5		4.0	4.5		4.0	4.5		4.0	4.5	4.5
Vehicle Extension (s)	2.0	5.0		2.0	3.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	140	1505		181	1609		222	381		151	332	282
v/s Ratio Prot	0.05	c0.22		c0.07	0.12		c0.08	c0.15		0.05	0.08	
v/s Ratio Perm												0.02
v/c Ratio	0.62	0.50		0.72	0.27		0.64	0.72		0.60	0.47	0.09
Uniform Delay, d1	42.9	19.8		41.9	16.3		40.0	34.9		42.3	35.4	33.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	6.0	1.2		10.7	0.4		4.3	5.2		4.2	0.4	0.1
Delay (s)	48.9	21.0		52.6	16.7		44.3	40.1		46.5	35.8	33.0
Level of Service	D	C		D	B		D	D		D	D	C
Approach Delay (s)		23.9			25.0			41.4			37.6	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	29.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	96.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		

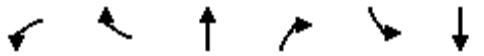
c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	184	248	220	120	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	200	270	239	130	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	909	130	130			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	909	130	130			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	78	81			
cM capacity (veh/h)	249	919	1455			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	200	270	239	130	0
Volume Left	0	270	0	0	0
Volume Right	200	0	0	0	0
cSH	919	1455	1700	1700	1700
Volume to Capacity	0.22	0.19	0.14	0.08	0.00
Queue Length 95th (ft)	21	17	0	0	0
Control Delay (s)	10.0	8.0	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	10.0	4.3		0.0	
Approach LOS	B				

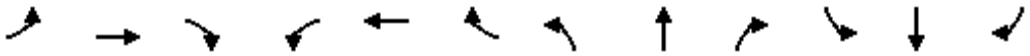
Intersection Summary				
Average Delay	5.0			
Intersection Capacity Utilization	38.5%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	69	0	160	93	0	60
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	75	0	174	101	0	65
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	290	224			275	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	290	224			275	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	89	100			100	
cM capacity (veh/h)	701	815			1288	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	75	275	65
Volume Left	75	0	0
Volume Right	0	101	0
cSH	701	1700	1288
Volume to Capacity	0.11	0.16	0.00
Queue Length 95th (ft)	9	0	0
Control Delay (s)	10.8	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.8	0.0	0.0
Approach LOS	B		

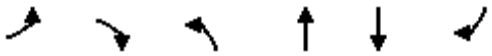
Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	24.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	1020	700	210	390	470	660	237	410	142	138	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	1109	761	228	424	511	717	258	446	154	150	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	3102	2602	155	3695	2385	480	161			703		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	3102	2602	155	3695	2385	480	161			703		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	0	15	0	0	13	49			83		
cM capacity (veh/h)	0	10	896	0	14	590	1418			894		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	1902	1163	1421	315
Volume Left	33	228	717	154
Volume Right	761	511	446	11
cSH	0	0	1418	894
Volume to Capacity	Err	Err	0.51	0.17
Queue Length 95th (ft)	Err	Err	74	16
Control Delay (s)	Err	Err	9.4	5.8
Lane LOS	F	F	A	A
Approach Delay (s)	Err	Err	9.4	5.8
Approach LOS	F	F		

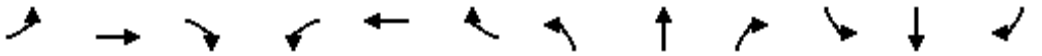
Intersection Summary				
Average Delay	Err			
Intersection Capacity Utilization	262.1%	ICU Level of Service	H	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	250	560	440	1167	1278	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	1599	1805	3610	3532	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1787	1599	1805	3610	3532	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	255	571	449	1191	1304	112
RTOR Reduction (vph)	0	364	0	0	8	0
Lane Group Flow (vph)	255	207	449	1191	1408	0
Heavy Vehicles (%)	1%	1%	0%	0%	1%	1%
Turn Type		Perm	Prot			
Protected Phases	2		3	8	4	
Permitted Phases		2				
Actuated Green, G (s)	14.1	14.1	20.2	55.3	30.6	
Effective Green, g (s)	14.1	14.1	20.7	55.8	31.1	
Actuated g/C Ratio	0.18	0.18	0.27	0.72	0.40	
Clearance Time (s)	4.0	4.0	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	2.0	2.0	2.5	2.5	
Lane Grp Cap (vph)	323	289	480	2586	1410	
v/s Ratio Prot	c0.14		c0.25	0.33	c0.40	
v/s Ratio Perm		0.13				
v/c Ratio	0.79	0.71	0.94	0.46	1.00	
Uniform Delay, d1	30.5	30.0	27.9	4.7	23.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	11.2	6.8	25.4	0.1	23.5	
Delay (s)	41.7	36.8	53.3	4.8	46.9	
Level of Service	D	D	D	A	D	
Approach Delay (s)	38.3			18.1	46.9	
Approach LOS	D			B	D	

