












HCM 2010 Signalized Intersection Capacity Analysis

1: Shafers School House Rd & SR 611

3/11/2015

									
Movement	SET	SER	NWL	NWT	NEL	NER			
Lane Configurations									
Volume (vph)	885	39	70	957	42	42			
Movement Number	2	12	1	6	3	18			
Initial Queue, veh	0	0	0	0	0	0			
Ped-Bike Adj. Factor (A _{pbT})		1.00	1.00		1.00	1.00			
Parking, Bus Adj. Factors	1.00	1.00	1.00	1.00	1.00	1.00			
Adj. Sat. Flow Rate, veh/h/ln	1807	1807	1768	1872	1808	1793			
Lanes	1	0	1	1	1	1			
Lane Assignment									
Capacity, veh/h	1351	85	364	1503	139	123			
Proportion Arriving On Green	0.80	0.80	0.27	0.29	0.08	0.08			
Movement Delay, s/veh	0.0	6.7	33.5	28.0	47.2	47.3			
Movement LOS		A	C	C	D	D			
Approach Volume, veh/h	1001			1168	110				
Approach Delay, s/veh	6.7			28.4	47.2				
Approach LOS	A			C	D				
Timer:		1	2	3	4	5	6	7	8
Assigned Phase			2				6		8
Case No			8.0				6.0		9.0
Phase Duration (G+Y+Rc), s			88.80				88.80		14.32
Change Period (Y+Rc), s			6.00				6.00		6.00
Max. Allowable Headway (MAH), s			6.72				6.72		4.50
Maximum Green Setting (Gmax), s			82.80				82.80		8.70
Max. Queue Clearance Time (g _c +l1), s			27.83				55.86		5.37
Green Extension Time (g _e), s			47.47				24.90		0.09
Probability of Phase Call (p _c)			1.000				1.000		0.957
Probability of Max Out (p _x)			0.831				0.925		1.000
Left-Turn Movement Data									
Assigned Movement							1		3
Mvmt. Sat Flow, veh/h							532.24		1721.68
Through Movement Data									
Assigned Movement			2				6		
Mvmt. Sat Flow, veh/h			1682.33				1872.06		
Right-Turn Movement Data									
Assigned Movement			12				16		18
Mvmt. Sat Flow, veh/h			105.59				0.00		1524.08
Left Lane Group Data									
Assigned Movement		0	0	0	0	0	1	0	3
Lane Assignment							L		L
Lanes in Group		0	0	0	0	0	1	0	1
Group Volume (v), veh/h		0.0	0.0	0.0	0.0	0.0	80.5	0.0	59.2
Group Sat. Flow (s), veh/h/ln		0.0	0.0	0.0	0.0	0.0	532.2	0.0	1721.7
Queue Serve Time (g _s), s		0.0	0.0	0.0	0.0	0.0	13.4	0.0	3.4
Cycle Queue Clear Time (g _c), s		0.0	0.0	0.0	0.0	0.0	39.2	0.0	3.4

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Perm LT Sat Flow Rate (s_l), veh/h/ln	0.0	0.0	0.0	0.0	0.0	532.2	0.0	1721.7
Shared LT Sat Flow (s_sh), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Eff. Green (g_p), s	0.0	0.0	0.0	0.0	0.0	82.8	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	0.0	0.0	57.0	0.0	0.0
Perm LT Que Serve Time (g_ps), s	0.0	0.0	0.0	0.0	0.0	13.4	0.0	0.0
Time to First Blk (g_f), s	0.0	82.8	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion LT Inside Lane (P_L)	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
Lane Group Capacity (c), veh/h	0.0	0.0	0.0	0.0	0.0	363.8	0.0	139.0
Volume-to-Capacity Ratio (X)	0.000	0.000	0.000	0.000	0.000	0.221	0.000	0.426
Available Capacity (c_a), veh/h	0.0	0.0	0.0	0.0	0.0	363.8	0.0	145.2
Upstream Filter Factor (I)	0.000	0.000	0.000	0.000	0.000	0.695	0.000	1.000
Uniform Delay (d1), s/veh	0.0	0.0	0.0	0.0	0.0	32.9	0.0	45.1
Incremental Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.6	0.0	2.1
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	33.5	0.0	47.2
First-Term Queue (Q1), veh/ln	0.0	0.0	0.0	0.0	0.0	1.9	0.0	1.4
Second-Term Queue (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	0.000	0.000	0.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.0	0.0	0.0	0.0	1.9	0.0	1.5
Percentile Storage Ratio (RQ%)	0.00	0.00	0.00	0.00	0.00	0.34	0.00	0.08
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data

Assigned Movement	0	2	0	0	0	6	0	0
Lane Assignment	T							
Lanes in Group	0	0	0	0	0	1	0	0
Group Volume (v), veh/h	0.0	0.0	0.0	0.0	0.0	1087.5	0.0	0.0
Group Sat. Flow (s), veh/h/ln	0.0	0.0	0.0	0.0	0.0	1872.1	0.0	0.0
Queue Serve Time (g_s), s	0.0	0.0	0.0	0.0	0.0	53.9	0.0	0.0
Cycle Queue Clear Time (g_c), s	0.0	0.0	0.0	0.0	0.0	53.9	0.0	0.0
Lane Group Capacity (c), veh/h	0.0	0.0	0.0	0.0	0.0	1503.1	0.0	0.0
Volume-to-Capacity Ratio (X)	0.000	0.000	0.000	0.000	0.000	0.724	0.000	0.000
Available Capacity (c_a), veh/h	0.0	0.0	0.0	0.0	0.0	1503.1	0.0	0.0
Upstream Filter Factor (I)	0.000	0.000	0.000	0.000	0.000	0.695	0.000	0.000
Uniform Delay (d1), s/veh	0.0	0.0	0.0	0.0	0.0	26.4	0.0	0.0
Incremental Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	28.0	0.0	0.0
First-Term Queue (Q1), veh/ln	0.0	0.0	0.0	0.0	0.0	26.2	0.0	0.0
Second-Term Queue (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	0.000	0.000	1.000	0.000	0.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.0	0.0	0.0	0.0	26.9	0.0	0.0
Percentile Storage Ratio (RQ%)	0.00	0.00	0.00	0.00	0.00	0.46	0.00	0.00

SR 611 Section 13S
PHASE II - ALT A - 2045 PM PEAK

Synchro 8 Report

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

















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Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Movement	0	12	0	0	0	16	0	18
Lane Assignment	T+R						R	
Lanes in Group	0	1	0	0	0	0	0	1
Group Volume (v), veh/h	0.0	1000.6	0.0	0.0	0.0	0.0	0.0	50.6
Group Sat. Flow (s), veh/h/ln	0.0	1787.9	0.0	0.0	0.0	0.0	0.0	1524.1
Queue Serve Time (g_s), s	0.0	25.8	0.0	0.0	0.0	0.0	0.0	3.3
Cycle Queue Clear Time (g_c), s	0.0	25.8	0.0	0.0	0.0	0.0	0.0	3.3
Prot RT Sat Flow Rate (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff. Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion RT Outside Lane (P_R)	0.000	0.059	0.000	0.000	0.000	0.000	0.000	1.000
Lane Group Capacity (c), veh/h	0.0	1435.5	0.0	0.0	0.0	0.0	0.0	123.0
Volume-to-Capacity Ratio (X)	0.000	0.697	0.000	0.000	0.000	0.000	0.000	0.411
Available Capacity (c_a), veh/h	0.0	1435.5	0.0	0.0	0.0	0.0	0.0	128.6
Upstream Filter Factor (I)	0.000	1.000	0.000	0.000	0.000	0.000	0.000	1.000
Uniform Delay (d1), s/veh	0.0	4.5	0.0	0.0	0.0	0.0	0.0	45.1
Incremental Delay (d2), s/veh	0.0	2.1	0.0	0.0	0.0	0.0	0.0	2.2
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	6.7	0.0	0.0	0.0	0.0	0.0	47.3
First-Term Queue (Q1), veh/ln	0.0	4.7	0.0	0.0	0.0	0.0	0.0	1.2
Second-Term Queue (Q2), veh/ln	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.1
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	0.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	5.6	0.0	0.0	0.0	0.0	0.0	1.3
Percentile Storage Ratio (RQ%)	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.21
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM Average Control Delay	19.8							
HCM Level of Service	B							

