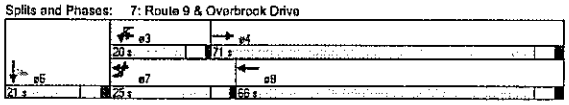
2013 No Build Capacity Analysis

Lane Configurations														
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		115		0		115		0	0		0	0		0
Storage Lanes		1		0		1		0	0		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50		50	50	50					50	50	
Trailing Detector (ft)	0	0	0		0	0	0					0	0	
Turning Speed (mph)	9	15		9	9	15		9	15		9	15		9
Right Turn on Red				Yes				Yes			Yes			Yes
Link Speed (mph)			30				30			30			30	
Link Distance (ft)			1199				3029			227			1412	
Travel Time (s)			27.3				68.8			5.2			32.1	
Volume (vph)	45	75	2315	0	90	0	2300	15	0	0	0	60	0	155
Peak Hour Factor	0.92	0.98	0.98	0.92	0.98	0.92	0.98	0.98	0.92	0.92	0.92	0.89	0.92	0.89
Heavy Vehicles (%)	2%	1%	1%	2%	2%	2%	2%	2%	2%	2%	2%	4%	2%	4%
Lane Group Flow (vph)	0	126	2362	0	0	92	2362	0	0	0	0	0	241	0
Turn Type	Prot	Prot			Prot	Prot						Perm		
Protected Phases	7	7	4		3	3	8						6	
Permitted Phases												6		
Detector Phases	7	7	4		3	3	8					6	6	
Minimum Initial (s)	6.0	6.0	15.0		6.0	6.0	15.0					6.0	6.0	
Minimum Split (s)	11.0	11.0	21.0		11.0	11.0	21.0					12.0	12.0	
Total Split (s)	25.0	25.0	71.0	0.0	20.0	20.0	66.0	0.0	0.0	0.0	0.0	21.0	21.0	0.0
Total Split (%)	22.3%	22.3%	63.4%	0.0%	17.9%	17.9%	58.9%	0.0%	0.0%	0.0%	0.0%	18.8%	18.8%	0.0%
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0	4.0					4.0	4.0	
All-Red Time (s)	1.0	1.0	2.0		1.0	1.0	2.0					2.0	2.0	
Lead/Lag	Lead	Lead	Lag		Lead	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes							
Recall Mode	None	None	Min		None	None	Min					None	None	
v/c Ratio		0.55	1.00			0.48	1.06						0.77	
Control Delay		52.4	40.2			53.1	69.0						43.4	
Queue Delay		0.0	0.0			0.0	0.0						0.0	
Total Delay		52.4	40.2			53.1	69.0						43.4	
Queue Length 50th (ft)		63	~951			61	~988						94	
Queue Length 95th (ft)		142	#1157			112	#1210						#209	
Internal Link Dist (ft)			1119				2949			147			1332	
Turn Bay Length (ft)		115				115								
Base Capacity (vph)		334	2354			255	2177						341	
Starvation Cap Reductn		0	0			0	0						0	
Spillback Cap Reductn		0	0			0	0						0	
Storage Cap Reductn		0	0			0	0						0	
Reduced v/c Ratio		0.38	1.00			0.38	1.06						0.71	

Area Type: Other
Cycle Length: 112
Actuated Cycle Length: 104.8
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Route 9 & Overbrook Drive



Lane Configurations														
Ideal Flow (vphpl)	1900	1900	1900	1900	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	0.95			1.00	0.95						1.00	
Frt		1.00	1.00			1.00	1.00						0.90	
Flt Protected		0.95	1.00			0.95	1.00						0.99	
Satd. Flow (prot)		1780	3574			1770	3536						1626	
Flt Permitted		0.95	1.00			0.95	1.00						0.99	
Satd. Flow (perm)		1780	3574			1770	3536						1626	
Volume (vph)	45	75	2315	0	90	0	2300	15	0	0	0	60	0	155
Peak-hour factor, PHF	0.92	0.98	0.98	0.92	0.98	0.92	0.98	0.98	0.92	0.92	0.92	0.89	0.92	0.89
Adj. Flow (vph)	49	77	2362	0	92	0	2347	15	0	0	0	67	0	174
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	84	0
Lane Group Flow (vph)	0	126	2362	0	0	92	2362	0	0	0	0	0	157	0
Heavy Vehicles (%)	2%	1%	1%	2%	2%	2%	2%	2%	2%	2%	2%	4%	2%	4%
Turn Type	Prot	Prot			Prot	Prot						Perm		
Protected Phases	7	7	4		3	3	8						6	
Permitted Phases												6		
Actuated Green, G (s)		12.6	67.0			9.2	63.8						12.6	
Effective Green, g (s)		13.6	69.0			10.2	65.6						14.6	
Actuated g/C Ratio		0.13	0.65			0.10	0.62						0.14	
Clearance Time (s)		5.0	6.0			5.0	6.0						6.0	
Vehicle Extension (s)		3.0	3.0			3.0	3.0						3.0	
Lane Grp Cap (vph)		229	2331			171	2192						224	
v/s Ratio Prot		c0.07	c0.66			0.05	c0.67							
v/s Ratio Perm													0.10	
v/c Ratio		0.55	1.01			0.54	1.08						0.70	
Uniform Delay, d1		43.2	18.4			45.6	20.1						43.5	
Progression Factor		1.00	1.00			1.00	1.00						1.00	
Incremental Delay, d2		2.8	22.0			3.2	43.9						9.1	
Delay (s)		46.1	40.4			48.8	64.0						52.7	
Level of Service		D	D			D	E						D	
Approach Delay (s)			40.7				63.4			0.0			52.7	
Approach LOS			D				E			A			D	

Intersection Summary			
HCM Average Control Delay	52.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	105.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	93.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	3%	
Volume (veh/h)	2145	415	0	2730	0	295
Peak Hour Factor	0.95	0.95	0.95	0.95	0.72	0.72
Hourly flow rate (vph)	2258	437	0	2874	0	410
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			2695		3913	1347
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2695		3913	1347
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	0
cM capacity (veh/h)			153		2	142

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1505	1189	1437	1437	410
Volume Left	0	0	0	0	0
Volume Right	0	437	0	0	410
cSH	1700	1700	1700	1700	142
Volume to Capacity	0.89	0.70	0.85	0.85	2.88
Queue Length 95th (ft)	0	0	0	0	938
Control Delay (s)	0.0	0.0	0.0	0.0	914.4
Lane LOS					F
Approach Delay (s)	0.0		0.0		914.4
Approach LOS					F

Intersection Summary			
Average Delay	62.7		
Intersection Capacity Utilization	97.5%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	-3%			0%	0%	
Volume (veh/h)	215	200	85	755	855	210
Peak Hour Factor	0.94	0.94	0.95	0.95	0.93	0.93
Hourly flow rate (vph)	229	213	89	795	919	226
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2006	1032	1145			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2006	1032	1145			
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	25	85			
cM capacity (veh/h)	56	283	614			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	441	884	1145
Volume Left	229	89	0
Volume Right	213	0	226
cSH	91	614	1700
Volume to Capacity	4.84	0.15	0.67
Queue Length 95th (ft)	Err	13	0
Control Delay (s)	Err	4.1	0.0
Lane LOS	F	A	
Approach Delay (s)	Err	4.1	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	1788.1		
Intersection Capacity Utilization	136.4%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		2%	
Volume (veh/h)	0	2560	2600	130	0	85
Peak Hour Factor	0.93	0.93	0.91	0.91	0.79	0.79
Hourly flow rate (vph)	0	2753	2857	143	0	108
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	3000				4305	1500
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3000				4305	1500
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	2
cM capacity (veh/h)	115				1	110

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	1376	1376	1905	1095	108
Volume Left	0	0	0	0	0
Volume Right	0	0	0	143	108
cSH	1700	1700	1700	1700	110
Volume to Capacity	0.81	0.81	1.12	0.64	0.98
Queue Length 95th (ft)	0	0	0	0	155
Control Delay (s)	0.0	0.0	0.0	0.0	153.2
Lane LOS					F
Approach Delay (s)	0.0		0.0		153.2
Approach LOS					F

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↱			↱
Sign Control		Free	Free		Stop	
Grade		0%	0%		2%	
Volume (veh/h)	0	2440	2420	265	0	310
Peak Hour Factor	0.92	0.92	0.93	0.93	0.83	0.83
Hourly flow rate (vph)	0	2652	2602	285	0	373
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2887				4071	1444
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2887				4071	1444
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	0
cM capacity (veh/h)	126				2	122

Direction/Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	1326	1326	1735	1152	373
Volume Left	0	0	0	0	0
Volume Right	0	0	0	285	373
cSH	1700	1700	1700	1700	122
Volume to Capacity	0.78	0.78	1.02	0.68	3.05
Queue Length 95th (ft)	0	0	0	0	Err
Control Delay (s)	0.0	0.0	0.0	0.0	Err
Lane LOS					F
Approach Delay (s)	0.0		0.0		Err
Approach LOS					F

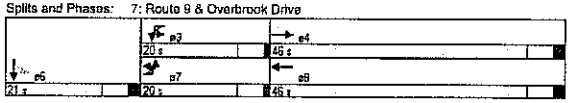
Intersection Summary			
Average Delay	631.6		
Intersection Capacity Utilization	101.2%	ICU Level of Service	G
Analysis Period (min)	15		

