

Appendix F:
Synchro/SimTraffic Results

1: N Raymond Performance by lane

Lane	EB	EB	NB	NB	SB	All
Movements Served	L	R	L	T	TR	
Stop Del/Veh (s)	408.0	36.8	6.1	0.5	0.1	47.5

5: Weymouth Performance by lane

Lane	WB	NB	SB	All
Movements Served	LR	TR	LT	
Stop Del/Veh (s)	14.2	0.2	0.2	1.2

7: Libby Hill/Hannaford Performance by lane

Lane	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	All
Movements Served	LT	R	LT	R	L	T	R	L	T	R	
Stop Del/Veh (s)	53.6	26.9	69.3	4.3	46.9	3.2	0.7	19.2	87.5	1.8	52.9

10: Gravel Drive/Rte 26 (Shaker) Performance by lane

Lane	EB	WB	WB	NB	SB	SB	All
Movements Served	LTR	LT	R	TR	L	TR	
Stop Del/Veh (s)	22.3	21.0	0.0	0.0	1.7	0.0	0.6

Total Network Performance

Stop Del/Veh (s)	79.5
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Intersection: 1: N Raymond

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	1016	125	61	130	44
Average Queue (ft)	582	122	26	19	2
95th Queue (ft)	1222	140	58	76	19
Link Distance (ft)	2022			6361	314
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		100	25		
Storage Blk Time (%)	6	80	8	0	
Queuing Penalty (veh)	27	110	24	0	

Intersection: 5: Weymouth

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	84	10	129
Average Queue (ft)	34	0	7
95th Queue (ft)	66	5	57
Link Distance (ft)	1757	314	2021
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: Libby Hill/Hannafor

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	R	L	T	R
Maximum Queue (ft)	138	190	120	31	371	237	63	87	2008	150
Average Queue (ft)	48	91	39	7	209	59	9	9	1226	70
95th Queue (ft)	106	170	90	23	327	157	37	53	2288	177
Link Distance (ft)	1553	1553	408	408		1090			6361	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)					400		125	125		125
Storage Blk Time (%)					0	1			41	0
Queuing Penalty (veh)					0	3			73	1

Intersection: 10: Gravel Drive/Rte 26 (Shaker)

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LT	TR	L	TR
Maximum Queue (ft)	58	51	24	138	6
Average Queue (ft)	7	7	1	51	0
95th Queue (ft)	37	30	10	103	4
Link Distance (ft)	1443	2333	2045		280
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)				240	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 238

1: Rte 26 (Shaker) & N Raymond Performance by lane

Lane	EB	EB	NB	NB	SB	All
Movements Served	L	R	L	T	TR	
Stop Del/Veh (s)	1664.5	12.4	4.6	21.5	0.2	108.0

5: Rte 26 (Shaker) & Weymouth Performance by lane

Lane	WB	NB	SB	All
Movements Served	LR	TR	LT	
Stop Del/Veh (s)	46.9	0.0	0.3	5.5

7: Rte 26 (Shaker) & Libby Hill/Hannaford Performance by lane

Lane	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	All
Movements Served	LT	R	LT	R	L	T	R	L	T	R	
Stop Del/Veh (s)	62.0	8.3	72.8	28.5	55.8	4.0	0.8	37.3	9.3	1.8	14.0

10: Rte 26A & Gravel Drive/Rte 26 (Shaker) Performance by lane

Lane	WB	WB	NB	SB	SB	All
Movements Served	LT	R	TR	L	TR	
Stop Del/Veh (s)	17.6	0.0	0.1	14.0	0.1	1.9

Total Network Performance

Stop Del/Veh (s)	98.4
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Intersection: 1: Rte 26 (Shaker) & N Raymond

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	1899	75	54	1180	60
Average Queue (ft)	1209	34	48	397	13
95th Queue (ft)	2439	93	55	1038	39
Link Distance (ft)	2022			6361	314
Upstream Blk Time (%)	30				
Queuing Penalty (veh)	0				
Storage Bay Dist (ft)		50	25		
Storage Blk Time (%)	87	8	40	1	
Queuing Penalty (veh)	155	5	272	5	

Intersection: 5: Rte 26 (Shaker) & Weymouth

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	216	4	85
Average Queue (ft)	83	0	7
95th Queue (ft)	175	3	40
Link Distance (ft)	1757	314	2021
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: Rte 26 (Shaker) & Libby Hill/Hannaford

Movement	EB	EB	WB	WB	NB	NB	NB	B13	B13	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	R	T		L	T	R
Maximum Queue (ft)	185	85	185	137	310	463	150	258	77	132	376	148
Average Queue (ft)	65	38	66	57	107	210	54	21	4	29	140	21
95th Queue (ft)	137	89	148	120	220	384	150	141	69	92	281	89
Link Distance (ft)	1553		408			1090		280	280		6361	
Upstream Blk Time (%)								0	0			
Queuing Penalty (veh)								2	1			
Storage Bay Dist (ft)		60		125	400		125			125		125
Storage Blk Time (%)	20	1	2	2		10	0				9	0
Queuing Penalty (veh)	20	1	3	2		28	0				8	0

Intersection: 10: Rte 26A & Gravel Drive/Rte 26 (Shaker)

Movement	WB	NB	SB	SB
Directions Served	LT	TR	L	TR
Maximum Queue (ft)	28	93	192	120
Average Queue (ft)	5	5	77	4
95th Queue (ft)	21	42	151	56
Link Distance (ft)	2333	2045		280
Upstream Blk Time (%)			0	0
Queuing Penalty (veh)			0	1
Storage Bay Dist (ft)			240	
Storage Blk Time (%)		0		0
Queuing Penalty (veh)		0		0

Network Summary

Network wide Queuing Penalty: 503

1: Rte 26 (Shaker) & N Raymond Performance by lane

Lane	EB	EB	NB	NB	SB	All
Movements Served	L	R	L	T	TR	
Stop Del/Veh (s)	1466.2	59.3	9.3	1.2	6.4	164.9

5: Rte 26 (Shaker) & Weymouth Performance by lane

Lane	WB	NB	SB	All
Movements Served	LR	TR	LT	
Stop Del/Veh (s)	52.5	0.1	3.2	5.8

7: Rte 26 (Shaker) & Libby Hill/Hannaford Performance by lane

Lane	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	All
Movements Served	LT	R	LT	R	L	T	R	L	T	R	
Stop Del/Veh (s)	76.4	21.3	62.7	5.5	31.5	2.0	0.5	19.9	516.1	5.0	245.0

10: Rte 26A & Gravel Drive/Rte 26 (Shaker) Performance by lane

Lane	EB	WB	WB	NB	SB	SB	All
Movements Served	LTR	LT	R	TR	L	TR	
Stop Del/Veh (s)	20.7	11.5	0.0	0.0	2.3	0.0	0.6

Total Network Performance

Stop Del/Veh (s)	321.1
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Intersection: 1: Rte 26 (Shaker) & N Raymond

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	2074	125	65	233	262
Average Queue (ft)	1775	124	31	27	64
95th Queue (ft)	2615	136	61	126	263
Link Distance (ft)	2022			6361	314
Upstream Blk Time (%)	71				4
Queuing Penalty (veh)	0				27
Storage Bay Dist (ft)		100	25		
Storage Blk Time (%)	12	92	15	1	
Queuing Penalty (veh)	71	155	51	0	

Intersection: 5: Rte 26 (Shaker) & Weymouth

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	208	4	341
Average Queue (ft)	60	0	45
95th Queue (ft)	148	4	222
Link Distance (ft)	1757	314	2021
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: Rte 26 (Shaker) & Libby Hill/Hannaford

Movement	EB	EB	WB	WB	NB	NB	NB	B13	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	R	T	L	T	R
Maximum Queue (ft)	275	85	96	40	347	176	76	33	147	6361	150
Average Queue (ft)	100	70	37	8	179	53	7	1	11	4226	73
95th Queue (ft)	229	103	80	27	293	134	39	25	64	7480	182
Link Distance (ft)	1553		408			1090		280		6361	
Upstream Blk Time (%)										1	
Queuing Penalty (veh)										11	
Storage Bay Dist (ft)		60		125	400		125		125		125
Storage Blk Time (%)	19	18	0		0	1				55	0
Queuing Penalty (veh)	35	12	0		0	3				98	1

Intersection: 10: Rte 26A & Gravel Drive/Rte 26 (Shaker)

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LT	TR	L	TR
Maximum Queue (ft)	64	62	15	117	3
Average Queue (ft)	8	8	1	50	0
95th Queue (ft)	40	34	9	100	4
Link Distance (ft)	1443	2333	2045		280
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)				240	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 464

1: Rte 26 (Shaker) & N Raymond Performance by lane

Lane	EB	EB	NB	NB	SB	All
Movements Served	L	R	L	T	TR	
Stop Del/Veh (s)	2753.6	10.2	7.2	305.0	0.2	256.5

5: Rte 26 (Shaker) & Weymouth Performance by lane

Lane	WB	NB	SB	All
Movements Served	LR	TR	LT	
Stop Del/Veh (s)	86.8	0.0	0.6	12.1

7: Rte 26 (Shaker) & Libby Hill/Hannaford Performance by lane

Lane	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	All
Movements Served	LT	R	LT	R	L	T	R	L	T	R	
Stop Del/Veh (s)	66.7	11.1	63.6	51.4	69.1	33.9	0.9	710.5	343.6	1.7	103.0

10: Rte 26A & Gravel Drive/Rte 26 (Shaker) Performance by lane

Lane	WB	WB	NB	SB	SB	All
Movements Served	LT	R	TR	L	TR	
Stop Del/Veh (s)	99.8	0.3	87.9	36.7	2.1	44.1

Total Network Performance

Stop Del/Veh (s)	321.3
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Intersection: 1: Rte 26 (Shaker) & N Raymond

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	2033	73	56	6184	56
Average Queue (ft)	1613	5	49	3533	14
95th Queue (ft)	2708	35	54	7216	44
Link Distance (ft)	2022			6361	314
Upstream Blk Time (%)	53			1	
Queuing Penalty (veh)	0			12	
Storage Bay Dist (ft)		50	25		
Storage Blk Time (%)	95	1	57	2	
Queuing Penalty (veh)	208	0	466	9	

Intersection: 5: Rte 26 (Shaker) & Weymouth

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	331	7	144
Average Queue (ft)	151	0	13
95th Queue (ft)	298	4	80
Link Distance (ft)	1757	314	2021
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: Rte 26 (Shaker) & Libby Hill/Hannaford

Movement	EB	EB	WB	WB	NB	NB	NB	B13	B13	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	R	T		L	T	R
Maximum Queue (ft)	216	85	215	148	424	1192	150	378	397	149	3728	133
Average Queue (ft)	90	47	74	96	211	914	65	278	182	99	1445	17
95th Queue (ft)	180	103	170	157	481	1465	172	489	440	181	4045	79
Link Distance (ft)	1553		408			1090		280	280		6361	
Upstream Blk Time (%)						19		30	10			
Queuing Penalty (veh)						275		218	70			
Storage Bay Dist (ft)		60		125	400		125			125		125
Storage Blk Time (%)	31	3	1	9	0	28	0			51	11	0
Queuing Penalty (veh)	30	2	1	6	0	81	1			341	11	0

Intersection: 10: Rte 26A & Gravel Drive/Rte 26 (Shaker)

Movement	WB	WB	NB	SB	SB	B13
Directions Served	LT	R	TR	L	TR	T
Maximum Queue (ft)	165	58	1741	238	206	296
Average Queue (ft)	25	5	716	104	40	41
95th Queue (ft)	115	52	1940	233	219	319
Link Distance (ft)	2333		2045		280	1090
Upstream Blk Time (%)			14	1	4	0
Queuing Penalty (veh)			0	0	28	0
Storage Bay Dist (ft)		150		240		
Storage Blk Time (%)	0	1	42	6	1	
Queuing Penalty (veh)	0	0	0	25	3	

Network Summary

Network wide Queuing Penalty: 1789

1: N Raymond Performance by lane

Lane	EB	EB	NB	NB	SB	All
Movements Served	L	R	L	T	TR	
Stop Del/Veh (s)	10.1	13.3	21.0	3.7	13.9	11.8

5: Weymouth Performance by lane

Lane	WB	NB	SB	All
Movements Served	LR	TR	LT	
Stop Del/Veh (s)	25.6	0.2	0.3	2.1

7: Libby Hill/Hannaford Performance by lane

Lane	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	All
Movements Served	L	TR	L	TR	L	T	R	L	T	R	
Stop Del/Veh (s)	47.3	31.2	56.7	44.8	41.2	3.0	0.6	6.2	41.0	1.3	30.8

10: Gravel Drive/Rte 26 (Shaker) Performance by lane

Lane	EB	WB	WB	NB	SB	SB	All
Movements Served	LTR	LT	R	TR	L	TR	
Stop Del/Veh (s)	18.8	14.2	0.0	0.0	1.7	0.0	0.5

Total Network Performance

Stop Del/Veh (s)	36.2
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Intersection: 1: N Raymond

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	185	230	93	211	325
Average Queue (ft)	48	119	41	72	201
95th Queue (ft)	142	205	82	153	328
Link Distance (ft)	2022			6353	314
Upstream Blk Time (%)					1
Queuing Penalty (veh)					7
Storage Bay Dist (ft)		250	250		
Storage Blk Time (%)		1		0	
Queuing Penalty (veh)		2		0	

Intersection: 5: Weymouth

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	119	148
Average Queue (ft)	41	13
95th Queue (ft)	84	71
Link Distance (ft)	1757	2021
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: Libby Hill/Hannafor

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	147	243	74	86	356	291	79	82	1375	150
Average Queue (ft)	44	100	19	26	176	56	8	9	729	65
95th Queue (ft)	106	189	54	66	308	172	40	60	1598	173
Link Distance (ft)		1551		408		1090			6353	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	125		125		400		125	125		125
Storage Blk Time (%)	0	6			0	1	0		31	0
Queuing Penalty (veh)	0	4			1	2	0		54	1

Intersection: 10: Gravel Drive/Rte 26 (Shaker)

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LT	TR	L	TR
Maximum Queue (ft)	53	51	19	115	17
Average Queue (ft)	7	6	2	50	1
95th Queue (ft)	36	29	12	96	8
Link Distance (ft)	1443	2333	2045		280
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)				240	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 72

1: Rte 26 (Shaker) & N Raymond Performance by lane

Lane	EB	EB	NB	NB	SB	All
Movements Served	L	R	L	T	TR	
Stop Del/Veh (s)	21.2	8.1	18.7	1.7	16.9	10.9

5: Rte 26 (Shaker) & Weymouth Performance by lane

Lane	WB	NB	SB	All
Movements Served	LR	TR	LT	
Stop Del/Veh (s)	46.9	0.1	0.5	5.4

7: Rte 26 (Shaker) & Libby Hill/Hannaford Performance by lane

Lane	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	All
Movements Served	L	TR	L	TR	L	T	R	L	T	R	
Stop Del/Veh (s)	48.5	34.3	50.5	35.0	6.7	5.1	0.6	25.2	5.1	0.4	10.6

10: Rte 26A & Gravel Drive/Rte 26 (Shaker) Performance by lane

Lane	WB	WB	NB	SB	SB	All
Movements Served	LT	R	TR	L	TR	
Stop Del/Veh (s)	21.4	0.0	0.1	14.9	0.2	2.2

Total Network Performance

Stop Del/Veh (s)	22.4
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Intersection: 1: Rte 26 (Shaker) & N Raymond