HCM 2010 Signalized Intersection Capacity Analysis

2: Applegate Rd/Terrace Dr & SR 611

3/11/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	841	31	31	908	14	36	3	32	8	2	24
Movement Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj. Factor (A _{pbT})	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj. Factors	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 Rate, veh/h/ln	1890	1873	1873	1890	1872	1872	1881	1911	1911	1884	1884	1884
Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Lane Assignment												
Capacity, veh/h	373	1389	58	393	1419	32	144	32	115	56	22	93
Proportion Arriving On Green	0.89	0.79	0.79	0.78	0.78	0.78	0.09	0.09	0.09	0.09	0.09	0.09
Movement Delay, s/veh	8.5	0.0	6.4	12.0	0.0	7.7	49.6	0.0	46.3	45.9	0.0	0.0
Movement LOS	A		A	B		A	D		D	D		
Approach Volume, veh/h		992			1034			105			57	
Approach Delay, s/veh		6.4			7.9			47.9			45.9	
Approach LOS		A			A			D			D	
Timer:		1	2	3	4	5	6	7	8			
Assigned Phase			2		4		6		8			
Case No			6.0		8.0		6.0		6.0			
Phase Duration (G+Y+Rc), s			87.30		16.60		87.30		16.60			
Change Period (Y+Rc), s			6.50		7.50		6.50		7.50			
Max. Allowable Headway (MAH), s			7.20		4.59		7.20		4.59			
Maximum Green Setting (Gmax), s			80.80		9.10		80.80		9.10			
Max. Queue Clearance Time (g _c +l1), s			30.22		5.37		29.93		9.19			
Green Extension Time (g _e), s			43.97		0.19		44.20		0.00			
Probability of Phase Call (p _c)			1.000		0.991		1.000		0.991			
Probability of Max Out (p _x)			0.840		1.000		0.839		1.000			
Left-Turn Movement Data												
Assigned Movement			5		7		1		3			
Mvmt. Sat Flow, veh/h			576.16		305.54		589.91		1353.62			
Through Movement Data												
Assigned Movement			2		4		6		8			
Mvmt. Sat Flow, veh/h			1785.52		102.36		1824.34		368.78			
Right-Turn Movement Data												
Assigned Movement			12		14		16		18			
Mvmt. Sat Flow, veh/h			73.94		1058.86		40.68		1311.23			
Left Lane Group Data												
Assigned Movement		0	5	0	7	0	1	0	3			
Lane Assignment			L		L+T+R		L		L			
Lanes in Group		0	1	0	1	0	1	0	1			
Group Volume (v), veh/h		0.0	29.3	0.0	57.3	0.0	47.0	0.0	50.7			
Group Sat. Flow (s), veh/h/ln		0.0	576.2	0.0	1466.8	0.0	589.9	0.0	1353.6			
Queue Serve Time (g _s), s		0.0	2.2	0.0	0.0	0.0	4.1	0.0	3.8			
Cycle Queue Clear Time (g _c), s		0.0	28.2	0.0	3.4	0.0	27.9	0.0	7.2			

HCM 2010 Signalized Intersection Capacity Analysis

2: Applegate Rd/Terrace Dr & SR 611

3/11/2015

Perm LT Sat Flow Rate (s_l), veh/h/ln	0.0	576.2	0.0	773.0	0.0	589.9	0.0	1353.6
Shared LT Sat Flow (s_sh), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Eff. Green (g_p), s	0.0	80.8	0.0	9.1	0.0	80.8	0.0	9.1
Perm LT Serve Time (g_u), s	0.0	54.8	0.0	5.9	0.0	56.9	0.0	5.7
Perm LT Que Serve Time (g_ps), s	0.0	2.2	0.0	0.0	0.0	4.1	0.0	3.8
Time to First Blk (g_f), s	0.0	0.0	0.0	3.9	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	3.4	0.0	0.0	0.0	0.0
Proportion LT Inside Lane (P_L)	0.000	1.000	0.000	0.208	0.000	1.000	0.000	1.000
Lane Group Capacity (c), veh/h	0.0	373.2	0.0	170.3	0.0	392.6	0.0	144.0
Volume-to-Capacity Ratio (X)	0.000	0.078	0.000	0.337	0.000	0.120	0.000	0.352
Available Capacity (c_a), veh/h	0.0	373.2	0.0	170.3	0.0	392.6	0.0	144.0
Upstream Filter Factor (I)	0.000	0.681	0.000	1.000	0.000	1.000	0.000	1.000
Uniform Delay (d1), s/veh	0.0	8.3	0.0	44.8	0.0	11.5	0.0	48.2
Incremental Delay (d2), s/veh	0.0	0.2	0.0	1.2	0.0	0.5	0.0	1.5
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	8.5	0.0	45.9	0.0	12.0	0.0	49.6
First-Term Queue (Q1), veh/ln	0.0	0.2	0.0	1.4	0.0	0.5	0.0	1.3
Second-Term Queue (Q2), veh/ln	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.3	0.0	1.5	0.0	0.5	0.0	1.4
Percentile Storage Ratio (RQ%)	0.00	0.08	0.00	0.08	0.00	0.18	0.00	0.47
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data

Assigned Movement	0	2	0	4	0	6	0	8
Lane Assignment								
Lanes in Group	0	0	0	0	0	0	0	0
Group Volume (v), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Group Sat. Flow (s), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Serve Time (g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clear Time (g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Capacity (c), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Volume-to-Capacity Ratio (X)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Available Capacity (c_a), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Upstream Filter Factor (I)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Uniform Delay (d1), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incremental Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
First-Term Queue (Q1), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Second-Term Queue (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile Storage Ratio (RQ%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

HCM 2010 Signalized Intersection Capacity Analysis

2: Applegate Rd/Terrace Dr & SR 611













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Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Movement	0	12	0	14	0	16	0	18
Lane Assignment	T+R			T+R			T+R	
Lanes in Group	0	1	0	0	0	1	0	1
Group Volume (v), veh/h	0.0	962.4	0.0	0.0	0.0	987.5	0.0	54.7
Group Sat. Flow (s), veh/h/ln	0.0	1859.5	0.0	0.0	0.0	1865.0	0.0	1680.0
Queue Serve Time (g_s), s	0.0	23.9	0.0	0.0	0.0	26.0	0.0	3.2
Cycle Queue Clear Time (g_c), s	0.0	23.9	0.0	0.0	0.0	26.0	0.0	3.2
Prot RT Sat Flow Rate (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff. Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion RT Outside Lane (P_R)	0.000	0.040	0.000	0.722	0.000	0.022	0.000	0.780
Lane Group Capacity (c), veh/h	0.0	1446.1	0.0	0.0	0.0	1450.4	0.0	147.1
Volume-to-Capacity Ratio (X)	0.000	0.666	0.000	0.000	0.000	0.681	0.000	0.372
Available Capacity (c_a), veh/h	0.0	1446.1	0.0	0.0	0.0	1450.4	0.0	147.1
Upstream Filter Factor (I)	0.000	0.681	0.000	0.000	0.000	1.000	0.000	1.000
Uniform Delay (d1), s/veh	0.0	4.9	0.0	0.0	0.0	5.5	0.0	44.7
Incremental Delay (d2), s/veh	0.0	1.4	0.0	0.0	0.0	2.3	0.0	1.6
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	6.4	0.0	0.0	0.0	7.7	0.0	46.3
First-Term Queue (Q1), veh/ln	0.0	5.1	0.0	0.0	0.0	6.0	0.0	1.3
Second-Term Queue (Q2), veh/ln	0.0	0.6	0.0	0.0	0.0	0.9	0.0	0.1
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	5.7	0.0	0.0	0.0	6.9	0.0	1.4
Percentile Storage Ratio (RQ%)	0.00	0.10	0.00	0.00	0.00	0.20	0.00	0.07
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM Average Control Delay	10.2							
HCM Level of Service	B							

