

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	246	273	19	54	274	17	37	1432	63	12	1197	213
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	267	297	21	0	375	0	40	1557	68	13	1533	0
Turn Type	Split		Free	Split			Perm		Perm	Perm		
Protected Phases	4	4		8	8			2			6	
Permitted Phases			Free				2		2	6		
Detector Phases	4	4		8	8		2	2	2	6	6	
Minimum Initial (s)	8.0	8.0		8.0	8.0		20.0	20.0	20.0	20.0	20.0	
Minimum Split (s)	26.0	26.0		27.0	27.0		27.0	27.0	27.0	27.0	27.0	
Total Split (s)	34.0	34.0	0.0	34.0	34.0	0.0	72.0	72.0	72.0	72.0	72.0	0.0
Total Split (%)	24.3%	24.3%	0.0%	24.3%	24.3%	0.0%	51.4%	51.4%	51.4%	51.4%	51.4%	0.0%
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)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min	Min	Min	Min	
Act Effct Green (s)	27.8	27.8	133.6		29.5		64.3	64.3	64.3	64.3	64.3	
Actuated g/C Ratio	0.21	0.21	1.00		0.22		0.48	0.48	0.48	0.48	0.48	
v/c Ratio	0.79	0.84	0.01		0.93		0.75	0.89	0.10	0.27	0.92	
Control Delay	68.9	72.6	0.0		81.6		103.1	38.9	19.9	39.4	41.7	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	68.9	72.6	0.0		81.6		103.1	38.9	19.9	39.4	41.7	
LOS	E	E	A		F		F	D	B	D	D	
Approach Delay		68.3			81.6			39.6			41.6	
Approach LOS		E			F			D			D	
Queue Length 50th (ft)	231	260	0		341		29	654	33	7	655	
Queue Length 95th (ft)	#358	#405	0		#541		#108	764	62	30	772	
Internal Link Dist (ft)		203			244			256			523	
Turn Bay Length (ft)			75				200		75	150		
Base Capacity (vph)	360	378	1553		414		54	1815	734	49	1726	
Starvation Cap Reductn	0	0	0		0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0		0		0	0	0	0	0	
Storage Cap Reductn	0	0	0		0		0	0	0	0	0	
Reduced v/c Ratio	0.74	0.79	0.01		0.91		0.74	0.86	0.09	0.27	0.89	

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 133.6

Natural Cycle: 100

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 48.2

Intersection LOS: D

Intersection Capacity Utilization 82.7%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Glen Head Road & Glen Cove Road

  02	  04	  08
72 s	34 s	34 s
  06		
72 s		

2: Back Road & Glen Cove Road

Build 2016

PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	172	4	286	3	3	4	432	1955	7	8	1392	177
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.96	0.96	0.96	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	0	191	311	0	10	0	450	2043	0	9	1497	190
Turn Type	Split		pt+ov	Split			Prot			Perm		pm+ov
Protected Phases	3	3	3 5	4	4		5	2			6	3
Permitted Phases										6		6
Detector Phases	3	3	3 5	4	4		5	2		6	6	3
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	10.0		10.0	10.0	8.0
Minimum Split (s)	24.0	24.0		38.3	38.3		12.8	24.8		24.8	24.8	24.0
Total Split (s)	25.5	25.5	61.5	38.3	38.3	0.0	36.0	94.8	0.0	58.8	58.8	25.5
Total Split (%)	16.1%	16.1%	38.8%	24.1%	24.1%	0.0%	22.7%	59.8%	0.0%	37.1%	37.1%	16.1%
Yellow Time (s)	3.5	3.5		3.5	3.5		4.0	4.0		4.0	4.0	3.5
All-Red Time (s)	2.0	2.0		4.8	4.8		2.0	4.8		4.8	4.8	2.0
Lead/Lag	Lead	Lead		Lag	Lag		Lead			Lag	Lag	Lead
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		None	Max		Max	Max	None
Act Effct Green (s)		19.7	55.1		12.3		32.1	91.2		55.0	55.0	78.7
Actuated g/C Ratio		0.16	0.45		0.09		0.26	0.75		0.45	0.45	0.65
v/c Ratio		0.75	0.38		0.06		0.85	0.77		0.16	0.94	0.19
Control Delay		67.7	3.3		45.6		59.5	13.2		32.6	44.4	4.2
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		67.7	3.3		45.6		59.5	13.2		32.6	44.4	4.2
LOS		E	A		D		E	B		C	D	A
Approach Delay		27.8			45.6			21.6			39.8	
Approach LOS		C			D			C			D	
Queue Length 50th (ft)		147	0		4		332	416		4	564	17
Queue Length 95th (ft)		#295	46		24		#610	830		22	#903	60
Internal Link Dist (ft)		345			160			143			316	
Turn Bay Length (ft)												
Base Capacity (vph)		276	818		421		529	2647		55	1599	1005
Starvation Cap Reductn		0	0		0		0	0		0	0	0
Spillback Cap Reductn		0	0		0		0	0		0	0	0
Storage Cap Reductn		0	0		0		0	0		0	0	0
Reduced v/c Ratio		0.69	0.38		0.02		0.85	0.77		0.16	0.94	0.19

Intersection Summary

Cycle Length: 158.6

Actuated Cycle Length: 121.8

Natural Cycle: 150

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 28.9

Intersection LOS: C

Intersection Capacity Utilization 94.8%

ICU Level of Service F

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

8/25/2009

Dutt Tarigoppula

Eschbacher Engineering

Glen Isle - FEIS
Lanes, Volumes, Timings

Splits and Phases: 2: Back Road & Glen Cove Road

 ø2	 ø3	 ø4
94.8 s	25.5 s	38.3 s
 ø5	 ø6	
36 s	58.8 s	

3: Pratt Blvd & Bridge Street

Build 2016

PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	102	981	30	61	959	77	39	53	64	150	46	156
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	111	1099	0	66	1126	0	42	128	0	0	213	170
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		4
Detector Phases	2	2		6	6		8	8		4	4	4
Minimum Initial (s)	5.0	5.0		5.0	5.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	26.0	26.0		26.0	26.0		25.5	25.5		25.5	25.5	25.5
Total Split (s)	43.5	43.5	0.0	43.5	43.5	0.0	26.5	26.5	0.0	26.5	26.5	26.5
Total Split (%)	62.1%	62.1%	0.0%	62.1%	62.1%	0.0%	37.9%	37.9%	0.0%	37.9%	37.9%	37.9%
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	Min		Min	Min		None	None		None	None	None
Act Effct Green (s)	36.5	36.5		36.5	36.5		16.0	16.0		16.0	16.0	16.0
Actuated g/C Ratio	0.60	0.60		0.60	0.60		0.26	0.26		0.26	0.26	0.26
v/c Ratio	0.58	0.55		0.34	0.57		0.16	0.27		0.64	0.36	0.36
Control Delay	25.6	9.2		13.9	9.3		18.9	10.7		29.0	11.1	11.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	25.6	9.2		13.9	9.3		18.9	10.7		29.0	11.1	11.1
LOS	C	A		B	A		B	B		C	B	B
Approach Delay		10.7			9.6			12.8			21.0	
Approach LOS		B			A			B			C	
Queue Length 50th (ft)	23	114		11	116		12	17		71	22	22
Queue Length 95th (ft)	#112	201		45	206		34	53		138	66	66
Internal Link Dist (ft)		458			137			80			142	
Turn Bay Length (ft)	120											
Base Capacity (vph)	200	2066		201	2058		329	587		425	583	583
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.56	0.53		0.33	0.55		0.13	0.22		0.50	0.29	0.29
Intersection Summary												
Cycle Length: 70												
Actuated Cycle Length: 60.7												
Natural Cycle: 60												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.64												
Intersection Signal Delay: 11.7						Intersection LOS: B						
Intersection Capacity Utilization 62.0%						ICU Level of Service B						
Analysis Period (min) 15												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												

Splits and Phases: 3: Pratt Blvd & Bridge Street

 ø2	 ø4
43.5 s	26.5 s
 ø6	 ø8
43.5 s	26.5 s

1: Cottage Row Road & Brewster Street

Build 2016

PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	138	160	207	30	193	318	158	965	112	231	911	184
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	0	324	225	0	243	346	170	1158	0	251	1190	0
Turn Type	Perm		Free	Perm		Perm	pm+pt			pm+pt		
Protected Phases		3			7		5	2		1	6	
Permitted Phases	3		Free	7		7	2			6		
Detector Phases	3	3		7	7	7	5	2		1	6	
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	4.0	20.0		4.0	20.0	
Minimum Split (s)	28.0	28.0		28.0	28.0	28.0	8.0	26.0		8.0	26.0	
Total Split (s)	31.0	31.0	0.0	31.0	31.0	31.0	12.0	37.0	0.0	12.0	37.0	0.0
Total Split (%)	38.8%	38.8%	0.0%	38.8%	38.8%	38.8%	15.0%	46.3%	0.0%	15.0%	46.3%	0.0%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0		1.0	2.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	None		None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)		24.5	80.0		24.5	24.5	40.5	32.9		45.1	35.9	
Actuated g/C Ratio		0.31	1.00		0.31	0.31	0.51	0.41		0.56	0.45	
v/c Ratio		0.84	0.14		0.46	0.71	0.74	0.84		0.82	0.79	
Control Delay		45.3	0.2		24.9	33.1	30.2	27.1		41.9	24.2	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		45.3	0.2		24.9	33.1	30.2	27.1		41.9	24.2	
LOS		D	A		C	C	C	C		D	C	
Approach Delay		26.8			29.7			27.5			27.3	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)		142	0		92	145	44	272		~81	269	
Queue Length 95th (ft)		#271	0		156	235	#119	#359		#229	#374	
Internal Link Dist (ft)		294			184			618			362	
Turn Bay Length (ft)			250			100	175			175		
Base Capacity (vph)		428	1636		583	536	240	1405		307	1504	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.76	0.14		0.42	0.65	0.71	0.82		0.82	0.79	
Intersection Summary												
Cycle Length: 80												
Actuated Cycle Length: 80												
Offset: 30 (38%), Referenced to phase 2:NBT and 6:SBTL, Start of Green												
Natural Cycle: 75												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.84												
Intersection Signal Delay: 27.7						Intersection LOS: C						
Intersection Capacity Utilization 84.2%						ICU Level of Service E						
Analysis Period (min) 15												
~ 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: 1: Cottage Row Road & Brewster Street

 ø1	 ø2	 ø3
12 s	37 s	31 s
 ø5	 ø6	 ø7
12 s	37 s	31 s

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	80	516	1	45	2	479	176	3	45	219	5
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	0	91	561	0	52	0	521	191	3	49	243	0
Turn Type	Perm		pt+ov	Perm			Split		Perm	Split		
Protected Phases		4	4 6		8		6	6		2	2	
Permitted Phases	4			8					6			
Detector Phases	4	4	4 6	8	8		6	6	6	2	2	
Minimum Initial (s)	8.0	8.0		8.0	8.0		25.0	25.0	25.0	8.0	8.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		31.0	31.0	31.0	14.0	14.0	
Total Split (s)	26.0	26.0	57.0	26.0	26.0	0.0	31.0	31.0	31.0	31.0	31.0	0.0
Total Split (%)	29.5%	29.5%	64.8%	29.5%	29.5%	0.0%	35.2%	35.2%	35.2%	35.2%	35.2%	0.0%
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)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min	Min	None	None	
Act Effct Green (s)		12.1	43.4		12.1		27.3	27.3	27.3	16.0	16.0	
Actuated g/C Ratio		0.18	0.64		0.18		0.40	0.40	0.40	0.24	0.24	
v/c Ratio		0.28	0.43		0.16		0.73	0.25	0.00	0.12	0.57	
Control Delay		27.5	3.1		25.1		26.8	16.4	11.3	20.8	28.3	
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		27.5	3.1		25.1		26.8	16.4	11.3	20.8	28.3	
LOS		C	A		C		C	B	B	C	C	
Approach Delay		6.5			25.1			24.0			27.0	
Approach LOS		A			C			C			C	
Queue Length 50th (ft)		33	22		17		172	50	0	16	86	
Queue Length 95th (ft)		77	74		49		#410	119	5	42	162	
Internal Link Dist (ft)		1067			319			407			212	
Turn Bay Length (ft)									125	125		
Base Capacity (vph)		527	1359		529		715	752	641	591	621	
Starvation Cap Reductn		0	0		0		0	0	0	0	0	
Spillback Cap Reductn		0	0		0		0	0	0	0	0	
Storage Cap Reductn		0	0		0		0	0	0	0	0	
Reduced v/c Ratio		0.17	0.41		0.10		0.73	0.25	0.00	0.08	0.39	

Intersection Summary	
Cycle Length: 88	
Actuated Cycle Length: 67.5	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 17.9	
Intersection LOS: B	
Intersection Capacity Utilization 60.4%	
ICU Level of Service B	
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 5: Herb Hill Road & Charles Street

 Ø2	 Ø6	 Ø4
31 s	31 s	26 s
		 Ø8
		26 s

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	234	541	23	4	505	6	21	12	7	4	2	200
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	249	600	0	0	560	0	0	44	0	0	6	217
Turn Type	pm+pt			Perm			Perm			Perm		Free
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		Free
Detector Phases	5	2		6	6		8	8		4	4	
Minimum Initial (s)	4.0	20.0		20.0	20.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	26.0		26.0	26.0		10.0	10.0		10.0	10.0	
Total Split (s)	9.0	65.0	0.0	56.0	56.0	0.0	15.0	15.0	0.0	15.0	15.0	0.0
Total Split (%)	11.3%	81.3%	0.0%	70.0%	70.0%	0.0%	18.8%	18.8%	0.0%	18.8%	18.8%	0.0%
Yellow Time (s)	3.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?												
Recall Mode	None	Min		Min	Min		None	None		None	None	
Act Effct Green (s)	37.9	40.8			30.9			8.7			8.6	46.7
Actuated g/C Ratio	0.78	0.87			0.66			0.16			0.16	1.00
v/c Ratio	0.39	0.39			0.47			0.16			0.02	0.13
Control Delay	4.3	3.5			8.3			18.6			19.8	0.2
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	4.3	3.5			8.3			18.6			19.8	0.2
LOS	A	A			A			B			B	A
Approach Delay		3.7			8.3			18.6			0.7	
Approach LOS		A			A			B			A	
Queue Length 50th (ft)	0	0			39			5			1	0
Queue Length 95th (ft)	49	138			206			35			11	0
Internal Link Dist (ft)		631			639			463			627	
Turn Bay Length (ft)												25
Base Capacity (vph)	631	1580			1409			333			333	1689
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	0.38			0.40			0.13			0.02	0.13
Intersection Summary												
Cycle Length: 80												
Actuated Cycle Length: 46.7												
Natural Cycle: 45												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.47												
Intersection Signal Delay: 5.2						Intersection LOS: A						
Intersection Capacity Utilization 75.9%						ICU Level of Service D						
Analysis Period (min) 15												

Splits and Phases: 91: Forest Avenue & Lattingtown Road

 ø2		 ø4	
65 s		15 s	
 ø5	 ø6	 ø8	
9 s	56 s	15 s	

8: Northern Boulevard & Glen Cove Road

Build 2016

PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	557	1139	119	412	792	110	184	1120	242	39	1060	357
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	593	1339	0	448	981	0	200	1217	263	41	1116	376
Turn Type	Prot			Prot			Prot		pt+ov	Prot		pt+ov
Protected Phases	5	2		1	6		7	4	4 1	3	8	8 5
Permitted Phases												
Detector Phases	5	2		1	6		7	4	4 1	3	8	8 5
Minimum Initial (s)	8.0	24.0		5.0	24.0		7.0	20.0		3.0	20.0	
Minimum Split (s)	13.0	37.5		10.0	37.5		13.0	34.3		9.0	34.3	
Total Split (s)	23.5	39.3	0.0	23.5	39.3	0.0	17.7	49.5	73.0	17.7	49.5	73.0
Total Split (%)	18.1%	30.2%	0.0%	18.1%	30.2%	0.0%	13.6%	38.1%	56.2%	13.6%	38.1%	56.2%
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.3		3.0	4.3	
All-Red Time (s)	2.0	2.5		2.0	2.5		3.0	3.0		3.0	3.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	19.5	35.3		19.5	35.3		13.7	50.9	74.4	10.6	45.5	69.0
Actuated g/C Ratio	0.15	0.27		0.15	0.27		0.11	0.39	0.57	0.08	0.35	0.53
v/c Ratio	1.19	1.41		0.93	1.08		1.15	0.91	0.31	0.31	0.93	0.26
Control Delay	151.4	228.0		81.7	97.1		164.7	49.0	16.8	61.4	55.2	17.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	151.4	228.0		81.7	97.1		164.7	49.0	16.8	61.4	55.2	17.2
LOS	F	F		F	F		F	D	B	E	E	B
Approach Delay		204.5			92.3			57.7			46.0	
Approach LOS		F			F			E			D	
Queue Length 50th (ft)	~310	~797		194	~483		~198	520	115	33	475	94
Queue Length 95th (ft)	#428	#936		#295	#617		#355	#707	184	70	#614	130
Internal Link Dist (ft)		319			439			466			338	
Turn Bay Length (ft)	425			300			300		420	325		300
Base Capacity (vph)	498	948		481	912		174	1341	846	174	1197	1430
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	1.19	1.41		0.93	1.08		1.15	0.91	0.31	0.24	0.93	0.26
Intersection Summary												
Cycle Length: 130												
Actuated Cycle Length: 130												
Offset: 117 (90%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow												
Natural Cycle: 140												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 1.41												
Intersection Signal Delay: 105.6						Intersection LOS: F						
Intersection Capacity Utilization 99.9%						ICU Level of Service F						
Analysis Period (min) 15												
~ Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												

8/25/2009

Dutt Tarigoppula
Eschbacher EngineeringGlen Isle - FEIS
Lanes, Volumes, Timings

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 8: Northern Boulevard & Glen Cove Road

 ø1	 ø2	 ø3	 ø4
23.5 s	39.3 s	17.7 s	49.5 s
 ø5	 ø6	 ø7	 ø8
23.5 s	39.3 s	17.7 s	49.5 s

1: Driveway/Witte Lane & Bryant Avenue

Build 2016

PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	3	25	193	1	30	1	888	26	219	420	1
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.96	0.96	0.96	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	0	33	0	210	34	0	0	953	0	226	434	0
Turn Type	Perm			Perm			Perm			pm+pt		
Protected Phases		8			4			2		1	6	
Permitted Phases	8			4			2			6		
Detector Phases	8	8		4	4		2	2		1	6	
Minimum Initial (s)	12.0	12.0		12.0	12.0		45.0	45.0		4.0	45.0	
Minimum Split (s)	17.5	17.5		17.5	17.5		50.0	50.0		9.0	50.0	
Total Split (s)	25.0	25.0	0.0	25.0	25.0	0.0	56.0	56.0	0.0	9.0	65.0	0.0
Total Split (%)	27.8%	27.8%	0.0%	27.8%	27.8%	0.0%	62.2%	62.2%	0.0%	10.0%	72.2%	0.0%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)		18.8		18.8	18.8			50.9		59.9	59.9	
Actuated g/C Ratio		0.22		0.22	0.22			0.59		0.69	0.69	
v/c Ratio		0.09		0.76	0.10			0.90		0.70	0.37	
Control Delay		13.2		50.4	10.8			29.8		19.8	7.0	
Queue Delay		0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay		13.2		50.4	10.8			29.8		19.8	7.0	
LOS		B		D	B			C		B	A	
Approach Delay		13.2			44.9			29.8			11.4	
Approach LOS		B			D			C			B	
Queue Length 50th (ft)		3		110	0			448		42	94	
Queue Length 95th (ft)		26		#209	24			#750		#89	143	
Internal Link Dist (ft)		52			208			183			261	
Turn Bay Length (ft)										125		
Base Capacity (vph)		409		304	379			1069		323	1174	
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		0.08		0.69	0.09			0.89		0.70	0.37	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 86.7

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 25.0

Intersection LOS: C

Intersection Capacity Utilization 113.2%

ICU Level of Service H

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

8/25/2009

Dutt Tarigoppula

Eschbacher Engineering

Glen Isle - FEIS
Lanes, Volumes, Timings

Splits and Phases: 1: Driveway/Witte Lane & Bryant Avenue

 ø1	 ø2	 ø4
9 s	56 s	25 s
 ø6		 ø8
65 s		25 s

Proposed Action Build Unmitigated
Saturday Peak

4: Pratt Blvd & Glen Cove Avenue

Build 2016

Saturday Peak

											
Lane Group	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER
Lane Configurations											
Volume (vph)	250	347	459	259	633	638	540	570	16	0	0
Confl. Peds. (#/hr)											
Confl. Bikes (#/hr)											
Peak Hour Factor	0.92	0.92	0.92	0.96	0.96	0.96	0.97	0.97	0.97	0.25	0.25
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	4%	5%	5%	5%	4%	4%	4%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)											
Mid-Block Traffic (%)		0%			0%			0%		0%	
Lane Group Flow (vph)	211	438	499	270	659	665	557	604	0	0	0
Turn Type	Split		pm+ov	pm+pt		pm+ov	Prot				
Protected Phases	4	4	1	5	2	4	1	6			
Permitted Phases			4	2		2					
Detector Phases	4	4	1	5	2	4	1	6			
Minimum Initial (s)	8.0	8.0	8.0	4.0	23.0	8.0	8.0	23.0			
Minimum Split (s)	22.0	22.0	15.0	10.0	41.0	22.0	15.0	41.0			
Total Split (s)	26.0	26.0	31.0	18.0	66.0	26.0	31.0	79.0	0.0	0.0	0.0
Total Split (%)	21.1%	21.1%	25.2%	14.6%	53.7%	21.1%	25.2%	64.2%	0.0%	0.0%	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)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0			
Lead/Lag			Lead	Lead	Lag		Lead	Lag			
Lead-Lag Optimize?											
Recall Mode	None	None	Min	None	Min	None	Min	Min			
Act Effct Green (s)	20.6	20.6	48.3	38.3	25.7	50.4	23.6	36.9			
Actuated g/C Ratio	0.25	0.25	0.59	0.47	0.31	0.61	0.29	0.45			
v/c Ratio	0.55	0.55	0.31	0.58	0.63	0.75	0.59	0.40			
Control Delay	33.9	30.4	9.0	14.3	28.4	19.1	28.2	16.6			
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0			
Total Delay	33.9	30.4	9.0	14.3	28.4	20.6	28.2	16.6			
LOS	C	C	A	B	C	C	C	B			
Approach Delay		21.7			22.8			22.2			
Approach LOS		C			C			C			
Queue Length 50th (ft)	107	112	65	54	163	246	127	112			
Queue Length 95th (ft)	193	168	102	88	224	411	186	154			
Internal Link Dist (ft)		458			408			365		404	
Turn Bay Length (ft)	75	75	350	220		100	150				
Base Capacity (vph)	404	836	1578	489	1744	891	1032	2087			
Starvation Cap Reductn	0	0	0	0	0	94	0	268			
Spillback Cap Reductn	0	0	0	0	0	0	0	0			
Storage Cap Reductn	0	0	0	0	0	0	0	0			
Reduced v/c Ratio	0.52	0.52	0.32	0.55	0.38	0.83	0.54	0.33			
Intersection Summary											
Cycle Length: 123											
Actuated Cycle Length: 82.1											
Natural Cycle: 80											
Control Type: Semi Act-Uncoord											
Maximum v/c Ratio: 0.75											
Intersection Signal Delay: 22.3						Intersection LOS: C					
Intersection Capacity Utilization 61.6%						ICU Level of Service B					
Analysis Period (min) 15											

4: Pratt Blvd & Glen Cove Avenue

Build 2016
Saturday Peak

Splits and Phases: 4: Pratt Blvd & Glen Cove Avenue

 ø1	 ø2	 ø4
31 s	66 s	26 s
 ø5	 ø6	
18 s	79 s	

6: Charles Street & Glen Cove Avenue

Build 2016

Saturday Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	391	31	294	22	0	37	0	937	31	21	817	0
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.92	0.25	0.92	0.25	0.93	0.93	0.94	0.94	0.25
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	5%	5%	4%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	416	33	313	0	64	0	0	1041	0	22	869	0
Turn Type	Perm		Perm	Perm						Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8						6		
Detector Phases	4	4	4	8	8			2		6	6	
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0			20.0		20.0	20.0	
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0			26.0		26.0	26.0	
Total Split (s)	37.0	37.0	37.0	37.0	37.0	0.0	0.0	43.0	0.0	43.0	43.0	0.0
Total Split (%)	46.3%	46.3%	46.3%	46.3%	46.3%	0.0%	0.0%	53.8%	0.0%	53.8%	53.8%	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)	2.0	2.0	2.0	2.0	2.0			2.0		2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None			Min		Min	Min	
Act Effct Green (s)	24.2	24.2	24.2		24.2			25.7		25.7	25.7	
Actuated g/C Ratio	0.42	0.42	0.42		0.42			0.44		0.44	0.44	
v/c Ratio	0.75	0.04	0.44		0.09			0.69		0.17	0.59	
Control Delay	24.5	10.6	10.0		6.2			17.1		16.2	15.4	
Queue Delay	0.1	0.0	0.0		0.0			0.1		0.0	0.0	
Total Delay	24.7	10.6	10.0		6.2			17.1		16.2	15.4	
LOS	C	B	B		A			B		B	B	
Approach Delay		18.0			6.2			17.1			15.4	
Approach LOS		B			A			B			B	
Queue Length 50th (ft)	101	6	40		4			146		5	115	
Queue Length 95th (ft)	257	23	120		0			256		21	204	
Internal Link Dist (ft)		349			162			294			408	
Turn Bay Length (ft)	250									125		
Base Capacity (vph)	664	929	841		827			1883		166	1845	
Starvation Cap Reductn	0	0	0		0			96		0	0	
Spillback Cap Reductn	16	0	0		20			31		0	0	
Storage Cap Reductn	0	0	0		0			0		0	0	
Reduced v/c Ratio	0.64	0.04	0.37		0.08			0.58		0.13	0.47	
Intersection Summary												
Cycle Length: 80												
Actuated Cycle Length: 58.3												
Natural Cycle: 50												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.75												
Intersection Signal Delay: 16.6						Intersection LOS: B						
Intersection Capacity Utilization 61.9%						ICU Level of Service B						
Analysis Period (min) 15												

8/26/2009

Dutt Tarigoppula
Eschbacher EngineeringGlen Isle - FEIS
Lanes, Volumes, Timings

Splits and Phases: 6: Charles Street & Glen Cove Avenue

 ø2	 ø4
43 s	37 s
 ø6	 ø8
43 s	37 s

7: Morris Avenue & Glen Cove Avenue

Build 2016
Saturday Peak

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	23	18	17	820	844	30
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.97	0.97	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	5%	5%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Lane Group Flow (vph)	25	20	18	845	910	0
Turn Type	Perm		Perm			
Protected Phases	4			2	6	
Permitted Phases		4	2			
Detector Phases	4	4	2	2	6	
Minimum Initial (s)	8.0	8.0	20.0	20.0	20.0	
Minimum Split (s)	20.0	20.0	30.0	30.0	30.0	
Total Split (s)	37.0	37.0	43.0	43.0	43.0	0.0
Total Split (%)	46.3%	46.3%	53.8%	53.8%	53.8%	0.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Min	Min	Min	
Act Effct Green (s)	13.2	13.2	62.3	62.3	62.3	
Actuated g/C Ratio	0.16	0.16	0.82	0.82	0.82	
v/c Ratio	0.10	0.08	0.06	0.31	0.33	
Control Delay	12.4	6.7	4.3	3.3	3.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	12.4	6.7	4.3	3.3	3.4	
LOS	B	A	A	A	A	
Approach Delay	9.9			3.3	3.4	
Approach LOS	A			A	A	
Queue Length 50th (ft)	8	0	0	0	0	
Queue Length 95th (ft)	16	11	8	79	86	
Internal Link Dist (ft)	135			701	294	
Turn Bay Length (ft)	150		75			
Base Capacity (vph)	597	547	334	2903	2918	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	48	0	0	117	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.05	0.04	0.05	0.30	0.31	

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 76

Natural Cycle: 50

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.33

Intersection Signal Delay: 3.5

Intersection LOS: A

Intersection Capacity Utilization 37.6%

ICU Level of Service A

Analysis Period (min) 15

9/9/2009

Dutt Tarigoppula
Eschbacher EngineeringGlen Isle - FEIS
Lanes, Volumes, Timings

Splits and Phases: 7: Morris Avenue & Glen Cove Avenue

 ø2	 ø4
43 s	37 s
 ø6	
43 s	

2: Herb Hill Road & Brewster Street

Build 2016

Saturday Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	58	16	24	17	4	53	46	2	169	902	23	24
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%	5%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%					0%		
Lane Group Flow (vph)	63	43	0	0	127	0	0	0	182	984	0	26
Turn Type	Perm			Perm				pm+pt	pm+pt			Perm
Protected Phases		4			8			5	5	2		
Permitted Phases	4			8				2	2			6
Detector Phases	4	4		8	8			5	5	2		6
Minimum Initial (s)	8.0	8.0		8.0	8.0			3.0	3.0	20.0		20.0
Minimum Split (s)	28.0	28.0		25.0	25.0			7.0	7.0	26.0		26.0
Total Split (s)	31.0	31.0	0.0	31.0	31.0	0.0	0.0	19.0	19.0	49.0	0.0	30.0
Total Split (%)	38.8%	38.8%	0.0%	38.8%	38.8%	0.0%	0.0%	23.8%	23.8%	61.3%	0.0%	37.5%
Yellow Time (s)	4.0	4.0		4.0	4.0			3.0	3.0	4.0		4.0
All-Red Time (s)	2.0	2.0		2.0	2.0			1.0	1.0	2.0		2.0
Lead/Lag								Lead	Lead			Lag
Lead-Lag Optimize?												
Recall Mode	None	None		None	None			None	None	C-Min		C-Min
Act Effct Green (s)	12.0	12.0			12.0				62.8	63.6		50.4
Actuated g/C Ratio	0.15	0.15			0.15				0.78	0.80		0.63
v/c Ratio	0.36	0.17			0.46				0.55	0.36		0.08
Control Delay	35.6	17.3			26.0				11.4	3.8		3.2
Queue Delay	0.0	0.0			0.0				0.0	0.2		0.0
Total Delay	35.6	17.3			26.0				11.4	4.0		3.2
LOS	D	B			C				B	A		A
Approach Delay		28.2			26.0					5.2		
Approach LOS		C			C					A		
Queue Length 50th (ft)	29	7			39				19	66		1
Queue Length 95th (ft)	62	33			84				69	119		m4
Internal Link Dist (ft)		605			24					365		
Turn Bay Length (ft)									200			220
Base Capacity (vph)	397	550			568				451	2722		324
Starvation Cap Reductn	0	0			0				0	881		0
Spillback Cap Reductn	0	0			0				0	0		0
Storage Cap Reductn	0	0			0				0	0		0
Reduced v/c Ratio	0.16	0.08			0.22				0.40	0.53		0.08
Intersection Summary												
Cycle Length: 80												
Actuated Cycle Length: 80												
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green, Master Intersection												
Natural Cycle: 65												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.55												
Intersection Signal Delay: 6.3						Intersection LOS: A						
Intersection Capacity Utilization 66.3%						ICU Level of Service C						
Analysis Period (min) 15												
m Volume for 95th percentile queue is metered by upstream signal.												

9/9/2009

Dutt Tarigoppula
Eschbacher Engineering

Glen Isle - FEIS
Lanes, Volumes, Timings

2: Herb Hill Road & Brewster Street

Build 2016
Saturday Peak

Splits and Phases: 2: Herb Hill Road & Brewster Street

 Ø2	 Ø4
49 s	31 s
 Ø5	 Ø8
19 s	31 s



Lane Group	SBT	SBR	SBR2
Lane Configurations	↑↑		
Volume (vph)	960	53	23
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Peak Hour Factor	0.93	0.93	0.93
Growth Factor	100%	100%	100%
Heavy Vehicles (%)	4%	4%	4%
Bus Blockages (#/hr)	0	0	0
Parking (#/hr)			
Mid-Block Traffic (%)	0%		
Lane Group Flow (vph)	1114	0	0
Turn Type			
Protected Phases	6		
Permitted Phases			
Detector Phases	6		
Minimum Initial (s)	20.0		
Minimum Split (s)	26.0		
Total Split (s)	30.0	0.0	0.0
Total Split (%)	37.5%	0.0%	0.0%
Yellow Time (s)	4.0		
All-Red Time (s)	2.0		
Lead/Lag	Lag		
Lead-Lag Optimize?			
Recall Mode	C-Min		
Act Effct Green (s)	50.4		
Actuated g/C Ratio	0.63		
v/c Ratio	0.51		
Control Delay	3.2		
Queue Delay	0.0		
Total Delay	3.2		
LOS	A		
Approach Delay	3.2		
Approach LOS	A		
Queue Length 50th (ft)	33		
Queue Length 95th (ft)	53		
Internal Link Dist (ft)	354		
Turn Bay Length (ft)			
Base Capacity (vph)	2165		
Starvation Cap Reductn	0		
Spillback Cap Reductn	0		
Storage Cap Reductn	0		
Reduced v/c Ratio	0.51		

Intersection Summary



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	324	60	56	690	640	256
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.94	0.94	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	5%	5%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Lane Group Flow (vph)	352	65	60	734	974	0
Turn Type		Perm	Perm			
Protected Phases	4			2	6	
Permitted Phases		4	2			
Detector Phases	4	4	2	2	6	
Minimum Initial (s)	8.0	8.0	20.0	20.0	20.0	
Minimum Split (s)	14.0	14.0	26.0	26.0	26.0	
Total Split (s)	25.0	25.0	55.0	55.0	55.0	0.0
Total Split (%)	31.3%	31.3%	68.8%	68.8%	68.8%	0.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Min	Min	Min	
Act Effct Green (s)	16.2	16.2	22.7	22.7	22.7	
Actuated g/C Ratio	0.34	0.34	0.48	0.48	0.48	
v/c Ratio	0.58	0.11	0.29	0.46	0.60	
Control Delay	16.8	4.0	13.5	9.9	9.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	16.8	4.0	13.5	9.9	9.9	
LOS	B	A	B	A	A	
Approach Delay	14.8			10.2	9.9	
Approach LOS	B			B	A	
Queue Length 50th (ft)	73	0	9	64	76	
Queue Length 95th (ft)	147	18	36	118	147	
Internal Link Dist (ft)	273			201	357	
Turn Bay Length (ft)			150			
Base Capacity (vph)	721	705	288	2254	2225	
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	0.49	0.09	0.21	0.33	0.44	

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 47

Natural Cycle: 40

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 10.9

Intersection LOS: B

Intersection Capacity Utilization 70.5%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 8: Shore Road & Glen Cove Avenue

 ø2	 ø4
55 s	25 s
 ø6	
55 s	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	52	76	53	112	110	97	47	480	109	96	440	69
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	5%	5%	5%	4%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	56	139	0	122	225	0	0	691	0	0	657	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phases	4	4		8	8		2	2		6	6	
Minimum Initial (s)	4.0	4.0		4.0	4.0		20.0	20.0		20.0	20.0	
Minimum Split (s)	10.0	10.0		10.0	10.0		26.0	26.0		26.0	26.0	
Total Split (s)	26.0	26.0	0.0	26.0	26.0	0.0	44.0	44.0	0.0	44.0	44.0	0.0
Total Split (%)	37.1%	37.1%	0.0%	37.1%	37.1%	0.0%	62.9%	62.9%	0.0%	62.9%	62.9%	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)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)	14.2	14.2		14.2	14.2			39.8			39.8	
Actuated g/C Ratio	0.23	0.23		0.23	0.23			0.67			0.67	
v/c Ratio	0.25	0.30		0.50	0.56			0.57			0.70	
Control Delay	20.8	13.3		26.2	18.8			9.5			14.8	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	20.8	13.3		26.2	18.8			9.5			14.8	
LOS	C	B		C	B			A			B	
Approach Delay		15.5			21.4			9.5			14.8	
Approach LOS		B			C			A			B	
Queue Length 50th (ft)	15	23		35	45			116			132	
Queue Length 95th (ft)	44	65		85	110			287			#423	
Internal Link Dist (ft)		645			488			861			659	
Turn Bay Length (ft)	150			200								
Base Capacity (vph)	320	631		345	543			1274			976	
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	0.18	0.22		0.35	0.41			0.54			0.67	
Intersection Summary												
Cycle Length: 70												
Actuated Cycle Length: 59												
Natural Cycle: 50												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.70												
Intersection Signal Delay: 14.1						Intersection LOS: B						
Intersection Capacity Utilization 81.0%						ICU Level of Service D						
Analysis Period (min) 15												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												

Splits and Phases: 92: Sea Cliff Avenue & Glen Cove Avenue

 ø2	 ø4
44 s	26 s
 ø6	 ø8
44 s	26 s

9: Glenwood Road/Glen Head Road & Glen Cove Avenue

Build 2016

Saturday Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	173	57	137	155	244	48	418	122	258	474	41
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	5%	5%	5%	4%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	0	351	0	0	564	0	52	587	0	272	542	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phases	4	4		8	8		2	2		6	6	
Minimum Initial (s)	8.0	8.0		8.0	8.0		20.0	20.0		20.0	20.0	
Minimum Split (s)	26.0	26.0		26.0	26.0		26.0	26.0		26.0	26.0	
Total Split (s)	31.0	31.0	0.0	31.0	31.0	0.0	39.0	39.0	0.0	39.0	39.0	0.0
Total Split (%)	44.3%	44.3%	0.0%	44.3%	44.3%	0.0%	55.7%	55.7%	0.0%	55.7%	55.7%	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)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)		25.7			25.7		35.1	35.1		35.1	35.1	
Actuated g/C Ratio		0.37			0.37		0.51	0.51		0.51	0.51	
v/c Ratio		0.65			0.91		0.18	0.59		1.12	0.61	
Control Delay		23.6			39.0		11.7	14.6		117.8	15.8	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		23.6			39.0		11.7	14.6		117.8	15.8	
LOS		C			D		B	B		F	B	
Approach Delay		23.6			39.0			14.3			49.9	
Approach LOS		C			D			B			D	
Queue Length 50th (ft)		113			196		12	160		~140	155	
Queue Length 95th (ft)		200			#386		32	256		#276	252	
Internal Link Dist (ft)		131			160			206			218	
Turn Bay Length (ft)							75			125		
Base Capacity (vph)		553			640		291	995		243	894	
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		0.63			0.88		0.18	0.59		1.12	0.61	
Intersection Summary												
Cycle Length: 70												
Actuated Cycle Length: 68.8												
Natural Cycle: 65												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 1.12												
Intersection Signal Delay: 33.8												
Intersection Capacity Utilization 95.2%												
Analysis Period (min) 15												
~ Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												
# 95th percentile volume exceeds capacity, queue may be longer.												