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	83	112	274	447	320
Average Queue (ft)	28	39	175	104	178
95th Queue (ft)	64	83	269	271	297
Link Distance (ft)	2022			6354	314
Upstream Blk Time (%)					1
Queuing Penalty (veh)					3
Storage Bay Dist (ft)		250	250		
Storage Blk Time (%)			2	0	
Queuing Penalty (veh)			16	0	

Intersection: 5: Rte 26 (Shaker) & Weymouth

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	222	4	113
Average Queue (ft)	81	0	10
95th Queue (ft)	173	3	57
Link Distance (ft)	1757	314	2021
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: Rte 26 (Shaker) & Libby Hill/Hannaford

Movement	EB	EB	WB	WB	NB	NB	NB	B13	B13	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	T		L	T	R
Maximum Queue (ft)	95	172	108	185	362	558	150	249	17	149	259	130
Average Queue (ft)	33	59	41	71	49	244	51	18	1	21	105	15
95th Queue (ft)	74	135	89	142	169	451	149	129	9	74	226	74
Link Distance (ft)	1551	1551	408	408		1090		280	280		6354	
Upstream Blk Time (%)								0				
Queuing Penalty (veh)								1				
Storage Bay Dist (ft)					400		125			125		125
Storage Blk Time (%)						12	0				5	0
Queuing Penalty (veh)						35	0				5	0

Intersection: 10: Rte 26A & Gravel Drive/Rte 26 (Shaker)

Movement	WB	NB	SB	SB	B13
Directions Served	LT	TR	L	TR	T
Maximum Queue (ft)	28	80	182	84	20
Average Queue (ft)	5	5	83	6	1
95th Queue (ft)	21	38	158	70	19
Link Distance (ft)	2333	2045		280	1090
Upstream Blk Time (%)			0	0	
Queuing Penalty (veh)			0	1	
Storage Bay Dist (ft)			240		
Storage Blk Time (%)		0	0	0	
Queuing Penalty (veh)		0	1	0	

Network Summary

Network wide Queuing Penalty: 64

1: Rte 26 (Shaker) & N Raymond Performance by lane

Lane	EB	EB	NB	NB	SB	All
Movements Served	L	R	L	T	TR	
Stop Del/Veh (s)	424.7	26.4	42.1	19.3	9.9	61.8

5: Rte 26 (Shaker) & Weymouth Performance by lane

Lane	WB	NB	SB	All
Movements Served	LR	TR	LT	
Stop Del/Veh (s)	72.0	0.1	0.6	5.5

7: Rte 26 (Shaker) & Libby Hill/Hannaford Performance by lane

Lane	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	All
Movements Served	L	TR	L	TR	L	T	R	L	T	R	
Stop Del/Veh (s)	50.9	47.4	50.8	45.9	65.3	7.5	0.4	8.6	82.7	3.6	56.8

10: Rte 26A & Gravel Drive/Rte 26 (Shaker) Performance by lane

Lane	EB	WB	WB	NB	SB	SB	All
Movements Served	LTR	LT	R	TR	L	TR	
Stop Del/Veh (s)	39.8	16.8	0.0	0.0	2.5	0.0	0.8

Total Network Performance

Stop Del/Veh (s)	95.6
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Intersection: 1: Rte 26 (Shaker) & N Raymond

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	1689	125	65	507	324
Average Queue (ft)	924	123	40	184	232
95th Queue (ft)	1847	136	63	433	335
Link Distance (ft)	2022			6354	314
Upstream Blk Time (%)	3				1
Queuing Penalty (veh)	0				8
Storage Bay Dist (ft)		100	25		
Storage Blk Time (%)	3	67	57	17	
Queuing Penalty (veh)	19	113	199	11	

Intersection: 5: Rte 26 (Shaker) & Weymouth

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	206	9	244
Average Queue (ft)	74	0	25
95th Queue (ft)	170	7	122
Link Distance (ft)	1757	314	2021
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: Rte 26 (Shaker) & Libby Hill/Hannaford

Movement	EB	EB	WB	WB	NB	NB	NB	B13	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	T	L	T	R
Maximum Queue (ft)	116	286	61	99	392	422	61	64	105	3018	150
Average Queue (ft)	44	109	17	26	237	114	7	3	9	1602	68
95th Queue (ft)	94	215	47	66	402	501	36	35	57	3314	171
Link Distance (ft)	1551	1551	408	408		1090		280		6354	
Upstream Blk Time (%)						1					
Queuing Penalty (veh)						4					
Storage Bay Dist (ft)					400		125		125		125
Storage Blk Time (%)					5	1				32	0
Queuing Penalty (veh)					20	2				57	3

Intersection: 10: Rte 26A & Gravel Drive/Rte 26 (Shaker)

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LT	TR	L	TR
Maximum Queue (ft)	64	66	10	152	10
Average Queue (ft)	9	9	1	63	0
95th Queue (ft)	41	35	6	117	4
Link Distance (ft)	1443	2333	2045		280
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)				240	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 435

1: Rte 26 (Shaker) & N Raymond Performance by lane

Lane	EB	EB	NB	NB	SB	All
Movements Served	L	R	L	T	TR	
Stop Del/Veh (s)	28.5	12.1	28.5	1.8	19.8	14.6

5: Rte 26 (Shaker) & Weymouth Performance by lane

Lane	WB	NB	SB	All
Movements Served	LR	TR	LT	
Stop Del/Veh (s)	640.5	0.1	1.1	76.1

7: Rte 26 (Shaker) & Libby Hill/Hannaford Performance by lane

Lane	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	All
Movements Served	L	TR	L	TR	L	T	R	L	T	R	
Stop Del/Veh (s)	54.7	39.6	54.3	63.5	16.5	20.7	0.4	56.9	10.8	0.7	22.3

10: Rte 26A & Gravel Drive/Rte 26 (Shaker) Performance by lane

Lane	WB	WB	NB	SB	SB	All
Movements Served	LT	R	TR	L	TR	
Stop Del/Veh (s)	768.8	0.4	40.7	67.9	7.4	41.0

Total Network Performance

Stop Del/Veh (s)	107.4
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Intersection: 1: Rte 26 (Shaker) & N Raymond

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	102	127	374	639	325
Average Queue (ft)	40	57	255	123	232
95th Queue (ft)	80	109	368	344	333
Link Distance (ft)	2022			6354	314
Upstream Blk Time (%)					2
Queuing Penalty (veh)					15
Storage Bay Dist (ft)		250	350		
Storage Blk Time (%)			2	0	
Queuing Penalty (veh)			19	0	

Intersection: 5: Rte 26 (Shaker) & Weymouth

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	1446	21	155
Average Queue (ft)	754	1	23
95th Queue (ft)	1533	10	97
Link Distance (ft)	1757	314	2021
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: Rte 26 (Shaker) & Libby Hill/Hannaford

Movement	EB	EB	WB	WB	NB	NB	NB	B13	B13	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	T		L	T	R
Maximum Queue (ft)	116	175	128	247	424	1185	150	385	385	99	443	130
Average Queue (ft)	46	60	45	126	135	825	55	250	133	26	167	19
95th Queue (ft)	98	131	96	226	404	1409	165	497	375	81	420	87
Link Distance (ft)	1551	1551	408	408		1090		280	280		6354	
Upstream Blk Time (%)						9		19	5			
Queuing Penalty (veh)						125		140	35			
Storage Bay Dist (ft)					400		125			125		125
Storage Blk Time (%)						21	0				11	0
Queuing Penalty (veh)						60	1				10	0

Intersection: 10: Rte 26A & Gravel Drive/Rte 26 (Shaker)

Movement	WB	WB	NB	SB	SB	B13
Directions Served	LT	R	TR	L	TR	T
Maximum Queue (ft)	849	58	1177	265	368	697
Average Queue (ft)	219	14	406	186	156	201
95th Queue (ft)	1130	90	1397	317	435	784
Link Distance (ft)	2333		2045		280	1090
Upstream Blk Time (%)	3		6	2	18	1
Queuing Penalty (veh)	0		0	0	138	9
Storage Bay Dist (ft)		150		240		
Storage Blk Time (%)	10	0	24	29	4	
Queuing Penalty (veh)	57	0	0	124	11	

Network Summary

Network wide Queuing Penalty: 745

2035 Future Volumes
AM Peak

SR26/26A
Capacity Expansion

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	4	0	5	3	356	0	328	18	492	810	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	0	5	0	6	3	409	0	377	21	566	931	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2441	2460	931	2452	2449	387	931			398		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2441	2460	931	2452	2449	387	931			398		
tC, single (s)	7.1	7.5	6.2	7.1	7.0	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.9	3.3	3.5	4.5	3.3	2.2			2.2		
p0 queue free %	100	41	100	22	69	37	100			51		
cM capacity (veh/h)	4	8	326	7	11	654	743			1155		
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2					
Volume Total	5	9	409	0	398	566	931					
Volume Left	0	6	0	0	0	566	0					
Volume Right	0	0	409	0	21	0	0					
cSH	8	8	654	1700	1700	1155	1700					
Volume to Capacity	0.59	1.09	0.63	0.00	0.23	0.49	0.55					
Queue Length 95th (ft)	28	48	110	0	0	69	0					
Control Delay (s)	742.6	907.0	19.2	0.0	0.0	11.1	0.0					
Lane LOS	F	F	C			B						
Approach Delay (s)	742.6	38.8		0.0		4.2						
Approach LOS	F	E										
Intersection Summary												
Average Delay			11.2									
Intersection Capacity Utilization			60.6%	ICU Level of Service						B		
Analysis Period (min)			15									

2035 Scenario 3
AM Peak

Roust 26/26A
Capacity Expansion

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	4	0	5	3	838	0	642	18	921	1080	0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850		0.996				
Flt Protected					0.970					0.950		
Satd. Flow (prot)	0	1900	0	0	1843	1583	1900	3494	0	1770	1792	0
Flt Permitted										0.950		
Satd. Flow (perm)	0	1900	0	0	1900	1583	1900	3494	0	1770	1792	0
Satd. Flow (RTOR)						911		2				
Lane Group Flow (vph)	0	4	0	0	8	911	0	718	0	1001	1174	0
Turn Type	Perm	NA		pm+pt	NA	Free	Perm	NA		Prot	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8		Free	2					
Total Split (s)	16.0	16.0		8.0	24.0		16.0	16.0		60.0	76.0	
Total Lost Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Act Effect Green (s)		6.0			6.1	100.0		33.8		56.0	97.0	
Actuated g/C Ratio		0.06			0.06	1.00		0.34		0.56	0.97	
v/c Ratio		0.04			0.07	0.58		0.61		1.01	0.68	
Control Delay		44.5			45.1	1.5		31.2		27.7	5.6	
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	
Total Delay		44.5			45.1	1.5		31.2		27.7	5.6	
LOS		D			D	A		C		C	A	
Approach Delay		44.5			1.9			31.2			15.8	
Approach LOS		D			A			C			B	
Queue Length 50th (ft)		2			5	0		191		~158	53	
Queue Length 95th (ft)		13			20	0		#304		m#158	m173	
Internal Link Dist (ft)		1406			574			2001			529	
Turn Bay Length (ft)						200						
Base Capacity (vph)		228			380	1583		1181		991	1738	
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		0.02			0.02	0.58		0.61		1.01	0.68	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

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

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 15.4

Intersection LOS: B

Intersection Capacity Utilization 83.9%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

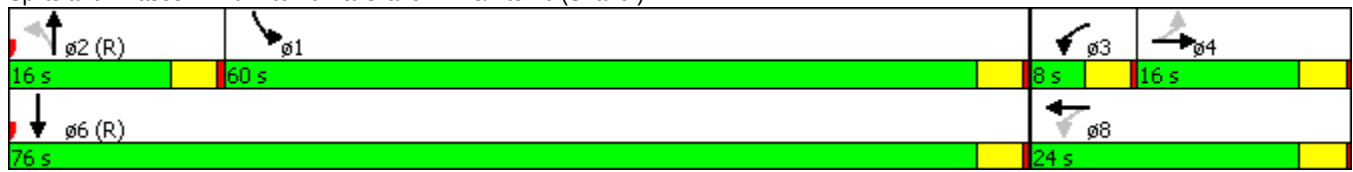
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 10: Rte 26A & Gravel Drive/Rte 26 (Shaker)



2035 Scenario 4
AM Peak

Route 26/26A
Capacity Expansion

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↗	↗	↗	↕	↗	↗	
Volume (vph)	0	0	0	9	0	907	0	1222	18	654	758	2
Satd. Flow (prot)	0	1900	0	0	1805	1583	1900	3499	0	1770	1789	0
Flt Permitted										0.950		
Satd. Flow (perm)	0	1900	0	0	1900	1583	1900	3499	0	1770	1789	0
Satd. Flow (RTOR)						655		1				
Lane Group Flow (vph)	0	0	0	0	10	986	0	1348	0	711	826	0
Turn Type	Perm			pm+pt	NA	Free	Perm	NA		Prot	NA	
Protected Phases		4		3	8			2		1	6	
Permitted Phases	4			8		Free	2					
Total Split (s)	20.0	20.0		8.0	28.0		53.0	53.0		57.0	110.0	
Total Lost Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Act Effect Green (s)					6.6	112.5		49.1		53.1	109.4	
Actuated g/C Ratio					0.06	1.00		0.44		0.47	0.97	
v/c Ratio					0.09	0.62		0.88		0.85	0.47	
Control Delay					53.0	1.9		37.7		38.5	1.6	
Queue Delay					0.0	0.0		0.0		0.0	0.0	
Total Delay					53.0	1.9		37.7		38.5	1.6	
LOS					D	A		D		D	A	
Approach Delay					2.4			37.7			18.6	
Approach LOS					A			D			B	
Queue Length 50th (ft)					7	0		440		421	0	
Queue Length 95th (ft)					26	0		#703		#778	159	
Internal Link Dist (ft)		1406			716			2001			267	
Turn Bay Length (ft)						250						
Base Capacity (vph)					405	1583		1527		834	1740	
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					0.02	0.62		0.88		0.85	0.47	

Intersection Summary

Cycle Length: 138

Actuated Cycle Length: 112.5

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 21.1

Intersection LOS: C

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: 10: Rte 26A & Gravel Drive/Rte 26 (Shaker)

			
57 s	53 s	8 s	20 s
			
110 s	28 s		

2035 Scenario 5
AM Peak

SR26/26A
Capacity Expansion

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	9	0	627	0	946	18	408	518	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	200		300	0		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1900	0	0	1805	1583	1900	1840	0	1770	1792	0
Flt Permitted										0.071		
Satd. Flow (perm)	0	1900	0	0	1900	1583	1900	1840	0	132	1792	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						473		1				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1486			464			2081			391	
Travel Time (s)		33.8			10.5			47.3			8.9	
Lane Group Flow (vph)	0	0	0	0	10	682	0	1048	0	443	563	0
Turn Type	Perm			Perm	NA	Free	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		Free	2			6		
Total Split (s)	20.0	20.0		20.0	20.0		71.0	71.0		29.0	100.0	
Total Lost Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Act Effct Green (s)					6.3	102.4		67.1		96.2	99.5	
Actuated g/C Ratio					0.06	1.00		0.66		0.94	0.97	
v/c Ratio					0.09	0.43		0.87		0.84	0.32	
Control Delay					48.2	0.9		24.6		42.5	1.0	
Queue Delay					0.0	0.0		0.0		0.0	0.0	
Total Delay					48.2	0.9		24.6		42.5	1.0	
LOS					D	A		C		D	A	
Approach Delay					1.5			24.6			19.3	
Approach LOS					A			C			B	
Queue Length 50th (ft)					6	0		456		196	0	
Queue Length 95th (ft)					25	0		#998		#440	81	
Internal Link Dist (ft)		1406			384			2001			311	
Turn Bay Length (ft)												
Base Capacity (vph)					297	1583		1207		525	1741	
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					0.03	0.43		0.87		0.84	0.32	