HCM 2010 Signalized Intersection Capacity Analysis

3: SR 611 & Pocono Commons Dr

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Movement	EBL	EBT	WBT	WBR	SBL	SBR			
Lane Configurations									
Volume (vph)	274	590	771	217	186	337			
Movement Number	5	2	6	16	7	14			
Initial Queue, veh	0	0	0	0	0	0			
Ped-Bike Adj. Factor (A _{pbT})	1.00			1.00	1.00	1.00			
Parking, Bus Adj. Factors	1.00	1.00	1.00	1.00	1.00	1.00			
Adj. Sat. Flow Rate, veh/h/ln	1891	1872	1872	1947	1957	1957			
Lanes	2	1	1	1	2	1			
Lane Assignment									
Capacity, veh/h	587	1440	1003	887	383	456			
Proportion Arriving On Green	0.17	0.77	0.54	0.54	0.11	0.11			
Movement Delay, s/veh	40.4	4.8	33.1	13.1	44.2	94.2			
Movement LOS	D	A	C	B	D	F			
Approach Volume, veh/h		1033	1148		706				
Approach Delay, s/veh		17.5	28.9		78.3				
Approach LOS		B	C		E				
Timer:		1	2	3	4	5	6	7	8
Assigned Phase			2		4	5	6		
Case No			4.0		9.0	2.0	7.0		
Phase Duration (G+Y+Rc), s			83.40		16.60	23.30	60.10		
Change Period (Y+Rc), s			6.50		6.00	6.50	6.50		
Max. Allowable Headway (MAH), s			6.63		3.63	3.18	6.63		
Maximum Green Setting (Gmax), s			76.90		10.60	16.80	53.60		
Max. Queue Clearance Time (g _c +I1), s			14.66		12.60	11.86	45.63		
Green Extension Time (g _e), s			39.47		0.00	0.46	7.22		
Probability of Phase Call (p _c)			1.000		1.000	1.000	1.000		
Probability of Max Out (p _x)			0.514		1.000	0.247	0.984		
Left-Turn Movement Data									
Assigned Movement					7	5			
Mvmt. Sat Flow, veh/h					3615.10	3493.10			
Through Movement Data									
Assigned Movement			2			6			
Mvmt. Sat Flow, veh/h			1872.06			1871.78			
Right-Turn Movement Data									
Assigned Movement			12		14		16		
Mvmt. Sat Flow, veh/h			0.00		1663.13		1654.66		
Left Lane Group Data									
Assigned Movement		0	0	0	7	5	0	0	0
Lane Assignment					L	L (Prot)			
Lanes in Group		0	0	0	2	2	0	0	0
Group Volume (v), veh/h		0.0	0.0	0.0	224.1	370.3	0.0	0.0	0.0
Group Sat. Flow (s), veh/h/ln		0.0	0.0	0.0	1807.6	1746.5	0.0	0.0	0.0
Queue Serve Time (g _s), s		0.0	0.0	0.0	5.9	9.9	0.0	0.0	0.0
Cycle Queue Clear Time (g _c), s		0.0	0.0	0.0	5.9	9.9	0.0	0.0	0.0

HCM 2010 Signalized Intersection Capacity Analysis

3: SR 611 & Pocono Commons Dr

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Perm LT Sat Flow Rate (s_l), veh/h/ln	0.0	0.0	0.0	1807.6	0.0	0.0	0.0	0.0
Shared LT Sat Flow (s_sh), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Eff. Green (g_p), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Que Serve Time (g_ps), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	53.6	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion LT Inside Lane (P_L)	0.000	0.000	0.000	1.000	1.000	0.000	0.000	0.000
Lane Group Capacity (c), veh/h	0.0	0.0	0.0	383.2	586.8	0.0	0.0	0.0
Volume-to-Capacity Ratio (X)	0.000	0.000	0.000	0.585	0.631	0.000	0.000	0.000
Available Capacity (c_a), veh/h	0.0	0.0	0.0	383.2	586.8	0.0	0.0	0.0
Upstream Filter Factor (I)	0.000	0.000	0.000	1.000	1.000	0.000	0.000	0.000
Uniform Delay (d1), s/veh	0.0	0.0	0.0	42.6	38.7	0.0	0.0	0.0
Incremental Delay (d2), s/veh	0.0	0.0	0.0	1.6	1.7	0.0	0.0	0.0
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	44.2	40.4	0.0	0.0	0.0
First-Term Queue (Q1), veh/ln	0.0	0.0	0.0	2.6	4.0	0.0	0.0	0.0
Second-Term Queue (Q2), veh/ln	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	0.000	0.000	1.000	1.000	0.000	0.000	0.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.0	0.0	2.7	4.2	0.0	0.0	0.0
Percentile Storage Ratio (RQ%)	0.00	0.00	0.00	0.15	0.60	0.00	0.00	0.00
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data

Assigned Movement	0	2	0	0	0	6	0	0
Lane Assignment	T			T				
Lanes in Group	0	1	0	0	0	1	0	0
Group Volume (v), veh/h	0.0	662.9	0.0	0.0	0.0	907.1	0.0	0.0
Group Sat. Flow (s), veh/h/ln	0.0	1872.1	0.0	0.0	0.0	1871.8	0.0	0.0
Queue Serve Time (g_s), s	0.0	12.7	0.0	0.0	0.0	43.6	0.0	0.0
Cycle Queue Clear Time (g_c), s	0.0	12.7	0.0	0.0	0.0	43.6	0.0	0.0
Lane Group Capacity (c), veh/h	0.0	1439.6	0.0	0.0	0.0	1003.3	0.0	0.0
Volume-to-Capacity Ratio (X)	0.000	0.460	0.000	0.000	0.000	0.904	0.000	0.000
Available Capacity (c_a), veh/h	0.0	1439.6	0.0	0.0	0.0	1003.3	0.0	0.0
Upstream Filter Factor (I)	0.000	1.000	0.000	0.000	0.000	1.000	0.000	0.000
Uniform Delay (d1), s/veh	0.0	4.1	0.0	0.0	0.0	20.9	0.0	0.0
Incremental Delay (d2), s/veh	0.0	0.6	0.0	0.0	0.0	12.2	0.0	0.0
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	4.8	0.0	0.0	0.0	33.1	0.0	0.0
First-Term Queue (Q1), veh/ln	0.0	2.9	0.0	0.0	0.0	16.4	0.0	0.0
Second-Term Queue (Q2), veh/ln	0.0	0.3	0.0	0.0	0.0	3.4	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	0.000	0.000	1.000	0.000	0.000
Percentile Back of Queue (Q%), veh/ln	0.0	3.2	0.0	0.0	0.0	19.8	0.0	0.0
Percentile Storage Ratio (RQ%)	0.00	0.26	0.00	0.00	0.00	0.52	0.00	0.00

HCM 2010 Signalized Intersection Capacity Analysis

3: SR 611 & Pocono Commons Dr












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Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Movement	0	12	0	14	0	16	0	0
Lane Assignment				R				
Lanes in Group	0	0	0	1	0	1	0	0
Group Volume (v), veh/h	0.0	0.0	0.0	481.4	0.0	241.1	0.0	0.0
Group Sat. Flow (s), veh/h/ln	0.0	0.0	0.0	1663.1	0.0	1654.7	0.0	0.0
Queue Serve Time (g_s), s	0.0	0.0	0.0	10.6	0.0	7.9	0.0	0.0
Cycle Queue Clear Time (g_c), s	0.0	0.0	0.0	10.6	0.0	7.9	0.0	0.0
Prot RT Sat Flow Rate (s_R), veh/h/ln	0.0	0.0	0.0	1663.1	0.0	0.0	0.0	0.0
Prot RT Eff. Green (g_R), s	0.0	0.0	0.0	16.8	0.0	0.0	0.0	0.0
Proportion RT Outside Lane (P_R)	0.000	0.000	0.000	1.000	0.000	1.000	0.000	0.000
Lane Group Capacity (c), veh/h	0.0	0.0	0.0	455.7	0.0	886.9	0.0	0.0
Volume-to-Capacity Ratio (X)	0.000	0.000	0.000	1.056	0.000	0.272	0.000	0.000
Available Capacity (c_a), veh/h	0.0	0.0	0.0	455.7	0.0	886.9	0.0	0.0
Upstream Filter Factor (I)	0.000	0.000	0.000	1.000	0.000	1.000	0.000	0.000
Uniform Delay (d1), s/veh	0.0	0.0	0.0	36.3	0.0	12.6	0.0	0.0
Incremental Delay (d2), s/veh	0.0	0.0	0.0	57.9	0.0	0.5	0.0	0.0
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	94.2	0.0	13.1	0.0	0.0
First-Term Queue (Q1), veh/ln	0.0	0.0	0.0	12.7	0.0	2.6	0.0	0.0
Second-Term Queue (Q2), veh/ln	0.0	0.0	0.0	7.3	0.0	0.1	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	0.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.0	0.0	20.0	0.0	2.7	0.0	0.0
Percentile Storage Ratio (RQ%)	0.00	0.00	0.00	3.38	0.00	0.25	0.00	0.00
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	6.4	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Intersection Summary								
HCM Average Control Delay	36.9							
HCM Level of Service	D							

