APPENDIX I

Capacity Analyses

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	34	274	59	61	260	76	40	245	44	32	322	52
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	180.0	163.0	180.0	180.0	173.1	180.0	180.0	173.1	180.0	180.0	173.1	180.0
Adj Flow Rate, veh/h	36	288	62	64	274	80	42	258	46	34	339	55
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	121	460	93	156	429	115	130	403	67	115	430	66
Arrive On Green	0.37	0.37	0.37	0.37	0.37	0.37	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	70	1226	248	148	1146	306	104	1296	215	66	1382	214
Grp Volume(v), veh/h	386	0	0	418	0	0	346	0	0	428	0	0
Grp Sat Flow(s),veh/h/ln	1544	0	0	1600	0	0	1614	0	0	1662	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0
Cycle Q Clear(g_c), s	8.3	0.0	0.0	8.6	0.0	0.0	7.5	0.0	0.0	9.8	0.0	0.0
Prop In Lane	0.09		0.16	0.15		0.19	0.12		0.13	0.08		0.13
Lane Grp Cap(c), veh/h	674	0	0	700	0	0	600	0	0	611	0	0
V/C Ratio(X)	0.57	0.00	0.00	0.60	0.00	0.00	0.58	0.00	0.00	0.70	0.00	0.00
Avail Cap(c_a), veh/h	674	0	0	700	0	0	1371	0	0	1415	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.29	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	10.7	0.0	0.0	10.8	0.0	0.0	12.4	0.0	0.0	13.1	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.0	0.0	3.7	0.0	0.0	0.3	0.0	0.0	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.0	0.0	4.7	0.0	0.0	3.4	0.0	0.0	4.5	0.0	0.0
LnGrp Delay(d),s/veh	11.7	0.0	0.0	14.5	0.0	0.0	12.7	0.0	0.0	13.7	0.0	0.0
LnGrp LOS	B			B			B			B		
Approach Vol, veh/h		386			418			346			428	
Approach Delay, s/veh		11.7			14.5			12.7			13.7	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		42.6		19.4		42.6		19.4
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		16.0		34.0		16.0		34.0
Max Q Clear Time (g_c+I1), s		10.3		11.8		10.6		9.5
Green Ext Time (p_c), s		1.8		1.6		1.7		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	13.2
HCM 2010 LOS	B

HCM 2010 methodology does not support more than 4 approaches.

HCM 2010 Computation does not support turning movement with Shared and Exclusive lanes.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	146	542	135	35	589	56	209	262	27	55	196	73
Number	7	4	14	3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	174.8	174.8	180.0	179.1	179.1	184.5	173.9	173.9	179.1	180.9	175.6	180.9
Adj Flow Rate, veh/h	160	596	0	38	647	0	230	288	30	60	215	80
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	209	822	0	247	593	0	243	613	64	97	256	88
Arrive On Green	0.08	0.47	0.00	0.33	0.33	0.00	0.08	0.40	0.40	0.25	0.25	0.25
Sat Flow, veh/h	1664	1748	0	831	1791	0	1656	1549	161	192	1021	353
Grp Volume(v), veh/h	160	596	0	38	647	0	230	0	318	355	0	0
Grp Sat Flow(s),veh/h/ln	1664	1748	0	831	1791	0	1656	0	1710	1566	0	0
Q Serve(g_s), s	5.2	23.6	0.0	3.3	28.5	0.0	6.5	0.0	11.9	13.3	0.0	0.0
Cycle Q Clear(g_c), s	5.2	23.6	0.0	14.9	28.5	0.0	6.5	0.0	11.9	18.8	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.09	0.17		0.23
Lane Grp Cap(c), veh/h	209	822	0	247	593	0	243	0	677	441	0	0
V/C Ratio(X)	0.76	0.72	0.00	0.15	1.09	0.00	0.95	0.00	0.47	0.80	0.00	0.00
Avail Cap(c_a), veh/h	209	822	0	247	593	0	243	0	755	511	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.9	18.3	0.0	29.1	28.8	0.0	28.2	0.0	19.3	31.0	0.0	0.0
Incr Delay (d2), s/veh	15.4	5.5	0.0	1.3	64.2	0.0	43.2	0.0	0.5	8.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	12.5	0.0	0.9	24.6	0.0	5.4	0.0	5.7	9.1	0.0	0.0
LnGrp Delay(d),s/veh	36.2	23.8	0.0	30.4	92.9	0.0	71.4	0.0	19.8	39.0	0.0	0.0
LnGrp LOS	D	C		C	F		E		B	D		
Approach Vol, veh/h		756			685			548			355	
Approach Delay, s/veh		26.5			89.5			41.5			39.0	
Approach LOS		C			F			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6	7	8
Phs Duration (G+Y+Rc), s	12.5	27.6		49.9		40.1	12.0	37.9
Change Period (Y+Rc), s	5.5	5.5		5.0		5.5	5.0	5.0
Max Green Setting (Gmax), s	7.0	26.0		41.0		38.5	7.0	29.0
Max Q Clear Time (g_c+I1), s	8.5	20.8		25.6		13.9	7.2	30.5
Green Ext Time (p_c), s	0.0	1.3		7.3		2.4	0.0	0.0

Intersection Summary		
HCM 2010 Ctrl Delay		50.3
HCM 2010 LOS		D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	162	382	2	2	443	125	14	153	12	61	51	136
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	185.4	178.3	185.4	176.4	169.6	176.4	176.3	169.5	176.3	184.4	177.3	184.4
Adj Flow Rate, veh/h	200	472	2	2	547	154	17	189	15	75	63	168
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	198	372	1	65	676	190	82	356	27	146	99	200
Arrive On Green	0.53	0.53	0.53	0.53	0.53	0.53	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	217	704	3	1	1281	360	54	1488	112	273	414	836
Grp Volume(v), veh/h	674	0	0	703	0	0	221	0	0	306	0	0
Grp Sat Flow(s),veh/h/ln	923	0	0	1642	0	0	1654	0	0	1523	0	0
Q Serve(g_s), s	9.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.0	0.0
Cycle Q Clear(g_c), s	29.5	0.0	0.0	19.9	0.0	0.0	6.5	0.0	0.0	10.5	0.0	0.0
Prop In Lane	0.30		0.00	0.00		0.22	0.08		0.07	0.25		0.55
Lane Grp Cap(c), veh/h	571	0	0	931	0	0	465	0	0	445	0	0
V/C Ratio(X)	1.18	0.00	0.00	0.75	0.00	0.00	0.47	0.00	0.00	0.69	0.00	0.00
Avail Cap(c_a), veh/h	571	0	0	931	0	0	642	0	0	604	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	15.8	0.0	0.0	10.9	0.0	0.0	18.6	0.0	0.0	20.0	0.0	0.0
Incr Delay (d2), s/veh	98.3	0.0	0.0	3.5	0.0	0.0	0.8	0.0	0.0	2.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	24.2	0.0	0.0	9.7	0.0	0.0	3.0	0.0	0.0	4.7	0.0	0.0
LnGrp Delay(d),s/veh	114.1	0.0	0.0	14.5	0.0	0.0	19.4	0.0	0.0	22.0	0.0	0.0
LnGrp LOS	F			B			B			C		
Approach Vol, veh/h		674			703			221			306	
Approach Delay, s/veh		114.1			14.5			19.4			22.0	
Approach LOS		F			B			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		36.0		19.9		36.0		19.9
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		30.0		20.0		30.0		20.0
Max Q Clear Time (g_c+I1), s		21.9		8.5		31.5		12.5
Green Ext Time (p_c), s		4.2		1.7		0.0		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	51.5
HCM 2010 LOS	D

HCM 2010 methodology does not support exclusive ped or hold phases.

HCM 2010 Signalized Intersection Summary
33: Williams Rd/Garrett Ave & Conestoga Rd

9/15/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	25	431	1	4	410	4	6	6	9	15	3	37
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	187.2	187.2	187.2	187.2	187.2	187.2	180.0	180.0	180.0	172.8	172.8	172.8
Adj Flow Rate, veh/h	28	490	1	5	466	5	7	7	10	17	3	42
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	98	1267	3	68	1306	14	103	37	40	102	8	57
Arrive On Green	0.71	0.71	0.71	0.71	0.71	0.71	0.06	0.06	0.06	0.06	0.06	0.06
Sat Flow, veh/h	42	1786	4	4	1841	20	343	643	704	335	143	1005
Grp Volume(v), veh/h	519	0	0	476	0	0	24	0	0	62	0	0
Grp Sat Flow(s),veh/h/ln	1832	0	0	1865	0	0	1690	0	0	1484	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0
Cycle Q Clear(g_c), s	6.2	0.0	0.0	5.5	0.0	0.0	0.8	0.0	0.0	2.3	0.0	0.0
Prop In Lane	0.05		0.00	0.01		0.01	0.29		0.42	0.27		0.68
Lane Grp Cap(c), veh/h	1368	0	0	1388	0	0	180	0	0	167	0	0
V/C Ratio(X)	0.38	0.00	0.00	0.34	0.00	0.00	0.13	0.00	0.00	0.37	0.00	0.00
Avail Cap(c_a), veh/h	1368	0	0	1388	0	0	634	0	0	592	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.3	0.0	0.0	3.2	0.0	0.0	25.1	0.0	0.0	25.8	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.0	0.0	0.7	0.0	0.0	0.5	0.0	0.0	1.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	0.0	0.0	3.0	0.0	0.0	0.4	0.0	0.0	1.0	0.0	0.0
LnGrp Delay(d),s/veh	4.1	0.0	0.0	3.8	0.0	0.0	25.6	0.0	0.0	27.7	0.0	0.0
LnGrp LOS	A			A			C			C		
Approach Vol, veh/h		519			476			24			62	
Approach Delay, s/veh		4.1			3.8			25.6			27.7	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		46.0		9.7		46.0		9.7
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		40.0		20.0		40.0		20.0
Max Q Clear Time (g_c+I1), s		8.2		4.3		7.5		2.8
Green Ext Time (p_c), s		4.4		0.3		4.4		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	5.8
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
51: Lowrys Ln & Lancaster Ave

9/15/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	18	1035	19	16	1063	22	46	102	38	21	70	19
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	180.0	174.8	180.0	177.3	172.1	177.3	190.0	184.5	190.0	188.1	182.7	188.1
Adj Flow Rate, veh/h	19	1113	20	17	1143	24	49	110	41	23	75	20
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	91	1851	33	89	1824	38	144	171	56	124	204	48
Arrive On Green	1.00	1.00	1.00	0.58	0.58	0.58	0.16	0.16	0.16	0.16	0.16	0.16
Sat Flow, veh/h	17	3208	57	14	3160	66	288	1061	348	185	1263	295
Grp Volume(v), veh/h	598	0	554	617	0	567	200	0	0	118	0	0
Grp Sat Flow(s),veh/h/ln	1702	0	1580	1685	0	1555	1697	0	0	1743	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	11.2	2.3	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	10.8	0.0	11.2	5.1	0.0	0.0	2.7	0.0	0.0
Prop In Lane	0.03		0.04	0.03		0.04	0.24		0.20	0.19		0.17
Lane Grp Cap(c), veh/h	1063	0	912	1053	0	897	372	0	0	375	0	0
V/C Ratio(X)	0.56	0.00	0.61	0.59	0.00	0.63	0.54	0.00	0.00	0.31	0.00	0.00
Avail Cap(c_a), veh/h	1063	0	912	1053	0	897	875	0	0	878	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.86	0.00	0.86	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	6.4	0.0	6.5	18.2	0.0	0.0	17.3	0.0	0.0
Incr Delay (d2), s/veh	1.8	0.0	2.6	2.4	0.0	3.4	1.2	0.0	0.0	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.7	5.7	0.0	5.6	2.5	0.0	0.0	1.4	0.0	0.0
LnGrp Delay(d),s/veh	1.8	0.0	2.6	8.8	0.0	9.8	19.4	0.0	0.0	17.8	0.0	0.0
LnGrp LOS	A		A	A		A	B			B		
Approach Vol, veh/h		1152			1184			200			118	
Approach Delay, s/veh		2.2			9.3			19.4			17.8	
Approach LOS		A			A			B			B	

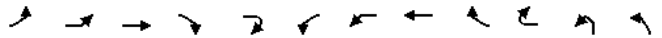
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		47.1		12.9		47.1		12.9
Change Period (Y+Rc), s		6.0		5.0		6.0		5.0
Max Green Setting (Gmax), s		27.0		22.0		27.0		22.0
Max Q Clear Time (g_c+I1), s		2.0		4.7		13.2		7.1
Green Ext Time (p_c), s		11.8		1.1		8.4		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	7.4
HCM 2010 LOS	A

Lane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL
Lane Configurations												
Volume (vph)	2	220	821	82	215	4	11	939	1	13	3	48
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	11	11	14	10	12	12	12	12	10	10
Grade (%)			3%					-2%				
Storage Length (ft)		300		0			75		0			0
Storage Lanes		1		1			1		0			0
Taper Length (ft)		25					25					25
Lane Util. Factor	0.95	1.00	0.95	0.95	1.00	0.95	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.986		0.850			0.998				
Flt Protected		0.950					0.950					
Satd. Flow (prot)	0	1497	3058	0	1531	0	1645	3283	0	0	0	0
Flt Permitted		0.101					0.258					
Satd. Flow (perm)	0	159	3058	0	1531	0	447	3283	0	0	0	0
Right Turn on Red					Yes					Yes		
Satd. Flow (RTOR)					161			1				
Link Speed (mph)			35					35				
Link Distance (ft)			577					1609				
Travel Time (s)			11.2					31.3				
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	2	229	855	85	224	4	11	978	1	14	3	50
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	231	940	0	224	0	15	993	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Right	Left	Left	Left	Right	Right	Left	Left
Median Width(ft)			12					12				
Link Offset(ft)			0					0				
Crosswalk Width(ft)			10					10				
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.14	1.14	1.01	1.16	1.06	1.06	1.06	1.06	1.18	1.18
Turning Speed (mph)	15	15		9	9	15	15		9	9	15	15
Number of Detectors	1	1	1		0	1	1	1			1	1
Detector Template	Left	Left	Thru		Right	Left	Left	Thru			Left	Left
Leading Detector (ft)	20	37	37		0	20	37	37			20	20
Trailing Detector (ft)	0	-3	-3		0	0	-3	-3			0	0
Detector 1 Position(ft)	0	-3	-3		0	0	-3	-3			0	0
Detector 1 Size(ft)	20	40	40		37	20	40	40			20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0
Turn Type	pm+pt	pm+pt	NA		Perm	Perm	Perm	NA			Perm	Perm
Protected Phases	5	5	2					6				
Permitted Phases	2	2			2	6	6				10	10
Detector Phase	5	5	2		2	6	6	6			10	10
Switch Phase												
Minimum Initial (s)	3.0	3.0	15.0		15.0	15.0	15.0	15.0			3.0	3.0

Lane Group	NBT	NBR	SBT	SBR	SBR2	NEL2	NEL	NET	NER	NER2	SWL2	SWL
Lane Configurations												
Volume (vph)	0	8	1	3	12	178	0	190	49	9	19	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	12	12	11	11	11	10	10
Grade (%)	1%		-3%					3%				
Storage Length (ft)		0		0			200		0			150
Storage Lanes		0		0			1		0			1
Taper Length (ft)							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		0.873					0.965				
Flt Protected	0.958						0.950					0.950
Satd. Flow (prot)	1498	0	1418	0	0	0	1604	1575	0	0	0	1573
Flt Permitted	0.743						0.152					0.600
Satd. Flow (perm)	1162	0	1418	0	0	0	257	1575	0	0	0	994
Right Turn on Red					No					No		
Satd. Flow (RTOR)												
Link Speed (mph)	25		25					40				
Link Distance (ft)	492		597					1336				
Travel Time (s)	13.4		16.3					22.8				
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	0	8	1	3	12	185	0	198	51	9	20	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	61	0	16	0	0	0	185	258	0	0	0	28
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Right	Left	Left	Left	Right	Right	Left	Left
Median Width(ft)	0		0					12				
Link Offset(ft)	0		0					0				
Crosswalk Width(ft)	10		10					10				
Two way Left Turn Lane												
Headway Factor	1.18	1.18	1.15	1.15	1.15	1.09	1.09	1.14	1.14	1.14	1.12	1.12
Turning Speed (mph)		9		9	9	15	15		9	9	15	15
Number of Detectors	1		1			1	1	1			1	1
Detector Template	Thru		Thru			Left	Left	Thru			Left	Left
Leading Detector (ft)	37		37			20	37	37			20	37
Trailing Detector (ft)	-3		-3			0	-3	-3			0	-3
Detector 1 Position(ft)	-3		-3			0	-3	-3			0	-3
Detector 1 Size(ft)	40		40			20	40	40			20	40
Detector 1 Type	Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0			0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0		0.0			0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0		0.0			0.0	0.0	0.0			0.0	0.0
Turn Type	NA		NA			pm+pt	pm+pt	NA			Perm	Perm
Protected Phases	10		9			3	3	8				
Permitted Phases						8	8				4	4
Detector Phase	10		9			3	3	8			4	4
Switch Phase												
Minimum Initial (s)	3.0		3.0			3.0	3.0	3.0			3.0	3.0

Lane Group	SWT	SWR
Lane Configurations		
Volume (vph)	131	152
Ideal Flow (vphpl)	1800	1800
Lane Width (ft)	10	10
Grade (%)	-7%	
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	1.00	1.00
Frt	0.919	
Flt Protected		
Satd. Flow (prot)	1522	0
Flt Permitted		
Satd. Flow (perm)	1522	0
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)	25	
Link Distance (ft)	3168	
Travel Time (s)	86.4	
Peak Hour Factor	0.96	0.96
Heavy Vehicles (%)	5%	5%
Adj. Flow (vph)	136	158
Shared Lane Traffic (%)		
Lane Group Flow (vph)	294	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	10	
Two way Left Turn Lane		
Headway Factor	1.12	1.12
Turning Speed (mph)		9
Number of Detectors	1	
Detector Template	Thru	
Leading Detector (ft)	37	
Trailing Detector (ft)	-3	
Detector 1 Position(ft)	-3	
Detector 1 Size(ft)	40	
Detector 1 Type	Cl+Ex	
Detector 1 Channel		
Detector 1 Extend (s)	0.0	
Detector 1 Queue (s)	0.0	
Detector 1 Delay (s)	0.0	
Turn Type	NA	
Protected Phases	4	
Permitted Phases		
Detector Phase	4	
Switch Phase		
Minimum Initial (s)	3.0	

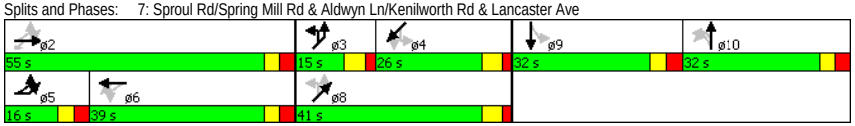


Lane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL
Minimum Split (s)	13.0	13.0	21.0		21.0	21.0	21.0	21.0			13.0	13.0
Total Split (s)	16.0	16.0	55.0		55.0	39.0	39.0	39.0			32.0	32.0
Total Split (%)	10.0%	10.0%	34.4%		34.4%	24.4%	24.4%	24.4%			20.0%	20.0%
Maximum Green (s)	10.0	10.0	49.0		49.0	33.0	33.0	33.0			26.0	26.0
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0			3.0	3.0
All-Red Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0			3.0	3.0
Lost Time Adjust (s)		0.5	0.5		0.5		0.5	0.5				
Total Lost Time (s)		6.5	6.5		6.5		6.5	6.5				
Lead/Lag	Lead	Lead				Lag	Lag	Lag			Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0			3.0	3.0
Recall Mode	None	None	Max		Max	None	None	None			None	None
Walk Time (s)			7.0		7.0	7.0	7.0	7.0				
Flash Dont Walk (s)			20.0		20.0	20.0	20.0	20.0				
Pedestrian Calls (#/hr)			0		0	0	0	0				
Act Effct Green (s)		49.2	49.2		49.2		33.0	33.0				
Actuated g/C Ratio		0.42	0.42		0.42		0.28	0.28				
v/c Ratio		1.31	0.73		0.30		0.12	1.07				
Control Delay		201.2	35.2		9.7		40.8	92.7				
Queue Delay		0.0	0.0		0.0		0.0	0.0				
Total Delay		201.2	35.2		9.7		40.8	92.7				
LOS		F	D		A		D	F				
Approach Delay			58.6					91.9				
Approach LOS			E					F				
Queue Length 50th (ft)		~172	292		27		8	~417				
Queue Length 95th (ft)		#414	492		101		32	#713				
Internal Link Dist (ft)			497					1529				
Turn Bay Length (ft)		300					75					
Base Capacity (vph)		176	1284		736		125	924				
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		1.31	0.73		0.30		0.12	1.07				

Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 117.2			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.31			
Intersection Signal Delay: 79.4		Intersection LOS: E	
Intersection Capacity Utilization 105.6%		ICU Level of Service G	
Analysis Period (min) 15			

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

Splits and Phases: 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave



Lane Group	NBT	NBR	SBT	SBR	SBR2	NEL2	NEL	NET	NER	NER2	SWL2	SWL
Minimum Split (s)	13.0		13.0			13.0	13.0	13.0			13.0	13.0
Total Split (s)	32.0		32.0			15.0	15.0	41.0			26.0	26.0
Total Split (%)	20.0%		20.0%			9.4%	9.4%	25.6%			16.3%	16.3%
Maximum Green (s)	26.0		26.0			9.0	9.0	35.0			20.0	20.0
Yellow Time (s)	3.0		3.0			4.0	4.0	4.0			4.0	4.0
All-Red Time (s)	3.0		3.0			2.0	2.0	2.0			2.0	2.0
Lost Time Adjust (s)	0.5		0.5				0.5	0.5				0.5
Total Lost Time (s)	6.5		6.5				6.5	6.5				6.5
Lead/Lag	Lag		Lead			Lead	Lead				Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0		3.0			3.0	3.0	3.0			3.0	3.0
Recall Mode	None		None			None	None	None			None	None
Walk Time (s)								7.0				
Flash Dont Walk (s)								25.0				
Pedestrian Calls (#/hr)								0				
Act Effct Green (s)	11.1		6.6				35.0	35.0				19.8
Actuated g/C Ratio	0.09		0.06				0.30	0.30				0.17
v/c Ratio	0.55		0.20				1.05	0.55				0.17
Control Delay	72.7		63.8				120.7	42.9				50.2
Queue Delay	0.0		0.0				0.0	0.0				0.0
Total Delay	72.7		63.8				120.7	42.9				50.2
LOS	E		E				F	D				D
Approach Delay	72.7		63.8					75.4				
Approach LOS	E		E					E				
Queue Length 50th (ft)	43		11				~110	156				18
Queue Length 95th (ft)	98		39				#312	301				54
Internal Link Dist (ft)	412		517					1256				
Turn Bay Length (ft)							200					150
Base Capacity (vph)	256		313				176	470				167
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	0.24		0.05				1.05	0.55				0.17

Intersection Summary

Lane Group	SWT	SWR
Minimum Split (s)	13.0	
Total Split (s)	26.0	
Total Split (%)	16.3%	
Maximum Green (s)	20.0	
Yellow Time (s)	4.0	
All-Red Time (s)	2.0	
Lost Time Adjust (s)	0.5	
Total Lost Time (s)	6.5	
Lead/Lag	Lag	
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	
Recall Mode	None	
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)	19.8	
Actuated g/C Ratio	0.17	
v/c Ratio	1.15	
Control Delay	146.3	
Queue Delay	0.0	
Total Delay	146.3	
LOS	F	
Approach Delay	137.9	
Approach LOS	F	
Queue Length 50th (ft)	~248	
Queue Length 95th (ft)	#521	
Internal Link Dist (ft)	3088	
Turn Bay Length (ft)		
Base Capacity (vph)	256	
Starvation Cap Reductn	0	
Spillback Cap Reductn	0	
Storage Cap Reductn	0	
Reduced v/c Ratio	1.15	

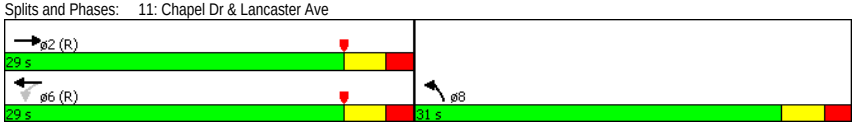
Intersection Summary

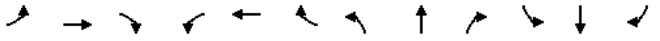
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	899	95	11	959	9	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	12	12
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt	0.986				0.961	
Flt Protected				0.999	0.966	
Satd. Flow (prot)	3196	0	0	3238	1638	0
Flt Permitted				0.942	0.966	
Satd. Flow (perm)	3196	0	0	3053	1638	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	22				4	
Link Speed (mph)	35			35	25	
Link Distance (ft)	1609			1285	319	
Travel Time (s)	31.3			25.0	8.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	977	103	12	1042	10	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1080	0	0	1054	14	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	10			10	10	
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.12	1.12	1.07	1.07
Turning Speed (mph)		9	15		15	9
Number of Detectors	1		1	1	1	
Detector Template	Thru		Left	Thru	Left	
Leading Detector (ft)	37		20	37	37	
Trailing Detector (ft)	-3		0	-3	-3	
Detector 1 Position(ft)	-3		0	-3	-3	
Detector 1 Size(ft)	40		20	40	40	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Detector Phase	2		6	6	8	
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	4.0	
Minimum Split (s)	21.0		21.0	21.0	28.0	
Total Split (s)	29.0		29.0	29.0	31.0	
Total Split (%)	48.3%		48.3%	48.3%	51.7%	
Maximum Green (s)	24.0		24.0	24.0	26.0	
Yellow Time (s)	3.0		3.0	3.0	3.0	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.5			0.5	0.5	
Total Lost Time (s)	5.5			5.5	5.5	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	C-Max		C-Max	C-Max	None	
Walk Time (s)	10.0		10.0	10.0	7.0	
Flash Dont Walk (s)	0.0		0.0	0.0	16.0	
Pedestrian Calls (#/hr)	0		0	0	0	
Act Effct Green (s)	56.5			56.5	5.6	
Actuated g/C Ratio	0.94			0.94	0.09	
v/c Ratio	0.36			0.37	0.09	
Control Delay	1.5			1.2	22.5	
Queue Delay	0.0			0.0	0.0	
Total Delay	1.5			1.2	22.5	
LOS	A			A	C	
Approach Delay	1.5			1.2	22.5	
Approach LOS	A			A	C	
Queue Length 50th (ft)	0			0	3	
Queue Length 95th (ft)	97			147	18	
Internal Link Dist (ft)	1529			1205	239	
Turn Bay Length (ft)						
Base Capacity (vph)	3009			2873	698	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.36			0.37	0.02	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 55 (92%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.37			
Intersection Signal Delay: 1.5		Intersection LOS: A	
Intersection Capacity Utilization 48.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: Chapel Dr & Lancaster Ave





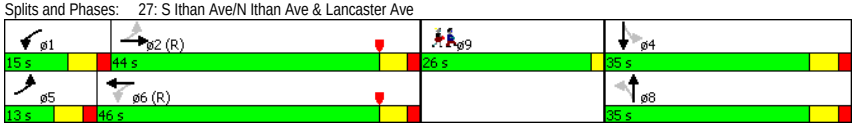
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	88	780	35	133	839	44	84	173	74	25	214	47
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)		0%			3%			1%			0%	
Storage Length (ft)	140		0	70		0	105		0	65		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.992			0.955			0.973	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1520	3022	0	1497	2970	0	1512	1520	0	1520	1557	0
Flt Permitted	0.180			0.187			0.332			0.363		
Satd. Flow (perm)	288	3022	0	295	2970	0	529	1520	0	581	1557	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1285			2035			183			973	
Travel Time (s)		25.0			39.6			5.0			26.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	94	830	37	141	893	47	89	184	79	27	228	50
Shared Lane Traffic (%)												
Lane Group Flow (vph)	94	867	0	141	940	0	89	263	0	27	278	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)		10			10			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane												
Headway Factor	1.17	1.17	1.17	1.19	1.19	1.19	1.18	1.18	1.18	1.17	1.17	1.17
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0		1	0		1	1		1	1	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	37	0		37	0		37	37		37	37	
Trailing Detector (ft)	-3	0		-3	0		-3	-3		-3	-3	
Detector 1 Position(ft)	-3	0		-3	0		-3	-3		-3	-3	
Detector 1 Size(ft)	40	6		40	6		40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	34.0		3.0	34.0		3.0	3.0		3.0	3.0	

Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	24.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	13.0	40.0		13.0	40.0		13.0	13.0		13.0	13.0	
Total Split (s)	13.0	44.0		15.0	46.0		35.0	35.0		35.0	35.0	
Total Split (%)	10.8%	36.7%		12.5%	38.3%		29.2%	29.2%		29.2%	29.2%	
Maximum Green (s)	7.0	38.0		9.0	40.0		29.0	29.0		29.0	29.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	52.9	46.5		56.8	48.5		24.9	24.9		24.9	24.9	
Actuated g/C Ratio	0.44	0.39		0.47	0.40		0.21	0.21		0.21	0.21	
v/c Ratio	0.49	0.74		0.63	0.78		0.82	0.83		0.23	0.86	
Control Delay	27.8	38.1		29.6	32.1		92.7	67.8		42.9	70.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	27.8	38.1		29.6	32.1		92.7	67.8		42.9	70.9	
LOS	C	D		C	C		F	E		D	E	
Approach Delay		37.1			31.8			74.1			68.4	
Approach LOS		D			C			E			E	
Queue Length 50th (ft)	41	331		63	368		65	193		17	206	
Queue Length 95th (ft)	79	#465		m111	#502		#152	#302		45	#323	
Internal Link Dist (ft)		1205			1955			103			893	
Turn Bay Length (ft)	140			70			105			65		
Base Capacity (vph)	194	1170		225	1199		125	361		137	369	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.48	0.74		0.63	0.78		0.71	0.73		0.20	0.75	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 43.3		Intersection LOS: D	
Intersection Capacity Utilization 77.6%		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: 27: S Ithan Ave/N Ithan Ave & Lancaster Ave



Lane Group	ø9
Minimum Split (s)	26.0
Total Split (s)	26.0
Total Split (%)	22%
Maximum Green (s)	24.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	9.0
Flash Dont Walk (s)	15.0
Pedestrian Calls (#/hr)	45
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	SBL	SBR	NWL	NWR
Vol, veh/h	199	15	138	328	37	250
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	0	-
Veh in Median Storage, #	0	-	0	-	0	-
Grade, %	0	-	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	212	16	147	349	39	266

Major/Minor	Minor2		Major2		Minor1	
Conflicting Flow All	133	0	0	-	8	0
Stage 1	0	-	-	-	0	-
Stage 2	133	-	-	-	8	-
Critical Hdwy	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %				-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	SB	NW
HCM Control Delay, s		0	
HCM LOS	-		-

Minor Lane/Major Mvmt	NWLn1	EBLn1	SBL	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	-	-
HCM Lane LOS	-	-	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Vol, veh/h	2	625	678	3	4	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	2	727	788	3	5	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	792	0	-	0	1521	790
Stage 1	-	-	-	-	790	-
Stage 2	-	-	-	-	731	-
Critical Hdwy	4.14	-	-	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.236	-	-	-	3.536	3.336
Pot Cap-1 Maneuver	820	-	-	-	129	387
Stage 1	-	-	-	-	444	-
Stage 2	-	-	-	-	473	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	820	-	-	-	128	387
Mov Cap-2 Maneuver	-	-	-	-	128	-
Stage 1	-	-	-	-	444	-
Stage 2	-	-	-	-	471	-

Approach	EB	WB	SW
HCM Control Delay, s	0	0	21.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SWLn1
Capacity (veh/h)	820	-	-	-	231
HCM Lane V/C Ratio	0.003	-	-	-	0.06
HCM Control Delay (s)	9.4	0	-	-	21.6
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	46	415	14	9	447	5	13	14	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3
Mvmt Flow	58	519	18	11	559	6	16	18	15

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	565	0	0	536	0	0	1287	1231	528
Stage 1	-	-	-	-	-	-	643	643	-
Stage 2	-	-	-	-	-	-	644	588	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327
Pot Cap-1 Maneuver	1002	-	-	1027	-	-	140	177	548
Stage 1	-	-	-	-	-	-	460	467	-
Stage 2	-	-	-	-	-	-	460	494	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1002	-	-	1027	-	-	95	160	548
Mov Cap-2 Maneuver	-	-	-	-	-	-	95	160	-
Stage 1	-	-	-	-	-	-	422	428	-
Stage 2	-	-	-	-	-	-	351	486	-

Approach	EB	WB	NB
HCM Control Delay, s	0.9	0.2	37.6
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	158	1002	-	-	1027	-	-	370
HCM Lane V/C Ratio	0.309	0.057	-	-	0.011	-	-	0.331
HCM Control Delay (s)	37.6	8.8	0	-	8.5	0	-	19.5
HCM Lane LOS	E	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.2	0.2	-	-	0	-	-	1.4

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	2	15	81
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	80	80	80
Heavy Vehicles, %	3	3	3
Mvmt Flow	2	19	101

Major/Minor	Minor2		
Conflicting Flow All	1243	1235	562
Stage 1	584	584	-
Stage 2	659	651	-
Critical Hdwy	7.13	6.53	6.23
Critical Hdwy Stg 1	6.13	5.53	-
Critical Hdwy Stg 2	6.13	5.53	-
Follow-up Hdwy	3.527	4.027	3.327
Pot Cap-1 Maneuver	151	176	525
Stage 1	496	496	-
Stage 2	451	463	-
Platoon blocked, %			
Mov Cap-1 Maneuver	125	159	525
Mov Cap-2 Maneuver	125	159	-
Stage 1	455	488	-
Stage 2	386	425	-

Approach	SB
HCM Control Delay, s	19.5
HCM LOS	C

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	24.3

Movement	NBT	NBR	SBL	SBT	SWL	SWR
Vol, veh/h	338	108	164	293	152	99
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	371	119	180	322	167	109

Major/Minor	Major1		Minor2		Minor1	
Conflicting Flow All	0	0	485	490	592	431
Stage 1	-	-	0	0	431	-
Stage 2	-	-	485	490	161	-
Critical Hdwy	-	-	6.42	6.52	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	5.42	5.52	-	-
Follow-up Hdwy	-	-	3.518	4.018	3.518	3.318
Pot Cap-1 Maneuver	-	-	541	479	469	624
Stage 1	-	-	-	-	655	-
Stage 2	-	-	619	549	-	-
Platoon blocked, %	-	-				
Mov Cap-1 Maneuver	-	-	541	0	469	624
Mov Cap-2 Maneuver	-	-	541	0	469	-
Stage 1	-	-	-	0	655	-
Stage 2	-	-	619	0	-	-

Approach	NB	SB	SW
HCM Control Delay, s	0	50.7	19.5
HCM LOS		F	C

Minor Lane/Major Mvmt	NBT	NBR	SBLn1	SWLn1
Capacity (veh/h)	-	-	541	520
HCM Lane V/C Ratio	-	-	0.928	0.53
HCM Control Delay (s)	-	-	50.7	19.5
HCM Lane LOS	-	-	F	C
HCM 95th %tile Q(veh)	-	-	11.5	3.1

Intersection	
Int Delay, s/veh	23.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	66	98	8	2	23	6	14	607	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	75	111	9	2	26	7	16	690	28

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	956	1316	285	1074	1324	359	569	0	0
Stage 1	566	566	-	736	736	-	-	-	-
Stage 2	390	750	-	338	588	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-
Pot Cap-1 Maneuver	213	156	712	174	155	638	999	-	-
Stage 1	476	506	-	377	423	-	-	-	-
Stage 2	606	417	-	650	494	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	177	150	712	66	149	638	999	-	-
Mov Cap-2 Maneuver	177	150	-	66	149	-	-	-	-
Stage 1	463	498	-	367	412	-	-	-	-
Stage 2	546	406	-	491	487	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	181	33.7	0.3
HCM LOS	F	D	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	999	-	-	166	160	879	-	-
HCM Lane V/C Ratio	0.016	-	-	1.177	0.22	0.01	-	-
HCM Control Delay (s)	8.7	0.1	-	181	33.7	9.1	0.1	-
HCM Lane LOS	A	A	-	F	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	10.6	0.8	0	-	-

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	8	464	37
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	88	88	88
Heavy Vehicles, %	2	2	2
Mvmt Flow	9	527	42

Major/Minor	Major2		
Conflicting Flow All	718	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	879	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	879	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.2
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	199	216	282	20	15	96
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	226	245	320	23	17	109

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	343	0	-	0	1030	332
Stage 1	-	-	-	-	332	-
Stage 2	-	-	-	-	698	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1222	-	-	-	260	712
Stage 1	-	-	-	-	729	-
Stage 2	-	-	-	-	495	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1222	-	-	-	204	712
Mov Cap-2 Maneuver	-	-	-	-	204	-
Stage 1	-	-	-	-	729	-
Stage 2	-	-	-	-	389	-

Approach	EB	WB	SB
HCM Control Delay, s	4.1	0	13.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1222	-	-	-	533
HCM Lane V/C Ratio	0.185	-	-	-	0.237
HCM Control Delay (s)	8.6	0	-	-	13.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.7	-	-	-	0.9

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	60	79	57	233	147	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	69	91	66	268	169	34

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	585	186	203	0	-	0
Stage 1	186	-	-	-	-	-
Stage 2	399	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	477	861	1381	-	-	-
Stage 1	851	-	-	-	-	-
Stage 2	682	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	450	861	1381	-	-	-
Mov Cap-2 Maneuver	450	-	-	-	-	-
Stage 1	851	-	-	-	-	-
Stage 2	644	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.8	1.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1381	-	618	-	-
HCM Lane V/C Ratio	0.047	-	0.259	-	-
HCM Control Delay (s)	7.7	0	12.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1	-	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	9	351	9	16	189	13	7	1	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4
Mvmt Flow	11	433	11	20	233	16	9	1	15

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	249	0	0	444	0	0	778	750	439
Stage 1	-	-	-	-	-	-	461	461	-
Stage 2	-	-	-	-	-	-	317	289	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.14	6.54	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.54	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.536	4.036	3.336
Pot Cap-1 Maneuver	1305	-	-	1106	-	-	311	338	614
Stage 1	-	-	-	-	-	-	577	562	-
Stage 2	-	-	-	-	-	-	690	669	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1305	-	-	1106	-	-	276	327	614
Mov Cap-2 Maneuver	-	-	-	-	-	-	276	327	-
Stage 1	-	-	-	-	-	-	571	556	-
Stage 2	-	-	-	-	-	-	613	655	-

Approach	EB	WB	NB
HCM Control Delay, s	0.2	0.6	14.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	417	1305	-	-	1106	-	-	594
HCM Lane V/C Ratio	0.059	0.009	-	-	0.018	-	-	0.156
HCM Control Delay (s)	14.2	7.8	0	-	8.3	0	-	12.2
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.5

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	16	0	59
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	81	81	81
Heavy Vehicles, %	4	4	4
Mvmt Flow	20	0	73

Major/Minor	Minor2		
Conflicting Flow All	750	748	241
Stage 1	281	281	-
Stage 2	469	467	-
Critical Hdwy	7.14	6.54	6.24
Critical Hdwy Stg 1	6.14	5.54	-
Critical Hdwy Stg 2	6.14	5.54	-
Follow-up Hdwy	3.536	4.036	3.336
Pot Cap-1 Maneuver	325	339	793
Stage 1	721	675	-
Stage 2	571	558	-
Platoon blocked, %			
Mov Cap-1 Maneuver	309	328	793
Mov Cap-2 Maneuver	309	328	-
Stage 1	713	661	-
Stage 2	550	552	-

Approach	SB
HCM Control Delay, s	12.2
HCM LOS	B

Minor Lane/Major Mvmt

HCM research expects at least one 'Stop' controlled approach at the intersection.

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	393	149	0	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	-1	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	427	162	0	1	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	162	0	-	0	589	162
Stage 1	-	-	-	-	162	-
Stage 2	-	-	-	-	427	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1417	-	-	-	471	883
Stage 1	-	-	-	-	867	-
Stage 2	-	-	-	-	658	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1417	-	-	-	471	883
Mov Cap-2 Maneuver	-	-	-	-	471	-
Stage 1	-	-	-	-	867	-
Stage 2	-	-	-	-	658	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1417	-	-	-	725
HCM Lane V/C Ratio	-	-	-	-	0.006
HCM Control Delay (s)	0	-	-	-	10
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	329	0	0	382	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	-1	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	358	0	0	415	1	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	358	0	773	358
Stage 1	-	-	-	-	358	-
Stage 2	-	-	-	-	415	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1201	-	367	686
Stage 1	-	-	-	-	707	-
Stage 2	-	-	-	-	666	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1201	-	367	686
Mov Cap-2 Maneuver	-	-	-	-	367	-
Stage 1	-	-	-	-	707	-
Stage 2	-	-	-	-	666	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	532	-	-	1201	-
HCM Lane V/C Ratio	0.006	-	-	-	-
HCM Control Delay (s)	11.8	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	3.1

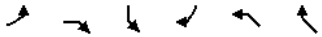
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1070	24	19	1100	0	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	3	0	-
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1597	36	28	1642	0	37

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1633	0	2493	816
Stage 1	-	-	-	-	1615	-
Stage 2	-	-	-	-	878	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	403	-	25	324
Stage 1	-	-	-	-	151	-
Stage 2	-	-	-	-	372	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	403	-	5	324
Mov Cap-2 Maneuver	-	-	-	-	5	-
Stage 1	-	-	-	-	151	-
Stage 2	-	-	-	-	78	-

Approach	EB	WB	NB
HCM Control Delay, s	0	5.8	17.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	324	-	-	403	-
HCM Lane V/C Ratio	0.115	-	-	0.07	-
HCM Control Delay (s)	17.6	-	-	14.6	5.6
HCM Lane LOS	C	-	-	B	A
HCM 95th %tile Q(veh)	0.4	-	-	0.2	-

Lanes, Volumes, Timings
2: County Line Rd & N Ithan Ave 9/15/2014



Lane Group	EBL	EBR	SBL	SBR	NWL	NWR
Lane Configurations						
Volume (vph)	199	15	138	328	37	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.991		0.905		0.882	
Flt Protected	0.956		0.985		0.994	
Satd. Flow (prot)	1765	0	1660	0	1633	0
Flt Permitted	0.956		0.985		0.994	
Satd. Flow (perm)	1765	0	1660	0	1633	0
Link Speed (mph)	30		30		30	
Link Distance (ft)	973		295		2020	
Travel Time (s)	22.1		6.7		45.9	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	212	16	147	349	39	266
Shared Lane Traffic (%)						
Lane Group Flow (vph)	228	0	496	0	305	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Right
Median Width(ft)	22		12		12	
Link Offset(ft)	0		0		0	
Crosswalk Width(ft)	10		10		10	
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	15	9
Sign Control	Stop		Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.3%		ICU Level of Service C	
Analysis Period (min) 15			

Lanes, Volumes, Timings
38: County Line Rd & N Ithan Ave 9/15/2014

Lane Group	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Volume (vph)	338	108	164	293	152	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.967				0.947	
Flt Protected				0.982	0.971	
Satd. Flow (prot)	1801	0	0	1829	1713	0
Flt Permitted				0.982	0.971	
Satd. Flow (perm)	1801	0	0	1829	1713	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	295			1901	824	
Travel Time (s)	6.7			43.2	18.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	371	119	180	322	167	109
Shared Lane Traffic (%)						
Lane Group Flow (vph)	490	0	0	502	276	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	10			10	10	
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
Sign Control	Free			Stop	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 73.3%		ICU Level of Service D	
Analysis Period (min) 15			

HCM 2010 Signalized Intersection Summary
3: County Line Rd & Spring Mill Rd

9/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	278	60	62	264	77	41	249	45	32	327	53
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	180.0	163.0	180.0	180.0	173.1	180.0	180.0	173.1	180.0	180.0	173.1	180.0
Adj Flow Rate, veh/h	37	293	63	65	278	81	43	262	47	34	344	56
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	105	565	114	145	522	140	104	366	61	91	410	64
Arrive On Green	0.46	0.46	0.46	0.46	0.46	0.46	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	73	1215	246	150	1123	301	102	1226	205	68	1373	214
Grp Volume(v), veh/h	393	0	0	424	0	0	352	0	0	434	0	0
Grp Sat Flow(s),veh/h/ln	1534	0	0	1574	0	0	1534	0	0	1655	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.0
Cycle Q Clear(g_c), s	9.7	0.0	0.0	10.0	0.0	0.0	11.2	0.0	0.0	13.6	0.0	0.0
Prop In Lane	0.09		0.16	0.15		0.19	0.12		0.13	0.08		0.13
Lane Grp Cap(c), veh/h	784	0	0	807	0	0	531	0	0	565	0	0
V/C Ratio(X)	0.50	0.00	0.00	0.53	0.00	0.00	0.66	0.00	0.00	0.77	0.00	0.00
Avail Cap(c_a), veh/h	784	0	0	807	0	0	732	0	0	774	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.54	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	10.5	0.0	0.0	10.5	0.0	0.0	17.2	0.0	0.0	18.2	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	0.0	2.4	0.0	0.0	0.5	0.0	0.0	2.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	0.0	0.0	5.1	0.0	0.0	4.9	0.0	0.0	6.5	0.0	0.0
LnGrp Delay(d),s/veh	11.7	0.0	0.0	13.0	0.0	0.0	17.7	0.0	0.0	20.2	0.0	0.0
LnGrp LOS	B			B			B			C		
Approach Vol, veh/h		393			424			352			434	
Approach Delay, s/veh		11.7			13.0			17.7			20.2	
Approach LOS		B			B			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		39.1		22.9		39.1		22.9
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		26.0		24.0		26.0		24.0
Max Q Clear Time (g_c+I1), s		11.7		15.6		12.0		13.2
Green Ext Time (p_c), s		3.1		1.3		3.1		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	15.7
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

9/17/2014

HCM 2010 methodology does not support more than 4 approaches.

HCM 2010 Computation does not support turning movement with Shared and Exclusive lanes.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	148	550	137	36	598	57	212	266	27	56	199	74
Number	7	4	14	3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	174.8	174.8	180.0	179.1	179.1	184.5	173.9	173.9	179.1	180.9	175.6	180.9
Adj Flow Rate, veh/h	163	604	0	40	657	0	233	292	30	62	219	81
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	200	874	0	275	657	0	201	577	59	93	236	81
Arrive On Green	0.07	0.50	0.00	0.37	0.37	0.00	0.07	0.37	0.37	0.23	0.23	0.23
Sat Flow, veh/h	1664	1748	0	825	1791	0	1656	1551	159	199	1012	349
Grp Volume(v), veh/h	163	604	0	40	657	0	233	0	322	362	0	0
Grp Sat Flow(s),veh/h/ln	1664	1748	0	825	1791	0	1656	0	1711	1560	0	0
Q Serve(g_s), s	5.3	23.8	0.0	3.5	33.0	0.0	6.5	0.0	13.1	15.9	0.0	0.0
Cycle Q Clear(g_c), s	5.3	23.8	0.0	15.3	33.0	0.0	6.5	0.0	13.1	20.8	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.09	0.17		0.22
Lane Grp Cap(c), veh/h	200	874	0	275	657	0	201	0	637	411	0	0
V/C Ratio(X)	0.81	0.69	0.00	0.15	1.00	0.00	1.16	0.00	0.51	0.88	0.00	0.00
Avail Cap(c_a), veh/h	200	874	0	275	657	0	201	0	637	411	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.3	17.2	0.0	27.6	28.5	0.0	29.4	0.0	21.8	34.2	0.0	0.0
Incr Delay (d2), s/veh	22.1	4.5	0.0	1.1	35.2	0.0	112.0	0.0	0.6	19.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	12.5	0.0	0.9	22.7	0.0	6.3	0.0	6.3	11.2	0.0	0.0
LnGrp Delay(d),s/veh	43.4	21.7	0.0	28.7	63.7	0.0	141.4	0.0	22.5	53.6	0.0	0.0
LnGrp LOS	D	C		C	F		F		C	D		
Approach Vol, veh/h		767			697			555			362	
Approach Delay, s/veh		26.3			61.7			72.4			53.6	
Approach LOS		C			E			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6	7	8
Phs Duration (G+Y+Rc), s	12.5	27.0		50.5		39.5	12.0	38.5
Change Period (Y+Rc), s	5.5	5.5		5.0		5.5	5.0	5.0
Max Green Setting (Gmax), s	7.0	21.5		45.5		34.0	7.0	33.5
Max Q Clear Time (g_c+I1), s	8.5	22.8		25.8		15.1	7.3	35.0
Green Ext Time (p_c), s	0.0	0.0		8.4		2.4	0.0	0.0

Intersection Summary		
HCM 2010 Ctrl Delay		51.6
HCM 2010 LOS		D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	164	388	2	2	450	127	14	155	12	62	51	138
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	185.4	178.3	185.4	176.4	169.6	176.4	176.3	169.5	176.3	184.4	177.3	184.4
Adj Flow Rate, veh/h	202	479	2	2	556	157	17	191	15	77	63	170
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	200	389	2	60	708	199	76	343	26	139	92	190
Arrive On Green	0.55	0.55	0.55	0.55	0.55	0.55	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	223	703	3	1	1280	360	54	1477	110	277	397	819
Grp Volume(v), veh/h	683	0	0	715	0	0	223	0	0	310	0	0
Grp Sat Flow(s),veh/h/ln	928	0	0	1641	0	0	1641	0	0	1493	0	0
Q Serve(g_s), s	12.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0
Cycle Q Clear(g_c), s	33.5	0.0	0.0	21.1	0.0	0.0	7.1	0.0	0.0	12.1	0.0	0.0
Prop In Lane	0.30		0.00	0.00		0.22	0.08		0.07	0.25		0.55
Lane Grp Cap(c), veh/h	590	0	0	967	0	0	446	0	0	421	0	0
V/C Ratio(X)	1.16	0.00	0.00	0.74	0.00	0.00	0.50	0.00	0.00	0.74	0.00	0.00
Avail Cap(c_a), veh/h	590	0	0	967	0	0	483	0	0	455	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	16.6	0.0	0.0	10.8	0.0	0.0	20.6	0.0	0.0	22.4	0.0	0.0
Incr Delay (d2), s/veh	88.6	0.0	0.0	3.0	0.0	0.0	0.9	0.0	0.0	5.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	24.2	0.0	0.0	10.2	0.0	0.0	3.4	0.0	0.0	5.7	0.0	0.0
LnGrp Delay(d),s/veh	105.2	0.0	0.0	13.8	0.0	0.0	21.5	0.0	0.0	28.0	0.0	0.0
LnGrp LOS	F			B			C			C		
Approach Vol, veh/h		683			715			223			310	
Approach Delay, s/veh		105.2			13.8			21.5			28.0	
Approach LOS		F			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		40.0		20.6		40.0		20.6
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		34.0		16.0		34.0		16.0
Max Q Clear Time (g_c+I1), s		23.1		9.1		35.5		14.1
Green Ext Time (p_c), s		5.3		1.3		0.0		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	49.3
HCM 2010 LOS	D

HCM 2010 methodology does not support exclusive ped or hold phases.

HCM 2010 Signalized Intersection Summary
33: Williams Rd/Garrett Ave & Conestoga Rd

9/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	25	438	1	4	416	4	6	6	9	15	3	38
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	187.2	187.2	187.2	187.2	187.2	187.2	180.0	180.0	180.0	172.8	172.8	172.8
Adj Flow Rate, veh/h	28	498	1	5	473	5	7	7	10	17	3	43
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	91	1337	3	58	1381	14	88	35	38	86	8	54
Arrive On Green	0.75	0.75	0.75	0.75	0.75	0.75	0.05	0.05	0.05	0.05	0.05	0.05
Sat Flow, veh/h	44	1782	3	4	1842	19	337	658	711	325	147	1015
Grp Volume(v), veh/h	527	0	0	483	0	0	24	0	0	63	0	0
Grp Sat Flow(s),veh/h/ln	1830	0	0	1865	0	0	1706	0	0	1487	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0
Cycle Q Clear(g_c), s	6.5	0.0	0.0	5.7	0.0	0.0	0.9	0.0	0.0	2.7	0.0	0.0
Prop In Lane	0.05		0.00	0.01		0.01	0.29		0.42	0.27		0.68
Lane Grp Cap(c), veh/h	1430	0	0	1454	0	0	161	0	0	148	0	0
V/C Ratio(X)	0.37	0.00	0.00	0.33	0.00	0.00	0.15	0.00	0.00	0.43	0.00	0.00
Avail Cap(c_a), veh/h	1430	0	0	1454	0	0	302	0	0	280	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	2.9	0.0	0.0	2.8	0.0	0.0	30.0	0.0	0.0	30.9	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.0	0.6	0.0	0.0	0.6	0.0	0.0	2.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	0.0	0.0	3.1	0.0	0.0	0.4	0.0	0.0	1.3	0.0	0.0
LnGrp Delay(d),s/veh	3.6	0.0	0.0	3.4	0.0	0.0	30.6	0.0	0.0	33.6	0.0	0.0
LnGrp LOS	A			A			C			C		
Approach Vol, veh/h		527			483			24			63	
Approach Delay, s/veh		3.6			3.4			30.6			33.6	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		56.0		10.0		56.0		10.0
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		50.0		10.0		50.0		10.0
Max Q Clear Time (g_c+I1), s		8.5		4.7		7.7		2.9
Green Ext Time (p_c), s		4.5		0.1		4.5		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	5.8
HCM 2010 LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

HCM 2010 Signalized Intersection Summary
51: Lowrys Ln & Lancaster Ave

9/17/2014

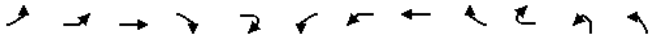
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	18	1051	19	16	1079	22	47	104	39	21	71	19
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	180.0	174.8	180.0	177.3	172.1	177.3	190.0	184.5	190.0	188.1	182.7	188.1
Adj Flow Rate, veh/h	19	1130	20	17	1160	24	51	112	42	23	76	20
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	78	2037	36	75	2008	41	126	157	52	104	187	43
Arrive On Green	1.00	1.00	1.00	0.64	0.64	0.64	0.15	0.15	0.15	0.15	0.15	0.15
Sat Flow, veh/h	18	3205	56	15	3159	65	307	1049	349	184	1252	290
Grp Volume(v), veh/h	606	0	563	625	0	576	205	0	0	119	0	0
Grp Sat Flow(s),veh/h/ln	1699	0	1580	1683	0	1555	1705	0	0	1726	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	12.0	3.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	11.6	0.0	12.0	6.4	0.0	0.0	3.4	0.0	0.0
Prop In Lane	0.03		0.04	0.03		0.04	0.25		0.20	0.19		0.17
Lane Grp Cap(c), veh/h	1146	0	1004	1136	0	988	336	0	0	335	0	0
V/C Ratio(X)	0.53	0.00	0.56	0.55	0.00	0.58	0.61	0.00	0.00	0.36	0.00	0.00
Avail Cap(c_a), veh/h	1146	0	1004	1136	0	988	457	0	0	457	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.62	0.00	0.62	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	5.8	0.0	5.9	22.9	0.0	0.0	21.6	0.0	0.0
Incr Delay (d2), s/veh	1.1	0.0	1.4	1.9	0.0	2.5	1.8	0.0	0.0	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.4	6.0	0.0	5.6	3.2	0.0	0.0	1.7	0.0	0.0
LnGrp Delay(d),s/veh	1.1	0.0	1.4	7.7	0.0	8.4	24.7	0.0	0.0	22.3	0.0	0.0
LnGrp LOS	A		A	A		A	C			C		
Approach Vol, veh/h		1169			1201			205			119	
Approach Delay, s/veh		1.2			8.1			24.7			22.3	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		46.1		13.9		46.1		13.9
Change Period (Y+Rc), s		6.0		5.0		6.0		5.0
Max Green Setting (Gmax), s		36.0		13.0		36.0		13.0
Max Q Clear Time (g_c+I1), s		2.0		5.4		14.0		8.4
Green Ext Time (p_c), s		13.6		0.7		11.3		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	7.0
HCM 2010 LOS	A

Notes

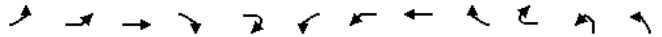
User approved pedestrian interval to be less than phase max green.