Intersection Summary

Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 102.4	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 16.8	Intersection LOS: B
Intersection Capacity Utilization 86.8%	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: 10: Rte 26A & Gravel Drive/Rte 26 (Shaker)

 ø1	 ø2	 ø4
29 s	71 s	20 s
 ø6		 ø8
100 s		20 s

2035 Background Volumes
PM Peak

SR26/26A
Capacity Expansion

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	9	0	561	0	901	18	320	434	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	10	0	610	0	979	20	348	472	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						40						
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2148	2167	473	2157	2159	989	474			999		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2148	2167	473	2157	2159	989	474			999		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	100	100	54	100	0	100			50		
cM capacity (veh/h)	0	24	595	21	24	299	1099			693		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	0	620	0	999	348	474						
Volume Left	0	10	0	0	348	0						
Volume Right	0	610	0	20	0	2						
cSH	1700	304	1700	1700	693	1700						
Volume to Capacity	0.00	2.04	0.00	0.59	0.50	0.28						
Queue Length 95th (ft)	0	1116	0	0	71	0						
Control Delay (s)	0.0	502.5	0.0	0.0	15.3	0.0						
Lane LOS	A	F			C							
Approach Delay (s)	0.0	502.5	0.0		6.5							
Approach LOS	A	F										
Intersection Summary												
Average Delay			129.8									
Intersection Capacity Utilization			89.9%	ICU Level of Service					E			
Analysis Period (min)			15									

2035 Scenario 4
PM Peak

Route 26/26A
Capacity Expansion

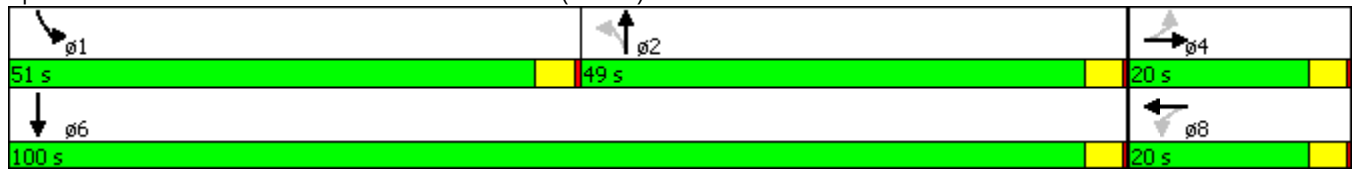
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	9	0	907	0	1222	18	654	758	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		250	200		500	0		0
Storage Lanes	0		0	0		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1900	0	0	1805	1583	1900	3499	0	1770	1789	0
Flt Permitted										0.950		
Satd. Flow (perm)	0	1900	0	0	1900	1583	1900	3499	0	1770	1789	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						640		1				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1486			796			2081			347	
Travel Time (s)		33.8			18.1			47.3			7.9	
Lane Group Flow (vph)	0	0	0	0	10	986	0	1348	0	711	826	0
Turn Type	Perm			Perm	NA	Free	Perm	NA		Prot	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		Free	2					
Total Split (s)	20.0	20.0		20.0	20.0		49.0	49.0		51.0	100.0	
Total Lost Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Act Effct Green (s)					6.3	102.4		45.1		47.1	99.5	
Actuated g/C Ratio					0.06	1.00		0.44		0.46	0.97	
v/c Ratio					0.09	0.62		0.87		0.87	0.48	
Control Delay					48.2	1.9		34.3		39.2	1.6	
Queue Delay					0.0	0.0		0.0		0.0	0.0	
Total Delay					48.2	1.9		34.3		39.2	1.6	
LOS					D	A		C		D	A	
Approach Delay					2.3			34.3			19.0	
Approach LOS					A			C			B	
Queue Length 50th (ft)					6	0		392		388	0	
Queue Length 95th (ft)					25	0		#646		#738	151	
Internal Link Dist (ft)		1406			716			2001			267	
Turn Bay Length (ft)						250						
Base Capacity (vph)					297	1583		1541		813	1738	
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					0.03	0.62		0.87		0.87	0.48	

Intersection Summary

Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 102.4	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 20.0	Intersection LOS: C
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: 10: Rte 26A & Gravel Drive/Rte 26 (Shaker)



Scenario 5
PM Peak

Route 26/26A
Capacity Expansion

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	9	0	878	0	924	0	559	448	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		150	200		500	350		0
Storage Lanes	0		0	0		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1900	0	0	1805	1583	1900	3505	0	1770	1784	0
Flt Permitted										0.950		
Satd. Flow (perm)	0	1900	0	0	1900	1583	1900	3505	0	1770	1784	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						704						1
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1486			499			2081			399	
Travel Time (s)		33.8			11.3			47.3			9.1	
Lane Group Flow (vph)	0	0	0	0	10	954	0	1004	0	608	489	0
Turn Type	Perm			Perm	NA	Free	Perm	NA		Prot	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		Free	2					
Total Split (s)	20.0	20.0		20.0	20.0		32.0	32.0		38.0	70.0	
Total Lost Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Act Effct Green (s)					6.1	72.3		28.1		34.1	69.6	
Actuated g/C Ratio					0.08	1.00		0.39		0.47	0.96	
v/c Ratio					0.06	0.60		0.74		0.73	0.28	
Control Delay					32.7	1.7		23.8		23.0	1.1	
Queue Delay					0.0	0.0		0.0		0.0	0.0	
Total Delay					32.7	1.7		23.8		23.0	1.1	
LOS					C	A		C		C	A	
Approach Delay					2.0			23.8			13.2	
Approach LOS					A			C			B	
Queue Length 50th (ft)					4	0		185		193	0	
Queue Length 95th (ft)					20	0		#327		#452	68	
Internal Link Dist (ft)		1406			419			2001			319	
Turn Bay Length (ft)						150				350		
Base Capacity (vph)					422	1583		1363		835	1716	
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					0.02	0.60		0.74		0.73	0.28	

Intersection Summary

Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 72.3	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 13.2	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.

Splits and Phases: 10: Rte 26A & Gravel Drive/Rte 26 (Shaker)



2035 Future Volumes
AM Peak

Libby Hill/Hannaford
Capacity Expansion

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	56	11	183	22	27	16	286	343	55	16	1097	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		250	0		125	300		0	250		250
Storage Lanes	1		1	1		1	1		1	1		2
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1612	1557	0	1612	1751	0	1703	1696	1495	1805	3438	1568
Flt Permitted	0.448			0.615			0.070			0.520		
Satd. Flow (perm)	760	1557	0	1043	1751	0	125	1696	1495	988	3438	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		220			15				66			181
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1619			456			1153			5878	
Travel Time (s)		36.8			10.4			26.2			133.6	
Lane Group Flow (vph)	67	233	0	27	52	0	345	413	66	19	1322	194
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Total Split (s)	20.0	20.0		20.0	20.0		37.0	102.0	20.0	8.0	73.0	20.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Act Effect Green (s)	19.2	11.2		14.1	8.5		82.3	79.7	91.7	54.1	49.7	64.4
Actuated g/C Ratio	0.17	0.10		0.13	0.08		0.74	0.72	0.83	0.49	0.45	0.58
v/c Ratio	0.32	0.66		0.16	0.35		0.70	0.34	0.05	0.04	0.86	0.20
Control Delay	47.7	18.7		45.5	50.9		37.7	8.0	1.0	8.9	34.9	2.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.7	18.7		45.5	50.9		37.7	8.0	1.0	8.9	34.9	2.6
LOS	D	B		D	D		D	A	A	A	C	A
Approach Delay		25.2			49.1			19.9			30.5	
Approach LOS		C			D			B			C	
Queue Length 50th (ft)	43	9		17	27		180	92	0	3	468	4
Queue Length 95th (ft)	89	69		45	71		316	189	8	11	562	28
Internal Link Dist (ft)		1539			376			1073			5798	
Turn Bay Length (ft)							300			250		250
Base Capacity (vph)	294	432		305	289		607	1441	1349	514	2265	1077
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	0.23	0.54		0.09	0.18		0.57	0.29	0.05	0.04	0.58	0.18

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 110.8

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 27.3

Intersection LOS: C

Intersection Capacity Utilization 74.5%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 7: Rte 26 (Shaker) & Libby Hill/Hannaford

 ø1	 ø2	 ø3	 ø4
8 s	102 s	20 s	20 s
 ø5	 ø6	 ø7	 ø8
37 s	73 s	20 s	20 s

2035 Scenario 3
AM Peak

Libby Hill Road
Capacity Expansion

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	11	261	42	27	86	321	1040	119	38	1698	169
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		0.856			0.886				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1626	0	1805	1683	0	1805	3471	1615	1805	3406	1615
Flt Permitted				0.909			0.079			0.167		
Satd. Flow (perm)	1900	1626	0	1727	1683	0	150	3471	1615	317	3406	1615
Satd. Flow (RTOR)		297			98				135			182
Lane Group Flow (vph)	80	309	0	48	129	0	365	1182	135	43	1930	192
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Total Split (s)	9.0	7.0		10.0	8.0		24.0	74.0	10.0	9.0	59.0	9.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Act Effect Green (s)	8.9	3.7		10.3	4.4		73.0	73.0	82.9	55.0	55.0	60.2
Actuated g/C Ratio	0.09	0.04		0.10	0.04		0.73	0.73	0.83	0.55	0.55	0.60
v/c Ratio	0.49	0.90		0.26	0.77		0.85	0.47	0.10	0.17	1.03	0.18
Control Delay	51.2	36.0		43.0	45.7		45.4	3.4	0.1	12.0	52.5	1.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.2	36.0		43.0	45.7		45.4	3.4	0.1	12.0	52.5	1.3
LOS	D	D		D	D		D	A	A	B	D	A
Approach Delay		39.2			45.0			12.2			47.2	
Approach LOS		D			D			B			D	
Queue Length 50th (ft)	47	8		28	20		185	75	0	12	~697	2
Queue Length 95th (ft)	#91	#145		61	#111		#314	88	0	27	#802	18
Internal Link Dist (ft)		1539			376			821			1341	
Turn Bay Length (ft)	250			250			500		300	300		300
Base Capacity (vph)	163	345		184	167		441	2534	1364	248	1873	1044
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	0.49	0.90		0.26	0.77		0.83	0.47	0.10	0.17	1.03	0.18

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

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

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 33.1

Intersection LOS: C

Intersection Capacity Utilization 98.1%

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: 7: Rte 26 (Shaker) & Libby Hill/Hannaford



2035 Scenario 4
AM Peak

Libby Hill
Capacity Expansion

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	117	31	187	120	13	201	239	1654	236	81	1124	108
Satd. Flow (prot)	1805	1655	0	1805	1632	0	1805	3471	1615	1805	3406	1615
Flt Permitted	0.421			0.348			0.093			0.103		
Satd. Flow (perm)	800	1655	0	661	1632	0	177	3471	1615	196	3406	1615
Satd. Flow (RTOR)		212			139				268			142
Lane Group Flow (vph)	133	247	0	136	243	0	272	1880	268	92	1277	123
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Total Split (s)	13.0	20.0		20.0	27.0		20.0	52.0	20.0	8.0	40.0	13.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Act Effect Green (s)	18.1	9.5		21.8	11.5		54.7	48.5	63.1	41.8	37.8	50.4
Actuated g/C Ratio	0.21	0.11		0.25	0.13		0.63	0.56	0.73	0.48	0.43	0.58
v/c Ratio	0.50	0.67		0.45	0.72		0.77	0.97	0.22	0.54	0.86	0.12
Control Delay	31.5	18.0		29.2	28.8		35.0	35.9	1.1	25.8	31.8	2.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.5	18.0		29.2	28.8		35.0	35.9	1.1	25.8	31.8	2.0
LOS	C	B		C	C		C	D	A	C	C	A
Approach Delay		22.7			29.0			32.0			28.9	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	58	18		59	55		90	507	0	17	326	0
Queue Length 95th (ft)	100	86		102	125		#215	#820	21	#71	#562	20
Internal Link Dist (ft)		2006			376			1073			1030	
Turn Bay Length (ft)	250			250			250		300	300		300
Base Capacity (vph)	276	479		396	537		413	1938	1333	169	1481	1005
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	0.48	0.52		0.34	0.45		0.66	0.97	0.20	0.54	0.86	0.12

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 86.9

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 30.0

Intersection LOS: C

Intersection Capacity Utilization 83.4%

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: 7: Rte 26 (Shaker) & Libby Hill/Hannaford

														
8 s	52 s		20 s			20 s			20 s					
														
20 s	40 s		13 s			27 s								

2035 Scenario 5
AM Peak

Libby Hill
Capacity Expansion

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	82	31	135	63	13	162	145	1219	209	91	766	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	250		0	300		300	300		300
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1805	1668	0	1805	1636	0	1805	3471	1615	1805	3406	1615
Flt Permitted	0.408			0.465			0.203			0.116		
Satd. Flow (perm)	775	1668	0	884	1636	0	386	3471	1615	220	3406	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		117			161				238			65
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1619			456			1089			1421	
Travel Time (s)		36.8			10.4			24.8			32.3	
Lane Group Flow (vph)	93	188	0	72	199	0	165	1385	238	103	870	58
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Total Split (s)	20.0	20.0		20.0	20.0		13.0	102.0	20.0	8.0	97.0	20.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Act Effect Green (s)	19.1	9.9		16.7	8.7		47.1	39.0	51.2	38.6	34.5	47.9
Actuated g/C Ratio	0.25	0.13		0.21	0.11		0.61	0.50	0.66	0.50	0.44	0.62
v/c Ratio	0.30	0.60		0.25	0.61		0.42	0.80	0.21	0.53	0.58	0.06
Control Delay	26.4	23.8		26.0	19.2		10.4	20.1	1.2	19.1	17.9	1.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.4	23.8		26.0	19.2		10.4	20.1	1.2	19.1	17.9	1.6
LOS	C	C		C	B		B	C	A	B	B	A
Approach Delay		24.6			21.0			16.7			17.1	
Approach LOS		C			C			B			B	
Queue Length 50th (ft)	33	31		25	16		29	260	0	17	153	0
Queue Length 95th (ft)	84	107		68	87		69	418	20	46	246	11
Internal Link Dist (ft)		1539			376			1009			1341	
Turn Bay Length (ft)	250			250			300		300	300		300
Base Capacity (vph)	441	452		447	477		406	3427	1298	194	3330	1167
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	0.21	0.42		0.16	0.42		0.41	0.40	0.18	0.53	0.26	0.05

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 77.8

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 17.8

Intersection LOS: B

Intersection Capacity Utilization 67.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 7: Rte 26 (Shaker) & Libby Hill/Hannafor

 ø1	 ø2	 ø3	 ø4
8 s	102 s	20 s	20 s
 ø5	 ø6	 ø7	 ø8
13 s	97 s	20 s	20 s

2035 Background Volumes
PM Peak

Libby Hill/Hannaford
Capacity Expansion

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	66	31	97	53	13	153	114	1171	177	36	606	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		250	0		125	300		0	250		250
Storage Lanes	1		1	1		1	1		1	1		2
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1805	1683	0	1805	1638	0	1805	1827	1615	1805	3406	1615
Flt Permitted	0.950			0.950			0.336			0.063		
Satd. Flow (perm)	1805	1683	0	1805	1638	0	638	1827	1615	120	3406	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		110			151				201			67
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1619			456			1153			2232	
Travel Time (s)		36.8			10.4			26.2			50.7	
Lane Group Flow (vph)	75	145	0	60	189	0	130	1331	201	41	689	67
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases							2		2	6		6
Total Split (s)	14.0	8.0		14.0	8.0		10.0	72.0	14.0	6.0	68.0	14.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Act Effect Green (s)	8.7	5.4		8.3	7.0		74.3	70.7	83.0	66.6	64.3	77.0
Actuated g/C Ratio	0.09	0.05		0.08	0.07		0.74	0.71	0.83	0.67	0.64	0.77
v/c Ratio	0.48	0.75		0.40	0.74		0.24	1.03	0.15	0.35	0.31	0.05
Control Delay	53.6	39.6		50.9	32.3		4.6	40.4	0.4	12.3	8.5	0.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.6	39.6		50.9	32.3		4.6	40.4	0.4	12.3	8.5	0.7
LOS	D	D		D	C		A	D	A	B	A	A
Approach Delay		44.4			36.8			32.7			8.1	
Approach LOS		D			D			C			A	
Queue Length 50th (ft)	46	22		37	24		24	~942	1	6	94	0
Queue Length 95th (ft)	89	#122		75	#143		m25	m#1005	m1	13	121	7
Internal Link Dist (ft)		1539			376			1073			2152	
Turn Bay Length (ft)							300			250		250
Base Capacity (vph)	180	194		180	255		544	1291	1398	118	2189	1279
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	0.42	0.75		0.33	0.74		0.24	1.03	0.14	0.35	0.31	0.05

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

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

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 27.2

Intersection LOS: C

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.