HCM 2010 Signalized Intersection Capacity Analysis

6: SR 611 & Connector Rd

3/11/2015

									
Movement	EBL	EBT	WBT	WBR	SBL	SBR			
Lane Configurations									
Volume (vph)	268	610	785	322	449	204			
Movement Number	5	2	6	16	7	14			
Initial Queue, veh	0	0	0	0	0	0			
Ped-Bike Adj. Factor (A _{pbT})	1.00			1.00	1.00	1.00			
Parking, Bus Adj. Factors	1.00	1.00	1.00	1.00	1.00	1.00			
Adj. Sat. Flow Rate, veh/h/ln	1900	1900	1900	1900	1900	1900			
Lanes	1	2	2	0	1	1			
Lane Assignment									
Capacity, veh/h	496	3388	1547	631	0	0			
Proportion Arriving On Green	0.27	0.94	0.60	0.60	0.00	0.00			
Movement Delay, s/veh	22.4	0.2	8.4	8.5	0.0	0.0			
Movement LOS	C	A	A	A					
Approach Volume, veh/h		976	1230		0				
Approach Delay, s/veh		7.0	8.5		0.0				
Approach LOS		A	A						
Timer:		1	2	3	4	5	6	7	8
Assigned Phase			2		4	5	6		
Case No			4.0		0.0	2.0	8.0		
Phase Duration (G+Y+Rc), s			64.94		0.00	21.82	43.13		
Change Period (Y+Rc), s			4.00		4.00	4.00	4.00		
Max. Allowable Headway (MAH), s			5.21		0.00	3.80	5.21		
Maximum Green Setting (Gmax), s			61.00		31.00	17.90	39.10		
Max. Queue Clearance Time (g _c +l ₁), s			2.92		0.00	11.28	15.39		
Green Extension Time (g _e), s			22.48		0.00	0.50	14.61		
Probability of Phase Call (p _c)			1.000		0.000	0.995	1.000		
Probability of Max Out (p _x)			0.181		0.000	0.173	0.550		
Left-Turn Movement Data									
Assigned Movement					7	5			
Mvmt. Sat Flow, veh/h					0.00	1809.52			
Through Movement Data									
Assigned Movement			2				6		
Mvmt. Sat Flow, veh/h			3705.00				2567.30		
Right-Turn Movement Data									
Assigned Movement			12				16		
Mvmt. Sat Flow, veh/h			0.00				1047.79		
Left Lane Group Data									
Assigned Movement		0	0	0	7	5	0	0	0
Lane Assignment					L (Prot)				
Lanes in Group		0	0	0	0	1	0	0	0
Group Volume (v), veh/h		0.0	0.0	0.0	0.0	297.8	0.0	0.0	0.0
Group Sat. Flow (s), veh/h/ln		0.0	0.0	0.0	0.0	1809.5	0.0	0.0	0.0
Queue Serve Time (g _s), s		0.0	0.0	0.0	0.0	9.3	0.0	0.0	0.0
Cycle Queue Clear Time (g _c), s		0.0	0.0	0.0	0.0	9.3	0.0	0.0	0.0

HCM 2010 Signalized Intersection Capacity Analysis

6: SR 611 & Connector Rd

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Perm LT Sat Flow Rate (s_l), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shared LT Sat Flow (s_sh), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Eff. Green (g_p), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Que Serve Time (g_ps), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	39.1	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion LT Inside Lane (P_L)	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
Lane Group Capacity (c), veh/h	0.0	0.0	0.0	0.0	496.4	0.0	0.0	0.0
Volume-to-Capacity Ratio (X)	0.000	0.000	0.000	0.000	0.600	0.000	0.000	0.000
Available Capacity (c_a), veh/h	0.0	0.0	0.0	0.0	498.7	0.0	0.0	0.0
Upstream Filter Factor (I)	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
Uniform Delay (d1), s/veh	0.0	0.0	0.0	0.0	20.5	0.0	0.0	0.0
Incremental Delay (d2), s/veh	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	0.0	22.4	0.0	0.0	0.0
First-Term Queue (Q1), veh/ln	0.0	0.0	0.0	0.0	3.6	0.0	0.0	0.0
Second-Term Queue (Q2), veh/ln	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	0.000	0.000	1.000	1.000	0.000	0.000	0.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.0	0.0	0.0	3.9	0.0	0.0	0.0
Percentile Storage Ratio (RQ%)	0.00	0.00	0.00	0.00	0.65	0.00	0.00	0.00
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data

Assigned Movement	0	2	0	0	0	6	0	0
Lane Assignment	T				T			
Lanes in Group	0	2	0	0	0	1	0	0
Group Volume (v), veh/h	0.0	677.8	0.0	0.0	0.0	644.4	0.0	0.0
Group Sat. Flow (s), veh/h/ln	0.0	1805.0	0.0	0.0	0.0	1900.0	0.0	0.0
Queue Serve Time (g_s), s	0.0	0.9	0.0	0.0	0.0	13.2	0.0	0.0
Cycle Queue Clear Time (g_c), s	0.0	0.9	0.0	0.0	0.0	13.2	0.0	0.0
Lane Group Capacity (c), veh/h	0.0	3387.7	0.0	0.0	0.0	1144.7	0.0	0.0
Volume-to-Capacity Ratio (X)	0.000	0.200	0.000	0.000	0.000	0.563	0.000	0.000
Available Capacity (c_a), veh/h	0.0	3390.7	0.0	0.0	0.0	1144.7	0.0	0.0
Upstream Filter Factor (I)	0.000	1.000	0.000	0.000	0.000	1.000	0.000	0.000
Uniform Delay (d1), s/veh	0.0	0.2	0.0	0.0	0.0	7.8	0.0	0.0
Incremental Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.2	0.0	0.0	0.0	8.4	0.0	0.0
First-Term Queue (Q1), veh/ln	0.0	-0.6	0.0	0.0	0.0	4.0	0.0	0.0
Second-Term Queue (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	0.000	0.000	1.000	0.000	0.000
Percentile Back of Queue (Q%), veh/ln	0.0	-0.6	0.0	0.0	0.0	4.2	0.0	0.0
Percentile Storage Ratio (RQ%)	0.00	-0.01	0.00	0.00	0.00	0.14	0.00	0.00

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Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Movement	0	12	0	0	0	16	0	0
Lane Assignment	T+R							
Lanes in Group	0	0	0	0	0	1	0	0
Group Volume (v), veh/h	0.0	0.0	0.0	0.0	0.0	585.6	0.0	0.0
Group Sat. Flow (s), veh/h/ln	0.0	0.0	0.0	0.0	0.0	1715.1	0.0	0.0
Queue Serve Time (g_s), s	0.0	0.0	0.0	0.0	0.0	13.4	0.0	0.0
Cycle Queue Clear Time (g_c), s	0.0	0.0	0.0	0.0	0.0	13.4	0.0	0.0
Prot RT Sat Flow Rate (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff. Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion RT Outside Lane (P_R)	0.000	0.000	0.000	0.000	0.000	0.611	0.000	0.000
Lane Group Capacity (c), veh/h	0.0	0.0	0.0	0.0	0.0	1033.3	0.0	0.0
Volume-to-Capacity Ratio (X)	0.000	0.000	0.000	0.000	0.000	0.567	0.000	0.000
Available Capacity (c_a), veh/h	0.0	0.0	0.0	0.0	0.0	1033.3	0.0	0.0
Upstream Filter Factor (I)	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000
Uniform Delay (d1), s/veh	0.0	0.0	0.0	0.0	0.0	7.8	0.0	0.0
Incremental Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	8.5	0.0	0.0
First-Term Queue (Q1), veh/ln	0.0	0.0	0.0	0.0	0.0	3.6	0.0	0.0
Second-Term Queue (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	0.000	0.000	1.000	0.000	0.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.0	0.0	0.0	0.0	3.8	0.0	0.0
Percentile Storage Ratio (RQ%)	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM Average Control Delay	7.8							
HCM Level of Service	A							

Intersection

Intersection Delay (sec/veh): 1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	0	0	1	1	204	1	449	0	0	268	322
Conflicting Peds. (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None	None	None	Yield	Yield	Yield	None	None	None	None	None	None
Storage Length	0		0	0		0	0		0	0		0
Median Width		0			0			0			0	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	0	0	0	0	0	0	0	0	0	0	0	0
Movement Flow Rate	0	0	0	1	1	227	1	499	0	0	298	358
Number of Lanes	0	0	0	0	1	0	0	2	0	0	1	1

