APPENDIX G

TRAFFIC IMPACT STUDY

CONTINUED

(3/3)

PM 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			0.96		1.00	1.00		1.00	1.00	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1699			1790		1770	1863		1770	1857	
Flt Permitted		0.99			1.00		0.51	1.00		0.24	1.00	
Satd. Flow (perm)		1687			1785		951	1863		444	1857	
Volume (vph)	15	217	416	1	121	50	52	406	0	232	334	7
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)	16	236	452	1	132	54	57	441	0	252	363	8
Lane Group Flow (vph)	0	704	0	0	187	0	57	441	0	252	371	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)		27.2			27.2		25.9	24.8		37.9	30.8	
Effective Green, g (s)		29.2			29.2		29.9	26.8		39.9	32.8	
Actuated g/C Ratio		0.38			0.38		0.39	0.35		0.52	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)		639			676		402	648		386	790	
v/s Ratio Prot							0.01	0.24		c0.08	0.20	
v/s Ratio Perm		c0.42			0.10		0.05			c0.26		
v/c Ratio		1.10			0.28		0.14	0.68		0.65	0.47	
Uniform Delay, d1		24.0			16.6		14.9	21.5		12.8	15.9	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		66.7			0.2		0.2	2.9		3.9	0.4	
Delay (s)		90.7			16.8		15.1	24.4		16.8	16.3	
Level of Service		F			B		B	C		B	B	
Approach Delay (s)		90.7			16.8			23.4			16.5	
Approach LOS		F			B			C			B	

Intersection Summary			
HCM Average Control Delay	44.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	77.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	101.9%	ICU Level of Service	F
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)	4	223	426	7	390	513
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	4	242	463	8	424	558
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	1872	467			471	
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 %	91	59			61	
cM capacity (veh/h)	48	596			1091	

Direction, Lane #	EB 1	SB 1	NW 1
Volume Total	247	471	982
Volume Left	4	0	424
Volume Right	242	8	0
cSH	497	1700	1091
Volume to Capacity	0.50	0.28	0.39
Queue Length (ft)	68	0	47
Control Delay (s)	19.2	0.0	7.9
Lane LOS	C		A
Approach Delay (s)	19.2	0.0	7.9
Approach LOS	C		

Intersection Summary			
Average Delay	7.3		
Intersection Capacity Utilization	109.1%	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	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.98		1.00	0.98			0.96			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1770	1818		1770	1826			1748			1797	
Flt Permitted	0.15	1.00		0.13	1.00			0.85			0.75	
Satd. Flow (perm)	273	1818		238	1826			1508			1380	
Volume (vph)	19	604	116	119	662	99	129	103	112	40	51	13
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)	21	657	126	129	720	108	140	112	122	43	55	14
Lane Group Flow (vph)	21	783	0	129	828	0	0	374	0	0	112	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)	26.4	25.3		39.2	32.1			16.0			16.0	
Effective Green, g (s)	30.4	27.3		41.2	34.1			18.0			18.0	
Actuated g/C Ratio	0.45	0.41		0.61	0.51			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)	193	739		372	927			404			370	
v/s Ratio Prot	0.01	c0.43		c0.05	c0.45							
v/s Ratio Perm	0.04			0.16				c0.25			0.08	
v/c Ratio	0.11	1.06		0.35	0.89			0.93			0.30	
Uniform Delay, d1	27.9	20.0		22.5	14.9			23.9			19.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.3	50.0		0.6	10.9			26.9			0.5	
Delay (s)	28.2	70.0		23.0	25.8			50.8			20.1	
Level of Service	C	E		C	C			D			C	
Approach Delay (s)		68.9			25.4			50.8			20.1	
Approach LOS		E			C			D			C	

Intersection Summary			
HCM Average Control Delay	44.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	67.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	87.1%	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		0.99			0.99			0.97			0.99	
Flt Protected		0.99			0.98			1.00			1.00	
Satd. Flow (prot)		1832			1817			1794			1833	
Flt Permitted		0.90			0.85			0.97			0.97	
Satd. Flow (perm)		1660			1571			1753			1788	
Volume (vph)	27	111	8	114	224	25	26	399	147	11	267	32
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	121	9	124	243	27	28	434	160	12	290	35
Lane Group Flow (vph)	0	159	0	0	394	0	0	622	0	0	337	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		16.1			16.1			19.4			19.4	
Effective Green, g (s)		18.1			18.1			21.4			21.4	
Actuated g/C Ratio		0.38			0.38			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)		633			599			790			806	
v/s Ratio Prot												
v/s Ratio Perm		0.10			c0.25			c0.35			0.19	
v/c Ratio		0.25			0.66			0.79			0.42	
Uniform Delay, d1		10.1			12.1			11.1			8.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.2			2.6			5.2			0.4	
Delay (s)		10.3			14.8			16.3			9.2	
Level of Service		B			B			B			A	
Approach Delay (s)		10.3			14.8			16.3			9.2	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM Average Control Delay	13.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	47.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	95.3%	ICU Level of Service	E
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)	635	2	70	408	4	101
Peak Hour Factor	0.92	0.92	0.90	0.90	0.94	0.94
Hourly flow rate (veh/h)	690	2	78	453	4	107
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume			692		1300	691
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 %			91		97	76
cM capacity (veh/h)			903		163	444

Direction, Lane #	NB 1	SB 1	SB 2	NW 1
Volume Total	692	78	453	112
Volume Left	0	78	0	4
Volume Right	2	0	0	107
cSH	1700	903	1700	417
Volume to Capacity	0.41	0.09	0.27	0.27
Queue Length (ft)	0	7	0	27
Control Delay (s)	0.0	9.4	0.0	16.8
Lane LOS		A		C
Approach Delay (s)	0.0	1.4		16.8
Approach LOS				C

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	57.7%	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)	17	31	63	645	427	39
Peak Hour Factor	0.50	0.50	0.90	0.90	0.96	0.96
Hourly flow rate (veh/h)	34	62	70	717	445	41
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	1322	465	485			
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 %	79	90	94			
cM capacity (veh/h)	161	597	1077			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	96	787	485
Volume Left	34	70	0
Volume Right	62	0	41
cSH	305	1077	1700
Volume to Capacity	0.31	0.06	0.29
Queue Length (ft)	33	5	0
Control Delay (s)	22.1	1.6	0.0
Lane LOS	C	A	
Approach Delay (s)	22.1	1.6	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	83.2%	ICU Level of Service	D

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	1.00		1.00	0.97		1.00	0.98	
Flt Protected		0.99		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1771		1770	1855		1770	1810		1770	1820	
Flt Permitted		0.91		0.32	1.00		0.22	1.00		0.32	1.00	
Satd. Flow (perm)		1618		599	1855		419	1810		592	1820	
Volume (vph)	44	155	89	103	256	7	177	470	110	9	334	61
Peak-hour factor, PHF	0.82	0.82	0.82	0.98	0.98	0.98	0.91	0.91	0.91	0.94	0.94	0.94
Adj. Flow (vph)	54	189	109	105	261	7	195	516	121	10	355	65
Lane Group Flow (vph)	0	352	0	105	268	0	195	637	0	10	420	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)		20.3		32.9	32.9		37.1	37.1		24.1	24.1	
Effective Green, g (s)		22.3		34.9	34.9		39.1	39.1		26.1	26.1	
Actuated g/C Ratio		0.27		0.43	0.43		0.48	0.48		0.32	0.32	
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)		440		378	790		348	863		188	579	
v/s Ratio Prot				0.03	c0.14		0.06	c0.35			0.23	
v/s Ratio Perm		c0.22		0.09			0.21			0.02		
v/c Ratio		0.80		0.28	0.34		0.56	0.74		0.05	0.73	
Uniform Delay, d1		27.8		16.3	15.8		14.8	17.3		19.4	24.8	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		10.0		0.4	0.3		2.1	3.3		0.1	4.5	
Delay (s)		37.8		16.7	16.1		16.9	20.6		19.5	29.3	
Level of Service		D		B	B		B	C		B	C	
Approach Delay (s)		37.8			16.2			19.8			29.0	
Approach LOS		D			B			B			C	

Intersection Summary			
HCM Average Control Delay	24.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	82.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.9%	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		0.99			0.99			0.98			0.99	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1800			1808			1829			1836	
Flt Permitted		0.86			0.82			0.99			0.98	
Satd. Flow (perm)		1582			1507			1810			1800	
Volume (vph)	22	28	6	61	67	8	12	427	63	12	313	34
Peak-hour factor, PHF	0.67	0.67	0.67	0.77	0.77	0.77	0.90	0.90	0.90	0.87	0.87	0.87
Adj. Flow (vph)	33	42	9	79	87	10	13	474	70	14	360	39
Lane Group Flow (vph)	0	84	0	0	176	0	0	557	0	0	413	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			24.8			24.8	
Effective Green, g (s)		11.1			11.1			26.8			26.8	
Actuated g/C Ratio		0.24			0.24			0.58			0.58	
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)		383			364			1057			1051	
v/s Ratio Prot												
v/s Ratio Perm		0.05			c0.12			c0.31			0.23	
v/c Ratio		0.22			0.48			0.53			0.39	
Uniform Delay, d1		13.9			14.9			5.7			5.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.3			1.0			0.5			0.2	
Delay (s)		14.2			16.0			6.2			5.4	
Level of Service		B			B			A			A	
Approach Delay (s)		14.2			16.0			6.2			5.4	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	45.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
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)	231	498	367	2	1	91
Peak Hour Factor	0.89	0.89	0.89	0.89	0.79	0.79
Hourly flow rate (veh/h)	260	560	412	2	1	115
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume	415				1492	413
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				99	82
cM capacity (veh/h)	1144				105	639

Direction, Lane #	NB 1	NB 2	SB 1	SE 1
Volume Total	260	560	415	116
Volume Left	260	0	0	1
Volume Right	0	0	2	115
cSH	1144	1700	1700	605
Volume to Capacity	0.23	0.33	0.24	0.19
Queue Length (ft)	22	0	0	18
Control Delay (s)	9.1	0.0	0.0	12.4
Lane LOS	A			B
Approach Delay (s)	2.9		0.0	12.4
Approach LOS				B

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	53.4%	ICU Level of Service	A

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			0.94		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)		1686			1742		1770	1863		1770	1843	
Flt Permitted		0.99			0.46		0.11	1.00		0.10	1.00	
Satd. Flow (perm)		1672			815		213	1863		191	1843	
Volume (vph)	15	296	714	70	194	198	203	1112	0	511	1040	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)	16	322	776	76	211	215	221	1209	0	555	1130	86
Lane Group Flow (vph)	0	1114	0	0	502	0	221	1209	0	555	1216	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		35.0	33.0		45.0	38.0	
Effective Green, g (s)		29.0			29.0		39.0	35.0		48.0	40.0	
Actuated g/C Ratio		0.34			0.34		0.46	0.41		0.56	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)		570			278		171	767		275	867	
v/s Ratio Prot							0.06	0.65		c0.21	0.66	
v/s Ratio Perm		c0.67			0.62		0.53			c0.93		
v/c Ratio		1.95			1.81		1.29	1.58		2.02	1.40	
Uniform Delay, d1		28.0			28.0		42.7	25.0		40.2	22.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		435.8			376.6		168.0	265.6		470.8	188.1	
Delay (s)		463.8			404.6		210.7	290.6		511.0	210.6	
Level of Service		F			F		F	F		F	F	
Approach Delay (s)		463.8			404.6			278.2			304.8	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	344.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.96		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	201.7%	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)	140	383	796	150	556	870
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	152	416	865	163	604	946
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	3101	947			1028	
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			11	
cM capacity (veh/h)	1	317			675	

Direction, Lane #	EB 1	SB 1	NW 1
Volume Total	568	1028	1550
Volume Left	152	0	604
Volume Right	416	163	0
cSH	5	1700	675
Volume to Capacity	113.20	0.60	0.89
Queue Length (ft)	Err	0	281
Control Delay (s)	Err	0.0	62.7
Lane LOS	F		F
Approach Delay (s)	Err	0.0	62.7
Approach LOS	F		

Intersection Summary			
Average Delay	1837.2		
Intersection Capacity Utilization	193.5%	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	0.99			0.96			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1770	1820		1770	1839			1753			1798	
Flt Permitted	0.15	1.00		0.13	1.00			0.81			0.77	
Satd. Flow (perm)	284	1820		247	1839			1450			1411	
Volume (vph)	20	1060	192	123	1108	102	202	106	115	41	53	13
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)	22	1152	209	134	1204	111	220	115	125	45	58	14
Lane Group Flow (vph)	22	1361	0	134	1315	0	0	460	0	0	117	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)	25.4	24.2		38.2	31.0			18.1			18.1	
Effective Green, g (s)	29.4	26.2		40.2	33.0			20.1			20.1	
Actuated g/C Ratio	0.43	0.38		0.59	0.48			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)	192	698		368	889			427			415	
v/s Ratio Prot	0.01	c0.75		c0.05	c0.72							
v/s Ratio Perm	0.04			0.16				c0.32			0.08	
v/c Ratio	0.11	1.95		0.36	1.48			1.08			0.28	
Uniform Delay, d1	31.4	21.0		23.2	17.6			24.1			18.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.3	432.7		0.6	221.7			65.8			0.4	
Delay (s)	31.7	453.7		23.8	239.4			89.9			18.9	
Level of Service	C	F		C	F			F			B	
Approach Delay (s)		447.0			219.4			89.9			18.9	
Approach LOS		F			F			F			B	

Intersection Summary			
HCM Average Control Delay	287.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	68.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	123.2%	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		0.97			0.99			0.97			0.98	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1780			1807			1791			1819	
Flt Permitted		0.66			0.62			0.66			0.98	
Satd. Flow (perm)		1204			1141			1185			1784	
Volume (vph)	164	183	85	343	303	26	104	962	373	11	835	176
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)	178	199	92	373	329	28	113	1046	405	12	908	191
Lane Group Flow (vph)	0	469	0	0	730	0	0	1564	0	0	1111	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		24.0			24.0			20.0			20.0	
Effective Green, g (s)		26.0			26.0			22.0			22.0	
Actuated g/C Ratio		0.46			0.46			0.39			0.39	
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)		559			530			466			701	
v/s Ratio Prot												
v/s Ratio Perm		0.39			c0.64			c1.32			0.62	
v/c Ratio		0.84			1.38			3.36			1.58	
Uniform Delay, d1		13.2			15.0			17.0			17.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		10.7			181.4			1065.8			270.0	
Delay (s)		23.8			196.4			1082.8			287.0	
Level of Service		C			F			F			F	
Approach Delay (s)		23.8			196.4			1082.8			287.0	
Approach LOS		C			F			F			F	

Intersection Summary			
HCM Average Control Delay	559.3	HCM Level of Service	F
HCM Volume to Capacity ratio	2.29		
Actuated Cycle Length (s)	56.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	225.0%	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)	1239	2	221	1008	4	250
Peak Hour Factor	0.92	0.92	0.90	0.90	0.94	0.94
Hourly flow rate (veh/h)	1347	2	246	1120	4	266
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume			1349		2959	1348
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 %			52		49	0
cM capacity (veh/h)			510		8	185

Direction, Lane #	NB 1	SB 1	SB 2	NW 1
Volume Total	1349	246	1120	270
Volume Left	0	246	0	4
Volume Right	2	0	0	266
cSH	1700	510	1700	138
Volume to Capacity	0.79	0.48	0.66	1.95
Queue Length (ft)	0	65	0	531
Control Delay (s)	0.0	18.4	0.0	507.8
Lane LOS		C		F
Approach Delay (s)	0.0	3.3		507.8
Approach LOS				F

Intersection Summary			
Average Delay	47.5		
Intersection Capacity Utilization	111.3%	ICU Level of Service	G

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	95	32	65	1173	951	117
Peak Hour Factor	0.50	0.50	0.90	0.90	0.96	0.96
Hourly flow rate (veh/h)	190	64	72	1303	991	122
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	2499	1052	1112			
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	77	88			
cM capacity (veh/h)	28	275	628			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	254	1376	1112
Volume Left	190	72	0
Volume Right	64	0	122
cSH	36	628	1700
Volume to Capacity	7.00	0.12	0.65
Queue Length (ft)	Err	10	0
Control Delay (s)	Err	6.0	0.0
Lane LOS	F	A	
Approach Delay (s)	Err	6.0	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	929.2		
Intersection Capacity Utilization	156.6%	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		0.95		1.00	0.98		1.00	0.97		1.00	0.96	
Flt Protected		0.98		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1746		1770	1831		1770	1800		1770	1797	
Flt Permitted		0.75		0.35	1.00		0.11	1.00		0.12	1.00	
Satd. Flow (perm)		1327		661	1831		207	1800		233	1797	
Volume (vph)	221	190	213	290	295	37	305	924	269	40	784	243
Peak-hour factor, PHF	0.82	0.82	0.82	0.98	0.98	0.98	0.91	0.91	0.91	0.94	0.94	0.94
Adj. Flow (vph)	270	232	260	296	301	38	335	1015	296	43	834	259
Lane Group Flow (vph)	0	762	0	296	339	0	335	1311	0	43	1093	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)		24.0		44.1	44.1		46.0	46.0		30.0	30.0	
Effective Green, g (s)		26.0		46.1	46.1		48.0	48.0		32.0	32.0	
Actuated g/C Ratio		0.25		0.45	0.45		0.47	0.47		0.31	0.31	
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)		338		473	827		281	846		73	563	
v/s Ratio Prot				c0.10	0.19		0.14	c0.73			c0.61	
v/s Ratio Perm		c0.57		0.18			0.42			0.18		
v/c Ratio		2.25		0.63	0.41		1.19	1.55		0.59	1.94	
Uniform Delay, d1		38.0		43.5	18.8		47.3	27.0		29.5	35.0	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		573.9		2.6	0.3		116.1	253.2		11.6	430.1	
Delay (s)		612.0		46.1	19.2		163.3	280.3		41.1	465.2	
Level of Service		F		D	B		F	F		D	F	
Approach Delay (s)		612.0			31.7			256.5			449.1	
Approach LOS		F			C			F			F	

Intersection Summary			
HCM Average Control Delay	339.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.77		
Actuated Cycle Length (s)	102.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	152.6%	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		0.99			1.00			0.98			0.99	
Flt Protected		0.98			0.97			1.00			1.00	
Satd. Flow (prot)		1801			1796			1830			1851	
Flt Permitted		0.83			0.81			0.99			0.98	
Satd. Flow (perm)		1524			1495			1811			1812	
Volume (vph)	23	29	6	140	69	8	12	983	142	12	801	35
Peak-hour factor, PHF	0.67	0.67	0.67	0.77	0.77	0.77	0.90	0.90	0.90	0.87	0.87	0.87
Adj. Flow (vph)	34	43	9	182	90	10	13	1092	158	14	921	40
Lane Group Flow (vph)	0	86	0	0	282	0	0	1263	0	0	975	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		9.0			9.0			42.9			42.9	
Effective Green, g (s)		11.0			11.0			44.9			44.9	
Actuated g/C Ratio		0.17			0.17			0.70			0.70	
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)		262			257			1273			1273	
v/s Ratio Prot												
v/s Ratio Perm		0.06			c0.19			c0.70			0.54	
v/c Ratio		0.33			1.10			0.99			0.77	
Uniform Delay, d1		23.2			26.4			9.3			6.1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.7			84.6			23.2			2.8	
Delay (s)		23.9			111.1			32.5			8.9	
Level of Service		C			F			C			A	
Approach Delay (s)		23.9			111.1			32.5			8.9	
Approach LOS		C			F			C			A	

Intersection Summary			
HCM Average Control Delay	31.9	HCM Level of Service	C
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	63.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	115.0%	ICU Level of Service	G
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)	499	903	930	2	1	357
Peak Hour Factor	0.89	0.89	0.89	0.89	0.79	0.79
Hourly flow rate (veh/h)	561	1015	1045	2	1	452
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume	1047				3182	1046
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 %	16				29	0
cM capacity (veh/h)	664				2	277

Direction, Lane #	NB 1	NB 2	SB 1	SE 1
Volume Total	561	1015	1047	453
Volume Left	561	0	0	1
Volume Right	0	0	2	452
cSH	664	1700	1700	194
Volume to Capacity	0.84	0.60	0.62	2.34
Queue Length (ft)	235	0	0	925
Control Delay (s)	32.7	0.0	0.0	656.5
Lane LOS	D			F
Approach Delay (s)	11.6		0.0	656.5
Approach LOS				F

Intersection Summary			
Average Delay	102.7		
Intersection Capacity Utilization	124.2%	ICU Level of Service	H

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)		1857	1583	1770	1863	1583	1770	3535		3433	3504	
Flt Permitted		0.97	1.00	0.52	1.00	1.00	0.30	1.00		0.17	1.00	
Satd. Flow (perm)		1806	1583	977	1863	1583	558	3535		615	3504	
Volume (vph)	11	167	514	59	174	147	151	790	6	501	818	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)	12	182	559	64	189	160	164	859	7	545	889	64
Lane Group Flow (vph)	0	194	559	64	189	160	164	866	0	545	953	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)		9.2	21.8	9.2	9.2	14.2	25.7	20.7		39.3	28.3	
Effective Green, g (s)		11.2	25.8	11.2	11.2	18.2	29.7	22.7		41.3	30.3	
Actuated g/C Ratio		0.19	0.43	0.19	0.19	0.30	0.49	0.38		0.68	0.50	
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)		334	780	181	345	581	414	1326		1100	1755	
v/s Ratio Prot			c0.17		0.10	0.03	0.05	c0.24		0.12	0.27	
v/s Ratio Perm		0.11	0.18	0.07		0.07	0.15			0.22		
v/c Ratio		0.58	0.72	0.35	0.55	0.28	0.40	0.65		0.50	0.54	
Uniform Delay, d1		22.5	14.3	21.5	22.4	16.1	8.6	15.6		6.1	10.4	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.6	3.2	1.2	1.8	0.3	0.6	1.2		0.4	0.3	
Delay (s)		25.1	17.5	22.7	24.1	16.4	9.3	16.8		6.5	10.7	
Level of Service		C	B	C	C	B	A	B		A	B	
Approach Delay (s)		19.4			20.9			15.6			9.2	
Approach LOS		B			C			B			A	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	60.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.5%	ICU Level of Service	C
c Critical Lane Group			

```
*******************************************************************************
*                                                                             *
*   1:4:06                ROUTE 50/ROUTE 67 ALT 1 HB                      35  *
*                                                                             *
*******************************************************************************
*                                                 *                           *
* 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    PM *
*                                                 *                           *
*******************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *              *         *
*RT 50 NB  *1.05*    0 1112  203  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 67 WB  *1.05*    0  296   15  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 5067 SB*1.05*    0 1040  511  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*BALL EB   *1.05*    0  194   70  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*******************************************************************************
*                                                                 *           *
* FLOW         veh    1315    311   1551    264                   * AVEDEL  s   4.8 *
* CAPACITY     veh    2114   1704   2290   1582                   * LOS   SIG     A *
* AVE DELAY   mins    0.08   0.04   0.09   0.04                   * LOS UNSIG     A *
* MAX DELAY   mins    0.15   0.07   0.17   0.07                   *                 *
* AVE QUEUE    veh       2      0      3      0                   * VEHIC HRS   4.6 *
* MAX QUEUE    veh       3      0      4      0                   * COST    $    69 *
*                                                                 *           *
*******************************************************************************
```

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	0.26		1.00		1.00			1.00			1.00	1.00
Satd. Flow (perm)	475		1583		3539			3539			3539	1583
Volume (vph)	108	0	401	0	556	0	0	870	0	0	721	105
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)	117	0	436	0	604	0	0	946	0	0	784	114
Lane Group Flow (vph)	117	0	436	0	604	0	0	946	0	0	784	114
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			20.0			20.0	36.0
Effective Green, g (s)	36.0		36.0		18.0			22.0			22.0	40.0
Actuated g/C Ratio	0.51		0.51		0.26			0.31			0.31	0.57
Clearance Time (s)	6.0		6.0		6.0			6.0			6.0	6.0
Lane Grp Cap (vph)	577		905		910			1112			1112	995
v/s Ratio Prot	0.05		c0.12		c0.17			c0.27			0.22	0.03
v/s Ratio Perm	0.05		0.15									0.04
v/c Ratio	0.20		0.48		0.66			0.85			0.71	0.11
Uniform Delay, d1	9.3		11.0		23.3			22.5			21.1	6.9
Progression Factor	1.00		1.00		1.00			1.00			1.00	1.00
Incremental Delay, d2	0.8		1.8		3.8			8.2			3.8	0.2
Delay (s)	10.1		12.8		27.1			30.7			24.9	7.1
Level of Service	B		B		C			C			C	A
Approach Delay (s)		12.2			27.1			30.7			22.6	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM Average Control Delay	24.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.3%	ICU Level of Service	A

c Critical Lane Group

```
*******************************************************************************
*                                                                             *
*   1:4:06                ROUTE 67/BROOKLINE RD ALT 1 HB                  17  *
*                                                                             *
*******************************************************************************
*                                                 *                           *
* 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    PM *
*                                                 *                           *
*******************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                             *    *  *              *        *
*RT 67 NB  *1.05*  870  556    0               *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 67 SB  *1.05*    0  796    0               *1.00*50*0.75 1.125 0.75*15 30 45 *
*BROOK EB  *1.05*  383  140    0               *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                             *    *  *              *        *
*          *    *                             *    *  *              *        *
*          *    *                             *    *  *              *        *
*          *    *                             *    *  *              *        *
*******************************************************************************
*                                                          *                  *
* FLOW         veh    1426    796    523                   * AVEDEL  s    2.7 *
* CAPACITY     veh    2541   2262   2100                   * LOS   SIG      A *
* AVE DELAY   mins    0.05   0.04   0.04                   * LOS UNSIG      A *
* MAX DELAY   mins    0.09   0.06   0.06                   *                  *
* AVE QUEUE    veh       1      1      0                   * VEHIC HRS    2.1 *
* MAX QUEUE    veh       2      1      0                   * COST     $    31 *
*                                                          *                  *
*******************************************************************************
```

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			0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1770	3470		1770	3505		1770	1664			1793	
Flt Permitted	0.20	1.00		0.13	1.00		0.59	1.00			0.52	
Satd. Flow (perm)	377	3470		251	3505		1093	1664			956	
Volume (vph)	12	980	146	106	900	63	170	63	155	87	78	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	1065	159	115	978	68	185	68	168	95	85	22
Lane Group Flow (vph)	13	1224	0	115	1046	0	185	236	0	0	202	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)	29.9	29.2		41.1	34.8		10.9	10.9			10.9	
Effective Green, g (s)	33.9	31.2		43.5	36.8		12.9	12.9			12.9	
Actuated g/C Ratio	0.53	0.48		0.68	0.57		0.20	0.20			0.20	
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)	257	1681		365	2003		219	333			191	
v/s Ratio Prot	0.00	c0.35		c0.04	c0.30			0.14				
v/s Ratio Perm	0.02			0.17			0.17				c0.21	
v/c Ratio	0.05	0.73		0.32	0.52		0.84	0.71			1.06	
Uniform Delay, d1	11.9	13.2		13.3	8.4		24.8	24.0			25.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.1	1.6		0.5	0.2		24.6	6.8			81.2	
Delay (s)	12.0	14.8		13.8	8.7		49.4	30.8			106.9	
Level of Service	B	B		B	A		D	C			F	
Approach Delay (s)		14.8			9.2			38.9			106.9	
Approach LOS		B			A			D			F	

Intersection Summary			
HCM Average Control Delay	22.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	64.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.2%	ICU Level of Service	C
c Critical Lane Group			

```
*******************************************************************************
*                                                                             *
*   1:4:06                ROUTE 67/EASTLINE RD ALT 1 HB                   23  *
*                                                                             *
*******************************************************************************
*                                                 *                           *
* 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    PM *
*                                                 *                           *
*******************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *        *
* RT 67 EB *1.05*    0 1060  192  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* EAST NB  *1.05*    0  106  202  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 67 WB *1.05*    0 1108  123  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* EAST SB  *1.05*   13   53   41  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *        *
*          *    *                            *    *  *               *        *
*          *    *                            *    *  *               *        *
*******************************************************************************
*                                                         *                   *
* FLOW        veh    1252    308   1231    107            * AVEDEL  s    3.8 *
* CAPACITY    veh    2490    729   2299    665            * LOS   SIG      A *
* AVE DELAY  mins    0.05   0.15   0.06   0.11            * LOS UNSIG      A *
* MAX DELAY  mins    0.08   0.28   0.10   0.18            *                   *
* AVE QUEUE   veh       1      1      1      0            * VEHIC HRS    3.1 *
* MAX QUEUE   veh       1      1      2      0            * COST    $     46 *
*                                                         *                   *
*******************************************************************************
```

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	0.96		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	1797		1770	1839		1770	3539	1583		3535	1583
Flt Permitted	0.61	1.00		0.26	1.00		0.16	1.00	1.00		0.93	1.00
Satd. Flow (perm)	1140	1797		492	1839		291	3539	1583		3290	1583
Volume (vph)	133	227	70	286	199	18	66	682	271	16	719	121
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)	145	247	76	311	216	20	72	741	295	17	782	132
Lane Group Flow (vph)	145	323	0	311	236	0	72	741	295	0	799	132
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)	19.0	16.0		31.0	22.0		28.6	28.6	37.6		19.6	22.6
Effective Green, g (s)	23.0	18.0		33.0	24.0		30.6	30.6	41.6		21.6	26.6
Actuated g/C Ratio	0.32	0.25		0.46	0.34		0.43	0.43	0.58		0.30	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)	410	452		423	616		228	1512	1008		993	677
v/s Ratio Prot	0.02	0.18		c0.11	0.13		0.02	c0.21	0.04			0.01
v/s Ratio Perm	0.09			c0.23			0.11		0.14		c0.24	0.07
v/c Ratio	0.35	0.71		0.74	0.38		0.32	0.49	0.29		0.80	0.19
Uniform Delay, d1	18.0	24.5		14.0	18.2		14.0	14.8	7.6		23.1	15.2
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	5.3		6.5	0.4		0.8	0.3	0.2		4.8	0.1
Delay (s)	18.5	29.8		20.5	18.6		14.8	15.1	7.7		27.9	15.4
Level of Service	B	C		C	B		B	B	A		C	B
Approach Delay (s)		26.3			19.7			13.1			26.1	
Approach LOS		C			B			B			C	

Intersection Summary			
HCM Average Control Delay	20.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	71.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.8%	ICU Level of Service	E
c Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06              ROUTE 50/BROOKLINE RD ALT 1 HB                  44  *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* 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    PM  *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *         *
* RT 50 NB *1.05*    0  962  104  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* BROOK WB *1.05*    0  303  343  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*    0  835   11  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* BROOK EB *1.05*    0  183  164  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*****************************************************************************
*                                                          *                 *
* FLOW        veh    1066    646    846    347              * AVEDEL  s   3.0 *
* CAPACITY    veh    2298   1648   1955   1674              * LOS   SIG     A *
* AVE DELAY  mins    0.05   0.06   0.05   0.04              * LOS UNSIG     A *
* MAX DELAY  mins    0.08   0.10   0.09   0.07              *                 *
* AVE QUEUE   veh       1      1      1      0              * VEHIC HRS   2.4 *
* MAX QUEUE   veh       1      1      1      0              * COST    $    37 *
*                                                          *                 *
*****************************************************************************
```

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		0.18	1.00	0.95	1.00
Satd. Flow (perm)	3538		330	1863	1770	1583
Volume (vph)	909	2	185	946	4	183
Peak-hour factor, PHF	0.92	0.92	0.90	0.90	0.94	0.94
Adj. Flow (vph)	988	2	206	1051	4	195
Lane Group Flow (vph)	990	0	206	1051	4	195
Turn Type			pm+pt			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases			6			8
Actuated Green, G (s)	37.0		52.0	52.0	16.0	25.0
Effective Green, g (s)	39.0		54.0	54.0	18.0	29.0
Actuated g/C Ratio	0.49		0.68	0.68	0.22	0.36
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0
Lane Grp Cap (vph)	1725		421	1258	398	653
v/s Ratio Prot	0.28		0.07	c0.56	0.00	c0.04
v/s Ratio Perm			0.26			0.08
v/c Ratio	0.57		0.49	0.84	0.01	0.30
Uniform Delay, d1	14.6		7.6	9.7	24.1	18.2
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4		4.0	6.7	0.0	1.2
Delay (s)	16.0		11.6	16.4	24.1	19.4
Level of Service	B		B	B	C	B
Approach Delay (s)	16.0			15.6	19.5	
Approach LOS	B			B	B	

Intersection Summary			
HCM Average Control Delay	16.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	B

c Critical Lane Group

```
*******************************************************************************
*                                                                             *
*   1:4:06                ROUTE 50/ROUTE 146A ALT 1 HB                    14  *
*                                                                             *
*******************************************************************************
*                                                   *                         *
* 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    PM  *
*                                                   *                         *
*******************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *         *
*RT 50 NB  *1.05*    2 1239    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 146A EB*1.05*  250    4    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 50 SB  *1.05* 1008  221    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*******************************************************************************
*                                                          *                  *
* FLOW        veh    1241    254   1229                    * AVEDEL  s   3.0 *
* CAPACITY    veh    2487    753   2691                    * LOS   SIG     A *
* AVE DELAY  mins    0.05   0.12   0.04                    * LOS UNSIG     A *
* MAX DELAY  mins    0.08   0.21   0.06                    *                  *
* AVE QUEUE   veh       1      1      1                    * VEHIC HRS   2.3 *
* MAX QUEUE   veh       1      1      1                    * COST    $    34 *
*                                                          *                  *
*******************************************************************************
```

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)	1696		1770	1863	1844	
Flt Permitted	0.98		0.16	1.00	1.00	
Satd. Flow (perm)	1696		295	1863	1844	
Volume (vph)	85	83	49	872	904	72
Peak-hour factor, PHF	0.50	0.50	0.90	0.90	0.96	0.96
Adj. Flow (vph)	170	166	54	969	942	75
Lane Group Flow (vph)	336	0	54	969	1017	0
Turn Type			Perm			
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	16.0		62.0	62.0	62.0	
Effective Green, g (s)	18.0		64.0	64.0	64.0	
Actuated g/C Ratio	0.20		0.71	0.71	0.71	
Clearance Time (s)	6.0		6.0	6.0	6.0	
Lane Grp Cap (vph)	339		210	1325	1311	
v/s Ratio Prot	c0.20			0.52	c0.55	
v/s Ratio Perm			0.18			
v/c Ratio	0.99		0.26	0.73	0.78	
Uniform Delay, d1	35.9		4.6	7.8	8.4	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	46.7		2.9	3.6	4.5	
Delay (s)	82.6		7.5	11.4	12.9	
Level of Service	F		A	B	B	
Approach Delay (s)	82.6			11.2	12.9	
Approach LOS	F			B	B	

Intersection Summary			
HCM Average Control Delay	22.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D

c Critical Lane Group