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

Splits and Phases: 7: Rte 26 (Shaker) & Libby Hill/Hannaford

 Ø1	 Ø2 (R)	 Ø3	 Ø4
6 s	72 s	14 s	8 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
10 s	68 s	14 s	8 s

Lanes, Volumes, Timings
7: Rte 26 (Shaker) & Libby Hill/Hannaford

7/7/2014

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	82	31	135	269	13	211	204	1880	248	91	1257	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		250	0		250	500		300	300		300
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1805	1668	0	1805	1632	0	1805	3471	1615	1805	3406	1615
Flt Permitted	0.741			0.426			0.073			0.079		
Satd. Flow (perm)	1408	1668	0	809	1632	0	139	3471	1615	150	3406	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		153			179				282			98
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1619			456			1159			2229	
Travel Time (s)		36.8			10.4			26.3			50.7	
Lane Group Flow (vph)	93	188	0	306	255	0	232	2136	282	103	1428	83
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Total Split (s)	20.0	9.0		21.0	10.0		16.0	63.0	21.0	7.0	54.0	20.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Act Effect Green (s)	14.9	5.4		25.8	12.3		66.2	59.0	79.4	54.1	50.9	64.5
Actuated g/C Ratio	0.15	0.05		0.26	0.12		0.66	0.59	0.79	0.54	0.51	0.64
v/c Ratio	0.38	0.80		0.82	0.71		0.83	1.04	0.21	0.77	0.82	0.08
Control Delay	34.2	38.3		52.7	26.9		47.3	54.0	0.6	50.8	26.1	1.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.2	38.3		52.7	26.9		47.3	54.0	0.6	50.8	26.1	1.1
LOS	C	D		D	C		D	D	A	D	C	A
Approach Delay		37.0			41.0			47.8			26.4	
Approach LOS		D			D			D			C	
Queue Length 50th (ft)	46	22		174	45		92	~781	0	21	395	0
Queue Length 95th (ft)	86	#127		#260	#166		#203	#882	12	#70	476	11
Internal Link Dist (ft)		1539			376			1079			2149	
Turn Bay Length (ft)							500		300	300		300
Base Capacity (vph)	364	234		378	357		291	2047	1348	133	1734	1173
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	0.26	0.80		0.81	0.71		0.80	1.04	0.21	0.77	0.82	0.07

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

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

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.04

Intersection Signal Delay: 39.7

Intersection LOS: D

Intersection Capacity Utilization 95.2%

ICU Level of Service F

Analysis Period (min) 15

Lanes, Volumes, Timings

7: Rte 26 (Shaker) & Libby Hill/Hannafor

7/7/2014

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 7: Rte 26 (Shaker) & Libby Hill/Hannafor

 ø1	 ø2 (R)	 ø3	 ø4
7 s	63 s	21 s	9 s
 ø5	 ø6 (R)	 ø7	 ø8
16 s	54 s	20 s	10 s

2035 Scenario 4
PM Peak

Libby Hill/Hannaford
Capacity Expansion

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	117	31	187	120	13	201	239	1654	236	81	1124	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		250	0		250	250		300	300		300
Storage Lanes	1		1	1		1	1		1	1		2
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1805	1655	0	1805	1632	0	1805	3471	1615	1805	3406	1615
Flt Permitted	0.357			0.305			0.088			0.082		
Satd. Flow (perm)	678	1655	0	580	1632	0	167	3471	1615	156	3406	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		212			119				268			129
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2086			456			1153			1110	
Travel Time (s)		47.4			10.4			26.2			25.2	
Lane Group Flow (vph)	133	247	0	136	243	0	272	1880	268	92	1277	123
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Total Split (s)	14.0	20.0		20.0	26.0		19.0	62.0	20.0	8.0	51.0	14.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Act Effect Green (s)	20.5	11.1		24.2	13.1		66.2	58.2	73.7	52.5	48.4	61.9
Actuated g/C Ratio	0.20	0.11		0.24	0.13		0.66	0.58	0.73	0.52	0.48	0.61
v/c Ratio	0.55	0.67		0.49	0.77		0.82	0.94	0.21	0.63	0.78	0.12
Control Delay	37.9	18.7		35.1	37.8		42.5	31.6	1.0	34.5	27.6	2.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.9	18.7		35.1	37.8		42.5	31.6	1.0	34.5	27.6	2.1
LOS	D	B		D	D		D	C	A	C	C	A
Approach Delay		25.4			36.9			29.4			25.9	
Approach LOS		C			D			C			C	
Queue Length 50th (ft)	68	21		70	77		109	556	0	20	359	0
Queue Length 95th (ft)	114	94		116	155		#257	#848	20	#66	506	22
Internal Link Dist (ft)		2006			376			1073			1030	
Turn Bay Length (ft)							250		300	300		300
Base Capacity (vph)	254	441		347	450		354	2004	1314	146	1636	1050
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	0.52	0.56		0.39	0.54		0.77	0.94	0.20	0.63	0.78	0.12

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 100.8

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 28.6

Intersection LOS: C

Intersection Capacity Utilization 83.4%

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: 7: Rte 26 (Shaker) & Libby Hill/Hannaford



Scenario 5
PM Peak

Libby Hill
Capacity Expansion

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	115	32	164	124	14	202	201	1328	273	79	721	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	125		0	300		300	300		300
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1805	1661	0	1805	1634	0	1805	3471	1615	1805	3406	1615
Flt Permitted	0.402			0.358			0.950			0.188		
Satd. Flow (perm)	764	1661	0	680	1634	0	1805	3471	1615	357	3406	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		186			156				310			112
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2044			456			1091			737	
Travel Time (s)		46.5			10.4			24.8			16.8	
Lane Group Flow (vph)	131	222	0	141	246	0	228	1509	310	90	819	112
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8					2	6		6
Total Split (s)	8.0	20.0		8.0	20.0		17.0	39.0	8.0	8.0	30.0	8.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Act Effect Green (s)	13.8	9.7		14.9	11.9		11.9	33.2	38.4	24.3	23.1	31.4
Actuated g/C Ratio	0.21	0.15		0.23	0.18		0.18	0.51	0.59	0.37	0.35	0.48
v/c Ratio	0.58	0.55		0.62	0.58		0.69	0.86	0.29	0.40	0.68	0.13
Control Delay	32.0	12.5		34.9	17.0		40.1	21.9	1.4	27.6	21.7	3.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.0	12.5		34.9	17.0		40.1	21.9	1.4	27.6	21.7	3.2
LOS	C	B		C	B		D	C	A	C	C	A
Approach Delay		19.7			23.5			20.8			20.2	
Approach LOS		B			C			C			C	
Queue Length 50th (ft)	44	14		48	35		90	267	0	24	143	0
Queue Length 95th (ft)	82	65		#89	96		#193	#471	19	58	224	24
Internal Link Dist (ft)		1964			376			1011			657	
Turn Bay Length (ft)	250			125			300		300	300		300
Base Capacity (vph)	227	557		226	528		369	1910	1077	223	1396	833
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	0.58	0.40		0.62	0.47		0.62	0.79	0.29	0.40	0.59	0.13

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 65.3

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 20.8

Intersection LOS: C

Intersection Capacity Utilization 74.0%

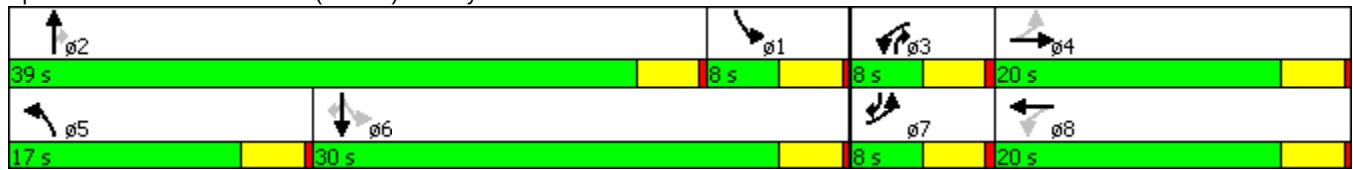
ICU Level of Service D

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 7: Rte 26 (Shaker) & Libby Hill/Hannafor



2035 Future Volumes
AM Peak

Weymouth/North Raymond
Realigned Intersection

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	106	63	571	82	6	0	68	219	128	9	621	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		150	250		0	250		250	250		250
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1770	1863	1599	1770	1863	0	1570	1666	0	1770	1714	0
Flt Permitted	0.950			0.950			0.204			0.517		
Satd. Flow (perm)	1770	1863	1599	1770	1863	0	337	1666	0	963	1714	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			573					28			4	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2078			1454			544			1657	
Travel Time (s)		47.2			33.0			12.4			37.7	
Lane Group Flow (vph)	113	68	607	89	7	0	72	372	0	10	712	0
Turn Type	Prot	NA	Free	Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free				2			6		
Total Split (s)	27.0	38.0		27.0	38.0		9.0	47.0		8.0	46.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Act Effect Green (s)	17.2	8.6	80.3	9.4	6.5		52.0	51.1		48.7	45.5	
Actuated g/C Ratio	0.21	0.11	1.00	0.12	0.08		0.65	0.64		0.61	0.57	
v/c Ratio	0.30	0.34	0.38	0.43	0.05		0.24	0.35		0.02	0.73	
Control Delay	29.3	39.2	0.7	40.4	35.8		8.9	9.5		7.1	22.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	29.3	39.2	0.7	40.4	35.8		8.9	9.5		7.1	22.0	
LOS	C	D	A	D	D		A	A		A	C	
Approach Delay		8.1			40.1			9.4			21.7	
Approach LOS		A			D			A			C	
Queue Length 50th (ft)	45	33	0	43	3		12	71		2	275	
Queue Length 95th (ft)	106	73	0	89	16		34	187		8	#557	
Internal Link Dist (ft)		1998			1374			464			1577	
Turn Bay Length (ft)	250		150	250			250			250		
Base Capacity (vph)	514	792	1599	509	792		295	1070		624	973	
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	0.22	0.09	0.38	0.17	0.01		0.24	0.35		0.02	0.73	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 80.3

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 14.7

Intersection LOS: B

Intersection Capacity Utilization 61.9%

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: 1: Rte 26 (Shaker) & N Raymond

 ø1	 ø2	 ø3	 ø4
8 s	47 s	27 s	38 s
 ø5	 ø6	 ø7	 ø8
9 s	46 s	27 s	38 s

2035 Scenario 3
AM Peak

Weymouth/North Raymond
Realigned Intersection

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	122	65	669	239	7	14	184	347	323	28	682	64
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.95	0.95
Frt			0.850		0.902			0.927			0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	1827	1599	1770	1680	0	3467	1710	0	1770	3375	0
Flt Permitted	0.000			0.000			0.182			0.257		
Satd. Flow (perm)	0	1827	1599	0	1680	0	664	1710	0	479	3375	0
Satd. Flow (RTOR)			571		15			76			11	
Lane Group Flow (vph)	130	69	712	260	23	0	196	720	0	30	794	0
Turn Type	pm+pt	NA	Free	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8			2			6		
Total Split (s)	13.0	12.0		21.0	20.0		29.0	49.0		8.0	28.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Act Effect Green (s)	17.2	7.6	72.7	15.1	9.4		37.7	37.7		28.9	27.6	
Actuated g/C Ratio	0.24	0.10	1.00	0.21	0.13		0.52	0.52		0.40	0.38	
v/c Ratio	0.32	0.36	0.45	0.71	0.10		0.29	0.78		0.11	0.62	
Control Delay	34.9	42.1	0.9	43.0	20.2		11.9	21.9		16.2	20.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	34.9	42.1	0.9	43.0	20.2		11.9	21.9		16.2	20.5	
LOS	C	D	A	D	C		B	C		B	C	
Approach Delay		8.9			41.1			19.7			20.4	
Approach LOS		A			D			B			C	
Queue Length 50th (ft)	40	31	0	113	4		23	234		7	161	
Queue Length 95th (ft)	#164	80	0	#260	25		46	#472		25	223	
Internal Link Dist (ft)		1353			2022			900			2338	
Turn Bay Length (ft)	250		300	250			250			250		
Base Capacity (vph)	411	217	1599	448	412		1391	1146		267	1477	
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	0.32	0.32	0.45	0.58	0.06		0.14	0.63		0.11	0.54	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 72.7

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 18.6

Intersection LOS: B

Intersection Capacity Utilization 71.3%

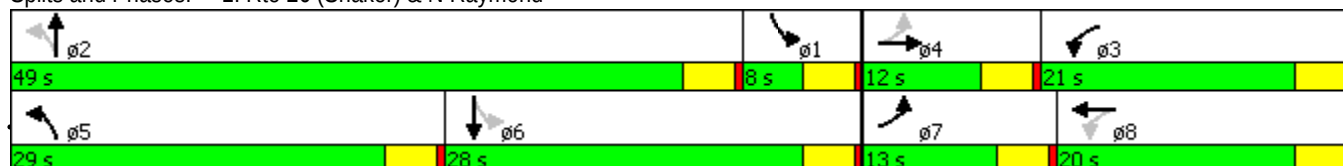
ICU Level of Service C

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Rte 26 (Shaker) & N Raymond



Gray route 26 Corridor

2035 Scenario 4
AM Peak

Weymouth/North Raymond
Realigned Intersection

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	68	14	305	275	38	10	664	804	268	9	105	103
Satd. Flow (prot)	1736	1611	0	1770	1803	0	3467	1766	0	1770	3229	0
Flt Permitted	0.723			0.412			0.950			0.113		
Satd. Flow (perm)	1321	1611	0	767	1803	0	3467	1766	0	210	3229	0
Satd. Flow (RTOR)		324			11			32			110	
Lane Group Flow (vph)	72	339	0	299	52	0	706	1146	0	10	222	0
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8						6		
Total Split (s)	15.0	8.0		20.0	13.0		26.0	56.0		6.0	36.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Act Effect Green (s)	14.8	4.0		21.6	11.7		20.8	55.7		34.1	32.1	
Actuated g/C Ratio	0.17	0.05		0.25	0.13		0.24	0.63		0.39	0.36	
v/c Ratio	0.26	0.89		0.83	0.21		0.86	1.02		0.09	0.18	
Control Delay	28.5	32.6		51.0	33.0		44.6	49.0		10.9	10.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	28.5	32.6		51.0	33.0		44.6	49.0		10.9	10.5	
LOS	C	C		D	C		D	D		B	B	
Approach Delay		31.9			48.3			47.3			10.5	
Approach LOS		C			D			D			B	
Queue Length 50th (ft)	31	8		150	21		196	570		2	22	
Queue Length 95th (ft)	66	#153		#244	57		#283	#993		7	46	
Internal Link Dist (ft)		806			2057			936			2338	
Turn Bay Length (ft)	250			250			250			250		
Base Capacity (vph)	315	382		370	260		867	1128		116	1244	
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	0.23	0.89		0.81	0.20		0.81	1.02		0.09	0.18	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 88.1