Lane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL
Lane Configurations												
Volume (vph)	2	223	833	83	218	4	11	953	1	13	3	49
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	11	11	14	10	12	12	12	12	10	10
Grade (%)			3%					-2%				
Storage Length (ft)		300		0			75		0			0
Storage Lanes		1		1			1		0			0
Taper Length (ft)		25					25					25
Lane Util. Factor	0.95	1.00	0.95	0.95	1.00	0.95	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.986		0.850			0.998				
Flt Protected		0.950					0.950					
Satd. Flow (prot)	0	1497	3058	0	1531	0	1645	3283	0	0	0	0
Flt Permitted		0.075					0.293					
Satd. Flow (perm)	0	118	3058	0	1531	0	507	3283	0	0	0	0
Right Turn on Red					Yes					Yes		
Satd. Flow (RTOR)					202			1				
Link Speed (mph)			35					35				
Link Distance (ft)			577					1609				
Travel Time (s)			11.2					31.3				
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	2	232	868	86	227	4	11	993	1	14	3	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	234	954	0	227	0	15	1008	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Right	Left	Left	Left	Right	Right	Left	Left
Median Width(ft)			12					12				
Link Offset(ft)			0					0				
Crosswalk Width(ft)			10					10				
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.14	1.14	1.01	1.16	1.06	1.06	1.06	1.06	1.18	1.18
Turning Speed (mph)	15	15		9	9	15	15		9	9	15	15
Number of Detectors	1	1	1		0	1	1	1			1	1
Detector Template	Left	Left	Thru		Right	Left	Left	Thru			Left	Left
Leading Detector (ft)	20	37	37		0	20	37	37			20	20
Trailing Detector (ft)	0	-3	-3		0	0	-3	-3			0	0
Detector 1 Position(ft)	0	-3	-3		0	0	-3	-3			0	0
Detector 1 Size(ft)	20	40	40		37	20	40	40			20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0
Turn Type	pm+pt	pm+pt	NA		Perm	Perm	Perm	NA			Perm	Perm
Protected Phases	5	5	2					6				
Permitted Phases	2	2			2	6	6				10	10
Detector Phase	5	5	2		2	6	6	6			10	10
Switch Phase												
Minimum Initial (s)	3.0	3.0	15.0		15.0	15.0	15.0	15.0			3.0	3.0

Lane Group	NBT	NBR	SBT	SBR	SBR2	NEL2	NEL	NET	NER	NER2	SWL2	SWL
Lane Configurations												
Volume (vph)	0	8	1	3	12	181	0	193	50	9	19	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	12	12	11	11	11	10	10
Grade (%)	1%		-3%					3%				
Storage Length (ft)		0		0			200		0			150
Storage Lanes		0		0			1		0			1
Taper Length (ft)							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	0.983		0.873					0.965				
Flt Protected	0.958						0.950					0.950
Satd. Flow (prot)	1499	0	1418	0	0	0	1604	1575	0	0	0	1573
Flt Permitted	0.742						0.189					0.597
Satd. Flow (perm)	1161	0	1418	0	0	0	319	1575	0	0	0	989
Right Turn on Red					No					No		
Satd. Flow (RTOR)												
Link Speed (mph)	25		25					40				
Link Distance (ft)	492		597					1336				
Travel Time (s)	13.4		16.3					22.8				
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	0	8	1	3	12	189	0	201	52	9	20	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	62	0	16	0	0	0	189	262	0	0	0	28
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Right	Left	Left	Left	Right	Right	Left	Left
Median Width(ft)	0		0					12				
Link Offset(ft)	0		0					0				
Crosswalk Width(ft)	10		10					10				
Two way Left Turn Lane												
Headway Factor	1.18	1.18	1.15	1.15	1.15	1.09	1.09	1.14	1.14	1.14	1.12	1.12
Turning Speed (mph)		9		9	9	15	15		9	9	15	15
Number of Detectors	1		1			1	1	1			1	1
Detector Template	Thru		Thru			Left	Left	Thru			Left	Left
Leading Detector (ft)	37		37			20	37	37			20	37
Trailing Detector (ft)	-3		-3			0	-3	-3			0	-3
Detector 1 Position(ft)	-3		-3			0	-3	-3			0	-3
Detector 1 Size(ft)	40		40			20	40	40			20	40
Detector 1 Type	Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0			0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0		0.0			0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0		0.0			0.0	0.0	0.0			0.0	0.0
Turn Type	NA		NA			pm+pt	pm+pt	NA			Perm	Perm
Protected Phases	10		9			3	3	8				
Permitted Phases						8	8				4	4
Detector Phase	10		9			3	3	8			4	4
Switch Phase												
Minimum Initial (s)	3.0		3.0			3.0	3.0	3.0			3.0	3.0

Lane Group	SWT	SWR
Lane Configurations		
Volume (vph)	133	154
Ideal Flow (vphpl)	1800	1800
Lane Width (ft)	10	10
Grade (%)	-7%	
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	1.00	1.00
Frt	0.920	
Flt Protected		
Satd. Flow (prot)	1524	0
Flt Permitted		
Satd. Flow (perm)	1524	0
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)	25	
Link Distance (ft)	3168	
Travel Time (s)	86.4	
Peak Hour Factor	0.96	0.96
Heavy Vehicles (%)	5%	5%
Adj. Flow (vph)	139	160
Shared Lane Traffic (%)		
Lane Group Flow (vph)	299	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	10	
Two way Left Turn Lane		
Headway Factor	1.12	1.12
Turning Speed (mph)		9
Number of Detectors	1	
Detector Template	Thru	
Leading Detector (ft)	37	
Trailing Detector (ft)	-3	
Detector 1 Position(ft)	-3	
Detector 1 Size(ft)	40	
Detector 1 Type	Cl+Ex	
Detector 1 Channel		
Detector 1 Extend (s)	0.0	
Detector 1 Queue (s)	0.0	
Detector 1 Delay (s)	0.0	
Turn Type	NA	
Protected Phases	4	
Permitted Phases		
Detector Phase	4	
Switch Phase		
Minimum Initial (s)	3.0	

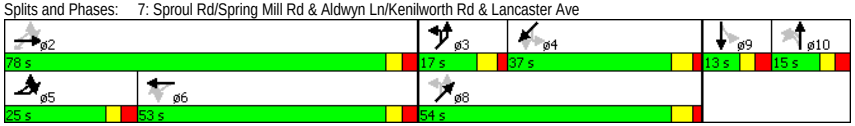


Lane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL
Minimum Split (s)	13.0	13.0	21.0		21.0	21.0	21.0	21.0			13.0	13.0
Total Split (s)	25.0	25.0	78.0		78.0	53.0	53.0	53.0			15.0	15.0
Total Split (%)	15.6%	15.6%	48.8%		48.8%	33.1%	33.1%	33.1%			9.4%	9.4%
Maximum Green (s)	19.0	19.0	72.0		72.0	47.0	47.0	47.0			9.0	9.0
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0			3.0	3.0
All-Red Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0			3.0	3.0
Lost Time Adjust (s)		0.5	0.5		0.5		0.5	0.5				
Total Lost Time (s)		6.5	6.5		6.5		6.5	6.5				
Lead/Lag	Lead	Lead				Lag	Lag	Lag			Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0			3.0	3.0
Recall Mode	None	None	Max		Max	None	None	None			None	None
Walk Time (s)			7.0		7.0	7.0	7.0	7.0				
Flash Dont Walk (s)			20.0		20.0	20.0	20.0	20.0				
Pedestrian Calls (#/hr)			0		0	0	0	0				
Act Effct Green (s)		71.6	71.6		71.6		46.6	46.6				
Actuated g/C Ratio		0.47	0.47		0.47		0.31	0.31				
v/c Ratio		1.05	0.66		0.27		0.10	1.00				
Control Delay		116.8	34.5		5.5		42.4	81.0				
Queue Delay		0.0	0.0		0.0		0.0	0.0				
Total Delay		116.8	34.5		5.5		42.4	81.0				
LOS		F	C		A		D	F				
Approach Delay			43.5					80.4				
Approach LOS			D					F				
Queue Length 50th (ft)		~188	352		12		10	502				
Queue Length 95th (ft)		#419	501		68		33	#746				
Internal Link Dist (ft)			497					1529				
Turn Bay Length (ft)		300					75					
Base Capacity (vph)		223	1439		827		155	1005				
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		1.05	0.66		0.27		0.10	1.00				

Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 152.2			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.05			
Intersection Signal Delay: 67.7		Intersection LOS: E	
Intersection Capacity Utilization 106.7%		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.

Splits and Phases: 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave



Lane Group	NBT	NBR	SBT	SBR	SBR2	NEL2	NEL	NET	NER	NER2	SWL2	SWL
Minimum Split (s)	13.0		13.0			13.0	13.0	13.0			13.0	13.0
Total Split (s)	15.0		13.0			17.0	17.0	54.0			37.0	37.0
Total Split (%)	9.4%		8.1%			10.6%	10.6%	33.8%			23.1%	23.1%
Maximum Green (s)	9.0		7.0			11.0	11.0	48.0			31.0	31.0
Yellow Time (s)	3.0		3.0			4.0	4.0	4.0			4.0	4.0
All-Red Time (s)	3.0		3.0			2.0	2.0	2.0			2.0	2.0
Lost Time Adjust (s)	0.5		0.5				0.5	0.5				0.5
Total Lost Time (s)	6.5		6.5				6.5	6.5				6.5
Lead/Lag	Lag		Lead			Lead	Lead				Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0		3.0			3.0	3.0	3.0			3.0	3.0
Recall Mode	None		None			None	None	None			None	None
Walk Time (s)								7.0				
Flash Dont Walk (s)								25.0				
Pedestrian Calls (#/hr)								0				
Act Effct Green (s)	8.5		6.1				47.6	47.6				30.6
Actuated g/C Ratio	0.06		0.04				0.31	0.31				0.20
v/c Ratio	0.95		0.29				1.01	0.53				0.14
Control Delay	170.3		86.1				111.7	48.9				54.4
Queue Delay	0.0		0.0				0.0	0.0				0.0
Total Delay	170.3		86.1				111.7	48.9				54.4
LOS	F		F				F	D				D
Approach Delay	170.3		86.1					75.2				
Approach LOS	F		F					E				
Queue Length 50th (ft)	60		15				139	204				22
Queue Length 95th (ft)	#174		44				#300	332				57
Internal Link Dist (ft)	412		517					1256				
Turn Bay Length (ft)							200					150
Base Capacity (vph)	65		60				188	492				198
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	0.95		0.27				1.01	0.53				0.14

Intersection Summary

Lane Group	SWT	SWR
Minimum Split (s)	13.0	
Total Split (s)	37.0	
Total Split (%)	23.1%	
Maximum Green (s)	31.0	
Yellow Time (s)	4.0	
All-Red Time (s)	2.0	
Lost Time Adjust (s)	0.5	
Total Lost Time (s)	6.5	
Lead/Lag	Lag	
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	
Recall Mode	None	
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)	30.6	
Actuated g/C Ratio	0.20	
v/c Ratio	0.98	
Control Delay	105.9	
Queue Delay	0.0	
Total Delay	105.9	
LOS	F	
Approach Delay	101.5	
Approach LOS	F	
Queue Length 50th (ft)	286	
Queue Length 95th (ft)	#533	
Internal Link Dist (ft)	3088	
Turn Bay Length (ft)		
Base Capacity (vph)	306	
Starvation Cap Reductn	0	
Spillback Cap Reductn	0	
Storage Cap Reductn	0	
Reduced v/c Ratio	0.98	

Intersection Summary

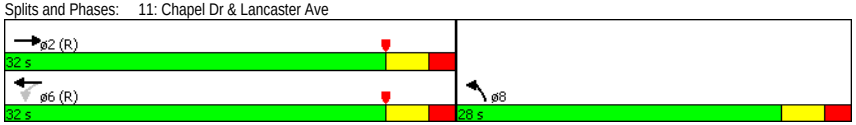
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	913	96	11	973	9	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	12	12
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt	0.986				0.961	
Flt Protected				0.999	0.966	
Satd. Flow (prot)	3196	0	0	3238	1638	0
Flt Permitted				0.942	0.966	
Satd. Flow (perm)	3196	0	0	3053	1638	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	24				4	
Link Speed (mph)	35			35	25	
Link Distance (ft)	1609			1285	319	
Travel Time (s)	31.3			25.0	8.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	992	104	12	1058	10	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1096	0	0	1070	14	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	10			10	10	
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.12	1.12	1.07	1.07
Turning Speed (mph)		9	15		15	9
Number of Detectors	1		1	1	1	
Detector Template	Thru		Left	Thru	Left	
Leading Detector (ft)	37		20	37	37	
Trailing Detector (ft)	-3		0	-3	-3	
Detector 1 Position(ft)	-3		0	-3	-3	
Detector 1 Size(ft)	40		20	40	40	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Detector Phase	2		6	6	8	
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	4.0	
Minimum Split (s)	21.0		21.0	21.0	28.0	
Total Split (s)	32.0		32.0	32.0	28.0	
Total Split (%)	53.3%		53.3%	53.3%	46.7%	
Maximum Green (s)	27.0		27.0	27.0	23.0	
Yellow Time (s)	3.0		3.0	3.0	3.0	

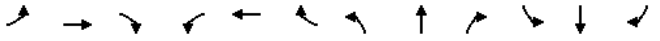
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.5			0.5	0.5	
Total Lost Time (s)	5.5			5.5	5.5	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	C-Max		C-Max	C-Max	None	
Walk Time (s)	10.0		10.0	10.0	7.0	
Flash Dont Walk (s)	0.0		0.0	0.0	16.0	
Pedestrian Calls (#/hr)	0		0	0	0	
Act Effct Green (s)	56.5			56.5	5.6	
Actuated g/C Ratio	0.94			0.94	0.09	
v/c Ratio	0.36			0.37	0.09	
Control Delay	1.5			3.2	22.5	
Queue Delay	0.0			0.0	0.0	
Total Delay	1.5			3.2	22.5	
LOS	A			A	C	
Approach Delay	1.5			3.2	22.5	
Approach LOS	A			A	C	
Queue Length 50th (ft)	0			0	3	
Queue Length 95th (ft)	99			326	18	
Internal Link Dist (ft)	1529			1205	239	
Turn Bay Length (ft)						
Base Capacity (vph)	3009			2873	616	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.36			0.37	0.02	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 55 (92%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.37
Intersection Signal Delay: 2.5 Intersection LOS: A
Intersection Capacity Utilization 49.1% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 11: Chapel Dr & Lancaster Ave





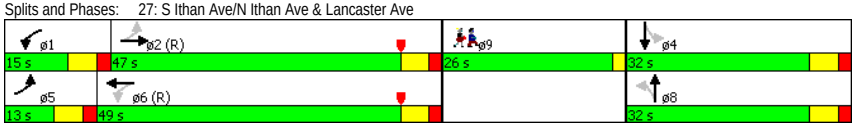
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	89	792	35	135	852	45	85	176	75	25	217	48
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)		0%			3%			1%			0%	
Storage Length (ft)	140		0	70		0	105		0	65		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.992			0.955			0.973	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1520	3022	0	1497	2970	0	1512	1520	0	1520	1557	0
Flt Permitted	0.178			0.185			0.311			0.343		
Satd. Flow (perm)	285	3022	0	292	2970	0	495	1520	0	549	1557	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1285			2035			183			973	
Travel Time (s)		25.0			39.6			5.0			26.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	95	843	37	144	906	48	90	187	80	27	231	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	95	880	0	144	954	0	90	267	0	27	282	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)		10			10			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane												
Headway Factor	1.17	1.17	1.17	1.19	1.19	1.19	1.18	1.18	1.18	1.17	1.17	1.17
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0		1	0		1	1		1	1	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	37	0		37	0		37	37		37	37	
Trailing Detector (ft)	-3	0		-3	0		-3	-3		-3	-3	
Detector 1 Position(ft)	-3	0		-3	0		-3	-3		-3	-3	
Detector 1 Size(ft)	40	6		40	6		40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	34.0		3.0	34.0		3.0	3.0		3.0	3.0	

Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	24.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	13.0	40.0		13.0	40.0		13.0	13.0		13.0	13.0	
Total Split (s)	13.0	47.0		15.0	49.0		32.0	32.0		32.0	32.0	
Total Split (%)	10.8%	39.2%		12.5%	40.8%		26.7%	26.7%		26.7%	26.7%	
Maximum Green (s)	7.0	41.0		9.0	43.0		26.0	26.0		26.0	26.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	53.7	47.4		57.6	49.3		24.1	24.1		24.1	24.1	
Actuated g/C Ratio	0.45	0.40		0.48	0.41		0.20	0.20		0.20	0.20	
v/c Ratio	0.49	0.74		0.65	0.78		0.91	0.88		0.25	0.91	
Control Delay	26.9	36.9		28.4	31.0		116.2	74.7		46.0	78.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	26.9	36.9		28.4	31.0		116.2	74.7		46.0	78.8	
LOS	C	D		C	C		F	E		D	E	
Approach Delay		35.9			30.6			85.2			75.9	
Approach LOS		D			C			F			E	
Queue Length 50th (ft)	41	333		64	352		68	199		18	212	
Queue Length 95th (ft)	77	#430		m#108	#488		#170	#341		47	#362	
Internal Link Dist (ft)		1205			1955			103			893	
Turn Bay Length (ft)	140			70			105			65		
Base Capacity (vph)	194	1193		225	1219		105	323		116	330	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.49	0.74		0.64	0.78		0.86	0.83		0.23	0.85	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 44.7		Intersection LOS: D	
Intersection Capacity Utilization 78.0%		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.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 27: S Ithan Ave/N Ithan Ave & Lancaster Ave



Lane Group	ø9
Minimum Split (s)	26.0
Total Split (s)	26.0
Total Split (%)	22%
Maximum Green (s)	24.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	9.0
Flash Dont Walk (s)	15.0
Pedestrian Calls (#/hr)	45
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

HCM 2010 TWSC
2: County Line Rd & N Ithan Ave

9/17/2014

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	SBL	SBR	NWL	NWR
Vol, veh/h	202	15	140	333	38	254
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	0	-
Veh in Median Storage, #	0	-	0	-	0	-
Grade, %	0	-	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	215	16	149	354	40	270

Major/Minor	Minor2		Major2		Minor1	
Conflicting Flow All	135	0	0	-	8	0
Stage 1	0	-	-	-	0	-
Stage 2	135	-	-	-	8	-
Critical Hdwy	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %				-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	SB	NW
HCM Control Delay, s		0	
HCM LOS	-		-

Minor Lane/Major Mvmt	NWLn1	EBLn1	SBL	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	-	-
HCM Lane LOS	-	-	-	-
HCM 95th %tile Q(veh)	-	-	-	-

HCM 2010 TWSC
15: Conestoga Rd & Spring Mill Rd

9/17/2014

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Vol, veh/h	2	634	688	3	4	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	2	737	800	3	5	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	803	0	-	0	1544	802
Stage 1	-	-	-	-	802	-
Stage 2	-	-	-	-	742	-
Critical Hdwy	4.14	-	-	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.236	-	-	-	3.536	3.336
Pot Cap-1 Maneuver	812	-	-	-	125	381
Stage 1	-	-	-	-	438	-
Stage 2	-	-	-	-	467	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	812	-	-	-	125	381
Mov Cap-2 Maneuver	-	-	-	-	125	-
Stage 1	-	-	-	-	438	-
Stage 2	-	-	-	-	465	-

Approach	EB	WB	SW
HCM Control Delay, s	0	0	22
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SWLn1
Capacity (veh/h)	812	-	-	-	226
HCM Lane V/C Ratio	0.003	-	-	-	0.062
HCM Control Delay (s)	9.4	0	-	-	22
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	47	421	14	9	454	5	13	14	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3
Mvmt Flow	59	526	18	11	568	6	16	18	15

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	574	0	0	544	0	0	1307	1249	535
Stage 1	-	-	-	-	-	-	653	653	-
Stage 2	-	-	-	-	-	-	654	596	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327
Pot Cap-1 Maneuver	994	-	-	1020	-	-	136	172	543
Stage 1	-	-	-	-	-	-	455	462	-
Stage 2	-	-	-	-	-	-	454	490	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	994	-	-	1020	-	-	92	155	543
Mov Cap-2 Maneuver	-	-	-	-	-	-	92	155	-
Stage 1	-	-	-	-	-	-	416	423	-
Stage 2	-	-	-	-	-	-	344	482	-

Approach	EB	WB	NB
HCM Control Delay, s	0.9	0.2	38.8
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	154	994	-	-	1020	-	-	363
HCM Lane V/C Ratio	0.317	0.059	-	-	0.011	-	-	0.341
HCM Control Delay (s)	38.8	8.8	0	-	8.6	0	-	20
HCM Lane LOS	E	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.3	0.2	-	-	0	-	-	1.5

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	2	15	82
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	80	80	80
Heavy Vehicles, %	3	3	3
Mvmt Flow	2	19	102

Major/Minor	Minor2		
Conflicting Flow All	1262	1254	571
Stage 1	593	593	-
Stage 2	669	661	-
Critical Hdwy	7.13	6.53	6.23
Critical Hdwy Stg 1	6.13	5.53	-
Critical Hdwy Stg 2	6.13	5.53	-
Follow-up Hdwy	3.527	4.027	3.327
Pot Cap-1 Maneuver	146	171	518
Stage 1	490	492	-
Stage 2	445	458	-
Platoon blocked, %			
Mov Cap-1 Maneuver	120	154	518
Mov Cap-2 Maneuver	120	154	-
Stage 1	448	484	-
Stage 2	380	419	-

Approach	SB
HCM Control Delay, s	20
HCM LOS	C

Minor Lane/Major Mvmt

HCM 2010 TWSC
38: County Line Rd & N Ithan Ave 9/17/2014

Intersection	
Int Delay, s/veh	26.1

Movement	NBT	NBR	SBL	SBT	SWL	SWR
Vol, veh/h	343	110	166	297	154	100
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	377	121	182	326	169	110

Major/Minor	Major1		Minor2		Minor1	
Conflicting Flow All	0	0	492	498	600	437
Stage 1	-	-	0	0	437	-
Stage 2	-	-	492	498	163	-
Critical Hdwy	-	-	6.42	6.52	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	5.42	5.52	-	-
Follow-up Hdwy	-	-	3.518	4.018	3.518	3.318
Pot Cap-1 Maneuver	-	-	536	474	464	620
Stage 1	-	-	-	-	651	-
Stage 2	-	-	615	544	-	-
Platoon blocked, %	-	-				
Mov Cap-1 Maneuver	-	-	536	0	464	620
Mov Cap-2 Maneuver	-	-	536	0	464	-
Stage 1	-	-	-	0	651	-
Stage 2	-	-	615	0	-	-

Approach	NB	SB	SW
HCM Control Delay, s	0	55.1	20
HCM LOS		F	C

Minor Lane/Major Mvmt	NBT	NBR	SBLn1	SWLn1
Capacity (veh/h)	-	-	536	515
HCM Lane V/C Ratio	-	-	0.949	0.542
HCM Control Delay (s)	-	-	55.1	20
HCM Lane LOS	-	-	F	C
HCM 95th %tile Q(veh)	-	-	12.2	3.2

HCM 2010 TWSC
43: County Line Rd & Roberts Rd 9/17/2014

Intersection	
Int Delay, s/veh	26.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	67	99	8	2	23	6	14	616	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	76	112	9	2	26	7	16	700	28

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	970	1335	289	1088	1343	364	578	0	0
Stage 1	575	575	-	746	746	-	-	-	-
Stage 2	395	760	-	342	597	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-
Pot Cap-1 Maneuver	208	152	708	170	151	633	992	-	-
Stage 1	470	501	-	372	419	-	-	-	-
Stage 2	602	413	-	646	490	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	172	146	708	60	145	633	992	-	-
Mov Cap-2 Maneuver	172	146	-	60	145	-	-	-	-
Stage 1	457	493	-	362	408	-	-	-	-
Stage 2	542	402	-	485	483	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	201.1	35.2	0.3
HCM LOS	F	E	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	992	-	-	161	154	871	-	-
HCM Lane V/C Ratio	0.016	-	-	1.228	0.229	0.01	-	-
HCM Control Delay (s)	8.7	0.1	-	201.1	35.2	9.2	0.1	-
HCM Lane LOS	A	A	-	F	E	A	A	-
HCM 95th %tile Q(veh)	0	-	-	11.2	0.8	0	-	-

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	8	471	38
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	88	88	88
Heavy Vehicles, %	2	2	2
Mvmt Flow	9	535	43

Major/Minor	Major2		
Conflicting Flow All	728	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	871	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	871	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.2
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	202	219	286	20	15	97
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	230	249	325	23	17	110

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	348	0	-	0	1044	336
Stage 1	-	-	-	-	336	-
Stage 2	-	-	-	-	708	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1216	-	-	-	255	708
Stage 1	-	-	-	-	726	-
Stage 2	-	-	-	-	490	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1216	-	-	-	199	708
Mov Cap-2 Maneuver	-	-	-	-	199	-
Stage 1	-	-	-	-	726	-
Stage 2	-	-	-	-	383	-

Approach	EB	WB	SB
HCM Control Delay, s	4.1	0	14
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1216	-	-	-	527
HCM Lane V/C Ratio	0.189	-	-	-	0.242
HCM Control Delay (s)	8.6	0	-	-	14
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.7	-	-	-	0.9

HCM 2010 TWSC
53: County Line Rd & Lowrys Ln 9/17/2014

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	61	80	58	237	149	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	70	92	67	272	171	34

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	595	189	206	0	-	0
Stage 1	189	-	-	-	-	-
Stage 2	406	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	470	858	1377	-	-	-
Stage 1	848	-	-	-	-	-
Stage 2	677	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	443	858	1377	-	-	-
Mov Cap-2 Maneuver	443	-	-	-	-	-
Stage 1	848	-	-	-	-	-
Stage 2	638	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13	1.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1377	-	611	-	-
HCM Lane V/C Ratio	0.048	-	0.265	-	-
HCM Control Delay (s)	7.7	0	13	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	1.1	-	-

HCM 2010 TWSC
61: Dwy/Aldwyn Ln & S Ithan Ave 9/17/2014

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	9	356	9	16	192	13	7	1	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4
Mvmt Flow	11	440	11	20	237	16	9	1	15

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	253	0	0	451	0	0	789	760	445
Stage 1	-	-	-	-	-	-	467	467	-
Stage 2	-	-	-	-	-	-	322	293	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.14	6.54	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.54	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.536	4.036	3.336
Pot Cap-1 Maneuver	1301	-	-	1099	-	-	306	333	609
Stage 1	-	-	-	-	-	-	572	558	-
Stage 2	-	-	-	-	-	-	686	667	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1301	-	-	1099	-	-	271	322	609
Mov Cap-2 Maneuver	-	-	-	-	-	-	271	322	-
Stage 1	-	-	-	-	-	-	566	552	-
Stage 2	-	-	-	-	-	-	609	653	-

Approach	EB	WB	NB
HCM Control Delay, s	0.2	0.6	14.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	411	1301	-	-	1099	-	-	591
HCM Lane V/C Ratio	0.06	0.009	-	-	0.018	-	-	0.159
HCM Control Delay (s)	14.3	7.8	0	-	8.3	0	-	12.2
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.6

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	16	0	60
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	81	81	81
Heavy Vehicles, %	4	4	4
Mvmt Flow	20	0	74

Major/Minor	Minor2		
Conflicting Flow All	760	758	245
Stage 1	285	285	-
Stage 2	475	473	-
Critical Hdwy	7.14	6.54	6.24
Critical Hdwy Stg 1	6.14	5.54	-
Critical Hdwy Stg 2	6.14	5.54	-
Follow-up Hdwy	3.536	4.036	3.336
Pot Cap-1 Maneuver	320	334	789
Stage 1	718	672	-
Stage 2	567	555	-
Platoon blocked, %			
Mov Cap-1 Maneuver	304	323	789
Mov Cap-2 Maneuver	304	323	-
Stage 1	710	658	-
Stage 2	546	549	-

Approach	SB
HCM Control Delay, s	12.2
HCM LOS	B

Minor Lane/Major Mvmt

HCM research expects at least one 'Stop' controlled approach at the intersection.

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	399	151	0	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	-1	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	434	164	0	1	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	164	0	-	0	598	164
Stage 1	-	-	-	-	164	-
Stage 2	-	-	-	-	434	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1414	-	-	-	465	881
Stage 1	-	-	-	-	865	-
Stage 2	-	-	-	-	653	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1414	-	-	-	465	881
Mov Cap-2 Maneuver	-	-	-	-	465	-
Stage 1	-	-	-	-	865	-
Stage 2	-	-	-	-	653	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1414	-	-	-	720
HCM Lane V/C Ratio	-	-	-	-	0.006
HCM Control Delay (s)	0	-	-	-	10
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	334	388	0	382	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	-1	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	363	422	0	415	1	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	785	0	989	574
Stage 1	-	-	-	-	574	-
Stage 2	-	-	-	-	415	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	834	-	274	518
Stage 1	-	-	-	-	563	-
Stage 2	-	-	-	-	666	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	834	-	274	518
Mov Cap-2 Maneuver	-	-	-	-	274	-
Stage 1	-	-	-	-	563	-
Stage 2	-	-	-	-	666	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	399	-	-	834	-
HCM Lane V/C Ratio	0.008	-	-	-	-
HCM Control Delay (s)	14.1	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

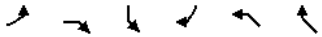
Intersection	
Int Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1086	24	19	1117	0	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	3	0	-
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1621	36	28	1667	0	37

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1657	0	2529	828
Stage 1	-	-	-	-	1639	-
Stage 2	-	-	-	-	890	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	394	-	23	318
Stage 1	-	-	-	-	147	-
Stage 2	-	-	-	-	366	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	394	-	1	318
Mov Cap-2 Maneuver	-	-	-	-	1	-
Stage 1	-	-	-	-	147	-
Stage 2	-	-	-	-	14	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7	17.8
HCM LOS			C

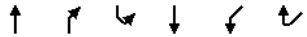
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	318	-	-	394	-
HCM Lane V/C Ratio	0.117	-	-	0.072	-
HCM Control Delay (s)	17.8	-	-	14.8	6.9
HCM Lane LOS	C	-	-	B	A
HCM 95th %tile Q(veh)	0.4	-	-	0.2	-



Lane Group	EBL	EBR	SBL	SBR	NWL	NWR
Lane Configurations						
Volume (vph)	202	15	140	333	38	254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.991		0.905		0.882	
Flt Protected	0.956		0.985		0.994	
Satd. Flow (prot)	1765	0	1660	0	1633	0
Flt Permitted	0.956		0.985		0.994	
Satd. Flow (perm)	1765	0	1660	0	1633	0
Link Speed (mph)	30		30		30	
Link Distance (ft)	973		295		2020	
Travel Time (s)	22.1		6.7		45.9	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	215	16	149	354	40	270
Shared Lane Traffic (%)						
Lane Group Flow (vph)	231	0	503	0	310	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Right
Median Width(ft)	22		12		12	
Link Offset(ft)	0		0		0	
Crosswalk Width(ft)	10		10		10	
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	15	9
Sign Control	Stop		Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 68.1%		ICU Level of Service C	
Analysis Period (min) 15			

Lanes, Volumes, Timings
38: County Line Rd & N Ithan Ave 9/17/2014



Lane Group	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Volume (vph)	343	110	166	297	154	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.967				0.947	
Flt Protected				0.982	0.971	
Satd. Flow (prot)	1801	0	0	1829	1713	0
Flt Permitted				0.982	0.971	
Satd. Flow (perm)	1801	0	0	1829	1713	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	295			1901	824	
Travel Time (s)	6.7			43.2	18.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	377	121	182	326	169	110
Shared Lane Traffic (%)						
Lane Group Flow (vph)	498	0	0	508	279	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	10			10	10	
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
Sign Control	Free			Stop	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 74.2%		ICU Level of Service D	
Analysis Period (min) 15			

HCM 2010 Signalized Intersection Summary
3: County Line Rd & Spring Mill Rd

9/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	278	50	52	264	77	41	253	45	32	297	53
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	180.0	164.3	180.0	180.0	173.1	180.0	180.0	173.1	180.0	180.0	173.1	180.0
Adj Flow Rate, veh/h	37	293	53	55	278	81	43	266	47	34	313	56
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	109	598	102	134	548	147	105	353	58	93	380	65
Arrive On Green	0.47	0.47	0.47	0.47	0.47	0.47	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	75	1262	215	122	1155	311	104	1244	205	73	1339	228
Grp Volume(v), veh/h	383	0	0	414	0	0	356	0	0	403	0	0
Grp Sat Flow(s),veh/h/ln	1551	0	0	1589	0	0	1553	0	0	1640	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0
Cycle Q Clear(g_c), s	8.9	0.0	0.0	9.3	0.0	0.0	11.3	0.0	0.0	12.5	0.0	0.0
Prop In Lane	0.10		0.14	0.13		0.20	0.12		0.13	0.08		0.14
Lane Grp Cap(c), veh/h	809	0	0	829	0	0	516	0	0	538	0	0
V/C Ratio(X)	0.47	0.00	0.00	0.50	0.00	0.00	0.69	0.00	0.00	0.75	0.00	0.00
Avail Cap(c_a), veh/h	809	0	0	829	0	0	754	0	0	784	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.54	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.8	0.0	0.0	9.9	0.0	0.0	17.6	0.0	0.0	18.2	0.0	0.0
Incr Delay (d2), s/veh	1.1	0.0	0.0	2.1	0.0	0.0	0.6	0.0	0.0	1.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	0.0	0.0	4.7	0.0	0.0	4.9	0.0	0.0	5.8	0.0	0.0
LnGrp Delay(d),s/veh	10.8	0.0	0.0	12.0	0.0	0.0	18.2	0.0	0.0	19.2	0.0	0.0
LnGrp LOS	B			B			B			B		
Approach Vol, veh/h		383			414			356			403	
Approach Delay, s/veh		10.8			12.0			18.2			19.2	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		40.2		21.8		40.2		21.8
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		26.0		24.0		26.0		24.0
Max Q Clear Time (g_c+I1), s		10.9		14.5		11.3		13.3
Green Ext Time (p_c), s		3.0		1.3		3.0		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	15.0
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

9/17/2014

HCM 2010 methodology does not support more than 4 approaches.

HCM 2010 Signalized Intersection Summary
11: Chapel Dr & Lancaster Ave

9/17/2014

Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations								
Volume (veh/h)	993	33	30	982	14	4		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	176.5	176.5	176.5	176.5	176.5	176.5		
Adj Flow Rate, veh/h	1079	36	33	1067	15	4		
Adj No. of Lanes	2	1	1	2	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	2355	1054	473	2355	10	9		
Arrive On Green	0.70	0.70	0.70	0.70	0.01	0.01		
Sat Flow, veh/h	3441	1500	503	3441	1681	1500		
Grp Volume(v), veh/h	1079	36	33	1067	15	4		
Grp Sat Flow(s),veh/h/ln	1676	1500	503	1676	1681	1500		
Q Serve(g_s), s	5.3	0.3	1.2	5.2	0.2	0.1		
Cycle Q Clear(g_c), s	5.3	0.3	6.5	5.2	0.2	0.1		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	2355	1054	473	2355	10	9		
V/C Ratio(X)	0.46	0.03	0.07	0.45	1.52	0.45		
Avail Cap(c_a), veh/h	2355	1054	473	2355	1002	895		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.54	0.54	1.00	1.00		
Uniform Delay (d), s/veh	2.5	1.7	3.9	2.4	18.8	18.7		
Incr Delay (d2), s/veh	0.6	0.1	0.2	0.3	316.8	32.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	53.1	0.0		
%ile BackOfQ(50%),veh/ln	2.6	0.1	0.2	2.5	1.0	0.1		
LnGrp Delay(d),s/veh	3.1	1.8	4.0	2.8	388.6	50.9		
LnGrp LOS	A	A	A	A	F	D		
Approach Vol, veh/h	1115			1100	19			
Approach Delay, s/veh	3.1			2.8	317.5			
Approach LOS	A			A	F			

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		54.3				54.3		5.7
Change Period (Y+Rc), s		5.0				5.0		5.0
Max Green Setting (Gmax), s		27.0				27.0		23.0
Max Q Clear Time (g_c+I1), s		7.3				8.5		2.2
Green Ext Time (p_c), s		10.9				10.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	5.6
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
16: Sproul Rd & Conestoga Rd

9/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	148	544	137	36	602	57	212	266	27	56	199	74
Number	7	4	14	3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	174.8	174.8	180.0	179.1	179.1	184.5	173.9	173.9	179.1	180.9	175.6	180.9
Adj Flow Rate, veh/h	163	598	0	40	662	0	233	292	30	62	219	81
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	192	874	0	279	677	0	201	577	59	93	236	81
Arrive On Green	0.06	0.50	0.00	0.38	0.38	0.00	0.07	0.37	0.37	0.23	0.23	0.23
Sat Flow, veh/h	1664	1748	0	829	1791	0	1656	1551	159	199	1012	349
Grp Volume(v), veh/h	163	598	0	40	662	0	233	0	322	362	0	0
Grp Sat Flow(s),veh/h/ln	1664	1748	0	829	1791	0	1656	0	1711	1560	0	0
Q Serve(g_s), s	5.3	23.4	0.0	3.5	32.8	0.0	6.5	0.0	13.1	15.9	0.0	0.0
Cycle Q Clear(g_c), s	5.3	23.4	0.0	15.9	32.8	0.0	6.5	0.0	13.1	20.8	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.09	0.17		0.22
Lane Grp Cap(c), veh/h	192	874	0	279	677	0	201	0	637	411	0	0
V/C Ratio(X)	0.85	0.68	0.00	0.14	0.98	0.00	1.16	0.00	0.51	0.88	0.00	0.00
Avail Cap(c_a), veh/h	192	874	0	279	677	0	201	0	637	411	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.7	17.1	0.0	27.3	27.6	0.0	29.4	0.0	21.8	34.2	0.0	0.0
Incr Delay (d2), s/veh	28.7	4.3	0.0	1.1	29.7	0.0	112.0	0.0	0.6	19.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	12.2	0.0	0.9	21.8	0.0	6.3	0.0	6.3	11.2	0.0	0.0
LnGrp Delay(d),s/veh	50.3	21.4	0.0	28.4	57.3	0.0	141.4	0.0	22.5	53.6	0.0	0.0
LnGrp LOS	D	C		C	E		F		C	D		
Approach Vol, veh/h		761			702			555			362	
Approach Delay, s/veh		27.6			55.7			72.4			53.6	
Approach LOS		C			E			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6	7	8
Phs Duration (G+Y+Rc), s	12.5	27.0		50.5		39.5	11.0	39.5
Change Period (Y+Rc), s	5.5	5.5		5.0		5.5	5.0	5.0
Max Green Setting (Gmax), s	7.0	21.5		45.5		34.0	6.0	34.5
Max Q Clear Time (g_c+I1), s	8.5	22.8		25.4		15.1	7.3	34.8
Green Ext Time (p_c), s	0.0	0.0		8.5		2.4	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	50.3
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	158	388	2	2	450	120	14	149	12	62	53	142
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	185.4	178.3	185.4	176.4	169.6	176.4	176.3	169.5	176.3	184.4	177.3	184.4
Adj Flow Rate, veh/h	195	479	2	2	556	148	17	184	15	77	65	175
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	200	406	2	60	716	190	77	344	27	138	94	195
Arrive On Green	0.55	0.55	0.55	0.55	0.55	0.55	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	224	736	3	1	1298	345	55	1469	114	274	401	832
Grp Volume(v), veh/h	676	0	0	706	0	0	216	0	0	317	0	0
Grp Sat Flow(s),veh/h/ln	963	0	0	1644	0	0	1638	0	0	1507	0	0
Q Serve(g_s), s	12.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.4	0.0	0.0
Cycle Q Clear(g_c), s	33.5	0.0	0.0	20.7	0.0	0.0	6.9	0.0	0.0	12.3	0.0	0.0
Prop In Lane	0.29		0.00	0.00		0.21	0.08		0.07	0.24		0.55
Lane Grp Cap(c), veh/h	608	0	0	966	0	0	448	0	0	427	0	0
V/C Ratio(X)	1.11	0.00	0.00	0.73	0.00	0.00	0.48	0.00	0.00	0.74	0.00	0.00
Avail Cap(c_a), veh/h	608	0	0	966	0	0	481	0	0	457	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	16.5	0.0	0.0	10.7	0.0	0.0	20.4	0.0	0.0	22.4	0.0	0.0
Incr Delay (d2), s/veh	71.4	0.0	0.0	2.9	0.0	0.0	0.8	0.0	0.0	6.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	22.0	0.0	0.0	10.0	0.0	0.0	3.3	0.0	0.0	5.8	0.0	0.0
LnGrp Delay(d),s/veh	87.9	0.0	0.0	13.6	0.0	0.0	21.2	0.0	0.0	28.4	0.0	0.0
LnGrp LOS	F			B			C			C		
Approach Vol, veh/h		676			706			216			317	
Approach Delay, s/veh		87.9			13.6			21.2			28.4	
Approach LOS		F			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		40.0		20.7		40.0		20.7
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		34.0		16.0		34.0		16.0
Max Q Clear Time (g_c+I1), s		22.7		8.9		35.5		14.3
Green Ext Time (p_c), s		5.3		1.3		0.0		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	43.1
HCM 2010 LOS	D

HCM 2010 methodology does not support exclusive ped or hold phases.

HCM 2010 Signalized Intersection Summary
33: Williams Rd/Garrett Ave & Conestoga Rd

9/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	25	438	1	4	409	4	6	6	9	15	3	38
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	187.2	187.2	187.2	187.2	187.2	187.2	180.0	180.0	180.0	172.8	172.8	172.8
Adj Flow Rate, veh/h	28	498	1	5	465	5	7	7	10	17	3	43
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	91	1338	3	58	1381	15	88	35	38	86	8	54
Arrive On Green	0.75	0.75	0.75	0.75	0.75	0.75	0.05	0.05	0.05	0.05	0.05	0.05
Sat Flow, veh/h	44	1783	3	4	1841	20	337	658	711	325	147	1015
Grp Volume(v), veh/h	527	0	0	475	0	0	24	0	0	63	0	0
Grp Sat Flow(s),veh/h/ln	1831	0	0	1865	0	0	1706	0	0	1487	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0
Cycle Q Clear(g_c), s	6.5	0.0	0.0	5.6	0.0	0.0	0.9	0.0	0.0	2.7	0.0	0.0
Prop In Lane	0.05		0.00	0.01		0.01	0.29		0.42	0.27		0.68
Lane Grp Cap(c), veh/h	1431	0	0	1454	0	0	161	0	0	148	0	0
V/C Ratio(X)	0.37	0.00	0.00	0.33	0.00	0.00	0.15	0.00	0.00	0.43	0.00	0.00
Avail Cap(c_a), veh/h	1431	0	0	1454	0	0	302	0	0	280	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	2.9	0.0	0.0	2.8	0.0	0.0	30.0	0.0	0.0	30.9	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.0	0.6	0.0	0.0	0.6	0.0	0.0	2.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	0.0	0.0	3.0	0.0	0.0	0.4	0.0	0.0	1.3	0.0	0.0
LnGrp Delay(d),s/veh	3.6	0.0	0.0	3.4	0.0	0.0	30.6	0.0	0.0	33.6	0.0	0.0
LnGrp LOS	A			A			C			C		
Approach Vol, veh/h		527			475			24			63	
Approach Delay, s/veh		3.6			3.4			30.6			33.6	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		56.0		10.0		56.0		10.0
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		50.0		10.0		50.0		10.0
Max Q Clear Time (g_c+I1), s		8.5		4.7		7.6		2.9
Green Ext Time (p_c), s		4.5		0.1		4.5		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	5.8
HCM 2010 LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

HCM 2010 Signalized Intersection Summary
51: Lowrys Ln & Lancaster Ave

9/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	18	1050	19	16	1142	22	47	104	39	21	71	19
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	180.0	174.8	180.0	177.3	172.1	177.3	190.0	184.5	190.0	188.1	182.7	188.1
Adj Flow Rate, veh/h	19	1129	20	17	1228	24	51	112	42	23	76	20
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	78	2034	36	75	2012	39	126	157	52	104	187	43
Arrive On Green	0.64	0.64	0.64	0.64	0.64	0.64	0.15	0.15	0.15	0.15	0.15	0.15
Sat Flow, veh/h	18	3201	56	14	3165	61	307	1049	349	184	1252	290
Grp Volume(v), veh/h	605	0	563	661	0	608	205	0	0	119	0	0
Grp Sat Flow(s),veh/h/ln	1694	0	1580	1685	0	1556	1705	0	0	1726	0	0
Q Serve(g_s), s	0.0	0.0	11.3	0.0	0.0	13.1	3.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	10.8	0.0	11.3	12.7	0.0	13.1	6.4	0.0	0.0	3.4	0.0	0.0
Prop In Lane	0.03		0.04	0.03		0.04	0.25		0.20	0.19		0.17
Lane Grp Cap(c), veh/h	1143	0	1004	1137	0	989	336	0	0	335	0	0
V/C Ratio(X)	0.53	0.00	0.56	0.58	0.00	0.62	0.61	0.00	0.00	0.36	0.00	0.00
Avail Cap(c_a), veh/h	1143	0	1004	1137	0	989	457	0	0	457	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.7	0.0	5.8	6.0	0.0	6.1	22.9	0.0	0.0	21.6	0.0	0.0
Incr Delay (d2), s/veh	1.8	0.0	2.3	2.2	0.0	2.9	1.8	0.0	0.0	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	0.0	5.5	6.6	0.0	6.2	3.2	0.0	0.0	1.7	0.0	0.0
LnGrp Delay(d),s/veh	7.4	0.0	8.0	8.2	0.0	9.0	24.7	0.0	0.0	22.3	0.0	0.0
LnGrp LOS	A		A	A		A	C			C		
Approach Vol, veh/h		1168			1269			205			119	
Approach Delay, s/veh		7.7			8.6			24.7			22.3	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		46.1		13.9		46.1		13.9
Change Period (Y+Rc), s		6.0		5.0		6.0		5.0
Max Green Setting (Gmax), s		36.0		13.0		36.0		13.0
Max Q Clear Time (g_c+I1), s		13.3		5.4		15.1		8.4
Green Ext Time (p_c), s		11.9		0.7		11.4		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	10.0
HCM 2010 LOS	A

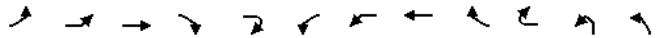
Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL
Lane Configurations												
Volume (vph)	2	223	882	83	218	4	11	967	1	13	3	49
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	11	11	14	10	12	12	12	12	10	10
Grade (%)			3%					-2%				
Storage Length (ft)		300		0			75		0			0
Storage Lanes		1		1			1		0			0
Taper Length (ft)		25					25					25
Lane Util. Factor	0.95	1.00	0.95	0.95	1.00	0.95	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.987		0.850			0.998				
Flt Protected		0.950					0.950					
Satd. Flow (prot)	0	1497	3061	0	1531	0	1645	3283	0	0	0	0
Flt Permitted		0.075					0.263					
Satd. Flow (perm)	0	118	3061	0	1531	0	455	3283	0	0	0	0
Right Turn on Red					Yes					Yes		
Satd. Flow (RTOR)					192			1				
Link Speed (mph)			35					35				
Link Distance (ft)			577					903				
Travel Time (s)			11.2					17.6				
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	2	232	919	86	227	4	11	1007	1	14	3	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	234	1005	0	227	0	15	1022	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Right	Left	Left	Left	Right	Right	Left	Left
Median Width(ft)			12					12				
Link Offset(ft)			0					0				
Crosswalk Width(ft)			10					10				
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.14	1.14	1.01	1.16	1.06	1.06	1.06	1.06	1.18	1.18
Turning Speed (mph)	15	15		9	9	15	15		9	9	15	15
Number of Detectors	1	1	1		0	1	1	1			1	1
Detector Template	Left	Left	Thru		Right	Left	Left	Thru			Left	Left
Leading Detector (ft)	20	37	37		0	20	37	37			20	20
Trailing Detector (ft)	0	-3	-3		0	0	-3	-3			0	0
Detector 1 Position(ft)	0	-3	-3		0	0	-3	-3			0	0
Detector 1 Size(ft)	20	40	40		37	20	40	40			20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0
Turn Type	pm+pt	pm+pt	NA		Perm	Perm	Perm	NA			Perm	Perm
Protected Phases	5	5	2					6				
Permitted Phases	2	2			2	6	6				10	10
Detector Phase	5	5	2		2	6	6	6			10	10
Switch Phase												
Minimum Initial (s)	3.0	3.0	15.0		15.0	15.0	15.0	15.0			3.0	3.0

Lane Group	NBT	NBR	SBT	SBR	SBR2	NEL2	NEL	NET	NER	NER2	SWL2	SWL
Lane Configurations												
Volume (vph)	0	8	1	3	12	181	0	193	50	9	19	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	12	12	11	11	11	10	10
Grade (%)	1%		-3%					3%				
Storage Length (ft)		0		0			200		0			150
Storage Lanes		0		0			1		0			1
Taper Length (ft)							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	0.983		0.873					0.965				
Flt Protected	0.958						0.950					0.950
Satd. Flow (prot)	1499	0	1418	0	0	0	1604	1575	0	0	0	1573
Flt Permitted	0.742						0.189					0.597
Satd. Flow (perm)	1161	0	1418	0	0	0	319	1575	0	0	0	989
Right Turn on Red					No					No		
Satd. Flow (RTOR)												
Link Speed (mph)	25		25					40				
Link Distance (ft)	492		597					1336				
Travel Time (s)	13.4		16.3					22.8				
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	0	8	1	3	12	189	0	201	52	9	20	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	62	0	16	0	0	0	189	262	0	0	0	28
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Right	Left	Left	Left	Right	Right	Left	Left
Median Width(ft)	0		0					12				
Link Offset(ft)	0		0					0				
Crosswalk Width(ft)	10		10					10				
Two way Left Turn Lane												
Headway Factor	1.18	1.18	1.15	1.15	1.15	1.09	1.09	1.14	1.14	1.14	1.12	1.12
Turning Speed (mph)		9		9	9	15	15		9	9	15	15
Number of Detectors	1		1			1	1	1			1	1
Detector Template	Thru		Thru			Left	Left	Thru			Left	Left
Leading Detector (ft)	37		37			20	37	37			20	37
Trailing Detector (ft)	-3		-3			0	-3	-3			0	-3
Detector 1 Position(ft)	-3		-3			0	-3	-3			0	-3
Detector 1 Size(ft)	40		40			20	40	40			20	40
Detector 1 Type	Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0			0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0		0.0			0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0		0.0			0.0	0.0	0.0			0.0	0.0
Turn Type	NA		NA			pm+pt	pm+pt	NA			Perm	Perm
Protected Phases	10		9			3	3	8				
Permitted Phases						8	8				4	4
Detector Phase	10		9			3	3	8			4	4
Switch Phase												
Minimum Initial (s)	3.0		3.0			3.0	3.0	3.0			3.0	3.0

Lane Group	SWT	SWR
Lane Configurations		
Volume (vph)	133	154
Ideal Flow (vphpl)	1800	1800
Lane Width (ft)	10	10
Grade (%)	-7%	
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	1.00	1.00
Frt	0.920	
Flt Protected		
Satd. Flow (prot)	1524	0
Flt Permitted		
Satd. Flow (perm)	1524	0
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)	25	
Link Distance (ft)	3168	
Travel Time (s)	86.4	
Peak Hour Factor	0.96	0.96
Heavy Vehicles (%)	5%	5%
Adj. Flow (vph)	139	160
Shared Lane Traffic (%)		
Lane Group Flow (vph)	299	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	10	
Two way Left Turn Lane		
Headway Factor	1.12	1.12
Turning Speed (mph)		9
Number of Detectors	1	
Detector Template	Thru	
Leading Detector (ft)	37	
Trailing Detector (ft)	-3	
Detector 1 Position(ft)	-3	
Detector 1 Size(ft)	40	
Detector 1 Type	Cl+Ex	
Detector 1 Channel		
Detector 1 Extend (s)	0.0	
Detector 1 Queue (s)	0.0	
Detector 1 Delay (s)	0.0	
Turn Type	NA	
Protected Phases	4	
Permitted Phases		
Detector Phase	4	
Switch Phase		
Minimum Initial (s)	3.0	

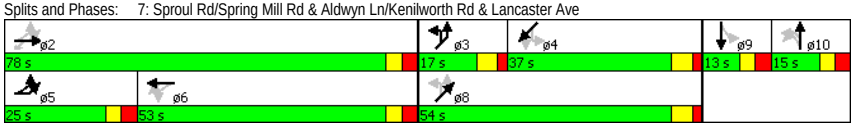


Lane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL
Minimum Split (s)	13.0	13.0	21.0		21.0	21.0	21.0	21.0			13.0	13.0
Total Split (s)	25.0	25.0	78.0		78.0	53.0	53.0	53.0			15.0	15.0
Total Split (%)	15.6%	15.6%	48.8%		48.8%	33.1%	33.1%	33.1%			9.4%	9.4%
Maximum Green (s)	19.0	19.0	72.0		72.0	47.0	47.0	47.0			9.0	9.0
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0			3.0	3.0
All-Red Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0			3.0	3.0
Lost Time Adjust (s)		0.5	0.5		0.5		0.5	0.5				
Total Lost Time (s)		6.5	6.5		6.5		6.5	6.5				
Lead/Lag	Lead	Lead				Lag	Lag	Lag			Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0			3.0	3.0
Recall Mode	None	None	Max		Max	None	None	None			None	None
Walk Time (s)			7.0		7.0	7.0	7.0	7.0				
Flash Dont Walk (s)			20.0		20.0	20.0	20.0	20.0				
Pedestrian Calls (#/hr)			0		0	0	0	0				
Act Effct Green (s)		71.6	71.6		71.6		46.6	46.6				
Actuated g/C Ratio		0.47	0.47		0.47		0.31	0.31				
v/c Ratio		1.05	0.70		0.28		0.11	1.02				
Control Delay		116.8	35.7		6.2		43.1	84.0				
Queue Delay		0.0	0.0		0.0		0.0	0.0				
Total Delay		116.8	35.7		6.2		43.1	84.0				
LOS		F	D		A		D	F				
Approach Delay			44.1					83.4				
Approach LOS			D					F				
Queue Length 50th (ft)		~188	380		17		10	512				
Queue Length 95th (ft)		#419	537		76		34	#762				
Internal Link Dist (ft)			497					823				
Turn Bay Length (ft)		300					75					
Base Capacity (vph)		223	1440		822		139	1005				
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		1.05	0.70		0.28		0.11	1.02				

Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 152.2			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.05			
Intersection Signal Delay: 68.5		Intersection LOS: E	
Intersection Capacity Utilization 107.1%		ICU Level of Service G	
Analysis Period (min) 15			

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

Splits and Phases: 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave



Lane Group	NBT	NBR	SBT	SBR	SBR2	NEL2	NEL	NET	NER	NER2	SWL2	SWL
Minimum Split (s)	13.0		13.0			13.0	13.0	13.0			13.0	13.0
Total Split (s)	15.0		13.0			17.0	17.0	54.0			37.0	37.0
Total Split (%)	9.4%		8.1%			10.6%	10.6%	33.8%			23.1%	23.1%
Maximum Green (s)	9.0		7.0			11.0	11.0	48.0			31.0	31.0
Yellow Time (s)	3.0		3.0			4.0	4.0	4.0			4.0	4.0
All-Red Time (s)	3.0		3.0			2.0	2.0	2.0			2.0	2.0
Lost Time Adjust (s)	0.5		0.5				0.5	0.5				0.5
Total Lost Time (s)	6.5		6.5				6.5	6.5				6.5
Lead/Lag	Lag		Lead			Lead	Lead				Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0		3.0			3.0	3.0	3.0			3.0	3.0
Recall Mode	None		None			None	None	None			None	None
Walk Time (s)								7.0				
Flash Dont Walk (s)								25.0				
Pedestrian Calls (#/hr)								0				
Act Effct Green (s)	8.5		6.1				47.6	47.6				30.6
Actuated g/C Ratio	0.06		0.04				0.31	0.31				0.20
v/c Ratio	0.95		0.29				1.01	0.53				0.14
Control Delay	170.3		86.1				111.7	48.9				54.4
Queue Delay	0.0		0.0				0.0	0.0				0.0
Total Delay	170.3		86.1				111.7	48.9				54.4
LOS	F		F				F	D				D
Approach Delay	170.3		86.1					75.2				
Approach LOS	F		F					E				
Queue Length 50th (ft)	60		15				139	204				22
Queue Length 95th (ft)	#174		44				#300	332				57
Internal Link Dist (ft)	412		517					1256				
Turn Bay Length (ft)							200					150
Base Capacity (vph)	65		60				188	492				198
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	0.95		0.27				1.01	0.53				0.14

Intersection Summary

Lane Group	SWT	SWR
Minimum Split (s)	13.0	
Total Split (s)	37.0	
Total Split (%)	23.1%	
Maximum Green (s)	31.0	
Yellow Time (s)	4.0	
All-Red Time (s)	2.0	
Lost Time Adjust (s)	0.5	
Total Lost Time (s)	6.5	
Lead/Lag	Lag	
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	
Recall Mode	None	
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)	30.6	
Actuated g/C Ratio	0.20	
v/c Ratio	0.98	
Control Delay	105.9	
Queue Delay	0.0	
Total Delay	105.9	
LOS	F	
Approach Delay	101.5	
Approach LOS	F	
Queue Length 50th (ft)	286	
Queue Length 95th (ft)	#533	
Internal Link Dist (ft)	3088	
Turn Bay Length (ft)		
Base Capacity (vph)	306	
Starvation Cap Reductn	0	
Spillback Cap Reductn	0	
Storage Cap Reductn	0	
Reduced v/c Ratio	0.98	

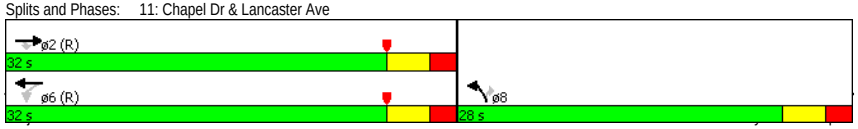
Intersection Summary

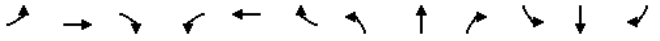
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	993	33	30	982	14	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	12	12
Storage Length (ft)		125	100		0	0
Storage Lanes		1	1		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3241	1450	1621	3241	1676	1500
Flt Permitted			0.265		0.950	
Satd. Flow (perm)	3241	1450	452	3241	1676	1500
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		36				4
Link Speed (mph)	35			35	25	
Link Distance (ft)	706			1285	319	
Travel Time (s)	13.8			25.0	8.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1079	36	33	1067	15	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1079	36	33	1067	15	4
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	11			11	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	10			10	10	
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.12	1.12	1.07	1.07
Turning Speed (mph)		9	15		15	9
Number of Detectors	1	1	1	1	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (ft)	37	20	20	37	37	20
Trailing Detector (ft)	-3	0	0	-3	-3	0
Detector 1 Position(ft)	-3	0	0	-3	-3	0
Detector 1 Size(ft)	40	20	20	40	40	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases		2	6			8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	4.0	4.0
Minimum Split (s)	21.0	21.0	21.0	21.0	28.0	28.0
Total Split (s)	32.0	32.0	32.0	32.0	28.0	28.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	53.3%	53.3%	53.3%	53.3%	46.7%	46.7%
Maximum Green (s)	27.0	27.0	27.0	27.0	23.0	23.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.5	0.5	0.5	0.5	0.5	0.5
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None
Walk Time (s)	10.0	10.0	10.0	10.0	7.0	7.0
Flash Dont Walk (s)	0.0	0.0	0.0	0.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	56.4	56.4	56.4	56.4	5.8	5.8
Actuated g/C Ratio	0.94	0.94	0.94	0.94	0.10	0.10
v/c Ratio	0.35	0.03	0.08	0.35	0.09	0.03
Control Delay	1.5	0.8	2.8	2.9	25.6	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.5	0.8	2.8	2.9	25.6	17.0
LOS	A	A	A	A	C	B
Approach Delay	1.5			2.9	23.8	
Approach LOS	A			A	C	
Queue Length 50th (ft)	0	0	0	0	5	0
Queue Length 95th (ft)	100	6	m11	315	20	7
Internal Link Dist (ft)	626			1205	239	
Turn Bay Length (ft)		125	100			
Base Capacity (vph)	3048	1366	425	3048	628	565
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	0.35	0.03	0.08	0.35	0.02	0.01

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 55 (92%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.35			
Intersection Signal Delay: 2.4		Intersection LOS: A	
Intersection Capacity Utilization 41.5%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 11: Chapel Dr & Lancaster Ave





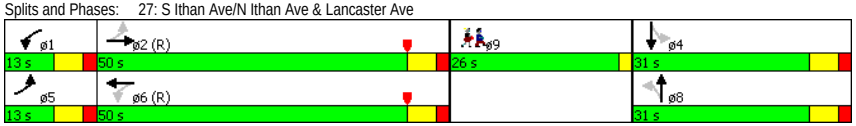
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	96	826	75	117	869	47	94	190	75	25	118	50
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)		0%			3%			1%			0%	
Storage Length (ft)	200		0	250		0	200		0	65		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.992			0.957			0.956	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1520	3000	0	1497	2970	0	1512	1524	0	1520	1530	0
Flt Permitted	0.164			0.169			0.533			0.306		
Satd. Flow (perm)	262	3000	0	266	2970	0	849	1524	0	490	1530	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1285			311			344			973	
Travel Time (s)		25.0			6.1			9.4			26.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	102	879	80	124	924	50	100	202	80	27	126	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	102	959	0	124	974	0	100	282	0	27	179	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)		11			11			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane												
Headway Factor	1.17	1.17	1.17	1.19	1.19	1.19	1.18	1.18	1.18	1.17	1.17	1.17
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0		1	0		1	1		1	1	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	37	0		37	0		37	37		37	37	
Trailing Detector (ft)	-3	0		-3	0		-3	-3		-3	-3	
Detector 1 Position(ft)	-3	0		-3	0		-3	-3		-3	-3	
Detector 1 Size(ft)	40	6		40	6		40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	34.0		3.0	34.0		3.0	3.0		3.0	3.0	

Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	24.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	13.0	40.0		13.0	40.0		13.0	13.0		13.0	13.0	
Total Split (s)	13.0	50.0		13.0	50.0		31.0	31.0		31.0	31.0	
Total Split (%)	10.8%	41.7%		10.8%	41.7%		25.8%	25.8%		25.8%	25.8%	
Maximum Green (s)	7.0	44.0		7.0	44.0		25.0	25.0		25.0	25.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	55.9	49.4		56.0	49.5		23.8	23.8		23.8	23.8	
Actuated g/C Ratio	0.47	0.41		0.47	0.41		0.20	0.20		0.20	0.20	
v/c Ratio	0.54	0.78		0.65	0.80		0.60	0.93		0.28	0.59	
Control Delay	30.0	36.8		28.5	30.7		59.4	85.3		49.0	52.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	30.0	36.8		28.5	30.7		59.4	85.3		49.0	52.4	
LOS	C	D		C	C		E	F		D	D	
Approach Delay		36.1			30.4			78.5			51.9	
Approach LOS		D			C			E			D	
Queue Length 50th (ft)	44	363		54	330		70	215		18	126	
Queue Length 95th (ft)	88	#484		m83	#491		133	#378		48	204	
Internal Link Dist (ft)		1205			231			264			893	
Turn Bay Length (ft)	200			250			200			65		
Base Capacity (vph)	190	1236		190	1225		173	311		100	312	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.54	0.78		0.65	0.80		0.58	0.91		0.27	0.57	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 40.9		Intersection LOS: D	
Intersection Capacity Utilization 75.6%		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: 27: S Ithan Ave/N Ithan Ave & Lancaster Ave



Lane Group	ø9
Minimum Split (s)	26.0
Total Split (s)	26.0
Total Split (%)	22%
Maximum Green (s)	24.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	9.0
Flash Dont Walk (s)	15.0
Pedestrian Calls (#/hr)	45
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