```
*****************************************************************************
*                                                                           *
*   1:4:06                  ROUTE 50/FOREST ALT 1 HB                   18   *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* 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    PM  *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *         *
* RT 50 NB *1.05* 1173   65    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*  117  951    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
* FOREST WB*1.05*   32   95    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*****************************************************************************
*                                                          *                 *
* FLOW        veh    1238   1068    127                    * AVEDEL  s   2.5 *
* CAPACITY    veh    2572   2592    800                    * LOS   SIG     A *
* AVE DELAY  mins    0.04   0.04   0.08                    * LOS UNSIG     A *
* MAX DELAY  mins    0.07   0.06   0.14                    *                 *
* AVE QUEUE   veh       1      1      0                    * VEHIC HRS   1.7 *
* MAX QUEUE   veh       1      1      0                    * 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	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	0.36	1.00	1.00	0.33	1.00		0.17	1.00	1.00	0.37	1.00	1.00
Satd. Flow (perm)	662	1863	1583	617	1830		321	3539	1583	685	3539	1583
Volume (vph)	175	243	200	267	245	32	209	681	223	30	709	168
Peak-hour factor, PHF	0.82	0.82	0.82	0.98	0.98	0.98	0.91	0.91	0.91	0.94	0.94	0.94
Adj. Flow (vph)	213	296	244	272	250	33	230	748	245	32	754	179
Lane Group Flow (vph)	213	296	244	272	283	0	230	748	245	32	754	179
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)	21.3	14.3	23.9	21.3	14.3		32.8	32.8	39.8	17.2	17.2	24.2
Effective Green, g (s)	25.3	16.3	27.9	25.3	16.3		34.8	34.8	43.8	19.2	19.2	28.2
Actuated g/C Ratio	0.35	0.23	0.39	0.35	0.23		0.48	0.48	0.61	0.27	0.27	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)	371	421	700	360	414		388	1708	1049	182	942	707
v/s Ratio Prot	0.07	0.16	0.06	c0.09	0.15		c0.10	0.21	0.03		c0.21	0.03
v/s Ratio Perm	0.13		0.10	c0.17			0.19		0.13	0.05		0.08
v/c Ratio	0.57	0.70	0.35	0.76	0.68		0.59	0.44	0.23	0.18	0.80	0.25
Uniform Delay, d1	17.6	25.7	15.7	18.4	25.5		13.2	12.2	6.5	20.4	24.7	14.8
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	2.1	5.3	0.3	8.7	4.6		2.4	0.2	0.1	0.5	4.9	0.2
Delay (s)	19.8	30.9	16.0	27.1	30.2		15.6	12.4	6.6	20.8	29.6	15.0
Level of Service	B	C	B	C	C		B	B	A	C	C	B
Approach Delay (s)		22.9			28.7			11.8			26.6	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM Average Control Delay	21.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	72.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	77.6%	ICU Level of Service	C
c Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06              ROUTE 50/LAKE HILL RD ALT 1 HB                  26  *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* 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    PM  *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *         *
* RT 50 NB *1.05*    0  924  305  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* LHR WB   *1.05*    0  295  290  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*    0  784   40  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* LHR EB   *1.05*    0  190  221  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*****************************************************************************
*                                                          *                 *
* FLOW        veh    1229    585    824    411             * AVEDEL  s   3.2 *
* CAPACITY    veh    2304   1660   1866   1722             * LOS   SIG     A *
* AVE DELAY  mins    0.06   0.06   0.06   0.04             * LOS UNSIG     A *
* MAX DELAY  mins    0.10   0.10   0.10   0.07             *                 *
* AVE QUEUE   veh       1      1      1      0             * VEHIC HRS   2.7 *
* MAX QUEUE   veh       2      1      1      0             * COST    $    41 *
*                                                          *                 *
*****************************************************************************
```

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	1805			3470			3522	
Flt Permitted		0.88		0.74	1.00			0.95			0.94	
Satd. Flow (perm)		1621		1377	1805			3286			3318	
Volume (vph)	27	53	5	117	47	12	8	732	107	10	718	22
Peak-hour factor, PHF	0.67	0.67	0.67	0.77	0.77	0.77	0.90	0.90	0.90	0.87	0.87	0.87
Adj. Flow (vph)	40	79	7	152	61	16	9	813	119	11	825	25
Lane Group Flow (vph)	0	126	0	152	77	0	0	941	0	0	861	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	9.1			29.7			29.7	
Effective Green, g (s)		11.1		11.1	11.1			31.7			31.7	
Actuated g/C Ratio		0.22		0.22	0.22			0.62			0.62	
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)		354		301	394			2051			2070	
v/s Ratio Prot					0.04							
v/s Ratio Perm		0.08		c0.11				c0.29			0.26	
v/c Ratio		0.36		0.50	0.20			0.46			0.42	
Uniform Delay, d1		16.8		17.4	16.2			5.0			4.8	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		0.6		1.3	0.2			0.2			0.1	
Delay (s)		17.4		18.8	16.4			5.2			5.0	
Level of Service		B		B	B			A			A	
Approach Delay (s)		17.4			18.0			5.2			5.0	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	7.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	50.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.1%	ICU Level of Service	A
c Critical Lane Group			

```
*******************************************************************************
*                                                                             *
*   1:4:06                ROUTE 50/OUTLET RD ALT 1 HB                       7 *
*                                                                             *
*******************************************************************************
*                                                 *                           *
* 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    PM *
*                                                 *                           *
*******************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *              *         *
* RT 50 NB *1.05*  142  986   12  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* OUTLET WB*1.05*    8   69  140  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*   35  801   12  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* CHAR EB  *1.05*    6   29   23  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*******************************************************************************
*                                                          *                  *
* FLOW         veh    1140    217    848     58            * AVEDEL  s    2.6 *
* CAPACITY     veh    2593    769   2487    799            * LOS   SIG      A *
* AVE DELAY   mins    0.04   0.10   0.03   0.07            * LOS UNSIG      A *
* MAX DELAY   mins    0.06   0.18   0.05   0.12            *                  *
* AVE QUEUE    veh       1      0      1      0            * VEHIC HRS    1.7 *
* MAX QUEUE    veh       1      1      1      0            * COST    $     25 *
*                                                          *                  *
*******************************************************************************
```

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)	211	1863	1863			1611
Volume (vph)	323	691	824	0	0	352
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.79	0.79
Adj. Flow (vph)	363	776	926	0	0	446
Lane Group Flow (vph)	363	776	926	0	0	446
Turn Type	pm+pt					custom
Protected Phases	5	2	6			5
Permitted Phases	2					5
Actuated Green, G (s)	69.0	75.0	43.0			20.0
Effective Green, g (s)	71.0	75.0	45.0			22.0
Actuated g/C Ratio	0.95	1.00	0.60			0.29
Clearance Time (s)	6.0	6.0	6.0			6.0
Lane Grp Cap (vph)	657	1863	1118			473
v/s Ratio Prot	0.16	0.42	c0.50			c0.28
v/s Ratio Perm	0.36					
v/c Ratio	0.55	0.42	0.83			0.94
Uniform Delay, d1	15.0	0.0	11.9			25.9
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	3.3	0.7	7.1			29.3
Delay (s)	18.3	0.7	19.0			55.2
Level of Service	B	A	B			E
Approach Delay (s)		6.3	19.0		55.2	
Approach LOS		A	B		E	

Intersection Summary			
HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.87		
Cycle Length (s)	75.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.0%	ICU Level of Service	D

c Critical Lane Group

```
*****************************************************************************
*                                                                           *
*   1:4:06              ROUTE 50/MIDDLELINE RD ALT 1 HB                  15 *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* 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    PM *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *         *
* RT 50 NB *1.05*  903  499    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*    2  930    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
* MID WB   *1.05*  357    1    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*****************************************************************************
*                                                          *                 *
* FLOW        veh    1402    932    358                    * AVEDEL  s   3.2 *
* CAPACITY    veh    2635   2300    894                    * LOS   SIG     A *
* AVE DELAY  mins    0.05   0.04   0.11                    * LOS UNSIG     A *
* MAX DELAY  mins    0.08   0.07   0.19                    *                 *
* AVE QUEUE   veh       1      1      1                    * VEHIC HRS   2.4 *
* MAX QUEUE   veh       2      1      1                    * COST    $    36 *
*                                                          *                 *
*****************************************************************************
```

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			0.95		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)		1685			1752		1770	1863		1770	1838	
Flt Permitted		0.99			0.48		0.14	1.00		0.12	1.00	
Satd. Flow (perm)		1673			847		257	1863		233	1838	
Volume (vph)	15	306	759	70	194	163	177	981	0	513	912	89
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)	16	333	825	76	211	177	192	1066	0	558	991	97
Lane Group Flow (vph)	0	1174	0	0	464	0	192	1066	0	558	1088	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)		23.0			23.0		31.0	27.0		37.0	30.0	
Effective Green, g (s)		25.0			25.0		35.0	29.0		41.0	32.0	
Actuated g/C Ratio		0.33			0.33		0.47	0.39		0.55	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)		558			282		241	720		312	784	
v/s Ratio Prot							0.06	0.57		c0.21	0.59	
v/s Ratio Perm		c0.70			0.55		0.31			c0.76		
v/c Ratio		2.10			1.65		0.80	1.48		1.79	1.39	
Uniform Delay, d1		25.0			25.0		35.6	23.0		35.3	21.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		502.8			305.9		16.5	223.7		367.4	182.4	
Delay (s)		527.8			330.9		52.1	246.7		402.7	203.9	
Level of Service		F			F		D	F		F	F	
Approach Delay (s)		527.8			330.9			217.0			271.3	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	328.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.99		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	195.6%	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)	141	313	852	172	487	873
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	153	340	926	187	529	949
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	3027	1020			1113	
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			16	
cM capacity (veh/h)	2	287			627	

Direction, Lane #	EB 1	SB 1	NW 1
Volume Total	493	1113	1478
Volume Left	153	0	529
Volume Right	340	187	0
cSH	7	1700	627
Volume to Capacity	69.06	0.65	0.84
Queue Length (ft)	Err	0	231
Control Delay (s)	Err	0.0	53.9
Lane LOS	F		F
Approach Delay (s)	Err	0.0	53.9
Approach LOS	F		

Intersection Summary			
Average Delay	1625.4		
Intersection Capacity Utilization	189.8%	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	0.99			0.96			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1770	1817		1770	1838			1753			1798	
Flt Permitted	0.05	1.00		0.05	1.00			0.76			0.75	
Satd. Flow (perm)	98	1817		93	1838			1372			1378	
Volume (vph)	20	1035	202	123	1041	102	202	106	115	41	53	13
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)	22	1125	220	134	1132	111	220	115	125	45	58	14
Lane Group Flow (vph)	22	1345	0	134	1243	0	0	460	0	0	117	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)	76.4	74.0		84.4	78.0			34.0			34.0	
Effective Green, g (s)	80.4	76.0		88.4	80.0			36.0			36.0	
Actuated g/C Ratio	0.61	0.57		0.67	0.60			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)	115	1043		168	1111			373			375	
v/s Ratio Prot	0.01	c0.74		c0.05	0.68							
v/s Ratio Perm	0.11			0.48				c0.34			0.08	
v/c Ratio	0.19	1.29		0.80	1.12			1.23			0.31	
Uniform Delay, d1	62.7	28.2		57.7	26.2			48.2			38.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.8	137.6		22.5	65.9			126.2			0.5	
Delay (s)	63.5	165.8		80.2	92.1			174.4			38.8	
Level of Service	E	F		F	F			F			D	
Approach Delay (s)		164.1			90.9			174.4			38.8	
Approach LOS		F			F			F			D	

Intersection Summary			
HCM Average Control Delay	130.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	132.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	122.5%	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		0.98			0.99			0.97			0.97	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1794			1811			1793			1807	
Flt Permitted		0.64			0.64			0.86			0.98	
Satd. Flow (perm)		1167			1183			1547			1772	
Volume (vph)	165	183	50	284	313	26	68	809	303	11	706	198
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)	179	199	54	309	340	28	74	879	329	12	767	215
Lane Group Flow (vph)	0	432	0	0	677	0	0	1282	0	0	994	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		36.0			36.0			52.0			52.0	
Effective Green, g (s)		38.0			38.0			54.0			54.0	
Actuated g/C Ratio		0.38			0.38			0.54			0.54	
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)		443			450			835			957	
v/s Ratio Prot												
v/s Ratio Perm		0.37			c0.57			c0.83			0.56	
v/c Ratio		0.98			1.50			1.54			1.04	
Uniform Delay, d1		30.5			31.0			23.0			23.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		36.0			238.4			246.9			39.6	
Delay (s)		66.5			269.4			269.9			62.6	
Level of Service		E			F			F			E	
Approach Delay (s)		66.5			269.4			269.9			62.6	
Approach LOS		E			F			F			E	

Intersection Summary			
HCM Average Control Delay	183.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.52		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	198.3%	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)	1111	2	195	900	4	215
Peak Hour Factor	0.92	0.92	0.90	0.90	0.94	0.94
Hourly flow rate (veh/h)	1208	2	217	1000	4	229
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume			1210		2642	1209
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 %			62		73	0
cM capacity (veh/h)			577		16	223

Direction, Lane #	NB 1	SB 1	SB 2	NW 1
Volume Total	1210	217	1000	233
Volume Left	0	217	0	4
Volume Right	2	0	0	229
cSH	1700	577	1700	180
Volume to Capacity	0.71	0.38	0.59	1.29
Queue Length (ft)	0	43	0	330
Control Delay (s)	0.0	15.0	0.0	216.6
Lane LOS		B		F
Approach Delay (s)	0.0	2.7		216.6
Approach LOS				F

Intersection Summary			
Average Delay	20.2		
Intersection Capacity Utilization	100.1%	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)	60	32	65	1080	879	81
Peak Hour Factor	0.50	0.50	0.90	0.90	0.96	0.96
Hourly flow rate (veh/h)	120	64	72	1200	916	84
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	2302	958	1000			
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	79	90			
cM capacity (veh/h)	38	312	692			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	184	1272	1000
Volume Left	120	72	0
Volume Right	64	0	84
cSH	55	692	1700
Volume to Capacity	3.36	0.10	0.59
Queue Length (ft)	Err	9	0
Control Delay (s)	Err	4.2	0.0
Lane LOS	F	A	
Approach Delay (s)	Err	4.2	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	751.2		
Intersection Capacity Utilization	141.0%	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		0.94		1.00	0.98		1.00	0.95		1.00	0.96	
Flt Protected		0.99		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1732		1770	1818		1770	1774		1770	1791	
Flt Permitted		0.73		0.29	1.00		0.10	1.00		0.11	1.00	
Satd. Flow (perm)		1286		534	1818		182	1774		201	1791	
Volume (vph)	210	214	309	408	318	61	399	831	384	63	700	240
Peak-hour factor, PHF	0.82	0.82	0.82	0.98	0.98	0.98	0.91	0.91	0.91	0.94	0.94	0.94
Adj. Flow (vph)	256	261	377	416	324	62	438	913	422	67	745	255
Lane Group Flow (vph)	0	894	0	416	386	0	438	1335	0	67	1000	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		41.0	41.0		47.0	47.0		35.0	35.0	
Effective Green, g (s)		33.0		43.0	43.0		49.0	49.0		37.0	37.0	
Actuated g/C Ratio		0.33		0.43	0.43		0.49	0.49		0.37	0.37	
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)		424		304	782		216	869		74	663	
v/s Ratio Prot				c0.08	0.21		c0.16	0.75			0.56	
v/s Ratio Perm		c0.70		0.51			c0.83			0.33		
v/c Ratio		2.11		1.37	0.49		2.03	1.54		0.91	1.51	
Uniform Delay, d1		33.5		53.3	20.6		48.2	25.5		29.8	31.5	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		506.8		185.5	0.5		478.4	247.1		72.4	236.5	
Delay (s)		540.3		238.8	21.1		526.6	272.6		102.2	268.0	
Level of Service		F		F	C		F	F		F	F	
Approach Delay (s)		540.3			134.0			335.4			257.6	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	321.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.99		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	166.4%	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			0.99			0.99			0.99	
Flt Protected		0.98			0.97			1.00			1.00	
Satd. Flow (prot)		1801			1800			1835			1850	
Flt Permitted		0.83			0.79			0.99			0.98	
Satd. Flow (perm)		1517			1468			1814			1815	
Volume (vph)	23	29	6	104	69	8	12	867	106	12	751	35
Peak-hour factor, PHF	0.67	0.67	0.67	0.77	0.77	0.77	0.90	0.90	0.90	0.87	0.87	0.87
Adj. Flow (vph)	34	43	9	135	90	10	13	963	118	14	863	40
Lane Group Flow (vph)	0	86	0	0	235	0	0	1094	0	0	917	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		15.9			15.9			56.1			56.1	
Effective Green, g (s)		17.9			17.9			58.1			58.1	
Actuated g/C Ratio		0.21			0.21			0.69			0.69	
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)		323			313			1255			1255	
v/s Ratio Prot												
v/s Ratio Perm		0.06			c0.16			c0.60			0.51	
v/c Ratio		0.27			0.75			0.87			0.73	
Uniform Delay, d1		27.6			31.0			10.1			8.1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.4			9.7			6.9			2.2	
Delay (s)		28.0			40.7			17.0			10.3	
Level of Service		C			D			B			B	
Approach Delay (s)		28.0			40.7			17.0			10.3	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM Average Control Delay	17.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	84.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	100.5%	ICU Level of Service	F
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)	416	857	845	2	1	275
Peak Hour Factor	0.89	0.89	0.89	0.89	0.79	0.79
Hourly flow rate (veh/h)	467	963	949	2	1	348
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume	952				2848	951
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 %	35				81	0
cM capacity (veh/h)	722				7	315

Direction, Lane #	NB 1	NB 2	SB 1	SE 1
Volume Total	467	963	952	349
Volume Left	467	0	0	1
Volume Right	0	0	2	348
cSH	722	1700	1700	270
Volume to Capacity	0.65	0.57	0.56	1.29
Queue Length (ft)	120	0	0	436
Control Delay (s)	18.7	0.0	0.0	194.8
Lane LOS	C			F
Approach Delay (s)	6.1		0.0	194.8
Approach LOS				F

Intersection Summary			
Average Delay	28.1		
Intersection Capacity Utilization	107.6%	ICU Level of Service	F

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	3498	
Flt Permitted		0.98	1.00	0.46	1.00	1.00	0.30	1.00		0.17	1.00	
Satd. Flow (perm)		1825	1583	854	1863	1583	565	3535		598	3498	
Volume (vph)	11	223	541	68	182	136	140	757	6	539	771	65
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	242	588	74	198	148	152	823	7	586	838	71
Lane Group Flow (vph)	0	254	588	74	198	148	152	830	0	586	909	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)		12.5	23.3	12.5	12.5	16.3	22.4	18.6		35.4	25.6	
Effective Green, g (s)		14.5	27.3	14.5	14.5	20.3	26.4	20.6		37.4	27.6	
Actuated g/C Ratio		0.24	0.46	0.24	0.24	0.34	0.44	0.34		0.62	0.46	
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)		442	827	207	451	642	366	1216		979	1612	
v/s Ratio Prot			c0.15		0.11	0.02	0.04	c0.23		0.13	0.26	
v/s Ratio Perm		0.14	0.22	0.09		0.07	0.14			0.25		
v/c Ratio		0.57	0.71	0.36	0.44	0.23	0.42	0.68		0.60	0.56	
Uniform Delay, d1		20.0	13.1	18.8	19.3	14.2	10.3	16.8		7.6	11.8	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.8	2.9	1.1	0.7	0.2	0.8	1.6		1.0	0.5	
Delay (s)		21.8	16.0	19.9	19.9	14.4	11.0	18.4		8.6	12.2	
Level of Service		C	B	B	B	B	B	B		A	B	
Approach Delay (s)		17.8			18.0			17.3			10.8	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	14.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	59.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.8%	ICU Level of Service	C
c Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06                ROUTE 50/ROUTE 67 ALT 2 HB                   37   *
*                                                                           *
*****************************************************************************
*                                                  *                        *
* 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    PM  *
*                                                  *                        *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *         *
*RT 50 NB  *1.05*    0  981  177  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 67 WB  *1.05*    0  306   15  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 5067 SB*1.05*    0  912  513  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
*BALL EB   *1.05*    0  194   70  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*****************************************************************************
*                                                          *                 *
* FLOW        veh    1158    321   1425    264             * AVEDEL  s   3.8 *
* CAPACITY    veh    2113   1809   2301   1667             * LOS   SIG     A *
* AVE DELAY  mins    0.06   0.04   0.07   0.04             * LOS UNSIG     A *
* MAX DELAY  mins    0.11   0.06   0.13   0.07             *                 *
* AVE QUEUE   veh       1      0      2      0             * VEHIC HRS   3.3 *
* MAX QUEUE   veh       2      0      3      0             * COST    $    50 *
*                                                          *                 *
*****************************************************************************
```

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	0.39		1.00		1.00			1.00			1.00	1.00
Satd. Flow (perm)	719		1583		3539			3539			3539	1583
Volume (vph)	126	0	367	0	487	0	0	873	0	0	852	172
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	399	0	529	0	0	949	0	0	926	187
Lane Group Flow (vph)	137	0	399	0	529	0	0	949	0	0	926	187
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)	16.1		16.1		13.2			15.7			15.7	18.6
Effective Green, g (s)	20.1		20.1		15.2			17.7			17.7	22.6
Actuated g/C Ratio	0.40		0.40		0.31			0.36			0.36	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)	394		766		1080			1258			1258	846
v/s Ratio Prot	0.03		c0.16		0.15			c0.27			0.26	0.02
v/s Ratio Perm	0.11		0.09									0.10
v/c Ratio	0.35		0.52		0.49			0.75			0.74	0.22
Uniform Delay, d1	9.7		11.2		14.1			14.1			14.0	8.3
Progression Factor	1.00		1.00		1.00			1.00			1.00	1.00
Incremental Delay, d2	0.5		0.6		0.4			2.6			2.3	0.1
Delay (s)	10.2		11.9		14.5			16.8			16.3	8.4
Level of Service	B		B		B			B			B	A
Approach Delay (s)		11.4			14.5			16.8			15.0	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	14.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	49.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.5%	ICU Level of Service	A
c Critical Lane Group			

```
*******************************************************************************
*                                                                             *
*   1:4:06                ROUTE 67/BROOKLINE RD ALT 2 HB                  17  *
*                                                                             *
*******************************************************************************
*                                                 *                           *
* 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    PM *
*                                                 *                           *
*******************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *         *
*RT 67 NB  *1.05*  873  487    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 67 SB  *1.05*    0  852    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*BROOK EB  *1.05*  313  141    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*******************************************************************************
*                                                          *                  *
* FLOW        veh    1360    852    454                    * AVEDEL  s    2.6 *
* CAPACITY    veh    2541   2308   2062                    * LOS   SIG      A *
* AVE DELAY  mins    0.05   0.04   0.03                    * LOS UNSIG      A *
* MAX DELAY  mins    0.08   0.06   0.06                    *                  *
* AVE QUEUE   veh       1      1      0                    * VEHIC HRS    1.9 *
* MAX QUEUE   veh       2      1      0                    * 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	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	3468		1770	3505		1770	1664			1792	
Flt Permitted	0.19	1.00		0.12	1.00		0.60	1.00			0.57	
Satd. Flow (perm)	349	3468		229	3505		1119	1664			1047	
Volume (vph)	12	973	152	106	898	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	1058	165	115	976	68	195	68	168	95	85	23
Lane Group Flow (vph)	13	1223	0	115	1044	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)	27.2	26.5		38.6	32.2		13.0	13.0			13.0	
Effective Green, g (s)	31.2	28.5		40.9	34.2		15.0	15.0			15.0	
Actuated g/C Ratio	0.49	0.45		0.64	0.54		0.23	0.23			0.23	
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)	230	1547		349	1876		263	391			246	
v/s Ratio Prot	0.00	c0.35		c0.04	c0.30			0.14				
v/s Ratio Perm	0.03			0.17			0.17				c0.19	
v/c Ratio	0.06	0.79		0.33	0.56		0.74	0.60			0.83	
Uniform Delay, d1	14.0	15.1		15.8	9.8		22.7	21.8			23.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.1	2.8		0.6	0.4		10.7	2.6			19.7	
Delay (s)	14.1	18.0		16.4	10.2		33.4	24.4			42.9	
Level of Service	B	B		B	B		C	C			D	
Approach Delay (s)		17.9			10.8			28.5			42.9	
Approach LOS		B			B			C			D	

Intersection Summary			
HCM Average Control Delay	18.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	63.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.3%	ICU Level of Service	C
c Critical Lane Group			

```
*******************************************************************************
*                                                                             *
*   1:4:06                ROUTE 67/EASTLINE RD ALT 2 HB                   25  *
*                                                                             *
*******************************************************************************
*                                                 *                           *
* 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    PM *
*                                                 *                           *
*******************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                             *    *  *              *        *
* RT 67 EB *1.05*    0 1035   20  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* EAST NB  *1.05*    0  106  202  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 67 WB *1.05*    0 1041  123  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* EAST SB  *1.05*   13   53   41  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                             *    *  *              *        *
*          *    *                             *    *  *              *        *
*          *    *                             *    *  *              *        *
*******************************************************************************
*                                                          *                  *
* FLOW        veh    1055    308   1164    107             * AVEDEL  s    3.2 *
* CAPACITY    veh    2490    819   2415    696             * LOS   SIG      A *
* AVE DELAY  mins    0.04   0.12   0.05   0.10             * LOS UNSIG      A *
* MAX DELAY  mins    0.06   0.21   0.08   0.17             *                  *
* AVE QUEUE   veh       1      1      1      0             * VEHIC HRS    2.4 *
* MAX QUEUE   veh       1      1      1      0             * COST    $     35 *
*                                                          *                  *
*******************************************************************************
```

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	1814		1770	1840		1770	3539	1583		3535	1583
Flt Permitted	0.56	1.00		0.37	1.00		0.19	1.00	1.00		0.93	1.00
Satd. Flow (perm)	1038	1814		689	1840		355	3539	1583		3285	1583
Volume (vph)	151	236	50	253	205	18	49	635	246	16	653	135
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	54	275	223	20	53	690	267	17	710	147
Lane Group Flow (vph)	164	311	0	275	243	0	53	690	267	0	727	147
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)	17.5	14.5		19.9	15.7		23.1	23.1	27.3		15.0	18.0
Effective Green, g (s)	21.5	16.5		23.9	17.7		25.1	25.1	31.3		17.0	22.0
Actuated g/C Ratio	0.36	0.28		0.40	0.30		0.42	0.42	0.52		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)	434	501		387	545		246	1485	934		934	688
v/s Ratio Prot	0.03	0.17		c0.07	0.13		0.01	c0.19	0.03			0.02
v/s Ratio Perm	0.10			c0.21			0.08		0.14		c0.22	0.07
v/c Ratio	0.38	0.62		0.71	0.45		0.22	0.46	0.29		0.78	0.21
Uniform Delay, d1	13.5	18.9		13.5	17.1		11.6	12.5	8.0		19.7	13.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.6	2.4		6.0	0.6		0.4	0.2	0.2		4.1	0.2
Delay (s)	14.1	21.3		19.6	17.7		12.0	12.7	8.2		23.8	13.1
Level of Service	B	C		B	B		B	B	A		C	B
Approach Delay (s)		18.8			18.7			11.5			22.0	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM Average Control Delay	17.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	59.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.0%	ICU Level of Service	B
c Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06              ROUTE 50/BROOKLINE RD ALT 2 HB                  46  *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* 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    PM  *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *         *
* RT 50 NB *1.05*    0  809   68  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* BROOK WB *1.05*    0  313  284  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*    0  706   11  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* BROOK EB *1.05*    0  183  165  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*****************************************************************************
*                                                          *                 *
* FLOW        veh     877    597    717    348             * AVEDEL  s   2.6 *
* CAPACITY    veh    2298   1768   2010   1795             * LOS   SIG     A *
* AVE DELAY  mins    0.04   0.05   0.04   0.04             * LOS UNSIG     A *
* MAX DELAY  mins    0.06   0.08   0.07   0.06             *                 *
* AVE QUEUE   veh       1      1      1      0             * VEHIC HRS   1.8 *
* MAX QUEUE   veh       1      1      1      0             * COST    $    27 *
*                                                          *                 *
*****************************************************************************
```

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		0.27	1.00	0.95	1.00
Satd. Flow (perm)	3538		500	1863	1770	1583
Volume (vph)	865	2	174	915	4	172
Peak-hour factor, PHF	0.92	0.92	0.90	0.90	0.94	0.94
Adj. Flow (vph)	940	2	193	1017	4	183
Lane Group Flow (vph)	942	0	193	1017	4	183
Turn Type			pm+pt			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases			6			8
Actuated Green, G (s)	81.3		96.7	96.7	1.3	10.7
Effective Green, g (s)	83.3		98.7	98.7	3.3	14.7
Actuated g/C Ratio	0.76		0.90	0.90	0.03	0.13
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)	2679		580	1672	53	269
v/s Ratio Prot	0.27		0.03	c0.55	0.00	c0.07
v/s Ratio Perm			0.26			0.05
v/c Ratio	0.35		0.33	0.61	0.08	0.68
Uniform Delay, d1	4.4		1.4	1.3	51.9	45.4
Progression Factor	0.52		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3		0.3	1.7	0.6	6.9
Delay (s)	2.6		1.7	2.9	52.5	52.3
Level of Service	A		A	A	D	D
Approach Delay (s)	2.6			2.7	52.3	
Approach LOS	A			A	D	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
c Critical Lane Group			

```
*******************************************************************************
*                                                                             *
*   1:4:06                ROUTE 50/ROUTE 146A ALT 2 HB                    17  *
*                                                                             *
*******************************************************************************
*                                                 *                           *
* 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    PM *
*                                                 *                           *
*******************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *        *
*RT 50 NB  *1.05*    2 1111    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 146A EB*1.05*  215    4    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 50 SB  *1.05*  900  195    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *        *
*          *    *                            *    *  *               *        *
*          *    *                            *    *  *               *        *
*          *    *                            *    *  *               *        *
*******************************************************************************
*                                                                 *           *
* FLOW         veh    1113    219   1095                         * AVEDEL  s   2.6 *
* CAPACITY     veh    2504    812   2691                         * LOS   SIG     A *
* AVE DELAY   mins    0.04   0.10   0.03                         * LOS UNSIG     A *
* MAX DELAY   mins    0.07   0.17   0.06                         *                 *
* AVE QUEUE    veh       1      0      1                         * VEHIC HRS   1.7 *
* MAX QUEUE    veh       1      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	0.92		1.00	1.00	0.99	
Flt Protected	0.98		0.95	1.00	1.00	
Satd. Flow (prot)	1685		1770	1863	1848	
Flt Permitted	0.98		0.18	1.00	1.00	
Satd. Flow (perm)	1685		343	1863	1848	
Volume (vph)	66	83	49	847	889	55
Peak-hour factor, PHF	0.50	0.50	0.90	0.90	0.96	0.96
Adj. Flow (vph)	132	166	54	941	926	57
Lane Group Flow (vph)	298	0	54	941	983	0
Turn Type			Perm			
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	19.9		78.1	78.1	78.1	
Effective Green, g (s)	21.9		80.1	80.1	80.1	
Actuated g/C Ratio	0.20		0.73	0.73	0.73	
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		250	1357	1346	
v/s Ratio Prot	c0.18			0.51	c0.53	
v/s Ratio Perm			0.16			
v/c Ratio	0.89		0.22	0.69	0.73	
Uniform Delay, d1	42.9		4.8	8.2	8.7	
Progression Factor	1.00		1.00	1.00	0.93	
Incremental Delay, d2	23.7		2.0	2.9	3.0	
Delay (s)	66.6		6.8	11.1	11.0	
Level of Service	E		A	B	B	
Approach Delay (s)	66.6			10.9	11.0	
Approach LOS	E			B	B	

Intersection Summary			
HCM Average Control Delay	18.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.4%	ICU Level of Service	C
c Critical Lane Group			

```
*******************************************************************************
*                                                                             *
*   1:4:06                ROUTE 50/FOREST ALT 2 HB                        20  *
*                                                                             *
*******************************************************************************
*                                                 *                           *
* 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    PM *
*                                                 *                           *
*******************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                             *    *  *              *        *
* RT 50 NB *1.05* 1080   65    0               *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*   81  879    0               *1.00*50*0.75 1.125 0.75*15 30 45 *
* FOREST WB*1.05*   32   60    0               *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                             *    *  *              *        *
*          *    *                             *    *  *              *        *
*          *    *                             *    *  *              *        *
*          *    *                             *    *  *              *        *
*******************************************************************************
*                                                                 *           *
* FLOW          veh    1145    960     92                         * AVEDEL  s   2.3 *
* CAPACITY      veh    2595   2592    832                         * LOS   SIG     A *
* AVE DELAY    mins    0.04   0.03   0.07                         * LOS UNSIG     A *
* MAX DELAY    mins    0.06   0.05   0.12                         *                 *
* AVE QUEUE     veh       1      1      0                         * VEHIC HRS   1.4 *
* MAX QUEUE     veh       1      1      0                         * 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	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	1817		1770	3539	1583	1770	3539	1583
Flt Permitted	0.48	1.00	1.00	0.18	1.00		0.16	1.00	1.00	0.38	1.00	1.00
Satd. Flow (perm)	885	1863	1583	343	1817		300	3539	1583	710	3539	1583
Volume (vph)	184	263	279	365	263	52	284	648	314	48	686	176
Peak-hour factor, PHF	0.82	0.82	0.82	0.98	0.98	0.98	0.91	0.91	0.91	0.94	0.94	0.94
Adj. Flow (vph)	224	321	340	372	268	53	312	712	345	51	730	187
Lane Group Flow (vph)	224	321	340	372	321	0	312	712	345	51	730	187
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)	22.7	15.7	31.7	35.7	22.7		40.8	40.8	54.8	18.8	18.8	25.8
Effective Green, g (s)	26.7	17.7	35.7	37.7	24.7		42.8	42.8	58.8	20.8	20.8	29.8
Actuated g/C Ratio	0.30	0.20	0.40	0.43	0.28		0.48	0.48	0.66	0.24	0.24	0.34
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)	357	373	710	404	507		444	1712	1123	167	832	605
v/s Ratio Prot	0.06	0.17	0.10	c0.17	0.18		c0.14	0.20	0.06		c0.21	0.03
v/s Ratio Perm	0.13		0.12	c0.23			0.20		0.16	0.07		0.09
v/c Ratio	0.63	0.86	0.48	0.92	0.63		0.70	0.42	0.31	0.31	0.88	0.31
Uniform Delay, d1	24.8	34.2	19.5	21.6	27.9		17.5	14.8	6.3	27.9	32.6	21.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.4	18.0	0.5	26.1	2.6		5.0	0.2	0.2	1.0	10.3	0.3
Delay (s)	28.2	52.2	20.0	47.7	30.5		22.5	14.9	6.4	28.9	43.0	22.0
Level of Service	C	D	C	D	C		C	B	A	C	D	C
Approach Delay (s)		33.8			39.7			14.5			38.2	
Approach LOS		C			D			B			D	

Intersection Summary			
HCM Average Control Delay	29.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	88.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	88.3%	ICU Level of Service	D
c Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06              ROUTE 50/LAKE HILL RD ALT 2 HB                  28  *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* 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    PM  *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *         *
* RT 50 NB *1.05*    0  831  399  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* LHR WB   *1.05*    0  318  408  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*    0  700   63  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* LHR EB   *1.05*    0  214  210  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*****************************************************************************
*                                                          *                 *
* FLOW        veh    1230    726    763    424              * AVEDEL  s   3.5 *
* CAPACITY    veh    2280   1667   1715   1686              * LOS   SIG     A *
* AVE DELAY  mins    0.06   0.07   0.06   0.04              * LOS UNSIG     A *
* MAX DELAY  mins    0.10   0.12   0.11   0.07              *                 *
* AVE QUEUE   veh       1      1      1      0              * VEHIC HRS   3.1 *
* MAX QUEUE   veh       2      1      1      0              * COST    $    46 *
*                                                          *                 *
*****************************************************************************
```

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	1805			3478			3521	
Flt Permitted		0.88		0.74	1.00			0.95			0.94	
Satd. Flow (perm)		1626		1375	1805			3294			3319	
Volume (vph)	27	53	5	100	47	12	8	709	90	10	697	22
Peak-hour factor, PHF	0.67	0.67	0.67	0.77	0.77	0.77	0.90	0.90	0.90	0.87	0.87	0.87
Adj. Flow (vph)	40	79	7	130	61	16	9	788	100	11	801	25
Lane Group Flow (vph)	0	126	0	130	77	0	0	897	0	0	837	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		9.6		9.6	9.6			29.5			29.5	
Effective Green, g (s)		11.6		11.6	11.6			31.5			31.5	
Actuated g/C Ratio		0.23		0.23	0.23			0.62			0.62	
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)		369		312	410			2031			2046	
v/s Ratio Prot					0.04							
v/s Ratio Perm		0.08		c0.09				c0.27			0.25	
v/c Ratio		0.34		0.42	0.19			0.44			0.41	
Uniform Delay, d1		16.5		16.9	15.9			5.2			5.0	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		0.6		0.9	0.2			0.2			0.1	
Delay (s)		17.1		17.8	16.2			5.3			5.2	
Level of Service		B		B	B			A			A	
Approach Delay (s)		17.1			17.2			5.3			5.2	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	7.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	51.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.5%	ICU Level of Service	A
c Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06                ROUTE 50/OUTLET RD ALT 2 HB                   9   *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* 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    PM  *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *         *
* RT 50 NB *1.05*  106  867   12  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* OUTLET WB*1.05*    8   69  104  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*   35  751   12  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* CHAR EB  *1.05*    6   29   23  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*****************************************************************************
*                                                          *                 *
* FLOW        veh     985    181    798     58             * AVEDEL  s   2.4 *
* CAPACITY    veh    2593    822   2511    837             * LOS   SIG     A *
* AVE DELAY  mins    0.03   0.09   0.03   0.07             * LOS UNSIG     A *
* MAX DELAY  mins    0.06   0.15   0.05   0.11             *                 *
* AVE QUEUE   veh       1      0      0      0             * VEHIC HRS   1.3 *
* MAX QUEUE   veh       1      0      1      0             * COST    $    20 *
*                                                          *                 *
*****************************************************************************
```

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	0.14	1.00	1.00			1.00
Satd. Flow (perm)	266	1863	1863			1611
Volume (vph)	289	701	793	0	0	312
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.79	0.79
Adj. Flow (vph)	325	788	891	0	0	395
Lane Group Flow (vph)	325	788	891	0	0	395
Turn Type	pm+pt					custom
Protected Phases	5	2	6			5
Permitted Phases	2					5
Actuated Green, G (s)	46.7	52.7	29.8			10.9
Effective Green, g (s)	48.7	52.7	31.8			12.9
Actuated g/C Ratio	0.92	1.00	0.60			0.24
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)	614	1863	1124			394
v/s Ratio Prot	0.13	0.42	c0.48			c0.25
v/s Ratio Perm	0.36					
v/c Ratio	0.53	0.42	0.79			1.00
Uniform Delay, d1	8.8	0.0	7.9			19.9
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.8	0.2	3.9			46.0
Delay (s)	9.6	0.2	11.9			65.9
Level of Service	A	A	B			E
Approach Delay (s)		2.9	11.9		65.9	
Approach LOS		A	B		E	

Intersection Summary			
HCM Average Control Delay	16.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	52.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.0%	ICU Level of Service	C
c Critical Lane Group			

```
*******************************************************************************
*                                                                             *
*   1:4:06              ROUTE 50/MIDDLELINE RD ALT 2 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   3.60                 * 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    PM *
*                                                 *                           *
*******************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *         *
* RT 50 NB *1.05*  857  416    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*    2  845    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
* MID WB   *1.05*  275    1    0              *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*******************************************************************************
*                                                                 *           *
* FLOW        veh    1273    847    276                          * AVEDEL  s   2.7 *
* CAPACITY    veh    2635   2356    933                          * LOS   SIG     A *
* AVE DELAY  mins    0.04   0.04   0.09                          * LOS UNSIG     A *
* MAX DELAY  mins    0.07   0.06   0.14                          *                 *
* AVE QUEUE   veh       1      1      0                          * VEHIC HRS   1.8 *
* MAX QUEUE   veh       1      1      1                          * COST    $    27 *
*                                                                 *           *
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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			0.94		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)		1680			1731		1770	1863		1770	1841	
Flt Permitted		0.98			0.39		0.18	1.00		0.18	1.00	
Satd. Flow (perm)		1652			680		339	1863		339	1841	
Volume (vph)	16	373	1014	137	264	343	351	1819	0	791	1747	150
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)	17	405	1102	149	287	373	382	1977	0	860	1899	163
Lane Group Flow (vph)	0	1524	0	0	809	0	382	1977	0	860	2062	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)		18.0			18.0		24.0	20.0		24.0	20.0	
Effective Green, g (s)		20.0			20.0		28.0	22.0		28.0	22.0	
Actuated g/C Ratio		0.33			0.33		0.47	0.37		0.47	0.37	
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)		551			227		301	683		301	675	
v/s Ratio Prot							0.13	1.06		c0.29	c1.12	
v/s Ratio Perm		0.92			c1.19		0.47			1.05		
v/c Ratio		2.77			3.56		1.27	2.89		2.86	3.05	
Uniform Delay, d1		20.0			20.0		10.8	19.0		10.8	19.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		799.7			1164.7		144.7	856.6		844.8	928.6	
Delay (s)		819.7			1184.7		155.5	875.6		855.6	947.6	
Level of Service		F			F		F	F		F	F	
Approach Delay (s)		819.7			1184.7			759.0			920.5	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	878.4	HCM Level of Service	F
HCM Volume to Capacity ratio	3.24		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	301.3%	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)	276	544	1168	293	724	1226
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	300	591	1270	318	787	1333
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	4335	1429			1588	
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			0	
cM capacity (veh/h)	0	165			413	

Direction, Lane #	EB 1	SB 1	NW 1
Volume Total	891	1588	2120
Volume Left	300	0	787
Volume Right	591	318	0
cSH	0	1700	413
Volume to Capacity	Err	0.93	1.90
Queue Length (ft)	Err	0	1308
Control Delay (s)	Err	0.0	1437.0
Lane LOS	F		F
Approach Delay (s)	Err	0.0	1437.0
Approach LOS	F		

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	278.3%	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	0.99			0.97			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.98	
Satd. Flow (prot)	1770	1821		1770	1845			1755			1797	
Flt Permitted	0.14	1.00		0.12	1.00			0.73			0.78	
Satd. Flow (perm)	259	1821		227	1845			1318			1429	
Volume (vph)	20	1520	266	126	1558	105	273	109	119	42	54	14
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)	22	1652	289	137	1693	114	297	118	129	46	59	15
Lane Group Flow (vph)	22	1941	0	137	1807	0	0	544	0	0	120	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)	91.4	89.0		99.4	93.0			39.0			39.0	
Effective Green, g (s)	95.4	91.0		103.4	95.0			41.0			41.0	
Actuated g/C Ratio	0.63	0.60		0.68	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)	206	1087		239	1150			355			384	
v/s Ratio Prot	0.00	c1.07		c0.03	0.98							
v/s Ratio Perm	0.06			0.36				c0.41			0.08	
v/c Ratio	0.11	1.79		0.57	1.57			1.53			0.31	
Uniform Delay, d1	11.6	30.7		19.8	28.7			55.7			44.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.2	357.3		3.3	261.3			253.4			0.5	
Delay (s)	11.9	388.0		23.1	290.0			309.1			44.9	
Level of Service	B	F		C	F			F			D	
Approach Delay (s)		383.8			271.2			309.1			44.9	
Approach LOS		F			F			F			D	

Intersection Summary

HCM Average Control Delay	318.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.60		
Actuated Cycle Length (s)	152.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	159.3%	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		0.97			1.00			0.96			0.98	
Flt Protected		0.98			0.97			1.00			1.00	
Satd. Flow (prot)		1769			1803			1790			1816	
Flt Permitted		0.66			0.51			0.38			0.98	
Satd. Flow (perm)		1187			939			692			1779	
Volume (vph)	301	254	162	574	381	27	181	1526	599	12	1403	320
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)	327	276	176	624	414	29	197	1659	651	13	1525	348
Lane Group Flow (vph)	0	779	0	0	1067	0	0	2507	0	0	1886	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		44.0			44.0			44.0			44.0	
Effective Green, g (s)		46.0			46.0			46.0			46.0	
Actuated g/C Ratio		0.46			0.46			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)		546			432			318			818	
v/s Ratio Prot												
v/s Ratio Perm		0.66			c1.14			c3.62			1.06	
v/c Ratio		1.43			2.47			7.88			2.31	
Uniform Delay, d1		27.0			27.0			27.0			27.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		202.5			668.4			3104.1			591.4	
Delay (s)		229.5			695.4			3131.1			618.4	
Level of Service		F			F			F			F	
Approach Delay (s)		229.5			695.4			3131.1			618.4	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	1592.7	HCM Level of Service	F
HCM Volume to Capacity ratio	5.17		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	354.7%	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)	1843	2	370	1609	4	397
Peak Hour Factor	0.92	0.92	0.90	0.90	0.94	0.94
Hourly flow rate (veh/h)	2003	2	411	1788	4	422
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume			2005		4614	2004
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 %			0		0	0
cM capacity (veh/h)			285		0	75

Direction, Lane #	NB 1	SB 1	SB 2	NW 1
Volume Total	2005	411	1788	427
Volume Left	0	411	0	4
Volume Right	2	0	0	422
cSH	1700	285	1700	0
Volume to Capacity	1.18	1.44	1.05	Err
Queue Length (ft)	0	565	0	Err
Control Delay (s)	0.0	252.1	0.0	Err
Lane LOS		F		F
Approach Delay (s)	0.0	47.1		Err
Approach LOS				F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	164.7%	ICU Level of Service	H

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	172	33	67	1700	1474	194
Peak Hour Factor	0.50	0.50	0.90	0.90	0.96	0.96
Hourly flow rate (veh/h)	344	66	74	1889	1535	202
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	3674	1636	1738			
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	47	79			
cM capacity (veh/h)	4	124	362			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	410	1963	1738
Volume Left	344	74	0
Volume Right	66	0	202
cSH	5	362	1700
Volume to Capacity	80.87	0.21	1.02
Queue Length (ft)	Err	19	0
Control Delay (s)	Err	-30.5	0.0
Lane LOS	F	A	
Approach Delay (s)	Err	-30.5	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	982.7		
Intersection Capacity Utilization	229.7%	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	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	0.96		1.00	0.96	
Flt Protected		0.98		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1738		1770	1816		1770	1797		1770	1791	
Flt Permitted		0.64		0.41	1.00		0.10	1.00		0.12	1.00	
Satd. Flow (perm)		1142		770	1816		191	1797		218	1791	
Volume (vph)	398	226	339	446	334	68	435	1377	426	72	1234	423
Peak-hour factor, PHF	0.82	0.82	0.82	0.98	0.98	0.98	0.91	0.91	0.91	0.94	0.94	0.94
Adj. Flow (vph)	485	276	413	455	341	69	478	1513	468	77	1313	450
Lane Group Flow (vph)	0	1174	0	455	410	0	478	1981	0	77	1763	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)		33.0		43.0	43.0		45.0	45.0		33.0	33.0	
Effective Green, g (s)		35.0		45.0	45.0		47.0	47.0		35.0	35.0	
Actuated g/C Ratio		0.35		0.45	0.45		0.47	0.47		0.35	0.35	
Clearance Time (s)		6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Grp Cap (vph)		400		407	817		216	845		76	627	
v/s Ratio Prot				c0.07	0.23		0.18	c1.10			c0.98	
v/s Ratio Perm		c1.03		0.44			0.86			0.35		
v/c Ratio		2.94		1.12	0.50		2.21	2.34		1.01	2.81	
Uniform Delay, d1		32.5		57.4	19.5		48.2	26.5		32.5	32.5	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		877.5		80.7	2.2		560.6	608.7		106.9	819.7	
Delay (s)		910.0		138.0	21.7		608.8	635.2		139.4	852.2	
Level of Service		F		F	C		F	F		F	F	
Approach Delay (s)		910.0			82.9			630.0			822.4	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	663.1	HCM Level of Service	F
HCM Volume to Capacity ratio	2.75		
Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	228.1%	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		0.99			1.00			0.98			1.00	
Flt Protected		0.98			0.96			1.00			1.00	
Satd. Flow (prot)		1802			1790			1831			1855	
Flt Permitted		0.90			0.72			0.98			0.97	
Satd. Flow (perm)		1652			1346			1802			1791	
Volume (vph)	23	30	6	218	71	8	13	1536	220	13	1284	36
Peak-hour factor, PHF	0.67	0.67	0.67	0.77	0.77	0.77	0.90	0.90	0.90	0.87	0.87	0.87
Adj. Flow (vph)	34	45	9	283	92	10	14	1707	244	15	1476	41
Lane Group Flow (vph)	0	88	0	0	385	0	0	1965	0	0	1532	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		18.0			18.0			70.0			70.0	
Effective Green, g (s)		20.0			20.0			72.0			72.0	
Actuated g/C Ratio		0.20			0.20			0.72			0.72	
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)		330			269			1297			1290	
v/s Ratio Prot												
v/s Ratio Perm		0.05			c0.29			c1.09			0.86	
v/c Ratio		0.27			1.43			1.52			1.19	
Uniform Delay, d1		33.8			40.0			14.0			14.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.4			214.2			235.8			92.5	
Delay (s)		34.2			254.2			249.8			106.5	
Level of Service		C			F			F			F	
Approach Delay (s)		34.2			254.2			249.8			106.5	
Approach LOS		C			F			F			F	

Intersection Summary			
HCM Average Control Delay	190.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.50		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	172.3%	ICU Level of Service	H
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)	767	1305	1493	2	1	621
Peak Hour Factor	0.89	0.89	0.89	0.89	0.79	0.79
Hourly flow rate (veh/h)	862	1466	1678	2	1	786
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume	1680				4869	1679
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 %	0				0	0
cM capacity (veh/h)	381				0	117

Direction, Lane #	NB 1	NB 2	SB 1	SE 1
Volume Total	862	1466	1680	787
Volume Left	862	0	0	1
Volume Right	0	0	2	786
cSH	381	1700	1700	0
Volume to Capacity	2.26	0.86	0.99	Err
Queue Length (ft)	1627	0	0	Err
Control Delay (s)	598.7	0.0	0.0	Err
Lane LOS	F			F
Approach Delay (s)	221.6		0.0	Err
Approach LOS				F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	194.9%	ICU Level of Service	H

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	5081		3433	5027	
Flt Permitted	0.36	1.00	1.00	0.49	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	668	3539	2787	1773	1863	2787	3433	5081		3433	5027	
Volume (vph)	11	272	723	110	227	250	248	1262	7	715	1315	109
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	296	786	120	247	272	270	1372	8	777	1429	118
Lane Group Flow (vph)	12	296	786	120	247	272	270	1380	0	777	1547	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)	13.8	13.8	34.8	13.8	13.8	13.8	10.1	28.7		21.0	39.6	
Effective Green, g (s)	15.8	15.8	38.8	15.8	15.8	15.8	12.1	30.7		23.0	41.6	
Actuated g/C Ratio	0.19	0.19	0.48	0.19	0.19	0.19	0.15	0.38		0.28	0.51	
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)	130	686	1464	344	361	540	510	1914		969	2566	
v/s Ratio Prot		0.08	0.15		c0.13		0.08	c0.27		c0.23	0.31	
v/s Ratio Perm	0.02		0.13	0.07		0.10						
v/c Ratio	0.09	0.43	0.54	0.35	0.68	0.50	0.53	0.72		0.80	0.60	
Uniform Delay, d1	27.0	28.9	15.0	28.4	30.5	29.3	32.1	21.7		27.1	14.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.4	0.4	0.6	5.3	0.7	1.0	1.4		4.8	0.4	
Delay (s)	27.3	29.3	15.4	29.0	35.8	30.1	33.1	23.1		32.0	14.5	
Level of Service	C	C	B	C	D	C	C	C		C	B	
Approach Delay (s)		19.3			32.1			24.7			20.4	
Approach LOS		B			C			C			C	

Intersection Summary

HCM Average Control Delay	22.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	81.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.5%	ICU Level of Service	C

c Critical Lane Group

```
*****************************************************************************
*                                                                           *
*   1:4:06                ROUTE 50/ROUTE 67 ALT 1 FB                    31  *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* 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    PM  *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *         *
*RT 50 NB  *1.05*    0 1819  351  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 67 WB  *1.05*    0  373   16  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 5067 SB*1.05*    0 1747  791  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
*BALL EB   *1.05*    0  264  137  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*****************************************************************************
*                                                          *                 *
* FLOW        veh    2170    389   2538    401             * AVEDEL  s  26.5 *
* CAPACITY    veh    2597   1016   2960    864             * LOS   SIG     C *
* AVE DELAY  mins    0.48   0.11   0.50   0.18             * LOS UNSIG     D *
* MAX DELAY  mins    1.22   0.20   1.26   0.37             *                 *
* AVE QUEUE   veh      18      1     21      1             * VEHIC HRS  40.5 *
* MAX QUEUE   veh      41      1     49      2             * COST    $   607 *
*                                                          *                 *
*****************************************************************************
```

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	0.23		1.00		1.00			1.00	1.00		1.00	
Satd. Flow (perm)	421		1583		3539			3539	1583		3539	
Volume (vph)	276	0	544	0	724	0	0	1168	293	0	1226	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)	300	0	591	0	787	0	0	1270	318	0	1333	0
Lane Group Flow (vph)	300	0	591	0	787	0	0	1270	318	0	1333	0
Turn Type	custom		custom						pm+ov			
Protected Phases	7				8			2	7		2	
Permitted Phases	8 7		4						2			
Actuated Green, G (s)	20.7		26.7		15.7			26.0	31.0		26.0	
Effective Green, g (s)	24.7		28.7		17.7			28.0	35.0		28.0	
Actuated g/C Ratio	0.38		0.44		0.27			0.43	0.54		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)	307		702		968			1532	954		1532	
v/s Ratio Prot	0.11				0.22			0.36	0.04		c0.38	
v/s Ratio Perm	c0.27		c0.37						0.16			
v/c Ratio	0.98		0.84		0.81			0.83	0.33		0.87	
Uniform Delay, d1	17.4		16.0		22.0			16.2	8.3		16.7	
Progression Factor	1.00		1.00		1.00			1.00	1.00		1.00	
Incremental Delay, d2	44.7		9.0		5.3			3.9	0.2		5.7	
Delay (s)	62.0		25.0		27.2			20.1	8.5		22.4	
Level of Service	E		C		C			C	A		C	
Approach Delay (s)		37.5			27.2			17.8			22.4	
Approach LOS		D			C			B			C	

Intersection Summary			
HCM Average Control Delay	24.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	64.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.2%	ICU Level of Service	D
c Critical Lane Group			

```
*******************************************************************************
*                                                                             *
*   1:4:06                ROUTE 67/BROOKLINE RD ALT 1 FB                  13  *
*                                                                             *
*******************************************************************************
*                                                 *                           *
* 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    PM *
*                                                 *                           *
*******************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *        *
*RT 67 NB  *1.05* 1226  724    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 67 SB  *1.05*    0 1168    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*BROOK EB  *1.05*  544  276    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *        *
*          *    *                            *    *  *               *        *
*          *    *                            *    *  *               *        *
*          *    *                            *    *  *               *        *
*******************************************************************************
*                                                          *                  *
* FLOW        veh    1950   1168    820                    * AVEDEL  s    7.4 *
* CAPACITY    veh    2450   2149   1850                    * LOS   SIG      A *
* AVE DELAY  mins    0.19   0.06   0.06                    * LOS UNSIG      A *
* MAX DELAY  mins    0.39   0.11   0.10                    *                  *
* AVE QUEUE   veh       6      1      1                    * VEHIC HRS    8.1 *
* MAX QUEUE   veh      11      2      1                    * COST    $    121 *
*                                                          *                  *
*******************************************************************************
```

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	3512		1770	1863	1583		1815	1583
Flt Permitted	0.09	1.00	1.00	0.08	1.00		0.36	1.00	1.00		0.80	1.00
Satd. Flow (perm)	169	3539	1583	155	3512		673	1863	1583		1483	1583
Volume (vph)	12	1296	198	108	1228	65	224	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	1409	215	117	1335	71	243	71	174	98	87	23
Lane Group Flow (vph)	13	1409	215	117	1406	0	243	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)	44.6	42.2	42.2	53.6	46.7		25.1	25.1	32.0		14.0	16.4
Effective Green, g (s)	48.6	44.2	44.2	57.1	48.7		27.1	27.1	36.0		16.0	20.4
Actuated g/C Ratio	0.53	0.48	0.48	0.62	0.53		0.29	0.29	0.39		0.17	0.22
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)	165	1697	759	252	1855		282	548	687		257	350
v/s Ratio Prot	0.00	c0.40		c0.04	c0.40		c0.07	0.04	0.02			0.00
v/s Ratio Perm	0.04		0.14	0.24			c0.19		0.09		0.12	0.01
v/c Ratio	0.08	0.83	0.28	0.46	0.76		0.86	0.13	0.25		0.72	0.07
Uniform Delay, d1	27.4	20.8	14.5	29.5	17.1		29.8	23.9	19.0		36.0	28.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2	3.6	0.2	1.4	1.8		22.6	0.1	0.2		9.3	0.1
Delay (s)	27.6	24.4	14.7	30.8	18.9		52.4	24.0	19.2		45.3	28.4
Level of Service	C	C	B	C	B		D	C	B		D	C
Approach Delay (s)		23.1			19.9			36.5			43.4	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM Average Control Delay	24.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	92.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.6%	ICU Level of Service	C
c Critical Lane Group			

```
*******************************************************************************
*                                                                             *
*   1:4:06                ROUTE 67/EASTLINE RD ALT 1 FB                   16  *
*                                                                             *
*******************************************************************************
*                                                 *                           *
* 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    PM *
*                                                 *                           *
*******************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *              *         *
* RT 67 EB *1.05*    0 1520   20  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* EAST NB  *1.05*    0  109  273  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 67 WB *1.05*    0 1558  126  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* EAST SB  *1.05*   14   54   42  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*******************************************************************************
*                                                                 *           *
* FLOW        veh    1540    382   1684    110                    * AVEDEL  s   5.2 *
* CAPACITY    veh    2486   1571   2365    427                    * LOS   SIG     A *
* AVE DELAY  mins    0.06   0.05   0.11   0.24                    * LOS UNSIG     A *
* MAX DELAY  mins    0.12   0.08   0.20   0.47                    *                 *
* AVE QUEUE   veh       2      0      3      0                    * VEHIC HRS   5.4 *
* MAX QUEUE   veh       3      0      5      1                    * COST    $    81 *
*                                                                 *                 *
*******************************************************************************
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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	0.95		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	3379		3433	3502		1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.18	1.00	1.00
Satd. Flow (perm)	3433	3379		3433	3502		1770	5085	1583	337	5085	1583
Volume (vph)	236	283	122	445	253	19	113	1055	420	16	1113	222
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)	257	308	133	484	275	21	123	1147	457	17	1210	241
Lane Group Flow (vph)	257	441	0	484	296	0	123	1147	457	17	1210	241
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)	10.6	13.5		13.8	16.7		6.5	30.6	44.4	26.9	25.5	36.1
Effective Green, g (s)	12.6	15.5		15.8	18.7		8.5	32.6	48.4	30.9	27.5	40.1
Actuated g/C Ratio	0.15	0.19		0.19	0.22		0.10	0.39	0.58	0.37	0.33	0.48
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)	519	629		651	786		181	1990	996	183	1679	838
v/s Ratio Prot	0.07	c0.13		c0.14	c0.08		c0.07	0.23	0.09	0.00	c0.24	0.04
v/s Ratio Perm									0.20	0.03		0.11
v/c Ratio	0.50	0.70		0.74	0.38		0.68	0.58	0.46	0.09	0.72	0.29
Uniform Delay, d1	32.4	31.7		31.8	27.4		36.1	19.9	10.0	16.9	24.5	13.0
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	0.7	3.5		4.6	0.3		9.7	0.4	0.3	0.2	1.6	0.2
Delay (s)	33.2	35.3		36.4	27.7		45.8	20.3	10.3	17.1	26.1	13.2
Level of Service	C	D		D	C		D	C	B	B	C	B
Approach Delay (s)		34.5			33.1			19.5			23.9	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM Average Control Delay	25.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	83.3	Sum of lost time (s)	20.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
c Critical Lane Group			

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	PM

LEG NAME	PCU	VEH	TURNS (1st exit, 2nd..U)				FLOF	CL	FLOW RATIO			FLOW TIME		
RT 50 NB	1.05	0	1526	181	0		1.00	50	0.75	1.125	0.75	15	30	45
BROOK WB	1.05	0	381	574	0		1.00	50	0.75	1.125	0.75	15	30	45
RT 50 SB	1.05	0	1403	12	0		1.00	50	0.75	1.125	0.75	15	30	45
BROOK EB	1.05	0	254	301	0		1.00	50	0.75	1.125	0.75	15	30	45

FLOW	veh	1707	955	1415	555
CAPACITY	veh	2269	1336	1901	1349
AVE DELAY	mins	0.15	0.42	0.19	0.08
MAX DELAY	mins	0.30	1.01	0.41	0.15
AVE QUEUE	veh	4	7	5	1
MAX QUEUE	veh	7	15	8	1

AVEDEL	s	12.6
LOS SIG		B
LOS UNSIG		B
VEHIC HRS		16.3
COST	$	244

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		507	3539	1770	2787
Volume (vph)	1334	2	284	1349	4	287
Peak-hour factor, PHF	0.92	0.92	0.90	0.90	0.94	0.94
Adj. Flow (vph)	1450	2	316	1499	4	305
Lane Group Flow (vph)	1452	0	316	1499	4	305
Turn Type			pm+pt			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases			6			8
Actuated Green, G (s)	65.7		76.7	76.7	1.3	6.3
Effective Green, g (s)	67.7		78.7	78.7	3.3	10.3
Actuated g/C Ratio	0.75		0.87	0.87	0.04	0.11
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)	2661		671	3095	65	443
v/s Ratio Prot	c0.41		0.04	0.42	0.00	c0.05
v/s Ratio Perm			0.38			0.06
v/c Ratio	0.55		0.47	0.48	0.06	0.69
Uniform Delay, d1	4.7		3.7	1.2	41.9	38.3
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8		0.5	0.5	0.4	4.4
Delay (s)	5.5		4.2	1.8	42.3	42.7
Level of Service	A		A	A	D	D
Approach Delay (s)	5.5			2.2	42.7	
Approach LOS	A			A	D	

Intersection Summary			
HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
c Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06                ROUTE 50/ROUTE 146A ALT 1 FB                  10  *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* 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    PM *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *         *
*RT 50 NB  *1.05*    2 1843    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 146A EB*1.05*  397    4    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 50 SB  *1.05* 1609  370    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*****************************************************************************
*                                                          *                 *
* FLOW        veh    1845    401   1979                    * AVEDEL  s   7.6 *
* CAPACITY    veh    2387   1396   2633                    * LOS   SIG     A *
* AVE DELAY  mins    0.16   0.06   0.11                    * LOS UNSIG     A *
* MAX DELAY  mins    0.33   0.11   0.22                    *                 *
* AVE QUEUE   veh       5      0      4                    * VEHIC HRS   9.0 *
* MAX QUEUE   veh       9      1      6                    * COST    $   134 *
*                                                          *                 *
*****************************************************************************
```

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)	1714		1770	3539	3493	
Flt Permitted	0.97		0.10	1.00	1.00	
Satd. Flow (perm)	1714		187	3539	3493	
Volume (vph)	138	85	50	1245	1257	120
Peak-hour factor, PHF	0.50	0.50	0.90	0.90	0.96	0.96
Adj. Flow (vph)	276	170	56	1383	1309	125
Lane Group Flow (vph)	446	0	56	1383	1434	0
Turn Type			pm+pt			
Protected Phases	4		5	2	6	
Permitted Phases			2			
Actuated Green, G (s)	39.1		98.9	98.9	88.1	
Effective Green, g (s)	41.1		100.9	100.9	90.1	
Actuated g/C Ratio	0.27		0.67	0.67	0.60	
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)	470		198	2381	2098	
v/s Ratio Prot	c0.26		0.01	c0.39	c0.41	
v/s Ratio Perm			0.18			
v/c Ratio	0.95		0.28	0.58	0.68	
Uniform Delay, d1	53.4		15.7	13.2	20.3	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	28.6		0.8	1.0	1.8	
Delay (s)	82.1		16.5	14.2	22.1	
Level of Service	F		B	B	C	
Approach Delay (s)	82.1			14.3	22.1	
Approach LOS	F			B	C	

Intersection Summary			
HCM Average Control Delay	26.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
c Critical Lane Group			

```
*******************************************************************************
*                                                                             *
*   1:4:06                  ROUTE 50/FOREST ALT 1 FB                      15  *
*                                                                             *
*******************************************************************************
*                                                   *                         *
* 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    PM  *
*                                                   *                         *
*******************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *         *
* RT 50 NB *1.05* 1700   67    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*  194 1474    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
* FOREST WB*1.05*   33  172    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*******************************************************************************
*                                                          *                  *
* FLOW        veh    1767   1668    205                    * AVEDEL  s    5.1 *
* CAPACITY    veh    2520   2591    571                    * LOS   SIG      A *
* AVE DELAY  mins    0.09   0.07   0.18                    * LOS UNSIG      A *
* MAX DELAY  mins    0.17   0.12   0.33                    *                  *
* AVE QUEUE   veh       3      2      1                    * VEHIC HRS    5.1 *
* MAX QUEUE   veh       4      3      1                    * COST    $     77 *
*                                                          *                  *
*******************************************************************************
```

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	3449		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	3449		3433	3539	1583	3433	3539	1583
Volume (vph)	305	275	303	395	276	57	309	1000	345	55	1010	291
Peak-hour factor, PHF	0.82	0.82	0.82	0.98	0.98	0.98	0.91	0.91	0.91	0.94	0.94	0.94
Adj. Flow (vph)	372	335	370	403	282	58	340	1099	379	59	1074	310
Lane Group Flow (vph)	372	335	370	403	340	0	340	1099	379	59	1074	310
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)	11.7	13.7	13.7	11.9	13.9		11.5	42.5	42.5	3.1	34.1	34.1
Effective Green, g (s)	13.7	15.7	15.7	13.9	15.9		13.5	44.5	44.5	5.1	36.1	36.1
Actuated g/C Ratio	0.14	0.16	0.16	0.15	0.17		0.14	0.47	0.47	0.05	0.38	0.38
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)	494	584	460	501	576		487	1654	740	184	1342	600
v/s Ratio Prot	0.11	0.09		c0.12	0.10		c0.10	0.31		0.02	c0.30	
v/s Ratio Perm			c0.13						0.24			0.20
v/c Ratio	0.75	0.57	0.80	0.80	0.59		0.70	0.66	0.51	0.32	0.80	0.52
Uniform Delay, d1	39.1	36.7	38.3	39.3	36.6		38.9	19.6	17.7	43.4	26.3	22.8
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	6.4	1.4	9.8	9.1	1.6		4.3	1.0	0.6	1.0	3.5	0.8
Delay (s)	45.5	38.0	48.1	48.4	38.3		43.3	20.6	18.4	44.4	29.9	23.6
Level of Service	D	D	D	D	D		D	C	B	D	C	C
Approach Delay (s)		44.1			43.8			24.4			29.1	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	32.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	95.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	73.5%	ICU Level of Service	C
c Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06              ROUTE 50/LAKE HILL RD ALT 1 FB                  21  *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* 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    PM  *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *         *
* RT 50 NB *1.05*    0 1377  435  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* LHR WB   *1.05*    0  334  446  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*    0 1234   72  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* LHR EB   *1.05*    0  226  339  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*****************************************************************************
*                                                          *                 *
* FLOW        veh    1812    780   1306    565             * AVEDEL  s  12.3 *
* CAPACITY    veh    2391   1244   1688   1357             * LOS   SIG     B *
* AVE DELAY  mins    0.15   0.24   0.32   0.08             * LOS UNSIG     B *
* MAX DELAY  mins    0.31   0.52   0.73   0.14             *                 *
* AVE QUEUE   veh       5      3      7      1             * VEHIC HRS  15.3 *
* MAX QUEUE   veh       8      6     14      1             * COST    $   229 *
*                                                          *                 *
*****************************************************************************
```

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)		1821		1770	1803			3474			3526	
Flt Permitted		0.87		0.46	1.00			0.95			0.93	
Satd. Flow (perm)		1603		861	1803			3285			3294	
Volume (vph)	27	55	5	166	48	13	8	1113	155	11	1059	23
Peak-hour factor, PHF	0.67	0.67	0.67	0.77	0.77	0.77	0.90	0.90	0.90	0.87	0.87	0.87
Adj. Flow (vph)	40	82	7	216	62	17	9	1237	172	13	1217	26
Lane Group Flow (vph)	0	129	0	216	79	0	0	1418	0	0	1256	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)		4.2		14.2	14.2			34.3			34.3	
Effective Green, g (s)		6.2		16.2	16.2			36.3			36.3	
Actuated g/C Ratio		0.10		0.27	0.27			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)		164		321	483			1971			1976	
v/s Ratio Prot				c0.07	0.04							
v/s Ratio Perm		0.08		c0.11				c0.43			0.38	
v/c Ratio		0.79		0.67	0.16			0.72			0.64	
Uniform Delay, d1		26.5		19.2	17.0			8.5			7.8	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		21.5		5.5	0.2			1.3			0.7	
Delay (s)		48.0		24.7	17.1			9.8			8.5	
Level of Service		D		C	B			A			A	
Approach Delay (s)		48.0			22.6			9.8			8.5	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	12.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	60.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.1%	ICU Level of Service	B
c Critical Lane Group			

```
*******************************************************************************
*                                                                             *
*   1:4:06                ROUTE 50/OUTLET RD ALT 1 FB                     5   *
*                                                                             *
*******************************************************************************
*                                                   *                         *
* 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    PM  *
*                                                   *                         *
*******************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *         *
* RT 50 NB *1.05*  220 1536   13  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* OUTLET WB*1.05*    8   71  218  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*   36 1284   13  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* CHAR EB  *1.05*    6   30   23  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*******************************************************************************
*                                                          *                  *
* FLOW        veh    1769    297   1333     59             * AVEDEL  s    5.9 *
* CAPACITY    veh    2591    528   2433    553             * LOS   SIG      A *
* AVE DELAY  mins    0.08   0.41   0.05   0.12             * LOS UNSIG      A *
* MAX DELAY  mins    0.14   0.85   0.09   0.21             *                  *
* AVE QUEUE   veh       2      2      1      0             * VEHIC HRS    5.7 *
* MAX QUEUE   veh       4      4      2      0             * COST    $     85 *
*                                                          *                  *
*******************************************************************************
```