Lane Group	EBLL	EBL	EBT	EBR	WBLL	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	1900	1900
Storage Length (ft)		115		0		115		0	0		0	0		0
Storage Lanes		1		0		1		0	0		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50		50	50	50					50	50	
Trailing Detector (ft)	0	0	0		0	0	0					0	0	
Turning Speed (mph)	9	15		9	9	15		9	15		9	15		9
Right Turn on Red				Yes				Yes			Yes			Yes
Link Speed (mph)			30				30			30			30	
Link Distance (ft)			1199				3029			219			1412	
Travel Time (s)			27.3				68.8			5.0			32.1	
Volume (vph)	100	65	1895	5	105	0	2255	25	0	0	0	50	0	80
Peak Hour Factor	0.92	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.92	0.94
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Lane Group Flow (vph)	0	178	2021	0	0	114	2478	0	0	0	0	0	149	0
Turn Type	Prot	Prot			Prot	Prot						Perm		
Protected Phases	7	7	4		3	3	8						6	
Permitted Phases												6		
Detector Phases	7	7	4		3	3	8					6	6	
Minimum Initial (s)	6.0	6.0	15.0		6.0	6.0	15.0					6.0	6.0	
Minimum Split (s)	11.0	11.0	21.0		11.0	11.0	21.0					12.0	12.0	
Total Split (s)	20.0	20.0	46.0	0.0	20.0	20.0	46.0	0.0	0.0	0.0	0.0	21.0	21.0	0.0
Total Split (%)	23.0%	23.0%	52.9%	0.0%	23.0%	23.0%	52.9%	0.0%	0.0%	0.0%	0.0%	24.1%	24.1%	0.0%
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0	4.0					4.0	4.0	
All-Red Time (s)	1.0	1.0	2.0		1.0	1.0	2.0					2.0	2.0	
Lead/Lag	Lead	Lead	Lag		Lead	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes							
Recall Mode	Min	Min	Min		Min	Min	Max					None	None	
v/c Ratio		0.59	1.00			0.45	1.28						0.48	
Control Delay		39.2	39.7			36.7	152.9						19.1	
Queue Delay		0.0	0.0			0.0	0.0						0.0	
Total Delay		39.2	39.7			36.7	152.9						19.1	
Queue Length 50th (ft)		80	466			51	~828						25	
Queue Length 95th (ft)		152	#817			103	#1107						78	
Internal Link Dist (ft)			1119				2949			139			1332	
Turn Bay Length (ft)		115				115								
Base Capacity (vph)		354	2021			346	1931						415	
Starvation Cap Reductn		0	0			0	0						0	
Spillback Cap Reductn		0	0			0	0						0	
Storage Cap Reductn		0	0			0	0						0	
Reduced v/c Ratio		0.50	1.00			0.33	1.28						0.36	

Intersection Summary

Area Type: Other
Cycle Length: 87
Actuated Cycle Length: 78
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Route 9 & Overbrook Drive



Movement	EBLL	EBL	EBT	EBR	WBLL	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	1900	1900
Total Lost time (s)		4.0	4.0			4.0	4.0						4.0	
Lane Util. Factor		1.00	0.95			1.00	0.95						1.00	
Frt		1.00	1.00			1.00	1.00						0.91	
Flt Protected		0.95	1.00			0.95	1.00						0.98	
Satd. Flow (prot)		1787	3573			1787	3568						1688	
Flt Permitted		0.95	1.00			0.95	1.00						0.98	
Satd. Flow (perm)		1787	3573			1787	3568						1688	
Volume (vph)	100	65	1895	5	105	0	2255	25	0	0	0	50	0	80
Peak-hour factor, PHF	0.92	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.92	0.94
Adj. Flow (vph)	109	69	2016	5	114	0	2451	27	0	0	0	53	0	85
RTOR Reduction (vph)	0	0	0	0	0	0	1	0	0	0	0	0	80	0
Lane Group Flow (vph)	0	178	2021	0	0	114	2477	0	0	0	0	0	69	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Turn Type	Prot	Prot			Prot	Prot						Perm		
Protected Phases	7	7	4		3	3	8						6	
Permitted Phases												6		
Actuated Green, G (s)		12.1	42.1			10.2	40.2						8.7	
Effective Green, g (s)		13.1	44.1			11.2	42.2						10.7	
Actuated g/C Ratio		0.17	0.57			0.14	0.54						0.14	
Clearance Time (s)		5.0	6.0			5.0	6.0						6.0	
Vehicle Extension (s)		3.0	3.0			3.0	3.0						3.0	
Lane Grp Cap (vph)		300	2020			257	1930						232	
v/s Ratio Prot		c0.10	0.57			0.06	c0.69							
v/s Ratio Perm													0.04	
v/c Ratio		0.59	1.00			0.44	1.28						0.30	
Uniform Delay, d1		30.0	17.0			30.5	17.9						30.3	
Progression Factor		1.00	1.00			1.00	1.00						1.00	
Incremental Delay, d2		3.1	20.1			1.2	131.6						0.7	
Delay (s)		33.1	37.1			31.8	149.5						31.0	
Level of Service		C	D			C	F						C	
Approach Delay (s)			36.8				144.4			0.0			31.0	
Approach LOS			D				F			A			C	

Intersection Summary

HCM Average Control Delay	93.1	HCM Level of Service	F
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	78.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	3%	
Volume (veh/h)	1610	455	0	2475	0	265
Peak Hour Factor	0.97	0.97	0.96	0.96	0.83	0.83
Hourly flow rate (vph)	1660	469	0	2578	0	319
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			2129		3183	1064
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2129		3183	1064
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	0
cM capacity (veh/h)			255		8	220

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1107	1022	1289	1289	319
Volume Left	0	0	0	0	0
Volume Right	0	469	0	0	319
cSH	1700	1700	1700	1700	220
Volume to Capacity	0.65	0.60	0.76	0.76	1.45
Queue Length 95th (ft)	0	0	0	0	469
Control Delay (s)	0.0	0.0	0.0	0.0	267.2
Lane LOS					F
Approach Delay (s)	0.0		0.0		267.2
Approach LOS					F

Intersection Summary			
Average Delay	17.0		
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	-3%			0%	0%	
Volume (veh/h)	210	245	80	970	645	185
Peak Hour Factor	0.91	0.91	0.92	0.92	0.91	0.91
Hourly flow rate (vph)	231	269	87	1054	709	203
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2039	810	912			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2039	810	912			
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	29	88			
cM capacity (veh/h)	56	382	751			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	500	1141	912
Volume Left	231	87	0
Volume Right	269	0	203
cSH	103	751	1700
Volume to Capacity	4.86	0.12	0.54
Queue Length 95th (ft)	Err	10	0
Control Delay (s)	Err	3.7	0.0
Lane LOS	F	A	
Approach Delay (s)	Err	3.7	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	1959.6		
Intersection Capacity Utilization	137.3%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		2%	
Volume (veh/h)	0	2065	2355	120	0	135
Peak Hour Factor	0.97	0.97	0.94	0.94	0.98	0.98
Hourly flow rate (vph)	0	2129	2505	128	0	138
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2633				3634	1316
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2633				3634	1316
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	8
cM capacity (veh/h)	161				4	151

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	1064	1064	1670	963	138
Volume Left	0	0	0	0	0
Volume Right	0	0	0	128	138
cSH	1700	1700	1700	1700	151
Volume to Capacity	0.63	0.63	0.98	0.57	0.92
Queue Length 95th (ft)	0	0	0	0	161
Control Delay (s)	0.0	0.0	0.0	0.0	110.9
Lane LOS					F
Approach Delay (s)	0.0		0.0		110.9
Approach LOS					F

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↱			↱
Sign Control		Free	Free		Stop	
Grade		0%	0%		2%	
Volume (veh/h)	0	1875	2045	140	0	430
Peak Hour Factor	0.92	0.92	0.96	0.96	0.82	0.82
Hourly flow rate (vph)	0	2038	2130	146	0	524
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2276				3222	1138
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2276				3222	1138
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	0
cM capacity (veh/h)	220				7	197

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	1019	1019	1420	856	524
Volume Left	0	0	0	0	0
Volume Right	0	0	0	146	524
cSH	1700	1700	1700	1700	197
Volume to Capacity	0.60	0.60	0.84	0.50	2.67
Queue Length 95th (ft)	0	0	0	0	1133
Control Delay (s)	0.0	0.0	0.0	0.0	801.4
Lane LOS					F
Approach Delay (s)	0.0		0.0		801.4
Approach LOS					F

Intersection Summary			
Average Delay	86.9		
Intersection Capacity Utilization	94.3%	ICU Level of Service	F
Analysis Period (min)	15		

2013 Build Capacity Analysis

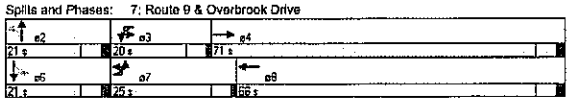
Appendix

Lane Group	EBL	EBL	EBT	EBR	WBL	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	1900	1900
Storage Length (ft)		115		0		115		0	0		0	0		0
Storage Lanes		1		0		1		0	0		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50		50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0		0	0	0		0	0		0	0	
Turning Speed (mph)	9	15		9	9	15		9	15		9	15		9
Right Turn on Red				Yes				Yes			Yes			Yes
Link Speed (mph)			30				30			30			30	
Link Distance (ft)			1199				362			227			1412	
Travel Time (s)			27.3				8.2			5.2			32.1	
Volume (vph)	45	75	2310	30	90	30	2295	15	30	1	30	60	0	155
Peak Hour Factor	0.92	0.98	0.98	0.92	0.98	0.92	0.98	0.98	0.92	0.92	0.92	0.89	0.92	0.89
Heavy Vehicles (%)	2%	1%	1%	2%	2%	2%	2%	2%	2%	2%	2%	4%	2%	4%
Lane Group Flow (vph)	0	126	2390	0	0	125	2357	0	0	67	0	0	241	0
Turn Type	Prot	Prot			Prot	Prot			Perm			Perm		
Protected Phases	7	7	4		3	3	8			2			6	
Permitted Phases									2			6		
Detector Phases	7	7	4		3	3	8		2	2		6	6	
Minimum Initial (s)	6.0	6.0	15.0		6.0	6.0	15.0		4.0	4.0		6.0	6.0	
Minimum Split (s)	11.0	11.0	21.0		11.0	11.0	21.0		12.0	12.0		12.0	12.0	
Total Split (s)	25.0	25.0	71.0	0.0	20.0	20.0	66.0	0.0	21.0	21.0	0.0	21.0	21.0	0.0
Total Split (%)	22.3%	22.3%	63.4%	0.0%	17.9%	17.9%	58.9%	0.0%	18.8%	18.8%	0.0%	18.8%	18.8%	0.0%
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	2.0		1.0	1.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag	Lead	Lead	Lag		Lead	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes							
Recall Mode	None	None	Min		None	None	Min		None	None		None	None	
v/c Ratio		0.58	1.07			0.58	1.08			0.39			0.83	
Control Delay		53.9	64.1			56.1	65.8			32.1			50.2	
Queue Delay		0.0	0.0			0.0	0.0			0.0			0.0	
Total Delay		53.9	64.1			56.1	65.8			32.1			50.2	
Queue Length 50th (ft)		85	~1013			84	~996			21			98	
Queue Length 95th (ft)		142	#1185			146	#1206			67			#228	
Internal Link Dist (ft)			1119				282			147			1332	
Turn Bay Length (ft)		115				115								
Base Capacity (vph)		326	2228			257	2190			154			311	
Starvation Cap Reductn		0	0			0	0			0			0	
Spillback Cap Reductn		0	0			0	0			0			0	
Storage Cap Reductn		0	0			0	0			0			0	
Reduced v/c Ratio		0.39	1.07			0.49	1.08			0.36			0.77	

Intersection Summary

Area Type: Other
Cycle Length: 112
Actuated Cycle Length: 107.6
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Route 9 & Overbrook Drive



Movement	EBL	EBL	EBT	EBR	WBL	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	1900	1900
Total Lost time (s)		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	
Frt		1.00	1.00			1.00	1.00			0.93			0.90	
Flt Protected		0.95	1.00			0.95	1.00			0.98			0.99	
Satd. Flow (prot)		1780	3566			1770	3536			1697			1626	
Flt Permitted		0.95	1.00			0.95	1.00			0.54			0.89	
Satd. Flow (perm)		1780	3566			1770	3536			942			1467	
Volume (vph)	45	75	2310	30	90	30	2295	15	30	1	30	60	0	155
Peak-hour factor, PHF	0.92	0.98	0.98	0.92	0.98	0.92	0.98	0.98	0.92	0.92	0.92	0.89	0.92	0.89
Adj. Flow (vph)	49	77	2357	33	92	33	2342	15	33	1	33	67	0	174
RTOR Reduction (vph)	0	0	1	0	0	0	0	0	0	28	0	0	84	0
Lane Group Flow (vph)	0	126	2389	0	0	125	2357	0	0	39	0	0	157	0
Heavy Vehicles (%)	2%	1%	1%	2%	2%	2%	2%	2%	2%	2%	2%	4%	2%	4%
Turn Type	Prot	Prot			Prot	Prot			Perm			Perm		
Protected Phases	7	7	4		3	3	8			2			6	
Permitted Phases									2			6		
Actuated Green, G (s)		12.7	65.2			12.1	64.6			13.2			13.2	
Effective Green, g (s)		13.7	67.2			13.1	66.6			15.2			15.2	
Actuated g/C Ratio		0.13	0.63			0.12	0.62			0.14			0.14	
Clearance Time (s)		5.0	6.0			5.0	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)		227	2229			216	2191			133			207	
v/s Ratio Prot		c0.07	c0.67			0.07	0.67							
v/s Ratio Perm										0.04			c0.11	
v/c Ratio		0.56	1.07			0.58	1.08			0.29			0.76	
Uniform Delay, d1		44.0	20.1			44.6	20.5			41.3			44.4	
Progression Factor		1.00	1.00			1.00	1.00			1.00			1.00	
Incremental Delay, d2		2.9	41.7			3.7	43.2			1.2			14.6	
Delay (s)		47.0	61.8			48.3	63.7			42.5			59.0	
Level of Service		D	E			D	E			D			E	
Approach Delay (s)			61.1				62.9			42.5			59.0	
Approach LOS			E				E			D			E	

Intersection Summary

HCM Average Control Delay	61.6	HCM Level of Service	E
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	107.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	95.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	3%	
Volume (veh/h)	2165	420	0	2755	0	295
Peak Hour Factor	0.95	0.95	0.95	0.95	0.72	0.72
Hourly flow rate (vph)	2279	442	0	2900	0	410
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			2721		3950	1361
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2721		3950	1361
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	0
cM capacity (veh/h)			149		2	139

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1519	1202	1450	1450	410
Volume Left	0	0	0	0	0
Volume Right	0	442	0	0	410
cSH	1700	1700	1700	1700	139
Volume to Capacity	0.89	0.71	0.85	0.85	2.94
Queue Length 95th (ft)	0	0	0	0	947
Control Delay (s)	0.0	0.0	0.0	0.0	942.2
Lane LOS					F
Approach Delay (s)	0.0		0.0		942.2
Approach LOS					F

Intersection Summary			
Average Delay	64.0		
Intersection Capacity Utilization	98.2%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	-3%			0%	0%	
Volume (veh/h)	215	205	85	755	855	210
Peak Hour Factor	0.94	0.94	0.95	0.95	0.93	0.93
Hourly flow rate (vph)	229	218	89	795	919	226
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2006	1032	1145			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2006	1032	1145			
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	23	85			
cM capacity (veh/h)	56	283	614			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	447	884	1145
Volume Left	229	89	0
Volume Right	218	0	226
cSH	92	614	1700
Volume to Capacity	4.86	0.15	0.67
Queue Length 95th (ft)	Err	13	0
Control Delay (s)	Err	4.1	0.0
Lane LOS	F	A	
Approach Delay (s)	Err	4.1	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	1805.7		
Intersection Capacity Utilization	136.7%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↱			↱
Sign Control		Free	Free		Stop	
Grade		0%	0%		2%	
Volume (veh/h)	0	2585	2625	130	0	85
Peak Hour Factor	0.93	0.93	0.91	0.91	0.79	0.79
Hourly flow rate (vph)	0	2780	2885	143	0	108
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	3027				4346	1514
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3027				4346	1514
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	0
cM capacity (veh/h)	112				1	108

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	1390	1390	1923	1104	108
Volume Left	0	0	0	0	0
Volume Right	0	0	0	143	108
cSH	1700	1700	1700	1700	108
Volume to Capacity	0.82	0.82	1.13	0.65	1.00
Queue Length 95th (ft)	0	0	0	0	159
Control Delay (s)	0.0	0.0	0.0	0.0	161.3
Lane LOS					F
Approach Delay (s)	0.0		0.0		161.3
Approach LOS					F

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	88.6%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↱			↱
Sign Control		Free	Free		Stop	
Grade		0%	0%		2%	
Volume (veh/h)	0	2460	2440	265	0	315
Peak Hour Factor	0.92	0.92	0.93	0.93	0.83	0.83
Hourly flow rate (vph)	0	2674	2624	285	0	380
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2909				4103	1454
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2909				4103	1454
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	0
cM capacity (veh/h)	123				2	120

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	1337	1337	1749	1159	380
Volume Left	0	0	0	0	0
Volume Right	0	0	0	285	380
cSH	1700	1700	1700	1700	120
Volume to Capacity	0.79	0.79	1.03	0.68	3.15
Queue Length 95th (ft)	0	0	0	0	Err
Control Delay (s)	0.0	0.0	0.0	0.0	Err
Lane LOS					F
Approach Delay (s)	0.0		0.0		Err
Approach LOS					F

Intersection Summary			
Average Delay	636.5		
Intersection Capacity Utilization	102.1%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	2495	0	0	2430	0	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2712	0	0	2641	0	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	362					
pX, platoon unblocked			0.38		0.38	0.38
vC, conflicting volume			2712		4033	1356
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			3860		7311	317
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	98
cM capacity (veh/h)			19		0	260

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1356	1356	1321	1321	5
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	5
cSH	1700	1700	1700	1700	260
Volume to Capacity	0.80	0.80	0.78	0.78	0.02
Queue Length 95th (ft)	0	0	0	0	2
Control Delay (s)	0.0	0.0	0.0	0.0	19.2
Lane LOS					C
Approach Delay (s)	0.0		0.0		19.2
Approach LOS					C

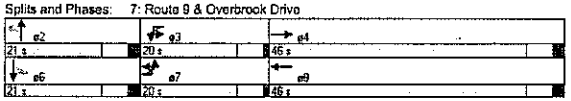
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

Lane Group	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
Storage Length (ft)		115		0		115		0	0		0	0
Storage Lanes		1		0		1		0	0		0	0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50		50	50	50		50	50		50
Trailing Detector (ft)	0	0	0		0	0	0		0	0		0
Turning Speed (mph)	9	15		9	9	15		9	15		9	15
Right Turn on Red				Yes				Yes			Yes	
Link Speed (mph)			30				30			30		
Link Distance (ft)			1199				321			219		
Travel Time (s)			27.3				7.3			5.0		
Volume (vph)	100	65	1885	45	105	45	2245	25	40	1	35	50
Peak Hour Factor	0.92	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.94
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%	2%	1%
Lane Group Flow (vph)	0	178	2054	0	0	163	2467	0	0	62	0	0
Turn Type	Prot	Prot			Prot	Prot			Perm			Perm
Protected Phases	7	7	4		3	3	8			2		
Permitted Phases									2			6
Detector Phases	7	7	4		3	3	8		2	2		6
Minimum Initial (s)	6.0	6.0	15.0		6.0	6.0	15.0		6.0	6.0		6.0
Minimum Split (s)	11.0	11.0	21.0		11.0	11.0	21.0		12.0	12.0		12.0
Total Split (s)	20.0	20.0	46.0	0.0	20.0	20.0	46.0	0.0	21.0	21.0	0.0	21.0
Total Split (%)	23.0%	23.0%	52.9%	0.0%	23.0%	23.0%	52.9%	0.0%	24.1%	24.1%	0.0%	24.1%
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0		4.0
All-Red Time (s)	1.0	1.0	2.0		1.0	1.0	2.0		2.0	2.0		2.0
Lead/Lag	Lead	Lead	Lag		Lead	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes					
Recall Mode	Min	Min	Min		Min	Min	Max		Min	Min		None
v/c Ratio		0.60	1.09			0.56	1.28			0.36		
Control Delay		39.6	60.0			38.8	153.4			23.7		
Queue Delay		0.0	0.0			0.0	0.0			0.0		
Total Delay		39.6	60.0			38.8	153.4			23.7		
Queue Length 50th (ft)		80	~593			74	~632			20		
Queue Length 95th (ft)		154	#664			142	#1120			60		
Internal Link Dist (ft)			1119				241			139		
Turn Bay Length (ft)		115				115						
Base Capacity (vph)		353	1935			351	1921			307		
Starvation Cap Reductn		0	0			0	0			0		
Spillback Cap Reductn		0	0			0	0			0		
Storage Cap Reductn		0	0			0	0			0		
Reduced v/c Ratio		0.50	1.06			0.46	1.28			0.39		

Intersection Summary

Area Type: Other
Cycle Length: 87
Actuated Cycle Length: 78.5
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Route 9 & Overbrook Drive



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	0.95			1.00	0.95			1.00			1.00	
Frt		1.00	1.00			1.00	1.00			0.94			0.91	
Flt Protected		0.95	1.00			0.95	1.00			0.97			0.98	
Satd. Flow (prot)		1787	3561			1787	3568			1702			1688	
Flt Permitted		0.95	1.00			0.95	1.00			0.69			0.87	
Satd. Flow (perm)		1787	3561			1787	3568			1199			1495	
Volume (vph)	100	65	1885	45	105	45	2245	25	40	1	35	50	0	90
Peak-hour factor, PHF	0.92	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.92	0.94
Adj. Flow (vph)	109	69	2005	49	114	49	2440	27	43	1	38	53	0	96
RTOR Reduction (vph)	0	0	2	0	0	0	1	0	0	33	0	0	80	0
Lane Group Flow (vph)	0	178	2052	0	0	163	2466	0	0	49	0	0	69	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Turn Type	Prot	Prot			Prot	Prot			Perm			Perm		
Protected Phases	7	7	4		3	3	8			2			6	
Permitted Phases									2			6		
Actuated Green, G (s)		12.1	40.6			11.7	40.2			9.1			9.1	
Effective Green, g (s)		13.1	42.6			12.7	42.2			11.1			11.1	
Actuated g/C Ratio		0.17	0.54			0.16	0.54			0.14			0.14	
Clearance Time (s)		5.0	6.0			5.0	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)		299	1935			289	1921			170			212	
v/s Ratio Prot		c0.10	0.58			0.09	c0.69							
v/s Ratio Perm										0.04			c0.05	
v/c Ratio		0.60	1.06			0.56	1.28			0.29			0.33	
Uniform Delay, d1		30.2	17.9			30.3	18.1			30.1			30.3	
Progression Factor		1.00	1.00			1.00	1.00			1.00			1.00	
Incremental Delay, d2		3.2	38.7			2.5	131.8			1.0			0.9	
Delay (s)		33.4	56.6			32.8	149.9			31.1			31.2	
Level of Service		C	E			C	F			C			C	
Approach Delay (s)			54.8				142.8			31.1			31.2	
Approach LOS			D				F			C			C	

HCM Average Control Delay	99.1	HCM Level of Service	F
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	78.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	3%	
Volume (veh/h)	1640	460	0	2510	0	265
Peak Hour Factor	0.97	0.97	0.96	0.96	0.83	0.83
Hourly flow rate (vph)	1691	474	0	2615	0	319
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			2165		3235	1082
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2165		3235	1082
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	0
cM capacity (veh/h)			247		7	214

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1127	1038	1307	1307	319
Volume Left	0	0	0	0	0
Volume Right	0	474	0	0	319
cSH	1700	1700	1700	1700	214
Volume to Capacity	0.66	0.61	0.77	0.77	1.49
Queue Length 95th (ft)	0	0	0	0	483
Control Delay (s)	0.0	0.0	0.0	0.0	285.4
Lane LOS					F
Approach Delay (s)	0.0		0.0		285.4
Approach LOS					F

Intersection Summary			
Average Delay	17.9		
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	-3%			0%	0%	
Volume (veh/h)	210	250	80	975	645	185
Peak Hour Factor	0.91	0.91	0.92	0.92	0.91	0.91
Hourly flow rate (vph)	231	275	87	1060	709	203
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2044	810	912			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2044	810	912			
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	28	88			
cM capacity (veh/h)	55	382	751			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	505	1147	912
Volume Left	231	87	0
Volume Right	275	0	203
cSH	103	751	1700
Volume to Capacity	4.90	0.12	0.54
Queue Length 95th (ft)	Err	10	0
Control Delay (s)	Err	3.7	0.0
Lane LOS	F	A	
Approach Delay (s)	Err	3.7	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	1972.7		
Intersection Capacity Utilization	137.9%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		2%	
Volume (veh/h)	0	2100	2390	120	0	135
Peak Hour Factor	0.97	0.97	0.94	0.94	0.98	0.98
Hourly flow rate (vph)	0	2165	2543	128	0	138
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2670				3689	1335
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2670				3689	1335
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	6
cM capacity (veh/h)	156				4	146

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	1082	1082	1695	975	138
Volume Left	0	0	0	0	0
Volume Right	0	0	0	128	138
cSH	1700	1700	1700	1700	146
Volume to Capacity	0.64	0.64	1.00	0.57	0.94
Queue Length 95th (ft)	0	0	0	0	167
Control Delay (s)	0.0	0.0	0.0	0.0	119.5
Lane LOS					F
Approach Delay (s)	0.0		0.0		119.5
Approach LOS					F

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		2%	
Volume (veh/h)	0	1905	2075	140	0	435
Peak Hour Factor	0.92	0.92	0.96	0.96	0.82	0.82
Hourly flow rate (vph)	0	2071	2161	146	0	530
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2307				3270	1154
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2307				3270	1154
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	0
cM capacity (veh/h)	214				7	192

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	1035	1035	1441	866	530
Volume Left	0	0	0	0	0
Volume Right	0	0	0	146	530
cSH	1700	1700	1700	1700	192
Volume to Capacity	0.61	0.61	0.85	0.51	2.76
Queue Length 95th (ft)	0	0	0	0	1165
Control Delay (s)	0.0	0.0	0.0	0.0	845.5
Lane LOS					F
Approach Delay (s)	0.0		0.0		845.5
Approach LOS					F

Intersection Summary			
Average Delay	91.4		
Intersection Capacity Utilization	95.4%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↱
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	2080	0	0	2420	0	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2261	0	0	2630	0	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	321					
pX, platoon unblocked			0.47		0.47	0.47
vC, conflicting volume			2261		3576	1130
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2560		5383	133
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	99
cM capacity (veh/h)			79		0	415

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1130	1130	1315	1315	5
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	5
cSH	1700	1700	1700	1700	415
Volume to Capacity	0.66	0.66	0.77	0.77	0.01
Queue Length 95th (ft)	0	0	0	0	1
Control Delay (s)	0.0	0.0	0.0	0.0	13.8
Lane LOS					B
Approach Delay (s)	0.0		0.0		13.8
Approach LOS					B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		

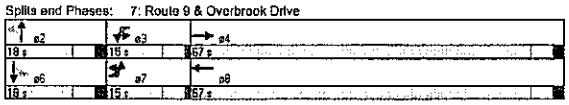
2013 Build Capacity Analysis – With Mitigation

Lane Group	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
Storage Length (ft)		115		0		115		0	0		0	0
Storage Lanes		1		0		1		0	0		0	0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50		50	50	50		50	50	50	50
Trailing Detector (ft)	0	0	0		0	0	0		0	0	0	0
Turning Speed (mph)	9	15		9	9	15		9	15		9	15		9
Right Turn on Red				Yes				Yes			Yes			Yes
Link Speed (mph)			30				30			30			30	
Link Distance (ft)			1199				382			227			1412	
Travel Time (s)			27.3				8.2			5.2			32.1	
Volume (vph)	45	75	2310	30	90	30	2295	15	30	1	30	60	0	155
Peak Hour Factor	0.92	0.98	0.98	0.92	0.98	0.92	0.98	0.98	0.92	0.92	0.92	0.89	0.92	0.89
Heavy Vehicles (%)	2%	1%	1%	2%	2%	2%	2%	2%	2%	2%	2%	4%	2%	4%
Lane Group Flow (vph)	0	126	2390	0	0	125	2357	0	0	67	0	0	241	0
Turn Type	Prot	Prot			Prot	Prot			Perm			Perm		
Protected Phases	7	7	4		3	3	8			2			6	
Permitted Phases									2			6		
Detector Phases	7	7	4		3	3	8		2	2		6	6	
Minimum Initial (s)	6.0	6.0	15.0		6.0	6.0	15.0		4.0	4.0		6.0	6.0	
Minimum Split (s)	11.0	11.0	21.0		11.0	11.0	21.0		12.0	12.0		12.0	12.0	
Total Split (s)	15.0	15.0	67.0	0.0	15.0	15.0	67.0	0.0	18.0	18.0	0.0	18.0	18.0	0.0
Total Split (%)	15.0%	15.0%	67.0%	0.0%	15.0%	15.0%	67.0%	0.0%	18.0%	18.0%	0.0%	18.0%	18.0%	0.0%
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	2.0		1.0	1.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag	Lead	Lead	Lag		Lead	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes							
Recall Mode	None	None	Min		None	None	Min		None	None		None	None	
v/c Ratio		0.67	1.05			0.66	1.05			0.43			0.66	
Control Delay		60.6	53.8			60.6	52.0			32.6			54.8	
Queue Delay		0.0	0.0			0.0	0.0			0.0			0.0	
Total Delay		60.6	53.8			60.6	52.0			32.6			54.8	
Queue Length 50th (ft)		78	~890			78	~874			20			94	
Queue Length 95th (ft)		#154	#1031			#153	#1014			63			#230	
Internal Link Dist (ft)			1119				282			147			1332	
Turn Bay Length (ft)		115				115								
Base Capacity (vph)		197	2273			195	2253			160			287	
Starvation Cap Reductn		0	0			0	0			0			0	
Spillback Cap Reductn		0	0			0	0			0			0	
Storage Cap Reductn		0	0			0	0			0			0	
Reduced v/c Ratio		0.64	1.05			0.64	1.05			0.42			0.84	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 98.9
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Route 9 & Overbrook Drive