HCM 2010 TWSC
2: County Line Rd & N Ithan Ave 9/17/2014

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	SBL	SBR	NWL	NWR
Vol, veh/h	206	15	140	263	30	254
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	0	-
Veh in Median Storage, #	0	-	0	-	0	-
Grade, %	0	-	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	219	16	149	280	32	270

Major/Minor	Minor2		Major2		Minor1	
Conflicting Flow All	135	0	0	-	8	0
Stage 1	0	-	-	-	0	-
Stage 2	135	-	-	-	8	-
Critical Hdwy	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %				-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	SB	NW
HCM Control Delay, s		0	
HCM LOS	-		-

Minor Lane/Major Mvmt	NWLn1	EBLn1	SBL	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	-	-
HCM Lane LOS	-	-	-	-
HCM 95th %tile Q(veh)	-	-	-	-

HCM 2010 TWSC
15: Conestoga Rd & Spring Mill Rd 9/17/2014

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Vol, veh/h	2	628	692	3	4	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	2	730	805	3	5	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	808	0	-	0	1541	806
Stage 1	-	-	-	-	806	-
Stage 2	-	-	-	-	735	-
Critical Hdwy	4.14	-	-	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.236	-	-	-	3.536	3.336
Pot Cap-1 Maneuver	809	-	-	-	125	379
Stage 1	-	-	-	-	436	-
Stage 2	-	-	-	-	471	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	809	-	-	-	125	379
Mov Cap-2 Maneuver	-	-	-	-	125	-
Stage 1	-	-	-	-	436	-
Stage 2	-	-	-	-	469	-

Approach	EB	WB	SW
HCM Control Delay, s	0	0	22
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SWLn1
Capacity (veh/h)	809	-	-	-	226
HCM Lane V/C Ratio	0.003	-	-	-	0.062
HCM Control Delay (s)	9.5	0	-	-	22
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	47	421	14	9	447	5	13	14	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3
Mvmt Flow	59	526	18	11	559	6	16	18	15

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	565	0	0	544	0	0	1298	1241	535
Stage 1	-	-	-	-	-	-	653	653	-
Stage 2	-	-	-	-	-	-	645	588	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327
Pot Cap-1 Maneuver	1002	-	-	1020	-	-	138	174	543
Stage 1	-	-	-	-	-	-	455	462	-
Stage 2	-	-	-	-	-	-	459	494	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1002	-	-	1020	-	-	93	157	543
Mov Cap-2 Maneuver	-	-	-	-	-	-	93	157	-
Stage 1	-	-	-	-	-	-	416	423	-
Stage 2	-	-	-	-	-	-	350	486	-

Approach	EB	WB	NB
HCM Control Delay, s	0.9	0.2	38.5
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	155	1002	-	-	1020	-	-	368
HCM Lane V/C Ratio	0.315	0.059	-	-	0.011	-	-	0.336
HCM Control Delay (s)	38.5	8.8	0	-	8.6	0	-	19.7
HCM Lane LOS	E	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.3	0.2	-	-	0	-	-	1.5

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	2	15	82
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	80	80	80
Heavy Vehicles, %	3	3	3
Mvmt Flow	2	19	102

Major/Minor	Minor2		
Conflicting Flow All	1253	1245	562
Stage 1	584	584	-
Stage 2	669	661	-
Critical Hdwy	7.13	6.53	6.23
Critical Hdwy Stg 1	6.13	5.53	-
Critical Hdwy Stg 2	6.13	5.53	-
Follow-up Hdwy	3.527	4.027	3.327
Pot Cap-1 Maneuver	148	173	525
Stage 1	496	496	-
Stage 2	445	458	-
Platoon blocked, %			
Mov Cap-1 Maneuver	122	156	525
Mov Cap-2 Maneuver	122	156	-
Stage 1	454	488	-
Stage 2	380	419	-

Approach	SB
HCM Control Delay, s	19.7
HCM LOS	C

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	18.6

Movement	NBT	NBR	SBL	SBT	SWL	SWR
Vol, veh/h	347	110	166	247	134	100
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	381	121	182	271	147	110

Major/Minor	Major1		Minor2		Minor1	
Conflicting Flow All	0	0	497	502	578	442
Stage 1	-	-	0	0	442	-
Stage 2	-	-	497	502	136	-
Critical Hdwy	-	-	6.42	6.52	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	5.42	5.52	-	-
Follow-up Hdwy	-	-	3.518	4.018	3.518	3.318
Pot Cap-1 Maneuver	-	-	532	471	478	615
Stage 1	-	-	-	-	648	-
Stage 2	-	-	611	542	-	-
Platoon blocked, %	-	-				
Mov Cap-1 Maneuver	-	-	532	0	478	615
Mov Cap-2 Maneuver	-	-	532	0	478	-
Stage 1	-	-	-	0	648	-
Stage 2	-	-	611	0	-	-

Approach	NB	SB	SW
HCM Control Delay, s	0	39.5	18.1
HCM LOS		E	C

Minor Lane/Major Mvmt	NBT	NBR	SBLn1	SWLn1
Capacity (veh/h)	-	-	532	528
HCM Lane V/C Ratio	-	-	0.853	0.487
HCM Control Delay (s)	-	-	39.5	18.1
HCM Lane LOS	-	-	E	C
HCM 95th %tile Q(veh)	-	-	9	2.6

Intersection	
Int Delay, s/veh	26.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	67	99	8	2	23	6	14	616	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	76	112	9	2	26	7	16	700	28

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	970	1335	289	1088	1343	364	578	0	0
Stage 1	575	575	-	746	746	-	-	-	-
Stage 2	395	760	-	342	597	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-
Pot Cap-1 Maneuver	208	152	708	170	151	633	992	-	-
Stage 1	470	501	-	372	419	-	-	-	-
Stage 2	602	413	-	646	490	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	172	146	708	60	145	633	992	-	-
Mov Cap-2 Maneuver	172	146	-	60	145	-	-	-	-
Stage 1	457	493	-	362	408	-	-	-	-
Stage 2	542	402	-	485	483	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	201.1	35.2	0.3
HCM LOS	F	E	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	992	-	-	161	154	871	-	-
HCM Lane V/C Ratio	0.016	-	-	1.228	0.229	0.01	-	-
HCM Control Delay (s)	8.7	0.1	-	201.1	35.2	9.2	0.1	-
HCM Lane LOS	A	A	-	F	E	A	A	-
HCM 95th %tile Q(veh)	0	-	-	11.2	0.8	0	-	-

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	8	471	38
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	88	88	88
Heavy Vehicles, %	2	2	2
Mvmt Flow	9	535	43

Major/Minor	Major2		
Conflicting Flow All	728	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	871	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	871	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.2
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	194	219	286	20	15	97
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	220	249	325	23	17	110

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	348	0	-	0	1026	336
Stage 1	-	-	-	-	336	-
Stage 2	-	-	-	-	690	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1216	-	-	-	261	708
Stage 1	-	-	-	-	726	-
Stage 2	-	-	-	-	500	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1216	-	-	-	206	708
Mov Cap-2 Maneuver	-	-	-	-	206	-
Stage 1	-	-	-	-	726	-
Stage 2	-	-	-	-	395	-

Approach	EB	WB	SB
HCM Control Delay, s	4	0	13.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1216	-	-	-	534
HCM Lane V/C Ratio	0.181	-	-	-	0.238
HCM Control Delay (s)	8.6	0	-	-	13.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.7	-	-	-	0.9

HCM 2010 TWSC
53: County Line Rd & Lowrys Ln 9/17/2014

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	61	80	58	229	149	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	70	92	67	263	171	34

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	586	189	206	0	-	0
Stage 1	189	-	-	-	-	-
Stage 2	397	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	476	858	1377	-	-	-
Stage 1	848	-	-	-	-	-
Stage 2	683	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	449	858	1377	-	-	-
Mov Cap-2 Maneuver	449	-	-	-	-	-
Stage 1	848	-	-	-	-	-
Stage 2	644	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.9	1.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1377	-	615	-	-
HCM Lane V/C Ratio	0.048	-	0.264	-	-
HCM Control Delay (s)	7.7	0	12.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	1.1	-	-

HCM 2010 TWSC
61: Dwy/Aldwyn Ln & S Ithan Ave 9/17/2014

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	9	337	9	16	197	13	7	1	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4
Mvmt Flow	11	416	11	20	243	16	9	1	15

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	259	0	0	427	0	0	772	743	422
Stage 1	-	-	-	-	-	-	444	444	-
Stage 2	-	-	-	-	-	-	328	299	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.14	6.54	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.54	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.536	4.036	3.336
Pot Cap-1 Maneuver	1294	-	-	1122	-	-	314	341	627
Stage 1	-	-	-	-	-	-	589	572	-
Stage 2	-	-	-	-	-	-	681	663	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1294	-	-	1122	-	-	277	330	627
Mov Cap-2 Maneuver	-	-	-	-	-	-	277	330	-
Stage 1	-	-	-	-	-	-	583	566	-
Stage 2	-	-	-	-	-	-	604	649	-

Approach	EB	WB	NB
HCM Control Delay, s	0.2	0.6	14.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	422	1294	-	-	1122	-	-	595
HCM Lane V/C Ratio	0.059	0.009	-	-	0.018	-	-	0.158
HCM Control Delay (s)	14.1	7.8	0	-	8.3	0	-	12.2
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.6

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	16	0	60
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	81	81	81
Heavy Vehicles, %	4	4	4
Mvmt Flow	20	0	74

Major/Minor	Minor2		
Conflicting Flow All	743	740	251
Stage 1	291	291	-
Stage 2	452	449	-
Critical Hdwy	7.14	6.54	6.24
Critical Hdwy Stg 1	6.14	5.54	-
Critical Hdwy Stg 2	6.14	5.54	-
Follow-up Hdwy	3.536	4.036	3.336
Pot Cap-1 Maneuver	329	342	783
Stage 1	713	668	-
Stage 2	583	569	-
Platoon blocked, %			
Mov Cap-1 Maneuver	313	331	783
Mov Cap-2 Maneuver	313	331	-
Stage 1	705	654	-
Stage 2	562	563	-

Approach	SB
HCM Control Delay, s	12.2
HCM LOS	B

Minor Lane/Major Mvmt	

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR
Vol, veh/h	5	331	29	150	220	9	23	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	None
Storage Length	50	-	-	100	-	-	0	-
Veh in Median Storage, #	-	0	-	-	0	-	0	-
Grade, %	-	1	-	-	-1	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2
Mvmt Flow	5	360	32	163	239	10	25	2

Major/Minor	Major1			Major2			Minor2	
Conflicting Flow All	249	0	0	391	0	0	967	244
Stage 1	-	-	-	-	-	-	570	-
Stage 2	-	-	-	-	-	-	397	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1317	-	-	1168	-	-	234	795
Stage 1	-	-	-	-	-	-	506	-
Stage 2	-	-	-	-	-	-	629	-
Platoon blocked, %		-	-		-	-		
Mov Cap-1 Maneuver	1317	-	-	1168	-	-	199	795
Mov Cap-2 Maneuver	-	-	-	-	-	-	199	-
Stage 1	-	-	-	-	-	-	504	-
Stage 2	-	-	-	-	-	-	606	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	3.4	22.8
HCM LOS			C

Minor Lane/Major Mvmt	NWLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	419	1317	-	-	1168	-	-	229
HCM Lane V/C Ratio	0.044	0.004	-	-	0.14	-	-	0.119
HCM Control Delay (s)	14	7.7	-	-	8.6	-	-	22.8
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0.5	-	-	0.4

Intersection	
Int Delay, s/veh	

Movement	NWL	NWR
Vol, veh/h	4	7
Conflicting Peds, #/hr	0	0
Sign Control	Stop	Stop
RT Channelized	-	-
Storage Length	0	-
Veh in Median Storage, #	0	-
Grade, %	0	-
Peak Hour Factor	92	92
Heavy Vehicles, %	2	2
Mvmt Flow	4	8

Major/Minor	Minor1	
Conflicting Flow All	970	376
Stage 1	386	-
Stage 2	584	-
Critical Hdwy	7.12	6.22
Critical Hdwy Stg 1	6.12	-
Critical Hdwy Stg 2	6.12	-
Follow-up Hdwy	3.518	3.318
Pot Cap-1 Maneuver	233	670
Stage 1	637	-
Stage 2	498	-
Platoon blocked, %		
Mov Cap-1 Maneuver	189	670
Mov Cap-2 Maneuver	189	-
Stage 1	635	-
Stage 2	403	-

Approach	NW
HCM Control Delay, s	14
HCM LOS	B

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	3.9

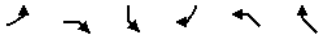
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1085	24	19	1180	0	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	3	0	-
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1619	36	28	1761	0	37

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1655	0	2574	828
Stage 1	-	-	-	-	1637	-
Stage 2	-	-	-	-	937	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	395	-	22	318
Stage 1	-	-	-	-	147	-
Stage 2	-	-	-	-	346	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	395	-	22	318
Mov Cap-2 Maneuver	-	-	-	-	22	-
Stage 1	-	-	-	-	147	-
Stage 2	-	-	-	-	346	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7.3	17.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	318	-	-	395	-
HCM Lane V/C Ratio	0.117	-	-	0.072	-
HCM Control Delay (s)	17.8	-	-	14.8	7.2
HCM Lane LOS	C	-	-	B	A
HCM 95th %tile Q(veh)	0.4	-	-	0.2	-

Lanes, Volumes, Timings
2: County Line Rd & N Ithan Ave 9/17/2014



Lane Group	EBL	EBR	SBL	SBR	NWL	NWR
Lane Configurations						
Volume (vph)	206	15	140	263	30	254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.991		0.912		0.879	
Flt Protected	0.955		0.983		0.995	
Satd. Flow (prot)	1763	0	1670	0	1629	0
Flt Permitted	0.955		0.983		0.995	
Satd. Flow (perm)	1763	0	1670	0	1629	0
Link Speed (mph)	30		30		30	
Link Distance (ft)	973		295		2020	
Travel Time (s)	22.1		6.7		45.9	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	219	16	149	280	32	270
Shared Lane Traffic (%)						
Lane Group Flow (vph)	235	0	429	0	302	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Right
Median Width(ft)	22		12		12	
Link Offset(ft)	0		0		0	
Crosswalk Width(ft)	10		10		10	
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	15	9
Sign Control	Stop		Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.6%		ICU Level of Service B	
Analysis Period (min) 15			

Lanes, Volumes, Timings
38: County Line Rd & N Ithan Ave

9/17/2014

Lane Group	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Volume (vph)	347	110	166	247	134	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.967				0.942	
Flt Protected				0.980	0.972	
Satd. Flow (prot)	1801	0	0	1825	1706	0
Flt Permitted				0.980	0.972	
Satd. Flow (perm)	1801	0	0	1825	1706	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	295			1901	824	
Travel Time (s)	6.7			43.2	18.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	381	121	182	271	147	110
Shared Lane Traffic (%)						
Lane Group Flow (vph)	502	0	0	453	257	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	10			10	10	
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
Sign Control	Free			Stop	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 70.7%		ICU Level of Service C	
Analysis Period (min) 15			

HCM 2010 Signalized Intersection Summary
3: County Line Rd & Spring Mill Rd

9/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	282	61	63	267	78	41	252	45	33	331	53
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	180.0	163.0	180.0	180.0	173.1	180.0	180.0	173.1	180.0	180.0	173.1	180.0
Adj Flow Rate, veh/h	37	297	64	66	281	82	43	265	47	35	348	56
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	105	562	114	146	519	139	104	370	61	92	414	64
Arrive On Green	0.46	0.46	0.46	0.46	0.46	0.46	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	72	1215	247	152	1122	301	101	1228	203	70	1371	211
Grp Volume(v), veh/h	398	0	0	429	0	0	355	0	0	439	0	0
Grp Sat Flow(s),veh/h/ln	1533	0	0	1576	0	0	1532	0	0	1652	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0
Cycle Q Clear(g_c), s	9.9	0.0	0.0	10.2	0.0	0.0	11.3	0.0	0.0	13.8	0.0	0.0
Prop In Lane	0.09		0.16	0.15		0.19	0.12		0.13	0.08		0.13
Lane Grp Cap(c), veh/h	781	0	0	804	0	0	535	0	0	569	0	0
V/C Ratio(X)	0.51	0.00	0.00	0.53	0.00	0.00	0.66	0.00	0.00	0.77	0.00	0.00
Avail Cap(c_a), veh/h	781	0	0	804	0	0	728	0	0	770	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.52	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	10.6	0.0	0.0	10.7	0.0	0.0	17.1	0.0	0.0	18.2	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	0.0	2.5	0.0	0.0	0.5	0.0	0.0	2.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	0.0	0.0	5.2	0.0	0.0	4.9	0.0	0.0	6.6	0.0	0.0
LnGrp Delay(d),s/veh	11.9	0.0	0.0	13.2	0.0	0.0	17.7	0.0	0.0	20.4	0.0	0.0
LnGrp LOS	B			B			B			C		
Approach Vol, veh/h		398			429			355			439	
Approach Delay, s/veh		11.9			13.2			17.7			20.4	
Approach LOS		B			B			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		38.9		23.1		38.9		23.1
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		26.0		24.0		26.0		24.0
Max Q Clear Time (g_c+I1), s		11.9		15.8		12.2		13.3
Green Ext Time (p_c), s		3.1		1.3		3.1		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	15.8
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

9/17/2014

HCM 2010 methodology does not support more than 4 approaches.

HCM 2010 Computation does not support turning movement with Shared and Exclusive lanes.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	150	557	139	36	605	58	215	269	28	57	201	75
Number	7	4	14	3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	174.8	174.8	180.0	179.1	179.1	184.5	173.9	173.9	179.1	180.9	175.6	180.9
Adj Flow Rate, veh/h	165	612	0	40	665	0	236	296	31	63	221	82
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	190	874	0	269	677	0	200	576	60	94	235	81
Arrive On Green	0.06	0.50	0.00	0.38	0.38	0.00	0.07	0.37	0.37	0.23	0.23	0.23
Sat Flow, veh/h	1664	1748	0	819	1791	0	1656	1548	162	201	1008	349
Grp Volume(v), veh/h	165	612	0	40	665	0	236	0	327	366	0	0
Grp Sat Flow(s),veh/h/ln	1664	1748	0	819	1791	0	1656	0	1710	1557	0	0
Q Serve(g_s), s	5.3	24.3	0.0	3.6	33.1	0.0	6.5	0.0	13.4	16.2	0.0	0.0
Cycle Q Clear(g_c), s	5.3	24.3	0.0	16.8	33.1	0.0	6.5	0.0	13.4	21.0	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.09	0.17		0.22
Lane Grp Cap(c), veh/h	190	874	0	269	677	0	200	0	637	410	0	0
V/C Ratio(X)	0.87	0.70	0.00	0.15	0.98	0.00	1.18	0.00	0.51	0.89	0.00	0.00
Avail Cap(c_a), veh/h	190	874	0	269	677	0	200	0	637	410	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.7	17.3	0.0	28.0	27.7	0.0	29.3	0.0	21.9	34.4	0.0	0.0
Incr Delay (d2), s/veh	32.6	4.7	0.0	1.2	30.6	0.0	121.5	0.0	0.7	21.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	12.7	0.0	0.9	22.0	0.0	6.7	0.0	6.4	11.4	0.0	0.0
LnGrp Delay(d),s/veh	54.2	22.0	0.0	29.2	58.3	0.0	150.8	0.0	22.6	55.4	0.0	0.0
LnGrp LOS	D	C		C	E		F		C	E		
Approach Vol, veh/h		777			705			563			366	
Approach Delay, s/veh		28.8			56.7			76.4			55.4	
Approach LOS		C			E			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6	7	8
Phs Duration (G+Y+Rc), s	12.5	27.0		50.5		39.5	11.0	39.5
Change Period (Y+Rc), s	5.5	5.5		5.0		5.5	5.0	5.0
Max Green Setting (Gmax), s	7.0	21.5		45.5		34.0	6.0	34.5
Max Q Clear Time (g_c+I1), s	8.5	23.0		26.3		15.4	7.3	35.1
Green Ext Time (p_c), s	0.0	0.0		8.5		2.4	0.0	0.0

Intersection Summary		
HCM 2010 Ctrl Delay		52.1
HCM 2010 LOS		D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	167	393	2	2	455	128	14	157	12	63	52	140
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	185.4	178.3	185.4	176.4	169.6	176.4	176.3	169.5	176.3	184.4	177.3	184.4
Adj Flow Rate, veh/h	206	485	2	2	562	158	17	194	15	78	64	173
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	196	374	1	60	706	198	76	348	26	139	93	193
Arrive On Green	0.55	0.55	0.55	0.55	0.55	0.55	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	217	679	3	1	1282	359	53	1478	109	276	396	818
Grp Volume(v), veh/h	693	0	0	722	0	0	226	0	0	315	0	0
Grp Sat Flow(s),veh/h/ln	899	0	0	1642	0	0	1640	0	0	1489	0	0
Q Serve(g_s), s	11.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2	0.0	0.0
Cycle Q Clear(g_c), s	33.5	0.0	0.0	21.7	0.0	0.0	7.3	0.0	0.0	12.4	0.0	0.0
Prop In Lane	0.30		0.00	0.00		0.22	0.08		0.07	0.25		0.55
Lane Grp Cap(c), veh/h	572	0	0	963	0	0	450	0	0	424	0	0
V/C Ratio(X)	1.21	0.00	0.00	0.75	0.00	0.00	0.50	0.00	0.00	0.74	0.00	0.00
Avail Cap(c_a), veh/h	572	0	0	963	0	0	481	0	0	453	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	16.9	0.0	0.0	11.0	0.0	0.0	20.5	0.0	0.0	22.4	0.0	0.0
Incr Delay (d2), s/veh	110.6	0.0	0.0	3.3	0.0	0.0	0.9	0.0	0.0	6.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	27.0	0.0	0.0	10.5	0.0	0.0	3.4	0.0	0.0	5.8	0.0	0.0
LnGrp Delay(d),s/veh	127.5	0.0	0.0	14.3	0.0	0.0	21.4	0.0	0.0	28.5	0.0	0.0
LnGrp LOS	F			B			C			C		
Approach Vol, veh/h		693			722			226			315	
Approach Delay, s/veh		127.5			14.3			21.4			28.5	
Approach LOS		F			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		40.0		20.8		40.0		20.8
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		34.0		16.0		34.0		16.0
Max Q Clear Time (g_c+I1), s		23.7		9.3		35.5		14.4
Green Ext Time (p_c), s		5.2		1.3		0.0		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	57.5
HCM 2010 LOS	E

HCM 2010 methodology does not support exclusive ped or hold phases.

HCM 2010 Signalized Intersection Summary
33: Williams Rd/Garrett Ave & Conestoga Rd

9/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	26	443	1	4	421	4	6	6	9	15	3	38
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	187.2	187.2	187.2	187.2	187.2	187.2	180.0	180.0	180.0	172.8	172.8	172.8
Adj Flow Rate, veh/h	30	503	1	5	478	5	7	7	10	17	3	43
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	94	1331	3	58	1382	14	88	35	38	86	8	54
Arrive On Green	0.75	0.75	0.75	0.75	0.75	0.75	0.05	0.05	0.05	0.05	0.05	0.05
Sat Flow, veh/h	48	1774	3	4	1842	19	337	658	711	325	147	1015
Grp Volume(v), veh/h	534	0	0	488	0	0	24	0	0	63	0	0
Grp Sat Flow(s),veh/h/ln	1826	0	0	1865	0	0	1706	0	0	1487	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0
Cycle Q Clear(g_c), s	6.6	0.0	0.0	5.8	0.0	0.0	0.9	0.0	0.0	2.7	0.0	0.0
Prop In Lane	0.06		0.00	0.01		0.01	0.29		0.42	0.27		0.68
Lane Grp Cap(c), veh/h	1427	0	0	1454	0	0	161	0	0	148	0	0
V/C Ratio(X)	0.37	0.00	0.00	0.34	0.00	0.00	0.15	0.00	0.00	0.43	0.00	0.00
Avail Cap(c_a), veh/h	1427	0	0	1454	0	0	302	0	0	280	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	2.9	0.0	0.0	2.8	0.0	0.0	30.0	0.0	0.0	30.9	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.0	0.0	0.6	0.0	0.0	0.6	0.0	0.0	2.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.0	0.0	3.1	0.0	0.0	0.4	0.0	0.0	1.3	0.0	0.0
LnGrp Delay(d),s/veh	3.6	0.0	0.0	3.4	0.0	0.0	30.6	0.0	0.0	33.6	0.0	0.0
LnGrp LOS	A			A			C			C		
Approach Vol, veh/h		534			488			24			63	
Approach Delay, s/veh		3.6			3.4			30.6			33.6	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		56.0		10.0		56.0		10.0
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		50.0		10.0		50.0		10.0
Max Q Clear Time (g_c+I1), s		8.6		4.7		7.8		2.9
Green Ext Time (p_c), s		4.6		0.1		4.6		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	5.8
HCM 2010 LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

HCM 2010 Signalized Intersection Summary
51: Lowrys Ln & Lancaster Ave

9/17/2014

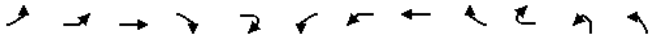
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	18	1064	19	16	1093	23	47	105	39	22	72	20
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	180.0	174.8	180.0	177.3	172.1	177.3	190.0	184.5	190.0	188.1	182.7	188.1
Adj Flow Rate, veh/h	19	1144	20	17	1175	25	51	113	42	24	77	22
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	78	2036	35	75	2005	42	126	158	52	105	184	46
Arrive On Green	1.00	1.00	1.00	0.64	0.64	0.64	0.15	0.15	0.15	0.15	0.15	0.15
Sat Flow, veh/h	18	3206	56	14	3157	67	306	1054	348	187	1225	308
Grp Volume(v), veh/h	614	0	569	633	0	584	206	0	0	123	0	0
Grp Sat Flow(s),veh/h/ln	1698	0	1580	1683	0	1555	1708	0	0	1720	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	12.3	2.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	11.9	0.0	12.3	6.4	0.0	0.0	3.5	0.0	0.0
Prop In Lane	0.03		0.04	0.03		0.04	0.25		0.20	0.20		0.18
Lane Grp Cap(c), veh/h	1145	0	1004	1135	0	988	337	0	0	335	0	0
V/C Ratio(X)	0.54	0.00	0.57	0.56	0.00	0.59	0.61	0.00	0.00	0.37	0.00	0.00
Avail Cap(c_a), veh/h	1145	0	1004	1135	0	988	457	0	0	455	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.60	0.00	0.60	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	5.9	0.0	6.0	22.8	0.0	0.0	21.7	0.0	0.0
Incr Delay (d2), s/veh	1.1	0.0	1.4	2.0	0.0	2.6	1.8	0.0	0.0	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.4	6.1	0.0	5.9	3.2	0.0	0.0	1.8	0.0	0.0
LnGrp Delay(d),s/veh	1.1	0.0	1.4	7.9	0.0	8.6	24.7	0.0	0.0	22.4	0.0	0.0
LnGrp LOS	A		A	A		A	C			C		
Approach Vol, veh/h		1183			1217			206			123	
Approach Delay, s/veh		1.2			8.2			24.7			22.4	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		46.1		13.9		46.1		13.9
Change Period (Y+Rc), s		6.0		5.0		6.0		5.0
Max Green Setting (Gmax), s		36.0		13.0		36.0		13.0
Max Q Clear Time (g_c+I1), s		2.0		5.5		14.3		8.4
Green Ext Time (p_c), s		13.9		0.7		11.4		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	7.1
HCM 2010 LOS	A

Notes

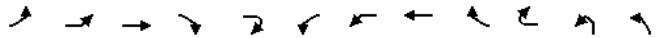
User approved pedestrian interval to be less than phase max green.



Lane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL
Lane Configurations												
Volume (vph)	2	226	844	84	221	4	11	965	1	13	3	49
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	11	11	14	10	12	12	12	12	10	10
Grade (%)			3%					-2%				
Storage Length (ft)		300		0			75		0			0
Storage Lanes		1		1			1		0			0
Taper Length (ft)		25					25					25
Lane Util. Factor	0.95	1.00	0.95	0.95	1.00	0.95	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.986		0.850			0.998				
Flt Protected		0.950					0.950					
Satd. Flow (prot)	0	1497	3058	0	1531	0	1645	3283	0	0	0	0
Flt Permitted		0.075					0.285					
Satd. Flow (perm)	0	118	3058	0	1531	0	493	3283	0	0	0	0
Right Turn on Red					Yes					Yes		
Satd. Flow (RTOR)					202			1				
Link Speed (mph)			35					35				
Link Distance (ft)			577					1609				
Travel Time (s)			11.2					31.3				
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	2	235	879	88	230	4	11	1005	1	14	3	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	237	967	0	230	0	15	1020	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Right	Left	Left	Left	Right	Right	Left	Left
Median Width(ft)			12					12				
Link Offset(ft)			0					0				
Crosswalk Width(ft)			10					10				
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.14	1.14	1.01	1.16	1.06	1.06	1.06	1.06	1.18	1.18
Turning Speed (mph)	15	15		9	9	15	15		9	9	15	15
Number of Detectors	1	1	1		0	1	1	1			1	1
Detector Template	Left	Left	Thru		Right	Left	Left	Thru			Left	Left
Leading Detector (ft)	20	37	37		0	20	37	37			20	20
Trailing Detector (ft)	0	-3	-3		0	0	-3	-3			0	0
Detector 1 Position(ft)	0	-3	-3		0	0	-3	-3			0	0
Detector 1 Size(ft)	20	40	40		37	20	40	40			20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0
Turn Type	pm+pt	pm+pt	NA		Perm	Perm	Perm	NA			Perm	Perm
Protected Phases	5	5	2					6				
Permitted Phases	2	2			2	6	6				10	10
Detector Phase	5	5	2		2	6	6	6			10	10
Switch Phase												
Minimum Initial (s)	3.0	3.0	15.0		15.0	15.0	15.0	15.0			3.0	3.0

Lane Group	NBT	NBR	SBT	SBR	SBR2	NEL2	NEL	NET	NER	NER2	SWL2	SWL
Lane Configurations												
Volume (vph)	0	8	1	3	12	183	0	195	50	9	19	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	12	12	11	11	11	10	10
Grade (%)	1%		-3%					3%				
Storage Length (ft)		0		0			200		0			150
Storage Lanes		0		0			1		0			1
Taper Length (ft)							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	0.983		0.873					0.965				
Flt Protected	0.958						0.950					0.950
Satd. Flow (prot)	1499	0	1418	0	0	0	1604	1575	0	0	0	1573
Flt Permitted	0.742						0.182					0.596
Satd. Flow (perm)	1161	0	1418	0	0	0	307	1575	0	0	0	987
Right Turn on Red					No					No		
Satd. Flow (RTOR)												
Link Speed (mph)	25		25					40				
Link Distance (ft)	492		597					1336				
Travel Time (s)	13.4		16.3					22.8				
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	0	8	1	3	12	191	0	203	52	9	20	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	62	0	16	0	0	0	191	264	0	0	0	28
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Right	Left	Left	Left	Right	Right	Left	Left
Median Width(ft)	0		0					12				
Link Offset(ft)	0		0					0				
Crosswalk Width(ft)	10		10					10				
Two way Left Turn Lane												
Headway Factor	1.18	1.18	1.15	1.15	1.15	1.09	1.09	1.14	1.14	1.14	1.12	1.12
Turning Speed (mph)		9		9	9	15	15		9	9	15	15
Number of Detectors	1		1			1	1	1			1	1
Detector Template	Thru		Thru			Left	Left	Thru			Left	Left
Leading Detector (ft)	37		37			20	37	37			20	37
Trailing Detector (ft)	-3		-3			0	-3	-3			0	-3
Detector 1 Position(ft)	-3		-3			0	-3	-3			0	-3
Detector 1 Size(ft)	40		40			20	40	40			20	40
Detector 1 Type	Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0			0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0		0.0			0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0		0.0			0.0	0.0	0.0			0.0	0.0
Turn Type	NA		NA			pm+pt	pm+pt	NA			Perm	Perm
Protected Phases	10		9			3	3	8				
Permitted Phases						8	8				4	4
Detector Phase	10		9			3	3	8			4	4
Switch Phase												
Minimum Initial (s)	3.0		3.0			3.0	3.0	3.0			3.0	3.0

Lane Group	SWT	SWR
Lane Configurations		
Volume (vph)	135	156
Ideal Flow (vphpl)	1800	1800
Lane Width (ft)	10	10
Grade (%)	-7%	
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	1.00	1.00
Frt	0.920	
Flt Protected		
Satd. Flow (prot)	1524	0
Flt Permitted		
Satd. Flow (perm)	1524	0
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)	25	
Link Distance (ft)	3168	
Travel Time (s)	86.4	
Peak Hour Factor	0.96	0.96
Heavy Vehicles (%)	5%	5%
Adj. Flow (vph)	141	162
Shared Lane Traffic (%)		
Lane Group Flow (vph)	303	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	10	
Two way Left Turn Lane		
Headway Factor	1.12	1.12
Turning Speed (mph)		9
Number of Detectors	1	
Detector Template	Thru	
Leading Detector (ft)	37	
Trailing Detector (ft)	-3	
Detector 1 Position(ft)	-3	
Detector 1 Size(ft)	40	
Detector 1 Type	Cl+Ex	
Detector 1 Channel		
Detector 1 Extend (s)	0.0	
Detector 1 Queue (s)	0.0	
Detector 1 Delay (s)	0.0	
Turn Type	NA	
Protected Phases	4	
Permitted Phases		
Detector Phase	4	
Switch Phase		
Minimum Initial (s)	3.0	

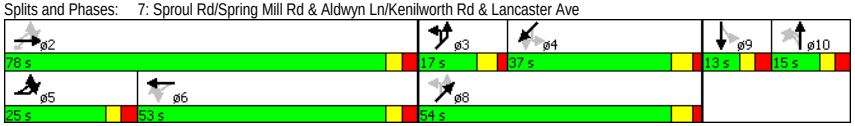


Lane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL
Minimum Split (s)	13.0	13.0	21.0		21.0	21.0	21.0	21.0			13.0	13.0
Total Split (s)	25.0	25.0	78.0		78.0	53.0	53.0	53.0			15.0	15.0
Total Split (%)	15.6%	15.6%	48.8%		48.8%	33.1%	33.1%	33.1%			9.4%	9.4%
Maximum Green (s)	19.0	19.0	72.0		72.0	47.0	47.0	47.0			9.0	9.0
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0			3.0	3.0
All-Red Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0			3.0	3.0
Lost Time Adjust (s)		0.5	0.5		0.5		0.5	0.5				
Total Lost Time (s)		6.5	6.5		6.5		6.5	6.5				
Lead/Lag	Lead	Lead				Lag	Lag	Lag			Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0			3.0	3.0
Recall Mode	None	None	Max		Max	None	None	None			None	None
Walk Time (s)			7.0		7.0	7.0	7.0	7.0				
Flash Dont Walk (s)			20.0		20.0	20.0	20.0	20.0				
Pedestrian Calls (#/hr)			0		0	0	0	0				
Act Effct Green (s)		71.6	71.6		71.6		46.6	46.6				
Actuated g/C Ratio		0.47	0.47		0.47		0.31	0.31				
v/c Ratio		1.06	0.67		0.28		0.10	1.01				
Control Delay		120.5	34.8		5.6		42.6	83.6				
Queue Delay		0.0	0.0		0.0		0.0	0.0				
Total Delay		120.5	34.8		5.6		42.6	83.6				
LOS		F	C		A		D	F				
Approach Delay			44.3					83.0				
Approach LOS			D					F				
Queue Length 50th (ft)		~198	359		14		10	510				
Queue Length 95th (ft)		#425	510		69		33	#760				
Internal Link Dist (ft)			497					1529				
Turn Bay Length (ft)		300					75					
Base Capacity (vph)		223	1439		827		150	1005				
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		1.06	0.67		0.28		0.10	1.01				

Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 152.2			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.06			
Intersection Signal Delay: 69.5		Intersection LOS: E	
Intersection Capacity Utilization 107.5%		ICU Level of Service G	
Analysis Period (min) 15			

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

Splits and Phases: 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave



Lane Group	NBT	NBR	SBT	SBR	SBR2	NEL2	NEL	NET	NER	NER2	SWL2	SWL
Minimum Split (s)	13.0		13.0			13.0	13.0	13.0			13.0	13.0
Total Split (s)	15.0		13.0			17.0	17.0	54.0			37.0	37.0
Total Split (%)	9.4%		8.1%			10.6%	10.6%	33.8%			23.1%	23.1%
Maximum Green (s)	9.0		7.0			11.0	11.0	48.0			31.0	31.0
Yellow Time (s)	3.0		3.0			4.0	4.0	4.0			4.0	4.0
All-Red Time (s)	3.0		3.0			2.0	2.0	2.0			2.0	2.0
Lost Time Adjust (s)	0.5		0.5				0.5	0.5				0.5
Total Lost Time (s)	6.5		6.5				6.5	6.5				6.5
Lead/Lag	Lag		Lead			Lead	Lead				Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0		3.0			3.0	3.0	3.0			3.0	3.0
Recall Mode	None		None			None	None	None			None	None
Walk Time (s)								7.0				
Flash Dont Walk (s)								25.0				
Pedestrian Calls (#/hr)								0				
Act Effct Green (s)	8.5		6.1				47.6	47.6				30.6
Actuated g/C Ratio	0.06		0.04				0.31	0.31				0.20
v/c Ratio	0.95		0.29				1.03	0.54				0.14
Control Delay	170.3		86.1				118.6	49.0				54.4
Queue Delay	0.0		0.0				0.0	0.0				0.0
Total Delay	170.3		86.1				118.6	49.0				54.4
LOS	F		F				F	D				D
Approach Delay	170.3		86.1					78.2				
Approach LOS	F		F					E				
Queue Length 50th (ft)	60		15				141	206				22
Queue Length 95th (ft)	#174		44				#313	335				57
Internal Link Dist (ft)	412		517					1256				
Turn Bay Length (ft)							200					150
Base Capacity (vph)	65		60				185	492				198
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	0.95		0.27				1.03	0.54				0.14

Intersection Summary

Lane Group	SWT	SWR
Minimum Split (s)	13.0	
Total Split (s)	37.0	
Total Split (%)	23.1%	
Maximum Green (s)	31.0	
Yellow Time (s)	4.0	
All-Red Time (s)	2.0	
Lost Time Adjust (s)	0.5	
Total Lost Time (s)	6.5	
Lead/Lag	Lag	
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	
Recall Mode	None	
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)	30.6	
Actuated g/C Ratio	0.20	
v/c Ratio	0.99	
Control Delay	109.0	
Queue Delay	0.0	
Total Delay	109.0	
LOS	F	
Approach Delay	104.4	
Approach LOS	F	
Queue Length 50th (ft)	290	
Queue Length 95th (ft)	#541	
Internal Link Dist (ft)	3088	
Turn Bay Length (ft)		
Base Capacity (vph)	306	
Starvation Cap Reductn	0	
Spillback Cap Reductn	0	
Storage Cap Reductn	0	
Reduced v/c Ratio	0.99	

Intersection Summary

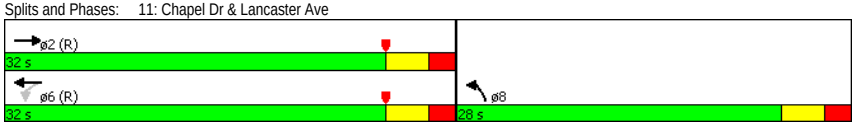
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	924	96	11	986	9	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	12	12
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt	0.986				0.961	
Flt Protected				0.999	0.966	
Satd. Flow (prot)	3196	0	0	3238	1638	0
Flt Permitted				0.942	0.966	
Satd. Flow (perm)	3196	0	0	3053	1638	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	23				4	
Link Speed (mph)	35			35	25	
Link Distance (ft)	1609			1285	319	
Travel Time (s)	31.3			25.0	8.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1004	104	12	1072	10	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1108	0	0	1084	14	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	10			10	10	
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.12	1.12	1.07	1.07
Turning Speed (mph)		9	15		15	9
Number of Detectors	1		1	1	1	
Detector Template	Thru		Left	Thru	Left	
Leading Detector (ft)	37		20	37	37	
Trailing Detector (ft)	-3		0	-3	-3	
Detector 1 Position(ft)	-3		0	-3	-3	
Detector 1 Size(ft)	40		20	40	40	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Detector Phase	2		6	6	8	
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	4.0	
Minimum Split (s)	21.0		21.0	21.0	28.0	
Total Split (s)	32.0		32.0	32.0	28.0	
Total Split (%)	53.3%		53.3%	53.3%	46.7%	
Maximum Green (s)	27.0		27.0	27.0	23.0	
Yellow Time (s)	3.0		3.0	3.0	3.0	

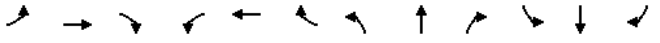
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.5			0.5	0.5	
Total Lost Time (s)	5.5			5.5	5.5	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	C-Max		C-Max	C-Max	None	
Walk Time (s)	10.0		10.0	10.0	7.0	
Flash Dont Walk (s)	0.0		0.0	0.0	16.0	
Pedestrian Calls (#/hr)	0		0	0	0	
Act Effct Green (s)	56.5			56.5	5.6	
Actuated g/C Ratio	0.94			0.94	0.09	
v/c Ratio	0.37			0.38	0.09	
Control Delay	1.6			3.2	22.5	
Queue Delay	0.0			0.0	0.0	
Total Delay	1.6			3.2	22.5	
LOS	A			A	C	
Approach Delay	1.6			3.2	22.5	
Approach LOS	A			A	C	
Queue Length 50th (ft)	0			0	3	
Queue Length 95th (ft)	101			m329	18	
Internal Link Dist (ft)	1529			1205	239	
Turn Bay Length (ft)						
Base Capacity (vph)	3009			2873	616	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.37			0.38	0.02	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 55 (92%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.38
Intersection Signal Delay: 2.5 Intersection LOS: A
Intersection Capacity Utilization 49.4% ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Chapel Dr & Lancaster Ave





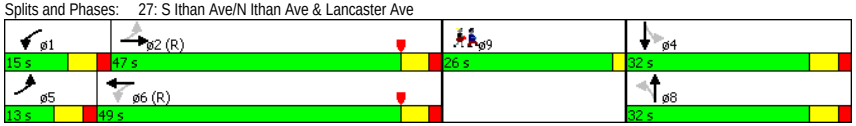
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	802	36	137	862	45	86	178	76	26	220	48
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)		0%			3%			1%			0%	
Storage Length (ft)	140		0	70		0	105		0	65		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.993			0.955			0.973	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1520	3022	0	1497	2973	0	1512	1520	0	1520	1557	0
Flt Permitted	0.172			0.180			0.306			0.338		
Satd. Flow (perm)	275	3022	0	284	2973	0	487	1520	0	541	1557	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1285			2035			183			973	
Travel Time (s)		25.0			39.6			5.0			26.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	96	853	38	146	917	48	91	189	81	28	234	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	96	891	0	146	965	0	91	270	0	28	285	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)		10			10			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane												
Headway Factor	1.17	1.17	1.17	1.19	1.19	1.19	1.18	1.18	1.18	1.17	1.17	1.17
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0		1	0		1	1		1	1	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	37	0		37	0		37	37		37	37	
Trailing Detector (ft)	-3	0		-3	0		-3	-3		-3	-3	
Detector 1 Position(ft)	-3	0		-3	0		-3	-3		-3	-3	
Detector 1 Size(ft)	40	6		40	6		40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	34.0		3.0	34.0		3.0	3.0		3.0	3.0	

Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	24.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	13.0	40.0		13.0	40.0		13.0	13.0		13.0	13.0	
Total Split (s)	13.0	47.0		15.0	49.0		32.0	32.0		32.0	32.0	
Total Split (%)	10.8%	39.2%		12.5%	40.8%		26.7%	26.7%		26.7%	26.7%	
Maximum Green (s)	7.0	41.0		9.0	43.0		26.0	26.0		26.0	26.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	53.6	47.2		57.5	49.2		24.2	24.2		24.2	24.2	
Actuated g/C Ratio	0.45	0.39		0.48	0.41		0.20	0.20		0.20	0.20	
v/c Ratio	0.51	0.75		0.66	0.79		0.93	0.88		0.26	0.91	
Control Delay	28.3	37.5		29.9	31.3		122.2	75.4		46.6	79.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	28.3	37.5		29.9	31.3		122.2	75.4		46.6	79.5	
LOS	C	D		C	C		F	E		D	E	
Approach Delay		36.6			31.1			87.2			76.6	
Approach LOS		D			C			F			E	
Queue Length 50th (ft)	42	339		65	360		69	202		18	214	
Queue Length 95th (ft)	80	#453		m#112	#496		#173	#346		48	#367	
Internal Link Dist (ft)		1205			1955			103			893	
Turn Bay Length (ft)	140			70			105			65		
Base Capacity (vph)	190	1188		222	1217		103	323		114	330	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.51	0.75		0.66	0.79		0.88	0.84		0.25	0.86	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 45.5		Intersection LOS: D	
Intersection Capacity Utilization 78.3%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 27: S Ithan Ave/N Ithan Ave & Lancaster Ave



Lane Group	ø9
Minimum Split (s)	26.0
Total Split (s)	26.0
Total Split (%)	22%
Maximum Green (s)	24.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	9.0
Flash Dont Walk (s)	15.0
Pedestrian Calls (#/hr)	45
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

HCM 2010 TWSC
2: County Line Rd & N Ithan Ave 9/17/2014

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	SBL	SBR	NWL	NWR
Vol, veh/h	205	15	142	337	38	257
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	0	-
Veh in Median Storage, #	0	-	0	-	0	-
Grade, %	0	-	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	218	16	151	359	40	273

Major/Minor	Minor2		Major2		Minor1	
Conflicting Flow All	137	0	0	-	8	0
Stage 1	0	-	-	-	0	-
Stage 2	137	-	-	-	8	-
Critical Hdwy	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %				-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	SB	NW
HCM Control Delay, s		0	
HCM LOS	-		-

Minor Lane/Major Mvmt	NWLn1	EBLn1	SBL	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	-	-
HCM Lane LOS	-	-	-	-
HCM 95th %tile Q(veh)	-	-	-	-

HCM 2010 TWSC
15: Conestoga Rd & Spring Mill Rd 9/17/2014

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Vol, veh/h	2	639	693	3	4	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	2	743	806	3	5	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	809	0	-	0	1556	808
Stage 1	-	-	-	-	808	-
Stage 2	-	-	-	-	748	-
Critical Hdwy	4.14	-	-	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.236	-	-	-	3.536	3.336
Pot Cap-1 Maneuver	808	-	-	-	123	378
Stage 1	-	-	-	-	435	-
Stage 2	-	-	-	-	464	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	808	-	-	-	123	378
Mov Cap-2 Maneuver	-	-	-	-	123	-
Stage 1	-	-	-	-	435	-
Stage 2	-	-	-	-	462	-

Approach	EB	WB	SW
HCM Control Delay, s	0	0	22.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SWLn1
Capacity (veh/h)	808	-	-	-	224
HCM Lane V/C Ratio	0.003	-	-	-	0.062
HCM Control Delay (s)	9.5	0	-	-	22.1
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	47	427	14	9	459	5	13	14	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3
Mvmt Flow	59	534	18	11	574	6	16	18	15

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	580	0	0	551	0	0	1321	1263	543
Stage 1	-	-	-	-	-	-	660	660	-
Stage 2	-	-	-	-	-	-	661	603	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327
Pot Cap-1 Maneuver	989	-	-	1014	-	-	133	169	538
Stage 1	-	-	-	-	-	-	450	459	-
Stage 2	-	-	-	-	-	-	450	487	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	989	-	-	1014	-	-	89	152	538
Mov Cap-2 Maneuver	-	-	-	-	-	-	89	152	-
Stage 1	-	-	-	-	-	-	411	420	-
Stage 2	-	-	-	-	-	-	340	479	-

Approach	EB	WB	NB
HCM Control Delay, s	0.9	0.2	40.1
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	150	989	-	-	1014	-	-	360
HCM Lane V/C Ratio	0.325	0.059	-	-	0.011	-	-	0.347
HCM Control Delay (s)	40.1	8.9	0	-	8.6	0	-	20.2
HCM Lane LOS	E	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.3	0.2	-	-	0	-	-	1.5

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	2	15	83
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	80	80	80
Heavy Vehicles, %	3	3	3
Mvmt Flow	2	19	104

Major/Minor	Minor2		
Conflicting Flow All	1275	1268	577
Stage 1	599	599	-
Stage 2	676	669	-
Critical Hdwy	7.13	6.53	6.23
Critical Hdwy Stg 1	6.13	5.53	-
Critical Hdwy Stg 2	6.13	5.53	-
Follow-up Hdwy	3.527	4.027	3.327
Pot Cap-1 Maneuver	143	168	514
Stage 1	487	489	-
Stage 2	441	454	-
Platoon blocked, %			
Mov Cap-1 Maneuver	117	151	514
Mov Cap-2 Maneuver	117	151	-
Stage 1	445	481	-
Stage 2	376	415	-

Approach	SB
HCM Control Delay, s	20.2
HCM LOS	C

Minor Lane/Major Mvmt

HCM 2010 TWSC
38: County Line Rd & N Ithan Ave 9/17/2014

Intersection	
Int Delay, s/veh	28.2

Movement	NBT	NBR	SBL	SBT	SWL	SWR
Vol, veh/h	347	111	169	301	156	102
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	381	122	186	331	171	112

Major/Minor	Major1		Minor2		Minor1	
Conflicting Flow All	0	0	498	503	607	442
Stage 1	-	-	0	0	442	-
Stage 2	-	-	498	503	165	-
Critical Hdwy	-	-	6.42	6.52	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	5.42	5.52	-	-
Follow-up Hdwy	-	-	3.518	4.018	3.518	3.318
Pot Cap-1 Maneuver	-	-	532	471	460	615
Stage 1	-	-	-	-	648	-
Stage 2	-	-	611	541	-	-
Platoon blocked, %	-	-				
Mov Cap-1 Maneuver	-	-	532	0	460	615
Mov Cap-2 Maneuver	-	-	532	0	460	-
Stage 1	-	-	-	0	648	-
Stage 2	-	-	611	0	-	-

Approach	NB	SB	SW
HCM Control Delay, s	0	60	20.5
HCM LOS		F	C

Minor Lane/Major Mvmt	NBT	NBR	SBLn1	SWLn1
Capacity (veh/h)	-	-	532	511
HCM Lane V/C Ratio	-	-	0.971	0.555
HCM Control Delay (s)	-	-	60	20.5
HCM Lane LOS	-	-	F	C
HCM 95th %tile Q(veh)	-	-	13	3.3

HCM 2010 TWSC
43: County Line Rd & Roberts Rd 9/17/2014

Intersection	
Int Delay, s/veh	29.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	68	101	8	2	24	6	14	624	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	77	115	9	2	27	7	16	709	28

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	982	1351	293	1102	1358	369	585	0	0
Stage 1	582	582	-	755	755	-	-	-	-
Stage 2	400	769	-	347	603	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-
Pot Cap-1 Maneuver	203	149	703	166	148	628	986	-	-
Stage 1	466	497	-	367	415	-	-	-	-
Stage 2	597	409	-	642	487	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	166	143	703	53	142	628	986	-	-
Mov Cap-2 Maneuver	166	143	-	53	142	-	-	-	-
Stage 1	453	489	-	357	403	-	-	-	-
Stage 2	535	398	-	477	479	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	222.4	37.1	0.3
HCM LOS	F	E	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	986	-	-	157	148	864	-	-
HCM Lane V/C Ratio	0.016	-	-	1.281	0.246	0.011	-	-
HCM Control Delay (s)	8.7	0.1	-	222.4	37.1	9.2	0.1	-
HCM Lane LOS	A	A	-	F	E	A	A	-
HCM 95th %tile Q(veh)	0	-	-	11.9	0.9	0	-	-

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	8	477	38
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	88	88	88
Heavy Vehicles, %	2	2	2
Mvmt Flow	9	542	43

Major/Minor	Major2		
Conflicting Flow All	738	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	864	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	864	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.2
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	205	222	290	20	15	99
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	233	252	330	23	17	112

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	352	0	-	0	1059	341
Stage 1	-	-	-	-	341	-
Stage 2	-	-	-	-	718	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1212	-	-	-	250	704
Stage 1	-	-	-	-	722	-
Stage 2	-	-	-	-	485	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1212	-	-	-	194	704
Mov Cap-2 Maneuver	-	-	-	-	194	-
Stage 1	-	-	-	-	722	-
Stage 2	-	-	-	-	376	-

Approach	EB	WB	SB
HCM Control Delay, s	4.2	0	14.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1212	-	-	-	523
HCM Lane V/C Ratio	0.192	-	-	-	0.248
HCM Control Delay (s)	8.7	0	-	-	14.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.7	-	-	-	1

HCM 2010 TWSC
53: County Line Rd & Lowrys Ln 9/17/2014

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	62	81	58	239	151	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	71	93	67	275	174	36

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	599	191	209	0	-	0
Stage 1	191	-	-	-	-	-
Stage 2	408	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	468	856	1374	-	-	-
Stage 1	846	-	-	-	-	-
Stage 2	676	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	441	856	1374	-	-	-
Mov Cap-2 Maneuver	441	-	-	-	-	-
Stage 1	846	-	-	-	-	-
Stage 2	637	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.1	1.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1374	-	608	-	-
HCM Lane V/C Ratio	0.049	-	0.27	-	-
HCM Control Delay (s)	7.8	0	13.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	1.1	-	-

HCM 2010 TWSC
61: Dwy/Aldwyn Ln & S Ithan Ave 9/17/2014

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	9	361	9	16	194	13	7	1	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4
Mvmt Flow	11	446	11	20	240	16	9	1	15

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	256	0	0	457	0	0	798	768	451
Stage 1	-	-	-	-	-	-	473	473	-
Stage 2	-	-	-	-	-	-	325	295	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.14	6.54	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.54	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.536	4.036	3.336
Pot Cap-1 Maneuver	1297	-	-	1093	-	-	302	330	604
Stage 1	-	-	-	-	-	-	568	555	-
Stage 2	-	-	-	-	-	-	683	665	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1297	-	-	1093	-	-	266	320	604
Mov Cap-2 Maneuver	-	-	-	-	-	-	266	320	-
Stage 1	-	-	-	-	-	-	562	549	-
Stage 2	-	-	-	-	-	-	605	651	-

Approach	EB	WB	NB
HCM Control Delay, s	0.2	0.6	14.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	406	1297	-	-	1093	-	-	588
HCM Lane V/C Ratio	0.061	0.009	-	-	0.018	-	-	0.162
HCM Control Delay (s)	14.4	7.8	0	-	8.4	0	-	12.3
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.6

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	16	0	61
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	81	81	81
Heavy Vehicles, %	4	4	4
Mvmt Flow	20	0	75

Major/Minor	Minor2		
Conflicting Flow All	768	766	248
Stage 1	287	287	-
Stage 2	481	479	-
Critical Hdwy	7.14	6.54	6.24
Critical Hdwy Stg 1	6.14	5.54	-
Critical Hdwy Stg 2	6.14	5.54	-
Follow-up Hdwy	3.536	4.036	3.336
Pot Cap-1 Maneuver	316	331	786
Stage 1	716	671	-
Stage 2	562	552	-
Platoon blocked, %			
Mov Cap-1 Maneuver	300	320	786
Mov Cap-2 Maneuver	300	320	-
Stage 1	708	657	-
Stage 2	541	546	-

Approach	SB
HCM Control Delay, s	12.3
HCM LOS	B

Minor Lane/Major Mvmt

HCM research expects at least one 'Stop' controlled approach at the intersection.

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	404	153	0	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	-1	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	439	166	0	1	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	166	0	-	0	605	166
Stage 1	-	-	-	-	166	-
Stage 2	-	-	-	-	439	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1412	-	-	-	461	878
Stage 1	-	-	-	-	863	-
Stage 2	-	-	-	-	650	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1412	-	-	-	461	878
Mov Cap-2 Maneuver	-	-	-	-	461	-
Stage 1	-	-	-	-	863	-
Stage 2	-	-	-	-	650	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1412	-	-	-	716
HCM Lane V/C Ratio	-	-	-	-	0.006
HCM Control Delay (s)	0	-	-	-	10.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	338	0	0	393	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	-1	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	367	0	0	427	1	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	367	0	794	367
Stage 1	-	-	-	-	367	-
Stage 2	-	-	-	-	427	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1192	-	357	678
Stage 1	-	-	-	-	701	-
Stage 2	-	-	-	-	658	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1192	-	357	678
Mov Cap-2 Maneuver	-	-	-	-	357	-
Stage 1	-	-	-	-	701	-
Stage 2	-	-	-	-	658	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	522	-	-	1192	-
HCM Lane V/C Ratio	0.006	-	-	-	-
HCM Control Delay (s)	11.9	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

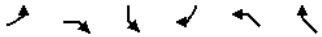
Intersection	
Int Delay, s/veh	3.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1100	25	20	1131	0	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	3	0	-
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1642	37	30	1688	0	39

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1679	0	2564	840
Stage 1	-	-	-	-	1660	-
Stage 2	-	-	-	-	904	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	387	-	22	313
Stage 1	-	-	-	-	143	-
Stage 2	-	-	-	-	360	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	387	-	22	313
Mov Cap-2 Maneuver	-	-	-	-	22	-
Stage 1	-	-	-	-	143	-
Stage 2	-	-	-	-	360	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7.4	18.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	313	-	-	387	-
HCM Lane V/C Ratio	0.124	-	-	0.077	-
HCM Control Delay (s)	18.1	-	-	15.1	7.3
HCM Lane LOS	C	-	-	C	A
HCM 95th %tile Q(veh)	0.4	-	-	0.2	-

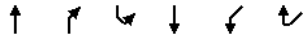


Lane Group	EBL	EBR	SBL	SBR	NWL	NWR
Lane Configurations						
Volume (vph)	205	15	142	337	38	257
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.991		0.905		0.882	
Flt Protected	0.955		0.985		0.994	
Satd. Flow (prot)	1763	0	1660	0	1633	0
Flt Permitted	0.955		0.985		0.994	
Satd. Flow (perm)	1763	0	1660	0	1633	0
Link Speed (mph)	30		30		30	
Link Distance (ft)	973		295		2020	
Travel Time (s)	22.1		6.7		45.9	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	218	16	151	359	40	273
Shared Lane Traffic (%)						
Lane Group Flow (vph)	234	0	510	0	313	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Right
Median Width(ft)	22		12		12	
Link Offset(ft)	0		0		0	
Crosswalk Width(ft)	10		10		10	
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	15	9
Sign Control	Stop		Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 68.9%		ICU Level of Service C	
Analysis Period (min) 15			

Lanes, Volumes, Timings
38: County Line Rd & N Ithan Ave

9/17/2014



Lane Group	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Volume (vph)	347	111	169	301	156	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.967				0.947	
Flt Protected				0.982	0.971	
Satd. Flow (prot)	1801	0	0	1829	1713	0
Flt Permitted				0.982	0.971	
Satd. Flow (perm)	1801	0	0	1829	1713	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	295			1901	824	
Travel Time (s)	6.7			43.2	18.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	381	122	186	331	171	112
Shared Lane Traffic (%)						
Lane Group Flow (vph)	503	0	0	517	283	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	10			10	10	
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
Sign Control	Free			Stop	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 75.1%		ICU Level of Service D	
Analysis Period (min) 15			

HCM 2010 Signalized Intersection Summary
3: County Line Rd & Spring Mill Rd

9/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	282	51	63	267	78	41	256	45	33	301	53
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	180.0	164.3	180.0	180.0	173.1	180.0	180.0	173.1	180.0	180.0	173.1	180.0
Adj Flow Rate, veh/h	37	297	54	66	281	82	43	269	47	35	317	56
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	108	595	102	148	529	142	104	357	58	94	384	65
Arrive On Green	0.47	0.47	0.47	0.47	0.47	0.47	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	74	1261	216	150	1120	300	103	1245	203	75	1338	225
Grp Volume(v), veh/h	388	0	0	429	0	0	359	0	0	408	0	0
Grp Sat Flow(s),veh/h/ln	1550	0	0	1570	0	0	1551	0	0	1637	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0
Cycle Q Clear(g_c), s	9.1	0.0	0.0	9.9	0.0	0.0	11.5	0.0	0.0	12.7	0.0	0.0
Prop In Lane	0.10		0.14	0.15		0.19	0.12		0.13	0.09		0.14
Lane Grp Cap(c), veh/h	805	0	0	818	0	0	520	0	0	542	0	0
V/C Ratio(X)	0.48	0.00	0.00	0.52	0.00	0.00	0.69	0.00	0.00	0.75	0.00	0.00
Avail Cap(c_a), veh/h	805	0	0	818	0	0	750	0	0	779	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.52	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.9	0.0	0.0	10.1	0.0	0.0	17.6	0.0	0.0	18.2	0.0	0.0
Incr Delay (d2), s/veh	1.1	0.0	0.0	2.4	0.0	0.0	0.6	0.0	0.0	1.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	0.0	5.1	0.0	0.0	5.0	0.0	0.0	5.9	0.0	0.0
LnGrp Delay(d),s/veh	11.0	0.0	0.0	12.5	0.0	0.0	18.2	0.0	0.0	19.4	0.0	0.0
LnGrp LOS	B			B			B			B		
Approach Vol, veh/h		388			429			359			408	
Approach Delay, s/veh		11.0			12.5			18.2			19.4	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		40.0		22.0		40.0		22.0
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		26.0		24.0		26.0		24.0
Max Q Clear Time (g_c+I1), s		11.1		14.7		11.9		13.5
Green Ext Time (p_c), s		3.1		1.3		3.1		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	15.2
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

9/17/2014

HCM 2010 methodology does not support more than 4 approaches.