Major/Minor	Minor 1			Major 1			Major 2		
Conflicting Flow Rate - All	850	799	249	656	0	-	-	0	0
Stage 1	501	652	305	517	362	748	180	-	0
Stage 2	349	308	149	280	1398	2370	188	-	0
Follow-up Headway	3.5	4	3.3	2.2	-	-	-	0	0
Pot Capacity-1 Maneuver	270	321	758	941	-	-	-	-	-
Stage 1	541	546	-	-	-	-	-	-	-
Stage 2	659	671	-	-	-	-	-	-	-
Mov Capacity-1 Maneuver	-	321	758	941	-	-	-	-	-
Mov Capacity-2 Maneuver	-	321	-	-	-	-	-	-	-
Stage 1	541	546	-	-	-	-	-	-	-
Stage 2	627	# 0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay (s)	11.7	0	0
HCM LOS	B	A	A

Lane	NBL	NBT	WBLn1	SBT	SBR
Capacity (vph)			765		
HCM Control Delay (s)	8.83	0	11.7	-	-
HCM Lane VC Ratio	0.001	-	0.299	0	-
HCM Lane LOS	A	-	B	-	-
HCM 95th Percentile Queue (veh)	0.004	-	1.257	0	-

Intersection

Intersection Delay (sec/veh): 0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Volume (vph)	449	1	0	0	268	0
Conflicting Peds. (#/hr)	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
Right Turn Channelized	None	None	None	None	None	None
Storage Length	0			0	0	0
Median Width		0	0		12	
Grade (%)		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	0	0	0	0	0	0
Movement Flow Rate	499	1	0	0	298	0
Number of Lanes	0	1	0	0	1	0

Major/Minor	Minor 1		
Conflicting Flow Rate - All 212108462	596	0	-
Stage 1 257910146222.049	596	0	-
Stage 2 10709768592022E-312	0	0	-
Follow-up Headway	- 0	-	-
Pot Capacity-1 Maneuver	- -	-	-
Stage 1	- -	-	-
Stage 2	- -	-	-
Mov Capacity-1 Maneuver	- # 0	-	-
Mov Capacity-2 Maneuver	- # 0	-	-
Stage 1	- # 0	-	-
Stage 2	- # 0	-	-













Approach	EB	SB
HCM Control Delay (s)	-	0
HCM LOS	-	A

Lane	EBLn1	SBL
Capacity (vph)	-	
HCM Control Delay (s)	-	-
HCM Lane VC Ratio	-	-
HCM Lane LOS	-	-
HCM 95th Percentile Queue (veh)	-	-

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Movement	EBT	EBR	WBL	WBT	NBL	NBR			
Lane Configurations									
Volume (vph)	695	112	251	829	193	308			
Movement Number	2	12	1	6	3	18			
Initial Queue, veh	0	0	0	0	0	0			
Ped-Bike Adj. Factor (A _{pbT})		1.00	1.00		1.00	1.00			
Parking, Bus Adj. Factors	1.00	1.00	1.00	1.00	1.00	1.00			
Adj. Sat. Flow Rate, veh/h/ln	1891	1872	1853	1908	1806	1771			
Lanes	1	1	1	1	1	1			
Lane Assignment									
Capacity, veh/h	1263	1063	0	1275	330	289			
Proportion Arriving On Green	0.67	0.67	0.00	0.15	0.19	0.19			
Movement Delay, s/veh	9.4	5.3	0.0	30.2	35.1	128.3			
Movement LOS	A	A		C	D	F			
Approach Volume, veh/h	857			891	531				
Approach Delay, s/veh	8.8			30.2	92.7				
Approach LOS	A			C	F				
Timer:		1	2	3	4	5	6	7	8
Assigned Phase			2				6		8
Case No			7.0				4.0		9.0
Phase Duration (G+Y+Rc), s			63.37				63.37		22.50
Change Period (Y+Rc), s			6.00				6.00		6.00
Max. Allowable Headway (MAH), s			7.23				7.23		4.46
Maximum Green Setting (Gmax), s			47.10				66.50		16.50
Max. Queue Clearance Time (g _c +l1), s			20.30				40.17		18.50
Green Extension Time (g _e), s			22.63				13.16		0.00
Probability of Phase Call (p _c)			1.000				1.000		1.000
Probability of Max Out (p _x)			0.842				0.846		1.000
Left-Turn Movement Data									
Assigned Movement									3
Mvmt. Sat Flow, veh/h									1719.94
Through Movement Data									
Assigned Movement			2				6		
Mvmt. Sat Flow, veh/h			1890.69				1908.20		
Right-Turn Movement Data									
Assigned Movement			12				16		18
Mvmt. Sat Flow, veh/h			1591.48				0.00		1505.24
Left Lane Group Data									
Assigned Movement		0	0	0	0	0	0	0	3
Lane Assignment									L
Lanes in Group		0	0	0	0	0	0	0	1
Group Volume (v), veh/h		0.0	0.0	0.0	0.0	0.0	0.0	0.0	203.2
Group Sat. Flow (s), veh/h/ln		0.0	0.0	0.0	0.0	0.0	0.0	0.0	1719.9
Queue Serve Time (g _s), s		0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.3
Cycle Queue Clear Time (g _c), s		0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.3

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Perm LT Sat Flow Rate (s_l), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1719.9
Shared LT Sat Flow (s_sh), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Eff. Green (g_p), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Que Serve Time (g_ps), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	57.4	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion LT Inside Lane (P_L)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000
Lane Group Capacity (c), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	330.5
Volume-to-Capacity Ratio (X)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.615
Available Capacity (c_a), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	330.5
Upstream Filter Factor (I)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000
Uniform Delay (d1), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.8
Incremental Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	35.1
First-Term Queue (Q1), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7
Second-Term Queue (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0
Percentile Storage Ratio (RQ%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data

Assigned Movement	0	2	0	0	0	6	0	0
Lane Assignment	T		T					
Lanes in Group	0	1	0	0	0	1	0	0
Group Volume (v), veh/h	0.0	739.4	0.0	0.0	0.0	891.4	0.0	0.0
Group Sat. Flow (s), veh/h/ln	0.0	1890.7	0.0	0.0	0.0	1908.2	0.0	0.0
Queue Serve Time (g_s), s	0.0	18.3	0.0	0.0	0.0	38.2	0.0	0.0
Cycle Queue Clear Time (g_c), s	0.0	18.3	0.0	0.0	0.0	38.2	0.0	0.0
Lane Group Capacity (c), veh/h	0.0	1263.2	0.0	0.0	0.0	1274.9	0.0	0.0
Volume-to-Capacity Ratio (X)	0.000	0.585	0.000	0.000	0.000	0.699	0.000	0.000
Available Capacity (c_a), veh/h	0.0	1263.2	0.0	0.0	0.0	1477.7	0.0	0.0
Upstream Filter Factor (I)	0.000	1.000	0.000	0.000	0.000	0.632	0.000	0.000
Uniform Delay (d1), s/veh	0.0	7.8	0.0	0.0	0.0	28.5	0.0	0.0
Incremental Delay (d2), s/veh	0.0	1.6	0.0	0.0	0.0	1.7	0.0	0.0
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	9.4	0.0	0.0	0.0	30.2	0.0	0.0
First-Term Queue (Q1), veh/ln	0.0	5.8	0.0	0.0	0.0	19.6	0.0	0.0
Second-Term Queue (Q2), veh/ln	0.0	0.6	0.0	0.0	0.0	0.6	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	0.000	0.000	1.000	0.000	0.000
Percentile Back of Queue (Q%), veh/ln	0.0	6.4	0.0	0.0	0.0	20.2	0.0	0.0
Percentile Storage Ratio (RQ%)	0.00	0.17	0.00	0.00	0.00	0.86	0.00	0.00

