Appendix J

This Appendix includes:

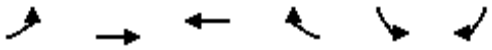
Intersection Levels of Service for the 2040 PM Peak for No Build and Full Build (All Projects) scenarios.

- The data is reported separately, first for signalized intersections, then for unsignalized intersections and lastly for roundabouts.

Data for <u>signalized intersections</u> in the <u>No Build</u> scenario begins on the following page.

The following clarification is provided regarding the absence of any LOS values for unsignalized intersections:

- The "Synchro" modeling software does not generate reports for two-way stop-controlled intersections that include a level of service value. According to Synchro: "Intersection wide delay and level of service is not defined by the HCM (Highway Capacity Manual) for two-way stop-controlled intersections, therefore, it is not shown in the report. The analyst needs to look at the delay and LOS for the individual movements".
- Synchro does however provide an intersection LOS for two-way stop-controlled intersections within the software, which is derived from the delay and LOS for the individual movements.
- The method described in the foregoing bullet has been relied upon to determine the LOS and Delay values presented in the tables that included in the text of the Draft GEIS.
- With respect to the terminology "two-way stop-controlled", this is used interchangeably for a four-legged intersection where two opposing legs are stop controlled and the others operate under free-flow as well as for a three-legged intersection where one leg is stop controlled and the other two legs operate under free-flow.



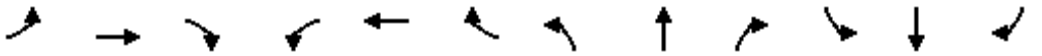
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	497	579	0	891	72
Future Volume (vph)	0	497	579	0	891	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3539	3539	0	3433	1583
Flt Permitted					0.950	
Satd. Flow (perm)	0	3539	3539	0	3433	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						78
Link Speed (mph)		45	45		45	
Link Distance (ft)		1813	468		1544	
Travel Time (s)		27.5	7.1		23.4	
Peak Hour Factor	0.93	0.93	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	534	629	0	968	78
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	534	629	0	968	78
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						6
Total Split (s)		50.0	50.0		40.0	50.0
Total Lost Time (s)		5.5	5.5		5.0	5.5
Act Effct Green (s)		44.5	44.5		35.0	44.5
Actuated g/C Ratio		0.49	0.49		0.39	0.49
v/c Ratio		0.31	0.36		0.73	0.09
Control Delay		14.1	15.3		27.3	3.3
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		14.1	15.3		27.3	3.3
LOS		B	B		C	A
Approach Delay		14.1	15.3		25.5	
Approach LOS		B	B		C	
Stops (vph)		280	395		733	9
Fuel Used(gal)		11	8		23	1
CO Emissions (g/hr)		752	593		1607	62
NOx Emissions (g/hr)		146	115		313	12
VOC Emissions (g/hr)		174	137		372	14
Dilemma Vehicles (#)		28	29		0	0
Queue Length 50th (ft)		90	122		236	0
Queue Length 95th (ft)		125	m137		308	22
Internal Link Dist (ft)		1733	388		1464	
Turn Bay Length (ft)						
Base Capacity (vph)		1749	1749		1335	822
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		0.31	0.36		0.73	0.09

Intersection Summary

Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:EBT, Start of Yellow			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 19.8		Intersection LOS: B	
Intersection Capacity Utilization 102.4%		ICU Level of Service G	
Analysis Period (min) 15			

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

Splits and Phases: 1: Rt 96 #1 & I-490 Exit 28 #1

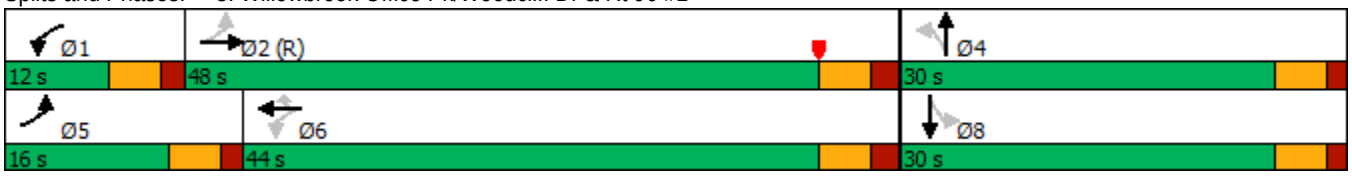


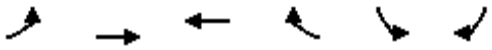
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	182	1188	18	13	882	33	276	16	172	167	7	510
Future Volume (vph)	182	1188	18	13	882	33	276	16	172	167	7	510
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	500		0	500		75	175		0	125		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998				0.850		0.862			0.852	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3532	0	1770	3539	1583	1770	1606	0	1770	1587	0
Flt Permitted	0.173			0.150			0.160			0.527		
Satd. Flow (perm)	322	3532	0	279	3539	1583	298	1606	0	982	1587	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				85		191			214	
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		1164			2246			565			661	
Travel Time (s)		17.6			34.0			15.4			18.0	
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.87	0.87	0.87	0.92	0.92	0.92
Adj. Flow (vph)	196	1277	19	14	959	36	317	18	198	182	8	554
Shared Lane Traffic (%)												
Lane Group Flow (vph)	196	1296	0	14	959	36	317	216	0	182	562	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2			6		6	4			8		
Total Split (s)	16.0	48.0		12.0	44.0	44.0	30.0	30.0		30.0	30.0	
Total Lost Time (s)	5.0	5.5		5.0	5.5	5.5	5.0	5.0		5.0	5.0	
Act Effct Green (s)	54.9	52.2		46.5	40.0	40.0	25.0	25.0		25.0	25.0	
Actuated g/C Ratio	0.61	0.58		0.52	0.44	0.44	0.28	0.28		0.28	0.28	
v/c Ratio	0.56	0.63		0.06	0.61	0.05	3.87	0.37		0.67	0.94	
Control Delay	10.8	9.9		13.9	24.4	5.6	1332.3	7.5		42.8	46.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	10.8	9.9		13.9	24.4	5.6	1332.3	7.5		42.8	46.8	
LOS	B	A		B	C	A	F	A		D	D	
Approach Delay		10.0			23.6			795.4			45.8	
Approach LOS		A			C			F			D	
Stops (vph)	76	948		9	493	5	252	34		145	294	
Fuel Used(gal)	3	23		0	23	1	77	1		3	9	
CO Emissions (g/hr)	190	1630		24	1634	41	5393	92		206	627	
NOx Emissions (g/hr)	37	317		5	318	8	1049	18		40	122	
VOC Emissions (g/hr)	44	378		5	379	9	1250	21		48	145	
Dilemma Vehicles (#)	0	24		0	120	0	0	0		0	0	
Queue Length 50th (ft)	13	213		4	168	0	~292	10		92	207	
Queue Length 95th (ft)	m26	366		m10	268	m7	#439	58		#184	#421	
Internal Link Dist (ft)		1084			2166			485			581	
Turn Bay Length (ft)	500			500		75	175			125		
Base Capacity (vph)	373	2050		263	1571	750	82	584		272	595	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.53	0.63		0.05	0.61	0.05	3.87	0.37		0.67	0.94	

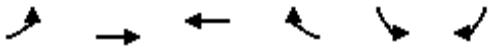
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Yellow			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 3.87			
Intersection Signal Delay: 131.5		Intersection LOS: F	
Intersection Capacity Utilization 102.7%		ICU Level of Service G	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 3: Willowbrook Office Pk/Woodcliff Dr & Rt 96 #1





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	161	1365	875	440	430	52
Future Volume (vph)	161	1365	875	440	430	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	450			400	250	0
Storage Lanes	1			1	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	0.95
Frt				0.850	0.984	
Flt Protected	0.950				0.957	
Satd. Flow (prot)	1770	3539	3539	1583	3403	0
Flt Permitted	0.213				0.957	
Satd. Flow (perm)	397	3539	3539	1583	3403	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				473	14	
Link Speed (mph)		45	45		45	
Link Distance (ft)		2246	1487		1337	
Travel Time (s)		34.0	22.5		20.3	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.87	0.87
Adj. Flow (vph)	173	1468	941	473	494	60
Shared Lane Traffic (%)						
Lane Group Flow (vph)	173	1468	941	473	554	0
Turn Type	pm+pt	NA	NA	pm+ov	Prot	
Protected Phases	5	2	6	4	4	
Permitted Phases	2			6		
Total Split (s)	20.0	65.0	45.0	25.0	25.0	
Total Lost Time (s)	5.0	5.5	5.5	5.0	5.0	
Act Effct Green (s)	61.5	61.0	47.3	71.3	18.5	
Actuated g/C Ratio	0.68	0.68	0.53	0.79	0.21	
v/c Ratio	0.43	0.61	0.51	0.35	0.78	
Control Delay	10.9	10.8	15.7	1.0	41.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	10.9	10.8	15.7	1.0	41.1	
LOS	B	B	B	A	D	
Approach Delay		10.8	10.8		41.1	
Approach LOS		B	B		D	
Stops (vph)	68	623	548	11	431	
Fuel Used(gal)	4	31	18	4	14	
CO Emissions (g/hr)	248	2143	1262	313	949	
NOx Emissions (g/hr)	48	417	245	61	185	
VOC Emissions (g/hr)	57	497	292	72	220	
Dilemma Vehicles (#)	0	120	49	0	0	
Queue Length 50th (ft)	31	161	179	0	147	
Queue Length 95th (ft)	m110	422	247	18	195	
Internal Link Dist (ft)		2166	1407		1257	
Turn Bay Length (ft)	450			400	250	
Base Capacity (vph)	499	2396	1858	1370	767	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.35	0.61	0.51	0.35	0.72	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Yellow			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 15.4		Intersection LOS: B	
Intersection Capacity Utilization 60.4%		ICU Level of Service B	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 4: Rt 96 #1 & Rte 250 #1

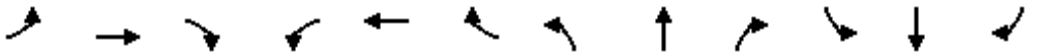
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1402	615	142	988	489	168
Future Volume (vph)	1402	615	142	988	489	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		400	245		0	0
Storage Lanes		1	1		2	0
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	0.95
Frt		0.850			0.962	
Flt Protected			0.950		0.964	
Satd. Flow (prot)	3539	1583	1770	3539	3351	0
Flt Permitted			0.104		0.964	
Satd. Flow (perm)	3539	1583	194	3539	3351	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		225			43	
Link Speed (mph)	45			45	25	
Link Distance (ft)	1487			1542	484	
Travel Time (s)	22.5			23.4	13.2	
Peak Hour Factor	0.95	0.95	0.93	0.93	0.92	0.92
Adj. Flow (vph)	1476	647	153	1062	532	183
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1476	647	153	1062	715	0
Turn Type	NA	pm+ov	pm+pt	NA	Prot	
Protected Phases	6	4	5	2	4	
Permitted Phases		6	2			
Total Split (s)	70.0	21.0	9.0	79.0	21.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Act Effct Green (s)	60.2	81.4	69.3	69.3	17.1	
Actuated g/C Ratio	0.64	0.86	0.73	0.73	0.18	
v/c Ratio	0.65	0.46	0.68	0.41	1.11	
Control Delay	12.1	2.0	22.3	5.2	106.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	12.1	2.0	22.3	5.2	106.8	
LOS	B	A	C	A	F	
Approach Delay	9.0			7.4	106.8	
Approach LOS	A			A	F	
Stops (vph)	797	67	40	328	500	
Fuel Used(gal)	27	7	3	15	19	
CO Emissions (g/hr)	1880	491	179	1050	1324	
NOx Emissions (g/hr)	366	95	35	204	258	
VOC Emissions (g/hr)	436	114	42	243	307	
Dilemma Vehicles (#)	74	0	0	52	0	
Queue Length 50th (ft)	260	28	22	105	~272	
Queue Length 95th (ft)	323	45	#53	133	#388	
Internal Link Dist (ft)	1407			1462	404	
Turn Bay Length (ft)		400	245			
Base Capacity (vph)	2490	1394	226	2830	642	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.59	0.46	0.68	0.38	1.11	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 94.5			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay: 25.8		Intersection LOS: C	
Intersection Capacity Utilization 75.9%		ICU Level of Service D	
Analysis Period (min) 15			

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

Splits and Phases: 5: Commons Blvd & Rt 96 #1

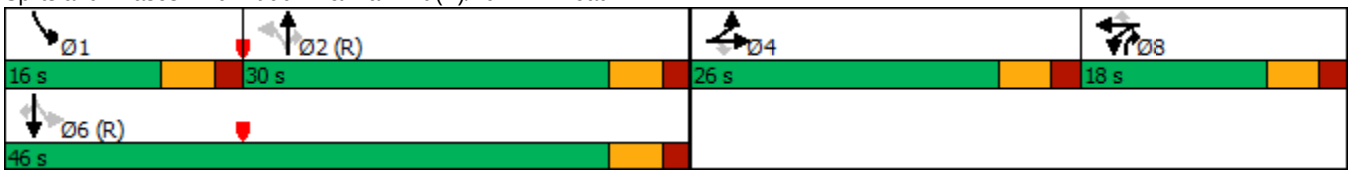


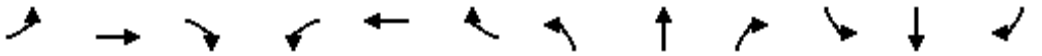
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	120	84	392	100	166	53	794	542	238	1088	243
Future Volume (vph)	170	120	84	392	100	166	53	794	542	238	1088	243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	12	12	11	11	11	11	11	11
Storage Length (ft)	0		0	0		200	100		175	350		200
Storage Lanes	1		1	2		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950	0.994		0.950			0.950			0.950		
Satd. Flow (prot)	1625	1700	1531	3433	1863	1583	1711	3421	1531	1711	3421	1531
Flt Permitted	0.950	0.994		0.950			0.204			0.130		
Satd. Flow (perm)	1625	1700	1531	3433	1863	1583	367	3421	1531	234	3421	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164			198			380			264
Link Speed (mph)		30			35			45			45	
Link Distance (ft)		497			533			1383			1542	
Travel Time (s)		11.3			10.4			21.0			23.4	
Peak Hour Factor	0.88	0.88	0.88	0.84	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	193	136	95	467	119	198	58	863	589	259	1183	264
Shared Lane Traffic (%)	10%											
Lane Group Flow (vph)	174	155	95	467	119	198	58	863	589	259	1183	264
Turn Type	Split	NA	Perm	Split	NA	Perm	Perm	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	4	4		8	8			2	8	1	6	
Permitted Phases			4			8	2		2	6	6	6
Total Split (s)	26.0	26.0	26.0	18.0	18.0	18.0	30.0	30.0	18.0	16.0	46.0	46.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Act Effct Green (s)	15.0	15.0	15.0	16.9	16.9	16.9	25.2	25.2	42.1	41.6	41.6	41.6
Actuated g/C Ratio	0.17	0.17	0.17	0.19	0.19	0.19	0.28	0.28	0.47	0.46	0.46	0.46
v/c Ratio	0.64	0.55	0.24	0.73	0.34	0.43	0.57	0.90	0.64	0.91	0.75	0.31
Control Delay	45.3	40.8	2.0	43.4	36.2	8.7	53.5	45.6	7.4	56.1	23.9	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.3	40.8	2.0	43.4	36.2	8.7	53.5	45.6	7.4	56.1	23.9	3.1
LOS	D	D	A	D	D	A	D	D	A	E	C	A
Approach Delay		34.0			33.6			31.0			25.6	
Approach LOS		C			C			C			C	
Stops (vph)	137	120	2	331	87	25	46	698	164	139	866	20
Fuel Used(gal)	3	2	0	7	2	1	2	23	8	7	27	3
CO Emissions (g/hr)	193	162	26	522	124	78	114	1620	540	477	1884	198
NOx Emissions (g/hr)	38	32	5	102	24	15	22	315	105	93	367	39
VOC Emissions (g/hr)	45	38	6	121	29	18	26	376	125	111	437	46
Dilemma Vehicles (#)	0	0	0	0	6	0	0	42	0	0	60	0
Queue Length 50th (ft)	98	86	0	127	58	0	29	251	33	99	287	0
Queue Length 95th (ft)	152	136	4	#210	108	48	#87	#368	101	#246	371	42
Internal Link Dist (ft)		417			453			1303			1462	
Turn Bay Length (ft)						200	100		175	350		200
Base Capacity (vph)	370	387	475	643	348	457	102	958	918	286	1582	850
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.40	0.20	0.73	0.34	0.43	0.57	0.90	0.64	0.91	0.75	0.31