HCM 2010 Signalized Intersection Summary
11: Chapel Dr & Lancaster Ave

9/17/2014

Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations								
Volume (veh/h)	1004	33	30	995	14	4		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	176.5	176.5	176.5	176.5	176.5	176.5		
Adj Flow Rate, veh/h	1091	36	33	1082	15	4		
Adj No. of Lanes	2	1	1	2	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	2355	1054	469	2355	10	9		
Arrive On Green	0.70	0.70	0.70	0.70	0.01	0.01		
Sat Flow, veh/h	3441	1500	498	3441	1681	1500		
Grp Volume(v), veh/h	1091	36	33	1082	15	4		
Grp Sat Flow(s),veh/h/ln	1676	1500	498	1676	1681	1500		
Q Serve(g_s), s	5.4	0.3	1.2	5.3	0.2	0.1		
Cycle Q Clear(g_c), s	5.4	0.3	6.6	5.3	0.2	0.1		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	2355	1054	469	2355	10	9		
V/C Ratio(X)	0.46	0.03	0.07	0.46	1.52	0.45		
Avail Cap(c_a), veh/h	2355	1054	469	2355	1002	895		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.52	0.52	1.00	1.00		
Uniform Delay (d), s/veh	2.5	1.7	3.9	2.5	18.8	18.7		
Incr Delay (d2), s/veh	0.7	0.1	0.2	0.3	316.8	32.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	53.1	0.0		
%ile BackOfQ(50%),veh/ln	2.6	0.1	0.2	2.5	1.0	0.1		
LnGrp Delay(d),s/veh	3.1	1.8	4.1	2.8	388.6	50.9		
LnGrp LOS	A	A	A	A	F	D		
Approach Vol, veh/h	1127			1115	19			
Approach Delay, s/veh	3.1			2.8	317.5			
Approach LOS	A			A	F			

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		54.3				54.3		5.7
Change Period (Y+Rc), s		5.0				5.0		5.0
Max Green Setting (Gmax), s		27.0				27.0		23.0
Max Q Clear Time (g_c+I1), s		7.4				8.6		2.2
Green Ext Time (p_c), s		11.0				10.6		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	5.6
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
16: Sproul Rd & Conestoga Rd

9/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	150	551	139	36	609	58	215	269	28	57	201	75
Number	7	4	14	3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	174.8	174.8	180.0	179.1	179.1	184.5	173.9	173.9	179.1	180.9	175.6	180.9
Adj Flow Rate, veh/h	165	605	0	40	669	0	236	296	31	63	221	82
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	187	874	0	274	677	0	200	576	60	94	235	81
Arrive On Green	0.06	0.50	0.00	0.38	0.38	0.00	0.07	0.37	0.37	0.23	0.23	0.23
Sat Flow, veh/h	1664	1748	0	824	1791	0	1656	1548	162	201	1008	349
Grp Volume(v), veh/h	165	605	0	40	669	0	236	0	327	366	0	0
Grp Sat Flow(s),veh/h/ln	1664	1748	0	824	1791	0	1656	0	1710	1557	0	0
Q Serve(g_s), s	5.3	23.8	0.0	3.5	33.4	0.0	6.5	0.0	13.4	16.2	0.0	0.0
Cycle Q Clear(g_c), s	5.3	23.8	0.0	16.3	33.4	0.0	6.5	0.0	13.4	21.0	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.09	0.17		0.22
Lane Grp Cap(c), veh/h	187	874	0	274	677	0	200	0	637	410	0	0
V/C Ratio(X)	0.88	0.69	0.00	0.15	0.99	0.00	1.18	0.00	0.51	0.89	0.00	0.00
Avail Cap(c_a), veh/h	187	874	0	274	677	0	200	0	637	410	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.7	17.2	0.0	27.7	27.8	0.0	29.3	0.0	21.9	34.4	0.0	0.0
Incr Delay (d2), s/veh	35.4	4.5	0.0	1.1	31.9	0.0	121.5	0.0	0.7	21.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	12.5	0.0	0.9	22.4	0.0	6.7	0.0	6.4	11.4	0.0	0.0
LnGrp Delay(d),s/veh	57.1	21.7	0.0	28.8	59.7	0.0	150.8	0.0	22.6	55.4	0.0	0.0
LnGrp LOS	E	C		C	E		F		C	E		
Approach Vol, veh/h		770			709			563			366	
Approach Delay, s/veh		29.3			58.0			76.4			55.4	
Approach LOS		C			E			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6	7	8
Phs Duration (G+Y+Rc), s	12.5	27.0		50.5		39.5	11.0	39.5
Change Period (Y+Rc), s	5.5	5.5		5.0		5.5	5.0	5.0
Max Green Setting (Gmax), s	7.0	21.5		45.5		34.0	6.0	34.5
Max Q Clear Time (g_c+I1), s	8.5	23.0		25.8		15.4	7.3	35.4
Green Ext Time (p_c), s	0.0	0.0		8.5		2.4	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	52.7
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	161	393	2	2	455	121	14	151	12	63	53	144
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	185.4	178.3	185.4	176.4	169.6	176.4	176.3	169.5	176.3	184.4	177.3	184.4
Adj Flow Rate, veh/h	199	485	2	2	562	149	17	186	15	78	65	178
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	197	392	1	60	715	189	77	348	27	138	94	197
Arrive On Green	0.55	0.55	0.55	0.55	0.55	0.55	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	219	713	3	1	1300	344	55	1470	113	274	396	834
Grp Volume(v), veh/h	686	0	0	713	0	0	218	0	0	321	0	0
Grp Sat Flow(s),veh/h/ln	935	0	0	1644	0	0	1637	0	0	1503	0	0
Q Serve(g_s), s	12.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.6	0.0	0.0
Cycle Q Clear(g_c), s	33.5	0.0	0.0	21.2	0.0	0.0	7.0	0.0	0.0	12.5	0.0	0.0
Prop In Lane	0.29		0.00	0.00		0.21	0.08		0.07	0.24		0.55
Lane Grp Cap(c), veh/h	591	0	0	963	0	0	451	0	0	429	0	0
V/C Ratio(X)	1.16	0.00	0.00	0.74	0.00	0.00	0.48	0.00	0.00	0.75	0.00	0.00
Avail Cap(c_a), veh/h	591	0	0	963	0	0	480	0	0	455	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	16.7	0.0	0.0	10.9	0.0	0.0	20.4	0.0	0.0	22.4	0.0	0.0
Incr Delay (d2), s/veh	90.4	0.0	0.0	3.1	0.0	0.0	0.8	0.0	0.0	6.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	24.7	0.0	0.0	10.1	0.0	0.0	3.3	0.0	0.0	5.9	0.0	0.0
LnGrp Delay(d),s/veh	107.1	0.0	0.0	14.0	0.0	0.0	21.2	0.0	0.0	28.7	0.0	0.0
LnGrp LOS	F			B			C			C		
Approach Vol, veh/h		686			713			218			321	
Approach Delay, s/veh		107.1			14.0			21.2			28.7	
Approach LOS		F			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		40.0		20.9		40.0		20.9
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		34.0		16.0		34.0		16.0
Max Q Clear Time (g_c+I1), s		23.2		9.0		35.5		14.5
Green Ext Time (p_c), s		5.2		1.3		0.0		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	50.2
HCM 2010 LOS	D

HCM 2010 methodology does not support exclusive ped or hold phases.

HCM 2010 Signalized Intersection Summary
33: Williams Rd/Garrett Ave & Conestoga Rd

9/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	25	443	1	4	414	4	6	6	9	15	3	38
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	187.2	187.2	187.2	187.2	187.2	187.2	180.0	180.0	180.0	172.8	172.8	172.8
Adj Flow Rate, veh/h	28	503	1	5	470	5	7	7	10	17	3	43
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	90	1338	3	58	1381	15	88	35	38	86	8	54
Arrive On Green	0.75	0.75	0.75	0.75	0.75	0.75	0.05	0.05	0.05	0.05	0.05	0.05
Sat Flow, veh/h	44	1783	3	4	1841	19	337	658	711	325	147	1015
Grp Volume(v), veh/h	532	0	0	480	0	0	24	0	0	63	0	0
Grp Sat Flow(s),veh/h/ln	1831	0	0	1865	0	0	1706	0	0	1487	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0
Cycle Q Clear(g_c), s	6.5	0.0	0.0	5.7	0.0	0.0	0.9	0.0	0.0	2.7	0.0	0.0
Prop In Lane	0.05		0.00	0.01		0.01	0.29		0.42	0.27		0.68
Lane Grp Cap(c), veh/h	1431	0	0	1454	0	0	161	0	0	148	0	0
V/C Ratio(X)	0.37	0.00	0.00	0.33	0.00	0.00	0.15	0.00	0.00	0.43	0.00	0.00
Avail Cap(c_a), veh/h	1431	0	0	1454	0	0	302	0	0	280	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	2.9	0.0	0.0	2.8	0.0	0.0	30.0	0.0	0.0	30.9	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.0	0.6	0.0	0.0	0.6	0.0	0.0	2.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	0.0	0.0	3.0	0.0	0.0	0.4	0.0	0.0	1.3	0.0	0.0
LnGrp Delay(d),s/veh	3.6	0.0	0.0	3.4	0.0	0.0	30.6	0.0	0.0	33.6	0.0	0.0
LnGrp LOS	A			A			C			C		
Approach Vol, veh/h		532			480			24			63	
Approach Delay, s/veh		3.6			3.4			30.6			33.6	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		56.0		10.0		56.0		10.0
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		50.0		10.0		50.0		10.0
Max Q Clear Time (g_c+I1), s		8.5		4.7		7.7		2.9
Green Ext Time (p_c), s		4.6		0.1		4.6		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	5.8
HCM 2010 LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

HCM 2010 Signalized Intersection Summary
51: Lowrys Ln & Lancaster Ave

9/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	19	1063	18	16	1156	23	47	105	39	22	72	20
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	180.0	174.8	180.0	177.3	172.1	177.3	190.0	184.5	190.0	188.1	182.7	188.1
Adj Flow Rate, veh/h	20	1143	19	17	1243	25	51	113	42	24	77	22
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	79	2032	33	75	2009	40	126	158	52	105	184	46
Arrive On Green	0.64	0.64	0.64	0.64	0.64	0.64	0.15	0.15	0.15	0.15	0.15	0.15
Sat Flow, veh/h	19	3199	53	14	3163	63	306	1054	348	187	1225	308
Grp Volume(v), veh/h	612	0	570	669	0	616	206	0	0	123	0	0
Grp Sat Flow(s),veh/h/ln	1690	0	1581	1685	0	1555	1708	0	0	1720	0	0
Q Serve(g_s), s	0.0	0.0	11.5	0.0	0.0	13.4	2.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	11.0	0.0	11.5	13.0	0.0	13.4	6.4	0.0	0.0	3.5	0.0	0.0
Prop In Lane	0.03		0.03	0.03		0.04	0.25		0.20	0.20		0.18
Lane Grp Cap(c), veh/h	1140	0	1004	1136	0	988	337	0	0	335	0	0
V/C Ratio(X)	0.54	0.00	0.57	0.59	0.00	0.62	0.61	0.00	0.00	0.37	0.00	0.00
Avail Cap(c_a), veh/h	1140	0	1004	1136	0	988	457	0	0	455	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.7	0.0	5.8	6.1	0.0	6.2	22.8	0.0	0.0	21.7	0.0	0.0
Incr Delay (d2), s/veh	1.8	0.0	2.3	2.2	0.0	3.0	1.8	0.0	0.0	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	0.0	5.6	6.7	0.0	6.5	3.2	0.0	0.0	1.8	0.0	0.0
LnGrp Delay(d),s/veh	7.5	0.0	8.1	8.3	0.0	9.1	24.7	0.0	0.0	22.4	0.0	0.0
LnGrp LOS	A		A	A		A	C			C		
Approach Vol, veh/h		1182			1285			206			123	
Approach Delay, s/veh		7.8			8.7			24.7			22.4	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		46.1		13.9		46.1		13.9
Change Period (Y+Rc), s		6.0		5.0		6.0		5.0
Max Green Setting (Gmax), s		36.0		13.0		36.0		13.0
Max Q Clear Time (g_c+I1), s		13.5		5.5		15.4		8.4
Green Ext Time (p_c), s		12.1		0.7		11.5		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	10.1
HCM 2010 LOS	B

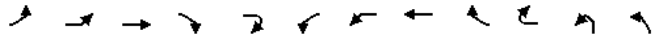
Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL
Lane Configurations												
Volume (vph)	2	226	893	84	221	4	11	979	1	13	3	49
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	11	11	14	10	12	12	12	12	10	10
Grade (%)			3%					-2%				
Storage Length (ft)		300		0			75		0			0
Storage Lanes		1		1			1		0			0
Taper Length (ft)		25					25					25
Lane Util. Factor	0.95	1.00	0.95	0.95	1.00	0.95	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.987		0.850			0.998				
Flt Protected		0.950					0.950					
Satd. Flow (prot)	0	1497	3061	0	1531	0	1645	3283	0	0	0	0
Flt Permitted		0.075					0.256					
Satd. Flow (perm)	0	118	3061	0	1531	0	443	3283	0	0	0	0
Right Turn on Red					Yes					Yes		
Satd. Flow (RTOR)					192			1				
Link Speed (mph)			35					35				
Link Distance (ft)			577					903				
Travel Time (s)			11.2					17.6				
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	2	235	930	88	230	4	11	1020	1	14	3	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	237	1018	0	230	0	15	1035	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Right	Left	Left	Left	Right	Right	Left	Left
Median Width(ft)			12					12				
Link Offset(ft)			0					0				
Crosswalk Width(ft)			10					10				
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.14	1.14	1.01	1.16	1.06	1.06	1.06	1.06	1.18	1.18
Turning Speed (mph)	15	15		9	9	15	15		9	9	15	15
Number of Detectors	1	1	1		0	1	1	1			1	1
Detector Template	Left	Left	Thru		Right	Left	Left	Thru			Left	Left
Leading Detector (ft)	20	37	37		0	20	37	37			20	20
Trailing Detector (ft)	0	-3	-3		0	0	-3	-3			0	0
Detector 1 Position(ft)	0	-3	-3		0	0	-3	-3			0	0
Detector 1 Size(ft)	20	40	40		37	20	40	40			20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0
Turn Type	pm+pt	pm+pt	NA		Perm	Perm	Perm	NA			Perm	Perm
Protected Phases	5	5	2					6				
Permitted Phases	2	2			2	6	6				10	10
Detector Phase	5	5	2		2	6	6	6			10	10
Switch Phase												
Minimum Initial (s)	3.0	3.0	15.0		15.0	15.0	15.0	15.0			3.0	3.0

Lane Group	NBT	NBR	SBT	SBR	SBR2	NEL2	NEL	NET	NER	NER2	SWL2	SWL
Lane Configurations												
Volume (vph)	0	8	1	3	12	183	0	195	50	9	20	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	12	12	11	11	11	10	10
Grade (%)	1%		-3%					3%				
Storage Length (ft)		0		0			200		0			150
Storage Lanes		0		0			1		0			1
Taper Length (ft)							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	0.983		0.873					0.965				
Flt Protected	0.958						0.950					0.950
Satd. Flow (prot)	1499	0	1418	0	0	0	1604	1575	0	0	0	1573
Flt Permitted	0.742						0.182					0.596
Satd. Flow (perm)	1161	0	1418	0	0	0	307	1575	0	0	0	987
Right Turn on Red					No					No		
Satd. Flow (RTOR)												
Link Speed (mph)	25		25					40				
Link Distance (ft)	492		597					1336				
Travel Time (s)	13.4		16.3					22.8				
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	0	8	1	3	12	191	0	203	52	9	21	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	62	0	16	0	0	0	191	264	0	0	0	29
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Right	Left	Left	Left	Right	Right	Left	Left
Median Width(ft)	0		0					12				
Link Offset(ft)	0		0					0				
Crosswalk Width(ft)	10		10					10				
Two way Left Turn Lane												
Headway Factor	1.18	1.18	1.15	1.15	1.15	1.09	1.09	1.14	1.14	1.14	1.12	1.12
Turning Speed (mph)		9		9	9	15	15		9	9	15	15
Number of Detectors	1		1			1	1	1			1	1
Detector Template	Thru		Thru			Left	Left	Thru			Left	Left
Leading Detector (ft)	37		37			20	37	37			20	37
Trailing Detector (ft)	-3		-3			0	-3	-3			0	-3
Detector 1 Position(ft)	-3		-3			0	-3	-3			0	-3
Detector 1 Size(ft)	40		40			20	40	40			20	40
Detector 1 Type	Cl+Ex		Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0			0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0		0.0			0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0		0.0			0.0	0.0	0.0			0.0	0.0
Turn Type	NA		NA			pm+pt	pm+pt	NA			Perm	Perm
Protected Phases	10		9			3	3	8				
Permitted Phases						8	8				4	4
Detector Phase	10		9			3	3	8			4	4
Switch Phase												
Minimum Initial (s)	3.0		3.0			3.0	3.0	3.0			3.0	3.0

Lane Group	SWT	SWR
Lane Configurations		
Volume (vph)	135	156
Ideal Flow (vphpl)	1800	1800
Lane Width (ft)	10	10
Grade (%)	-7%	
Storage Length (ft)		0
Storage Lanes		0
Taper Length (ft)		
Lane Util. Factor	1.00	1.00
Frt	0.920	
Flt Protected		
Satd. Flow (prot)	1524	0
Flt Permitted		
Satd. Flow (perm)	1524	0
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)	25	
Link Distance (ft)	3168	
Travel Time (s)	86.4	
Peak Hour Factor	0.96	0.96
Heavy Vehicles (%)	5%	5%
Adj. Flow (vph)	141	162
Shared Lane Traffic (%)		
Lane Group Flow (vph)	303	0
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	10	
Two way Left Turn Lane		
Headway Factor	1.12	1.12
Turning Speed (mph)		9
Number of Detectors	1	
Detector Template	Thru	
Leading Detector (ft)	37	
Trailing Detector (ft)	-3	
Detector 1 Position(ft)	-3	
Detector 1 Size(ft)	40	
Detector 1 Type	Cl+Ex	
Detector 1 Channel		
Detector 1 Extend (s)	0.0	
Detector 1 Queue (s)	0.0	
Detector 1 Delay (s)	0.0	
Turn Type	NA	
Protected Phases	4	
Permitted Phases		
Detector Phase	4	
Switch Phase		
Minimum Initial (s)	3.0	

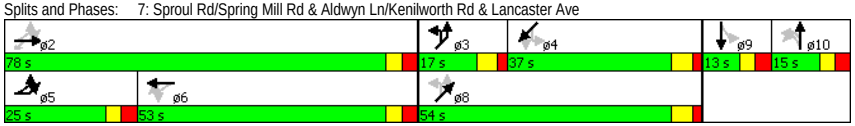


Lane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL
Minimum Split (s)	13.0	13.0	21.0		21.0	21.0	21.0	21.0			13.0	13.0
Total Split (s)	25.0	25.0	78.0		78.0	53.0	53.0	53.0			15.0	15.0
Total Split (%)	15.6%	15.6%	48.8%		48.8%	33.1%	33.1%	33.1%			9.4%	9.4%
Maximum Green (s)	19.0	19.0	72.0		72.0	47.0	47.0	47.0			9.0	9.0
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0			3.0	3.0
All-Red Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0			3.0	3.0
Lost Time Adjust (s)		0.5	0.5		0.5		0.5	0.5				
Total Lost Time (s)		6.5	6.5		6.5		6.5	6.5				
Lead/Lag	Lead	Lead				Lag	Lag	Lag			Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0			3.0	3.0
Recall Mode	None	None	Max		Max	None	None	None			None	None
Walk Time (s)			7.0		7.0	7.0	7.0	7.0				
Flash Dont Walk (s)			20.0		20.0	20.0	20.0	20.0				
Pedestrian Calls (#/hr)			0		0	0	0	0				
Act Effct Green (s)		71.6	71.6		71.6		46.6	46.6				
Actuated g/C Ratio		0.47	0.47		0.47		0.31	0.31				
v/c Ratio		1.06	0.71		0.28		0.11	1.03				
Control Delay		120.5	36.1		6.3		43.2	87.1				
Queue Delay		0.0	0.0		0.0		0.0	0.0				
Total Delay		120.5	36.1		6.3		43.2	87.1				
LOS		F	D		A		D	F				
Approach Delay			44.9					86.5				
Approach LOS			D					F				
Queue Length 50th (ft)		~198	387		19		10	522				
Queue Length 95th (ft)		#425	547		77		34	#777				
Internal Link Dist (ft)			497					823				
Turn Bay Length (ft)		300					75					
Base Capacity (vph)		223	1440		822		135	1005				
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		1.06	0.71		0.28		0.11	1.03				

Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 152.2			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.06			
Intersection Signal Delay: 70.5		Intersection LOS: E	
Intersection Capacity Utilization 108.0%		ICU Level of Service G	
Analysis Period (min) 15			

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

Splits and Phases: 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave



Lane Group	NBT	NBR	SBT	SBR	SBR2	NEL2	NEL	NET	NER	NER2	SWL2	SWL
Minimum Split (s)	13.0		13.0			13.0	13.0	13.0			13.0	13.0
Total Split (s)	15.0		13.0			17.0	17.0	54.0			37.0	37.0
Total Split (%)	9.4%		8.1%			10.6%	10.6%	33.8%			23.1%	23.1%
Maximum Green (s)	9.0		7.0			11.0	11.0	48.0			31.0	31.0
Yellow Time (s)	3.0		3.0			4.0	4.0	4.0			4.0	4.0
All-Red Time (s)	3.0		3.0			2.0	2.0	2.0			2.0	2.0
Lost Time Adjust (s)	0.5		0.5				0.5	0.5				0.5
Total Lost Time (s)	6.5		6.5				6.5	6.5				6.5
Lead/Lag	Lag		Lead			Lead	Lead				Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0		3.0			3.0	3.0	3.0			3.0	3.0
Recall Mode	None		None			None	None	None			None	None
Walk Time (s)								7.0				
Flash Dont Walk (s)								25.0				
Pedestrian Calls (#/hr)								0				
Act Effct Green (s)	8.5		6.1				47.6	47.6				30.6
Actuated g/C Ratio	0.06		0.04				0.31	0.31				0.20
v/c Ratio	0.95		0.29				1.03	0.54				0.15
Control Delay	170.3		86.1				118.6	49.0				54.6
Queue Delay	0.0		0.0				0.0	0.0				0.0
Total Delay	170.3		86.1				118.6	49.0				54.6
LOS	F		F				F	D				D
Approach Delay	170.3		86.1					78.2				
Approach LOS	F		F					E				
Queue Length 50th (ft)	60		15				141	206				23
Queue Length 95th (ft)	#174		44				#313	335				59
Internal Link Dist (ft)	412		517					1256				
Turn Bay Length (ft)							200					150
Base Capacity (vph)	65		60				185	492				198
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	0.95		0.27				1.03	0.54				0.15

Intersection Summary

Lane Group	SWT	SWR
Minimum Split (s)	13.0	
Total Split (s)	37.0	
Total Split (%)	23.1%	
Maximum Green (s)	31.0	
Yellow Time (s)	4.0	
All-Red Time (s)	2.0	
Lost Time Adjust (s)	0.5	
Total Lost Time (s)	6.5	
Lead/Lag	Lag	
Lead-Lag Optimize?		
Vehicle Extension (s)	3.0	
Recall Mode	None	
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)	30.6	
Actuated g/C Ratio	0.20	
v/c Ratio	0.99	
Control Delay	109.0	
Queue Delay	0.0	
Total Delay	109.0	
LOS	F	
Approach Delay	104.3	
Approach LOS	F	
Queue Length 50th (ft)	290	
Queue Length 95th (ft)	#541	
Internal Link Dist (ft)	3088	
Turn Bay Length (ft)		
Base Capacity (vph)	306	
Starvation Cap Reductn	0	
Spillback Cap Reductn	0	
Storage Cap Reductn	0	
Reduced v/c Ratio	0.99	

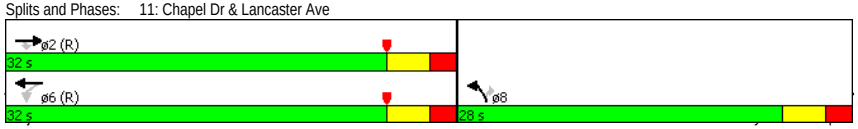
Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1004	33	30	995	14	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	12	12
Storage Length (ft)		125	100		0	0
Storage Lanes		1	1		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3241	1450	1621	3241	1676	1500
Flt Permitted			0.261		0.950	
Satd. Flow (perm)	3241	1450	445	3241	1676	1500
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		36				4
Link Speed (mph)	35			35	25	
Link Distance (ft)	706			1285	319	
Travel Time (s)	13.8			25.0	8.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1091	36	33	1082	15	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1091	36	33	1082	15	4
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	11			11	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	10			10	10	
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.12	1.12	1.07	1.07
Turning Speed (mph)		9	15		15	9
Number of Detectors	1	1	1	1	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (ft)	37	20	20	37	37	20
Trailing Detector (ft)	-3	0	0	-3	-3	0
Detector 1 Position(ft)	-3	0	0	-3	-3	0
Detector 1 Size(ft)	40	20	20	40	40	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases		2	6			8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	4.0	4.0
Minimum Split (s)	21.0	21.0	21.0	21.0	28.0	28.0
Total Split (s)	32.0	32.0	32.0	32.0	28.0	28.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	53.3%	53.3%	53.3%	53.3%	46.7%	46.7%
Maximum Green (s)	27.0	27.0	27.0	27.0	23.0	23.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.5	0.5	0.5	0.5	0.5	0.5
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None
Walk Time (s)	10.0	10.0	10.0	10.0	7.0	7.0
Flash Dont Walk (s)	0.0	0.0	0.0	0.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	56.4	56.4	56.4	56.4	5.8	5.8
Actuated g/C Ratio	0.94	0.94	0.94	0.94	0.10	0.10
v/c Ratio	0.36	0.03	0.08	0.35	0.09	0.03
Control Delay	1.6	0.8	2.8	2.9	25.6	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.6	0.8	2.8	2.9	25.6	17.0
LOS	A	A	A	A	C	B
Approach Delay	1.5			2.9	23.8	
Approach LOS	A			A	C	
Queue Length 50th (ft)	0	0	0	0	5	0
Queue Length 95th (ft)	102	6	m11	318	20	7
Internal Link Dist (ft)	626			1205	239	
Turn Bay Length (ft)		125	100			
Base Capacity (vph)	3048	1366	418	3048	628	565
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	0.36	0.03	0.08	0.35	0.02	0.01

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 55 (92%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.36			
Intersection Signal Delay: 2.4		Intersection LOS: A	
Intersection Capacity Utilization 41.8%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 11: Chapel Dr & Lancaster Ave

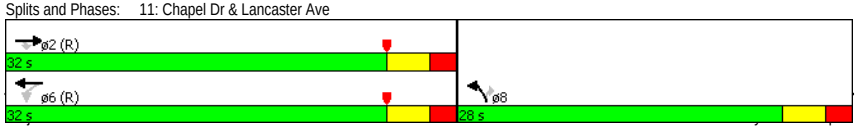


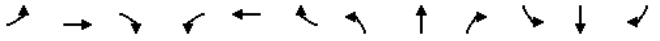
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1004	33	30	995	14	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	12	12
Storage Length (ft)		125	100		0	0
Storage Lanes		1	1		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3241	1450	1621	3241	1676	1500
Flt Permitted			0.261		0.950	
Satd. Flow (perm)	3241	1450	445	3241	1676	1500
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		36				4
Link Speed (mph)	35			35	25	
Link Distance (ft)	706			1285	319	
Travel Time (s)	13.8			25.0	8.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1091	36	33	1082	15	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1091	36	33	1082	15	4
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	11			11	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	10			10	10	
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.12	1.12	1.07	1.07
Turning Speed (mph)		9	15		15	9
Number of Detectors	1	1	1	1	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (ft)	37	20	20	37	37	20
Trailing Detector (ft)	-3	0	0	-3	-3	0
Detector 1 Position(ft)	-3	0	0	-3	-3	0
Detector 1 Size(ft)	40	20	20	40	40	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases		2	6			8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	4.0	4.0
Minimum Split (s)	21.0	21.0	21.0	21.0	28.0	28.0
Total Split (s)	32.0	32.0	32.0	32.0	28.0	28.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	53.3%	53.3%	53.3%	53.3%	46.7%	46.7%
Maximum Green (s)	27.0	27.0	27.0	27.0	23.0	23.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.5	0.5	0.5	0.5	0.5	0.5
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None
Walk Time (s)	10.0	10.0	10.0	10.0	7.0	7.0
Flash Dont Walk (s)	0.0	0.0	0.0	0.0	16.0	16.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	56.4	56.4	56.4	56.4	5.8	5.8
Actuated g/C Ratio	0.94	0.94	0.94	0.94	0.10	0.10
v/c Ratio	0.36	0.03	0.08	0.35	0.09	0.03
Control Delay	1.6	0.8	2.8	2.9	25.6	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.6	0.8	2.8	2.9	25.6	17.0
LOS	A	A	A	A	C	B
Approach Delay	1.5			2.9	23.8	
Approach LOS	A			A	C	
Queue Length 50th (ft)	0	0	0	0	5	0
Queue Length 95th (ft)	102	6	m11	318	20	7
Internal Link Dist (ft)	626			1205	239	
Turn Bay Length (ft)		125	100			
Base Capacity (vph)	3048	1366	418	3048	628	565
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	0.36	0.03	0.08	0.35	0.02	0.01

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 55 (92%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.36			
Intersection Signal Delay: 2.4		Intersection LOS: A	
Intersection Capacity Utilization 41.8%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 11: Chapel Dr & Lancaster Ave





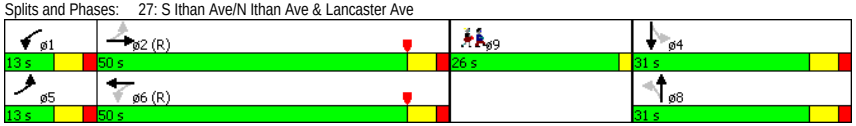
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	97	836	75	117	879	47	95	192	75	26	121	50
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)		0%			3%			1%			0%	
Storage Length (ft)	200		0	250		0	200		0	65		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.988			0.992			0.958			0.956	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1520	3004	0	1497	2970	0	1512	1525	0	1520	1530	0
Flt Permitted	0.160			0.165			0.526			0.302		
Satd. Flow (perm)	256	3004	0	260	2970	0	837	1525	0	483	1530	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1285			311			344			973	
Travel Time (s)		25.0			6.1			9.4			26.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	103	889	80	124	935	50	101	204	80	28	129	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	103	969	0	124	985	0	101	284	0	28	182	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)		11			11			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane												
Headway Factor	1.17	1.17	1.17	1.19	1.19	1.19	1.18	1.18	1.18	1.17	1.17	1.17
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0		1	0		1	1		1	1	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	37	0		37	0		37	37		37	37	
Trailing Detector (ft)	-3	0		-3	0		-3	-3		-3	-3	
Detector 1 Position(ft)	-3	0		-3	0		-3	-3		-3	-3	
Detector 1 Size(ft)	40	6		40	6		40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	34.0		3.0	34.0		3.0	3.0		3.0	3.0	

Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	24.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	13.0	40.0		13.0	40.0		13.0	13.0		13.0	13.0	
Total Split (s)	13.0	50.0		13.0	50.0		31.0	31.0		31.0	31.0	
Total Split (%)	10.8%	41.7%		10.8%	41.7%		25.8%	25.8%		25.8%	25.8%	
Maximum Green (s)	7.0	44.0		7.0	44.0		25.0	25.0		25.0	25.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	55.8	49.4		55.9	49.4		23.8	23.8		23.8	23.8	
Actuated g/C Ratio	0.46	0.41		0.47	0.41		0.20	0.20		0.20	0.20	
v/c Ratio	0.55	0.78		0.66	0.81		0.61	0.94		0.29	0.60	
Control Delay	31.0	37.2		29.2	31.2		60.6	85.9		49.8	52.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	31.0	37.2		29.2	31.2		60.6	85.9		49.8	52.7	
LOS	C	D		C	C		E	F		D	D	
Approach Delay		36.6			30.9			79.3			52.3	
Approach LOS		D			C			E			D	
Queue Length 50th (ft)	44	368		54	338		71	217		19	128	
Queue Length 95th (ft)	#90	#492		m82	#502		#138	#381		49	208	
Internal Link Dist (ft)		1205			231			264			893	
Turn Bay Length (ft)	200			250			200			65		
Base Capacity (vph)	187	1235		188	1223		170	311		98	312	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.55	0.78		0.66	0.81		0.59	0.91		0.29	0.58	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 41.4		Intersection LOS: D	
Intersection Capacity Utilization 75.7%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 27: S Ithan Ave/N Ithan Ave & Lancaster Ave



Lane Group	ø9
Minimum Split (s)	26.0
Total Split (s)	26.0
Total Split (%)	22%
Maximum Green (s)	24.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	9.0
Flash Dont Walk (s)	15.0
Pedestrian Calls (#/hr)	45
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

HCM 2010 TWSC
2: County Line Rd & N Ithan Ave 9/17/2014

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	SBL	SBR	NWL	NWR
Vol, veh/h	209	15	142	267	30	257
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	0	-
Veh in Median Storage, #	0	-	0	-	0	-
Grade, %	0	-	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	222	16	151	284	32	273

Major/Minor	Minor2		Major2		Minor1	
Conflicting Flow All	137	0	0	-	8	0
Stage 1	0	-	-	-	0	-
Stage 2	137	-	-	-	8	-
Critical Hdwy	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %				-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	SB	NW
HCM Control Delay, s		0	
HCM LOS	-		-

Minor Lane/Major Mvmt	NWLn1	EBLn1	SBL	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	-	-
HCM Lane LOS	-	-	-	-
HCM 95th %tile Q(veh)	-	-	-	-

HCM 2010 TWSC
15: Conestoga Rd & Spring Mill Rd 9/17/2014

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Vol, veh/h	2	633	697	3	4	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	2	736	810	3	5	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	814	0	-	0	1553	812
Stage 1	-	-	-	-	812	-
Stage 2	-	-	-	-	741	-
Critical Hdwy	4.14	-	-	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	2.236	-	-	-	3.536	3.336
Pot Cap-1 Maneuver	804	-	-	-	123	376
Stage 1	-	-	-	-	433	-
Stage 2	-	-	-	-	468	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	804	-	-	-	123	376
Mov Cap-2 Maneuver	-	-	-	-	123	-
Stage 1	-	-	-	-	433	-
Stage 2	-	-	-	-	466	-

Approach	EB	WB	SW
HCM Control Delay, s	0	0	22.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SWLn1
Capacity (veh/h)	804	-	-	-	223
HCM Lane V/C Ratio	0.003	-	-	-	0.063
HCM Control Delay (s)	9.5	0	-	-	22.2
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	47	427	14	9	452	5	13	14	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3
Mvmt Flow	59	534	18	11	565	6	16	18	15

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	571	0	0	551	0	0	1312	1254	543
Stage 1	-	-	-	-	-	-	660	660	-
Stage 2	-	-	-	-	-	-	652	594	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327
Pot Cap-1 Maneuver	997	-	-	1014	-	-	135	171	538
Stage 1	-	-	-	-	-	-	450	459	-
Stage 2	-	-	-	-	-	-	455	491	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	997	-	-	1014	-	-	91	154	538
Mov Cap-2 Maneuver	-	-	-	-	-	-	91	154	-
Stage 1	-	-	-	-	-	-	411	420	-
Stage 2	-	-	-	-	-	-	345	483	-

Approach	EB	WB	NB
HCM Control Delay, s	0.9	0.2	39.5
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	152	997	-	-	1014	-	-	364
HCM Lane V/C Ratio	0.321	0.059	-	-	0.011	-	-	0.343
HCM Control Delay (s)	39.5	8.8	0	-	8.6	0	-	20
HCM Lane LOS	E	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.3	0.2	-	-	0	-	-	1.5

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	2	15	83
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	80	80	80
Heavy Vehicles, %	3	3	3
Mvmt Flow	2	19	104

Major/Minor	Minor2		
Conflicting Flow All	1267	1260	568
Stage 1	591	591	-
Stage 2	676	669	-
Critical Hdwy	7.13	6.53	6.23
Critical Hdwy Stg 1	6.13	5.53	-
Critical Hdwy Stg 2	6.13	5.53	-
Follow-up Hdwy	3.527	4.027	3.327
Pot Cap-1 Maneuver	145	170	520
Stage 1	492	493	-
Stage 2	441	454	-
Platoon blocked, %			
Mov Cap-1 Maneuver	119	153	520
Mov Cap-2 Maneuver	119	153	-
Stage 1	450	485	-
Stage 2	376	415	-

Approach	SB
HCM Control Delay, s	20
HCM LOS	C

Minor Lane/Major Mvmt

HCM 2010 TWSC
38: County Line Rd & N Ithan Ave 9/17/2014

Intersection	
Int Delay, s/veh	19.9

Movement	NBT	NBR	SBL	SBT	SWL	SWR
Vol, veh/h	351	111	169	251	136	102
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	386	122	186	276	149	112

Major/Minor	Major1		Minor2		Minor1	
Conflicting Flow All	0	0	503	508	585	447
Stage 1	-	-	0	0	447	-
Stage 2	-	-	503	508	138	-
Critical Hdwy	-	-	6.42	6.52	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	5.42	5.52	-	-
Follow-up Hdwy	-	-	3.518	4.018	3.518	3.318
Pot Cap-1 Maneuver	-	-	528	468	473	612
Stage 1	-	-	-	-	644	-
Stage 2	-	-	607	539	-	-
Platoon blocked, %	-	-				
Mov Cap-1 Maneuver	-	-	528	0	473	612
Mov Cap-2 Maneuver	-	-	528	0	473	-
Stage 1	-	-	-	0	644	-
Stage 2	-	-	607	0	-	-

Approach	NB	SB	SW
HCM Control Delay, s	0	42.5	18.5
HCM LOS		E	C

Minor Lane/Major Mvmt	NBT	NBR	SBLn1	SWLn1
Capacity (veh/h)	-	-	528	524
HCM Lane V/C Ratio	-	-	0.874	0.499
HCM Control Delay (s)	-	-	42.5	18.5
HCM Lane LOS	-	-	E	C
HCM 95th %tile Q(veh)	-	-	9.6	2.8

HCM 2010 TWSC
43: County Line Rd & Roberts Rd 9/17/2014

Intersection	
Int Delay, s/veh	29.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	68	101	8	2	24	6	14	624	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	77	115	9	2	27	7	16	709	30

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	982	1352	293	1103	1359	369	585	0	0
Stage 1	582	582	-	756	756	-	-	-	-
Stage 2	400	770	-	347	603	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-
Pot Cap-1 Maneuver	203	149	703	166	147	628	986	-	-
Stage 1	466	497	-	366	414	-	-	-	-
Stage 2	597	408	-	642	487	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	165	143	703	53	141	628	986	-	-
Mov Cap-2 Maneuver	165	143	-	53	141	-	-	-	-
Stage 1	453	489	-	356	402	-	-	-	-
Stage 2	535	397	-	477	479	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	222.4	37.4	0.3
HCM LOS	F	E	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	986	-	-	157	147	863	-	-
HCM Lane V/C Ratio	0.016	-	-	1.281	0.247	0.011	-	-
HCM Control Delay (s)	8.7	0.1	-	222.4	37.4	9.2	0.1	-
HCM Lane LOS	A	A	-	F	E	A	A	-
HCM 95th %tile Q(veh)	0	-	-	11.9	0.9	0	-	-

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	8	477	38
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	88	88	88
Heavy Vehicles, %	2	2	2
Mvmt Flow	9	542	43

Major/Minor	Major2		
Conflicting Flow All	739	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	863	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	863	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.2
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	197	222	290	21	15	99
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	224	252	330	24	17	112

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	353	0	-	0	1041	341
Stage 1	-	-	-	-	341	-
Stage 2	-	-	-	-	700	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1211	-	-	-	256	704
Stage 1	-	-	-	-	722	-
Stage 2	-	-	-	-	494	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1211	-	-	-	201	704
Mov Cap-2 Maneuver	-	-	-	-	201	-
Stage 1	-	-	-	-	722	-
Stage 2	-	-	-	-	388	-

Approach	EB	WB	SB
HCM Control Delay, s	4.1	0	14
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1211	-	-	-	530
HCM Lane V/C Ratio	0.185	-	-	-	0.244
HCM Control Delay (s)	8.6	0	-	-	14
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.7	-	-	-	1

HCM 2010 TWSC
53: County Line Rd & Lowrys Ln 9/17/2014

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	62	81	58	231	151	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	71	93	67	266	174	36

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	590	191	209	0	-	0
Stage 1	191	-	-	-	-	-
Stage 2	399	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	474	856	1374	-	-	-
Stage 1	846	-	-	-	-	-
Stage 2	682	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	447	856	1374	-	-	-
Mov Cap-2 Maneuver	447	-	-	-	-	-
Stage 1	846	-	-	-	-	-
Stage 2	643	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13	1.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1374	-	613	-	-
HCM Lane V/C Ratio	0.049	-	0.268	-	-
HCM Control Delay (s)	7.8	0	13	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	1.1	-	-

HCM 2010 TWSC
61: Dwy/Aldwyn Ln & S Ithan Ave 9/17/2014

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	9	342	9	16	199	13	7	1	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4
Mvmt Flow	11	422	11	20	246	16	9	1	15

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	262	0	0	433	0	0	781	751	428
Stage 1	-	-	-	-	-	-	450	450	-
Stage 2	-	-	-	-	-	-	331	301	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.14	6.54	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.54	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.536	4.036	3.336
Pot Cap-1 Maneuver	1291	-	-	1116	-	-	310	337	623
Stage 1	-	-	-	-	-	-	585	568	-
Stage 2	-	-	-	-	-	-	678	661	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1291	-	-	1116	-	-	273	326	623
Mov Cap-2 Maneuver	-	-	-	-	-	-	273	326	-
Stage 1	-	-	-	-	-	-	579	562	-
Stage 2	-	-	-	-	-	-	600	647	-

Approach	EB	WB	NB
HCM Control Delay, s	0.2	0.6	14.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	417	1291	-	-	1116	-	-	592
HCM Lane V/C Ratio	0.059	0.009	-	-	0.018	-	-	0.161
HCM Control Delay (s)	14.2	7.8	0	-	8.3	0	-	12.2
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.6

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	16	0	61
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	81	81	81
Heavy Vehicles, %	4	4	4
Mvmt Flow	20	0	75

Major/Minor	Minor2		
Conflicting Flow All	751	749	254
Stage 1	293	293	-
Stage 2	458	456	-
Critical Hdwy	7.14	6.54	6.24
Critical Hdwy Stg 1	6.14	5.54	-
Critical Hdwy Stg 2	6.14	5.54	-
Follow-up Hdwy	3.536	4.036	3.336
Pot Cap-1 Maneuver	325	338	780
Stage 1	711	667	-
Stage 2	579	565	-
Platoon blocked, %			
Mov Cap-1 Maneuver	309	327	780
Mov Cap-2 Maneuver	309	327	-
Stage 1	703	653	-
Stage 2	558	559	-

Approach	SB
HCM Control Delay, s	12.2
HCM LOS	B

Minor Lane/Major Mvmt	

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR
Vol, veh/h	5	336	29	150	222	9	23	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	None
Storage Length	50	-	-	100	-	-	0	-
Veh in Median Storage, #	-	0	-	-	0	-	0	-
Grade, %	-	1	-	-	-1	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2
Mvmt Flow	5	365	32	163	241	10	25	2

Major/Minor	Major1			Major2			Minor2	
Conflicting Flow All	251	0	0	397	0	0	971	246
Stage 1	-	-	-	-	-	-	572	-
Stage 2	-	-	-	-	-	-	399	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1314	-	-	1162	-	-	232	793
Stage 1	-	-	-	-	-	-	505	-
Stage 2	-	-	-	-	-	-	627	-
Platoon blocked, %		-	-		-	-		
Mov Cap-1 Maneuver	1314	-	-	1162	-	-	196	793
Mov Cap-2 Maneuver	-	-	-	-	-	-	196	-
Stage 1	-	-	-	-	-	-	503	-
Stage 2	-	-	-	-	-	-	610	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	3.4	23
HCM LOS			C

Minor Lane/Major Mvmt	NWLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	186	1314	-	-	1162	-	-	227
HCM Lane V/C Ratio	0.041	0.004	-	-	0.14	-	-	0.12
HCM Control Delay (s)	25.2	7.8	-	-	8.6	-	-	23
HCM Lane LOS	D	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0.5	-	-	0.4

Intersection	
Int Delay, s/veh	

Movement	NWU	NWL	NWR
Vol, veh/h	4	7	13
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	-
Storage Length	-	0	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	4	8	14

Major/Minor	Minor1		
Conflicting Flow All	0	978	381
Stage 1	0	392	-
Stage 2	0	586	-
Critical Hdwy	-	7.12	6.22
Critical Hdwy Stg 1	-	6.12	-
Critical Hdwy Stg 2	-	6.12	-
Follow-up Hdwy	-	3.518	3.318
Pot Cap-1 Maneuver	0	230	666
Stage 1	0	633	-
Stage 2	0	496	-
Platoon blocked, %	-		
Mov Cap-1 Maneuver	0	186	666
Mov Cap-2 Maneuver	0	186	-
Stage 1	0	631	-
Stage 2	0	401	-

Approach	NW
HCM Control Delay, s	25.2
HCM LOS	D

Minor Lane/Major Mvmt

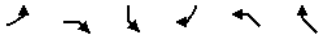
Intersection	
Int Delay, s/veh	4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1099	25	20	1194	0	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	3	0	-
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1640	37	30	1782	0	39

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1678	0	2610	839
Stage 1	-	-	-	-	1659	-
Stage 2	-	-	-	-	951	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	387	-	20	313
Stage 1	-	-	-	-	143	-
Stage 2	-	-	-	-	341	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	387	-	20	313
Mov Cap-2 Maneuver	-	-	-	-	20	-
Stage 1	-	-	-	-	143	-
Stage 2	-	-	-	-	341	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7.4	18.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	313	-	-	387	-
HCM Lane V/C Ratio	0.124	-	-	0.077	-
HCM Control Delay (s)	18.1	-	-	15.1	7.3
HCM Lane LOS	C	-	-	C	A
HCM 95th %tile Q(veh)	0.4	-	-	0.2	-



Lane Group	EBL	EBR	SBL	SBR	NWL	NWR
Lane Configurations						
Volume (vph)	209	15	142	267	30	257
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.991		0.912		0.879	
Flt Protected	0.955		0.983		0.995	
Satd. Flow (prot)	1763	0	1670	0	1629	0
Flt Permitted	0.955		0.983		0.995	
Satd. Flow (perm)	1763	0	1670	0	1629	0
Link Speed (mph)	30		30		30	
Link Distance (ft)	973		295		2020	
Travel Time (s)	22.1		6.7		45.9	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	222	16	151	284	32	273
Shared Lane Traffic (%)						
Lane Group Flow (vph)	238	0	435	0	305	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Right
Median Width(ft)	22		12		12	
Link Offset(ft)	0		0		0	
Crosswalk Width(ft)	10		10		10	
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	15	9
Sign Control	Stop		Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.3%		ICU Level of Service C	
Analysis Period (min) 15			

Lanes, Volumes, Timings
38: County Line Rd & N Ithan Ave

9/17/2014

Lane Group	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Volume (vph)	351	111	169	251	136	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.968				0.942	
Flt Protected				0.980	0.972	
Satd. Flow (prot)	1803	0	0	1825	1706	0
Flt Permitted				0.980	0.972	
Satd. Flow (perm)	1803	0	0	1825	1706	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	295			1901	824	
Travel Time (s)	6.7			43.2	18.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	386	122	186	276	149	112
Shared Lane Traffic (%)						
Lane Group Flow (vph)	508	0	0	462	261	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	10			10	10	
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
Sign Control	Free			Stop	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 71.6%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	11.7
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	SBU	SBL	SBR
Vol, veh/h	0	5	336	29	0	150	222	9	0	23	2
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	5	365	32	0	163	241	10	0	25	2
Number of Lanes	0	1	1	0	0	1	1	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB	NW	WB
Conflicting Lanes Left	1	1	2
Conflicting Approach Right	NW	SB	EB
Conflicting Lanes Right	1	1	2
HCM Control Delay	13.6	10.2	9.3
HCM LOS	B	B	A

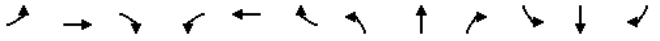
Lane	NWLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	35%	100%	0%	100%	0%	92%
Vol Thru, %	0%	0%	92%	0%	96%	0%
Vol Right, %	65%	0%	8%	0%	4%	8%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	24	5	365	150	231	25
LT Vol	0	0	336	0	222	0
Through Vol	16	0	29	0	9	2
RT Vol	8	5	0	150	0	23
Lane Flow Rate	26	5	397	163	251	27
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.04	0.008	0.551	0.249	0.347	0.045
Departure Headway (Hd)	5.476	5.562	5.004	5.498	4.968	5.93
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	650	643	722	652	723	601
Service Time	3.543	3.3	2.741	3.235	2.705	3.997
HCM Lane V/C Ratio	0.04	0.008	0.55	0.25	0.347	0.045
HCM Control Delay	8.8	8.3	13.7	10.1	10.3	9.3
HCM Lane LOS	A	A	B	B	B	A
HCM 95th-tile Q	0.1	0	3.4	1	1.6	0.1

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	NWU	NWL	NWR
Vol, veh/h	4	7	13
Peak Hour Factor	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2
Mvmt Flow	4	8	14
Number of Lanes	0	1	0

Approach	NW
Opposing Approach	
Opposing Lanes	0
Conflicting Approach Left	EB
Conflicting Lanes Left	2
Conflicting Approach Right	WB
Conflicting Lanes Right	2
HCM Control Delay	8.8
HCM LOS	A

Lane



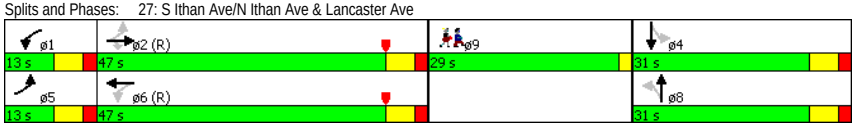
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	97	836	75	117	879	47	95	192	75	26	121	50
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)		0%			3%			1%			0%	
Storage Length (ft)	200		0	250		0	200		0	65		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.992			0.958			0.956	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1520	3040	1360	1497	2970	0	1512	1525	0	1520	1530	0
Flt Permitted	0.159			0.200			0.526			0.302		
Satd. Flow (perm)	254	3040	1360	315	2970	0	837	1525	0	483	1530	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1285			311			344			973	
Travel Time (s)		25.0			6.1			9.4			26.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	103	889	80	124	935	50	101	204	80	28	129	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	103	889	80	124	985	0	101	284	0	28	182	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)		11			11			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane												
Headway Factor	1.17	1.17	1.17	1.19	1.19	1.19	1.18	1.18	1.18	1.17	1.17	1.17
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	0	1	1	0		1	1		1	1	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	37	0	20	37	0		37	37		37	37	
Trailing Detector (ft)	-3	0	0	-3	0		-3	-3		-3	-3	
Detector 1 Position(ft)	-3	0	0	-3	0		-3	-3		-3	-3	
Detector 1 Size(ft)	40	6	20	40	6		40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	5	2	2	1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	34.0	34.0	3.0	34.0		3.0	3.0		3.0	3.0	

Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	24.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	13.0	40.0	40.0	13.0	40.0		13.0	13.0		13.0	13.0	
Total Split (s)	13.0	47.0	47.0	13.0	47.0		31.0	31.0		31.0	31.0	
Total Split (%)	10.8%	39.2%	39.2%	10.8%	39.2%		25.8%	25.8%		25.8%	25.8%	
Maximum Green (s)	7.0	41.0	41.0	7.0	41.0		25.0	25.0		25.0	25.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	55.9	49.4	49.4	55.9	49.4		23.8	23.8		23.8	23.8	
Actuated g/C Ratio	0.47	0.41	0.41	0.47	0.41		0.20	0.20		0.20	0.20	
v/c Ratio	0.55	0.71	0.14	0.59	0.81		0.61	0.94		0.29	0.60	
Control Delay	31.1	34.1	25.4	23.1	31.2		60.6	85.9		49.8	52.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	31.1	34.1	25.4	23.1	31.2		60.6	85.9		49.8	52.7	
LOS	C	C	C	C	C		E	F		D	D	
Approach Delay		33.2			30.3			79.3			52.3	
Approach LOS		C			C			E			D	
Queue Length 50th (ft)	44	324	42	54	338		71	217		19	128	
Queue Length 95th (ft)	#91	310	80	m78	#502		#138	#381		49	208	
Internal Link Dist (ft)		1205			231			264			893	
Turn Bay Length (ft)	200			250			200			65		
Base Capacity (vph)	186	1250	559	210	1221		170	311		98	312	
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	0.55	0.71	0.14	0.59	0.81		0.59	0.91		0.29	0.58	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 39.9		Intersection LOS: D	
Intersection Capacity Utilization 75.7%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 27: S Ithan Ave/N Ithan Ave & Lancaster Ave



Lane Group	ø9
Minimum Split (s)	26.0
Total Split (s)	29.0
Total Split (%)	24%
Maximum Green (s)	27.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	9.0
Flash Dont Walk (s)	15.0
Pedestrian Calls (#/hr)	45
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

HCM 2010 Signalized Intersection Summary
3: County Line Rd & Spring Mill Rd

9/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	63	300	93	55	240	51	71	199	37	64	390	44
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	180.0	178.9	180.0	180.0	176.6	180.0	180.0	180.0	180.0	180.0	177.3	180.0
Adj Flow Rate, veh/h	88	333	108	76	276	80	88	255	56	84	438	64
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.72	0.90	0.86	0.72	0.87	0.64	0.81	0.78	0.66	0.76	0.89	0.69
Percent Heavy Veh, %	1	1	1	3	3	3	0	0	0	1	1	1
Cap, veh/h	135	301	90	135	307	80	168	402	78	150	526	72
Arrive On Green	0.32	0.32	0.32	0.32	0.32	0.32	0.41	0.41	0.41	0.41	0.41	0.41
Sat Flow, veh/h	150	936	278	146	952	250	187	986	192	157	1291	178
Grp Volume(v), veh/h	529	0	0	432	0	0	399	0	0	586	0	0
Grp Sat Flow(s),veh/h/ln	1364	0	0	1348	0	0	1365	0	0	1626	0	0
Q Serve(g_s), s	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2	0.0	0.0
Cycle Q Clear(g_c), s	15.5	0.0	0.0	15.4	0.0	0.0	10.7	0.0	0.0	15.9	0.0	0.0
Prop In Lane	0.17		0.20	0.18		0.19	0.22		0.14	0.14		0.11
Lane Grp Cap(c), veh/h	527	0	0	522	0	0	648	0	0	748	0	0
V/C Ratio(X)	1.00	0.00	0.00	0.83	0.00	0.00	0.62	0.00	0.00	0.78	0.00	0.00
Avail Cap(c_a), veh/h	527	0	0	522	0	0	1006	0	0	1142	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	17.1	0.0	0.0	15.6	0.0	0.0	11.1	0.0	0.0	13.0	0.0	0.0
Incr Delay (d2), s/veh	12.8	0.0	0.0	14.0	0.0	0.0	0.4	0.0	0.0	0.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.8	0.0	0.0	7.7	0.0	0.0	4.3	0.0	0.0	7.2	0.0	0.0
LnGrp Delay(d),s/veh	30.0	0.0	0.0	29.6	0.0	0.0	11.5	0.0	0.0	13.9	0.0	0.0
LnGrp LOS	F			C			B			B		
Approach Vol, veh/h		529			432			399			586	
Approach Delay, s/veh		30.0			29.6			11.5			13.9	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		33.9		26.1		33.9		26.1
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		16.0		32.0		16.0		32.0
Max Q Clear Time (g_c+I1), s		17.5		17.9		17.4		12.7
Green Ext Time (p_c), s		0.0		2.2		0.0		2.3

Intersection Summary	
HCM 2010 Ctrl Delay	21.3
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

9/17/2014

HCM 2010 methodology does not support more than 4 approaches.