Intersection Summary			
HCM Average Control Delay	32.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	77.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	104	830	1000	180	630	148	520	1031	240	314	1037	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	5187	1615	3502	5187	1615	3502	5187	1615	3467	5136	1599
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3502	5187	1615	3502	5187	1615	3502	5187	1615	3467	5136	1599
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	107	856	1031	186	649	153	536	1063	247	324	1069	146
RTOR Reduction (vph)	0	0	0	0	0	108	0	0	110	0	0	98
Lane Group Flow (vph)	107	856	1031	186	649	45	536	1063	137	324	1069	48
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%
Turn Type	Prot		Free	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8			2			6
Actuated Green, G (s)	4.6	22.5	87.2	6.1	24.0	24.0	9.6	25.6	25.6	11.0	27.0	27.0
Effective Green, g (s)	6.1	24.0	87.2	7.6	25.5	25.5	11.1	27.1	27.1	12.5	28.5	28.5
Actuated g/C Ratio	0.07	0.28	1.00	0.09	0.29	0.29	0.13	0.31	0.31	0.14	0.33	0.33
Clearance Time (s)	5.5	5.5		5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Vehicle Extension (s)	2.0	3.0		2.0	3.0	3.0	2.0	3.0	3.0	2.0	3.0	3.0
Lane Grp Cap (vph)	245	1428	1615	305	1517	472	446	1612	502	497	1679	523
v/s Ratio Prot	0.03	0.17		0.05	0.13		c0.15	0.20		0.09	0.21	
v/s Ratio Perm			c0.64			0.03			0.09			0.03
v/c Ratio	0.44	0.60	0.64	0.61	0.43	0.09	1.20	0.66	0.27	0.65	0.64	0.09
Uniform Delay, d1	38.9	27.4	0.0	38.4	24.9	22.5	38.1	26.0	22.6	35.3	24.9	20.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.7	1.9	2.4	0.2	0.1	110.6	1.0	0.3	2.3	0.8	0.1
Delay (s)	39.4	28.1	1.9	40.7	25.1	22.5	148.6	27.0	22.9	37.6	25.7	20.4
Level of Service	D	C	A	D	C	C	F	C	C	D	C	C
Approach Delay (s)		15.2			27.7			61.8			27.7	
Approach LOS		B			C			E			C	

Intersection Summary			
HCM Average Control Delay	33.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	87.2	Sum of lost time (s)	4.0
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

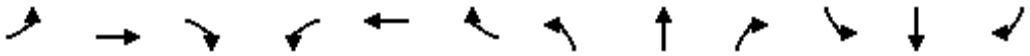
Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #4 Larch Rd/Tracy Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	4.211
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	986.1
Optimal Cycle:	0	Level Of Service:	F

Street Name:	Tracy Blvd						Larch Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 0	1	1 0	0 1	0	0 0	1! 0	0	0	1 0	0 1
Volume Module:												
Base Vol:	630	330	100	10	110	10	10	600	850	160	120	20
Growth 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
Initial Bse:	630	330	100	10	110	10	10	600	850	160	120	20
Added Vol:	310	923	0	52	420	0	0	0	122	0	0	93
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	940	1253	100	62	530	10	10	600	972	160	120	113
User 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
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	989	1319	105	65	558	11	11	632	1023	168	126	119
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	989	1319	105	65	558	11	11	632	1023	168	126	119
PCE 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
MLF 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
FinalVolume:	989	1319	105	65	558	11	11	632	1023	168	126	119
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.00	1.00	1.00	0.98	0.02	0.01	0.38	0.61	0.57	0.43	1.00
Final Sat.:	346	364	389	355	371	7	2	150	243	209	157	405
Capacity Analysis Module:												
Vol/Sat:	2.86	3.63	0.27	0.18	1.51	1.51	4.21	4.21	4.21	0.81	0.81	0.29
Crit Moves:	****					****		****		****		
Delay/Veh:	863.3	1206	15.2	15.0	265	265.3	1467	1467	1467	42.9	42.9	15.2
Delay 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
AdjDel/Veh:	863.3	1206	15.2	15.0	265	265.3	1467	1467	1467	42.9	42.9	15.2
LOS by Move:	F	F	C	B	F	F	F	F	F	E	E	C
ApproachDel:	1013.5			239.5			1466.8			34.9		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	1013.5			239.5			1466.8			34.9		
LOS by Appr:	F			F			F			D		
AllWayAvgQ:	81.7	121	0.4	0.2	26.5	26.5	160	160	159.8	3.1	3.1	0.4

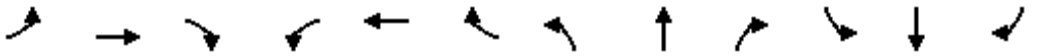
Note: Queue reported is the number of cars per lane.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	430	0	1376	440	1017	0	0	1559	233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	
Lane Util. Factor					1.00		1.00	0.95			0.95	
Frt					0.90		1.00	1.00			0.98	
Flt Protected					0.99		0.95	1.00			1.00	
Satd. Flow (prot)					1668		1787	3574			3505	
Flt Permitted					0.99		0.95	1.00			1.00	
Satd. Flow (perm)					1668		1787	3574			3505	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	453	0	1448	463	1071	0	0	1641	245
RTOR Reduction (vph)	0	0	0	0	69	0	0	0	0	0	11	0
Lane Group Flow (vph)	0	0	0	0	1832	0	463	1071	0	0	1875	0
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type				Perm			Prot					
Protected Phases					8		5	2			6	
Permitted Phases				8								
Actuated Green, G (s)					36.0		21.0	65.1			40.1	
Effective Green, g (s)					36.0		21.0	66.0			41.0	
Actuated g/C Ratio					0.33		0.19	0.60			0.37	
Clearance Time (s)					4.0		4.0	4.9			4.9	
Vehicle Extension (s)					3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)					546		341	2144			1306	
v/s Ratio Prot							c0.26	0.30			c0.54	
v/s Ratio Perm					1.10							
v/c Ratio					3.36		1.36	0.50			1.44	
Uniform Delay, d1					37.0		44.5	12.6			34.5	
Progression Factor					1.00		1.00	1.00			1.00	
Incremental Delay, d2					1064.9		179.0	0.2			200.6	
Delay (s)					1101.9		223.5	12.8			235.1	
Level of Service					F		F	B			F	
Approach Delay (s)		0.0			1101.9			76.4			235.1	
Approach LOS		A			F			E			F	

Intersection Summary			
HCM Average Control Delay	499.0	HCM Level of Service	F
HCM Volume to Capacity ratio	2.12		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	193.5%	ICU Level of Service	H
Analysis Period (min)	15		

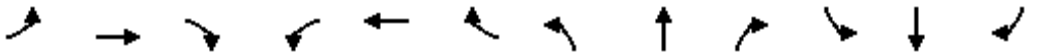
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	349	0	540	0	0	0	0	1107	480	1045	944	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		1.00						0.95		1.00	0.95	
Frt		0.92						0.95		1.00	1.00	
Flt Protected		0.98						1.00		0.95	1.00	
Satd. Flow (prot)		1694						3412		1787	3574	
Flt Permitted		0.98						1.00		0.95	1.00	
Satd. Flow (perm)		1694						3412		1787	3574	
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)	379	0	587	0	0	0	0	1203	522	1136	1026	0
RTOR Reduction (vph)	0	53	0	0	0	0	0	46	0	0	0	0
Lane Group Flow (vph)	0	913	0	0	0	0	0	1679	0	1136	1026	0
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	1%	1%	1%	1%	1%	1%
Turn Type	Perm									Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4											
Actuated Green, G (s)		30.1						40.1		21.0	65.1	
Effective Green, g (s)		31.0						41.0		21.0	66.0	
Actuated g/C Ratio		0.30						0.39		0.20	0.63	
Clearance Time (s)		4.9						4.9		4.0	4.9	
Vehicle Extension (s)		3.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		500						1332		357	2247	
v/s Ratio Prot								c0.49		c0.64	0.29	
v/s Ratio Perm		0.54										
v/c Ratio		1.83						1.26		3.18	0.46	
Uniform Delay, d1		37.0						32.0		42.0	10.2	
Progression Factor		1.00						1.00		1.00	1.00	
Incremental Delay, d2		379.6						123.3		989.2	0.1	
Delay (s)		416.6						155.3		1031.2	10.3	
Level of Service		F						F		F	B	
Approach Delay (s)		416.6			0.0			155.3			546.7	
Approach LOS		F			A			F			F	

Intersection Summary			
HCM Average Control Delay	381.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.88		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	193.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	208	270	410	80	160	184	380	960	50	303	911	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.91		1.00	0.92		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3283		1787	3287		1787	3548		1787	3514	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	3283		1787	3287		1787	3548		1787	3514	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	214	278	423	82	165	190	392	990	52	312	939	118
RTOR Reduction (vph)	0	296	0	0	166	0	0	3	0	0	8	0
Lane Group Flow (vph)	214	405	0	82	189	0	392	1039	0	312	1049	0
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	14.3	18.6		7.0	11.3		19.0	33.9		18.0	32.9	
Effective Green, g (s)	14.8	19.6		7.5	12.3		19.5	34.4		18.5	33.4	
Actuated g/C Ratio	0.15	0.20		0.08	0.13		0.20	0.36		0.19	0.35	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	1.0	3.0		1.0	3.0		1.0	3.0		1.0	3.0	
Lane Grp Cap (vph)	278	670		140	421		363	1271		344	1223	
v/s Ratio Prot	c0.12	c0.12		0.05	0.06		c0.22	0.29		0.17	c0.30	
v/s Ratio Perm												
v/c Ratio	0.77	0.60		0.59	0.45		1.08	0.82		0.91	0.86	
Uniform Delay, d1	39.0	34.7		42.7	38.7		38.2	27.9		37.9	29.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.0	1.5		4.0	0.8		70.3	5.9		25.9	7.9	
Delay (s)	49.9	36.2		46.7	39.5		108.5	33.9		63.8	37.0	
Level of Service	D	D		D	D		F	C		E	D	
Approach Delay (s)		39.4			40.8			54.3			43.1	
Approach LOS		D			D			D			D	

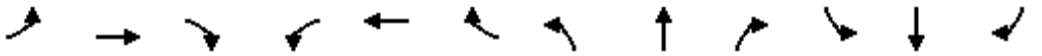
Intersection Summary			
HCM Average Control Delay	45.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	96.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	88.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	370	10	362	10	10	10	203	40	10	10	40	20
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	394	11	385	11	11	11	216	43	11	11	43	21
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	570	560	53	945	565	48	64			53		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	570	560	53	945	565	48	64			53		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	97	62	92	97	99	86			99		
cM capacity (veh/h)	373	374	1017	132	373	1027	1532			1559		

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	394	396	32	269	74
Volume Left	394	0	11	216	11
Volume Right	0	385	11	11	21
cSH	373	972	267	1532	1559
Volume to Capacity	1.06	0.41	0.12	0.14	0.01
Queue Length 95th (ft)	338	50	10	12	1
Control Delay (s)	96.2	11.2	20.3	6.4	1.1
Lane LOS	F	B	C	A	A
Approach Delay (s)	53.6		20.3	6.4	1.1
Approach LOS	F		C		

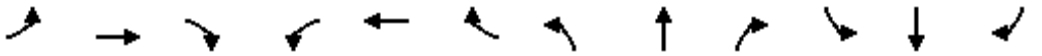
Intersection Summary				
Average Delay	38.4			
Intersection Capacity Utilization	54.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	410	70	40	127	50	80	301	30	230	330	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	3531		1805	3458		1805	1900	1615	1805	1900	1615
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1805	3531		1805	3458		1805	1900	1615	1805	1900	1615
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)	65	446	76	43	138	54	87	327	33	250	359	76
RTOR Reduction (vph)	0	15	0	0	41	0	0	0	15	0	0	22
Lane Group Flow (vph)	65	507	0	43	151	0	87	327	18	250	359	54
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	3.8	16.0		3.4	15.6		6.0	17.3	17.3	12.9	24.2	24.2
Effective Green, g (s)	4.3	16.5		3.9	16.1		6.5	17.8	17.8	13.4	24.7	24.7
Actuated g/C Ratio	0.06	0.24		0.06	0.24		0.10	0.26	0.26	0.20	0.37	0.37
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	1.0	3.0		1.0	3.0		1.0	2.0	2.0	1.0	2.0	2.0
Lane Grp Cap (vph)	115	862		104	824		174	500	425	358	694	590
v/s Ratio Prot	c0.04	c0.14		0.02	0.04		0.05	c0.17		c0.14	0.19	
v/s Ratio Perm									0.01			0.03
v/c Ratio	0.57	0.59		0.41	0.18		0.50	0.65	0.04	0.70	0.52	0.09
Uniform Delay, d1	30.7	22.6		30.7	20.5		29.0	22.2	18.6	25.2	16.8	14.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.8	1.0		1.0	0.1		0.8	2.3	0.0	4.7	0.3	0.0
Delay (s)	34.5	23.6		31.7	20.6		29.8	24.5	18.6	30.0	17.1	14.1
Level of Service	C	C		C	C		C	C	B	C	B	B
Approach Delay (s)		24.8			22.7			25.1			21.4	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	23.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	67.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		

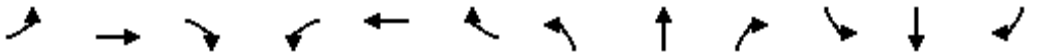
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	529	960	90	430	830	458	450	1844	320	475	1785	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	5187	1615	3502	5187	1615	3502	5187	1615	3502	5187	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3502	5187	1615	3502	5187	1615	3502	5187	1615	3502	5187	1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	545	990	93	443	856	472	464	1901	330	490	1840	160
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	78	0	0	41
Lane Group Flow (vph)	545	990	93	443	856	472	464	1901	252	490	1840	119
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot		Free	Prot		Free	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			Free			Free			4			8
Actuated Green, G (s)	22.0	33.9	145.4	20.4	32.3	145.4	18.0	50.1	50.1	19.0	51.1	51.1
Effective Green, g (s)	23.0	35.9	145.4	21.4	34.3	145.4	19.0	52.1	52.1	20.0	53.1	53.1
Actuated g/C Ratio	0.16	0.25	1.00	0.15	0.24	1.00	0.13	0.36	0.36	0.14	0.37	0.37
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	554	1281	1615	515	1224	1615	458	1859	579	482	1894	590
v/s Ratio Prot	c0.16	c0.19		0.13	0.17		0.13	c0.37		c0.14	0.35	
v/s Ratio Perm			0.06			c0.29			0.16			0.07
v/c Ratio	0.98	0.77	0.06	0.86	0.70	0.29	1.01	1.02	0.43	1.02	0.97	0.20
Uniform Delay, d1	61.0	51.0	0.0	60.5	50.8	0.0	63.2	46.7	35.5	62.7	45.4	31.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	33.8	3.0	0.1	13.7	1.8	0.5	45.4	26.8	0.5	45.2	14.5	0.2
Delay (s)	94.9	53.9	0.1	74.2	52.6	0.5	108.6	73.4	36.0	107.9	59.9	31.8
Level of Service	F	D	A	E	D	A	F	E	D	F	E	C
Approach Delay (s)		64.5			44.1			74.9			67.5	
Approach LOS		E			D			E			E	

Intersection Summary			
HCM Average Control Delay	64.5	HCM Level of Service	E
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	145.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.6%	ICU Level of Service	F
Analysis Period (min)	15		

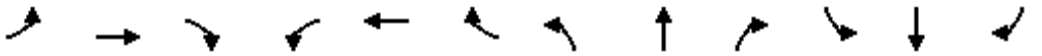
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	357	540	570	60	350	170	610	647	90	127	623	359
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	3610	1615	3502	3610	1615	3502	3610	1615	3502	3610	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3502	3610	1615	3502	3610	1615	3502	3610	1615	3502	3610	1615
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	372	562	594	62	365	177	635	674	94	132	649	374
RTOR Reduction (vph)	0	0	307	0	0	143	0	0	35	0	0	105
Lane Group Flow (vph)	372	562	287	62	365	34	635	674	59	132	649	269
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	14.7	26.3	26.3	5.2	16.8	16.8	20.5	36.1	36.1	8.3	23.9	23.9
Effective Green, g (s)	15.2	27.8	27.8	5.7	18.3	18.3	21.0	37.6	37.6	8.8	25.4	25.4
Actuated g/C Ratio	0.16	0.29	0.29	0.06	0.19	0.19	0.22	0.39	0.39	0.09	0.26	0.26
Clearance Time (s)	4.5	5.5	5.5	4.5	5.5	5.5	4.5	5.5	5.5	4.5	5.5	5.5
Vehicle Extension (s)	2.0	2.5	2.5	2.0	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	555	1046	468	208	689	308	767	1415	633	321	956	428
v/s Ratio Prot	c0.11	0.16		0.02	0.10		c0.18	0.19		0.04	c0.18	
v/s Ratio Perm			c0.18			0.02			0.04			0.17
v/c Ratio	0.67	0.54	0.61	0.30	0.53	0.11	0.83	0.48	0.09	0.41	0.68	0.63
Uniform Delay, d1	38.0	28.6	29.4	43.2	34.9	32.1	35.7	21.8	18.4	41.1	31.6	31.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.5	0.4	2.0	0.3	0.6	0.1	7.0	0.1	0.0	0.3	1.5	2.1
Delay (s)	40.5	29.1	31.4	43.5	35.5	32.2	42.7	21.9	18.4	41.4	33.1	33.2
Level of Service	D	C	C	D	D	C	D	C	B	D	C	C
Approach Delay (s)		32.8			35.3			31.1			34.1	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM Average Control Delay	32.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	95.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		

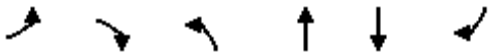
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	518	100	90	325	67	100	157	110	94	141	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.97		1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	3522		1787	3483		1787	1765		1805	1900	1615
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1805	3522		1787	3483		1787	1765		1805	1900	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	61	529	102	92	332	68	102	160	112	96	144	92
RTOR Reduction (vph)	0	15	0	0	15	0	0	22	0	0	0	62
Lane Group Flow (vph)	61	616	0	92	385	0	102	250	0	96	144	30
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases												4
Actuated Green, G (s)	4.3	22.5		6.7	24.9		7.0	15.3		6.8	15.1	15.1
Effective Green, g (s)	4.3	23.0		6.7	25.4		7.0	15.8		6.8	15.6	15.6
Actuated g/C Ratio	0.06	0.34		0.10	0.37		0.10	0.23		0.10	0.23	0.23
Clearance Time (s)	4.0	4.5		4.0	4.5		4.0	4.5		4.0	4.5	4.5
Vehicle Extension (s)	2.0	5.0		2.0	3.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	114	1186		175	1295		183	408		180	434	369
v/s Ratio Prot	0.03	c0.17		c0.05	0.11		c0.06	c0.14		0.05	0.08	
v/s Ratio Perm												0.02
v/c Ratio	0.54	0.52		0.53	0.30		0.56	0.61		0.53	0.33	0.08
Uniform Delay, d1	31.0	18.2		29.3	15.1		29.2	23.5		29.2	22.0	20.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.4	0.8		1.3	0.1		2.1	1.9		1.5	0.2	0.0
Delay (s)	33.4	19.0		30.6	15.3		31.3	25.4		30.8	22.2	20.8
Level of Service	C	B		C	B		C	C		C	C	C
Approach Delay (s)		20.3			18.1			27.0			24.3	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM Average Control Delay	21.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	68.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		

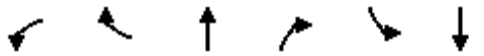
c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	472	1015	360	130	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	513	1103	391	141	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2739	141	141			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2739	141	141			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	43	23			
cM capacity (veh/h)	5	907	1442			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	513	1103	391	141	0
Volume Left	0	1103	0	0	0
Volume Right	513	0	0	0	0
cSH	907	1442	1700	1700	1700
Volume to Capacity	0.57	0.77	0.23	0.08	0.00
Queue Length 95th (ft)	91	205	0	0	0
Control Delay (s)	14.0	15.1	0.0	0.0	0.0
Lane LOS	B	C			
Approach Delay (s)	14.0	11.1		0.0	
Approach LOS	B				

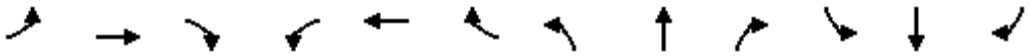
Intersection Summary			
Average Delay	11.1		
Intersection Capacity Utilization	102.3%	ICU Level of Service	G
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	209	0	270	467	0	80
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	227	0	293	508	0	87
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	634	547			801	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	634	547			801	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	49	100			100	
cM capacity (veh/h)	443	537			822	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	227	801	87
Volume Left	227	0	0
Volume Right	0	508	0
cSH	443	1700	822
Volume to Capacity	0.51	0.47	0.00
Queue Length 95th (ft)	71	0	0
Control Delay (s)	21.4	0.0	0.0
Lane LOS	C		
Approach Delay (s)	21.4	0.0	0.0
Approach LOS	C		

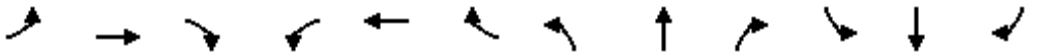
Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	61.1%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	1040	740	180	410	52	690	171	430	19	100	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3610	1615	1805	3549		3433	1863	1583	1770	1837	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1805	3610	1615	1805	3549		3433	1863	1583	1770	1837	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	1130	804	196	446	57	750	186	467	21	109	11
RTOR Reduction (vph)	0	0	364	0	10	0	0	0	156	0	4	0
Lane Group Flow (vph)	33	1130	440	196	493	0	750	186	311	21	116	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	2%	2%	2%	2%	2%
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	2.9	29.7	29.7	10.0	36.8		19.0	30.9	30.9	1.5	13.4	
Effective Green, g (s)	2.9	29.7	29.7	10.0	36.8		19.0	30.9	30.9	1.5	13.4	
Actuated g/C Ratio	0.03	0.34	0.34	0.11	0.42		0.22	0.35	0.35	0.02	0.15	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	59	1217	544	205	1482		740	653	555	30	279	
v/s Ratio Prot	0.02	c0.31		c0.11	0.14		c0.22	0.10		0.01	0.06	
v/s Ratio Perm			0.27						c0.20			
v/c Ratio	0.56	0.93	0.81	0.96	0.33		1.01	0.28	0.56	0.70	0.41	
Uniform Delay, d1	42.0	28.2	26.6	38.8	17.3		34.5	20.6	23.1	43.1	33.8	
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	11.0	12.2	8.7	49.9	0.1		36.5	0.2	1.3	52.7	1.0	
Delay (s)	53.0	40.3	35.3	88.7	17.5		71.0	20.9	24.4	95.8	34.8	
Level of Service	D	D	D	F	B		E	C	C	F	C	
Approach Delay (s)		38.5			37.5			48.9			43.9	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM Average Control Delay	42.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	88.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		

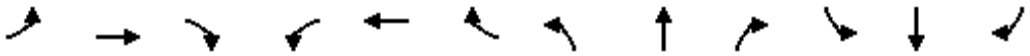
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	630	849	220	140	68	492	391	140	45	249	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00		0.97	0.95	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	1777		3400	3505	1568	1719	1796	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	1777		3400	3505	1568	1719	1796	
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)	11	685	923	239	152	74	535	425	152	49	271	11
RTOR Reduction (vph)	0	0	0	0	23	0	0	0	101	0	2	0
Lane Group Flow (vph)	11	685	923	239	203	0	535	425	51	49	280	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	1%	3%	3%	3%	5%	5%	10%
Turn Type	Prot		Free	Prot			Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free						2			
Actuated Green, G (s)	0.8	18.8	72.7	10.0	28.0		12.0	24.4	24.4	3.5	15.9	
Effective Green, g (s)	0.8	18.8	72.7	10.0	28.0		12.0	24.4	24.4	3.5	15.9	
Actuated g/C Ratio	0.01	0.26	1.00	0.14	0.39		0.17	0.34	0.34	0.05	0.22	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	19	915	1583	243	684		561	1176	526	83	393	
v/s Ratio Prot	0.01	c0.19		c0.14	0.11		c0.16	0.12		0.03	0.16	
v/s Ratio Perm			c0.58						0.03			
v/c Ratio	0.58	0.75	0.58	0.98	0.30		0.95	0.36	0.10	0.59	0.71	
Uniform Delay, d1	35.8	24.8	0.0	31.3	15.5		30.1	18.3	16.6	33.9	26.3	
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	36.3	3.4	1.6	52.8	0.2		26.7	0.2	0.1	10.7	6.0	
Delay (s)	72.1	28.2	1.6	84.0	15.8		56.7	18.4	16.7	44.6	32.3	
Level of Service	E	C	A	F	B		E	B	B	D	C	
Approach Delay (s)		13.3			50.8			36.6			34.1	
Approach LOS		B			D			D			C	

Intersection Summary			
HCM Average Control Delay	27.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	72.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		

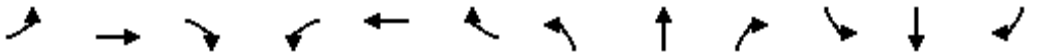
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	470	0	478	360	645	0	0	1243	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0			4.0	
Lane Util. Factor					1.00	1.00	0.97	0.95			0.95	
Frt					1.00	0.85	1.00	1.00			0.98	
Flt Protected					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					1752	1568	3400	3539			3477	
Flt Permitted					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (perm)					1752	1568	3400	3539			3477	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	500	0	509	383	686	0	0	1322	176
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	12	0
Lane Group Flow (vph)	0	0	0	0	500	509	383	686	0	0	1486	0
Heavy Vehicles (%)	0%	0%	0%	3%	3%	3%	3%	2%	3%	2%	2%	2%
Turn Type				Perm		Free	Prot					
Protected Phases					8		5	2			6	
Permitted Phases				8		Free						
Actuated Green, G (s)					24.0	88.8	11.0	55.9			40.9	
Effective Green, g (s)					24.0	88.8	11.0	56.8			41.8	
Actuated g/C Ratio					0.27	1.00	0.12	0.64			0.47	
Clearance Time (s)					4.0		4.0	4.9			4.9	
Vehicle Extension (s)					3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)					474	1568	421	2264			1637	
v/s Ratio Prot							c0.11	0.19			c0.43	
v/s Ratio Perm					0.29	0.32						
v/c Ratio					1.05	0.32	0.91	0.30			0.91	
Uniform Delay, d1					32.4	0.0	38.4	7.2			21.7	
Progression Factor					1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2					56.6	0.6	23.1	0.1			7.7	
Delay (s)					89.0	0.6	61.5	7.2			29.4	
Level of Service					F	A	E	A			C	
Approach Delay (s)		0.0			44.4			26.7			29.4	
Approach LOS		A			D			C			C	

Intersection Summary			
HCM Average Control Delay	32.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	88.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.9%	ICU Level of Service	E
Analysis Period (min)	15		

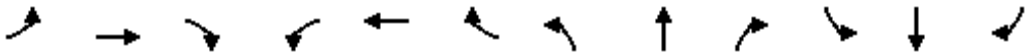
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	126	0	520	0	0	0	0	879	450	781	933	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0					4.0	4.9	4.0	4.0	
Lane Util. Factor	1.00	0.95	0.95					0.95	1.00	0.97	0.95	
Frt	1.00	0.85	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1752	1490	1490					3539	1583	3467	3574	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1752	1490	1490					3539	1583	3467	3574	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	133	0	547	0	0	0	0	925	474	822	982	0
RTOR Reduction (vph)	0	134	134	0	0	0	0	0	307	0	0	0
Lane Group Flow (vph)	133	140	139	0	0	0	0	925	167	822	982	0
Heavy Vehicles (%)	3%	3%	3%	0%	0%	0%	2%	2%	2%	1%	1%	1%
Turn Type	Perm		Perm						Perm	Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	12.8	12.8	12.8					26.7	26.7	22.7	53.4	
Effective Green, g (s)	13.7	13.7	13.7					27.6	26.7	22.7	54.3	
Actuated g/C Ratio	0.18	0.18	0.18					0.36	0.35	0.30	0.71	
Clearance Time (s)	4.9	4.9	4.9					4.9	4.9	4.0	4.9	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	316	269	269					1285	556	1036	2554	
v/s Ratio Prot		c0.09						c0.26		c0.24	0.27	
v/s Ratio Perm	0.08		0.09						0.11			
v/c Ratio	0.42	0.52	0.52					0.72	0.30	0.79	0.38	
Uniform Delay, d1	27.6	28.2	28.2					20.9	17.9	24.5	4.3	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.9	1.8	1.7					2.0	0.3	4.3	0.1	
Delay (s)	28.5	30.0	29.9					22.8	18.2	28.7	4.4	
Level of Service	C	C	C					C	B	C	A	
Approach Delay (s)		29.7			0.0			21.3			15.5	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	20.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	76.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.9%	ICU Level of Service	E
Analysis Period (min)	15		

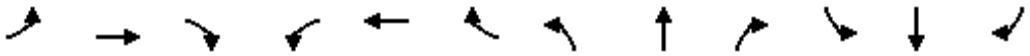
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	410	10	385	10	10	10	158	40	10	10	40	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	
Frt	1.00	0.85			0.95			0.99			0.93	
Flt Protected	0.95	1.00			0.98			0.96			0.99	
Satd. Flow (prot)	1787	1606			1785			1765			1745	
Flt Permitted	0.74	1.00			0.89			0.71			0.96	
Satd. Flow (perm)	1384	1606			1608			1297			1689	
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)	446	11	418	11	11	11	172	43	11	11	43	54
RTOR Reduction (vph)	0	215	0	0	6	0	0	3	0	0	37	0
Lane Group Flow (vph)	446	214	0	0	27	0	0	223	0	0	71	0
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	3%	3%	3%	1%	1%	1%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	19.2	19.2			19.2			12.3			12.3	
Effective Green, g (s)	19.2	19.2			19.2			12.3			12.3	
Actuated g/C Ratio	0.49	0.49			0.49			0.31			0.31	
Clearance Time (s)	4.0	4.0			4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)	673	781			782			404			526	
v/s Ratio Prot		0.13										
v/s Ratio Perm	c0.32				0.02			c0.17			0.04	
v/c Ratio	0.66	0.27			0.03			0.55			0.13	
Uniform Delay, d1	7.7	6.0			5.3			11.3			9.8	
Progression Factor	1.00	1.00			1.00			1.00			1.00	
Incremental Delay, d2	2.5	0.2			0.0			1.6			0.1	
Delay (s)	10.2	6.2			5.3			12.9			9.9	
Level of Service	B	A			A			B			A	
Approach Delay (s)		8.2			5.3			12.9			9.9	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	9.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	39.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		

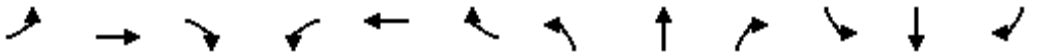
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	1020	700	210	390	470	660	237	410	142	138	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.92		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3610	1615	1805	3314		3433	1863	1583	1770	1844	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1805	3610	1615	1805	3314		3433	1863	1583	1770	1844	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	1109	761	228	424	511	717	258	446	154	150	11
RTOR Reduction (vph)	0	0	0	0	220	0	0	0	144	0	3	0
Lane Group Flow (vph)	33	1109	761	228	715	0	717	258	302	154	158	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	2%	2%	2%	2%	2%
Turn Type	Prot		Free	Prot			Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free						2			
Actuated Green, G (s)	2.9	28.7	86.2	11.0	36.8		18.0	25.5	25.5	5.0	12.5	
Effective Green, g (s)	2.9	28.7	86.2	11.0	36.8		18.0	25.5	25.5	5.0	12.5	
Actuated g/C Ratio	0.03	0.33	1.00	0.13	0.43		0.21	0.30	0.30	0.06	0.15	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	61	1202	1615	230	1415		717	551	468	103	267	
v/s Ratio Prot	0.02	c0.31		c0.13	0.22		c0.21	0.14		c0.09	0.09	
v/s Ratio Perm			0.47						c0.19			
v/c Ratio	0.54	0.92	0.47	0.99	0.51		1.00	0.47	0.65	1.50	0.59	
Uniform Delay, d1	41.0	27.7	0.0	37.6	18.0		34.1	24.8	26.4	40.6	34.5	
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	9.4	11.7	1.0	56.7	0.3		33.6	0.6	3.1	266.9	3.5	
Delay (s)	50.4	39.3	1.0	94.2	18.3		67.7	25.4	29.5	307.5	37.9	
Level of Service	D	D	A	F	B		E	C	C	F	D	
Approach Delay (s)		24.2			33.2			48.0			169.7	
Approach LOS		C			C			D			F	

Intersection Summary			
HCM Average Control Delay	43.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	86.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		

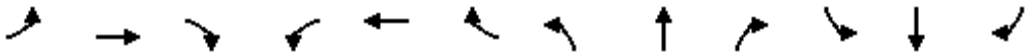
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	600	972	160	120	113	940	1253	100	62	530	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00		0.97	0.95	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3610	1615	1752	1726		3467	3574	1599	1770	1876	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1805	3610	1615	1752	1726		3467	3574	1599	1770	1876	
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)	11	652	1057	174	130	123	1022	1362	109	67	576	11
RTOR Reduction (vph)	0	0	0	0	32	0	0	0	27	0	1	0
Lane Group Flow (vph)	11	652	1057	174	221	0	1022	1362	82	67	586	0
Heavy Vehicles (%)	0%	0%	0%	3%	3%	1%	1%	1%	1%	2%	1%	2%
Turn Type	Prot		Free	Prot			Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free						2			
Actuated Green, G (s)	0.8	20.2	104.0	10.0	29.4		28.0	51.5	51.5	6.3	29.8	
Effective Green, g (s)	0.8	20.2	104.0	10.0	29.4		28.0	51.5	51.5	6.3	29.8	
Actuated g/C Ratio	0.01	0.19	1.00	0.10	0.28		0.27	0.50	0.50	0.06	0.29	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	14	701	1615	168	488		933	1770	792	107	538	
v/s Ratio Prot	0.01	c0.18		c0.10	0.13		c0.29	0.38		0.04	c0.31	
v/s Ratio Perm			c0.65						0.05			
v/c Ratio	0.79	0.93	0.65	1.04	0.45		1.10	0.77	0.10	0.63	1.09	
Uniform Delay, d1	51.5	41.2	0.0	47.0	30.7		38.0	21.4	14.0	47.7	37.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	130.6	18.9	2.1	79.2	0.7		59.0	2.1	0.1	10.9	65.5	
Delay (s)	182.1	60.1	2.1	126.2	31.4		97.0	23.5	14.0	58.6	102.6	
Level of Service	F	E	A	F	C		F	C	B	E	F	
Approach Delay (s)		25.2			70.0			53.2			98.1	
Approach LOS		C			E			D			F	

Intersection Summary			
HCM Average Control Delay	51.0	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	94.1%	ICU Level of Service	F
Analysis Period (min)	15		

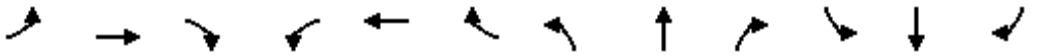
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	430	0	1376	440	1017	0	0	1559	233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0			4.0	
Lane Util. Factor					1.00	1.00	0.97	0.95			0.95	
Frt					1.00	0.85	1.00	1.00			0.98	
Flt Protected					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					1787	1599	3467	3574			3505	
Flt Permitted					0.95	1.00	0.95	1.00			1.00	
Satd. Flow (perm)					1787	1599	3467	3574			3505	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	453	0	1448	463	1071	0	0	1641	245
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	13	0
Lane Group Flow (vph)	0	0	0	0	453	1448	463	1071	0	0	1873	0
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type				Perm		Free	Prot					
Protected Phases					8		5	2			6	
Permitted Phases				8		Free						
Actuated Green, G (s)					23.9	89.9	9.0	57.1			44.1	
Effective Green, g (s)					23.9	89.9	9.0	58.0			45.0	
Actuated g/C Ratio					0.27	1.00	0.10	0.65			0.50	
Clearance Time (s)					4.0		4.0	4.9			4.9	
Vehicle Extension (s)					3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)					475	1599	347	2306			1754	
v/s Ratio Prot							c0.13	0.30			c0.53	
v/s Ratio Perm					0.25	c0.91						
v/c Ratio					0.95	0.91	1.33	0.46			1.07	
Uniform Delay, d1					32.5	0.0	40.5	8.1			22.5	
Progression Factor					1.00	1.00	1.00	1.00			1.00	
Incremental Delay, d2					29.6	8.9	168.9	0.1			42.2	
Delay (s)					62.1	8.9	209.3	8.2			64.7	
Level of Service					E	A	F	A			E	
Approach Delay (s)		0.0			21.6			68.9			64.7	
Approach LOS		A			C			E			E	

Intersection Summary			
HCM Average Control Delay	50.5	HCM Level of Service	D
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	89.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	96.9%	ICU Level of Service	F
Analysis Period (min)	15		

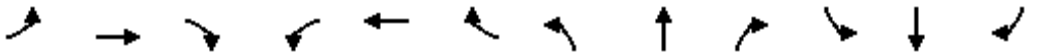
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	349	0	540	0	0	0	0	1107	480	1045	944	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0					4.0	4.9	4.0	4.0	
Lane Util. Factor	1.00	0.95	0.95					0.95	1.00	0.97	0.95	
Frt	1.00	0.85	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1787	1519	1519					3574	1599	3467	3574	
Flt Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1787	1519	1519					3574	1599	3467	3574	
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)	379	0	587	0	0	0	0	1203	522	1136	1026	0
RTOR Reduction (vph)	0	115	115	0	0	0	0	0	317	0	0	0
Lane Group Flow (vph)	379	179	178	0	0	0	0	1203	205	1136	1026	0
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	1%	1%	1%	1%	1%	1%
Turn Type	Perm		Perm						Perm	Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	19.8	19.8	19.8					29.1	29.1	27.0	60.1	
Effective Green, g (s)	20.7	20.7	20.7					30.0	29.1	27.0	61.0	
Actuated g/C Ratio	0.23	0.23	0.23					0.33	0.32	0.30	0.68	
Clearance Time (s)	4.9	4.9	4.9					4.9	4.9	4.0	4.9	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	412	351	351					1195	519	1044	2430	
v/s Ratio Prot		0.12						c0.34		c0.33	0.29	
v/s Ratio Perm	c0.21		0.12						0.13			
v/c Ratio	0.92	0.51	0.51					1.01	0.40	1.09	0.42	
Uniform Delay, d1	33.7	30.1	30.1					29.9	23.5	31.4	6.4	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.00	1.00	
Incremental Delay, d2	25.3	1.3	1.2					27.7	0.5	55.0	0.1	
Delay (s)	58.9	31.3	31.2					57.5	24.0	86.4	6.6	
Level of Service	E	C	C					E	C	F	A	
Approach Delay (s)		42.1			0.0			47.4			48.5	
Approach LOS		D			A			D			D	

Intersection Summary			
HCM Average Control Delay	46.8	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	89.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	96.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	370	10	362	10	10	10	203	40	10	10	40	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	
Frt	1.00	0.85			0.95			0.99			0.96	
Flt Protected	0.95	1.00			0.98			0.96			0.99	
Satd. Flow (prot)	1787	1607			1785			1764			1797	
Flt Permitted	0.74	1.00			0.89			0.72			0.95	
Satd. Flow (perm)	1384	1607			1609			1318			1714	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	394	11	385	11	11	11	216	43	11	11	43	21
RTOR Reduction (vph)	0	213	0	0	6	0	0	3	0	0	14	0
Lane Group Flow (vph)	394	183	0	0	27	0	0	267	0	0	61	0
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	3%	3%	3%	1%	1%	1%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	17.6	17.6			17.6			13.9			13.9	
Effective Green, g (s)	17.6	17.6			17.6			13.9			13.9	
Actuated g/C Ratio	0.45	0.45			0.45			0.35			0.35	
Clearance Time (s)	4.0	4.0			4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)	617	716			717			464			603	
v/s Ratio Prot		0.11										
v/s Ratio Perm	c0.28				0.02			c0.20			0.04	
v/c Ratio	0.64	0.25			0.04			0.58			0.10	
Uniform Delay, d1	8.5	6.8			6.2			10.4			8.6	
Progression Factor	1.00	1.00			1.00			1.00			1.00	
Incremental Delay, d2	2.2	0.2			0.0			1.7			0.1	
Delay (s)	10.7	7.0			6.2			12.1			8.7	
Level of Service	B	A			A			B			A	
Approach Delay (s)		8.8			6.2			12.1			8.7	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	39.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group