Intersection Summary		
Area Type:	Other	
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: 0.91		
Intersection Signal Delay: 29.7		Intersection LOS: C
Intersection Capacity Utilization 75.0%		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: 6: Rt 96 #1 & Mall Ent (N)/Turk Hill Road #1





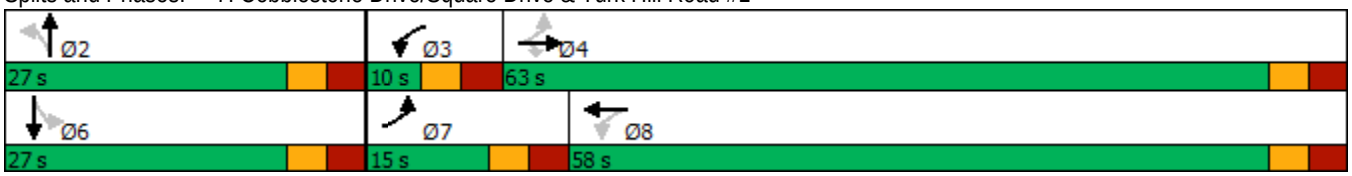
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	241	431	228	97	262	35	144	25	90	57	33	252
Future Volume (vph)	241	431	228	97	262	35	144	25	90	57	33	252
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		225	100		275	75		0	50		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.982			0.883			0.867	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	3476	0	1770	1645	0	1770	1615	0
Flt Permitted	0.449			0.398			0.425			0.673		
Satd. Flow (perm)	836	1863	1583	741	3476	0	792	1645	0	1254	1615	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			245		23			103			290	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		533			819			470			441	
Travel Time (s)		10.4			16.0			12.8			12.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	259	463	245	104	282	38	166	29	103	66	38	290
Shared Lane Traffic (%)												
Lane Group Flow (vph)	259	463	245	104	320	0	166	132	0	66	328	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8			2			6		
Total Split (s)	15.0	63.0	63.0	10.0	58.0		27.0	27.0		27.0	27.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Act Effct Green (s)	34.1	26.3	26.3	25.0	19.0		23.2	23.2		23.2	23.2	
Actuated g/C Ratio	0.52	0.40	0.40	0.38	0.29		0.35	0.35		0.35	0.35	
v/c Ratio	0.44	0.62	0.31	0.28	0.31		0.59	0.20		0.15	0.43	
Control Delay	10.8	20.2	3.1	10.0	16.8		31.1	7.2		18.1	5.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	10.8	20.2	3.1	10.0	16.8		31.1	7.2		18.1	5.9	
LOS	B	C	A	B	B		C	A		B	A	
Approach Delay		13.4			15.2			20.5			7.9	
Approach LOS		B			B			C			A	
Stops (vph)	117	322	21	50	192		110	29		39	47	
Fuel Used(gal)	2	6	1	1	4		2	1		1	2	
CO Emissions (g/hr)	164	409	82	80	296		134	52		40	111	
NOx Emissions (g/hr)	32	80	16	16	57		26	10		8	22	
VOC Emissions (g/hr)	38	95	19	19	68		31	12		9	26	
Dilemma Vehicles (#)	0	32	0	0	22		0	0		0	0	
Queue Length 50th (ft)	53	150	0	19	47		53	7		18	10	
Queue Length 95th (ft)	89	235	36	39	75		#150	44		50	64	
Internal Link Dist (ft)		453			739			390			361	
Turn Bay Length (ft)	225		225	100			75			50		
Base Capacity (vph)	594	1675	1448	378	2904		281	650		445	761	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	

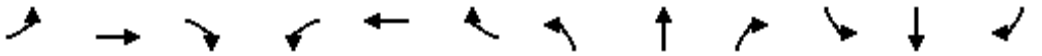
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.44	0.28	0.17	0.28	0.11		0.59	0.20		0.15	0.43	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 65.4			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 13.7		Intersection LOS: B	
Intersection Capacity Utilization 66.7%		ICU Level of Service C	
Analysis Period (min) 15			

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

Splits and Phases: 7: Cobblestone Drive/Square Drive & Turk Hill Road #1





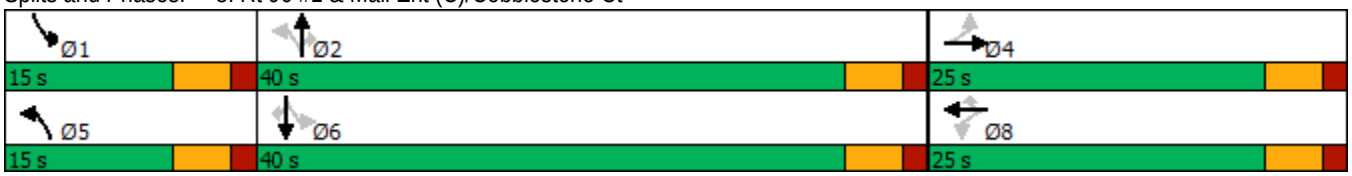
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	15	57	272	29	234	39	1063	223	73	1433	66
Future Volume (vph)	92	15	57	272	29	234	39	1063	223	73	1433	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	165		0	100		100	200		175	400		450
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
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		0.881				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1641	0	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.736			0.706			0.117			0.135		
Satd. Flow (perm)	1371	1641	0	1315	1863	1583	218	3539	1583	251	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		62				254			242			95
Link Speed (mph)		25			20			45			45	
Link Distance (ft)		570			251			991			1383	
Travel Time (s)		15.5			8.6			15.0			21.0	
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
Adj. Flow (vph)	100	16	62	296	32	254	42	1155	242	79	1558	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	100	78	0	296	32	254	42	1155	242	79	1558	72
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Total Split (s)	25.0	25.0		25.0	25.0	25.0	15.0	40.0	40.0	15.0	40.0	40.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Act Effct Green (s)	18.8	18.8		18.8	18.8	18.8	37.9	33.3	33.3	39.1	35.7	35.7
Actuated g/C Ratio	0.27	0.27		0.27	0.27	0.27	0.54	0.47	0.47	0.55	0.50	0.50
v/c Ratio	0.28	0.16		0.85	0.06	0.42	0.17	0.69	0.28	0.29	0.87	0.09
Control Delay	24.3	9.6		50.2	21.4	5.7	7.9	18.4	2.8	9.4	24.6	2.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.3	9.6		50.2	21.4	5.7	7.9	18.4	2.8	9.4	24.6	2.1
LOS	C	A		D	C	A	A	B	A	A	C	A
Approach Delay		17.9			29.2			15.5			22.9	
Approach LOS		B			C			B			C	
Stops (vph)	68	21		224	23	30	17	793	20	30	1109	6
Fuel Used(gal)	1	1		5	0	2	1	21	2	1	34	1
CO Emissions (g/hr)	81	40		329	23	107	37	1446	126	82	2364	49
NOx Emissions (g/hr)	16	8		64	4	21	7	281	25	16	460	9
VOC Emissions (g/hr)	19	9		76	5	25	9	335	29	19	548	11
Dilemma Vehicles (#)	0	0		0	0	0	0	63	0	0	89	0
Queue Length 50th (ft)	38	6		133	11	0	7	219	0	14	356	0
Queue Length 95th (ft)	78	36		#270	32	52	18	293	36	30	#521	14
Internal Link Dist (ft)		490			171			911			1303	
Turn Bay Length (ft)	165			100		100	200		175	400		450
Base Capacity (vph)	391	513		375	532	633	348	1769	912	363	1787	846
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0

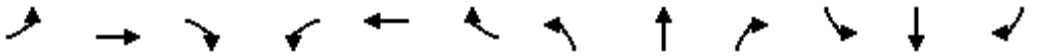
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.15		0.79	0.06	0.40	0.12	0.65	0.27	0.22	0.87	0.09

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 70.7			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 20.9		Intersection LOS: C	
Intersection Capacity Utilization 78.8%		ICU Level of Service D	
Analysis Period (min) 15			

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

Splits and Phases: 8: Rt 96 #1 & Mall Ent (C)/Cobblestone Ct





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	132	231	115	105	192	299	1035	240	400	1268	92
Future Volume (vph)	81	132	231	115	105	192	299	1035	240	400	1268	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	12	12	11	11	11	11	11	11
Storage Length (ft)	145		0	125		200	650		150	600		350
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
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			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1745	1837	1531	1787	1900	1599	1728	3421	1531	1728	3388	1531
Flt Permitted	0.617			0.555			0.950			0.950		
Satd. Flow (perm)	1133	1837	1531	1044	1900	1599	1728	3421	1531	1728	3388	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			36			51			231			101
Link Speed (mph)		25			40			45			45	
Link Distance (ft)		920			889			1270			991	
Travel Time (s)		25.1			15.2			19.2			15.0	
Peak Hour Factor	0.88	0.88	0.88	0.84	0.84	0.84	0.97	0.97	0.97	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	2%	1%	0%	1%	1%	2%	2%	1%	3%	2%
Adj. Flow (vph)	92	150	263	137	125	229	308	1067	247	440	1393	101
Shared Lane Traffic (%)												
Lane Group Flow (vph)	92	150	263	137	125	229	308	1067	247	440	1393	101
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4	5		8	1	5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Total Split (s)	23.0	23.0	17.0	23.0	23.0	21.0	17.0	46.0	46.0	21.0	50.0	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	4.0	4.0
Act Effct Green (s)	16.6	16.6	36.0	16.6	16.6	40.0	15.4	42.0	42.0	19.4	46.0	46.0
Actuated g/C Ratio	0.18	0.18	0.40	0.18	0.18	0.44	0.17	0.47	0.47	0.22	0.51	0.51
v/c Ratio	0.44	0.45	0.41	0.71	0.36	0.31	1.04	0.67	0.30	1.18	0.80	0.12
Control Delay	38.8	36.3	19.0	55.1	34.3	13.7	80.2	35.0	15.3	140.2	22.8	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.8	36.3	19.0	55.1	34.3	13.7	80.2	35.0	15.3	140.2	22.8	2.8
LOS	D	D	B	E	C	B	F	C	B	F	C	A
Approach Delay		27.8			30.5			40.6			48.5	
Approach LOS		C			C			D			D	
Stops (vph)	69	113	140	103	88	93	230	918	145	298	1012	10
Fuel Used(gal)	2	2	3	3	2	3	12	33	6	18	27	1
CO Emissions (g/hr)	108	171	227	209	156	182	836	2332	414	1237	1862	54
NOx Emissions (g/hr)	21	33	44	41	30	35	163	454	81	241	362	10
VOC Emissions (g/hr)	25	40	53	49	36	42	194	540	96	287	432	12
Dilemma Vehicles (#)	0	0	0	0	6	0	0	66	0	0	70	0
Queue Length 50th (ft)	46	74	90	72	61	61	~222	336	75	~325	328	0
Queue Length 95th (ft)	90	127	151	124	102	102	m#288	m373	m105	#513	423	24
Internal Link Dist (ft)		840			809			1190			911	
Turn Bay Length (ft)	145			125		200	650		150	600		350
Base Capacity (vph)	239	387	634	220	401	739	296	1596	837	373	1731	831

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.39	0.41	0.62	0.31	0.31	1.04	0.67	0.30	1.18	0.80	0.12

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 86 (96%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay: 41.4		Intersection LOS: D	
Intersection Capacity Utilization 78.3%		ICU Level of Service D	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Splits and Phases: 9: Rt 96 #1 & Mall Ent (S)/High St

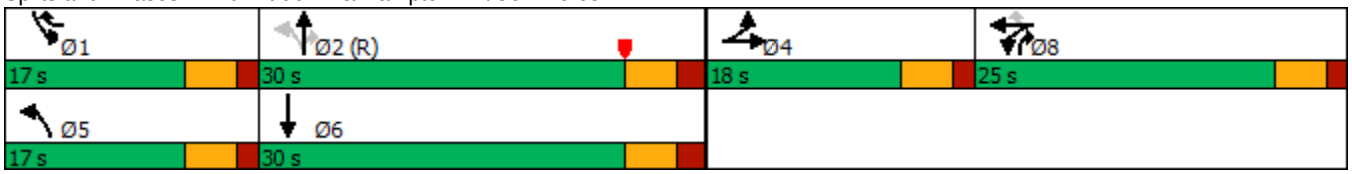
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	14	111	299	25	295	44	1291	265	348	1259	93
Future Volume (vph)	62	14	111	299	25	295	44	1291	265	348	1259	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	80		0	120		0	240		400	425		0
Storage Lanes	1		0	1		1	1		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.95	0.95
Frt		0.867				0.850			0.850		0.990	
Flt Protected	0.950			0.950	0.960		0.950			0.950		
Satd. Flow (prot)	1805	1647	0	1698	1718	1599	1805	3574	1615	3467	3509	0
Flt Permitted	0.950			0.950	0.960		0.113			0.950		
Satd. Flow (perm)	1805	1647	0	1698	1718	1599	215	3574	1615	3467	3509	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		119				219			270		8	
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		394			713			521			899	
Travel Time (s)		10.7			19.4			7.9			13.6	
Peak Hour Factor	0.93	0.93	0.93	0.97	0.97	0.97	0.98	0.98	0.98	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	0%	1%	0%	1%	0%	1%	0%	1%	2%	0%
Adj. Flow (vph)	67	15	119	308	26	304	45	1317	270	370	1339	99
Shared Lane Traffic (%)				44%								
Lane Group Flow (vph)	67	134	0	172	162	304	45	1317	270	370	1438	0
Turn Type	Split	NA		Split	NA	pm+ov	pm+pt	NA	pm+ov	Prot	NA	
Protected Phases	4	4		8	8	1	5	2	8	1	6	
Permitted Phases						8	2		2			
Total Split (s)	18.0	18.0		25.0	25.0	17.0	17.0	30.0	25.0	17.0	30.0	
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 Effct Green (s)	8.8	8.8		15.4	15.4	33.4	42.5	35.8	51.2	14.0	47.1	
Actuated g/C Ratio	0.10	0.10		0.17	0.17	0.37	0.47	0.40	0.57	0.16	0.52	
v/c Ratio	0.38	0.50		0.59	0.55	0.42	0.21	0.93	0.26	0.69	0.78	
Control Delay	43.5	16.2		41.8	40.2	7.1	11.3	36.8	1.0	39.2	27.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	
Total Delay	43.5	16.2		41.8	40.2	7.1	11.3	36.8	1.0	39.2	27.6	
LOS	D	B		D	D	A	B	D	A	D	C	
Approach Delay		25.3			24.9			30.2			29.9	
Approach LOS		C			C			C			C	
Stops (vph)	56	31		149	138	62	22	987	16	332	848	
Fuel Used(gal)	1	1		3	3	2	1	26	1	12	37	
CO Emissions (g/hr)	68	66		210	193	172	37	1839	81	825	2587	
NOx Emissions (g/hr)	13	13		41	38	33	7	358	16	161	503	
VOC Emissions (g/hr)	16	15		49	45	40	8	426	19	191	600	
Dilemma Vehicles (#)	0	0		0	0	0	0	7	0	0	134	
Queue Length 50th (ft)	36	8		95	89	31	8	427	2	107	300	
Queue Length 95th (ft)	74	59		149	141	79	m18	m#621	m10	m151	#641	
Internal Link Dist (ft)		314			633			441			819	
Turn Bay Length (ft)	80			120			240		400	425		
Base Capacity (vph)	280	356		401	405	736	346	1421	1122	553	1839	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	