HCM 2010 Computation does not support turning movement with Shared and Exclusive lanes.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	103	541	214	27	514	46	103	182	27	50	287	81
Number	7	4	14	3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	178.2	178.2	180.0	182.7	182.7	184.5	177.3	177.3	179.1	180.9	179.1	180.9
Adj Flow Rate, veh/h	108	569	0	28	541	0	108	192	28	53	302	85
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	226	811	0	266	605	0	190	601	88	88	317	84
Arrive On Green	0.05	0.46	0.00	0.33	0.33	0.00	0.06	0.40	0.40	0.26	0.26	0.26
Sat Flow, veh/h	1697	1782	0	869	1827	0	1689	1514	221	137	1204	321
Grp Volume(v), veh/h	108	569	0	28	541	0	108	0	220	440	0	0
Grp Sat Flow(s),veh/h/ln	1697	1782	0	869	1827	0	1689	0	1734	1662	0	0
Q Serve(g_s), s	3.1	19.9	0.0	2.1	21.9	0.0	3.5	0.0	6.8	14.3	0.0	0.0
Cycle Q Clear(g_c), s	3.1	19.9	0.0	12.3	21.9	0.0	3.5	0.0	6.8	20.5	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.13	0.12		0.19
Lane Grp Cap(c), veh/h	226	811	0	266	605	0	190	0	689	489	0	0
V/C Ratio(X)	0.48	0.70	0.00	0.11	0.89	0.00	0.57	0.00	0.32	0.90	0.00	0.00
Avail Cap(c_a), veh/h	277	811	0	266	605	0	233	0	734	489	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	18.7	17.0	0.0	25.8	24.8	0.0	21.1	0.0	16.2	28.7	0.0	0.0
Incr Delay (d2), s/veh	1.6	5.0	0.0	0.8	18.2	0.0	2.7	0.0	0.3	19.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	10.8	0.0	0.6	14.0	0.0	1.7	0.0	3.3	12.1	0.0	0.0
LnGrp Delay(d),s/veh	20.2	22.0	0.0	26.6	43.0	0.0	23.7	0.0	16.5	48.2	0.0	0.0
LnGrp LOS	C	C		C	D		C		B	D		
Approach Vol, veh/h		677			569			328			440	
Approach Delay, s/veh		21.7			42.2			18.9			48.2	
Approach LOS		C			D			B			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6	7	8
Phs Duration (G+Y+Rc), s	10.5	26.5		43.0		37.0	9.7	33.3
Change Period (Y+Rc), s	5.5	5.5		5.0		5.5	5.0	5.0
Max Green Setting (Gmax), s	7.0	21.0		36.0		33.5	7.0	24.0
Max Q Clear Time (g_c+I1), s	5.5	22.5		21.9		8.8	5.1	23.9
Green Ext Time (p_c), s	0.0	0.0		6.0		2.4	0.0	0.0

Intersection Summary		
HCM 2010 Ctrl Delay		32.8
HCM 2010 LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	63	512	7	11	462	39	7	18	6	52	86	134
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	185.4	183.6	185.4	176.4	174.7	176.4	176.3	174.5	176.3	184.4	182.6	184.4
Adj Flow Rate, veh/h	72	582	8	12	525	44	8	20	7	59	98	152
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	145	738	10	90	736	61	144	259	75	147	144	186
Arrive On Green	0.47	0.47	0.47	0.47	0.47	0.47	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	113	1576	21	11	1571	130	182	1115	324	206	620	800
Grp Volume(v), veh/h	662	0	0	581	0	0	35	0	0	309	0	0
Grp Sat Flow(s),veh/h/ln	1709	0	0	1712	0	0	1621	0	0	1627	0	0
Q Serve(g_s), s	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	0.0	0.0
Cycle Q Clear(g_c), s	14.2	0.0	0.0	11.7	0.0	0.0	0.7	0.0	0.0	7.8	0.0	0.0
Prop In Lane	0.11		0.01	0.02		0.08	0.23		0.20	0.19		0.49
Lane Grp Cap(c), veh/h	892	0	0	887	0	0	478	0	0	476	0	0
V/C Ratio(X)	0.74	0.00	0.00	0.66	0.00	0.00	0.07	0.00	0.00	0.65	0.00	0.00
Avail Cap(c_a), veh/h	1237	0	0	1241	0	0	803	0	0	823	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.7	0.0	0.0	9.3	0.0	0.0	13.1	0.0	0.0	15.7	0.0	0.0
Incr Delay (d2), s/veh	1.5	0.0	0.0	0.8	0.0	0.0	0.1	0.0	0.0	1.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.0	0.0	0.0	5.7	0.0	0.0	0.3	0.0	0.0	3.6	0.0	0.0
LnGrp Delay(d),s/veh	11.3	0.0	0.0	10.1	0.0	0.0	13.1	0.0	0.0	17.2	0.0	0.0
LnGrp LOS	B			B			B			B		
Approach Vol, veh/h		662			581			35			309	
Approach Delay, s/veh		11.3			10.1			13.1			17.2	
Approach LOS		B			B			B			B	

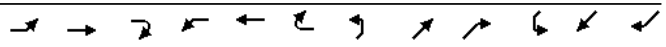
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		26.8		16.6		26.8		16.6
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		30.0		20.0		30.0		20.0
Max Q Clear Time (g_c+I1), s		13.7		2.7		16.2		9.8
Green Ext Time (p_c), s		5.0		1.2		4.7		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	12.0
HCM 2010 LOS	B

HCM 2010 methodology does not support exclusive ped or hold phases.

HCM 2010 Signalized Intersection Summary
33: Williams Rd/Garrett Ave & Conestoga Rd

9/17/2014



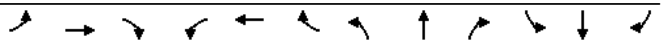
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	26	488	9	12	486	28	16	1	11	27	12	51
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	187.2	187.2	187.2	187.2	187.2	187.2	180.0	180.0	180.0	172.8	172.8	172.8
Adj Flow Rate, veh/h	28	530	10	13	528	30	17	1	12	29	13	55
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	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
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	93	1208	22	73	1193	67	153	27	54	110	26	71
Arrive On Green	0.69	0.69	0.69	0.69	0.69	0.69	0.08	0.08	0.08	0.08	0.08	0.08
Sat Flow, veh/h	39	1753	32	13	1732	97	656	316	648	335	310	845
Grp Volume(v), veh/h	568	0	0	571	0	0	30	0	0	97	0	0
Grp Sat Flow(s),veh/h/ln	1824	0	0	1841	0	0	1620	0	0	1490	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0
Cycle Q Clear(g_c), s	7.8	0.0	0.0	7.9	0.0	0.0	1.0	0.0	0.0	3.6	0.0	0.0
Prop In Lane	0.05		0.02	0.02		0.05	0.57		0.40	0.30		0.57
Lane Grp Cap(c), veh/h	1323	0	0	1333	0	0	234	0	0	207	0	0
V/C Ratio(X)	0.43	0.00	0.00	0.43	0.00	0.00	0.13	0.00	0.00	0.47	0.00	0.00
Avail Cap(c_a), veh/h	1323	0	0	1333	0	0	601	0	0	582	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.0	0.0	0.0	4.0	0.0	0.0	24.5	0.0	0.0	25.7	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.0	0.0	1.0	0.0	0.0	0.3	0.0	0.0	2.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	0.0	0.0	4.3	0.0	0.0	0.5	0.0	0.0	1.6	0.0	0.0
LnGrp Delay(d),s/veh	5.0	0.0	0.0	5.0	0.0	0.0	24.8	0.0	0.0	28.0	0.0	0.0
LnGrp LOS	A			A			C			C		
Approach Vol, veh/h		568			571			30			97	
Approach Delay, s/veh		5.0			5.0			24.8			28.0	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		46.0		11.3		46.0		11.3
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		40.0		20.0		40.0		20.0
Max Q Clear Time (g_c+I1), s		9.8		5.6		9.9		3.0
Green Ext Time (p_c), s		5.3		0.5		5.3		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	7.2
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
51: Lowrys Ln & Lancaster Ave

9/17/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	1138	22	15	887	4	19	35	15	96	69	70
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	180.0	178.2	180.0	177.3	175.5	177.3	190.0	188.1	190.0	188.1	186.3	188.1
Adj Flow Rate, veh/h	2	1237	24	16	964	4	21	38	16	104	75	76
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	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
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	76	1834	36	86	1805	7	149	217	73	214	117	96
Arrive On Green	0.73	0.73	0.73	0.55	0.55	0.55	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	1	3326	64	16	3273	13	268	1094	369	545	587	481
Grp Volume(v), veh/h	663	0	600	509	0	475	75	0	0	255	0	0
Grp Sat Flow(s),veh/h/ln	1781	0	1610	1708	0	1595	1732	0	0	1613	0	0
Q Serve(g_s), s	0.0	0.0	9.5	0.0	0.0	9.1	0.0	0.0	0.0	5.5	0.0	0.0
Cycle Q Clear(g_c), s	9.4	0.0	9.5	8.8	0.0	9.1	1.7	0.0	0.0	7.2	0.0	0.0
Prop In Lane	0.00		0.04	0.03		0.01	0.28		0.21	0.41		0.30
Lane Grp Cap(c), veh/h	1057	0	888	1019	0	880	440	0	0	426	0	0
V/C Ratio(X)	0.63	0.00	0.68	0.50	0.00	0.54	0.17	0.00	0.00	0.60	0.00	0.00
Avail Cap(c_a), veh/h	1057	0	888	1019	0	880	844	0	0	819	0	0
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.34	0.00	0.34	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.1	0.0	4.1	6.8	0.0	6.9	16.1	0.0	0.0	18.2	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.0	1.4	1.8	0.0	2.4	0.2	0.0	0.0	1.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	0.0	4.4	4.7	0.0	4.5	0.9	0.0	0.0	3.3	0.0	0.0
LnGrp Delay(d),s/veh	5.1	0.0	5.6	8.6	0.0	9.2	16.3	0.0	0.0	19.6	0.0	0.0
LnGrp LOS	A		A	A		A	B			B		
Approach Vol, veh/h		1263			984			75			255	
Approach Delay, s/veh		5.3			8.9			16.3			19.6	
Approach LOS		A			A			B			B	

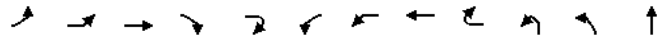
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		44.9		15.1		44.9		15.1
Change Period (Y+Rc), s		6.0		5.0		6.0		5.0
Max Green Setting (Gmax), s		27.0		22.0		27.0		22.0
Max Q Clear Time (g_c+I1), s		11.5		9.2		11.1		3.7
Green Ext Time (p_c), s		8.6		1.0		8.7		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	8.4
HCM 2010 LOS	A

Lane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR2	NBL2	NBL	NBT
Lane Configurations												
Volume (vph)	4	244	965	30	276	2	22	835	32	7	51	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	11	11	14	10	12	12	12	10	10	10
Grade (%)			3%					-2%				1%
Storage Length (ft)		300		0			75				0	
Storage Lanes		1		1			1				0	
Taper Length (ft)		25					25				25	
Lane Util. Factor	0.95	1.00	0.95	0.95	1.00	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.995		0.850			0.994				0.974
Flt Protected		0.950					0.950					0.961
Satd. Flow (prot)	0	1541	3177	0	1576	0	1693	3366	0	0	0	1534
Flt Permitted		0.109					0.199					0.754
Satd. Flow (perm)	0	177	3177	0	1576	0	355	3366	0	0	0	1204
Right Turn on Red					Yes				Yes			
Satd. Flow (RTOR)					196			196				
Link Speed (mph)			35					35				25
Link Distance (ft)			577					1609				492
Travel Time (s)			11.2					31.3				13.4
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	4	252	995	31	285	2	23	861	33	7	53	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	256	1026	0	285	0	25	894	0	0	0	74
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Right	Left	Left	Left	Right	Left	Left	Left
Median Width(ft)			12					12				0
Link Offset(ft)			0					0				0
Crosswalk Width(ft)			10					10				10
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.14	1.14	1.01	1.16	1.06	1.06	1.06	1.18	1.18	1.18
Turning Speed (mph)	15	15		9	9	15	15		9	15	15	
Number of Detectors	1	1	1		1	1	1	1		1	1	1
Detector Template	Left	Left	Thru		Right	Left	Left	Thru		Left	Left	Thru
Leading Detector (ft)	20	37	37		37	20	37	37		20	20	37
Trailing Detector (ft)	0	-3	-3		-3	0	-3	-3		0	0	-3
Detector 1 Position(ft)	0	-3	-3		-3	0	-3	-3		0	0	-3
Detector 1 Size(ft)	20	40	40		40	20	40	40		20	20	40
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	pm+pt	pm+pt	NA		Perm	Perm	Perm	NA		Perm	Perm	NA
Protected Phases	5	5	2					6				10
Permitted Phases	2	2			2	6	6			10	10	
Detector Phase	5	5	2		2	6	6	6		10	10	10
Switch Phase												
Minimum Initial (s)	3.0	3.0	15.0		15.0	15.0	15.0	15.0		3.0	3.0	3.0
Minimum Split (s)	13.0	13.0	21.0		21.0	21.0	21.0	21.0		13.0	13.0	13.0

Lane Group	NBR	NBR2	SBL2	SBL	SBT	SBR	SBR2	NEL2	NEL	NET	NER	NER2
Lane Configurations												
Volume (vph)	4	10	1	1	0	3	14	187	0	110	20	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	12	12	11	11	11
Grade (%)					-3%					3%		
Storage Length (ft)	0			0		0			200		0	
Storage Lanes	0			0		0			1		0	
Taper Length (ft)				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					0.879					0.976		
Flt Protected					0.995				0.950			
Satd. Flow (prot)	0	0	0	0	1462	0	0	0	1651	1640	0	0
Flt Permitted					0.992				0.170			
Satd. Flow (perm)	0	0	0	0	1458	0	0	0	295	1640	0	0
Right Turn on Red		No					No					No
Satd. Flow (RTOR)												
Link Speed (mph)					25					40		
Link Distance (ft)					597					1336		
Travel Time (s)					16.3					22.8		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	4	10	1	1	0	3	14	193	0	113	21	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	19	0	0	0	193	135	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Right	Right	Left	Left	Left	Right	Right	Left	Left	Left	Right	Right
Median Width(ft)					0					12		
Link Offset(ft)					0					0		
Crosswalk Width(ft)					10					10		
Two way Left Turn Lane												
Headway Factor	1.18	1.18	1.15	1.15	1.15	1.15	1.15	1.09	1.09	1.14	1.14	1.14
Turning Speed (mph)	9	9	15	15		9	9	15	15		9	9
Number of Detectors			1	1	1			1	1	1		
Detector Template			Left	Left	Thru			Left	Left	Thru		
Leading Detector (ft)			20	20	37			20	37	37		
Trailing Detector (ft)			0	0	-3			0	-3	-3		
Detector 1 Position(ft)			0	0	-3			0	-3	-3		
Detector 1 Size(ft)			20	20	40			20	40	40		
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel												
Detector 1 Extend (s)			0.0	0.0	0.0			0.0	0.0	0.0		
Detector 1 Queue (s)			0.0	0.0	0.0			0.0	0.0	0.0		
Detector 1 Delay (s)			0.0	0.0	0.0			0.0	0.0	0.0		
Turn Type			Perm	Perm	NA			pm+pt	pm+pt	NA		
Protected Phases					9			3	3	8		
Permitted Phases			9	9				8	8			
Detector Phase			9	9	9			3	3	8		
Switch Phase												
Minimum Initial (s)			3.0	3.0	3.0			3.0	3.0	3.0		
Minimum Split (s)			13.0	13.0	13.0			13.0	13.0	13.0		

Lane Group	SWL2	SWL	SWT	SWR	SWR2
Lane Configurations					
Volume (vph)	38	9	163	230	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10
Grade (%)			-7%		
Storage Length (ft)		150		0	
Storage Lanes		1		0	
Taper Length (ft)		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00
Frt			0.912		
Flt Protected		0.950			
Satd. Flow (prot)	0	1619	1555	0	0
Flt Permitted		0.671			
Satd. Flow (perm)	0	1144	1555	0	0
Right Turn on Red					No
Satd. Flow (RTOR)					
Link Speed (mph)			25		
Link Distance (ft)			3168		
Travel Time (s)			86.4		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	39	9	168	237	1
Shared Lane Traffic (%)					
Lane Group Flow (vph)	0	48	406	0	0
Enter Blocked Intersection	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Right
Median Width(ft)			12		
Link Offset(ft)			0		
Crosswalk Width(ft)			10		
Two way Left Turn Lane					
Headway Factor	1.12	1.12	1.12	1.12	1.12
Turning Speed (mph)	15	15		9	9
Number of Detectors	1	1	1		
Detector Template	Left	Left	Thru		
Leading Detector (ft)	20	37	37		
Trailing Detector (ft)	0	-3	-3		
Detector 1 Position(ft)	0	-3	-3		
Detector 1 Size(ft)	20	40	40		
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel					
Detector 1 Extend (s)	0.0	0.0	0.0		
Detector 1 Queue (s)	0.0	0.0	0.0		
Detector 1 Delay (s)	0.0	0.0	0.0		
Turn Type	Perm	Perm	NA		
Protected Phases			4		
Permitted Phases	4	4			
Detector Phase	4	4	4		
Switch Phase					
Minimum Initial (s)	3.0	3.0	3.0		
Minimum Split (s)	13.0	13.0	13.0		



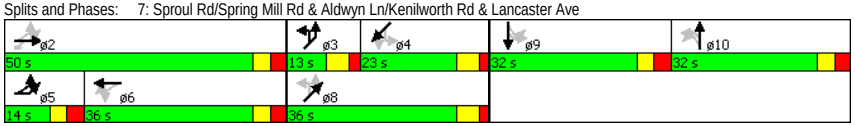
Lane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR2	NBL2	NBL	NBT
Total Split (s)	14.0	14.0	50.0		50.0	36.0	36.0	36.0		32.0	32.0	32.0
Total Split (%)	9.3%	9.3%	33.3%		33.3%	24.0%	24.0%	24.0%		21.3%	21.3%	21.3%
Maximum Green (s)	8.0	8.0	44.0		44.0	30.0	30.0	30.0		26.0	26.0	26.0
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)		0.5	0.5		0.5		0.5	0.5				0.5
Total Lost Time (s)		6.5	6.5		6.5		6.5	6.5				6.5
Lead/Lag	Lead	Lead				Lag	Lag	Lag		Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	Max		Max	None	None	None		None	None	None
Walk Time (s)			7.0		7.0	7.0	7.0	7.0				
Flash Dont Walk (s)			20.0		20.0	20.0	20.0	20.0				
Pedestrian Calls (#/hr)			0		0	0	0	0				
Act Effct Green (s)		44.3	44.3		44.3		30.0	30.0				11.6
Actuated g/C Ratio		0.41	0.41		0.41		0.28	0.28				0.11
v/c Ratio		1.51	0.79		0.37		0.26	0.83				0.57
Control Delay		283.2	35.5		10.4		44.7	37.7				65.8
Queue Delay		0.0	0.0		0.0		0.0	0.0				0.0
Total Delay		283.2	35.5		10.4		44.7	37.7				65.8
LOS		F	D		B		D	D				E
Approach Delay			71.4					37.9				65.8
Approach LOS			E					D				E
Queue Length 50th (ft)		~193	300		36		13	231				47
Queue Length 95th (ft)		#447	#561		126		47	#443				108
Internal Link Dist (ft)			497					1529				412
Turn Bay Length (ft)		300					75					
Base Capacity (vph)		169	1306		763		98	1080				290
Starvation Cap Reductn		0	0		0		0	0				0
Spillback Cap Reductn		0	0		0		0	0				0
Storage Cap Reductn		0	0		0		0	0				0
Reduced v/c Ratio		1.51	0.79		0.37		0.26	0.83				0.26

Intersection Summary			
Area Type:	Other		
Cycle Length: 150			
Actuated Cycle Length: 107.7			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.68			
Intersection Signal Delay: 99.2		Intersection LOS: F	
Intersection Capacity Utilization 114.6%		ICU Level of Service H	
Analysis Period (min) 15			

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

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

Splits and Phases: 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave



Lane Group	NBR	NBR2	SBL2	SBL	SBT	SBR	SBR2	NEL2	NEL	NET	NER	NER2
Total Split (s)			32.0	32.0	32.0			13.0	13.0	36.0		
Total Split (%)			21.3%	21.3%	21.3%			8.7%	8.7%	24.0%		
Maximum Green (s)			26.0	26.0	26.0			7.0	7.0	30.0		
Yellow Time (s)			3.0	3.0	3.0			4.0	4.0	4.0		
All-Red Time (s)			3.0	3.0	3.0			2.0	2.0	2.0		
Lost Time Adjust (s)					0.5				0.5	0.5		
Total Lost Time (s)					6.5				6.5	6.5		
Lead/Lag			Lead	Lead	Lead			Lead	Lead			
Lead-Lag Optimize?												
Vehicle Extension (s)			3.0	3.0	3.0			3.0	3.0	3.0		
Recall Mode			None	None	None			None	None	None		
Walk Time (s)										7.0		
Flash Dont Walk (s)										25.0		
Pedestrian Calls (#/hr)										0		
Act Effct Green (s)					6.7				30.0	30.0		
Actuated g/C Ratio					0.06				0.28	0.28		
v/c Ratio					0.21				1.17	0.30		
Control Delay					58.7				157.9	36.7		
Queue Delay					0.0				0.0	0.0		
Total Delay					58.7				157.9	36.7		
LOS					E				F	D		
Approach Delay					58.7					108.0		
Approach LOS					E					F		
Queue Length 50th (ft)					12				~104	70		
Queue Length 95th (ft)					41				#316	154		
Internal Link Dist (ft)					517					1256		
Turn Bay Length (ft)									200			
Base Capacity (vph)					351				165	457		
Starvation Cap Reductn					0				0	0		
Spillback Cap Reductn					0				0	0		
Storage Cap Reductn					0				0	0		
Reduced v/c Ratio					0.05				1.17	0.30		

Intersection Summary

Lane Group	SWL2	SWL	SWT	SWR	SWR2
Total Split (s)	23.0	23.0	23.0		
Total Split (%)	15.3%	15.3%	15.3%		
Maximum Green (s)	17.0	17.0	17.0		
Yellow Time (s)	4.0	4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0		
Lost Time Adjust (s)		0.5	0.5		
Total Lost Time (s)		6.5	6.5		
Lead/Lag	Lag	Lag	Lag		
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0		
Recall Mode	None	None	None		
Walk Time (s)					
Flash Dont Walk (s)					
Pedestrian Calls (#/hr)					
Act Effct Green (s)		16.8	16.8		
Actuated g/C Ratio		0.16	0.16		
v/c Ratio		0.27	1.68		
Control Delay		50.0	351.7		
Queue Delay		0.0	0.0		
Total Delay		50.0	351.7		
LOS		D	F		
Approach Delay			319.8		
Approach LOS			F		
Queue Length 50th (ft)		28	~391		
Queue Length 95th (ft)		77	#719		
Internal Link Dist (ft)			3088		
Turn Bay Length (ft)		150			
Base Capacity (vph)		178	242		
Starvation Cap Reductn		0	0		
Spillback Cap Reductn		0	0		
Storage Cap Reductn		0	0		
Reduced v/c Ratio		0.27	1.68		

Intersection Summary

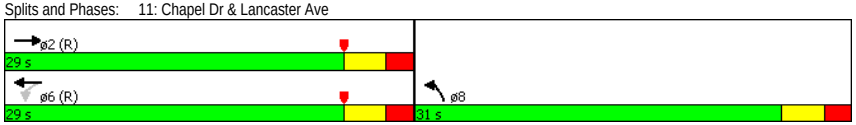
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1089	122	20	800	85	19
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	12	12
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt	0.985				0.975	
Flt Protected				0.999	0.961	
Satd. Flow (prot)	3193	0	0	3238	1653	0
Flt Permitted				0.906	0.961	
Satd. Flow (perm)	3193	0	0	2937	1653	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	23				18	
Link Speed (mph)	35			35	25	
Link Distance (ft)	1609			1291	319	
Travel Time (s)	31.3			25.1	8.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1184	133	22	870	92	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1317	0	0	892	113	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	10			10	10	
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.12	1.12	1.07	1.07
Turning Speed (mph)		9	15		15	9
Number of Detectors	1		1	1	1	
Detector Template	Thru		Left	Thru	Left	
Leading Detector (ft)	37		20	37	37	
Trailing Detector (ft)	-3		0	-3	-3	
Detector 1 Position(ft)	-3		0	-3	-3	
Detector 1 Size(ft)	40		20	40	40	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Detector Phase	2		6	6	8	
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	4.0	
Minimum Split (s)	21.0		21.0	21.0	28.0	
Total Split (s)	29.0		29.0	29.0	31.0	
Total Split (%)	48.3%		48.3%	48.3%	51.7%	
Maximum Green (s)	24.0		24.0	24.0	26.0	
Yellow Time (s)	3.0		3.0	3.0	3.0	

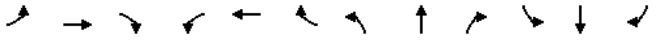
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.5			0.5	0.5	
Total Lost Time (s)	5.5			5.5	5.5	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	C-Max		C-Max	C-Max	None	
Walk Time (s)	10.0		10.0	10.0	7.0	
Flash Dont Walk (s)	0.0		0.0	0.0	16.0	
Pedestrian Calls (#/hr)	0		0	0	0	
Act Effct Green (s)	43.7			43.7	8.5	
Actuated g/C Ratio	0.73			0.73	0.14	
v/c Ratio	0.57			0.42	0.45	
Control Delay	6.6			2.1	25.2	
Queue Delay	0.0			0.0	0.0	
Total Delay	6.6			2.1	25.2	
LOS	A			A	C	
Approach Delay	6.6			2.1	25.2	
Approach LOS	A			A	C	
Queue Length 50th (ft)	107			1	32	
Queue Length 95th (ft)	199			m2	68	
Internal Link Dist (ft)	1529			1211	239	
Turn Bay Length (ft)						
Base Capacity (vph)	2330			2138	712	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.57			0.42	0.16	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 26 (43%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.57
Intersection Signal Delay: 5.8 Intersection LOS: A
Intersection Capacity Utilization 53.8% ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Chapel Dr & Lancaster Ave





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	937	91	95	684	31	63	123	76	65	232	73
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)		0%			3%			1%			0%	
Storage Length (ft)	140		0	70		0	105		0	65		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.993			0.943			0.964	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1565	3089	0	1541	3061	0	1557	1545	0	1565	1588	0
Flt Permitted	0.270			0.097			0.252			0.480		
Satd. Flow (perm)	445	3089	0	157	3061	0	413	1545	0	791	1588	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1291			2034			183			973	
Travel Time (s)		25.1			39.6			5.0			26.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	84	986	96	100	720	33	66	129	80	68	244	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	84	1082	0	100	753	0	66	209	0	68	321	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)		10			10			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane												
Headway Factor	1.17	1.17	1.17	1.19	1.19	1.19	1.18	1.18	1.18	1.17	1.17	1.17
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	37	37		37	37		37	37		37	37	
Trailing Detector (ft)	-3	-3		-3	-3		-3	-3		-3	-3	
Detector 1 Position(ft)	-3	-3		-3	-3		-3	-3		-3	-3	
Detector 1 Size(ft)	40	40		40	40		40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	34.0		3.0	34.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	13.0	40.0		13.0	40.0		13.0	13.0		13.0	13.0	

Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	24.0
Minimum Split (s)	26.0

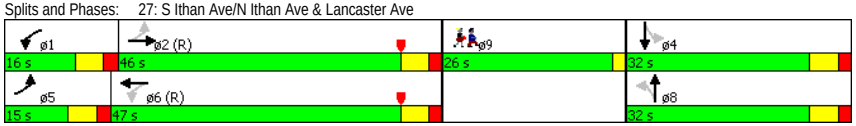
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)	15.0	46.0		16.0	47.0		32.0	32.0		32.0	32.0	
Total Split (%)	12.5%	38.3%		13.3%	39.2%		26.7%	26.7%		26.7%	26.7%	
Maximum Green (s)	9.0	40.0		10.0	41.0		26.0	26.0		26.0	26.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	53.6	45.9		56.5	49.1		25.3	25.3		25.3	25.3	
Actuated g/C Ratio	0.45	0.38		0.47	0.41		0.21	0.21		0.21	0.21	
v/c Ratio	0.31	0.92		0.58	0.60		0.77	0.64		0.41	0.96	
Control Delay	22.0	50.1		36.6	26.8		94.2	53.4		49.4	87.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	22.0	50.1		36.6	26.8		94.2	53.4		49.4	87.8	
LOS	C	D		D	C		F	D		D	F	
Approach Delay		48.1			27.9			63.2			81.1	
Approach LOS		D			C			E			F	
Queue Length 50th (ft)	35	~500		49	196		48	149		46	247	
Queue Length 95th (ft)	m63	#640		m105	258		#131	234		94	#428	
Internal Link Dist (ft)		1211			1954			103			893	
Turn Bay Length (ft)	140			70			105			65		
Base Capacity (vph)	281	1182		183	1253		87	328		168	337	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.30	0.92		0.55	0.60		0.76	0.64		0.40	0.95	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 48.0 Intersection LOS: D
Intersection Capacity Utilization 78.9% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 27: S Ithan Ave/N Ithan Ave & Lancaster Ave



Lane Group	ø9
Total Split (s)	26.0
Total Split (%)	22%
Maximum Green (s)	24.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	9.0
Flash Dont Walk (s)	15.0
Pedestrian Calls (#/hr)	45
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

HCM 2010 TWSC
2: County Line Rd & N Ithan Ave 9/17/2014

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	SBL	SBR	NWL	NWR
Vol, veh/h	218	36	296	302	23	159
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	0	-
Veh in Median Storage, #	0	-	0	-	0	-
Grade, %	0	-	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	232	38	315	321	24	169

Major/Minor	Minor2		Major2		Minor1	
Conflicting Flow All	85	0	0	-	19	0
Stage 1	0	-	-	-	0	-
Stage 2	85	-	-	-	19	-
Critical Hdwy	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %				-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	SB	NW
HCM Control Delay, s		0	
HCM LOS	-		-

Minor Lane/Major Mvmt	NWLn1	EBLn1	SBL	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	-	-
HCM Lane LOS	-	-	-	-
HCM 95th %tile Q(veh)	-	-	-	-

HCM 2010 TWSC
15: Conestoga Rd & Spring Mill Rd 9/17/2014

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Vol, veh/h	10	646	607	3	17	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	10	673	632	3	18	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	635	0	-	0	1328	634
Stage 1	-	-	-	-	634	-
Stage 2	-	-	-	-	694	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	953	-	-	-	172	481
Stage 1	-	-	-	-	530	-
Stage 2	-	-	-	-	498	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	953	-	-	-	169	481
Mov Cap-2 Maneuver	-	-	-	-	169	-
Stage 1	-	-	-	-	530	-
Stage 2	-	-	-	-	490	-

Approach	EB	WB	SW
HCM Control Delay, s	0.1	0	23.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SWLn1
Capacity (veh/h)	953	-	-	-	218
HCM Lane V/C Ratio	0.011	-	-	-	0.124
HCM Control Delay (s)	8.8	0	-	-	23.8
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.4

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	36	494	17	17	456	16	15	8	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1
Mvmt Flow	38	515	18	18	475	17	16	8	18

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	492	0	0	532	0	0	1153	1125	523
Stage 1	-	-	-	-	-	-	598	598	-
Stage 2	-	-	-	-	-	-	555	527	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309
Pot Cap-1 Maneuver	1077	-	-	1041	-	-	175	206	556
Stage 1	-	-	-	-	-	-	491	492	-
Stage 2	-	-	-	-	-	-	518	530	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1077	-	-	1041	-	-	139	191	556
Mov Cap-2 Maneuver	-	-	-	-	-	-	139	191	-
Stage 1	-	-	-	-	-	-	466	467	-
Stage 2	-	-	-	-	-	-	443	517	-

Approach	EB	WB	NB
HCM Control Delay, s	0.6	0.3	24.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	222	1077	-	-	1041	-	-	334
HCM Lane V/C Ratio	0.188	0.035	-	-	0.017	-	-	0.243
HCM Control Delay (s)	24.9	8.5	0	-	8.5	0	-	19.2
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.7	0.1	-	-	0.1	-	-	0.9

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	9	17	52
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	96	96	96
Heavy Vehicles, %	1	1	1
Mvmt Flow	9	18	54

Major/Minor	Minor2		
Conflicting Flow All	1130	1126	483
Stage 1	519	519	-
Stage 2	611	607	-
Critical Hdwy	7.11	6.51	6.21
Critical Hdwy Stg 1	6.11	5.51	-
Critical Hdwy Stg 2	6.11	5.51	-
Follow-up Hdwy	3.509	4.009	3.309
Pot Cap-1 Maneuver	182	206	586
Stage 1	542	534	-
Stage 2	483	488	-
Platoon blocked, %			
Mov Cap-1 Maneuver	161	191	586
Mov Cap-2 Maneuver	161	191	-
Stage 1	515	521	-
Stage 2	436	464	-

Approach	SB
HCM Control Delay, s	19.2
HCM LOS	C

Minor Lane/Major Mvmt

HCM 2010 TWSC
38: County Line Rd & N Ithan Ave 9/17/2014

Intersection	
Int Delay, s/veh	55.5

Movement	NBT	NBR	SBL	SBT	SWL	SWR
Vol, veh/h	264	115	179	483	112	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	281	122	190	514	119	65

Major/Minor	Major1		Minor2		Minor1	
Conflicting Flow All	0	0	374	403	599	342
Stage 1	-	-	0	0	342	-
Stage 2	-	-	374	403	257	-
Critical Hdwy	-	-	6.41	6.51	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	5.41	5.51	-	-
Follow-up Hdwy	-	-	3.509	4.009	3.509	3.309
Pot Cap-1 Maneuver	-	-	629	538	466	703
Stage 1	-	-	-	-	722	-
Stage 2	-	-	698	601	-	-
Platoon blocked, %	-	-				
Mov Cap-1 Maneuver	-	-	629	0	466	703
Mov Cap-2 Maneuver	-	-	629	0	466	-
Stage 1	-	-	-	0	722	-
Stage 2	-	-	698	0	-	-

Approach	NB	SB	SW
HCM Control Delay, s	0	97.7	15.4
HCM LOS		F	C

Minor Lane/Major Mvmt	NBT	NBR	SBLn1	SWLn1
Capacity (veh/h)	-	-	629	529
HCM Lane V/C Ratio	-	-	1.12	0.348
HCM Control Delay (s)	-	-	97.7	15.4
HCM Lane LOS	-	-	F	C
HCM 95th %tile Q(veh)	-	-	21.6	1.5

HCM 2010 TWSC
43: County Line Rd & Roberts Rd 9/17/2014

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	36	25	1	9	25	11	4	501	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1
Mvmt Flow	38	26	1	9	26	12	4	527	29

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	1014	1294	368	925	1311	278	737	0	0
Stage 1	729	729	-	551	551	-	-	-	-
Stage 2	285	565	-	374	760	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.52	6.52	6.92	4.12	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.52	5.52	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.52	5.52	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.51	4.01	3.31	2.21	-	-
Pot Cap-1 Maneuver	194	163	632	225	159	722	871	-	-
Stage 1	383	429	-	489	516	-	-	-	-
Stage 2	701	509	-	622	415	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	163	159	632	192	155	722	871	-	-
Mov Cap-2 Maneuver	163	159	-	192	155	-	-	-	-
Stage 1	380	420	-	486	512	-	-	-	-
Stage 2	650	505	-	570	407	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	41.1	28.3	0.1
HCM LOS	E	D	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	871	-	-	163	201	1017	-	-
HCM Lane V/C Ratio	0.005	-	-	0.4	0.236	0.011	-	-
HCM Control Delay (s)	9.2	0	-	41.1	28.3	8.6	0.1	-
HCM Lane LOS	A	A	-	E	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.8	0.9	0	-	-

HCM 2010 TWSC
43: County Line Rd & Roberts Rd 9/17/2014

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	11	641	59
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	1	1	1
Mvmt Flow	12	675	62

Major/Minor	Major2		
Conflicting Flow All	557	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.21	-	-
Pot Cap-1 Maneuver	1017	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1017	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.2
HCM LOS	

Minor Lane/Major Mvmt

HCM 2010 TWSC
52: Airdale Rd & County Line Rd 9/17/2014

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	166	211	338	16	12	116
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	169	215	345	16	12	118

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	361	0	-	0	907	353
Stage 1	-	-	-	-	353	-
Stage 2	-	-	-	-	554	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1203	-	-	-	307	693
Stage 1	-	-	-	-	713	-
Stage 2	-	-	-	-	577	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1203	-	-	-	258	693
Mov Cap-2 Maneuver	-	-	-	-	258	-
Stage 1	-	-	-	-	713	-
Stage 2	-	-	-	-	485	-

Approach	EB	WB	SB
HCM Control Delay, s	3.7	0	12.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1203	-	-	-	598
HCM Lane V/C Ratio	0.141	-	-	-	0.218
HCM Control Delay (s)	8.5	0	-	-	12.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.5	-	-	-	0.8

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	16	18	51	179	153	122
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	17	19	53	186	159	127

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	516	223	286	0	-	0
Stage 1	223	-	-	-	-	-
Stage 2	293	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	523	822	1288	-	-	-
Stage 1	819	-	-	-	-	-
Stage 2	762	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	499	822	1288	-	-	-
Mov Cap-2 Maneuver	499	-	-	-	-	-
Stage 1	819	-	-	-	-	-
Stage 2	727	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.1	1.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1288	-	630	-	-
HCM Lane V/C Ratio	0.041	-	0.056	-	-
HCM Control Delay (s)	7.9	0	11.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	34	130	5	51	267	21	8	3	37
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	37	143	5	56	293	23	9	3	41

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	316	0	0	148	0	0	644	649	146
Stage 1	-	-	-	-	-	-	220	220	-
Stage 2	-	-	-	-	-	-	424	429	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1244	-	-	1434	-	-	386	389	901
Stage 1	-	-	-	-	-	-	782	721	-
Stage 2	-	-	-	-	-	-	608	584	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1244	-	-	1434	-	-	356	358	901
Mov Cap-2 Maneuver	-	-	-	-	-	-	356	358	-
Stage 1	-	-	-	-	-	-	757	698	-
Stage 2	-	-	-	-	-	-	568	556	-

Approach	EB	WB	NB
HCM Control Delay, s	1.6	1.1	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	667	1244	-	-	1434	-	-	574
HCM Lane V/C Ratio	0.079	0.03	-	-	0.039	-	-	0.033
HCM Control Delay (s)	10.9	8	0	-	7.6	0	-	11.5
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0.1	-	-	0.1

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	4	0	13
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	91	91	91
Heavy Vehicles, %	2	2	2
Mvmt Flow	4	0	14

Major/Minor	Minor2		
Conflicting Flow All	659	640	305
Stage 1	417	417	-
Stage 2	242	223	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	377	393	735
Stage 1	613	591	-
Stage 2	762	719	-
Platoon blocked, %			
Mov Cap-1 Maneuver	336	362	735
Mov Cap-2 Maneuver	336	362	-
Stage 1	593	563	-
Stage 2	701	696	-

Approach	SB
HCM Control Delay, s	11.5
HCM LOS	B

Minor Lane/Major Mvmt

HCM research expects at least one 'Stop' controlled approach at the intersection.

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	149	258	0	109	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	-1	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	162	280	0	118	58

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	280	0	-	0	442	280
Stage 1	-	-	-	-	280	-
Stage 2	-	-	-	-	162	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1283	-	-	-	573	759
Stage 1	-	-	-	-	767	-
Stage 2	-	-	-	-	867	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1283	-	-	-	573	759
Mov Cap-2 Maneuver	-	-	-	-	573	-
Stage 1	-	-	-	-	767	-
Stage 2	-	-	-	-	867	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	13
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1283	-	-	-	623
HCM Lane V/C Ratio	-	-	-	-	0.283
HCM Control Delay (s)	0	-	-	-	13
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	1.2

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	208	0	0	418	20	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	-1	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	226	0	0	454	22	59

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	226	0	680	226
Stage 1	-	-	-	-	226	-
Stage 2	-	-	-	-	454	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1342	-	417	813
Stage 1	-	-	-	-	812	-
Stage 2	-	-	-	-	640	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1342	-	417	813
Mov Cap-2 Maneuver	-	-	-	-	417	-
Stage 1	-	-	-	-	812	-
Stage 2	-	-	-	-	640	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	647	-	-	1342	-
HCM Lane V/C Ratio	0.124	-	-	-	-
HCM Control Delay (s)	11.4	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1203	46	47	900	0	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	3	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1467	56	57	1098	0	45

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1523	0	2158	762
Stage 1	-	-	-	-	1495	-
Stage 2	-	-	-	-	663	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	444	-	42	352
Stage 1	-	-	-	-	175	-
Stage 2	-	-	-	-	480	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	444	-	28	352
Mov Cap-2 Maneuver	-	-	-	-	28	-
Stage 1	-	-	-	-	175	-
Stage 2	-	-	-	-	322	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.7	16.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	352	-	-	444	-
HCM Lane V/C Ratio	0.128	-	-	0.129	-
HCM Control Delay (s)	16.7	-	-	14.3	2.1
HCM Lane LOS	C	-	-	B	A
HCM 95th %tile Q(veh)	0.4	-	-	0.4	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	SBL	SBR	NWL	NWR
Vol, veh/h	218	36	296	302	23	159
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	0	-
Veh in Median Storage, #	0	-	0	-	0	-
Grade, %	0	-	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	232	38	315	321	24	169

Major/Minor	Minor2		Major2		Minor1	
Conflicting Flow All	85	0	0	-	19	0
Stage 1	0	-	-	-	0	-
Stage 2	85	-	-	-	19	-
Critical Hdwy	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %				-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	SB	NW
HCM Control Delay, s		0	
HCM LOS	-		-

Minor Lane/Major Mvmt	NWLn1	EBLn1	SBL	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	-	-
HCM Lane LOS	-	-	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	55.5

Movement	NBT	NBR	SBL	SBT	SWL	SWR
Vol, veh/h	264	115	179	483	112	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	281	122	190	514	119	65

Major/Minor	Major1		Minor2		Minor1	
Conflicting Flow All	0	0	374	403	599	342
Stage 1	-	-	0	0	342	-
Stage 2	-	-	374	403	257	-
Critical Hdwy	-	-	6.41	6.51	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	5.41	5.51	-	-
Follow-up Hdwy	-	-	3.509	4.009	3.509	3.309
Pot Cap-1 Maneuver	-	-	629	538	466	703
Stage 1	-	-	-	-	722	-
Stage 2	-	-	698	601	-	-
Platoon blocked, %	-	-				
Mov Cap-1 Maneuver	-	-	629	0	466	703
Mov Cap-2 Maneuver	-	-	629	0	466	-
Stage 1	-	-	-	0	722	-
Stage 2	-	-	698	0	-	-

Approach	NB	SB	SW
HCM Control Delay, s	0	97.7	15.4
HCM LOS		F	C

Minor Lane/Major Mvmt	NBT	NBR	SBLn1	SWLn1
Capacity (veh/h)	-	-	629	529
HCM Lane V/C Ratio	-	-	1.12	0.348
HCM Control Delay (s)	-	-	97.7	15.4
HCM Lane LOS	-	-	F	C
HCM 95th %tile Q(veh)	-	-	21.6	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	64	305	94	56	244	52	72	202	38	65	396	45
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	180.0	178.9	180.0	180.0	176.6	180.0	180.0	180.0	180.0	180.0	177.3	180.0
Adj Flow Rate, veh/h	89	339	109	78	280	81	89	259	58	86	445	65
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.72	0.90	0.86	0.72	0.87	0.64	0.81	0.78	0.66	0.76	0.89	0.69
Percent Heavy Veh, %	1	1	1	3	3	3	0	0	0	1	1	1
Cap, veh/h	127	348	103	122	332	87	139	350	69	131	489	67
Arrive On Green	0.38	0.38	0.38	0.38	0.38	0.38	0.41	0.41	0.41	0.41	0.41	0.41
Sat Flow, veh/h	153	929	276	137	885	231	161	856	170	152	1198	165
Grp Volume(v), veh/h	537	0	0	439	0	0	406	0	0	596	0	0
Grp Sat Flow(s),veh/h/ln	1358	0	0	1252	0	0	1187	0	0	1515	0	0
Q Serve(g_s), s	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.0
Cycle Q Clear(g_c), s	22.5	0.0	0.0	19.6	0.0	0.0	17.1	0.0	0.0	23.1	0.0	0.0
Prop In Lane	0.17		0.20	0.18		0.18	0.22		0.14	0.14		0.11
Lane Grp Cap(c), veh/h	579	0	0	540	0	0	558	0	0	687	0	0
V/C Ratio(X)	0.93	0.00	0.00	0.81	0.00	0.00	0.73	0.00	0.00	0.87	0.00	0.00
Avail Cap(c_a), veh/h	579	0	0	540	0	0	558	0	0	687	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.47	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	18.8	0.0	0.0	16.8	0.0	0.0	14.4	0.0	0.0	17.1	0.0	0.0
Incr Delay (d2), s/veh	13.2	0.0	0.0	12.6	0.0	0.0	4.2	0.0	0.0	10.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.9	0.0	0.0	8.7	0.0	0.0	6.4	0.0	0.0	11.7	0.0	0.0
LnGrp Delay(d),s/veh	32.0	0.0	0.0	29.4	0.0	0.0	18.6	0.0	0.0	28.0	0.0	0.0
LnGrp LOS	C			C			B			C		
Approach Vol, veh/h		537			439			406			596	
Approach Delay, s/veh		32.0			29.4			18.6			28.0	
Approach LOS		C			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		29.0		31.0		29.0		31.0
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		23.0		25.0		23.0		25.0
Max Q Clear Time (g_c+I1), s		24.5		25.1		21.6		19.1
Green Ext Time (p_c), s		0.0		0.0		0.7		1.5

Intersection Summary	
HCM 2010 Ctrl Delay	27.5
HCM 2010 LOS	C

HCM 2010 methodology does not support more than 4 approaches.

HCM 2010 Signalized Intersection Summary
11: Chapel Dr & Lancaster Ave

9/17/2014

Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations								
Volume (veh/h)	1105	122	20	812	85	19		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	176.5	180.0	180.0	176.5	176.5	180.0		
Adj Flow Rate, veh/h	1201	133	22	883	92	21		
Adj No. of Lanes	2	0	0	2	0	0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	0	0		
Cap, veh/h	1995	220	109	2087	97	22		
Arrive On Green	0.65	0.65	1.00	1.00	0.07	0.07		
Sat Flow, veh/h	3134	336	24	3267	1327	303		
Grp Volume(v), veh/h	660	674	476	429	114	0		
Grp Sat Flow(s),veh/h/ln	1676	1705	1685	1526	1645	0		
Q Serve(g_s), s	9.1	9.1	0.0	0.0	2.8	0.0		
Cycle Q Clear(g_c), s	9.1	9.1	0.0	0.0	2.8	0.0		
Prop In Lane		0.20	0.05		0.81	0.18		
Lane Grp Cap(c), veh/h	1098	1117	1197	999	120	0		
V/C Ratio(X)	0.60	0.60	0.40	0.43	0.95	0.00		
Avail Cap(c_a), veh/h	1098	1117	1197	999	915	0		
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00		
Upstream Filter(I)	0.41	0.41	0.75	0.75	1.00	0.00		
Uniform Delay (d), s/veh	4.0	4.0	0.0	0.0	18.7	0.0		
Incr Delay (d2), s/veh	1.0	1.0	0.7	1.0	27.0	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	4.3	4.4	0.2	0.3	2.1	0.0		
LnGrp Delay(d),s/veh	5.0	5.0	0.7	1.0	45.7	0.0		
LnGrp LOS	A	A	A	A	D			
Approach Vol, veh/h	1334			905	114			
Approach Delay, s/veh	5.0			0.9	45.7			
Approach LOS	A			A	D			

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		51.5				51.5		8.5
Change Period (Y+Rc), s		5.0				5.0		5.0
Max Green Setting (Gmax), s		27.0				27.0		23.0
Max Q Clear Time (g_c+I1), s		11.1				2.0		4.8
Green Ext Time (p_c), s		8.8				11.1		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		5.4
HCM 2010 LOS		A

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
16: Sproul Rd & Conestoga Rd

9/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	105	549	217	27	522	47	105	185	27	51	291	82
Number	7	4	14	3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	178.2	178.2	180.0	182.7	182.7	184.5	177.3	177.3	179.1	180.9	179.1	180.9
Adj Flow Rate, veh/h	111	578	0	28	549	0	111	195	28	54	306	86
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	213	799	0	250	589	0	192	614	88	89	324	86
Arrive On Green	0.06	0.45	0.00	0.32	0.32	0.00	0.06	0.40	0.40	0.27	0.27	0.27
Sat Flow, veh/h	1697	1782	0	861	1827	0	1689	1517	218	138	1203	320
Grp Volume(v), veh/h	111	578	0	28	549	0	111	0	223	446	0	0
Grp Sat Flow(s),veh/h/ln	1697	1782	0	861	1827	0	1689	0	1735	1661	0	0
Q Serve(g_s), s	3.3	20.7	0.0	2.1	22.7	0.0	3.6	0.0	6.9	14.6	0.0	0.0
Cycle Q Clear(g_c), s	3.3	20.7	0.0	13.0	22.7	0.0	3.6	0.0	6.9	20.9	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.13	0.12		0.19
Lane Grp Cap(c), veh/h	213	799	0	250	589	0	192	0	702	498	0	0
V/C Ratio(X)	0.52	0.72	0.00	0.11	0.93	0.00	0.58	0.00	0.32	0.89	0.00	0.00
Avail Cap(c_a), veh/h	260	799	0	250	589	0	233	0	744	498	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	19.3	17.6	0.0	26.9	25.6	0.0	20.9	0.0	15.9	28.4	0.0	0.0
Incr Delay (d2), s/veh	2.0	5.6	0.0	0.9	23.7	0.0	2.7	0.0	0.3	18.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	11.4	0.0	0.6	15.3	0.0	1.7	0.0	3.3	12.1	0.0	0.0
LnGrp Delay(d),s/veh	21.3	23.2	0.0	27.8	49.3	0.0	23.6	0.0	16.1	46.8	0.0	0.0
LnGrp LOS	C	C		C	D		C		B	D		
Approach Vol, veh/h		689			577			334			446	
Approach Delay, s/veh		22.9			48.3			18.6			46.8	
Approach LOS		C			D			B			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6	7	8
Phs Duration (G+Y+Rc), s	10.6	27.0		42.4		37.6	9.8	32.6
Change Period (Y+Rc), s	5.5	5.5		5.0		5.5	5.0	5.0
Max Green Setting (Gmax), s	7.0	21.5		35.5		34.0	7.0	23.5
Max Q Clear Time (g_c+I1), s	5.6	22.9		22.7		8.9	5.3	24.7
Green Ext Time (p_c), s	0.0	0.0		5.8		2.4	0.0	0.0

Intersection Summary		
HCM 2010 Ctrl Delay		34.6
HCM 2010 LOS		C

HCM 2010 Signalized Intersection Summary
25: S Ithan Ave & Conestoga Rd

9/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	64	520	7	11	469	40	7	18	6	53	87	136
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	185.4	183.6	185.4	176.4	174.7	176.4	176.3	174.5	176.3	184.4	182.6	184.4
Adj Flow Rate, veh/h	73	591	8	12	533	45	8	20	7	60	99	155
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	144	753	10	87	753	63	141	254	74	144	141	184
Arrive On Green	0.48	0.48	0.48	0.48	0.48	0.48	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	113	1572	20	10	1570	131	181	1106	322	208	615	802
Grp Volume(v), veh/h	672	0	0	590	0	0	35	0	0	314	0	0
Grp Sat Flow(s),veh/h/ln	1705	0	0	1711	0	0	1608	0	0	1626	0	0
Q Serve(g_s), s	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9	0.0	0.0
Cycle Q Clear(g_c), s	14.7	0.0	0.0	12.1	0.0	0.0	0.7	0.0	0.0	8.2	0.0	0.0
Prop In Lane	0.11		0.01	0.02		0.08	0.23		0.20	0.19		0.49
Lane Grp Cap(c), veh/h	907	0	0	902	0	0	468	0	0	469	0	0
V/C Ratio(X)	0.74	0.00	0.00	0.65	0.00	0.00	0.07	0.00	0.00	0.67	0.00	0.00
Avail Cap(c_a), veh/h	1349	0	0	1359	0	0	644	0	0	657	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.7	0.0	0.0	9.2	0.0	0.0	13.5	0.0	0.0	16.4	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	0.0	0.8	0.0	0.0	0.1	0.0	0.0	1.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.2	0.0	0.0	5.8	0.0	0.0	0.3	0.0	0.0	3.9	0.0	0.0
LnGrp Delay(d),s/veh	10.9	0.0	0.0	10.0	0.0	0.0	13.6	0.0	0.0	18.0	0.0	0.0
LnGrp LOS	B			B			B			B		
Approach Vol, veh/h		672			590			35			314	
Approach Delay, s/veh		10.9			10.0			13.6			18.0	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		27.9		16.8		27.9		16.8
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		34.0		16.0		34.0		16.0
Max Q Clear Time (g_c+I1), s		14.1		2.7		16.7		10.2
Green Ext Time (p_c), s		5.5		1.1		5.2		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	12.0
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
27: S Ithan Ave/N Ithan Ave & Lancaster Ave

9/17/2014

HCM 2010 methodology does not support exclusive ped or hold phases.

HCM 2010 Signalized Intersection Summary
33: Williams Rd/Garrett Ave & Conestoga Rd

9/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	26	495	9	12	493	28	16	1	11	27	12	52
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	187.2	187.2	187.2	187.2	187.2	187.2	180.0	180.0	180.0	172.8	172.8	172.8
Adj Flow Rate, veh/h	28	538	10	13	536	30	17	1	12	29	13	57
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	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
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	88	1249	23	67	1235	68	141	25	52	100	26	71
Arrive On Green	0.71	0.71	0.71	0.71	0.71	0.71	0.08	0.08	0.08	0.08	0.08	0.08
Sat Flow, veh/h	40	1751	32	13	1732	95	634	296	620	324	308	858
Grp Volume(v), veh/h	576	0	0	579	0	0	30	0	0	99	0	0
Grp Sat Flow(s),veh/h/ln	1823	0	0	1841	0	0	1550	0	0	1491	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0
Cycle Q Clear(g_c), s	8.2	0.0	0.0	8.3	0.0	0.0	1.1	0.0	0.0	4.1	0.0	0.0
Prop In Lane	0.05		0.02	0.02		0.05	0.57		0.40	0.29		0.58
Lane Grp Cap(c), veh/h	1359	0	0	1370	0	0	217	0	0	197	0	0
V/C Ratio(X)	0.42	0.00	0.00	0.42	0.00	0.00	0.14	0.00	0.00	0.50	0.00	0.00
Avail Cap(c_a), veh/h	1359	0	0	1370	0	0	401	0	0	385	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.8	0.0	0.0	3.8	0.0	0.0	27.3	0.0	0.0	28.7	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.0	0.0	1.0	0.0	0.0	0.4	0.0	0.0	2.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.0	0.0	4.5	0.0	0.0	0.5	0.0	0.0	1.9	0.0	0.0
LnGrp Delay(d),s/veh	4.8	0.0	0.0	4.8	0.0	0.0	27.7	0.0	0.0	31.5	0.0	0.0
LnGrp LOS	A			A			C			C		
Approach Vol, veh/h		576			579			30			99	
Approach Delay, s/veh		4.8			4.8			27.7			31.5	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		52.0		11.8		52.0		11.8
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		46.0		14.0		46.0		14.0
Max Q Clear Time (g_c+I1), s		10.2		6.1		10.3		3.1
Green Ext Time (p_c), s		5.6		0.3		5.6		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	7.4
HCM 2010 LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

HCM 2010 Signalized Intersection Summary
51: Lowrys Ln & Lancaster Ave

9/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	1155	22	15	900	4	19	36	15	97	70	71
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	180.0	178.2	180.0	177.3	175.5	177.3	190.0	188.1	190.0	188.1	186.3	188.1
Adj Flow Rate, veh/h	2	1255	24	16	978	4	21	39	16	105	76	77
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	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
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	65	1989	38	76	1956	8	131	201	67	196	108	91
Arrive On Green	1.00	1.00	1.00	0.60	0.60	0.60	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	1	3327	64	16	3271	13	263	1071	356	562	574	483
Grp Volume(v), veh/h	673	0	608	516	0	482	76	0	0	258	0	0
Grp Sat Flow(s),veh/h/ln	1781	0	1611	1705	0	1595	1689	0	0	1619	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	9.8	0.0	0.0	0.0	6.6	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	9.4	0.0	9.8	2.0	0.0	0.0	8.6	0.0	0.0
Prop In Lane	0.00		0.04	0.03		0.01	0.28		0.21	0.41		0.30
Lane Grp Cap(c), veh/h	1129	0	963	1086	0	954	399	0	0	395	0	0
V/C Ratio(X)	0.60	0.00	0.63	0.48	0.00	0.51	0.19	0.00	0.00	0.65	0.00	0.00
Avail Cap(c_a), veh/h	1129	0	963	1086	0	954	515	0	0	507	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.41	0.00	0.41	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	6.4	0.0	6.5	19.3	0.0	0.0	21.9	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.0	1.3	1.5	0.0	1.9	0.2	0.0	0.0	2.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.3	4.9	0.0	4.7	1.0	0.0	0.0	4.0	0.0	0.0
LnGrp Delay(d),s/veh	1.0	0.0	1.3	7.9	0.0	8.4	19.5	0.0	0.0	23.8	0.0	0.0
LnGrp LOS	A		A	A		A	B			C		
Approach Vol, veh/h		1281			998			76			258	
Approach Delay, s/veh		1.1			8.1			19.5			23.8	
Approach LOS		A			A			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		44.0		16.0		44.0		16.0
Change Period (Y+Rc), s		6.0		5.0		6.0		5.0
Max Green Setting (Gmax), s		34.0		15.0		34.0		15.0
Max Q Clear Time (g_c+I1), s		2.0		10.6		11.8		4.0
Green Ext Time (p_c), s		12.2		0.5		10.6		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	6.6
HCM 2010 LOS	A

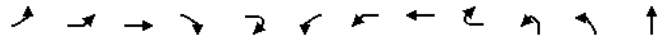
Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR2	NBL2	NBL	NBT
Lane Configurations												
Volume (vph)	4	248	980	30	280	2	22	848	33	7	52	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	11	11	14	10	12	12	12	10	10	10
Grade (%)			3%					-2%				1%
Storage Length (ft)		300		0			75				0	
Storage Lanes		1		1			1				0	
Taper Length (ft)		25					25				25	
Lane Util. Factor	0.95	1.00	0.95	0.95	1.00	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.996		0.850			0.994				0.975
Flt Protected		0.950					0.950					0.961
Satd. Flow (prot)	0	1541	3180	0	1576	0	1693	3366	0	0	0	1536
Flt Permitted		0.105					0.191					0.753
Satd. Flow (perm)	0	170	3180	0	1576	0	340	3366	0	0	0	1203
Right Turn on Red					Yes				Yes			
Satd. Flow (RTOR)					221			196				
Link Speed (mph)			35					35				25
Link Distance (ft)			577					1609				492
Travel Time (s)			11.2					31.3				13.4
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	4	256	1010	31	289	2	23	874	34	7	54	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	260	1041	0	289	0	25	908	0	0	0	75
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Right	Left	Left	Left	Right	Left	Left	Left
Median Width(ft)			12					12				0
Link Offset(ft)			0					0				0
Crosswalk Width(ft)			10					10				10
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.14	1.14	1.01	1.16	1.06	1.06	1.06	1.18	1.18	1.18
Turning Speed (mph)	15	15		9	9	15	15		9	15	15	
Number of Detectors	1	1	1		1	1	1	1		1	1	1
Detector Template	Left	Left	Thru		Right	Left	Left	Thru		Left	Left	Thru
Leading Detector (ft)	20	37	37		37	20	37	37		20	20	37
Trailing Detector (ft)	0	-3	-3		-3	0	-3	-3		0	0	-3
Detector 1 Position(ft)	0	-3	-3		-3	0	-3	-3		0	0	-3
Detector 1 Size(ft)	20	40	40		40	20	40	40		20	20	40
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	pm+pt	pm+pt	NA		Perm	Perm	Perm	NA		Perm	Perm	NA
Protected Phases	5	5	2					6				10
Permitted Phases	2	2			2	6	6			10	10	
Detector Phase	5	5	2		2	6	6	6		10	10	10
Switch Phase												
Minimum Initial (s)	3.0	3.0	15.0		15.0	15.0	15.0	15.0		3.0	3.0	3.0
Minimum Split (s)	13.0	13.0	21.0		21.0	21.0	21.0	21.0		13.0	13.0	13.0

Lane Group	NBR	NBR2	SBL2	SBL	SBT	SBR	SBR2	NEL2	NEL	NET	NER	NER2
Lane Configurations												
Volume (vph)	4	10	1	1	0	3	14	190	0	112	20	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	12	12	11	11	11
Grade (%)					-3%					3%		
Storage Length (ft)	0			0		0			200		0	
Storage Lanes	0			0		0			1		0	
Taper Length (ft)				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					0.879					0.976		
Flt Protected					0.995				0.950			
Satd. Flow (prot)	0	0	0	0	1462	0	0	0	1651	1640	0	0
Flt Permitted					0.982				0.125			
Satd. Flow (perm)	0	0	0	0	1443	0	0	0	217	1640	0	0
Right Turn on Red		No					No					No
Satd. Flow (RTOR)												
Link Speed (mph)					25					40		
Link Distance (ft)					597					1336		
Travel Time (s)					16.3					22.8		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	4	10	1	1	0	3	14	196	0	115	21	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	19	0	0	0	196	137	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Right	Right	Left	Left	Left	Right	Right	Left	Left	Left	Right	Right
Median Width(ft)					0					12		
Link Offset(ft)					0					0		
Crosswalk Width(ft)					10					10		
Two way Left Turn Lane												
Headway Factor	1.18	1.18	1.15	1.15	1.15	1.15	1.15	1.09	1.09	1.14	1.14	1.14
Turning Speed (mph)	9	9	15	15		9	9	15	15		9	9
Number of Detectors			1	1	1			1	1	1		
Detector Template			Left	Left	Thru			Left	Left	Thru		
Leading Detector (ft)			20	20	37			20	37	37		
Trailing Detector (ft)			0	0	-3			0	-3	-3		
Detector 1 Position(ft)			0	0	-3			0	-3	-3		
Detector 1 Size(ft)			20	20	40			20	40	40		
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel												
Detector 1 Extend (s)			0.0	0.0	0.0			0.0	0.0	0.0		
Detector 1 Queue (s)			0.0	0.0	0.0			0.0	0.0	0.0		
Detector 1 Delay (s)			0.0	0.0	0.0			0.0	0.0	0.0		
Turn Type			Perm	Perm	NA			pm+pt	pm+pt	NA		
Protected Phases					9			3	3	8		
Permitted Phases			9	9				8	8			
Detector Phase			9	9	9			3	3	8		
Switch Phase												
Minimum Initial (s)			3.0	3.0	3.0			3.0	3.0	3.0		
Minimum Split (s)			13.0	13.0	13.0			13.0	13.0	13.0		