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	0.14	1.00	1.00			1.00
Satd. Flow (perm)	257	3539	3538			1611
Volume (vph)	492	979	1206	2	0	538
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.79	0.79
Adj. Flow (vph)	553	1100	1355	2	0	681
Lane Group Flow (vph)	553	1100	1357	0	0	681
Turn Type	pm+pt					custom
Protected Phases	5	2	6			5
Permitted Phases	2					5
Actuated Green, G (s)	53.9	59.9	23.0			24.9
Effective Green, g (s)	55.9	59.9	25.0			26.9
Actuated g/C Ratio	0.93	1.00	0.42			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)	919	3539	1477			723
v/s Ratio Prot	0.27	0.31	c0.38			c0.42
v/s Ratio Perm	0.29					
v/c Ratio	0.60	0.31	0.92			0.94
Uniform Delay, d1	9.0	0.0	16.5			15.8
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	1.1	0.1	9.4			20.5
Delay (s)	10.1	0.1	25.9			36.2
Level of Service	B	A	C			D
Approach Delay (s)		3.4	25.9		36.2	
Approach LOS		A	C		D	

Intersection Summary			
HCM Average Control Delay	17.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	59.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	86.4%	ICU Level of Service	D
c Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06              ROUTE 50/MIDDLELINE RD ALT 1 FB                  8  *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* 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    PM *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *         *
* RT 50 NB *1.05* 1305  767    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*    2 1493    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
* MID WB   *1.05*  621    1    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*****************************************************************************
*                                                          *                 *
* FLOW        veh    2072   1495    622                    * AVEDEL  s   7.5 *
* CAPACITY    veh    2635   2120   1631                    * LOS   SIG     A *
* AVE DELAY  mins    0.15   0.12   0.06                    * LOS UNSIG     A *
* MAX DELAY  mins    0.30   0.24   0.11                    *                 *
* AVE QUEUE   veh       5      3      1                    * VEHIC HRS   8.7 *
* MAX QUEUE   veh       9      5      1                    * COST    $   130 *
*                                                          *                 *
*****************************************************************************
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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	0.98	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1678			1743		1770	1863		1770	1834	
Flt Permitted		0.99			0.37		0.18	1.00		0.18	1.00	
Satd. Flow (perm)		1657			643		339	1863		339	1834	
Volume (vph)	16	394	1103	138	265	275	302	1558	0	797	1490	171
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)	17	428	1199	150	288	299	328	1693	0	866	1620	186
Lane Group Flow (vph)	0	1644	0	0	737	0	328	1693	0	866	1806	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)		18.0			18.0		24.0	20.0		24.0	20.0	
Effective Green, g (s)		20.0			20.0		28.0	22.0		28.0	22.0	
Actuated g/C Ratio		0.33			0.33		0.47	0.37		0.47	0.37	
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)		552			214		301	683		301	672	
v/s Ratio Prot							0.11	0.91		c0.29	0.98	
v/s Ratio Perm		0.99			c1.15		0.40			c1.05		
v/c Ratio		2.98			3.44		1.09	2.48		2.88	2.69	
Uniform Delay, d1		20.0			20.0		10.8	19.0		29.3	19.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		895.1			1111.5		78.0	669.8		853.8	763.6	
Delay (s)		915.1			1131.5		88.7	688.8		883.0	782.6	
Level of Service		F			F		F	F		F	F	
Approach Delay (s)		915.1			1131.5			591.4			815.2	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	807.4	HCM Level of Service	F
HCM Volume to Capacity ratio	3.11		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	289.4%	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)	278	403	1277	337	584	1233
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	302	438	1388	366	635	1340
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	4181	1571			1754	
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			0	
cM capacity (veh/h)	0	136			357	

Direction, Lane #	EB 1	SB 1	NW 1
Volume Total	740	1754	1975
Volume Left	302	0	635
Volume Right	438	366	0
cSH	0	1700	357
Volume to Capacity	Err	1.03	1.78
Queue Length (ft)	Err	0	1016
Control Delay (s)	Err	0.0	1368.4
Lane LOS	F		F
Approach Delay (s)	Err	0.0	1368.4
Approach LOS	F		

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	270.5%	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	0.99			0.97			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.98	
Satd. Flow (prot)	1770	1817		1770	1844			1755			1797	
Flt Permitted	0.04	1.00		0.13	1.00			0.73			0.78	
Satd. Flow (perm)	82	1817		235	1844			1317			1430	
Volume (vph)	20	1468	287	126	1424	105	274	109	119	42	54	14
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)	22	1596	312	137	1548	114	298	118	129	46	59	15
Lane Group Flow (vph)	22	1908	0	137	1662	0	0	545	0	0	120	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)	91.4	89.0		99.4	93.0			39.0			39.0	
Effective Green, g (s)	95.4	91.0		103.4	95.0			41.0			41.0	
Actuated g/C Ratio	0.63	0.60		0.68	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)	100	1085		244	1149			354			385	
v/s Ratio Prot	0.01	c1.05		c0.03	0.90							
v/s Ratio Perm	0.13			0.35				c0.41			0.08	
v/c Ratio	0.22	1.76		0.56	1.45			1.54			0.31	
Uniform Delay, d1	72.8	30.7		18.9	28.7			55.7			44.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.1	345.1		2.9	205.9			256.5			0.5	
Delay (s)	73.9	375.8		21.9	234.6			312.2			44.9	
Level of Service	E	F		C	F			F			D	
Approach Delay (s)		372.4			218.4			312.2			44.9	
Approach LOS		F			F			F			D	

Intersection Summary			
HCM Average Control Delay	292.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.58		
Actuated Cycle Length (s)	152.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	157.8%	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			0.97			0.97	
Flt Protected		0.98			0.97			1.00			1.00	
Satd. Flow (prot)		1785			1809			1793			1802	
Flt Permitted		0.61			0.57			0.56			0.97	
Satd. Flow (perm)		1116			1062			1000			1756	
Volume (vph)	303	255	93	455	402	27	111	1221	459	12	1144	364
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)	329	277	101	495	437	29	121	1327	499	13	1243	396
Lane Group Flow (vph)	0	707	0	0	961	0	0	1947	0	0	1652	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		42.0			42.0			46.0			46.0	
Effective Green, g (s)		44.0			44.0			48.0			48.0	
Actuated g/C Ratio		0.44			0.44			0.48			0.48	
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)		491			467			480			843	
v/s Ratio Prot												
v/s Ratio Perm		0.63			c0.91			c1.95			0.94	
v/c Ratio		1.44			2.06			4.06			1.96	
Uniform Delay, d1		28.0			28.0			26.0			26.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		209.3			483.4			1380.3			436.2	
Delay (s)		237.3			511.4			1406.3			462.2	
Level of Service		F			F			F			F	
Approach Delay (s)		237.3			511.4			1406.3			462.2	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	790.0	HCM Level of Service	F
HCM Volume to Capacity ratio	3.10		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	301.6%	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)	1588	2	321	1395	4	329
Peak Hour Factor	0.92	0.92	0.90	0.90	0.94	0.94
Hourly flow rate (veh/h)	1726	2	357	1550	4	350
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume			1728		3991	1727
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 %			2		0	0
cM capacity (veh/h)			365		0	110

Direction, Lane #	NB 1	SB 1	SB 2	NW 1
Volume Total	1728	357	1550	354
Volume Left	0	357	0	4
Volume Right	2	0	0	350
cSH	1700	365	1700	6
Volume to Capacity	1.02	0.98	0.91	59.85
Queue Length (ft)	0	276	0	Err
Control Delay (s)	0.0	75.8	0.0	Err
Lane LOS		F		F
Approach Delay (s)	0.0	14.2		Err
Approach LOS				F

Intersection Summary			
Average Delay	894.7		
Intersection Capacity Utilization	142.6%	ICU Level of Service	H

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	103	33	67	1514	1331	124
Peak Hour Factor	0.50	0.50	0.90	0.90	0.96	0.96
Hourly flow rate (veh/h)	206	66	74	1682	1386	129
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	3282	1451	1516			
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	59	83			
cM capacity (veh/h)	8	160	441			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	272	1757	1516
Volume Left	206	74	0
Volume Right	66	0	129
cSH	11	441	1700
Volume to Capacity	25.65	0.17	0.89
Queue Length (ft)	Err	15	0
Control Delay (s)	Err	229.9	0.0
Lane LOS	F	F	
Approach Delay (s)	Err	229.9	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	881.3		
Intersection Capacity Utilization	198.9%	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		0.94		1.00	0.97		1.00	0.95		1.00	0.96	
Flt Protected		0.98		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1723		1770	1798		1770	1763		1770	1784	
Flt Permitted		0.57		0.32	1.00		0.11	1.00		0.12	1.00	
Satd. Flow (perm)		999		597	1798		201	1763		226	1784	
Volume (vph)	377	273	527	684	380	115	621	1190	659	118	1066	420
Peak-hour factor, PHF	0.82	0.82	0.82	0.98	0.98	0.98	0.91	0.91	0.91	0.94	0.94	0.94
Adj. Flow (vph)	460	333	643	698	388	117	682	1308	724	126	1134	447
Lane Group Flow (vph)	0	1436	0	698	505	0	682	2032	0	126	1581	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)		32.0		43.0	43.0		45.0	45.0		31.0	31.0	
Effective Green, g (s)		34.0		45.0	45.0		47.0	47.0		33.0	33.0	
Actuated g/C Ratio		0.34		0.45	0.45		0.47	0.47		0.33	0.33	
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)		340		351	809		251	829		75	589	
v/s Ratio Prot				c0.14	0.28		0.27	c1.15			0.89	
v/s Ratio Perm		c1.44		0.76			c1.00			0.56		
v/c Ratio		4.22		1.99	0.62		2.72	2.45		1.68	2.68	
Uniform Delay, d1		33.0		53.9	21.0		47.2	26.5		33.5	33.5	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1457.5		455.0	1.5		783.9	656.7		356.8	762.7	
Delay (s)		1490.5		508.9	22.5		831.1	683.2		390.3	796.2	
Level of Service		F		F	C		F	F		F	F	
Approach Delay (s)		1490.5			304.7			720.3			766.3	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	817.3	HCM Level of Service	F
HCM Volume to Capacity ratio	3.22		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	259.0%	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		0.99			1.00			0.99			1.00	
Flt Protected		0.98			0.97			1.00			1.00	
Satd. Flow (prot)		1802			1796			1836			1855	
Flt Permitted		0.85			0.72			0.98			0.97	
Satd. Flow (perm)		1556			1335			1804			1803	
Volume (vph)	23	30	6	148	71	8	13	1308	150	13	1189	36
Peak-hour factor, PHF	0.67	0.67	0.67	0.77	0.77	0.77	0.90	0.90	0.90	0.87	0.87	0.87
Adj. Flow (vph)	34	45	9	192	92	10	14	1453	167	15	1367	41
Lane Group Flow (vph)	0	88	0	0	294	0	0	1634	0	0	1423	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		22.0			22.0			96.0			96.0	
Effective Green, g (s)		24.0			24.0			98.0			98.0	
Actuated g/C Ratio		0.18			0.18			0.75			0.75	
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)		287			246			1360			1359	
v/s Ratio Prot												
v/s Ratio Perm		0.06			c0.22			c0.91			0.79	
v/c Ratio		0.31			1.20			1.20			1.05	
Uniform Delay, d1		45.8			53.0			16.0			16.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.6			120.5			98.0			37.7	
Delay (s)		46.4			173.5			114.0			53.7	
Level of Service		D			F			F			D	
Approach Delay (s)		46.4			173.5			114.0			53.7	
Approach LOS		D			F			F			D	

Intersection Summary			
HCM Average Control Delay	92.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	143.5%	ICU Level of Service	H
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)	602	1218	1327	2	1	459
Peak Hour Factor	0.89	0.89	0.89	0.89	0.79	0.79
Hourly flow rate (veh/h)	676	1369	1491	2	1	581
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume	1493				4213	1492
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 %	0				0	0
cM capacity (veh/h)	449				0	152

Direction, Lane #	NB 1	NB 2	SB 1	SE 1
Volume Total	676	1369	1493	582
Volume Left	676	0	0	1
Volume Right	0	0	2	581
cSH	449	1700	1700	0
Volume to Capacity	1.50	0.81	0.88	Err
Queue Length (ft)	888	0	0	Err
Control Delay (s)	262.0	0.0	0.0	Err
Lane LOS	F			F
Approach Delay (s)	86.6		0.0	Err
Approach LOS				F

Intersection Summary			
Average Delay		Err	
Intersection Capacity Utilization	162.1%	ICU Level of Service	H

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	5016	
Flt Permitted	0.41	1.00	1.00	0.39	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	771	3539	2787	728	1863	1583	3433	5081		3433	5016	
Volume (vph)	11	285	777	128	246	229	227	1196	7	789	1221	122
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	310	845	139	267	249	247	1300	8	858	1327	133
Lane Group Flow (vph)	12	310	845	139	267	249	247	1308	0	858	1460	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)	18.9	18.1	42.2	25.3	21.3	21.3	11.3	29.5		24.1	42.3	
Effective Green, g (s)	22.9	20.1	46.2	29.3	23.3	23.3	13.3	31.5		26.1	44.3	
Actuated g/C Ratio	0.23	0.20	0.46	0.29	0.23	0.23	0.13	0.32		0.26	0.44	
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)	205	713	1403	277	435	370	458	1605		899	2229	
v/s Ratio Prot	0.00	0.09	0.16	c0.03	0.14		0.07	c0.26		c0.25	0.29	
v/s Ratio Perm	0.01		0.15	0.12		c0.16						
v/c Ratio	0.06	0.43	0.60	0.50	0.61	0.67	0.54	0.81		0.95	0.66	
Uniform Delay, d1	30.0	34.8	19.9	27.3	34.2	34.7	40.3	31.4		36.2	21.7	
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	0.4	0.7	1.4	2.6	4.8	1.2	3.3		19.7	0.7	
Delay (s)	30.1	35.3	20.6	28.7	36.7	39.5	41.6	34.7		55.9	22.4	
Level of Service	C	D	C	C	D	D	D	C		E	C	
Approach Delay (s)		24.6			36.1			35.8			34.8	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM Average Control Delay	33.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	99.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	80.5%	ICU Level of Service	D
c Critical Lane Group			

```
*******************************************************************************
*                                                                             *
*   1:4:06                ROUTE 50/ROUTE 67 ALT 2 FB                      36  *
*                                                                             *
*******************************************************************************
*                                                 *                           *
* 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    PM  *
*                                                 *                           *
*******************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *         *
*RT 50 NB  *1.05*    0 1558  302  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 67 WB  *1.05*    0  394   16  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 5067 SB*1.05*    0 1490  797  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
*BALL EB   *1.05*    0  265  138  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*******************************************************************************
*                                                          *                  *
* FLOW        veh    1860    410   2287    403             * AVEDEL  s    7.4 *
* CAPACITY    veh    2591   1206   2982   1018             * LOS   SIG      A *
* AVE DELAY  mins    0.12   0.08   0.13   0.12             * LOS UNSIG      A *
* MAX DELAY  mins    0.25   0.15   0.28   0.23             *                  *
* AVE QUEUE   veh       4      1      5      1             * VEHIC HRS   10.2 *
* MAX QUEUE   veh       7      1      9      1             * COST    $    153 *
*                                                          *                  *
*******************************************************************************
```

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	0.21		1.00		1.00			1.00	1.00		1.00	
Satd. Flow (perm)	384		1583		3539			3539	1583		3539	
Volume (vph)	278	0	403	0	584	0	0	1277	337	0	1233	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)	302	0	438	0	635	0	0	1388	366	0	1340	0
Lane Group Flow (vph)	302	0	438	0	635	0	0	1388	366	0	1340	0
Turn Type	custom		custom						pm+ov			
Protected Phases	7				8			1	7		1	
Permitted Phases	8 7		4						1			
Actuated Green, G (s)	31.6		37.6		17.4			37.9	52.1		37.9	
Effective Green, g (s)	35.6		39.6		19.4			39.9	56.1		39.9	
Actuated g/C Ratio	0.41		0.45		0.22			0.46	0.64		0.46	
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)	413		716		785			1614	1087		1614	
v/s Ratio Prot	c0.14				c0.18			c0.39	0.06		0.38	
v/s Ratio Perm	0.16		0.28						0.17			
v/c Ratio	0.73		0.61		0.81			0.86	0.34		0.83	
Uniform Delay, d1	19.7		18.1		32.3			21.3	7.2		20.8	
Progression Factor	1.00		1.00		1.00			1.00	1.00		1.00	
Incremental Delay, d2	6.5		1.6		6.2			4.8	0.2		3.8	
Delay (s)	26.2		19.7		38.5			26.1	7.4		24.6	
Level of Service	C		B		D			C	A		C	
Approach Delay (s)		22.4			38.5			22.2			24.6	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM Average Control Delay	25.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	87.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.7%	ICU Level of Service	D
c Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06              ROUTE 67/BROOKLINE RD ALT 2 FB                  15  *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* 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    PM  *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *         *
*RT 67 NB  *1.05* 1233  584    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 67 SB  *1.05*    0 1227    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*BROOK EB  *1.05*  403  278    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*****************************************************************************
*                                                          *                 *
* FLOW        veh    1817   1227    681                    * AVEDEL  s   5.2 *
* CAPACITY    veh    2449   2243   1810                    * LOS   SIG     A *
* AVE DELAY  mins    0.12   0.06   0.05                    * LOS UNSIG     A *
* MAX DELAY  mins    0.23   0.10   0.09                    *                 *
* AVE QUEUE   veh       4      1      1                    * VEHIC HRS   5.4 *
* MAX QUEUE   veh       6      2      1                    * COST    $    81 *
*                                                          *                 *
*****************************************************************************
```

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	3512		1770	1863	1583		1815	1583
Flt Permitted	0.10	1.00	1.00	0.09	1.00		0.40	1.00	1.00		0.80	1.00
Satd. Flow (perm)	180	3539	1583	164	3512		737	1863	1583		1483	1583
Volume (vph)	12	1283	211	108	1222	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	1395	229	117	1328	71	263	71	174	98	87	23
Lane Group Flow (vph)	13	1395	229	117	1399	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)	41.9	39.5	39.5	50.9	44.0		25.8	25.8	32.7		15.7	18.1
Effective Green, g (s)	45.9	41.5	41.5	54.4	46.0		27.8	27.8	36.7		17.7	22.1
Actuated g/C Ratio	0.51	0.46	0.46	0.60	0.51		0.31	0.31	0.41		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)	169	1628	728	257	1791		297	574	714		291	388
v/s Ratio Prot	0.00	c0.39		c0.04	c0.40		c0.06	0.04	0.02			0.00
v/s Ratio Perm	0.04		0.14	0.23			c0.21		0.09		0.12	0.01
v/c Ratio	0.08	0.86	0.31	0.46	0.78		0.89	0.12	0.24		0.64	0.06
Uniform Delay, d1	28.6	21.7	15.4	29.7	18.0		29.5	22.4	17.6		33.3	26.1
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2	4.7	0.2	1.3	2.3		25.4	0.1	0.2		4.5	0.1
Delay (s)	28.8	26.4	15.6	30.9	20.3		54.9	22.5	17.8		37.8	26.2
Level of Service	C	C	B	C	C		D	C	B		D	C
Approach Delay (s)		24.9			21.1			37.7			36.5	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	25.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	90.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.3%	ICU Level of Service	C
c Critical Lane Group			

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*******************************************************************************
*                                                                             *
*   1:4:06                ROUTE 67/EASTLINE RD ALT 2 FB                   16  *
*                                                                             *
*******************************************************************************
*                                                   *                         *
* 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    PM  *
*                                                   *                         *
*******************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *         *
* RT 67 EB *1.05*    0 1468   20  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* EAST NB  *1.05*    0  109  274  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 67 WB *1.05*    0 1424  126  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* EAST SB  *1.05*   14   54   42  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*******************************************************************************
*                                                          *                  *
* FLOW        veh    1488    383   1550    110             * AVEDEL  s    4.3 *
* CAPACITY    veh    2486   1606   2364    487             * LOS   SIG      A *
* AVE DELAY  mins    0.06   0.05   0.08   0.18             * LOS UNSIG      A *
* MAX DELAY  mins    0.11   0.08   0.15   0.34             *                  *
* AVE QUEUE   veh       2      0      2      0             * VEHIC HRS    4.2 *
* MAX QUEUE   veh       2      0      3      1             * COST    $     63 *
*                                                          *                  *
*******************************************************************************
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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	3425		3433	3503		1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.20	1.00	1.00
Satd. Flow (perm)	3433	3425		3433	3503		1770	5085	1583	370	5085	1583
Volume (vph)	273	301	83	378	266	19	80	962	372	16	981	249
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)	297	327	90	411	289	21	87	1046	404	17	1066	271
Lane Group Flow (vph)	297	417	0	411	310	0	87	1046	404	17	1066	271
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)	9.4	12.4		9.7	12.7		3.0	24.4	34.1	22.8	22.1	31.5
Effective Green, g (s)	11.4	14.4		11.7	14.7		5.0	26.4	38.1	26.8	24.1	35.5
Actuated g/C Ratio	0.16	0.20		0.16	0.21		0.07	0.37	0.54	0.38	0.34	0.50
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)	550	693		564	723		124	1885	936	192	1721	878
v/s Ratio Prot	0.09	c0.12		c0.12	0.09		c0.05	0.21	0.07	0.00	c0.21	0.05
v/s Ratio Perm									0.18	0.03		0.12
v/c Ratio	0.54	0.60		0.73	0.43		0.70	0.55	0.43	0.09	0.62	0.31
Uniform Delay, d1	27.5	25.8		28.2	24.6		32.4	17.7	10.0	14.2	19.7	10.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	1.5		4.7	0.4		16.4	0.4	0.3	0.2	0.7	0.2
Delay (s)	28.6	27.3		32.9	25.0		48.8	18.1	10.3	14.4	20.4	10.8
Level of Service	C	C		C	C		D	B	B	B	C	B
Approach Delay (s)		27.8			29.5			17.8			18.4	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	21.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	71.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	62.4%	ICU Level of Service	B
c Critical Lane Group			

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*****************************************************************************
*                                                                           *
*   1:4:06              ROUTE 50/BROOKLINE RD ALT 2 FB                  51  *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* 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    PM  *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *         *
* RT 50 NB *1.05*    0 1221  111  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* BROOK WB *1.05*    0  402  455  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*    0 1144   12  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
* BROOK EB *1.05*    0  255  305  0          *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*****************************************************************************
*                                                          *                 *
* FLOW        veh    1332    857   1156    560             * AVEDEL  s   4.5 *
* CAPACITY    veh    2265   1576   2009   1593             * LOS   SIG     A *
* AVE DELAY  mins    0.07   0.10   0.07   0.06             * LOS UNSIG     A *
* MAX DELAY  mins    0.12   0.18   0.14   0.10             *                 *
* AVE QUEUE   veh       2      1      2      1             * VEHIC HRS   4.8 *
* MAX QUEUE   veh       2      2      2      1             * COST    $    73 *
*                                                          *                 *
*****************************************************************************
```

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		0.12	1.00	0.95	1.00
Satd. Flow (perm)	3538		220	3539	1770	2787
Volume (vph)	1248	2	263	1287	4	266
Peak-hour factor, PHF	0.92	0.92	0.90	0.90	0.94	0.94
Adj. Flow (vph)	1357	2	292	1430	4	283
Lane Group Flow (vph)	1359	0	292	1430	4	283
Turn Type			pm+pt			pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases			6			8
Actuated Green, G (s)	27.8		43.7	43.7	0.8	10.7
Effective Green, g (s)	29.8		45.7	45.7	2.8	14.7
Actuated g/C Ratio	0.53		0.81	0.81	0.05	0.26
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)	1866		504	2863	88	922
v/s Ratio Prot	c0.38		c0.12	0.40	0.00	c0.06
v/s Ratio Perm			0.35			0.04
v/c Ratio	0.73		0.58	0.50	0.05	0.31
Uniform Delay, d1	10.2		9.7	1.7	25.6	16.8
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.5		1.6	0.1	0.2	0.2
Delay (s)	11.7		11.3	1.9	25.8	17.0
Level of Service	B		B	A	C	B
Approach Delay (s)	11.7			3.5	17.1	
Approach LOS	B			A	B	

Intersection Summary			
HCM Average Control Delay	8.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	56.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.1%	ICU Level of Service	B
c Critical Lane Group			

```
*******************************************************************************
*                                                                             *
*   1:4:06                ROUTE 50/ROUTE 146A ALT 2 FB                    10  *
*                                                                             *
*******************************************************************************
*                                                 *                           *
* 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    PM *
*                                                 *                           *
*******************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *         *
*RT 50 NB  *1.05*    2 1588    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 146A EB*1.05*  329    4    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*RT 50 SB  *1.05* 1395  321    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*******************************************************************************
*                                                                 *           *
* FLOW        veh    1590    333   1716                           * AVEDEL  s   4.2 *
* CAPACITY    veh    2420   1567   2633                           * LOS   SIG     A *
* AVE DELAY  mins    0.08   0.05   0.07                           * LOS UNSIG     A *
* MAX DELAY  mins    0.14   0.08   0.12                           *                 *
* AVE QUEUE   veh       2      0      2                           * VEHIC HRS   4.3 *
* MAX QUEUE   veh       3      0      3                           * COST    $    64 *
*                                                                 *                 *
*******************************************************************************
```

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	0.94		1.00	1.00	0.99	
Flt Protected	0.97		0.95	1.00	1.00	
Satd. Flow (prot)	1701		1770	3539	3504	
Flt Permitted	0.97		0.12	1.00	1.00	
Satd. Flow (perm)	1701		217	3539	3504	
Volume (vph)	99	85	50	1198	1229	86
Peak-hour factor, PHF	0.50	0.50	0.90	0.90	0.96	0.96
Adj. Flow (vph)	198	170	56	1331	1280	90
Lane Group Flow (vph)	368	0	56	1331	1370	0
Turn Type			pm+pt			
Protected Phases	4		5	2	6	
Permitted Phases			2			
Actuated Green, G (s)	13.6		36.4	36.4	28.4	
Effective Green, g (s)	15.6		38.4	38.4	30.4	
Actuated g/C Ratio	0.25		0.62	0.62	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)	428		235	2192	1718	
v/s Ratio Prot	c0.22		0.02	c0.38	c0.39	
v/s Ratio Perm			0.13			
v/c Ratio	0.86		0.24	0.61	0.80	
Uniform Delay, d1	22.2		8.6	7.2	13.2	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	15.7		0.5	0.5	2.7	
Delay (s)	37.9		9.2	7.7	15.9	
Level of Service	D		A	A	B	
Approach Delay (s)	37.9			7.7	15.9	
Approach LOS	D			A	B	

Intersection Summary			
HCM Average Control Delay	14.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	62.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.3%	ICU Level of Service	B
c Critical Lane Group			

```
*****************************************************************************
*                                                                           *
*   1:4:06                  ROUTE 50/FOREST ALT 2 FB                     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    PM *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                             *    *  *              *         *
* RT 50 NB *1.05* 1514   67    0               *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*  124 1331    0               *1.00*50*0.75 1.125 0.75*15 30 45 *
* FOREST WB*1.05*   33  103    0               *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                             *    *  *              *         *
*          *    *                             *    *  *              *         *
*          *    *                             *    *  *              *         *
*          *    *                             *    *  *              *         *
*****************************************************************************
*                                                          *                  *
* FLOW        veh    1581   1455    136                    * AVEDEL  s    3.6 *
* CAPACITY    veh    2566   2591    633                    * LOS   SIG      A *
* AVE DELAY  mins    0.06   0.05   0.12                    * LOS UNSIG      A *
* MAX DELAY  mins    0.11   0.09   0.21                    *                  *
* AVE QUEUE   veh       2      1      0                    * VEHIC HRS    3.1 *
* MAX QUEUE   veh       2      2      0                    * COST    $     47 *
*                                                          *                  *
*****************************************************************************
```

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	0.96		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	3414		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	3414		4990	3539	1583	3433	5085	1583
Volume (vph)	323	314	460	593	313	96	457	935	530	91	964	306
Peak-hour factor, PHF	0.82	0.82	0.82	0.98	0.98	0.98	0.91	0.91	0.91	0.94	0.94	0.94
Adj. Flow (vph)	394	383	561	605	319	98	502	1027	582	97	1026	326
Lane Group Flow (vph)	394	383	561	605	417	0	502	1027	582	97	1026	326
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)	12.4	14.3	14.3	15.1	17.0		10.8	31.7	31.7	3.1	24.0	24.0
Effective Green, g (s)	14.4	16.3	16.3	17.1	19.0		12.8	33.7	33.7	5.1	26.0	26.0
Actuated g/C Ratio	0.16	0.18	0.18	0.19	0.22		0.15	0.38	0.38	0.06	0.29	0.29
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)	560	654	515	666	735		724	1352	605	199	1499	467
v/s Ratio Prot	0.11	0.11		c0.18	c0.12		c0.10	0.29		0.03	0.20	
v/s Ratio Perm			c0.20						c0.37			0.21
v/c Ratio	0.70	0.59	1.09	0.91	0.57		0.69	0.76	0.96	0.49	0.68	0.70
Uniform Delay, d1	34.9	32.9	36.0	34.8	30.9		35.8	23.7	26.6	40.3	27.5	27.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.0	1.3	66.1	16.2	1.0		2.9	2.5	27.2	1.9	1.3	4.5
Delay (s)	38.9	34.2	102.1	51.0	31.9		38.7	26.2	53.8	42.2	28.8	32.1
Level of Service	D	C	F	D	C		D	C	D	D	C	C
Approach Delay (s)		64.0			43.2			36.8			30.4	
Approach LOS		E			D			D			C	

Intersection Summary			
HCM Average Control Delay	42.5	HCM Level of Service	D
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	88.2	Sum of lost time (s)	20.0
Intersection Capacity Utilization	72.9%	ICU Level of Service	C
c Critical Lane Group			

```
*******************************************************************************
*                                                                             *
*   1:4:06                ROUTE 50/LAKE HILL RD ALT 2 FB                  27  *
*                                                                             *
*******************************************************************************
*                                                 *                           *
* 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    PM *
*                                                 *                           *
*******************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                             *    *  *              *        *
* RT 50 NB *1.05*    0 1190  621  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* LHR WB   *1.05*    0  380  684  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*    0 1066  118  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* LHR EB   *1.05*    0  273  377  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                             *    *  *              *        *
*          *    *                             *    *  *              *        *
*          *    *                             *    *  *              *        *
*******************************************************************************
*                                                                 *           *
* FLOW        veh    1811   1064   1184    650                    * AVEDEL  s  15.2 *
* CAPACITY    veh    2533   1509   1545   1286                    * LOS   SIG     B *
* AVE DELAY  mins    0.11   0.39   0.43   0.11                    * LOS UNSIG     C *
* MAX DELAY  mins    0.21   0.94   1.05   0.21                    *                 *
* AVE QUEUE   veh       3      7      9      1                    * VEHIC HRS  19.9 *
* MAX QUEUE   veh       5     15     19      2                    * COST    $   299 *
*                                                                 *           *
*******************************************************************************
```

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)		1821		1770	1803			3484			3526	
Flt Permitted		0.87		0.48	1.00			0.95			0.93	
Satd. Flow (perm)		1603		896	1803			3295			3298	
Volume (vph)	27	55	5	133	48	13	8	1066	121	11	1019	23
Peak-hour factor, PHF	0.67	0.67	0.67	0.77	0.77	0.77	0.90	0.90	0.90	0.87	0.87	0.87
Adj. Flow (vph)	40	82	7	173	62	17	9	1184	134	13	1171	26
Lane Group Flow (vph)	0	129	0	173	79	0	0	1327	0	0	1210	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)		4.3		13.6	13.6			31.8			31.8	
Effective Green, g (s)		6.3		15.6	15.6			33.8			33.8	
Actuated g/C Ratio		0.11		0.27	0.27			0.59			0.59	
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)		176		324	490			1940			1942	
v/s Ratio Prot				c0.05	0.04							
v/s Ratio Perm		0.08		c0.10				c0.40			0.37	
v/c Ratio		0.73		0.53	0.16			0.68			0.62	
Uniform Delay, d1		24.7		17.4	15.9			8.1			7.7	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		14.6		1.7	0.2			1.0			0.6	
Delay (s)		39.3		19.1	16.1			9.1			8.3	
Level of Service		D		B	B			A			A	
Approach Delay (s)		39.3			18.1			9.1			8.3	
Approach LOS		D			B			A			A	

Intersection Summary			
HCM Average Control Delay	10.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	57.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
c Critical Lane Group			

```
*******************************************************************************
*                                                                             *
*   1:4:06                ROUTE 50/OUTLET RD ALT 2 FB                       7 *
*                                                                             *
*******************************************************************************
*                                                 *                           *
* 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    PM *
*                                                 *                           *
*******************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *        *
* RT 50 NB *1.05*  150 1308   13  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* OUTLET WB*1.05*    8   71  148  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*   36 1189   13  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
* CHAR EB  *1.05*    6   30   23  0           *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *        *
*          *    *                            *    *  *               *        *
*          *    *                            *    *  *               *        *
*******************************************************************************
*                                                                 *           *
* FLOW        veh    1471    227   1238     59                    * AVEDEL  s   3.5 *
* CAPACITY    veh    2591    628   2480    625                    * LOS   SIG     A *
* AVE DELAY  mins    0.05   0.16   0.05   0.10                    * LOS UNSIG     A *
* MAX DELAY  mins    0.09   0.29   0.08   0.17                    *                 *
* AVE QUEUE   veh       1      1      1      0                    * VEHIC HRS   2.9 *
* MAX QUEUE   veh       2      1      1      0                    * COST    $    44 *
*                                                                 *           *
*******************************************************************************
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```
*****************************************************************************
*                                                                           *
*   1:4:06              ROUTE 50/MIDDLELINE RD ALT 2 FB                 10  *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* 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    PM  *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *         *
* RT 50 NB *1.05* 1218  602    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
* RT 50 SB *1.05*    2 1327    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
* MID WB   *1.05*  459    1    0             *1.00*50*0.75 1.125 0.75*15 30 45 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*****************************************************************************
*                                                          *                 *
* FLOW        veh    1820   1329    460                    * AVEDEL  s   4.3 *
* CAPACITY    veh    2635   2231   1743                    * LOS   SIG     A *
* AVE DELAY  mins    0.08   0.07   0.04                    * LOS UNSIG     A *
* MAX DELAY  mins    0.15   0.13   0.08                    *                 *
* AVE QUEUE   veh       3      2      0                    * VEHIC HRS   4.3 *
* MAX QUEUE   veh       4      2      0                    * COST    $    64 *
*                                                          *                 *
*****************************************************************************
```