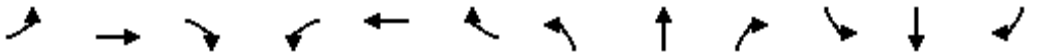
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn	0	3		0	0	0	0	0	0	0	128	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.24	0.38		0.43	0.40	0.41	0.13	0.93	0.24	0.67	0.84	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 40 (44%), Referenced to phase 2:NBTL, Start of Yellow			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 29.1		Intersection LOS: C	
Intersection Capacity Utilization 75.5%		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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Rt 96 #1 & Hampton Inn/Commerce Dr





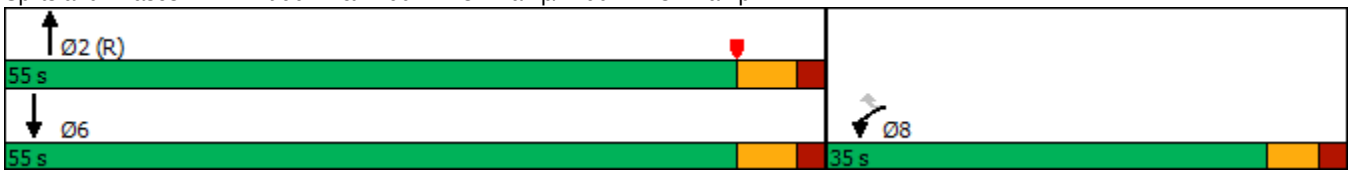
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	184	0	502	0	1036	0	0	1556	179
Future Volume (vph)	0	0	0	184	0	502	0	1036	0	0	1556	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	120		0	0		0	0		400
Storage Lanes	0		0	1		1	0		0	0		1
Taper Length (ft)	25			25			25			25		
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						0.850						0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	1752	0	1599	0	3574	0	0	3539	1599
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	1752	0	1599	0	3574	0	0	3539	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						84						149
Link Speed (mph)		25			40			45			45	
Link Distance (ft)		1143			359			583			521	
Travel Time (s)		31.2			6.1			8.8			7.9	
Peak Hour Factor	0.92	0.92	0.92	0.85	0.85	0.85	0.95	0.95	0.95	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	3%	0%	1%	0%	1%	0%	0%	2%	1%
Adj. Flow (vph)	0	0	0	216	0	591	0	1091	0	0	1710	197
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	216	0	591	0	1091	0	0	1710	197
Turn Type				Prot		Perm		NA			NA	Free
Protected Phases				8				2			6	
Permitted Phases						8						Free
Total Split (s)				35.0		35.0		55.0			55.0	
Total Lost Time (s)				4.0		4.0		4.0			4.0	
Act Effct Green (s)				31.0		31.0		51.0			51.0	90.0
Actuated g/C Ratio				0.34		0.34		0.57			0.57	1.00
v/c Ratio				0.36		0.98		0.54			0.85	0.12
Control Delay				24.2		58.2		10.8			15.9	0.1
Queue Delay				0.0		0.0		0.0			8.2	0.0
Total Delay				24.2		58.2		10.8			24.0	0.1
LOS				C		E		B			C	A
Approach Delay					49.1			10.8			21.6	
Approach LOS					D			B			C	
Stops (vph)				135		377		606			1114	0
Fuel Used(gal)				3		11		14			24	1
CO Emissions (g/hr)				187		760		960			1688	43
NOx Emissions (g/hr)				36		148		187			328	8
VOC Emissions (g/hr)				43		176		222			391	10
Dilemma Vehicles (#)				0		0		92			21	0
Queue Length 50th (ft)				91		290		205			398	0
Queue Length 95th (ft)				141		#464		m165			144	m0
Internal Link Dist (ft)		1063			279			503			441	
Turn Bay Length (ft)				120								400
Base Capacity (vph)				603		605		2025			2005	1599
Starvation Cap Reductn				0		0		0			277	0

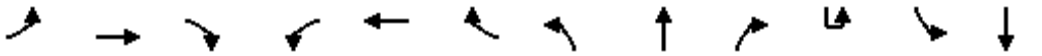
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn				0		0		0			0	0
Storage Cap Reductn				0		0		0			0	0
Reduced v/c Ratio				0.36		0.98		0.54			0.99	0.12

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 55 (61%), Referenced to phase 2:NBT, Start of Yellow			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.98			
Intersection Signal Delay: 24.3		Intersection LOS: C	
Intersection Capacity Utilization 66.4%		ICU Level of Service C	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Rt 96 #1 & I-490 WB On Ramp/I-490 WB Off Ramp





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	976	86	110	25	82	152	97	1025	37	39	188	1333
Future Volume (vph)	976	86	110	25	82	152	97	1025	37	39	188	1333
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	450		450	75		0	430		0		400	
Storage Lanes	1		1	1		0	1		0		1	
Taper Length (ft)	25			25			25				25	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95
Frt			0.850		0.902			0.995				
Flt Protected	0.950	0.960		0.950			0.950				0.950	
Satd. Flow (prot)	1698	1718	1615	1805	1680	0	1805	3524	0	0	1790	3574
Flt Permitted	0.950	0.960		0.950			0.950				0.950	
Satd. Flow (perm)	1698	1718	1615	1805	1680	0	1805	3524	0	0	1790	3574
Right Turn on Red			Yes			Yes			Yes			
Satd. Flow (RTOR)			117		85			4				
Link Speed (mph)		45			45			50				50
Link Distance (ft)		1243			922			1348				1581
Travel Time (s)		18.8			14.0			18.4				21.6
Peak Hour Factor	0.94	0.94	0.94	0.81	0.81	0.81	0.91	0.91	0.91	0.90	0.90	0.90
Heavy Vehicles (%)	1%	0%	0%	0%	2%	2%	0%	2%	0%	0%	1%	1%
Adj. Flow (vph)	1038	91	117	31	101	188	107	1126	41	43	209	1481
Shared Lane Traffic (%)	47%											
Lane Group Flow (vph)	550	579	117	31	289	0	107	1167	0	0	252	1481
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Prot	Prot	NA
Protected Phases	8	8	5	4	4		5	2		1	1	6
Permitted Phases			8									
Total Split (s)	30.0	30.0	15.0	15.0	15.0		15.0	30.0		15.0	15.0	30.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	4.0
Act Effct Green (s)	26.0	26.0	39.1	11.0	11.0		9.1	26.0			11.0	27.9
Actuated g/C Ratio	0.29	0.29	0.43	0.12	0.12		0.10	0.29			0.12	0.31
v/c Ratio	1.12	1.17	0.15	0.14	1.04		0.59	1.14			1.16	1.34
Control Delay	110.8	126.8	3.4	37.1	93.2		51.7	108.0			147.7	181.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	110.8	126.8	3.4	37.1	93.2		51.7	108.0			147.7	181.9
LOS	F	F	A	D	F		D	F			F	F
Approach Delay		108.1			87.7			103.2				124.5
Approach LOS		F			F			F				F
Stops (vph)	428	446	13	23	134		91	895			177	1019
Fuel Used(gal)	21	24	1	1	8		3	46			12	78
CO Emissions (g/hr)	1479	1676	79	44	525		227	3227			826	5479
NOx Emissions (g/hr)	288	326	15	8	102		44	628			161	1066
VOC Emissions (g/hr)	343	388	18	10	122		53	748			191	1270
Dilemma Vehicles (#)	0	25	0	0	11		0	50			0	51
Queue Length 50th (ft)	~383	~415	0	16	~132		59	~414			~169	~594
Queue Length 95th (ft)	#590	#626	28	38	#239		110	#544			m#279	#743
Internal Link Dist (ft)		1163			842			1268				1501
Turn Bay Length (ft)	450		450	75			430				400	
Base Capacity (vph)	490	496	799	220	279		220	1020			218	1109
Starvation Cap Reductn	0	0	0	0	0		0	0			0	0

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	717
Future Volume (vph)	717
Ideal Flow (vphpl)	1900
Storage Length (ft)	425
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1583
Flt Permitted	
Satd. Flow (perm)	1583
Right Turn on Red	Yes
Satd. Flow (RTOR)	362
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.90
Heavy Vehicles (%)	2%
Adj. Flow (vph)	797
Shared Lane Traffic (%)	
Lane Group Flow (vph)	797
Turn Type	pm+ov
Protected Phases	8
Permitted Phases	6
Total Split (s)	30.0
Total Lost Time (s)	4.0
Act Effct Green (s)	53.9
Actuated g/C Ratio	0.60
v/c Ratio	0.73
Control Delay	10.3
Queue Delay	0.0
Total Delay	10.3
LOS	B
Approach Delay	
Approach LOS	
Stops (vph)	445
Fuel Used(gal)	16
CO Emissions (g/hr)	1086
NOx Emissions (g/hr)	211
VOC Emissions (g/hr)	252
Dilemma Vehicles (#)	0
Queue Length 50th (ft)	140
Queue Length 95th (ft)	m254
Internal Link Dist (ft)	
Turn Bay Length (ft)	425
Base Capacity (vph)	1093
Starvation Cap Reductn	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
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	1.12	1.17	0.15	0.14	1.04		0.49	1.14			1.16	1.34

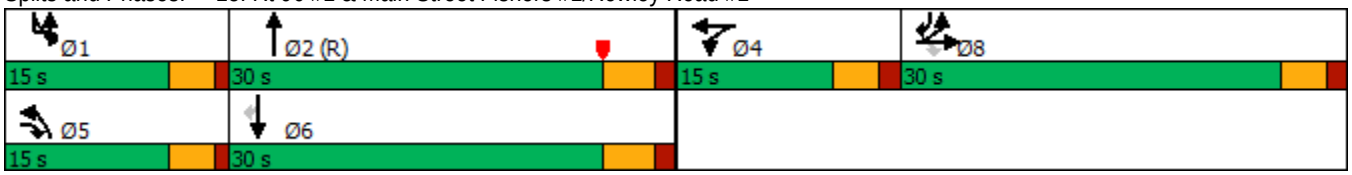
Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 10 (11%), Referenced to phase 2:NBT, Start of Yellow	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.34	
Intersection Signal Delay: 113.5	Intersection LOS: F
Intersection Capacity Utilization 98.5%	ICU Level of Service F
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

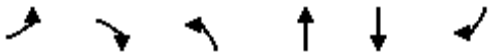
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Rt 96 #1 & Main Street Fishers #1/Rowley Road #1

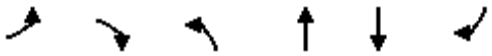


Lane Group	SBR
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.73

Intersection Summary



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	264	210	135	834	1111	349
Future Volume (vph)	264	210	135	834	1111	349
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	16	16	12
Storage Length (ft)	0	150	285			550
Storage Lanes	1	1	1			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1787	1553	1656	2091	2111	1599
Flt Permitted	0.950		0.127			
Satd. Flow (perm)	1787	1553	221	2091	2111	1599
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		273				388
Link Speed (mph)	50			50	50	
Link Distance (ft)	1732			375	4424	
Travel Time (s)	23.6			5.1	60.3	
Peak Hour Factor	0.77	0.77	0.93	0.93	0.90	0.90
Heavy Vehicles (%)	1%	4%	9%	3%	2%	1%
Adj. Flow (vph)	343	273	145	897	1234	388
Shared Lane Traffic (%)						
Lane Group Flow (vph)	343	273	145	897	1234	388
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Total Split (s)	29.0	29.0	20.0	50.5	30.5	30.5
Total Lost Time (s)	4.0	4.0	3.5	4.0	4.0	4.0
Act Effct Green (s)	15.7	15.7	39.5	39.0	28.1	28.1
Actuated g/C Ratio	0.25	0.25	0.63	0.62	0.45	0.45
v/c Ratio	0.77	0.46	0.38	0.69	1.31	0.42
Control Delay	35.3	5.8	9.8	12.5	171.3	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.3	5.8	9.8	12.5	171.3	3.6
LOS	D	A	A	B	F	A
Approach Delay	22.2			12.2	131.2	
Approach LOS	C			B	F	
Stops (vph)	226	25	52	516	770	32
Fuel Used(gal)	8	3	1	12	84	11
CO Emissions (g/hr)	578	205	97	841	5858	782
NOx Emissions (g/hr)	112	40	19	164	1140	152
VOC Emissions (g/hr)	134	48	22	195	1358	181
Dilemma Vehicles (#)	0	0	0	65	64	0
Queue Length 50th (ft)	126	0	19	192	~666	0
Queue Length 95th (ft)	186	28	62	441	#1118	53
Internal Link Dist (ft)	1652			295	4344	
Turn Bay Length (ft)		150	285			550
Base Capacity (vph)	736	800	529	1575	940	927



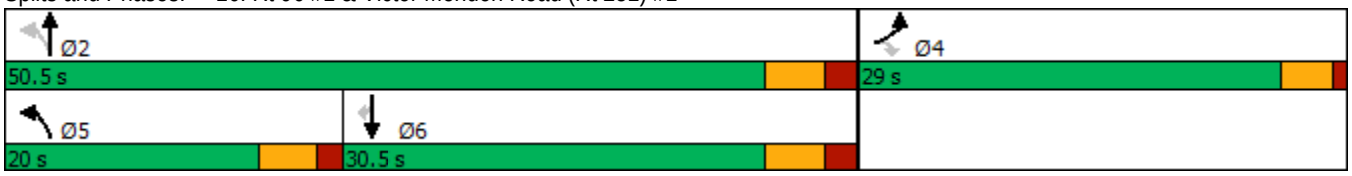
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.34	0.27	0.57	1.31	0.42

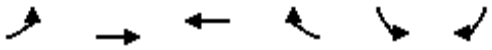
Intersection Summary			
Area Type:	Other		
Cycle Length: 79.5			
Actuated Cycle Length: 63.1			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.31			
Intersection Signal Delay: 72.9		Intersection LOS: E	
Intersection Capacity Utilization 90.6%		ICU Level of Service E	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

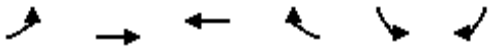
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 16: Rt 96 #1 & Victor Mendon Road (Rt 251) #1





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	15	1161	787	194	220	18
Future Volume (vph)	15	1161	787	194	220	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130			130	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.990	
Flt Protected	0.950				0.956	
Satd. Flow (prot)	1593	1676	1676	1425	1587	0
Flt Permitted	0.244				0.956	
Satd. Flow (perm)	409	1676	1676	1425	1587	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)					3	
Link Speed (mph)		30	30		30	
Link Distance (ft)		5115	640		866	
Travel Time (s)		116.3	14.5		19.7	
Peak Hour Factor	0.92	0.92	0.91	0.91	0.94	0.94
Adj. Flow (vph)	16	1262	865	213	234	19
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	1262	865	213	253	0
Turn Type	Perm	NA	NA	pt+ov	Prot	
Protected Phases		2	6	6 4	4	
Permitted Phases	2					
Total Split (s)	90.0	90.0	90.0		30.0	
Total Lost Time (s)	4.0	4.0	4.0		4.0	
Act Effct Green (s)	88.4	88.4	88.4	120.0	23.6	
Actuated g/C Ratio	0.74	0.74	0.74	1.00	0.20	
v/c Ratio	0.05	1.02	0.70	0.15	0.81	
Control Delay	5.5	49.1	10.0	0.2	64.9	
Queue Delay	0.0	30.1	0.7	0.0	0.0	
Total Delay	5.5	79.2	10.8	0.2	64.9	
LOS	A	E	B	A	E	
Approach Delay		78.3	8.7		64.9	
Approach LOS		E	A		E	
Stops (vph)	6	869	339	0	217	
Fuel Used(gal)	1	69	7	1	6	
CO Emissions (g/hr)	51	4821	518	68	416	
NOx Emissions (g/hr)	10	938	101	13	81	
VOC Emissions (g/hr)	12	1117	120	16	96	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (ft)	3	~1064	219	0	182	
Queue Length 95th (ft)	10	#1327	373	m0	#293	
Internal Link Dist (ft)		5035	560		786	
Turn Bay Length (ft)	130			130		
Base Capacity (vph)	301	1235	1235	1415	346	
Starvation Cap Reductn	0	0	129	0	0	
Spillback Cap Reductn	0	166	0	0	0	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.05	1.18	0.78	0.15	0.73	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 117 (98%), Referenced to phase 6:WBT, Start of Yellow			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.02			
Intersection Signal Delay: 48.2		Intersection LOS: D	
Intersection Capacity Utilization 89.3%		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.