Lane Group	SWL2	SWL	SWT	SWR	SWR2
Lane Configurations					
Volume (vph)	39	9	165	233	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10
Grade (%)			-7%		
Storage Length (ft)		150		0	
Storage Lanes		1		0	
Taper Length (ft)		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00
Frt			0.912		
Flt Protected		0.950			
Satd. Flow (prot)	0	1619	1555	0	0
Flt Permitted		0.669			
Satd. Flow (perm)	0	1140	1555	0	0
Right Turn on Red					No
Satd. Flow (RTOR)					
Link Speed (mph)			25		
Link Distance (ft)			3168		
Travel Time (s)			86.4		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	40	9	170	240	1
Shared Lane Traffic (%)					
Lane Group Flow (vph)	0	49	411	0	0
Enter Blocked Intersection	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Right
Median Width(ft)			12		
Link Offset(ft)			0		
Crosswalk Width(ft)			10		
Two way Left Turn Lane					
Headway Factor	1.12	1.12	1.12	1.12	1.12
Turning Speed (mph)	15	15		9	9
Number of Detectors	1	1	1		
Detector Template	Left	Left	Thru		
Leading Detector (ft)	20	37	37		
Trailing Detector (ft)	0	-3	-3		
Detector 1 Position(ft)	0	-3	-3		
Detector 1 Size(ft)	20	40	40		
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel					
Detector 1 Extend (s)	0.0	0.0	0.0		
Detector 1 Queue (s)	0.0	0.0	0.0		
Detector 1 Delay (s)	0.0	0.0	0.0		
Turn Type	Perm	Perm	NA		
Protected Phases			4		
Permitted Phases	4	4			
Detector Phase	4	4	4		
Switch Phase					
Minimum Initial (s)	3.0	3.0	3.0		
Minimum Split (s)	13.0	13.0	13.0		



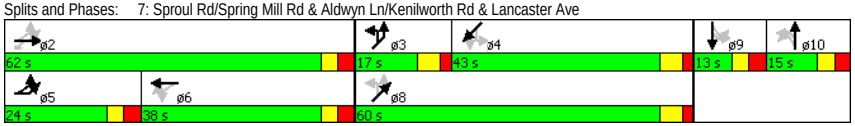
Lane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR2	NBL2	NBL	NBT
Total Split (s)	24.0	24.0	62.0		62.0	38.0	38.0	38.0		15.0	15.0	15.0
Total Split (%)	16.0%	16.0%	41.3%		41.3%	25.3%	25.3%	25.3%		10.0%	10.0%	10.0%
Maximum Green (s)	18.0	18.0	56.0		56.0	32.0	32.0	32.0		9.0	9.0	9.0
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)		0.5	0.5		0.5		0.5	0.5				0.5
Total Lost Time (s)		6.5	6.5		6.5		6.5	6.5				6.5
Lead/Lag	Lead	Lead				Lag	Lag	Lag		Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	Max		Max	None	None	None		None	None	None
Walk Time (s)			7.0		7.0	7.0	7.0	7.0				
Flash Dont Walk (s)			20.0		20.0	20.0	20.0	20.0				
Pedestrian Calls (#/hr)			0		0	0	0	0				
Act Effct Green (s)		55.6	55.6		55.6		31.6	31.6				8.5
Actuated g/C Ratio		0.38	0.38		0.38		0.22	0.22				0.06
v/c Ratio		1.13	0.85		0.39		0.34	1.02				1.07
Control Delay		136.2	49.6		10.1		64.8	79.6				188.7
Queue Delay		0.0	0.0		0.0		0.0	0.0				0.0
Total Delay		136.2	49.6		10.1		64.8	79.6				188.7
LOS		F	D		B		E	E				F
Approach Delay			56.6					79.2				188.7
Approach LOS			E					E				F
Queue Length 50th (ft)		~258	500		44		21	~425				~83
Queue Length 95th (ft)		#445	599		120		56	#563				#197
Internal Link Dist (ft)			497					1529				412
Turn Bay Length (ft)		300					75					
Base Capacity (vph)		230	1221		741		74	886				70
Starvation Cap Reductn		0	0		0		0	0				0
Spillback Cap Reductn		0	0		0		0	0				0
Storage Cap Reductn		0	0		0		0	0				0
Reduced v/c Ratio		1.13	0.85		0.39		0.34	1.02				1.07

Intersection Summary			
Area Type:	Other		
Cycle Length: 150			
Actuated Cycle Length: 144.8			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.13			
Intersection Signal Delay: 74.9		Intersection LOS: E	
Intersection Capacity Utilization 115.6%		ICU Level of Service H	
Analysis Period (min) 15			

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

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

Splits and Phases: 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave



Lane Group	NBR	NBR2	SBL2	SBL	SBT	SBR	SBR2	NEL2	NEL	NET	NER	NER2
Total Split (s)			13.0	13.0	13.0			17.0	17.0	60.0		
Total Split (%)			8.7%	8.7%	8.7%			11.3%	11.3%	40.0%		
Maximum Green (s)			7.0	7.0	7.0			11.0	11.0	54.0		
Yellow Time (s)			3.0	3.0	3.0			4.0	4.0	4.0		
All-Red Time (s)			3.0	3.0	3.0			2.0	2.0	2.0		
Lost Time Adjust (s)					0.5				0.5	0.5		
Total Lost Time (s)					6.5				6.5	6.5		
Lead/Lag			Lead	Lead	Lead			Lead	Lead			
Lead-Lag Optimize?												
Vehicle Extension (s)			3.0	3.0	3.0			3.0	3.0	3.0		
Recall Mode			None	None	None			None	None	None		
Walk Time (s)										7.0		
Flash Dont Walk (s)										25.0		
Pedestrian Calls (#/hr)										0		
Act Effct Green (s)					6.1				53.6	53.6		
Actuated g/C Ratio					0.04				0.37	0.37		
v/c Ratio					0.32				1.07	0.23		
Control Delay					83.2				120.9	33.7		
Queue Delay					0.0				0.0	0.0		
Total Delay					83.2				120.9	33.7		
LOS					F				F	C		
Approach Delay					83.2					85.1		
Approach LOS					F					F		
Queue Length 50th (ft)					18				~153	94		
Queue Length 95th (ft)					48				#322	150		
Internal Link Dist (ft)					517					1256		
Turn Bay Length (ft)									200			
Base Capacity (vph)					64				184	606		
Starvation Cap Reductn					0				0	0		
Spillback Cap Reductn					0				0	0		
Storage Cap Reductn					0				0	0		
Reduced v/c Ratio					0.30				1.07	0.23		

Intersection Summary

Lane Group	SWL2	SWL	SWT	SWR	SWR2
Total Split (s)	43.0	43.0	43.0		
Total Split (%)	28.7%	28.7%	28.7%		
Maximum Green (s)	37.0	37.0	37.0		
Yellow Time (s)	4.0	4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0		
Lost Time Adjust (s)		0.5	0.5		
Total Lost Time (s)		6.5	6.5		
Lead/Lag	Lag	Lag	Lag		
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0		
Recall Mode	None	None	None		
Walk Time (s)					
Flash Dont Walk (s)					
Pedestrian Calls (#/hr)					
Act Effct Green (s)		36.6	36.6		
Actuated g/C Ratio		0.25	0.25		
v/c Ratio		0.17	1.05		
Control Delay		46.1	109.9		
Queue Delay		0.0	0.0		
Total Delay		46.1	109.9		
LOS		D	F		
Approach Delay			103.1		
Approach LOS			F		
Queue Length 50th (ft)		38	~450		
Queue Length 95th (ft)		77	#665		
Internal Link Dist (ft)			3088		
Turn Bay Length (ft)		150			
Base Capacity (vph)		287	392		
Starvation Cap Reductn		0	0		
Spillback Cap Reductn		0	0		
Storage Cap Reductn		0	0		
Reduced v/c Ratio		0.17	1.05		

Intersection Summary

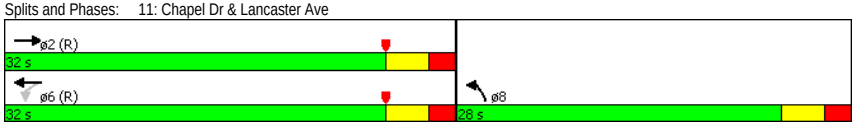
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1105	122	20	812	85	19
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	12	12
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt	0.985				0.975	
Flt Protected				0.999	0.961	
Satd. Flow (prot)	3193	0	0	3238	1653	0
Flt Permitted				0.906	0.961	
Satd. Flow (perm)	3193	0	0	2937	1653	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	25				21	
Link Speed (mph)	35			35	25	
Link Distance (ft)	1609			1291	319	
Travel Time (s)	31.3			25.1	8.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1201	133	22	883	92	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1334	0	0	905	113	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	10			10	10	
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.12	1.12	1.07	1.07
Turning Speed (mph)		9	15		15	9
Number of Detectors	1		1	1	1	
Detector Template	Thru		Left	Thru	Left	
Leading Detector (ft)	37		20	37	37	
Trailing Detector (ft)	-3		0	-3	-3	
Detector 1 Position(ft)	-3		0	-3	-3	
Detector 1 Size(ft)	40		20	40	40	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Detector Phase	2		6	6	8	
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	4.0	
Minimum Split (s)	21.0		21.0	21.0	28.0	
Total Split (s)	32.0		32.0	32.0	28.0	
Total Split (%)	53.3%		53.3%	53.3%	46.7%	
Maximum Green (s)	27.0		27.0	27.0	23.0	
Yellow Time (s)	3.0		3.0	3.0	3.0	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.5			0.5	0.5	
Total Lost Time (s)	5.5			5.5	5.5	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	C-Max		C-Max	C-Max	None	
Walk Time (s)	10.0		10.0	10.0	7.0	
Flash Dont Walk (s)	0.0		0.0	0.0	16.0	
Pedestrian Calls (#/hr)	0		0	0	0	
Act Effct Green (s)	43.8			43.8	8.5	
Actuated g/C Ratio	0.73			0.73	0.14	
v/c Ratio	0.57			0.42	0.45	
Control Delay	6.6			3.3	24.8	
Queue Delay	0.0			0.0	0.0	
Total Delay	6.6			3.3	24.8	
LOS	A			A	C	
Approach Delay	6.6			3.3	24.8	
Approach LOS	A			A	C	
Queue Length 50th (ft)	108			1	31	
Queue Length 95th (ft)	202			m123	67	
Internal Link Dist (ft)	1529			1211	239	
Turn Bay Length (ft)						
Base Capacity (vph)	2335			2142	633	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.57			0.42	0.18	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 26 (43%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 6.2		Intersection LOS: A	
Intersection Capacity Utilization 54.2%		ICU Level of Service A	
Analysis Period (min) 15			

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

Splits and Phases: 11: Chapel Dr & Lancaster Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	81	951	92	96	694	31	64	125	77	66	236	74
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)		0%			3%			1%			0%	
Storage Length (ft)	140		0	70		0	105		0	65		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.994			0.943			0.964	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1565	3089	0	1541	3064	0	1557	1545	0	1565	1588	0
Flt Permitted	0.262			0.111			0.227			0.464		
Satd. Flow (perm)	432	3089	0	180	3064	0	372	1545	0	764	1588	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1291			2034			183			973	
Travel Time (s)		25.1			39.6			5.0			26.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	85	1001	97	101	731	33	67	132	81	69	248	78
Shared Lane Traffic (%)												
Lane Group Flow (vph)	85	1098	0	101	764	0	67	213	0	69	326	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)		10			10			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane												
Headway Factor	1.17	1.17	1.17	1.19	1.19	1.19	1.18	1.18	1.18	1.17	1.17	1.17
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	37	37		37	37		37	37		37	37	
Trailing Detector (ft)	-3	-3		-3	-3		-3	-3		-3	-3	
Detector 1 Position(ft)	-3	-3		-3	-3		-3	-3		-3	-3	
Detector 1 Size(ft)	40	40		40	40		40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	34.0		3.0	34.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	13.0	40.0		13.0	40.0		13.0	13.0		13.0	13.0	

Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	24.0
Minimum Split (s)	26.0

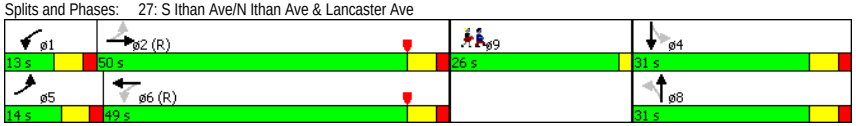
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)	14.0	50.0		13.0	49.0		31.0	31.0		31.0	31.0	
Total Split (%)	11.7%	41.7%		10.8%	40.8%		25.8%	25.8%		25.8%	25.8%	
Maximum Green (s)	8.0	44.0		7.0	43.0		25.0	25.0		25.0	25.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	55.8	48.7		55.7	50.5		24.5	24.5		24.5	24.5	
Actuated g/C Ratio	0.46	0.41		0.46	0.42		0.20	0.20		0.20	0.20	
v/c Ratio	0.32	0.88		0.64	0.59		0.89	0.68		0.45	1.01	
Control Delay	21.0	44.3		37.7	25.3		126.0	56.0		52.3	99.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	21.0	44.3		37.7	25.3		126.0	56.0		52.3	99.5	
LOS	C	D		D	C		F	E		D	F	
Approach Delay		42.7			26.8			72.8			91.3	
Approach LOS		D			C			E			F	
Queue Length 50th (ft)	35	478		44	200		51	154		47	~257	
Queue Length 95th (ft)	m63	#609		m#100	238		#144	241		97	#448	
Internal Link Dist (ft)		1211			1954			103			893	
Turn Bay Length (ft)	140			70			105			65		
Base Capacity (vph)	273	1253		157	1289		75	315		155	324	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.31	0.88		0.64	0.59		0.89	0.68		0.45	1.01	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection
Natural Cycle: 115
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.01
Intersection Signal Delay: 47.8 Intersection LOS: D
Intersection Capacity Utilization 79.7% 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: 27: S Ithan Ave/N Ithan Ave & Lancaster Ave



Lane Group	ø9
Total Split (s)	26.0
Total Split (%)	22%
Maximum Green (s)	24.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	9.0
Flash Dont Walk (s)	15.0
Pedestrian Calls (#/hr)	45
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

HCM 2010 TWSC
2: County Line Rd & N Ithan Ave 9/17/2014

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	SBL	SBR	NWL	NWR
Vol, veh/h	221	37	300	307	23	161
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	0	-
Veh in Median Storage, #	0	-	0	-	0	-
Grade, %	0	-	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	235	39	319	327	24	171

Major/Minor	Minor2		Major2		Minor1	
Conflicting Flow All	86	0	0	-	20	0
Stage 1	0	-	-	-	0	-
Stage 2	86	-	-	-	20	-
Critical Hdwy	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %				-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	SB	NW
HCM Control Delay, s		0	
HCM LOS	-		-

Minor Lane/Major Mvmt	NWLn1	EBLn1	SBL	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	-	-
HCM Lane LOS	-	-	-	-
HCM 95th %tile Q(veh)	-	-	-	-

HCM 2010 TWSC
15: Conestoga Rd & Spring Mill Rd 9/17/2014

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Vol, veh/h	10	656	616	3	17	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	10	683	642	3	18	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	645	0	-	0	1347	643
Stage 1	-	-	-	-	643	-
Stage 2	-	-	-	-	704	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	945	-	-	-	167	475
Stage 1	-	-	-	-	525	-
Stage 2	-	-	-	-	492	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	945	-	-	-	164	475
Mov Cap-2 Maneuver	-	-	-	-	164	-
Stage 1	-	-	-	-	525	-
Stage 2	-	-	-	-	484	-

Approach	EB	WB	SW
HCM Control Delay, s	0.1	0	24.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SWLn1
Capacity (veh/h)	945	-	-	-	212
HCM Lane V/C Ratio	0.011	-	-	-	0.128
HCM Control Delay (s)	8.9	0	-	-	24.5
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.4

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	36	501	17	17	463	16	15	8	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1
Mvmt Flow	38	522	18	18	482	17	16	8	18

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	499	0	0	540	0	0	1169	1140	531
Stage 1	-	-	-	-	-	-	606	606	-
Stage 2	-	-	-	-	-	-	563	534	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309
Pot Cap-1 Maneuver	1070	-	-	1034	-	-	171	202	550
Stage 1	-	-	-	-	-	-	486	488	-
Stage 2	-	-	-	-	-	-	513	526	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1070	-	-	1034	-	-	135	187	550
Mov Cap-2 Maneuver	-	-	-	-	-	-	135	187	-
Stage 1	-	-	-	-	-	-	461	463	-
Stage 2	-	-	-	-	-	-	438	513	-

Approach	EB	WB	NB
HCM Control Delay, s	0.6	0.3	25.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	216	1070	-	-	1034	-	-	329
HCM Lane V/C Ratio	0.193	0.035	-	-	0.017	-	-	0.25
HCM Control Delay (s)	25.6	8.5	0	-	8.5	0	-	19.6
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.7	0.1	-	-	0.1	-	-	1

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	9	17	53
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	96	96	96
Heavy Vehicles, %	1	1	1
Mvmt Flow	9	18	55

Major/Minor	Minor2		
Conflicting Flow All	1145	1141	491
Stage 1	526	526	-
Stage 2	619	615	-
Critical Hdwy	7.11	6.51	6.21
Critical Hdwy Stg 1	6.11	5.51	-
Critical Hdwy Stg 2	6.11	5.51	-
Follow-up Hdwy	3.509	4.009	3.309
Pot Cap-1 Maneuver	177	201	580
Stage 1	537	530	-
Stage 2	478	484	-
Platoon blocked, %			
Mov Cap-1 Maneuver	156	186	580
Mov Cap-2 Maneuver	156	186	-
Stage 1	510	517	-
Stage 2	431	459	-

Approach	SB
HCM Control Delay, s	19.6
HCM LOS	C

Minor Lane/Major Mvmt

HCM 2010 TWSC
38: County Line Rd & N Ithan Ave 9/17/2014

Intersection	
Int Delay, s/veh	60.7

Movement	NBT	NBR	SBL	SBT	SWL	SWR
Vol, veh/h	268	117	182	490	114	62
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	285	124	194	521	121	66

Major/Minor	Major1		Minor2		Minor1	
Conflicting Flow All	0	0	380	410	608	347
Stage 1	-	-	0	0	347	-
Stage 2	-	-	380	410	261	-
Critical Hdwy	-	-	6.41	6.51	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	5.41	5.51	-	-
Follow-up Hdwy	-	-	3.509	4.009	3.509	3.309
Pot Cap-1 Maneuver	-	-	624	533	461	698
Stage 1	-	-	-	-	718	-
Stage 2	-	-	694	597	-	-
Platoon blocked, %	-	-				
Mov Cap-1 Maneuver	-	-	624	0	461	698
Mov Cap-2 Maneuver	-	-	624	0	461	-
Stage 1	-	-	-	0	718	-
Stage 2	-	-	694	0	-	-

Approach	NB	SB	SW
HCM Control Delay, s	0	107.2	15.6
HCM LOS		F	C

Minor Lane/Major Mvmt	NBT	NBR	SBLn1	SWLn1
Capacity (veh/h)	-	-	624	524
HCM Lane V/C Ratio	-	-	1.146	0.357
HCM Control Delay (s)	-	-	107.2	15.6
HCM Lane LOS	-	-	F	C
HCM 95th %tile Q(veh)	-	-	23	1.6

HCM 2010 TWSC
43: County Line Rd & Roberts Rd 9/17/2014

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	37	25	1	9	26	11	4	509	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1
Mvmt Flow	39	26	1	9	27	12	4	536	29

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	1029	1313	374	938	1330	283	747	0	0
Stage 1	739	739	-	559	559	-	-	-	-
Stage 2	290	574	-	379	771	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.52	6.52	6.92	4.12	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.52	5.52	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.52	5.52	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.51	4.01	3.31	2.21	-	-
Pot Cap-1 Maneuver	189	158	626	221	155	717	864	-	-
Stage 1	377	424	-	483	512	-	-	-	-
Stage 2	696	504	-	618	410	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	157	154	626	188	151	717	864	-	-
Mov Cap-2 Maneuver	157	154	-	188	151	-	-	-	-
Stage 1	374	415	-	480	508	-	-	-	-
Stage 2	643	500	-	566	401	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	43.3	29.5	0.1
HCM LOS	E	D	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	864	-	-	158	195	1010	-	-
HCM Lane V/C Ratio	0.005	-	-	0.42	0.248	0.011	-	-
HCM Control Delay (s)	9.2	0	-	43.3	29.5	8.6	0.1	-
HCM Lane LOS	A	A	-	E	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.9	0.9	0	-	-

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	11	651	59
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	1	1	1
Mvmt Flow	12	685	62

Major/Minor	Major2		
Conflicting Flow All	565	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.21	-	-
Pot Cap-1 Maneuver	1010	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1010	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.2
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	169	214	343	16	12	118
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	172	218	350	16	12	120

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	366	0	-	0	921	358
Stage 1	-	-	-	-	358	-
Stage 2	-	-	-	-	563	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1198	-	-	-	302	689
Stage 1	-	-	-	-	710	-
Stage 2	-	-	-	-	572	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1198	-	-	-	253	689
Mov Cap-2 Maneuver	-	-	-	-	253	-
Stage 1	-	-	-	-	710	-
Stage 2	-	-	-	-	479	-

Approach	EB	WB	SB
HCM Control Delay, s	3.8	0	12.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1198	-	-	-	594
HCM Lane V/C Ratio	0.144	-	-	-	0.223
HCM Control Delay (s)	8.5	0	-	-	12.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.5	-	-	-	0.8

HCM 2010 TWSC
53: County Line Rd & Lowrys Ln 9/17/2014

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	16	18	52	182	155	124
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	17	19	54	190	161	129

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	524	226	291	0	-	0
Stage 1	226	-	-	-	-	-
Stage 2	298	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	517	818	1282	-	-	-
Stage 1	816	-	-	-	-	-
Stage 2	758	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	493	818	1282	-	-	-
Mov Cap-2 Maneuver	493	-	-	-	-	-
Stage 1	816	-	-	-	-	-
Stage 2	722	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.1	1.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1282	-	624	-	-
HCM Lane V/C Ratio	0.042	-	0.057	-	-
HCM Control Delay (s)	7.9	0	11.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

HCM 2010 TWSC
61: Dwy/Aldwyn Ln & S Ithan Ave 9/17/2014

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	35	132	5	52	271	21	8	3	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	38	145	5	57	298	23	9	3	42

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	321	0	0	151	0	0	656	660	148
Stage 1	-	-	-	-	-	-	225	225	-
Stage 2	-	-	-	-	-	-	431	435	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1239	-	-	1430	-	-	379	383	899
Stage 1	-	-	-	-	-	-	778	718	-
Stage 2	-	-	-	-	-	-	603	580	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1239	-	-	1430	-	-	349	352	899
Mov Cap-2 Maneuver	-	-	-	-	-	-	349	352	-
Stage 1	-	-	-	-	-	-	752	694	-
Stage 2	-	-	-	-	-	-	562	552	-

Approach	EB	WB	NB
HCM Control Delay, s	1.6	1.2	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	665	1239	-	-	1430	-	-	568
HCM Lane V/C Ratio	0.081	0.031	-	-	0.04	-	-	0.033
HCM Control Delay (s)	10.9	8	0	-	7.6	0	-	11.6
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0.1	-	-	0.1

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	4	0	13
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	91	91	91
Heavy Vehicles, %	2	2	2
Mvmt Flow	4	0	14

Major/Minor	Minor2		
Conflicting Flow All	671	651	309
Stage 1	424	424	-
Stage 2	247	227	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	370	388	731
Stage 1	608	587	-
Stage 2	757	716	-
Platoon blocked, %			
Mov Cap-1 Maneuver	329	357	731
Mov Cap-2 Maneuver	329	357	-
Stage 1	588	558	-
Stage 2	695	692	-

Approach	SB
HCM Control Delay, s	11.6
HCM LOS	B

Minor Lane/Major Mvmt

HCM research expects at least one 'Stop' controlled approach at the intersection.

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	151	262	0	109	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	-1	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	164	285	0	118	58

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	285	0	-	0	449	285
Stage 1	-	-	-	-	285	-
Stage 2	-	-	-	-	164	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1277	-	-	-	568	754
Stage 1	-	-	-	-	763	-
Stage 2	-	-	-	-	865	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1277	-	-	-	568	754
Mov Cap-2 Maneuver	-	-	-	-	568	-
Stage 1	-	-	-	-	763	-
Stage 2	-	-	-	-	865	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	13.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1277	-	-	-	618
HCM Lane V/C Ratio	-	-	-	-	0.285
HCM Control Delay (s)	0	-	-	-	13.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	1.2

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	211	0	0	424	20	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	-1	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	229	0	0	461	22	59

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	229	0	690	229
Stage 1	-	-	-	-	229	-
Stage 2	-	-	-	-	461	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1339	-	411	810
Stage 1	-	-	-	-	809	-
Stage 2	-	-	-	-	635	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1339	-	411	810
Mov Cap-2 Maneuver	-	-	-	-	411	-
Stage 1	-	-	-	-	809	-
Stage 2	-	-	-	-	635	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	642	-	-	1339	-
HCM Lane V/C Ratio	0.125	-	-	-	-
HCM Control Delay (s)	11.4	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0	-

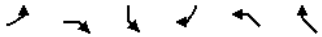
Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1221	47	48	914	0	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	3	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1489	57	59	1115	0	46

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1546	0	2192	773
Stage 1	-	-	-	-	1518	-
Stage 2	-	-	-	-	674	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	435	-	40	346
Stage 1	-	-	-	-	171	-
Stage 2	-	-	-	-	473	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	435	-	26	346
Mov Cap-2 Maneuver	-	-	-	-	26	-
Stage 1	-	-	-	-	171	-
Stage 2	-	-	-	-	305	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.9	17
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	346	-	-	435	-
HCM Lane V/C Ratio	0.134	-	-	0.135	-
HCM Control Delay (s)	17	-	-	14.6	2.3
HCM Lane LOS	C	-	-	B	A
HCM 95th %tile Q(veh)	0.5	-	-	0.5	-



Lane Group	EBL	EBR	SBL	SBR	NWL	NWR
Lane Configurations						
Volume (vph)	221	37	300	307	23	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.981		0.932		0.882	
Flt Protected	0.959		0.976		0.994	
Satd. Flow (prot)	1763	0	1711	0	1649	0
Flt Permitted	0.959		0.976		0.994	
Satd. Flow (perm)	1763	0	1711	0	1649	0
Link Speed (mph)	30		30		30	
Link Distance (ft)	973		295		2014	
Travel Time (s)	22.1		6.7		45.8	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	1	0	0	0	0	0
Adj. Flow (vph)	235	39	319	327	24	171
Shared Lane Traffic (%)						
Lane Group Flow (vph)	274	0	646	0	195	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Right
Median Width(ft)	22		12		12	
Link Offset(ft)	0		0		0	
Crosswalk Width(ft)	10		10		10	
Two way Left Turn Lane						
Headway Factor	1.01	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15	9	15	9
Sign Control	Stop		Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 71.2%		ICU Level of Service C	
Analysis Period (min) 15			

Lanes, Volumes, Timings
38: County Line Rd & N Ithan Ave

9/17/2014

Lane Group	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Volume (vph)	268	117	182	490	114	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.959				0.952	
Flt Protected				0.987	0.969	
Satd. Flow (prot)	1804	0	0	1857	1735	0
Flt Permitted				0.987	0.969	
Satd. Flow (perm)	1804	0	0	1857	1735	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	295			1901	824	
Travel Time (s)	6.7			43.2	18.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	285	124	194	521	121	66
Shared Lane Traffic (%)						
Lane Group Flow (vph)	409	0	0	715	187	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	10			10	10	
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
Sign Control	Free			Stop	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 77.2%		ICU Level of Service D	
Analysis Period (min) 15			

HCM 2010 Signalized Intersection Summary
3: County Line Rd & Spring Mill Rd

9/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	64	305	94	46	244	52	72	182	38	65	376	45
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	180.0	178.9	180.0	180.0	176.5	180.0	180.0	180.0	180.0	180.0	177.3	180.0
Adj Flow Rate, veh/h	89	339	109	64	280	81	89	233	58	86	422	65
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.72	0.90	0.86	0.72	0.87	0.64	0.81	0.78	0.66	0.76	0.89	0.69
Percent Heavy Veh, %	1	1	1	3	3	3	0	0	0	1	1	1
Cap, veh/h	137	385	115	118	383	101	146	335	73	135	477	69
Arrive On Green	0.38	0.38	0.38	0.38	0.38	0.38	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h	171	1004	299	123	999	264	178	849	185	163	1208	175
Grp Volume(v), veh/h	537	0	0	425	0	0	380	0	0	573	0	0
Grp Sat Flow(s),veh/h/ln	1475	0	0	1385	0	0	1212	0	0	1546	0	0
Q Serve(g_s), s	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.0
Cycle Q Clear(g_c), s	20.8	0.0	0.0	15.0	0.0	0.0	15.0	0.0	0.0	21.0	0.0	0.0
Prop In Lane	0.17		0.20	0.15		0.19	0.23		0.15	0.15		0.11
Lane Grp Cap(c), veh/h	637	0	0	602	0	0	554	0	0	681	0	0
V/C Ratio(X)	0.84	0.00	0.00	0.71	0.00	0.00	0.69	0.00	0.00	0.84	0.00	0.00
Avail Cap(c_a), veh/h	637	0	0	602	0	0	587	0	0	717	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.46	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	17.3	0.0	0.0	15.2	0.0	0.0	14.3	0.0	0.0	16.9	0.0	0.0
Incr Delay (d2), s/veh	6.4	0.0	0.0	6.8	0.0	0.0	2.4	0.0	0.0	8.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	0.0	0.0	7.0	0.0	0.0	5.5	0.0	0.0	10.3	0.0	0.0
LnGrp Delay(d),s/veh	23.7	0.0	0.0	22.0	0.0	0.0	16.8	0.0	0.0	24.9	0.0	0.0
LnGrp LOS	C			C			B			C		
Approach Vol, veh/h		537			425			380			573	
Approach Delay, s/veh		23.7			22.0			16.8			24.9	
Approach LOS		C			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		30.3		29.7		30.3		29.7
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		23.0		25.0		23.0		25.0
Max Q Clear Time (g_c+I1), s		22.8		23.0		17.0		17.0
Green Ext Time (p_c), s		0.1		0.6		2.3		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	22.3
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

9/17/2014

HCM 2010 methodology does not support more than 4 approaches.

HCM 2010 Signalized Intersection Summary
11: Chapel Dr & Lancaster Ave

9/17/2014

Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations								
Volume (veh/h)	1167	37	26	849	103	30		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	176.5	180.0	180.0	176.5	176.5	176.5		
Adj Flow Rate, veh/h	1268	40	28	923	112	33		
Adj No. of Lanes	2	0	0	2	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	2139	67	113	2033	148	132		
Arrive On Green	0.64	0.64	0.64	0.64	0.09	0.09		
Sat Flow, veh/h	3406	105	32	3234	1681	1500		
Grp Volume(v), veh/h	640	668	497	454	112	33		
Grp Sat Flow(s),veh/h/ln	1676	1746	1660	1526	1681	1500		
Q Serve(g_s), s	9.0	9.0	0.0	6.2	2.7	0.8		
Cycle Q Clear(g_c), s	9.0	9.0	5.7	6.2	2.7	0.8		
Prop In Lane		0.06	0.06		1.00	1.00		
Lane Grp Cap(c), veh/h	1081	1125	1163	983	148	132		
V/C Ratio(X)	0.59	0.59	0.43	0.46	0.76	0.25		
Avail Cap(c_a), veh/h	1081	1125	1163	983	920	821		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.73	0.73	1.00	1.00		
Uniform Delay (d), s/veh	4.2	4.2	3.6	3.7	18.3	17.5		
Incr Delay (d2), s/veh	2.4	2.3	0.8	1.1	7.7	1.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	4.8	5.0	3.0	2.8	1.6	0.4		
LnGrp Delay(d),s/veh	6.6	6.5	4.5	4.8	26.0	18.5		
LnGrp LOS	A	A	A	A	C	B		
Approach Vol, veh/h	1308			951	145			
Approach Delay, s/veh	6.6			4.6	24.3			
Approach LOS	A			A	C			

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		50.9				50.9		9.1
Change Period (Y+Rc), s		5.0				5.0		5.0
Max Green Setting (Gmax), s		27.0				27.0		23.0
Max Q Clear Time (g_c+I1), s		11.0				8.2		4.7
Green Ext Time (p_c), s		8.9				9.8		0.4

Intersection Summary		
HCM 2010 Ctrl Delay		6.9
HCM 2010 LOS		A

HCM 2010 Signalized Intersection Summary
16: Sproul Rd & Conestoga Rd

9/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	106	546	220	27	512	47	106	187	28	51	295	83
Number	7	4	14	3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	178.2	178.2	180.0	182.7	182.7	184.5	177.3	177.3	179.1	180.9	179.1	180.9
Adj Flow Rate, veh/h	112	575	0	28	539	0	112	197	29	54	311	87
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	220	798	0	252	588	0	192	612	90	88	324	86
Arrive On Green	0.06	0.45	0.00	0.32	0.32	0.00	0.06	0.40	0.40	0.27	0.27	0.27
Sat Flow, veh/h	1697	1782	0	864	1827	0	1689	1511	223	136	1206	320
Grp Volume(v), veh/h	112	575	0	28	539	0	112	0	226	452	0	0
Grp Sat Flow(s),veh/h/ln	1697	1782	0	864	1827	0	1689	0	1734	1662	0	0
Q Serve(g_s), s	3.3	20.5	0.0	2.1	22.2	0.0	3.6	0.0	7.0	14.7	0.0	0.0
Cycle Q Clear(g_c), s	3.3	20.5	0.0	12.8	22.2	0.0	3.6	0.0	7.0	21.0	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.13	0.12		0.19
Lane Grp Cap(c), veh/h	220	798	0	252	588	0	192	0	702	498	0	0
V/C Ratio(X)	0.51	0.72	0.00	0.11	0.92	0.00	0.58	0.00	0.32	0.91	0.00	0.00
Avail Cap(c_a), veh/h	266	798	0	252	588	0	233	0	744	498	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	19.2	17.6	0.0	26.8	25.5	0.0	20.9	0.0	15.9	28.6	0.0	0.0
Incr Delay (d2), s/veh	1.8	5.6	0.0	0.9	21.5	0.0	2.8	0.0	0.3	20.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	11.3	0.0	0.6	14.6	0.0	1.8	0.0	3.4	12.5	0.0	0.0
LnGrp Delay(d),s/veh	21.0	23.1	0.0	27.7	47.0	0.0	23.7	0.0	16.2	48.9	0.0	0.0
LnGrp LOS	C	C		C	D		C		B	D		
Approach Vol, veh/h		687			567			338			452	
Approach Delay, s/veh		22.8			46.1			18.7			48.9	
Approach LOS		C			D			B			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6	7	8
Phs Duration (G+Y+Rc), s	10.6	27.0		42.4		37.6	9.9	32.5
Change Period (Y+Rc), s	5.5	5.5		5.0		5.5	5.0	5.0
Max Green Setting (Gmax), s	7.0	21.5		35.5		34.0	7.0	23.5
Max Q Clear Time (g_c+I1), s	5.6	23.0		22.5		9.0	5.3	24.2
Green Ext Time (p_c), s	0.0	0.0		5.7		2.5	0.0	0.0

Intersection Summary		
HCM 2010 Ctrl Delay		34.3
HCM 2010 LOS		C

HCM 2010 Signalized Intersection Summary
25: S Ithan Ave & Conestoga Rd

9/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	61	520	7	11	469	37	7	15	6	43	77	126
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	185.4	183.6	185.4	176.4	174.7	176.4	176.3	174.5	176.3	184.4	182.6	184.4
Adj Flow Rate, veh/h	69	591	8	12	533	42	8	17	7	49	88	143
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	146	767	10	93	757	59	150	225	75	139	129	174
Arrive On Green	0.48	0.48	0.48	0.48	0.48	0.48	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	105	1600	21	10	1580	123	201	1071	356	182	614	832
Grp Volume(v), veh/h	668	0	0	587	0	0	32	0	0	280	0	0
Grp Sat Flow(s),veh/h/ln	1727	0	0	1713	0	0	1628	0	0	1628	0	0
Q Serve(g_s), s	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	0.0	0.0
Cycle Q Clear(g_c), s	13.2	0.0	0.0	11.2	0.0	0.0	0.6	0.0	0.0	6.8	0.0	0.0
Prop In Lane	0.10		0.01	0.02		0.07	0.25		0.22	0.17		0.51
Lane Grp Cap(c), veh/h	922	0	0	909	0	0	449	0	0	443	0	0
V/C Ratio(X)	0.72	0.00	0.00	0.65	0.00	0.00	0.07	0.00	0.00	0.63	0.00	0.00
Avail Cap(c_a), veh/h	1452	0	0	1452	0	0	689	0	0	701	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.0	0.0	0.0	8.6	0.0	0.0	13.3	0.0	0.0	15.7	0.0	0.0
Incr Delay (d2), s/veh	1.1	0.0	0.0	0.8	0.0	0.0	0.1	0.0	0.0	1.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	0.0	0.0	5.4	0.0	0.0	0.3	0.0	0.0	3.2	0.0	0.0
LnGrp Delay(d),s/veh	10.1	0.0	0.0	9.4	0.0	0.0	13.4	0.0	0.0	17.2	0.0	0.0
LnGrp LOS	B			A			B			B		
Approach Vol, veh/h		668			587			32			280	
Approach Delay, s/veh		10.1			9.4			13.4			17.2	
Approach LOS		B			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		26.5		15.3		26.5		15.3
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		34.0		16.0		34.0		16.0
Max Q Clear Time (g_c+I1), s		13.2		2.6		15.2		8.8
Green Ext Time (p_c), s		5.5		1.0		5.3		0.7

Intersection Summary		
HCM 2010 Ctrl Delay		11.2
HCM 2010 LOS		B

HCM 2010 Signalized Intersection Summary
27: S Ithan Ave/N Ithan Ave & Lancaster Ave

9/17/2014

HCM 2010 methodology does not support exclusive ped or hold phases.

HCM 2010 Signalized Intersection Summary
33: Williams Rd/Garrett Ave & Conestoga Rd

9/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	26	485	9	12	490	28	16	1	11	27	12	52
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	187.2	187.2	187.2	187.2	187.2	187.2	180.0	180.0	180.0	172.8	172.8	172.8
Adj Flow Rate, veh/h	28	527	10	13	533	30	17	1	12	29	13	57
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	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
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	88	1247	23	67	1235	68	141	25	52	100	26	71
Arrive On Green	0.71	0.71	0.71	0.71	0.71	0.71	0.08	0.08	0.08	0.08	0.08	0.08
Sat Flow, veh/h	41	1749	32	13	1732	96	634	296	620	324	308	858
Grp Volume(v), veh/h	565	0	0	576	0	0	30	0	0	99	0	0
Grp Sat Flow(s),veh/h/ln	1822	0	0	1841	0	0	1550	0	0	1491	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0
Cycle Q Clear(g_c), s	8.0	0.0	0.0	8.2	0.0	0.0	1.1	0.0	0.0	4.1	0.0	0.0
Prop In Lane	0.05		0.02	0.02		0.05	0.57		0.40	0.29		0.58
Lane Grp Cap(c), veh/h	1358	0	0	1370	0	0	217	0	0	197	0	0
V/C Ratio(X)	0.42	0.00	0.00	0.42	0.00	0.00	0.14	0.00	0.00	0.50	0.00	0.00
Avail Cap(c_a), veh/h	1358	0	0	1370	0	0	401	0	0	385	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.8	0.0	0.0	3.8	0.0	0.0	27.3	0.0	0.0	28.7	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.0	0.0	0.9	0.0	0.0	0.4	0.0	0.0	2.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	0.0	0.0	4.5	0.0	0.0	0.5	0.0	0.0	1.9	0.0	0.0
LnGrp Delay(d),s/veh	4.7	0.0	0.0	4.8	0.0	0.0	27.7	0.0	0.0	31.5	0.0	0.0
LnGrp LOS	A			A			C			C		
Approach Vol, veh/h		565			576			30			99	
Approach Delay, s/veh		4.7			4.8			27.7			31.5	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		52.0		11.8		52.0		11.8
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		46.0		14.0		46.0		14.0
Max Q Clear Time (g_c+I1), s		10.0		6.1		10.2		3.1
Green Ext Time (p_c), s		5.5		0.3		5.5		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	7.4
HCM 2010 LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

HCM 2010 Signalized Intersection Summary
51: Lowrys Ln & Lancaster Ave

9/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	1214	22	15	996	4	19	36	15	97	70	71
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	180.0	178.2	180.0	177.3	175.5	177.3	190.0	188.1	190.0	188.1	186.3	188.1
Adj Flow Rate, veh/h	2	1320	24	16	1083	4	21	39	16	105	76	77
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	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
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	65	1992	36	75	1958	7	131	201	67	196	108	91
Arrive On Green	0.60	0.60	0.60	0.60	0.60	0.60	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	1	3331	60	15	3275	12	263	1071	356	562	574	483
Grp Volume(v), veh/h	706	0	640	571	0	532	76	0	0	258	0	0
Grp Sat Flow(s),veh/h/ln	1781	0	1611	1706	0	1595	1689	0	0	1619	0	0
Q Serve(g_s), s	0.0	0.0	14.8	0.0	0.0	11.3	0.0	0.0	0.0	6.6	0.0	0.0
Cycle Q Clear(g_c), s	14.8	0.0	14.8	10.9	0.0	11.3	2.0	0.0	0.0	8.6	0.0	0.0
Prop In Lane	0.00		0.04	0.03		0.01	0.28		0.21	0.41		0.30
Lane Grp Cap(c), veh/h	1129	0	963	1086	0	954	399	0	0	395	0	0
V/C Ratio(X)	0.63	0.00	0.66	0.53	0.00	0.56	0.19	0.00	0.00	0.65	0.00	0.00
Avail Cap(c_a), veh/h	1129	0	963	1086	0	954	515	0	0	507	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.5	0.0	7.5	6.7	0.0	6.8	19.3	0.0	0.0	21.9	0.0	0.0
Incr Delay (d2), s/veh	2.6	0.0	3.6	1.8	0.0	2.4	0.2	0.0	0.0	2.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.9	0.0	7.4	5.8	0.0	5.5	1.0	0.0	0.0	4.0	0.0	0.0
LnGrp Delay(d),s/veh	10.1	0.0	11.1	8.5	0.0	9.2	19.5	0.0	0.0	23.8	0.0	0.0
LnGrp LOS	B		B	A		A	B			C		
Approach Vol, veh/h		1346			1103			76			258	
Approach Delay, s/veh		10.6			8.8			19.5			23.8	
Approach LOS		B			A			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		44.0		16.0		44.0		16.0
Change Period (Y+Rc), s		6.0		5.0		6.0		5.0
Max Green Setting (Gmax), s		34.0		15.0		34.0		15.0
Max Q Clear Time (g_c+I1), s		16.8		10.6		13.3		4.0
Green Ext Time (p_c), s		10.1		0.5		11.2		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	11.4
HCM 2010 LOS	B

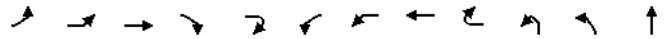
Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR2	NBL2	NBL	NBT
Lane Configurations												
Volume (vph)	4	248	977	30	280	2	22	901	33	7	52	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	11	11	14	10	12	12	12	10	10	10
Grade (%)			3%					-2%				1%
Storage Length (ft)		300		0			75				0	
Storage Lanes		1		1			1				0	
Taper Length (ft)		25					25				25	
Lane Util. Factor	0.95	1.00	0.95	0.95	1.00	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.996		0.850			0.995				0.975
Flt Protected		0.950					0.950					0.961
Satd. Flow (prot)	0	1541	3180	0	1576	0	1693	3370	0	0	0	1536
Flt Permitted		0.093					0.221					0.753
Satd. Flow (perm)	0	151	3180	0	1576	0	394	3370	0	0	0	1203
Right Turn on Red					Yes				Yes			
Satd. Flow (RTOR)					234			196				
Link Speed (mph)			35					35				25
Link Distance (ft)			577					864				492
Travel Time (s)			11.2					16.8				13.4
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	4	256	1007	31	289	2	23	929	34	7	54	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	260	1038	0	289	0	25	963	0	0	0	75
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Right	Left	Left	Left	Right	Left	Left	Left
Median Width(ft)			12					12				0
Link Offset(ft)			0					0				0
Crosswalk Width(ft)			10					10				10
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.14	1.14	1.01	1.16	1.06	1.06	1.06	1.18	1.18	1.18
Turning Speed (mph)	15	15		9	9	15	15		9	15	15	
Number of Detectors	1	1	1		1	1	1	1		1	1	1
Detector Template	Left	Left	Thru		Right	Left	Left	Thru		Left	Left	Thru
Leading Detector (ft)	20	37	37		37	20	37	37		20	20	37
Trailing Detector (ft)	0	-3	-3		-3	0	-3	-3		0	0	-3
Detector 1 Position(ft)	0	-3	-3		-3	0	-3	-3		0	0	-3
Detector 1 Size(ft)	20	40	40		40	20	40	40		20	20	40
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	pm+pt	pm+pt	NA		Perm	Perm	Perm	NA		Perm	Perm	NA
Protected Phases	5	5	2					6				10
Permitted Phases	2	2			2	6	6			10	10	
Detector Phase	5	5	2		2	6	6	6		10	10	10
Switch Phase												
Minimum Initial (s)	3.0	3.0	15.0		15.0	15.0	15.0	15.0		3.0	3.0	3.0
Minimum Split (s)	13.0	13.0	21.0		21.0	21.0	21.0	21.0		13.0	13.0	13.0

Lane Group	NBR	NBR2	SBL2	SBL	SBT	SBR	SBR2	NEL2	NEL	NET	NER	NER2
Lane Configurations												
Volume (vph)	4	10	1	1	0	3	14	190	0	112	20	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	12	12	11	11	11
Grade (%)					-3%					3%		
Storage Length (ft)	0			0		0			200		0	
Storage Lanes	0			0		0			1		0	
Taper Length (ft)				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					0.879					0.976		
Flt Protected					0.995				0.950			
Satd. Flow (prot)	0	0	0	0	1462	0	0	0	1651	1640	0	0
Flt Permitted					0.982				0.098			
Satd. Flow (perm)	0	0	0	0	1443	0	0	0	170	1640	0	0
Right Turn on Red		No					No					No
Satd. Flow (RTOR)												
Link Speed (mph)					25					40		
Link Distance (ft)					597					1336		
Travel Time (s)					16.3					22.8		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	4	10	1	1	0	3	14	196	0	115	21	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	19	0	0	0	196	137	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Right	Right	Left	Left	Left	Right	Right	Left	Left	Left	Right	Right
Median Width(ft)					0					12		
Link Offset(ft)					0					0		
Crosswalk Width(ft)					10					10		
Two way Left Turn Lane												
Headway Factor	1.18	1.18	1.15	1.15	1.15	1.15	1.15	1.09	1.09	1.14	1.14	1.14
Turning Speed (mph)	9	9	15	15		9	9	15	15		9	9
Number of Detectors			1	1	1			1	1	1		
Detector Template			Left	Left	Thru			Left	Left	Thru		
Leading Detector (ft)			20	20	37			20	37	37		
Trailing Detector (ft)			0	0	-3			0	-3	-3		
Detector 1 Position(ft)			0	0	-3			0	-3	-3		
Detector 1 Size(ft)			20	20	40			20	40	40		
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel												
Detector 1 Extend (s)			0.0	0.0	0.0			0.0	0.0	0.0		
Detector 1 Queue (s)			0.0	0.0	0.0			0.0	0.0	0.0		
Detector 1 Delay (s)			0.0	0.0	0.0			0.0	0.0	0.0		
Turn Type			Perm	Perm	NA			pm+pt	pm+pt	NA		
Protected Phases					9			3	3	8		
Permitted Phases			9	9				8	8			
Detector Phase			9	9	9			3	3	8		
Switch Phase												
Minimum Initial (s)			3.0	3.0	3.0			3.0	3.0	3.0		
Minimum Split (s)			13.0	13.0	13.0			13.0	13.0	13.0		

Lane Group	SWL2	SWL	SWT	SWR	SWR2
Lane Configurations					
Volume (vph)	39	9	165	233	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10
Grade (%)			-7%		
Storage Length (ft)		150		0	
Storage Lanes		1		0	
Taper Length (ft)		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00
Frt			0.912		
Flt Protected		0.950			
Satd. Flow (prot)	0	1619	1555	0	0
Flt Permitted		0.669			
Satd. Flow (perm)	0	1140	1555	0	0
Right Turn on Red					No
Satd. Flow (RTOR)					
Link Speed (mph)			25		
Link Distance (ft)			3168		
Travel Time (s)			86.4		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	40	9	170	240	1
Shared Lane Traffic (%)					
Lane Group Flow (vph)	0	49	411	0	0
Enter Blocked Intersection	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Right
Median Width(ft)			12		
Link Offset(ft)			0		
Crosswalk Width(ft)			10		
Two way Left Turn Lane					
Headway Factor	1.12	1.12	1.12	1.12	1.12
Turning Speed (mph)	15	15		9	9
Number of Detectors	1	1	1		
Detector Template	Left	Left	Thru		
Leading Detector (ft)	20	37	37		
Trailing Detector (ft)	0	-3	-3		
Detector 1 Position(ft)	0	-3	-3		
Detector 1 Size(ft)	20	40	40		
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel					
Detector 1 Extend (s)	0.0	0.0	0.0		
Detector 1 Queue (s)	0.0	0.0	0.0		
Detector 1 Delay (s)	0.0	0.0	0.0		
Turn Type	Perm	Perm	NA		
Protected Phases			4		
Permitted Phases	4	4			
Detector Phase	4	4	4		
Switch Phase					
Minimum Initial (s)	3.0	3.0	3.0		
Minimum Split (s)	13.0	13.0	13.0		



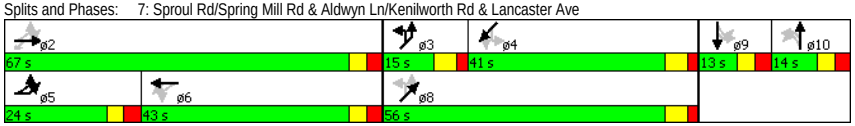
Lane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR2	NBL2	NBL	NBT
Total Split (s)	24.0	24.0	67.0		67.0	43.0	43.0	43.0		14.0	14.0	14.0
Total Split (%)	16.0%	16.0%	44.7%		44.7%	28.7%	28.7%	28.7%		9.3%	9.3%	9.3%
Maximum Green (s)	18.0	18.0	61.0		61.0	37.0	37.0	37.0		8.0	8.0	8.0
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)		0.5	0.5		0.5		0.5	0.5				0.5
Total Lost Time (s)		6.5	6.5		6.5		6.5	6.5				6.5
Lead/Lag	Lead	Lead				Lag	Lag	Lag		Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	Max		Max	None	None	None		None	None	None
Walk Time (s)			7.0		7.0	7.0	7.0	7.0				
Flash Dont Walk (s)			20.0		20.0	20.0	20.0	20.0				
Pedestrian Calls (#/hr)			0		0	0	0	0				
Act Effct Green (s)		60.6	60.6		60.6		36.6	36.6				7.5
Actuated g/C Ratio		0.42	0.42		0.42		0.25	0.25				0.05
v/c Ratio		1.13	0.78		0.36		0.25	0.97				1.21
Control Delay		134.5	42.1		7.9		53.5	63.8				236.1
Queue Delay		0.0	0.0		0.0		0.0	0.0				0.0
Total Delay		134.5	42.1		7.9		53.5	63.8				236.1
LOS		F	D		A		D	E				F
Approach Delay			51.0					63.6				236.1
Approach LOS			D					E				F
Queue Length 50th (ft)		~257	470		33		20	415				~91
Queue Length 95th (ft)		#444	563		101		52	#569				#205
Internal Link Dist (ft)			497					784				412
Turn Bay Length (ft)		300					75					
Base Capacity (vph)		231	1331		795		99	997				62
Starvation Cap Reductn		0	0		0		0	0				0
Spillback Cap Reductn		0	0		0		0	0				0
Storage Cap Reductn		0	0		0		0	0				0
Reduced v/c Ratio		1.13	0.78		0.36		0.25	0.97				1.21

Intersection Summary			
Area Type:	Other		
Cycle Length: 150			
Actuated Cycle Length: 144.8			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.35			
Intersection Signal Delay: 77.5		Intersection LOS: E	
Intersection Capacity Utilization 115.7%		ICU Level of Service H	
Analysis Period (min) 15			

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

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

Splits and Phases: 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave



Lane Group	NBR	NBR2	SBL2	SBL	SBT	SBR	SBR2	NEL2	NEL	NET	NER	NER2
Total Split (s)			13.0	13.0	13.0			15.0	15.0	56.0		
Total Split (%)			8.7%	8.7%	8.7%			10.0%	10.0%	37.3%		
Maximum Green (s)			7.0	7.0	7.0			9.0	9.0	50.0		
Yellow Time (s)			3.0	3.0	3.0			4.0	4.0	4.0		
All-Red Time (s)			3.0	3.0	3.0			2.0	2.0	2.0		
Lost Time Adjust (s)					0.5				0.5	0.5		
Total Lost Time (s)					6.5				6.5	6.5		
Lead/Lag			Lead	Lead	Lead			Lead	Lead			
Lead-Lag Optimize?												
Vehicle Extension (s)			3.0	3.0	3.0			3.0	3.0	3.0		
Recall Mode			None	None	None			None	None	None		
Walk Time (s)										7.0		
Flash Dont Walk (s)										25.0		
Pedestrian Calls (#/hr)										0		
Act Effct Green (s)					6.1				49.6	49.6		
Actuated g/C Ratio					0.04				0.34	0.34		
v/c Ratio					0.32				1.35	0.24		
Control Delay					83.2				227.6	36.8		
Queue Delay					0.0				0.0	0.0		
Total Delay					83.2				227.6	36.8		
LOS					F				F	D		
Approach Delay					83.2					149.1		
Approach LOS					F					F		
Queue Length 50th (ft)					18				~209	98		
Queue Length 95th (ft)					48				#377	156		
Internal Link Dist (ft)					517					1256		
Turn Bay Length (ft)									200			
Base Capacity (vph)					64				145	561		
Starvation Cap Reductn					0				0	0		
Spillback Cap Reductn					0				0	0		
Storage Cap Reductn					0				0	0		
Reduced v/c Ratio					0.30				1.35	0.24		

Intersection Summary

Lane Group	SWL2	SWL	SWT	SWR	SWR2
Total Split (s)	41.0	41.0	41.0		
Total Split (%)	27.3%	27.3%	27.3%		
Maximum Green (s)	35.0	35.0	35.0		
Yellow Time (s)	4.0	4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0		
Lost Time Adjust (s)		0.5	0.5		
Total Lost Time (s)		6.5	6.5		
Lead/Lag	Lag	Lag	Lag		
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0		
Recall Mode	None	None	None		
Walk Time (s)					
Flash Dont Walk (s)					
Pedestrian Calls (#/hr)					
Act Effct Green (s)		34.6	34.6		
Actuated g/C Ratio		0.24	0.24		
v/c Ratio		0.18	1.11		
Control Delay		47.9	129.3		
Queue Delay		0.0	0.0		
Total Delay		47.9	129.3		
LOS		D	F		
Approach Delay			120.6		
Approach LOS			F		
Queue Length 50th (ft)		39	~471		
Queue Length 95th (ft)		79	#686		
Internal Link Dist (ft)			3088		
Turn Bay Length (ft)		150			
Base Capacity (vph)		272	371		
Starvation Cap Reductn		0	0		
Spillback Cap Reductn		0	0		
Storage Cap Reductn		0	0		
Reduced v/c Ratio		0.18	1.11		

Intersection Summary

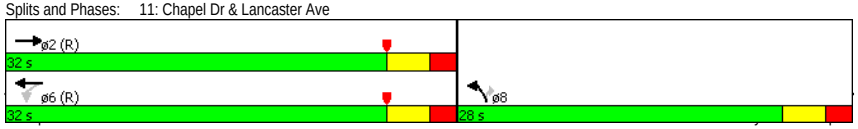
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1167	37	26	849	103	30
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	12	12
Storage Length (ft)		125	100		0	0
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt	0.995					0.850
Flt Protected				0.999	0.950	
Satd. Flow (prot)	3225	0	0	3238	1676	1500
Flt Permitted				0.892	0.950	
Satd. Flow (perm)	3225	0	0	2891	1676	1500
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	7					22
Link Speed (mph)	35			35	25	
Link Distance (ft)	745			1291	319	
Travel Time (s)	14.5			25.1	8.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1268	40	28	923	112	33
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1308	0	0	951	112	33
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	10			10	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	10			10	10	
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.12	1.12	1.07	1.07
Turning Speed (mph)		9	15		15	9
Number of Detectors	1		1	1	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (ft)	37		20	37	37	20
Trailing Detector (ft)	-3		0	-3	-3	0
Detector 1 Position(ft)	-3		0	-3	-3	0
Detector 1 Size(ft)	40		20	40	40	20
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	4.0	4.0
Minimum Split (s)	21.0		21.0	21.0	28.0	28.0
Total Split (s)	32.0		32.0	32.0	28.0	28.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	53.3%		53.3%	53.3%	46.7%	46.7%
Maximum Green (s)	27.0		27.0	27.0	23.0	23.0
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.5			0.5	0.5	0.5
Total Lost Time (s)	5.5			5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	C-Max		C-Max	C-Max	None	None
Walk Time (s)	10.0		10.0	10.0	7.0	7.0
Flash Dont Walk (s)	0.0		0.0	0.0	16.0	16.0
Pedestrian Calls (#/hr)	0		0	0	0	0
Act Effct Green (s)	43.3			43.3	8.9	8.9
Actuated g/C Ratio	0.72			0.72	0.15	0.15
v/c Ratio	0.56			0.46	0.45	0.14
Control Delay	6.8			3.8	28.2	13.2
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	6.8			3.8	28.2	13.2
LOS	A			A	C	B
Approach Delay	6.8			3.8	24.8	
Approach LOS	A			A	C	
Queue Length 50th (ft)	111			1	38	3
Queue Length 95th (ft)	202			m225	73	22
Internal Link Dist (ft)	665			1211	239	
Turn Bay Length (ft)						
Base Capacity (vph)	2330			2087	628	576
Starvation Cap Reductn	0			0	0	0
Spillback Cap Reductn	0			0	0	0
Storage Cap Reductn	0			0	0	0
Reduced v/c Ratio	0.56			0.46	0.18	0.06

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 26 (43%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.56
Intersection Signal Delay: 6.7 Intersection LOS: A
Intersection Capacity Utilization 59.8% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Chapel Dr & Lancaster Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	79	1001	116	114	701	34	89	91	29	67	183	85
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)		0%			3%			1%			0%	
Storage Length (ft)	250		0	200		0	200		0	65		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.993			0.963			0.953	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1565	3129	1400	1541	3061	0	1557	1578	0	1565	1570	0
Flt Permitted	0.261			0.132			0.301			0.652		
Satd. Flow (perm)	430	3129	1400	214	3061	0	493	1578	0	1074	1570	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1291			265			344			973	
Travel Time (s)		25.1			5.2			9.4			26.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	83	1054	122	120	738	36	94	96	31	71	193	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	83	1054	122	120	774	0	94	127	0	71	282	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)		10			10			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane												
Headway Factor	1.17	1.17	1.17	1.19	1.19	1.19	1.18	1.18	1.18	1.17	1.17	1.17
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	37	37	20	37	37		37	37		37	37	
Trailing Detector (ft)	-3	-3	0	-3	-3		-3	-3		-3	-3	
Detector 1 Position(ft)	-3	-3	0	-3	-3		-3	-3		-3	-3	
Detector 1 Size(ft)	40	40	20	40	40		40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	5	2	2	1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	34.0	34.0	3.0	34.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	13.0	40.0	40.0	13.0	40.0		13.0	13.0		13.0	13.0	