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 42.2

Intersection LOS: D

Intersection Capacity Utilization 110.1%

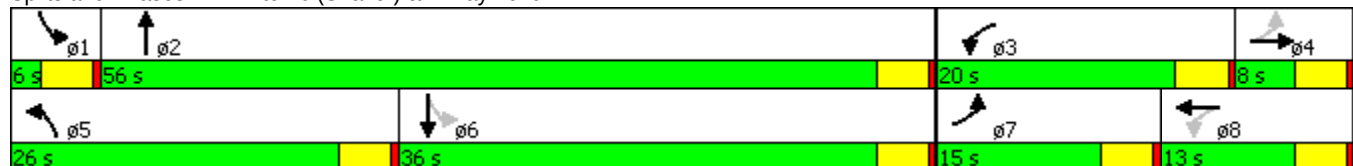
ICU Level of Service H

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Rte 26 (Shaker) & N Raymond



2035 Scenario 5
AM Peak

Weymouth/North Raymond
Realigned Intersection

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	69	15	243	156	49	11	0	713	149	56	366	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		250	250		0	250		0	250		0
Storage Lanes	1		1	1		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1736	1827	1599	1770	1811	0	0	1789	0	1770	1785	0
Flt Permitted	0.950			0.620						0.950		
Satd. Flow (perm)	1736	1827	1599	1155	1811	0	0	1789	0	1770	1785	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			259		11			17			4	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1257			2102			1204			2418	
Travel Time (s)		28.6			47.8			27.4			55.0	
Lane Group Flow (vph)	73	16	259	170	65	0	0	921	0	61	405	0
Turn Type	Prot	NA	Perm	pm+pt	NA			NA		Prot	NA	
Protected Phases	7	4		3	8			2		1	6	
Permitted Phases			4	8								
Total Split (s)	13.0	20.0	20.0	13.0	20.0			49.0		8.0	57.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	
Act Effect Green (s)	8.1	8.5	8.5	18.4	11.2			50.7		8.1	60.7	
Actuated g/C Ratio	0.09	0.09	0.09	0.20	0.12			0.56		0.09	0.67	
v/c Ratio	0.47	0.09	0.67	0.57	0.28			0.91		0.39	0.34	
Control Delay	48.8	36.1	14.2	36.7	34.5			34.3		46.5	7.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0		0.0	0.0	
Total Delay	48.8	36.1	14.2	36.7	34.5			34.3		46.5	7.6	
LOS	D	D	B	D	C			C		D	A	
Approach Delay		22.5			36.1			34.3			12.7	
Approach LOS		C			D			C			B	
Queue Length 50th (ft)	40	9	0	82	29			471		33	83	
Queue Length 95th (ft)	83	26	66	129	64			#791		#81	159	
Internal Link Dist (ft)		1177			2022			1124			2338	
Turn Bay Length (ft)	250		250	250						250		
Base Capacity (vph)	173	324	497	297	338			1014		158	1204	
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	0.05	0.52	0.57	0.19			0.91		0.39	0.34	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 27.3

Intersection LOS: C

Intersection Capacity Utilization 68.6%

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.

Splits and Phases: 1: Rte 26 (Shaker) & N Raymond

																				
8 s		49 s																		
																				
57 s																				

2035 Background Volumes
PM Peak

Weymouth-North Raymond
Realigned Intersection

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	63	12	219	129	35	5	568	699	123	9	353	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		150	250		0	250		250	250		250
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1736	1863	1599	1770	1831	0	1787	1790	0	1770	1753	0
Flt Permitted	0.950			0.950			0.204			0.239		
Satd. Flow (perm)	1736	1863	1599	1770	1831	0	384	1790	0	445	1753	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			233		5			8			11	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2360			2137			870			2418	
Travel Time (s)		53.6			48.6			19.8			55.0	
Lane Group Flow (vph)	67	13	233	140	43	0	604	878	0	10	478	0
Turn Type	Prot	NA	Perm	Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4				2			6		
Total Split (s)	32.0	25.0	25.0	32.0	25.0		28.0	47.0		16.0	35.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Act Effect Green (s)	11.6	7.6	7.6	12.5	12.9		59.3	57.4		36.9	31.2	
Actuated g/C Ratio	0.13	0.08	0.08	0.14	0.14		0.65	0.63		0.40	0.34	
v/c Ratio	0.31	0.08	0.67	0.58	0.16		0.98	0.78		0.04	0.79	
Control Delay	42.3	40.5	16.0	47.3	34.4		51.8	21.4		10.8	39.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	42.3	40.5	16.0	47.3	34.4		51.8	21.4		10.8	39.2	
LOS	D	D	B	D	C		D	C		B	D	
Approach Delay		22.7			44.3			33.8			38.6	
Approach LOS		C			D			C			D	
Queue Length 50th (ft)	36	7	0	75	20		236	290		2	233	
Queue Length 95th (ft)	83	25	69	144	52		#576	#853		10	#479	
Internal Link Dist (ft)		2280			2057			790			2338	
Turn Bay Length (ft)	250		150	250			250			250		
Base Capacity (vph)	533	429	548	544	426		618	1126		384	604	
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	0.13	0.03	0.43	0.26	0.10		0.98	0.78		0.03	0.79	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 91.5

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 34.1

Intersection LOS: C

Intersection Capacity Utilization 79.7%

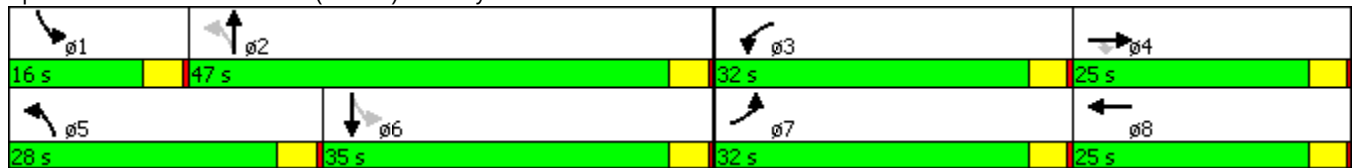
ICU Level of Service D

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Rte 26 (Shaker) & N Raymond



Scenario 3
PM Peak

Weymouth/North Raymond
Realigned Intersection

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	75	219	369	56	39	0	747	384	56	464	143
Satd. Flow (prot)	1827	1827	1599	1770	1749	0	3650	1827	1583	1770	3323	0
Flt Permitted				0.498						0.085		
Satd. Flow (perm)	1827	1827	1599	928	1749	0	3650	1827	1583	158	3323	0
Satd. Flow (RTOR)			233		40				417		66	
Lane Group Flow (vph)	0	80	233	401	103	0	0	795	417	61	646	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA	pm+ov	pm+pt	NA	
Protected Phases	7	4		3	8			2	3	1	6	
Permitted Phases	4		4	8			2		2	6		
Total Split (s)	8.0	20.0	20.0	20.0	32.0		42.0	42.0	20.0	8.0	50.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Act Effect Green (s)		9.6	9.6	29.6	29.6			44.0	64.0	52.4	52.4	
Actuated g/C Ratio		0.11	0.11	0.33	0.33			0.49	0.71	0.58	0.58	
v/c Ratio		0.41	0.62	0.88	0.17			0.89	0.33	0.30	0.33	
Control Delay		42.9	12.6	48.6	13.6			37.4	1.4	12.9	9.6	
Queue Delay		0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay		42.9	12.6	48.6	13.6			37.4	1.4	12.9	9.6	
LOS		D	B	D	B			D	A	B	A	
Approach Delay		20.4			41.5			25.0			9.9	
Approach LOS		C			D			C			A	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

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

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 23.6

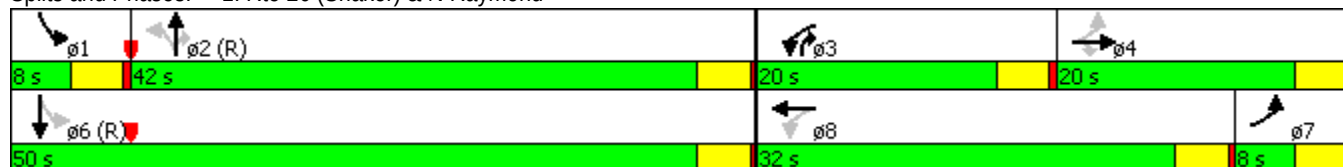
Intersection LOS: C

Intersection Capacity Utilization 79.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: Rte 26 (Shaker) & N Raymond



2035 Scenario 4
PM Peak

Weymouth/North Raymond
Realigned Intersection

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	68	14	305	275	38	10	664	804	268	9	105	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		250	250		0	250		250	250		250
Storage Lanes	1		1	1		0	2		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1736	1863	1599	1770	1803	0	3467	1766	0	1770	3229	0
Flt Permitted	0.723			0.533			0.950			0.084		
Satd. Flow (perm)	1321	1863	1599	993	1803	0	3467	1766	0	156	3229	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			324		8			20			110	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		886			2137			1016			2418	
Travel Time (s)		20.1			48.6			23.1			55.0	
Lane Group Flow (vph)	72	15	324	299	52	0	706	1146	0	10	222	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8						6		
Total Split (s)	29.0	24.0	24.0	26.0	21.0		72.0	82.0		8.0	18.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Act Effect Green (s)	18.2	9.0	9.0	33.3	22.3		31.2	78.5		48.7	44.6	
Actuated g/C Ratio	0.15	0.07	0.07	0.27	0.18		0.26	0.65		0.40	0.37	
v/c Ratio	0.31	0.11	0.78	0.74	0.15		0.79	1.00		0.09	0.18	
Control Delay	37.6	54.4	19.1	50.5	39.7		48.9	48.2		17.1	15.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	37.6	54.4	19.1	50.5	39.7		48.9	48.2		17.1	15.7	
LOS	D	D	B	D	D		D	D		B	B	
Approach Delay		23.6			48.9			48.5			15.7	
Approach LOS		C			D			D			B	
Queue Length 50th (ft)	42	11	0	200	29		261	764		2	28	
Queue Length 95th (ft)	85	34	94	316	72		351	#1472		11	74	
Internal Link Dist (ft)		806			2057			936			2338	
Turn Bay Length (ft)	250		250	250			250			250		
Base Capacity (vph)	442	309	535	414	337		1957	1150		116	1258	
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	0.16	0.05	0.61	0.72	0.15		0.36	1.00		0.09	0.18	

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 121.2

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.00

Intersection Signal Delay: 42.3

Intersection LOS: D

Intersection Capacity Utilization 93.9%

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: 1: Rte 26 (Shaker) & N Raymond

 ø1	 ø2	 ø3	 ø4
8 s	82 s	26 s	24 s
 ø5	 ø6	 ø7	 ø8
72 s	18 s	29 s	21 s

Scenario 5
PM Peak

Weymouth/North Raymond
Realigned Intersection

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	79	39	270	214	65	19	629	700	189	22	378	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		50	250		0	250		0	250		0
Storage Lanes	1		1	1		0	2		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1736	1863	1599	1770	1799	0	3467	1776	0	1770	1752	0
Flt Permitted	0.950			0.513			0.950			0.950		
Satd. Flow (perm)	1736	1863	1599	956	1799	0	3467	1776	0	1770	1752	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			287		13			19			15	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		707			2102			676			2418	
Travel Time (s)		16.1			47.8			15.4			55.0	
Lane Group Flow (vph)	84	42	287	233	92	0	669	950	0	24	517	0
Turn Type	Prot	NA	Perm	pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4	8								
Total Split (s)	20.0	23.0	23.0	17.0	20.0		24.0	52.0		8.0	36.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Act Effect Green (s)	9.6	8.6	8.6	23.4	13.5		19.7	50.8		4.0	30.0	
Actuated g/C Ratio	0.11	0.10	0.10	0.27	0.16		0.23	0.59		0.05	0.35	
v/c Ratio	0.44	0.23	0.69	0.63	0.32		0.85	0.91		0.29	0.84	
Control Delay	44.6	39.6	14.1	34.1	34.5		44.9	31.8		52.3	40.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	44.6	39.6	14.1	34.1	34.5		44.9	31.8		52.3	40.1	
LOS	D	D	B	C	C		D	C		D	D	
Approach Delay		22.9			34.2			37.2			40.6	
Approach LOS		C			C			D			D	
Queue Length 50th (ft)	45	22	0	108	41		185	366		13	249	
Queue Length 95th (ft)	93	53	71	174	90		#316	#886		41	#479	
Internal Link Dist (ft)		627			2022			596			2338	
Turn Bay Length (ft)	250		50	250			250			250		
Base Capacity (vph)	323	411	576	381	359		806	1049		82	661	
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	0.26	0.10	0.50	0.61	0.26		0.83	0.91		0.29	0.78	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 86.6

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 35.5

Intersection LOS: D

Intersection Capacity Utilization 80.2%

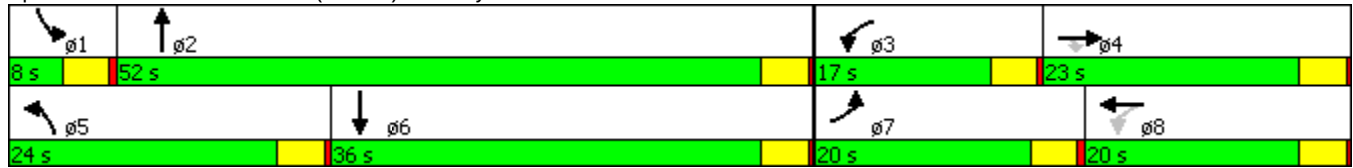
ICU Level of Service D

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Rte 26 (Shaker) & N Raymond



2035 Future Volumes
AM Peak

Northern Intersection
Loop Alternative

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	106	63	0	82	6	0	0	219	128	9	621	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	100		0	0		0	0		0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1807	0	1770	1863	0	0	1639	0	0	1874	0
Flt Permitted		0.805		0.659							0.995	
Satd. Flow (perm)	0	1500	0	1228	1863	0	0	1639	0	0	1866	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)								88			12	
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		421			1817			400			2068	
Travel Time (s)		9.6			41.3			6.8			35.3	
Lane Group Flow (vph)	0	183	0	87	7	0	0	369	0	0	723	0
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8						6		
Total Split (s)	20.0	20.0		20.0	20.0			40.0		40.0	40.0	
Total Lost Time (s)		4.0		4.0	4.0			4.0			4.0	
Act Effect Green (s)		12.1		12.1	12.1			39.9			39.9	
Actuated g/C Ratio		0.20		0.20	0.20			0.66			0.66	
v/c Ratio		0.61		0.35	0.02			0.33			0.58	
Control Delay		29.8		23.4	17.2			4.7			8.5	
Queue Delay		0.0		0.0	0.0			0.0			0.1	
Total Delay		29.8		23.4	17.2			4.7			8.6	
LOS		C		C	B			A			A	
Approach Delay		29.8			23.0			4.7			8.6	
Approach LOS		C			C			A			A	
Queue Length 50th (ft)		60		27	2			34			116	
Queue Length 95th (ft)		107		58	10			82			243	
Internal Link Dist (ft)		341			1737			320			1988	
Turn Bay Length (ft)				100								
Base Capacity (vph)		400		327	496			1119			1244	
Starvation Cap Reductn		0		0	0			0			0	
Spillback Cap Reductn		0		0	0			0			47	
Storage Cap Reductn		0		0	0			0			0	
Reduced v/c Ratio		0.46		0.27	0.01			0.33			0.60	