HCM 2010 Signalized Intersection Capacity Analysis

1: Bridge St & SR 611





















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Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Movement	0	12	0	0	0	16	0	18
Lane Assignment	R				R			
Lanes in Group	0	1	0	0	0	0	0	1
Group Volume (v), veh/h	0.0	117.9	0.0	0.0	0.0	0.0	0.0	327.7
Group Sat. Flow (s), veh/h/ln	0.0	1591.5	0.0	0.0	0.0	0.0	0.0	1505.2
Queue Serve Time (g_s), s	0.0	2.3	0.0	0.0	0.0	0.0	0.0	16.5
Cycle Queue Clear Time (g_c), s	0.0	2.3	0.0	0.0	0.0	0.0	0.0	16.5
Prot RT Sat Flow Rate (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff. Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion RT Outside Lane (P_R)	0.000	1.000	0.000	0.000	0.000	0.000	0.000	1.000
Lane Group Capacity (c), veh/h	0.0	1063.3	0.0	0.0	0.0	0.0	0.0	289.2
Volume-to-Capacity Ratio (X)	0.000	0.111	0.000	0.000	0.000	0.000	0.000	1.133
Available Capacity (c_a), veh/h	0.0	1063.3	0.0	0.0	0.0	0.0	0.0	289.2
Upstream Filter Factor (I)	0.000	1.000	0.000	0.000	0.000	0.000	0.000	1.000
Uniform Delay (d1), s/veh	0.0	5.1	0.0	0.0	0.0	0.0	0.0	34.7
Incremental Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.0	0.0	0.0	93.7
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	5.3	0.0	0.0	0.0	0.0	0.0	128.3
First-Term Queue (Q1), veh/ln	0.0	0.6	0.0	0.0	0.0	0.0	0.0	5.8
Second-Term Queue (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.5
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	0.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.7	0.0	0.0	0.0	0.0	0.0	13.3
Percentile Storage Ratio (RQ%)	0.00	0.09	0.00	0.00	0.00	0.00	0.00	2.35
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.6
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Intersection Summary								
HCM Average Control Delay	36.7							
HCM Level of Service	D							

HCM 2010 Signalized Intersection Capacity Analysis

2: Commercial Driveway/Stroud Mall Main Dr & SR 611

3/11/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	172	905	13	13	890	66	23	4	11	99	3	156
Movement Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj. Factor (A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj. Factors	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 Rate, veh/h/ln	1881	1882	1882	1900	1937	1976	1986	1986	1986	2025	2025	2005
Lanes	1	1	0	1	1	1	0	1	0	0	1	1
Lane Assignment												
Capacity, veh/h	0	1395	24	504	1466	1271	67	32	11	200	5	198
Proportion Arriving On Green	0.00	1.00	1.00	0.23	0.31	0.12	0.12	0.12	0.12	0.12	0.12	0.12
Movement Delay, s/veh	0.0	0.0	1.8	10.1	22.6	11.9	48.7	0.0	0.0	44.8	0.0	82.3
Movement LOS			A	B	C	B	D			D		F
Approach Volume, veh/h		1012			1025			63			297	
Approach Delay, s/veh		1.8			21.5			48.7			67.7	
Approach LOS		A			C			D			E	
Timer:		1	2	3	4	5	6	7	8			
Assigned Phase			2		4		6		8			
Case No			4.0		7.0		5.3		8.0			
Phase Duration (G+Y+Rc), s			77.90		17.10		77.90		17.10			
Change Period (Y+Rc), s			6.00		6.00		6.00		6.00			
Max. Allowable Headway (MAH), s			1.46		4.64		1.46		4.64			
Maximum Green Setting (Gmax), s			71.90		11.10		56.90		11.10			
Max. Queue Clearance Time (g_c+l1), s			2.00		12.04		40.89		13.10			
Green Extension Time (g_e), s			0.41		0.00		0.41		0.00			
Probability of Phase Call (p_c)			1.000		1.000		1.000		1.000			
Probability of Max Out (p_x)			0.000		1.000		0.000		1.000			
Left-Turn Movement Data												
Assigned Movement					7		1		3			
Mvmt. Sat Flow, veh/h					1077.51		565.64		232.63			
Through Movement Data												
Assigned Movement			2		4		6		8			
Mvmt. Sat Flow, veh/h			1842.85		38.75		1937.25		111.67			
Right-Turn Movement Data												
Assigned Movement			12		14		16		18			
Mvmt. Sat Flow, veh/h			32.12		1697.25		1679.60		92.49			
Left Lane Group Data												
Assigned Movement		0	0	0	7	0	1	0	3			
Lane Assignment					L+T		L		L+T+R			
Lanes in Group		0	0	0	1	0	1	0	1			
Group Volume (v), veh/h		0.0	0.0	0.0	115.2	0.0	21.7	0.0	62.6			
Group Sat. Flow (s), veh/h/ln		0.0	0.0	0.0	1116.3	0.0	565.6	0.0	436.8			
Queue Serve Time (g_s), s		0.0	0.0	0.0	0.0	0.0	2.8	0.0	1.4			
Cycle Queue Clear Time (g_c), s		0.0	0.0	0.0	9.7	0.0	2.8	0.0	11.1			

HCM 2010 Signalized Intersection Capacity Analysis

2: Commercial Driveway/Stroud Mall Main Dr & SR 611

3/11/2015

Perm LT Sat Flow Rate (s_l), veh/h/ln	0.0	0.0	0.0	769.1	0.0	565.6	0.0	742.2
Shared LT Sat Flow (s_sh), veh/h/ln	0.0	0.0	0.0	1112.8	0.0	0.0	0.0	0.0
Perm LT Eff. Green (g_p), s	0.0	0.0	0.0	11.1	0.0	71.9	0.0	11.1
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	0.0	0.0	71.9	0.0	1.4
Perm LT Que Serve Time (g_ps), s	0.0	0.0	0.0	0.0	0.0	2.8	0.0	1.4
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7
Proportion LT Inside Lane (P_L)	0.000	0.000	0.000	0.965	0.000	1.000	0.000	0.533
Lane Group Capacity (c), veh/h	0.0	0.0	0.0	204.9	0.0	503.9	0.0	109.1
Volume-to-Capacity Ratio (X)	0.000	0.000	0.000	0.562	0.000	0.043	0.000	0.574
Available Capacity (c_a), veh/h	0.0	0.0	0.0	204.9	0.0	503.9	0.0	109.1
Upstream Filter Factor (I)	0.000	0.000	0.000	1.000	0.000	0.634	0.000	1.000
Uniform Delay (d1), s/veh	0.0	0.0	0.0	41.3	0.0	10.0	0.0	41.6
Incremental Delay (d2), s/veh	0.0	0.0	0.0	3.5	0.0	0.1	0.0	7.1
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	44.8	0.0	10.1	0.0	48.7
First-Term Queue (Q1), veh/ln	0.0	0.0	0.0	2.9	0.0	0.3	0.0	1.5
Second-Term Queue (Q2), veh/ln	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	0.000	0.000	1.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.0	0.0	3.1	0.0	0.3	0.0	1.7
Percentile Storage Ratio (RQ%)	0.00	0.00	0.00	0.17	0.00	0.09	0.00	0.09
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data

Assigned Movement	0	2	0	4	0	6	0	8
Lane Assignment	T							
Lanes in Group	0	0	0	0	0	1	0	0
Group Volume (v), veh/h	0.0	0.0	0.0	0.0	0.0	927.1	0.0	0.0
Group Sat. Flow (s), veh/h/ln	0.0	0.0	0.0	0.0	0.0	1937.3	0.0	0.0
Queue Serve Time (g_s), s	0.0	0.0	0.0	0.0	0.0	38.9	0.0	0.0
Cycle Queue Clear Time (g_c), s	0.0	0.0	0.0	0.0	0.0	38.9	0.0	0.0
Lane Group Capacity (c), veh/h	0.0	0.0	0.0	0.0	0.0	1466.2	0.0	0.0
Volume-to-Capacity Ratio (X)	0.000	0.000	0.000	0.000	0.000	0.632	0.000	0.000
Available Capacity (c_a), veh/h	0.0	0.0	0.0	0.0	0.0	1466.2	0.0	0.0
Upstream Filter Factor (I)	0.000	0.000	0.000	0.000	0.000	0.634	0.000	0.000
Uniform Delay (d1), s/veh	0.0	0.0	0.0	0.0	0.0	21.2	0.0	0.0
Incremental Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	22.6	0.0	0.0
First-Term Queue (Q1), veh/ln	0.0	0.0	0.0	0.0	0.0	19.4	0.0	0.0
Second-Term Queue (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0
Percentile Storage Ratio (RQ%)	0.00	0.00	0.00	0.00	0.00	1.93	0.00	0.00