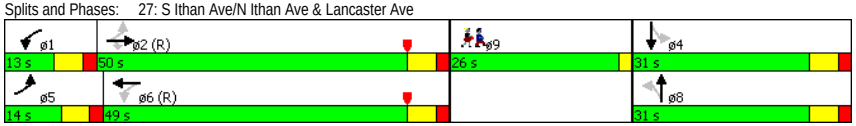
Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	24.0
Minimum Split (s)	26.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)	14.0	50.0	50.0	13.0	49.0		31.0	31.0		31.0	31.0	
Total Split (%)	11.7%	41.7%	41.7%	10.8%	40.8%		25.8%	25.8%		25.8%	25.8%	
Maximum Green (s)	8.0	44.0	44.0	7.0	43.0		25.0	25.0		25.0	25.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	56.8	49.7	49.7	56.7	51.5		23.5	23.5		23.5	23.5	
Actuated g/C Ratio	0.47	0.41	0.41	0.47	0.43		0.20	0.20		0.20	0.20	
v/c Ratio	0.31	0.81	0.21	0.69	0.59		0.98	0.41		0.34	0.92	
Control Delay	20.7	40.3	26.5	38.1	24.5		135.3	46.3		46.1	81.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	20.7	40.3	26.5	38.1	24.5		135.3	46.3		46.1	81.7	
LOS	C	D	C	D	C		F	D		D	F	
Approach Delay		37.6			26.3			84.2			74.5	
Approach LOS		D			C			F			E	
Queue Length 50th (ft)	35	458	64	53	201		72	86		47	214	
Queue Length 95th (ft)	m62	#562	100	m#105	240		#182	147		94	#370	
Internal Link Dist (ft)		1211			185			264			893	
Turn Bay Length (ft)	250			200			200			65		
Base Capacity (vph)	275	1295	579	173	1313		100	322		219	320	
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	0.30	0.81	0.21	0.69	0.59		0.94	0.39		0.32	0.88	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 42.5 Intersection LOS: D
Intersection Capacity Utilization 78.4% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 27: S Ithan Ave/N Ithan Ave & Lancaster Ave



Lane Group	ø9
Total Split (s)	26.0
Total Split (%)	22%
Maximum Green (s)	24.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	9.0
Flash Dont Walk (s)	15.0
Pedestrian Calls (#/hr)	45
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

HCM 2010 TWSC
2: County Line Rd & N Ithan Ave

9/17/2014

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	SBL	SBR	NWL	NWR
Vol, veh/h	191	37	300	264	23	161
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	0	-
Veh in Median Storage, #	0	-	0	-	0	-
Grade, %	0	-	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	203	39	319	281	24	171

Major/Minor	Minor2		Major2		Minor1	
Conflicting Flow All	86	0	0	-	20	0
Stage 1	0	-	-	-	0	-
Stage 2	86	-	-	-	20	-
Critical Hdwy	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %				-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	SB	NW
HCM Control Delay, s		0	
HCM LOS	-		-

Minor Lane/Major Mvmt	NWLn1	EBLn1	SBL	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	-	-
HCM Lane LOS	-	-	-	-
HCM 95th %tile Q(veh)	-	-	-	-

HCM 2010 TWSC
15: Conestoga Rd & Spring Mill Rd

9/17/2014

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Vol, veh/h	10	653	606	3	17	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	10	680	631	3	18	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	634	0	-	0	1334	633
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	701	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	954	-	-	-	171	482
Stage 1	-	-	-	-	531	-
Stage 2	-	-	-	-	494	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	954	-	-	-	168	482
Mov Cap-2 Maneuver	-	-	-	-	168	-
Stage 1	-	-	-	-	531	-
Stage 2	-	-	-	-	486	-

Approach	EB	WB	SW
HCM Control Delay, s	0.1	0	23.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SWLn1
Capacity (veh/h)	954	-	-	-	217
HCM Lane V/C Ratio	0.011	-	-	-	0.125
HCM Control Delay (s)	8.8	0	-	-	23.9
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.4

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	37	491	17	17	460	16	15	8	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1
Mvmt Flow	39	511	18	18	479	17	16	8	18

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	496	0	0	529	0	0	1156	1128	520
Stage 1	-	-	-	-	-	-	597	597	-
Stage 2	-	-	-	-	-	-	559	531	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309
Pot Cap-1 Maneuver	1073	-	-	1043	-	-	174	205	558
Stage 1	-	-	-	-	-	-	491	493	-
Stage 2	-	-	-	-	-	-	515	528	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1073	-	-	1043	-	-	138	190	558
Mov Cap-2 Maneuver	-	-	-	-	-	-	138	190	-
Stage 1	-	-	-	-	-	-	465	467	-
Stage 2	-	-	-	-	-	-	439	515	-

Approach	EB	WB	NB
HCM Control Delay, s	0.6	0.3	25
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	221	1073	-	-	1043	-	-	334
HCM Lane V/C Ratio	0.189	0.036	-	-	0.017	-	-	0.246
HCM Control Delay (s)	25	8.5	0	-	8.5	0	-	19.3
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.7	0.1	-	-	0.1	-	-	1

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	9	17	53
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	96	96	96
Heavy Vehicles, %	1	1	1
Mvmt Flow	9	18	55

Major/Minor	Minor2		
Conflicting Flow All	1133	1129	488
Stage 1	523	523	-
Stage 2	610	606	-
Critical Hdwy	7.11	6.51	6.21
Critical Hdwy Stg 1	6.11	5.51	-
Critical Hdwy Stg 2	6.11	5.51	-
Follow-up Hdwy	3.509	4.009	3.309
Pot Cap-1 Maneuver	181	205	582
Stage 1	539	532	-
Stage 2	483	488	-
Platoon blocked, %			
Mov Cap-1 Maneuver	160	190	582
Mov Cap-2 Maneuver	160	190	-
Stage 1	511	519	-
Stage 2	435	463	-

Approach	SB
HCM Control Delay, s	19.3
HCM LOS	C

Minor Lane/Major Mvmt

HCM 2010 TWSC
38: County Line Rd & N Ithan Ave 9/17/2014

Intersection	
Int Delay, s/veh	44.4

Movement	NBT	NBR	SBL	SBT	SWL	SWR
Vol, veh/h	248	107	182	460	101	62
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	264	114	194	489	107	66

Major/Minor	Major1		Minor2		Minor1	
Conflicting Flow All	0	0	354	378	566	321
Stage 1	-	-	0	0	321	-
Stage 2	-	-	354	378	245	-
Critical Hdwy	-	-	6.41	6.51	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	5.41	5.51	-	-
Follow-up Hdwy	-	-	3.509	4.009	3.509	3.309
Pot Cap-1 Maneuver	-	-	646	555	487	722
Stage 1	-	-	-	-	738	-
Stage 2	-	-	713	617	-	-
Platoon blocked, %	-	-				
Mov Cap-1 Maneuver	-	-	646	0	487	722
Mov Cap-2 Maneuver	-	-	646	0	487	-
Stage 1	-	-	-	0	738	-
Stage 2	-	-	713	0	-	-

Approach	NB	SB	SW
HCM Control Delay, s	0	76.5	14.4
HCM LOS		F	B

Minor Lane/Major Mvmt	NBT	NBR	SBLn1	SWLn1
Capacity (veh/h)	-	-	646	556
HCM Lane V/C Ratio	-	-	1.057	0.312
HCM Control Delay (s)	-	-	76.5	14.4
HCM Lane LOS	-	-	F	B
HCM 95th %tile Q(veh)	-	-	18.5	1.3

HCM 2010 TWSC
43: County Line Rd & Roberts Rd 9/17/2014

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	37	25	1	9	26	11	4	509	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1
Mvmt Flow	39	26	1	9	27	12	4	536	29

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	1029	1313	374	938	1330	283	747	0	0
Stage 1	739	739	-	559	559	-	-	-	-
Stage 2	290	574	-	379	771	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.52	6.52	6.92	4.12	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.52	5.52	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.52	5.52	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.51	4.01	3.31	2.21	-	-
Pot Cap-1 Maneuver	189	158	626	221	155	717	864	-	-
Stage 1	377	424	-	483	512	-	-	-	-
Stage 2	696	504	-	618	410	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	157	154	626	188	151	717	864	-	-
Mov Cap-2 Maneuver	157	154	-	188	151	-	-	-	-
Stage 1	374	415	-	480	508	-	-	-	-
Stage 2	643	500	-	566	401	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	43.3	29.5	0.1
HCM LOS	E	D	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	864	-	-	158	195	1010	-	-
HCM Lane V/C Ratio	0.005	-	-	0.42	0.248	0.011	-	-
HCM Control Delay (s)	9.2	0	-	43.3	29.5	8.6	0.1	-
HCM Lane LOS	A	A	-	E	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.9	0.9	0	-	-

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	11	651	59
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	1	1	1
Mvmt Flow	12	685	62

Major/Minor	Major2		
Conflicting Flow All	565	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.21	-	-
Pot Cap-1 Maneuver	1010	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1010	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.2
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	169	214	343	16	12	118
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	172	218	350	16	12	120

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	366	0	-	0	921	358
Stage 1	-	-	-	-	358	-
Stage 2	-	-	-	-	563	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1198	-	-	-	302	689
Stage 1	-	-	-	-	710	-
Stage 2	-	-	-	-	572	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1198	-	-	-	253	689
Mov Cap-2 Maneuver	-	-	-	-	253	-
Stage 1	-	-	-	-	710	-
Stage 2	-	-	-	-	479	-

Approach	EB	WB	SB
HCM Control Delay, s	3.8	0	12.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1198	-	-	-	594
HCM Lane V/C Ratio	0.144	-	-	-	0.223
HCM Control Delay (s)	8.5	0	-	-	12.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.5	-	-	-	0.8

HCM 2010 TWSC
53: County Line Rd & Lowrys Ln 9/17/2014

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	16	18	52	182	155	124
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	17	19	54	190	161	129

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	524	226	291	0	-	0
Stage 1	226	-	-	-	-	-
Stage 2	298	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	517	818	1282	-	-	-
Stage 1	816	-	-	-	-	-
Stage 2	758	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	493	818	1282	-	-	-
Mov Cap-2 Maneuver	493	-	-	-	-	-
Stage 1	816	-	-	-	-	-
Stage 2	722	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.1	1.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1282	-	624	-	-
HCM Lane V/C Ratio	0.042	-	0.057	-	-
HCM Control Delay (s)	7.9	0	11.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

HCM 2010 TWSC
61: Dwy/Aldwyn Ln & S Ithan Ave 9/17/2014

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	35	123	5	52	241	22	8	3	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	38	135	5	57	265	24	9	3	42

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	289	0	0	141	0	0	613	618	138
Stage 1	-	-	-	-	-	-	215	215	-
Stage 2	-	-	-	-	-	-	398	403	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1273	-	-	1442	-	-	405	405	910
Stage 1	-	-	-	-	-	-	787	725	-
Stage 2	-	-	-	-	-	-	628	600	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1273	-	-	1442	-	-	374	374	910
Mov Cap-2 Maneuver	-	-	-	-	-	-	374	374	-
Stage 1	-	-	-	-	-	-	762	702	-
Stage 2	-	-	-	-	-	-	587	572	-

Approach	EB	WB	NB
HCM Control Delay, s	1.7	1.3	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	688	1273	-	-	1442	-	-	598
HCM Lane V/C Ratio	0.078	0.03	-	-	0.04	-	-	0.031
HCM Control Delay (s)	10.7	7.9	0	-	7.6	0	-	11.2
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0.1	-	-	0.1

HCM 2010 TWSC
61: Dwy/Aldwyn Ln & S Ithan Ave 9/17/2014

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	4	0	13
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	91	91	91
Heavy Vehicles, %	2	2	2
Mvmt Flow	4	0	14

Major/Minor	Minor2		
Conflicting Flow All	628	609	277
Stage 1	391	391	-
Stage 2	237	218	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	395	410	762
Stage 1	633	607	-
Stage 2	766	723	-
Platoon blocked, %			
Mov Cap-1 Maneuver	352	378	762
Mov Cap-2 Maneuver	352	378	-
Stage 1	613	578	-
Stage 2	704	700	-

Approach	SB
HCM Control Delay, s	11.2
HCM LOS	B

Minor Lane/Major Mvmt

HCM 2010 TWSC
76: S Ithan Ave & Dwy 9/17/2014

Intersection	
Int Delay, s/veh	7.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR
Vol, veh/h	4	136	25	136	280	5	20	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	None
Storage Length	50	-	-	100	-	-	0	-
Veh in Median Storage, #	-	0	-	-	0	-	0	-
Grade, %	-	1	-	-	-1	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2
Mvmt Flow	4	148	27	148	304	5	22	7

Major/Minor	Major1			Major2			Minor2	
Conflicting Flow All	310	0	0	175	0	0	825	307
Stage 1	-	-	-	-	-	-	603	-
Stage 2	-	-	-	-	-	-	222	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1250	-	-	1401	-	-	292	733
Stage 1	-	-	-	-	-	-	486	-
Stage 2	-	-	-	-	-	-	780	-
Platoon blocked, %		-	-		-	-		
Mov Cap-1 Maneuver	1250	-	-	1401	-	-	196	733
Mov Cap-2 Maneuver	-	-	-	-	-	-	196	-
Stage 1	-	-	-	-	-	-	484	-
Stage 2	-	-	-	-	-	-	671	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	2.5	17.4
HCM LOS			C

Minor Lane/Major Mvmt	NWLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	265	1250	-	-	1401	-	-	320
HCM Lane V/C Ratio	0.234	0.003	-	-	0.106	-	-	0.095
HCM Control Delay (s)	22.7	7.9	-	-	7.9	-	-	17.4
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.9	0	-	-	0.4	-	-	0.3

Intersection	
Int Delay, s/veh	

Movement	NWU	NWL	NWR
Vol, veh/h	28	57	95
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	-
Storage Length	-	0	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	30	62	103

Major/Minor	Minor1		
Conflicting Flow All	0	787	161
Stage 1	0	170	-
Stage 2	0	617	-
Critical Hdwy	-	7.12	6.22
Critical Hdwy Stg 1	-	6.12	-
Critical Hdwy Stg 2	-	6.12	-
Follow-up Hdwy	-	3.518	3.318
Pot Cap-1 Maneuver	0	309	884
Stage 1	0	832	-
Stage 2	0	477	-
Platoon blocked, %	-		
Mov Cap-1 Maneuver	0	265	884
Mov Cap-2 Maneuver	0	265	-
Stage 1	0	829	-
Stage 2	0	402	-

Approach	NW
HCM Control Delay, s	22.7
HCM LOS	C

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	1.9

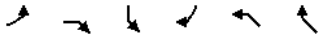
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1280	47	48	1010	0	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	3	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1561	57	59	1232	0	46

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1618	0	2323	809
Stage 1	-	-	-	-	1590	-
Stage 2	-	-	-	-	733	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	408	-	32	328
Stage 1	-	-	-	-	156	-
Stage 2	-	-	-	-	442	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	408	-	17	328
Mov Cap-2 Maneuver	-	-	-	-	17	-
Stage 1	-	-	-	-	156	-
Stage 2	-	-	-	-	240	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.7	17.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	328	-	-	408	-
HCM Lane V/C Ratio	0.141	-	-	0.143	-
HCM Control Delay (s)	17.8	-	-	15.3	3.2
HCM Lane LOS	C	-	-	C	A
HCM 95th %tile Q(veh)	0.5	-	-	0.5	-

Lanes, Volumes, Timings
2: County Line Rd & N Ithan Ave 9/17/2014



Lane Group	EBL	EBR	SBL	SBR	NWL	NWR
Lane Configurations						
Volume (vph)	191	37	300	264	23	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.978		0.937		0.882	
Flt Protected	0.960		0.974		0.994	
Satd. Flow (prot)	1759	0	1717	0	1649	0
Flt Permitted	0.960		0.974		0.994	
Satd. Flow (perm)	1759	0	1717	0	1649	0
Link Speed (mph)	30		30		30	
Link Distance (ft)	973		295		2014	
Travel Time (s)	22.1		6.7		45.8	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	1	0	0	0	0	0
Adj. Flow (vph)	203	39	319	281	24	171
Shared Lane Traffic (%)						
Lane Group Flow (vph)	242	0	600	0	195	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Right
Median Width(ft)	22		12		12	
Link Offset(ft)	0		0		0	
Crosswalk Width(ft)	10		10		10	
Two way Left Turn Lane						
Headway Factor	1.01	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15	9	15	9
Sign Control	Stop		Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 66.9%		ICU Level of Service C	
Analysis Period (min) 15			

Lanes, Volumes, Timings
38: County Line Rd & N Ithan Ave

9/17/2014

Lane Group	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Volume (vph)	248	107	182	460	101	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.959				0.948	
Flt Protected				0.986	0.970	
Satd. Flow (prot)	1804	0	0	1855	1730	0
Flt Permitted				0.986	0.970	
Satd. Flow (perm)	1804	0	0	1855	1730	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	295			1901	824	
Travel Time (s)	6.7			43.2	18.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	264	114	194	489	107	66
Shared Lane Traffic (%)						
Lane Group Flow (vph)	378	0	0	683	173	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	10			10	10	
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
Sign Control	Free			Stop	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 73.2%		ICU Level of Service D	
Analysis Period (min) 15			

HCM 2010 Signalized Intersection Summary
3: County Line Rd & Spring Mill Rd

9/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	65	308	96	57	247	52	73	205	38	66	401	45
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	180.0	178.9	180.0	180.0	176.6	180.0	180.0	180.0	180.0	180.0	177.3	180.0
Adj Flow Rate, veh/h	90	342	112	79	284	81	90	263	58	87	451	65
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.72	0.90	0.86	0.72	0.87	0.64	0.81	0.78	0.66	0.76	0.89	0.69
Percent Heavy Veh, %	1	1	1	3	3	3	0	0	0	1	1	1
Cap, veh/h	127	343	103	122	331	85	137	342	67	130	484	66
Arrive On Green	0.38	0.38	0.38	0.38	0.38	0.38	0.41	0.41	0.41	0.41	0.41	0.41
Sat Flow, veh/h	151	914	276	137	884	228	155	838	163	150	1185	161
Grp Volume(v), veh/h	544	0	0	444	0	0	411	0	0	603	0	0
Grp Sat Flow(s),veh/h/ln	1341	0	0	1249	0	0	1156	0	0	1496	0	0
Q Serve(g_s), s	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.0
Cycle Q Clear(g_c), s	22.5	0.0	0.0	20.2	0.0	0.0	18.0	0.0	0.0	24.0	0.0	0.0
Prop In Lane	0.17		0.21	0.18		0.18	0.22		0.14	0.14		0.11
Lane Grp Cap(c), veh/h	573	0	0	539	0	0	545	0	0	679	0	0
V/C Ratio(X)	0.95	0.00	0.00	0.82	0.00	0.00	0.75	0.00	0.00	0.89	0.00	0.00
Avail Cap(c_a), veh/h	573	0	0	539	0	0	545	0	0	679	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.45	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	19.1	0.0	0.0	17.0	0.0	0.0	14.6	0.0	0.0	17.4	0.0	0.0
Incr Delay (d2), s/veh	15.8	0.0	0.0	13.3	0.0	0.0	5.3	0.0	0.0	13.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.4	0.0	0.0	8.9	0.0	0.0	6.7	0.0	0.0	12.2	0.0	0.0
LnGrp Delay(d),s/veh	34.9	0.0	0.0	30.3	0.0	0.0	19.9	0.0	0.0	30.5	0.0	0.0
LnGrp LOS	C			C			B			C		
Approach Vol, veh/h		544			444			411			603	
Approach Delay, s/veh		34.9			30.3			19.9			30.5	
Approach LOS		C			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		29.0		31.0		29.0		31.0
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		23.0		25.0		23.0		25.0
Max Q Clear Time (g_c+I1), s		24.5		26.0		22.2		20.0
Green Ext Time (p_c), s		0.0		0.0		0.4		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	29.5
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

9/17/2014

HCM 2010 methodology does not support more than 4 approaches.

HCM 2010 Signalized Intersection Summary
11: Chapel Dr & Lancaster Ave

9/17/2014

Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations								
Volume (veh/h)	1119	124	20	822	85	19		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	176.5	180.0	180.0	176.5	176.5	180.0		
Adj Flow Rate, veh/h	1216	135	22	893	92	21		
Adj No. of Lanes	2	0	0	2	0	0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	0	0		
Cap, veh/h	1994	221	109	2087	97	22		
Arrive On Green	0.65	0.65	1.00	1.00	0.07	0.07		
Sat Flow, veh/h	3133	337	24	3267	1327	303		
Grp Volume(v), veh/h	668	683	481	434	114	0		
Grp Sat Flow(s),veh/h/ln	1676	1705	1685	1526	1645	0		
Q Serve(g_s), s	9.2	9.3	0.0	0.0	2.8	0.0		
Cycle Q Clear(g_c), s	9.2	9.3	0.0	0.0	2.8	0.0		
Prop In Lane		0.20	0.05		0.81	0.18		
Lane Grp Cap(c), veh/h	1098	1117	1196	999	120	0		
V/C Ratio(X)	0.61	0.61	0.40	0.43	0.95	0.00		
Avail Cap(c_a), veh/h	1098	1117	1196	999	915	0		
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00		
Upstream Filter(I)	0.38	0.38	0.74	0.74	1.00	0.00		
Uniform Delay (d), s/veh	4.0	4.0	0.0	0.0	18.7	0.0		
Incr Delay (d2), s/veh	1.0	1.0	0.7	1.0	27.0	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	4.4	4.5	0.2	0.3	2.1	0.0		
LnGrp Delay(d),s/veh	5.0	5.0	0.7	1.0	45.7	0.0		
LnGrp LOS	A	A	A	A	D			
Approach Vol, veh/h	1351			915	114			
Approach Delay, s/veh	5.0			0.9	45.7			
Approach LOS	A			A	D			

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		51.5				51.5		8.5
Change Period (Y+Rc), s		5.0				5.0		5.0
Max Green Setting (Gmax), s		27.0				27.0		23.0
Max Q Clear Time (g_c+I1), s		11.3				2.0		4.8
Green Ext Time (p_c), s		8.9				11.4		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		5.4
HCM 2010 LOS		A

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
16: Sproul Rd & Conestoga Rd

9/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	106	556	220	28	528	47	106	187	28	51	295	83
Number	7	4	14	3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	178.2	178.2	180.0	182.7	182.7	184.5	177.3	177.3	179.1	180.9	179.1	180.9
Adj Flow Rate, veh/h	112	585	0	29	556	0	112	197	29	54	311	87
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	208	798	0	245	588	0	192	612	90	88	324	86
Arrive On Green	0.06	0.45	0.00	0.32	0.32	0.00	0.06	0.40	0.40	0.27	0.27	0.27
Sat Flow, veh/h	1697	1782	0	856	1827	0	1689	1511	223	136	1206	320
Grp Volume(v), veh/h	112	585	0	29	556	0	112	0	226	452	0	0
Grp Sat Flow(s),veh/h/ln	1697	1782	0	856	1827	0	1689	0	1734	1662	0	0
Q Serve(g_s), s	3.3	21.1	0.0	2.3	23.2	0.0	3.6	0.0	7.0	14.7	0.0	0.0
Cycle Q Clear(g_c), s	3.3	21.1	0.0	13.5	23.2	0.0	3.6	0.0	7.0	21.0	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.13	0.12		0.19
Lane Grp Cap(c), veh/h	208	798	0	245	588	0	192	0	702	498	0	0
V/C Ratio(X)	0.54	0.73	0.00	0.12	0.95	0.00	0.58	0.00	0.32	0.91	0.00	0.00
Avail Cap(c_a), veh/h	255	798	0	245	588	0	233	0	744	498	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	19.4	17.7	0.0	27.3	25.8	0.0	20.9	0.0	15.9	28.6	0.0	0.0
Incr Delay (d2), s/veh	2.1	5.9	0.0	1.0	26.0	0.0	2.8	0.0	0.3	20.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	11.5	0.0	0.6	15.8	0.0	1.8	0.0	3.4	12.5	0.0	0.0
LnGrp Delay(d),s/veh	21.6	23.6	0.0	28.3	51.8	0.0	23.7	0.0	16.2	48.9	0.0	0.0
LnGrp LOS	C	C		C	D		C		B	D		
Approach Vol, veh/h		697			585			338			452	
Approach Delay, s/veh		23.3			50.7			18.7			48.9	
Approach LOS		C			D			B			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6	7	8
Phs Duration (G+Y+Rc), s	10.6	27.0		42.4		37.6	9.9	32.5
Change Period (Y+Rc), s	5.5	5.5		5.0		5.5	5.0	5.0
Max Green Setting (Gmax), s	7.0	21.5		35.5		34.0	7.0	23.5
Max Q Clear Time (g_c+I1), s	5.6	23.0		23.1		9.0	5.3	25.2
Green Ext Time (p_c), s	0.0	0.0		5.7		2.5	0.0	0.0

Intersection Summary		
HCM 2010 Ctrl Delay		35.8
HCM 2010 LOS		D

HCM 2010 Signalized Intersection Summary
25: S Ithan Ave & Conestoga Rd

9/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	65	526	7	11	475	40	7	19	6	53	88	138
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	185.4	183.6	185.4	176.4	174.7	176.4	176.3	174.5	176.3	184.4	182.6	184.4
Adj Flow Rate, veh/h	74	598	8	12	540	45	8	22	7	60	100	157
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	143	757	10	86	760	62	135	264	71	142	142	186
Arrive On Green	0.48	0.48	0.48	0.48	0.48	0.48	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	114	1565	20	10	1572	129	168	1144	306	206	614	805
Grp Volume(v), veh/h	680	0	0	597	0	0	37	0	0	317	0	0
Grp Sat Flow(s),veh/h/ln	1699	0	0	1712	0	0	1617	0	0	1625	0	0
Q Serve(g_s), s	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.1	0.0	0.0
Cycle Q Clear(g_c), s	15.2	0.0	0.0	12.5	0.0	0.0	0.8	0.0	0.0	8.4	0.0	0.0
Prop In Lane	0.11		0.01	0.02		0.08	0.22		0.19	0.19		0.50
Lane Grp Cap(c), veh/h	909	0	0	908	0	0	470	0	0	469	0	0
V/C Ratio(X)	0.75	0.00	0.00	0.66	0.00	0.00	0.08	0.00	0.00	0.68	0.00	0.00
Avail Cap(c_a), veh/h	1321	0	0	1334	0	0	635	0	0	645	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.8	0.0	0.0	9.3	0.0	0.0	13.8	0.0	0.0	16.7	0.0	0.0
Incr Delay (d2), s/veh	1.4	0.0	0.0	0.8	0.0	0.0	0.1	0.0	0.0	1.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	0.0	0.0	6.0	0.0	0.0	0.4	0.0	0.0	4.0	0.0	0.0
LnGrp Delay(d),s/veh	11.2	0.0	0.0	10.1	0.0	0.0	13.8	0.0	0.0	18.4	0.0	0.0
LnGrp LOS	B			B			B			B		
Approach Vol, veh/h		680			597			37			317	
Approach Delay, s/veh		11.2			10.1			13.8			18.4	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		28.5		17.0		28.5		17.0
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		34.0		16.0		34.0		16.0
Max Q Clear Time (g_c+I1), s		14.5		2.8		17.2		10.4
Green Ext Time (p_c), s		5.6		1.1		5.3		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	12.3
HCM 2010 LOS	B

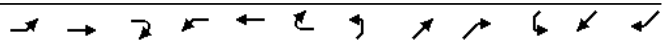
HCM 2010 Signalized Intersection Summary
27: S Ithan Ave/N Ithan Ave & Lancaster Ave

9/17/2014

HCM 2010 methodology does not support exclusive ped or hold phases.

HCM 2010 Signalized Intersection Summary
33: Williams Rd/Garrett Ave & Conestoga Rd

9/17/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	27	502	9	12	500	29	16	1	11	28	12	52
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	187.2	187.2	187.2	187.2	187.2	187.2	180.0	180.0	180.0	172.8	172.8	172.8
Adj Flow Rate, veh/h	29	546	10	13	543	32	17	1	12	30	13	57
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	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
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	89	1245	22	67	1230	71	141	25	52	101	26	71
Arrive On Green	0.71	0.71	0.71	0.71	0.71	0.71	0.08	0.08	0.08	0.08	0.08	0.08
Sat Flow, veh/h	41	1748	31	13	1727	100	632	294	618	334	307	849
Grp Volume(v), veh/h	585	0	0	588	0	0	30	0	0	100	0	0
Grp Sat Flow(s),veh/h/ln	1821	0	0	1840	0	0	1544	0	0	1490	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	0.0	0.0
Cycle Q Clear(g_c), s	8.4	0.0	0.0	8.5	0.0	0.0	1.1	0.0	0.0	4.2	0.0	0.0
Prop In Lane	0.05		0.02	0.02		0.05	0.57		0.40	0.30		0.57
Lane Grp Cap(c), veh/h	1356	0	0	1369	0	0	218	0	0	199	0	0
V/C Ratio(X)	0.43	0.00	0.00	0.43	0.00	0.00	0.14	0.00	0.00	0.50	0.00	0.00
Avail Cap(c_a), veh/h	1356	0	0	1369	0	0	400	0	0	385	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.8	0.0	0.0	3.9	0.0	0.0	27.3	0.0	0.0	28.7	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.0	0.0	1.0	0.0	0.0	0.4	0.0	0.0	2.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	0.0	0.0	4.6	0.0	0.0	0.5	0.0	0.0	1.9	0.0	0.0
LnGrp Delay(d),s/veh	4.9	0.0	0.0	4.9	0.0	0.0	27.7	0.0	0.0	31.5	0.0	0.0
LnGrp LOS	A			A			C			C		
Approach Vol, veh/h		585			588			30			100	
Approach Delay, s/veh		4.9			4.9			27.7			31.5	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		52.0		11.9		52.0		11.9
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		46.0		14.0		46.0		14.0
Max Q Clear Time (g_c+I1), s		10.4		6.2		10.5		3.1
Green Ext Time (p_c), s		5.7		0.3		5.7		0.4

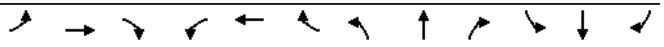
Intersection Summary		
HCM 2010 Ctrl Delay		7.4
HCM 2010 LOS		A

Notes

User approved pedestrian interval to be less than phase max green.

HCM 2010 Signalized Intersection Summary
51: Lowrys Ln & Lancaster Ave

9/17/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	1170	23	15	912	4	20	36	15	99	71	72
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	180.0	178.2	180.0	177.3	175.5	177.3	190.0	188.1	190.0	188.1	186.3	188.1
Adj Flow Rate, veh/h	2	1272	25	16	991	4	22	39	16	108	77	78
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	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
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	65	1981	39	76	1948	8	135	200	66	199	109	92
Arrive On Green	1.00	1.00	1.00	0.60	0.60	0.60	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	1	3325	65	16	3271	13	276	1048	347	570	569	480
Grp Volume(v), veh/h	682	0	617	523	0	488	77	0	0	263	0	0
Grp Sat Flow(s),veh/h/ln	1781	0	1610	1705	0	1595	1671	0	0	1619	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0	6.8	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	9.6	0.0	10.0	2.0	0.0	0.0	8.8	0.0	0.0
Prop In Lane	0.00		0.04	0.03		0.01	0.29		0.21	0.41		0.30
Lane Grp Cap(c), veh/h	1125	0	959	1082	0	950	401	0	0	399	0	0
V/C Ratio(X)	0.61	0.00	0.64	0.48	0.00	0.51	0.19	0.00	0.00	0.66	0.00	0.00
Avail Cap(c_a), veh/h	1125	0	959	1082	0	950	510	0	0	505	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.39	0.00	0.39	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	6.5	0.0	6.6	19.2	0.0	0.0	21.9	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.0	1.3	1.5	0.0	2.0	0.2	0.0	0.0	2.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.3	5.1	0.0	4.9	1.0	0.0	0.0	4.2	0.0	0.0
LnGrp Delay(d),s/veh	0.9	0.0	1.3	8.1	0.0	8.6	19.5	0.0	0.0	24.0	0.0	0.0
LnGrp LOS	A		A	A		A	B			C		
Approach Vol, veh/h		1299			1011			77			263	
Approach Delay, s/veh		1.1			8.3			19.5			24.0	
Approach LOS		A			A			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		43.8		16.2		43.8		16.2
Change Period (Y+Rc), s		6.0		5.0		6.0		5.0
Max Green Setting (Gmax), s		34.0		15.0		34.0		15.0
Max Q Clear Time (g_c+I1), s		2.0		10.8		12.0		4.0
Green Ext Time (p_c), s		12.5		0.5		10.7		1.0

Intersection Summary		
HCM 2010 Ctrl Delay		6.7
HCM 2010 LOS		A

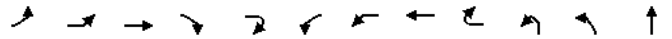
Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR2	NBL2	NBL	NBT
Lane Configurations												
Volume (vph)	4	251	992	31	284	2	23	858	33	7	52	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	11	11	14	10	12	12	12	10	10	10
Grade (%)			3%					-2%				1%
Storage Length (ft)		300		0			75				0	
Storage Lanes		1		1			1				0	
Taper Length (ft)		25					25				25	
Lane Util. Factor	0.95	1.00	0.95	0.95	1.00	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.995		0.850			0.994				0.975
Flt Protected		0.950					0.950					0.961
Satd. Flow (prot)	0	1541	3177	0	1576	0	1693	3366	0	0	0	1536
Flt Permitted		0.105					0.182					0.753
Satd. Flow (perm)	0	170	3177	0	1576	0	324	3366	0	0	0	1203
Right Turn on Red					Yes				Yes			
Satd. Flow (RTOR)					221			196				
Link Speed (mph)			35					35				25
Link Distance (ft)			577					1609				492
Travel Time (s)			11.2					31.3				13.4
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	4	259	1023	32	293	2	24	885	34	7	54	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	263	1055	0	293	0	26	919	0	0	0	75
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Right	Left	Left	Left	Right	Left	Left	Left
Median Width(ft)			12					12				0
Link Offset(ft)			0					0				0
Crosswalk Width(ft)			10					10				10
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.14	1.14	1.01	1.16	1.06	1.06	1.06	1.18	1.18	1.18
Turning Speed (mph)	15	15		9	9	15	15		9	15	15	
Number of Detectors	1	1	1		1	1	1	1		1	1	1
Detector Template	Left	Left	Thru		Right	Left	Left	Thru		Left	Left	Thru
Leading Detector (ft)	20	37	37		37	20	37	37		20	20	37
Trailing Detector (ft)	0	-3	-3		-3	0	-3	-3		0	0	-3
Detector 1 Position(ft)	0	-3	-3		-3	0	-3	-3		0	0	-3
Detector 1 Size(ft)	20	40	40		40	20	40	40		20	20	40
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	pm+pt	pm+pt	NA		Perm	Perm	Perm	NA		Perm	Perm	NA
Protected Phases	5	5	2					6				10
Permitted Phases	2	2			2	6	6			10	10	
Detector Phase	5	5	2		2	6	6	6		10	10	10
Switch Phase												
Minimum Initial (s)	3.0	3.0	15.0		15.0	15.0	15.0	15.0		3.0	3.0	3.0
Minimum Split (s)	13.0	13.0	21.0		21.0	21.0	21.0	21.0		13.0	13.0	13.0

Lane Group	NBR	NBR2	SBL2	SBL	SBT	SBR	SBR2	NEL2	NEL	NET	NER	NER2
Lane Configurations												
Volume (vph)	4	10	1	1	0	3	14	192	0	113	20	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	12	12	11	11	11
Grade (%)					-3%					3%		
Storage Length (ft)	0			0		0			200		0	
Storage Lanes	0			0		0			1		0	
Taper Length (ft)				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					0.879					0.976		
Flt Protected					0.995				0.950			
Satd. Flow (prot)	0	0	0	0	1462	0	0	0	1651	1640	0	0
Flt Permitted					0.982				0.117			
Satd. Flow (perm)	0	0	0	0	1443	0	0	0	203	1640	0	0
Right Turn on Red		No					No					No
Satd. Flow (RTOR)												
Link Speed (mph)					25					40		
Link Distance (ft)					597					1336		
Travel Time (s)					16.3					22.8		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	4	10	1	1	0	3	14	198	0	116	21	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	19	0	0	0	198	138	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Right	Right	Left	Left	Left	Right	Right	Left	Left	Left	Right	Right
Median Width(ft)					0					12		
Link Offset(ft)					0					0		
Crosswalk Width(ft)					10					10		
Two way Left Turn Lane												
Headway Factor	1.18	1.18	1.15	1.15	1.15	1.15	1.15	1.09	1.09	1.14	1.14	1.14
Turning Speed (mph)	9	9	15	15		9	9	15	15		9	9
Number of Detectors			1	1	1			1	1	1		
Detector Template			Left	Left	Thru			Left	Left	Thru		
Leading Detector (ft)			20	20	37			20	37	37		
Trailing Detector (ft)			0	0	-3			0	-3	-3		
Detector 1 Position(ft)			0	0	-3			0	-3	-3		
Detector 1 Size(ft)			20	20	40			20	40	40		
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel												
Detector 1 Extend (s)			0.0	0.0	0.0			0.0	0.0	0.0		
Detector 1 Queue (s)			0.0	0.0	0.0			0.0	0.0	0.0		
Detector 1 Delay (s)			0.0	0.0	0.0			0.0	0.0	0.0		
Turn Type			Perm	Perm	NA			pm+pt	pm+pt	NA		
Protected Phases					9			3	3	8		
Permitted Phases			9	9				8	8			
Detector Phase			9	9	9			3	3	8		
Switch Phase												
Minimum Initial (s)			3.0	3.0	3.0			3.0	3.0	3.0		
Minimum Split (s)			13.0	13.0	13.0			13.0	13.0	13.0		

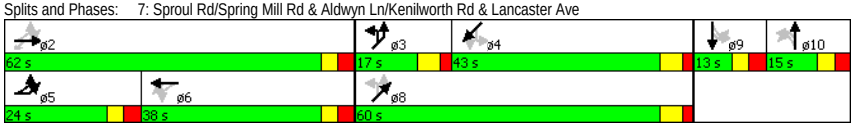
Lane Group	SWL2	SWL	SWT	SWR	SWR2
Lane Configurations					
Volume (vph)	39	9	168	236	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10
Grade (%)			-7%		
Storage Length (ft)		150		0	
Storage Lanes		1		0	
Taper Length (ft)		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00
Frt			0.912		
Flt Protected		0.950			
Satd. Flow (prot)	0	1619	1555	0	0
Flt Permitted		0.669			
Satd. Flow (perm)	0	1140	1555	0	0
Right Turn on Red					No
Satd. Flow (RTOR)					
Link Speed (mph)			25		
Link Distance (ft)			3168		
Travel Time (s)			86.4		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	40	9	173	243	1
Shared Lane Traffic (%)					
Lane Group Flow (vph)	0	49	417	0	0
Enter Blocked Intersection	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Right
Median Width(ft)			12		
Link Offset(ft)			0		
Crosswalk Width(ft)			10		
Two way Left Turn Lane					
Headway Factor	1.12	1.12	1.12	1.12	1.12
Turning Speed (mph)	15	15		9	9
Number of Detectors	1	1	1		
Detector Template	Left	Left	Thru		
Leading Detector (ft)	20	37	37		
Trailing Detector (ft)	0	-3	-3		
Detector 1 Position(ft)	0	-3	-3		
Detector 1 Size(ft)	20	40	40		
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel					
Detector 1 Extend (s)	0.0	0.0	0.0		
Detector 1 Queue (s)	0.0	0.0	0.0		
Detector 1 Delay (s)	0.0	0.0	0.0		
Turn Type	Perm	Perm	NA		
Protected Phases			4		
Permitted Phases	4	4			
Detector Phase	4	4	4		
Switch Phase					
Minimum Initial (s)	3.0	3.0	3.0		
Minimum Split (s)	13.0	13.0	13.0		



Lane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR2	NBL2	NBL	NBT
Total Split (s)	24.0	24.0	62.0		62.0	38.0	38.0	38.0		15.0	15.0	15.0
Total Split (%)	16.0%	16.0%	41.3%		41.3%	25.3%	25.3%	25.3%		10.0%	10.0%	10.0%
Maximum Green (s)	18.0	18.0	56.0		56.0	32.0	32.0	32.0		9.0	9.0	9.0
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)		0.5	0.5		0.5		0.5	0.5				0.5
Total Lost Time (s)		6.5	6.5		6.5		6.5	6.5				6.5
Lead/Lag	Lead	Lead				Lag	Lag	Lag		Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	Max		Max	None	None	None		None	None	None
Walk Time (s)			7.0		7.0	7.0	7.0	7.0				
Flash Dont Walk (s)			20.0		20.0	20.0	20.0	20.0				
Pedestrian Calls (#/hr)			0		0	0	0	0				
Act Effct Green (s)		55.6	55.6		55.6		31.6	31.6				8.5
Actuated g/C Ratio		0.38	0.38		0.38		0.22	0.22				0.06
v/c Ratio		1.14	0.86		0.40		0.37	1.04				1.07
Control Delay		140.4	50.5		10.4		67.7	82.9				188.7
Queue Delay		0.0	0.0		0.0		0.0	0.0				0.0
Total Delay		140.4	50.5		10.4		67.7	82.9				188.7
LOS		F	D		B		E	F				F
Approach Delay			57.9					82.5				188.7
Approach LOS			E					F				F
Queue Length 50th (ft)		~264	510		46		22	~437				~83
Queue Length 95th (ft)		#453	#620		124		58	#575				#197
Internal Link Dist (ft)			497					1529				412
Turn Bay Length (ft)		300					75					
Base Capacity (vph)		230	1220		741		70	886				70
Starvation Cap Reductn		0	0		0		0	0				0
Spillback Cap Reductn		0	0		0		0	0				0
Storage Cap Reductn		0	0		0		0	0				0
Reduced v/c Ratio		1.14	0.86		0.40		0.37	1.04				1.07

Intersection Summary			
Area Type:	Other		
Cycle Length: 150			
Actuated Cycle Length: 144.8			
Natural Cycle: 140			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.14			
Intersection Signal Delay: 77.5		Intersection LOS: E	
Intersection Capacity Utilization 116.5%		ICU Level of Service H	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave



Lane Group	NBR	NBR2	SBL2	SBL	SBT	SBR	SBR2	NEL2	NEL	NET	NER	NER2
Total Split (s)			13.0	13.0	13.0			17.0	17.0	60.0		
Total Split (%)			8.7%	8.7%	8.7%			11.3%	11.3%	40.0%		
Maximum Green (s)			7.0	7.0	7.0			11.0	11.0	54.0		
Yellow Time (s)			3.0	3.0	3.0			4.0	4.0	4.0		
All-Red Time (s)			3.0	3.0	3.0			2.0	2.0	2.0		
Lost Time Adjust (s)					0.5				0.5	0.5		
Total Lost Time (s)					6.5				6.5	6.5		
Lead/Lag			Lead	Lead	Lead			Lead	Lead			
Lead-Lag Optimize?												
Vehicle Extension (s)			3.0	3.0	3.0			3.0	3.0	3.0		
Recall Mode			None	None	None			None	None	None		
Walk Time (s)										7.0		
Flash Dont Walk (s)										25.0		
Pedestrian Calls (#/hr)										0		
Act Effct Green (s)					6.1				53.6	53.6		
Actuated g/C Ratio					0.04				0.37	0.37		
v/c Ratio					0.32				1.10	0.23		
Control Delay					83.2				131.7	33.8		
Queue Delay					0.0				0.0	0.0		
Total Delay					83.2				131.7	33.8		
LOS					F				F	C		
Approach Delay					83.2					91.5		
Approach LOS					F					F		
Queue Length 50th (ft)					18				~165	95		
Queue Length 95th (ft)					48				#334	151		
Internal Link Dist (ft)					517					1256		
Turn Bay Length (ft)									200			
Base Capacity (vph)					64				180	606		
Starvation Cap Reductn					0				0	0		
Spillback Cap Reductn					0				0	0		
Storage Cap Reductn					0				0	0		
Reduced v/c Ratio					0.30				1.10	0.23		

Intersection Summary

Lane Group	SWL2	SWL	SWT	SWR	SWR2
Total Split (s)	43.0	43.0	43.0		
Total Split (%)	28.7%	28.7%	28.7%		
Maximum Green (s)	37.0	37.0	37.0		
Yellow Time (s)	4.0	4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0		
Lost Time Adjust (s)		0.5	0.5		
Total Lost Time (s)		6.5	6.5		
Lead/Lag	Lag	Lag	Lag		
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0		
Recall Mode	None	None	None		
Walk Time (s)					
Flash Dont Walk (s)					
Pedestrian Calls (#/hr)					
Act Effct Green (s)		36.6	36.6		
Actuated g/C Ratio		0.25	0.25		
v/c Ratio		0.17	1.06		
Control Delay		46.1	113.9		
Queue Delay		0.0	0.0		
Total Delay		46.1	113.9		
LOS		D	F		
Approach Delay			106.8		
Approach LOS			F		
Queue Length 50th (ft)		38	~462		
Queue Length 95th (ft)		77	#679		
Internal Link Dist (ft)			3088		
Turn Bay Length (ft)		150			
Base Capacity (vph)		287	392		
Starvation Cap Reductn		0	0		
Spillback Cap Reductn		0	0		
Storage Cap Reductn		0	0		
Reduced v/c Ratio		0.17	1.06		

Intersection Summary

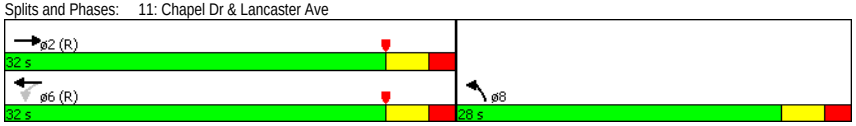
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1119	124	20	822	85	19
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	12	12
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt	0.985				0.975	
Flt Protected				0.999	0.961	
Satd. Flow (prot)	3193	0	0	3238	1653	0
Flt Permitted				0.906	0.961	
Satd. Flow (perm)	3193	0	0	2937	1653	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	25				21	
Link Speed (mph)	35			35	25	
Link Distance (ft)	1609			1291	319	
Travel Time (s)	31.3			25.1	8.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1216	135	22	893	92	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1351	0	0	915	113	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	10			10	10	
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.12	1.12	1.07	1.07
Turning Speed (mph)		9	15		15	9
Number of Detectors	1		1	1	1	
Detector Template	Thru		Left	Thru	Left	
Leading Detector (ft)	37		20	37	37	
Trailing Detector (ft)	-3		0	-3	-3	
Detector 1 Position(ft)	-3		0	-3	-3	
Detector 1 Size(ft)	40		20	40	40	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Detector Phase	2		6	6	8	
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	4.0	
Minimum Split (s)	21.0		21.0	21.0	28.0	
Total Split (s)	32.0		32.0	32.0	28.0	
Total Split (%)	53.3%		53.3%	53.3%	46.7%	
Maximum Green (s)	27.0		27.0	27.0	23.0	
Yellow Time (s)	3.0		3.0	3.0	3.0	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.5			0.5	0.5	
Total Lost Time (s)	5.5			5.5	5.5	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	C-Max		C-Max	C-Max	None	
Walk Time (s)	10.0		10.0	10.0	7.0	
Flash Dont Walk (s)	0.0		0.0	0.0	16.0	
Pedestrian Calls (#/hr)	0		0	0	0	
Act Effct Green (s)	43.8			43.8	8.5	
Actuated g/C Ratio	0.73			0.73	0.14	
v/c Ratio	0.58			0.43	0.45	
Control Delay	6.7			3.3	24.8	
Queue Delay	0.0			0.0	0.0	
Total Delay	6.7			3.3	24.8	
LOS	A			A	C	
Approach Delay	6.7			3.3	24.8	
Approach LOS	A			A	C	
Queue Length 50th (ft)	111			1	31	
Queue Length 95th (ft)	206			m109	67	
Internal Link Dist (ft)	1529			1211	239	
Turn Bay Length (ft)						
Base Capacity (vph)	2335			2142	633	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.58			0.43	0.18	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 26 (43%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.58
Intersection Signal Delay: 6.3 Intersection LOS: A
Intersection Capacity Utilization 54.5% ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Chapel Dr & Lancaster Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	82	963	94	98	703	32	65	126	78	67	238	75
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)		0%			3%			1%			0%	
Storage Length (ft)	140		0	70		0	105		0	65		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.993			0.943			0.964	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1565	3089	0	1541	3061	0	1557	1545	0	1565	1588	0
Flt Permitted	0.257			0.106			0.219			0.459		
Satd. Flow (perm)	423	3089	0	172	3061	0	359	1545	0	756	1588	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1291			2034			183			973	
Travel Time (s)		25.1			39.6			5.0			26.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	86	1014	99	103	740	34	68	133	82	71	251	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	86	1113	0	103	774	0	68	215	0	71	330	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)		10			10			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane												
Headway Factor	1.17	1.17	1.17	1.19	1.19	1.19	1.18	1.18	1.18	1.17	1.17	1.17
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	37	37		37	37		37	37		37	37	
Trailing Detector (ft)	-3	-3		-3	-3		-3	-3		-3	-3	
Detector 1 Position(ft)	-3	-3		-3	-3		-3	-3		-3	-3	
Detector 1 Size(ft)	40	40		40	40		40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	34.0		3.0	34.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	13.0	40.0		13.0	40.0		13.0	13.0		13.0	13.0	

Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	24.0
Minimum Split (s)	26.0

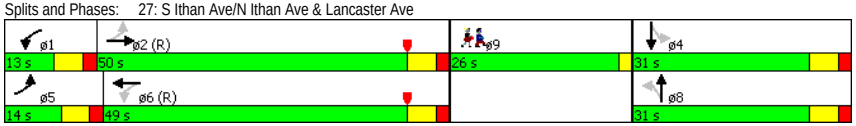
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)	14.0	50.0		13.0	49.0		31.0	31.0		31.0	31.0	
Total Split (%)	11.7%	41.7%		10.8%	40.8%		25.8%	25.8%		25.8%	25.8%	
Maximum Green (s)	8.0	44.0		7.0	43.0		25.0	25.0		25.0	25.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	55.8	48.7		55.7	50.5		24.5	24.5		24.5	24.5	
Actuated g/C Ratio	0.46	0.41		0.46	0.42		0.20	0.20		0.20	0.20	
v/c Ratio	0.33	0.89		0.67	0.60		0.93	0.68		0.46	1.02	
Control Delay	21.1	45.2		40.9	25.4		136.7	56.4		53.1	102.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	21.1	45.2		40.9	25.4		136.7	56.4		53.1	102.3	
LOS	C	D		D	C		F	E		D	F	
Approach Delay		43.5			27.2			75.7			93.6	
Approach LOS		D			C			E			F	
Queue Length 50th (ft)	36	484		47	202		52	155		49	~265	
Queue Length 95th (ft)	m63	#623		m#107	241		#147	243		99	#456	
Internal Link Dist (ft)		1211			1954			103			893	
Turn Bay Length (ft)	140			70			105			65		
Base Capacity (vph)	269	1253		154	1288		73	315		154	324	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.32	0.89		0.67	0.60		0.93	0.68		0.46	1.02	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection
Natural Cycle: 115
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.02
Intersection Signal Delay: 48.9 Intersection LOS: D
Intersection Capacity Utilization 80.5% 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: 27: S Ithan Ave/N Ithan Ave & Lancaster Ave



Lane Group	ø9
Total Split (s)	26.0
Total Split (%)	22%
Maximum Green (s)	24.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	9.0
Flash Dont Walk (s)	15.0
Pedestrian Calls (#/hr)	45
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

HCM 2010 TWSC
2: County Line Rd & N Ithan Ave 9/17/2014

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	SBL	SBR	NWL	NWR
Vol, veh/h	224	37	304	310	24	163
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	0	-
Veh in Median Storage, #	0	-	0	-	0	-
Grade, %	0	-	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	238	39	323	330	26	173

Major/Minor	Minor2		Major2		Minor1	
Conflicting Flow All	87	0	0	-	20	0
Stage 1	0	-	-	-	0	-
Stage 2	87	-	-	-	20	-
Critical Hdwy	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %				-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	SB	NW
HCM Control Delay, s		0	
HCM LOS	-		-

Minor Lane/Major Mvmt	NWLn1	EBLn1	SBL	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	-	-
HCM Lane LOS	-	-	-	-
HCM 95th %tile Q(veh)	-	-	-	-

HCM 2010 TWSC
15: Conestoga Rd & Spring Mill Rd 9/17/2014

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Vol, veh/h	10	664	624	3	17	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	10	692	650	3	18	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	653	0	-	0	1365	652
Stage 1	-	-	-	-	652	-
Stage 2	-	-	-	-	713	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	939	-	-	-	163	470
Stage 1	-	-	-	-	520	-
Stage 2	-	-	-	-	488	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	939	-	-	-	160	470
Mov Cap-2 Maneuver	-	-	-	-	160	-
Stage 1	-	-	-	-	520	-
Stage 2	-	-	-	-	480	-

Approach	EB	WB	SW
HCM Control Delay, s	0.1	0	25
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SWLn1
Capacity (veh/h)	939	-	-	-	207
HCM Lane V/C Ratio	0.011	-	-	-	0.131
HCM Control Delay (s)	8.9	0	-	-	25
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	0.4

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	37	508	17	17	469	16	15	8	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1
Mvmt Flow	39	529	18	18	489	17	16	8	18

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	505	0	0	547	0	0	1184	1156	538
Stage 1	-	-	-	-	-	-	615	615	-
Stage 2	-	-	-	-	-	-	569	541	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309
Pot Cap-1 Maneuver	1065	-	-	1027	-	-	167	197	545
Stage 1	-	-	-	-	-	-	480	484	-
Stage 2	-	-	-	-	-	-	509	522	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1065	-	-	1027	-	-	132	182	545
Mov Cap-2 Maneuver	-	-	-	-	-	-	132	182	-
Stage 1	-	-	-	-	-	-	455	458	-
Stage 2	-	-	-	-	-	-	434	509	-

Approach	EB	WB	NB
HCM Control Delay, s	0.6	0.3	26.1
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	212	1065	-	-	1027	-	-	323
HCM Lane V/C Ratio	0.197	0.036	-	-	0.017	-	-	0.255
HCM Control Delay (s)	26.1	8.5	0	-	8.6	0	-	19.9
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.7	0.1	-	-	0.1	-	-	1

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	9	17	53
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	96	96	96
Heavy Vehicles, %	1	1	1
Mvmt Flow	9	18	55

Major/Minor	Minor2		
Conflicting Flow All	1160	1156	497
Stage 1	532	532	-
Stage 2	628	624	-
Critical Hdwy	7.11	6.51	6.21
Critical Hdwy Stg 1	6.11	5.51	-
Critical Hdwy Stg 2	6.11	5.51	-
Follow-up Hdwy	3.509	4.009	3.309
Pot Cap-1 Maneuver	173	197	575
Stage 1	533	527	-
Stage 2	472	479	-
Platoon blocked, %			
Mov Cap-1 Maneuver	152	182	575
Mov Cap-2 Maneuver	152	182	-
Stage 1	505	514	-
Stage 2	425	454	-

Approach	SB
HCM Control Delay, s	19.9
HCM LOS	C

Minor Lane/Major Mvmt

HCM 2010 TWSC
38: County Line Rd & N Ithan Ave 9/17/2014

Intersection	
Int Delay, s/veh	65

Movement	NBT	NBR	SBL	SBT	SWL	SWR
Vol, veh/h	271	118	184	496	115	63
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	288	126	196	528	122	67

Major/Minor	Major1		Minor2		Minor1	
Conflicting Flow All	0	0	385	414	615	351
Stage 1	-	-	0	0	351	-
Stage 2	-	-	385	414	264	-
Critical Hdwy	-	-	6.41	6.51	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	5.41	5.51	-	-
Follow-up Hdwy	-	-	3.509	4.009	3.509	3.309
Pot Cap-1 Maneuver	-	-	620	530	456	695
Stage 1	-	-	-	-	715	-
Stage 2	-	-	690	595	-	-
Platoon blocked, %	-	-				
Mov Cap-1 Maneuver	-	-	620	0	456	695
Mov Cap-2 Maneuver	-	-	620	0	456	-
Stage 1	-	-	-	0	715	-
Stage 2	-	-	690	0	-	-

Approach	NB	SB	SW
HCM Control Delay, s	0	115.1	15.9
HCM LOS		F	C

Minor Lane/Major Mvmt	NBT	NBR	SBLn1	SWLn1
Capacity (veh/h)	-	-	620	519
HCM Lane V/C Ratio	-	-	1.167	0.365
HCM Control Delay (s)	-	-	115.1	15.9
HCM Lane LOS	-	-	F	C
HCM 95th %tile Q(veh)	-	-	24.2	1.7

HCM 2010 TWSC
43: County Line Rd & Roberts Rd 9/17/2014

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	37	26	1	9	26	11	4	515	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1
Mvmt Flow	39	27	1	9	27	12	4	542	31

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	1042	1330	379	950	1347	286	758	0	0
Stage 1	749	749	-	566	566	-	-	-	-
Stage 2	293	581	-	384	781	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.52	6.52	6.92	4.12	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.52	5.52	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.52	5.52	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.51	4.01	3.31	2.21	-	-
Pot Cap-1 Maneuver	185	155	622	216	151	714	856	-	-
Stage 1	372	420	-	479	508	-	-	-	-
Stage 2	694	500	-	613	406	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	153	151	622	182	147	714	856	-	-
Mov Cap-2 Maneuver	153	151	-	182	147	-	-	-	-
Stage 1	369	411	-	476	504	-	-	-	-
Stage 2	641	497	-	559	397	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	45.4	30.3	0.1
HCM LOS	E	D	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	856	-	-	154	190	1003	-	-
HCM Lane V/C Ratio	0.005	-	-	0.437	0.255	0.012	-	-
HCM Control Delay (s)	9.2	0	-	45.4	30.3	8.6	0.1	-
HCM Lane LOS	A	A	-	E	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	2	1	0	-	-

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	11	659	61
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	1	1	1
Mvmt Flow	12	694	64

Major/Minor	Major2		
Conflicting Flow All	573	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.21	-	-
Pot Cap-1 Maneuver	1003	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1003	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.2
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	171	217	347	16	12	119
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	174	221	354	16	12	121

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	370	0	-	0	932	362
Stage 1	-	-	-	-	362	-
Stage 2	-	-	-	-	570	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1194	-	-	-	297	685
Stage 1	-	-	-	-	707	-
Stage 2	-	-	-	-	568	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1194	-	-	-	248	685
Mov Cap-2 Maneuver	-	-	-	-	248	-
Stage 1	-	-	-	-	707	-
Stage 2	-	-	-	-	474	-

Approach	EB	WB	SB
HCM Control Delay, s	3.8	0	12.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1194	-	-	-	590
HCM Lane V/C Ratio	0.146	-	-	-	0.227
HCM Control Delay (s)	8.5	0	-	-	12.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.5	-	-	-	0.9

HCM 2010 TWSC
53: County Line Rd & Lowrys Ln 9/17/2014

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	16	19	52	184	157	125
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	17	20	54	192	164	130

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	529	229	294	0	-	0
Stage 1	229	-	-	-	-	-
Stage 2	300	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	514	815	1279	-	-	-
Stage 1	814	-	-	-	-	-
Stage 2	756	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	490	815	1279	-	-	-
Mov Cap-2 Maneuver	490	-	-	-	-	-
Stage 1	814	-	-	-	-	-
Stage 2	720	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.1	1.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1279	-	625	-	-
HCM Lane V/C Ratio	0.042	-	0.058	-	-
HCM Control Delay (s)	7.9	0	11.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

HCM 2010 TWSC
61: Dwy/Aldwyn Ln & S Ithan Ave 9/17/2014

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	35	134	5	52	274	22	8	3	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	38	147	5	57	301	24	9	3	42

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	325	0	0	153	0	0	662	667	150
Stage 1	-	-	-	-	-	-	227	227	-
Stage 2	-	-	-	-	-	-	435	440	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1235	-	-	1428	-	-	375	380	896
Stage 1	-	-	-	-	-	-	776	716	-
Stage 2	-	-	-	-	-	-	600	578	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1235	-	-	1428	-	-	345	349	896
Mov Cap-2 Maneuver	-	-	-	-	-	-	345	349	-
Stage 1	-	-	-	-	-	-	750	692	-
Stage 2	-	-	-	-	-	-	559	550	-

Approach	EB	WB	NB
HCM Control Delay, s	1.6	1.1	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	660	1235	-	-	1428	-	-	564
HCM Lane V/C Ratio	0.082	0.031	-	-	0.04	-	-	0.033
HCM Control Delay (s)	10.9	8	0	-	7.6	0	-	11.6
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0.1	-	-	0.1

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	4	0	13
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	91	91	91
Heavy Vehicles, %	2	2	2
Mvmt Flow	4	0	14

Major/Minor	Minor2		
Conflicting Flow All	676	657	313
Stage 1	427	427	-
Stage 2	249	230	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	367	385	727
Stage 1	606	585	-
Stage 2	755	714	-
Platoon blocked, %			
Mov Cap-1 Maneuver	326	354	727
Mov Cap-2 Maneuver	326	354	-
Stage 1	585	556	-
Stage 2	692	690	-

Approach	SB
HCM Control Delay, s	11.6
HCM LOS	B

Minor Lane/Major Mvmt

HCM research expects at least one 'Stop' controlled approach at the intersection.