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 8 (13%), Referenced to phase 2:NBT and 6:SBTL, Start of Red
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.61
 Intersection Signal Delay: 11.4
 Intersection Capacity Utilization 65.4%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service C

Splits and Phases: 5: Rte 26 (Shaker) & Weymouth



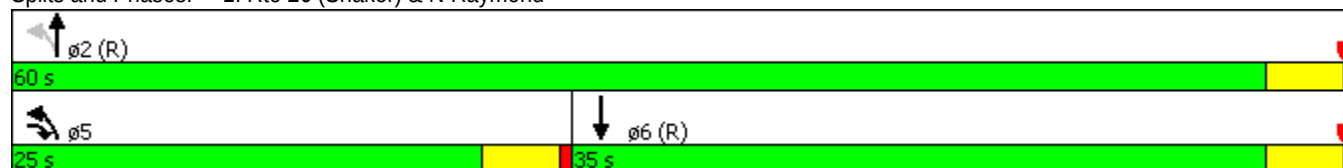
2035 Future Volumes
AM Peak

Southern Intersection
Loop Alternative

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	571	68	347	703	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100	100	300			0
Storage Lanes	0	0	1			0
Taper Length (ft)	25		25			
Satd. Flow (prot)	0	1627	1570	1712	1727	0
Flt Permitted			0.168			
Satd. Flow (perm)	0	1627	278	1712	1727	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		163				
Link Speed (mph)	30			40	40	
Link Distance (ft)	383			6434	400	
Travel Time (s)	8.7			109.7	6.8	
Lane Group Flow (vph)	0	607	72	369	748	0
Turn Type		Over	pm+pt	NA	NA	
Protected Phases		5	5	2	6	
Permitted Phases			2			
Total Split (s)		25.0	25.0	60.0	35.0	
Total Lost Time (s)		4.0	4.0	4.0	4.0	
Act Effect Green (s)		20.2	56.0	60.0	31.8	
Actuated g/C Ratio		0.34	0.93	1.00	0.53	
v/c Ratio		0.93	0.10	0.22	0.82	
Control Delay		37.5	0.4	0.3	18.2	
Queue Delay		0.0	0.0	0.0	0.0	
Total Delay		37.5	0.4	0.3	18.2	
LOS		D	A	A	B	
Approach Delay				0.3	18.2	
Approach LOS				A	B	
Queue Length 50th (ft)		152	0	0	230	
Queue Length 95th (ft)		#343	0	0	#405	
Internal Link Dist (ft)	303			6354	320	
Turn Bay Length (ft)		100	300			
Base Capacity (vph)		678	714	1712	920	
Starvation Cap Reductn		0	0	0	2	
Spillback Cap Reductn		0	0	0	0	
Storage Cap Reductn		0	0	0	0	
Reduced v/c Ratio		0.90	0.10	0.22	0.81	
Intersection Summary						
Area Type:	Other					
Cycle Length: 60						
Actuated Cycle Length: 60						
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Red, Master Intersection						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.93						
Intersection Signal Delay: 20.4				Intersection LOS: C		
Intersection Capacity Utilization 79.0%				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: 1: Rte 26 (Shaker) & N Raymond



Scenario 3 AM Peak

Northerly Intersection Loop Alternative

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	122	65	0	239	7	14	0	347	323	28	682	64
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.902			0.934			0.987	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1736	1827	0	1770	1680	0	0	1722	0	1770	1776	0
Flt Permitted	0.000			0.000						0.179		
Satd. Flow (perm)	0	1827	0	0	1680	0	0	1722	0	333	1776	0
Satd. Flow (RTOR)					15			78			9	
Lane Group Flow (vph)	130	69	0	260	23	0	0	720	0	30	794	0
Turn Type	pm+pt	NA		pm+pt	NA			NA		pm+pt	NA	
Protected Phases	7	4		3	8			2		1	6	
Permitted Phases	4			8						6		
Total Split (s)	12.0	20.0		12.0	20.0			40.0		8.0	48.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Act Effect Green (s)	16.1	8.4		14.5	11.0			43.8		49.7	47.0	
Actuated g/C Ratio	0.20	0.10		0.18	0.14			0.55		0.62	0.59	
v/c Ratio	0.37	0.36		0.81	0.09			0.74		0.10	0.76	
Control Delay	34.6	37.8		53.5	17.4			21.0		10.3	19.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay	34.6	37.8		53.5	17.4			21.0		10.3	19.9	
LOS	C	D		D	B			C		B	B	
Approach Delay		35.7			50.6			21.0			19.6	
Approach LOS		D			D			C			B	
Queue Length 50th (ft)	43	33		119	4			242		6	318	
Queue Length 95th (ft)	#151	69		#269	22			#512		18	#486	
Internal Link Dist (ft)		484			2022			621			2338	
Turn Bay Length (ft)	250			250						250		
Base Capacity (vph)	353	365		320	348			977		289	1057	
Starvation Cap Reductn	0	0		0	0			0		0	0	
Spillback Cap Reductn	0	0		0	0			0		0	0	
Storage Cap Reductn	0	0		0	0			0		0	0	
Reduced v/c Ratio	0.37	0.19		0.81	0.07			0.74		0.10	0.75	

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

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

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 26.0

Intersection LOS: C

Intersection Capacity Utilization 66.3%

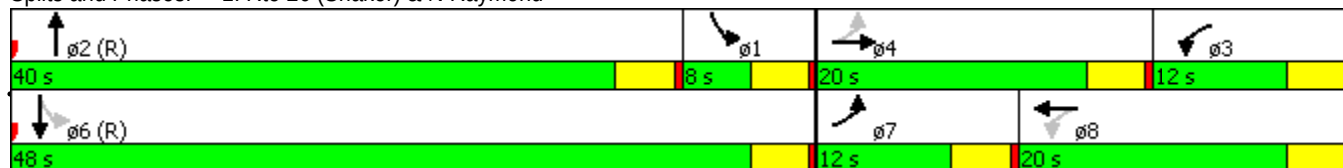
ICU Level of Service C

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Rte 26 (Shaker) & N Raymond



Scenario 3
AM Peak

Southerly Intersection
Loop Alternative

						
Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations			 			
Volume (vph)	184	670	921	0	0	669
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00
Frt						0.865
Flt Protected	0.950					
Satd. Flow (prot)	1770	1863	3539	0	0	1611
Flt Permitted	0.165					
Satd. Flow (perm)	307	1863	3539	0	0	1611
Satd. Flow (RTOR)						21
Lane Group Flow (vph)	200	728	1001	0	0	727
Turn Type	pm+pt	NA	NA			Over
Protected Phases	5	2	6			5
Permitted Phases	2					
Total Split (s)	32.0	55.0	23.0			32.0
Total Lost Time (s)	4.0	4.0	4.0			4.0
Act Effect Green (s)	51.0	55.0	20.2			26.8
Actuated g/C Ratio	0.93	1.00	0.37			0.49
v/c Ratio	0.20	0.39	0.77			0.91
Control Delay	0.9	0.6	21.4			31.4
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	0.9	0.6	21.4			31.4
LOS	A	A	C			C
Approach Delay		0.7	21.4			
Approach LOS		A	C			
Queue Length 50th (ft)	0	0	153			186
Queue Length 95th (ft)	6	0	#249			#398
Internal Link Dist (ft)		389	621		863	
Turn Bay Length (ft)	250					
Base Capacity (vph)	1029	1863	1298			830
Starvation Cap Reductn	0	0	0			0
Spillback Cap Reductn	0	0	0			0
Storage Cap Reductn	0	0	0			0
Reduced v/c Ratio	0.19	0.39	0.77			0.88

Intersection Summary

Cycle Length: 55

Actuated Cycle Length: 55

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

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 16.9

Intersection LOS: B

Intersection Capacity Utilization 73.5%

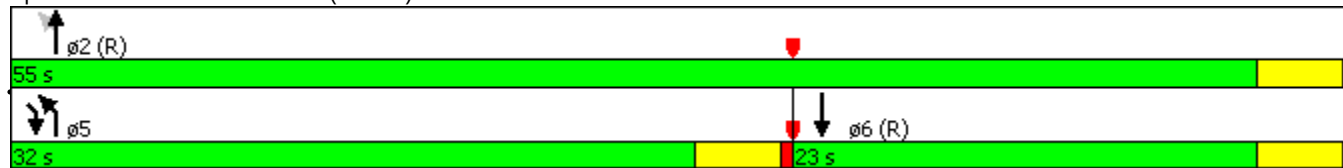
ICU Level of Service D

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 22: Rte 26 (Shaker)



2035 Scenario 4
AM Peak

Northerly Intersection
Loop Alternative

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	109	64	0	146	6	2	0	247	164	12	681	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	250		0	250		250	250		250
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1736	1863	0	1770	1801	0	0	1742	0	1770	1779	0
Flt Permitted	0.950			0.950						0.366		
Satd. Flow (perm)	1736	1863	0	1770	1801	0	0	1742	0	682	1779	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					2			47			7	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		555			2137			484			2418	
Travel Time (s)		12.6			48.6			11.0			55.0	
Lane Group Flow (vph)	116	70	0	159	9	0	0	441	0	13	784	0
Turn Type	Prot	NA		Prot	NA			NA		pm+pt	NA	
Protected Phases	7	4		3	8			2		1	6	
Permitted Phases										6		
Total Split (s)	20.0	22.0		18.0	20.0			32.0		8.0	40.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Act Effect Green (s)	19.1	8.4		11.7	7.2			47.7		49.8	49.8	
Actuated g/C Ratio	0.24	0.10		0.15	0.09			0.60		0.62	0.62	
v/c Ratio	0.28	0.36		0.61	0.06			0.42		0.03	0.71	
Control Delay	26.0	37.6		42.2	29.9			11.9		8.4	17.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay	26.0	37.6		42.2	29.9			11.9		8.4	17.2	
LOS	C	D		D	C			B		A	B	
Approach Delay		30.4			41.5			11.9			17.0	
Approach LOS		C			D			B			B	
Queue Length 50th (ft)	43	33		75	3			96		2	258	
Queue Length 95th (ft)	99	69		132	16			246		11	#536	
Internal Link Dist (ft)		475			2057			404			2338	
Turn Bay Length (ft)	250			250						250		
Base Capacity (vph)	460	419		309	361			1057		503	1109	
Starvation Cap Reductn	0	0		0	0			0		0	0	
Spillback Cap Reductn	0	0		0	0			0		0	0	
Storage Cap Reductn	0	0		0	0			0		0	0	
Reduced v/c Ratio	0.25	0.17		0.51	0.02			0.42		0.03	0.71	

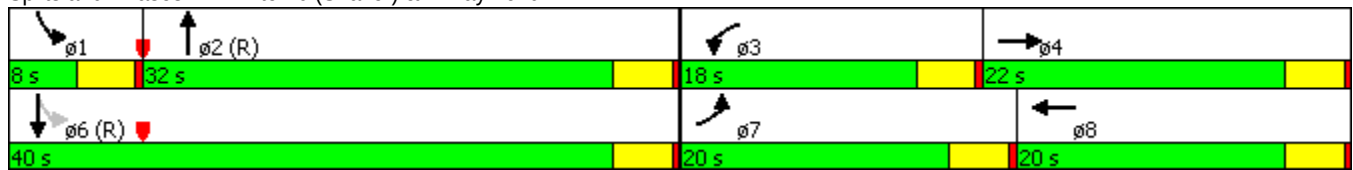
Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 8 (10%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.71
 Intersection Signal Delay: 19.7
 Intersection Capacity Utilization 60.7%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service B

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

Splits and Phases: 1: Rte 26 (Shaker) & N Raymond



2035 Scenario 4
AM Peak

Northerly Intersection
Loop Alternative

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	13	0	6	16	0	20	15	480	29	31	1397	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	250		250	250		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1722	0	0	1685	0	0	1846	0	0	1855	0
Flt Permitted		0.968			0.979			0.999			0.999	
Satd. Flow (perm)	0	1722	0	0	1685	0	0	1846	0	0	1855	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1366			1563			1971			2005	
Travel Time (s)		31.0			35.5			44.8			45.6	
Lane Group Flow (vph)	0	21	0	0	39	0	0	570	0	0	1584	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 98.9% ICU Level of Service F

Analysis Period (min) 15

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	2	4	19	17	7	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1668	0	0	1814	1652	0
Flt Permitted	0.984			0.974		
Satd. Flow (perm)	1668	0	0	1814	1652	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	5544			1482	1366	
Travel Time (s)	126.0			33.7	31.0	
Lane Group Flow (vph)	6	0	0	39	48	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	18.6%			ICU Level of Service A		
Analysis Period (min)	15					

2035 Scenario 4
AM Peak

Northerly Intersection
Loop Alternative

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	11	253	29	27	21	314	549	68	35	1278	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	250		0	300		0	300		300
Storage Lanes	1		0	1		0	1		1	1		2
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1805	1626	0	1805	1776	0	1805	1827	1615	1805	3406	1615
Flt Permitted	0.687			0.494			0.077			0.428		
Satd. Flow (perm)	1305	1626	0	939	1776	0	146	1827	1615	813	3406	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		288			24				77			205
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2086			456			1153			954	
Travel Time (s)		47.4			10.4			26.2			21.7	
Lane Group Flow (vph)	74	300	0	33	55	0	357	624	77	40	1452	205
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Total Split (s)	10.0	20.0		20.0	30.0		20.0	62.0	20.0	8.0	50.0	10.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Act Effect Green (s)	13.2	8.5		15.0	9.4		66.5	61.9	72.8	50.4	46.3	56.4
Actuated g/C Ratio	0.14	0.09		0.16	0.10		0.72	0.67	0.79	0.55	0.50	0.61
v/c Ratio	0.34	0.73		0.15	0.27		0.90	0.51	0.06	0.08	0.85	0.19
Control Delay	34.5	16.9		30.6	27.6		53.0	11.6	1.3	7.0	27.1	2.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.5	16.9		30.6	27.6		53.0	11.6	1.3	7.0	27.1	2.0
LOS	C	B		C	C		D	B	A	A	C	A
Approach Delay		20.4			28.7			24.8			23.6	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	36	7		16	17		150	178	0	5	361	0
Queue Length 95th (ft)	71	78		39	50		#363	351	12	20	#604	30
Internal Link Dist (ft)		2006			376			1073			874	
Turn Bay Length (ft)	250			250			300			300		300
Base Capacity (vph)	220	522		352	523		396	1231	1428	489	1718	1071
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	0.34	0.57		0.09	0.11		0.90	0.51	0.05	0.08	0.85	0.19

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 91.8

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 23.8

Intersection LOS: C

Intersection Capacity Utilization 85.6%

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: 7: Rte 26 (Shaker) & Libby Hill/Hannafor



2035 Scenario 4
AM Peak

Northerly Intersection
Loop Alternative

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	5	3	485	0	446	18	663	920	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		250	200		0	240		0
Storage Lanes	0		0	0		2	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1900	0	0	1843	2787	1900	1836	0	3433	1792	0
Flt Permitted					0.876					0.950		
Satd. Flow (perm)	0	1900	0	0	1664	2787	1900	1836	0	3433	1792	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						527		4				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1486			752			2081			347	
Travel Time (s)		33.8			17.1			47.3			7.9	
Lane Group Flow (vph)	0	0	0	0	8	527	0	505	0	721	1000	0
Turn Type	Perm			Perm	NA	Perm	Perm	NA		Prot	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8		8	2					
Total Split (s)	20.0	20.0		20.0	20.0	20.0	23.0	23.0		17.0	40.0	
Total Lost Time (s)		4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Act Effct Green (s)					8.0	8.0		19.1		13.1	36.2	
Actuated g/C Ratio					0.15	0.15		0.37		0.25	0.69	
v/c Ratio					0.03	0.60		0.75		0.84	0.81	
Control Delay					18.0	5.5		24.9		31.1	14.3	
Queue Delay					0.0	0.0		0.0		0.0	0.0	
Total Delay					18.0	5.5		24.9		31.1	14.3	
LOS					B	A		C		C	B	
Approach Delay					5.6			24.9			21.3	
Approach LOS					A			C			C	
Queue Length 50th (ft)					2	0		123		103	137	
Queue Length 95th (ft)					11	35		#311		#221	#531	
Internal Link Dist (ft)		1406			672			2001			267	
Turn Bay Length (ft)						250				240		
Base Capacity (vph)					512	1222		673		858	1241	
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					0.02	0.43		0.75		0.84	0.81	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 52.2

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 18.9

Intersection LOS: B

Intersection Capacity Utilization 65.1%

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: 10: Rte 26A & Gravel Drive/Rte 26 (Shaker)



2035 Scenario 4
AM Peak

Northerly Intersection
Loop Alternative

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	0	47	27	0	7	28	662	32	22	1354	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	250		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1637	0	0	1740	0	0	1848	0	0	1859	0
Flt Permitted		0.993			0.962			0.998			0.999	
Satd. Flow (perm)	0	1637	0	0	1740	0	0	1848	0	0	1859	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1128			1862			1279			1971	
Travel Time (s)		25.6			42.3			29.1			44.8	
Lane Group Flow (vph)	0	60	0	0	37	0	0	785	0	0	1504	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

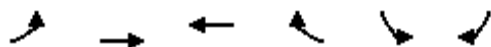
Control Type: Unsignalized

Intersection Capacity Utilization 94.0% ICU Level of Service F

Analysis Period (min) 15

						
Lane Group	WBL	WBR	SEL	SER	NEL	NER
Lane Configurations						
Volume (vph)	3	155	802	3	56	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1613	0	1775	0	1770	0
Flt Permitted	0.999		0.953		0.950	
Satd. Flow (perm)	1613	0	1775	0	1770	0
Link Speed (mph)	30		30		30	
Link Distance (ft)	1707		1792		5544	
Travel Time (s)	38.8		40.7		126.0	
Lane Group Flow (vph)	171	0	875	0	61	0
Sign Control	Free		Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	67.7%			ICU Level of Service C		
Analysis Period (min)	15					

						
Lane Group	WBL	WBR	SEL	SER	NEL	NER
Lane Configurations						
Volume (vph)	0	35	3	8	1	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1611	0	1655	0	1613	0
Flt Permitted			0.988		0.999	
Satd. Flow (perm)	1611	0	1655	0	1613	0
Link Speed (mph)	30		30		30	
Link Distance (ft)	1128		1482		1697	
Travel Time (s)	25.6		33.7		38.6	
Lane Group Flow (vph)	38	0	12	0	58	0
Sign Control	Free		Stop		Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	20.0%			ICU Level of Service A		
Analysis Period (min)	15					



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	329	468	53	0	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1863	1837	0	1611	0
Flt Permitted						
Satd. Flow (perm)	0	1863	1837	0	1611	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		332	2086		1697	
Travel Time (s)		7.5	47.4		38.6	
Lane Group Flow (vph)	0	358	567	0	9	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 37.8% ICU Level of Service A

Analysis Period (min) 15

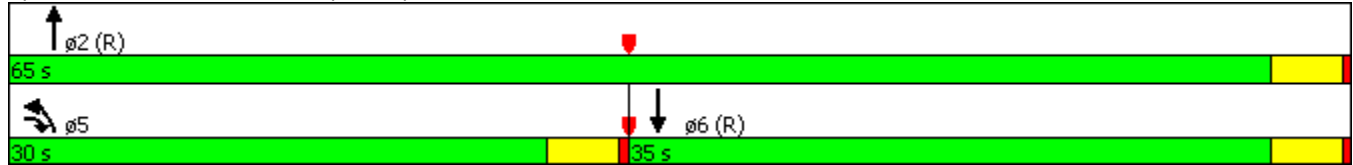
2035 Scenario 4
AM Peak

Northerly Intersection
Loop Alternative

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	629	96	411	827	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	250			0
Storage Lanes	0	1	1			0
Taper Length (ft)	25		25			
Satd. Flow (prot)	0	1611	1770	1863	1863	0
Flt Permitted			0.950			
Satd. Flow (perm)	0	1611	1770	1863	1863	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		89				
Link Speed (mph)	30			30	30	
Link Distance (ft)	894			2005	484	
Travel Time (s)	20.3			45.6	11.0	
Lane Group Flow (vph)	0	684	104	447	899	0
Turn Type		Over	Prot	NA	NA	
Protected Phases		5	5	2	6	
Permitted Phases						
Total Split (s)		30.0	30.0	65.0	35.0	
Total Lost Time (s)		4.0	4.0	4.0	4.0	
Act Effect Green (s)		26.0	26.0	65.0	31.0	
Actuated g/C Ratio		0.40	0.40	1.00	0.48	
v/c Ratio		0.98	0.15	0.24	1.01	
Control Delay		49.8	13.2	0.3	53.4	
Queue Delay		0.0	0.0	0.0	0.3	
Total Delay		49.8	13.2	0.3	53.7	
LOS		D	B	A	D	
Approach Delay				2.7	53.7	
Approach LOS				A	D	
Queue Length 50th (ft)		231	25	0	~346	
Queue Length 95th (ft)		#452	53	0	#589	
Internal Link Dist (ft)	814			1925	404	
Turn Bay Length (ft)			250			
Base Capacity (vph)		697	708	1863	888	
Starvation Cap Reductn		0	0	0	1	
Spillback Cap Reductn		0	0	0	0	
Storage Cap Reductn		0	0	0	0	
Reduced v/c Ratio		0.98	0.15	0.24	1.01	
Intersection Summary						
Area Type:	Other					
Cycle Length: 65						
Actuated Cycle Length: 65						
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 1.01						
Intersection Signal Delay: 39.3				Intersection LOS: D		
Intersection Capacity Utilization 89.1%				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.
Queue shown is maximum after two cycles.

Splits and Phases: 21: Rte 26 (Shaker)



						
Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Volume (vph)	173	629	0	62	96	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1665	0	0	1863	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	1665	0	0	1863	1770	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	1707			555	894	
Travel Time (s)	38.8			12.6	20.3	
Lane Group Flow (vph)	872	0	0	67	104	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	59.8%			ICU Level of Service B		
Analysis Period (min)	15					

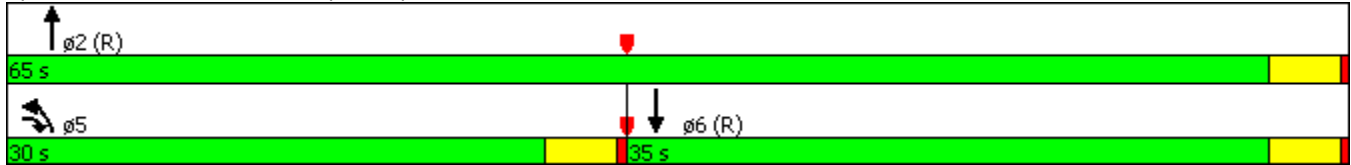
2035 Scenario 4
AM Peak

Southerly Intersection
Loop Alternative

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	629	96	411	827	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	250			0
Storage Lanes	0	1	1			0
Taper Length (ft)	25		25			
Satd. Flow (prot)	0	1611	1770	1863	1863	0
Flt Permitted			0.950			
Satd. Flow (perm)	0	1611	1770	1863	1863	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		89				
Link Speed (mph)	30			30	30	
Link Distance (ft)	894			2005	484	
Travel Time (s)	20.3			45.6	11.0	
Lane Group Flow (vph)	0	684	104	447	899	0
Turn Type		Over	Prot	NA	NA	
Protected Phases		5	5	2	6	
Permitted Phases						
Total Split (s)		30.0	30.0	65.0	35.0	
Total Lost Time (s)		4.0	4.0	4.0	4.0	
Act Effect Green (s)		26.0	26.0	65.0	31.0	
Actuated g/C Ratio		0.40	0.40	1.00	0.48	
v/c Ratio		0.98	0.15	0.24	1.01	
Control Delay		49.8	13.2	0.3	53.4	
Queue Delay		0.0	0.0	0.0	0.3	
Total Delay		49.8	13.2	0.3	53.7	
LOS		D	B	A	D	
Approach Delay				2.7	53.7	
Approach LOS				A	D	
Queue Length 50th (ft)		231	25	0	~346	
Queue Length 95th (ft)		#452	53	0	#589	
Internal Link Dist (ft)	814			1925	404	
Turn Bay Length (ft)			250			
Base Capacity (vph)		697	708	1863	888	
Starvation Cap Reductn		0	0	0	1	
Spillback Cap Reductn		0	0	0	0	
Storage Cap Reductn		0	0	0	0	
Reduced v/c Ratio		0.98	0.15	0.24	1.01	
Intersection Summary						
Area Type:	Other					
Cycle Length: 65						
Actuated Cycle Length: 65						
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 1.01						
Intersection Signal Delay: 39.3				Intersection LOS: D		
Intersection Capacity Utilization 89.1%				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.
Queue shown is maximum after two cycles.

Splits and Phases: 21: Rte 26 (Shaker)



2035 Scenario 5
AM Peak

Northerly Intersection
Loop Alternative

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	69	15	0	156	49	11	0	713	149	56	366	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		250	250		0	250		0	250		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1736	1827	0	1770	1811	0	1881	1785	0	1770	1785	0
Flt Permitted	0.950			0.645						0.950		
Satd. Flow (perm)	1736	1827	0	1201	1811	0	1881	1785	0	1770	1785	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					11			16				4
Link Speed (mph)		30			30			30				30
Link Distance (ft)		1257			2102			591				2418
Travel Time (s)		28.6			47.8			13.4				55.0
Lane Group Flow (vph)	73	16	0	170	65	0	0	921	0	61	405	0
Turn Type	Prot	NA		pm+pt	NA		Perm	NA		Prot	NA	
Protected Phases	7	4		3	8			2		1	6	
Permitted Phases				8			2					
Total Split (s)	15.0	20.0		15.0	20.0		47.0	47.0		8.0	55.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Act Effect Green (s)	8.8	7.1		18.9	8.8			51.8		8.6	62.3	
Actuated g/C Ratio	0.10	0.08		0.21	0.10			0.58		0.10	0.69	
v/c Ratio	0.43	0.11		0.48	0.35			0.89		0.36	0.33	
Control Delay	45.6	38.9		33.5	37.6			33.1		44.1	7.3	
Queue Delay	0.0	0.0		0.0	0.0			2.7		0.0	0.0	
Total Delay	45.6	38.9		33.5	37.6			35.7		44.1	7.3	
LOS	D	D		C	D			D		D	A	
Approach Delay		44.4			34.6			35.7			12.1	
Approach LOS		D			C			D			B	
Queue Length 50th (ft)	40	9		82	29			475		33	83	
Queue Length 95th (ft)	81	27		131	67			#817		72	156	
Internal Link Dist (ft)		1177			2022			511			2338	
Turn Bay Length (ft)	250			250						250		
Base Capacity (vph)	212	324		366	331			1034		169	1237	
Starvation Cap Reductn	0	0		0	0			51		0	0	
Spillback Cap Reductn	0	0		0	0			0		0	0	
Storage Cap Reductn	0	0		0	0			0		0	0	
Reduced v/c Ratio	0.34	0.05		0.46	0.20			0.94		0.36	0.33	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

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

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 29.6

Intersection LOS: C

Intersection Capacity Utilization 68.6%

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.

Splits and Phases: 1: Rte 26 (Shaker) & N Raymond

 ø1	 ø2 (R)	 ø3	 ø4
8 s	47 s	15 s	20 s
 ø6 (R)		 ø7	 ø8
55 s		15 s	20 s

2035 Scenario 5
AM Peak

Southerly Intersection
Loop Alternative

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	309	589	862	522	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	250			0
Storage Lanes	0	1	1			0
Taper Length (ft)	25		25			
Satd. Flow (prot)	0	1611	1770	1863	3539	0
Flt Permitted			0.439			
Satd. Flow (perm)	0	1611	818	1863	3539	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		428				
Link Speed (mph)	30			30	30	
Link Distance (ft)	1571			2086	591	
Travel Time (s)	35.7			47.4	13.4	
Lane Group Flow (vph)	0	336	640	937	567	0
Turn Type		custom	Perm	NA	NA	
Protected Phases				2	6	
Permitted Phases		4	2			
Total Split (s)		20.0	90.0	90.0	90.0	
Total Lost Time (s)		4.0	4.0	4.0	4.0	
Act Effect Green (s)		6.3	95.7	95.7	95.7	
Actuated g/C Ratio		0.06	0.87	0.87	0.87	
v/c Ratio		0.68	0.90	0.58	0.18	
Control Delay		8.5	24.0	3.6	1.3	
Queue Delay		0.0	0.0	0.0	0.0	
Total Delay		8.5	24.0	3.6	1.3	
LOS		A	C	A	A	
Approach Delay				11.9	1.3	
Approach LOS				B	A	
Queue Length 50th (ft)		0	154	99	18	
Queue Length 95th (ft)		20	#656	213	36	
Internal Link Dist (ft)	1491			2006	511	
Turn Bay Length (ft)			250			
Base Capacity (vph)		600	711	1621	3080	
Starvation Cap Reductn		0	0	0	0	
Spillback Cap Reductn		0	0	0	0	
Storage Cap Reductn		0	0	0	0	
Reduced v/c Ratio		0.56	0.90	0.58	0.18	

Intersection Summary

Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 9.0	Intersection LOS: A
Intersection Capacity Utilization 53.7%	ICU Level of Service A
Analysis Period (min) 15	

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

Splits and Phases: 20: Rte 26 (Shaker)

 ø2 (R) 90 s	 ø4 20 s
 ø6 (R) 90 s	

2035 Future Volumes
PM Peak

Northerly Intersection
Loop Alternative

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗	↖	↗	↗	
Volume (vph)	0	219	568	822	482	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50	50	300			0
Storage Lanes	0	0	1			0
Taper Length (ft)	25		25			
Satd. Flow (prot)	0	1627	1787	1827	1792	0
Flt Permitted			0.400			
Satd. Flow (perm)	0	1627	752	1827	1792	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		300				
Link Speed (mph)	30			40	40	
Link Distance (ft)	397			6434	400	
Travel Time (s)	9.0			109.7	6.8	
Lane Group Flow (vph)	0	233	604	874	513	0
Turn Type		Over	pm+pt	NA	NA	
Protected Phases		5	5	2	6	
Permitted Phases			2			
Total Split (s)		25.0	25.0	60.0	35.0	
Total Lost Time (s)		4.0	4.0	4.0	4.0	
Act Effect Green (s)		10.0	56.0	60.0	42.0	
Actuated g/C Ratio		0.17	0.93	1.00	0.70	
v/c Ratio		0.45	0.69	0.48	0.41	
Control Delay		3.8	5.2	0.9	5.0	
Queue Delay		0.0	0.0	0.1	0.2	
Total Delay		3.8	5.2	1.0	5.2	
LOS		A	A	A	A	
Approach Delay				2.7	5.2	
Approach LOS				A	A	
Queue Length 50th (ft)		0	0	0	29	
Queue Length 95th (ft)		21	18	0	119	
Internal Link Dist (ft)	317			6354	320	
Turn Bay Length (ft)		50	300			
Base Capacity (vph)		764	1064	1827	1254	
Starvation Cap Reductn		0	0	0	217	
Spillback Cap Reductn		0	0	122	0	
Storage Cap Reductn		0	0	0	0	
Reduced v/c Ratio		0.30	0.57	0.51	0.49	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 60