HCM 2010 Signalized Intersection Capacity Analysis

2: Commercial Driveway/Stroud Mall Main Dr & SR 611













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Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Movement	0	12	0	14	0	16	0	18
Lane Assignment	T+R		R		R			
Lanes in Group	0	1	0	1	0	1	0	0
Group Volume (v), veh/h	0.0	1011.8	0.0	181.4	0.0	76.7	0.0	0.0
Group Sat. Flow (s), veh/h/ln	0.0	1875.0	0.0	1697.3	0.0	1679.6	0.0	0.0
Queue Serve Time (g_s), s	0.0	0.0	0.0	10.0	0.0	3.9	0.0	0.0
Cycle Queue Clear Time (g_c), s	0.0	0.0	0.0	10.0	0.0	3.9	0.0	0.0
Prot RT Sat Flow Rate (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff. Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion RT Outside Lane (P_R)	0.000	0.017	0.000	1.000	0.000	1.000	0.000	0.212
Lane Group Capacity (c), veh/h	0.0	1419.1	0.0	198.3	0.0	1271.2	0.0	0.0
Volume-to-Capacity Ratio (X)	0.000	0.713	0.000	0.915	0.000	0.060	0.000	0.000
Available Capacity (c_a), veh/h	0.0	1419.1	0.0	198.3	0.0	1271.2	0.0	0.0
Upstream Filter Factor (I)	0.000	0.571	0.000	1.000	0.000	0.634	0.000	0.000
Uniform Delay (d1), s/veh	0.0	0.0	0.0	41.5	0.0	11.9	0.0	0.0
Incremental Delay (d2), s/veh	0.0	1.8	0.0	40.8	0.0	0.1	0.0	0.0
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	1.8	0.0	82.3	0.0	11.9	0.0	0.0
First-Term Queue (Q1), veh/ln	0.0	0.0	0.0	4.2	0.0	1.1	0.0	0.0
Second-Term Queue (Q2), veh/ln	0.0	0.7	0.0	2.3	0.0	0.0	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.7	0.0	6.4	0.0	1.1	0.0	0.0
Percentile Storage Ratio (RQ%)	0.00	0.03	0.00	1.30	0.00	0.19	0.00	0.00
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM Average Control Delay	19.6							
HCM Level of Service	B							

HCM 2010 Signalized Intersection Capacity Analysis

3: SR 611 & Stroud Mall East Dr

3/11/2015

									
Movement	EBL	EBT	WBT	WBR	SBL	SBR			
Lane Configurations									
Volume (vph)	19	757	903	77	36	63			
Movement Number	5	2	6	16	7	14			
Initial Queue, veh	0	0	0	0	0	0			
Ped-Bike Adj. Factor (A _{pbT})	1.00			1.00	1.00	1.00			
Parking, Bus Adj. Factors	1.00	1.00	1.00	1.00	1.00	1.00			
Adj. Sat. Flow Rate, veh/h/ln	1900	1863	1863	1900	1976	1937			
Lanes	1	1	1	1	1	1			
Lane Assignment									
Capacity, veh/h	0	1500	1500	1301	137	120			
Proportion Arriving On Green	0.00	0.59	0.40	0.01	0.07	0.07			
Movement Delay, s/veh	0.0	10.6	21.6	12.7	46.2	55.0			
Movement LOS		B	C	B	D	D			
Approach Volume, veh/h		841	1143		140				
Approach Delay, s/veh		10.6	20.8		51.0				
Approach LOS		B	C		D				
Timer:		1	2	3	4	5	6	7	8
Assigned Phase			2		4		6		
Case No			4.0		9.0		7.0		
Phase Duration (G+Y+Rc), s			85.20		13.14		85.20		
Change Period (Y+Rc), s			6.00		6.00		6.00		
Max. Allowable Headway (MAH), s			1.43		4.59		1.43		
Maximum Green Setting (Gmax), s			79.20		7.30		74.30		
Max. Queue Clearance Time (g _c +l1), s			29.38		6.46		47.61		
Green Extension Time (g _e), s			0.36		0.04		0.36		
Probability of Phase Call (p _c)			1.000		0.978		1.000		
Probability of Max Out (p _x)			0.000		1.000		0.000		
Left-Turn Movement Data									
Assigned Movement					7				
Mvmt. Sat Flow, veh/h					1881.90				
Through Movement Data									
Assigned Movement			2				6		
Mvmt. Sat Flow, veh/h			1862.75				1862.75		
Right-Turn Movement Data									
Assigned Movement			12		14		16		
Mvmt. Sat Flow, veh/h			0.00		1646.67		1615.00		
Left Lane Group Data									
Assigned Movement		0	0	0	7	0	0	0	0
Lane Assignment					L				
Lanes in Group		0	0	0	1	0	0	0	0
Group Volume (v), veh/h		0.0	0.0	0.0	63.2	0.0	0.0	0.0	0.0
Group Sat. Flow (s), veh/h/ln		0.0	0.0	0.0	1881.9	0.0	0.0	0.0	0.0
Queue Serve Time (g _s), s		0.0	0.0	0.0	3.2	0.0	0.0	0.0	0.0
Cycle Queue Clear Time (g _c), s		0.0	0.0	0.0	3.2	0.0	0.0	0.0	0.0

HCM 2010 Signalized Intersection Capacity Analysis

3: SR 611 & Stroud Mall East Dr

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Perm LT Sat Flow Rate (s_l), veh/h/ln	0.0	0.0	0.0	1881.9	0.0	0.0	0.0	0.0
Shared LT Sat Flow (s_sh), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Eff. Green (g_p), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Que Serve Time (g_ps), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	79.2	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion LT Inside Lane (P_L)	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000
Lane Group Capacity (c), veh/h	0.0	0.0	0.0	136.6	0.0	0.0	0.0	0.0
Volume-to-Capacity Ratio (X)	0.000	0.000	0.000	0.462	0.000	0.000	0.000	0.000
Available Capacity (c_a), veh/h	0.0	0.0	0.0	139.7	0.0	0.0	0.0	0.0
Upstream Filter Factor (I)	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000
Uniform Delay (d1), s/veh	0.0	0.0	0.0	43.8	0.0	0.0	0.0	0.0
Incremental Delay (d2), s/veh	0.0	0.0	0.0	2.4	0.0	0.0	0.0	0.0
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	46.2	0.0	0.0	0.0	0.0
First-Term Queue (Q1), veh/ln	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0
Second-Term Queue (Q2), veh/ln	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0
Percentile Storage Ratio (RQ%)	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data

Assigned Movement	0	2	0	0	0	6	0	0
Lane Assignment	T			T				
Lanes in Group	0	1	0	0	0	1	0	0
Group Volume (v), veh/h	0.0	841.1	0.0	0.0	0.0	1037.9	0.0	0.0
Group Sat. Flow (s), veh/h/ln	0.0	1862.7	0.0	0.0	0.0	1862.7	0.0	0.0
Queue Serve Time (g_s), s	0.0	27.4	0.0	0.0	0.0	45.6	0.0	0.0
Cycle Queue Clear Time (g_c), s	0.0	27.4	0.0	0.0	0.0	45.6	0.0	0.0
Lane Group Capacity (c), veh/h	0.0	1500.2	0.0	0.0	0.0	1500.2	0.0	0.0
Volume-to-Capacity Ratio (X)	0.000	0.561	0.000	0.000	0.000	0.692	0.000	0.000
Available Capacity (c_a), veh/h	0.0	1500.2	0.0	0.0	0.0	1500.2	0.0	0.0
Upstream Filter Factor (I)	0.000	0.633	0.000	0.000	0.000	0.770	0.000	0.000
Uniform Delay (d1), s/veh	0.0	9.6	0.0	0.0	0.0	19.6	0.0	0.0
Incremental Delay (d2), s/veh	0.0	1.0	0.0	0.0	0.0	2.0	0.0	0.0
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	10.6	0.0	0.0	0.0	21.6	0.0	0.0
First-Term Queue (Q1), veh/ln	0.0	11.3	0.0	0.0	0.0	21.4	0.0	0.0
Second-Term Queue (Q2), veh/ln	0.0	0.4	0.0	0.0	0.0	0.9	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	0.000	0.000	1.000	0.000	0.000
Percentile Back of Queue (Q%), veh/ln	0.0	11.7	0.0	0.0	0.0	22.3	0.0	0.0
Percentile Storage Ratio (RQ%)	0.00	1.13	0.00	0.00	0.00	0.34	0.00	0.00