8/26/2009

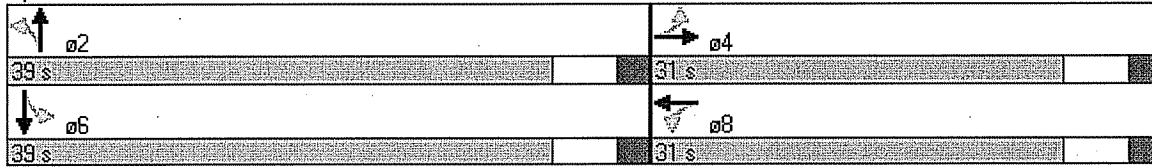
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Eschbacher Engineering

Glen Isle - FEIS
Lanes, Volumes, Timings

Queue shown is maximum after two cycles.

Splits and Phases: 9: Glenwood Road/Glen Head Road & Glen Cove Avenue



						
Lane Group	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations	 			 		
Volume (vph)	1352	0	500	1715	0	0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Lane Group Flow (vph)	1470	0	543	1864	0	0
Turn Type			Prot			
Protected Phases	2		4	2 4		
Permitted Phases						
Detector Phases	2		4	2 4		
Minimum Initial (s)	20.0		10.0			
Minimum Split (s)	27.0		17.0			
Total Split (s)	67.0	0.0	42.0	109.0	0.0	0.0
Total Split (%)	61.5%	0.0%	38.5%	100.0%	0.0%	0.0%
Yellow Time (s)	4.0		4.0			
All-Red Time (s)	3.0		3.0			
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max		None			
Act Effct Green (s)	63.0		38.0	109.0		
Actuated g/C Ratio	0.58		0.35	1.00		
v/c Ratio	0.73		0.83	0.53		
Control Delay	19.6		44.7	0.6		
Queue Delay	0.0		0.0	0.0		
Total Delay	19.6		44.7	0.6		
LOS	B		D	A		
Approach Delay	19.6			10.5		
Approach LOS	B			B		
Queue Length 50th (ft)	372		344	0		
Queue Length 95th (ft)	459		#522	0		
Internal Link Dist (ft)	495			382	312	
Turn Bay Length (ft)			375			
Base Capacity (vph)	2006		658	3539		
Starvation Cap Reductn	0		0	0		
Spillback Cap Reductn	0		0	0		
Storage Cap Reductn	0		0	0		
Reduced v/c Ratio	0.73		0.83	0.53		
Intersection Summary						
Cycle Length: 109						
Actuated Cycle Length: 109						
Natural Cycle: 50						
Control Type: Semi Act-Uncoord						
Maximum v/c Ratio: 0.83						
Intersection Signal Delay: 14.0				Intersection LOS: B		
Intersection Capacity Utilization 71.7%				ICU Level of Service C		
Analysis Period (min) 15						
# 95th percentile volume exceeds capacity, queue may be longer.						
Queue shown is maximum after two cycles.						

8/26/2009

Dutt Tarigoppula
Eschbacher EngineeringGlen Isle - FEIS
Lanes, Volumes, Timings

Splits and Phases: 5: Glen Cove Road & Route 107



3: Glen Head Road & Glen Cove Road

Build 2016

Saturday Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	204	219	42	44	251	31	64	1117	59	22	1506	187
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	4%	4%	4%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	222	238	46	0	355	0	70	1214	64	24	1840	0
Turn Type	Split		Free	Split			Perm		Perm	Perm		
Protected Phases	4	4		8	8			2			6	
Permitted Phases			Free				2		2	6		
Detector Phases	4	4		8	8		2	2	2	6	6	
Minimum Initial (s)	8.0	8.0		8.0	8.0		20.0	20.0	20.0	20.0	20.0	
Minimum Split (s)	26.0	26.0		27.0	27.0		27.0	27.0	27.0	27.0	27.0	
Total Split (s)	34.0	34.0	0.0	34.0	34.0	0.0	72.0	72.0	72.0	72.0	72.0	0.0
Total Split (%)	24.3%	24.3%	0.0%	24.3%	24.3%	0.0%	51.4%	51.4%	51.4%	51.4%	51.4%	0.0%
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)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min	Min	Min	Min	
Act Effct Green (s)	25.5	25.5	134.9		29.2		68.2	68.2	68.2	68.2	68.2	
Actuated g/C Ratio	0.19	0.19	1.00		0.22		0.51	0.51	0.51	0.51	0.51	
v/c Ratio	0.72	0.74	0.03		0.90		1.30	0.67	0.09	0.26	1.04	
Control Delay	65.6	65.9	0.0		78.0		250.5	28.0	19.2	30.2	66.7	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	65.6	65.9	0.0		78.0		250.5	28.0	19.2	30.2	66.7	
LOS	E	E	A		E		F	C	B	C	E	
Approach Delay		59.8			78.0			39.1			66.3	
Approach LOS		E			E			D			E	
Queue Length 50th (ft)	186	200	0		310		~80	424	29	12	~947	
Queue Length 95th (ft)	278	296	0		#501		#143	525	59	40	#1124	
Internal Link Dist (ft)		203			244			256			523	
Turn Bay Length (ft)			75				200		75	150		
Base Capacity (vph)	349	367	1553		404		54	1812	732	93	1764	
Starvation Cap Reductn	0	0	0		0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0		0		0	0	0	0	0	
Storage Cap Reductn	0	0	0		0		0	0	0	0	0	
Reduced v/c Ratio	0.64	0.65	0.03		0.88		1.30	0.67	0.09	0.26	1.04	
Intersection Summary												
Cycle Length: 140												
Actuated Cycle Length: 134.9												
Natural Cycle: 130												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 1.30												
Intersection Signal Delay: 57.5						Intersection LOS: E						
Intersection Capacity Utilization 92.2%						ICU Level of Service F						
Analysis Period (min) 15												
~ Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												
# 95th percentile volume exceeds capacity, queue may be longer.												

8/26/2009

Dutt Tarigoppula
Eschbacher EngineeringGlen Isle - FEIS
Lanes, Volumes, Timings

Queue shown is maximum after two cycles.

Splits and Phases: 3: Glen Head Road & Glen Cove Road

  ø2	 ø4	  ø8
72 s	34 s	34 s
  ø6		
72 s		

2: Back Road & Glen Cove Road

Build 2016

Saturday Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	62	1	375	1	2	1	403	1523	3	28	1312	97
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.98	0.98	0.98	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	5%	5%	5%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	0	116	360	0	4	0	411	1557	0	29	1367	101
Turn Type	Split		pt+ov	Split			Prot			Perm		pm+ov
Protected Phases	3	3	3 5	4	4		5	2			6	3
Permitted Phases										6		6
Detector Phases	3	3	3 5	4	4		5	2		6	6	3
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	10.0		10.0	10.0	8.0
Minimum Split (s)	24.0	24.0		38.3	38.3		12.8	24.8		24.8	24.8	24.0
Total Split (s)	25.5	25.5	61.5	38.3	38.3	0.0	36.0	94.8	0.0	58.8	58.8	25.5
Total Split (%)	16.1%	16.1%	38.8%	24.1%	24.1%	0.0%	22.7%	59.8%	0.0%	37.1%	37.1%	16.1%
Yellow Time (s)	3.5	3.5		3.5	3.5		4.0	4.0		4.0	4.0	3.5
All-Red Time (s)	2.0	2.0		4.8	4.8		2.0	4.8		4.8	4.8	2.0
Lead/Lag	Lead	Lead		Lag	Lag		Lead			Lag	Lag	Lead
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		None	Max		Max	Max	None
Act Effct Green (s)		13.8	49.4		12.3		32.2	91.4		55.2	55.2	73.1
Actuated g/C Ratio		0.12	0.43		0.10		0.28	0.79		0.48	0.48	0.63
v/c Ratio		0.59	0.45		0.02		0.76	0.58		0.32	0.82	0.11
Control Delay		53.4	3.6		50.2		50.0	7.3		35.6	32.5	3.9
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		53.4	3.6		50.2		50.0	7.3		35.6	32.5	3.9
LOS		D	A		D		D	A		D	C	A
Approach Delay		15.8			50.3			16.3			30.7	
Approach LOS		B			D			B			C	
Queue Length 50th (ft)		70	0		2		267	157		12	418	7
Queue Length 95th (ft)		150	48		15		#545	490		55	#783	36
Internal Link Dist (ft)		345			160			143			316	
Turn Bay Length (ft)												
Base Capacity (vph)		280	845		445		541	2707		90	1666	978
Starvation Cap Reductn		0	0		0		0	0		0	0	0
Spillback Cap Reductn		0	0		0		0	0		0	0	0
Storage Cap Reductn		0	0		0		0	0		0	0	0
Reduced v/c Ratio		0.41	0.43		0.01		0.76	0.58		0.32	0.82	0.10

Intersection Summary

Cycle Length: 158.6

Actuated Cycle Length: 116.1

Natural Cycle: 150

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 21.7

Intersection LOS: C

Intersection Capacity Utilization 85.2%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

8/26/2009

Dutt Tarigoppula

Eschbacher Engineering

Glen Isle - FEIS
Lanes, Volumes, Timings

Splits and Phases: 2: Back Road & Glen Cove Road

 ø2	 ø3	 ø4
94.8 s	25.5 s	38.3 s
 ø5	 ø6	
36 s	58.8 s	

3: Pratt Blvd & Bridge Street

Build 2016

Saturday Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	166	960	48	55	911	65	36	66	84	105	45	180
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.97	0.97	0.97	0.92	0.92	0.92	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	2%	2%	2%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	171	1039	0	60	1061	0	38	157	0	0	158	189
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		4
Detector Phases	2	2		6	6		8	8		4	4	4
Minimum Initial (s)	5.0	5.0		5.0	5.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	26.0	26.0		26.0	26.0		25.5	25.5		25.5	25.5	25.5
Total Split (s)	43.5	43.5	0.0	43.5	43.5	0.0	26.5	26.5	0.0	26.5	26.5	26.5
Total Split (%)	62.1%	62.1%	0.0%	62.1%	62.1%	0.0%	37.9%	37.9%	0.0%	37.9%	37.9%	37.9%
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	Min		Min	Min		None	None		None	None	None
Act Effct Green (s)	40.0	40.0		40.0	40.0		14.2	14.2		14.2	14.2	14.2
Actuated g/C Ratio	0.64	0.64		0.64	0.64		0.23	0.23		0.23	0.23	0.23
v/c Ratio	0.74	0.48		0.26	0.50		0.15	0.36		0.54	0.44	0.44
Control Delay	34.5	7.4		9.9	7.4		19.6	11.9		27.4	12.6	12.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	34.5	7.4		9.9	7.4		19.6	11.9		27.4	12.6	12.6
LOS	C	A		A	A		B	B		C	B	B
Approach Delay		11.2			7.6			13.4			19.3	
Approach LOS		B			A			B			B	
Queue Length 50th (ft)	37	87		8	90		11	21		52	25	25
Queue Length 95th (ft)	#170	172		35	177		32	61		102	71	71
Internal Link Dist (ft)		458			137			80			142	
Turn Bay Length (ft)	120											
Base Capacity (vph)	231	2148		232	2143		356	570		412	565	565
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.74	0.48		0.26	0.50		0.11	0.28		0.38	0.33	0.33
Intersection Summary												
Cycle Length: 70												
Actuated Cycle Length: 62.2												
Natural Cycle: 75												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.74												
Intersection Signal Delay: 10.9						Intersection LOS: B						
Intersection Capacity Utilization 66.6%						ICU Level of Service C						
Analysis Period (min) 15												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												

8/26/2009

Dutt Tarigoppula

Eschbacher Engineering

Glen Isle - FEIS
Lanes, Volumes, Timings

Splits and Phases: 3: Pratt Blvd & Bridge Street

 ø2	 ø4
43.5 s	26.5 s
 ø6	 ø8
43.5 s	26.5 s

1: Cottage Row Road & Brewster Street

Build 2016

Saturday Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	135	163	206	47	153	279	97	814	87	265	865	132
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	5%	5%	5%	4%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	0	320	222	0	217	303	105	980	0	288	1083	0
Turn Type	Perm		Free	Perm		Perm	pm+pt			pm+pt		
Protected Phases		3			7		5	2		1	6	
Permitted Phases	3		Free	7		7	2			6		
Detector Phases	3	3		7	7	7	5	2		1	6	
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	4.0	20.0		4.0	20.0	
Minimum Split (s)	28.0	28.0		28.0	28.0	28.0	8.0	26.0		8.0	26.0	
Total Split (s)	31.0	31.0	0.0	31.0	31.0	31.0	12.0	37.0	0.0	12.0	37.0	0.0
Total Split (%)	38.8%	38.8%	0.0%	38.8%	38.8%	38.8%	15.0%	46.3%	0.0%	15.0%	46.3%	0.0%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0		1.0	2.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	None		None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)		23.5	80.0		23.5	23.5	38.5	31.8		46.9	39.5	
Actuated g/C Ratio		0.29	1.00		0.29	0.29	0.48	0.40		0.59	0.49	
v/c Ratio		0.80	0.14		0.49	0.65	0.50	0.74		0.76	0.65	
Control Delay		41.0	0.2		26.4	31.0	14.2	23.0		30.7	18.9	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		41.0	0.2		26.4	31.0	14.2	23.0		30.7	18.9	
LOS		D	A		C	C	B	C		C	B	
Approach Delay		24.3			29.1			22.2			21.4	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)		141	0		86	127	16	228		69	218	
Queue Length 95th (ft)		#233	0		144	202	30	284		#244	311	
Internal Link Dist (ft)		294			184			618			362	
Turn Bay Length (ft)			250			100	175			175		
Base Capacity (vph)		462	1636		513	537	238	1396		381	1673	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.69	0.14		0.42	0.56	0.44	0.70		0.76	0.65	
Intersection Summary												
Cycle Length: 80												
Actuated Cycle Length: 80												
Offset: 30 (38%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 70												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.80												
Intersection Signal Delay: 23.2						Intersection LOS: C						
Intersection Capacity Utilization 80.0%						ICU Level of Service D						
Analysis Period (min) 15												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												

8/26/2009

Dutt Tarigoppula
Eschbacher EngineeringGlen Isle - FEIS
Lanes, Volumes, Timings

Splits and Phases: 1: Cottage Row Road & Brewster Street

 ø1	 ø2	 ø3
12 s	37 s	31 s
 ø5	 ø6	 ø7
12 s	37 s	31 s

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	47	407	1	58	2	511	127	3	67	254	3
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	0	53	442	0	66	0	555	138	3	73	279	0
Turn Type	Perm		pt+ov	Perm			Split		Perm	Split		
Protected Phases		4	4 6		8		6	6		2	2	
Permitted Phases	4			8					6			
Detector Phases	4	4	4 6	8	8		6	6	6	2	2	
Minimum Initial (s)	8.0	8.0		8.0	8.0		25.0	25.0	25.0	8.0	8.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		31.0	31.0	31.0	14.0	14.0	
Total Split (s)	26.0	26.0	57.0	26.0	26.0	0.0	31.0	31.0	31.0	31.0	31.0	0.0
Total Split (%)	29.5%	29.5%	64.8%	29.5%	29.5%	0.0%	35.2%	35.2%	35.2%	35.2%	35.2%	0.0%
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)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min	Min	None	None	
Act Effct Green (s)		10.8	42.0		10.8		27.2	27.2	27.2	17.3	17.3	
Actuated g/C Ratio		0.16	0.62		0.16		0.40	0.40	0.40	0.26	0.26	
v/c Ratio		0.18	0.35		0.22		0.78	0.18	0.00	0.17	0.60	
Control Delay		27.8	2.8		27.7		28.9	15.5	11.0	19.9	27.7	
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		27.8	2.8		27.7		28.9	15.5	11.0	19.9	27.7	
LOS		C	A		C		C	B	B	B	C	
Approach Delay		5.4			27.7			26.1			26.1	
Approach LOS		A			C			C			C	
Queue Length 50th (ft)		19	15		23		187	34	0	23	98	
Queue Length 95th (ft)		53	60		61		#435	86	5	53	175	
Internal Link Dist (ft)		1079			319			407			212	
Turn Bay Length (ft)									125	125		
Base Capacity (vph)		519	1324		521		714	752	641	602	633	
Starvation Cap Reductn		0	0		0		0	0	0	0	0	
Spillback Cap Reductn		0	0		0		0	0	0	0	0	
Storage Cap Reductn		0	0		0		0	0	0	0	0	
Reduced v/c Ratio		0.10	0.33		0.13		0.78	0.18	0.00	0.12	0.44	
Intersection Summary												
Cycle Length: 88												
Actuated Cycle Length: 67.4												
Natural Cycle: 65												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.78												
Intersection Signal Delay: 19.8						Intersection LOS: B						
Intersection Capacity Utilization 58.5%						ICU Level of Service B						
Analysis Period (min) 15												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												

Splits and Phases: 5: Herb Hill Road & Charles Street

 ø2	 ø6	 ø4
31 s	31 s	26 s
		 ø8 26 s

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	180	463	13	3	515	5	21	9	6	3	9	229
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	196	517	0	0	550	0	0	40	0	0	13	249
Turn Type	pm+pt			Perm			Perm			Perm		Free
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		Free
Detector Phases	5	2		6	6		8	8		4	4	
Minimum Initial (s)	4.0	20.0		20.0	20.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	26.0		26.0	26.0		10.0	10.0		10.0	10.0	
Total Split (s)	9.0	65.0	0.0	56.0	56.0	0.0	15.0	15.0	0.0	15.0	15.0	0.0
Total Split (%)	11.3%	81.3%	0.0%	70.0%	70.0%	0.0%	18.8%	18.8%	0.0%	18.8%	18.8%	0.0%
Yellow Time (s)	3.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?												
Recall Mode	None	Min		Min	Min		None	None		None	None	
Act Effct Green (s)	44.4	46.9			35.5			9.3			9.2	53.7
Actuated g/C Ratio	0.80	0.87			0.66			0.15			0.15	1.00
v/c Ratio	0.31	0.34			0.46			0.16			0.05	0.15
Control Delay	3.5	3.1			8.0			18.6			19.8	0.2
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	3.5	3.1			8.0			18.6			19.8	0.2
LOS	A	A			A			B			B	A
Approach Delay		3.2			8.0			18.6			1.2	
Approach LOS		A			A			B			A	
Queue Length 50th (ft)	0	0			39			5			2	0
Queue Length 95th (ft)	38	109			199			33			17	0
Internal Link Dist (ft)		631			639			463			627	
Turn Bay Length (ft)												25
Base Capacity (vph)	641	1583			1413			307			348	1689
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	0.31	0.33			0.39			0.13			0.04	0.15
Intersection Summary												
Cycle Length: 80												
Actuated Cycle Length: 53.7												
Natural Cycle: 45												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.46												
Intersection Signal Delay: 4.9						Intersection LOS: A						
Intersection Capacity Utilization 71.4%						ICU Level of Service C						
Analysis Period (min) 15												

Splits and Phases: 91: Forest Avenue & Lattingtown Road

 Ø2		 Ø4	
65 s		15 s	
 Ø5	 Ø6	 Ø8	
9 s	56 s	15 s	

8: Northern Boulevard & Glen Cove Road

Build 2016

Saturday Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	529	656	226	611	905	152	236	1076	248	48	987	404
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.92	0.92	0.92	0.94	0.94	0.94	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	5%	5%	5%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	557	929	0	664	1149	0	251	1145	264	49	1007	412
Turn Type	Prot			Prot			Prot		pt+ov	Prot		pt+ov
Protected Phases	5	2		1	6		7	4	4 1	3	8	8 5
Permitted Phases												
Detector Phases	5	2		1	6		7	4	4 1	3	8	8 5
Minimum Initial (s)	8.0	24.0		5.0	24.0		7.0	20.0		3.0	20.0	
Minimum Split (s)	13.0	37.5		10.0	37.5		13.0	34.3		9.0	34.3	
Total Split (s)	23.5	39.3	0.0	23.5	39.3	0.0	17.7	49.5	73.0	17.7	49.5	73.0
Total Split (%)	18.1%	30.2%	0.0%	18.1%	30.2%	0.0%	13.6%	38.1%	56.2%	13.6%	38.1%	56.2%
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.3		3.0	4.3	
All-Red Time (s)	2.0	2.5		2.0	2.5		3.0	3.0		3.0	3.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	20.0	35.3		20.0	35.3		13.7	50.0	74.0	11.0	45.0	69.0
Actuated g/C Ratio	0.15	0.27		0.15	0.27		0.11	0.38	0.57	0.08	0.35	0.53
v/c Ratio	1.12	1.03		1.34	1.26		1.49	0.90	0.32	0.36	0.86	0.29
Control Delay	126.9	85.4		209.6	167.2		286.6	48.6	17.3	62.5	48.2	17.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	126.9	85.4		209.6	167.2		286.6	48.6	17.3	62.5	48.2	17.6
LOS	F	F		F	F		F	D	B	E	D	B
Approach Delay		101.0			182.7			79.6			40.1	
Approach LOS		F			F			E			D	
Queue Length 50th (ft)	~284	~442		~382	~640		~291	485	118	40	411	105
Queue Length 95th (ft)	#400	#575		#503	#777		#463	#656	187	81	502	143
Internal Link Dist (ft)		319			439			466			338	
Turn Bay Length (ft)	425			300			300		420	325		300
Base Capacity (vph)	497	898		494	909		169	1278	818	172	1186	1411
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	1.12	1.03		1.34	1.26		1.49	0.90	0.32	0.28	0.85	0.29
Intersection Summary												
Cycle Length: 130												
Actuated Cycle Length: 130												
Offset: 117 (90%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow												
Natural Cycle: 140												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 1.49												
Intersection Signal Delay: 104.6						Intersection LOS: F						
Intersection Capacity Utilization 98.6%						ICU Level of Service F						
Analysis Period (min) 15												
~ Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												

8/26/2009

Dutt Tarigoppula
Eschbacher EngineeringGlen Isle - FEIS
Lanes, Volumes, Timings

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 8: Northern Boulevard & Glen Cove Road

 ø1	 ø2	 ø3	 ø4
23.5 s	39.3 s	17.7 s	49.5 s
 ø5	 ø6	 ø7	 ø8
23.5 s	39.3 s	17.7 s	49.5 s

1: Driveway/Witte Lane & Bryant Avenue

Build 2016

Saturday Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1	3	192	1	25	2	518	27	228	353	1
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.94	0.94	0.94	0.94	0.94	0.99	0.99	0.99
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	0	5	0	209	28	0	0	582	0	230	358	0
Turn Type	Perm			Perm			Perm			pm+pt		
Protected Phases		8			4			2		1	6	
Permitted Phases	8			4			2			6		
Detector Phases	8	8		4	4		2	2		1	6	
Minimum Initial (s)	12.0	12.0		12.0	12.0		45.0	45.0		4.0	45.0	
Minimum Split (s)	17.5	17.5		17.5	17.5		50.0	50.0		9.0	50.0	
Total Split (s)	27.5	27.5	0.0	27.5	27.5	0.0	51.5	51.5	0.0	11.0	62.5	0.0
Total Split (%)	30.6%	30.6%	0.0%	30.6%	30.6%	0.0%	57.2%	57.2%	0.0%	12.2%	69.4%	0.0%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)		19.3		19.3	19.3			46.4		57.4	57.4	
Actuated g/C Ratio		0.23		0.23	0.23			0.55		0.68	0.68	
v/c Ratio		0.01		0.70	0.08			0.59		0.51	0.31	
Control Delay		19.2		43.1	10.7			16.6		10.1	7.0	
Queue Delay		0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay		19.2		43.1	10.7			16.6		10.1	7.0	
LOS		B		D	B			B		B	A	
Approach Delay		19.2			39.3			16.6			8.2	
Approach LOS		B			D			B			A	
Queue Length 50th (ft)		1		102	0			198		42	70	
Queue Length 95th (ft)		9		180	21			325		80	126	
Internal Link Dist (ft)		52			208			183			261	
Turn Bay Length (ft)										125		
Base Capacity (vph)		447		349	416			996		454	1153	
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		0.01		0.60	0.07			0.58		0.51	0.31	
Intersection Summary												
Cycle Length: 90												
Actuated Cycle Length: 84.7												
Natural Cycle: 80												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.70												
Intersection Signal Delay: 16.9												
Intersection Capacity Utilization 102.3%												
Analysis Period (min) 15												
Intersection LOS: B												
ICU Level of Service G												

1: Driveway/Witte Lane & Bryant Avenue

Build 2016
Saturday Peak

Splits and Phases: 1: Driveway/Witte Lane & Bryant Avenue

 ø1	 ø2	 ø4
11 s	51.5 s	27.5 s
 ø6		 ø8
62.5 s		27.5 s

Proposed Action Build Timing Mitigation

AM Peak

						
Lane Group	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations	↑↑		↰	↑↑		
Volume (vph)	1334	0	742	1730	0	0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	6%	6%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Lane Group Flow (vph)	1450	0	807	1880	0	0
Turn Type			Prot			
Protected Phases	2		4	2 4		
Permitted Phases						
Detector Phases	2		4	2 4		
Minimum Initial (s)	20.0		10.0			
Minimum Split (s)	27.0		17.0			
Total Split (s)	55.0	0.0	54.0	109.0	0.0	0.0
Total Split (%)	50.5%	0.0%	49.5%	100.0%	0.0%	0.0%
Yellow Time (s)	4.0		4.0			
All-Red Time (s)	3.0		3.0			
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max		None			
Act Effct Green (s)	51.0		50.0	109.0		
Actuated g/C Ratio	0.47		0.46	1.00		
v/c Ratio	0.89		0.97	0.55		
Control Delay	35.0		54.2	0.6		
Queue Delay	0.0		0.0	0.0		
Total Delay	35.0		54.2	0.6		
LOS	D		D	A		
Approach Delay	35.0			16.7		
Approach LOS	D			B		
Queue Length 50th (ft)	473		535	0		
Queue Length 95th (ft)	#587		#805	0		
Internal Link Dist (ft)	495			382	312	
Turn Bay Length (ft)			375			
Base Capacity (vph)	1624		833	3406		
Starvation Cap Reductn	0		0	0		
Spillback Cap Reductn	0		0	0		
Storage Cap Reductn	0		0	0		
Reduced v/c Ratio	0.89		0.97	0.55		
Intersection Summary						
Cycle Length: 109						
Actuated Cycle Length: 109						
Natural Cycle: 75						
Control Type: Semi Act-Uncoord						
Maximum v/c Ratio: 0.97						
Intersection Signal Delay: 23.2				Intersection LOS: C		
Intersection Capacity Utilization 84.6%				ICU Level of Service E		
Analysis Period (min) 15						
# 95th percentile volume exceeds capacity, queue may be longer.						
Queue shown is maximum after two cycles.						

Splits and Phases: 5: Glen Cove Road & Route 107

 ø2	 ø4
55 s	54 s

3: Glen Head Road & Glen Cove Road

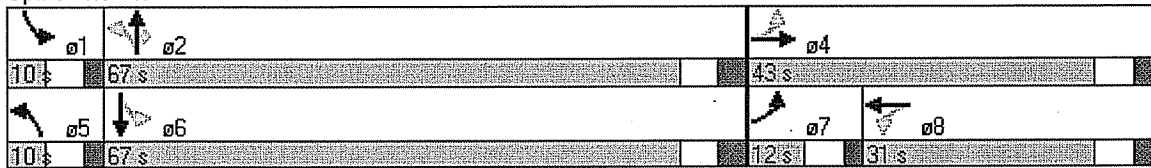
Build 2016 Mitigated (Timing)

AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	165	293	4	48	253	7	39	1161	34	30	1531	169
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	9%	9%	9%	5%	5%	5%	4%	4%	4%	6%	6%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	179	318	4	0	335	0	42	1262	37	32	1790	0
Turn Type	pm+pt		Free	Perm			pm+pt		Perm	pm+pt		
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		Free	8			2		2	6		
Detector Phases	7	4		8	8		5	2	2	1	6	
Minimum Initial (s)	4.0	8.0		8.0	8.0		4.0	20.0	20.0	4.0	20.0	
Minimum Split (s)	10.0	15.0		15.0	15.0		10.0	27.0	27.0	10.0	27.0	
Total Split (s)	12.0	43.0	0.0	31.0	31.0	0.0	10.0	67.0	67.0	10.0	67.0	0.0
Total Split (%)	10.0%	35.8%	0.0%	25.8%	25.8%	0.0%	8.3%	55.8%	55.8%	8.3%	55.8%	0.0%
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)	2.0	3.0		3.0	3.0		2.0	3.0	3.0	2.0	3.0	
Lead/Lag	Lead			Lag	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		None	Min	Min	None	Min	
Act Effct Green (s)	38.7	38.7	117.7		26.7		68.6	65.1	65.1	67.8	63.1	
Actuated g/C Ratio	0.33	0.33	1.00		0.23		0.57	0.55	0.55	0.56	0.54	
v/c Ratio	0.82	0.59	0.00		0.92		0.29	0.64	0.05	0.19	0.99	
Control Delay	61.7	39.0	0.0		76.3		14.6	20.7	13.7	12.3	46.9	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	61.7	39.0	0.0		76.3		14.6	20.7	13.7	12.3	46.9	
LOS	E	D	A		E		B	C	B	B	D	
Approach Delay		46.8			76.3			20.3			46.3	
Approach LOS		D			E			C			D	
Queue Length 50th (ft)	106	206	0		256		12	363	13	9	~729	
Queue Length 95th (ft)	#221	306	0		#434		27	440	31	23	#906	
Internal Link Dist (ft)		203			244			256			524	
Turn Bay Length (ft)			75				200		75	150		
Base Capacity (vph)	219	539	1482		368		147	1983	801	172	1806	
Starvation Cap Reductn	0	0	0		0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0		0		0	0	0	0	0	
Storage Cap Reductn	0	0	0		0		0	0	0	0	0	
Reduced v/c Ratio	0.82	0.59	0.00		0.91		0.29	0.64	0.05	0.19	0.99	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 117.7												
Natural Cycle: 110												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.99												
Intersection Signal Delay: 40.2						Intersection LOS: D						
Intersection Capacity Utilization 89.5%						ICU Level of Service E						
Analysis Period (min) 15												
~ 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: 3: Glen Head Road & Glen Cove Road



5: Herb Hill Road & Charles Street

Build 2016 Mitigated (Timing)

AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	43	360	1	72	6	389	83	1	100	333	7
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	0	47	391	0	86	0	423	90	1	105	358	0
Turn Type	Perm		pt+ov	Perm			Split		Perm	Split		
Protected Phases		4	4 6		8		6	6		2	2	
Permitted Phases	4			8					6			
Detector Phases	4	4	4 6	8	8		6	6	6	2	2	
Minimum Initial (s)	8.0	8.0		8.0	8.0		25.0	25.0	25.0	8.0	8.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		31.0	31.0	31.0	14.0	14.0	
Total Split (s)	20.0	20.0	53.0	20.0	20.0	0.0	33.0	33.0	33.0	27.0	27.0	0.0
Total Split (%)	25.0%	25.0%	66.3%	25.0%	25.0%	0.0%	41.3%	41.3%	41.3%	33.8%	33.8%	0.0%
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)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min	C-Min	None	None	
Act Effct Green (s)		11.5	50.3		11.5		34.7	34.7	34.7	21.7	21.7	
Actuated g/C Ratio		0.14	0.63		0.14		0.43	0.43	0.43	0.27	0.27	
v/c Ratio		0.18	0.32		0.32		0.55	0.11	0.00	0.23	0.73	
Control Delay		23.0	1.3		41.6		21.9	16.1	13.0	22.6	35.5	
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		23.0	1.3		41.6		21.9	16.1	13.0	22.6	35.5	
LOS		C	A		D		C	B	B	C	D	
Approach Delay		3.7			41.6			20.8			32.6	
Approach LOS		A			D			C			C	
Queue Length 50th (ft)		22	2		43		153	26	0	40	159	
Queue Length 95th (ft)		m41	21		89		273	61	3	76	244	
Internal Link Dist (ft)		1071			319			407			212	
Turn Bay Length (ft)									125	125		
Base Capacity (vph)		373	1297		372		769	809	688	514	540	
Starvation Cap Reductn		0	0		0		0	0	0	0	0	
Spillback Cap Reductn		0	0		0		0	0	0	0	0	
Storage Cap Reductn		0	0		0		0	0	0	0	0	
Reduced v/c Ratio		0.13	0.30		0.23		0.55	0.11	0.00	0.20	0.66	
Intersection Summary												
Cycle Length: 80												
Actuated Cycle Length: 80												
Offset: 56 (70%), Referenced to phase 6:NBTL, Start of Yellow												
Natural Cycle: 70												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.73												
Intersection Signal Delay: 20.6						Intersection LOS: C						
Intersection Capacity Utilization 56.9%						ICU Level of Service B						
Analysis Period (min) 15												
m Volume for 95th percentile queue is metered by upstream signal.												