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Red, Master Intersection

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 3.4

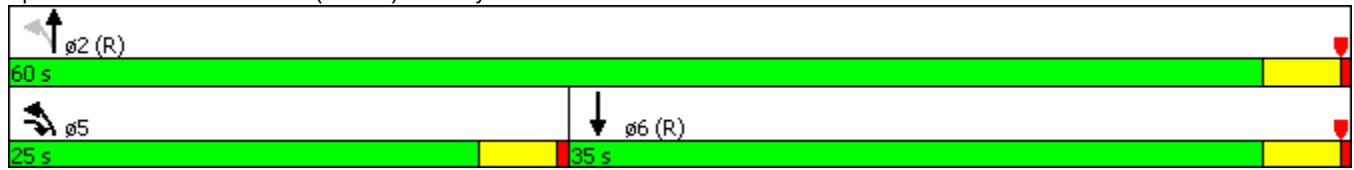
Intersection Capacity Utilization 63.5%

Analysis Period (min) 15

Intersection LOS: A

ICU Level of Service B

Splits and Phases: 1: Rte 26 (Shaker) & N Raymond



2035 Future Volumes
PM Peak

Northerly Intersection
Loop Alternative

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	63	12	0	129	35	5	0	699	123	9	353	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	100		50	0		100	0		100
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1788	0	1787	1830	0	0	1784	0	0	1835	0
Flt Permitted		0.730		0.772							0.984	
Satd. Flow (perm)	0	1360	0	1452	1830	0	0	1784	0	0	1807	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					6			26			39	
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		429			1817			400			2068	
Travel Time (s)		9.8			41.3			6.8			35.3	
Lane Group Flow (vph)	0	81	0	143	44	0	0	914	0	0	506	0
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8						6		
Total Split (s)	20.0	20.0		20.0	20.0			40.0		40.0	40.0	
Total Lost Time (s)		4.0		4.0	4.0			4.0			4.0	
Act Effect Green (s)		11.1		11.2	11.2			43.6			43.6	
Actuated g/C Ratio		0.18		0.19	0.19			0.73			0.73	
v/c Ratio		0.32		0.53	0.13			0.70			0.38	
Control Delay		23.2		28.2	17.3			11.3			5.4	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		23.2		28.2	17.3			11.3			5.4	
LOS		C		C	B			B			A	
Approach Delay		23.2			25.6			11.3			5.4	
Approach LOS		C			C			B			A	
Queue Length 50th (ft)		26		47	12			166			58	
Queue Length 95th (ft)		53		86	31			#487			137	
Internal Link Dist (ft)		349			1737			320			1988	
Turn Bay Length (ft)				100								
Base Capacity (vph)		362		387	492			1304			1325	
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		0.37	0.09			0.70			0.38	

Intersection Summary

Area Type: Other
 Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Red
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.70
 Intersection Signal Delay: 11.7
 Intersection Capacity Utilization 61.7%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service B

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

Splits and Phases: 5: Rte 26 (Shaker) & Weymouth



Scenario 3
PM Peak

Northerly Intersection
Loop Alternative

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	75	0	369	56	39	0	747	384	56	464	143
Satd. Flow (prot)	1827	1827	0	1770	1749	0	0	3313	0	1770	1749	0
Flt Permitted				0.464						0.098		
Satd. Flow (perm)	1827	1827	0	864	1749	0	0	3313	0	183	1749	0
Satd. Flow (RTOR)					42			133			26	
Lane Group Flow (vph)	0	80	0	401	103	0	0	1212	0	61	646	0
Turn Type	pm+pt	NA		pm+pt	NA			NA		pm+pt	NA	
Protected Phases	7	4		3	8			2		1	6	
Permitted Phases	4			8						6		
Total Split (s)	8.0	20.0		19.0	31.0			33.0		8.0	41.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Act Effect Green (s)		8.8		25.9	25.9			39.3		46.1	46.1	
Actuated g/C Ratio		0.11		0.32	0.32			0.49		0.58	0.58	
v/c Ratio		0.40		0.89	0.17			0.72		0.26	0.63	
Control Delay		38.1		46.9	11.5			20.3		11.8	15.8	
Queue Delay		0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay		38.1		46.9	11.5			20.3		11.8	15.8	
LOS		D		D	B			C		B	B	
Approach Delay		38.1			39.7			20.3			15.4	
Approach LOS		D			D			C			B	
Queue Length 50th (ft)		38		166	20			247		13	202	
Queue Length 95th (ft)		76		#283	50			#418		33	352	
Internal Link Dist (ft)		578			2022			461			2338	
Turn Bay Length (ft)				250						250		
Base Capacity (vph)		365		449	648			1694		238	1018	
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		0.22		0.89	0.16			0.72		0.26	0.63	

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

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

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 23.4

Intersection LOS: C

Intersection Capacity Utilization 73.4%

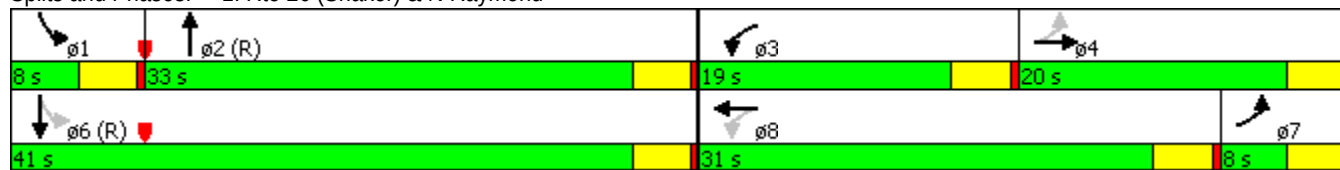
ICU Level of Service D

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Rte 26 (Shaker) & N Raymond



Scenario 3
PM Peak

Southerly Intersection
Loop Alternative

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	219	763	1131	833	0
Satd. Flow (prot)	0	1611	1681	1764	3539	0
Flt Permitted			0.195	0.932		
Satd. Flow (perm)	0	1611	345	1649	3539	0
Satd. Flow (RTOR)		45				
Lane Group Flow (vph)	0	238	746	1312	905	0
Turn Type		Over	pm+pt	NA	NA	
Protected Phases		5	5	2	6	
Permitted Phases			2			
Total Split (s)		30.0	30.0	55.0	25.0	
Total Lost Time (s)		4.0	4.0	4.0	4.0	
Act Effect Green (s)		22.3	51.0	51.0	24.7	
Actuated g/C Ratio		0.41	0.93	0.93	0.45	
v/c Ratio		0.35	0.87	0.83	0.57	
Control Delay		9.5	20.1	7.1	14.2	
Queue Delay		0.0	0.0	0.0	0.0	
Total Delay		9.5	20.1	7.1	14.2	
LOS		A	C	A	B	
Approach Delay				11.8	14.2	
Approach LOS				B	B	
Queue Length 50th (ft)		36	115	0	121	
Queue Length 95th (ft)		73	#328	0	180	
Internal Link Dist (ft)	952			466	461	
Turn Bay Length (ft)			250			
Base Capacity (vph)		785	951	1575	1590	
Starvation Cap Reductn		0	0	0	0	
Spillback Cap Reductn		0	0	0	0	
Storage Cap Reductn		0	0	0	0	
Reduced v/c Ratio		0.30	0.78	0.83	0.57	

Intersection Summary

Cycle Length: 55

Actuated Cycle Length: 55

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

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 12.3

Intersection LOS: B

Intersection Capacity Utilization 89.2%

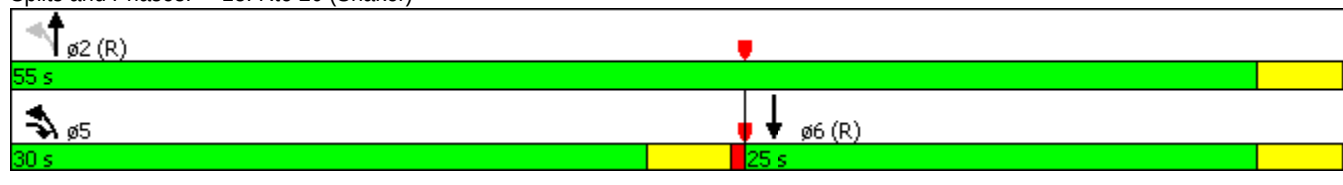
ICU Level of Service E

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 18: Rte 26 (Shaker)



2035 Scenario 4
PM Peak

Northerly Intersection
Loop Alternative

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	68	14	0	275	38	10	0	804	268	9	105	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		250	250		0	250		250	250		250
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1736	1863	0	1770	1803	0	0	1773	0	1770	1700	0
Flt Permitted				0.580						0.061		
Satd. Flow (perm)	1827	1863	0	1080	1803	0	0	1773	0	114	1700	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					11			23			77	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		861			2137			454			2418	
Travel Time (s)		19.6			48.6			10.3			55.0	
Lane Group Flow (vph)	72	15	0	299	52	0	0	1146	0	10	222	0
Turn Type	pm+pt	NA		pm+pt	NA			NA		pm+pt	NA	
Protected Phases	7	4		3	8			2		1	6	
Permitted Phases	4			8						6		
Total Split (s)	22.0	20.0		22.0	20.0			50.0		8.0	58.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Act Effect Green (s)	11.8	6.4		22.6	11.6			67.4		69.4	69.4	
Actuated g/C Ratio	0.12	0.06		0.23	0.12			0.67		0.69	0.69	
v/c Ratio	0.35	0.13		0.81	0.24			0.95		0.06	0.18	
Control Delay	37.4	46.0		52.8	35.6			29.2		7.3	4.7	
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay	37.4	46.0		52.8	35.6			29.2		7.3	4.7	
LOS	D	D		D	D			C		A	A	
Approach Delay		38.8			50.2			29.2			4.8	
Approach LOS		D			D			C			A	
Queue Length 50th (ft)	44	9		182	25			316		2	26	
Queue Length 95th (ft)	68	30		248	59			#1155		8	66	
Internal Link Dist (ft)		781			2057			374			2338	
Turn Bay Length (ft)	250			250						250		
Base Capacity (vph)	366	298		380	297			1202		174	1203	
Starvation Cap Reductn	0	0		0	0			0		0	0	
Spillback Cap Reductn	0	0		0	0			0		0	0	
Storage Cap Reductn	0	0		0	0			0		0	0	
Reduced v/c Ratio	0.20	0.05		0.79	0.18			0.95		0.06	0.18	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

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

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 30.6

Intersection LOS: C

Intersection Capacity Utilization 87.2%

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.

Splits and Phases: 1: Rte 26 (Shaker) & N Raymond

 ø1	 ø2 (R)	 ø3	 ø4
8 s	50 s	22 s	20 s
 ø6 (R)		 ø7	 ø8
58 s		22 s	20 s

Scenario 5
PM Peak

Northerly Intersection
Loop Alternative

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	79	39	0	214	65	19	0	700	189	22	378	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		50	250		0	250		0	250		0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1736	1863	0	1770	1799	0	0	1781	0	1770	1752	0
Flt Permitted	0.950			0.452						0.950		
Satd. Flow (perm)	1736	1863	0	842	1799	0	0	1781	0	1770	1752	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					13			19				23
Link Speed (mph)		30			30			30				30
Link Distance (ft)		739			2102			1090				2418
Travel Time (s)		16.8			47.8			24.8				55.0
Lane Group Flow (vph)	84	42	0	233	92	0	0	950	0	24	517	0
Turn Type	Prot	NA		pm+pt	NA			NA		Prot	NA	
Protected Phases	7	4		3	8			2		1	6	
Permitted Phases				8								
Total Split (s)	20.0	23.0		17.0	20.0			52.0		8.0	60.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Act Effect Green (s)	10.2	9.0		21.4	11.1			64.0		6.8	68.8	
Actuated g/C Ratio	0.10	0.09		0.21	0.11			0.64		0.07	0.69	
v/c Ratio	0.48	0.25		0.75	0.44			0.83		0.20	0.43	
Control Delay	50.6	44.4		48.3	42.1			25.4		47.5	9.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay	50.6	44.4		48.3	42.1			25.4		47.5	9.1	
LOS	D	D		D	D			C		D	A	
Approach Delay		48.6			46.5			25.4			10.8	
Approach LOS		D			D			C			B	
Queue Length 50th (ft)	51	26		129	48			367		15	128	
Queue Length 95th (ft)	96	55		186	95			#930		40	244	
Internal Link Dist (ft)		659			2022			1010			2338	
Turn Bay Length (ft)	250			250						250		
Base Capacity (vph)	277	353		317	298			1147		120	1212	
Starvation Cap Reductn	0	0		0	0			0		0	0	
Spillback Cap Reductn	0	0		0	0			0		0	0	
Storage Cap Reductn	0	0		0	0			0		0	0	
Reduced v/c Ratio	0.30	0.12		0.74	0.31			0.83		0.20	0.43	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 8 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 26.4

Intersection LOS: C

Intersection Capacity Utilization 73.5%

ICU Level of Service D

Analysis Period (min) 15

Scenario 5
PM Peak

Northerly Intersection
Loop Alternative

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

Splits and Phases: 1: Rte 26 (Shaker) & N Raymond



Scenario 5
PM Peak

Northerly Intersection
Loop Alternative

						
Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Volume (vph)	629	889	592	0	0	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300			0	0	0
Storage Lanes	1			0	0	1
Taper Length (ft)	25				25	
Satd. Flow (prot)	1770	1863	1863	0	0	1611
Flt Permitted	0.410					
Satd. Flow (perm)	764	1863	1863	0	0	1611
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						406
Link Speed (mph)		30	30		30	
Link Distance (ft)		1624	1090		1488	
Travel Time (s)		36.9	24.8		33.8	
Lane Group Flow (vph)	684	966	643	0	0	293
Turn Type	Perm	NA	NA			custom
Protected Phases		2	6			
Permitted Phases	2					4
Total Split (s)	130.0	130.0	130.0			20.0
Total Lost Time (s)	4.0	4.0	4.0			4.0
Act Effect Green (s)	136.5	136.5	136.5			5.5
Actuated g/C Ratio	0.91	0.91	0.91			0.04
v/c Ratio	0.98	0.57	0.38			0.65
Control Delay	38.9	2.7	1.6			7.1
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	38.9	2.7	1.6			7.1
LOS	D	A	A			A
Approach Delay		17.7	1.6			
Approach LOS		B	A			
Queue Length 50th (ft)	343	105	52			0
Queue Length 95th (ft)	#230	139	68			0
Internal Link Dist (ft)		1544	1010		1408	
Turn Bay Length (ft)	300					
Base Capacity (vph)	695	1695	1695			534
Starvation Cap Reductn	0	0	0			0
Spillback Cap Reductn	0	0	0			0
Storage Cap Reductn	0	0	0			0
Reduced v/c Ratio	0.98	0.57	0.38			0.55

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

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

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 12.5

Intersection Capacity Utilization 72.7%

Analysis Period (min) 15

Intersection LOS: B

ICU Level of Service C

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

Splits and Phases: 22: Rte 26 (Shaker)

 ø2 (R)	 ø4
130 s	20 s
 ø6 (R)	
130 s	