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	0.95			1.00	0.95			1.00			1.00	
Frt		1.00	1.00			1.00	1.00			0.93			0.90	
Flt Protected		0.95	1.00			0.95	1.00			0.98			0.99	
Satd. Flow (prot)		1780	3566			1770	3536			1697			1626	
Flt Permitted		0.95	1.00			0.95	1.00			0.53			0.89	
Satd. Flow (perm)		1780	3566			1770	3536			923			1475	
Volume (vph)	45	75	2310	30	90	30	2295	15	30	1	30	60	0	155
Peak-hour factor, PHF	0.92	0.98	0.98	0.92	0.98	0.92	0.98	0.98	0.92	0.92	0.92	0.89	0.92	0.89
Adj. Flow (vph)	49	77	2357	33	92	33	2342	15	33	1	33	67	0	174
RTOR Reduction (vph)	0	0	1	0	0	0	0	0	0	29	0	0	80	0
Lane Group Flow (vph)	0	126	2389	0	0	125	2357	0	0	38	0	0	161	0
Heavy Vehicles (%)	2%	1%	1%	2%	2%	2%	2%	2%	2%	2%	2%	4%	2%	4%
Turn Type	Prot	Prot			Prot	Prot			Perm			Perm		
Protected Phases	7	7	4		3	3	8			2			6	
Permitted Phases									2			6		
Actuated Green, G (s)		9.5	61.0			9.5	61.0			11.4			11.4	
Effective Green, g (s)		10.5	63.0			10.5	63.0			13.4			13.4	
Actuated g/C Ratio		0.11	0.64			0.11	0.64			0.14			0.14	
Clearance Time (s)		5.0	6.0			5.0	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)		189	2272			188	2252			125			200	
v/s Ratio Prot		c0.07	c0.67			0.07	0.67							
v/s Ratio Perm										0.04			c0.11	
v/c Ratio		0.67	1.05			0.66	1.05			0.31			0.81	
Uniform Delay, d1		42.5	18.0			42.5	18.0			38.8			41.5	
Progression Factor		1.00	1.00			1.00	1.00			1.00			1.00	
Incremental Delay, d2		8.6	34.1			8.6	32.5			1.4			20.7	
Delay (s)		51.1	52.1			51.1	50.4			40.0			62.2	
Level of Service		D	D			D	D			D			E	
Approach Delay (s)			52.0				50.5			40.0			62.2	
Approach LOS			D				D			D			E	

Intersection Summary

HCM Average Control Delay	51.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	98.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	95.4%	ICU Level of Service	F
Analysis Period (min)	15		

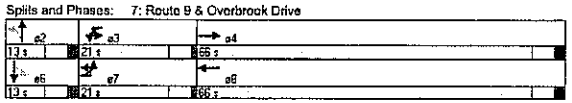
c Critical Lane Group

Lane Group	EBL	EBL	EBT	EBR	WBL	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	1900	1900
Storage Length (ft)		115		0		115		0	0		0	0		0
Storage Lanes		1		0		1		0	0		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50		50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0		0	0	0		0	0		0	0	
Turning Speed (mph)	9	15		9	9	15		9	15		9	15		9
Right Turn on Red				Yes				Yes			Yes			Yes
Link Speed (mph)			30				30			30			30	
Link Distance (ft)			1199				372			219			1412	
Travel Time (s)			27.3				8.5			5.0			32.1	
Volume (vph)	100	65	1865	45	105	45	2245	25	40	1	35	50	0	90
Peak Hour Factor	0.92	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.92	0.94
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Lane Group Flow (vph)	0	178	2054	0	0	163	2467	0	0	82	0	0	149	0
Turn Type	Prot	Prot			Prot	Prot			Perm			Perm		
Protected Phases	7	7	4		3	3	8			2			6	
Permitted Phases									2			6		
Detector Phases	7	7	4		3	3	8		2	2		6	6	
Minimum Initial (s)	6.0	6.0	15.0		6.0	6.0	15.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	11.0	11.0	21.0		11.0	11.0	21.0		12.0	12.0		12.0	12.0	
Total Split (s)	21.0	21.0	66.0	0.0	21.0	21.0	66.0	0.0	13.0	13.0	0.0	13.0	13.0	0.0
Total Split (%)	21.0%	21.0%	66.0%	0.0%	21.0%	21.0%	66.0%	0.0%	13.0%	13.0%	0.0%	13.0%	13.0%	0.0%
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	2.0		1.0	1.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag	Lead	Lead	Lag		Lead	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes							
Recall Mode	Min	Min	Min		Min	Min	Max		Min	Min		None	None	
v/c Ratio		0.66	0.90			0.63	1.09			0.67			0.76	
Control Delay		51.7	22.5			50.2	67.4			55.4			48.2	
Queue Delay		0.0	0.0			0.0	0.0			0.0			0.0	
Total Delay		51.7	22.5			50.2	67.4			55.4			48.2	
Queue Length 50th (ft)		106	533			97	~941			29			47	
Queue Length 95th (ft)		177	#756			163	#1097			#104			#148	
Internal Link Dist (ft)			1119				292			139			1332	
Turn Bay Length (ft)		115				115								
Base Capacity (vph)		304	2281			303	2269			123			199	
Starvation Cap Reductn		0	0			0	0			0			0	
Spillback Cap Reductn		0	0			0	0			0			0	
Storage Cap Reductn		0	0			0	0			0			0	
Reduced v/c Ratio		0.59	0.90			0.54	1.09			0.67			0.75	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 97.6
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Route 9 & Overbrook Drive



Movement	EBL	EBL	EBT	EBR	WBL	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	1900	1900
Total Lost time (s)		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	
Frt		1.00	1.00			1.00	1.00			0.94			0.91	
Flt Protected		0.95	1.00			0.95	1.00			0.97			0.98	
Satd. Flow (prot)		1787	3561			1787	3568			1702			1688	
Flt Permitted		0.95	1.00			0.95	1.00			0.57			0.85	
Satd. Flow (perm)		1787	3561			1787	3568			1003			1456	
Volume (vph)	100	65	1865	45	105	45	2245	25	40	1	35	50	0	90
Peak-hour factor, PHF	0.92	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.92	0.94
Adj. Flow (vph)	109	69	2005	49	114	49	2440	27	43	1	38	53	0	96
RTOR Reduction (vph)	0	0	1	0	0	0	1	0	0	31	0	0	65	0
Lane Group Flow (vph)	0	178	2053	0	0	163	2486	0	0	51	0	0	84	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Turn Type	Prot	Prot			Prot	Prot			Perm			Perm		
Protected Phases	7	7	4		3	3	8			2			6	
Permitted Phases									2			6		
Actuated Green, G (s)		13.6	60.5			13.2	60.1			8.9			8.9	
Effective Green, g (s)		14.6	62.5			14.2	62.1			8.9			8.9	
Actuated g/C Ratio		0.15	0.64			0.15	0.64			0.09			0.09	
Clearance Time (s)		5.0	6.0			5.0	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)		267	2280			260	2270			91			133	
v/s Ratio Prot		c0.10	0.58			0.09	c0.69							
v/s Ratio Perm										0.05			c0.06	
v/c Ratio		0.67	0.90			0.63	1.09			0.56			0.63	
Uniform Delay, d1		39.2	14.9			39.2	17.7			42.5			42.8	
Progression Factor		1.00	1.00			1.00	1.00			1.00			1.00	
Incremental Delay, d2		6.2	5.3			4.7	47.1			7.7			8.9	
Delay (s)		45.4	20.3			43.9	64.9			50.2			51.7	
Level of Service		D	C			D	E			D			D	
Approach Delay (s)			22.3				63.6			50.2			51.7	
Approach LOS			C				E			D			D	

Intersection Summary

HCM Average Control Delay	44.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	97.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

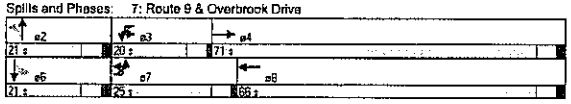
2013 Build Capacity Analysis – With Cross Connection

Lane Group	EBL	EBL	EBT	EBR	WBL	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	1900	1900
Storage Length (ft)		115		0		115		0	0		0	0		0
Storage Lanes		1		0		1		0	0		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50		50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0		0	0	0		0	0		0	0	
Turning Speed (mph)	9	15		9	9	15		9	15		9	15		9
Right Turn on Red				Yes				Yes			Yes			Yes
Link Speed (mph)			30				30			30			30	
Link Distance (ft)			1199				362			227			1412	
Travel Time (s)			27.3				8.2			5.2			32.1	
Volume (vph)	45	75	2310	30	90	30	2215	15	110	1	30	60	0	155
Peak Hour Factor	0.92	0.98	0.98	0.92	0.98	0.92	0.98	0.98	0.92	0.92	0.92	0.89	0.92	0.89
Heavy Vehicles (%)	2%	1%	1%	2%	2%	2%	2%	2%	2%	2%	2%	4%	2%	4%
Lane Group Flow (vph)	0	126	2389	0	0	125	2275	0	0	154	0	0	241	0
Turn Type	Prot	Prot			Prot	Prot			Perm			Perm		
Protected Phases	7	7	4		3	3	8			2			6	
Permitted Phases									2			6		
Detector Phases	7	7	4		3	3	8		2	2		6	6	
Minimum Initial (s)	6.0	6.0	15.0		6.0	6.0	15.0		4.0	4.0		6.0	6.0	
Minimum Split (s)	11.0	11.0	21.0		11.0	11.0	21.0		12.0	12.0		12.0	12.0	
Total Split (s)	25.0	25.0	71.0	0.0	20.0	20.0	66.0	0.0	21.0	21.0	0.0	21.0	21.0	0.0
Total Split (%)	22.3%	22.3%	63.4%	0.0%	17.9%	17.9%	58.9%	0.0%	18.8%	18.8%	0.0%	18.8%	18.8%	0.0%
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	2.0		1.0	1.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag	Lead	Lead	Lag		Lead	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes							
Recall Mode	None	None	Min		None	None	Min		None	None		None	None	
v/c Ratio		0.58	1.09			0.58	1.06			1.32			0.77	
Control Delay		54.3	72.2			56.6	59.7			228.0			44.0	
Queue Delay		0.0	0.0			0.0	0.0			0.0			0.0	
Total Delay		54.3	72.2			56.6	59.7			228.0			44.0	
Queue Length 50th (ft)		85	~1013			84	~931			~136			99	
Queue Length 95th (ft)		142	#1185			145	#1141			#276			#227	
Internal Link Dist (ft)			1119				282			147			1332	
Turn Bay Length (ft)		115				115								
Base Capacity (vph)		321	2188			253	2150			117			312	
Starvation Cap Reductn		0	0			0	0			0			0	
Spillback Cap Reductn		0	0			0	0			0			0	
Storage Cap Reductn		0	0			0	0			0			0	
Reduced v/c Ratio		0.39	1.09			0.49	1.06			1.32			0.77	

Intersection Summary

Area Type: Other
Cycle Length: 112
Actuated Cycle Length: 109.3
Natural Cycle: 140
Control Type: Actuated-Uncoordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Route 9 & Overbrook Drive



Movement	EBL	EBL	EBT	EBR	WBL	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	1900	1900
Total Lost time (s)		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	
Frt		1.00	1.00			1.00	1.00			0.97			0.90	
Flt Protected		0.95	1.00			0.95	1.00			0.98			0.99	
Satd. Flow (prot)		1780	3566			1770	3536			1741			1626	
Flt Permitted		0.95	1.00			0.95	1.00			0.39			0.89	
Satd. Flow (perm)		1780	3566			1770	3536			713			1474	
Volume (vph)	45	75	2310	30	90	30	2215	15	110	1	30	60	0	155
Peak-hour factor, PHF	0.92	0.98	0.98	0.92	0.98	0.92	0.98	0.98	0.92	0.92	0.92	0.89	0.92	0.89
Adj. Flow (vph)	49	77	2357	33	92	33	2260	15	120	1	33	67	0	174
RTOR Reduction (vph)	0	0	1	0	0	0	0	0	0	8	0	0	83	0
Lane Group Flow (vph)	0	126	2389	0	0	125	2275	0	0	146	0	0	158	0
Heavy Vehicles (%)	2%	1%	1%	2%	2%	2%	2%	2%	2%	2%	2%	4%	2%	4%
Turn Type	Prot	Prot			Prot	Prot			Perm			Perm		
Protected Phases	7	7	4		3	3	8			2			6	
Permitted Phases									2			6		
Actuated Green, G (s)		12.8	65.0			12.3	64.5			15.0			15.0	
Effective Green, g (s)		13.8	67.0			13.3	66.5			17.0			17.0	
Actuated g/C Ratio		0.13	0.61			0.12	0.61			0.16			0.16	
Clearance Time (s)		5.0	6.0			5.0	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)		225	2186			215	2151			111			229	
v/s Ratio Prot		c0.07	c0.67			0.07	0.64							
v/s Ratio Perm										c0.20			0.11	
v/c Ratio		0.56	1.09			0.58	1.06			1.31			0.69	
Uniform Delay, d1		44.9	21.2			45.4	21.4			46.2			43.7	
Progression Factor		1.00	1.00			1.00	1.00			1.00			1.00	
Incremental Delay, d2		3.2	49.9			4.0	36.7			190.4			8.7	
Delay (s)		48.1	71.1			49.3	58.1			236.5			52.3	
Level of Service		D	E			D	E			F			D	
Approach Delay (s)			69.9				57.7			236.5			52.3	
Approach LOS			E				E			F			D	

Intersection Summary

HCM Average Control Delay	68.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	109.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	100.5%	ICU Level of Service	G
Analysis Period (min)	15		

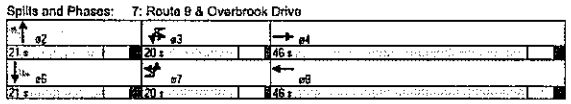
c Critical Lane Group

Lane Configurations														
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		115		0		115		0	0		0	0		0
Storage Lanes		1		0		1		0	0		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50		50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0		0	0	0		0	0		0	0	
Turning Speed (mph)	9	15		9	9	15		9	15		9	15		9
Right Turn on Red				Yes				Yes			Yes			Yes
Link Speed (mph)			30				30			30			30	
Link Distance (ft)			1199				372			219			1412	
Travel Time (s)			27.3				8.5			5.0			32.1	
Volume (vph)	100	65	1885	45	105	45	2160	25	125	1	35	50	0	90
Peak Hour Factor	0.92	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.92	0.94
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Lane Group Flow (vph)	0	178	2064	0	0	163	2375	0	0	176	0	0	149	0
Turn Type	Prot	Prot			Prot	Prot			Perm			Perm		
Protected Phases	7	7	4		3	3	8			2			6	
Permitted Phases									2			6		
Detector Phases	7	7	4		3	3	8		2	2		6	6	
Minimum Initial (s)	6.0	6.0	15.0		6.0	6.0	15.0		8.0	6.0		6.0	6.0	
Minimum Split (s)	11.0	11.0	21.0		11.0	11.0	21.0		12.0	12.0		12.0	12.0	
Total Split (s)	20.0	20.0	46.0	0.0	20.0	20.0	46.0	0.0	21.0	21.0	0.0	21.0	21.0	0.0
Total Split (%)	23.0%	23.0%	52.9%	0.0%	23.0%	23.0%	52.9%	0.0%	24.1%	24.1%	0.0%	24.1%	24.1%	0.0%
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	2.0		1.0	1.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag	Lead	Lead	Lag		Lead	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes							
Recall Mode	Min	Min	Min		Min	Min	Max		Min	Min		None	None	
v/c Ratio		0.62	1.13			0.58	1.32			0.78			0.42	
Control Delay		42.6	89.3			41.5	169.2			55.1			17.0	
Queue Delay		0.0	0.0			0.0	0.0			0.0			0.0	
Total Delay		42.6	89.3			41.5	169.2			55.1			17.0	
Queue Length 50th (ft)		89	~700			82	~905			82			25	
Queue Length 95th (ft)		154	#870			142	#1066			#188			79	
Internal Link Dist (ft)			1119				292			139			1332	
Turn Bay Length (ft)		115				115								
Base Capacity (vph)		334	1817			332	1804			238			373	
Starvation Cap Reductn		0	0			0	0			0			0	
Spillback Cap Reductn		0	0			0	0			0			0	
Storage Cap Reductn		0	0			0	0			0			0	
Reduced v/c Ratio		0.53	1.13			0.49	1.32			0.74			0.40	

Intersection Summary

Area Type: Other
Cycle Length: 87
Actuated Cycle Length: 83.4
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Route 9 & Overbrook Drive



Lane Configurations														
Ideal Flow (vphpl)	1900	1900	1900	1900	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	0.95			1.00	0.95			1.00			1.00	
Frt		1.00	1.00			1.00	1.00			0.97			0.91	
Flt Protected		0.95	1.00			0.95	1.00			0.96			0.98	
Satd. Flow (prot)		1787	3551			1787	3566			1741			1688	
Flt Permitted		0.95	1.00			0.95	1.00			0.62			0.87	
Satd. Flow (perm)		1787	3551			1787	3566			1130			1486	
Volume (vph)	100	65	1885	45	105	45	2160	25	125	1	35	50	0	90
Peak-hour factor, PHF	0.92	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.92	0.94
Adj. Flow (vph)	109	69	2005	49	114	49	2348	27	136	1	38	53	0	96
RTOR Reduction (vph)	0	0	2	0	0	0	1	0	0	11	0	0	75	0
Lane Group Flow (vph)	0	178	2052	0	0	163	2374	0	0	164	0	0	74	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Turn Type	Prot	Prot			Prot	Prot			Perm			Perm		
Protected Phases	7	7	4		3	3	8			2			6	
Permitted Phases									2			6		
Actuated Green, G (s)		12.5	40.5			12.1	40.1			13.7			13.7	
Effective Green, g (s)		13.5	42.5			13.1	42.1			15.7			15.7	
Actuated g/C Ratio		0.16	0.51			0.16	0.51			0.19			0.19	
Clearance Time (s)		5.0	6.0			5.0	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)		290	1817			281	1803			213			280	
v/s Ratio Prot		c0.10	0.58			0.09	c0.67							
v/s Ratio Perm										c0.14			0.05	
v/c Ratio		0.61	1.13			0.58	1.32			0.77			0.26	
Uniform Delay, d1		32.5	20.4			32.5	20.6			32.1			28.9	
Progression Factor		1.00	1.00			1.00	1.00			1.00			1.00	
Incremental Delay, d2		3.8	65.9			3.0	146.6			16.3			0.5	
Delay (s)		36.3	86.3			35.6	167.2			47.3			29.4	
Level of Service		D	F			D	F			D			C	
Approach Delay (s)			82.3				158.7			47.3			29.4	
Approach LOS			F				F			D			C	

Intersection Summary

HCM Average Control Delay	117.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	83.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	95.4%	ICU Level of Service	F
Analysis Period (min)	15		

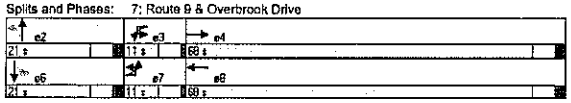
c Critical Lane Group

Lane Group	EBL	EBL	EBT	EBR	WBL	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	1900	1900
Storage Length (ft)		115		0		115		0	0		0	0		0
Storage Lanes		1		0		1		0	0		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50		50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0		0	0	0		0	0		0	0	
Turning Speed (mph)	9	15		9	9	15		9	15		9	15		9
Right Turn on Red				Yes				Yes			Yes			Yes
Link Speed (mph)			30				30			30			30	
Link Distance (ft)			1199				199			227			1412	
Travel Time (s)			27.3				4.5			5.2			32.1	
Volume (vph)	45	75	2310	30	90	30	2215	15	110	1	30	60	0	155
Peak Hour Factor	0.92	0.98	0.98	0.92	0.98	0.92	0.98	0.98	0.92	0.92	0.92	0.89	0.92	0.89
Heavy Vehicles (%)	2%	1%	1%	2%	2%	2%	2%	2%	2%	2%	2%	4%	2%	4%
Lane Group Flow (vph)	0	126	2369	0	0	125	2275	0	0	154	0	0	241	0
Turn Type	Prot	Prot			Prot	Prot			Perm			Perm		
Protected Phases	7	7	4		3	3	8			2			6	
Permitted Phases									2			6		
Detector Phases	7	7	4		3	3	8		2	2		6	6	
Minimum Initial (s)	6.0	6.0	15.0		6.0	6.0	15.0		4.0	4.0		6.0	6.0	
Minimum Split (s)	11.0	11.0	21.0		11.0	11.0	21.0		12.0	12.0		12.0	12.0	
Total Split (s)	11.0	11.0	68.0	0.0	11.0	11.0	68.0	0.0	21.0	21.0	0.0	21.0	21.0	0.0
Total Split (%)	11.0%	11.0%	68.0%	0.0%	11.0%	11.0%	68.0%	0.0%	21.0%	21.0%	0.0%	21.0%	21.0%	0.0%
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	2.0		1.0	1.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag	Lead	Lead	Lag		Lead	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes							
Recall Mode	None	None	None		None	None	None		None	None		None	None	
v/c Ratio		1.01	1.05			1.01	1.01			1.09			0.83	
Control Delay		131.1	51.8			131.5	39.1			141.0			57.3	
Queue Delay		0.0	0.0			0.0	0.0			0.0			0.0	
Total Delay		131.1	51.8			131.5	39.1			141.0			57.3	
Queue Length 50th (ft)		~83	~877			~82	~713			~105			122	
Queue Length 95th (ft)		#201	#1017			#200	#943			#233			#256	
Internal Link Dist (ft)			1119				119			147			1332	
Turn Bay Length (ft)		115				115								
Base Capacity (vph)		125	2284			124	2263			141			289	
Starvation Cap Reductn		0	0			0	0			0			0	
Spillback Cap Reductn		0	0			0	0			0			0	
Storage Cap Reductn		0	0			0	0			0			0	
Reduced v/c Ratio		1.01	1.05			1.01	1.01			1.09			0.83	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Natural Cycle: 140
Control Type: Actuated-Uncoordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Route 9 & Overbrook Drive



Movement	EBL	EBL	EBT	EBR	WBL	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	1900	1900
Total Lost time (s)		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	
Frt		1.00	1.00			1.00	1.00			0.97			0.90	
Flt Protected		0.95	1.00			0.95	1.00			0.98			0.99	
Satd. Flow (prot)		1780	3566			1770	3536			1741			1626	
Flt Permitted		0.95	1.00			0.95	1.00			0.43			0.89	
Satd. Flow (perm)		1780	3566			1770	3536			771			1468	
Volume (vph)	45	75	2310	30	90	30	2215	15	110	1	30	60	0	155
Peak-hour factor, PHF	0.92	0.98	0.98	0.92	0.98	0.92	0.98	0.98	0.92	0.92	0.92	0.89	0.92	0.89
Adj. Flow (vph)	49	77	2357	33	92	33	2260	15	120	1	33	67	0	174
RTOR Reduction (vph)	0	0	1	0	0	0	0	0	0	10	0	0	39	0
Lane Group Flow (vph)	0	126	2369	0	0	125	2275	0	0	144	0	0	202	0
Heavy Vehicles (%)	2%	1%	1%	2%	2%	2%	2%	2%	2%	2%	2%	4%	2%	4%
Turn Type	Prot	Prot			Prot	Prot			Perm			Perm		
Protected Phases	7	7	4		3	3	8			2			6	
Permitted Phases									2			6		
Actuated Green, G (s)		6.0	62.0			6.0	62.0			15.0			15.0	
Effective Green, g (s)		7.0	64.0			7.0	64.0			17.0			17.0	
Actuated g/C Ratio		0.07	0.64			0.07	0.64			0.17			0.17	
Clearance Time (s)		5.0	6.0			5.0	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)		125	2282			124	2263			131			250	
v/s Ratio Prot		c0.07	c0.67			0.07	0.64							
v/s Ratio Perm										c0.19			0.14	
v/c Ratio		1.01	1.05			1.01	1.01			1.10			0.81	
Uniform Delay, d1		46.5	18.0			46.5	18.0			41.5			39.9	
Progression Factor		1.00	1.00			1.00	1.00			1.00			1.00	
Incremental Delay, d2		82.6	32.5			83.0	20.2			107.8			17.2	
Delay (s)		129.1	50.5			129.5	38.2			149.3			57.1	
Level of Service		F	D			F	D			F			E	
Approach Delay (s)			54.5				42.9			149.3			57.1	
Approach LOS			D				D			F			E	

Intersection Summary

HCM Average Control Delay	52.1	HCM Level of Service	D
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	100.5%	ICU Level of Service	G
Analysis Period (min)	15		

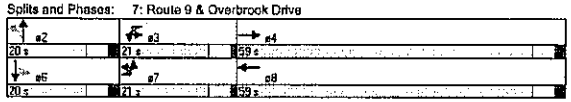
c Critical Lane Group

Lane Group	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
Storage Length (ft)		115		0		115		0	0		0	0
Storage Lanes		1		0		1		0	0		0	0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50		50	50	50	50	50		50	50
Trailing Detector (ft)	0	0	0		0	0	0	0	0		0	0
Turning Speed (mph)	9	15		9	9	15		9	15	9	15	
Right Turn on Red				Yes				Yes		Yes		
Link Speed (mph)			30				30		30			30
Link Distance (ft)			1199				372		219			1412
Travel Time (s)			27.3				8.5		5.0			32.1
Volume (vph)	100	65	1885	45	105	45	2160	25	125	1	35	50	0	90
Peak Hour Factor	0.92	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.92	0.94
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Lane Group Flow (vph)	0	178	2054	0	0	163	2375	0	0	175	0	0	149	0
Turn Type	Prot	Prot			Prot	Prot			Perm			Perm		
Protected Phases	7	7	4		3	3	8			2			6	
Permitted Phases									2			6		
Detector Phases	7	7	4		3	3	8		2	2		6	6	
Minimum Initial (s)	6.0	6.0	15.0		6.0	6.0	15.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	11.0	11.0	21.0		11.0	11.0	21.0		12.0	12.0		12.0	12.0	
Total Split (s)	21.0	21.0	59.0	0.0	21.0	21.0	59.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Total Split (%)	21.0%	21.0%	59.0%	0.0%	21.0%	21.0%	59.0%	0.0%	20.0%	20.0%	0.0%	20.0%	20.0%	0.0%
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	2.0		1.0	1.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag	Lead	Lead	Lag		Lead	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes							
Recall Mode	Min	Min	Min		Min	Min	Max		Min	Min		None	None	
v/c Ratio		0.66	1.02			0.63	1.18			0.96			0.48	
Control Delay		51.7	46.3			50.3	110.3			96.9			24.7	
Queue Delay		0.0	0.0			0.0	0.0			0.0			0.0	
Total Delay		51.7	46.3			50.3	110.3			96.9			24.7	
Queue Length 50th (ft)		106	~728			97	~956			104			40	
Queue Length 95th (ft)		177	#896			163	#1123			#243			102	
Internal Link Dist (ft)			1119				292			139			1332	
Turn Bay Length (ft)		115				115								
Base Capacity (vph)		304	2023			303	2010			183			311	
Starvation Cap Reductn		0	0			0	0			0			0	
Spillback Cap Reductn		0	0			0	0			0			0	
Storage Cap Reductn		0	0			0	0			0			0	
Reduced v/c Ratio		0.59	1.02			0.54	1.18			0.96			0.48	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 97.7
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: Route 9 & Overbrook Drive



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	0.95			1.00	0.95			1.00			1.00	
Frt		1.00	1.00			1.00	1.00			0.97			0.91	
Flt Protected		0.95	1.00			0.95	1.00			0.98			0.98	
Satd. Flow (prot)		1787	3561			1787	3568			1741			1688	
Flt Permitted		0.95	1.00			0.95	1.00			0.59			0.87	
Satd. Flow (perm)		1787	3561			1787	3568			1064			1488	
Volume (vph)	100	65	1885	45	105	45	2160	25	125	1	35	50	0	90
Peak-hour factor, PHF	0.92	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.92	0.94
Adj. Flow (vph)	109	69	2005	49	114	49	2348	27	136	1	38	53	0	96
RTOR Reduction (vph)	0	0	2	0	0	0	1	0	0	10	0	0	65	0
Lane Group Flow (vph)	0	178	2062	0	0	163	2374	0	0	165	0	0	84	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Turn Type	Prot	Prot			Prot	Prot			Perm			Perm		
Protected Phases	7	7	4		3	3	8			2			6	
Permitted Phases									2			6		
Actuated Green, G (s)		13.7	53.5			13.2	53.0			14.0			14.0	
Effective Green, g (s)		14.7	55.6			14.2	55.0			16.0			16.0	
Actuated g/C Ratio		0.15	0.57			0.15	0.56			0.16			0.16	
Clearance Time (s)		5.0	6.0			5.0	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)		269	2023			260	2009			174			245	
v/s Ratio Prot		c0.10	0.58			0.09	c0.67							
v/s Ratio Perm										c0.16			0.06	
v/c Ratio		0.66	1.01			0.63	1.18			0.95			0.34	
Uniform Delay, d1		39.2	21.1			39.3	21.4			40.4			36.2	
Progression Factor		1.00	1.00			1.00	1.00			1.00			1.00	
Incremental Delay, d2		6.0	23.7			4.7	87.2			52.6			0.8	
Delay (s)		45.1	44.8			43.9	108.6			93.0			37.0	
Level of Service		D	D			D	F			F			D	
Approach Delay (s)			44.8				104.4			93.0			37.0	
Approach LOS			D				F			F			D	

Intersection Summary

HCM Average Control Delay	75.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	97.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	95.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	3%	
Volume (veh/h)	2160	340	0	2670	0	295
Peak Hour Factor	0.95	0.95	0.95	0.95	0.72	0.72
Hourly flow rate (vph)	2274	358	0	2811	0	410
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			2632		3858	1316
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2632		3858	1316
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	0
cM capacity (veh/h)			162		3	149

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1516	1116	1405	1405	410
Volume Left	0	0	0	0	0
Volume Right	0	358	0	0	410
cSH	1700	1700	1700	1700	149
Volume to Capacity	0.89	0.66	0.83	0.83	2.74
Queue Length 95th (ft)	0	0	0	0	918
Control Delay (s)	0.0	0.0	0.0	0.0	850.2
Lane LOS					F
Approach Delay (s)	0.0		0.0		850.2
Approach LOS					F

Intersection Summary			
Average Delay	59.5		
Intersection Capacity Utilization	95.5%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	-3%			0%	0%	
Volume (veh/h)	135	205	85	755	855	210
Peak Hour Factor	0.94	0.94	0.95	0.95	0.93	0.93
Hourly flow rate (vph)	144	218	89	795	919	226
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2006	1032	1145			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2006	1032	1145			
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	23	85			
cM capacity (veh/h)	56	283	614			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	362	884	1145
Volume Left	144	89	0
Volume Right	218	0	226
cSH	108	614	1700
Volume to Capacity	3.34	0.15	0.67
Queue Length 95th (ft)	Err	13	0
Control Delay (s)	Err	4.1	0.0
Lane LOS	F	A	
Approach Delay (s)	Err	4.1	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	1514.1		
Intersection Capacity Utilization	132.3%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		2%	
Volume (veh/h)	0	2500	2540	130	0	85
Peak Hour Factor	0.93	0.93	0.91	0.91	0.79	0.79
Hourly flow rate (vph)	0	2688	2791	143	0	108
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2934				4207	1467
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2934				4207	1467
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	7
cM capacity (veh/h)	122				1	116

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	1344	1344	1861	1073	108
Volume Left	0	0	0	0	0
Volume Right	0	0	0	143	108
cSH	1700	1700	1700	1700	116
Volume to Capacity	0.79	0.79	1.09	0.63	0.93
Queue Length 95th (ft)	0	0	0	0	147
Control Delay (s)	0.0	0.0	0.0	0.0	135.4
Lane LOS					F
Approach Delay (s)	0.0		0.0		135.4
Approach LOS					F

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	86.3%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↳			↱
Sign Control		Free	Free		Stop	
Grade		0%	0%		2%	
Volume (veh/h)	0	2455	2440	265	0	230
Peak Hour Factor	0.92	0.92	0.93	0.93	0.83	0.83
Hourly flow rate (vph)	0	2668	2624	285	0	277
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2909				4100	1454
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2909				4100	1454
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	0
cM capacity (veh/h)	123				2	120

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	1334	1334	1749	1159	277
Volume Left	0	0	0	0	0
Volume Right	0	0	0	285	277
cSH	1700	1700	1700	1700	120
Volume to Capacity	0.78	0.78	1.03	0.68	2.30
Queue Length 95th (ft)	0	0	0	0	598
Control Delay (s)	0.0	0.0	0.0	0.0	669.6
Lane LOS					F
Approach Delay (s)	0.0		0.0		669.6
Approach LOS					F

Intersection Summary			
Average Delay	31.7		
Intersection Capacity Utilization	96.8%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	2485	0	0	2345	0	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2701	0	0	2549	0	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	199					
pX, platoon unblocked			0.39		0.39	0.39
vC, conflicting volume			2701		3976	1351
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			3776		7004	355
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	98
cM capacity (veh/h)			21		0	253

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1351	1351	1274	1274	5
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	5
cSH	1700	1700	1700	1700	253
Volume to Capacity	0.79	0.79	0.75	0.75	0.02
Queue Length 95th (ft)	0	0	0	0	2
Control Delay (s)	0.0	0.0	0.0	0.0	19.5
Lane LOS					C
Approach Delay (s)	0.0		0.0		19.5
Approach LOS					C

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	78.7%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	3%	
Volume (veh/h)	1635	375	0	2420	0	265
Peak Hour Factor	0.97	0.97	0.96	0.96	0.83	0.83
Hourly flow rate (vph)	1686	387	0	2521	0	319
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			2072		3139	1036
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2072		3139	1036
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	0
cM capacity (veh/h)			269		9	230

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1124	948	1260	1260	319
Volume Left	0	0	0	0	0
Volume Right	0	387	0	0	319
cSH	1700	1700	1700	1700	230
Volume to Capacity	0.66	0.56	0.74	0.74	1.39
Queue Length 95th (ft)	0	0	0	0	447
Control Delay (s)	0.0	0.0	0.0	0.0	239.9
Lane LOS					F
Approach Delay (s)	0.0		0.0		239.9
Approach LOS					F

Intersection Summary			
Average Delay	15.6		
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	-3%			0%	0%	
Volume (veh/h)	125	250	80	975	645	185
Peak Hour Factor	0.91	0.91	0.92	0.92	0.91	0.91
Hourly flow rate (vph)	137	275	87	1060	709	203
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2044	810	912			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2044	810	912			
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	28	88			
cM capacity (veh/h)	55	382	751			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	412	1147	912
Volume Left	137	87	0
Volume Right	275	0	203
cSH	128	751	1700
Volume to Capacity	3.21	0.12	0.54
Queue Length 95th (ft)	Err	10	0
Control Delay (s)	Err	3.7	0.0
Lane LOS	F	A	
Approach Delay (s)	Err	3.7	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	1669.3		
Intersection Capacity Utilization	133.2%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		2%	
Volume (veh/h)	0	2010	2300	120	0	135
Peak Hour Factor	0.97	0.97	0.94	0.94	0.98	0.98
Hourly flow rate (vph)	0	2072	2447	128	0	138
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2574				3547	1287
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2574				3547	1287
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	13
cM capacity (veh/h)	170				4	158

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	1036	1036	1631	943	138
Volume Left	0	0	0	0	0
Volume Right	0	0	0	128	138
cSH	1700	1700	1700	1700	158
Volume to Capacity	0.61	0.61	0.96	0.55	0.87
Queue Length 95th (ft)	0	0	0	0	151
Control Delay (s)	0.0	0.0	0.0	0.0	98.6
Lane LOS					F
Approach Delay (s)	0.0		0.0		98.6
Approach LOS					F

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	82.4%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		2%	
Volume (veh/h)	0	1900	2070	140	0	350
Peak Hour Factor	0.92	0.92	0.96	0.96	0.82	0.82
Hourly flow rate (vph)	0	2065	2156	146	0	427
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2302				3262	1151
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2302				3262	1151
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	0
cM capacity (veh/h)	215				7	193

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	1033	1033	1438	865	427
Volume Left	0	0	0	0	0
Volume Right	0	0	0	146	427
cSH	1700	1700	1700	1700	193
Volume to Capacity	0.61	0.61	0.85	0.51	2.21
Queue Length 95th (ft)	0	0	0	0	849
Control Delay (s)	0.0	0.0	0.0	0.0	602.3
Lane LOS					F
Approach Delay (s)	0.0		0.0		602.3
Approach LOS					F

Intersection Summary			
Average Delay	53.6		
Intersection Capacity Utilization	90.0%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↱
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	2075	0	0	2335	0	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2255	0	0	2538	0	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	193					
pX, platoon unblocked			0.44		0.44	0.44
vC, conflicting volume			2255		3524	1128
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2584		5487	5
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	99
cM capacity (veh/h)			73		0	471

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1128	1128	1269	1269	5
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	5
cSH	1700	1700	1700	1700	471
Volume to Capacity	0.66	0.66	0.75	0.75	0.01
Queue Length 95th (ft)	0	0	0	0	1
Control Delay (s)	0.0	0.0	0.0	0.0	12.7
Lane LOS					B
Approach Delay (s)	0.0		0.0		12.7
Approach LOS					B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		

600-foot Buffer from 984 Worcester St.