9/1/2009

Dutt Tarigoppula
Eschbacher EngineeringGlen Isle - FEIS
Lanes, Volumes, Timings

Splits and Phases: 5: Herb Hill Road & Charles Street

 ø2	 ø6	 ø4
27 s	33 s	20 s
		 ø8 20 s

8: Northern Boulevard & Glen Cove Road

Build 2016 Mitigated (Timing)

AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	369	570	82	301	1124	33	142	856	277	25	1151	523
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.98	0.98	0.98	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	6%	6%	3%	3%	3%	4%	4%	4%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	401	709	0	324	1244	0	145	873	283	27	1238	562
Turn Type	Prot			Prot			Prot		pt+ov	Prot		pt+ov
Protected Phases	5	2		1	6		7	4	4 1	3	8	8 5
Permitted Phases												
Detector Phases	5	2		1	6		7	4	4 1	3	8	8 5
Minimum Initial (s)	8.0	24.0		5.0	24.0		7.0	20.0		3.0	20.0	
Minimum Split (s)	13.0	37.5		10.0	37.5		13.0	34.3		9.0	34.3	
Total Split (s)	21.0	43.0	0.0	24.0	46.0	0.0	17.0	50.0	74.0	13.0	46.0	67.0
Total Split (%)	16.2%	33.1%	0.0%	18.5%	35.4%	0.0%	13.1%	38.5%	56.9%	10.0%	35.4%	51.5%
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.3		3.0	4.3	
All-Red Time (s)	2.0	2.5		2.0	2.5		3.0	3.0		3.0	3.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	17.0	40.7		18.3	42.0		13.0	51.2	73.5	8.6	42.0	63.0
Actuated g/C Ratio	0.13	0.31		0.14	0.32		0.10	0.39	0.57	0.07	0.32	0.48
v/c Ratio	0.96	0.68		0.72	1.14		0.90	0.66	0.35	0.25	1.15	0.44
Control Delay	91.0	43.3		63.2	115.1		105.2	36.4	17.4	63.7	119.6	23.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	91.0	43.3		63.2	115.1		105.2	36.4	17.4	63.7	119.6	23.4
LOS	F	D		E	F		F	D	B	E	F	C
Approach Delay		60.5			104.4			39.9			89.2	
Approach LOS		E			F			D			F	
Queue Length 50th (ft)	175	280		134	~644		123	336	132	22	~646	172
Queue Length 95th (ft)	#278	351		186	#782		#250	415	197	54	#785	225
Internal Link Dist (ft)		319			439			466			338	
Turn Bay Length (ft)	425			300			300		420	325		300
Base Capacity (vph)	418	1045		488	1090		162	1321	838	111	1074	1268
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.68		0.66	1.14		0.90	0.66	0.34	0.24	1.15	0.44
Intersection Summary												
Cycle Length: 130												
Actuated Cycle Length: 130												
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow												
Natural Cycle: 120												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 1.15												
Intersection Signal Delay: 76.8						Intersection LOS: E						
Intersection Capacity Utilization 95.7%						ICU Level of Service F						
Analysis Period (min) 15												
~ Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												

9/1/2009

Dutt Tarigoppula
Eschbacher EngineeringGlen Isle - FEIS
Lanes, Volumes, Timings

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 8: Northern Boulevard & Glen Cove Road

 ø1	 ø2	 ø3	 ø4
24 s	43 s	13 s	50 s
 ø5	 ø6	 ø7	 ø8
21 s	46 s	17 s	46 s

Proposed Action Build Timing Mitigation

PM Peak

						
Lane Group	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations	↑↑		↱	↑↑		
Volume (vph)	1695	0	671	1422	0	0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Lane Group Flow (vph)	1842	0	729	1546	0	0
Turn Type			Prot			
Protected Phases	2		4	2 4		
Permitted Phases						
Detector Phases	2		4	2 4		
Minimum Initial (s)	20.0		10.0			
Minimum Split (s)	27.0		17.0			
Total Split (s)	64.0	0.0	45.0	109.0	0.0	0.0
Total Split (%)	58.7%	0.0%	41.3%	100.0%	0.0%	0.0%
Yellow Time (s)	4.0		4.0			
All-Red Time (s)	3.0		3.0			
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max		None			
Act Effct Green (s)	60.0		41.0	109.0		
Actuated g/C Ratio	0.55		0.38	1.00		
v/c Ratio	0.95		1.03	0.44		
Control Delay	34.7		75.3	0.4		
Queue Delay	0.0		0.0	0.0		
Total Delay	34.7		75.3	0.4		
LOS	C		E	A		
Approach Delay	34.7			24.4		
Approach LOS	C			C		
Queue Length 50th (ft)	604		~546	0		
Queue Length 95th (ft)	#805		#775	0		
Internal Link Dist (ft)	495			382	312	
Turn Bay Length (ft)			375			
Base Capacity (vph)	1948		710	3539		
Starvation Cap Reductn	0		0	0		
Spillback Cap Reductn	0		0	0		
Storage Cap Reductn	0		0	0		
Reduced v/c Ratio	0.95		1.03	0.44		
Intersection Summary						
Cycle Length: 109						
Actuated Cycle Length: 109						
Natural Cycle: 80						
Control Type: Semi Act-Uncoord						
Maximum v/c Ratio: 1.03						
Intersection Signal Delay: 29.0				Intersection LOS: C		
Intersection Capacity Utilization 90.7%				ICU Level of Service E		
Analysis Period (min) 15						
~ 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: 5: Glen Cove Road & Route 107



3: Glen Head Road & Glen Cove Road

Build 2016 Mitigated (Timing)

PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	246	273	19	54	274	17	37	1432	63	12	1197	213
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	267	297	21	0	375	0	40	1557	68	13	1533	0
Turn Type	pm+pt		Free	Perm			pm+pt		Perm	pm+pt		
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		Free	8			2		2	6		
Detector Phases	7	4		8	8		5	2	2	1	6	
Minimum Initial (s)	5.0	8.0		8.0	8.0		4.0	20.0	20.0	4.0	20.0	
Minimum Split (s)	12.0	26.0		27.0	27.0		10.0	27.0	27.0	10.0	27.0	
Total Split (s)	19.0	52.0	0.0	33.0	33.0	0.0	10.0	58.0	58.0	10.0	58.0	0.0
Total Split (%)	15.8%	43.3%	0.0%	27.5%	27.5%	0.0%	8.3%	48.3%	48.3%	8.3%	48.3%	0.0%
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)	3.0	3.0		3.0	3.0		2.0	3.0	3.0	2.0	3.0	
Lead/Lag	Lead			Lag	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		None	Min	Min	None	Min	
Act Effct Green (s)	47.8	47.8	117.6		28.8		60.3	57.9	57.9	58.7	54.0	
Actuated g/C Ratio	0.41	0.41	1.00		0.24		0.50	0.49	0.49	0.47	0.46	
v/c Ratio	0.81	0.43	0.01		0.93		0.26	0.86	0.09	0.10	0.96	
Control Delay	46.1	28.1	0.0		74.6		17.8	33.5	17.7	15.7	45.9	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	46.1	28.1	0.0		74.6		17.8	33.5	17.7	15.7	45.9	
LOS	D	C	A		E		B	C	B	B	D	
Approach Delay		35.3			74.6			32.5			45.7	
Approach LOS		D			E			C			D	
Queue Length 50th (ft)	147	165	0		286		14	495	25	5	595	
Queue Length 95th (ft)	#237	245	0		#475		32	#762	58	15	#771	
Internal Link Dist (ft)		203			244			256			523	
Turn Bay Length (ft)			75				200		75	150		
Base Capacity (vph)	331	695	1553		407		151	1802	728	130	1600	
Starvation Cap Reductn	0	0	0		0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0		0		0	0	0	0	0	
Storage Cap Reductn	0	0	0		0		0	0	0	0	0	
Reduced v/c Ratio	0.81	0.43	0.01		0.92		0.26	0.86	0.09	0.10	0.96	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 117.6

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 41.6

Intersection LOS: D

Intersection Capacity Utilization 82.7%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

9/1/2009

Dutt Tarigoppula

Eschbacher Engineering

Glen Isle - FEIS
Lanes, Volumes, Timings

Splits and Phases: 3: Glen Head Road & Glen Cove Road

 ø1	 ø2	 ø4	
10 s	58 s	52 s	
 ø5	 ø6	 ø7	 ø8
10 s	58 s	19 s	33 s

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	80	516	1	45	2	479	176	3	45	219	5
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	0	91	561	0	52	0	521	191	3	49	243	0
Turn Type	Perm		pt+ov	Perm			Split		Perm	Split		
Protected Phases		4	4 6		8		6	6		2	2	
Permitted Phases	4			8					6			
Detector Phases	4	4	4 6	8	8		6	6	6	2	2	
Minimum Initial (s)	8.0	8.0		8.0	8.0		25.0	25.0	25.0	8.0	8.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		31.0	31.0	31.0	14.0	14.0	
Total Split (s)	20.0	20.0	51.0	20.0	20.0	0.0	31.0	31.0	31.0	29.0	29.0	0.0
Total Split (%)	25.0%	25.0%	63.8%	25.0%	25.0%	0.0%	38.8%	38.8%	38.8%	36.3%	36.3%	0.0%
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)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min	C-Min	None	None	
Act Effct Green (s)		12.1	54.6		12.1		38.5	38.5	38.5	17.4	17.4	
Actuated g/C Ratio		0.15	0.68		0.15		0.48	0.48	0.48	0.22	0.22	
v/c Ratio		0.32	0.41		0.18		0.61	0.21	0.00	0.13	0.62	
Control Delay		29.4	1.9		42.9		21.8	14.8	11.0	24.1	34.7	
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		29.4	1.9		42.9		21.8	14.8	11.0	24.1	34.7	
LOS		C	A		D		C	B	B	C	C	
Approach Delay		5.8			42.9			19.9			32.9	
Approach LOS		A			D			B			C	
Queue Length 50th (ft)		43	10		23		177	51	0	20	110	
Queue Length 95th (ft)		73	44		m44		#399	117	5	43	166	
Internal Link Dist (ft)		1067			319			407			212	
Turn Bay Length (ft)									125	125		
Base Capacity (vph)		369	1421		371		851	896	762	535	562	
Starvation Cap Reductn		0	0		0		0	0	0	0	0	
Spillback Cap Reductn		0	0		0		0	0	0	0	0	
Storage Cap Reductn		0	0		0		0	0	0	0	0	
Reduced v/c Ratio		0.25	0.39		0.14		0.61	0.21	0.00	0.09	0.43	
Intersection Summary												
Cycle Length: 80												
Actuated Cycle Length: 80												
Offset: 73 (91%), Referenced to phase 6:NBTL, Start of Yellow												
Natural Cycle: 65												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.62												
Intersection Signal Delay: 17.4						Intersection LOS: B						
Intersection Capacity Utilization 60.4%						ICU Level of Service B						
Analysis Period (min) 15												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												

m . Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Herb Hill Road & Charles Street

 ø2	 ø6	 ø4
29 s	31 s	20 s
		 ø8 20 s

8: Northern Boulevard & Glen Cove Road

Build 2016 Mitigated (Timing)

PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	557	1139	119	412	792	110	184	1120	242	39	1060	357
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	593	1339	0	448	981	0	200	1217	263	41	1116	376
Turn Type	Prot			Prot			Prot		pt+ov	Prot		pt+ov
Protected Phases	5	2		1	6		7	4	4 1	3	8	8 5
Permitted Phases												
Detector Phases	5	2		1	6		7	4	4 1	3	8	8 5
Minimum Initial (s)	8.0	24.0		5.0	24.0		7.0	20.0		3.0	20.0	
Minimum Split (s)	13.0	37.5		10.0	37.5		13.0	34.3		9.0	34.3	
Total Split (s)	28.0	50.0	0.0	23.0	45.0	0.0	20.0	56.0	79.0	11.0	47.0	75.0
Total Split (%)	20.0%	35.7%	0.0%	16.4%	32.1%	0.0%	14.3%	40.0%	56.4%	7.9%	33.6%	53.6%
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.3		3.0	4.3	
All-Red Time (s)	2.0	2.5		2.0	2.5		3.0	3.0		3.0	3.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	24.0	46.0		19.0	41.0		16.0	54.2	77.2	7.0	43.0	71.0
Actuated g/C Ratio	0.17	0.33		0.14	0.29		0.11	0.39	0.55	0.05	0.31	0.51
v/c Ratio	1.04	1.17		1.03	1.00		1.06	0.92	0.32	0.49	1.06	0.28
Control Delay	104.5	126.8		109.2	77.1		139.5	53.2	19.1	85.1	91.8	20.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	104.5	126.8		109.2	77.1		139.5	53.2	19.1	85.1	91.8	20.4
LOS	F	F		F	E		F	D	B	F	F	C
Approach Delay		120.0			87.2			58.1			74.2	
Approach LOS		F			F			E			E	
Queue Length 50th (ft)	~300	~761		~224	471		~200	565	131	37	~587	108
Queue Length 95th (ft)	#420	#901		#336	#622		#362	#717	194	#83	#726	146
Internal Link Dist (ft)		319			439			466			338	
Turn Bay Length (ft)	425			300			300		420	325		300
Base Capacity (vph)	569	1147		435	984		189	1325	815	83	1051	1366
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	1.04	1.17		1.03	1.00		1.06	0.92	0.32	0.49	1.06	0.28
Intersection Summary												
Cycle Length: 140												
Actuated Cycle Length: 140												
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow												
Natural Cycle: 140												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 1.17												
Intersection Signal Delay: 86.3						Intersection LOS: F						
Intersection Capacity Utilization 99.9%						ICU Level of Service F						
Analysis Period (min) 15												
~ 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: 8: Northern Boulevard & Glen Cove Road

 ø1	 ø2	 ø3	 ø4
23 s	50 s	11 s	56 s
 ø5	 ø6	 ø7	 ø8
28 s	45 s	20 s	47 s

Proposed Action Build Timing Mitigation

Saturday Peak

3: Glen Head Road & Glen Cove Road

Build 2016 Mitigation (Timing)

Saturday Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	204	219	42	44	251	31	64	1117	59	22	1506	187
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	4%	4%	4%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	222	238	46	0	355	0	70	1214	64	24	1840	0
Turn Type	pm+pt		Free	Perm			pm+pt		Perm	pm+pt		
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		Free	8			2		2	6		
Detector Phases	7	4		8	8		5	2	2	1	6	
Minimum Initial (s)	4.0	8.0		8.0	8.0		4.0	20.0	20.0	4.0	20.0	
Minimum Split (s)	10.0	26.0		27.0	27.0		10.0	27.0	27.0	10.0	27.0	
Total Split (s)	15.0	46.0	0.0	31.0	31.0	0.0	10.0	64.0	64.0	10.0	64.0	0.0
Total Split (%)	12.5%	38.3%	0.0%	25.8%	25.8%	0.0%	8.3%	53.3%	53.3%	8.3%	53.3%	0.0%
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)	2.0	3.0		3.0	3.0		2.0	3.0	3.0	2.0	3.0	
Lead/Lag	Lead			Lag	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		None	Min	Min	None	Min	
Act Effct Green (s)	41.8	41.8	117.8		26.8		65.6	62.1	62.1	64.8	60.1	
Actuated g/C Ratio	0.35	0.35	1.00		0.23		0.55	0.53	0.53	0.53	0.51	
v/c Ratio	0.86	0.39	0.03		0.92		0.47	0.64	0.08	0.14	1.03	
Control Delay	61.4	31.4	0.0		75.7		24.0	22.6	15.5	12.6	59.3	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	61.4	31.4	0.0		75.7		24.0	22.6	15.5	12.6	59.3	
LOS	E	C	A		E		C	C	B	B	E	
Approach Delay		41.7			75.7			22.3			58.7	
Approach LOS		D			E			C			E	
Queue Length 50th (ft)	129	138	0		272		22	362	25	7	~817	
Queue Length 95th (ft)	#224	212	0		#456		51	440	50	19	#957	
Internal Link Dist (ft)		203			244			256			523	
Turn Bay Length (ft)			75				200		75	150		
Base Capacity (vph)	258	608	1553		387		148	1890	764	176	1783	
Starvation Cap Reductn	0	0	0		0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0		0		0	0	0	0	0	
Storage Cap Reductn	0	0	0		0		0	0	0	0	0	
Reduced v/c Ratio	0.86	0.39	0.03		0.92		0.47	0.64	0.08	0.14	1.03	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 117.8												
Natural Cycle: 120												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 1.03												
Intersection Signal Delay: 46.0						Intersection LOS: D						
Intersection Capacity Utilization 92.2%						ICU Level of Service F						
Analysis Period (min) 15												
~ Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												
# 95th percentile volume exceeds capacity, queue may be longer.												

9/1/2009

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Eschbacher Engineering

Glen Isle - FEIS
Lanes, Volumes, Timings

Queue shown is maximum after two cycles.

Splits and Phases: 3: Glen Head Road & Glen Cove Road

 ø1	 ø2	 ø4
10 s	64 s	46 s
 ø5	 ø6	 ø7
10 s	64 s	15 s
		 ø8
		31 s

5: Herb Hill Road & Charles Street

Build 2016 Mitigated (Timing)

Saturday Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	47	407	1	58	2	511	127	3	67	254	3
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	0	53	442	0	66	0	555	138	3	73	279	0
Turn Type	Perm		pt+ov	Perm			Split		Perm	Split		
Protected Phases		4	4 6		8		6	6		2	2	
Permitted Phases	4			8					6			
Detector Phases	4	4	4 6	8	8		6	6	6	2	2	
Minimum Initial (s)	8.0	8.0		8.0	8.0		25.0	25.0	25.0	8.0	8.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		31.0	31.0	31.0	14.0	14.0	
Total Split (s)	20.0	20.0	57.0	20.0	20.0	0.0	37.0	37.0	37.0	23.0	23.0	0.0
Total Split (%)	25.0%	25.0%	71.3%	25.0%	25.0%	0.0%	46.3%	46.3%	46.3%	28.8%	28.8%	0.0%
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)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min	C-Min	None	None	
Act Effct Green (s)		11.0	53.3		11.0		38.4	38.4	38.4	18.7	18.7	
Actuated g/C Ratio		0.14	0.67		0.14		0.48	0.48	0.48	0.23	0.23	
v/c Ratio		0.21	0.35		0.26		0.65	0.15	0.00	0.18	0.66	
Control Delay		30.3	2.4		36.3		21.9	13.8	9.7	24.3	35.4	
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		30.3	2.4		36.3		21.9	13.8	9.7	24.3	35.4	
LOS		C	A		D		C	B	A	C	D	
Approach Delay		5.4			36.3			20.3			33.1	
Approach LOS		A			D			C			C	
Queue Length 50th (ft)		25	18		34		200	37	0	29	125	
Queue Length 95th (ft)		m56	47		m68		#361	79	5	60	196	
Internal Link Dist (ft)		1079			319			407			212	
Turn Bay Length (ft)									125	125		
Base Capacity (vph)		370	1374		372		849	894	761	435	458	
Starvation Cap Reductn		0	0		0		0	0	0	0	0	
Spillback Cap Reductn		0	0		0		0	0	0	0	0	
Storage Cap Reductn		0	0		0		0	0	0	0	0	
Reduced v/c Ratio		0.14	0.32		0.18		0.65	0.15	0.00	0.17	0.61	
Intersection Summary												
Cycle Length: 80												
Actuated Cycle Length: 80												
Offset: 54 (68%), Referenced to phase 6:NBTL, Start of Yellow												
Natural Cycle: 65												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.66												
Intersection Signal Delay: 19.1						Intersection LOS: B						
Intersection Capacity Utilization 58.5%						ICU Level of Service B						
Analysis Period (min) 15												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												

9/1/2009

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Lanes, Volumes, Timings

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Herb Hill Road & Charles Street

 ø2	 ø6	 ø4
23 s	37 s	20 s
		 ø8 20 s

8: Northern Boulevard & Glen Cove Road

Build 2016 Mitigation (Timing)

Saturday Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	529	656	226	611	905	152	236	1076	248	48	987	404
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.92	0.92	0.92	0.94	0.94	0.94	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	5%	5%	5%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	557	929	0	664	1149	0	251	1145	264	49	1007	412
Turn Type	Prot			Prot			Prot		pt+ov	Prot		pt+ov
Protected Phases	5	2		1	6		7	4	4 1	3	8	8 5
Permitted Phases												
Detector Phases	5	2		1	6		7	4	4 1	3	8	8 5
Minimum Initial (s)	8.0	24.0		5.0	24.0		7.0	20.0		3.0	20.0	
Minimum Split (s)	13.0	37.5		10.0	37.5		13.0	34.3		9.0	34.3	
Total Split (s)	22.0	40.0	0.0	29.0	47.0	0.0	21.0	51.0	80.0	10.0	40.0	62.0
Total Split (%)	16.9%	30.8%	0.0%	22.3%	36.2%	0.0%	16.2%	39.2%	61.5%	7.7%	30.8%	47.7%
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.3		3.0	4.3	
All-Red Time (s)	2.0	2.5		2.0	2.5		3.0	3.0		3.0	3.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	18.0	36.0		25.0	43.0		17.0	49.0	78.0	6.0	36.0	58.0
Actuated g/C Ratio	0.14	0.28		0.19	0.33		0.13	0.38	0.60	0.05	0.28	0.45
v/c Ratio	1.25	1.01		1.08	1.04		1.20	0.91	0.31	0.64	1.07	0.35
Control Delay	174.9	79.8		108.1	79.8		172.4	51.1	14.5	96.5	95.7	24.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	174.9	79.8		108.1	79.8		172.4	51.1	14.5	96.5	95.7	24.6
LOS	F	E		F	E		F	D	B	F	F	C
Approach Delay		115.4			90.2			63.6			75.8	
Approach LOS		F			F			E			E	
Queue Length 50th (ft)	~301	~424		~321	~548		~256	492	108	41	~495	126
Queue Length 95th (ft)	#417	#567		#442	#686		#427	#638	163	#107	#631	172
Internal Link Dist (ft)		319			439			466			338	
Turn Bay Length (ft)	425			300			300		420	325		300
Base Capacity (vph)	446	916		616	1107		210	1252	862	76	938	1190
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	1.25	1.01		1.08	1.04		1.20	0.91	0.31	0.64	1.07	0.35
Intersection Summary												
Cycle Length: 130												
Actuated Cycle Length: 130												
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow												
Natural Cycle: 140												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 1.25												
Intersection Signal Delay: 85.9						Intersection LOS: F						
Intersection Capacity Utilization 98.6%						ICU Level of Service F						
Analysis Period (min) 15												
~ Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												

9/1/2009

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Glen Isle - FEIS
Lanes, Volumes, Timings

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 8: Northern Boulevard & Glen Cove Road

 ø1	 ø2	 ø3	 ø4
29 s	40 s	10 s	51 s
 ø5	 ø6	 ø7	 ø8
22 s	47 s	21 s	40 s

Proposed Action Build Configuration & Timing
Mitigation
AM Peak

3: Glen Head Road & Glen Cove Road

Build 2016 Mitigated (Configuration & Timing)

AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	165	293	4	48	253	7	39	1161	34	30	1531	169
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	9%	9%	9%	5%	5%	5%	4%	4%	4%	6%	6%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	179	318	4	0	335	0	42	1262	37	32	1790	0
Turn Type	Split		Free	Split			pm+pt		Perm	pm+pt		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			Free				2		2	6		
Detector Phases	4	4		8	8		5	2	2	1	6	
Minimum Initial (s)	8.0	8.0		8.0	8.0		4.0	20.0	20.0	4.0	20.0	
Minimum Split (s)	15.0	15.0		15.0	15.0		10.0	27.0	27.0	10.0	27.0	
Total Split (s)	33.0	33.0	0.0	32.0	32.0	0.0	10.0	50.0	50.0	10.0	50.0	0.0
Total Split (%)	26.4%	26.4%	0.0%	25.6%	25.6%	0.0%	8.0%	40.0%	40.0%	8.0%	40.0%	0.0%
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)	3.0	3.0		3.0	3.0		2.0	3.0	3.0	2.0	3.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		None	Min	Min	None	Min	
Act Effct Green (s)	27.2	27.2	119.6		26.3		51.6	48.3	48.3	50.9	46.4	
Actuated g/C Ratio	0.23	0.23	1.00		0.22		0.42	0.40	0.40	0.41	0.39	
v/c Ratio	0.51	0.86	0.00		0.85		0.29	0.61	0.06	0.24	0.95	
Control Delay	47.1	68.1	0.0		66.4		24.8	31.0	25.6	24.3	48.7	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	47.1	68.1	0.0		66.4		24.8	31.0	25.6	24.3	48.7	
LOS	D	E	A		E		C	C	C	C	D	
Approach Delay		60.0			66.4			30.7			48.3	
Approach LOS		E			E			C			D	
Queue Length 50th (ft)	127	247	0		260		19	310	19	14	~526	
Queue Length 95th (ft)	202	#402	0		#415		41	363	44	34	#647	
Internal Link Dist (ft)		203			244			256			524	
Turn Bay Length (ft)			75				200		75	150		
Base Capacity (vph)	371	390	1482		415		146	2083	585	135	1881	
Starvation Cap Reductn	0	0	0		0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0		0		0	0	0	0	0	
Storage Cap Reductn	0	0	0		0		0	0	0	0	0	
Reduced v/c Ratio	0.48	0.82	0.00		0.81		0.29	0.61	0.06	0.24	0.95	
Intersection Summary												
Cycle Length: 125												
Actuated Cycle Length: 119.6												
Natural Cycle: 90												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.95												
Intersection Signal Delay: 45.4						Intersection LOS: D						
Intersection Capacity Utilization 75.2%						ICU Level of Service D						
Analysis Period (min) 15												
~ 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: 3: Glen Head Road & Glen Cove Road

 ø1	 ø2	 ø4	 ø8
10 s	50 s	33 s	32 s
 ø5	 ø6		
10 s	50 s		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	357	31	5	206	163	30
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Lane Group Flow (vph)	388	34	5	224	0	210
Turn Type	Perm			Free	Perm	
Protected Phases	8		2			6
Permitted Phases		8		Free	6	
Detector Phases	8	8	2		6	6
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	20.0	20.0	20.0		20.0	20.0
Total Split (s)	42.0	42.0	38.0	0.0	38.0	38.0
Total Split (%)	52.5%	52.5%	47.5%	0.0%	47.5%	47.5%
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	Min		Min	Min
Act Effct Green (s)	55.1	55.1	16.9	80.0		16.9
Actuated g/C Ratio	0.69	0.69	0.21	1.00		0.21
v/c Ratio	0.29	0.04	0.01	0.16		0.64
Control Delay	0.7	0.1	21.8	0.3		37.1
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	0.7	0.1	21.8	0.3		37.1
LOS	A	A	C	A		D
Approach Delay	0.7		0.7			37.1
Approach LOS	A		A			D
Queue Length 50th (ft)	3	0	2	0		97
Queue Length 95th (ft)	m4	m0	10	0		150
Internal Link Dist (ft)	1071		287			421
Turn Bay Length (ft)		100				
Base Capacity (vph)	1340	955	871	1372		660
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	0.29	0.04	0.01	0.16		0.32

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 14 (18%), Referenced to phase 8:WBL, Start of Yellow

Natural Cycle: 40

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 9.6

Intersection LOS: A

Intersection Capacity Utilization 43.7%

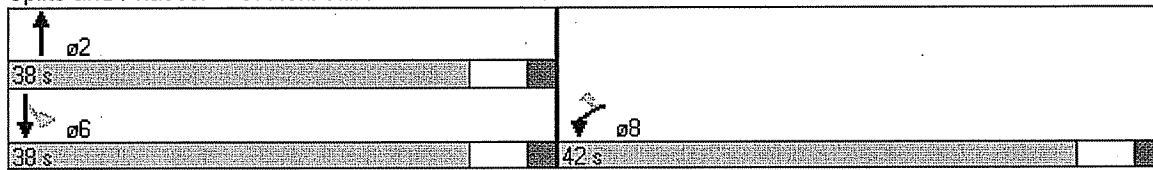
ICU Level of Service A

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

9: Herb Hill Road & Garvies Point Road/Dickson Street Build 2016 Mitigated (Configuration)
 AM Peak

Splits and Phases: 9: Herb Hill Road & Garvies Point Road/Dickson Street



8: Northern Boulevard & Glen Cove Road

Build 2016 Mitigated (Configuration & Timing)

AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	369	570	82	301	1124	33	142	856	277	25	1151	523
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.98	0.98	0.98	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	6%	6%	3%	3%	3%	4%	4%	4%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	401	709	0	324	1244	0	145	873	283	27	1238	562
Turn Type	Prot			Prot			Prot		pt+ov	Prot		pt+ov
Protected Phases	5	2		1	6		7	4	4 1	3	8	8 5
Permitted Phases												
Detector Phases	5	2		1	6		7	4	4 1	3	8	8 5
Minimum Initial (s)	8.0	24.0		5.0	24.0		7.0	20.0		3.0	20.0	
Minimum Split (s)	13.0	37.5		10.0	37.5		13.0	34.3		9.0	34.3	
Total Split (s)	23.0	50.0	0.0	24.0	51.0	0.0	17.0	45.0	69.0	11.0	39.0	62.0
Total Split (%)	17.7%	38.5%	0.0%	18.5%	39.2%	0.0%	13.1%	34.6%	53.1%	8.5%	30.0%	47.7%
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.3		3.0	4.3	
All-Red Time (s)	2.0	2.5		2.0	2.5		3.0	3.0		3.0	3.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	19.0	47.7		18.3	47.0		13.0	45.4	67.7	7.0	35.0	58.0
Actuated g/C Ratio	0.15	0.37		0.14	0.36		0.10	0.35	0.52	0.05	0.27	0.45
v/c Ratio	0.86	0.58		0.72	1.02		0.90	0.74	0.37	0.31	1.02	0.98
Control Delay	72.6	35.8		63.2	71.9		105.2	42.9	20.9	69.2	77.4	70.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.6	35.8		63.2	71.9		105.2	42.9	20.9	69.2	77.4	70.1
LOS	E	D		E	E		F	D	C	E	E	E
Approach Delay		49.1			70.1			45.1			75.0	
Approach LOS		D			E			D			E	
Queue Length 50th (ft)	172	256		134	~584		123	358	144	22	~427	534
Queue Length 95th (ft)	#256	322		186	#722		#250	442	216	55	#530	#824
Internal Link Dist (ft)		319			439			466			338	
Turn Bay Length (ft)	425			300			300		420	325		300
Base Capacity (vph)	467	1225		488	1220		162	1172	774	86	1215	571
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.58		0.66	1.02		0.90	0.74	0.37	0.31	1.02	0.98
Intersection Summary												
Cycle Length: 130												
Actuated Cycle Length: 130												
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow												
Natural Cycle: 110												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 1.02												
Intersection Signal Delay: 62.0						Intersection LOS: E						
Intersection Capacity Utilization 90.0%						ICU Level of Service E						
Analysis Period (min) 15												
~ Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												

9/1/2009

Dutt Tarigoppula
Eschbacher EngineeringGlen Isle - FEIS
Lanes, Volumes, Timings

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 8: Northern Boulevard & Glen Cove Road

 ø1	 ø2	 ø3	 ø4
24 s	50 s	11 s	45 s
 ø5	 ø6	 ø7	 ø8
23 s	51 s	17 s	39 s

Proposed Action Build Configuration & Timing
Mitigation
PM Peak

3: Glen Head Road & Glen Cove Road

Build 2016 Mitigated (Configuration & Timing)

PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	246	273	19	54	274	17	37	1432	63	12	1197	213
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	267	297	21	0	375	0	40	1557	68	13	1533	0
Turn Type	Split		Free	Split			pm+pt		Perm	pm+pt		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			Free				2		2	6		
Detector Phases	4	4		8	8		5	2	2	1	6	
Minimum Initial (s)	8.0	8.0		8.0	8.0		4.0	20.0	20.0	4.0	20.0	
Minimum Split (s)	26.0	26.0		27.0	27.0		10.0	27.0	27.0	10.0	27.0	
Total Split (s)	35.0	35.0	0.0	37.0	37.0	0.0	10.0	43.0	43.0	10.0	43.0	0.0
Total Split (%)	28.0%	28.0%	0.0%	29.6%	29.6%	0.0%	8.0%	34.4%	34.4%	8.0%	34.4%	0.0%
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)	3.0	3.0		3.0	3.0		2.0	3.0	3.0	2.0	3.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		None	Min	Min	None	Min	
Act Effct Green (s)	25.3	25.3	109.6		28.0		42.1	40.4	40.4	41.4	38.6	
Actuated g/C Ratio	0.23	0.23	1.00		0.26		0.37	0.37	0.37	0.36	0.35	
v/c Ratio	0.71	0.76	0.01		0.80		0.26	0.80	0.12	0.09	0.87	
Control Delay	52.1	54.1	0.0		53.7		27.7	37.3	28.9	25.5	41.2	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	52.1	54.1	0.0		53.7		27.7	37.3	28.9	25.5	41.2	
LOS	D	D	A		D		C	D	C	C	D	
Approach Delay		51.2			53.7			36.7			41.1	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	195	220	0		276		19	385	34	6	432	
Queue Length 95th (ft)	293	324	0		#407		44	#551	77	20	#552	
Internal Link Dist (ft)		203			244			256			523	
Turn Bay Length (ft)			75				200		75	150		
Base Capacity (vph)	444	467	1553		538		156	1985	558	137	1814	
Starvation Cap Reductn	0	0	0		0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0		0		0	0	0	0	0	
Storage Cap Reductn	0	0	0		0		0	0	0	0	0	
Reduced v/c Ratio	0.60	0.64	0.01		0.70		0.26	0.78	0.12	0.09	0.85	

Intersection Summary

Cycle Length: 125

Actuated Cycle Length: 109.6

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 41.9

Intersection LOS: D

Intersection Capacity Utilization 73.6%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

9/1/2009

Dutt Tarigoppula

Eschbacher Engineering

Glen Isle - FEIS
Lanes, Volumes, Timings

Splits and Phases: 3: Glen Head Road & Glen Cove Road

 ø1	 ø2	 ø4	 ø8
10 s	43 s	35 s	37 s
 ø5	 ø6		
10 s	43 s		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	←	←	↑	↑	←	←
Volume (vph)	267	117	28	381	89	10
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Lane Group Flow (vph)	290	127	30	414	0	108
Turn Type		Perm		Free	Perm	
Protected Phases	8		2			6
Permitted Phases		8		Free	6	
Detector Phases	8	8	2		6	6
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	20.0	20.0	20.0		20.0	20.0
Total Split (s)	34.0	34.0	46.0	0.0	46.0	46.0
Total Split (%)	42.5%	42.5%	57.5%	0.0%	57.5%	57.5%
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	None		None	None
Act Effct Green (s)	63.4	63.4	11.7	80.0		11.8
Actuated g/C Ratio	0.79	0.79	0.15	1.00		0.15
v/c Ratio	0.19	0.11	0.10	0.30		0.47
Control Delay	0.3	0.2	28.8	0.6		37.3
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	0.3	0.2	28.8	0.6		37.3
LOS	A	A	C	A		D
Approach Delay	0.3		2.5			37.3
Approach LOS	A		A			D
Queue Length 50th (ft)	1	0	13	0		50
Queue Length 95th (ft)	2	m0	34	0		93
Internal Link Dist (ft)	1067		285			433
Turn Bay Length (ft)		100				
Base Capacity (vph)	1544	1114	1076	1372		823
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	0.19	0.11	0.03	0.30		0.13

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 47 (59%), Referenced to phase 8:WBL, Start of Yellow

Natural Cycle: 40

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.47

Intersection Signal Delay: 5.4

Intersection LOS: A

Intersection Capacity Utilization 33.6%

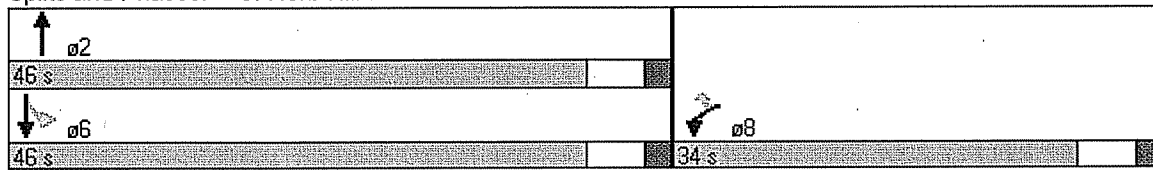
ICU Level of Service A

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

9: Herb Hill Road & Garvies Point Road/Dickson Street Build 2016 Mitigated (Configuration)
 PM Peak

Splits and Phases: 9: Herb Hill Road & Garvies Point Road/Dickson Street



8: Northern Boulevard & Glen Cove Road

Build 2016 Mitigated (Configuration & Timing)

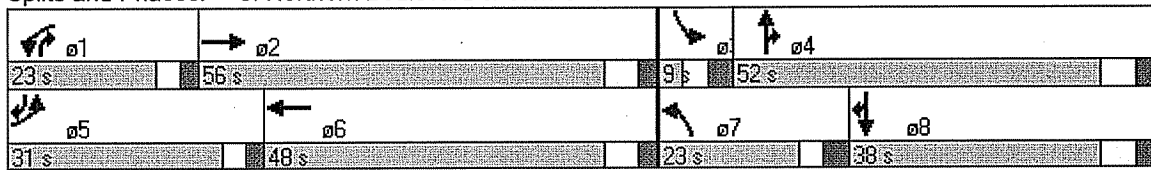
PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	557	1139	119	412	792	110	184	1120	242	39	1060	357
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	593	1339	0	448	981	0	200	1217	263	41	1116	376
Turn Type	Prot			Prot			Prot		pt+ov	Prot		pt+ov
Protected Phases	5	2		1	6		7	4	4 1	3	8	8 5
Permitted Phases												
Detector Phases	5	2		1	6		7	4	4 1	3	8	8 5
Minimum Initial (s)	8.0	24.0		5.0	24.0		7.0	20.0		3.0	20.0	
Minimum Split (s)	13.0	37.5		10.0	37.5		13.0	34.3		9.0	34.3	
Total Split (s)	31.0	56.0	0.0	23.0	48.0	0.0	23.0	52.0	75.0	9.0	38.0	69.0
Total Split (%)	22.1%	40.0%	0.0%	16.4%	34.3%	0.0%	16.4%	37.1%	53.6%	6.4%	27.1%	49.3%
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.3		3.0	4.3	
All-Red Time (s)	2.0	2.5		2.0	2.5		3.0	3.0		3.0	3.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	27.0	52.0		19.0	44.0		19.0	49.8	72.8	5.0	34.0	65.0
Actuated g/C Ratio	0.19	0.37		0.14	0.31		0.14	0.36	0.52	0.04	0.24	0.46
v/c Ratio	0.93	1.03		1.03	0.93		0.89	1.00	0.34	0.69	0.99	0.62
Control Delay	76.9	76.8		109.2	61.8		97.1	70.8	21.7	117.0	76.7	33.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.9	76.8		109.2	61.8		97.1	70.8	21.7	117.0	76.7	33.5
LOS	E	E		F	E		F	E	C	F	E	C
Approach Delay		76.9			76.6			66.3			67.2	
Approach LOS		E			E			E			E	
Queue Length 50th (ft)	276	~686		~224	455		182	~626	140	38	395	293
Queue Length 95th (ft)	#385	#827		#336	#586		#329	#766	207	#105	#506	426
Internal Link Dist (ft)		319			439			466			338	
Turn Bay Length (ft)	425			300			300		420	325		300
Base Capacity (vph)	640	1296		435	1056		224	1217	769	59	1129	611
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.93	1.03		1.03	0.93		0.89	1.00	0.34	0.69	0.99	0.62
Intersection Summary												
Cycle Length: 140												
Actuated Cycle Length: 140												
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow												
Natural Cycle: 140												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 1.03												
Intersection Signal Delay: 71.8						Intersection LOS: E						
Intersection Capacity Utilization 94.7%						ICU Level of Service F						
Analysis Period (min) 15												
~ 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: 8: Northern Boulevard & Glen Cove Road



Proposed Action Build Configuration & Timing
Mitigation
Saturday Peak

3: Glen Head Road & Glen Cove Road

Build 2016 Mitigation (Configuration & Timing)

Saturday Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	204	219	42	44	251	31	64	1117	59	22	1506	187
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	4%	4%	4%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	222	238	46	0	355	0	70	1214	64	24	1840	0
Turn Type	Split		Free	Split			pm+pt		Perm	pm+pt		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			Free				2		2	6		
Detector Phases	4	4		8	8		5	2	2	1	6	
Minimum Initial (s)	8.0	8.0		8.0	8.0		4.0	20.0	20.0	4.0	20.0	
Minimum Split (s)	26.0	26.0		27.0	27.0		10.0	27.0	27.0	10.0	27.0	
Total Split (s)	30.0	30.0	0.0	35.0	35.0	0.0	10.0	50.0	50.0	10.0	50.0	0.0
Total Split (%)	24.0%	24.0%	0.0%	28.0%	28.0%	0.0%	8.0%	40.0%	40.0%	8.0%	40.0%	0.0%
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)	3.0	3.0		3.0	3.0		2.0	3.0	3.0	2.0	3.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		None	Min	Min	None	Min	
Act Effct Green (s)	22.4	22.4	116.2		27.7		51.4	48.4	48.4	50.6	46.4	
Actuated g/C Ratio	0.19	0.19	1.00		0.24		0.43	0.42	0.42	0.42	0.40	
v/c Ratio	0.71	0.73	0.03		0.82		0.47	0.57	0.11	0.16	0.92	
Control Delay	58.5	58.7	0.0		58.8		29.8	29.2	25.7	21.9	42.9	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	58.5	58.7	0.0		58.8		29.8	29.2	25.7	21.9	42.9	
LOS	E	E	A		E		C	C	C	C	D	
Approach Delay		53.3			58.8			29.0			42.6	
Approach LOS		D			E			C			D	
Queue Length 50th (ft)	166	179	0		268		32	292	34	11	530	
Queue Length 95th (ft)	257	271	0		#408		61	346	68	27	#656	
Internal Link Dist (ft)		203			244			256			523	
Turn Bay Length (ft)			75				200		75	150		
Base Capacity (vph)	355	374	1553		478		150	2155	606	152	2016	
Starvation Cap Reductn	0	0	0		0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0		0		0	0	0	0	0	
Storage Cap Reductn	0	0	0		0		0	0	0	0	0	
Reduced v/c Ratio	0.63	0.64	0.03		0.74		0.47	0.56	0.11	0.16	0.91	
Intersection Summary												
Cycle Length: 125												
Actuated Cycle Length: 116.2												
Natural Cycle: 100												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.92												
Intersection Signal Delay: 40.9						Intersection LOS: D						
Intersection Capacity Utilization 79.2%						ICU Level of Service D						
Analysis Period (min) 15												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												

Splits and Phases: 3: Glen Head Road & Glen Cove Road

 ø1	 ø2	 ø4	 ø8
10 s	50 s	30 s	35 s
 ø5	 ø6		
10 s	50 s		

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	310	86	10	217	91	19
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Lane Group Flow (vph)	337	93	11	236	0	120
Turn Type		Perm		Free	Perm	
Protected Phases	8		2			6
Permitted Phases		8		Free	6	
Detector Phases	8	8	2		6	6
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	20.0	20.0	20.0		20.0	20.0
Total Split (s)	49.0	49.0	31.0	0.0	31.0	31.0
Total Split (%)	61.3%	61.3%	38.8%	0.0%	38.8%	38.8%
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	None		None	None
Act Effct Green (s)	62.5	62.5	12.6	80.0		12.8
Actuated g/C Ratio	0.78	0.78	0.16	1.00		0.16
v/c Ratio	0.22	0.09	0.03	0.17		0.47
Control Delay	1.6	0.3	26.4	0.3		36.0
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	1.6	0.3	26.4	0.3		36.0
LOS	A	A	C	A		D
Approach Delay	1.3		1.4			36.0
Approach LOS	A		A			D
Queue Length 50th (ft)	19	0	5	0		55
Queue Length 95th (ft)	11	m0	17	0		99
Internal Link Dist (ft)	1079		299			404
Turn Bay Length (ft)		100				
Base Capacity (vph)	1521	1092	692	1372		536
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	0.22	0.09	0.02	0.17		0.22
Intersection Summary						
Cycle Length: 80						
Actuated Cycle Length: 80						
Offset: 27 (34%), Referenced to phase 8:WBL, Start of Yellow						
Natural Cycle: 40						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.47						
Intersection Signal Delay: 6.6				Intersection LOS: A		
Intersection Capacity Utilization 36.5%				ICU Level of Service A		
Analysis Period (min) 15						
m Volume for 95th percentile queue is metered by upstream signal.						

9: Herb Hill Road & Garvies Point Road/Dickson Street Build 2016 Mitigated (Configuration)
 Saturday Peak

Splits and Phases: 9: Herb Hill Road & Garvies Point Road/Dickson Street

 02	
31 s	
 06	
31 s	 08 49 s

8: Northern Boulevard & Glen Cove Road

Build 2016 Mitigation (Configuration & Timing)

Saturday Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	529	656	226	611	905	152	236	1076	248	48	987	404
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.92	0.92	0.92	0.94	0.94	0.94	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	5%	5%	5%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	557	929	0	664	1149	0	251	1145	264	49	1007	412
Turn Type	Prot			Prot			Prot		pt+ov	Prot		pt+ov
Protected Phases	5	2		1	6		7	4	4 1	3	8	8 5
Permitted Phases												
Detector Phases	5	2		1	6		7	4	4 1	3	8	8 5
Minimum Initial (s)	8.0	24.0		5.0	24.0		7.0	20.0		3.0	20.0	
Minimum Split (s)	13.0	37.5		10.0	37.5		13.0	34.3		9.0	34.3	
Total Split (s)	22.0	40.0	0.0	29.0	47.0	0.0	25.0	49.0	78.0	12.0	36.0	58.0
Total Split (%)	16.9%	30.8%	0.0%	22.3%	36.2%	0.0%	19.2%	37.7%	60.0%	9.2%	27.7%	44.6%
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.3		3.0	4.3	
All-Red Time (s)	2.0	2.5		2.0	2.5		3.0	3.0		3.0	3.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	18.0	36.0		25.0	43.0		21.0	47.4	76.4	7.9	32.0	54.0
Actuated g/C Ratio	0.14	0.28		0.19	0.33		0.16	0.36	0.59	0.06	0.25	0.42
v/c Ratio	1.25	1.01		1.08	1.04		0.97	0.95	0.31	0.49	0.89	0.76
Control Delay	174.9	79.8		108.1	79.8		102.7	56.5	15.5	76.0	58.0	43.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	174.9	79.8		108.1	79.8		102.7	56.5	15.5	76.0	58.0	43.3
LOS	F	E		F	E		F	E	B	E	E	D
Approach Delay		115.4			90.2			56.9			54.5	
Approach LOS		F			F			E			D	
Queue Length 50th (ft)	~301	~424		~321	~548		213	504	112	41	318	340
Queue Length 95th (ft)	#417	#567		#442	#686		#384	#662	170	85	#398	503
Internal Link Dist (ft)		319			439			466			338	
Turn Bay Length (ft)	425			300			300		420	325		300
Base Capacity (vph)	446	916		616	1107		259	1211	844	101	1133	541
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	1.25	1.01		1.08	1.04		0.97	0.95	0.31	0.49	0.89	0.76
Intersection Summary												
Cycle Length: 130												
Actuated Cycle Length: 130												
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow												
Natural Cycle: 130												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 1.25												
Intersection Signal Delay: 79.3						Intersection LOS: E						
Intersection Capacity Utilization 93.4%						ICU Level of Service F						
Analysis Period (min) 15												
~ Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												

9/1/2009

Dutt Tarigoppula
Eschbacher EngineeringGlen Isle - FEIS
Lanes, Volumes, Timings

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 8: Northern Boulevard & Glen Cove Road

 Ø1	 Ø2	 Ø3	 Ø4
29 s	40 s	12 s	49 s
 Ø5	 Ø6	 Ø7	 Ø8
22 s	47 s	25 s	36 s

Full Build-Out Unmitigated
AM Peak

												
Lane Group	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER	
Lane Configurations												
Volume (vph)	214	345	429	250	445	701	530	419	13	0	0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.92	0.92	0.92	0.96	0.96	0.96	0.25	0.25	
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	12%	12%	12%	7%	7%	7%	4%	4%	4%	0%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%		0%		
Lane Group Flow (vph)	194	401	456	272	484	762	552	450	0	0	0	
Turn Type	Split		pm+ov	pm+pt		pm+ov	Prot					
Protected Phases	4	4	1	5	2	4	1	6				
Permitted Phases			4	2		2						
Detector Phases	4	4	1	5	2	4	1	6				
Minimum Initial (s)	8.0	8.0	8.0	4.0	23.0	8.0	8.0	23.0				
Minimum Split (s)	22.0	22.0	15.0	10.0	41.0	22.0	15.0	41.0				
Total Split (s)	26.0	26.0	31.0	18.0	66.0	26.0	31.0	79.0	0.0	0.0	0.0	
Total Split (%)	21.1%	21.1%	25.2%	14.6%	53.7%	21.1%	25.2%	64.2%	0.0%	0.0%	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)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0				
Lead/Lag			Lead	Lead	Lag		Lead	Lag				
Lead-Lag Optimize?												
Recall Mode	None	None	Min	None	Min	None	Min	Min				
Act Effct Green (s)	20.6	20.6	47.9	37.8	25.2	49.8	23.3	35.9				
Actuated g/C Ratio	0.25	0.25	0.59	0.47	0.31	0.61	0.29	0.44				
v/c Ratio	0.54	0.54	0.30	0.55	0.48	0.88	0.59	0.30				
Control Delay	33.4	29.8	8.7	13.3	25.7	28.7	27.7	15.7				
Queue Delay	0.0	0.0	0.0	0.0	0.0	4.8	0.0	0.0				
Total Delay	33.4	29.8	8.7	13.3	25.7	33.5	27.7	15.7				
LOS	C	C	A	B	C	C	C	B				
Approach Delay		21.3			27.4			22.3				
Approach LOS		C			C			C				
Queue Length 50th (ft)	96	100	59	55	111	316	126	79				
Queue Length 95th (ft)	173	150	86	91	162	#607	176	114				
Internal Link Dist (ft)		458			408			365		404		
Turn Bay Length (ft)	75	75	350	220		100	150					
Base Capacity (vph)	379	784	1474	516	1717	873	1040	2085				
Starvation Cap Reductn	0	0	0	0	0	68	0	0				
Spillback Cap Reductn	0	0	0	0	0	0	0	0				
Storage Cap Reductn	0	0	0	0	0	0	0	0				
Reduced v/c Ratio	0.51	0.51	0.31	0.53	0.28	0.95	0.53	0.22				
Intersection Summary												
Cycle Length: 123												
Actuated Cycle Length: 81.2												
Natural Cycle: 80												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.88												
Intersection Signal Delay: 24.2						Intersection LOS: C						
Intersection Capacity Utilization 65.2%						ICU Level of Service C						
Analysis Period (min) 15												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												

Splits and Phases: 4: Pratt Blvd & Glen Cove Avenue

 ø1	 ø2	 ø4
31 s	66 s	26 s
 ø5	 ø6	
18 s	79 s	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	527	49	341	38	0	34	0	828	31	16	658	0
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.99	0.99	0.99	0.92	0.25	0.92	0.25	0.92	0.92	0.92	0.92	0.25
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	7%	7%	7%	4%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	532	49	344	0	78	0	0	934	0	17	715	0
Turn Type	Perm		Perm	Perm						Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8	8					6		
Detector Phases	4	4	4	8	8			2		6	6	
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0			20.0		20.0	20.0	
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0			26.0		26.0	26.0	
Total Split (s)	37.0	37.0	37.0	37.0	37.0	0.0	0.0	43.0	0.0	43.0	43.0	0.0
Total Split (%)	46.3%	46.3%	46.3%	46.3%	46.3%	0.0%	0.0%	53.8%	0.0%	53.8%	53.8%	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)	2.0	2.0	2.0	2.0	2.0			2.0		2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None			Min		Min	Min	
Act Effct Green (s)	30.4	30.4	30.4		30.4			24.4		24.4	24.4	
Actuated g/C Ratio	0.48	0.48	0.48		0.48			0.39		0.39	0.39	
v/c Ratio	0.79	0.05	0.41		0.10			0.72		0.12	0.55	
Control Delay	25.3	9.4	7.3		6.3			20.3		15.6	17.3	
Queue Delay	0.6	0.0	0.0		0.0			0.1		0.0	0.0	
Total Delay	25.9	9.4	7.3		6.3			20.3		15.6	17.3	
LOS	C	A	A		A			C		B	B	
Approach Delay		18.1			6.3			20.3			17.3	
Approach LOS		B			A			C			B	
Queue Length 50th (ft)	145	8	35		7			164		4	116	
Queue Length 95th (ft)	#375	28	104		2			225		17	163	
Internal Link Dist (ft)		349			162			294			408	
Turn Bay Length (ft)	250									125		
Base Capacity (vph)	703	943	880		808			1699		187	1695	
Starvation Cap Reductn	0	0	0		0			67		0	0	
Spillback Cap Reductn	30	0	1		34			39		0	0	
Storage Cap Reductn	0	0	0		0			0		0	0	
Reduced v/c Ratio	0.79	0.05	0.39		0.10			0.57		0.09	0.42	
Intersection Summary												
Cycle Length: 80												
Actuated Cycle Length: 62.8												
Natural Cycle: 55												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.79												
Intersection Signal Delay: 18.3						Intersection LOS: B						
Intersection Capacity Utilization 66.4%						ICU Level of Service C						
Analysis Period (min) 15												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												

Splits and Phases: 6: Charles Street & Glen Cove Avenue

 ø2	 ø4
43 s	37 s
 ø6	 ø8
43 s	37 s



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	66	27	41	755	865	121
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	7%	7%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Lane Group Flow (vph)	72	29	45	821	1072	0
Turn Type		Perm	Perm			
Protected Phases	4			2	6	
Permitted Phases		4	2			
Detector Phases	4	4	2	2	6	
Minimum Initial (s)	8.0	8.0	20.0	20.0	20.0	
Minimum Split (s)	20.0	20.0	30.0	30.0	30.0	
Total Split (s)	37.0	37.0	43.0	43.0	43.0	0.0
Total Split (%)	46.3%	46.3%	53.8%	53.8%	53.8%	0.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Min	Min	Min	
Act Effct Green (s)	12.9	12.9	44.6	44.6	44.6	
Actuated g/C Ratio	0.19	0.19	0.73	0.73	0.73	
v/c Ratio	0.22	0.09	0.22	0.34	0.44	
Control Delay	14.2	6.6	8.6	4.5	5.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	14.2	6.6	8.6	4.5	5.1	
LOS	B	A	A	A	A	
Approach Delay	12.0			4.7	5.1	
Approach LOS	B			A	A	
Queue Length 50th (ft)	13	0	4	48	67	
Queue Length 95th (ft)	37	14	23	84	116	
Internal Link Dist (ft)	135			701	294	
Turn Bay Length (ft)	150		75			
Base Capacity (vph)	693	637	222	2632	2664	
Starvation Cap Reductn	0	0	0	0	14	
Spillback Cap Reductn	19	0	0	62	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.11	0.05	0.20	0.32	0.40	

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 60.9

Natural Cycle: 50

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.44

Intersection Signal Delay: 5.3

Intersection LOS: A

Intersection Capacity Utilization 47.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Morris Avenue & Glen Cove Avenue

 ø2	 ø4
43 s	37 s
 ø6	
43 s	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	67	14	61	9	2	27	37	6	97	733	9	21
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	7%	7%	7%	7%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%					0%		
Lane Group Flow (vph)	73	81	0	0	81	0	0	0	112	807	0	23
Turn Type	Perm			Perm				pm+pt	pm+pt			Perm
Protected Phases		4			8			5	5	2		
Permitted Phases	4			8				2	2			6
Detector Phases	4	4		8	8			5	5	2		6
Minimum Initial (s)	8.0	8.0		8.0	8.0			3.0	3.0	20.0		20.0
Minimum Split (s)	28.0	28.0		25.0	25.0			7.0	7.0	26.0		26.0
Total Split (s)	31.0	31.0	0.0	31.0	31.0	0.0	0.0	19.0	19.0	49.0	0.0	30.0
Total Split (%)	38.8%	38.8%	0.0%	38.8%	38.8%	0.0%	0.0%	23.8%	23.8%	61.3%	0.0%	37.5%
Yellow Time (s)	4.0	4.0		4.0	4.0			3.0	3.0	4.0		4.0
All-Red Time (s)	2.0	2.0		2.0	2.0			1.0	1.0	2.0		2.0
Lead/Lag								Lead	Lead			Lag
Lead-Lag Optimize?												
Recall Mode	None	None		None	None			None	None	C-Min		C-Min
Act Effct Green (s)	12.0	12.0			12.0				62.8	63.6		54.5
Actuated g/C Ratio	0.15	0.15			0.15				0.78	0.80		0.68
v/c Ratio	0.37	0.29			0.30				0.37	0.30		0.06
Control Delay	35.7	13.3			20.0				6.5	3.5		2.8
Queue Delay	0.0	0.0			0.0				0.0	0.0		0.0
Total Delay	35.7	13.3			20.0				6.5	3.5		2.8
LOS	D	B			B				A	A		A
Approach Delay		23.9			20.0					3.9		
Approach LOS		C			B					A		
Queue Length 50th (ft)	34	7			18				11	51		1
Queue Length 95th (ft)	69	42			54				29	91		m4
Internal Link Dist (ft)		605			24					365		
Turn Bay Length (ft)									200			220
Base Capacity (vph)	440	559			567				442	2679		418
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	0.17	0.14			0.14				0.25	0.30		0.06
Intersection Summary												
Cycle Length: 80												
Actuated Cycle Length: 80												
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green, Master Intersection												
Natural Cycle: 65												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.46												
Intersection Signal Delay: 5.4						Intersection LOS: A						
Intersection Capacity Utilization 58.4%						ICU Level of Service B						
Analysis Period (min) 15												
m Volume for 95th percentile queue is metered by upstream signal.												

Splits and Phases: 2: Herb Hill Road & Brewster Street

 ø2	 ø4
49 s	31 s
 ø5	 ø8
19 s	31 s



Lane Group	SBT	SBR	SBR2
Lane Configurations	↑↑		
Volume (vph)	881	80	18
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Peak Hour Factor	0.92	0.92	0.92
Growth Factor	100%	100%	100%
Heavy Vehicles (%)	4%	4%	4%
Bus Blockages (#/hr)	0	0	0
Parking (#/hr)			
Mid-Block Traffic (%)	0%		
Lane Group Flow (vph)	1065	0	0
Turn Type			
Protected Phases	6		
Permitted Phases			
Detector Phases	6		
Minimum Initial (s)	20.0		
Minimum Split (s)	26.0		
Total Split (s)	30.0	0.0	0.0
Total Split (%)	37.5%	0.0%	0.0%
Yellow Time (s)	4.0		
All-Red Time (s)	2.0		
Lead/Lag	Lag		
Lead-Lag Optimize?			
Recall Mode	C-Min		
Act Effct Green (s)	54.5		
Actuated g/C Ratio	0.68		
v/c Ratio	0.46		
Control Delay	3.0		
Queue Delay	0.0		
Total Delay	3.0		
LOS	A		
Approach Delay	3.0		
Approach LOS	A		
Queue Length 50th (ft)	32		
Queue Length 95th (ft)	55		
Internal Link Dist (ft)	354		
Turn Bay Length (ft)			
Base Capacity (vph)	2331		
Starvation Cap Reductn	0		
Spillback Cap Reductn	0		
Storage Cap Reductn	0		
Reduced v/c Ratio	0.46		
Intersection Summary			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	279	35	31	620	590	318
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	7%	7%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Lane Group Flow (vph)	303	38	34	674	987	0
Turn Type		Perm	Perm			
Protected Phases	4			2	6	
Permitted Phases		4	2			
Detector Phases	4	4	2	2	6	
Minimum Initial (s)	8.0	8.0	20.0	20.0	20.0	
Minimum Split (s)	14.0	14.0	26.0	26.0	26.0	
Total Split (s)	25.0	25.0	55.0	55.0	55.0	0.0
Total Split (%)	31.3%	31.3%	68.8%	68.8%	68.8%	0.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Min	Min	Min	
Act Effct Green (s)	14.7	14.7	22.6	22.6	22.6	
Actuated g/C Ratio	0.32	0.32	0.50	0.50	0.50	
v/c Ratio	0.53	0.07	0.17	0.42	0.58	
Control Delay	16.0	4.6	10.4	8.9	8.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	16.0	4.6	10.4	8.9	8.1	
LOS	B	A	B	A	A	
Approach Delay	14.7			9.0	8.1	
Approach LOS	B			A	A	
Queue Length 50th (ft)	61	0	4	51	58	
Queue Length 95th (ft)	121	14	21	107	133	
Internal Link Dist (ft)	273			201	357	
Turn Bay Length (ft)			150			
Base Capacity (vph)	723	691	282	2256	2275	
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	0.42	0.05	0.12	0.30	0.43	

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 45.4

Natural Cycle: 40

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.58

Intersection Signal Delay: 9.5

Intersection LOS: A

Intersection Capacity Utilization 48.6%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 8: Shore Road & Glen Cove Avenue

 ø2	 ø4
55 s	25 s
 ø6	
55 s	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	125	27	104	50	89	14	299	113	94	390	31
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	7%	7%	7%	4%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	26	158	0	113	151	0	0	463	0	0	560	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phases	4	4		8	8		2	2		6	6	
Minimum Initial (s)	4.0	4.0		4.0	4.0		20.0	20.0		20.0	20.0	
Minimum Split (s)	10.0	10.0		10.0	10.0		26.0	26.0		26.0	26.0	
Total Split (s)	26.0	26.0	0.0	26.0	26.0	0.0	44.0	44.0	0.0	44.0	44.0	0.0
Total Split (%)	37.1%	37.1%	0.0%	37.1%	37.1%	0.0%	62.9%	62.9%	0.0%	62.9%	62.9%	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)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)	15.8	15.8		15.8	15.8			42.6			42.6	
Actuated g/C Ratio	0.23	0.23		0.23	0.23			0.65			0.65	
v/c Ratio	0.09	0.35		0.48	0.36			0.38			0.60	
Control Delay	16.4	16.3		23.6	9.4			6.6			10.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	16.4	16.3		23.6	9.4			6.6			10.9	
LOS	B	B		C	A			A			B	
Approach Delay		16.3			15.5			6.6			10.9	
Approach LOS		B			B			A			B	
Queue Length 50th (ft)	5	27		22	10			53			87	
Queue Length 95th (ft)	24	88		80	56			148			255	
Internal Link Dist (ft)		645			488			861			659	
Turn Bay Length (ft)	150			200								
Base Capacity (vph)	393	638		334	557			1327			1028	
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	0.07	0.25		0.34	0.27			0.35			0.54	
Intersection Summary												
Cycle Length: 70												
Actuated Cycle Length: 65.6												
Natural Cycle: 40												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.60												
Intersection Signal Delay: 11.1						Intersection LOS: B						
Intersection Capacity Utilization 78.3%						ICU Level of Service D						
Analysis Period (min) 15												

Splits and Phases: 92: Sea Cliff Avenue & Glen Cove Avenue

 ø2	 ø4
44 s	26 s
 ø6	 ø8
44 s	26 s

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	64	163	39	103	133	261	33	361	75	264	514	58
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.94	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	7%	7%	7%	4%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	0	289	0	0	541	0	35	464	0	287	622	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phases	4	4		8	8		2	2		6	6	
Minimum Initial (s)	8.0	8.0		8.0	8.0		20.0	20.0		20.0	20.0	
Minimum Split (s)	26.0	26.0		26.0	26.0		26.0	26.0		26.0	26.0	
Total Split (s)	31.0	31.0	0.0	31.0	31.0	0.0	39.0	39.0	0.0	39.0	39.0	0.0
Total Split (%)	44.3%	44.3%	0.0%	44.3%	44.3%	0.0%	55.7%	55.7%	0.0%	55.7%	55.7%	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)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)		22.6			22.6		31.6	31.6		31.6	31.6	
Actuated g/C Ratio		0.36			0.36		0.51	0.51		0.51	0.51	
v/c Ratio		0.51			0.83		0.16	0.48		0.88	0.70	
Control Delay		19.0			28.4		11.7	12.4		45.8	17.8	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		19.0			28.4		11.7	12.4		45.8	17.8	
LOS		B			C		B	B		D	B	
Approach Delay		19.0			28.4			12.3			26.7	
Approach LOS		B			C			B			C	
Queue Length 50th (ft)		86			167		8	117		104	190	
Queue Length 95th (ft)		153			#332		24	190		#253	310	
Internal Link Dist (ft)		131			160			206			218	
Turn Bay Length (ft)							75			125		
Base Capacity (vph)		635			722		238	1026		347	935	
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		0.46			0.75		0.15	0.45		0.83	0.67	
Intersection Summary												
Cycle Length: 70												
Actuated Cycle Length: 62.5												
Natural Cycle: 60												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.88												
Intersection Signal Delay: 22.9						Intersection LOS: C						
Intersection Capacity Utilization 93.8%						ICU Level of Service F						
Analysis Period (min) 15												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												

Splits and Phases: 9: Glenwood Road/Glen Head Road & Glen Cove Avenue

 ø2	 ø4
39 s	31 s
 ø6	 ø8
39 s	31 s

						
Lane Group	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Volume (vph)	1392	0	782	1823	0	0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	6%	6%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Lane Group Flow (vph)	1513	0	850	1982	0	0
Turn Type			Prot			
Protected Phases	2		4	2 4		
Permitted Phases						
Detector Phases	2		4	2 4		
Minimum Initial (s)	20.0		10.0			
Minimum Split (s)	27.0		17.0			
Total Split (s)	67.0	0.0	42.0	109.0	0.0	0.0
Total Split (%)	61.5%	0.0%	38.5%	100.0%	0.0%	0.0%
Yellow Time (s)	4.0		4.0			
All-Red Time (s)	3.0		3.0			
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max		None			
Act Effct Green (s)	63.0		38.0	109.0		
Actuated g/C Ratio	0.58		0.35	1.00		
v/c Ratio	0.75		1.34	0.58		
Control Delay	20.3		195.8	0.7		
Queue Delay	0.0		0.0	0.0		
Total Delay	20.3		195.8	0.7		
LOS	C		F	A		
Approach Delay	20.3			59.3		
Approach LOS	C			E		
Queue Length 50th (ft)	392		~778	0		
Queue Length 95th (ft)	484		#1016	0		
Internal Link Dist (ft)	495			382	312	
Turn Bay Length (ft)			375			
Base Capacity (vph)	2006		633	3406		
Starvation Cap Reductn	0		0	0		
Spillback Cap Reductn	0		0	0		
Storage Cap Reductn	0		0	0		
Reduced v/c Ratio	0.75		1.34	0.58		
Intersection Summary						
Cycle Length: 109						
Actuated Cycle Length: 109						
Natural Cycle: 90						
Control Type: Semi Act-Uncoord						
Maximum v/c Ratio: 1.34						
Intersection Signal Delay: 45.7				Intersection LOS: D		
Intersection Capacity Utilization 88.5%				ICU Level of Service E		
Analysis Period (min) 15						
~ 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: 5: Glen Cove Road & Route 107



3: Glen Head Road & Glen Cove Road

Full Build 2016

AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	165	293	4	48	253	7	39	1219	34	30	1624	169
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	9%	9%	9%	5%	5%	5%	4%	4%	4%	6%	6%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	179	318	4	0	335	0	42	1325	37	32	1887	0
Turn Type	Split		Free	Split			Perm		Perm	Perm		
Protected Phases	4	4		8	8			2			6	
Permitted Phases			Free				2		2	6		
Detector Phases	4	4		8	8		2	2	2	6	6	
Minimum Initial (s)	8.0	8.0		8.0	8.0		20.0	20.0	20.0	20.0	20.0	
Minimum Split (s)	26.0	26.0		27.0	27.0		27.0	27.0	27.0	27.0	27.0	
Total Split (s)	26.0	26.0	0.0	27.0	27.0	0.0	72.0	72.0	72.0	72.0	72.0	0.0
Total Split (%)	20.8%	20.8%	0.0%	21.6%	21.6%	0.0%	57.6%	57.6%	57.6%	57.6%	57.6%	0.0%
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)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min	Min	Min	Min	
Act Effct Green (s)	22.0	22.0	125.0		23.0		68.0	68.0	68.0	68.0	68.0	
Actuated g/C Ratio	0.18	0.18	1.00		0.18		0.54	0.54	0.54	0.54	0.54	
v/c Ratio	0.66	1.11	0.00		1.02		0.71	0.68	0.05	0.33	1.03	
Control Delay	60.7	133.8	0.0		104.7		83.5	22.8	13.6	27.9	57.5	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	60.7	133.8	0.0		104.7		83.5	22.8	13.6	27.9	57.5	
LOS	E	F	A		F		F	C	B	C	E	
Approach Delay		106.6			104.7			24.4			57.0	
Approach LOS		F			F			C			E	
Queue Length 50th (ft)	136	~294	0		~286		24	391	13	14	~856	
Queue Length 95th (ft)	218	#479	0		#475		#100	470	31	45	#996	
Internal Link Dist (ft)		203			244			256			524	
Turn Bay Length (ft)			75				200		75	150		
Base Capacity (vph)	272	286	1482		329		59	1951	788	96	1833	
Starvation Cap Reductn	0	0	0		0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0		0		0	0	0	0	0	
Storage Cap Reductn	0	0	0		0		0	0	0	0	0	
Reduced v/c Ratio	0.66	1.11	0.00		1.02		0.71	0.68	0.05	0.33	1.03	
Intersection Summary												
Cycle Length: 125												
Actuated Cycle Length: 125												
Natural Cycle: 130												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 1.11												
Intersection Signal Delay: 55.8						Intersection LOS: E						
Intersection Capacity Utilization 92.1%						ICU Level of Service F						
Analysis Period (min) 15												
~ 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: 3: Glen Head Road & Glen Cove Road

 ø2	 ø4	 ø8
72 s	26 s	27 s
 ø6		
72 s		

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	58	0	389	5	2	3	310	1288	11	13	1746	186
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	4%	4%	4%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	0	120	366	0	10	0	337	1412	0	14	1877	200
Turn Type	Split		pt+ov	Split			Prot			Perm		pm+ov
Protected Phases	3	3	3 5	4	4		5	2			6	3
Permitted Phases										6		6
Detector Phases	3	3	3 5	4	4		5	2		6	6	3
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	10.0		10.0	10.0	8.0
Minimum Split (s)	24.0	24.0		38.3	38.3		12.8	24.8		24.8	24.8	24.0
Total Split (s)	25.5	25.5	61.5	38.3	38.3	0.0	36.0	94.8	0.0	58.8	58.8	25.5
Total Split (%)	16.1%	16.1%	38.8%	24.1%	24.1%	0.0%	22.7%	59.8%	0.0%	37.1%	37.1%	16.1%
Yellow Time (s)	3.5	3.5		3.5	3.5		4.0	4.0		4.0	4.0	3.5
All-Red Time (s)	2.0	2.0		4.8	4.8		2.0	4.8		4.8	4.8	2.0
Lead/Lag	Lead	Lead		Lag	Lag		Lead			Lag	Lag	Lead
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		None	Max		Max	Max	None
Act Effct Green (s)		14.0	43.2		12.3		25.9	91.4		61.6	61.6	79.6
Actuated g/C Ratio		0.12	0.37		0.10		0.22	0.79		0.53	0.53	0.68
v/c Ratio		0.59	0.48		0.05		0.77	0.52		0.10	1.03	0.20
Control Delay		51.5	4.1		47.2		55.5	6.7		23.0	58.3	4.9
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		51.5	4.1		47.2		55.5	6.7		23.0	58.3	4.9
LOS		D	A		D		E	A		C	E	A
Approach Delay		15.8			47.2			16.1			52.9	
Approach LOS		B			D			B			D	
Queue Length 50th (ft)		69	0		5		224	131		5	~710	21
Queue Length 95th (ft)		152	49		25		392	410		26	#1288	75
Internal Link Dist (ft)		345			160			143			316	
Turn Bay Length (ft)												
Base Capacity (vph)		283	825		438		516	2727		140	1820	1038
Starvation Cap Reductn		0	0		0		0	0		0	0	0
Spillback Cap Reductn		0	0		0		0	0		0	0	0
Storage Cap Reductn		0	0		0		0	0		0	0	0
Reduced v/c Ratio		0.42	0.44		0.02		0.65	0.52		0.10	1.03	0.19
Intersection Summary												
Cycle Length: 158.6												
Actuated Cycle Length: 116.3												
Natural Cycle: 150												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 1.03												
Intersection Signal Delay: 33.9						Intersection LOS: C						
Intersection Capacity Utilization 87.7%						ICU Level of Service E						
Analysis Period (min) 15												
~ 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: 2: Back Road & Glen Cove Road

 ø2	 ø3	 ø4
94.8 s	25.5 s	38.3 s
 ø5	 ø6	
36 s	58.9 s	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	57	1164	42	35	930	55	28	69	76	96	63	60
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.96	0.96	0.96	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	12%	12%	12%	12%	12%	12%	2%	2%	2%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	62	1311	0	36	1026	0	30	158	0	0	172	65
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		4
Detector Phases	2	2		6	6		8	8		4	4	4
Minimum Initial (s)	5.0	5.0		5.0	5.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	26.0	26.0		26.0	26.0		25.5	25.5		25.5	25.5	25.5
Total Split (s)	43.5	43.5	0.0	43.5	43.5	0.0	26.5	26.5	0.0	26.5	26.5	26.5
Total Split (%)	62.1%	62.1%	0.0%	62.1%	62.1%	0.0%	37.9%	37.9%	0.0%	37.9%	37.9%	37.9%
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	Min		Min	Min		None	None		None	None	None
Act Effect Green (s)	42.1	42.1		42.1	42.1		14.5	14.5		14.5	14.5	14.5
Actuated g/C Ratio	0.69	0.69		0.69	0.69		0.23	0.23		0.23	0.23	0.23
v/c Ratio	0.25	0.61		0.25	0.48		0.12	0.39		0.56	0.16	
Control Delay	10.0	9.1		12.6	7.3		19.0	15.6		27.0	6.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	10.0	9.1		12.6	7.3		19.0	15.6		27.0	6.5	
LOS	B	A		B	A		B	B		C	A	
Approach Delay		9.1			7.5			16.1			21.4	
Approach LOS		A			A			B			C	
Queue Length 50th (ft)	9	136		5	91		9	32		57	0	
Queue Length 95th (ft)	38	268		29	180		27	75		109	24	
Internal Link Dist (ft)		458			137			80			142	
Turn Bay Length (ft)	120											
Base Capacity (vph)	247	2168		144	2164		341	545		427	532	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.25	0.60		0.25	0.47		0.09	0.29		0.40	0.12	
Intersection Summary												
Cycle Length: 70												
Actuated Cycle Length: 60.9												
Natural Cycle: 60												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.61												
Intersection Signal Delay: 10.0						Intersection LOS: B						
Intersection Capacity Utilization 67.9%						ICU Level of Service C						
Analysis Period (min) 15												

Splits and Phases: 3: Pratt Blvd & Bridge Street

 ø2	 ø4
43.5 s	26.5 s
 ø6	 ø8
43.5 s	26.5 s

1: Cottage Row Road & Brewster Street

Full Build 2016

AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	177	163	304	24	97	184	87	687	23	169	771	97
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	7%	7%	7%	4%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	0	369	330	0	131	200	95	772	0	184	943	0
Turn Type	Perm		Free	Perm		Perm	pm+pt			pm+pt		
Protected Phases		3			7		5	2		1	6	
Permitted Phases	3		Free	7		7	2			6		
Detector Phases	3	3		7	7	7	5	2		1	6	
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	4.0	20.0		4.0	20.0	
Minimum Split (s)	28.0	28.0		28.0	28.0	28.0	8.0	26.0		8.0	26.0	
Total Split (s)	31.0	31.0	0.0	31.0	31.0	31.0	12.0	37.0	0.0	12.0	37.0	0.0
Total Split (%)	38.8%	38.8%	0.0%	38.8%	38.8%	38.8%	15.0%	46.3%	0.0%	15.0%	46.3%	0.0%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0		1.0	2.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	None		None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)		24.2	80.0		24.2	24.2	42.7	36.1		45.5	38.9	
Actuated g/C Ratio		0.30	1.00		0.30	0.30	0.53	0.45		0.57	0.49	
v/c Ratio		0.78	0.20		0.26	0.41	0.37	0.52		0.50	0.57	
Control Delay		37.2	0.3		21.3	24.1	10.7	17.6		13.4	18.0	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		37.2	0.3		21.3	24.1	10.7	17.6		13.4	18.0	
LOS		D	A		C	C	B	B		B	B	
Approach Delay		19.8			23.0			16.8			17.2	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)		164	0		48	77	12	155		39	178	
Queue Length 95th (ft)		257	0		88	131	35	216		74	257	
Internal Link Dist (ft)		294			184			618			362	
Turn Bay Length (ft)			250			100	175			175		
Base Capacity (vph)		539	1636		574	548	284	1520		379	1672	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.68	0.20		0.23	0.36	0.33	0.51		0.49	0.56	
Intersection Summary												
Cycle Length: 80												
Actuated Cycle Length: 80												
Offset: 30 (38%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 65												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.78												
Intersection Signal Delay: 18.3						Intersection LOS: B						
Intersection Capacity Utilization 65.0%						ICU Level of Service C						
Analysis Period (min) 15												

Splits and Phases: 1: Cottage Row Road & Brewster Street

 ø1	 ø2	 ø3
12 s	37 s	31 s
 ø5	 ø6	 ø7
12 s	37 s	31 s

5: Herb Hill Road & Charles Street

Full Build 2016

AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	65	561	1	82	6	517	83	1	100	333	7
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	0	71	610	0	97	0	562	90	1	105	358	0
Turn Type	Perm		pt+ov	Perm			Split		Perm	Split		
Protected Phases		4	4 6		8		6	6		2	2	
Permitted Phases	4			8					6			
Detector Phases	4	4	4 6	8	8		6	6	6	2	2	
Minimum Initial (s)	8.0	8.0		8.0	8.0		25.0	25.0	25.0	8.0	8.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		31.0	31.0	31.0	14.0	14.0	
Total Split (s)	26.0	26.0	57.0	26.0	26.0	0.0	31.0	31.0	31.0	31.0	31.0	0.0
Total Split (%)	29.5%	29.5%	64.8%	29.5%	29.5%	0.0%	35.2%	35.2%	35.2%	35.2%	35.2%	0.0%
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)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min	Min	None	None	
Act Effct Green (s)		11.7	43.0		11.7		27.2	27.2	27.2	20.4	20.4	
Actuated g/C Ratio		0.16	0.60		0.16		0.38	0.38	0.38	0.29	0.29	
v/c Ratio		0.23	0.52		0.32		0.83	0.13	0.00	0.21	0.70	
Control Delay		29.5	7.0		29.9		35.4	17.4	14.0	20.4	30.6	
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		29.5	7.0		29.9		35.4	17.4	14.0	20.4	30.6	
LOS		C	A		C		D	B	B	C	C	
Approach Delay		9.4			29.9			32.9			28.3	
Approach LOS		A			C			C			C	
Queue Length 50th (ft)		28	73		37		217	25	0	34	136	
Queue Length 95th (ft)		67	179		84		#479	65	3	74	238	
Internal Link Dist (ft)		1071			319			407			212	
Turn Bay Length (ft)									125	125		
Base Capacity (vph)		503	1254		500		675	710	604	594	624	
Starvation Cap Reductn		0	0		0		0	0	0	0	0	
Spillback Cap Reductn		0	0		0		0	0	0	0	0	
Storage Cap Reductn		0	0		0		0	0	0	0	0	
Reduced v/c Ratio		0.14	0.49		0.19		0.83	0.13	0.00	0.18	0.57	
Intersection Summary												
Cycle Length: 88												
Actuated Cycle Length: 71.5												
Natural Cycle: 75												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.83												
Intersection Signal Delay: 23.2						Intersection LOS: C						
Intersection Capacity Utilization 69.4%						ICU Level of Service C						
Analysis Period (min) 15												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												

8/31/2009

Dutt Tarigoppula
Eschbacher EngineeringGlen Isle - FEIS
Lanes, Volumes, Timings

Splits and Phases: 5: Herb Hill Road & Charles Street

 Ø2	 Ø6	 Ø4
31 s	31 s	26 s
		 Ø8
		26 s

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	144	439	15	5	263	8	20	11	5	4	1	217
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	157	493	0	0	300	0	0	39	0	0	5	233
Turn Type	pm+pt			Perm			Perm			Perm		Free
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		Free
Detector Phases	5	2		6	6		8	8		4	4	
Minimum Initial (s)	4.0	20.0		20.0	20.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	26.0		26.0	26.0		10.0	10.0		10.0	10.0	
Total Split (s)	9.0	65.0	0.0	56.0	56.0	0.0	15.0	15.0	0.0	15.0	15.0	0.0
Total Split (%)	11.3%	81.3%	0.0%	70.0%	70.0%	0.0%	18.8%	18.8%	0.0%	18.8%	18.8%	0.0%
Yellow Time (s)	3.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?												
Recall Mode	None	Min		Min	Min		None	None		None	None	
Act Effct Green (s)	40.0	42.3			31.3			9.2			9.1	49.5
Actuated g/C Ratio	0.78	0.85			0.63			0.16			0.16	1.00
v/c Ratio	0.20	0.33			0.26			0.14			0.02	0.14
Control Delay	3.1	3.4			7.0			16.1			16.0	0.2
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	3.1	3.4			7.0			16.1			16.0	0.2
LOS	A	A			A			B			B	A
Approach Delay		3.3			7.0			16.1			0.5	
Approach LOS		A			A			B			A	
Queue Length 50th (ft)	0	0			17			5			1	0
Queue Length 95th (ft)	32	105			99			27			8	0
Internal Link Dist (ft)		631			639			463			627	
Turn Bay Length (ft)												25
Base Capacity (vph)	790	1584			1405			332			326	1689
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	0.20	0.31			0.21			0.12			0.02	0.14
Intersection Summary												
Cycle Length: 80												
Actuated Cycle Length: 49.5												
Natural Cycle: 45												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.33												
Intersection Signal Delay: 4.1						Intersection LOS: A						
Intersection Capacity Utilization 59.3%						ICU Level of Service B						
Analysis Period (min) 15												

Splits and Phases: 91: Forest Avenue & Lattingtown Road

 ø2		 ø4	
65 s		15 s	
 ø5	 ø6	 ø8	
9 s	56 s	15 s	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	388	570	82	301	1124	33	142	895	277	25	1213	554
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.98	0.98	0.98	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	6%	6%	3%	3%	3%	4%	4%	4%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	422	709	0	324	1244	0	145	913	283	27	1304	596
Turn Type	Prot			Prot			Prot		pt+ov	Prot		pt+ov
Protected Phases	5	2		1	6		7	4	4 1	3	8	8 5
Permitted Phases												
Detector Phases	5	2		1	6		7	4	4 1	3	8	8 5
Minimum Initial (s)	8.0	24.0		5.0	24.0		7.0	20.0		3.0	20.0	
Minimum Split (s)	13.0	37.5		10.0	37.5		13.0	34.3		9.0	34.3	
Total Split (s)	25.5	50.3	0.0	23.5	48.3	0.0	21.7	61.5	85.0	9.7	49.5	75.0
Total Split (%)	17.6%	34.7%	0.0%	16.2%	33.3%	0.0%	15.0%	42.4%	58.6%	6.7%	34.1%	51.7%
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.3		3.0	4.3	
All-Red Time (s)	2.0	2.5		2.0	2.5		3.0	3.0		3.0	3.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	21.5	47.2		18.6	44.3		16.9	61.4	84.0	5.7	46.3	71.8
Actuated g/C Ratio	0.15	0.33		0.13	0.31		0.12	0.42	0.58	0.04	0.32	0.50
v/c Ratio	0.89	0.65		0.79	1.21		0.77	0.64	0.34	0.43	1.23	0.46
Control Delay	82.2	45.5		76.1	145.3		87.3	36.4	17.9	88.7	153.3	25.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.2	45.5		76.1	145.3		87.3	36.4	17.9	88.7	153.3	25.6
LOS	F	D		E	F		F	D	B	F	F	C
Approach Delay		59.2			131.0			38.0			112.9	
Approach LOS		E			F			D			F	
Queue Length 50th (ft)	204	304		154	~751		134	373	142	25	~806	206
Queue Length 95th (ft)	#297	376		209	#891		#237	452	207	61	#947	264
Internal Link Dist (ft)		319			439			466			338	
Turn Bay Length (ft)	425			300			300		420	325		300
Base Capacity (vph)	473	1087		427	1031		198	1420	848	63	1061	1295
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.65		0.76	1.21		0.73	0.64	0.33	0.43	1.23	0.46
Intersection Summary												
Cycle Length: 145												
Actuated Cycle Length: 145												
Offset: 132 (91%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow												
Natural Cycle: 140												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 1.23												
Intersection Signal Delay: 90.6						Intersection LOS: F						
Intersection Capacity Utilization 97.9%						ICU Level of Service F						
Analysis Period (min) 15												
~ Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												

8/31/2009

Dutt Tarigoppula
Eschbacher EngineeringGlen Isle - FEIS
Lanes, Volumes, Timings

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 8: Northern Boulevard & Glen Cove Road

 ø1	 ø2	 ø3	 ø4
23.5 s	50.3 s	9.7 s	61.5 s
 ø5	 ø6	 ø7	 ø8
25.5 s	48.3 s	21.7 s	49.5 s

1: Driveway/Witte Lane & Bryant Avenue

Full Build 2016

AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1	3	299	11	8	12	447	30	487	708	4
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	0	4	0	325	21	0	0	532	0	524	765	0
Turn Type	Perm			Perm			Perm			pm+pt		
Protected Phases		8			4			2		1	6	
Permitted Phases	8			4			2			6		
Detector Phases	8	8		4	4		2	2		1	6	
Minimum Initial (s)	12.0	12.0		12.0	12.0		45.0	45.0		4.0	45.0	
Minimum Split (s)	17.5	17.5		17.5	17.5		50.0	50.0		9.0	50.0	
Total Split (s)	27.0	27.0	0.0	27.0	27.0	0.0	51.0	51.0	0.0	12.0	63.0	0.0
Total Split (%)	30.0%	30.0%	0.0%	30.0%	30.0%	0.0%	56.7%	56.7%	0.0%	13.3%	70.0%	0.0%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)		23.0		23.0	23.0			46.2		58.2	58.2	
Actuated g/C Ratio		0.26		0.26	0.26			0.52		0.65	0.65	
v/c Ratio		0.01		0.96	0.05			0.58		1.12	0.69	
Control Delay		18.5		73.6	18.6			17.9		93.5	14.1	
Queue Delay		0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay		18.5		73.6	18.6			17.9		93.5	14.1	
LOS		B		E	B			B		F	B	
Approach Delay		18.5			70.2			17.9			46.4	
Approach LOS		B			E			B			D	
Queue Length 50th (ft)		0		180	5			194		~179	243	
Queue Length 95th (ft)		9		#350	23			292		#410	376	
Internal Link Dist (ft)		52			208			183			261	
Turn Bay Length (ft)										125		
Base Capacity (vph)		436		340	429			920		469	1106	
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		0.01		0.96	0.05			0.58		1.12	0.69	
Intersection Summary												
Cycle Length: 90												
Actuated Cycle Length: 89.2												
Natural Cycle: 100												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 1.12												
Intersection Signal Delay: 43.1						Intersection LOS: D						
Intersection Capacity Utilization 108.2%						ICU Level of Service G						
Analysis Period (min) 15												
~ 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: 1: Driveway/Witte Lane & Bryant Avenue

 ø1	 ø2	 ø4
12 s	51 s	27 s
 ø6		 ø8
63 s		27 s

Full Build-Out Unmitigated
PM Peak

											
Lane Group	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER
Lane Configurations											
Volume (vph)	256	519	571	320	597	760	433	480	20	0	0
Confl. Peds. (#/hr)											
Confl. Bikes (#/hr)											
Peak Hour Factor	0.92	0.92	0.92	0.96	0.96	0.96	0.93	0.93	0.93	0.25	0.25
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)											
Mid-Block Traffic (%)		0%			0%			0%		0%	
Lane Group Flow (vph)	278	564	621	333	622	792	466	538	0	0	0
Turn Type	Split		pm+ov	pm+pt		pm+ov	Prot				
Protected Phases	4	4	1	5	2	4	1	6			
Permitted Phases			4	2		2					
Detector Phases	4	4	1	5	2	4	1	6			
Minimum Initial (s)	8.0	8.0	8.0	4.0	23.0	8.0	8.0	23.0			
Minimum Split (s)	22.0	22.0	15.0	10.0	41.0	22.0	15.0	41.0			
Total Split (s)	26.0	26.0	31.0	18.0	66.0	26.0	31.0	79.0	0.0	0.0	0.0
Total Split (%)	21.1%	21.1%	25.2%	14.6%	53.7%	21.1%	25.2%	64.2%	0.0%	0.0%	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)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0			
Lead/Lag			Lead	Lead	Lag		Lead	Lag			
Lead-Lag Optimize?											
Recall Mode	None	None	Min	None	Min	None	Min	Min			
Act Effct Green (s)	22.1	22.1	48.9	38.6	25.3	51.4	22.8	34.8			
Actuated g/C Ratio	0.27	0.27	0.59	0.47	0.31	0.63	0.28	0.42			
v/c Ratio	0.68	0.67	0.39	0.67	0.61	0.88	0.52	0.38			
Control Delay	38.4	32.3	9.5	17.3	27.9	28.2	27.2	17.2			
Queue Delay	0.0	0.0	0.0	0.0	0.0	6.2	0.0	0.0			
Total Delay	38.4	32.3	9.5	17.3	27.9	34.4	27.2	17.2			
LOS	D	C	A	B	C	C	C	B			
Approach Delay		23.8			28.8			21.9			
Approach LOS		C			C			C			
Queue Length 50th (ft)	143	145	85	70	146	322	103	98			
Queue Length 95th (ft)	#279	217	126	115	210	#637	151	137			
Internal Link Dist (ft)		458			408		365			404	
Turn Bay Length (ft)	75	75	350	220		100	150				
Base Capacity (vph)	406	839	1587	504	1734	898	1009	2027			
Starvation Cap Reductn	0	0	0	0	0	75	0	0			
Spillback Cap Reductn	0	0	0	0	0	0	0	0			
Storage Cap Reductn	0	0	0	0	0	0	0	0			
Reduced v/c Ratio	0.68	0.67	0.39	0.66	0.36	0.96	0.46	0.27			

Intersection Summary

Cycle Length: 123

Actuated Cycle Length: 82.2

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 25.4

Intersection LOS: C

Intersection Capacity Utilization 66.1%

ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Pratt Blvd & Glen Cove Avenue

 ø1	 ø2	 ø4
31 s	66 s	26 s
 ø5	 ø6	
18 s	79 s	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	533	55	356	41	0	40	0	1159	40	23	737	0
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.25	0.92	0.25	0.94	0.94	0.92	0.92	0.25
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	579	60	387	0	88	0	0	1276	0	25	801	0
Turn Type	Perm		Perm	Perm						Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8						6		
Detector Phases	4	4	4	8	8			2		6	6	
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0			20.0		20.0	20.0	
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0			26.0		26.0	26.0	
Total Split (s)	37.0	37.0	37.0	37.0	37.0	0.0	0.0	43.0	0.0	43.0	43.0	0.0
Total Split (%)	46.3%	46.3%	46.3%	46.3%	46.3%	0.0%	0.0%	53.8%	0.0%	53.8%	53.8%	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)	2.0	2.0	2.0	2.0	2.0			2.0		2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None			Min		Min	Min	
Act Effct Green (s)	33.2	33.2	33.2		33.2			30.9		30.9	30.9	
Actuated g/C Ratio	0.46	0.46	0.46		0.46			0.43		0.43	0.43	
v/c Ratio	0.92	0.07	0.49		0.12			0.87		0.33	0.56	
Control Delay	43.7	13.3	12.5		9.4			25.8		26.9	16.9	
Queue Delay	4.3	0.0	0.0		0.0			3.1		0.0	0.0	
Total Delay	48.1	13.3	12.5		9.4			28.9		26.9	16.9	
LOS	D	B	B		A			C		C	B	
Approach Delay		32.6			9.4			28.9			17.2	
Approach LOS		C			A			C			B	
Queue Length 50th (ft)	235	15	74		13			258		7	135	
Queue Length 95th (ft)	#506	40	174		3			341		30	183	
Internal Link Dist (ft)		349			162			294			408	
Turn Bay Length (ft)	250									125		
Base Capacity (vph)	629	857	796		732			1671		86	1620	
Starvation Cap Reductn	0	0	0		0			286		0	0	
Spillback Cap Reductn	25	0	0		29			25		0	0	
Storage Cap Reductn	0	0	0		0			0		0	0	
Reduced v/c Ratio	0.96	0.07	0.49		0.13			0.92		0.29	0.49	

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 72.2

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 26.6

Intersection LOS: C

Intersection Capacity Utilization 76.2%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 6: Charles Street & Glen Cove Avenue

 ø2	 ø4
43 s	37 s
 ø6	 ø8
43 s	37 s

7: Morris Avenue & Glen Cove Avenue

Full Build 2016

PM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	84	27	11	942	953	38
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.96	0.96	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Lane Group Flow (vph)	91	29	11	981	1077	0
Turn Type		Perm	Perm			
Protected Phases	4			2	6	
Permitted Phases		4	2			
Detector Phases	4	4	2	2	6	
Minimum Initial (s)	8.0	8.0	20.0	20.0	20.0	
Minimum Split (s)	20.0	20.0	30.0	30.0	30.0	
Total Split (s)	37.0	37.0	43.0	43.0	43.0	0.0
Total Split (%)	46.3%	46.3%	53.8%	53.8%	53.8%	0.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Min	Min	Min	
Act Effect Green (s)	13.2	13.2	43.3	43.3	43.3	
Actuated g/C Ratio	0.20	0.20	0.73	0.73	0.73	
v/c Ratio	0.27	0.09	0.05	0.41	0.45	
Control Delay	14.6	6.4	5.6	5.1	5.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	14.6	6.4	5.6	5.1	5.4	
LOS	B	A	A	A	A	
Approach Delay	12.6			5.2	5.4	
Approach LOS	B			A	A	
Queue Length 50th (ft)	16	0	1	61	70	
Queue Length 95th (ft)	45	13	7	112	128	
Internal Link Dist (ft)	135			701	294	
Turn Bay Length (ft)	150		75			
Base Capacity (vph)	704	647	223	2670	2656	
Starvation Cap Reductn	0	0	0	0	15	
Spillback Cap Reductn	108	0	0	290	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.15	0.04	0.05	0.41	0.41	

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 59.4

Natural Cycle: 50

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 5.7

Intersection LOS: A

Intersection Capacity Utilization 40.9%

ICU Level of Service A

Analysis Period (min) 15

9/9/2009

Dutt Tarigoppula

Eschbacher Engineering

Glen Isle - FEIS
Lanes, Volumes, Timings

Splits and Phases: 7: Morris Avenue & Glen Cove Avenue

 ø2	 ø4
43 s	37 s
 ø6	
43 s	

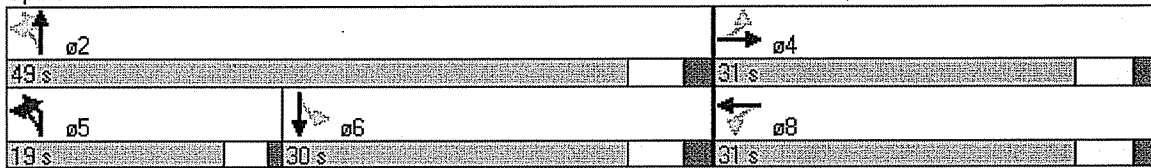
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	99	28	30	12	2	58	67	6	277	941	32	23
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.96	0.96	0.96	0.96	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%					0%		
Lane Group Flow (vph)	108	63	0	0	151	0	0	0	295	1013	0	25
Turn Type	Perm			Perm				pm+pt	pm+pt			Perm
Protected Phases		4			8			5	5	2		
Permitted Phases	4			8				2	2			6
Detector Phases	4	4		8	8			5	5	2		6
Minimum Initial (s)	8.0	8.0		8.0	8.0			3.0	3.0	20.0		20.0
Minimum Split (s)	28.0	28.0		25.0	25.0			7.0	7.0	26.0		26.0
Total Split (s)	31.0	31.0	0.0	31.0	31.0	0.0	0.0	19.0	19.0	49.0	0.0	30.0
Total Split (%)	38.8%	38.8%	0.0%	38.8%	38.8%	0.0%	0.0%	23.8%	23.8%	61.3%	0.0%	37.5%
Yellow Time (s)	4.0	4.0		4.0	4.0			3.0	3.0	4.0		4.0
All-Red Time (s)	2.0	2.0		2.0	2.0			1.0	1.0	2.0		2.0
Lead/Lag								Lead	Lead			Lag
Lead-Lag Optimize?												
Recall Mode	None	None		None	None			None	None	C-Min		C-Min
Act Effct Green (s)	14.7	14.7			14.7				57.3	57.3		39.6
Actuated g/C Ratio	0.18	0.18			0.18				0.72	0.72		0.50
v/c Ratio	0.53	0.20			0.44				0.72	0.41		0.10
Control Delay	37.9	16.0			20.1				21.3	5.7		5.6
Queue Delay	0.0	0.0			0.0				0.0	0.3		0.0
Total Delay	37.9	16.0			20.1				21.3	6.0		5.6
LOS	D	B			C				C	A		A
Approach Delay		29.8			20.1					9.5		
Approach LOS		C			C					A		
Queue Length 50th (ft)	50	13			38				64	85		2
Queue Length 95th (ft)	91	41			83				151	157		m6
Internal Link Dist (ft)		605			24					365		
Turn Bay Length (ft)									200			220
Base Capacity (vph)	376	562			583				464	2450		245
Starvation Cap Reductn	0	0			0				0	760		0
Spillback Cap Reductn	0	0			0				0	0		0
Storage Cap Reductn	0	0			0				0	0		0
Reduced v/c Ratio	0.29	0.11			0.26				0.64	0.60		0.10
Intersection Summary												
Cycle Length: 80												
Actuated Cycle Length: 80												
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green, Master Intersection												
Natural Cycle: 75												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.72												
Intersection Signal Delay: 11.0						Intersection LOS: B						
Intersection Capacity Utilization 72.2%						ICU Level of Service C						
Analysis Period (min) 15												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												



Lane Group	SBT	SBR	SBR2
Lane Configurations	↑↑		
Volume (vph)	900	60	24
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Peak Hour Factor	0.93	0.93	0.93
Growth Factor	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%
Bus Blockages (#/hr)	0	0	0
Parking (#/hr)			
Mid-Block Traffic (%)	0%		
Lane Group Flow (vph)	1059	0	0
Turn Type			
Protected Phases	6		
Permitted Phases			
Detector Phases	6		
Minimum Initial (s)	20.0		
Minimum Split (s)	26.0		
Total Split (s)	30.0	0.0	0.0
Total Split (%)	37.5%	0.0%	0.0%
Yellow Time (s)	4.0		
All-Red Time (s)	2.0		
Lead/Lag	Lag		
Lead-Lag Optimize?			
Recall Mode	C-Min		
Act Effct Green (s)	39.6		
Actuated g/C Ratio	0.50		
v/c Ratio	0.63		
Control Delay	8.8		
Queue Delay	0.0		
Total Delay	8.8		
LOS	A		
Approach Delay	8.7		
Approach LOS	A		
Queue Length 50th (ft)	35		
Queue Length 95th (ft)	#406		
Internal Link Dist (ft)	354		
Turn Bay Length (ft)			
Base Capacity (vph)	1679		
Starvation Cap Reductn	0		
Spillback Cap Reductn	0		
Storage Cap Reductn	0		
Reduced v/c Ratio	0.63		
Intersection Summary			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Herb Hill Road & Brewster Street





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	444	47	46	751	782	362
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.95	0.95	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Lane Group Flow (vph)	483	51	48	791	1243	0
Turn Type		Perm	Perm			
Protected Phases	4			2	6	
Permitted Phases		4	2			
Detector Phases	4	4	2	2	6	
Minimum Initial (s)	8.0	8.0	20.0	20.0	20.0	
Minimum Split (s)	14.0	14.0	26.0	26.0	26.0	
Total Split (s)	25.0	25.0	55.0	55.0	55.0	0.0
Total Split (%)	31.3%	31.3%	68.8%	68.8%	68.8%	0.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Min	Min	Min	
Act Effct Green (s)	21.2	21.2	25.6	25.6	25.6	
Actuated g/C Ratio	0.39	0.39	0.47	0.47	0.47	
v/c Ratio	0.71	0.08	0.36	0.51	0.79	
Control Delay	23.4	5.2	17.9	11.3	14.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	23.4	5.2	17.9	11.3	14.4	
LOS	C	A	B	B	B	
Approach Delay	21.7			11.7	14.4	
Approach LOS	C			B	B	
Queue Length 50th (ft)	116	0	9	87	140	
Queue Length 95th (ft)	#319	20	34	125	205	
Internal Link Dist (ft)	273			201	357	
Turn Bay Length (ft)			150			
Base Capacity (vph)	684	663	182	2118	2087	
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	0.71	0.08	0.26	0.37	0.60	

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 54.8

Natural Cycle: 45

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 15.0

Intersection LOS: B

Intersection Capacity Utilization 69.5%

ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 8: Shore Road & Glen Cove Avenue

 ø2	 ø4
55 s	25 s
 ø6	
55 s	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	118	35	104	63	116	35	439	126	105	371	46
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	26	166	0	113	194	0	0	652	0	0	567	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phases	4	4		8	8		2	2		6	6	
Minimum Initial (s)	4.0	4.0		4.0	4.0		20.0	20.0		20.0	20.0	
Minimum Split (s)	10.0	10.0		10.0	10.0		26.0	26.0		26.0	26.0	
Total Split (s)	26.0	26.0	0.0	26.0	26.0	0.0	44.0	44.0	0.0	44.0	44.0	0.0
Total Split (%)	37.1%	37.1%	0.0%	37.1%	37.1%	0.0%	62.9%	62.9%	0.0%	62.9%	62.9%	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)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)	14.5	14.5		14.5	14.5			39.4			39.4	
Actuated g/C Ratio	0.23	0.23		0.23	0.23			0.66			0.66	
v/c Ratio	0.10	0.36		0.49	0.44			0.53			0.65	
Control Delay	17.8	16.9		25.3	10.3			8.7			12.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	17.8	16.9		25.3	10.3			8.7			12.9	
LOS	B	B		C	B			A			B	
Approach Delay		17.1			15.8			8.7			12.9	
Approach LOS		B			B			A			B	
Queue Length 50th (ft)	5	31		26	14			95			99	
Queue Length 95th (ft)	24	90		80	67			253			#302	
Internal Link Dist (ft)		645			488			861			659	
Turn Bay Length (ft)	150			200								
Base Capacity (vph)	353	638		328	576			1312			934	
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	0.07	0.26		0.34	0.34			0.50			0.61	

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 59.7

Natural Cycle: 45

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 12.3

Intersection LOS: B

Intersection Capacity Utilization 83.9%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 92: Sea Cliff Avenue & Glen Cove Avenue

 ø2	 ø4
44 s	26 s
 ø6	 ø8
44 s	26 s

9: Glenwood Road/Glen Head Road & Glen Cove Avenue

Full Build 2016

PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	82	170	48	117	148	274	32	553	96	216	481	57
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.96	0.96	0.96	0.96	0.96	0.96	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	0	326	0	0	561	0	33	676	0	235	585	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phases	4	4		8	8		2	2		6	6	
Minimum Initial (s)	8.0	8.0		8.0	8.0		20.0	20.0		20.0	20.0	
Minimum Split (s)	26.0	26.0		26.0	26.0		26.0	26.0		26.0	26.0	
Total Split (s)	31.0	31.0	0.0	31.0	31.0	0.0	39.0	39.0	0.0	39.0	39.0	0.0
Total Split (%)	44.3%	44.3%	0.0%	44.3%	44.3%	0.0%	55.7%	55.7%	0.0%	55.7%	55.7%	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)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)		24.5			24.5		35.1	35.1		35.1	35.1	
Actuated g/C Ratio		0.36			0.36		0.52	0.52		0.52	0.52	
v/c Ratio		0.61			0.87		0.12	0.66		1.28	0.65	
Control Delay		22.3			33.1		10.9	16.3		185.1	16.6	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		22.3			33.1		10.9	16.3		185.1	16.6	
LOS		C			C		B	B		F	B	
Approach Delay		22.3			33.1			16.0			64.9	
Approach LOS		C			C			B			E	
Queue Length 50th (ft)		102			181		7	202		~135	174	
Queue Length 95th (ft)		181			#358		22	319		#191	284	
Internal Link Dist (ft)		131			160			206			218	
Turn Bay Length (ft)							75			125		
Base Capacity (vph)		564			681		264	1019		183	899	
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		0.58			0.82		0.13	0.66		1.28	0.65	
Intersection Summary												
Cycle Length: 70												
Actuated Cycle Length: 67.7												
Natural Cycle: 65												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 1.28												
Intersection Signal Delay: 37.4												
Intersection LOS: D												
Intersection Capacity Utilization 100.1%												
ICU Level of Service G												
Analysis Period (min) 15												
~ Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												
# 95th percentile volume exceeds capacity, queue may be longer.												

8/31/2009

Dutt Tarigoppula
Eschbacher EngineeringGlen Isle - FEIS
Lanes, Volumes, Timings

Queue shown is maximum after two cycles.

Splits and Phases: 9: Glenwood Road/Glen Head Road & Glen Cove Avenue

 ø2	 ø4
 ø6	 ø8

	↑	↶	↷	↓	↵	↶
Lane Group	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations	↑↑		↶	↑↑		
Volume (vph)	1791	0	709	1511	0	0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Lane Group Flow (vph)	1947	0	771	1642	0	0
Turn Type			Prot			
Protected Phases	2		4	2 4		
Permitted Phases						
Detector Phases	2		4	2 4		
Minimum Initial (s)	20.0		10.0			
Minimum Split (s)	27.0		17.0			
Total Split (s)	67.0	0.0	42.0	109.0	0.0	0.0
Total Split (%)	61.5%	0.0%	38.5%	100.0%	0.0%	0.0%
Yellow Time (s)	4.0		4.0			
All-Red Time (s)	3.0		3.0			
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max		None			
Act Effct Green (s)	63.0		38.0	109.0		
Actuated g/C Ratio	0.58		0.35	1.00		
v/c Ratio	0.95		1.17	0.46		
Control Delay	33.7		126.3	0.4		
Queue Delay	0.0		0.0	0.0		
Total Delay	33.7		126.3	0.4		
LOS	C		F	A		
Approach Delay	33.7			40.7		
Approach LOS	C			D		
Queue Length 50th (ft)	633		~645	0		
Queue Length 95th (ft)	#848		#878	0		
Internal Link Dist (ft)	495			382	312	
Turn Bay Length (ft)			375			
Base Capacity (vph)	2045		658	3539		
Starvation Cap Reductn	0		0	0		
Spillback Cap Reductn	0		0	0		
Storage Cap Reductn	0		0	0		
Reduced v/c Ratio	0.95		1.17	0.46		
Intersection Summary						
Cycle Length: 109						
Actuated Cycle Length: 109						
Natural Cycle: 120						
Control Type: Semi Act-Uncoord						
Maximum v/c Ratio: 1.17						
Intersection Signal Delay: 37.6				Intersection LOS: D		
Intersection Capacity Utilization 95.5%				ICU Level of Service F		
Analysis Period (min) 15						
~ 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: 5: Glen Cove Road & Route 107



3: Glen Head Road & Glen Cove Road

Full Build 2016

PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	246	273	19	54	274	17	37	1528	63	12	1286	213
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	267	297	21	0	375	0	40	1661	68	13	1630	0
Turn Type	Split		Free	Split			Perm		Perm	Perm		
Protected Phases	4	4		8	8			2			6	
Permitted Phases			Free				2		2	6		
Detector Phases	4	4		8	8		2	2	2	6	6	
Minimum Initial (s)	8.0	8.0		8.0	8.0		20.0	20.0	20.0	20.0	20.0	
Minimum Split (s)	26.0	26.0		27.0	27.0		27.0	27.0	27.0	27.0	27.0	
Total Split (s)	34.0	34.0	0.0	34.0	34.0	0.0	72.0	72.0	72.0	72.0	72.0	0.0
Total Split (%)	24.3%	24.3%	0.0%	24.3%	24.3%	0.0%	51.4%	51.4%	51.4%	51.4%	51.4%	0.0%
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)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min	Min	Min	Min	
Act Effct Green (s)	28.4	28.4	137.7		30.0		67.3	67.3	67.3	67.3	67.3	
Actuated g/C Ratio	0.21	0.21	1.00		0.22		0.49	0.49	0.49	0.49	0.49	
v/c Ratio	0.80	0.85	0.01		0.94		0.74	0.93	0.09	0.27	0.96	
Control Delay	70.5	74.4	0.0		84.8		100.3	43.6	19.8	39.1	47.6	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	70.5	74.4	0.0		84.8		100.3	43.6	19.8	39.1	47.6	
LOS	E	E	A		F		F	D	B	D	D	
Approach Delay		69.9			84.8			44.0			47.5	
Approach LOS		E			F			D			D	
Queue Length 50th (ft)	231	260	0		341		29	734	33	7	733	
Queue Length 95th (ft)	#358	#405	0		#541		#108	#880	62	30	#914	
Internal Link Dist (ft)		203			244			256			523	
Turn Bay Length (ft)			75				200		75	150		
Base Capacity (vph)	349	367	1553		401		54	1797	726	49	1713	
Starvation Cap Reductn	0	0	0		0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0		0		0	0	0	0	0	
Storage Cap Reductn	0	0	0		0		0	0	0	0	0	
Reduced v/c Ratio	0.77	0.81	0.01		0.94		0.74	0.92	0.09	0.27	0.95	

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 137.7

Natural Cycle: 100

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 52.3

Intersection LOS: D

Intersection Capacity Utilization 85.1%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Glen Head Road & Glen Cove Road

 02	 04	 08
72 s	34 s	34 s
 06		
72 s		

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	172	4	286	3	3	4	432	2051	7	8	1481	177
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.96	0.96	0.96	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	0	191	311	0	10	0	450	2143	0	9	1592	190
Turn Type	Split		pt+ov	Split			Prot			Perm		pm+ov
Protected Phases	3	3	3 5	4	4		5	2			6	3
Permitted Phases										6		6
Detector Phases	3	3	3 5	4	4		5	2		6	6	3
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	10.0		10.0	10.0	8.0
Minimum Split (s)	24.0	24.0		38.3	38.3		12.8	24.8		24.8	24.8	24.0
Total Split (s)	25.5	25.5	61.5	38.3	38.3	0.0	36.0	94.8	0.0	58.8	58.8	25.5
Total Split (%)	16.1%	16.1%	38.8%	24.1%	24.1%	0.0%	22.7%	59.8%	0.0%	37.1%	37.1%	16.1%
Yellow Time (s)	3.5	3.5		3.5	3.5		4.0	4.0		4.0	4.0	3.5
All-Red Time (s)	2.0	2.0		4.8	4.8		2.0	4.8		4.8	4.8	2.0
Lead/Lag	Lead	Lead		Lag	Lag		Lead			Lag	Lag	Lead
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		None	Max		Max	Max	None
Act Effct Green (s)		19.7	55.1		12.3		32.1	91.2		55.0	55.0	78.7
Actuated g/C Ratio		0.16	0.45		0.09		0.26	0.75		0.45	0.45	0.65
v/c Ratio		0.75	0.38		0.06		0.85	0.81		0.16	1.00	0.19
Control Delay		67.7	3.3		45.6		59.5	14.5		32.6	55.4	4.5
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		67.7	3.3		45.6		59.5	14.5		32.6	55.4	4.5
LOS		E	A		D		E	B		C	E	A
Approach Delay		27.8			45.6			22.3			49.9	
Approach LOS		C			D			C			D	
Queue Length 50th (ft)		147	0		4		332	467		4	629	19
Queue Length 95th (ft)		#295	46		24		#610	935		22	#995	63
Internal Link Dist (ft)		345			160			143			316	
Turn Bay Length (ft)												
Base Capacity (vph)		276	818		421		529	2649		55	1599	1003
Starvation Cap Reductn		0	0		0		0	0		0	0	0
Spillback Cap Reductn		0	0		0		0	0		0	0	0
Storage Cap Reductn		0	0		0		0	0		0	0	0
Reduced v/c Ratio		0.69	0.38		0.02		0.85	0.81		0.16	1.00	0.19

Intersection Summary

Cycle Length: 158.6

Actuated Cycle Length: 121.8

Natural Cycle: 150

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.00

Intersection Signal Delay: 33.0

Intersection LOS: C

Intersection Capacity Utilization 97.5%

ICU Level of Service F

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Back Road & Glen Cove Road

 ø2	 ø3	 ø4
94.8 s	25.5 s	38.3 s
 ø5	 ø6	
36 s	58.8 s	

3: Pratt Blvd & Bridge Street

Full Build 2016

PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	109	1103	37	61	1096	77	47	53	68	150	46	164
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	118	1239	0	66	1275	0	51	132	0	0	213	178
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		4
Detector Phases	2	2		6	6		8	8		4	4	4
Minimum Initial (s)	5.0	5.0		5.0	5.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	26.0	26.0		26.0	26.0		25.5	25.5		25.5	25.5	25.5
Total Split (s)	43.5	43.5	0.0	43.5	43.5	0.0	26.5	26.5	0.0	26.5	26.5	26.5
Total Split (%)	62.1%	62.1%	0.0%	62.1%	62.1%	0.0%	37.9%	37.9%	0.0%	37.9%	37.9%	37.9%
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	Min		Min	Min		None	None		None	None	None
Act Effct Green (s)	39.6	39.6		39.6	39.6		16.6	16.6		16.6	16.6	16.6
Actuated g/C Ratio	0.62	0.62		0.62	0.62		0.26	0.26		0.26	0.26	0.26
v/c Ratio	0.78	0.61		0.42	0.63		0.20	0.29		0.66	0.40	0.40
Control Delay	52.3	10.0		19.1	10.2		20.0	12.1		31.1	15.0	15.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	52.3	10.0		19.1	10.2		20.0	12.1		31.1	15.0	15.0
LOS	D	A		B	B		C	B		C	B	B
Approach Delay		13.7			10.7			14.3			23.8	
Approach LOS		B			B			B			C	
Queue Length 50th (ft)	31	140		12	145		16	20		74	35	35
Queue Length 95th (ft)	#139	241		#62	251		40	58		138	82	82
Internal Link Dist (ft)		458			137			80			142	
Turn Bay Length (ft)	120											
Base Capacity (vph)	151	2044		156	2037		313	556		403	539	539
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.78	0.61		0.42	0.63		0.16	0.24		0.53	0.33	0.33

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 64.3

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 13.7

Intersection LOS: B

Intersection Capacity Utilization 69.8%

ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

8/31/2009

Dutt Tarigoppula
Eschbacher EngineeringGlen Isle - FEIS
Lanes, Volumes, Timings

Splits and Phases: 3: Pratt Blvd & Bridge Street

 ø2	 ø4
43.5 s	26.5 s
 ø6	 ø8
43.5 s	26.5 s

1: Cottage Row Road & Brewster Street

Full Build 2016

PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	138	160	207	30	193	318	158	986	112	231	934	184
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	0	324	225	0	243	346	170	1180	0	251	1215	0
Turn Type	Perm		Free	Perm		Perm	pm+pt			pm+pt		
Protected Phases		3			7		5	2			1	6
Permitted Phases	3		Free	7		7	2			6		
Detector Phases	3	3		7	7	7	5	2		1	6	
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	4.0	20.0		4.0	20.0	
Minimum Split (s)	28.0	28.0		28.0	28.0	28.0	8.0	26.0		8.0	26.0	
Total Split (s)	31.0	31.0	0.0	31.0	31.0	31.0	12.0	37.0	0.0	12.0	37.0	0.0
Total Split (%)	38.8%	38.8%	0.0%	38.8%	38.8%	38.8%	15.0%	46.3%	0.0%	15.0%	46.3%	0.0%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0		1.0	2.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	None		None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)		24.5	80.0		24.5	24.5	40.7	33.1		45.1	36.0	
Actuated g/C Ratio		0.31	1.00		0.31	0.31	0.51	0.41		0.56	0.45	
v/c Ratio		0.84	0.14		0.46	0.71	0.73	0.85		0.83	0.81	
Control Delay		45.3	0.2		24.9	33.1	30.7	27.5		43.1	25.0	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		45.3	0.2		24.9	33.1	30.7	27.5		43.1	25.0	
LOS		D	A		C	C	C	C		D	C	
Approach Delay		26.8			29.7			27.9			28.1	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)		142	0		92	145	40	281		~81	278	
Queue Length 95th (ft)		#271	0		156	235	#120	#378		#229	#410	
Internal Link Dist (ft)		294			184			618			362	
Turn Bay Length (ft)			250			100	175			175		
Base Capacity (vph)		428	1636		583	536	241	1406		303	1505	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.76	0.14		0.42	0.65	0.71	0.84		0.83	0.81	

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 30 (38%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 28.1

Intersection LOS: C

Intersection Capacity Utilization 84.8%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

9/9/2009

Dutt Tarigoppula
Eschbacher EngineeringGlen Isle - FEIS
Lanes, Volumes, Timings

1: Cottage Row Road & Brewster Street

Full Build 2016

PM Peak

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Cottage Row Road & Brewster Street

 ø1	 ø2	 ø3
12 s	37 s	31 s
 ø5	 ø6	 ø7
12 s	37 s	31 s

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	101	708	1	62	2	692	176	3	45	219	5
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	0	114	770	0	70	0	752	191	3	49	243	0
Turn Type	Perm		pt+ov	Perm			Split		Perm	Split		
Protected Phases		4	4 6		8		6	6		2	2	
Permitted Phases	4			8					6			
Detector Phases	4	4	4 6	8	8		6	6	6	2	2	
Minimum Initial (s)	8.0	8.0		8.0	8.0		25.0	25.0	25.0	8.0	8.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		31.0	31.0	31.0	14.0	14.0	
Total Split (s)	26.0	26.0	57.0	26.0	26.0	0.0	31.0	31.0	31.0	31.0	31.0	0.0
Total Split (%)	29.5%	29.5%	64.8%	29.5%	29.5%	0.0%	35.2%	35.2%	35.2%	35.2%	35.2%	0.0%
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)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min	Min	None	None	
Act Effct Green (s)		13.8	45.3		13.8		27.4	27.4	27.4	16.3	16.3	
Actuated g/C Ratio		0.20	0.65		0.20		0.39	0.39	0.39	0.23	0.23	
v/c Ratio		0.31	0.59		0.19		1.08	0.26	0.00	0.12	0.58	
Control Delay		27.2	5.6		25.0		83.8	17.9	12.7	22.1	29.7	
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		27.2	5.6		25.0		83.8	17.9	12.7	22.1	29.7	
LOS		C	A		C		F	B	B	C	C	
Approach Delay		8.4			25.0			70.3			28.4	
Approach LOS		A			C			E			C	
Queue Length 50th (ft)		42	59		24		~364	53	0	16	90	
Queue Length 95th (ft)		93	185		61		#720	128	6	44	171	
Internal Link Dist (ft)		1067			319			407			212	
Turn Bay Length (ft)									125	125		
Base Capacity (vph)		526	1355		528		695	732	624	578	607	
Starvation Cap Reductn		0	0		0		0	0	0	0	0	
Spillback Cap Reductn		0	0		0		0	0	0	0	0	
Storage Cap Reductn		0	0		0		0	0	0	0	0	
Reduced v/c Ratio		0.22	0.57		0.13		1.08	0.26	0.00	0.08	0.40	
Intersection Summary												
Cycle Length: 88												
Actuated Cycle Length: 69.7												
Natural Cycle: 80												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 1.08												
Intersection Signal Delay: 38.3												
Intersection LOS: D												
Intersection Capacity Utilization 72.3%												
ICU Level of Service C												
Analysis Period (min) 15												
~ 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: 5: Herb Hill Road & Charles Street

 ø2	 ø6	 ø4
31 s	31 s	26 s
		 ø8
		26 s

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	234	556	23	4	521	6	21	12	7	4	2	200
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	249	615	0	0	577	0	0	44	0	0	6	217
Turn Type	pm+pt			Perm			Perm			Perm		Free
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		Free
Detector Phases	5	2		6	6		8	8		4	4	
Minimum Initial (s)	4.0	20.0		20.0	20.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	26.0		26.0	26.0		10.0	10.0		10.0	10.0	
Total Split (s)	9.0	65.0	0.0	56.0	56.0	0.0	15.0	15.0	0.0	15.0	15.0	0.0
Total Split (%)	11.3%	81.3%	0.0%	70.0%	70.0%	0.0%	18.8%	18.8%	0.0%	18.8%	18.8%	0.0%
Yellow Time (s)	3.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?												
Recall Mode	None	Min		Min	Min		None	None		None	None	
Act Effct Green (s)	38.4	41.2			31.3			8.7			8.6	47.1
Actuated g/C Ratio	0.79	0.87			0.66			0.16			0.16	1.00
v/c Ratio	0.40	0.40			0.48			0.16			0.02	0.13
Control Delay	4.3	3.5			8.3			19.0			20.3	0.2
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	4.3	3.5			8.3			19.0			20.3	0.2
LOS	A	A			A			B			C	A
Approach Delay		3.7			8.3			19.0			0.7	
Approach LOS		A			A			B			A	
Queue Length 50th (ft)	0	0			41			5			1	0
Queue Length 95th (ft)	49	142			214			36			10	0
Internal Link Dist (ft)		631			639			463			627	
Turn Bay Length (ft)												25
Base Capacity (vph)	623	1580			1409			331			331	1689
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	0.40	0.39			0.41			0.13			0.02	0.13
Intersection Summary												
Cycle Length: 80												
Actuated Cycle Length: 47.1												
Natural Cycle: 50												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.48												
Intersection Signal Delay: 5.3						Intersection LOS: A						
Intersection Capacity Utilization 77.5%						ICU Level of Service D						
Analysis Period (min) 15												

Splits and Phases: 91: Forest Avenue & Lattingtown Road

 ø2		 ø4	
65 s		15 s	
 ø5	 ø6	 ø8	
9 s	56 s	15 s	

8: Northern Boulevard & Glen Cove Road

Full Build 2016

PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	589	1139	119	412	792	110	184	1184	242	39	1119	387
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	627	1339	0	448	981	0	200	1287	263	41	1178	407
Turn Type	Prot			Prot			Prot		pt+ov	Prot		pt+ov
Protected Phases	5	2		1	6		7	4	4 1	3	8	8 5
Permitted Phases												
Detector Phases	5	2		1	6		7	4	4 1	3	8	8 5
Minimum Initial (s)	8.0	24.0		5.0	24.0		7.0	20.0		3.0	20.0	
Minimum Split (s)	13.0	37.5		10.0	37.5		13.0	34.3		9.0	34.3	
Total Split (s)	23.5	39.3	0.0	23.5	39.3	0.0	17.7	49.5	73.0	17.7	49.5	73.0
Total Split (%)	18.1%	30.2%	0.0%	18.1%	30.2%	0.0%	13.6%	38.1%	56.2%	13.6%	38.1%	56.2%
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.3		3.0	4.3	
All-Red Time (s)	2.0	2.5		2.0	2.5		3.0	3.0		3.0	3.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	19.5	35.3		19.5	35.3		13.7	50.9	74.4	10.6	45.5	69.0
Actuated g/C Ratio	0.15	0.27		0.15	0.27		0.11	0.39	0.57	0.08	0.35	0.53
v/c Ratio	1.26	1.41		0.93	1.08		1.15	0.96	0.31	0.31	0.98	0.28
Control Delay	176.7	228.0		81.7	97.1		164.7	56.1	16.8	61.4	64.4	17.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	176.7	228.0		81.7	97.1		164.7	56.1	16.8	61.4	64.4	17.5
LOS	F	F		F	F		F	E	B	E	E	B
Approach Delay		211.7			92.3			62.6			52.6	
Approach LOS		F			F			E			D	
Queue Length 50th (ft)	~341	~797		194	~483		~198	~572	115	33	515	103
Queue Length 95th (ft)	#461	#936		#295	#617		#355	#773	184	70	#672	141
Internal Link Dist (ft)		319			439			466			338	
Turn Bay Length (ft)	425			300			300		420	325		300
Base Capacity (vph)	498	948		481	912		174	1341	846	174	1197	1430
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	1.26	1.41		0.93	1.08		1.15	0.96	0.31	0.24	0.98	0.28
Intersection Summary												
Cycle Length: 130												
Actuated Cycle Length: 130												
Offset: 117 (90%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow												
Natural Cycle: 140												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 1.41												
Intersection Signal Delay: 109.7						Intersection LOS: F						
Intersection Capacity Utilization 101.5%						ICU Level of Service G						
Analysis Period (min) 15												
~ Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												

8/31/2009

Dutt Tarigoppula
Eschbacher EngineeringGlen Isle - FEIS
Lanes, Volumes, Timings

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 8: Northern Boulevard & Glen Cove Road

 ø1	 ø2	 ø3	 ø4
23.5 s	39.3 s	17.7 s	49.5 s
 ø5	 ø6	 ø7	 ø8
23.5 s	39.3 s	17.7 s	49.5 s

1: Driveway/Witte Lane & Bryant Avenue

Full Build 2016

PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	3	25	193	1	30	1	934	26	240	441	1
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.96	0.96	0.96	0.97	0.97	0.97
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	0	33	0	210	34	0	0	1001	0	247	456	0
Turn Type	Perm			Perm			Perm			pm+pt		
Protected Phases		8			4			2		1	6	
Permitted Phases	8			4			2			6		
Detector Phases	8	8		4	4		2	2		1	6	
Minimum Initial (s)	12.0	12.0		12.0	12.0		45.0	45.0		4.0	45.0	
Minimum Split (s)	17.5	17.5		17.5	17.5		50.0	50.0		9.0	50.0	
Total Split (s)	25.0	25.0	0.0	25.0	25.0	0.0	56.0	56.0	0.0	9.0	65.0	0.0
Total Split (%)	27.8%	27.8%	0.0%	27.8%	27.8%	0.0%	62.2%	62.2%	0.0%	10.0%	72.2%	0.0%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)		18.8		18.8	18.8			50.9		59.9	59.9	
Actuated g/C Ratio		0.22		0.22	0.22			0.59		0.69	0.69	
v/c Ratio		0.09		0.76	0.10			0.95		0.80	0.39	
Control Delay		13.2		50.4	10.8			36.2		28.7	7.2	
Queue Delay		0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay		13.2		50.4	10.8			36.2		28.7	7.2	
LOS		B		D	B			D		C	A	
Approach Delay		13.2			44.9			36.2			14.8	
Approach LOS		B			D			D			B	
Queue Length 50th (ft)		3		110	0			499		47	100	
Queue Length 95th (ft)		26		#209	24			#811		#122	153	
Internal Link Dist (ft)		52			208			183			261	
Turn Bay Length (ft)										125		
Base Capacity (vph)		409		304	379			1069		309	1174	
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		0.08		0.69	0.09			0.94		0.80	0.39	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 86.7

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 29.3

Intersection LOS: C

Intersection Capacity Utilization 115.6%

ICU Level of Service H

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

8/31/2009

Dutt Tarigoppula

Eschbacher Engineering

Glen Isle - FEIS
Lanes, Volumes, Timings

Splits and Phases: 1: Driveway/Witte Lane & Bryant Avenue

 ø1	 ø2	 ø4
9 s	56 s	25 s
 ø6		 ø8
65 s		25 s

Full Build-Out Unmitigated
Saturday Peak

4: Pratt Blvd & Glen Cove Avenue

Full Build 2016

Saturday Peak

											
Lane Group	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER
Lane Configurations											
Volume (vph)	250	447	459	295	633	719	540	570	20	0	0
Confl. Peds. (#/hr)											
Confl. Bikes (#/hr)											
Peak Hour Factor	0.92	0.92	0.92	0.96	0.96	0.96	0.97	0.97	0.97	0.25	0.25
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	4%	5%	5%	5%	4%	4%	4%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)											
Mid-Block Traffic (%)		0%			0%			0%		0%	
Lane Group Flow (vph)	247	511	499	307	659	749	557	609	0	0	0
Turn Type	Split		pm+ov	pm+pt		pm+ov	Prot				
Protected Phases	4	4	1	5	2	4	1	6			
Permitted Phases				4	2	2					
Detector Phases	4	4	1	5	2	4	1	6			
Minimum Initial (s)	8.0	8.0	8.0	4.0	23.0	8.0	8.0	23.0			
Minimum Split (s)	22.0	22.0	15.0	10.0	41.0	22.0	15.0	41.0			
Total Split (s)	26.0	26.0	31.0	18.0	66.0	26.0	31.0	79.0	0.0	0.0	0.0
Total Split (%)	21.1%	21.1%	25.2%	14.6%	53.7%	21.1%	25.2%	64.2%	0.0%	0.0%	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)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0			
Lead/Lag			Lead	Lead	Lag		Lead	Lag			
Lead-Lag Optimize?											
Recall Mode	None	None	Min	None	Min	None	Min	Min			
Act Effect Green (s)	21.5	21.5	49.3	38.6	25.7	51.2	23.8	36.4			
Actuated g/C Ratio	0.26	0.26	0.59	0.47	0.31	0.62	0.29	0.44			
v/c Ratio	0.62	0.62	0.31	0.65	0.64	0.85	0.60	0.42			
Control Delay	36.2	31.8	8.9	16.7	28.8	25.0	28.5	17.1			
Queue Delay	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0			
Total Delay	36.2	31.8	8.9	16.7	28.8	29.0	28.5	17.2			
LOS	D	C	A	B	C	C	C	B			
Approach Delay		23.6			26.7			22.6			
Approach LOS		C			C			C			
Queue Length 50th (ft)	129	134	65	63	163	311	127	114			
Queue Length 95th (ft)	227	198	102	102	224	#586	186	156			
Internal Link Dist (ft)		458			408			365		404	
Turn Bay Length (ft)	75	75	350	220		100	150				
Base Capacity (vph)	403	835	1590	485	1728	889	1022	2062			
Starvation Cap Reductn	0	0	0	0	0	82	0	259			
Spillback Cap Reductn	0	0	0	0	0	0	0	0			
Storage Cap Reductn	0	0	0	0	0	0	0	0			
Reduced v/c Ratio	0.61	0.61	0.31	0.63	0.38	0.93	0.55	0.34			

Intersection Summary

Cycle Length: 123

Actuated Cycle Length: 83

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 24.6

Intersection LOS: C

Intersection Capacity Utilization 66.6%

ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

9/9/2009

Dutt Tarigoppula

Eschbacher Engineering

Glen Isle - FEIS
Lanes, Volumes, Timings

4: Pratt Blvd & Glen Cove Avenue

Full Build 2016
Saturday Peak

Splits and Phases: 4: Pratt Blvd & Glen Cove Avenue

 Ø1	 Ø2	 Ø4
31 s	66 s	26 s
 Ø5	 Ø6	
18 s	79 s	

6: Charles Street & Glen Cove Avenue

Full Build 2016

Saturday Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	472	34	324	22	0	37	0	973	31	21	817	0
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.92	0.25	0.92	0.25	0.93	0.93	0.94	0.94	0.25
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	5%	5%	4%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	502	36	345	0	64	0	0	1079	0	22	869	0
Turn Type	Perm		Perm	Perm						Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8						6		
Detector Phases	4	4	4	8	8			2		6	6	
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0			20.0		20.0	20.0	
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0			26.0		26.0	26.0	
Total Split (s)	37.0	37.0	37.0	37.0	37.0	0.0	0.0	43.0	0.0	43.0	43.0	0.0
Total Split (%)	46.3%	46.3%	46.3%	46.3%	46.3%	0.0%	0.0%	53.8%	0.0%	53.8%	53.8%	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)	2.0	2.0	2.0	2.0	2.0			2.0		2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None			Min		Min	Min	
Act Effect Green (s)	29.8	29.8	29.8		29.8			26.6		26.6	26.6	
Actuated g/C Ratio	0.46	0.46	0.46		0.46			0.41		0.41	0.41	
v/c Ratio	0.82	0.04	0.44		0.08			0.76		0.19	0.63	
Control Delay	29.4	11.0	10.6		6.3			20.8		17.7	17.8	
Queue Delay	0.6	0.0	0.0		0.0			0.2		0.0	0.0	
Total Delay	30.0	11.0	10.6		6.3			21.0		17.7	17.8	
LOS	C	B	B		A			C		B	B	
Approach Delay		21.7			6.3			21.0			17.8	
Approach LOS		C			A			C			B	
Queue Length 50th (ft)	154	7	55		5			201		6	150	
Queue Length 95th (ft)	#390	25	143		0			268		22	204	
Internal Link Dist (ft)		349			162			294			408	
Turn Bay Length (ft)	250									125		
Base Capacity (vph)	652	912	828		813			1745		143	1710	
Starvation Cap Reductn	0	0	0		0			159		0	0	
Spillback Cap Reductn	24	0	0		29			30		0	0	
Storage Cap Reductn	0	0	0		0			0		0	0	
Reduced v/c Ratio	0.80	0.04	0.42		0.08			0.68		0.15	0.51	

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 64.6

Natural Cycle: 50

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 19.9

Intersection LOS: B

Intersection Capacity Utilization 67.4%

ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

9/9/2009

Dutt Tarigoppula
Eschbacher EngineeringGlen Isle - FEIS
Lanes, Volumes, Timings

Splits and Phases: 6: Charles Street & Glen Cove Avenue

 ø2	 ø4
43 s	37 s
 ø6	 ø8
43 s	37 s

7: Morris Avenue & Glen Cove Avenue

Full Build 2016

Saturday Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	23	18	17	856	874	30
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.97	0.97	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	5%	5%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Lane Group Flow (vph)	25	20	18	882	941	0
Turn Type		Perm	Perm			
Protected Phases	4			2	6	
Permitted Phases		4	2			
Detector Phases	4	4	2	2	6	
Minimum Initial (s)	8.0	8.0	20.0	20.0	20.0	
Minimum Split (s)	20.0	20.0	30.0	30.0	30.0	
Total Split (s)	37.0	37.0	43.0	43.0	43.0	0.0
Total Split (%)	46.3%	46.3%	53.8%	53.8%	53.8%	0.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Min	Min	Min	
Act Effect Green (s)	13.2	13.2	62.3	62.3	62.3	
Actuated g/C Ratio	0.16	0.16	0.82	0.82	0.82	
v/c Ratio	0.10	0.08	0.06	0.32	0.34	
Control Delay	12.4	6.7	4.4	3.4	3.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	12.4	6.7	4.4	3.4	3.4	
LOS	B	A	A	A	A	
Approach Delay	9.9			3.4	3.4	
Approach LOS	A			A	A	
Queue Length 50th (ft)	8	0	0	0	0	
Queue Length 95th (ft)	16	11	8	83	90	
Internal Link Dist (ft)	135			701	294	
Turn Bay Length (ft)	150		75			
Base Capacity (vph)	597	547	315	2903	2918	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	51	0	0	133	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.05	0.04	0.06	0.32	0.32	

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 76

Natural Cycle: 50

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.34

Intersection Signal Delay: 3.6

Intersection LOS: A

Intersection Capacity Utilization 38.4%

ICU Level of Service A

Analysis Period (min) 15

9/9/2009

Dutt Tarigoppula

Eschbacher Engineering

Glen Isle - FEIS
Lanes, Volumes, Timings

Splits and Phases: 7: Morris Avenue & Glen Cove Avenue

 ø2	 ø4
43 s	37 s
 ø6	
43 s	

2: Herb Hill Road & Brewster Street

Full Build 2016

Saturday Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	71	16	24	17	4	53	46	2	169	902	23	24
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	5%	5%	5%	5%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%					0%		
Lane Group Flow (vph)	77	43	0	0	127	0	0	0	182	984	0	26
Turn Type	Perm			Perm				pm+pt	pm+pt			Perm
Protected Phases		4			8			5	5	2		
Permitted Phases	4			8				2	2			6
Detector Phases	4	4		8	8			5	5	2		6
Minimum Initial (s)	8.0	8.0		8.0	8.0			3.0	3.0	20.0		20.0
Minimum Split (s)	28.0	28.0		25.0	25.0			7.0	7.0	26.0		26.0
Total Split (s)	31.0	31.0	0.0	31.0	31.0	0.0	0.0	19.0	19.0	49.0	0.0	30.0
Total Split (%)	38.8%	38.8%	0.0%	38.8%	38.8%	0.0%	0.0%	23.8%	23.8%	61.3%	0.0%	37.5%
Yellow Time (s)	4.0	4.0		4.0	4.0			3.0	3.0	4.0		4.0
All-Red Time (s)	2.0	2.0		2.0	2.0			1.0	1.0	2.0		2.0
Lead/Lag								Lead	Lead			Lag
Lead-Lag Optimize?												
Recall Mode	None	None		None	None			None	None	C-Min		C-Min
Act Effect Green (s)	12.6	12.6			12.6				62.2	63.0		49.8
Actuated g/C Ratio	0.16	0.16			0.16				0.78	0.79		0.62
v/c Ratio	0.42	0.16			0.44				0.55	0.36		0.08
Control Delay	36.6	16.7			24.9				11.6	4.1		3.3
Queue Delay	0.0	0.0			0.0				0.0	0.2		0.0
Total Delay	36.6	16.7			24.9				11.6	4.3		3.3
LOS	D	B			C				B	A		A
Approach Delay		29.5			24.9					5.4		
Approach LOS		C			C					A		
Queue Length 50th (ft)	36	7			38				20	70		1
Queue Length 95th (ft)	72	33			83				71	125		m3
Internal Link Dist (ft)		605			24					365		
Turn Bay Length (ft)									200			220
Base Capacity (vph)	397	550			568				449	2698		320
Starvation Cap Reductn	0	0			0				0	855		0
Spillback Cap Reductn	0	0			0				0	0		0
Storage Cap Reductn	0	0			0				0	0		0
Reduced v/c Ratio	0.19	0.08			0.22				0.41	0.53		0.08

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green, Master Intersection

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 6.6

Intersection LOS: A

Intersection Capacity Utilization 66.3%

ICU Level of Service C

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

9/9/2009

Dutt Tarigoppula
Eschbacher EngineeringGlen Isle - FEIS
Lanes, Volumes, Timings

2: Herb Hill Road & Brewster Street

Full Build 2016
Saturday Peak

Splits and Phases: 2: Herb Hill Road & Brewster Street

 ø2	 ø4
49 s	31 s
 ø5	 ø8
19 s	31 s



Lane Group	SBT	SBR	SBR2
Lane Configurations	↑↑		
Volume (vph)	964	64	23
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Peak Hour Factor	0.93	0.93	0.93
Growth Factor	100%	100%	100%
Heavy Vehicles (%)	4%	4%	4%
Bus Blockages (#/hr)	0	0	0
Parking (#/hr)			
Mid-Block Traffic (%)	0%		
Lane Group Flow (vph)	1131	0	0
Turn Type			
Protected Phases	6		
Permitted Phases			
Detector Phases	6		
Minimum Initial (s)	20.0		
Minimum Split (s)	26.0		
Total Split (s)	30.0	0.0	0.0
Total Split (%)	37.5%	0.0%	0.0%
Yellow Time (s)	4.0		
All-Red Time (s)	2.0		
Lead/Lag	Lag		
Lead-Lag Optimize?			
Recall Mode	C-Min		
Act Effect Green (s)	49.8		
Actuated g/C Ratio	0.62		
v/c Ratio	0.53		
Control Delay	3.3		
Queue Delay	0.0		
Total Delay	3.3		
LOS	A		
Approach Delay	3.3		
Approach LOS	A		
Queue Length 50th (ft)	34		
Queue Length 95th (ft)	54		
Internal Link Dist (ft)	354		
Turn Bay Length (ft)			
Base Capacity (vph)	2134		
Starvation Cap Reductn	0		
Spillback Cap Reductn	0		
Storage Cap Reductn	0		
Reduced v/c Ratio	0.53		
Intersection Summary			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	336	60	56	714	660	266
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.94	0.94	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	5%	5%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Lane Group Flow (vph)	365	65	60	760	1006	0
Turn Type		Perm	Perm			
Protected Phases	4			2	6	
Permitted Phases		4	2			
Detector Phases	4	4	2	2	6	
Minimum Initial (s)	8.0	8.0	20.0	20.0	20.0	
Minimum Split (s)	14.0	14.0	26.0	26.0	26.0	
Total Split (s)	25.0	25.0	55.0	55.0	55.0	0.0
Total Split (%)	31.3%	31.3%	68.8%	68.8%	68.8%	0.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Min	Min	Min	
Act Effct Green (s)	16.6	16.6	22.9	22.9	22.9	
Actuated g/C Ratio	0.35	0.35	0.48	0.48	0.48	
v/c Ratio	0.59	0.11	0.31	0.48	0.62	
Control Delay	17.1	4.0	14.2	10.2	10.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	17.1	4.0	14.2	10.2	10.3	
LOS	B	A	B	B	B	
Approach Delay	15.2			10.5	10.3	
Approach LOS	B			B	B	
Queue Length 50th (ft)	77	0	10	69	83	
Queue Length 95th (ft)	158	19	37	122	154	
Internal Link Dist (ft)	273			201	357	
Turn Bay Length (ft)			150			
Base Capacity (vph)	718	703	273	2240	2213	
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	0.51	0.09	0.22	0.34	0.45	

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 47.6	
Natural Cycle: 40	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.62	
Intersection Signal Delay: 11.3	
Intersection Capacity Utilization 71.8%	
Analysis Period (min) 15	
Intersection LOS: B	
ICU Level of Service C	

Splits and Phases: 8: Shore Road & Glen Cove Avenue

 Ø2	 Ø4
55 s	25 s
 Ø6	
55 s	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	52	76	53	112	110	97	47	498	109	96	455	69
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	5%	5%	5%	4%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	56	139	0	122	225	0	0	710	0	0	674	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phases	4	4		8	8		2	2		6	6	
Minimum Initial (s)	4.0	4.0		4.0	4.0		20.0	20.0		20.0	20.0	
Minimum Split (s)	10.0	10.0		10.0	10.0		26.0	26.0		26.0	26.0	
Total Split (s)	26.0	26.0	0.0	26.0	26.0	0.0	44.0	44.0	0.0	44.0	44.0	0.0
Total Split (%)	37.1%	37.1%	0.0%	37.1%	37.1%	0.0%	62.9%	62.9%	0.0%	62.9%	62.9%	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)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)	14.1	14.1		14.1	14.1		40.0			40.0		
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.68			0.68		
v/c Ratio	0.25	0.30		0.50	0.56		0.58			0.72		
Control Delay	21.1	13.6		26.6	19.1		9.7			15.4		
Queue Delay	0.0	0.0		0.0	0.0		0.0			0.0		
Total Delay	21.1	13.6		26.6	19.1		9.7			15.4		
LOS	C	B		C	B		A			B		
Approach Delay		15.7			21.7		9.7			15.4		
Approach LOS		B			C		A			B		
Queue Length 50th (ft)	16	25		37	48		124			142		
Queue Length 95th (ft)	44	65		85	110		301			#441		
Internal Link Dist (ft)		645			488		861			659		
Turn Bay Length (ft)	150			200								
Base Capacity (vph)	319	628		343	540		1273			974		
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	0.18	0.22		0.36	0.42		0.56			0.69		
Intersection Summary												
Cycle Length: 70												
Actuated Cycle Length: 58.9												
Natural Cycle: 50												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.72												
Intersection Signal Delay: 14.5						Intersection LOS: B						
Intersection Capacity Utilization 82.3%						ICU Level of Service E						
Analysis Period (min) 15												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												

Splits and Phases: 92: Sea Cliff Avenue & Glen Cove Avenue

 ø2	 ø4
44 s	26 s
 ø6	 ø8
44 s	26 s

9: Glenwood Road/Glen Head Road & Glen Cove Avenue

Build 2016

Saturday Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	173	57	137	155	244	48	436	122	258	489	41
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	5%	5%	5%	4%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	0	351	0	0	564	0	52	607	0	272	558	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phases	4	4		8	8		2	2		6	6	
Minimum Initial (s)	8.0	8.0		8.0	8.0		20.0	20.0		20.0	20.0	
Minimum Split (s)	26.0	26.0		26.0	26.0		26.0	26.0		26.0	26.0	
Total Split (s)	31.0	31.0	0.0	31.0	31.0	0.0	39.0	39.0	0.0	39.0	39.0	0.0
Total Split (%)	44.3%	44.3%	0.0%	44.3%	44.3%	0.0%	55.7%	55.7%	0.0%	55.7%	55.7%	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)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)		25.7			25.7		35.1	35.1		35.1	35.1	
Actuated g/C Ratio		0.37			0.37		0.51	0.51		0.51	0.51	
v/c Ratio		0.65			0.91		0.19	0.61		1.19	0.62	
Control Delay		23.6			39.0		11.9	15.0		144.6	16.2	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		23.6			39.0		11.9	15.0		144.6	16.2	
LOS		C			D		B	B		F	B	
Approach Delay		23.6			39.0			14.8			58.3	
Approach LOS		C			D			B			E	
Queue Length 50th (ft)		113			196		12	169		~147	162	
Queue Length 95th (ft)		200			#386		32	269		#283	263	
Internal Link Dist (ft)		131			160			206			218	
Turn Bay Length (ft)							75			125		
Base Capacity (vph)		553			640		279	995		228	894	
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		0.63			0.88		0.19	0.61		1.19	0.62	
Intersection Summary												
Cycle Length: 70												
Actuated Cycle Length: 68.8												
Natural Cycle: 70												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 1.19												
Intersection Signal Delay: 36.8						Intersection LOS: D						
Intersection Capacity Utilization 96.1%						ICU Level of Service F						
Analysis Period (min) 15												
~ Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												
# 95th percentile volume exceeds capacity, queue may be longer.												

8/31/2009

Dutt Tarigoppula
Eschbacher EngineeringGlen Isle - FEIS
Lanes, Volumes, Timings

Queue shown is maximum after two cycles.

Splits and Phases: 9: Glenwood Road/Glen Head Road & Glen Cove Avenue

 02	 04
39 s	31 s
 06	 08
39 s	31 s

	↑	↖	↙	↓	↘	↗
Lane Group	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations	↑↑		↙	↑↑		
Volume (vph)	1415	0	523	1768	0	0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Lane Group Flow (vph)	1538	0	568	1922	0	0
Turn Type			Prot			
Protected Phases	2		4	2 4		
Permitted Phases						
Detector Phases	2		4	2 4		
Minimum Initial (s)	20.0		10.0			
Minimum Split (s)	27.0		17.0			
Total Split (s)	67.0	0.0	42.0	109.0	0.0	0.0
Total Split (%)	61.5%	0.0%	38.5%	100.0%	0.0%	0.0%
Yellow Time (s)	4.0		4.0			
All-Red Time (s)	3.0		3.0			
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max		None			
Act Effct Green (s)	63.0		38.0	109.0		
Actuated g/C Ratio	0.58		0.35	1.00		
v/c Ratio	0.77		0.86	0.54		
Control Delay	20.7		48.1	0.6		
Queue Delay	0.0		0.0	0.0		
Total Delay	20.7		48.1	0.6		
LOS	C		D	A		
Approach Delay	20.7			11.4		
Approach LOS	C			B		
Queue Length 50th (ft)	404		367	0		
Queue Length 95th (ft)	497		#562	0		
Internal Link Dist (ft)	495			382	312	
Turn Bay Length (ft)			375			
Base Capacity (vph)	2006		658	3539		
Starvation Cap Reductn	0		0	0		
Spillback Cap Reductn	0		0	0		
Storage Cap Reductn	0		0	0		
Reduced v/c Ratio	0.77		0.86	0.54		

Intersection Summary	
Cycle Length: 109	
Actuated Cycle Length: 109	
Natural Cycle: 55	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 15.0	Intersection LOS: B
Intersection Capacity Utilization 74.8%	ICU Level of Service D
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 5: Glen Cove Road & Route 107

 ø2	 ø4
67 s	42 s

3: Glen Head Road & Glen Cove Road

Build 2016

Saturday Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	204	219	42	44	251	31	64	1180	59	22	1559	187
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	4%	4%	4%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	222	238	46	0	355	0	70	1283	64	24	1898	0
Turn Type	Split		Free	Split			Perm		Perm	Perm		
Protected Phases	4	4		8	8			2			6	
Permitted Phases			Free				2		2		6	
Detector Phases	4	4		8	8		2	2	2		6	6
Minimum Initial (s)	8.0	8.0		8.0	8.0		20.0	20.0	20.0	20.0	20.0	
Minimum Split (s)	26.0	26.0		27.0	27.0		27.0	27.0	27.0	27.0	27.0	
Total Split (s)	34.0	34.0	0.0	34.0	34.0	0.0	72.0	72.0	72.0	72.0	72.0	0.0
Total Split (%)	24.3%	24.3%	0.0%	24.3%	24.3%	0.0%	51.4%	51.4%	51.4%	51.4%	51.4%	0.0%
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)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min	Min	Min	Min	
Act Effct Green (s)	25.5	25.5	134.9		29.2		68.2	68.2	68.2	68.2	68.2	
Actuated g/C Ratio	0.19	0.19	1.00		0.22		0.51	0.51	0.51	0.51	0.51	
v/c Ratio	0.72	0.74	0.03		0.90		1.30	0.71	0.09	0.31	1.07	
Control Delay	65.6	65.9	0.0		78.0		250.5	29.2	19.2	35.4	77.4	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	65.6	65.9	0.0		78.0		250.5	29.2	19.2	35.4	77.4	
LOS	E	E	A		E		F	C	B	D	E	
Approach Delay		59.8			78.0			39.7			76.9	
Approach LOS		E			E			D			E	
Queue Length 50th (ft)	186	200	0		310		~80	461	29	13	~1003	
Queue Length 95th (ft)	278	296	0		#501		#143	570	59	44	#1180	
Internal Link Dist (ft)		203			244			256			523	
Turn Bay Length (ft)			75				200		75	150		
Base Capacity (vph)	349	367	1553		404		54	1812	732	77	1766	
Starvation Cap Reductn	0	0	0		0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0		0		0	0	0	0	0	
Storage Cap Reductn	0	0	0		0		0	0	0	0	0	
Reduced v/c Ratio	0.64	0.65	0.03		0.88		1.30	0.71	0.09	0.31	1.07	

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 134.9

Natural Cycle: 130

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.30

Intersection Signal Delay: 62.3

Intersection LOS: E

Intersection Capacity Utilization 92.2%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

8/31/2009

Dutt Tarigoppula

Eschbacher Engineering

Glen Isle - FEIS
Lanes, Volumes, Timings

Queue shown is maximum after two cycles.

Splits and Phases: 3: Glen Head Road & Glen Cove Road

 ø2	 ø4	 ø8
72 s	34 s	34 s
 ø6		
72 s		

2: Back Road & Glen Cove Road

Build 2016

Saturday Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	62	1	375	1	2	1	403	1586	3	28	1365	97
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.98	0.98	0.98	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	5%	5%	5%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	0	116	360	0	4	0	411	1621	0	29	1422	101
Turn Type	Split		pt+ov	Split			Prot			Perm		pm+ov
Protected Phases	3	3	3 5	4	4		5	2			6	3
Permitted Phases										6		6
Detector Phases	3	3	3 5	4	4		5	2		6	6	3
Minimum Initial (s)	8.0	8.0		8.0	8.0		5.0	10.0		10.0	10.0	8.0
Minimum Split (s)	24.0	24.0		38.3	38.3		12.8	24.8		24.8	24.8	24.0
Total Split (s)	25.5	25.5	61.5	38.3	38.3	0.0	36.0	94.8	0.0	58.8	58.8	25.5
Total Split (%)	16.1%	16.1%	38.8%	24.1%	24.1%	0.0%	22.7%	59.8%	0.0%	37.1%	37.1%	16.1%
Yellow Time (s)	3.5	3.5		3.5	3.5		4.0	4.0		4.0	4.0	3.5
All-Red Time (s)	2.0	2.0		4.8	4.8		2.0	4.8		4.8	4.8	2.0
Lead/Lag	Lead	Lead		Lag	Lag		Lead			Lag	Lag	Lead
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		None	Max		Max	Max	None
Act Effct Green (s)		13.8	49.4		12.3		32.2	91.4		55.2	55.2	73.1
Actuated g/C Ratio		0.12	0.43		0.10		0.28	0.79		0.48	0.48	0.63
v/c Ratio		0.59	0.45		0.02		0.76	0.60		0.39	0.85	0.11
Control Delay		53.4	3.6		50.2		50.0	7.7		43.5	34.2	4.2
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		53.4	3.6		50.2		50.0	7.7		43.5	34.2	4.2
LOS		D	A		D		D	A		D	C	A
Approach Delay		15.8			50.3			16.2			32.5	
Approach LOS		B			D			B			C	
Queue Length 50th (ft)		70	0		2		267	170		13	447	8
Queue Length 95th (ft)		150	48		15		#545	527		#66	#836	37
Internal Link Dist (ft)		345			160			143			316	
Turn Bay Length (ft)												
Base Capacity (vph)		280	845		445		541	2707		74	1666	977
Starvation Cap Reductn		0	0		0		0	0		0	0	0
Spillback Cap Reductn		0	0		0		0	0		0	0	0
Storage Cap Reductn		0	0		0		0	0		0	0	0
Reduced v/c Ratio		0.41	0.43		0.01		0.76	0.60		0.39	0.85	0.10

Intersection Summary

Cycle Length: 158.6

Actuated Cycle Length: 116.1

Natural Cycle: 150

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 22.4

Intersection LOS: C

Intersection Capacity Utilization 86.7%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

8/31/2009

Dutt Tarigoppula

Eschbacher Engineering

Glen Isle - FEIS
Lanes, Volumes, Timings

Splits and Phases: 2: Back Road & Glen Cove Road

 ø2	 ø3	 ø4
94.8 s	25.5 s	38.3 s
 ø5	 ø6	
36 s	58.8 s	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	170	1033	52	55	1001	65	41	66	87	105	45	185
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.97	0.97	0.97	0.92	0.92	0.92	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	2%	2%	2%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	175	1119	0	60	1159	0	43	161	0	0	158	195
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		4
Detector Phases	2	2		6	6		8	8		4	4	4
Minimum Initial (s)	5.0	5.0		5.0	5.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	26.0	26.0		26.0	26.0		25.5	25.5		25.5	25.5	25.5
Total Split (s)	43.5	43.5	0.0	43.5	43.5	0.0	26.5	26.5	0.0	26.5	26.5	26.5
Total Split (%)	62.1%	62.1%	0.0%	62.1%	62.1%	0.0%	37.9%	37.9%	0.0%	37.9%	37.9%	37.9%
Yellow Time (s)	4.0	4.0		4.0	4.0		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	Min		Min	Min		None	None		None	None	None
Act Effct Green (s)	41.2	41.2		41.2	41.2		14.3	14.3		14.3	14.3	14.3
Actuated g/C Ratio	0.65	0.65		0.65	0.65		0.22	0.22		0.22	0.22	0.22
v/c Ratio	0.88	0.52		0.29	0.54		0.17	0.38		0.55	0.47	0.47
Control Delay	58.6	7.7		11.3	7.9		20.0	12.1		28.1	15.5	15.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	58.6	7.7		11.3	7.9		20.0	12.1		28.1	15.5	15.5
LOS	E	A		B	A		C	B		C	B	B
Approach Delay		14.6			8.0			13.8			21.1	
Approach LOS		B			A			B			C	
Queue Length 50th (ft)	46	98		8	103		13	22		52	35	35
Queue Length 95th (ft)	#190	192		39	203		35	63		102	84	84
Internal Link Dist (ft)		458			137			80			142	
Turn Bay Length (ft)	120											
Base Capacity (vph)	198	2164		204	2161		350	561		403	541	541
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.88	0.52		0.29	0.54		0.12	0.29		0.39	0.36	0.36

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 63.6

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 12.7

Intersection LOS: B

Intersection Capacity Utilization 69.5%

ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Pratt Blvd & Bridge Street

 ø2	 ø4
43.5 s	26.5 s
 ø6	 ø8
43.5 s	26.5 s

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	135	163	206	47	153	279	97	827	87	265	880	132
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	5%	5%	5%	4%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	0	320	222	0	217	303	105	994	0	288	1100	0
Turn Type	Perm		Free	Perm		Perm	pm+pt			pm+pt		
Protected Phases		3			7		5	2		1	6	
Permitted Phases	3		Free	7		7	2			6		
Detector Phases	3	3		7	7	7	5	2		1	6	
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	4.0	20.0		4.0	20.0	
Minimum Split (s)	28.0	28.0		28.0	28.0	28.0	8.0	26.0		8.0	26.0	
Total Split (s)	31.0	31.0	0.0	31.0	31.0	31.0	12.0	37.0	0.0	12.0	37.0	0.0
Total Split (%)	38.8%	38.8%	0.0%	38.8%	38.8%	38.8%	15.0%	46.3%	0.0%	15.0%	46.3%	0.0%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	4.0		3.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0		1.0	2.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	None		None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)		23.5	80.0		23.5	23.5	38.2	31.5		46.9	39.6	
Actuated g/C Ratio		0.29	1.00		0.29	0.29	0.48	0.39		0.59	0.50	
v/c Ratio		0.80	0.14		0.49	0.65	0.50	0.75		0.75	0.66	
Control Delay		41.2	0.2		26.5	31.1	14.2	23.8		30.9	19.1	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		41.2	0.2		26.5	31.1	14.2	23.8		30.9	19.1	
LOS		D	A		C	C	B	C		C	B	
Approach Delay		24.4			29.2			22.8			21.5	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)		141	0		86	127	14	235		71	223	
Queue Length 95th (ft)		#233	0		144	202	28	290		#248	318	
Internal Link Dist (ft)		294			184			618			362	
Turn Bay Length (ft)			250			100	175			175		
Base Capacity (vph)		461	1636		512	536	236	1389		383	1671	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.69	0.14		0.42	0.57	0.44	0.72		0.75	0.66	
Intersection Summary												
Cycle Length: 80												
Actuated Cycle Length: 80												
Offset: 30 (38%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 70												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.80												
Intersection Signal Delay: 23.5						Intersection LOS: C						
Intersection Capacity Utilization 80.3%						ICU Level of Service D						
Analysis Period (min) 15												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												

Splits and Phases: 1: Cottage Row Road & Brewster Street

 ø1	 ø2	 ø3
12 s	37 s	31 s
 ø5	 ø6	 ø7
12 s	37 s	31 s

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	60	521	1	69	2	651	127	3	67	254	3
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	0	67	566	0	78	0	708	138	3	73	279	0
Turn Type	Perm		pt+ov	Perm			Split		Perm	Split		
Protected Phases		4	4 6		8		6	6		2	2	
Permitted Phases	4			8					6			
Detector Phases	4	4	4 6	8	8		6	6	6	2	2	
Minimum Initial (s)	8.0	8.0		8.0	8.0		25.0	25.0	25.0	8.0	8.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		31.0	31.0	31.0	14.0	14.0	
Total Split (s)	26.0	26.0	57.0	26.0	26.0	0.0	31.0	31.0	31.0	31.0	31.0	0.0
Total Split (%)	29.5%	29.5%	64.8%	29.5%	29.5%	0.0%	35.2%	35.2%	35.2%	35.2%	35.2%	0.0%
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)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min	Min	None	None	
Act Effct Green (s)		11.5	42.8		11.5		27.3	27.3	27.3	17.5	17.5	
Actuated g/C Ratio		0.17	0.63		0.17		0.40	0.40	0.40	0.26	0.26	
v/c Ratio		0.22	0.45		0.25		1.00	0.19	0.00	0.17	0.61	
Control Delay		27.9	4.2		28.1		59.6	16.2	11.7	20.4	28.3	
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		27.9	4.2		28.1		59.6	16.2	11.7	20.4	28.3	
LOS		C	A		C		E	B	B	C	C	
Approach Delay		6.7			28.1			52.4			26.7	
Approach LOS		A			C			D			C	
Queue Length 50th (ft)		24	35		28		280	35	0	23	100	
Queue Length 95th (ft)		62	109		70		#631	89	6	55	181	
Internal Link Dist (ft)		1079			319			407			212	
Turn Bay Length (ft)									125	125		
Base Capacity (vph)		520	1322		521		706	743	633	596	627	
Starvation Cap Reductn		0	0		0		0	0	0	0	0	
Spillback Cap Reductn		0	0		0		0	0	0	0	0	
Storage Cap Reductn		0	0		0		0	0	0	0	0	
Reduced v/c Ratio		0.13	0.43		0.15		1.00	0.19	0.00	0.12	0.44	

Intersection Summary

Cycle Length: 88

Actuated Cycle Length: 68.3

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.00

Intersection Signal Delay: 31.5

Intersection LOS: C

Intersection Capacity Utilization 66.3%

ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 5: Herb Hill Road & Charles Street

 ø2	 ø6	 ø4
31 s	31 s	26 s
		 ø8 26 s

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	180	472	13	3	526	5	21	9	6	3	9	229
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	196	527	0	0	562	0	0	40	0	0	13	249
Turn Type	pm+pt			Perm			Perm			Perm		Free
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		Free
Detector Phases	5	2		6	6		8	8		4	4	
Minimum Initial (s)	4.0	20.0		20.0	20.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	26.0		26.0	26.0		10.0	10.0		10.0	10.0	
Total Split (s)	9.0	65.0	0.0	56.0	56.0	0.0	15.0	15.0	0.0	15.0	15.0	0.0
Total Split (%)	11.3%	81.3%	0.0%	70.0%	70.0%	0.0%	18.8%	18.8%	0.0%	18.8%	18.8%	0.0%
Yellow Time (s)	3.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?												
Recall Mode	None	Min		Min	Min		None	None		None	None	
Act Effct Green (s)	44.7	47.2			35.8			9.3			9.2	54.0
Actuated g/C Ratio	0.80	0.87			0.66			0.15			0.15	1.00
v/c Ratio	0.31	0.35			0.47			0.16			0.05	0.15
Control Delay	3.5	3.1			8.1			18.9			20.1	0.2
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	3.5	3.1			8.1			18.9			20.1	0.2
LOS	A	A			A			B			C	A
Approach Delay		3.2			8.1			18.9			1.2	
Approach LOS		A			A			B			A	
Queue Length 50th (ft)	0	0			40			5			2	0
Queue Length 95th (ft)	38	113			205			33			17	0
Internal Link Dist (ft)		631			639			463			627	
Turn Bay Length (ft)												25
Base Capacity (vph)	636	1583			1412			306			347	1689
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	0.31	0.33			0.40			0.13			0.04	0.15

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 54

Natural Cycle: 45

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.47

Intersection Signal Delay: 5.0

Intersection LOS: A

Intersection Capacity Utilization 72.5%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 91: Forest Avenue & Lattingtown Road

 ø2		 ø4	
65 s		15 s	
 ø5	 ø6	 ø8	
9 s	56 s	15 s	

8: Northern Boulevard & Glen Cove Road

Build 2016

Saturday Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	550	656	226	611	905	152	236	1118	248	48	1022	422
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.92	0.92	0.92	0.94	0.94	0.94	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	5%	5%	5%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	579	929	0	664	1149	0	251	1189	264	49	1043	431
Turn Type	Prot			Prot			Prot		pt+ov	Prot		pt+ov
Protected Phases	5	2		1	6		7	4	4 1	3	8	8 5
Permitted Phases												
Detector Phases	5	2		1	6		7	4	4 1	3	8	8 5
Minimum Initial (s)	8.0	24.0		5.0	24.0		7.0	20.0		3.0	20.0	
Minimum Split (s)	13.0	37.5		10.0	37.5		13.0	34.3		9.0	34.3	
Total Split (s)	23.5	39.3	0.0	23.5	39.3	0.0	17.7	49.5	73.0	17.7	49.5	73.0
Total Split (%)	18.1%	30.2%	0.0%	18.1%	30.2%	0.0%	13.6%	38.1%	56.2%	13.6%	38.1%	56.2%
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.3		3.0	4.3	
All-Red Time (s)	2.0	2.5		2.0	2.5		3.0	3.0		3.0	3.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	19.5	35.3		19.5	35.3		13.7	50.5	74.0	11.0	45.5	69.0
Actuated g/C Ratio	0.15	0.27		0.15	0.27		0.11	0.39	0.57	0.08	0.35	0.53
v/c Ratio	1.20	1.03		1.38	1.26		1.49	0.92	0.32	0.36	0.88	0.30
Control Delay	153.8	85.4		224.8	167.2		286.6	51.0	17.3	62.5	49.5	17.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	153.8	85.4		224.8	167.2		286.6	51.0	17.3	62.5	49.5	17.8
LOS	F	F		F	F		F	D	B	E	D	B
Approach Delay		111.7			188.3			80.5			41.0	
Approach LOS		F			F			F			D	
Queue Length 50th (ft)	~304	~442		~382	~640		~291	514	118	40	432	111
Queue Length 95th (ft)	#420	#575		#503	#777		#463	#696	187	81	#531	150
Internal Link Dist (ft)		319			439			466			338	
Turn Bay Length (ft)	425			300			300		420	325		300
Base Capacity (vph)	484	898		481	909		169	1292	818	172	1186	1416
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	1.20	1.03		1.38	1.26		1.49	0.92	0.32	0.28	0.88	0.30

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 117 (90%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow

Natural Cycle: 130

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.49

Intersection Signal Delay: 108.3

Intersection LOS: F

Intersection Capacity Utilization 100.2%

ICU Level of Service G

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

8/31/2009

Dutt Tarigoppula

Eschbacher Engineering

Glen Isle - FEIS
Lanes, Volumes, Timings

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: Northern Boulevard & Glen Cove Road

 Ø1	 Ø2	 Ø3	 Ø4
23.5 s	39.3 s	17.7 s	49.5 s
 Ø5	 Ø6	 Ø7	 Ø8
23.5 s	39.3 s	17.7 s	49.5 s

1: Driveway/Witte Lane & Bryant Avenue

Full Build 2016

Saturday Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1	3	192	1	25	2	548	27	241	366	1
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.94	0.94	0.94	0.94	0.94	0.99	0.99	0.99
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	0	5	0	209	28	0	0	614	0	243	371	0
Turn Type	Perm			Perm			Perm			pm+pt		
Protected Phases		8			4			2		1	6	
Permitted Phases	8			4			2			6		
Detector Phases	8	8		4	4		2	2		1	6	
Minimum Initial (s)	12.0	12.0		12.0	12.0		45.0	45.0		4.0	45.0	
Minimum Split (s)	17.5	17.5		17.5	17.5		50.0	50.0		9.0	50.0	
Total Split (s)	27.5	27.5	0.0	27.5	27.5	0.0	51.5	51.5	0.0	11.0	62.5	0.0
Total Split (%)	30.6%	30.6%	0.0%	30.6%	30.6%	0.0%	57.2%	57.2%	0.0%	12.2%	69.4%	0.0%
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)		19.3		19.3	19.3			46.4		57.4	57.4	
Actuated g/C Ratio		0.23		0.23	0.23			0.55		0.68	0.68	
v/c Ratio		0.01		0.70	0.08			0.62		0.55	0.32	
Control Delay		19.2		43.1	10.7			17.3		11.2	7.1	
Queue Delay		0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay		19.2		43.1	10.7			17.3		11.2	7.1	
LOS		B		D	B			B		B	A	
Approach Delay		19.2			39.3			17.3			8.8	
Approach LOS		B			D			B			A	
Queue Length 50th (ft)		1		102	0			214		45	74	
Queue Length 95th (ft)		9		180	21			351		85	131	
Internal Link Dist (ft)		52			208			183			261	
Turn Bay Length (ft)										125		
Base Capacity (vph)		447		349	416			997		440	1153	
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		0.01		0.60	0.07			0.62		0.55	0.32	
Intersection Summary												
Cycle Length: 90												
Actuated Cycle Length: 84.7												
Natural Cycle: 80												
Control Type: Semi Act-Uncoord												
Maximum v/c Ratio: 0.70												
Intersection Signal Delay: 17.3						Intersection LOS: B						
Intersection Capacity Utilization 102.3%						ICU Level of Service G						
Analysis Period (min) 15												

Splits and Phases: 1: Driveway/Witte Lane & Bryant Avenue

 ø1	 ø2	 ø4
11 s	51.5 s	27.5 s
 ø6		 ø8
62.5 s		27.5 s

Full Build-Out Timing Mitigation

AM Peak

	↑	↖	↙	↓	↘	↗
Lane Group	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations	↑↑		↙	↑↑		
Volume (vph)	1392	0	782	1823	0	0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	6%	6%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Lane Group Flow (vph)	1513	0	850	1982	0	0
Turn Type			Prot			
Protected Phases	2		4	2 4		
Permitted Phases						
Detector Phases	2		4	2 4		
Minimum Initial (s)	20.0		10.0			
Minimum Split (s)	27.0		17.0			
Total Split (s)	53.0	0.0	56.0	109.0	0.0	0.0
Total Split (%)	48.6%	0.0%	51.4%	100.0%	0.0%	0.0%
Yellow Time (s)	4.0		4.0			
All-Red Time (s)	3.0		3.0			
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max		None			
Act Effct Green (s)	49.0		52.0	109.0		
Actuated g/C Ratio	0.45		0.48	1.00		
v/c Ratio	0.97		0.98	0.58		
Control Delay	46.6		55.5	0.7		
Queue Delay	0.0		0.0	0.0		
Total Delay	46.6		55.5	0.7		
LOS	D		E	A		
Approach Delay	46.6			17.2		
Approach LOS	D			B		
Queue Length 50th (ft)	529		566	0		
Queue Length 95th (ft)	#701		#846	0		
Internal Link Dist (ft)	495			382	312	
Turn Bay Length (ft)			375			
Base Capacity (vph)	1560		866	3406		
Starvation Cap Reductn	0		0	0		
Spillback Cap Reductn	0		0	0		
Storage Cap Reductn	0		0	0		
Reduced v/c Ratio	0.97		0.98	0.58		

Intersection Summary

Cycle Length: 109

Actuated Cycle Length: 109

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 27.4

Intersection LOS: C

Intersection Capacity Utilization 88.5%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 5: Glen Cove Road & Route 107

 53 s	 56 s
---	---

3: Glen Head Road & Glen Cove Road

Full Build 2016 Mitigated (Timing)

AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	165	293	4	48	253	7	39	1219	34	30	1624	169
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	9%	9%	9%	5%	5%	5%	4%	4%	4%	6%	6%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	179	318	4	0	335	0	42	1325	37	32	1887	0
Turn Type	pm+pt		Free	Perm			pm+pt		Perm	pm+pt		
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		Free	8			2		2	6		
Detector Phases	7	4		8	8		5	2	2	1	6	
Minimum Initial (s)	4.0	8.0		8.0	8.0		4.0	20.0	20.0	4.0	20.0	
Minimum Split (s)	10.0	15.0		15.0	15.0		10.0	27.0	27.0	10.0	27.0	
Total Split (s)	11.0	42.0	0.0	31.0	31.0	0.0	10.0	68.0	68.0	10.0	68.0	0.0
Total Split (%)	9.2%	35.0%	0.0%	25.8%	25.8%	0.0%	8.3%	56.7%	56.7%	8.3%	56.7%	0.0%
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)	2.0	3.0		3.0	3.0		2.0	3.0	3.0	2.0	3.0	
Lead/Lag	Lead			Lag	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		None	Min	Min	None	Min	
Act Effct Green (s)	37.7	37.7	117.7		26.7		69.6	66.1	66.1	68.8	64.1	
Actuated g/C Ratio	0.32	0.32	1.00		0.23		0.58	0.56	0.56	0.57	0.54	
v/c Ratio	0.87	0.61	0.00		0.92		0.29	0.66	0.05	0.20	1.03	
Control Delay	71.9	40.3	0.0		76.3		14.2	20.7	13.3	12.2	56.1	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	71.9	40.3	0.0		76.3		14.2	20.7	13.3	12.2	56.1	
LOS	E	D	A		E		B	C	B	B	E	
Approach Delay		51.2			76.3			20.3			55.4	
Approach LOS		D			E			C			E	
Queue Length 50th (ft)	107	209	0		256		12	384	13	9	~836	
Queue Length 95th (ft)	#235	310	0		#434		26	464	31	22	#977	
Internal Link Dist (ft)		203			244			256			524	
Turn Bay Length (ft)			75				200		75	150		
Base Capacity (vph)	206	524	1482		368		147	2013	814	163	1835	
Starvation Cap Reductn	0	0	0		0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0		0		0	0	0	0	0	
Storage Cap Reductn	0	0	0		0		0	0	0	0	0	
Reduced v/c Ratio	0.87	0.61	0.00		0.91		0.29	0.66	0.05	0.20	1.03	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 117.7

Natural Cycle: 130

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 44.7

Intersection LOS: D

Intersection Capacity Utilization 92.1%

ICU Level of Service F

Analysis Period (min) 15

Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

9/2/2009

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Queue shown is maximum after two cycles.

Splits and Phases: 3: Glen Head Road & Glen Cove Road

 ø1	 ø2	 ø4
10 s	68 s	42 s
 ø5	 ø6	 ø7
10 s	68 s	11 s
		 ø8
		31 s

5: Herb Hill Road & Charles Street

Full Build 2016 Mitigated (Timing)

AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	65	561	1	82	6	517	83	1	100	333	7
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	0	71	610	0	97	0	562	90	1	105	358	0
Turn Type	Perm		pt+ov	Perm			Split		Perm	Split		
Protected Phases		4	4 6		8		6	6		2	2	
Permitted Phases	4			8					6			
Detector Phases	4	4	4 6	8	8		6	6	6	2	2	
Minimum Initial (s)	8.0	8.0		8.0	8.0		25.0	25.0	25.0	8.0	8.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		31.0	31.0	31.0	14.0	14.0	
Total Split (s)	20.0	20.0	53.0	20.0	20.0	0.0	33.0	33.0	33.0	27.0	27.0	0.0
Total Split (%)	25.0%	25.0%	66.3%	25.0%	25.0%	0.0%	41.3%	41.3%	41.3%	33.8%	33.8%	0.0%
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)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min	C-Min	None	None	
Act Effct Green (s)		12.1	50.7		12.1		34.6	34.6	34.6	21.3	21.3	
Actuated g/C Ratio		0.15	0.63		0.15		0.43	0.43	0.43	0.27	0.27	
v/c Ratio		0.25	0.50		0.35		0.73	0.11	0.00	0.23	0.75	
Control Delay		25.6	3.9		42.1		28.3	16.2	13.0	23.2	36.8	
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		25.6	3.9		42.1		28.3	16.2	13.0	23.2	36.8	
LOS		C	A		D		C	B	B	C	D	
Approach Delay		6.1			42.1			26.6			33.7	
Approach LOS		A			D			C			C	
Queue Length 50th (ft)		34	41		50		230	26	0	40	159	
Queue Length 95th (ft)		m58	73		98		#445	61	3	78	252	
Internal Link Dist (ft)		1071			319			407			212	
Turn Bay Length (ft)									125	125		
Base Capacity (vph)		373	1294		371		766	806	685	505	531	
Starvation Cap Reductn		0	0		0		0	0	0	0	0	
Spillback Cap Reductn		0	0		0		0	0	0	0	0	
Storage Cap Reductn		0	0		0		0	0	0	0	0	
Reduced v/c Ratio		0.19	0.47		0.26		0.73	0.11	0.00	0.21	0.67	

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 56 (70%), Referenced to phase 6:NBTL, Start of Yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 21.8

Intersection LOS: C

Intersection Capacity Utilization 69.4%

ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

9/2/2009

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Eschbacher Engineering

Glen Isle - FEIS
Lanes, Volumes, Timings

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Herb Hill Road & Charles Street

 ø2	 ø6	 ø4
27 s	33 s	20 s
		 ø8
		20 s

8: Northern Boulevard & Glen Cove Road

Full Build 2016 Mitigated (Timing)

AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	388	570	82	301	1124	33	142	895	277	25	1213	554
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.98	0.98	0.98	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	6%	6%	3%	3%	3%	4%	4%	4%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	422	709	0	324	1244	0	145	913	283	27	1304	596
Turn Type	Prot			Prot			Prot		pt+ov	Prot		pt+ov
Protected Phases	5	2		1	6		7	4	4 1	3	8	8 5
Permitted Phases												
Detector Phases	5	2		1	6		7	4	4 1	3	8	8 5
Minimum Initial (s)	8.0	24.0		5.0	24.0		7.0	20.0		3.0	20.0	
Minimum Split (s)	13.0	37.5		10.0	37.5		13.0	34.3		9.0	34.3	
Total Split (s)	20.0	47.0	0.0	20.0	47.0	0.0	15.0	53.0	73.0	10.0	48.0	68.0
Total Split (%)	15.4%	36.2%	0.0%	15.4%	36.2%	0.0%	11.5%	40.8%	56.2%	7.7%	36.9%	52.3%
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.3		3.0	4.3	
All-Red Time (s)	2.0	2.5		2.0	2.5		3.0	3.0		3.0	3.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	16.0	43.2		15.8	43.0		11.0	53.0	72.8	6.0	44.0	64.0
Actuated g/C Ratio	0.12	0.33		0.12	0.33		0.08	0.41	0.56	0.05	0.34	0.49
v/c Ratio	1.07	0.64		0.84	1.11		1.06	0.67	0.35	0.36	1.16	0.46
Control Delay	119.6	40.0		75.1	104.7		149.2	35.1	18.0	74.2	120.9	23.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	119.6	40.0		75.1	104.7		149.2	35.1	18.0	74.2	120.9	23.2
LOS	F	D		E	F		F	D	B	E	F	C
Approach Delay		69.7			98.6			43.8			90.0	
Approach LOS		E			F			D			F	
Queue Length 50th (ft)	~203	266		139	~632		~134	343	135	23	~683	182
Queue Length 95th (ft)	#309	334		#213	#770		#272	424	201	56	#822	238
Internal Link Dist (ft)		319			439			466			338	
Turn Bay Length (ft)	425			300			300		420	325		300
Base Capacity (vph)	393	1110		391	1116		137	1368	814	74	1125	1288
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	1.07	0.64		0.83	1.11		1.06	0.67	0.35	0.36	1.16	0.46

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow

Natural Cycle: 140

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.16

Intersection Signal Delay: 78.0

Intersection LOS: E

Intersection Capacity Utilization 97.9%

ICU Level of Service F

Analysis Period (min) 15

~ 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: 8: Northern Boulevard & Glen Cove Road

 ø1	 ø2	 ø3	 ø4
20 s	47 s	10 s	53 s
 ø5	 ø6	 ø7	 ø8
20 s	47 s	15 s	48 s

Full Build-Out Timing Mitigation

PM Peak

	↑	↖	↙	↓	↘	↗
Lane Group	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations	↑↑		↙	↑↑		
Volume (vph)	1791	0	709	1511	0	0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Lane Group Flow (vph)	1947	0	771	1642	0	0
Turn Type			Prot			
Protected Phases	2		4	2 4		
Permitted Phases						
Detector Phases	2		4	2 4		
Minimum Initial (s)	20.0		10.0			
Minimum Split (s)	27.0		17.0			
Total Split (s)	63.0	0.0	46.0	109.0	0.0	0.0
Total Split (%)	57.8%	0.0%	42.2%	100.0%	0.0%	0.0%
Yellow Time (s)	4.0		4.0			
All-Red Time (s)	3.0		3.0			
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max		None			
Act Effct Green (s)	59.0		42.0	109.0		
Actuated g/C Ratio	0.54		0.39	1.00		
v/c Ratio	1.02		1.06	0.46		
Control Delay	50.3		84.1	0.4		
Queue Delay	0.0		0.0	0.0		
Total Delay	50.3		84.1	0.4		
LOS	D		F	A		
Approach Delay	50.3			27.2		
Approach LOS	D			C		
Queue Length 50th (ft)	~722		~594	0		
Queue Length 95th (ft)	#898		#828	0		
Internal Link Dist (ft)	495			382	312	
Turn Bay Length (ft)			375			
Base Capacity (vph)	1916		727	3539		
Starvation Cap Reductn	0		0	0		
Spillback Cap Reductn	0		0	0		
Storage Cap Reductn	0		0	0		
Reduced v/c Ratio	1.02		1.06	0.46		

Intersection Summary

Cycle Length: 109

Actuated Cycle Length: 109

Natural Cycle: 120

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.06

Intersection Signal Delay: 37.5

Intersection LOS: D

Intersection Capacity Utilization 95.5%

ICU Level of Service F

Analysis Period (min) 15

☐ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

9/2/2009

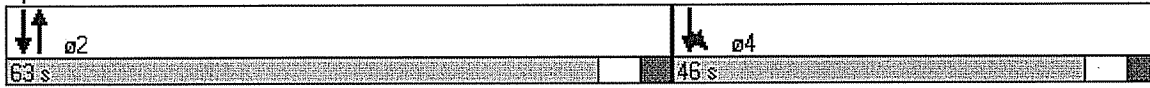
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Lanes, Volumes, Timings

Queue shown is maximum after two cycles.

Splits and Phases: 5: Glen Cove Road & Route 107



3: Glen Head Road & Glen Cove Road

Full Build 2016 Mitigated (Timing)

PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	246	273	19	54	274	17	37	1528	63	12	1286	213
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	267	297	21	0	375	0	40	1661	68	13	1630	0
Turn Type	pm+pt		Free	Perm			pm+pt		Perm	pm+pt		
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		Free	8			2		2	6		
Detector Phases	7	4		8	8		5	2	2	1	6	
Minimum Initial (s)	5.0	8.0		8.0	8.0		4.0	20.0	20.0	4.0	20.0	
Minimum Split (s)	12.0	26.0		27.0	27.0		10.0	27.0	27.0	10.0	27.0	
Total Split (s)	19.0	52.0	0.0	33.0	33.0	0.0	10.0	58.0	58.0	10.0	58.0	0.0
Total Split (%)	15.8%	43.3%	0.0%	27.5%	27.5%	0.0%	8.3%	48.3%	48.3%	8.3%	48.3%	0.0%
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)	3.0	3.0		3.0	3.0		2.0	3.0	3.0	2.0	3.0	
Lead/Lag	Lead			Lag	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		None	Min	Min	None	Min	
Act Effct Green (s)	47.8	47.8	117.7		28.8		60.4	58.0	58.0	58.8	54.1	
Actuated g/C Ratio	0.41	0.41	1.00		0.24		0.50	0.49	0.49	0.48	0.46	
v/c Ratio	0.81	0.43	0.01		0.93		0.26	0.92	0.09	0.10	1.02	
Control Delay	46.3	28.1	0.0		75.0		17.8	38.2	17.7	15.7	58.9	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	46.3	28.1	0.0		75.0		17.8	38.2	17.7	15.7	58.9	
LOS	D	C	A		E		B	D	B	B	E	
Approach Delay		35.4			75.0			36.9			58.6	
Approach LOS		D			E			D			E	
Queue Length 50th (ft)	147	165	0		286		14	556	25	5	~712	
Queue Length 95th (ft)	#237	245	0		#475		32	#850	58	15	#855	
Internal Link Dist (ft)		203			244			256			523	
Turn Bay Length (ft)			75				200		75	150		
Base Capacity (vph)	331	694	1553		406		151	1802	728	130	1602	
Starvation Cap Reductn	0	0	0		0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0		0		0	0	0	0	0	
Storage Cap Reductn	0	0	0		0		0	0	0	0	0	
Reduced v/c Ratio	0.81	0.43	0.01		0.92		0.26	0.92	0.09	0.10	1.02	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 117.7

Natural Cycle: 110

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 48.1

Intersection LOS: D

Intersection Capacity Utilization 85.1%

ICU Level of Service E

Analysis Period (min) 15

- Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

9/2/2009

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Lanes, Volumes, Timings

Queue shown is maximum after two cycles.

Splits and Phases: 3: Glen Head Road & Glen Cove Road

 Ø1	 Ø2	 Ø4
10 s	58 s	52 s
 Ø5	 Ø6	 Ø7
10 s	58 s	19 s
		 Ø8
		33 s

5: Herb Hill Road & Charles Street

Full Build 2016 Mitigated (Timing)

PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	101	708	1	62	2	692	176	3	45	219	5
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	0	114	770	0	70	0	752	191	3	49	243	0
Turn Type	Perm		pt+ov	Perm			Split		Perm	Split		
Protected Phases		4	4 6		8		6	6		2	2	
Permitted Phases	4			8					6			
Detector Phases	4	4	4 6	8	8		6	6	6	2	2	
Minimum Initial (s)	8.0	8.0		8.0	8.0		25.0	25.0	25.0	8.0	8.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		31.0	31.0	31.0	14.0	14.0	
Total Split (s)	20.0	20.0	51.0	20.0	20.0	0.0	31.0	31.0	31.0	29.0	29.0	0.0
Total Split (%)	25.0%	25.0%	63.8%	25.0%	25.0%	0.0%	38.8%	38.8%	38.8%	36.3%	36.3%	0.0%
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)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min	C-Min	None	None	
Act Effct Green (s)		14.3	54.6		14.3		36.3	36.3	36.3	17.4	17.4	
Actuated g/C Ratio		0.18	0.68		0.18		0.45	0.45	0.45	0.22	0.22	
v/c Ratio		0.35	0.57		0.21		0.94	0.23	0.00	0.13	0.62	
Control Delay		27.3	3.9		43.4		44.8	16.2	11.0	24.1	34.7	
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		27.3	3.9		43.4		44.8	16.2	11.0	24.1	34.7	
LOS		C	A		D		D	B	B	C	C	
Approach Delay		6.9			43.4			38.9			32.9	
Approach LOS		A			D			D			C	
Queue Length 50th (ft)		42	41		32		358	58	0	20	110	
Queue Length 95th (ft)		81	111		m59		#667	117	5	43	166	
Internal Link Dist (ft)		1067			319			407			212	
Turn Bay Length (ft)									125	125		
Base Capacity (vph)		369	1384		372		803	846	720	535	562	
Starvation Cap Reductn		0	0		0		0	0	0	0	0	
Spillback Cap Reductn		0	0		0		0	0	0	0	0	
Storage Cap Reductn		0	0		0		0	0	0	0	0	
Reduced v/c Ratio		0.31	0.56		0.19		0.94	0.23	0.00	0.09	0.43	
Intersection Summary												
Cycle Length: 80												
Actuated Cycle Length: 80												
Offset: 73 (91%), Referenced to phase 6:NBT, Start of Yellow												
Natural Cycle: 80												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.94												
Intersection Signal Delay: 25.4						Intersection LOS: C						
Intersection Capacity Utilization 72.3%						ICU Level of Service C						
Analysis Period (min) 15												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Herb Hill Road & Charles Street

 ø2	 ø6	 ø4
29 s	31 s	20 s
		 ø8
		20 s

8: Northern Boulevard & Glen Cove Road

Full Build 2016 Mitigated (Timing)

PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	589	1139	119	412	792	110	184	1184	242	39	1119	387
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	627	1339	0	448	981	0	200	1287	263	41	1178	407
Turn Type	Prot			Prot			Prot		pt+ov	Prot		pt+ov
Protected Phases	5	2		1	6		7	4	4 1	3	8	8 5
Permitted Phases												
Detector Phases	5	2		1	6		7	4	4 1	3	8	8 5
Minimum Initial (s)	8.0	24.0		5.0	24.0		7.0	20.0		3.0	20.0	
Minimum Split (s)	13.0	37.5		10.0	37.5		13.0	34.3		9.0	34.3	
Total Split (s)	28.0	53.0	0.0	21.0	46.0	0.0	19.0	57.0	78.0	9.0	47.0	75.0
Total Split (%)	20.0%	37.9%	0.0%	15.0%	32.9%	0.0%	13.6%	40.7%	55.7%	6.4%	33.6%	53.6%
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.3		3.0	4.3	
All-Red Time (s)	2.0	2.5		2.0	2.5		3.0	3.0		3.0	3.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	24.0	49.0		17.0	42.0		15.0	54.8	75.8	5.0	43.0	71.0
Actuated g/C Ratio	0.17	0.35		0.12	0.30		0.11	0.39	0.54	0.04	0.31	0.51
v/c Ratio	1.10	1.10		1.15	0.97		1.13	0.96	0.33	0.69	1.12	0.30
Control Delay	121.2	98.6		146.8	70.9		161.4	58.8	19.9	117.0	111.5	20.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	121.2	98.6		146.8	70.9		161.4	58.8	19.9	117.0	111.5	20.8
LOS	F	F		F	E		F	E	B	F	F	C
Approach Delay		105.8			94.7			64.7			88.9	
Approach LOS		F			F			E			F	
Queue Length 50th (ft)	~333	~724		~246	466		~211	611	133	38	~648	119
Queue Length 95th (ft)	#455	#864		#358	#610		#373	#775	197	#105	#788	159
Internal Link Dist (ft)		319			439			466			338	
Turn Bay Length (ft)	425			300			300		420	325		300
Base Capacity (vph)	569	1222		389	1008		177	1339	800	59	1051	1366
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	1.10	1.10		1.15	0.97		1.13	0.96	0.33	0.69	1.12	0.30
Intersection Summary												
Cycle Length: 140												
Actuated Cycle Length: 140												
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow												
Natural Cycle: 140												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 1.15												
Intersection Signal Delay: 88.8						Intersection LOS: F						
Intersection Capacity Utilization 101.5%						ICU Level of Service G						
Analysis Period (min) 15												
~ 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: 8: Northern Boulevard & Glen Cove Road

 Ø1	 Ø2	 Ø3	 Ø4
21 s	53 s	9 s	57 s
 Ø5	 Ø6	 Ø7	 Ø8
28 s	46 s	19 s	47 s

Full Build-Out Timing Mitigation

Saturday Peak

3: Glen Head Road & Glen Cove Road

Full Build 2016 Mitigation (Timing)

Saturday Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	204	219	42	44	251	31	64	1180	59	22	1559	187
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	4%	4%	4%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	222	238	46	0	355	0	70	1283	64	24	1898	0
Turn Type	pm+pt		Free	Perm			pm+pt		Perm	pm+pt		
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		Free	8			2		2	6		
Detector Phases	7	4		8	8		5	2	2	1	6	
Minimum Initial (s)	4.0	8.0		8.0	8.0		4.0	20.0	20.0	4.0	20.0	
Minimum Split (s)	10.0	26.0		27.0	27.0		10.0	27.0	27.0	10.0	27.0	
Total Split (s)	15.0	46.0	0.0	31.0	31.0	0.0	10.0	64.0	64.0	10.0	64.0	0.0
Total Split (%)	12.5%	38.3%	0.0%	25.8%	25.8%	0.0%	8.3%	53.3%	53.3%	8.3%	53.3%	0.0%
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)	2.0	3.0		3.0	3.0		2.0	3.0	3.0	2.0	3.0	
Lead/Lag	Lead			Lag	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		None	Min	Min	None	Min	
Act Effct Green (s)	41.8	41.8	117.8		26.8		65.6	62.1	62.1	64.8	60.1	
Actuated g/C Ratio	0.35	0.35	1.00		0.23		0.55	0.53	0.53	0.53	0.51	
v/c Ratio	0.86	0.39	0.03		0.92		0.47	0.68	0.08	0.15	1.06	
Control Delay	61.4	31.4	0.0		75.7		24.0	23.5	15.5	13.0	69.8	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	61.4	31.4	0.0		75.7		24.0	23.5	15.5	13.0	69.8	
LOS	E	C	A		E		C	C	B	B	E	
Approach Delay		41.7			75.7			23.2			69.0	
Approach LOS		D			E			C			E	
Queue Length 50th (ft)	129	138	0		272		22	394	25	7	~867	
Queue Length 95th (ft)	#224	212	0		#456		51	477	50	19	#1008	
Internal Link Dist (ft)		203			244			256			523	
Turn Bay Length (ft)			75				200		75	150		
Base Capacity (vph)	258	608	1553		387		148	1890	764	160	1784	
Starvation Cap Reductn	0	0	0		0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0		0		0	0	0	0	0	
Storage Cap Reductn	0	0	0		0		0	0	0	0	0	
Reduced v/c Ratio	0.86	0.39	0.03		0.92		0.47	0.68	0.08	0.15	1.06	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 117.8

Natural Cycle: 140

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.06

Intersection Signal Delay: 50.8

Intersection LOS: D

Intersection Capacity Utilization 92.2%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

9/2/2009

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Queue shown is maximum after two cycles.

Splits and Phases: 3: Glen Head Road & Glen Cove Road

 Ø1	 Ø2	 Ø4
10 s	64 s	46 s
 Ø5	 Ø6	 Ø7
10 s	64 s	15 s
		 Ø8
		31 s

5: Herb Hill Road & Charles Street

Full Build 2016 Mitigated (Timing)

Saturday Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	60	521	1	69	2	651	127	3	67	254	3
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	0	67	566	0	78	0	708	138	3	73	279	0
Turn Type	Perm		pt+ov	Perm			Split		Perm	Split		
Protected Phases		4	4 6		8		6	6		2	2	
Permitted Phases	4			8					6			
Detector Phases	4	4	4 6	8	8		6	6	6	2	2	
Minimum Initial (s)	8.0	8.0		8.0	8.0		25.0	25.0	25.0	8.0	8.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		31.0	31.0	31.0	14.0	14.0	
Total Split (s)	20.0	20.0	57.0	20.0	20.0	0.0	37.0	37.0	37.0	23.0	23.0	0.0
Total Split (%)	25.0%	25.0%	71.3%	25.0%	25.0%	0.0%	46.3%	46.3%	46.3%	28.8%	28.8%	0.0%
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)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min	C-Min	None	None	
Act Effct Green (s)		11.6	53.7		11.6		38.1	38.1	38.1	18.3	18.3	
Actuated g/C Ratio		0.14	0.67		0.14		0.48	0.48	0.48	0.23	0.23	
v/c Ratio		0.25	0.44		0.29		0.84	0.16	0.00	0.19	0.68	
Control Delay		29.1	3.5		37.2		31.8	14.0	9.7	24.9	36.5	
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay		29.1	3.5		37.2		31.8	14.0	9.7	24.9	36.5	
LOS		C	A		D		C	B	A	C	D	
Approach Delay		6.2			37.3			28.8			34.1	
Approach LOS		A			D			C			C	
Queue Length 50th (ft)		32	39		42		296	37	0	29	125	
Queue Length 95th (ft)		m63	72		m80		#567	79	5	62	203	
Internal Link Dist (ft)		1079			319			407			212	
Turn Bay Length (ft)									125	125		
Base Capacity (vph)		370	1369		371		843	887	756	428	450	
Starvation Cap Reductn		0	0		0		0	0	0	0	0	
Spillback Cap Reductn		0	0		0		0	0	0	0	0	
Storage Cap Reductn		0	0		0		0	0	0	0	0	
Reduced v/c Ratio		0.18	0.41		0.21		0.84	0.16	0.00	0.17	0.62	

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 54 (68%), Referenced to phase 6:NBTL, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 22.6

Intersection LOS: C

Intersection Capacity Utilization 66.3%

ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

9/2/2009

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Lanes, Volumes, Timings

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Herb Hill Road & Charles Street

 ø2	 ø6	 ø4
23 s	37 s	20 s
		 ø8
		20 s

8: Northern Boulevard & Glen Cove Road

Full Build 2016 Mitigation (Timing)

Saturday Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	550	656	226	611	905	152	236	1118	248	48	1022	422
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.92	0.92	0.92	0.94	0.94	0.94	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	5%	5%	5%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	579	929	0	664	1149	0	251	1189	264	49	1043	431
Turn Type	Prot			Prot			Prot		pt+ov	Prot		pt+ov
Protected Phases	5	2		1	6		7	4	4 1	3	8	8 5
Permitted Phases												
Detector Phases	5	2		1	6		7	4	4 1	3	8	8 5
Minimum Initial (s)	8.0	24.0		5.0	24.0		7.0	20.0		3.0	20.0	
Minimum Split (s)	13.0	37.5		10.0	37.5		13.0	34.3		9.0	34.3	
Total Split (s)	24.0	40.0	0.0	29.0	45.0	0.0	21.0	52.0	81.0	9.0	40.0	64.0
Total Split (%)	18.5%	30.8%	0.0%	22.3%	34.6%	0.0%	16.2%	40.0%	62.3%	6.9%	30.8%	49.2%
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.3		3.0	4.3	
All-Red Time (s)	2.0	2.5		2.0	2.5		3.0	3.0		3.0	3.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	20.0	36.0		25.0	41.0		17.0	49.8	78.8	5.0	36.0	60.0
Actuated g/C Ratio	0.15	0.28		0.19	0.32		0.13	0.38	0.61	0.04	0.28	0.46
v/c Ratio	1.17	1.01		1.08	1.09		1.20	0.93	0.30	0.78	1.11	0.35
Control Delay	143.0	79.8		108.1	97.2		172.4	52.9	14.0	123.6	108.5	23.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	143.0	79.8		108.1	97.2		172.4	52.9	14.0	123.6	108.5	23.5
LOS	F	E		F	F		F	D	B	F	F	C
Approach Delay		104.0			101.2			64.5			84.9	
Approach LOS		F			F			E			F	
Queue Length 50th (ft)	~298	~424		~321	~572		~256	514	106	42	~528	130
Queue Length 95th (ft)	#414	#567		#442	#710		#427	#667	160	#118	#665	175
Internal Link Dist (ft)		319			439			466			338	
Turn Bay Length (ft)	425			300			300		420	325		300
Base Capacity (vph)	496	916		616	1055		210	1273	871	63	938	1231
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	1.17	1.01		1.08	1.09		1.20	0.93	0.30	0.78	1.11	0.35

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow

Natural Cycle: 130

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.20

Intersection Signal Delay: 88.5

Intersection LOS: F

Intersection Capacity Utilization 100.2%

ICU Level of Service G

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

9/2/2009

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Glen Isle - FEIS
Lanes, Volumes, Timings

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 8: Northern Boulevard & Glen Cove Road

 Ø1	 Ø2	 Ø3	 Ø4
29 s	40 s	9 s	52 s
 Ø5	 Ø6	 Ø7	 Ø8
24 s	45 s	21 s	40 s

Full Build-Out Configuration & Timing
Mitigation
AM Peak

3: Glen Head Road & Glen Cove Road

Full Build 2016 Mitigated (Configuration & Timing)

AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	165	293	4	48	253	7	39	1219	34	30	1624	169
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	9%	9%	9%	5%	5%	5%	4%	4%	4%	6%	6%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	179	318	4	0	335	0	42	1325	37	32	1887	0
Turn Type	Split		Free	Split			pm+pt		Perm	pm+pt		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			Free				2		2	6		
Detector Phases	4	4		8	8		5	2	2	1	6	
Minimum Initial (s)	8.0	8.0		8.0	8.0		4.0	20.0	20.0	4.0	20.0	
Minimum Split (s)	15.0	15.0		15.0	15.0		10.0	27.0	27.0	10.0	27.0	
Total Split (s)	32.0	32.0	0.0	32.0	32.0	0.0	10.0	51.0	51.0	10.0	51.0	0.0
Total Split (%)	25.6%	25.6%	0.0%	25.6%	25.6%	0.0%	8.0%	40.8%	40.8%	8.0%	40.8%	0.0%
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)	3.0	3.0		3.0	3.0		2.0	3.0	3.0	2.0	3.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		None	Min	Min	None	Min	
Act Effct Green (s)	26.6	26.6	120.1		26.3		52.6	49.3	49.3	51.9	47.3	
Actuated g/C Ratio	0.22	0.22	1.00		0.22		0.43	0.41	0.41	0.42	0.39	
v/c Ratio	0.52	0.88	0.00		0.85		0.29	0.63	0.06	0.25	0.99	
Control Delay	48.4	71.9	0.0		66.6		24.3	31.0	24.9	24.2	54.7	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	48.4	71.9	0.0		66.6		24.3	31.0	24.9	24.2	54.7	
LOS	D	E	A		E		C	C	C	C	D	
Approach Delay		62.9			66.6			30.6			54.2	
Approach LOS		E			E			C			D	
Queue Length 50th (ft)	128	250	0		260		19	326	19	14	~597	
Queue Length 95th (ft)	204	#413	0		#415		40	380	43	33	#695	
Internal Link Dist (ft)		203			244			256			524	
Turn Bay Length (ft)			75				200		75	150		
Base Capacity (vph)	358	376	1482		413		145	2114	595	129	1912	
Starvation Cap Reductn	0	0	0		0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0		0		0	0	0	0	0	
Storage Cap Reductn	0	0	0		0		0	0	0	0	0	
Reduced v/c Ratio	0.50	0.85	0.00		0.81		0.29	0.63	0.06	0.25	0.99	

Intersection Summary

Cycle Length: 125

Actuated Cycle Length: 120.1

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 48.3

Intersection LOS: D

Intersection Capacity Utilization 77.0%

ICU Level of Service D

Analysis Period (min) 15

- Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

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Queue shown is maximum after two cycles.

Splits and Phases: 3: Glen Head Road & Glen Cove Road

 ø1	 ø2	 ø4	 ø8
10 s	51 s	32 s	32 s
 ø5	 ø6		
10 s	51 s		

9: Herb Hill Road & Garvies Point Road/Dickson Street Full Build 2016 Mitigated (Configuration)

AM Peak

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	483	44	5	406	185	30
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Lane Group Flow (vph)	525	48	5	441	0	234
Turn Type		Perm		Free	Perm	
Protected Phases	8		2			6
Permitted Phases		8		Free	6	
Detector Phases	8	8	2		6	6
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	20.0	20.0	20.0		20.0	20.0
Total Split (s)	42.0	42.0	38.0	0.0	38.0	38.0
Total Split (%)	52.5%	52.5%	47.5%	0.0%	47.5%	47.5%
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	Min		Min	Min
Act Effct Green (s)	53.8	53.8	18.2	80.0		18.2
Actuated g/C Ratio	0.67	0.67	0.23	1.00		0.23
v/c Ratio	0.40	0.05	0.01	0.32		0.67
Control Delay	0.9	0.1	20.8	0.6		37.0
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	0.9	0.1	20.8	0.6		37.0
LOS	A	A	C	A		D
Approach Delay	0.8		0.8			37.0
Approach LOS	A		A			D
Queue Length 50th (ft)	3	0	2	0		107
Queue Length 95th (ft)	4	m0	9	0		162
Internal Link Dist (ft)	1071		287			421
Turn Bay Length (ft)		100				
Base Capacity (vph)	1310	936	871	1372		656
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	0.40	0.05	0.01	0.32		0.36

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 14 (18%), Referenced to phase 8:WBL, Start of Yellow

Natural Cycle: 40

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 7.6

Intersection LOS: A

Intersection Capacity Utilization 51.9%

ICU Level of Service A

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

9/2/2009

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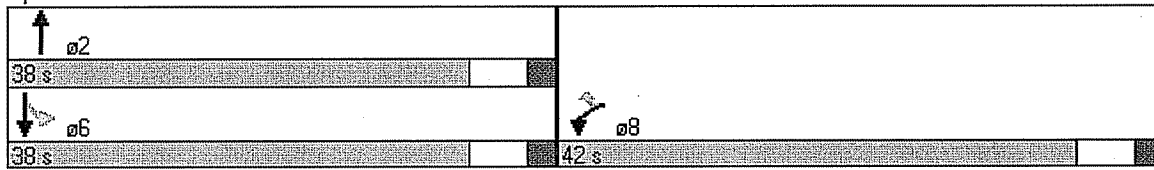
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9: Herb Hill Road & Garvies Point Road/Dickson Street Full Build 2016 Mitigated (Configuration)

AM Peak

Splits and Phases: 9: Herb Hill Road & Garvies Point Road/Dickson Street



8: Northern Boulevard & Glen Cove Road Full Build 2016 Mitigated (Configuration & Timing)

AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	388	570	82	301	1124	33	142	895	277	25	1213	554
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.98	0.98	0.98	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	6%	6%	3%	3%	3%	4%	4%	4%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	422	709	0	324	1244	0	145	913	283	27	1304	596
Turn Type	Prot			Prot			Prot		pt+ov	Prot		pt+ov
Protected Phases	5	2		1	6		7	4	4 1	3	8	8 5
Permitted Phases												
Detector Phases	5	2		1	6		7	4	4 1	3	8	8 5
Minimum Initial (s)	8.0	24.0		5.0	24.0		7.0	20.0		3.0	20.0	
Minimum Split (s)	13.0	37.5		10.0	37.5		13.0	34.3		9.0	34.3	
Total Split (s)	23.0	50.0	0.0	24.0	51.0	0.0	17.0	45.0	69.0	11.0	39.0	62.0
Total Split (%)	17.7%	38.5%	0.0%	18.5%	39.2%	0.0%	13.1%	34.6%	53.1%	8.5%	30.0%	47.7%
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.3		3.0	4.3	
All-Red Time (s)	2.0	2.5		2.0	2.5		3.0	3.0		3.0	3.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	19.0	47.7		18.3	47.0		13.0	45.4	67.7	7.0	35.0	58.0
Actuated g/C Ratio	0.15	0.37		0.14	0.36		0.10	0.35	0.52	0.05	0.27	0.45
v/c Ratio	0.90	0.58		0.72	1.02		0.90	0.78	0.37	0.31	1.07	1.04
Control Delay	78.2	35.8		63.2	71.9		105.2	44.3	20.9	69.2	92.9	85.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.2	35.8		63.2	71.9		105.2	44.3	20.9	69.2	92.9	85.3
LOS	E	D		E	E		F	D	C	E	F	F
Approach Delay		51.6			70.1			46.0			90.2	
Approach LOS		D			E			D			F	
Queue Length 50th (ft)	182	256		134	~584		123	380	144	22	~472	~632
Queue Length 95th (ft)	#276	322		186	#722		#250	468	216	55	#575	#897
Internal Link Dist (ft)		319			439			466			338	
Turn Bay Length (ft)	425			300			300		420	325		300
Base Capacity (vph)	467	1225		488	1220		162	1172	774	86	1215	571
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.58		0.66	1.02		0.90	0.78	0.37	0.31	1.07	1.04

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.07	
Intersection Signal Delay: 67.6	Intersection LOS: E
Intersection Capacity Utilization 91.9%	ICU Level of Service F
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	

8: Northern Boulevard & Glen Cove Road Full Build 2016 Mitigated (Configuration & Timing) AM Peak

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: Northern Boulevard & Glen Cove Road

 ø1	 ø2	 ø3	 ø4
24 s	50 s	11 s	45 s
 ø5	 ø6	 ø7	 ø8
23 s	51 s	17 s	39 s

Full Build-Out Configuration & Timing
Mitigation
PM Peak

3: Glen Head Road & Glen Cove Road

Full Build 2016 Mitigated (Configuration & Timing)

PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	246	273	19	54	274	17	37	1528	63	12	1286	213
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	267	297	21	0	375	0	40	1661	68	13	1630	0
Turn Type	Split		Free	Split			pm+pt		Perm	pm+pt		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			Free				2		2	6		
Detector Phases	4	4		8	8		5	2	2	1	6	
Minimum Initial (s)	8.0	8.0		8.0	8.0		4.0	20.0	20.0	4.0	20.0	
Minimum Split (s)	26.0	26.0		27.0	27.0		10.0	27.0	27.0	10.0	27.0	
Total Split (s)	35.0	35.0	0.0	37.0	37.0	0.0	10.0	43.0	43.0	10.0	43.0	0.0
Total Split (%)	28.0%	28.0%	0.0%	29.6%	29.6%	0.0%	8.0%	34.4%	34.4%	8.0%	34.4%	0.0%
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)	3.0	3.0		3.0	3.0		2.0	3.0	3.0	2.0	3.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		None	Min	Min	None	Min	
Act Effct Green (s)	25.5	25.5	111.4		28.3		43.5	41.8	41.8	42.9	40.0	
Actuated g/C Ratio	0.23	0.23	1.00		0.25		0.38	0.38	0.38	0.37	0.36	
v/c Ratio	0.72	0.76	0.01		0.80		0.26	0.84	0.12	0.09	0.90	
Control Delay	52.8	54.8	0.0		54.5		27.7	38.9	28.9	25.6	43.9	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	52.8	54.8	0.0		54.5		27.7	38.9	28.9	25.6	43.9	
LOS	D	D	A		D		C	D	C	C	D	
Approach Delay		51.9			54.5			38.3			43.8	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	195	220	0		276		19	422	34	6	~501	
Queue Length 95th (ft)	293	324	0		#407		44	#615	77	20	#612	
Internal Link Dist (ft)		203			244			256			523	
Turn Bay Length (ft)			75				200		75	150		
Base Capacity (vph)	435	458	1553		528		156	1970	554	137	1803	
Starvation Cap Reductn	0	0	0		0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0		0		0	0	0	0	0	
Storage Cap Reductn	0	0	0		0		0	0	0	0	0	
Reduced v/c Ratio	0.61	0.65	0.01		0.71		0.26	0.84	0.12	0.09	0.90	

Intersection Summary

Cycle Length: 125

Actuated Cycle Length: 111.4

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 43.6

Intersection LOS: D

Intersection Capacity Utilization 73.6%

ICU Level of Service D

Analysis Period (min) 15

Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

9/2/2009

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Queue shown is maximum after two cycles.

Splits and Phases: 3: Glen Head Road & Glen Cove Road

 ø1	 ø2	 ø4	 ø8
10 s	43 s	35 s	37 s
 ø5	 ø6		
10 s	43 s		

9: Herb Hill Road & Garvies Point Road/Dickson Street Full Build 2016 Mitigated (Configuration)

PM Peak

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	475	140	28	573	110	10
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Lane Group Flow (vph)	516	152	30	623	0	131
Turn Type		Perm		Free	Perm	
Protected Phases	8		2			6
Permitted Phases		8		Free	6	
Detector Phases	8	8	2		6	6
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	20.0	20.0	20.0		20.0	20.0
Total Split (s)	34.0	34.0	46.0	0.0	46.0	46.0
Total Split (%)	42.5%	42.5%	57.5%	0.0%	57.5%	57.5%
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	None		None	None
Act Effct Green (s)	62.4	62.4	12.7	80.0		12.8
Actuated g/C Ratio	0.78	0.78	0.16	1.00		0.16
v/c Ratio	0.34	0.14	0.09	0.45		0.53
Control Delay	0.7	0.2	27.5	1.1		38.1
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	0.7	0.2	27.5	1.1		38.1
LOS	A	A	C	A		D
Approach Delay	0.6		2.3			38.1
Approach LOS	A		A			D
Queue Length 50th (ft)	2	0	13	0		61
Queue Length 95th (ft)	m2	m0	33	0		107
Internal Link Dist (ft)	1067		285			433
Turn Bay Length (ft)		100				
Base Capacity (vph)	1520	1094	1076	1372		806
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	0.34	0.14	0.03	0.45		0.16

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 47 (59%), Referenced to phase 8:WBL, Start of Yellow

Natural Cycle: 40

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.53

Intersection Signal Delay: 4.8

Intersection LOS: A

Intersection Capacity Utilization 46.3%

ICU Level of Service A

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

9/2/2009

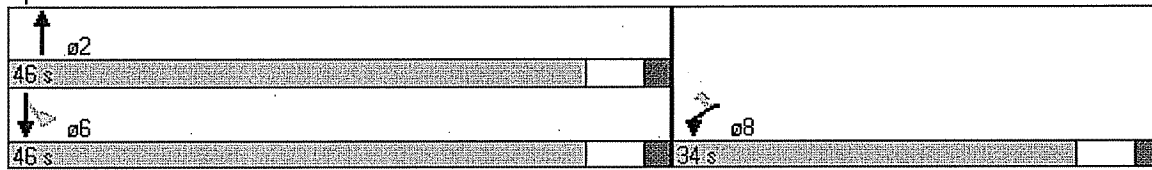
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Lanes, Volumes, Timings

9: Herb Hill Road & Garvies Point Road/Dickson Street Full Build 2016 Mitigated (Configuration) PM Peak

Splits and Phases: 9: Herb Hill Road & Garvies Point Road/Dickson Street



8: Northern Boulevard & Glen Cove Road Full Build 2016 Mitigated (Configuration & Timing)

PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	589	1139	119	412	792	110	184	1184	242	39	1119	387
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	627	1339	0	448	981	0	200	1287	263	41	1178	407
Turn Type	Prot			Prot			Prot		pt+ov	Prot		pt+ov
Protected Phases	5	2		1	6		7	4	4 1	3	8	8 5
Permitted Phases												
Detector Phases	5	2		1	6		7	4	4 1	3	8	8 5
Minimum Initial (s)	8.0	24.0		5.0	24.0		7.0	20.0		3.0	20.0	
Minimum Split (s)	13.0	37.5		10.0	37.5		13.0	34.3		9.0	34.3	
Total Split (s)	31.0	56.0	0.0	23.0	48.0	0.0	23.0	52.0	75.0	9.0	38.0	69.0
Total Split (%)	22.1%	40.0%	0.0%	16.4%	34.3%	0.0%	16.4%	37.1%	53.6%	6.4%	27.1%	49.3%
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.3		3.0	4.3	
All-Red Time (s)	2.0	2.5		2.0	2.5		3.0	3.0		3.0	3.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	27.0	52.0		19.0	44.0		19.0	49.8	72.8	5.0	34.0	65.0
Actuated g/C Ratio	0.19	0.37		0.14	0.31		0.14	0.36	0.52	0.04	0.24	0.46
v/c Ratio	0.98	1.03		1.03	0.93		0.89	1.06	0.34	0.69	1.04	0.67
Control Delay	86.8	76.8		109.2	61.8		97.1	85.8	21.7	117.0	89.7	35.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	86.8	76.8		109.2	61.8		97.1	85.8	21.7	117.0	89.7	35.6
LOS	F	E		F	E		F	F	C	F	F	D
Approach Delay		80.0			76.6			77.4			76.8	
Approach LOS		E			E			E			E	
Queue Length 50th (ft)	296	~686		~224	455		182	~696	140	38	~449	327
Queue Length 95th (ft)	#420	#827		#336	#586		#329	#835	207	#105	#551	475
Internal Link Dist (ft)		319			439			466			338	
Turn Bay Length (ft)	425			300			300		420	325		300
Base Capacity (vph)	640	1296		435	1056		224	1217	769	59	1129	611
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.98	1.03		1.03	0.93		0.89	1.06	0.34	0.69	1.04	0.67
Intersection Summary												
Cycle Length: 140												
Actuated Cycle Length: 140												
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow												
Natural Cycle: 140												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 1.06												
Intersection Signal Delay: 77.9						Intersection LOS: E						
Intersection Capacity Utilization 96.4%						ICU Level of Service F						
Analysis Period (min) 15												
~ Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												

8: Northern Boulevard & Glen Cove Road Full Build 2016 Mitigated (Configuration & Timing) PM Peak

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: Northern Boulevard & Glen Cove Road

 Ø1	 Ø2	 Ø3	 Ø4
23 s	56 s	9 s	52 s
 Ø5	 Ø6	 Ø7	 Ø8
31 s	48 s	23 s	38 s

Full Build-Out Configuration & Timing
Mitigation
Saturday Peak

3: Glen Head Road & Glen Cove Road

Full Build 2016 Mitigation (Configuration & Timing)

Saturday Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	204	219	42	44	251	31	64	1180	59	22	1559	187
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	4%	4%	4%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	222	238	46	0	355	0	70	1283	64	24	1898	0
Turn Type	Split		Free	Split			pm+pt		Perm	pm+pt		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			Free				2		2	6		
Detector Phases	4	4		8	8		5	2	2	1	6	
Minimum Initial (s)	8.0	8.0		8.0	8.0		4.0	20.0	20.0	4.0	20.0	
Minimum Split (s)	26.0	26.0		27.0	27.0		10.0	27.0	27.0	10.0	27.0	
Total Split (s)	30.0	30.0	0.0	35.0	35.0	0.0	10.0	50.0	50.0	10.0	50.0	0.0
Total Split (%)	24.0%	24.0%	0.0%	28.0%	28.0%	0.0%	8.0%	40.0%	40.0%	8.0%	40.0%	0.0%
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)	3.0	3.0		3.0	3.0		2.0	3.0	3.0	2.0	3.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		None	Min	Min	None	Min	
Act Effct Green (s)	22.4	22.4	116.6		27.7		51.7	48.7	48.7	51.0	46.7	
Actuated g/C Ratio	0.19	0.19	1.00		0.24		0.44	0.42	0.42	0.42	0.40	
v/c Ratio	0.71	0.73	0.03		0.82		0.47	0.60	0.11	0.17	0.94	
Control Delay	58.6	58.8	0.0		59.0		29.9	29.8	25.7	22.3	45.7	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	58.6	58.8	0.0		59.0		29.9	29.8	25.7	22.3	45.7	
LOS	E	E	A		E		C	C	C	C	D	
Approach Delay		53.4			59.0			29.6			45.4	
Approach LOS		D			E			C			D	
Queue Length 50th (ft)	166	179	0		268		32	314	34	11	~589	
Queue Length 95th (ft)	257	271	0		#408		61	371	68	27	#693	
Internal Link Dist (ft)		203			244			256			523	
Turn Bay Length (ft)			75				200		75	150		
Base Capacity (vph)	353	372	1553		476		150	2151	605	141	2014	
Starvation Cap Reductn	0	0	0		0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0		0		0	0	0	0	0	
Storage Cap Reductn	0	0	0		0		0	0	0	0	0	
Reduced v/c Ratio	0.63	0.64	0.03		0.75		0.47	0.60	0.11	0.17	0.94	

Intersection Summary

Cycle Length: 125

Actuated Cycle Length: 116.6

Natural Cycle: 100

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 42.2

Intersection LOS: D

Intersection Capacity Utilization 80.2%

ICU Level of Service D

Analysis Period (min) 15

Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

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Queue shown is maximum after two cycles.

Splits and Phases: 3: Glen Head Road & Glen Cove Road

 ø1	 ø2	 ø4	 ø8
10 s	50 s	30 s	35 s
 ø5	 ø6		
10 s	50 s		

9: Herb Hill Road & Garvies Point Road/Dickson Street Full Build 2016 Mitigated (Configuration)

Saturday Peak

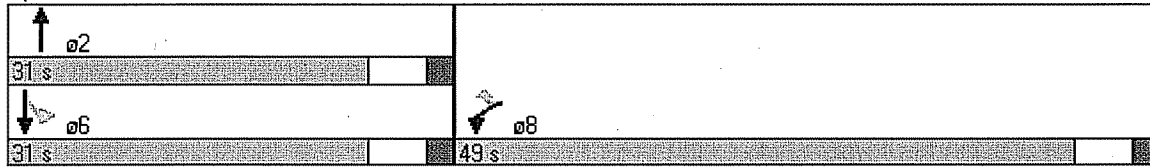
						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	447	102	10	330	103	19
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Lane Group Flow (vph)	486	111	11	359	0	133
Turn Type		Perm		Free	Perm	
Protected Phases	8		2			6
Permitted Phases		8		Free	6	
Detector Phases	8	8	2		6	6
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	20.0	20.0	20.0		20.0	20.0
Total Split (s)	49.0	49.0	31.0	0.0	31.0	31.0
Total Split (%)	61.3%	61.3%	38.8%	0.0%	38.8%	38.8%
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	None		None	None
Act Effct Green (s)	61.9	61.9	13.2	80.0		13.4
Actuated g/C Ratio	0.77	0.77	0.16	1.00		0.17
v/c Ratio	0.32	0.10	0.03	0.26		0.51
Control Delay	0.8	0.1	25.6	0.5		36.2
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	0.8	0.1	25.6	0.5		36.2
LOS	A	A	C	A		D
Approach Delay	0.6		1.2			36.2
Approach LOS	A		A			D
Queue Length 50th (ft)	8	1	5	0		61
Queue Length 95th (ft)	m0	m0	17	0		107
Internal Link Dist (ft)	1079		299			404
Turn Bay Length (ft)		100				
Base Capacity (vph)	1506	1086	692	1372		529
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	0.32	0.10	0.02	0.26		0.25

Intersection Summary

Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 27 (34%), Referenced to phase 8:WBL, Start of Yellow
 Natural Cycle: 40
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.51
 Intersection Signal Delay: 5.1
 Intersection Capacity Utilization 44.8%
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

9: Herb Hill Road & Garvies Point Road/Dickson Street Full Build 2016 Mitigated (Configuration)
 Saturday Peak

Splits and Phases: 9: Herb Hill Road & Garvies Point Road/Dickson Street



8: Northern Boulevard & Glen Cove Road Full Build 2016 Mitigation (Configuration & Timing)

Saturday Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	550	656	226	611	905	152	236	1118	248	48	1022	422
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.92	0.92	0.92	0.94	0.94	0.94	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	5%	5%	5%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph)	579	929	0	664	1149	0	251	1189	264	49	1043	431
Turn Type	Prot			Prot			Prot		pt+ov	Prot		pt+ov
Protected Phases	5	2		1	6		7	4	4 1	3	8	8 5
Permitted Phases												
Detector Phases	5	2		1	6		7	4	4 1	3	8	8 5
Minimum Initial (s)	8.0	24.0		5.0	24.0		7.0	20.0		3.0	20.0	
Minimum Split (s)	13.0	37.5		10.0	37.5		13.0	34.3		9.0	34.3	
Total Split (s)	22.0	40.0	0.0	29.0	47.0	0.0	25.0	49.0	78.0	12.0	36.0	58.0
Total Split (%)	16.9%	30.8%	0.0%	22.3%	36.2%	0.0%	19.2%	37.7%	60.0%	9.2%	27.7%	44.6%
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.3		3.0	4.3	
All-Red Time (s)	2.0	2.5		2.0	2.5		3.0	3.0		3.0	3.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	18.0	36.0		25.0	43.0		21.0	47.4	76.4	7.9	32.0	54.0
Actuated g/C Ratio	0.14	0.28		0.19	0.33		0.16	0.36	0.59	0.06	0.25	0.42
v/c Ratio	1.30	1.01		1.08	1.04		0.97	0.98	0.31	0.49	0.92	0.80
Control Delay	193.7	79.8		108.1	79.8		102.7	63.2	15.5	76.0	61.3	45.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	193.7	79.8		108.1	79.8		102.7	63.2	15.5	76.0	61.3	45.9
LOS	F	E		F	E		F	E	B	E	E	D
Approach Delay		123.5			90.2			61.6			57.4	
Approach LOS		F			F			E			E	
Queue Length 50th (ft)	~321	~424		~321	~548		213	~565	112	41	334	363
Queue Length 95th (ft)	#437	#567		#442	#686		#384	#703	170	85	#424	#553
Internal Link Dist (ft)		319			439			466			338	
Turn Bay Length (ft)	425			300			300		420	325		300
Base Capacity (vph)	446	916		616	1107		259	1211	844	101	1133	541
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	1.30	1.01		1.08	1.04		0.97	0.98	0.31	0.49	0.92	0.80

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow	
Natural Cycle: 130	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.30	
Intersection Signal Delay: 82.8	Intersection LOS: F
Intersection Capacity Utilization 94.8%	ICU Level of Service F
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	

8: Northern Boulevard & Glen Cove Road Full Build 2016 Mitigation (Configuration & Timing) Saturday Peak

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: Northern Boulevard & Glen Cove Road

 Ø1	 Ø2	 Ø3	 Ø4
29 s	40 s	12 s	49 s
 Ø5	 Ø6	 Ø7	 Ø8
22 s	47 s	25 s	36 s