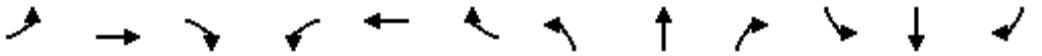
Splits and Phases: 18: Rt 96 #1 & High Street #1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	905	310	89	795	182	139
Future Volume (vph)	905	310	89	795	182	139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		250	130		110	0
Storage Lanes		1	1		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1676	1425	1593	1676	1593	1425
Flt Permitted			0.101		0.950	
Satd. Flow (perm)	1676	1425	169	1676	1593	1425
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		230				78
Link Speed (mph)	30			30	30	
Link Distance (ft)	640			691	1139	
Travel Time (s)	14.5			15.7	25.9	
Peak Hour Factor	0.90	0.90	0.85	0.85	0.89	0.89
Adj. Flow (vph)	1006	344	105	935	204	156
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1006	344	105	935	204	156
Turn Type	NA	Perm	pm+pt	NA	Prot	pm+ov
Protected Phases	6		5	2	4	5
Permitted Phases		6	2			4
Total Split (s)	65.0	65.0	20.0	85.0	35.0	20.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Act Effct Green (s)	77.4	77.4	90.0	90.0	22.0	34.6
Actuated g/C Ratio	0.64	0.64	0.75	0.75	0.18	0.29
v/c Ratio	0.93	0.34	0.46	0.74	0.70	0.34
Control Delay	22.0	1.7	14.3	13.1	58.3	17.0
Queue Delay	25.0	0.0	0.0	0.2	0.0	0.0
Total Delay	47.0	1.7	14.3	13.2	58.3	17.0
LOS	D	A	B	B	E	B
Approach Delay	35.5			13.3	40.4	
Approach LOS	D			B	D	
Stops (vph)	614	35	30	372	166	52
Fuel Used(gal)	12	2	1	8	5	2
CO Emissions (g/hr)	836	129	63	591	328	140
NOx Emissions (g/hr)	163	25	12	115	64	27
VOC Emissions (g/hr)	194	30	15	137	76	32
Dilemma Vehicles (#)	0	0	0	0	0	0
Queue Length 50th (ft)	481	10	12	338	149	46
Queue Length 95th (ft)	m#892	m18	m57	486	214	87
Internal Link Dist (ft)	560			611	1059	
Turn Bay Length (ft)		250	130		110	
Base Capacity (vph)	1081	1001	316	1257	411	549
Starvation Cap Reductn	122	0	0	32	0	0
Spillback Cap Reductn	0	0	0	0	0	0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.05	0.34	0.33	0.76	0.50	0.28

Intersection Summary			
Area Type:	CBD		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 10 (8%), Referenced to phase 2:WBTL, Start of Yellow			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 27.7		Intersection LOS: C	
Intersection Capacity Utilization 79.6%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 19: School St #1 & Rt 96 #1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	745	227	171	610	11	254	7	162	27	10	10
Future Volume (vph)	24	745	227	171	610	11	254	7	162	27	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	120		225	130		0	200		0	0		0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
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			0.850		0.997			0.857			0.971	
Flt Protected	0.950			0.950			0.950				0.972	
Satd. Flow (prot)	1593	1676	1425	1593	1671	0	1593	1437	0	0	1582	0
Flt Permitted	0.325			0.148			0.666				0.750	
Satd. Flow (perm)	545	1676	1425	248	1671	0	1117	1437	0	0	1221	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			200		1			174			11	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		691			618			732			679	
Travel Time (s)		15.7			14.0			16.6			15.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.93	0.93	0.93	0.79	0.79	0.79
Adj. Flow (vph)	25	784	239	180	642	12	273	8	174	34	13	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	25	784	239	180	654	0	273	182	0	0	60	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases	1	6	7	5	2		7	4			8	
Permitted Phases	6		6	2			4			8		
Total Split (s)	21.0	53.0	16.0	21.0	53.0		16.0	46.0		30.0	30.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Act Effct Green (s)	73.2	66.9	82.9	83.2	76.8		28.8	28.8			14.9	
Actuated g/C Ratio	0.61	0.56	0.69	0.69	0.64		0.24	0.24			0.12	
v/c Ratio	0.06	0.84	0.23	0.58	0.61		0.87	0.38			0.37	
Control Delay	7.8	23.0	0.6	17.5	20.4		66.5	7.2			43.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay	7.8	23.0	0.6	17.5	20.5		66.5	7.2			43.3	
LOS	A	C	A	B	C		E	A			D	
Approach Delay		17.5			19.8			42.8			43.3	
Approach LOS		B			B			D			D	
Stops (vph)	4	340	9	66	394		224	20			34	
Fuel Used(gal)	0	9	1	2	8		6	1			1	
CO Emissions (g/hr)	13	655	91	126	542		428	92			60	
NOx Emissions (g/hr)	3	128	18	24	105		83	18			12	
VOC Emissions (g/hr)	3	152	21	29	126		99	21			14	
Dilemma Vehicles (#)	0	0	0	0	0		0	0			0	
Queue Length 50th (ft)	3	193	0	39	280		203	5			37	
Queue Length 95th (ft)	m6	m#818	m2	109	579		251	54			61	
Internal Link Dist (ft)		611			538			652			599	
Turn Bay Length (ft)	120		225	130			200					
Base Capacity (vph)	518	934	1046	363	1069		315	616			273	
Starvation Cap Reductn	0	0	0	0	0		0	0			0	
Spillback Cap Reductn	0	0	0	0	7		0	0			0	

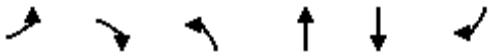
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Storage Cap Reductn	0	0	0	0	0		0	0			0	
Reduced v/c Ratio	0.05	0.84	0.23	0.50	0.62		0.87	0.30			0.22	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 15 (13%), Referenced to phase 2:WBTL, Start of Yellow			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 23.7		Intersection LOS: C	
Intersection Capacity Utilization 88.1%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 20: Maple Ave #1/Moore Ave #1 & Rt 96 #1

Appendix J

Data for unsignalized intersections in the No Build scenario begins on the following page.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	303	51	5	1139	1486	23
Future Volume (Veh/h)	303	51	5	1139	1486	23
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	329	55	5	1238	1615	25
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2256	820	1640			
vC1, stage 1 conf vol	1628					
vC2, stage 2 conf vol	629					
vCu, unblocked vol	2256	820	1640			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	83	99			
cM capacity (veh/h)	137	318	391			

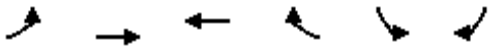
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	329	55	5	619	619	1077	563
Volume Left	329	0	5	0	0	0	0
Volume Right	0	55	0	0	0	0	25
cSH	137	318	391	1700	1700	1700	1700
Volume to Capacity	2.40	0.17	0.01	0.36	0.36	0.63	0.33
Queue Length 95th (ft)	708	15	1	0	0	0	0
Control Delay (s)	701.6	18.7	14.3	0.0	0.0	0.0	0.0
Lane LOS	F	C	B				
Approach Delay (s)	603.8		0.1			0.0	
Approach LOS	F						

Intersection Summary			
Average Delay	71.0		
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	9	110	859	59	376	945
Future Volume (Veh/h)	9	110	859	59	376	945
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.92	0.92	0.93	0.93
Hourly flow rate (vph)	11	133	934	64	404	1016
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (ft)						375
pX, platoon unblocked	0.57					
vC, conflicting volume	2790	966			998	
vC1, stage 1 conf vol	966					
vC2, stage 2 conf vol	1824					
vCu, unblocked vol	3783	966			998	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	54	57			42	
cM capacity (veh/h)	24	309			693	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	144	998	404	1016
Volume Left	11	0	404	0
Volume Right	133	64	0	0
cSH	162	1700	693	1700
Volume to Capacity	0.89	0.59	0.58	0.60
Queue Length 95th (ft)	157	0	95	0
Control Delay (s)	99.0	0.0	17.2	0.0
Lane LOS	F		C	
Approach Delay (s)	99.0	0.0	4.9	
Approach LOS	F			

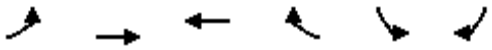
Intersection Summary			
Average Delay	8.3		
Intersection Capacity Utilization	86.9%	ICU Level of Service	E
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	188	746	610	54	36	182
Future Volume (Veh/h)	188	746	610	54	36	182
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.83	0.83
Hourly flow rate (vph)	204	811	663	59	43	219
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	None			
Median storage veh)		2				
Upstream signal (ft)		618				
pX, platoon unblocked					0.63	
vC, conflicting volume	722				1912	692
vC1, stage 1 conf vol					692	
vC2, stage 2 conf vol					1219	
vCu, unblocked vol	722				2151	692
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	77				71	51
cM capacity (veh/h)	880				150	444

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	204	811	722	43	219
Volume Left	204	0	0	43	0
Volume Right	0	0	59	0	219
cSH	880	1700	1700	150	444
Volume to Capacity	0.23	0.48	0.42	0.29	0.49
Queue Length 95th (ft)	22	0	0	28	67
Control Delay (s)	10.3	0.0	0.0	38.2	20.8
Lane LOS	B			E	C
Approach Delay (s)	2.1		0.0	23.6	
Approach LOS				C	

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	60	843	849	50	10	20
Future Volume (Veh/h)	60	843	849	50	10	20
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	65	916	923	54	11	22
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	977				1996	950
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	977				1996	950
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	91				82	93
cM capacity (veh/h)	706				60	315

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	981	977	33
Volume Left	65	0	11
Volume Right	0	54	22
cSH	706	1700	131
Volume to Capacity	0.09	0.57	0.25
Queue Length 95th (ft)	8	0	24
Control Delay (s)	2.7	0.0	41.7
Lane LOS	A		E
Approach Delay (s)	2.7	0.0	41.7
Approach LOS			E

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	103.7%	ICU Level of Service	G
Analysis Period (min)	15		

Appendix J

Data for <u>roundabout intersections</u> in the <u>No Build</u> scenario begins on the following page.

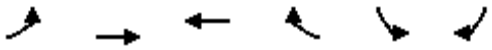
Intersection	
Intersection Delay, s/veh	14.1
Intersection LOS	B

Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	848	945	210
Demand Flow Rate, veh/h	865	964	215
Vehicles Circulating, veh/h	185	31	711
Vehicles Exiting, veh/h	741	1019	284
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	16.2	13.1	9.7
Approach LOS	C	B	A

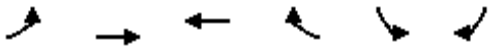
Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	865	964	215
Cap Entry Lane, veh/h	1143	1337	668
Entry HV Adj Factor	0.980	0.980	0.977
Flow Entry, veh/h	848	945	210
Cap Entry, veh/h	1120	1311	653
V/C Ratio	0.757	0.721	0.322
Control Delay, s/veh	16.2	13.1	9.7
LOS	C	B	A
95th %tile Queue, veh	8	7	1

Appendix J

Data for signalized intersections in the Full Build scenario begins on the following page.



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	497	579	0	891	72
Future Volume (vph)	0	497	579	0	891	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	3539	3539	0	3433	1583
Flt Permitted					0.950	
Satd. Flow (perm)	0	3539	3539	0	3433	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						78
Link Speed (mph)		45	45		45	
Link Distance (ft)		1813	468		1544	
Travel Time (s)		27.5	7.1		23.4	
Peak Hour Factor	0.93	0.93	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	534	629	0	968	78
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	534	629	0	968	78
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		24	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						6
Total Split (s)		50.0	50.0		40.0	50.0
Total Lost Time (s)		5.5	5.5		5.0	5.5
Act Effct Green (s)		44.5	44.5		35.0	44.5
Actuated g/C Ratio		0.49	0.49		0.39	0.49
v/c Ratio		0.31	0.36		0.73	0.09
Control Delay		14.1	15.3		27.3	3.3
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		14.1	15.3		27.3	3.3
LOS		B	B		C	A
Approach Delay		14.1	15.3		25.5	
Approach LOS		B	B		C	
Stops (vph)		280	395		733	9
Fuel Used(gal)		11	8		23	1
CO Emissions (g/hr)		752	593		1607	62
NOx Emissions (g/hr)		146	115		313	12
VOC Emissions (g/hr)		174	137		372	14
Dilemma Vehicles (#)		28	29		0	0
Queue Length 50th (ft)		90	122		236	0
Queue Length 95th (ft)		125	m137		308	22

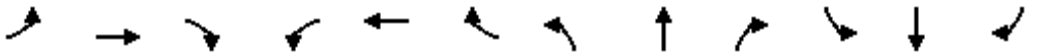


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Internal Link Dist (ft)		1733	388		1464	
Turn Bay Length (ft)						
Base Capacity (vph)		1749	1749		1335	822
Starvation Cap Reductn		0	0		0	0
Spillback Cap Reductn		0	0		0	0
Storage Cap Reductn		0	0		0	0
Reduced v/c Ratio		0.31	0.36		0.73	0.09

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:EBT, Start of Yellow			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 19.8		Intersection LOS: B	
Intersection Capacity Utilization 102.4%		ICU Level of Service G	
Analysis Period (min) 15			

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

Splits and Phases: 1: Rt 96 #1 & I-490 Exit 28 #1

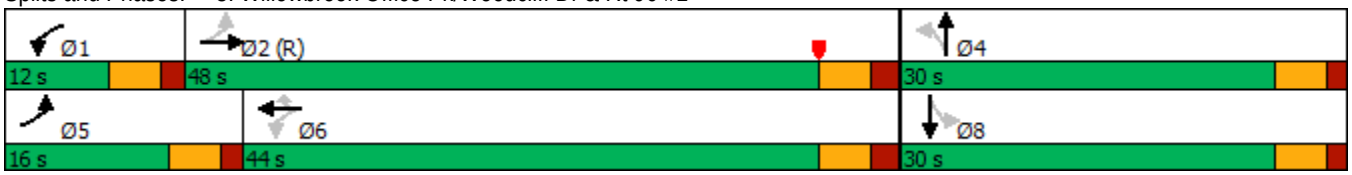


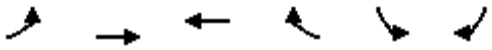
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	182	1188	18	13	882	33	276	16	172	167	7	510
Future Volume (vph)	182	1188	18	13	882	33	276	16	172	167	7	510
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	500		0	500		75	175		0	125		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998				0.850		0.862			0.852	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3532	0	1770	3539	1583	1770	1606	0	1770	1587	0
Flt Permitted	0.173			0.150			0.160			0.527		
Satd. Flow (perm)	322	3532	0	279	3539	1583	298	1606	0	982	1587	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				85		191			214	
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		1164			2246			565			661	
Travel Time (s)		17.6			34.0			15.4			18.0	
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.87	0.87	0.87	0.92	0.92	0.92
Adj. Flow (vph)	196	1277	19	14	959	36	317	18	198	182	8	554
Shared Lane Traffic (%)												
Lane Group Flow (vph)	196	1296	0	14	959	36	317	216	0	182	562	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2			6		6	4			8		
Total Split (s)	16.0	48.0		12.0	44.0	44.0	30.0	30.0		30.0	30.0	
Total Lost Time (s)	5.0	5.5		5.0	5.5	5.5	5.0	5.0		5.0	5.0	
Act Effct Green (s)	54.9	52.2		46.5	40.0	40.0	25.0	25.0		25.0	25.0	
Actuated g/C Ratio	0.61	0.58		0.52	0.44	0.44	0.28	0.28		0.28	0.28	
v/c Ratio	0.56	0.63		0.06	0.61	0.05	3.87	0.37		0.67	0.94	
Control Delay	10.8	9.9		13.9	24.4	5.6	1332.3	7.5		42.8	46.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	10.8	9.9		13.9	24.4	5.6	1332.3	7.5		42.8	46.8	
LOS	B	A		B	C	A	F	A		D	D	
Approach Delay		10.0			23.6			795.4			45.8	
Approach LOS		A			C			F			D	
Stops (vph)	76	948		9	493	5	252	34		145	294	
Fuel Used(gal)	3	23		0	23	1	77	1		3	9	
CO Emissions (g/hr)	190	1630		24	1634	41	5393	92		206	627	
NOx Emissions (g/hr)	37	317		5	318	8	1049	18		40	122	
VOC Emissions (g/hr)	44	378		5	379	9	1250	21		48	145	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Dilemma Vehicles (#)	0	24		0	120	0	0	0		0	0	
Queue Length 50th (ft)	13	213		4	168	0	~292	10		92	207	
Queue Length 95th (ft)	m26	366		m10	268	m7	#439	58		#184	#421	
Internal Link Dist (ft)		1084			2166			485			581	
Turn Bay Length (ft)	500			500		75	175			125		
Base Capacity (vph)	373	2050		263	1571	750	82	584		272	595	
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	0.53	0.63		0.05	0.61	0.05	3.87	0.37		0.67	0.94	

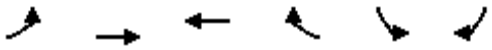
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Yellow			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 3.87			
Intersection Signal Delay: 131.5		Intersection LOS: F	
Intersection Capacity Utilization 102.7%		ICU Level of Service G	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 3: Willowbrook Office Pk/Woodcliff Dr & Rt 96 #1





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	161	1365	875	440	430	52
Future Volume (vph)	161	1365	875	440	430	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	450			400	250	0
Storage Lanes	1			1	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	0.95
Frt				0.850	0.984	
Flt Protected	0.950				0.957	
Satd. Flow (prot)	1770	3539	3539	1583	3403	0
Flt Permitted	0.213				0.957	
Satd. Flow (perm)	397	3539	3539	1583	3403	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				473	14	
Link Speed (mph)		45	45		45	
Link Distance (ft)		2246	1487		1337	
Travel Time (s)		34.0	22.5		20.3	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.87	0.87
Adj. Flow (vph)	173	1468	941	473	494	60
Shared Lane Traffic (%)						
Lane Group Flow (vph)	173	1468	941	473	554	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		24	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Turn Type	pm+pt	NA	NA	pm+ov	Prot	
Protected Phases	5	2	6	4	4	
Permitted Phases	2			6		
Total Split (s)	20.0	65.0	45.0	25.0	25.0	
Total Lost Time (s)	5.0	5.5	5.5	5.0	5.0	
Act Effct Green (s)	61.5	61.0	47.3	71.3	18.5	
Actuated g/C Ratio	0.68	0.68	0.53	0.79	0.21	
v/c Ratio	0.43	0.61	0.51	0.35	0.78	
Control Delay	10.9	10.8	15.7	1.0	41.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	10.9	10.8	15.7	1.0	41.1	
LOS	B	B	B	A	D	
Approach Delay		10.8	10.8		41.1	
Approach LOS		B	B		D	
Stops (vph)	68	623	548	11	431	
Fuel Used(gal)	4	31	18	4	14	
CO Emissions (g/hr)	248	2143	1262	313	949	
NOx Emissions (g/hr)	48	417	245	61	185	
VOC Emissions (g/hr)	57	497	292	72	220	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Dilemma Vehicles (#)	0	120	49	0	0	
Queue Length 50th (ft)	31	161	179	0	147	
Queue Length 95th (ft)	m110	422	247	18	195	
Internal Link Dist (ft)		2166	1407		1257	
Turn Bay Length (ft)	450			400	250	
Base Capacity (vph)	499	2396	1858	1370	767	
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	0.35	0.61	0.51	0.35	0.72	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Yellow			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 15.4		Intersection LOS: B	
Intersection Capacity Utilization 60.4%		ICU Level of Service B	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 4: Rt 96 #1 & Rte 250 #1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1402	615	142	988	489	168
Future Volume (vph)	1402	615	142	988	489	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		400	245		0	0
Storage Lanes		1	1		2	0
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	0.95
Frt		0.850			0.962	
Flt Protected			0.950		0.964	
Satd. Flow (prot)	3539	1583	1770	3539	3351	0
Flt Permitted			0.104		0.964	
Satd. Flow (perm)	3539	1583	194	3539	3351	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		225			43	
Link Speed (mph)	45			45	25	
Link Distance (ft)	1487			1542	484	
Travel Time (s)	22.5			23.4	13.2	
Peak Hour Factor	0.95	0.95	0.93	0.93	0.92	0.92
Adj. Flow (vph)	1476	647	153	1062	532	183
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1476	647	153	1062	715	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	18			12	24	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Turn Type	NA	pm+ov	pm+pt	NA	Prot	
Protected Phases	6	4	5	2	4	
Permitted Phases		6	2			
Total Split (s)	70.0	21.0	9.0	79.0	21.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Act Effct Green (s)	60.2	81.4	69.3	69.3	17.1	
Actuated g/C Ratio	0.64	0.86	0.73	0.73	0.18	
v/c Ratio	0.65	0.46	0.68	0.41	1.11	
Control Delay	12.1	2.0	22.3	5.2	106.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	12.1	2.0	22.3	5.2	106.8	
LOS	B	A	C	A	F	
Approach Delay	9.0			7.4	106.8	
Approach LOS	A			A	F	
Stops (vph)	797	67	40	328	500	
Fuel Used(gal)	27	7	3	15	19	
CO Emissions (g/hr)	1880	491	179	1050	1324	
NOx Emissions (g/hr)	366	95	35	204	258	
VOC Emissions (g/hr)	436	114	42	243	307	

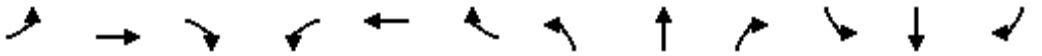
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Dilemma Vehicles (#)	74	0	0	52	0	
Queue Length 50th (ft)	260	28	22	105	~272	
Queue Length 95th (ft)	323	45	#53	133	#388	
Internal Link Dist (ft)	1407			1462	404	
Turn Bay Length (ft)		400	245			
Base Capacity (vph)	2490	1394	226	2830	642	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.59	0.46	0.68	0.38	1.11	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 94.5			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay: 25.8		Intersection LOS: C	
Intersection Capacity Utilization 75.9%		ICU Level of Service D	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 5: Commons Blvd & Rt 96 #1

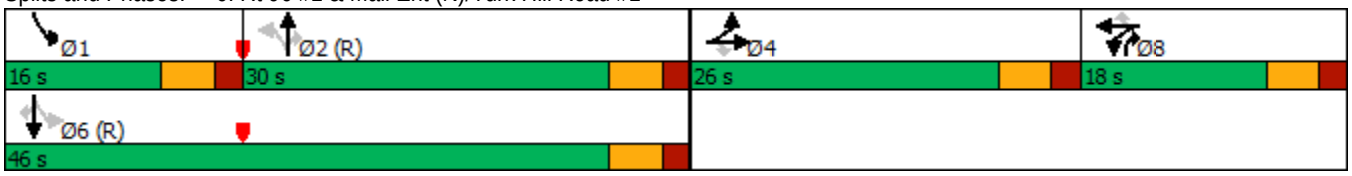


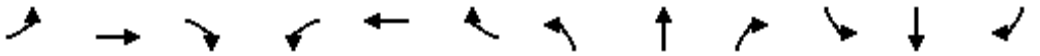
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	120	84	392	100	166	53	794	542	238	1088	243
Future Volume (vph)	170	120	84	392	100	166	53	794	542	238	1088	243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	12	12	11	11	11	11	11	11
Storage Length (ft)	0		0	0		200	100		175	350		200
Storage Lanes	1		1	2		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950	0.994		0.950			0.950			0.950		
Satd. Flow (prot)	1625	1700	1531	3433	1863	1583	1711	3421	1531	1711	3421	1531
Flt Permitted	0.950	0.994		0.950			0.204			0.130		
Satd. Flow (perm)	1625	1700	1531	3433	1863	1583	367	3421	1531	234	3421	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164			198			380			264
Link Speed (mph)		30			35			45			45	
Link Distance (ft)		497			533			1383			1542	
Travel Time (s)		11.3			10.4			21.0			23.4	
Peak Hour Factor	0.88	0.88	0.88	0.84	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	193	136	95	467	119	198	58	863	589	259	1183	264
Shared Lane Traffic (%)	10%											
Lane Group Flow (vph)	174	155	95	467	119	198	58	863	589	259	1183	264
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		36			36			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.00	1.00	1.00	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Perm	Split	NA	Perm	Perm	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	4	4		8	8			2	8	1	6	
Permitted Phases			4			8	2		2	6	6	6
Total Split (s)	26.0	26.0	26.0	18.0	18.0	18.0	30.0	30.0	18.0	16.0	46.0	46.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Act Effct Green (s)	15.0	15.0	15.0	16.9	16.9	16.9	25.2	25.2	42.1	41.6	41.6	41.6
Actuated g/C Ratio	0.17	0.17	0.17	0.19	0.19	0.19	0.28	0.28	0.47	0.46	0.46	0.46
v/c Ratio	0.64	0.55	0.24	0.73	0.34	0.43	0.57	0.90	0.64	0.91	0.75	0.31
Control Delay	45.3	40.8	2.0	43.4	36.2	8.7	53.5	45.6	7.4	56.1	23.9	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.3	40.8	2.0	43.4	36.2	8.7	53.5	45.6	7.4	56.1	23.9	3.1
LOS	D	D	A	D	D	A	D	D	A	E	C	A
Approach Delay		34.0			33.6			31.0			25.6	
Approach LOS		C			C			C			C	
Stops (vph)	137	120	2	331	87	25	46	698	164	139	866	20
Fuel Used(gal)	3	2	0	7	2	1	2	23	8	7	27	3
CO Emissions (g/hr)	193	162	26	522	124	78	114	1620	540	477	1884	198
NOx Emissions (g/hr)	38	32	5	102	24	15	22	315	105	93	367	39

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
VOC Emissions (g/hr)	45	38	6	121	29	18	26	376	125	111	437	46
Dilemma Vehicles (#)	0	0	0	0	6	0	0	42	0	0	60	0
Queue Length 50th (ft)	98	86	0	127	58	0	29	251	33	99	287	0
Queue Length 95th (ft)	152	136	4	#210	108	48	#87	#368	101	#246	371	42
Internal Link Dist (ft)		417			453			1303			1462	
Turn Bay Length (ft)						200	100		175	350		200
Base Capacity (vph)	370	387	475	643	348	457	102	958	918	286	1582	850
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.40	0.20	0.73	0.34	0.43	0.57	0.90	0.64	0.91	0.75	0.31

Intersection Summary			
Area Type:	Other		
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: 0.91			
Intersection Signal Delay: 29.7		Intersection LOS: C	
Intersection Capacity Utilization 75.0%		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: 6: Rt 96 #1 & Mall Ent (N)/Turk Hill Road #1





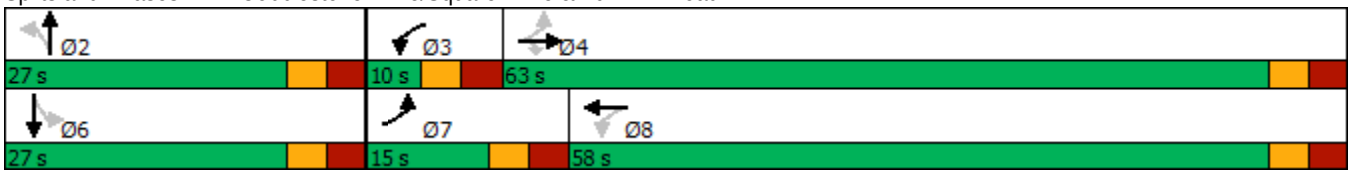
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	241	431	228	97	262	35	144	25	90	57	33	252
Future Volume (vph)	241	431	228	97	262	35	144	25	90	57	33	252
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	225		225	100		275	75		0	50		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.982			0.883			0.867	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	3476	0	1770	1645	0	1770	1615	0
Flt Permitted	0.449			0.398			0.425			0.673		
Satd. Flow (perm)	836	1863	1583	741	3476	0	792	1645	0	1254	1615	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			245		23			103			290	
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		533			819			470			441	
Travel Time (s)		10.4			16.0			12.8			12.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	259	463	245	104	282	38	166	29	103	66	38	290
Shared Lane Traffic (%)												
Lane Group Flow (vph)	259	463	245	104	320	0	166	132	0	66	328	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8			2			6		
Total Split (s)	15.0	63.0	63.0	10.0	58.0		27.0	27.0		27.0	27.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Act Effct Green (s)	34.1	26.3	26.3	25.0	19.0		23.2	23.2		23.2	23.2	
Actuated g/C Ratio	0.52	0.40	0.40	0.38	0.29		0.35	0.35		0.35	0.35	
v/c Ratio	0.44	0.62	0.31	0.28	0.31		0.59	0.20		0.15	0.43	
Control Delay	10.8	20.2	3.1	10.0	16.8		31.1	7.2		18.1	5.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	10.8	20.2	3.1	10.0	16.8		31.1	7.2		18.1	5.9	
LOS	B	C	A	B	B		C	A		B	A	
Approach Delay		13.4			15.2			20.5			7.9	
Approach LOS		B			B			C			A	
Stops (vph)	117	322	21	50	192		110	29		39	47	
Fuel Used(gal)	2	6	1	1	4		2	1		1	2	
CO Emissions (g/hr)	164	409	82	80	296		134	52		40	111	
NOx Emissions (g/hr)	32	80	16	16	57		26	10		8	22	
VOC Emissions (g/hr)	38	95	19	19	68		31	12		9	26	

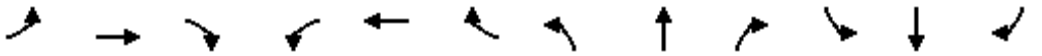
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Dilemma Vehicles (#)	0	32	0	0	22		0	0		0	0	
Queue Length 50th (ft)	53	150	0	19	47		53	7		18	10	
Queue Length 95th (ft)	89	235	36	39	75		#150	44		50	64	
Internal Link Dist (ft)		453			739			390			361	
Turn Bay Length (ft)	225		225	100			75			50		
Base Capacity (vph)	594	1675	1448	378	2904		281	650		445	761	
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	0.44	0.28	0.17	0.28	0.11		0.59	0.20		0.15	0.43	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 65.4			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 13.7		Intersection LOS: B	
Intersection Capacity Utilization 66.7%		ICU Level of Service C	
Analysis Period (min) 15			

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

Splits and Phases: 7: Cobblestone Drive/Square Drive & Turk Hill Road #1





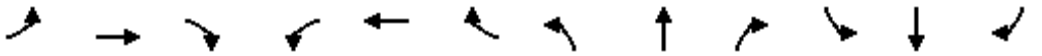
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	15	57	272	29	234	39	1063	223	73	1433	66
Future Volume (vph)	92	15	57	272	29	234	39	1063	223	73	1433	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	165		0	100		100	200		175	400		450
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
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		0.881				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1641	0	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.736			0.706			0.117			0.135		
Satd. Flow (perm)	1371	1641	0	1315	1863	1583	218	3539	1583	251	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		62				254			242			95
Link Speed (mph)		25			20			45			45	
Link Distance (ft)		570			251			991			1383	
Travel Time (s)		15.5			8.6			15.0			21.0	
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
Adj. Flow (vph)	100	16	62	296	32	254	42	1155	242	79	1558	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	100	78	0	296	32	254	42	1155	242	79	1558	72
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		18			18			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Total Split (s)	25.0	25.0		25.0	25.0	25.0	15.0	40.0	40.0	15.0	40.0	40.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Act Effct Green (s)	18.8	18.8		18.8	18.8	18.8	37.9	33.3	33.3	39.1	35.7	35.7
Actuated g/C Ratio	0.27	0.27		0.27	0.27	0.27	0.54	0.47	0.47	0.55	0.50	0.50
v/c Ratio	0.28	0.16		0.85	0.06	0.42	0.17	0.69	0.28	0.29	0.87	0.09
Control Delay	24.3	9.6		50.2	21.4	5.7	7.9	18.4	2.8	9.4	24.6	2.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.3	9.6		50.2	21.4	5.7	7.9	18.4	2.8	9.4	24.6	2.1
LOS	C	A		D	C	A	A	B	A	A	C	A
Approach Delay		17.9			29.2			15.5			22.9	
Approach LOS		B			C			B			C	
Stops (vph)	68	21		224	23	30	17	793	20	30	1109	6
Fuel Used(gal)	1	1		5	0	2	1	21	2	1	34	1
CO Emissions (g/hr)	81	40		329	23	107	37	1446	126	82	2364	49
NOx Emissions (g/hr)	16	8		64	4	21	7	281	25	16	460	9
VOC Emissions (g/hr)	19	9		76	5	25	9	335	29	19	548	11

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Dilemma Vehicles (#)	0	0		0	0	0	0	63	0	0	89	0
Queue Length 50th (ft)	38	6		133	11	0	7	219	0	14	356	0
Queue Length 95th (ft)	78	36		#270	32	52	18	293	36	30	#521	14
Internal Link Dist (ft)		490			171			911			1303	
Turn Bay Length (ft)	165			100		100	200		175	400		450
Base Capacity (vph)	391	513		375	532	633	348	1769	912	363	1787	846
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.15		0.79	0.06	0.40	0.12	0.65	0.27	0.22	0.87	0.09

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 70.7			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 20.9		Intersection LOS: C	
Intersection Capacity Utilization 78.8%		ICU Level of Service D	
Analysis Period (min) 15			

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

Splits and Phases: 8: Rt 96 #1 & Mall Ent (C)/Cobblestone Ct



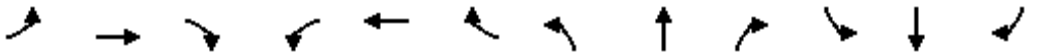
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	132	231	115	105	192	299	1035	240	400	1268	92
Future Volume (vph)	81	132	231	115	105	192	299	1035	240	400	1268	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	12	12	11	11	11	11	11	11
Storage Length (ft)	145		0	125		200	650		150	600		350
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
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			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1745	1837	1531	1787	1900	1599	1728	3421	1531	1728	3388	1531
Flt Permitted	0.617			0.555			0.950			0.950		
Satd. Flow (perm)	1133	1837	1531	1044	1900	1599	1728	3421	1531	1728	3388	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			36			51			231			101
Link Speed (mph)		25			40			45			45	
Link Distance (ft)		920			889			1270			991	
Travel Time (s)		25.1			15.2			19.2			15.0	
Peak Hour Factor	0.88	0.88	0.88	0.84	0.84	0.84	0.97	0.97	0.97	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	2%	1%	0%	1%	1%	2%	2%	1%	3%	2%
Adj. Flow (vph)	92	150	263	137	125	229	308	1067	247	440	1393	101
Shared Lane Traffic (%)												
Lane Group Flow (vph)	92	150	263	137	125	229	308	1067	247	440	1393	101
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.00	1.00	1.00	1.04	1.04	1.04	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4	5		8	1	5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Total Split (s)	23.0	23.0	17.0	23.0	23.0	21.0	17.0	46.0	46.0	21.0	50.0	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	4.0	4.0
Act Effct Green (s)	16.6	16.6	36.0	16.6	16.6	40.0	15.4	42.0	42.0	19.4	46.0	46.0
Actuated g/C Ratio	0.18	0.18	0.40	0.18	0.18	0.44	0.17	0.47	0.47	0.22	0.51	0.51
v/c Ratio	0.44	0.45	0.41	0.71	0.36	0.31	1.04	0.67	0.30	1.18	0.80	0.12
Control Delay	38.8	36.3	19.0	55.1	34.3	13.7	79.9	34.6	15.2	140.2	22.8	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.8	36.3	19.0	55.1	34.3	13.7	79.9	34.6	15.2	140.2	22.8	2.8
LOS	D	D	B	E	C	B	E	C	B	F	C	A
Approach Delay		27.8			30.5			40.2			48.5	
Approach LOS		C			C			D			D	
Stops (vph)	69	113	140	103	88	93	227	918	142	298	1012	10
Fuel Used(gal)	2	2	3	3	2	3	12	33	6	18	27	1
CO Emissions (g/hr)	108	171	227	209	156	182	832	2326	411	1237	1862	54

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
NOx Emissions (g/hr)	21	33	44	41	30	35	162	452	80	241	362	10
VOC Emissions (g/hr)	25	40	53	49	36	42	193	539	95	287	432	12
Dilemma Vehicles (#)	0	0	0	0	6	0	0	56	0	0	70	0
Queue Length 50th (ft)	46	74	90	72	61	61	~222	336	74	~325	328	0
Queue Length 95th (ft)	90	127	151	124	102	102	m#288	m373	m105	#513	423	24
Internal Link Dist (ft)		840			809			1190			911	
Turn Bay Length (ft)	145			125		200	650		150	600		350
Base Capacity (vph)	239	387	634	220	401	739	296	1596	837	373	1731	831
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.39	0.41	0.62	0.31	0.31	1.04	0.67	0.30	1.18	0.80	0.12

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 86 (96%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.18
Intersection Signal Delay: 41.3 Intersection LOS: D
Intersection Capacity Utilization 78.3% ICU Level of Service D
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Rt 96 #1 & Mall Ent (S)/High St



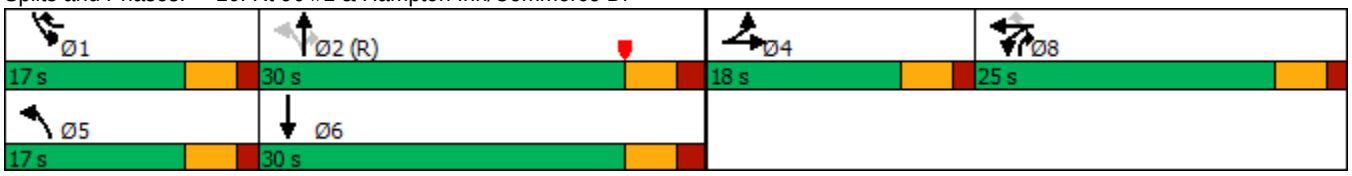
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	14	111	299	25	295	44	1291	265	348	1259	93
Future Volume (vph)	62	14	111	299	25	295	44	1291	265	348	1259	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	80		0	120		0	240		400	425		0
Storage Lanes	1		0	1		1	1		1	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.95	0.95
Frt		0.867				0.850			0.850		0.990	
Flt Protected	0.950			0.950	0.960		0.950			0.950		
Satd. Flow (prot)	1805	1647	0	1698	1718	1599	1805	3574	1615	3467	3509	0
Flt Permitted	0.950			0.950	0.960		0.113			0.950		
Satd. Flow (perm)	1805	1647	0	1698	1718	1599	215	3574	1615	3467	3509	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		119				219			270		8	
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		394			713			521			899	
Travel Time (s)		10.7			19.4			7.9			13.6	
Peak Hour Factor	0.93	0.93	0.93	0.97	0.97	0.97	0.98	0.98	0.98	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	0%	1%	0%	1%	0%	1%	0%	1%	2%	0%
Adj. Flow (vph)	67	15	119	308	26	304	45	1317	270	370	1339	99
Shared Lane Traffic (%)				44%								
Lane Group Flow (vph)	67	134	0	172	162	304	45	1317	270	370	1438	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA		Split	NA	pm+ov	pm+pt	NA	pm+ov	Prot	NA	
Protected Phases	4	4		8	8	1	5	2	8	1	6	
Permitted Phases						8	2		2			
Total Split (s)	18.0	18.0		25.0	25.0	17.0	17.0	30.0	25.0	17.0	30.0	
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 Effct Green (s)	8.8	8.8		15.4	15.4	33.4	42.5	35.8	51.2	14.0	47.1	
Actuated g/C Ratio	0.10	0.10		0.17	0.17	0.37	0.47	0.40	0.57	0.16	0.52	
v/c Ratio	0.38	0.50		0.59	0.55	0.42	0.21	0.93	0.26	0.69	0.78	
Control Delay	43.5	16.2		41.8	40.2	7.1	9.3	32.5	0.7	39.2	27.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	
Total Delay	43.5	16.2		41.8	40.2	7.1	9.3	32.5	0.7	39.2	27.6	
LOS	D	B		D	D	A	A	C	A	D	C	
Approach Delay		25.3			24.9			26.6			29.9	
Approach LOS		C			C			C			C	
Stops (vph)	56	31		149	138	62	17	874	6	332	848	
Fuel Used(gal)	1	1		3	3	2	0	24	1	12	37	
CO Emissions (g/hr)	68	66		210	193	172	31	1663	71	825	2587	
NOx Emissions (g/hr)	13	13		41	38	33	6	323	14	161	503	

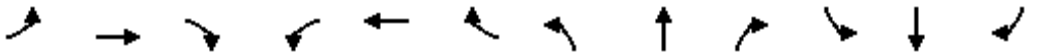
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
VOC Emissions (g/hr)	16	15		49	45	40	7	385	16	191	600	
Dilemma Vehicles (#)	0	0		0	0	0	0	44	0	0	134	
Queue Length 50th (ft)	36	8		95	89	31	6	397	0	107	300	
Queue Length 95th (ft)	74	59		149	141	79	m14	m#607	m4	m151	#641	
Internal Link Dist (ft)		314			633			441			819	
Turn Bay Length (ft)	80			120			240		400	425		
Base Capacity (vph)	280	356		401	405	736	346	1421	1122	553	1839	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	3		0	0	0	0	0	0	0	128	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.24	0.38		0.43	0.40	0.41	0.13	0.93	0.24	0.67	0.84	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 40 (44%), Referenced to phase 2:NBTL, Start of Yellow			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 27.7		Intersection LOS: C	
Intersection Capacity Utilization 75.5%		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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Rt 96 #1 & Hampton Inn/Commerce Dr





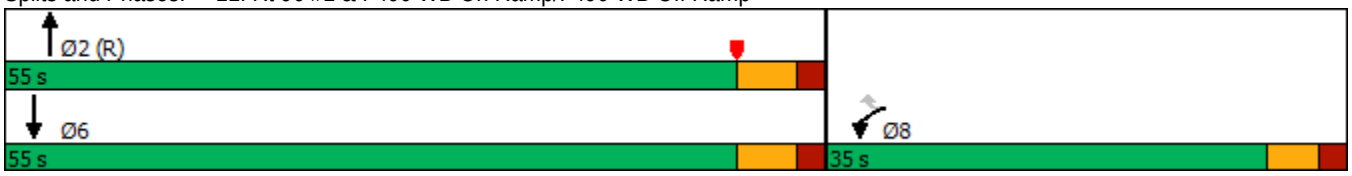
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	184	0	502	0	1036	0	0	1556	179
Future Volume (vph)	0	0	0	184	0	502	0	1036	0	0	1556	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	120		0	0		0	0		400
Storage Lanes	0		0	1		1	0		0	0		1
Taper Length (ft)	25			25			25			25		
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						0.850						0.850
Flt Protected				0.950								
Satd. Flow (prot)	0	0	0	1752	0	1599	0	3574	0	0	3539	1599
Flt Permitted				0.950								
Satd. Flow (perm)	0	0	0	1752	0	1599	0	3574	0	0	3539	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						84						149
Link Speed (mph)		25			40			45			45	
Link Distance (ft)		1143			359			583			521	
Travel Time (s)		31.2			6.1			8.8			7.9	
Peak Hour Factor	0.92	0.92	0.92	0.85	0.85	0.85	0.95	0.95	0.95	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	3%	0%	1%	0%	1%	0%	0%	2%	1%
Adj. Flow (vph)	0	0	0	216	0	591	0	1091	0	0	1710	197
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	216	0	591	0	1091	0	0	1710	197
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type				Prot		Perm		NA			NA	Free
Protected Phases				8				2			6	
Permitted Phases						8						Free
Total Split (s)				35.0		35.0		55.0			55.0	
Total Lost Time (s)				4.0		4.0		4.0			4.0	
Act Effct Green (s)				31.0		31.0		51.0			51.0	90.0
Actuated g/C Ratio				0.34		0.34		0.57			0.57	1.00
v/c Ratio				0.36		0.98		0.54			0.85	0.12
Control Delay				24.2		58.2		13.4			15.9	0.1
Queue Delay				0.0		0.0		0.0			8.2	0.0
Total Delay				24.2		58.2		13.4			24.0	0.1
LOS				C		E		B			C	A
Approach Delay					49.1			13.4			21.6	
Approach LOS					D			B			C	
Stops (vph)				135		377		610			1114	0
Fuel Used(gal)				3		11		14			24	1
CO Emissions (g/hr)				187		760		1002			1688	43
NOx Emissions (g/hr)				36		148		195			328	8

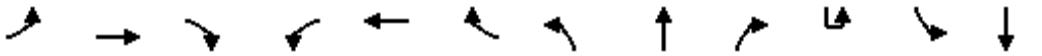
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
VOC Emissions (g/hr)				43		176		232			391	10
Dilemma Vehicles (#)				0		0		58			21	0
Queue Length 50th (ft)				91		290		189			398	0
Queue Length 95th (ft)				141		#464		244			144	m0
Internal Link Dist (ft)		1063			279			503			441	
Turn Bay Length (ft)				120								400
Base Capacity (vph)				603		605		2025			2005	1599
Starvation Cap Reductn				0		0		0			277	0
Spillback Cap Reductn				0		0		0			0	0
Storage Cap Reductn				0		0		0			0	0
Reduced v/c Ratio				0.36		0.98		0.54			0.99	0.12

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 55 (61%), Referenced to phase 2:NBT, Start of Yellow			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.98			
Intersection Signal Delay: 25.1		Intersection LOS: C	
Intersection Capacity Utilization 66.4%		ICU Level of Service C	
Analysis Period (min) 15			

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Rt 96 #1 & I-490 WB On Ramp/I-490 WB Off Ramp





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	976	86	110	25	82	152	97	1025	37	39	188	1333
Future Volume (vph)	976	86	110	25	82	152	97	1025	37	39	188	1333
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	450		450	75		0	430		0		400	
Storage Lanes	1		1	1		0	1		0		1	
Taper Length (ft)	25			25			25				25	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95
Frt			0.850		0.902			0.995				
Flt Protected	0.950	0.960		0.950			0.950				0.950	
Satd. Flow (prot)	1698	1718	1615	1805	1680	0	1805	3524	0	0	1790	3574
Flt Permitted	0.950	0.960		0.950			0.950				0.950	
Satd. Flow (perm)	1698	1718	1615	1805	1680	0	1805	3524	0	0	1790	3574
Right Turn on Red			Yes			Yes			Yes			
Satd. Flow (RTOR)			117		61			3				
Link Speed (mph)		45			45			50				50
Link Distance (ft)		1243			922			1348				1581
Travel Time (s)		18.8			14.0			18.4				21.6
Peak Hour Factor	0.94	0.94	0.94	0.81	0.81	0.81	0.91	0.91	0.91	0.90	0.90	0.90
Heavy Vehicles (%)	1%	0%	0%	0%	2%	2%	0%	2%	0%	0%	1%	1%
Adj. Flow (vph)	1038	91	117	31	101	188	107	1126	41	43	209	1481
Shared Lane Traffic (%)	47%											
Lane Group Flow (vph)	550	579	117	31	289	0	107	1167	0	0	252	1481
Enter Blocked Intersection	Yes	Yes	No	No	Yes	Yes	No	No	No	Yes	Yes	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	R NA	Left	Left
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	9	15	
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Prot	Prot	NA
Protected Phases	8	8	5	4	4		5	2		1	1	6
Permitted Phases			8									
Total Split (s)	41.0	41.0	14.0	14.0	14.0		14.0	40.0		25.0	25.0	51.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	4.0
Act Effct Green (s)	37.0	37.0	47.0	10.0	10.0		10.0	37.7			19.3	47.0
Actuated g/C Ratio	0.31	0.31	0.39	0.08	0.08		0.08	0.31			0.16	0.39
v/c Ratio	1.05	1.09	0.17	0.21	1.48		0.71	1.05			0.88	1.06
Control Delay	94.2	107.0	3.2	55.0	272.7		72.9	78.7			78.4	77.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0			0.0	0.0
Total Delay	94.2	107.0	3.2	55.0	272.7		72.9	78.7			78.4	77.0
LOS	F	F	A	D	F		E	E			E	E
Approach Delay		91.6			251.6			78.2				55.6
Approach LOS		F			F			E				E
Stops (vph)	442	460	12	25	126		92	934			209	1173
Fuel Used(gal)	20	22	1	1	16		4	40			9	52
CO Emissions (g/hr)	1369	1535	77	52	1116		257	2826			637	3655
NOx Emissions (g/hr)	266	299	15	10	217		50	550			124	711

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	717
Future Volume (vph)	717
Ideal Flow (vphpl)	1900
Storage Length (ft)	425
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1583
Flt Permitted	
Satd. Flow (perm)	1583
Right Turn on Red	Yes
Satd. Flow (RTOR)	213
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.90
Heavy Vehicles (%)	2%
Adj. Flow (vph)	797
Shared Lane Traffic (%)	
Lane Group Flow (vph)	797
Enter Blocked Intersection	Yes
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Turn Type	pm+ov
Protected Phases	8
Permitted Phases	6
Total Split (s)	41.0
Total Lost Time (s)	4.0
Act Effct Green (s)	88.0
Actuated g/C Ratio	0.73
v/c Ratio	0.65
Control Delay	8.6
Queue Delay	0.0
Total Delay	8.6
LOS	A
Approach Delay	
Approach LOS	
Stops (vph)	266
Fuel Used(gal)	13
CO Emissions (g/hr)	876
NOx Emissions (g/hr)	170

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
VOC Emissions (g/hr)	317	356	18	12	259		60	655			148	847
Dilemma Vehicles (#)	0	20	0	0	6		0	14			0	51
Queue Length 50th (ft)	~489	~532	0	23	~264		84	~548			189	~662
Queue Length 95th (ft)	#717	#765	27	50	#377		m#136	#687			#321	#801
Internal Link Dist (ft)		1163			842			1268				1501
Turn Bay Length (ft)	450		450	75			430				400	
Base Capacity (vph)	523	529	703	150	195		150	1109			313	1399
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	1.05	1.09	0.17	0.21	1.48		0.71	1.05			0.81	1.06

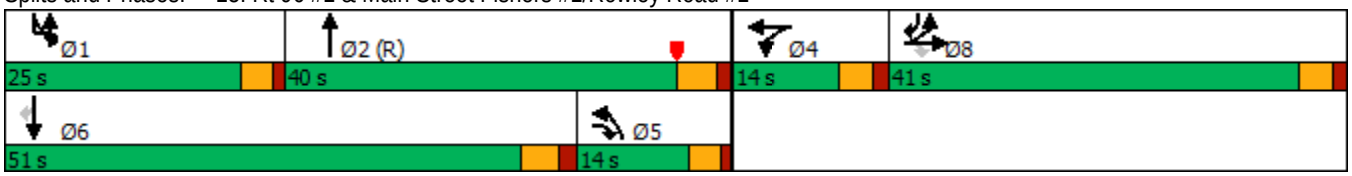
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:NBT, Start of Yellow			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.48			
Intersection Signal Delay: 81.0		Intersection LOS: F	
Intersection Capacity Utilization 98.5%		ICU Level of Service F	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

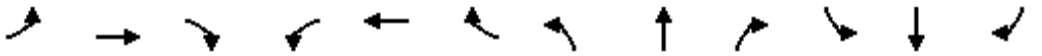
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Rt 96 #1 & Main Street Fishers #1/Rowley Road #1



Lane Group	SBR
VOC Emissions (g/hr)	203
Dilemma Vehicles (#)	0
Queue Length 50th (ft)	194
Queue Length 95th (ft)	308
Internal Link Dist (ft)	
Turn Bay Length (ft)	425
Base Capacity (vph)	1217
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.65

Intersection Summary



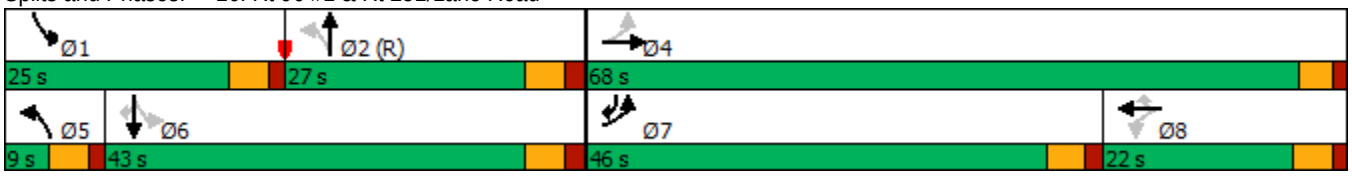
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	545	58	112	9	50	60	108	443	59	376	316	768
Future Volume (vph)	545	58	112	9	50	60	108	443	59	376	316	768
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	16	12	12	16	12
Storage Length (ft)	300		0	0		200	285		0	200		550
Storage Lanes	1		0	0		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt		0.895				0.850		0.982				0.850
Flt Protected	0.950				0.992		0.950			0.950		
Satd. Flow (prot)	1787	1645	0	0	1848	1583	1656	3905	0	1770	4011	1599
Flt Permitted	0.462				0.907		0.541			0.172		
Satd. Flow (perm)	869	1645	0	0	1690	1583	943	3905	0	320	4011	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		145				159		11				622
Link Speed (mph)		50			40			50			50	
Link Distance (ft)		534			1891			1183			4706	
Travel Time (s)		7.3			32.2			16.1			64.2	
Peak Hour Factor	0.77	0.92	0.77	0.92	0.92	0.92	0.93	0.93	0.92	0.92	0.90	0.90
Heavy Vehicles (%)	1%	2%	4%	2%	2%	2%	9%	3%	2%	2%	2%	1%
Adj. Flow (vph)	708	63	145	10	54	65	116	476	64	409	351	853
Shared Lane Traffic (%)												
Lane Group Flow (vph)	708	208	0	0	64	65	116	540	0	409	351	853
Enter Blocked Intersection	Yes	No	Yes	No	No	No	Yes	Yes	No	No	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane											Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.85	1.00	1.00	0.85	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	7	4			8		5	2		1	6	7
Permitted Phases	4			8		8	2			6		6
Total Split (s)	46.0	68.0		22.0	22.0	22.0	9.0	27.0		25.0	43.0	46.0
Total Lost Time (s)	5.0	4.5			5.0	5.0	3.5	4.0		5.0	4.0	3.5
Act Effct Green (s)	55.6	56.1			10.2	10.2	31.5	20.8		54.4	41.7	90.2
Actuated g/C Ratio	0.46	0.47			0.08	0.08	0.26	0.17		0.45	0.35	0.75
v/c Ratio	0.97	0.25			0.45	0.23	0.38	0.79		0.81	0.25	0.63
Control Delay	55.7	6.4			61.7	1.9	25.7	55.4		33.8	9.9	16.9
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	55.7	6.4			61.7	1.9	25.7	55.4		33.8	9.9	16.9
LOS	E	A			E	A	C	E		C	A	B
Approach Delay		44.5			31.6			50.1			19.6	
Approach LOS		D			C			D			B	
Stops (vph)	426	31			54	0	81	461		235	146	652
Fuel Used(gal)	15	1			2	1	6	33		17	12	36
CO Emissions (g/hr)	1018	89			142	55	428	2292		1217	861	2486

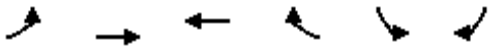
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
NOx Emissions (g/hr)	198	17			28	11	83	446		237	167	484
VOC Emissions (g/hr)	236	21			33	13	99	531		282	199	576
Dilemma Vehicles (#)	0	6			2	0	0	21		0	8	0
Queue Length 50th (ft)	459	25			48	0	52	207		158	68	581
Queue Length 95th (ft)	468	66			92	0	94	266		#450	78	749
Internal Link Dist (ft)		454			1811			1103			4626	
Turn Bay Length (ft)	300					200	285			200		550
Base Capacity (vph)	731	938			239	360	307	757		502	1403	1356
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	0.97	0.22			0.27	0.18	0.38	0.71		0.81	0.25	0.63

Intersection Summary

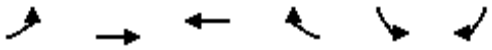
Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 97 (81%), Referenced to phase 2:NBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 33.0 Intersection LOS: C
Intersection Capacity Utilization 82.2% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 16: Rt 96 #1 & Rt 251/Lane Road





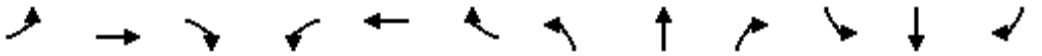
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	15	672	542	194	220	18
Future Volume (vph)	15	672	542	194	220	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130			130	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.990	
Flt Protected	0.950				0.956	
Satd. Flow (prot)	1593	1676	1676	1425	1587	0
Flt Permitted	0.372				0.956	
Satd. Flow (perm)	624	1676	1676	1425	1587	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				213	4	
Link Speed (mph)		30	30		30	
Link Distance (ft)		5115	640		866	
Travel Time (s)		116.3	14.5		19.7	
Peak Hour Factor	0.92	0.92	0.91	0.91	0.94	0.94
Adj. Flow (vph)	16	730	596	213	234	19
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	730	596	213	253	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes		Yes	
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15			9	15	9
Turn Type	Perm	NA	NA	Prot	Prot	
Protected Phases		2	6	6	7	
Permitted Phases	2					
Total Split (s)	69.0	69.0	69.0	69.0	31.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Act Effct Green (s)	70.2	70.2	70.2	70.2	21.8	
Actuated g/C Ratio	0.70	0.70	0.70	0.70	0.22	
v/c Ratio	0.04	0.62	0.51	0.20	0.73	
Control Delay	6.1	11.7	9.5	1.4	47.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	6.1	11.7	9.5	1.4	47.6	
LOS	A	B	A	A	D	
Approach Delay		11.6	7.4		47.6	
Approach LOS		B	A		D	
Stops (vph)	6	356	248	10	211	
Fuel Used(gal)	1	36	5	1	5	
CO Emissions (g/hr)	54	2502	358	75	355	
NOx Emissions (g/hr)	10	487	70	15	69	
VOC Emissions (g/hr)	12	580	83	17	82	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (ft)	3	219	157	0	147	
Queue Length 95th (ft)	11	390	276	24	221	
Internal Link Dist (ft)		5035	560		786	
Turn Bay Length (ft)	130			130		
Base Capacity (vph)	438	1176	1176	1064	431	
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	0.04	0.62	0.51	0.20	0.59	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 18 (18%), Referenced to phase 6:WBT, Start of Yellow			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 14.7		Intersection LOS: B	
Intersection Capacity Utilization 60.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 18: Rt 96 #1 & High Street #1

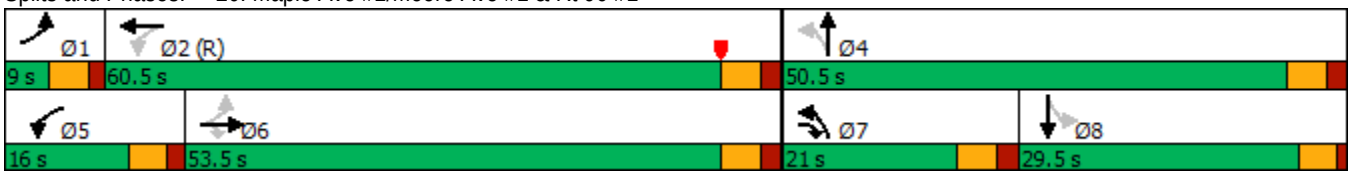


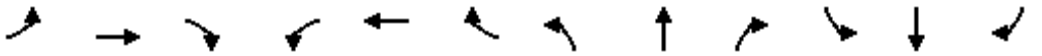
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	524	227	206	395	11	331	7	159	27	10	10
Future Volume (vph)	24	524	227	206	395	11	331	7	159	27	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	120		225	130		0	200		0	0		0
Storage Lanes	1		1	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
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			0.850		0.996			0.857			0.971	
Flt Protected	0.950			0.950			0.950				0.972	
Satd. Flow (prot)	1593	1676	1425	1593	1670	0	1593	1437	0	0	1582	0
Flt Permitted	0.476			0.281			0.666				0.751	
Satd. Flow (perm)	798	1676	1425	471	1670	0	1117	1437	0	0	1223	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			239		2			171			11	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		691			618			503			679	
Travel Time (s)		15.7			14.0			11.4			15.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.93	0.93	0.93	0.79	0.79	0.79
Adj. Flow (vph)	25	552	239	217	416	12	356	8	171	34	13	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	25	552	239	217	428	0	356	179	0	0	60	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases	1	6	7	5	2		7	4			8	
Permitted Phases	6		6	2			4			8		
Total Split (s)	9.0	53.5	21.0	16.0	60.5		21.0	50.5		29.5	29.5	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	
Act Effct Green (s)	68.8	63.4	84.4	78.2	72.6		33.8	33.8			14.9	
Actuated g/C Ratio	0.57	0.53	0.70	0.65	0.60		0.28	0.28			0.12	
v/c Ratio	0.05	0.62	0.22	0.53	0.42		0.93	0.34			0.37	
Control Delay	11.7	27.4	1.9	15.8	17.7		66.2	5.8			43.3	
Queue Delay	0.0	0.0	0.0	0.1	0.0		2.8	0.0			0.0	
Total Delay	11.7	27.4	1.9	15.9	17.7		69.1	5.8			43.3	
LOS	B	C	A	B	B		E	A			D	
Approach Delay		19.5			17.1			47.9			43.3	
Approach LOS		B			B			D			D	
Stops (vph)	12	377	13	87	227		309	47			34	
Fuel Used(gal)	0	8	1	2	5		7	1			1	
CO Emissions (g/hr)	18	548	97	149	328		522	77			60	
NOx Emissions (g/hr)	3	107	19	29	64		102	15			12	
VOC Emissions (g/hr)	4	127	22	35	76		121	18			14	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Dilemma Vehicles (#)	0	0	0	0	0		0	0			0	
Queue Length 50th (ft)	6	277	0	57	169		~282	26			37	
Queue Length 95th (ft)	22	523	33	132	329		346	m20			61	
Internal Link Dist (ft)		611			538			423			599	
Turn Bay Length (ft)	120		225	130			200					
Base Capacity (vph)	493	885	1072	419	1010		382	661			268	
Starvation Cap Reductn	0	0	0	0	0		8	0			0	
Spillback Cap Reductn	0	0	47	6	0		0	0			0	
Storage Cap Reductn	0	0	0	0	0		0	0			0	
Reduced v/c Ratio	0.05	0.62	0.23	0.53	0.42		0.95	0.27			0.22	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 58 (48%), Referenced to phase 2:WBTL, Start of Yellow			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 26.8		Intersection LOS: C	
Intersection Capacity Utilization 82.0%		ICU Level of Service E	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 20: Maple Ave #1/Moore Ave #1 & Rt 96 #1



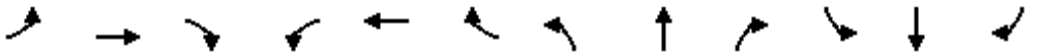


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	303	25	26	25	25	25	5	1114	25	97	1389	23
Future Volume (vph)	303	25	26	25	25	25	5	1114	25	97	1389	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		0	0		0	100		0	100		0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.924			0.955			0.997			0.998	
Flt Protected	0.950				0.984		0.950			0.950		
Satd. Flow (prot)	1770	1721	0	0	1750	0	1770	3529	0	1770	3532	0
Flt Permitted	0.716				0.907		0.119			0.117		
Satd. Flow (perm)	1334	1721	0	0	1613	0	222	3529	0	218	3532	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		28			23			2			2	
Link Speed (mph)		30			45			50			50	
Link Distance (ft)		451			876			4706			1348	
Travel Time (s)		10.3			13.3			64.2			18.4	
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
Adj. Flow (vph)	329	27	28	27	27	27	5	1211	27	105	1510	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	329	55	0	0	81	0	5	1238	0	105	1535	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes				
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Total Split (s)	48.0	48.0		48.0	48.0		57.0	57.0		15.0	72.0	
Total Lost Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	
Act Effct Green (s)	34.3	34.3			34.3		62.5	62.5		75.7	75.7	
Actuated g/C Ratio	0.29	0.29			0.29		0.52	0.52		0.63	0.63	
v/c Ratio	0.87	0.11			0.17		0.04	0.67		0.43	0.69	
Control Delay	62.1	16.5			21.9		26.2	29.0		19.1	36.0	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	62.1	16.5			21.9		26.2	29.0		19.1	36.0	
LOS	E	B			C		C	C		B	D	
Approach Delay		55.5			21.9			29.0			34.9	
Approach LOS		E			C			C			C	
Stops (vph)	281	19			38		1	752		78	1387	
Fuel Used(gal)	6	0			1		0	52		2	44	
CO Emissions (g/hr)	451	32			86		13	3653		168	3055	
NOx Emissions (g/hr)	88	6			17		3	711		33	594	
VOC Emissions (g/hr)	104	7			20		3	847		39	708	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Dilemma Vehicles (#)	0	0			3		0	61		0	5	
Queue Length 50th (ft)	240	15			33		2	317		59	660	
Queue Length 95th (ft)	327	43			66		m3	m356		m76	m636	
Internal Link Dist (ft)		371			796			4626			1268	
Turn Bay Length (ft)	300						100			100		
Base Capacity (vph)	478	634			592		115	1839		266	2229	
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	0.69	0.09			0.14		0.04	0.67		0.39	0.69	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 68 (57%), Referenced to phase 2:NBTL, Start of Yellow			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 34.7		Intersection LOS: C	
Intersection Capacity Utilization 87.6%		ICU Level of Service E	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 42: Rt 96 #1 & Omnitech Dr/Willowbrook Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	138	178	25	25	197	10	64	349	10	30	353	60
Future Volume (vph)	138	178	25	25	197	10	64	349	10	30	353	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
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		0.982			0.994			0.997			0.982	
Flt Protected	0.950				0.995			0.992			0.997	
Satd. Flow (prot)	1770	1829	0	0	1842	0	0	1842	0	0	1824	0
Flt Permitted	0.358				0.899			0.869			0.951	
Satd. Flow (perm)	667	1829	0	0	1665	0	0	1614	0	0	1740	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			2			2			12	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1096			3263			515			503	
Travel Time (s)		24.9			74.2			11.7			11.4	
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
Adj. Flow (vph)	150	193	27	27	214	11	70	379	11	33	384	65
Shared Lane Traffic (%)												
Lane Group Flow (vph)	150	220	0	0	252	0	0	460	0	0	482	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Total Split (s)	42.0	42.0		42.0	42.0		78.0	78.0		78.0	78.0	
Total Lost Time (s)	4.0	4.0			4.0			4.0			4.0	
Act Effct Green (s)	26.1	26.1			26.1			85.9			85.9	
Actuated g/C Ratio	0.22	0.22			0.22			0.72			0.72	
v/c Ratio	1.04	0.55			0.69			0.40			0.39	
Control Delay	130.1	44.2			51.9			9.3			14.0	
Queue Delay	0.0	0.0			0.0			0.0			0.7	
Total Delay	130.1	44.2			51.9			9.3			14.7	
LOS	F	D			D			A			B	
Approach Delay		79.0			51.9			9.3			14.7	
Approach LOS		E			D			A			B	
Stops (vph)	129	166			204			170			231	
Fuel Used(gal)	6	4			9			3			4	
CO Emissions (g/hr)	388	312			663			240			299	
NOx Emissions (g/hr)	75	61			129			47			58	
VOC Emissions (g/hr)	90	72			154			56			69	

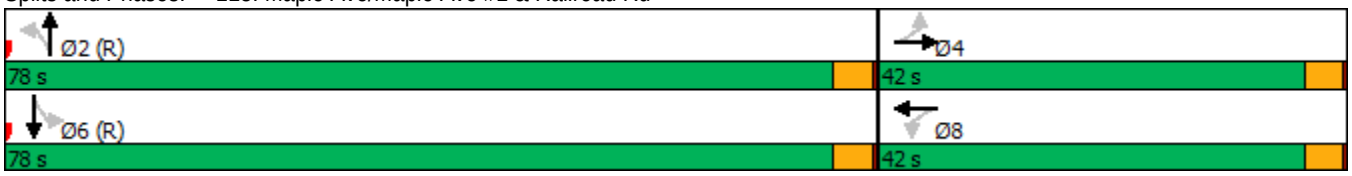
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Dilemma Vehicles (#)	0	0			0			0			0	
Queue Length 50th (ft)	~125	149			180			125			122	
Queue Length 95th (ft)	#208	201			239			254			411	
Internal Link Dist (ft)		1016			3183			435			423	
Turn Bay Length (ft)	250											
Base Capacity (vph)	211	583			528			1156			1248	
Starvation Cap Reductn	0	0			0			0			448	
Spillback Cap Reductn	0	0			0			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.71	0.38			0.48			0.40			0.60	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 45 (38%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.04			
Intersection Signal Delay: 34.3		Intersection LOS: C	
Intersection Capacity Utilization 72.1%		ICU Level of Service C	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 118: Maple Ave/Maple Ave #1 & Railroad Rd



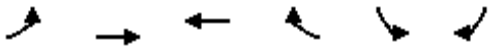
Appendix J

Data for unsignalized intersections in the Full Build scenario begins on the following page.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	591	310	0	736	0	184
Future Volume (Veh/h)	591	310	0	736	0	184
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.85	0.85	0.89	0.89
Hourly flow rate (vph)	657	344	0	866	0	207
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)	640			691		
pX, platoon unblocked			0.87		0.74	0.87
vC, conflicting volume			657		1523	657
vC1, stage 1 conf vol					657	
vC2, stage 2 conf vol					866	
vCu, unblocked vol			535		1146	535
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	57
cM capacity (veh/h)			902		333	476

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	657	344	866	207
Volume Left	0	0	0	0
Volume Right	0	344	0	207
cSH	1700	1700	1700	476
Volume to Capacity	0.39	0.20	0.51	0.43
Queue Length 95th (ft)	0	0	0	54
Control Delay (s)	0.0	0.0	0.0	18.2
Lane LOS				C
Approach Delay (s)	0.0		0.0	18.2
Approach LOS				C

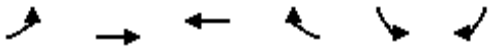
Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	188	522	430	54	36	182
Future Volume (Veh/h)	188	522	430	54	36	182
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.83	0.83
Hourly flow rate (vph)	204	567	467	59	43	219
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	None			
Median storage veh)		2				
Upstream signal (ft)		618				
pX, platoon unblocked					0.81	
vC, conflicting volume	526				1472	496
vC1, stage 1 conf vol					496	
vC2, stage 2 conf vol					975	
vCu, unblocked vol	526				1465	496
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	80				83	62
cM capacity (veh/h)	1041				252	573

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	204	567	526	43	219
Volume Left	204	0	0	43	0
Volume Right	0	0	59	0	219
cSH	1041	1700	1700	252	573
Volume to Capacity	0.20	0.33	0.31	0.17	0.38
Queue Length 95th (ft)	18	0	0	15	45
Control Delay (s)	9.3	0.0	0.0	22.2	15.1
Lane LOS	A			C	C
Approach Delay (s)	2.5		0.0	16.3	
Approach LOS				C	

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	60	843	849	50	10	20
Future Volume (Veh/h)	60	843	849	50	10	20
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	65	916	923	54	11	22
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	977				1996	950
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	977				1996	950
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	91				82	93
cM capacity (veh/h)	706				60	315

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	981	977	33
Volume Left	65	0	11
Volume Right	0	54	22
cSH	706	1700	131
Volume to Capacity	0.09	0.57	0.25
Queue Length 95th (ft)	8	0	24
Control Delay (s)	2.7	0.0	41.7
Lane LOS	A		E
Approach Delay (s)	2.7	0.0	41.7
Approach LOS			E

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	103.7%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	432	40	442	484	40	283
Future Volume (Veh/h)	432	40	442	484	40	283
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	470	43	480	526	43	308
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						12
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				534		
pX, platoon unblocked						
vC, conflicting volume			513		1978	492
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			513		1978	492
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			54		0	47
cM capacity (veh/h)			1052		37	577

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	513	480	526	351
Volume Left	0	480	0	43
Volume Right	43	0	0	308
cSH	1700	1052	1700	302
Volume to Capacity	0.30	0.46	0.31	1.16
Queue Length 95th (ft)	0	61	0	374
Control Delay (s)	0.0	11.3	0.0	61.0
Lane LOS		B		F
Approach Delay (s)	0.0	5.4		61.0
Approach LOS				F

Intersection Summary			
Average Delay	14.3		
Intersection Capacity Utilization	63.0%	ICU Level of Service	B
Analysis Period (min)	15		

Appendix J

Data for <u>roundabout intersections</u> in the <u>Full Build</u> scenario begins on the following page.

.

Intersection	
Intersection Delay, s/veh	13.4
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	606	945	237	210
Demand Flow Rate, veh/h	619	964	241	214
Vehicles Circulating, veh/h	393	50	754	718
Vehicles Exiting, veh/h	539	945	258	296
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	15.0	13.8	11.0	9.8
Approach LOS	B	B	B	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	619	964	241	214
Cap Entry Lane, veh/h	924	1311	640	663
Entry HV Adj Factor	0.980	0.980	0.982	0.981
Flow Entry, veh/h	606	945	237	210
Cap Entry, veh/h	905	1285	628	651
V/C Ratio	0.670	0.735	0.377	0.323
Control Delay, s/veh	15.0	13.8	11.0	9.8
LOS	B	B	B	A
95th %tile Queue, veh	5	7	2	1

Intersection	
Intersection Delay, s/veh	4.8
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	167	179	133	307
Demand Flow Rate, veh/h	169	183	135	313
Vehicles Circulating, veh/h	264	202	236	67
Vehicles Exiting, veh/h	116	169	197	317
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.9	4.7	4.5	5.0
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	169	183	135	313
Cap Entry Lane, veh/h	1054	1123	1085	1289
Entry HV Adj Factor	0.986	0.978	0.983	0.980
Flow Entry, veh/h	167	179	133	307
Cap Entry, veh/h	1039	1098	1066	1263
V/C Ratio	0.160	0.163	0.124	0.243
Control Delay, s/veh	4.9	4.7	4.5	5.0
LOS	A	A	A	A
95th %tile Queue, veh	1	1	0	1

Intersection	
Intersection Delay, s/veh	8.8
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	524	349	286	327
Demand Flow Rate, veh/h	535	356	292	333
Vehicles Circulating, veh/h	292	331	417	483
Vehicles Exiting, veh/h	524	378	410	204
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	10.0	7.6	7.6	9.1
Approach LOS	B	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	535	356	292	333
Cap Entry Lane, veh/h	1024	985	902	843
Entry HV Adj Factor	0.980	0.981	0.980	0.981
Flow Entry, veh/h	524	349	286	327
Cap Entry, veh/h	1004	965	884	827
V/C Ratio	0.522	0.362	0.324	0.395
Control Delay, s/veh	10.0	7.6	7.6	9.1
LOS	B	A	A	A
95th %tile Queue, veh	3	2	1	2