HCM 2010 TWSC
76: S Ithan Ave & Dwy 9/17/2014

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	153	265	0	109	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	1	-1	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	166	288	0	118	58

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	288	0	-	0	454	288
Stage 1	-	-	-	-	288	-
Stage 2	-	-	-	-	166	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1274	-	-	-	564	751
Stage 1	-	-	-	-	761	-
Stage 2	-	-	-	-	863	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1274	-	-	-	564	751
Mov Cap-2 Maneuver	-	-	-	-	564	-
Stage 1	-	-	-	-	761	-
Stage 2	-	-	-	-	863	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	13.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1274	-	-	-	614
HCM Lane V/C Ratio	-	-	-	-	0.287
HCM Control Delay (s)	0	-	-	-	13.2
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	1.2

HCM 2010 TWSC
78: Dwy & S Ithan Ave 9/17/2014

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	214	0	0	430	20	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	1	-	-	-1	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	233	0	0	467	22	59

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	233	0	700	233
Stage 1	-	-	-	-	233	-
Stage 2	-	-	-	-	467	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1335	-	405	806
Stage 1	-	-	-	-	806	-
Stage 2	-	-	-	-	631	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1335	-	405	806
Mov Cap-2 Maneuver	-	-	-	-	405	-
Stage 1	-	-	-	-	806	-
Stage 2	-	-	-	-	631	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	636	-	-	1335	-
HCM Lane V/C Ratio	0.126	-	-	-	-
HCM Control Delay (s)	11.5	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection	
Int Delay, s/veh	1.6

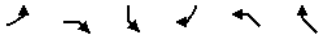
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1236	47	48	925	0	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	3	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1507	57	59	1128	0	46

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1565	0	2217	782
Stage 1	-	-	-	-	1536	-
Stage 2	-	-	-	-	681	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	428	-	38	341
Stage 1	-	-	-	-	167	-
Stage 2	-	-	-	-	469	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	428	-	24	341
Mov Cap-2 Maneuver	-	-	-	-	24	-
Stage 1	-	-	-	-	167	-
Stage 2	-	-	-	-	296	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.1	17.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	341	-	-	428	-
HCM Lane V/C Ratio	0.136	-	-	0.137	-
HCM Control Delay (s)	17.2	-	-	14.7	2.5
HCM Lane LOS	C	-	-	B	A
HCM 95th %tile Q(veh)	0.5	-	-	0.5	-

Lanes, Volumes, Timings
2: County Line Rd & N Ithan Ave 9/17/2014



Lane Group	EBL	EBR	SBL	SBR	NWL	NWR
Lane Configurations						
Volume (vph)	224	37	304	310	24	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.981		0.932		0.883	
Flt Protected	0.959		0.976		0.994	
Satd. Flow (prot)	1763	0	1711	0	1651	0
Flt Permitted	0.959		0.976		0.994	
Satd. Flow (perm)	1763	0	1711	0	1651	0
Link Speed (mph)	30		30		30	
Link Distance (ft)	973		295		2014	
Travel Time (s)	22.1		6.7		45.8	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	1	0	0	0	0	0
Adj. Flow (vph)	238	39	323	330	26	173
Shared Lane Traffic (%)						
Lane Group Flow (vph)	277	0	653	0	199	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Right
Median Width(ft)	22		12		12	
Link Offset(ft)	0		0		0	
Crosswalk Width(ft)	10		10		10	
Two way Left Turn Lane						
Headway Factor	1.01	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15	9	15	9
Sign Control	Stop		Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 71.9%		ICU Level of Service C	
Analysis Period (min) 15			

Lanes, Volumes, Timings
38: County Line Rd & N Ithan Ave

9/17/2014

Lane Group	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Volume (vph)	271	118	184	496	115	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.959				0.952	
Flt Protected				0.987	0.969	
Satd. Flow (prot)	1804	0	0	1857	1735	0
Flt Permitted				0.987	0.969	
Satd. Flow (perm)	1804	0	0	1857	1735	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	295			1901	824	
Travel Time (s)	6.7			43.2	18.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	288	126	196	528	122	67
Shared Lane Traffic (%)						
Lane Group Flow (vph)	414	0	0	724	189	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	10			10	10	
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
Sign Control	Free			Stop	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 78.0%		ICU Level of Service D	
Analysis Period (min) 15			

HCM 2010 Signalized Intersection Summary
3: County Line Rd & Spring Mill Rd

9/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	65	308	96	47	247	52	73	185	38	66	381	45
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	180.0	178.9	180.0	180.0	176.5	180.0	180.0	180.0	180.0	180.0	177.3	180.0
Adj Flow Rate, veh/h	90	342	112	65	284	81	90	237	58	87	428	65
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.72	0.90	0.86	0.72	0.87	0.64	0.81	0.78	0.66	0.76	0.89	0.69
Percent Heavy Veh, %	1	1	1	3	3	3	0	0	0	1	1	1
Cap, veh/h	134	373	113	115	370	96	145	337	72	135	480	69
Arrive On Green	0.38	0.38	0.38	0.38	0.38	0.38	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	167	979	297	118	973	253	176	843	181	162	1203	172
Grp Volume(v), veh/h	544	0	0	430	0	0	385	0	0	580	0	0
Grp Sat Flow(s),veh/h/ln	1442	0	0	1344	0	0	1199	0	0	1537	0	0
Q Serve(g_s), s	6.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.1	0.0	0.0
Cycle Q Clear(g_c), s	22.2	0.0	0.0	16.0	0.0	0.0	15.5	0.0	0.0	21.6	0.0	0.0
Prop In Lane	0.17		0.21	0.15		0.19	0.23		0.15	0.15		0.11
Lane Grp Cap(c), veh/h	620	0	0	582	0	0	554	0	0	684	0	0
V/C Ratio(X)	0.88	0.00	0.00	0.74	0.00	0.00	0.69	0.00	0.00	0.85	0.00	0.00
Avail Cap(c_a), veh/h	620	0	0	582	0	0	576	0	0	708	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.45	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	18.0	0.0	0.0	15.6	0.0	0.0	14.3	0.0	0.0	16.9	0.0	0.0
Incr Delay (d2), s/veh	8.1	0.0	0.0	8.2	0.0	0.0	2.8	0.0	0.0	8.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.2	0.0	0.0	7.5	0.0	0.0	5.8	0.0	0.0	10.7	0.0	0.0
LnGrp Delay(d),s/veh	26.0	0.0	0.0	23.8	0.0	0.0	17.2	0.0	0.0	25.6	0.0	0.0
LnGrp LOS	C			C			B			C		
Approach Vol, veh/h		544			430			385			580	
Approach Delay, s/veh		26.0			23.8			17.2			25.6	
Approach LOS		C			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		29.9		30.1		29.9		30.1
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		23.0		25.0		23.0		25.0
Max Q Clear Time (g_c+I1), s		24.2		23.6		18.0		17.5
Green Ext Time (p_c), s		0.0		0.5		2.1		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	23.7
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave

9/17/2014

HCM 2010 methodology does not support more than 4 approaches.

HCM 2010 Signalized Intersection Summary
11: Chapel Dr & Lancaster Ave

9/17/2014

Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations								
Volume (veh/h)	1181	37	26	859	103	30		
Number	2	12	1	6	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	176.5	180.0	180.0	176.5	176.5	176.5		
Adj Flow Rate, veh/h	1284	40	28	934	112	33		
Adj No. of Lanes	2	0	0	2	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	2140	67	113	2032	148	132		
Arrive On Green	0.64	0.64	0.64	0.64	0.09	0.09		
Sat Flow, veh/h	3408	103	32	3234	1681	1500		
Grp Volume(v), veh/h	648	676	502	460	112	33		
Grp Sat Flow(s),veh/h/ln	1676	1746	1660	1526	1681	1500		
Q Serve(g_s), s	9.2	9.2	0.0	6.3	2.7	0.8		
Cycle Q Clear(g_c), s	9.2	9.2	5.8	6.3	2.7	0.8		
Prop In Lane		0.06	0.06		1.00	1.00		
Lane Grp Cap(c), veh/h	1081	1126	1162	983	148	132		
V/C Ratio(X)	0.60	0.60	0.43	0.47	0.76	0.25		
Avail Cap(c_a), veh/h	1081	1126	1162	983	920	821		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.72	0.72	1.00	1.00		
Uniform Delay (d), s/veh	4.2	4.2	3.6	3.7	18.3	17.5		
Incr Delay (d2), s/veh	2.5	2.4	0.8	1.2	7.7	1.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	4.9	5.1	3.1	2.9	1.6	0.4		
LnGrp Delay(d),s/veh	6.7	6.6	4.5	4.9	26.0	18.5		
LnGrp LOS	A	A	A	A	C	B		
Approach Vol, veh/h	1324			962	145			
Approach Delay, s/veh	6.7			4.7	24.3			
Approach LOS	A			A	C			

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		50.9				50.9		9.1
Change Period (Y+Rc), s		5.0				5.0		5.0
Max Green Setting (Gmax), s		27.0				27.0		23.0
Max Q Clear Time (g_c+I1), s		11.2				8.3		4.7
Green Ext Time (p_c), s		9.0				9.9		0.4

Intersection Summary		
HCM 2010 Ctrl Delay		6.9
HCM 2010 LOS		A

HCM 2010 Signalized Intersection Summary
16: Sproul Rd & Conestoga Rd

9/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	106	553	220	27	518	47	106	187	28	51	295	83
Number	7	4	14	3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	178.2	178.2	180.0	182.7	182.7	184.5	177.3	177.3	179.1	180.9	179.1	180.9
Adj Flow Rate, veh/h	112	582	0	28	545	0	112	197	29	54	311	87
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	216	798	0	247	588	0	192	612	90	88	324	86
Arrive On Green	0.06	0.45	0.00	0.32	0.32	0.00	0.06	0.40	0.40	0.27	0.27	0.27
Sat Flow, veh/h	1697	1782	0	858	1827	0	1689	1511	223	136	1206	320
Grp Volume(v), veh/h	112	582	0	28	545	0	112	0	226	452	0	0
Grp Sat Flow(s),veh/h/ln	1697	1782	0	858	1827	0	1689	0	1734	1662	0	0
Q Serve(g_s), s	3.3	20.9	0.0	2.2	22.5	0.0	3.6	0.0	7.0	14.7	0.0	0.0
Cycle Q Clear(g_c), s	3.3	20.9	0.0	13.2	22.5	0.0	3.6	0.0	7.0	21.0	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.13	0.12		0.19
Lane Grp Cap(c), veh/h	216	798	0	247	588	0	192	0	702	498	0	0
V/C Ratio(X)	0.52	0.73	0.00	0.11	0.93	0.00	0.58	0.00	0.32	0.91	0.00	0.00
Avail Cap(c_a), veh/h	262	798	0	247	588	0	233	0	744	498	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	19.3	17.7	0.0	27.1	25.6	0.0	20.9	0.0	15.9	28.6	0.0	0.0
Incr Delay (d2), s/veh	1.9	5.8	0.0	0.9	23.0	0.0	2.8	0.0	0.3	20.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	11.5	0.0	0.6	15.1	0.0	1.8	0.0	3.4	12.5	0.0	0.0
LnGrp Delay(d),s/veh	21.2	23.5	0.0	28.1	48.6	0.0	23.7	0.0	16.2	48.9	0.0	0.0
LnGrp LOS	C	C		C	D		C		B	D		
Approach Vol, veh/h		694			573			338			452	
Approach Delay, s/veh		23.1			47.6			18.7			48.9	
Approach LOS		C			D			B			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6	7	8
Phs Duration (G+Y+Rc), s	10.6	27.0		42.4		37.6	9.9	32.5
Change Period (Y+Rc), s	5.5	5.5		5.0		5.5	5.0	5.0
Max Green Setting (Gmax), s	7.0	21.5		35.5		34.0	7.0	23.5
Max Q Clear Time (g_c+I1), s	5.6	23.0		22.9		9.0	5.3	24.5
Green Ext Time (p_c), s	0.0	0.0		5.7		2.5	0.0	0.0

Intersection Summary		
HCM 2010 Ctrl Delay		34.9
HCM 2010 LOS		C

HCM 2010 Signalized Intersection Summary
25: S Ithan Ave & Conestoga Rd

9/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	62	526	7	11	475	37	7	16	6	43	78	128
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	185.4	183.6	185.4	176.4	174.7	176.4	176.3	174.5	176.3	184.4	182.6	184.4
Adj Flow Rate, veh/h	70	598	8	12	540	42	8	18	7	49	89	145
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	145	771	10	91	764	59	146	231	73	137	130	176
Arrive On Green	0.48	0.48	0.48	0.48	0.48	0.48	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	106	1595	20	10	1582	121	193	1091	346	180	614	834
Grp Volume(v), veh/h	676	0	0	594	0	0	33	0	0	283	0	0
Grp Sat Flow(s),veh/h/ln	1722	0	0	1713	0	0	1630	0	0	1628	0	0
Q Serve(g_s), s	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.9	0.0	0.0
Cycle Q Clear(g_c), s	13.7	0.0	0.0	11.5	0.0	0.0	0.7	0.0	0.0	7.0	0.0	0.0
Prop In Lane	0.10		0.01	0.02		0.07	0.24		0.21	0.17		0.51
Lane Grp Cap(c), veh/h	925	0	0	914	0	0	449	0	0	443	0	0
V/C Ratio(X)	0.73	0.00	0.00	0.65	0.00	0.00	0.07	0.00	0.00	0.64	0.00	0.00
Avail Cap(c_a), veh/h	1424	0	0	1427	0	0	678	0	0	689	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.1	0.0	0.0	8.7	0.0	0.0	13.5	0.0	0.0	16.0	0.0	0.0
Incr Delay (d2), s/veh	1.1	0.0	0.0	0.8	0.0	0.0	0.1	0.0	0.0	1.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	0.0	0.0	5.6	0.0	0.0	0.3	0.0	0.0	3.3	0.0	0.0
LnGrp Delay(d),s/veh	10.2	0.0	0.0	9.5	0.0	0.0	13.6	0.0	0.0	17.5	0.0	0.0
LnGrp LOS	B			A			B			B		
Approach Vol, veh/h		676			594			33			283	
Approach Delay, s/veh		10.2			9.5			13.6			17.5	
Approach LOS		B			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		27.1		15.5		27.1		15.5
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		34.0		16.0		34.0		16.0
Max Q Clear Time (g_c+I1), s		13.5		2.7		15.7		9.0
Green Ext Time (p_c), s		5.6		1.0		5.4		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	11.3
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
27: S Ithan Ave/N Ithan Ave & Lancaster Ave

9/17/2014

HCM 2010 methodology does not support exclusive ped or hold phases.

HCM 2010 Signalized Intersection Summary
33: Williams Rd/Garrett Ave & Conestoga Rd

9/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	27	492	9	12	497	29	16	1	11	28	12	52
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	187.2	187.2	187.2	187.2	187.2	187.2	180.0	180.0	180.0	172.8	172.8	172.8
Adj Flow Rate, veh/h	29	535	10	13	540	32	17	1	12	30	13	57
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	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
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	89	1244	23	67	1230	72	141	25	52	101	26	71
Arrive On Green	0.71	0.71	0.71	0.71	0.71	0.71	0.08	0.08	0.08	0.08	0.08	0.08
Sat Flow, veh/h	42	1746	32	13	1727	101	632	294	618	334	307	849
Grp Volume(v), veh/h	574	0	0	585	0	0	30	0	0	100	0	0
Grp Sat Flow(s),veh/h/ln	1820	0	0	1840	0	0	1544	0	0	1490	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	0.0	0.0
Cycle Q Clear(g_c), s	8.2	0.0	0.0	8.5	0.0	0.0	1.1	0.0	0.0	4.2	0.0	0.0
Prop In Lane	0.05		0.02	0.02		0.05	0.57		0.40	0.30		0.57
Lane Grp Cap(c), veh/h	1356	0	0	1369	0	0	218	0	0	199	0	0
V/C Ratio(X)	0.42	0.00	0.00	0.43	0.00	0.00	0.14	0.00	0.00	0.50	0.00	0.00
Avail Cap(c_a), veh/h	1356	0	0	1369	0	0	400	0	0	385	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.8	0.0	0.0	3.9	0.0	0.0	27.3	0.0	0.0	28.7	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.0	0.0	1.0	0.0	0.0	0.4	0.0	0.0	2.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.0	0.0	4.6	0.0	0.0	0.5	0.0	0.0	1.9	0.0	0.0
LnGrp Delay(d),s/veh	4.8	0.0	0.0	4.8	0.0	0.0	27.7	0.0	0.0	31.5	0.0	0.0
LnGrp LOS	A			A			C			C		
Approach Vol, veh/h		574			585			30			100	
Approach Delay, s/veh		4.8			4.8			27.7			31.5	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		52.0		11.9		52.0		11.9
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0
Max Green Setting (Gmax), s		46.0		14.0		46.0		14.0
Max Q Clear Time (g_c+I1), s		10.2		6.2		10.5		3.1
Green Ext Time (p_c), s		5.6		0.3		5.6		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	7.4
HCM 2010 LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

HCM 2010 Signalized Intersection Summary
51: Lowrys Ln & Lancaster Ave

9/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	1229	23	15	1008	4	20	36	15	99	71	72
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	180.0	178.2	180.0	177.3	175.5	177.3	190.0	188.1	190.0	188.1	186.3	188.1
Adj Flow Rate, veh/h	2	1336	25	16	1096	4	22	39	16	108	77	78
Adj No. of Lanes	0	2	0	0	2	0	0	1	0	0	1	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
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	65	1983	37	74	1951	7	135	200	66	199	109	92
Arrive On Green	0.60	0.60	0.60	0.60	0.60	0.60	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	1	3329	62	15	3275	12	276	1048	347	570	569	480
Grp Volume(v), veh/h	715	0	648	577	0	539	77	0	0	263	0	0
Grp Sat Flow(s),veh/h/ln	1781	0	1611	1706	0	1595	1671	0	0	1619	0	0
Q Serve(g_s), s	0.0	0.0	15.3	0.0	0.0	11.6	0.0	0.0	0.0	6.8	0.0	0.0
Cycle Q Clear(g_c), s	15.2	0.0	15.3	11.1	0.0	11.6	2.0	0.0	0.0	8.8	0.0	0.0
Prop In Lane	0.00		0.04	0.03		0.01	0.29		0.21	0.41		0.30
Lane Grp Cap(c), veh/h	1125	0	960	1082	0	950	401	0	0	399	0	0
V/C Ratio(X)	0.64	0.00	0.67	0.53	0.00	0.57	0.19	0.00	0.00	0.66	0.00	0.00
Avail Cap(c_a), veh/h	1125	0	960	1082	0	950	510	0	0	505	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.7	0.0	7.7	6.8	0.0	6.9	19.2	0.0	0.0	21.9	0.0	0.0
Incr Delay (d2), s/veh	2.7	0.0	3.8	1.9	0.0	2.4	0.2	0.0	0.0	2.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	0.0	7.7	5.9	0.0	5.6	1.0	0.0	0.0	4.2	0.0	0.0
LnGrp Delay(d),s/veh	10.4	0.0	11.5	8.7	0.0	9.4	19.5	0.0	0.0	24.0	0.0	0.0
LnGrp LOS	B		B	A		A	B			C		
Approach Vol, veh/h		1363			1116			77			263	
Approach Delay, s/veh		10.9			9.0			19.5			24.0	
Approach LOS		B			A			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		43.8		16.2		43.8		16.2
Change Period (Y+Rc), s		6.0		5.0		6.0		5.0
Max Green Setting (Gmax), s		34.0		15.0		34.0		15.0
Max Q Clear Time (g_c+I1), s		17.3		10.8		13.6		4.0
Green Ext Time (p_c), s		10.0		0.5		11.3		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	11.6
HCM 2010 LOS	B

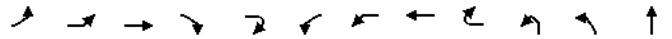
Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR2	NBL2	NBL	NBT
Lane Configurations												
Volume (vph)	4	251	989	31	284	2	23	911	33	7	52	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	11	11	14	10	12	12	12	10	10	10
Grade (%)			3%					-2%				1%
Storage Length (ft)		300		0			75				0	
Storage Lanes		1		1			1				0	
Taper Length (ft)		25					25				25	
Lane Util. Factor	0.95	1.00	0.95	0.95	1.00	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.995		0.850			0.995				0.975
Flt Protected		0.950					0.950					0.961
Satd. Flow (prot)	0	1541	3177	0	1576	0	1693	3370	0	0	0	1536
Flt Permitted		0.093					0.213					0.753
Satd. Flow (perm)	0	151	3177	0	1576	0	380	3370	0	0	0	1203
Right Turn on Red					Yes				Yes			
Satd. Flow (RTOR)					234			196				
Link Speed (mph)			35					35				25
Link Distance (ft)			577					864				492
Travel Time (s)			11.2					16.8				13.4
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	4	259	1020	32	293	2	24	939	34	7	54	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	263	1052	0	293	0	26	973	0	0	0	75
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Right	Left	Left	Left	Right	Left	Left	Left
Median Width(ft)			12					12				0
Link Offset(ft)			0					0				0
Crosswalk Width(ft)			10					10				10
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.14	1.14	1.01	1.16	1.06	1.06	1.06	1.18	1.18	1.18
Turning Speed (mph)	15	15		9	9	15	15		9	15	15	
Number of Detectors	1	1	1		1	1	1	1		1	1	1
Detector Template	Left	Left	Thru		Right	Left	Left	Thru		Left	Left	Thru
Leading Detector (ft)	20	37	37		37	20	37	37		20	20	37
Trailing Detector (ft)	0	-3	-3		-3	0	-3	-3		0	0	-3
Detector 1 Position(ft)	0	-3	-3		-3	0	-3	-3		0	0	-3
Detector 1 Size(ft)	20	40	40		40	20	40	40		20	20	40
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	pm+pt	pm+pt	NA		Perm	Perm	Perm	NA		Perm	Perm	NA
Protected Phases	5	5	2					6				10
Permitted Phases	2	2			2	6	6			10	10	
Detector Phase	5	5	2		2	6	6	6		10	10	10
Switch Phase												
Minimum Initial (s)	3.0	3.0	15.0		15.0	15.0	15.0	15.0		3.0	3.0	3.0
Minimum Split (s)	13.0	13.0	21.0		21.0	21.0	21.0	21.0		13.0	13.0	13.0

Lane Group	NBR	NBR2	SBL2	SBL	SBT	SBR	SBR2	NEL2	NEL	NET	NER	NER2
Lane Configurations												
Volume (vph)	4	10	1	1	0	3	14	192	0	113	20	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	12	12	11	11	11
Grade (%)					-3%					3%		
Storage Length (ft)	0			0		0			200		0	
Storage Lanes	0			0		0			1		0	
Taper Length (ft)				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					0.879					0.976		
Flt Protected					0.995				0.950			
Satd. Flow (prot)	0	0	0	0	1462	0	0	0	1651	1640	0	0
Flt Permitted					0.982				0.097			
Satd. Flow (perm)	0	0	0	0	1443	0	0	0	169	1640	0	0
Right Turn on Red		No					No					No
Satd. Flow (RTOR)												
Link Speed (mph)					25					40		
Link Distance (ft)					597					1336		
Travel Time (s)					16.3					22.8		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	4	10	1	1	0	3	14	198	0	116	21	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	19	0	0	0	198	138	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Right	Right	Left	Left	Left	Right	Right	Left	Left	Left	Right	Right
Median Width(ft)					0					12		
Link Offset(ft)					0					0		
Crosswalk Width(ft)					10					10		
Two way Left Turn Lane												
Headway Factor	1.18	1.18	1.15	1.15	1.15	1.15	1.15	1.09	1.09	1.14	1.14	1.14
Turning Speed (mph)	9	9	15	15		9	9	15	15		9	9
Number of Detectors			1	1	1			1	1	1		
Detector Template			Left	Left	Thru			Left	Left	Thru		
Leading Detector (ft)			20	20	37			20	37	37		
Trailing Detector (ft)			0	0	-3			0	-3	-3		
Detector 1 Position(ft)			0	0	-3			0	-3	-3		
Detector 1 Size(ft)			20	20	40			20	40	40		
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel												
Detector 1 Extend (s)			0.0	0.0	0.0			0.0	0.0	0.0		
Detector 1 Queue (s)			0.0	0.0	0.0			0.0	0.0	0.0		
Detector 1 Delay (s)			0.0	0.0	0.0			0.0	0.0	0.0		
Turn Type			Perm	Perm	NA			pm+pt	pm+pt	NA		
Protected Phases					9			3	3	8		
Permitted Phases			9	9				8	8			
Detector Phase			9	9	9			3	3	8		
Switch Phase												
Minimum Initial (s)			3.0	3.0	3.0			3.0	3.0	3.0		
Minimum Split (s)			13.0	13.0	13.0			13.0	13.0	13.0		

Lane Group	SWL2	SWL	SWT	SWR	SWR2
Lane Configurations					
Volume (vph)	39	9	168	236	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10
Grade (%)			-7%		
Storage Length (ft)		150		0	
Storage Lanes		1		0	
Taper Length (ft)		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00
Frt			0.912		
Flt Protected		0.950			
Satd. Flow (prot)	0	1619	1555	0	0
Flt Permitted		0.669			
Satd. Flow (perm)	0	1140	1555	0	0
Right Turn on Red					No
Satd. Flow (RTOR)					
Link Speed (mph)			25		
Link Distance (ft)			3168		
Travel Time (s)			86.4		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	40	9	173	243	1
Shared Lane Traffic (%)					
Lane Group Flow (vph)	0	49	417	0	0
Enter Blocked Intersection	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Right
Median Width(ft)			12		
Link Offset(ft)			0		
Crosswalk Width(ft)			10		
Two way Left Turn Lane					
Headway Factor	1.12	1.12	1.12	1.12	1.12
Turning Speed (mph)	15	15		9	9
Number of Detectors	1	1	1		
Detector Template	Left	Left	Thru		
Leading Detector (ft)	20	37	37		
Trailing Detector (ft)	0	-3	-3		
Detector 1 Position(ft)	0	-3	-3		
Detector 1 Size(ft)	20	40	40		
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel					
Detector 1 Extend (s)	0.0	0.0	0.0		
Detector 1 Queue (s)	0.0	0.0	0.0		
Detector 1 Delay (s)	0.0	0.0	0.0		
Turn Type	Perm	Perm	NA		
Protected Phases			4		
Permitted Phases	4	4			
Detector Phase	4	4	4		
Switch Phase					
Minimum Initial (s)	3.0	3.0	3.0		
Minimum Split (s)	13.0	13.0	13.0		



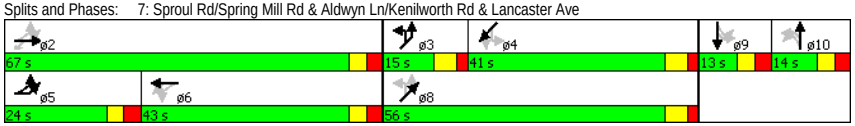
Lane Group	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR2	NBL2	NBL	NBT
Total Split (s)	24.0	24.0	67.0		67.0	43.0	43.0	43.0		14.0	14.0	14.0
Total Split (%)	16.0%	16.0%	44.7%		44.7%	28.7%	28.7%	28.7%		9.3%	9.3%	9.3%
Maximum Green (s)	18.0	18.0	61.0		61.0	37.0	37.0	37.0		8.0	8.0	8.0
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)		0.5	0.5		0.5		0.5	0.5				0.5
Total Lost Time (s)		6.5	6.5		6.5		6.5	6.5				6.5
Lead/Lag	Lead	Lead				Lag	Lag	Lag		Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	Max		Max	None	None	None		None	None	None
Walk Time (s)			7.0		7.0	7.0	7.0	7.0				
Flash Dont Walk (s)			20.0		20.0	20.0	20.0	20.0				
Pedestrian Calls (#/hr)			0		0	0	0	0				
Act Effct Green (s)		60.6	60.6		60.6		36.6	36.6				7.5
Actuated g/C Ratio		0.42	0.42		0.42		0.25	0.25				0.05
v/c Ratio		1.14	0.79		0.37		0.27	0.98				1.21
Control Delay		138.7	42.7		8.2		54.7	65.9				236.1
Queue Delay		0.0	0.0		0.0		0.0	0.0				0.0
Total Delay		138.7	42.7		8.2		54.7	65.9				236.1
LOS		F	D		A		D	E				F
Approach Delay			52.1					65.6				236.1
Approach LOS			D					E				F
Queue Length 50th (ft)		~263	480		36		21	~427				~91
Queue Length 95th (ft)		#452	574		106		53	#580				#205
Internal Link Dist (ft)			497					784				412
Turn Bay Length (ft)		300					75					
Base Capacity (vph)		231	1329		795		96	997				62
Starvation Cap Reductn		0	0		0		0	0				0
Spillback Cap Reductn		0	0		0		0	0				0
Storage Cap Reductn		0	0		0		0	0				0
Reduced v/c Ratio		1.14	0.79		0.37		0.27	0.98				1.21

Intersection Summary			
Area Type:	Other		
Cycle Length: 150			
Actuated Cycle Length: 144.8			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.37			
Intersection Signal Delay: 79.5		Intersection LOS: E	
Intersection Capacity Utilization 116.6%		ICU Level of Service H	
Analysis Period (min) 15			

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

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

Splits and Phases: 7: Sproul Rd/Spring Mill Rd & Aldwyn Ln/Kenilworth Rd & Lancaster Ave



Lane Group	NBR	NBR2	SBL2	SBL	SBT	SBR	SBR2	NEL2	NEL	NET	NER	NER2
Total Split (s)			13.0	13.0	13.0			15.0	15.0	56.0		
Total Split (%)			8.7%	8.7%	8.7%			10.0%	10.0%	37.3%		
Maximum Green (s)			7.0	7.0	7.0			9.0	9.0	50.0		
Yellow Time (s)			3.0	3.0	3.0			4.0	4.0	4.0		
All-Red Time (s)			3.0	3.0	3.0			2.0	2.0	2.0		
Lost Time Adjust (s)					0.5				0.5	0.5		
Total Lost Time (s)					6.5				6.5	6.5		
Lead/Lag			Lead	Lead	Lead			Lead	Lead			
Lead-Lag Optimize?												
Vehicle Extension (s)			3.0	3.0	3.0			3.0	3.0	3.0		
Recall Mode			None	None	None			None	None	None		
Walk Time (s)										7.0		
Flash Dont Walk (s)										25.0		
Pedestrian Calls (#/hr)										0		
Act Effct Green (s)					6.1				49.6	49.6		
Actuated g/C Ratio					0.04				0.34	0.34		
v/c Ratio					0.32				1.37	0.25		
Control Delay					83.2				235.1	36.8		
Queue Delay					0.0				0.0	0.0		
Total Delay					83.2				235.1	36.8		
LOS					F				F	D		
Approach Delay					83.2					153.7		
Approach LOS					F					F		
Queue Length 50th (ft)					18				~213	99		
Queue Length 95th (ft)					48				#382	158		
Internal Link Dist (ft)					517					1256		
Turn Bay Length (ft)									200			
Base Capacity (vph)					64				145	561		
Starvation Cap Reductn					0				0	0		
Spillback Cap Reductn					0				0	0		
Storage Cap Reductn					0				0	0		
Reduced v/c Ratio					0.30				1.37	0.25		

Intersection Summary

Lane Group	SWL2	SWL	SWT	SWR	SWR2
Total Split (s)	41.0	41.0	41.0		
Total Split (%)	27.3%	27.3%	27.3%		
Maximum Green (s)	35.0	35.0	35.0		
Yellow Time (s)	4.0	4.0	4.0		
All-Red Time (s)	2.0	2.0	2.0		
Lost Time Adjust (s)		0.5	0.5		
Total Lost Time (s)		6.5	6.5		
Lead/Lag	Lag	Lag	Lag		
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0		
Recall Mode	None	None	None		
Walk Time (s)					
Flash Dont Walk (s)					
Pedestrian Calls (#/hr)					
Act Effct Green (s)		34.6	34.6		
Actuated g/C Ratio		0.24	0.24		
v/c Ratio		0.18	1.12		
Control Delay		47.9	134.3		
Queue Delay		0.0	0.0		
Total Delay		47.9	134.3		
LOS		D	F		
Approach Delay			125.2		
Approach LOS			F		
Queue Length 50th (ft)		39	~483		
Queue Length 95th (ft)		79	#700		
Internal Link Dist (ft)			3088		
Turn Bay Length (ft)		150			
Base Capacity (vph)		272	371		
Starvation Cap Reductn		0	0		
Spillback Cap Reductn		0	0		
Storage Cap Reductn		0	0		
Reduced v/c Ratio		0.18	1.12		

Intersection Summary

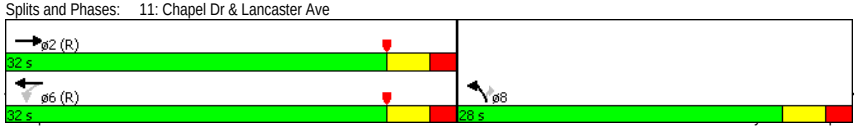
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1181	37	26	859	103	30
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	12	12
Storage Length (ft)		125	100		0	0
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt	0.995					0.850
Flt Protected				0.999	0.950	
Satd. Flow (prot)	3225	0	0	3238	1676	1500
Flt Permitted				0.891	0.950	
Satd. Flow (perm)	3225	0	0	2888	1676	1500
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	7					21
Link Speed (mph)	35			35	25	
Link Distance (ft)	745			1291	319	
Travel Time (s)	14.5			25.1	8.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1284	40	28	934	112	33
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1324	0	0	962	112	33
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	10			10	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	10			10	10	
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.12	1.12	1.07	1.07
Turning Speed (mph)		9	15		15	9
Number of Detectors	1		1	1	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (ft)	37		20	37	37	20
Trailing Detector (ft)	-3		0	-3	-3	0
Detector 1 Position(ft)	-3		0	-3	-3	0
Detector 1 Size(ft)	40		20	40	40	20
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Turn Type	NA		Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	4.0	4.0
Minimum Split (s)	21.0		21.0	21.0	28.0	28.0
Total Split (s)	32.0		32.0	32.0	28.0	28.0

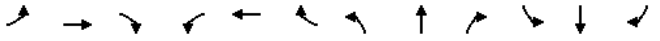
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	53.3%		53.3%	53.3%	46.7%	46.7%
Maximum Green (s)	27.0		27.0	27.0	23.0	23.0
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.5			0.5	0.5	0.5
Total Lost Time (s)	5.5			5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	C-Max		C-Max	C-Max	None	None
Walk Time (s)	10.0		10.0	10.0	7.0	7.0
Flash Dont Walk (s)	0.0		0.0	0.0	16.0	16.0
Pedestrian Calls (#/hr)	0		0	0	0	0
Act Effct Green (s)	43.3			43.3	8.9	8.9
Actuated g/C Ratio	0.72			0.72	0.15	0.15
v/c Ratio	0.57			0.46	0.45	0.14
Control Delay	6.9			3.9	28.2	13.6
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	6.9			3.9	28.2	13.6
LOS	A			A	C	B
Approach Delay	6.9			3.9	24.9	
Approach LOS	A			A	C	
Queue Length 50th (ft)	113			1	38	4
Queue Length 95th (ft)	206			m210	73	22
Internal Link Dist (ft)	665			1211	239	
Turn Bay Length (ft)						
Base Capacity (vph)	2330			2085	628	575
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	0.57			0.46	0.18	0.06

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 60
Offset: 26 (43%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.57
Intersection Signal Delay: 6.8 Intersection LOS: A
Intersection Capacity Utilization 60.1% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Chapel Dr & Lancaster Ave





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	1003	118	116	710	35	90	92	30	68	185	86
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)		0%			3%			1%			0%	
Storage Length (ft)	250		0	200		0	200		0	65		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.984			0.993			0.963			0.952	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1565	3079	0	1541	3061	0	1557	1578	0	1565	1568	0
Flt Permitted	0.256			0.088			0.294			0.647		
Satd. Flow (perm)	422	3079	0	143	3061	0	482	1578	0	1066	1568	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1291			265			344			973	
Travel Time (s)		25.1			5.2			9.4			26.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	84	1056	124	122	747	37	95	97	32	72	195	91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	84	1180	0	122	784	0	95	129	0	72	286	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)		10			10			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane												
Headway Factor	1.17	1.17	1.17	1.19	1.19	1.19	1.18	1.18	1.18	1.17	1.17	1.17
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	37	37		37	37		37	37		37	37	
Trailing Detector (ft)	-3	-3		-3	-3		-3	-3		-3	-3	
Detector 1 Position(ft)	-3	-3		-3	-3		-3	-3		-3	-3	
Detector 1 Size(ft)	40	40		40	40		40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	34.0		3.0	34.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	13.0	40.0		13.0	40.0		13.0	13.0		13.0	13.0	

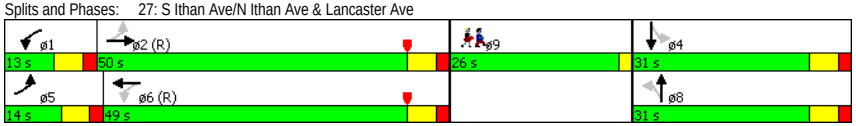
Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	24.0
Minimum Split (s)	26.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)	14.0	50.0		13.0	49.0		31.0	31.0		31.0	31.0	
Total Split (%)	11.7%	41.7%		10.8%	40.8%		25.8%	25.8%		25.8%	25.8%	
Maximum Green (s)	8.0	44.0		7.0	43.0		25.0	25.0		25.0	25.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Total Lost Time (s)	6.5	6.5		6.5	6.5		6.5	6.5		6.5	6.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	56.7	49.6		56.6	51.4		23.6	23.6		23.6	23.6	
Actuated g/C Ratio	0.47	0.41		0.47	0.43		0.20	0.20		0.20	0.20	
v/c Ratio	0.32	0.93		0.85	0.60		1.01	0.42		0.34	0.93	
Control Delay	20.8	48.8		65.4	24.6		143.3	46.4		46.3	83.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	20.8	48.8		65.4	24.6		143.3	46.4		46.3	83.3	
LOS	C	D		E	C		F	D		D	F	
Approach Delay		46.9			30.1			87.5			75.9	
Approach LOS		D			C			F			E	
Queue Length 50th (ft)	35	~543		69	204		74	87		48	218	
Queue Length 95th (ft)	m62	#682		m#147	243		#187	149		95	#377	
Internal Link Dist (ft)		1211			185			264			893	
Turn Bay Length (ft)	250			200			200			65		
Base Capacity (vph)	271	1272		143	1310		98	322		217	320	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.31	0.93		0.85	0.60		0.97	0.40		0.33	0.89	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection			
Natural Cycle: 115			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 48.5		Intersection LOS: D	
Intersection Capacity Utilization 82.8%		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: 27: S Ithan Ave/N Ithan Ave & Lancaster Ave



Lane Group	ø9
Total Split (s)	26.0
Total Split (%)	22%
Maximum Green (s)	24.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	9.0
Flash Dont Walk (s)	15.0
Pedestrian Calls (#/hr)	45
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

HCM 2010 TWSC
2: County Line Rd & N Ithan Ave 9/17/2014

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	SBL	SBR	NWL	NWR
Vol, veh/h	194	37	304	267	24	163
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	0	-
Veh in Median Storage, #	0	-	0	-	0	-
Grade, %	0	-	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	206	39	323	284	26	173

Major/Minor	Minor2		Major2		Minor1	
Conflicting Flow All	87	0	0	-	20	0
Stage 1	0	-	-	-	0	-
Stage 2	87	-	-	-	20	-
Critical Hdwy	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-
Pot Cap-1 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %				-		
Mov Cap-1 Maneuver	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	SB	NW
HCM Control Delay, s		0	
HCM LOS	-		-

Minor Lane/Major Mvmt	NWLn1	EBLn1	SBL	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	-	-
HCM Lane LOS	-	-	-	-
HCM 95th %tile Q(veh)	-	-	-	-

HCM 2010 TWSC
15: Conestoga Rd & Spring Mill Rd 9/17/2014

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Vol, veh/h	10	661	614	3	17	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	10	689	640	3	18	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	643	0	-	0	1350	641
Stage 1	-	-	-	-	641	-
Stage 2	-	-	-	-	709	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	947	-	-	-	167	477
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	490	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	947	-	-	-	164	477
Mov Cap-2 Maneuver	-	-	-	-	164	-
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	482	-

Approach	EB	WB	SW
HCM Control Delay, s	0.1	0	24.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SWLn1
Capacity (veh/h)	947	-	-	-	212
HCM Lane V/C Ratio	0.011	-	-	-	0.128
HCM Control Delay (s)	8.8	0	-	-	24.5
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.4

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	37	498	17	17	466	16	15	8	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1
Mvmt Flow	39	519	18	18	485	17	16	8	18

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	502	0	0	536	0	0	1171	1143	528
Stage 1	-	-	-	-	-	-	605	605	-
Stage 2	-	-	-	-	-	-	566	538	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.509	4.009	3.309
Pot Cap-1 Maneuver	1068	-	-	1037	-	-	170	201	552
Stage 1	-	-	-	-	-	-	486	489	-
Stage 2	-	-	-	-	-	-	511	524	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1068	-	-	1037	-	-	135	186	552
Mov Cap-2 Maneuver	-	-	-	-	-	-	135	186	-
Stage 1	-	-	-	-	-	-	461	464	-
Stage 2	-	-	-	-	-	-	436	511	-

Approach	EB	WB	NB
HCM Control Delay, s	0.6	0.3	25.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	216	1068	-	-	1037	-	-	328
HCM Lane V/C Ratio	0.193	0.036	-	-	0.017	-	-	0.251
HCM Control Delay (s)	25.6	8.5	0	-	8.5	0	-	19.6
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.7	0.1	-	-	0.1	-	-	1

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	9	17	53
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	96	96	96
Heavy Vehicles, %	1	1	1
Mvmt Flow	9	18	55

Major/Minor	Minor2		
Conflicting Flow All	1147	1143	494
Stage 1	529	529	-
Stage 2	618	614	-
Critical Hdwy	7.11	6.51	6.21
Critical Hdwy Stg 1	6.11	5.51	-
Critical Hdwy Stg 2	6.11	5.51	-
Follow-up Hdwy	3.509	4.009	3.309
Pot Cap-1 Maneuver	177	201	577
Stage 1	535	529	-
Stage 2	478	484	-
Platoon blocked, %			
Mov Cap-1 Maneuver	156	186	577
Mov Cap-2 Maneuver	156	186	-
Stage 1	507	516	-
Stage 2	431	459	-

Approach	SB
HCM Control Delay, s	19.6
HCM LOS	C

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	47.9

Movement	NBT	NBR	SBL	SBT	SWL	SWR
Vol, veh/h	251	108	184	466	102	63
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	267	115	196	496	109	67

Major/Minor	Major1		Minor2		Minor1	
Conflicting Flow All	0	0	358	382	572	324
Stage 1	-	-	0	0	324	-
Stage 2	-	-	358	382	248	-
Critical Hdwy	-	-	6.41	6.51	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	5.41	5.51	-	-
Follow-up Hdwy	-	-	3.509	4.009	3.509	3.309
Pot Cap-1 Maneuver	-	-	642	553	483	719
Stage 1	-	-	-	-	735	-
Stage 2	-	-	710	614	-	-
Platoon blocked, %	-	-				
Mov Cap-1 Maneuver	-	-	642	0	483	719
Mov Cap-2 Maneuver	-	-	642	0	483	-
Stage 1	-	-	-	0	735	-
Stage 2	-	-	710	0	-	-

Approach	NB	SB	SW
HCM Control Delay, s	0	82.9	14.5
HCM LOS		F	B

Minor Lane/Major Mvmt	NBT	NBR	SBLn1	SWLn1
Capacity (veh/h)	-	-	642	552
HCM Lane V/C Ratio	-	-	1.077	0.318
HCM Control Delay (s)	-	-	82.9	14.5
HCM Lane LOS	-	-	F	B
HCM 95th %tile Q(veh)	-	-	19.5	1.4

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	37	26	1	9	26	11	4	515	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1
Mvmt Flow	39	27	1	9	27	12	4	542	31

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	1042	1330	379	950	1347	286	758	0	0
Stage 1	749	749	-	566	566	-	-	-	-
Stage 2	293	581	-	384	781	-	-	-	-
Critical Hdwy	7.52	6.52	6.92	7.52	6.52	6.92	4.12	-	-
Critical Hdwy Stg 1	6.52	5.52	-	6.52	5.52	-	-	-	-
Critical Hdwy Stg 2	6.52	5.52	-	6.52	5.52	-	-	-	-
Follow-up Hdwy	3.51	4.01	3.31	3.51	4.01	3.31	2.21	-	-
Pot Cap-1 Maneuver	185	155	622	216	151	714	856	-	-
Stage 1	372	420	-	479	508	-	-	-	-
Stage 2	694	500	-	613	406	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	153	151	622	182	147	714	856	-	-
Mov Cap-2 Maneuver	153	151	-	182	147	-	-	-	-
Stage 1	369	411	-	476	504	-	-	-	-
Stage 2	641	497	-	559	397	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	45.4	30.3	0.1
HCM LOS	E	D	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	856	-	-	154	190	1003	-	-
HCM Lane V/C Ratio	0.005	-	-	0.437	0.255	0.012	-	-
HCM Control Delay (s)	9.2	0	-	45.4	30.3	8.6	0.1	-
HCM Lane LOS	A	A	-	E	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	2	1	0	-	-

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	11	659	61
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	95	95	95
Heavy Vehicles, %	1	1	1
Mvmt Flow	12	694	64

Major/Minor	Major2		
Conflicting Flow All	573	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.21	-	-
Pot Cap-1 Maneuver	1003	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1003	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	SB
HCM Control Delay, s	0.2
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	171	217	347	16	12	119
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	174	221	354	16	12	121

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	370	0	-	0	932	362
Stage 1	-	-	-	-	362	-
Stage 2	-	-	-	-	570	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1194	-	-	-	297	685
Stage 1	-	-	-	-	707	-
Stage 2	-	-	-	-	568	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1194	-	-	-	248	685
Mov Cap-2 Maneuver	-	-	-	-	248	-
Stage 1	-	-	-	-	707	-
Stage 2	-	-	-	-	474	-

Approach	EB	WB	SB
HCM Control Delay, s	3.8	0	12.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1194	-	-	-	590
HCM Lane V/C Ratio	0.146	-	-	-	0.227
HCM Control Delay (s)	8.5	0	-	-	12.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.5	-	-	-	0.9

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	16	19	52	184	157	125
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	17	20	54	192	164	130

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	529	229	294	0	-	0
Stage 1	229	-	-	-	-	-
Stage 2	300	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	514	815	1279	-	-	-
Stage 1	814	-	-	-	-	-
Stage 2	756	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	490	815	1279	-	-	-
Mov Cap-2 Maneuver	490	-	-	-	-	-
Stage 1	814	-	-	-	-	-
Stage 2	720	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.1	1.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1279	-	625	-	-
HCM Lane V/C Ratio	0.042	-	0.058	-	-
HCM Control Delay (s)	7.9	0	11.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	35	125	5	52	244	22	8	3	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	38	137	5	57	268	24	9	3	42

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	292	0	0	143	0	0	619	624	140
Stage 1	-	-	-	-	-	-	217	217	-
Stage 2	-	-	-	-	-	-	402	407	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1270	-	-	1440	-	-	401	402	908
Stage 1	-	-	-	-	-	-	785	723	-
Stage 2	-	-	-	-	-	-	625	597	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1270	-	-	1440	-	-	370	370	908
Mov Cap-2 Maneuver	-	-	-	-	-	-	370	370	-
Stage 1	-	-	-	-	-	-	759	699	-
Stage 2	-	-	-	-	-	-	584	569	-

Approach	EB	WB	NB
HCM Control Delay, s	1.7	1.2	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	685	1270	-	-	1440	-	-	594
HCM Lane V/C Ratio	0.079	0.03	-	-	0.04	-	-	0.031
HCM Control Delay (s)	10.7	7.9	0	-	7.6	0	-	11.3
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0.1	-	-	0.1

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	4	0	13
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	91	91	91
Heavy Vehicles, %	2	2	2
Mvmt Flow	4	0	14

Major/Minor	Minor2		
Conflicting Flow All	635	615	280
Stage 1	395	395	-
Stage 2	240	220	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	391	407	759
Stage 1	630	605	-
Stage 2	763	721	-
Platoon blocked, %			
Mov Cap-1 Maneuver	348	375	759
Mov Cap-2 Maneuver	348	375	-
Stage 1	609	577	-
Stage 2	701	697	-

Approach	SB
HCM Control Delay, s	11.3
HCM LOS	B

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	7.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR
Vol, veh/h	4	138	25	136	284	5	20	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	None
Storage Length	50	-	-	100	-	-	0	-
Veh in Median Storage, #	-	0	-	-	0	-	0	-
Grade, %	-	1	-	-	-1	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2
Mvmt Flow	4	150	27	148	309	5	22	7

Major/Minor	Major1			Major2			Minor2	
Conflicting Flow All	314	0	0	177	0	0	831	311
Stage 1	-	-	-	-	-	-	607	-
Stage 2	-	-	-	-	-	-	224	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1246	-	-	1399	-	-	289	729
Stage 1	-	-	-	-	-	-	483	-
Stage 2	-	-	-	-	-	-	779	-
Platoon blocked, %		-	-		-	-		
Mov Cap-1 Maneuver	1246	-	-	1399	-	-	193	729
Mov Cap-2 Maneuver	-	-	-	-	-	-	193	-
Stage 1	-	-	-	-	-	-	481	-
Stage 2	-	-	-	-	-	-	670	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	2.5	17.6
HCM LOS			C

Minor Lane/Major Mvmt	NWLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	262	1246	-	-	1399	-	-	316
HCM Lane V/C Ratio	0.236	0.003	-	-	0.106	-	-	0.096
HCM Control Delay (s)	22.9	7.9	-	-	7.9	-	-	17.6
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.9	0	-	-	0.4	-	-	0.3

Intersection	
Int Delay, s/veh	

Movement	NWU	NWL	NWR
Vol, veh/h	28	57	95
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	-
Storage Length	-	0	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	30	62	103

Major/Minor	Minor1		
Conflicting Flow All	0	793	164
Stage 1	0	172	-
Stage 2	0	621	-
Critical Hdwy	-	7.12	6.22
Critical Hdwy Stg 1	-	6.12	-
Critical Hdwy Stg 2	-	6.12	-
Follow-up Hdwy	-	3.518	3.318
Pot Cap-1 Maneuver	0	306	881
Stage 1	0	830	-
Stage 2	0	475	-
Platoon blocked, %	-		
Mov Cap-1 Maneuver	0	262	881
Mov Cap-2 Maneuver	0	262	-
Stage 1	0	827	-
Stage 2	0	400	-

Approach	NW
HCM Control Delay, s	22.9
HCM LOS	C

Minor Lane/Major Mvmt

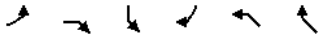
Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1295	47	48	1021	0	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	3	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1579	57	59	1245	0	46

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1637	0	2348	818
Stage 1	-	-	-	-	1608	-
Stage 2	-	-	-	-	740	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	401	-	31	323
Stage 1	-	-	-	-	152	-
Stage 2	-	-	-	-	438	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	401	-	16	323
Mov Cap-2 Maneuver	-	-	-	-	16	-
Stage 1	-	-	-	-	152	-
Stage 2	-	-	-	-	229	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.9	18
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	323	-	-	401	-
HCM Lane V/C Ratio	0.143	-	-	0.146	-
HCM Control Delay (s)	18	-	-	15.5	3.4
HCM Lane LOS	C	-	-	C	A
HCM 95th %tile Q(veh)	0.5	-	-	0.5	-



Lane Group	EBL	EBR	SBL	SBR	NWL	NWR
Lane Configurations						
Volume (vph)	194	37	304	267	24	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.979		0.937		0.883	
Flt Protected	0.960		0.974		0.994	
Satd. Flow (prot)	1761	0	1717	0	1651	0
Flt Permitted	0.960		0.974		0.994	
Satd. Flow (perm)	1761	0	1717	0	1651	0
Link Speed (mph)	30		30		30	
Link Distance (ft)	973		295		2014	
Travel Time (s)	22.1		6.7		45.8	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	1	0	0	0	0	0
Adj. Flow (vph)	206	39	323	284	26	173
Shared Lane Traffic (%)						
Lane Group Flow (vph)	245	0	607	0	199	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Right
Median Width(ft)	22		12		12	
Link Offset(ft)	0		0		0	
Crosswalk Width(ft)	10		10		10	
Two way Left Turn Lane						
Headway Factor	1.01	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15	9	15	9
Sign Control	Stop		Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.6%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Volume (vph)	251	108	184	466	102	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.959				0.949	
Flt Protected				0.986	0.970	
Satd. Flow (prot)	1804	0	0	1855	1732	0
Flt Permitted				0.986	0.970	
Satd. Flow (perm)	1804	0	0	1855	1732	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	295			1901	824	
Travel Time (s)	6.7			43.2	18.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Adj. Flow (vph)	267	115	196	496	109	67
Shared Lane Traffic (%)						
Lane Group Flow (vph)	382	0	0	692	176	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	10			10	10	
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
Sign Control	Free			Stop	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 74.0%		ICU Level of Service D	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	11.2
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	SBU	SBL	SBR
Vol, veh/h	0	4	138	25	0	136	284	5	0	20	6
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	4	150	27	0	148	309	5	0	22	7
Number of Lanes	0	1	1	0	0	1	1	0	0	1	0

Approach	EB	WB
Opposing Approach	WB	EB
Opposing Lanes	2	2
Conflicting Approach Left	SB	NW
Conflicting Lanes Left	1	1
Conflicting Approach Right	NW	SB
Conflicting Lanes Right	1	1
HCM Control Delay	10.5	11.9
HCM LOS	B	B

Lane	NWLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	38%	100%	0%	100%	0%	79%
Vol Thru, %	0%	0%	85%	0%	98%	0%
Vol Right, %	62%	0%	15%	0%	2%	21%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	180	4	163	136	289	28
LT Vol	0	0	138	0	284	0
Through Vol	112	0	25	0	5	6
RT Vol	68	4	0	136	0	22
Lane Flow Rate	196	4	177	148	314	30
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.281	0.008	0.277	0.239	0.462	0.05
Departure Headway (Hd)	5.175	6.241	5.626	5.811	5.294	5.912
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	687	577	641	612	672	608
Service Time	3.268	3.943	3.329	3.608	3.091	3.923
HCM Lane V/C Ratio	0.285	0.007	0.276	0.242	0.467	0.049
HCM Control Delay	10.3	9	10.5	10.5	12.6	9.2
HCM Lane LOS	B	A	B	B	B	A
HCM 95th-tile Q	1.2	0	1.1	0.9	2.4	0.2

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	NWU	NWL	NWR
Vol, veh/h	28	57	95
Peak Hour Factor	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2
Mvmt Flow	30	62	103
Number of Lanes	0	1	0

Approach	NW
Opposing Approach	
Opposing Lanes	0
Conflicting Approach Left	EB
Conflicting Lanes Left	2
Conflicting Approach Right	WB
Conflicting Lanes Right	2
HCM Control Delay	10.3
HCM LOS	B

Lane

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	1003	118	116	710	35	90	92	30	68	185	86
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)		0%			3%			1%			0%	
Storage Length (ft)	250		0	200		0	200		0	65		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.993			0.963			0.952	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1565	3129	1400	1541	3061	0	1557	1578	0	1565	1568	0
Flt Permitted	0.256			0.131			0.294			0.647		
Satd. Flow (perm)	422	3129	1400	213	3061	0	482	1578	0	1066	1568	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		1291			265			344			973	
Travel Time (s)		25.1			5.2			9.4			26.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	84	1056	124	122	747	37	95	97	32	72	195	91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	84	1056	124	122	784	0	95	129	0	72	286	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)		10			10			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		10			10			10			10	
Two way Left Turn Lane												
Headway Factor	1.17	1.17	1.17	1.19	1.19	1.19	1.18	1.18	1.18	1.17	1.17	1.17
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	37	37	20	37	37		37	37		37	37	
Trailing Detector (ft)	-3	-3	0	-3	-3		-3	-3		-3	-3	
Detector 1 Position(ft)	-3	-3	0	-3	-3		-3	-3		-3	-3	
Detector 1 Size(ft)	40	40	20	40	40		40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	5	2	2	1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	34.0	34.0	3.0	34.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	13.0	40.0	40.0	13.0	40.0		13.0	13.0		13.0	13.0	

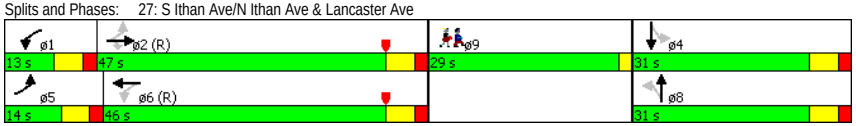
Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	24.0
Minimum Split (s)	26.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)	14.0	47.0	47.0	13.0	46.0		31.0	31.0		31.0	31.0	
Total Split (%)	11.7%	39.2%	39.2%	10.8%	38.3%		25.8%	25.8%		25.8%	25.8%	
Maximum Green (s)	8.0	41.0	41.0	7.0	40.0		25.0	25.0		25.0	25.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	56.7	49.6	49.6	56.6	51.4		23.6	23.6		23.6	23.6	
Actuated g/C Ratio	0.47	0.41	0.41	0.47	0.43		0.20	0.20		0.20	0.20	
v/c Ratio	0.32	0.82	0.21	0.71	0.60		1.01	0.42		0.34	0.93	
Control Delay	20.8	40.3	26.5	39.5	24.6		143.3	46.4		46.3	83.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	20.8	40.3	26.5	39.5	24.6		143.3	46.4		46.3	83.3	
LOS	C	D	C	D	C		F	D		D	F	
Approach Delay		37.7			26.6			87.5			75.9	
Approach LOS		D			C			F			E	
Queue Length 50th (ft)	35	458	65	55	204		74	87		48	218	
Queue Length 95th (ft)	m62	#563	100	m#105	243		#187	149		95	#377	
Internal Link Dist (ft)		1211			185			264			893	
Turn Bay Length (ft)	250			200			200			65		
Base Capacity (vph)	271	1292	578	172	1310		98	322		217	320	
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	0.31	0.82	0.21	0.71	0.60		0.97	0.40		0.33	0.89	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow, Master Intersection
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.01
Intersection Signal Delay: 43.1 Intersection LOS: D
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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 27: S Ithan Ave/N Ithan Ave & Lancaster Ave



Lane Group	ø9
Total Split (s)	29.0
Total Split (%)	24%
Maximum Green (s)	27.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	9.0
Flash Dont Walk (s)	15.0
Pedestrian Calls (#/hr)	45
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary