APPENDIX G

TRAFFIC IMPACT STUDY

CONTINUED

(2/2)

AM PEAK HOUR

LEVEL-OF-SERVICE ANALYSIS

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.91			0.97		1.00	0.99		1.00	1.00	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1702			1805		1770	1849		1770	1854	
Flt Permitted		0.99			0.96		0.47	1.00		0.56	1.00	
Satd. Flow (perm)		1690			1742		882	1849		1041	1854	
Volume (vph)	6	107	195	13	115	32	50	232	12	345	308	10
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)	7	116	212	14	125	35	54	252	13	375	335	11
Lane Group Flow (vph)	0	335	0	0	174	0	54	265	0	375	346	0
Turn Type	Perm			Perm			pm+pt			pm+pt		
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)		12.1			12.1		21.5	19.4		21.7	19.5	
Effective Green, g (s)		14.1			14.1		25.5	21.4		25.7	21.5	
Actuated g/C Ratio		0.27			0.27		0.49	0.41		0.50	0.42	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		461			475		505	765		577	771	
v/s Ratio Prot							0.01	0.14		c0.05	0.19	
v/s Ratio Perm		c0.20			0.10		0.04			c0.27		
v/c Ratio		0.73			0.37		0.11	0.35		0.65	0.45	
Uniform Delay, d1		17.1			15.2		6.9	10.4		9.0	10.8	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		5.6			0.5		0.1	0.3		2.5	0.4	
Delay (s)		22.7			15.7		7.0	10.6		11.5	11.3	
Level of Service		C			B		A	B		B	B	
Approach Delay (s)		22.7			15.7			10.0			11.4	
Approach LOS		C			B			B			B	

Intersection Summary			
HCM Average Control Delay	14.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	51.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.3%	ICU Level of Service	B
c Critical Lane Group			

Movement	EBL	EBR	SBL	SBR	NWL	NWR
Lane Configurations						
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Volume (veh/h)	7	372	489	3	212	273
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	8	404	532	3	230	297
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	1291	533			535	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	26			78	
cM capacity (veh/h)	140	547			1033	

Direction, Lane #	EB 1	SB 1	NW 1
Volume Total	412	535	527
Volume Left	8	0	230
Volume Right	404	3	0
cSH	519	1700	1033
Volume to Capacity	0.79	0.31	0.22
Queue Length (ft)	186	0	21
Control Delay (s)	33.6	0.0	5.6
Lane LOS	D		A
Approach Delay (s)	33.6	0.0	5.6
Approach LOS	D		

Intersection Summary			
Average Delay	11.4		
Intersection Capacity Utilization	96.1%	ICU Level of Service	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			0.92			0.99	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1770	1839		1770	1850			1682			1792	
Flt Permitted	0.31	1.00		0.09	1.00			0.78			0.59	
Satd. Flow (perm)	578	1839		163	1850			1339			1078	
Volume (vph)	4	730	69	85	487	23	100	19	188	129	99	25
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	793	75	92	529	25	109	21	204	140	108	27
Lane Group Flow (vph)	4	868	0	92	554	0	0	334	0	0	275	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	41.6	39.7		50.0	43.9			21.2			21.2	
Effective Green, g (s)	45.6	41.7		53.8	45.9			23.2			23.2	
Actuated g/C Ratio	0.54	0.49		0.63	0.54			0.27			0.27	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	365	902		256	999			365			294	
v/s Ratio Prot	0.00	c0.47		c0.03	c0.30							
v/s Ratio Perm	0.01			0.19				0.25			c0.26	
v/c Ratio	0.01	0.96		0.36	0.55			0.92			0.94	
Uniform Delay, d1	16.5	20.9		30.3	12.8			29.9			30.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	21.2		0.9	0.7			26.8			35.5	
Delay (s)	16.5	42.1		31.2	13.5			56.7			65.6	
Level of Service	B	D		C	B			E			E	
Approach Delay (s)		42.0			16.0			56.7			65.6	
Approach LOS		D			B			E			E	

Intersection Summary			
HCM Average Control Delay	39.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	99.5%	ICU Level of Service	E
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			0.99			0.96			1.00	
Flt Protected		0.99			0.97			1.00			1.00	
Satd. Flow (prot)		1830			1792			1787			1852	
Flt Permitted		0.94			0.60			0.98			0.97	
Satd. Flow (perm)		1735			1114			1762			1810	
Volume (vph)	32	229	26	143	64	10	9	223	96	19	380	10
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)	35	249	28	155	70	11	10	242	104	21	413	11
Lane Group Flow (vph)	0	312	0	0	236	0	0	356	0	0	445	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		10.9			10.9			18.4			18.4	
Effective Green, g (s)		12.9			12.9			20.4			20.4	
Actuated g/C Ratio		0.31			0.31			0.49			0.49	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		542			348			870			894	
v/s Ratio Prot												
v/s Ratio Perm		0.18			c0.21			0.20			c0.25	
v/c Ratio		0.58			0.68			0.41			0.50	
Uniform Delay, d1		11.9			12.4			6.6			7.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.5			5.2			0.3			0.4	
Delay (s)		13.4			17.6			6.9			7.5	
Level of Service		B			B			A			A	
Approach Delay (s)		13.4			17.6			6.9			7.5	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	10.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	41.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.8%	ICU Level of Service	C
c Critical Lane Group			

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	331	1	99	681	4	51
Peak Hour Factor	0.72	0.72	0.81	0.81	0.87	0.87
Hourly flow rate (veh/h)	460	1	122	841	5	59
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume			461		1546	460
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			89		96	90
cM capacity (veh/h)			1100		112	601

Direction, Lane #	NB 1	SB 1	SB 2	NW 1
Volume Total	461	122	841	63
Volume Left	0	122	0	5
Volume Right	1	0	0	59
cSH	1700	1100	1700	456
Volume to Capacity	0.27	0.11	0.49	0.14
Queue Length (ft)	0	9	0	12
Control Delay (s)	0.0	8.7	0.0	14.2
Lane LOS		A		B
Approach Delay (s)	0.0	1.1		14.2
Approach LOS				B

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	54.8%	ICU Level of Service	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	47	129	31	349	670	9
Peak Hour Factor	0.60	0.60	0.90	0.90	0.93	0.93
Hourly flow rate (veh/h)	78	215	34	388	720	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	1182	725	730			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	61	49	96			
cM capacity (veh/h)	201	425	874			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	293	422	730
Volume Left	78	34	0
Volume Right	215	0	10
cSH	328	874	1700
Volume to Capacity	0.89	0.04	0.43
Queue Length (ft)	214	3	0
Control Delay (s)	62.9	1.2	0.0
Lane LOS	F	A	
Approach Delay (s)	62.9	1.2	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	13.1		
Intersection Capacity Utilization	72.2%	ICU Level of Service	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.97		1.00	0.99		1.00	0.96		1.00	0.99	
Flt Protected		0.99		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1789		1770	1852		1770	1791		1770	1847	
Flt Permitted		0.94		0.22	1.00		0.10	1.00		0.55	1.00	
Satd. Flow (perm)		1691		414	1852		181	1791		1029	1847	
Volume (vph)	47	268	106	143	172	7	43	251	86	2	484	29
Peak-hour factor, PHF	0.87	0.87	0.87	0.89	0.89	0.89	0.97	0.97	0.97	0.66	0.66	0.66
Adj. Flow (vph)	54	308	122	161	193	8	44	259	89	3	733	44
Lane Group Flow (vph)	0	484	0	161	201	0	44	348	0	3	777	0
Turn Type	Perm			pm+pt			pm+pt			Perm		
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		23.1		33.1	33.1		43.4	43.4		35.1	35.1	
Effective Green, g (s)		25.1		35.1	35.1		45.4	45.4		37.1	37.1	
Actuated g/C Ratio		0.28		0.40	0.40		0.51	0.51		0.42	0.42	
Clearance Time (s)		6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		480		256	735		170	919		431	774	
v/s Ratio Prot				c0.04	0.11		0.01	c0.19			c0.42	
v/s Ratio Perm		c0.29		0.21			0.12			0.00		
v/c Ratio		1.01		0.63	0.27		0.26	0.38		0.01	1.00	
Uniform Delay, d1		31.7		21.0	18.1		19.5	13.0		15.0	25.7	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		43.2		4.8	0.2		0.8	0.3		0.0	33.3	
Delay (s)		74.9		25.7	18.3		20.3	13.3		15.0	59.0	
Level of Service		E		C	B		C	B		B	E	
Approach Delay (s)		74.9			21.6			14.1			58.8	
Approach LOS		E			C			B			E	

Intersection Summary			
HCM Average Control Delay	47.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	88.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	88.5%	ICU Level of Service	D
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		1.00			0.98			0.98			1.00	
Flt Protected		0.99			0.97			1.00			1.00	
Satd. Flow (prot)		1831			1769			1823			1856	
Flt Permitted		0.89			0.75			1.00			0.99	
Satd. Flow (perm)		1654			1367			1817			1843	
Volume (vph)	29	75	3	74	23	16	3	273	51	8	436	9
Peak-hour factor, PHF	0.61	0.61	0.61	0.81	0.81	0.81	0.88	0.88	0.88	0.94	0.94	0.94
Adj. Flow (vph)	48	123	5	91	28	20	3	310	58	9	464	10
Lane Group Flow (vph)	0	176	0	0	139	0	0	371	0	0	483	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.8			7.8			22.0			22.0	
Effective Green, g (s)		9.8			9.8			24.0			24.0	
Actuated g/C Ratio		0.23			0.23			0.57			0.57	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		388			320			1043			1058	
v/s Ratio Prot												
v/s Ratio Perm		c0.11			0.10			0.20			c0.26	
v/c Ratio		0.45			0.43			0.36			0.46	
Uniform Delay, d1		13.7			13.6			4.8			5.1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.8			0.9			0.2			0.3	
Delay (s)		14.6			14.6			5.0			5.5	
Level of Service		B			B			A			A	
Approach Delay (s)		14.6			14.6			5.0			5.5	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	41.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.3%	ICU Level of Service	A
c Critical Lane Group			

Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	71	305	518	1	0	239
Peak Hour Factor	0.89	0.89	0.88	0.88	0.82	0.82
Hourly flow rate (veh/h)	80	343	589	1	0	291
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume	590				1091	589
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	92				100	43
cM capacity (veh/h)	986				218	508

Direction, Lane #	NB 1	NB 2	SB 1	SE 1
Volume Total	80	343	590	291
Volume Left	80	0	0	0
Volume Right	0	0	1	291
cSH	986	1700	1700	508
Volume to Capacity	0.08	0.20	0.35	0.57
Queue Length (ft)	7	0	0	89
Control Delay (s)	9.0	0.0	0.0	21.2
Lane LOS	A			C
Approach Delay (s)	1.7		0.0	21.2
Approach LOS				C

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	63.5%	ICU Level of Service	B

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.88			0.96		1.00	1.00		1.00	0.99	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1641			1768		1770	1856		1770	1846	
Flt Permitted		0.99			0.75		0.28	1.00		0.16	1.00	
Satd. Flow (perm)		1631			1345		524	1856		307	1846	
Volume (vph)	6	38	313	48	153	95	98	467	12	491	595	38
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)	7	41	340	52	166	103	107	508	13	534	647	41
Lane Group Flow (vph)	0	388	0	0	321	0	107	521	0	534	688	0
Turn Type	Perm			Perm			pm+pt			pm+pt		
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)		14.9			14.9		21.4	18.3		38.3	29.2	
Effective Green, g (s)		16.9			16.9		25.4	20.3		40.3	31.2	
Actuated g/C Ratio		0.26			0.26		0.39	0.31		0.62	0.48	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		423			349		302	578		549	883	
v/s Ratio Prot							0.03	0.28		c0.24	0.37	
v/s Ratio Perm		0.24			c0.24		0.11			c0.36		
v/c Ratio		0.92			0.92		0.35	0.90		0.97	0.78	
Uniform Delay, d1		23.5			23.5		13.3	21.5		16.7	14.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		24.4			28.4		0.7	17.2		31.3	4.4	
Delay (s)		47.9			51.8		14.0	38.7		48.0	18.5	
Level of Service		D			D		B	D		D	B	
Approach Delay (s)		47.9			51.8			34.5			31.4	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	37.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	65.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	111.9%	ICU Level of Service	G
c Critical Lane Group			

Movement	EBL	EBR	SBL	SBR	NWL	NWR
Lane Configurations						
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Volume (veh/h)	75	418	645	59	272	451
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	82	454	701	64	296	490
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	1815	733			765	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	0			65	
cM capacity (veh/h)	56	421			848	

Direction, Lane #	EB 1	SB 1	NW 1
Volume Total	536	765	786
Volume Left	82	0	296
Volume Right	454	64	0
cSH	211	1700	848
Volume to Capacity	2.54	0.45	0.35
Queue Length (ft)	1126	0	39
Control Delay (s)	740.8	0.0	7.8
Lane LOS	F		A
Approach Delay (s)	740.8	0.0	7.8
Approach LOS	F		

Intersection Summary			
Average Delay	193.2		
Intersection Capacity Utilization	131.8%	ICU Level of Service	H

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			0.93			0.99	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1770	1835		1770	1853			1691			1792	
Flt Permitted	0.20	1.00		0.05	1.00			0.74			0.59	
Satd. Flow (perm)	372	1835		93	1853			1275			1089	
Volume (vph)	4	899	99	88	692	24	138	20	194	133	102	26
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	977	108	96	752	26	150	22	211	145	111	28
Lane Group Flow (vph)	4	1085	0	96	778	0	0	383	0	0	284	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	75.4	74.0		88.8	81.4			34.0			34.0	
Effective Green, g (s)	79.4	76.0		90.8	83.4			36.0			36.0	
Actuated g/C Ratio	0.59	0.56		0.67	0.62			0.27			0.27	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	254	1035		197	1146			341			291	
v/s Ratio Prot	0.00	c0.59		c0.04	c0.42							
v/s Ratio Perm	0.01			0.29				c0.30			0.26	
v/c Ratio	0.02	1.05		0.49	0.68			1.12			0.98	
Uniform Delay, d1	30.6	29.4		55.7	16.9			49.4			49.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	41.5		1.9	1.6			86.3			45.7	
Delay (s)	30.6	70.9		57.6	18.5			135.7			94.7	
Level of Service	C	E		E	B			F			F	
Approach Delay (s)		70.8			22.8			135.7			94.7	
Approach LOS		E			C			F			F	

Intersection Summary			
HCM Average Control Delay	66.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	134.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	114.5%	ICU Level of Service	G
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.98			1.00			0.96			0.99	
Flt Protected		0.99			0.97			1.00			1.00	
Satd. Flow (prot)		1809			1793			1788			1836	
Flt Permitted		0.85			0.49			0.96			0.97	
Satd. Flow (perm)		1549			918			1715			1791	
Volume (vph)	101	271	54	229	94	10	27	402	169	20	602	66
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)	110	295	59	249	102	11	29	437	184	22	654	72
Lane Group Flow (vph)	0	464	0	0	362	0	0	650	0	0	748	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		26.4			26.4			28.1			28.1	
Effective Green, g (s)		28.4			28.4			30.1			30.1	
Actuated g/C Ratio		0.43			0.43			0.45			0.45	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		662			392			776			811	
v/s Ratio Prot												
v/s Ratio Perm		0.30			c0.39			0.38			c0.42	
v/c Ratio		0.70			0.92			0.84			0.92	
Uniform Delay, d1		15.6			18.0			16.0			17.1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		3.4			27.1			7.9			15.8	
Delay (s)		18.9			45.1			23.9			32.9	
Level of Service		B			D			C			C	
Approach Delay (s)		18.9			45.1			23.9			32.9	
Approach LOS		B			D			C			C	

Intersection Summary			
HCM Average Control Delay	29.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	66.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	121.9%	ICU Level of Service	H
c Critical Lane Group			

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	579	1	148	884	4	115
Peak Hour Factor	0.72	0.72	0.81	0.81	0.87	0.87
Hourly flow rate (veh/h)	804	1	183	1091	5	132
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume			806		2262	805
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			78		87	65
cM capacity (veh/h)			819		35	383

Direction, Lane #	NB 1	SB 1	SB 2	NW 1
Volume Total	806	183	1091	137
Volume Left	0	183	0	5
Volume Right	1	0	0	132
cSH	1700	819	1700	287
Volume to Capacity	0.47	0.22	0.64	0.48
Queue Length (ft)	0	21	0	61
Control Delay (s)	0.0	10.7	0.0	28.5
Lane LOS		B		D
Approach Delay (s)	0.0	1.5		28.5
Approach LOS				D

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	72.5%	ICU Level of Service	C

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	75	133	32	570	856	27
Peak Hour Factor	0.60	0.60	0.90	0.90	0.93	0.93
Hourly flow rate (veh/h)	125	222	36	633	920	29
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	1639	935	949			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	31	95			
cM capacity (veh/h)	105	322	723			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	347	669	949
Volume Left	125	36	0
Volume Right	222	0	29
cSH	184	723	1700
Volume to Capacity	1.88	0.05	0.56
Queue Length (ft)	635	4	0
Control Delay (s)	458.7	1.3	0.0
Lane LOS	F	A	
Approach Delay (s)	458.7	1.3	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	81.4		
Intersection Capacity Utilization	109.0%	ICU Level of Service	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.96		1.00	0.98		1.00	0.96		1.00	0.98	
Flt Protected		0.99		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1767		1770	1830		1770	1783		1770	1827	
Flt Permitted		0.86		0.25	1.00		0.06	1.00		0.28	1.00	
Satd. Flow (perm)		1533		474	1830		120	1783		525	1827	
Volume (vph)	129	295	186	243	194	26	113	437	176	19	634	93
Peak-hour factor, PHF	0.87	0.87	0.87	0.89	0.89	0.89	0.97	0.97	0.97	0.66	0.66	0.66
Adj. Flow (vph)	148	339	214	273	218	29	116	451	181	29	961	141
Lane Group Flow (vph)	0	701	0	273	247	0	116	632	0	29	1102	0
Turn Type	Perm			pm+pt			pm+pt			Perm		
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		42.0		52.0	52.0		66.0	66.0		56.0	56.0	
Effective Green, g (s)		44.0		54.0	54.0		68.0	68.0		58.0	58.0	
Actuated g/C Ratio		0.34		0.42	0.42		0.52	0.52		0.45	0.45	
Clearance Time (s)		6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		519		257	760		139	933		234	815	
v/s Ratio Prot				c0.05	0.13		c0.04	0.35			c0.60	
v/s Ratio Perm		c0.46		0.39			0.40			0.06		
v/c Ratio		1.35		1.06	0.32		0.83	0.68		0.12	1.35	
Uniform Delay, d1		43.0		45.2	25.7		63.3	22.9		21.1	36.0	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		170.2		73.5	0.3		33.0	2.0		0.2	166.5	
Delay (s)		213.2		118.7	25.9		96.2	24.9		21.3	202.5	
Level of Service		F		F	C		F	C		C	F	
Approach Delay (s)		213.2			74.6			35.9			197.9	
Approach LOS		F			E			D			F	

Intersection Summary			
HCM Average Control Delay	141.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.31		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	133.1%	ICU Level of Service	H
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		1.00			0.98			0.98			1.00	
Flt Protected		0.99			0.97			1.00			1.00	
Satd. Flow (prot)		1831			1771			1830			1858	
Flt Permitted		0.88			0.70			1.00			0.99	
Satd. Flow (perm)		1638			1276			1826			1844	
Volume (vph)	30	77	3	94	24	16	3	481	71	8	634	9
Peak-hour factor, PHF	0.61	0.61	0.61	0.81	0.81	0.81	0.88	0.88	0.88	0.94	0.94	0.94
Adj. Flow (vph)	49	126	5	116	30	20	3	547	81	9	674	10
Lane Group Flow (vph)	0	180	0	0	166	0	0	631	0	0	693	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.8			7.8			27.6			27.6	
Effective Green, g (s)		9.8			9.8			29.6			29.6	
Actuated g/C Ratio		0.21			0.21			0.62			0.62	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		339			264			1140			1152	
v/s Ratio Prot												
v/s Ratio Perm		0.11			c0.13			0.35			c0.38	
v/c Ratio		0.53			0.63			0.55			0.60	
Uniform Delay, d1		16.8			17.1			5.1			5.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.6			4.6			0.6			0.9	
Delay (s)		18.4			21.8			5.7			6.2	
Level of Service		B			C			A			A	
Approach Delay (s)		18.4			21.8			5.7			6.2	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	47.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
c Critical Lane Group			

Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	146	479	718	1	0	346
Peak Hour Factor	0.89	0.89	0.88	0.88	0.82	0.82
Hourly flow rate (veh/h)	164	538	816	1	0	422
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume	817				1683	816
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	80				100	0
cM capacity (veh/h)	811				83	377

Direction, Lane #	NB 1	NB 2	SB 1	SE 1
Volume Total	164	538	817	422
Volume Left	164	0	0	0
Volume Right	0	0	1	422
cSH	811	1700	1700	377
Volume to Capacity	0.20	0.32	0.48	1.12
Queue Length (ft)	19	0	0	393
Control Delay (s)	10.6	0.0	0.0	116.1
Lane LOS	B			F
Approach Delay (s)	2.5		0.0	116.1
Approach LOS				F

Intersection Summary			
Average Delay	26.1		
Intersection Capacity Utilization	88.2%	ICU Level of Service	D

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.95		0.97	0.95	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.99	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1849	1583	1770	1863	1583	1770	3526		3433	3508	
Flt Permitted		0.93	1.00	0.73	1.00	1.00	0.39	1.00		0.37	1.00	
Satd. Flow (perm)		1740	1583	1352	1863	1583	721	3526		1340	3508	
Volume (vph)	6	38	313	48	153	95	98	467	12	491	595	38
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)	7	41	340	52	166	103	107	508	13	534	647	41
Lane Group Flow (vph)	0	48	340	52	166	103	107	521	0	534	688	0
Turn Type	Perm		pm+ov	Perm		pm+ov	pm+pt			pm+pt		
Protected Phases		8	1		4	5	5	2		1	6	
Permitted Phases	8		8	4		4	2			6		
Actuated Green, G (s)		7.4	12.8	7.4	7.4	10.3	17.5	14.6		22.5	17.1	
Effective Green, g (s)		9.4	16.8	9.4	9.4	14.3	21.5	16.6		26.5	19.1	
Actuated g/C Ratio		0.21	0.37	0.21	0.21	0.31	0.47	0.37		0.58	0.42	
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0		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	
Lane Grp Cap (vph)		360	725	280	386	638	455	1289		1123	1476	
v/s Ratio Prot			c0.08		0.09	0.02	0.03	0.15		c0.08	0.20	
v/s Ratio Perm		0.03	0.14	0.04		0.05	0.09			c0.20		
v/c Ratio		0.13	0.47	0.19	0.43	0.16	0.24	0.40		0.48	0.47	
Uniform Delay, d1		14.7	10.9	14.8	15.7	11.2	6.7	10.7		4.9	9.5	
Progression Factor		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	0.8	0.1	0.3	0.2		0.3	0.2	
Delay (s)		14.8	11.4	15.2	16.4	11.3	7.0	10.9		5.2	9.7	
Level of Service		B	B	B	B	B	A	B		A	A	
Approach Delay (s)		11.8			14.6			10.3			7.7	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	45.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
c Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06                ROUTE 50/ROUTE 67 ALT 1 HB                    34  *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* E     (m)   10.00  10.00  10.00  10.00          * TIME PERIOD     min    60  *
* L'    (m)   20.00  20.00  20.00  20.00          * TIME SLICE      min    15  *
* V     (m)    7.20   7.20   7.20   7.20          * RESULTS PERIOD  min  0 60  *
* RAD   (m)   20.00  20.00  20.00  20.00          * TIME COST      $/hr 15.00  *
* PHI   (d)   30.00  30.00  30.00  30.00          * FLOW PERIOD     min  0 60  *
* DIA   (m)   70.00  70.00  70.00  70.00          * FLOW TYPE   pcu/veh   VEH  *
* GRAD SEP       0      0      0      0           * FLOW PEAK  am/op/pm    AM  *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                             *    *  *              *        *
*RT 50 NB  *1.05*    0  467   98  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 67 WB  *1.05*    0  138    6  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 5067 SB*1.05*    0  595  491  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*BALL EB   *1.05*    0  153   48  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                             *    *  *              *        *
*          *    *                             *    *  *              *        *
*          *    *                             *    *  *              *        *
*****************************************************************************
*                                                         *                 *
* FLOW        veh     565    144   1086    201           * AVEDEL  s    2.2 *
* CAPACITY    veh    2170   2223   2473   1901           * LOS   SIG      A *
* AVE DELAY  mins    0.03   0.03   0.04   0.03           * LOS UNSIG      A *
* MAX DELAY  mins    0.06   0.04   0.07   0.05           *                  *
* AVE QUEUE   veh       0      0      1      0           * VEHIC HRS    1.2 *
* MAX QUEUE   veh       0      0      1      0           * COST    $     19 *
*                                                         *                 *
*****************************************************************************
```

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0			4.0			4.0	4.0
Lane Util. Factor	1.00		1.00		0.95			0.95			0.95	1.00
Frt	1.00		0.85		1.00			1.00			1.00	0.85
Flt Protected	0.95		1.00		1.00			1.00			1.00	1.00
Satd. Flow (prot)	1770		1583		3539			3539			3539	1583
Flt Permitted	0.48		1.00		1.00			1.00			1.00	1.00
Satd. Flow (perm)	897		1583		3539			3539			3539	1583
Volume (vph)	75	0	418	0	272	0	0	451	0	0	645	59
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)	82	0	454	0	296	0	0	490	0	0	701	64
Lane Group Flow (vph)	82	0	454	0	296	0	0	490	0	0	701	64
Turn Type	custom		custom									pm+ov
Protected Phases	7		8		8			2			6	7
Permitted Phases	8-7		7 8									6
Actuated Green, G (s)	32.0		32.0		16.0			40.0			40.0	56.0
Effective Green, g (s)	36.0		36.0		18.0			42.0			42.0	60.0
Actuated g/C Ratio	0.40		0.40		0.20			0.47			0.47	0.67
Clearance Time (s)	6.0		6.0		6.0			6.0			6.0	6.0
Lane Grp Cap (vph)	533		704		708			1652			1652	1126
v/s Ratio Prot	0.03		c0.13		0.08			0.14			c0.20	0.01
v/s Ratio Perm	0.03		0.16									0.03
v/c Ratio	0.15		0.64		0.42			0.30			0.42	0.06
Uniform Delay, d1	17.0		21.8		31.4			14.9			16.0	5.2
Progression Factor	1.00		1.00		1.00			1.00			1.00	1.00
Incremental Delay, d2	0.6		4.5		1.8			0.5			0.8	0.1
Delay (s)	17.6		26.3		33.2			15.3			16.8	5.3
Level of Service	B		C		C			B			B	A
Approach Delay (s)		25.0			33.2			15.3			15.8	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	20.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.53		
Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.2%	ICU Level of Service	A

c Critical Lane Group

```
*****************************************************************************
*                                                                           *
*   1:4:06                ROUTE 67/BROOKLINE RD ALT 1 HB                  16 *
*                                                                           *
*****************************************************************************
*                                                   *                       *
* E     (m)   10.00  10.00  10.00                   * TIME PERIOD     min   60 *
* L'    (m)   20.00  20.00  20.00                   * TIME SLICE      min   15 *
* V     (m)    7.20   7.20   7.20                   * RESULTS PERIOD  min  0 60 *
* RAD   (m)   20.00  20.00  20.00                   * TIME COST      $/hr 15.00 *
* PHI   (d)   30.00  30.00  30.00                   * FLOW PERIOD     min  0 60 *
* DIA   (m)   70.00  70.00  70.00                   * FLOW TYPE   pcu/veh   VEH *
* GRAD SEP       0      0      0                   * FLOW PEAK  am/op/pm    AM *
*                                                   *                       *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *              *         *
*RT 67 NB  *1.05*  451  272    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 67 SB  *1.05*    0  645    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*BROOK EB  *1.05*  418   75    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*****************************************************************************
*                                                           *                 *
* FLOW        veh     723    645    493                     * AVEDEL  s   1.8 *
* CAPACITY    veh    2585   2453   2202                     * LOS   SIG     A *
* AVE DELAY  mins    0.03   0.03   0.03                     * LOS UNSIG     A *
* MAX DELAY  mins    0.05   0.05   0.05                     *                 *
* AVE QUEUE   veh       0      0      0                     * VEHIC HRS   0.9 *
* MAX QUEUE   veh       0      0      0                     * COST    $    14 *
*                                                           *                 *
*****************************************************************************
```

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.86			0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1770	3486		1770	3521		1770	1610			1792	
Flt Permitted	0.27	1.00		0.15	1.00		0.57	1.00			0.62	
Satd. Flow (perm)	506	3486		280	3521		1063	1610			1141	
Volume (vph)	4	899	99	88	692	24	138	20	194	133	102	26
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	977	108	96	752	26	150	22	211	145	111	28
Lane Group Flow (vph)	4	1085	0	96	778	0	150	233	0	0	284	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	21.3	20.6		32.7	26.3		15.2	15.2			15.2	
Effective Green, g (s)	25.3	22.6		35.0	28.3		17.2	17.2			17.2	
Actuated g/C Ratio	0.42	0.38		0.58	0.47		0.29	0.29			0.29	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	269	1309		371	1655		304	460			326	
v/s Ratio Prot	0.00	c0.31		c0.04	c0.22			0.14				
v/s Ratio Perm	0.01			0.11			0.14				c0.25	
v/c Ratio	0.01	0.83		0.26	0.47		0.49	0.51			0.87	
Uniform Delay, d1	13.6	17.0		14.9	10.8		17.9	18.0			20.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.0	4.5		0.4	0.2		1.3	0.9			21.6	
Delay (s)	13.6	21.5		15.3	11.1		19.1	18.8			42.0	
Level of Service	B	C		B	B		B	B			D	
Approach Delay (s)		21.5			11.5			19.0			42.0	
Approach LOS		C			B			B			D	

Intersection Summary			
HCM Average Control Delay	20.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	60.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	C
c Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06                ROUTE 67/EASTLINE RD ALT 1 HB                  22 *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* E     (m)   10.00   5.00  10.00   5.00          * TIME PERIOD     min    60 *
* L'    (m)   20.00  10.00  20.00  10.00          * TIME SLICE      min    15 *
* V     (m)    7.20   3.60   7.20   3.60          * RESULTS PERIOD  min  0 60 *
* RAD   (m)   20.00  20.00  20.00  20.00          * TIME COST      $/hr 15.00 *
* PHI   (d)   30.00  30.00  30.00  30.00          * FLOW PERIOD     min  0 60 *
* DIA   (m)   70.00  70.00  70.00  70.00          * FLOW TYPE   pcu/veh   VEH *
* GRAD SEP       0      0      0      0          * FLOW PEAK  am/op/pm    AM *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *              *        *
* RT 67 EB *1.05*    0  899    4  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* EAST NB  *1.05*    0   20  138  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 67 WB *1.05*    0  692   88  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* EAST SB  *1.05*   26  102  133  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *              *        *
*          *    *                            *    *  *              *        *
*          *    *                            *    *  *              *        *
*****************************************************************************
*                                                          *                 *
* FLOW        veh     903    158    780    261             * AVEDEL  s   2.7 *
* CAPACITY    veh    2418    846   2527    900             * LOS   SIG     A *
* AVE DELAY  mins    0.04   0.08   0.03   0.09             * LOS UNSIG     A *
* MAX DELAY  mins    0.06   0.14   0.05   0.15             *                 *
* AVE QUEUE   veh       1      0      0      0             * VEHIC HRS   1.6 *
* MAX QUEUE   veh       1      0      1      1             * COST    $    24 *
*                                                          *                 *
*****************************************************************************
```

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00		0.95	1.00
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00		1.00	1.00
Satd. Flow (prot)	1770	1816		1770	1836		1770	3539	1583		3533	1583
Flt Permitted	0.60	1.00		0.40	1.00		0.20	1.00	1.00		0.93	1.00
Satd. Flow (perm)	1121	1816		753	1836		369	3539	1583		3287	1583
Volume (vph)	101	271	54	229	94	10	27	402	169	20	602	66
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)	110	295	59	249	102	11	29	437	184	22	654	72
Lane Group Flow (vph)	110	354	0	249	113	0	29	437	184	0	676	72
Turn Type	pm+pt			pm+pt			pm+pt		pm+ov	Perm		pm+ov
Protected Phases	7	4		3	8		5	2	3		6	7
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	23.7	16.3		19.3	14.1		21.5	21.5	26.7		14.2	21.6
Effective Green, g (s)	27.7	18.3		23.3	16.1		23.5	23.5	30.7		16.2	25.6
Actuated g/C Ratio	0.45	0.30		0.38	0.26		0.39	0.39	0.50		0.27	0.42
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0		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
Lane Grp Cap (vph)	609	545		408	485		218	1363	900		873	768
v/s Ratio Prot	c0.03	c0.19		c0.07	0.06		0.01	c0.12	0.02			0.01
v/s Ratio Perm	0.05			0.16			0.04		0.09		c0.21	0.03
v/c Ratio	0.18	0.65		0.61	0.23		0.13	0.32	0.20		0.77	0.09
Uniform Delay, d1	9.7	18.6		13.8	17.6		12.8	13.2	8.4		20.7	10.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	2.7		2.7	0.2		0.3	0.1	0.1		4.3	0.1
Delay (s)	9.9	21.2		16.4	17.9		13.0	13.3	8.5		25.0	10.7
Level of Service	A	C		B	B		B	B	A		C	B
Approach Delay (s)		18.5			16.9			11.9			23.7	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM Average Control Delay	18.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	61.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	64.9%	ICU Level of Service	B
c Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06                ROUTE 50/BROOKLINE RD ALT 1 HB                 43 *
*                                                                           *
*****************************************************************************
*                                                   *                       *
* E     (m)   10.00  10.00  10.00  10.00            * TIME PERIOD     min   60 *
* L'    (m)   20.00  20.00  20.00  20.00            * TIME SLICE      min   15 *
* V     (m)    6.00   6.00   6.00   6.00            * RESULTS PERIOD  min  0 60 *
* RAD   (m)   40.00  20.00  20.00  20.00            * TIME COST      $/hr 15.00 *
* PHI   (d)   25.00  30.00  30.00  30.00            * FLOW PERIOD     min  0 60 *
* DIA   (m)   70.00  70.00  70.00  70.00            * FLOW TYPE   pcu/veh  VEH *
* GRAD SEP        0      0      0      0            * FLOW PEAK  am/op/pm   AM *
*                                                   *                       *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *              *        *
* RT 50 NB *1.05*    0  402   27  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* BROOK WB *1.05*    0   94  229  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*    0  602   20  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* BROOK EB *1.05*    0  271  101  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *              *        *
*          *    *                            *    *  *              *        *
*          *    *                            *    *  *              *        *
*****************************************************************************
*                                                         *                 *
* FLOW        veh     429    323    622    372           * AVEDEL  s    2.0 *
* CAPACITY    veh    2276   2096   2211   1891           * LOS   SIG      A *
* AVE DELAY  mins    0.03   0.03   0.03   0.04           * LOS UNSIG      A *
* MAX DELAY  mins    0.05   0.05   0.06   0.06           *                 *
* AVE QUEUE   veh       0      0      0      0           * VEHIC HRS    1.0 *
* MAX QUEUE   veh       0      0      0      0           * COST     $    14 *
*                                                         *                 *
*****************************************************************************
```

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539		1770	1863	1770	1583
Flt Permitted	1.00		0.30	1.00	0.95	1.00
Satd. Flow (perm)	3539		553	1863	1770	1583
Volume (vph)	579	1	148	884	4	115
Peak-hour factor, PHF	0.72	0.72	0.81	0.81	0.87	0.87
Adj. Flow (vph)	804	1	183	1091	5	132
Lane Group Flow (vph)	805	0	183	1091	5	132
Turn Type			pm+pt			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases			6			8
Actuated Green, G (s)	49.0		62.0	62.0	16.0	23.0
Effective Green, g (s)	51.0		64.0	64.0	18.0	27.0
Actuated g/C Ratio	0.57		0.71	0.71	0.20	0.30
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0
Lane Grp Cap (vph)	2005		515	1325	354	545
v/s Ratio Prot	0.23		0.04	c0.59	0.00	c0.02
v/s Ratio Perm			0.22			0.06
v/c Ratio	0.40		0.36	0.82	0.01	0.24
Uniform Delay, d1	10.9		9.0	9.1	28.9	23.8
Progression Factor	0.88		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5		1.9	5.9	0.1	1.1
Delay (s)	10.2		10.9	15.0	29.0	24.8
Level of Service	B		B	B	C	C
Approach Delay (s)	10.2			14.4	25.0	
Approach LOS	B			B	C	

Intersection Summary			
HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Cycle Length (s)	90.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	67.4%	ICU Level of Service	B

c Critical Lane Group

```
*******************************************************************************
*                                                                             *
*   1:4:06                ROUTE 50/ROUTE 146A ALT 1 HB                     13 *
*                                                                             *
*******************************************************************************
*                                                 *                           *
* E     (m)   10.00   5.00  10.00                 * TIME PERIOD     min    60 *
* L'    (m)   20.00  10.00  20.00                 * TIME SLICE      min    15 *
* V     (m)    7.20   3.60   7.60                 * RESULTS PERIOD  min  0 60 *
* RAD   (m)   20.00  20.00  20.00                 * TIME COST      $/hr 15.00 *
* PHI   (d)   30.00  30.00  30.00                 * FLOW PERIOD     min  0 60 *
* DIA   (m)   70.00  70.00  70.00                 * FLOW TYPE   pcu/veh   VEH *
* GRAD SEP       0      0      0                 * FLOW PEAK  am/op/pm    AM *
*                                                 *                           *
*******************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                             *    *  *              *        *
*RT 50 NB  *1.05*    1  579    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 146A EB*1.05*  115    4    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 50 SB  *1.05*  884  148    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                             *    *  *              *        *
*          *    *                             *    *  *              *        *
*          *    *                             *    *  *              *        *
*          *    *                             *    *  *              *        *
*******************************************************************************
*                                                         *                   *
* FLOW        veh     580    119   1032                   * AVEDEL  s    2.0 *
* CAPACITY    veh    2536   1054   2691                   * LOS   SIG      A *
* AVE DELAY  mins    0.03   0.06   0.03                   * LOS UNSIG      A *
* MAX DELAY  mins    0.04   0.09   0.05                   *                   *
* AVE QUEUE   veh       0      0      1                   * VEHIC HRS    1.0 *
* MAX QUEUE   veh       0      0      1                   * COST     $    14 *
*                                                         *                   *
*******************************************************************************
```

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	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	1.00	1.00	
Frt	0.91		1.00	1.00	1.00	
Flt Protected	0.98		0.95	1.00	1.00	
Satd. Flow (prot)	1672		1770	1863	1855	
Flt Permitted	0.98		0.15	1.00	1.00	
Satd. Flow (perm)	1672		284	1863	1855	
Volume (vph)	75	133	32	570	856	27
Peak-hour factor, PHF	0.60	0.60	0.90	0.90	0.93	0.93
Adj. Flow (vph)	125	222	36	633	920	29
Lane Group Flow (vph)	347	0	36	633	949	0
Turn Type			Perm			
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	21.0		57.0	57.0	57.0	
Effective Green, g (s)	23.0		59.0	59.0	59.0	
Actuated g/C Ratio	0.26		0.66	0.66	0.66	
Clearance Time (s)	6.0		6.0	6.0	6.0	
Lane Grp Cap (vph)	427		186	1221	1216	
v/s Ratio Prot	c0.21			0.34	c0.51	
v/s Ratio Perm			0.13			
v/c Ratio	0.81		0.19	0.52	0.78	
Uniform Delay, d1	31.5		6.1	8.1	10.9	
Progression Factor	1.00		1.00	1.00	0.17	
Incremental Delay, d2	15.5		2.3	1.6	2.8	
Delay (s)	46.9		8.4	9.7	4.7	
Level of Service	D		A	A	A	
Approach Delay (s)	46.9			9.6	4.7	
Approach LOS	D			A	A	

Intersection Summary			
HCM Average Control Delay	13.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	77.4%	ICU Level of Service	C

c Critical Lane Group

```
*******************************************************************************
*                                                                             *
*   1:4:06                  ROUTE 50/FOREST ALT 1 HB                     17   *
*                                                                             *
*******************************************************************************
*                                                   *                         *
* E     (m)   10.00  10.00   5.00                   * TIME PERIOD     min    60  *
* L'    (m)   20.00  20.00  10.00                   * TIME SLICE      min    15  *
* V     (m)    7.20   7.20   3.00                   * RESULTS PERIOD  min  0 60  *
* RAD   (m)   20.00  20.00  20.00                   * TIME COST      $/hr 15.00  *
* PHI   (d)   30.00  30.00  30.00                   * FLOW PERIOD     min  0 60  *
* DIA   (m)   70.00  70.00  70.00                   * FLOW TYPE   pcu/veh   VEH  *
* GRAD SEP       0      0      0                   * FLOW PEAK  am/op/pm    AM  *
*                                                   *                         *
*******************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *              *         *
* RT 50 NB *1.05*  570   32    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*   27  856    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
* FOREST WB*1.05*  133   75    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*******************************************************************************
*                                                         *                   *
* FLOW        veh     602    883    208                   * AVEDEL  s    2.2  *
* CAPACITY    veh    2585   2614    842                   * LOS   SIG      A  *
* AVE DELAY  mins    0.03   0.03   0.09                   * LOS UNSIG      A  *
* MAX DELAY  mins    0.04   0.05   0.15                   *                   *
* AVE QUEUE   veh       0      1      0                   * VEHIC HRS    1.1  *
* MAX QUEUE   veh       0      1      0                   * COST    $     16  *
*                                                         *                   *
*******************************************************************************
```

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1830		1770	3539	1583	1770	3539	1583
Flt Permitted	0.54	1.00	1.00	0.26	1.00		0.16	1.00	1.00	0.49	1.00	1.00
Satd. Flow (perm)	1000	1863	1583	486	1830		290	3539	1583	916	3539	1583
Volume (vph)	129	295	186	243	194	26	113	437	176	19	634	93
Peak-hour factor, PHF	0.87	0.87	0.87	0.89	0.89	0.89	0.97	0.97	0.97	0.66	0.66	0.66
Adj. Flow (vph)	148	339	214	273	218	29	116	451	181	29	961	141
Lane Group Flow (vph)	148	339	214	273	247	0	116	451	181	29	961	141
Turn Type	pm+pt		pm+ov	pm+pt			pm+pt		pm+ov	Perm		pm+ov
Protected Phases	7	4	5	3	8		5	2	3		6	7
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)	18.8	14.8	18.8	22.8	16.8		29.7	29.7	35.7	19.7	19.7	23.7
Effective Green, g (s)	22.8	16.8	22.8	26.8	18.8		31.7	31.7	39.7	21.7	21.7	27.7
Actuated g/C Ratio	0.33	0.25	0.33	0.39	0.27		0.46	0.46	0.58	0.32	0.32	0.40
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	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)	400	457	619	340	502		264	1638	1010	290	1121	733
v/s Ratio Prot	0.03	0.18	c0.03	c0.09	0.13		0.04	0.13	0.02		c0.27	0.02
v/s Ratio Perm	0.09		0.10	c0.22			0.16		0.09	0.03		0.07
v/c Ratio	0.37	0.74	0.35	0.80	0.49		0.44	0.28	0.18	0.10	0.86	0.19
Uniform Delay, d1	16.7	23.8	17.2	16.0	20.8		13.3	11.3	6.8	16.5	21.9	13.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	6.4	0.3	12.8	0.8		1.2	0.1	0.1	0.2	6.6	0.1
Delay (s)	17.2	30.2	17.6	28.8	21.6		14.5	11.4	6.8	16.7	28.6	13.3
Level of Service	B	C	B	C	C		B	B	A	B	C	B
Approach Delay (s)		23.6			25.4			10.8			26.4	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM Average Control Delay	21.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	68.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.3%	ICU Level of Service	C
c Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06              ROUTE 50/LAKE HILL RD ALT 1 HB                   25 *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* E     (m)   10.00  10.00  10.00  10.00          * TIME PERIOD     min    60 *
* L'    (m)   20.00  20.00  20.00  20.00          * TIME SLICE      min    15 *
* V     (m)    7.00   7.20   6.00   6.00          * RESULTS PERIOD  min  0 60 *
* RAD   (m)   20.00  20.00  20.00  20.00          * TIME COST      $/hr 15.00 *
* PHI   (d)   30.00  30.00  30.00  30.00          * FLOW PERIOD     min  0 60 *
* DIA   (m)   70.00  70.00  70.00  70.00          * FLOW TYPE   pcu/veh   VEH *
* GRAD SEP       0      0      0      0           * FLOW PEAK  am/op/pm    AM *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *        *
* RT 50 NB *1.05*    0  437  113  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* LHR WB   *1.05*    0  194  243  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*    0  634   19  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* LHR EB   *1.05*    0  295  129  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *        *
*          *    *                            *    *  *               *        *
*          *    *                            *    *  *               *        *
*****************************************************************************
*                                                                 *         *
* FLOW        veh     550    437    653    424                   * AVEDEL  s   2.1 *
* CAPACITY    veh    2309   2179   2083   1862                   * LOS   SIG     A *
* AVE DELAY  mins    0.03   0.03   0.04   0.04                   * LOS UNSIG     A *
* MAX DELAY  mins    0.05   0.05   0.06   0.06                   *                 *
* AVE QUEUE   veh       0      0      0      0                   * VEHIC HRS   1.2 *
* MAX QUEUE   veh       0      0      1      0                   * COST    $    18 *
*                                                                 *                 *
*****************************************************************************
```

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor		1.00		1.00	1.00			0.95			0.95	
Frt		1.00		1.00	0.94			0.98			1.00	
Flt Protected		0.99		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1831		1770	1751			3470			3529	
Flt Permitted		0.90		0.66	1.00			0.95			0.95	
Satd. Flow (perm)		1678		1222	1751			3306			3343	
Volume (vph)	30	77	3	94	24	16	3	481	71	8	634	9
Peak-hour factor, PHF	0.61	0.61	0.61	0.81	0.81	0.81	0.88	0.88	0.88	0.94	0.94	0.94
Adj. Flow (vph)	49	126	5	116	30	20	3	547	81	9	674	10
Lane Group Flow (vph)	0	180	0	116	50	0	0	631	0	0	693	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		11.0		11.0	11.0			26.5			26.5	
Effective Green, g (s)		13.0		13.0	13.0			28.5			28.5	
Actuated g/C Ratio		0.26		0.26	0.26			0.58			0.58	
Clearance Time (s)		6.0		6.0	6.0			6.0			6.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		441		321	460			1903			1925	
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.11		0.09				0.19			c0.21	
v/c Ratio		0.41		0.36	0.11			0.33			0.36	
Uniform Delay, d1		15.1		14.9	13.9			5.5			5.6	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		0.6		0.7	0.1			0.1			0.1	
Delay (s)		15.7		15.6	14.0			5.6			5.7	
Level of Service		B		B	B			A			A	
Approach Delay (s)		15.7			15.1			5.6			5.7	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	7.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	49.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
c Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06                ROUTE 50/OUTLET RD ALT 1 HB                     6 *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* E     (m)   10.00   5.00  10.00   5.00          * TIME PERIOD     min   60 *
* L'    (m)   20.00  10.00  20.00  10.00          * TIME SLICE      min   15 *
* V     (m)    7.20   3.00   7.20   3.00          * RESULTS PERIOD  min  0 60 *
* RAD   (m)   20.00  20.00  20.00  20.00          * TIME COST      $/hr 15.00 *
* PHI   (d)   30.00  30.00  30.00  30.00          * FLOW PERIOD     min  0 60 *
* DIA   (m)   70.00  70.00  70.00  70.00          * FLOW TYPE   pcu/veh   VEH *
* GRAD SEP       0      0      0      0          * FLOW PEAK  am/op/pm    AM *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *              *        *
* RT 50 NB *1.05*   71  481    3  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* OUTLET WB*1.05*   16   24   94  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*    9  634    8  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* CHAR EB  *1.05*    3   77   30  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *              *        *
*          *    *                            *    *  *              *        *
*          *    *                            *    *  *              *        *
*****************************************************************************
*                                                                 *         *
* FLOW        veh     555    134    651    110                   * AVEDEL  s   2.1 *
* CAPACITY    veh    2575    995   2554    894                   * LOS   SIG     A *
* AVE DELAY  mins    0.03   0.06   0.03   0.07                   * LOS UNSIG     A *
* MAX DELAY  mins    0.04   0.10   0.05   0.11                   *                 *
* AVE QUEUE   veh       0      0      0      0                   * VEHIC HRS   0.8 *
* MAX QUEUE   veh       0      0      0      0                   * COST    $    12 *
*                                                                 *                 *
*****************************************************************************
```

Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Ideal Flow (vphpl)	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	1.00			1.00
Frt	1.00	1.00	1.00			0.86
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1770	1863	1862			1611
Flt Permitted	0.15	1.00	1.00			1.00
Satd. Flow (perm)	287	1863	1862			1611
Volume (vph)	146	479	718	1	0	346
Peak-hour factor, PHF	0.89	0.89	0.88	0.88	0.82	0.82
Adj. Flow (vph)	164	538	816	1	0	422
Lane Group Flow (vph)	164	538	817	0	0	422
Turn Type	pm+pt					custom
Protected Phases	5	2	6			5
Permitted Phases	2					5
Actuated Green, G (s)	49.0	55.0	29.0			14.0
Effective Green, g (s)	51.0	55.0	31.0			16.0
Actuated g/C Ratio	0.93	1.00	0.56			0.29
Clearance Time (s)	6.0	6.0	6.0			6.0
Lane Grp Cap (vph)	698	1863	1049			469
v/s Ratio Prot	0.07	0.29	c0.44			c0.26
v/s Ratio Perm	0.15					
v/c Ratio	0.23	0.29	0.78			0.90
Uniform Delay, d1	5.0	0.0	9.3			18.7
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.8	0.4	5.7			22.9
Delay (s)	5.7	0.4	15.0			41.6
Level of Service	A	A	B			D
Approach Delay (s)		1.6	15.0		41.6	
Approach LOS		A	B		D	

Intersection Summary			
HCM Average Control Delay	16.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.82		
Cycle Length (s)	55.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.8%	ICU Level of Service	C

c Critical Lane Group

```
*****************************************************************************
*                                                                           *
*   1:4:06              ROUTE 50/MIDDLELINE RD ALT 1 HB                  14 *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* E     (m)   10.00  10.00   5.00                 * TIME PERIOD     min   60 *
* L'    (m)   20.00  20.00  10.00                 * TIME SLICE      min   15 *
* V     (m)    7.20   7.20   3.60                 * RESULTS PERIOD  min 0 60 *
* RAD   (m)   20.00  20.00  20.00                 * TIME COST      $/hr 15.00 *
* PHI   (d)   30.00  30.00  30.00                 * FLOW PERIOD     min 0 60 *
* DIA   (m)   70.00  70.00  70.00                 * FLOW TYPE   pcu/veh  VEH *
* GRAD SEP       0      0      0                 * FLOW PEAK  am/op/pm   AM *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                             *    *  *             *        *
* RT 50 NB *1.05*  479  143    0               *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*    1  718    0               *1.00*50*0.75 1.125 0.75*15 30 45 *
* MID WB   *1.05*  346    0    0               *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                             *    *  *             *        *
*          *    *                             *    *  *             *        *
*          *    *                             *    *  *             *        *
*          *    *                             *    *  *             *        *
*****************************************************************************
*                                                          *                 *
* FLOW        veh     622    719    346                    * AVEDEL  s   2.5 *
* CAPACITY    veh    2636   2539    991                    * LOS   SIG     A *
* AVE DELAY  mins    0.03   0.03   0.09                    * LOS UNSIG     A *
* MAX DELAY  mins    0.04   0.05   0.15                    *                 *
* AVE QUEUE   veh       0      0      1                    * VEHIC HRS   1.2 *
* MAX QUEUE   veh       0      0      1                    * COST    $    17 *
*                                                          *                 *
*****************************************************************************
```

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.91			0.96		1.00	1.00		1.00	0.99	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1689			1767		1770	1857		1770	1846	
Flt Permitted		0.99			0.64		0.21	1.00		0.14	1.00	
Satd. Flow (perm)		1679			1135		382	1857		264	1846	
Volume (vph)	6	140	322	65	170	108	102	532	12	564	629	40
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)	7	152	350	71	185	117	111	578	13	613	684	43
Lane Group Flow (vph)	0	509	0	0	373	0	111	591	0	613	727	0
Turn Type	Perm			Perm			pm+pt			pm+pt		
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)		21.0			21.0		25.4	22.2		43.2	34.0	
Effective Green, g (s)		23.0			23.0		29.4	24.2		45.2	36.0	
Actuated g/C Ratio		0.30			0.30		0.39	0.32		0.59	0.47	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		507			343		242	590		493	872	
v/s Ratio Prot							0.03	0.32		c0.28	0.39	
v/s Ratio Perm		0.30			c0.33		0.15			c0.46		
v/c Ratio		1.00			1.09		0.46	1.00		1.24	0.83	
Uniform Delay, d1		26.6			26.6		16.3	26.0		21.5	17.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		40.9			74.0		1.4	37.5		125.8	6.9	
Delay (s)		67.5			100.6		17.7	63.5		147.3	24.4	
Level of Service		E			F		B	E		F	C	
Approach Delay (s)		67.5			100.6			56.2			80.6	
Approach LOS		E			F			E			F	

Intersection Summary			
HCM Average Control Delay	75.0	HCM Level of Service	E
HCM Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	76.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	129.2%	ICU Level of Service	H
c Critical Lane Group			

Movement	EBL	EBR	SBL	SBR	NWL	NWR
Lane Configurations						
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Volume (veh/h)	111	421	656	65	262	542
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	121	458	713	71	285	589
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	1907	748			784	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	0			66	
cM capacity (veh/h)	50	412			835	

Direction, Lane #	EB 1	SB 1	NW 1
Volume Total	578	784	874
Volume Left	121	0	285
Volume Right	458	71	0
cSH	163	1700	835
Volume to Capacity	3.54	0.46	0.34
Queue Length (ft)	Err	0	38
Control Delay (s)	Err	0.0	7.8
Lane LOS	F		A
Approach Delay (s)	Err	0.0	7.8
Approach LOS	F		

Intersection Summary			
Average Delay	2589.1		
Intersection Capacity Utilization	140.7%	ICU Level of Service	H

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.98		1.00	1.00			0.93			0.99	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1770	1835		1770	1854			1695			1791	
Flt Permitted	0.15	1.00		0.05	1.00			0.72			0.61	
Satd. Flow (perm)	285	1835		94	1854			1254			1117	
Volume (vph)	4	911	101	88	755	24	155	20	194	133	102	28
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	990	110	96	821	26	168	22	211	145	111	30
Lane Group Flow (vph)	4	1100	0	96	847	0	0	401	0	0	286	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	73.8	73.0		87.8	81.0			35.0			35.0	
Effective Green, g (s)	77.8	75.0		89.8	83.0			37.0			37.0	
Actuated g/C Ratio	0.58	0.56		0.67	0.62			0.27			0.27	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	195	1021		197	1142			344			307	
v/s Ratio Prot	0.00	c0.60		c0.04	c0.46							
v/s Ratio Perm	0.01			0.28				c0.32			0.26	
v/c Ratio	0.02	1.08		0.49	0.74			1.17			0.93	
Uniform Delay, d1	36.6	29.9		55.7	18.3			48.9			47.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	51.4		1.9	2.6			101.6			33.8	
Delay (s)	36.7	81.3		57.6	21.0			150.5			81.5	
Level of Service	D	F		E	C			F			F	
Approach Delay (s)		81.2			24.7			150.5			81.5	
Approach LOS		F			C			F			F	

Intersection Summary			
HCM Average Control Delay	71.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	134.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	116.5%	ICU Level of Service	G
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			1.00			0.96			0.99	
Flt Protected		0.99			0.97			1.00			1.00	
Satd. Flow (prot)		1810			1794			1789			1834	
Flt Permitted		0.81			0.49			0.96			0.97	
Satd. Flow (perm)		1491			904			1714			1788	
Volume (vph)	137	288	50	221	96	10	29	461	189	20	600	72
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)	149	313	54	240	104	11	32	501	205	22	652	78
Lane Group Flow (vph)	0	516	0	0	355	0	0	738	0	0	752	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		26.3			26.3			28.2			28.2	
Effective Green, g (s)		28.3			28.3			30.2			30.2	
Actuated g/C Ratio		0.43			0.43			0.45			0.45	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		635			385			778			812	
v/s Ratio Prot												
v/s Ratio Perm		0.35			c0.39			c0.43			0.42	
v/c Ratio		0.81			0.92			0.95			0.93	
Uniform Delay, d1		16.8			18.1			17.4			17.1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		7.8			27.2			20.5			16.3	
Delay (s)		24.6			45.2			37.9			33.4	
Level of Service		C			D			D			C	
Approach Delay (s)		24.6			45.2			37.9			33.4	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM Average Control Delay	34.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	66.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	139.4%	ICU Level of Service	H
c: Critical Lane Group			

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	618	1	152	930	4	128
Peak Hour Factor	0.72	0.72	0.81	0.81	0.87	0.87
Hourly flow rate (veh/h)	858	1	188	1148	5	147
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume			860		2382	859
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			76		84	59
cM capacity (veh/h)			782		29	356

Direction, Lane #	NB 1	SB 1	SB 2	NW 1
Volume Total	860	188	1148	152
Volume Left	0	188	0	5
Volume Right	1	0	0	147
cSH	1700	782	1700	264
Volume to Capacity	0.51	0.24	0.68	0.57
Queue Length (ft)	0	23	0	82
Control Delay (s)	0.0	11.1	0.0	35.5
Lane LOS		B		E
Approach Delay (s)	0.0	1.6		35.5
Approach LOS				E

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	76.5%	ICU Level of Service	C

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	71	133	32	614	899	29
Peak Hour Factor	0.60	0.60	0.90	0.90	0.93	0.93
Hourly flow rate (veh/h)	118	222	36	682	967	31
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	1736	982	998			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	27	95			
cM capacity (veh/h)	91	302	694			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	340	718	998
Volume Left	118	36	0
Volume Right	222	0	31
cSH	167	694	1700
Volume to Capacity	2.03	0.05	0.59
Queue Length (ft)	660	4	0
Control Delay (s)	529.1	1.4	0.0
Lane LOS	F	A	
Approach Delay (s)	529.1	1.4	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	88.0		
Intersection Capacity Utilization	115.0%	ICU Level of Service	G

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.95		1.00	0.97		1.00	0.95		1.00	0.98	
Flt Protected		0.99		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1756		1770	1816		1770	1767		1770	1823	
Flt Permitted		0.84		0.24	1.00		0.07	1.00		0.18	1.00	
Satd. Flow (perm)		1496		450	1816		128	1767		330	1823	
Volume (vph)	158	311	248	322	208	42	168	465	243	33	672	111
Peak-hour factor, PHF	0.87	0.87	0.87	0.89	0.89	0.89	0.97	0.97	0.97	0.66	0.66	0.66
Adj. Flow (vph)	182	357	285	362	234	47	173	479	251	50	1018	168
Lane Group Flow (vph)	0	824	0	362	281	0	173	730	0	50	1186	0
Turn Type	Perm			pm+pt			pm+pt			Perm		
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		43.0		55.0	55.0		63.0	63.0		52.0	52.0	
Effective Green, g (s)		45.0		57.0	57.0		65.0	65.0		54.0	54.0	
Actuated g/C Ratio		0.35		0.44	0.44		0.50	0.50		0.42	0.42	
Clearance Time (s)		6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		518		279	796		152	884		137	757	
v/s Ratio Prot				c0.08	0.15		c0.06	0.41			c0.65	
v/s Ratio Perm		c0.55		0.49			0.50			0.15		
v/c Ratio		1.59		1.30	0.35		1.14	0.83		0.36	1.57	
Uniform Delay, d1		42.5		42.1	24.2		63.7	27.7		26.2	38.0	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		274.9		157.7	0.3		114.9	6.4		1.7	261.4	
Delay (s)		317.4		199.9	24.5		178.6	34.0		27.8	299.4	
Level of Service		F		F	C		F	C		C	F	
Approach Delay (s)		317.4			123.2			61.7			288.4	
Approach LOS		F			F			E			F	

Intersection Summary			
HCM Average Control Delay	208.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.54		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	153.0%	ICU Level of Service	H
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		1.00			0.98			0.98			1.00	
Flt Protected		0.99			0.97			1.00			1.00	
Satd. Flow (prot)		1831			1771			1833			1858	
Flt Permitted		0.88			0.68			1.00			0.99	
Satd. Flow (perm)		1637			1245			1829			1843	
Volume (vph)	30	77	3	96	24	16	3	550	73	8	643	9
Peak-hour factor, PHF	0.61	0.61	0.61	0.81	0.81	0.81	0.88	0.88	0.88	0.94	0.94	0.94
Adj. Flow (vph)	49	126	5	119	30	20	3	625	83	9	684	10
Lane Group Flow (vph)	0	180	0	0	169	0	0	711	0	0	703	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.5			7.5			29.9			29.9	
Effective Green, g (s)		9.5			9.5			31.9			31.9	
Actuated g/C Ratio		0.19			0.19			0.65			0.65	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		315			239			1181			1190	
v/s Ratio Prot												
v/s Ratio Perm		0.11			c0.14			c0.39			0.38	
v/c Ratio		0.57			0.71			0.60			0.59	
Uniform Delay, d1		18.1			18.6			5.1			5.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		2.5			9.2			0.9			0.8	
Delay (s)		20.6			27.8			5.9			5.8	
Level of Service		C			C			A			A	
Approach Delay (s)		20.6			27.8			5.9			5.8	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	49.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
c Critical Lane Group			

Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	162	545	741	1	0	348
Peak Hour Factor	0.89	0.89	0.88	0.88	0.82	0.82
Hourly flow rate (veh/h)	182	612	842	1	0	424
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume	843				1819	843
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	77				100	0
cM capacity (veh/h)	793				66	364

Direction, Lane #	NB 1	NB 2	SB 1	SE 1
Volume Total	182	612	843	424
Volume Left	182	0	0	0
Volume Right	0	0	1	424
cSH	793	1700	1700	364
Volume to Capacity	0.23	0.36	0.50	1.17
Queue Length (ft)	22	0	0	424
Control Delay (s)	10.9	0.0	0.0	133.5
Lane LOS	B			F
Approach Delay (s)	2.5		0.0	133.5
Approach LOS				F

Intersection Summary			
Average Delay	28.4		
Intersection Capacity Utilization	77.3%	ICU Level of Service	C

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00	1.00	1.00	0.95		0.97	0.95	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1858	1583	1770	1863	1583	1770	3535		3433	3504	
Flt Permitted		0.98	1.00	0.48	1.00	1.00	0.26	1.00		0.17	1.00	
Satd. Flow (perm)		1824	1583	903	1863	1583	487	3535		631	3504	
Volume (vph)	11	218	518	68	182	153	153	822	6	538	835	60
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)	12	237	563	74	198	166	166	893	7	585	908	65
Lane Group Flow (vph)	0	249	563	74	198	166	166	900	0	585	973	0
Turn Type	Perm		pm+ov	Perm		pm+ov	pm+pt			pm+pt		
Protected Phases		8	1		4	5	5	2		1	6	
Permitted Phases	8		8	4		4	2			6		
Actuated Green, G (s)		12.1	21.5	12.1	12.1	15.2	20.0	16.9		32.3	23.2	
Effective Green, g (s)		14.1	25.5	14.1	14.1	19.2	24.0	18.9		34.3	25.2	
Actuated g/C Ratio		0.25	0.45	0.25	0.25	0.34	0.43	0.34		0.61	0.45	
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0		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	
Lane Grp Cap (vph)		456	828	226	466	651	323	1185		950	1566	
v/s Ratio Prot			c0.14		0.11	0.02	0.05	c0.25		0.12	0.28	
v/s Ratio Perm		0.14	0.22	0.08		0.08	0.17			0.25		
v/c Ratio		0.55	0.68	0.33	0.42	0.25	0.51	0.76		0.62	0.62	
Uniform Delay, d1		18.4	12.2	17.3	17.7	13.4	10.3	16.7		7.8	11.9	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.3	2.2	0.9	0.6	0.2	1.4	2.9		1.2	0.8	
Delay (s)		19.7	14.5	18.1	18.4	13.6	11.7	19.6		9.0	12.7	
Level of Service		B	B	B	B	B	B	B		A	B	
Approach Delay (s)		16.1			16.5			18.3			11.3	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	14.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	56.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
c Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06                ROUTE 50/ROUTE 146A ALT 2 HB                  16  *
*                                                                           *
*****************************************************************************
*                                                 *                         *
*                                                 * TIME PERIOD     min   60 *
* E     (m)   10.00   5.00  10.00                 * TIME SLICE      min   15 *
* L'    (m)   20.00  10.00  20.00                 * RESULTS PERIOD  min  0 60 *
* V     (m)    7.20   3.60   7.60                 * TIME COST      $/hr 15.00 *
* RAD   (m)   20.00  20.00  20.00                 * FLOW PERIOD     min  0 60 *
* PHI   (d)   30.00  30.00  30.00                 * FLOW TYPE   pcu/veh  VEH *
* DIA   (m)   70.00  70.00  70.00                 * FLOW PEAK  am/op/pm   AM *
* GRAD SEP        0      0      0                 *                         *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *              *         *
*RT 50 NB  *1.05*    1  618    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 146A EB*1.05*  128    4    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 50 SB  *1.05*  930  152    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*****************************************************************************
*                                                          *                 *
* FLOW        veh     619    132   1082                    * AVEDEL  s   2.1 *
* CAPACITY    veh    2533   1036   2691                    * LOS   SIG     A *
* AVE DELAY  mins    0.03   0.06   0.03                    * LOS UNSIG     A *
* MAX DELAY  mins    0.04   0.10   0.06                    *                 *
* AVE QUEUE   veh       0      0      1                    * VEHIC HRS   1.1 *
* MAX QUEUE   veh       0      0      1                    * COST    $    16 *
*                                                          *                 *
*****************************************************************************
```

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0			4.0			4.0	4.0
Lane Util. Factor	1.00		1.00		0.95			0.95			0.95	1.00
Frt	1.00		0.85		1.00			1.00			1.00	0.85
Flt Protected	0.95		1.00		1.00			1.00			1.00	1.00
Satd. Flow (prot)	1770		1583		3539			3539			3539	1583
Flt Permitted	0.50		1.00		1.00			1.00			1.00	1.00
Satd. Flow (perm)	923		1583		3539			3539			3539	1583
Volume (vph)	126	0	402	0	262	0	0	542	0	0	656	108
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)	137	0	437	0	285	0	0	589	0	0	713	117
Lane Group Flow (vph)	137	0	437	0	285	0	0	589	0	0	713	117
Turn Type	custom		custom									pm+ov
Protected Phases	7		8		8			2			6	7
Permitted Phases	8 7		7 8									6
Actuated Green, G (s)	32.0		32.0		16.0			40.0			40.0	56.0
Effective Green, g (s)	36.0		36.0		18.0			42.0			42.0	60.0
Actuated g/C Ratio	0.40		0.40		0.20			0.47			0.47	0.67
Clearance Time (s)	6.0		6.0		6.0			6.0			6.0	6.0
Lane Grp Cap (vph)	539		704		708			1652			1652	1126
v/s Ratio Prot	0.05		c0.12		0.08			0.17			c0.20	0.02
v/s Ratio Perm	0.05		0.15									0.05
v/c Ratio	0.25		0.62		0.40			0.36			0.43	0.10
Uniform Delay, d1	17.6		21.6		31.3			15.4			16.0	5.4
Progression Factor	1.00		1.00		1.00			1.00			1.00	1.00
Incremental Delay, d2	1.1		4.1		1.7			0.6			0.8	0.2
Delay (s)	18.7		25.6		33.0			16.0			16.9	5.6
Level of Service	B		C		C			B			B	A
Approach Delay (s)		24.0			33.0			16.0			15.3	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	19.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.4%	ICU Level of Service	A

c Critical Lane Group

```
*****************************************************************************
*                                                                           *
*   1:4:06                  ROUTE 50/FOREST ALT 2 HB                   19   *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* E     (m)   10.00  10.00   5.00                 * TIME PERIOD     min    60  *
* L'    (m)   20.00  20.00  10.00                 * TIME SLICE      min    15  *
* V     (m)    7.20   7.20   3.00                 * RESULTS PERIOD  min  0 60  *
* RAD   (m)   20.00  20.00  20.00                 * TIME COST      $/hr 15.00  *
* PHI   (d)   30.00  30.00  30.00                 * FLOW PERIOD     min  0 60  *
* DIA   (m)   70.00  70.00  70.00                 * FLOW TYPE   pcu/veh   VEH  *
* GRAD SEP       0      0      0                  * FLOW PEAK  am/op/pm    AM  *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *              *         *
* RT 50 NB *1.05*  614   32    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*   29  899    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
* FOREST WB*1.05*  183   71    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*****************************************************************************
*                                                                 *                 *
* FLOW         veh     646    928    254                         * AVEDEL  s   2.4 *
* CAPACITY     veh    2588   2614    823                         * LOS   SIG     A *
* AVE DELAY   mins    0.03   0.03   0.10                         * LOS UNSIG     A *
* MAX DELAY   mins    0.04   0.05   0.17                         *                 *
* AVE QUEUE    veh       0      1      0                         * VEHIC HRS   1.2 *
* MAX QUEUE    veh       0      1      1                         * COST    $    19 *
*                                                                 *                 *
*****************************************************************************
```

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.89			0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1770	3470		1770	3506		1770	1664			1792	
Flt Permitted	0.16	1.00		0.14	1.00		0.61	1.00			0.61	
Satd. Flow (perm)	307	3470		263	3506		1142	1664			1122	
Volume (vph)	12	986	147	106	932	63	179	63	155	87	78	21
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)	13	1072	160	115	1013	68	195	68	168	95	85	23
Lane Group Flow (vph)	13	1232	0	115	1081	0	195	236	0	0	203	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	23.0	22.3		34.8	28.2		13.1	13.1			13.1	
Effective Green, g (s)	27.0	24.3		36.9	30.2		15.1	15.1			15.1	
Actuated g/C Ratio	0.45	0.40		0.62	0.50		0.25	0.25			0.25	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	204	1405		378	1765		287	419			282	
v/s Ratio Prot	0.00	c0.36		c0.04	c0.31			0.14				
v/s Ratio Perm	0.03			0.14			0.17				c0.18	
v/c Ratio	0.06	0.88		0.30	0.61		0.68	0.56			0.72	
Uniform Delay, d1	15.6	16.5		15.8	10.7		20.3	19.6			20.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.1	6.5		0.5	0.6		6.3	1.7			8.5	
Delay (s)	15.8	22.9		16.2	11.3		26.5	21.3			29.0	
Level of Service	B	C		B	B		C	C			C	
Approach Delay (s)		22.9			11.8			23.7			29.0	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.5%	ICU Level of Service	C
c Critical Lane Group			

```
*******************************************************************************
*                                                                             *
*   1:4:06                ROUTE 50/ROUTE 67 ALT 2 HB                      36  *
*                                                                             *
*******************************************************************************
*                                                 *                           *
* E     (m)   10.00  10.00  10.00  10.00          * TIME PERIOD     min    60 *
* L'    (m)   20.00  20.00  20.00  20.00          * TIME SLICE      min    15 *
* V     (m)    7.20   7.20   7.20   7.20          * RESULTS PERIOD  min  0 60 *
* RAD   (m)   20.00  20.00  20.00  20.00          * TIME COST      $/hr 15.00 *
* PHI   (d)   30.00  30.00  30.00  30.00          * FLOW PERIOD     min  0 60 *
* DIA   (m)   70.00  70.00  70.00  70.00          * FLOW TYPE   pcu/veh   VEH *
* GRAD SEP       0      0      0      0           * FLOW PEAK  am/op/pm    AM *
*                                                 *                           *
*******************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *              *         *
*RT 50 NB  *1.05*    0  532  102  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 67 WB  *1.05*    0  140    6  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 5067 SB*1.05*    0  629  564  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*BALL EB   *1.05*    0  170   65  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*******************************************************************************
*                                                                 *           *
* FLOW        veh     634    146   1193    235                    * AVEDEL  s   2.4 *
* CAPACITY    veh    2098   2165   2469   1829                    * LOS   SIG     A *
* AVE DELAY  mins    0.04   0.03   0.04   0.03                    * LOS UNSIG     A *
* MAX DELAY  mins    0.06   0.04   0.08   0.06                    *                 *
* AVE QUEUE   veh       0      0      1      0                    * VEHIC HRS   1.5 *
* MAX QUEUE   veh       1      0      1      0                    * COST    $    23 *
*                                                                 *           *
*******************************************************************************
```

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00		0.95	1.00
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00		1.00	1.00
Satd. Flow (prot)	1770	1800		1770	1839		1770	3539	1583		3535	1583
Flt Permitted	0.60	1.00		0.32	1.00		0.19	1.00	1.00		0.93	1.00
Satd. Flow (perm)	1114	1800		595	1839		347	3539	1583		3281	1583
Volume (vph)	151	236	68	282	200	18	67	712	281	16	718	124
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)	164	257	74	307	217	20	73	774	305	17	780	135
Lane Group Flow (vph)	164	331	0	307	237	0	73	774	305	0	797	135
Turn Type	pm+pt			pm+pt			pm+pt		pm+ov	Perm		pm+ov
Protected Phases	7	4		3	8		5	2	3		6	7
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	17.9	14.9		22.1	17.0		23.6	23.6	28.7		15.5	18.5
Effective Green, g (s)	21.9	16.9		26.1	19.0		25.6	25.6	32.7		17.5	22.5
Actuated g/C Ratio	0.36	0.27		0.42	0.31		0.42	0.42	0.53		0.28	0.37
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0		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
Lane Grp Cap (vph)	449	494		388	567		239	1471	943		932	681
v/s Ratio Prot	0.03	0.18		c0.09	0.13		0.02	c0.22	0.04			0.02
v/s Ratio Perm	0.10			c0.24			0.11		0.16		c0.24	0.07
v/c Ratio	0.37	0.67		0.79	0.42		0.31	0.53	0.32		0.86	0.20
Uniform Delay, d1	14.1	19.9		13.5	16.9		12.6	13.5	8.2		20.9	13.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.5	3.6		10.5	0.5		0.7	0.3	0.2		7.7	0.1
Delay (s)	14.6	23.4		24.0	17.4		13.3	13.8	8.4		28.6	13.5
Level of Service	B	C		C	B		B	B	A		C	B
Approach Delay (s)		20.5			21.1			12.3			26.4	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM Average Control Delay	19.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	61.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	91.8%	ICU Level of Service	E
c Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06              ROUTE 67/BROOKLINE RD ALT 2 HB                  16  *
*                                                                           *
*****************************************************************************
*                                                   *                       *
* E     (m)   10.00  10.00  10.00                   * TIME PERIOD     min   60  *
* L'    (m)   20.00  20.00  20.00                   * TIME SLICE      min   15  *
* V     (m)    7.20   7.20   7.20                   * RESULTS PERIOD  min  0 60  *
* RAD   (m)   20.00  20.00  20.00                   * TIME COST      $/hr 15.00  *
* PHI   (d)   30.00  30.00  30.00                   * FLOW PERIOD     min  0 60  *
* DIA   (m)   70.00  70.00  70.00                   * FLOW TYPE   pcu/veh   VEH  *
* GRAD SEP       0      0      0                   * FLOW PEAK  am/op/pm    AM  *
*                                                   *                       *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *              *        *
*RT 67 NB  *1.05*  542  262    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 67 SB  *1.05*    0  656    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
*BROOK EB  *1.05*  421  111    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *              *        *
*          *    *                            *    *  *              *        *
*          *    *                            *    *  *              *        *
*          *    *                            *    *  *              *        *
*****************************************************************************
*                                                         *                 *
* FLOW        veh     804    656    532                   * AVEDEL  s   1.9 *
* CAPACITY    veh    2561   2459   2194                   * LOS   SIG     A *
* AVE DELAY  mins    0.03   0.03   0.03                   * LOS UNSIG     A *
* MAX DELAY  mins    0.05   0.05   0.05                   *                 *
* AVE QUEUE   veh       0      0      0                   * VEHIC HRS   1.0 *
* MAX QUEUE   veh       1      0      0                   * COST    $    16 *
*                                                         *                 *
*****************************************************************************
```

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3538		1770	1863	1770	1583
Flt Permitted	1.00		0.15	1.00	0.95	1.00
Satd. Flow (perm)	3538		277	1863	1770	1583
Volume (vph)	929	2	187	969	4	189
Peak-hour factor, PHF	0.72	0.72	0.81	0.81	0.87	0.87
Adj. Flow (vph)	1290	3	231	1196	5	217
Lane Group Flow (vph)	1293	0	231	1196	5	217
Turn Type			pm+pt			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases			6			8
Actuated Green, G (s)	59.0		72.0	72.0	16.0	23.0
Effective Green, g_e (s)	61.0		74.0	74.0	18.0	27.0
Actuated g/C Ratio	0.61		0.74	0.74	0.18	0.27
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0
Lane Grp Cap (vph)	2158		339	1379	319	491
v/s Ratio Prot	0.37		0.06	c0.64	0.00	c0.04
v/s Ratio Perm			0.44			0.10
v/c Ratio	0.60		0.68	0.87	0.02	0.44
Uniform Delay, d1	12.0		21.1	9.4	33.7	30.3
Progression Factor	0.91		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9		10.6	7.6	0.1	2.9
Delay (s)	11.8		31.7	17.0	33.8	33.1
Level of Service	B		C	B	C	C
Approach Delay (s)	11.8			19.4	33.1	
Approach LOS	B			B	C	

Intersection Summary			
HCM Average Control Delay	17.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Cycle Length (s)	100.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	73.0%	ICU Level of Service	C

c Critical Lane Group

```
*****************************************************************************
*                                                                           *
*   1:4:06              ROUTE 67/EASTLINE RD ALT 2 HB                   24  *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* E     (m)   10.00   5.00  10.00   5.00          * TIME PERIOD     min    60  *
* L'    (m)   20.00  10.00  20.00  10.00          * TIME SLICE      min    15  *
* V     (m)    7.20   3.60   7.20   3.60          * RESULTS PERIOD  min  0 60  *
* RAD   (m)   20.00  20.00  20.00  20.00          * TIME COST      $/hr 15.00  *
* PHI   (d)   30.00  30.00  30.00  30.00          * FLOW PERIOD     min  0 60  *
* DIA   (m)   70.00  70.00  70.00  70.00          * FLOW TYPE   pcu/veh   VEH  *
* GRAD SEP       0      0      0      0          * FLOW PEAK  am/op/pm    AM  *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                             *    *  *              *        *
* RT 67 EB *1.05*    0  911    4  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* EAST NB  *1.05*    0   20  155  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 67 WB *1.05*    0  755   88  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* EAST SB  *1.05*   28  102  133  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                             *    *  *              *        *
*          *    *                             *    *  *              *        *
*          *    *                             *    *  *              *        *
*****************************************************************************
*                                                          *                 *
* FLOW        veh     915    175    843    263             * AVEDEL  s    2.8 *
* CAPACITY    veh    2418    840   2515    863             * LOS   SIG      A *
* AVE DELAY  mins    0.04   0.09   0.03   0.10             * LOS UNSIG      A *
* MAX DELAY  mins    0.06   0.14   0.05   0.16             *                  *
* AVE QUEUE   veh       1      0      1      0             * VEHIC HRS    1.7 *
* MAX QUEUE   veh       1      0      1      1             * COST    $     26 *
*                                                          *                 *
*****************************************************************************
```

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	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	1.00	1.00	
Frt	0.93		1.00	1.00	0.99	
Flt Protected	0.98		0.95	1.00	1.00	
Satd. Flow (prot)	1695		1770	1863	1844	
Flt Permitted	0.98		0.08	1.00	1.00	
Satd. Flow (perm)	1695		157	1863	1844	
Volume (vph)	83	83	49	894	925	73
Peak-hour factor, PHF	0.60	0.60	0.90	0.90	0.93	0.93
Adj. Flow (vph)	138	138	54	993	995	78
Lane Group Flow (vph)	276	0	54	993	1073	0
Turn Type			Perm			
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	24.0		64.0	64.0	64.0	
Effective Green, g (s)	26.0		66.0	66.0	66.0	
Actuated g/C Ratio	0.26		0.66	0.66	0.66	
Clearance Time (s)	6.0		6.0	6.0	6.0	
Lane Grp Cap (vph)	441		104	1230	1217	
v/s Ratio Prot	c0.16			0.53	c0.58	
v/s Ratio Perm			0.34			
v/c Ratio	0.63		0.52	0.81	0.88	
Uniform Delay, d1	32.7		8.8	12.4	13.8	
Progression Factor	1.00		1.00	1.00	0.31	
Incremental Delay, d2	6.6		17.3	5.8	4.8	
Delay (s)	39.3		26.1	18.1	9.1	
Level of Service	D		C	B	A	
Approach Delay (s)	39.3			18.5	9.1	
Approach LOS	D			B	A	

Intersection Summary			
HCM Average Control Delay	16.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.81		
Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.9%	ICU Level of Service	C

c Critical Lane Group

```
*****************************************************************************
*                                                                           *
*   1:4:06                ROUTE 50/BROOKLINE RD ALT 2 HB                  45 *
*                                                                           *
*****************************************************************************
*                                                                           *
* E     (m)   10.00  10.00  10.00  10.00          * TIME PERIOD     min    60 *
* L'    (m)   20.00  20.00  20.00  20.00          * TIME SLICE      min    15 *
* V     (m)    6.00   6.00   6.00   6.00          * RESULTS PERIOD  min  0 60 *
* RAD   (m)   40.00  20.00  20.00  20.00          * TIME COST      $/hr 15.00 *
* PHI   (d)   25.00  30.00  30.00  30.00          * FLOW PERIOD     min  0 60 *
* DIA   (m)   70.00  70.00  70.00  70.00          * FLOW TYPE   pcu/veh   VEH *
* GRAD SEP       0      0      0      0           * FLOW PEAK  am/op/pm    AM *
*                                                                           *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *              *        *
* RT 50 NB *1.05*    0  461   29  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* BROOK WB *1.05*    0   96  221  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*    0  600   20  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* BROOK EB *1.05*    0  288  137  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *              *        *
*          *    *                            *    *  *              *        *
*          *    *                            *    *  *              *        *
*****************************************************************************
*                                                                 *         *
* FLOW        veh     490    317    620    425                   * AVEDEL  s   2.0 *
* CAPACITY    veh    2240   2034   2214   1897                   * LOS   SIG     A *
* AVE DELAY  mins    0.03   0.03   0.03   0.04                   * LOS UNSIG     A *
* MAX DELAY  mins    0.05   0.05   0.06   0.06                   *                 *
* AVE QUEUE   veh       0      0      0      0                   * VEHIC HRS   1.0 *
* MAX QUEUE   veh       0      0      0      0                   * COST    $    16 *
*                                                                 *                 *
*****************************************************************************
```

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1824		1770	3539	1583	1770	3539	1583
Flt Permitted	0.43	1.00	1.00	0.25	1.00		0.13	1.00	1.00	0.38	1.00	1.00
Satd. Flow (perm)	803	1863	1583	466	1824		248	3539	1583	707	3539	1583
Volume (vph)	190	251	231	306	252	40	237	695	256	37	728	177
Peak-hour factor, PHF	0.87	0.87	0.87	0.89	0.89	0.89	0.97	0.97	0.97	0.66	0.66	0.66
Adj. Flow (vph)	218	289	266	344	283	45	244	716	264	56	1103	268
Lane Group Flow (vph)	218	289	266	344	328	0	244	716	264	56	1103	268
Turn Type	pm+pt		pm+ov	pm+pt			pm+pt		pm+ov	Perm		pm+ov
Protected Phases	7	4	5	3	8		5	2	3		6	7
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)	21.7	14.7	18.7	31.3	19.5		34.0	34.0	45.8	24.0	24.0	31.0
Effective Green, g (s)	25.7	16.7	22.7	34.5	21.5		36.0	36.0	49.8	26.0	26.0	35.0
Actuated g/C Ratio	0.33	0.21	0.29	0.44	0.27		0.46	0.46	0.63	0.33	0.33	0.45
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	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)	374	396	538	434	500		230	1623	1085	234	1172	786
v/s Ratio Prot	0.07	0.16	0.04	c0.14	0.18		c0.08	0.20	0.04		0.31	0.04
v/s Ratio Perm	0.12		0.13	c0.21			c0.40		0.12	0.08		0.13
v/c Ratio	0.58	0.73	0.49	0.79	0.66		1.06	0.44	0.24	0.24	0.94	0.34
Uniform Delay, d1	20.4	28.8	23.1	16.6	25.2		18.8	14.4	6.2	19.1	25.5	14.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.3	6.6	0.7	9.6	3.1		76.3	0.2	0.1	0.5	14.4	0.3
Delay (s)	22.7	35.4	23.9	26.2	28.3		95.1	14.6	6.3	19.6	39.9	14.5
Level of Service	C	D	C	C	C		F	B	A	B	D	B
Approach Delay (s)		27.8			27.2			28.9			34.3	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	30.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	78.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	91.6%	ICU Level of Service	E
c Critical Lane Group			

```
*******************************************************************************
*                                                                             *
*   1:4:06                ROUTE 50/LAKE HILL RD ALT 2 HB                  27  *
*                                                                             *
*******************************************************************************
*                                                   *                         *
* E     (m)   10.00  10.00  10.00  10.00            * TIME PERIOD     min    60  *
* L'    (m)   20.00  20.00  20.00  20.00            * TIME SLICE      min    15  *
* V     (m)    7.00   7.20   6.00   6.00            * RESULTS PERIOD  min  0 60  *
* RAD   (m)   20.00  20.00  20.00  20.00            * TIME COST      $/hr 15.00  *
* PHI   (d)   30.00  30.00  30.00  30.00            * FLOW PERIOD     min  0 60  *
* DIA   (m)   70.00  70.00  70.00  70.00            * FLOW TYPE   pcu/veh   VEH  *
* GRAD SEP       0      0      0      0             * FLOW PEAK  am/op/pm    AM  *
*                                                   *                         *
*******************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *         *
* RT 50 NB *1.05*    0  465  168  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* LHR WB   *1.05*    0  208  322  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*    0  672   33  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* LHR EB   *1.05*    0  311  158  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*******************************************************************************
*                                                                 *           *
* FLOW        veh     633    530    705    469                   * AVEDEL  s   2.3 *
* CAPACITY    veh    2270   2103   1989   1778                   * LOS   SIG     A *
* AVE DELAY  mins    0.03   0.04   0.04   0.04                   * LOS UNSIG     A *
* MAX DELAY  mins    0.05   0.06   0.07   0.07                   *                 *
* AVE QUEUE   veh       0      0      1      0                   * VEHIC HRS   1.5 *
* MAX QUEUE   veh       0      0      1      0                   * COST    $    23 *
*                                                                 *           *
*******************************************************************************
```

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor		1.00		1.00	1.00			0.95			0.95	
Frt		0.99		1.00	0.97			0.98			1.00	
Flt Protected		0.98		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1819		1770	1805			3473			3522	
Flt Permitted		0.88		0.71	1.00			0.95			0.94	
Satd. Flow (perm)		1633		1324	1805			3292			3310	
Volume (vph)	27	53	5	118	47	12	8	767	108	10	722	22
Peak-hour factor, PHF	0.61	0.61	0.61	0.81	0.81	0.81	0.88	0.88	0.88	0.94	0.94	0.94
Adj. Flow (vph)	44	87	8	146	58	15	9	872	123	11	768	23
Lane Group Flow (vph)	0	139	0	146	73	0	0	1004	0	0	802	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		10.8		10.8	10.8			29.3			29.3	
Effective Green, g (s)		12.8		12.8	12.8			31.3			31.3	
Actuated g/C Ratio		0.25		0.25	0.25			0.60			0.60	
Clearance Time (s)		6.0		6.0	6.0			6.0			6.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		401		325	443			1978			1989	
v/s Ratio Prot					0.04							
v/s Ratio Perm		0.09		c0.11				c0.30			0.24	
v/c Ratio		0.35		0.45	0.16			0.51			0.40	
Uniform Delay, d1		16.2		16.7	15.4			6.0			5.5	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		0.5		1.0	0.2			0.2			0.1	
Delay (s)		16.7		17.7	15.6			6.2			5.6	
Level of Service		B		B	B			A			A	
Approach Delay (s)		16.7			17.0			6.2			5.6	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	7.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	52.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.7%	ICU Level of Service	A
c Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06                ROUTE 50/OUTLET RD ALT 2 HB                     8 *
*                                                                           *
*****************************************************************************
*                                                                           *
*                                                  *                        *
* E     (m)   10.00   5.00  10.00   5.00           * TIME PERIOD     min   60 *
* L'    (m)   20.00  10.00  20.00  10.00           * TIME SLICE      min   15 *
* V     (m)    7.20   3.00   7.20   3.00           * RESULTS PERIOD  min  0 60 *
* RAD   (m)   20.00  20.00  20.00  20.00           * TIME COST      $/hr 15.00 *
* PHI   (d)   30.00  30.00  30.00  30.00           * FLOW PERIOD     min  0 60 *
* DIA   (m)   70.00  70.00  70.00  70.00           * FLOW TYPE   pcu/veh  VEH *
* GRAD SEP       0      0      0      0           * FLOW PEAK  am/op/pm   AM *
*                                                  *                        *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *              *         *
* RT 50 NB *1.05*   73  550    3  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* OUTLET WB*1.05*   16   24   96  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*    9  642    8  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* CHAR EB  *1.05*    3   77   30  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*****************************************************************************
*                                                                  *         *
* FLOW          veh    626    136    659    110                    * AVEDEL  s   2.1 *
* CAPACITY      veh   2575    964   2553    890                    * LOS   SIG     A *
* AVE DELAY    mins   0.03   0.07   0.03   0.07                    * LOS UNSIG     A *
* MAX DELAY    mins   0.04   0.11   0.05   0.11                    *                 *
* AVE QUEUE     veh      0      0      0      0                    * VEHIC HRS   0.9 *
* MAX QUEUE     veh      0      0      0      0                    * COST    $    13 *
*                                                                  *                 *
*****************************************************************************
```

Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Ideal Flow (vphpl)	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	1.00			1.00
Frt	1.00	1.00	1.00			0.86
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1770	1863	1863			1611
Flt Permitted	0.11	1.00	1.00			1.00
Satd. Flow (perm)	213	1863	1863			1611
Volume (vph)	331	724	836	0	0	353
Peak-hour factor, PHF	0.89	0.89	0.88	0.88	0.82	0.82
Adj. Flow (vph)	372	813	950	0	0	430
Lane Group Flow (vph)	372	813	950	0	0	430
Turn Type	pm+pt					custom
Protected Phases	5	2	6			5
Permitted Phases	2					5
Actuated Green, G (s)	49.0	55.0	29.0			14.0
Effective Green, g (s)	51.0	55.0	31.0			16.0
Actuated g/C Ratio	0.93	1.00	0.56			0.29
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	650	1863	1050			469
v/s Ratio Prot	0.17	0.44	c0.51			c0.27
v/s Ratio Perm	0.36					
v/c Ratio	0.57	0.44	0.90			0.92
Uniform Delay, d1	10.5	0.0	10.7			18.9
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	3.6	0.7	12.6			25.3
Delay (s)	14.1	0.7	23.3			44.1
Level of Service	B	A	C			D
Approach Delay (s)		4.9	23.3		44.1	
Approach LOS		A	C		D	

Intersection Summary			
HCM Average Control Delay	18.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.3%	ICU Level of Service	D
c Critical Lane Group			

```
*******************************************************************************
*                                                                             *
*   1:4:06              ROUTE 50/MIDDLELINE RD ALT 2 HB                    16 *
*                                                                             *
*******************************************************************************
*                                                 *                           *
* E     (m)   10.00  10.00   5.00                 * TIME PERIOD     min    60 *
* L'    (m)   20.00  20.00  10.00                 * TIME SLICE      min    15 *
* V     (m)    7.20   7.20   3.60                 * RESULTS PERIOD  min  0 60 *
* RAD   (m)   20.00  20.00  20.00                 * TIME COST      $/hr 15.00 *
* PHI   (d)   30.00  30.00  30.00                 * FLOW PERIOD     min  0 60 *
* DIA   (m)   70.00  70.00  70.00                 * FLOW TYPE   pcu/veh   VEH *
* GRAD SEP       0      0      0                 * FLOW PEAK  am/op/pm    AM *
*                                                 *                           *
*******************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *         *
* RT 50 NB *1.05*  545  162    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*    1  741    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
* MID WB   *1.05*  348    0    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*******************************************************************************
*                                                                 *           *
* FLOW        veh     707    742    348                          * AVEDEL  s   2.5 *
* CAPACITY    veh    2636   2527    980                          * LOS   SIG     A *
* AVE DELAY  mins    0.03   0.03   0.09                          * LOS UNSIG     A *
* MAX DELAY  mins    0.04   0.05   0.15                          *                 *
* AVE QUEUE   veh       0      0      1                          * VEHIC HRS   1.2 *
* MAX QUEUE   veh       0      1      1                          * COST    $    19 *
*                                                                 *           *
*******************************************************************************
```

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.90			0.95		1.00	1.00		1.00	0.99	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1684			1754		1770	1858		1770	1843	
Flt Permitted		0.99			0.54		0.10	1.00		0.11	1.00	
Satd. Flow (perm)		1675			963		191	1858		213	1843	
Volume (vph)	6	171	432	82	190	156	145	705	13	639	883	68
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)	7	186	470	89	207	170	158	766	14	695	960	74
Lane Group Flow (vph)	0	663	0	0	466	0	158	780	0	695	1034	0
Turn Type	Perm			Perm			pm+pt			pm+pt		
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)		27.0			27.0		44.8	37.9		35.0	33.0	
Effective Green, g (s)		29.0			29.0		47.9	39.9		39.0	35.0	
Actuated g/C Ratio		0.34			0.34		0.56	0.47		0.46	0.41	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		572			329		273	873		171	760	
v/s Ratio Prot							0.06	c0.42		c0.19	0.56	
v/s Ratio Perm		0.40			c0.48		0.27			c1.67		
v/c Ratio		1.16			1.42		0.58	0.89		4.06	1.36	
Uniform Delay, d1		28.0			28.0		37.4	20.6		22.0	25.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		89.9			204.4		3.0	11.5		1392.8	170.7	
Delay (s)		117.8			232.4		40.3	32.1		1414.7	195.7	
Level of Service		F			F		D	C		F	F	
Approach Delay (s)		117.8			232.4			33.4			685.7	
Approach LOS		F			F			C			F	

Intersection Summary			
HCM Average Control Delay	369.7	HCM Level of Service	F
HCM Volume to Capacity ratio	2.93		
Actuated Cycle Length (s)	84.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	158.2%	ICU Level of Service	H
c Critical Lane Group			

Movement	EBL	EBR	SBL	SBR	NWL	NWR
Lane Configurations						
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Volume (veh/h)	143	466	801	115	332	631
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	155	507	871	125	361	686
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	2341	933			996	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	0			48	
cM capacity (veh/h)	19	323			695	

Direction, Lane #	EB 1	SB 1	NW 1
Volume Total	662	996	1047
Volume Left	155	0	361
Volume Right	507	125	0
cSH	69	1700	695
Volume to Capacity	9.64	0.59	0.52
Queue Length (ft)	Err	0	76
Control Delay (s)	Err	0.0	14.3
Lane LOS	F		B
Approach Delay (s)	Err	0.0	14.3
Approach LOS	F		

Intersection Summary			
Average Delay	2453.0		
Intersection Capacity Utilization	167.8%	ICU Level of Service	H

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.98		1.00	1.00			0.93			0.99	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1770	1833		1770	1855			1698			1792	
Flt Permitted	0.08	1.00		0.08	1.00			0.72			0.62	
Satd. Flow (perm)	158	1833		146	1855			1241			1132	
Volume (vph)	4	1071	130	90	897	24	174	20	200	137	105	27
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	1164	141	98	975	26	189	22	217	149	114	29
Lane Group Flow (vph)	4	1305	0	98	1001	0	0	428	0	0	292	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	45.9	45.1		57.7	51.0			23.1			23.1	
Effective Green, g (s)	49.9	47.1		59.8	53.0			25.1			25.1	
Actuated g/C Ratio	0.54	0.51		0.64	0.57			0.27			0.27	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	133	929		246	1058			335			306	
v/s Ratio Prot	0.00	c0.71		c0.04	c0.54							
v/s Ratio Perm	0.02			0.22				c0.34			0.26	
v/c Ratio	0.03	1.40		0.40	0.95			1.28			0.95	
Uniform Delay, d1	42.6	22.9		36.4	18.6			33.9			33.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	188.6		1.1	16.2			146.1			39.0	
Delay (s)	42.7	211.5		37.4	34.8			180.0			72.3	
Level of Service	D	F		D	C			F			E	
Approach Delay (s)		211.0			35.0			180.0			72.3	
Approach LOS		F			D			F			E	

Intersection Summary			
HCM Average Control Delay	132.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	92.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	129.6%	ICU Level of Service	H
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.98			1.00			0.96			0.98	
Flt Protected		0.99			0.97			1.00			1.00	
Satd. Flow (prot)		1799			1794			1788			1829	
Flt Permitted		0.79			0.45			0.90			0.98	
Satd. Flow (perm)		1449			832			1607			1788	
Volume (vph)	170	311	82	316	125	11	45	584	241	20	823	123
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)	185	338	89	343	136	12	49	635	262	22	895	134
Lane Group Flow (vph)	0	612	0	0	491	0	0	946	0	0	1051	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		20.0			20.0			24.0			24.0	
Effective Green, g (s)		22.0			22.0			26.0			26.0	
Actuated g/C Ratio		0.39			0.39			0.46			0.46	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		569			327			746			830	
v/s Ratio Prot												
v/s Ratio Perm		0.42			c0.59			c0.59			0.59	
v/c Ratio		1.08			1.50			1.27			1.27	
Uniform Delay, d1		17.0			17.0			15.0			15.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		59.7			241.1			131.1			129.4	
Delay (s)		76.7			258.1			146.1			144.4	
Level of Service		E			F			F			F	
Approach Delay (s)		76.7			258.1			146.1			144.4	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM Average Control Delay	149.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.38		
Actuated Cycle Length (s)	56.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	182.1%	ICU Level of Service	H
c Critical Lane Group			

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	825	1	197	1088	4	176
Peak Hour Factor	0.72	0.72	0.81	0.81	0.87	0.87
Hourly flow rate (veh/h)	1146	1	243	1343	5	202
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume			1147		2976	1147
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			60		51	17
cM capacity (veh/h)			609		9	242

Direction, Lane #	NB 1	SB 1	SB 2	NW 1
Volume Total	1147	243	1343	207
Volume Left	0	243	0	5
Volume Right	1	0	0	202
cSH	1700	609	1700	156
Volume to Capacity	0.67	0.40	0.79	1.33
Queue Length (ft)	0	48	0	313
Control Delay (s)	0.0	14.8	0.0	239.5
Lane LOS		B		F
Approach Delay (s)	0.0	2.3		239.5
Approach LOS				F

Intersection Summary			
Average Delay	18.1		
Intersection Capacity Utilization	96.6%	ICU Level of Service	E

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	104	137	33	790	1040	45
Peak Hour Factor	0.60	0.60	0.90	0.90	0.93	0.93
Hourly flow rate (veh/h)	173	228	37	878	1118	48
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	2094	1142	1167			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	6	94			
cM capacity (veh/h)	54	244	599			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	402	914	1167
Volume Left	173	37	0
Volume Right	228	0	48
cSH	97	599	1700
Volume to Capacity	4.15	0.06	0.69
Queue Length (ft)	Err	5	0
Control Delay (s)	Err	1.8	0.0
Lane LOS	F	A	
Approach Delay (s)	Err	1.8	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	1618.3		
Intersection Capacity Utilization	143.6%	ICU Level of Service	H

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.96		1.00	0.97		1.00	0.96		1.00	0.97	
Flt Protected		0.99		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1756		1770	1814		1770	1780		1770	1816	
Flt Permitted		0.81		0.27	1.00		0.10	1.00		0.11	1.00	
Satd. Flow (perm)		1445		497	1814		182	1780		201	1816	
Volume (vph)	211	324	266	344	218	46	183	622	263	37	785	158
Peak-hour factor, PHF	0.87	0.87	0.87	0.89	0.89	0.89	0.97	0.97	0.97	0.66	0.66	0.66
Adj. Flow (vph)	243	372	306	387	245	52	189	641	271	56	1189	239
Lane Group Flow (vph)	0	921	0	387	297	0	189	912	0	56	1428	0
Turn Type	Perm			pm+pt			pm+pt			Perm		
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		23.0		33.0	33.0		45.0	45.0		35.0	35.0	
Effective Green, g (s)		25.0		35.0	35.0		47.0	47.0		37.0	37.0	
Actuated g/C Ratio		0.28		0.39	0.39		0.52	0.52		0.41	0.41	
Clearance Time (s)		6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		401		278	705		201	930		83	747	
v/s Ratio Prot				c0.09	0.16		0.06	c0.51			c0.79	
v/s Ratio Perm		c0.64		0.45			0.43			0.28		
v/c Ratio		2.30		1.39	0.42		0.94	0.98		0.67	1.91	
Uniform Delay, d1		32.5		46.5	20.1		43.9	21.1		21.6	26.5	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		591.4		197.0	0.4		46.6	24.7		19.5	415.2	
Delay (s)		623.9		243.5	20.5		90.5	45.8		41.1	441.7	
Level of Service		F		F	C		F	D		D	F	
Approach Delay (s)		623.9			146.7			53.5			426.6	
Approach LOS		F			F			D			F	

Intersection Summary			
HCM Average Control Delay	326.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.95		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	174.0%	ICU Level of Service	H
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		1.00			0.99			0.98			1.00	
Flt Protected		0.99			0.96			1.00			1.00	
Satd. Flow (prot)		1831			1770			1834			1859	
Flt Permitted		0.88			0.64			1.00			0.99	
Satd. Flow (perm)		1636			1180			1830			1844	
Volume (vph)	31	80	3	114	24	17	3	690	89	8	833	10
Peak-hour factor, PHF	0.61	0.61	0.61	0.81	0.81	0.81	0.88	0.88	0.88	0.94	0.94	0.94
Adj. Flow (vph)	51	131	5	141	30	21	3	784	101	9	886	11
Lane Group Flow (vph)	0	187	0	0	192	0	0	888	0	0	906	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		9.1			9.1			33.1			33.1	
Effective Green, g (s)		11.1			11.1			35.1			35.1	
Actuated g/C Ratio		0.20			0.20			0.65			0.65	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		335			242			1185			1194	
v/s Ratio Prot												
v/s Ratio Perm		0.11			c0.16			0.49			c0.49	
v/c Ratio		0.56			0.79			0.75			0.76	
Uniform Delay, d1		19.3			20.5			6.5			6.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		2.0			16.2			2.6			2.8	
Delay (s)		21.4			36.7			9.2			9.4	
Level of Service		C			D			A			A	
Approach Delay (s)		21.4			36.7			9.2			9.4	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM Average Control Delay	12.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	54.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	85.7%	ICU Level of Service	D
c Critical Lane Group			

Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	216	653	919	1	0	454
Peak Hour Factor	0.89	0.89	0.88	0.88	0.82	0.82
Hourly flow rate (veh/h)	243	734	1044	1	0	554
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume	1045				2264	1045
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	64				100	0
cM capacity (veh/h)	665				28	278

Direction, Lane #	NB 1	NB 2	SB 1	SE 1
Volume Total	243	734	1045	554
Volume Left	243	0	0	0
Volume Right	0	0	1	554
cSH	665	1700	1700	278
Volume to Capacity	0.36	0.43	0.61	1.99
Queue Length (ft)	42	0	0	993
Control Delay (s)	13.5	0.0	0.0	489.2
Lane LOS	B			F
Approach Delay (s)	3.4		0.0	489.2
Approach LOS				F

Intersection Summary			
Average Delay	106.4		
Intersection Capacity Utilization	96.0%	ICU Level of Service	E

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	0.88	0.97	1.00	0.88	0.97	0.91		0.97	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	2787	3433	1863	2787	3433	5079		3433	5024	
Flt Permitted	0.55	1.00	1.00	0.59	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1033	3539	2787	2136	1863	2787	3433	5079		3433	5024	
Volume (vph)	11	239	596	76	192	160	161	843	7	576	898	79
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)	12	260	648	83	209	174	175	916	8	626	976	86
Lane Group Flow (vph)	12	260	648	83	209	174	175	924	0	626	1062	0
Turn Type	Perm		pm+ov	Perm		Perm	Prot			Prot		
Protected Phases		8	1		4		5	2		1	6	
Permitted Phases	8		8	4		4						
Actuated Green, G (s)	11.0	11.0	21.1	11.0	11.0	11.0	3.1	15.8		10.1	22.8	
Effective Green, g (s)	13.0	13.0	25.1	13.0	13.0	13.0	5.1	17.8		12.1	24.8	
Actuated g/C Ratio	0.24	0.24	0.46	0.24	0.24	0.24	0.09	0.32		0.22	0.45	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		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)	245	838	1477	506	441	660	319	1647		757	2269	
v/s Ratio Prot		0.07	c0.10		0.11		0.05	c0.18		c0.18	0.21	
v/s Ratio Perm	0.01		0.14	0.04		0.06						
v/c Ratio	0.05	0.31	0.44	0.16	0.47	0.26	0.55	0.56		0.83	0.47	
Uniform Delay, d1	16.2	17.3	10.1	16.6	18.0	17.1	23.8	15.3		20.4	10.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.2	0.2	0.2	0.8	0.2	1.9	0.4		7.4	0.2	
Delay (s)	16.3	17.5	10.3	16.8	18.8	17.3	25.7	15.8		27.8	10.6	
Level of Service	B	B	B	B	B	B	C	B		C	B	
Approach Delay (s)		12.4			17.9			17.4			17.0	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	16.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	54.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
c Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06                ROUTE 50/ROUTE 67 ALT 1 FB                    30  *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* E     (m)   12.00  10.00  12.00  10.00          * TIME PERIOD     min   60 *
* L'    (m)   65.00  20.00  65.00  20.00          * TIME SLICE      min   15 *
* V     (m)   10.00   6.00  10.00   6.00          * RESULTS PERIOD  min  0 60 *
* RAD   (m)   40.00  20.00  40.00  20.00          * TIME COST      $/hr 15.00 *
* PHI   (d)   25.00  30.00  25.00  30.00          * FLOW PERIOD     min  0 60 *
* DIA   (m)   75.00  75.00  75.00  75.00          * FLOW TYPE   pcu/veh   VEH *
* GRAD SEP       0      0      0      0           * FLOW PEAK  am/op/pm    AM *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *        *
*RT 50 NB  *1.05*    0  705  145  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 67 WB  *1.05*    0  171    6  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 5067 SB*1.05*    0  883  639  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*BALL EB   *1.05*    0  190   82  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *        *
*          *    *                            *    *  *               *        *
*          *    *                            *    *  *               *        *
*****************************************************************************
*                                                                 *         *
* FLOW        veh     850    177   1522    272                    * AVEDEL  s   1.9 *
* CAPACITY    veh    2822   1861   3295   1495                    * LOS   SIG     A *
* AVE DELAY  mins    0.03   0.03   0.03   0.05                    * LOS UNSIG     A *
* MAX DELAY  mins    0.05   0.05   0.05   0.08                    *                 *
* AVE QUEUE   veh       0      0      1      0                    * VEHIC HRS   1.5 *
* MAX QUEUE   veh       1      0      1      0                    * COST    $    23 *
*                                                                 *                 *
*****************************************************************************
```

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00		1.00		0.95			0.95	1.00		0.95	
Frt	1.00		0.85		1.00			1.00	0.85		1.00	
Flt Protected	0.95		1.00		1.00			1.00	1.00		1.00	
Satd. Flow (prot)	1770		1583		3539			3539	1583		3539	
Flt Permitted	0.51		1.00		1.00			1.00	1.00		1.00	
Satd. Flow (perm)	955		1583		3539			3539	1583		3539	
Volume (vph)	143	0	466	0	332	0	0	801	115	0	631	0
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)	155	0	507	0	361	0	0	871	125	0	686	0
Lane Group Flow (vph)	155	0	507	0	361	0	0	871	125	0	686	0
Turn Type	custom		custom						Perm			
Protected Phases	7				8			2			2	
Permitted Phases	8 7		4						2			
Actuated Green, G (s)	21.0		27.0		17.0			21.0	21.0		21.0	
Effective Green, g (s)	25.0		29.0		19.0			23.0	23.0		23.0	
Actuated g/C Ratio	0.42		0.48		0.32			0.38	0.38		0.38	
Clearance Time (s)	6.0		6.0		6.0			6.0	6.0		6.0	
Lane Grp Cap (vph)	479		765		1121			1357	607		1357	
v/s Ratio Prot	0.03				0.10			c0.25			0.19	
v/s Ratio Perm	0.10		c0.32						0.08			
v/c Ratio	0.32		0.66		0.32			0.64	0.21		0.51	
Uniform Delay, d1	11.2		11.8		15.6			15.1	12.4		14.2	
Progression Factor	1.00		1.00		1.00			1.00	1.00		1.00	
Incremental Delay, d2	1.8		4.5		0.8			2.3	0.8		1.3	
Delay (s)	13.0		16.3		16.4			17.5	13.2		15.5	
Level of Service	B		B		B			B	B		B	
Approach Delay (s)		15.5			16.4			16.9			15.5	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	16.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B

c Critical Lane Group

```
*******************************************************************************
*                                                                             *
*   1:4:06                ROUTE 67/BROOKLINE RD ALT 1 FB                   12 *
*                                                                             *
*******************************************************************************
*                                                 *                           *
* E     (m)    10.00  10.00  10.00                * TIME PERIOD     min    60 *
* L'    (m)    20.00  20.00  20.00                * TIME SLICE      min    15 *
* V     (m)     7.20   7.20   7.20                * RESULTS PERIOD  min  0 60 *
* RAD   (m)    20.00  20.00  20.00                * TIME COST      $/hr 15.00 *
* PHI   (d)    30.00  30.00  30.00                * FLOW PERIOD     min  0 60 *
* DIA   (m)    70.00  70.00  70.00                * FLOW TYPE   pcu/veh   VEH *
* GRAD SEP        0      0      0                * FLOW PEAK  am/op/pm    AM *
*                                                 *                           *
*******************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *              *         *
*RT 67 NB  *1.05*  631  332    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 67 SB  *1.05*    0  801    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
*BROOK EB  *1.05*  466  143    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*******************************************************************************
*                                                         *                   *
* FLOW        veh     963    801    609                  * AVEDEL  s    2.1 *
* CAPACITY    veh    2539   2412   2097                  * LOS   SIG      A *
* AVE DELAY  mins    0.04   0.03   0.04                  * LOS UNSIG      A *
* MAX DELAY  mins    0.06   0.06   0.06                  *                   *
* AVE QUEUE   veh       1      1      0                  * VEHIC HRS    1.4 *
* MAX QUEUE   veh       1      1      1                  * COST    $     21 *
*                                                         *                   *
*******************************************************************************
```

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3507		1770	1863	1583		1815	1583
Flt Permitted	0.16	1.00	1.00	0.15	1.00		0.37	1.00	1.00		0.80	1.00
Satd. Flow (perm)	295	3539	1583	279	3507		688	1863	1583		1486	1583
Volume (vph)	12	1053	166	107	969	63	188	63	158	89	79	20
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)	13	1145	180	116	1053	68	204	68	172	97	86	22
Lane Group Flow (vph)	13	1145	180	116	1121	0	204	68	172	0	183	22
Turn Type	pm+pt		Perm	pm+pt			pm+pt		pm+ov	Perm		pm+ov
Protected Phases	5	2		1	6		3	8	1		4	5
Permitted Phases	2		2	6			8		8	4		4
Actuated Green, G (s)	41.1	38.5	38.5	44.3	40.1		20.9	20.9	25.1		12.0	14.6
Effective Green, g (s)	45.1	40.5	40.5	48.3	42.1		22.9	22.9	29.1		14.0	18.6
Actuated g/C Ratio	0.55	0.50	0.50	0.59	0.52		0.28	0.28	0.36		0.17	0.23
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0		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)	246	1756	786	278	1809		258	523	642		255	361
v/s Ratio Prot	0.00	c0.32		c0.03	0.32		c0.05	0.04	0.02			0.00
v/s Ratio Perm	0.03		0.11	0.22			c0.17		0.09		0.12	0.01
v/c Ratio	0.05	0.65	0.23	0.42	0.62		0.79	0.13	0.27		0.72	0.06
Uniform Delay, d1	16.9	15.3	11.7	20.4	14.1		26.9	21.9	18.7		31.9	24.7
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	0.1	0.9	0.1	1.0	0.6		15.1	0.1	0.2		9.3	0.1
Delay (s)	17.0	16.2	11.8	21.5	14.7		42.0	22.0	18.9		41.2	24.7
Level of Service	B	B	B	C	B		D	C	B		D	C
Approach Delay (s)		15.6			15.3			30.0			39.4	
Approach LOS		B			B			C			D	

Intersection Summary			
HCM Average Control Delay	19.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	81.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.1%	ICU Level of Service	B
c Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06              ROUTE 67/EASTLINE RD ALT 1 FB                    15 *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* E     (m)   10.00  10.00  10.00   5.00          * TIME PERIOD     min    60 *
* L'    (m)   20.00  20.00  20.00  10.00          * TIME SLICE      min    15 *
* V     (m)    7.20   7.20   7.20   3.60          * RESULTS PERIOD  min  0 60 *
* RAD   (m)   20.00  20.00  20.00  20.00          * TIME COST      $/hr 15.00 *
* PHI   (d)   30.00  30.00  30.00  30.00          * FLOW PERIOD     min  0 60 *
* DIA   (m)   70.00  70.00  70.00  70.00          * FLOW TYPE   pcu/veh   VEH *
* GRAD SEP       0      0      0      0           * FLOW PEAK  am/op/pm    AM *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *        *
* RT 67 EB *1.05*    0 1071    4  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* EAST NB  *1.05*    0   20  174  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 67 WB *1.05*    0  897   90  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* EAST SB  *1.05*   27  105  137  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *        *
*          *    *                            *    *  *               *        *
*          *    *                            *    *  *               *        *
*****************************************************************************
*                                                          *                 *
* FLOW        veh    1075    194    987    269             * AVEDEL  s   2.8 *
* CAPACITY    veh    2412   1820   2502    789             * LOS   SIG     A *
* AVE DELAY  mins    0.04   0.03   0.04   0.12             * LOS UNSIG     A *
* MAX DELAY  mins    0.07   0.06   0.06   0.20             *                 *
* AVE QUEUE   veh       1      0      1      1             * VEHIC HRS   2.0 *
* MAX QUEUE   veh       1      0      1      1             * COST    $    30 *
*                                                          *                 *
*****************************************************************************
```

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.91	1.00	1.00	0.91	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)	3433	3427		3433	3496		1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.32	1.00	1.00
Satd. Flow (perm)	3433	3427		3433	3496		1770	5085	1583	590	5085	1583
Volume (vph)	168	247	66	300	219	19	57	697	272	16	765	161
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)	183	268	72	326	238	21	62	758	296	17	832	175
Lane Group Flow (vph)	183	340	0	326	259	0	62	758	296	17	832	175
Turn Type	Prot			Prot			Prot		pm+ov	pm+pt		pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases									2	6		6
Actuated Green, G (s)	3.8	11.4		5.2	12.8		2.1	17.0	22.2	16.3	15.6	19.4
Effective Green, g (s)	5.8	13.4		7.2	14.8		4.1	19.0	26.2	20.3	17.6	23.4
Actuated g/C Ratio	0.10	0.23		0.12	0.25		0.07	0.33	0.45	0.35	0.30	0.40
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	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)	342	788		424	887		124	1657	820	260	1535	744
v/s Ratio Prot	0.05	c0.10		c0.09	0.07		c0.04	0.15	0.04	0.00	c0.16	0.02
v/s Ratio Perm									0.14	0.02		0.09
v/c Ratio	0.54	0.43		0.77	0.29		0.50	0.46	0.36	0.07	0.54	0.24
Uniform Delay, d1	25.0	19.2		24.7	17.5		26.1	15.6	10.5	12.5	17.0	11.5
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	1.6	0.4		8.2	0.2		3.1	0.2	0.3	0.1	0.4	0.2
Delay (s)	26.6	19.6		32.9	17.7		29.3	15.8	10.8	12.6	17.4	11.7
Level of Service	C	B		C	B		C	B	B	B	B	B
Approach Delay (s)		22.0			26.2			15.2			16.3	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	18.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	58.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
c - Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06                ROUTE 50/BROOKLINE RD ALT 1 FB                 48 *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* E     (m)   10.00  10.00  10.00  10.00          * TIME PERIOD     min   60 *
* L'    (m)   20.00  20.00  20.00  20.00          * TIME SLICE      min   15 *
* V     (m)    7.20   7.20   7.20   7.20          * RESULTS PERIOD  min  0 60 *
* RAD   (m)   20.00  20.00  20.00  20.00          * TIME COST      $/hr 15.00 *
* PHI   (d)   30.00  30.00  30.00  30.00          * FLOW PERIOD     min  0 60 *
* DIA   (m)   75.00  75.00  75.00  75.00          * FLOW TYPE   pcu/veh   VEH *
* GRAD SEP       0      0      0      0           * FLOW PEAK  am/op/pm    AM *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *        *
* RT 50 NB *1.05*    0  584   45  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* BROOK WB *1.05*    0  125  316  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*    0  823   20  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* BROOK EB *1.05*    0  311  170  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *        *
*          *    *                            *    *  *               *        *
*          *    *                            *    *  *               *        *
*****************************************************************************
*                                                                 *         *
* FLOW        veh     629    441    843    481                   * AVEDEL  s   2.2 *
* CAPACITY    veh    2311   2118   2321   1885                   * LOS   SIG     A *
* AVE DELAY  mins    0.03   0.03   0.04   0.04                   * LOS UNSIG     A *
* MAX DELAY  mins    0.05   0.05   0.06   0.07                   *                 *
* AVE QUEUE   veh       0      0      1      0                   * VEHIC HRS   1.4 *
* MAX QUEUE   veh       0      0      1      0                   * COST    $    22 *
*                                                                 *                 *
*****************************************************************************
```

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		0.97	0.95	1.00	0.88
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3538		3433	3539	1770	2787
Flt Permitted	1.00		0.14	1.00	0.95	1.00
Satd. Flow (perm)	3538		516	3539	1770	2787
Volume (vph)	968	2	196	994	4	196
Peak-hour factor, PHF	0.72	0.72	0.81	0.81	0.87	0.87
Adj. Flow (vph)	1344	3	242	1227	5	225
Lane Group Flow (vph)	1347	0	242	1227	5	225
Turn Type			pm+pt		custom	
Protected Phases	2		1	6	8	1
Permitted Phases			6			1
Actuated Green, G (s)	22.0		32.0	32.0	16.0	4.0
Effective Green, g (s)	24.0		34.0	34.0	18.0	6.0
Actuated g/C Ratio	0.40		0.57	0.57	0.30	0.10
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0
Lane Grp Cap (vph)	1415		584	2005	531	279
v/s Ratio Prot	c0.38		0.04	0.35	c0.00	c0.08
v/s Ratio Perm			0.19			
v/c Ratio	0.95		0.41	0.61	0.01	0.81
Uniform Delay, d1	17.4		11.0	8.6	14.7	26.4
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	14.9		2.2	1.4	0.0	21.5
Delay (s)	32.4		13.2	10.0	14.8	48.0
Level of Service	C		B	B	B	D
Approach Delay (s)	32.4			10.5	47.3	
Approach LOS	C			B	D	

Intersection Summary			
HCM Average Control Delay	23.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.58		
Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.5%	ICU Level of Service	A

c Critical Lane Group

```
*****************************************************************************
*                                                                           *
*   1:4:06                ROUTE 50/ROUTE 146A ALT 1 FB                    9 *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* E     (m)    10.00  10.00  10.00                * TIME PERIOD     min    60 *
* L'    (m)    20.00  20.00  20.00                * TIME SLICE      min    15 *
* V     (m)     7.20   7.20   7.20                * RESULTS PERIOD  min  0 60 *
* RAD   (m)    20.00  20.00  20.00                * TIME COST      $/hr 15.00 *
* PHI   (d)    30.00  30.00  30.00                * FLOW PERIOD     min  0 60 *
* DIA   (m)    70.00  70.00  70.00                * FLOW TYPE   pcu/veh   VEH *
* GRAD SEP         0      0      0               * FLOW PEAK  am/op/pm    AM *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                             *    *  *              *        *
*RT 50 NB  *1.05*    1  825    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 146A EB*1.05*  176    4    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 50 SB  *1.05* 1088  197    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                             *    *  *              *        *
*          *    *                             *    *  *              *        *
*          *    *                             *    *  *              *        *
*          *    *                             *    *  *              *        *
*****************************************************************************
*                                                         *                 *
* FLOW        veh     826    180   1285                   * AVEDEL  s    2.3 *
* CAPACITY    veh    2503   2080   2633                   * LOS   SIG      A *
* AVE DELAY  mins    0.03   0.03   0.04                   * LOS UNSIG      A *
* MAX DELAY  mins    0.05   0.05   0.07                   *                 *
* AVE QUEUE   veh       1      0      1                   * VEHIC HRS    1.4 *
* MAX QUEUE   veh       1      0      1                   * COST    $     22 *
*                                                         *                 *
*****************************************************************************
```

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	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	0.99	
Flt Protected	0.98		0.95	1.00	1.00	
Satd. Flow (prot)	1693		1770	3539	3506	
Flt Permitted	0.98		0.18	1.00	1.00	
Satd. Flow (perm)	1693		339	3539	3506	
Volume (vph)	82	85	49	935	960	63
Peak-hour factor, PHF	0.60	0.60	0.90	0.90	0.93	0.93
Adj. Flow (vph)	137	142	54	1039	1032	68
Lane Group Flow (vph)	279	0	54	1039	1100	0
Turn Type			pm+pt			
Protected Phases	4		5	2	6	
Permitted Phases			2			
Actuated Green, G (s)	16.0		26.0	26.0	16.0	
Effective Green, g (s)	18.0		28.0	28.0	18.0	
Actuated g/C Ratio	0.33		0.52	0.52	0.33	
Clearance Time (s)	6.0		6.0	6.0	6.0	
Lane Grp Cap (vph)	564		335	1835	1169	
v/s Ratio Prot	c0.16		0.02	c0.29	c0.31	
v/s Ratio Perm			0.07			
v/c Ratio	0.49		0.16	0.57	0.94	
Uniform Delay, d1	14.4		9.3	8.9	17.5	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	3.1		1.0	1.3	15.5	
Delay (s)	17.5		10.3	10.1	33.0	
Level of Service	B		B	B	C	
Approach Delay (s)	17.5			10.1	33.0	
Approach LOS	B			B	C	

Intersection Summary			
HCM Average Control Delay	21.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Cycle Length (s)	54.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.6%	ICU Level of Service	A

c Critical Lane Group

```
*****************************************************************************
*                                                                           *
*   1:4:06                  ROUTE 50/FOREST ALT 1 FB                     14 *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* E     (m)   10.00  10.00   5.00                 * TIME PERIOD     min    60 *
* L'    (m)   20.00  20.00  10.00                 * TIME SLICE      min    15 *
* V     (m)    7.20   7.20   3.00                 * RESULTS PERIOD  min  0 60 *
* RAD   (m)   20.00  20.00  20.00                 * TIME COST      $/hr 15.00 *
* PHI   (d)   30.00  30.00  30.00                 * FLOW PERIOD     min  0 60 *
* DIA   (m)   70.00  70.00  70.00                 * FLOW TYPE   pcu/veh   VEH *
* GRAD SEP       0      0      0                  * FLOW PEAK  am/op/pm    AM *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *        *
* RT 50 NB *1.05*  790   33    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*   45 1040    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
* FOREST WB*1.05*  137  104    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *        *
*          *    *                            *    *  *               *        *
*          *    *                            *    *  *               *        *
*          *    *                            *    *  *               *        *
*****************************************************************************
*                                                         *                 *
* FLOW        veh     823   1085    241                   * AVEDEL  s   2.6 *
* CAPACITY    veh    2566   2614    761                   * LOS   SIG     A *
* AVE DELAY  mins    0.03   0.04   0.11                   * LOS UNSIG     A *
* MAX DELAY  mins    0.05   0.06   0.19                   *                 *
* AVE QUEUE   veh       0      1      0                   * VEHIC HRS   1.5 *
* MAX QUEUE   veh       1      1      1                   * COST    $    23 *
*                                                         *                 *
*****************************************************************************
```

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	0.88	0.97	0.95		0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	2787	3433	3450		3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	2787	3433	3450		3433	3539	1583	3433	3539	1583
Volume (vph)	211	269	288	376	268	54	291	727	324	50	743	199
Peak-hour factor, PHF	0.87	0.87	0.87	0.89	0.89	0.89	0.97	0.97	0.97	0.66	0.66	0.66
Adj. Flow (vph)	243	309	331	422	301	61	300	749	334	76	1126	302
Lane Group Flow (vph)	243	309	331	422	362	0	300	749	334	76	1126	302
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	7.9	12.4	12.4	8.0	12.5		4.0	29.0	29.0	3.1	28.1	28.1
Effective Green, g (s)	9.9	14.4	14.4	10.0	14.5		6.0	31.0	31.0	5.1	30.1	30.1
Actuated g/C Ratio	0.13	0.19	0.19	0.13	0.19		0.08	0.41	0.41	0.07	0.39	0.39
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	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)	444	666	525	449	654		269	1434	641	229	1392	623
v/s Ratio Prot	0.07	0.09		c0.12	0.10		c0.09	0.21		0.02	c0.32	
v/s Ratio Perm			c0.12						0.21			0.19
v/c Ratio	0.55	0.46	0.63	0.94	0.55		1.12	0.52	0.52	0.33	0.81	0.48
Uniform Delay, d1	31.2	27.6	28.6	33.0	28.1		35.2	17.2	17.2	34.1	20.6	17.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.5	2.5	27.6	1.0		89.4	0.3	0.8	0.9	3.6	0.6
Delay (s)	32.6	28.1	31.1	60.5	29.1		124.7	17.5	17.9	34.9	24.2	18.0
Level of Service	C	C	C	E	C		F	B	B	C	C	B
Approach Delay (s)		30.5			46.0			40.9			23.5	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM Average Control Delay	34.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	76.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	C
c Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06                ROUTE 50/LAKE HILL RD ALT 1 FB                 20 *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* E     (m)   12.00  10.00  10.00  10.00          * TIME PERIOD     min   60 *
* L'    (m)   20.00  20.00  20.00  20.00          * TIME SLICE      min   15 *
* V     (m)    7.00   7.20   6.00   6.00          * RESULTS PERIOD  min  0 60 *
* RAD   (m)   20.00  20.00  20.00  20.00          * TIME COST      $/hr 15.00 *
* PHI   (d)   30.00  30.00  30.00  30.00          * FLOW PERIOD     min  0 60 *
* DIA   (m)   75.00  75.00  75.00  75.00          * FLOW TYPE   pcu/veh  VEH *
* GRAD SEP       0      0      0      0           * FLOW PEAK  am/op/pm   AM *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *              *        *
* RT 50 NB *1.05*    0  622  183  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* LHR WB   *1.05*    0  218  344  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*    0  785   37  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* LHR EB   *1.05*    0  324  211  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *              *        *
*          *    *                            *    *  *              *        *
*          *    *                            *    *  *              *        *
*****************************************************************************
*                                                                 *         *
* FLOW        veh     805    562    822    535                   * AVEDEL  s   2.6 *
* CAPACITY    veh    2434   1978   1977   1718                   * LOS   SIG     A *
* AVE DELAY  mins    0.03   0.04   0.05   0.05                   * LOS UNSIG     A *
* MAX DELAY  mins    0.06   0.07   0.08   0.08                   *                 *
* AVE QUEUE   veh       1      0      1      0                   * VEHIC HRS   1.9 *
* MAX QUEUE   veh       1      1      1      1                   * COST    $    29 *
*                                                                 *                 *
*****************************************************************************
```

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor		1.00		1.00	1.00			0.95			0.95	
Frt		0.99		1.00	0.97			0.98			1.00	
Flt Protected		0.98		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1820		1770	1802			3479			3522	
Flt Permitted		0.87		0.51	1.00			0.95			0.94	
Satd. Flow (perm)		1606		951	1802			3295			3313	
Volume (vph)	27	55	5	109	47	13	8	779	98	10	792	23
Peak-hour factor, PHF	0.61	0.61	0.61	0.81	0.81	0.81	0.88	0.88	0.88	0.94	0.94	0.94
Adj. Flow (vph)	44	90	8	135	58	16	9	885	111	11	843	24
Lane Group Flow (vph)	0	142	0	135	74	0	0	1005	0	0	878	0
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.7		17.3	17.3			31.6			31.6	
Effective Green, g (s)		9.7		19.3	19.3			33.6			33.6	
Actuated g/C Ratio		0.16		0.32	0.32			0.55			0.55	
Clearance Time (s)		6.0		6.0	6.0			6.0			6.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		256		377	571			1818			1828	
v/s Ratio Prot				c0.03	0.04							
v/s Ratio Perm		c0.09		0.08				c0.31			0.26	
v/c Ratio		0.55		0.36	0.13			0.55			0.48	
Uniform Delay, d1		23.6		15.9	14.8			8.8			8.3	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		2.6		0.6	0.1			0.4			0.2	
Delay (s)		26.2		16.5	14.9			9.2			8.5	
Level of Service		C		B	B			A			A	
Approach Delay (s)		26.2			16.0			9.2			8.5	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	10.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	60.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
c Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06                ROUTE 50/OUTLET RD ALT 1 FB                     4 *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* E     (m)   10.00   5.00  10.00   5.00          * TIME PERIOD     min   60 *
* L'    (m)   20.00  10.00  20.00  10.00          * TIME SLICE      min   15 *
* V     (m)    7.20   3.00   7.20   3.00          * RESULTS PERIOD  min  0 60 *
* RAD   (m)   20.00  20.00  20.00  20.00          * TIME COST      $/hr 15.00 *
* PHI   (d)   30.00  30.00  30.00  30.00          * FLOW PERIOD     min  0 60 *
* DIA   (m)   70.00  70.00  70.00  70.00          * FLOW TYPE   pcu/veh  VEH *
* GRAD SEP       0      0      0      0          * FLOW PEAK  am/op/pm   AM *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *              *        *
* RT 50 NB *1.05*   89  690    3  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* OUTLET WB*1.05*   17   24  114  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*   10  833    8  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* CHAR EB  *1.05*    3   80   31  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *              *        *
*          *    *                            *    *  *              *        *
*          *    *                            *    *  *              *        *
*****************************************************************************
*                                                                 *                 *
* FLOW        veh     782    155    851    114                   * AVEDEL  s   2.3 *
* CAPACITY    veh    2556    900   2541    798                   * LOS   SIG     A *
* AVE DELAY  mins    0.03   0.07   0.03   0.08                   * LOS UNSIG     A *
* MAX DELAY  mins    0.05   0.12   0.05   0.13                   *                 *
* AVE QUEUE   veh       0      0      1      0                   * VEHIC HRS   1.2 *
* MAX QUEUE   veh       1      0      1      0                   * COST    $    18 *
*                                                                 *                 *
*****************************************************************************
```

Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Ideal Flow (vphpl)	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	0.95			1.00
Frt	1.00	1.00	1.00			0.86
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1770	3539	3538			1611
Flt Permitted	0.18	1.00	1.00			1.00
Satd. Flow (perm)	339	3539	3538			1611
Volume (vph)	316	755	882	2	0	365
Peak-hour factor, PHF	0.89	0.89	0.88	0.88	0.82	0.82
Adj. Flow (vph)	355	848	1002	2	0	445
Lane Group Flow (vph)	355	848	1004	0	0	445
Turn Type	pm+pt					custom
Protected Phases	5	2	6			5
Permitted Phases	2					5
Actuated Green, G (s)	34.0	40.0	16.0			12.0
Effective Green, g (s)	36.0	40.0	18.0			14.0
Actuated g/C Ratio	0.90	1.00	0.45			0.35
Clearance Time (s)	6.0	6.0	6.0			6.0
Lane Grp Cap (vph)	806	3539	1592			564
v/s Ratio Prot	0.15	0.24	c0.28			c0.28
v/s Ratio Perm	0.24					
v/c Ratio	0.44	0.24	0.63			0.79
Uniform Delay, d1	3.1	0.0	8.4			11.7
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.7	0.2	1.9			10.7
Delay (s)	4.8	0.2	10.4			22.4
Level of Service	A	A	B			C
Approach Delay (s)		1.5	10.4		22.4	
Approach LOS		A	B		C	

Intersection Summary			
HCM Average Control Delay	8.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.70		
Cycle Length (s)	40.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.0%	ICU Level of Service	B

c Critical Lane Group

```
*****************************************************************************
*                                                                           *
*   1:4:06              ROUTE 50/MIDDLELINE RD ALT 1 FB                   7 *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* E     (m)   10.00  10.00  10.00                 * TIME PERIOD     min    60 *
* L'    (m)   20.00  20.00  20.00                 * TIME SLICE      min    15 *
* V     (m)    7.20   7.20   7.20                 * RESULTS PERIOD  min  0 60 *
* RAD   (m)   20.00  20.00  20.00                 * TIME COST      $/hr 15.00 *
* PHI   (d)   30.00  30.00  30.00                 * FLOW PERIOD     min  0 60 *
* DIA   (m)   70.00  70.00  70.00                 * FLOW TYPE   pcu/veh   VEH *
* GRAD SEP       0      0      0                 * FLOW PEAK  am/op/pm    AM *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *        *
* RT 50 NB *1.05*  653  216    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*    1  919    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
* MID WB   *1.05*  454    0    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *        *
*          *    *                            *    *  *               *        *
*          *    *                            *    *  *               *        *
*          *    *                            *    *  *               *        *
*****************************************************************************
*                                                         *                 *
* FLOW         veh     869    920    454                  * AVEDEL  s   2.0 *
* CAPACITY     veh    2636   2490   2017                  * LOS   SIG     A *
* AVE DELAY   mins    0.03   0.04   0.04                  * LOS UNSIG     A *
* MAX DELAY   mins    0.05   0.06   0.06                  *                 *
* AVE QUEUE    veh       0      1      0                  * VEHIC HRS   1.3 *
* MAX QUEUE    veh       1      1      0                  * COST    $    19 *
*                                                         *                 *
*****************************************************************************
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Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.90			0.95		1.00	1.00		1.00	0.99	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1683			1756		1770	1858		1770	1843	
Flt Permitted		0.99			0.47		0.13	1.00		0.11	1.00	
Satd. Flow (perm)		1673			827		240	1858		213	1843	
Volume (vph)	6	175	451	118	226	182	152	833	13	781	951	72
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)	7	190	490	128	246	198	165	905	14	849	1034	78
Lane Group Flow (vph)	0	687	0	0	572	0	165	919	0	849	1112	0
Turn Type	Perm			Perm			pm+pt			pm+pt		
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)		35.0			35.0		33.0	29.0		53.0	43.0	
Effective Green, g (s)		37.0			37.0		37.0	31.0		55.0	45.0	
Actuated g/C Ratio		0.37			0.37		0.37	0.31		0.55	0.45	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		619			306		181	576		429	829	
v/s Ratio Prot							0.05	0.49		c0.40	0.60	
v/s Ratio Perm		0.41			c0.69		0.28			c0.69		
v/c Ratio		1.11			1.87		0.91	1.60		1.98	1.34	
Uniform Delay, d1		31.5			31.5		48.7	34.5		42.2	27.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		70.1			403.4		42.5	276.1		448.9	161.7	
Delay (s)		101.6			434.9		91.2	310.6		491.1	189.2	
Level of Service		F			F		F	F		F	F	
Approach Delay (s)		101.6			434.9			277.2			319.9	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	289.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.91		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	181.5%	ICU Level of Service	H
c Critical Lane Group			

Movement	EBL	EBR	SBL	SBR	NWL	NWR
Lane Configurations						
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Volume (veh/h)	216	473	824	125	313	810
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	235	514	896	136	340	880
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	2524	964			1032	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	0			49	
cM capacity (veh/h)	15	310			674	

Direction, Lane #	EB 1	SB 1	NW 1
Volume Total	749	1032	1221
Volume Left	235	0	340
Volume Right	514	136	0
cSH	44	1700	674
Volume to Capacity	17.17	0.61	0.51
Queue Length (ft)	Err	0	72
Control Delay (s)	Err	0.0	16.2
Lane LOS	F		C
Approach Delay (s)	Err	0.0	16.2
Approach LOS	F		

Intersection Summary			
Average Delay	2501.8		
Intersection Capacity Utilization	185.6%	ICU Level of Service	H

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.98		1.00	1.00			0.94			0.99	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1770	1832		1770	1856			1704			1792	
Flt Permitted	0.05	1.00		0.05	1.00			0.69			0.64	
Satd. Flow (perm)	102	1832		97	1856			1211			1176	
Volume (vph)	4	1097	134	90	1020	24	210	20	200	137	105	27
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	1192	146	98	1109	26	228	22	217	149	114	29
Lane Group Flow (vph)	4	1338	0	98	1135	0	0	467	0	0	292	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	71.8	71.0		85.8	79.0			37.0			37.0	
Effective Green, g (s)	75.8	73.0		87.8	81.0			39.0			39.0	
Actuated g/C Ratio	0.56	0.54		0.65	0.60			0.29			0.29	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	92	992		197	1115			350			340	
v/s Ratio Prot	0.00	c0.73		c0.04	c0.61							
v/s Ratio Perm	0.02			0.28				c0.39			0.25	
v/c Ratio	0.04	1.35		0.50	1.02			1.33			0.86	
Uniform Delay, d1	64.8	30.9		55.7	26.9			47.9			45.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.2	163.7		2.0	31.5			168.7			18.9	
Delay (s)	65.0	194.6		57.7	58.4			216.6			64.2	
Level of Service	E	F		E	E			F			E	
Approach Delay (s)		194.2			58.4			216.6			64.2	
Approach LOS		F			E			F			E	

Intersection Summary			
HCM Average Control Delay	135.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.26		
Actuated Cycle Length (s)	134.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	133.5%	ICU Level of Service	H
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			1.00			0.96			0.98	
Flt Protected		0.98			0.97			1.00			1.00	
Satd. Flow (prot)		1802			1795			1789			1826	
Flt Permitted		0.75			0.45			0.87			0.97	
Satd. Flow (perm)		1370			840			1568			1765	
Volume (vph)	243	347	72	301	129	11	48	702	284	20	818	133
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)	264	377	78	327	140	12	52	763	309	22	889	145
Lane Group Flow (vph)	0	719	0	0	479	0	0	1124	0	0	1056	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		41.0			41.0			47.0			47.0	
Effective Green, g (s)		43.0			43.0			49.0			49.0	
Actuated g/C Ratio		0.43			0.43			0.49			0.49	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		589			361			768			865	
v/s Ratio Prot												
v/s Ratio Perm		0.52			c0.57			c0.72			0.60	
v/c Ratio		1.22			1.33			1.46			1.22	
Uniform Delay, d1		28.5			28.5			25.5			25.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		114.0			165.1			215.7			109.8	
Delay (s)		142.5			193.6			241.2			135.3	
Level of Service		F			F			F			F	
Approach Delay (s)		142.5			193.6			241.2			135.3	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	180.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.40		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	197.4%	ICU Level of Service	H
c Critical Lane Group			

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	907	1	204	1178	4	202
Peak Hour Factor	0.72	0.72	0.81	0.81	0.87	0.87
Hourly flow rate (veh/h)	1260	1	252	1454	5	232
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume			1261		3218	1260
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			54		22	0
cM capacity (veh/h)			551		6	208

Direction, Lane #	NB 1	SB 1	SB 2	NW 1
Volume Total	1261	252	1454	237
Volume Left	0	252	0	5
Volume Right	1	0	0	232
cSH	1700	551	1700	125
Volume to Capacity	0.74	0.46	0.86	1.90
Queue Length (ft)	0	59	0	469
Control Delay (s)	0.0	16.9	0.0	492.5
Lane LOS		C		F
Approach Delay (s)	0.0	2.5		492.5
Approach LOS				F

Intersection Summary			
Average Delay	37.7		
Intersection Capacity Utilization	105.0%	ICU Level of Service	F

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	94	137	33	881	1126	48
Peak Hour Factor	0.60	0.60	0.90	0.90	0.93	0.93
Hourly flow rate (veh/h)	157	228	37	979	1211	52
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	2289	1237	1262			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	0	93			
cM capacity (veh/h)	40	215	551			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	385	1016	1262
Volume Left	157	37	0
Volume Right	228	0	52
cSH	78	551	1700
Volume to Capacity	4.94	0.07	0.74
Queue Length (ft)	Err	5	0
Control Delay (s)	Err	2.2	0.0
Lane LOS	F	A	
Approach Delay (s)	Err	2.2	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	1446.5		
Intersection Capacity Utilization	153.1%	ICU Level of Service	H

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.95		1.00	0.96		1.00	0.94		1.00	0.97	
Flt Protected		0.99		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1743		1770	1796		1770	1759		1770	1812	
Flt Permitted		0.79		0.26	1.00		0.10	1.00		0.11	1.00	
Satd. Flow (perm)		1396		493	1796		186	1759		207	1812	
Volume (vph)	268	355	392	501	245	77	293	679	401	64	861	192
Peak-hour factor, PHF	0.87	0.87	0.87	0.89	0.89	0.89	0.97	0.97	0.97	0.66	0.66	0.66
Adj. Flow (vph)	308	408	451	563	275	87	302	700	413	97	1305	291
Lane Group Flow (vph)	0	1167	0	563	362	0	302	1113	0	97	1596	0
Turn Type	Perm			pm+pt			pm+pt			Perm		
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		31.0		43.0	43.0		45.0	45.0		34.0	34.0	
Effective Green, g (s)		33.0		45.0	45.0		47.0	47.0		36.0	36.0	
Actuated g/C Ratio		0.33		0.45	0.45		0.47	0.47		0.36	0.36	
Clearance Time (s)		6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		461		324	808		198	827		75	652	
v/s Ratio Prot				c0.14	0.20		0.11	c0.63			c0.88	
v/s Ratio Perm		c0.84		0.64			0.61			0.47		
v/c Ratio		2.53		1.74	0.45		1.53	1.35		1.29	2.45	
Uniform Delay, d1		33.5		51.8	18.9		48.7	26.5		32.0	32.0	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		695.5		344.6	0.4		260.3	163.7		201.4	656.2	
Delay (s)		729.0		396.4	19.3		309.0	190.2		233.4	688.2	
Level of Service		F		F	B		F	F		F	F	
Approach Delay (s)		729.0			248.8			215.5			662.1	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	482.1	HCM Level of Service	F
HCM Volume to Capacity ratio	2.35		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	213.6%	ICU Level of Service	H
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		1.00			0.99			0.99			1.00	
Flt Protected		0.99			0.96			1.00			1.00	
Satd. Flow (prot)		1831			1770			1837			1859	
Flt Permitted		0.88			0.62			1.00			0.99	
Satd. Flow (perm)		1642			1133			1834			1841	
Volume (vph)	31	80	3	117	24	17	3	824	92	8	848	10
Peak-hour factor, PHF	0.61	0.61	0.61	0.81	0.81	0.81	0.88	0.88	0.88	0.94	0.94	0.94
Adj. Flow (vph)	51	131	5	144	30	21	3	936	105	9	902	11
Lane Group Flow (vph)	0	187	0	0	195	0	0	1044	0	0	922	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		12.8			12.8			41.1			41.1	
Effective Green, g (s)		14.8			14.8			43.1			43.1	
Actuated g/C Ratio		0.22			0.22			0.65			0.65	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		369			254			1199			1204	
v/s Ratio Prot												
v/s Ratio Perm		0.11			c0.17			c0.57			0.50	
v/c Ratio		0.51			0.77			0.87			0.77	
Uniform Delay, d1		22.4			23.9			9.2			7.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.1			13.0			7.1			3.0	
Delay (s)		23.5			36.9			16.3			10.9	
Level of Service		C			D			B			B	
Approach Delay (s)		23.5			36.9			16.3			10.9	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM Average Control Delay	16.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	65.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	89.8%	ICU Level of Service	D
c Critical Lane Group			

Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	253	780	963	1	0	456
Peak Hour Factor	0.89	0.89	0.88	0.88	0.82	0.82
Hourly flow rate (veh/h)	284	876	1094	1	0	556
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume	1095				2540	1095
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	55				100	0
cM capacity (veh/h)	637				17	260

Direction, Lane #	NB 1	NB 2	SB 1	SE 1
Volume Total	284	876	1095	556
Volume Left	284	0	0	0
Volume Right	0	0	1	556
cSH	637	1700	1700	260
Volume to Capacity	0.45	0.52	0.64	2.14
Queue Length (ft)	57	0	0	1050
Control Delay (s)	15.1	0.0	0.0	556.7
Lane LOS	C			F
Approach Delay (s)	3.7		0.0	556.7
Approach LOS				F

Intersection Summary			
Average Delay	111.6		
Intersection Capacity Utilization	98.8%	ICU Level of Service	E

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	0.88	1.00	1.00	1.00	0.97	0.91		0.97	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	2787	1770	1863	1583	3433	5081		3433	5027	
Flt Permitted	0.47	1.00	1.00	0.45	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	868	3539	2787	834	1863	1583	3433	5081		3433	5027	
Volume (vph)	11	274	733	128	245	263	252	1326	7	786	1349	111
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)	12	298	797	139	266	286	274	1441	8	854	1466	121
Lane Group Flow (vph)	12	298	797	139	266	286	274	1449	0	854	1587	0
Turn Type	pm+pt		pm+ov	pm+pt		Perm	Prot			Prot		
Protected Phases	3	8	1	7	4		5	2		1	6	
Permitted Phases	8		8	4		4						
Actuated Green, G (s)	16.0	15.3	35.0	20.8	17.7	17.7	6.1	16.2		19.7	29.8	
Effective Green, g (s)	20.0	17.3	39.0	24.8	19.7	19.7	8.1	18.2		21.7	31.8	
Actuated g/C Ratio	0.26	0.22	0.50	0.32	0.25	0.25	0.10	0.23		0.28	0.41	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		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)	253	782	1531	325	469	398	355	1181		951	2042	
v/s Ratio Prot	0.00	0.08	0.14	c0.03	0.14		0.08	c0.29		c0.25	0.32	
v/s Ratio Perm	0.01		0.14	0.11		c0.18						
v/c Ratio	0.05	0.38	0.52	0.43	0.57	0.72	0.77	1.23		0.90	0.78	
Uniform Delay, d1	21.9	25.9	13.3	20.0	25.6	26.8	34.2	30.0		27.2	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	0.1	0.3	0.3	0.9	1.6	6.1	10.0	109.8		11.1	1.9	
Delay (s)	22.0	26.3	13.6	20.9	27.2	32.9	44.2	139.8		38.3	22.1	
Level of Service	C	C	B	C	C	C	D	F		D	C	
Approach Delay (s)		17.1			28.3			124.6			27.8	
Approach LOS		B			C			F			C	

Intersection Summary			
HCM Average Control Delay	53.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	78.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	83.1%	ICU Level of Service	D
c Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06                ROUTE 50/ROUTE 67 ALT 2 FB                    35  *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* E     (m)   12.00  10.00  12.00  10.00          * TIME PERIOD     min   60 *
* L'    (m)   65.00  20.00  65.00  20.00          * TIME SLICE      min   15 *
* V     (m)   10.00   6.00  10.00   6.00          * RESULTS PERIOD  min  0 60 *
* RAD   (m)   40.00  20.00  40.00  20.00          * TIME COST      $/hr 15.00 *
* PHI   (d)   25.00  30.00  25.00  30.00          * FLOW PERIOD     min  0 60 *
* DIA   (m)   75.00  75.00  75.00  75.00          * FLOW TYPE   pcu/veh  VEH *
* GRAD SEP        0      0      0      0          * FLOW PEAK  am/op/pm   AM *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *              *        *
*RT 50 NB  *1.05*    0  833  152  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 67 WB  *1.05*    0  175    6  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 5067 SB*1.05*    0  951  781  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*BALL EB   *1.05*    0  226  118  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *              *        *
*          *    *                            *    *  *              *        *
*          *    *                            *    *  *              *        *
*****************************************************************************
*                                                                 *         *
* FLOW        veh     985    181   1732    344                    * AVEDEL  s   2.3 *
* CAPACITY    veh    2651   1756   3286   1365                    * LOS   SIG     A *
* AVE DELAY  mins    0.03   0.04   0.04   0.06                    * LOS UNSIG     A *
* MAX DELAY  mins    0.06   0.06   0.06   0.10                    *                 *
* AVE QUEUE   veh       1      0      1      0                    * VEHIC HRS   2.1 *
* MAX QUEUE   veh       1      0      2      0                    * COST    $    31 *
*                                                                 *                 *
*****************************************************************************
```

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00		1.00		0.95			0.95	1.00		0.95	
Frt	1.00		0.85		1.00			1.00	0.85		1.00	
Flt Protected	0.95		1.00		1.00			1.00	1.00		1.00	
Satd. Flow (prot)	1770		1583		3539			3539	1583		3539	
Flt Permitted	0.50		1.00		1.00			1.00	1.00		1.00	
Satd. Flow (perm)	929		1583		3539			3539	1583		3539	
Volume (vph)	216	0	473	0	313	0	0	824	125	0	810	0
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)	235	0	514	0	340	0	0	896	136	0	880	0
Lane Group Flow (vph)	235	0	514	0	340	0	0	896	136	0	880	0
Turn Type	custom		custom						Perm			
Protected Phases	7				8			2			2	
Permitted Phases	8 7		4						2			
Actuated Green, G (s)	18.2		24.2		11.2			23.8	23.8		23.8	
Effective Green, g (s)	22.2		26.2		13.2			25.8	25.8		25.8	
Actuated g/C Ratio	0.37		0.44		0.22			0.43	0.43		0.43	
Clearance Time (s)	6.0		6.0		6.0			6.0	6.0		6.0	
Vehicle Extension (s)	3.0		3.0		3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	470		691		779			1522	681		1522	
v/s Ratio Prot	0.08				0.10			c0.25			0.25	
v/s Ratio Perm	0.11		c0.32						0.09			
v/c Ratio	0.50		0.74		0.44			0.59	0.20		0.58	
Uniform Delay, d1	13.7		14.1		20.2			13.1	10.7		13.0	
Progression Factor	1.00		1.00		1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.8		4.3		0.4			1.7	0.7		1.6	
Delay (s)	14.6		18.4		20.6			14.7	11.3		14.6	
Level of Service	B		B		C			B	B		B	
Approach Delay (s)		17.2			20.6			14.3			14.6	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM Average Control Delay	15.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
c Critical Lane Group			

```
*******************************************************************************
*                                                                             *
*   1:4:06                ROUTE 67/BROOKLINE RD ALT 2 FB                  14  *
*                                                                             *
*******************************************************************************
*                                                   *                         *
* E     (m)   10.00  10.00  10.00                   * TIME PERIOD     min    60  *
* L'    (m)   20.00  20.00  20.00                   * TIME SLICE      min    15  *
* V     (m)    7.20   7.20   7.20                   * RESULTS PERIOD  min  0 60  *
* RAD   (m)   20.00  20.00  20.00                   * TIME COST      $/hr 15.00  *
* PHI   (d)   30.00  30.00  30.00                   * FLOW PERIOD     min  0 60  *
* DIA   (m)   70.00  70.00  70.00                   * FLOW TYPE   pcu/veh   VEH  *
* GRAD SEP       0      0      0                   * FLOW PEAK  am/op/pm    AM  *
*                                                   *                         *
*******************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO    *FLOW TIME*
*          *    *                            *    *  *               *         *
*RT 67 NB  *1.05*  810  313    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 67 SB  *1.05*    0  824    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
*BROOK EB  *1.05*  473  216    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*******************************************************************************
*                                                          *                  *
* FLOW         veh    1123    824    689                   * AVEDEL  s    2.3 *
* CAPACITY     veh    2490   2425   2081                   * LOS   SIG      A *
* AVE DELAY   mins    0.04   0.03   0.04                   * LOS UNSIG      A *
* MAX DELAY   mins    0.07   0.06   0.07                   *                  *
* AVE QUEUE    veh       1      1      1                   * VEHIC HRS    1.7 *
* MAX QUEUE    veh       1      1      1                   * COST     $    26 *
*                                                          *                  *
*******************************************************************************
```

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3514		1770	1863	1583		1815	1583
Flt Permitted	0.12	1.00	1.00	0.11	1.00		0.40	1.00	1.00		0.80	1.00
Satd. Flow (perm)	232	3539	1583	206	3514		752	1863	1583		1483	1583
Volume (vph)	12	1309	200	108	1289	65	242	65	160	90	80	21
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)	13	1423	217	117	1401	71	263	71	174	98	87	23
Lane Group Flow (vph)	13	1423	217	117	1472	0	263	71	174	0	185	23
Turn Type	pm+pt		Perm	pm+pt			pm+pt		pm+ov	Perm		pm+ov
Protected Phases	5	2		1	6		3	8	1		4	5
Permitted Phases	2		2	6			8		8	4		4
Actuated Green, G (s)	32.4	30.1	30.1	40.8	34.3		24.7	24.7	31.2		13.7	16.0
Effective Green, g (s)	36.4	32.1	32.1	44.6	36.3		26.7	26.7	35.2		15.7	20.0
Actuated g/C Ratio	0.46	0.40	0.40	0.56	0.46		0.34	0.34	0.44		0.20	0.25
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0		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)	190	1433	641	284	1609		343	627	783		294	399
v/s Ratio Prot	0.00	c0.40		c0.04	c0.42		c0.07	0.04	0.02			0.00
v/s Ratio Perm	0.03		0.14	0.19			c0.19		0.09		0.12	0.01
v/c Ratio	0.07	0.99	0.34	0.41	0.91		0.77	0.11	0.22		0.63	0.06
Uniform Delay, d1	32.3	23.5	16.3	28.8	20.1		22.5	18.1	13.6		29.1	22.5
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2	22.0	0.3	1.0	8.4		9.8	0.1	0.1		4.2	0.1
Delay (s)	32.5	45.5	16.6	29.8	28.5		32.3	18.2	13.7		33.3	22.6
Level of Service	C	D	B	C	C		C	B	B		C	C
Approach Delay (s)		41.6			28.6			24.0			32.1	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM Average Control Delay	33.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	79.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	77.1%	ICU Level of Service	C
c Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06                ROUTE 67/EASTLINE RD ALT 2 FB                  15 *
*                                                                           *
*****************************************************************************
*                                                   *                       *
* E     (m)   10.00  10.00  10.00   5.00            * TIME PERIOD     min   60 *
* L'    (m)   20.00  20.00  20.00  10.00            * TIME SLICE      min   15 *
* V     (m)    7.20   7.20   7.20   3.60            * RESULTS PERIOD  min  0 60 *
* RAD   (m)   20.00  20.00  20.00  20.00            * TIME COST      $/hr 15.00 *
* PHI   (d)   30.00  30.00  30.00  30.00            * FLOW PERIOD     min  0 60 *
* DIA   (m)   70.00  70.00  70.00  70.00            * FLOW TYPE   pcu/veh  VEH *
* GRAD SEP        0      0      0      0            * FLOW PEAK  am/op/pm   AM *
*                                                   *                       *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *              *         *
* RT 67 EB *1.05*    0 1097  134  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* EAST NB  *1.05*    0   20  210  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 67 WB *1.05*    0 1020   90  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* EAST SB  *1.05*   27  105  137  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*****************************************************************************
*                                                         *                 *
* FLOW        veh    1231    230   1110    269            * AVEDEL  s    3.3 *
* CAPACITY    veh    2412   1715   2391    716            * LOS   SIG      A *
* AVE DELAY  mins    0.05   0.04   0.04   0.14            * LOS UNSIG      A *
* MAX DELAY  mins    0.08   0.06   0.08   0.25            *                 *
* AVE QUEUE   veh       1      0      1      1            * VEHIC HRS    2.6 *
* MAX QUEUE   veh       1      0      1      1            * COST    $     39 *
*                                                         *                 *
*****************************************************************************
```

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.96		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)	3433	3391		3433	3502		1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.19	1.00	1.00
Satd. Flow (perm)	3433	3391		3433	3502		1770	5085	1583	355	5085	1583
Volume (vph)	272	301	117	438	255	19	115	1114	442	16	1111	227
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)	296	327	127	476	277	21	125	1211	480	17	1208	247
Lane Group Flow (vph)	296	454	0	476	298	0	125	1211	480	17	1208	247
Turn Type	Prot			Prot			Prot		pm+ov	pm+pt		pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases									2	6		6
Actuated Green, G (s)	5.1	11.5		5.1	11.5		3.0	21.3	26.4	19.7	19.0	24.1
Effective Green, g (s)	7.1	13.5		7.1	13.5		5.0	23.3	30.4	23.7	21.0	28.1
Actuated g/C Ratio	0.11	0.22		0.11	0.22		0.08	0.37	0.49	0.38	0.34	0.45
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	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)	389	731		389	755		141	1893	870	195	1706	812
v/s Ratio Prot	0.09	c0.13		c0.14	0.09		c0.07	c0.24	0.06	0.00	0.24	0.03
v/s Ratio Perm									0.24	0.03		0.12
v/c Ratio	0.76	0.62		1.22	0.39		0.89	0.64	0.55	0.09	0.71	0.30
Uniform Delay, d1	26.9	22.2		27.8	21.0		28.5	16.2	11.3	12.6	18.1	11.0
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	8.5	1.6		121.6	0.3		43.5	0.7	0.8	0.2	1.4	0.2
Delay (s)	35.4	23.9		149.3	21.4		72.0	16.9	12.1	12.8	19.5	11.2
Level of Service	D	C		F	C		E	B	B	B	B	B
Approach Delay (s)		28.4			100.1			19.4			18.0	
Approach LOS		C			F			B			B	

Intersection Summary			
HCM Average Control Delay	33.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	62.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
c= Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06                ROUTE 50/BROOKLINE RD ALT 2 FB                 50 *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* E     (m)   10.00  10.00  10.00  10.00          * TIME PERIOD     min   60 *
* L'    (m)   20.00  20.00  20.00  20.00          * TIME SLICE      min   15 *
* V     (m)    7.20   7.20   7.20   7.20          * RESULTS PERIOD  min  0 60 *
* RAD   (m)   20.00  20.00  20.00  20.00          * TIME COST      $/hr 15.00 *
* PHI   (d)   30.00  30.00  30.00  30.00          * FLOW PERIOD     min  0 60 *
* DIA   (m)   75.00  75.00  75.00  75.00          * FLOW TYPE   pcu/veh  VEH *
* GRAD SEP        0      0      0      0          * FLOW PEAK  am/op/pm   AM *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                             *    *  *              *        *
* RT 50 NB *1.05*    0  702   48  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* BROOK WB *1.05*    0  129  301  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*    0  818   20  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* BROOK EB *1.05*    0  347  243  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                             *    *  *              *        *
*          *    *                             *    *  *              *        *
*          *    *                             *    *  *              *        *
*****************************************************************************
*                                                                 *           *
* FLOW        veh     750    430    838    590                   * AVEDEL  s   2.3 *
* CAPACITY    veh    2241   1993   2326   1898                   * LOS   SIG     A *
* AVE DELAY  mins    0.04   0.04   0.04   0.04                   * LOS UNSIG     A *
* MAX DELAY  mins    0.06   0.06   0.06   0.07                   *                 *
* AVE QUEUE   veh       1      0      1      0                   * VEHIC HRS   1.7 *
* MAX QUEUE   veh       1      0      1      1                   * COST    $    25 *
*                                                                 *                 *
*****************************************************************************
```

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	0.88
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3538		1770	3539	1770	2787
Flt Permitted	1.00		0.09	1.00	0.95	1.00
Satd. Flow (perm)	3538		163	3539	1770	2787
Volume (vph)	1375	2	287	1394	4	300
Peak-hour factor, PHF	0.72	0.72	0.81	0.81	0.87	0.87
Adj. Flow (vph)	1910	3	354	1721	5	345
Lane Group Flow (vph)	1913	0	354	1721	5	345
Turn Type			pm+pt			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases			6			8
Actuated Green, G (s)	39.7		51.7	51.7	1.3	7.3
Effective Green, g (s)	41.7		53.7	53.7	3.3	11.3
Actuated g/C Ratio	0.64		0.83	0.83	0.05	0.17
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2270		332	2924	90	656
v/s Ratio Prot	0.54		c0.13	0.49	0.00	c0.06
v/s Ratio Perm			c0.75			0.06
v/c Ratio	0.84		1.07	0.59	0.06	0.53
Uniform Delay, d1	9.1		20.4	1.9	29.4	24.4
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	4.0		68.0	0.9	0.3	0.8
Delay (s)	13.1		88.5	2.8	29.6	25.2
Level of Service	B		F	A	C	C
Approach Delay (s)	13.1			17.4	25.2	
Approach LOS	B			B	C	

Intersection Summary			
HCM Average Control Delay	16.1	HCM Level of Service	B
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	85.8%	ICU Level of Service	D
c Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06                ROUTE 50/ROUTE 146A ALT 2 FB                    9 *
*                                                                           *
*****************************************************************************
*                                                   *                       *
*                                                   * TIME PERIOD     min   60 *
* E     (m)   10.00  10.00  10.00                   * TIME SLICE      min   15 *
* L'    (m)   20.00  20.00  20.00                   * RESULTS PERIOD  min  0 60 *
* V     (m)    7.20   7.20   7.20                   * TIME COST      $/hr 15.00 *
* RAD   (m)   20.00  20.00  20.00                   * FLOW PERIOD     min  0 60 *
* PHI   (d)   30.00  30.00  30.00                   * FLOW TYPE   pcu/veh  VEH *
* DIA   (m)   70.00  70.00  70.00                   * FLOW PEAK  am/op/pm   AM *
* GRAD SEP        0      0      0                   *                       *
*                                                   *                       *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *              *        *
*RT 50 NB  *1.05*    1  907    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 146A EB*1.05*  202    4    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 50 SB  *1.05* 1178  204    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *              *        *
*          *    *                            *    *  *              *        *
*          *    *                            *    *  *              *        *
*          *    *                            *    *  *              *        *
*****************************************************************************
*                                                         *                   *
* FLOW        veh     908    206   1382                   * AVEDEL  s    2.4 *
* CAPACITY    veh    2498   2025   2633                   * LOS   SIG      A *
* AVE DELAY  mins    0.03   0.03   0.05                   * LOS UNSIG      A *
* MAX DELAY  mins    0.06   0.05   0.08                   *                   *
* AVE QUEUE   veh       1      0      1                   * VEHIC HRS    1.7 *
* MAX QUEUE   veh       1      0      2                   * COST    $     25 *
*                                                         *                   *
*****************************************************************************
```

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	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	0.95		1.00	1.00	0.99	
Flt Protected	0.97		0.95	1.00	1.00	
Satd. Flow (prot)	1712		1770	3539	3494	
Flt Permitted	0.97		0.13	1.00	1.00	
Satd. Flow (perm)	1712		237	3539	3494	
Volume (vph)	133	85	50	1291	1300	121
Peak-hour factor, PHF	0.60	0.60	0.90	0.90	0.93	0.93
Adj. Flow (vph)	222	142	56	1434	1398	130
Lane Group Flow (vph)	364	0	56	1434	1528	0
Turn Type			pm+pt			
Protected Phases	4		5	2	6	
Permitted Phases			2			
Actuated Green, G (s)	14.1		33.9	33.9	25.5	
Effective Green, g (s)	16.1		35.9	35.9	27.5	
Actuated g/C Ratio	0.27		0.60	0.60	0.46	
Clearance Time (s)	6.0		6.0	6.0	6.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	459		254	2118	1601	
v/s Ratio Prot	c0.21		0.02	c0.41	c0.44	
v/s Ratio Perm			0.12			
v/c Ratio	0.79		0.22	0.68	0.95	
Uniform Delay, d1	20.4		11.0	8.1	15.6	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	9.1		0.4	1.8	14.0	
Delay (s)	29.5		11.4	9.9	29.6	
Level of Service	C		B	A	C	
Approach Delay (s)	29.5			10.0	29.6	
Approach LOS	C			A	C	

Intersection Summary			
HCM Average Control Delay	21.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
c Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06                ROUTE 50/FOREST ALT 2 FB                      16  *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* E     (m)   10.00  10.00   5.00                 * TIME PERIOD     min    60  *
* L'    (m)   20.00  20.00  10.00                 * TIME SLICE      min    15  *
* V     (m)    7.20   7.20   3.00                 * RESULTS PERIOD  min  0 60  *
* RAD   (m)   20.00  20.00  20.00                 * TIME COST      $/hr 15.00  *
* PHI   (d)   30.00  30.00  30.00                 * FLOW PERIOD     min  0 60  *
* DIA   (m)   70.00  70.00  70.00                 * FLOW TYPE   pcu/veh   VEH  *
* GRAD SEP       0      0      0                 * FLOW PEAK  am/op/pm    AM  *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *              *         *
* RT 50 NB *1.05*  881   33     0             *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*   48 1126     0             *1.00*50*0.75 1.125 0.75*15 30 45 *
* FOREST WB*1.05*  137   94     0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*****************************************************************************
*                                                                 *           *
* FLOW         veh     914   1174    231                        * AVEDEL  s   2.7 *
* CAPACITY     veh    2573   2614    723                        * LOS   SIG     A *
* AVE DELAY   mins    0.03   0.04   0.12                        * LOS UNSIG     A *
* MAX DELAY   mins    0.05   0.06   0.21                        *                 *
* AVE QUEUE    veh       1      1      1                        * VEHIC HRS   1.7 *
* MAX QUEUE    veh       1      1      1                        * COST    $    26 *
*                                                                 *           *
*****************************************************************************
```

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	0.88	0.97	0.95		0.94	0.95	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	2787	3433	3433		4990	3539	1583	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	2787	3433	3433		4990	3539	1583	3433	5085	1583
Volume (vph)	333	291	366	474	290	73	364	1028	414	68	1048	308
Peak-hour factor, PHF	0.87	0.87	0.87	0.89	0.89	0.89	0.97	0.97	0.97	0.66	0.66	0.66
Adj. Flow (vph)	383	334	421	533	326	82	375	1060	427	103	1588	467
Lane Group Flow (vph)	383	334	421	533	408	0	375	1060	427	103	1588	467
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	10.0	16.0	16.0	13.0	19.0		4.0	23.0	23.0	4.0	23.0	23.0
Effective Green, g (s)	12.0	18.0	18.0	15.0	21.0		6.0	25.0	25.0	6.0	25.0	25.0
Actuated g/C Ratio	0.15	0.22	0.22	0.19	0.26		0.08	0.31	0.31	0.08	0.31	0.31
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	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)	515	796	627	644	901		374	1106	495	257	1589	495
v/s Ratio Prot	0.11	0.09		c0.16	c0.12		c0.08	0.30		0.03	c0.31	
v/s Ratio Perm			c0.15						0.27			0.29
v/c Ratio	0.74	0.42	0.67	0.83	0.45		1.00	0.96	0.86	0.40	1.00	0.94
Uniform Delay, d1	32.5	26.5	28.3	31.3	24.7		37.0	27.0	25.9	35.3	27.5	26.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.4	1.6	5.7	11.7	1.6		47.2	18.7	17.7	4.6	22.4	28.6
Delay (s)	41.9	28.2	34.0	42.9	26.3		84.2	45.7	43.6	39.9	49.9	55.4
Level of Service	D	C	C	D	C		F	D	D	D	D	E
Approach Delay (s)		34.9			35.7			53.0			50.6	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM Average Control Delay	46.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	75.6%	ICU Level of Service	C
c Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06              ROUTE 50/LAKE HILL RD ALT 2 FB                  26  *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* E     (m)   12.00  12.00  10.00  10.00          * TIME PERIOD     min   60 *
* L'    (m)   45.00  40.00  20.00  20.00          * TIME SLICE      min   15 *
* V     (m)    7.00   7.20   7.20   6.00          * RESULTS PERIOD  min  0 60 *
* RAD   (m)   20.00  20.00  20.00  20.00          * TIME COST      $/hr 15.00 *
* PHI   (d)   30.00  30.00  30.00  30.00          * FLOW PERIOD     min  0 60 *
* DIA   (m)   75.00  75.00  75.00  75.00          * FLOW TYPE   pcu/veh  VEH *
* GRAD SEP        0      0      0      0          * FLOW PEAK  am/op/pm   AM *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *              *        *
* RT 50 NB *1.05*    0  679  293  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* LHR WB   *1.05*    0  245  501  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*    0  861   64  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* LHR EB   *1.05*    0  355  392  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *              *        *
*          *    *                            *    *  *              *        *
*          *    *                            *    *  *              *        *
*****************************************************************************
*                                                          *                *
* FLOW        veh     972    746    925    747             * AVEDEL  s   3.2 *
* CAPACITY    veh    2502   2100   1963   1557             * LOS   SIG     A *
* AVE DELAY  mins    0.04   0.04   0.06   0.08             * LOS UNSIG     A *
* MAX DELAY  mins    0.06   0.07   0.10   0.14             *                 *
* AVE QUEUE   veh       1      1      1      1             * VEHIC HRS   3.0 *
* MAX QUEUE   veh       1      1      1      2             * COST    $    45 *
*                                                          *                *
*****************************************************************************
```

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor		1.00		1.00	1.00			0.95			0.95	
Frt		0.99		1.00	0.97			0.98			1.00	
Flt Protected		0.98		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1820		1770	1803			3477			3527	
Flt Permitted		0.87		0.52	1.00			0.95			0.90	
Satd. Flow (perm)		1605		959	1803			3290			3188	
Volume (vph)	27	55	5	168	48	13	8	1180	156	11	1066	23
Peak-hour factor, PHF	0.61	0.61	0.61	0.81	0.81	0.81	0.88	0.88	0.88	0.94	0.94	0.94
Adj. Flow (vph)	44	90	8	207	59	16	9	1341	177	12	1134	24
Lane Group Flow (vph)	0	142	0	207	75	0	0	1527	0	0	1170	0
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		5.2		14.6	14.6			23.4			23.4	
Effective Green, g (s)		7.2		16.6	16.6			25.4			25.4	
Actuated g/C Ratio		0.14		0.33	0.33			0.51			0.51	
Clearance Time (s)		6.0		6.0	6.0			6.0			6.0	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		231		406	599			1671			1620	
v/s Ratio Prot				c0.06	0.04							
v/s Ratio Perm		0.09		c0.11				c0.46			0.37	
v/c Ratio		0.61		0.51	0.13			0.91			0.72	
Uniform Delay, d1		20.1		13.2	11.6			11.3			9.6	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		4.8		1.0	0.1			8.1			1.6	
Delay (s)		24.9		14.2	11.7			19.4			11.2	
Level of Service		C		B	B			B			B	
Approach Delay (s)		24.9			13.5			19.4			11.2	
Approach LOS		C			B			B			B	

Intersection Summary			
HCM Average Control Delay	16.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.0%	ICU Level of Service	C
c Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06                ROUTE 50/OUTLET RD ALT 2 FB                     6 *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* E     (m)   10.00   5.00  10.00   5.00          * TIME PERIOD     min   60 *
* L'    (m)   20.00  10.00  20.00  10.00          * TIME SLICE      min   15 *
* V     (m)    7.20   3.00   7.20   3.00          * RESULTS PERIOD  min  0 60 *
* RAD   (m)   20.00  20.00  20.00  20.00          * TIME COST      $/hr 15.00 *
* PHI   (d)   30.00  30.00  30.00  30.00          * FLOW PERIOD     min  0 60 *
* DIA   (m)   70.00  70.00  70.00  70.00          * FLOW TYPE   pcu/veh  VEH *
* GRAD SEP       0      0      0      0          * FLOW PEAK  am/op/pm   AM *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *              *        *
* RT 50 NB *1.05*   92  824    3  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* OUTLET WB*1.05*   17   24  117  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*   10  848    8  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* CHAR EB  *1.05*    3   80   31  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *              *        *
*          *    *                            *    *  *              *        *
*          *    *                            *    *  *              *        *
*****************************************************************************
*                                                         *                 *
* FLOW        veh     919    158    866    114            * AVEDEL  s    2.4 *
* CAPACITY    veh    2556    841   2539    790            * LOS   SIG      A *
* AVE DELAY  mins    0.03   0.08   0.03   0.08            * LOS UNSIG      A *
* MAX DELAY  mins    0.05   0.13   0.05   0.14            *                 *
* AVE QUEUE   veh       1      0      1      0            * VEHIC HRS    1.4 *
* MAX QUEUE   veh       1      0      1      0            * COST    $     21 *
*                                                         *                 *
*****************************************************************************
```

Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Ideal Flow (vphpl)	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	0.95			1.00
Frt	1.00	1.00	1.00			0.86
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1770	3539	3538			1611
Flt Permitted	0.13	1.00	1.00			1.00
Satd. Flow (perm)	248	3539	3538			1611
Volume (vph)	510	1043	1228	2	0	539
Peak-hour factor, PHF	0.89	0.89	0.88	0.88	0.82	0.82
Adj. Flow (vph)	573	1172	1395	2	0	657
Lane Group Flow (vph)	573	1172	1397	0	0	657
Turn Type	pm+pt					custom
Protected Phases	5	2	6			5
Permitted Phases	2					5
Actuated Green, G (s)	54.0	60.0	24.0			24.0
Effective Green, g (s)	56.0	60.0	26.0			26.0
Actuated g/C Ratio	0.93	1.00	0.43			0.43
Clearance Time (s)	6.0	6.0	6.0			6.0
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	891	3539	1533			698
v/s Ratio Prot	0.28	0.33	c0.39			c0.41
v/s Ratio Perm	0.32					
v/c Ratio	0.64	0.33	0.91			0.94
Uniform Delay, d1	9.8	0.0	15.9			16.3
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.6	0.3	9.7			20.9
Delay (s)	11.4	0.3	25.6			37.1
Level of Service	B	A	C			D
Approach Delay (s)		3.9	25.6		37.1	
Approach LOS		A	C		D	

Intersection Summary			
HCM Average Control Delay	17.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	86.0%	ICU Level of Service	D
c Critical Lane Group			

```
*******************************************************************************
*                                                                             *
*   1:4:06              ROUTE 50/MIDDLELINE RD ALT 2 FB                     9 *
*                                                                             *
*******************************************************************************
*                                                 *                           *
* E     (m)   10.00  10.00  10.00                 * TIME PERIOD     min    60 *
* L'    (m)   20.00  20.00  20.00                 * TIME SLICE      min    15 *
* V     (m)    7.20   7.20   7.20                 * RESULTS PERIOD  min  0 60 *
* RAD   (m)   20.00  20.00  20.00                 * TIME COST      $/hr 15.00 *
* PHI   (d)   30.00  30.00  30.00                 * FLOW PERIOD     min  0 60 *
* DIA   (m)   70.00  70.00  70.00                 * FLOW TYPE   pcu/veh   VEH *
* GRAD SEP       0      0      0                 * FLOW PEAK  am/op/pm    AM *
*                                                 *                           *
*******************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                             *    *  *             *         *
* RT 50 NB *1.05*  780  253    0               *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*    1  963    0               *1.00*50*0.75 1.125 0.75*15 30 45 *
* MID WB   *1.05*  456    0    0               *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                             *    *  *             *         *
*          *    *                             *    *  *             *         *
*          *    *                             *    *  *             *         *
*          *    *                             *    *  *             *         *
*******************************************************************************
*                                                         *                   *
* FLOW        veh    1033    964    456                   * AVEDEL  s    2.2 *
* CAPACITY    veh    2636   2465   1988                   * LOS   SIG      A *
* AVE DELAY  mins    0.03   0.04   0.04                   * LOS UNSIG      A *
* MAX DELAY  mins    0.06   0.06   0.06                   *                   *
* AVE QUEUE   veh       1      1      0                   * VEHIC HRS    1.5 *
* MAX QUEUE   veh       1      1      0                   * COST    $     22 *
*                                                         *                   *
*******************************************************************************
```