HCM 2010 Signalized Intersection Capacity Analysis

3: SR 611 & Stroud Mall East Dr






















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Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Movement	0	12	0	14	0	16	0	0
Lane Assignment				R				R
Lanes in Group	0	0	0	1	0	1	0	0
Group Volume (v), veh/h	0.0	0.0	0.0	76.8	0.0	105.5	0.0	0.0
Group Sat. Flow (s), veh/h/ln	0.0	0.0	0.0	1646.7	0.0	1615.0	0.0	0.0
Queue Serve Time (g_s), s	0.0	0.0	0.0	4.5	0.0	6.4	0.0	0.0
Cycle Queue Clear Time (g_c), s	0.0	0.0	0.0	4.5	0.0	6.4	0.0	0.0
Prot RT Sat Flow Rate (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff. Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion RT Outside Lane (P_R)	0.000	0.000	0.000	1.000	0.000	1.000	0.000	0.000
Lane Group Capacity (c), veh/h	0.0	0.0	0.0	119.6	0.0	1300.7	0.0	0.0
Volume-to-Capacity Ratio (X)	0.000	0.000	0.000	0.643	0.000	0.081	0.000	0.000
Available Capacity (c_a), veh/h	0.0	0.0	0.0	122.2	0.0	1300.7	0.0	0.0
Upstream Filter Factor (I)	0.000	0.000	0.000	1.000	0.000	0.770	0.000	0.000
Uniform Delay (d1), s/veh	0.0	0.0	0.0	44.4	0.0	12.6	0.0	0.0
Incremental Delay (d2), s/veh	0.0	0.0	0.0	10.6	0.0	0.1	0.0	0.0
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	55.0	0.0	12.7	0.0	0.0
First-Term Queue (Q1), veh/ln	0.0	0.0	0.0	2.0	0.0	1.8	0.0	0.0
Second-Term Queue (Q2), veh/ln	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	0.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.0	0.0	2.4	0.0	1.8	0.0	0.0
Percentile Storage Ratio (RQ%)	0.00	0.00	0.00	0.41	0.00	0.18	0.00	0.00
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM Average Control Delay	18.7							
HCM Level of Service	B							

HCM 2010 Signalized Intersection Capacity Analysis

4: Commercial Driveway/Chipperfield Dr & SR 611

3/25/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	216	499	1	5	489	54	28	7	7	251	11	248
Movement Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj. Factor (A _{pbT})	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking, Bus Adj. Factors	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 Rate, veh/h/ln	1872	1891	1891	1890	1872	1928	1900	1900	1976	1856	1856	1947
Lanes	1	1	0	1	1	1	0	1	1	0	1	1
Lane Assignment												
Capacity, veh/h	0	980	7	342	979	855	86	18	94	364	27	364
Proportion Arriving On Green	0.00	0.34	0.34	0.52	0.52	0.52	0.06	0.06	0.06	0.22	0.22	0.22
Movement Delay, s/veh	0.0	0.0	22.3	22.7	15.7	10.7	44.2	0.0	40.9	46.5	0.0	39.5
Movement LOS			C	C	B	B	D		D	D		D
Approach Volume, veh/h		529			586			59			585	
Approach Delay, s/veh		22.3			15.4			43.5			43.3	
Approach LOS		C			B			D			D	
Timer:	1	2	3	4	5	6	7	8				
Assigned Phase		2	8	4		6						
Case No		4.0	11.0	11.0		5.3						
Phase Duration (G+Y+Rc), s		53.01	11.08	25.80		53.01						
Change Period (Y+Rc), s		6.00	6.00	6.00		6.00						
Max. Allowable Headway (MAH), s		7.24	5.18	4.90		7.24						
Maximum Green Setting (G _{max}), s		55.40	6.60	19.80		39.30						
Max. Queue Clearance Time (g _c +I ₁), s		22.36	4.24	17.48		23.23						
Green Extension Time (g _e), s		8.39	0.03	0.75		10.48						
Probability of Phase Call (p _c)		1.000	0.776	1.000		1.000						
Probability of Max Out (p _x)		0.380	1.000	1.000		0.718						
Left-Turn Movement Data												
Assigned Movement			3	7		1						
Mvmt. Sat Flow, veh/h			1514.49	1651.73		883.56						
Through Movement Data												
Assigned Movement		2	8	4		6						
Mvmt. Sat Flow, veh/h		1873.95	309.79	121.61		1871.78						
Right-Turn Movement Data												
Assigned Movement			12	18	14			16				
Mvmt. Sat Flow, veh/h			14.27	1656.72	1654.66			1635.30				
Left Lane Group Data												
Assigned Movement		0	0	3	7	0	1	0	0			
Lane Assignment				L+T	L+T		L					
Lanes in Group		0	0	1	1	0	1	0	0			
Group Volume (v), veh/h		0.0	0.0	46.8	320.8	0.0	11.9	0.0	0.0			
Group Sat. Flow (s), veh/h/ln		0.0	0.0	1824.3	1773.3	0.0	883.6	0.0	0.0			
Queue Serve Time (g _s), s		0.0	0.0	2.2	15.5	0.0	0.9	0.0	0.0			
Cycle Queue Clear Time (g _c), s		0.0	0.0	2.2	15.5	0.0	21.2	0.0	0.0			

HCM 2010 Signalized Intersection Capacity Analysis

4: Commercial Driveway/Chipperfield Dr & SR 611

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Perm LT Sat Flow Rate (s_l), veh/h/ln	0.0	0.0	0.0	0.0	0.0	883.6	0.0	0.0
Shared LT Sat Flow (s_sh), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Eff. Green (g_p), s	0.0	0.0	0.0	0.0	0.0	47.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	0.0	0.0	26.6	0.0	0.0
Perm LT Que Serve Time (g_ps), s	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion LT Inside Lane (P_L)	0.000	0.000	0.830	0.931	0.000	1.000	0.000	0.000
Lane Group Capacity (c), veh/h	0.0	0.0	103.2	390.6	0.0	342.0	0.0	0.0
Volume-to-Capacity Ratio (X)	0.000	0.000	0.454	0.821	0.000	0.035	0.000	0.000
Available Capacity (c_a), veh/h	0.0	0.0	133.9	390.6	0.0	342.0	0.0	0.0
Upstream Filter Factor (I)	0.000	0.000	1.000	1.000	0.000	1.000	0.000	0.000
Uniform Delay (d1), s/veh	0.0	0.0	41.1	33.4	0.0	22.6	0.0	0.0
Incremental Delay (d2), s/veh	0.0	0.0	3.1	13.1	0.0	0.1	0.0	0.0
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	44.2	46.5	0.0	22.7	0.0	0.0
First-Term Queue (Q1), veh/ln	0.0	0.0	1.0	6.4	0.0	0.2	0.0	0.0
Second-Term Queue (Q2), veh/ln	0.0	0.0	0.1	1.4	0.0	0.0	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	0.000	1.000	1.000	0.000	1.000	0.000	0.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.0	1.1	7.8	0.0	0.2	0.0	0.0
Percentile Storage Ratio (RQ%)	0.00	0.00	0.06	0.42	0.00	0.02	0.00	0.00
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data

Assigned Movement	0	2	8	4	0	6	0	0
Lane Assignment	T							
Lanes in Group	0	0	0	0	0	1	0	0
Group Volume (v), veh/h	0.0	0.0	0.0	0.0	0.0	514.7	0.0	0.0
Group Sat. Flow (s), veh/h/ln	0.0	0.0	0.0	0.0	0.0	1871.8	0.0	0.0
Queue Serve Time (g_s), s	0.0	0.0	0.0	0.0	0.0	16.3	0.0	0.0
Cycle Queue Clear Time (g_c), s	0.0	0.0	0.0	0.0	0.0	16.3	0.0	0.0
Lane Group Capacity (c), veh/h	0.0	0.0	0.0	0.0	0.0	978.8	0.0	0.0
Volume-to-Capacity Ratio (X)	0.000	0.000	0.000	0.000	0.000	0.526	0.000	0.000
Available Capacity (c_a), veh/h	0.0	0.0	0.0	0.0	0.0	978.8	0.0	0.0
Upstream Filter Factor (I)	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000
Uniform Delay (d1), s/veh	0.0	0.0	0.0	0.0	0.0	14.1	0.0	0.0
Incremental Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	15.7	0.0	0.0
First-Term Queue (Q1), veh/ln	0.0	0.0	0.0	0.0	0.0	6.2	0.0	0.0
Second-Term Queue (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	1.000	1.000	0.000	1.000	0.000	0.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.0	0.0	0.0	0.0	6.7	0.0	0.0
Percentile Storage Ratio (RQ%)	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00

HCM 2010 Signalized Intersection Capacity Analysis

4: Commercial Driveway/Chipperfield Dr & SR 611

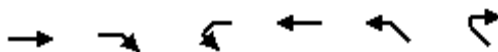
3/25/2015

Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Movement	0	12	18	14	0	16	0	0
Lane Assignment		T+R	R	R		R		
Lanes in Group	0	1	1	1	0	1	0	0
Group Volume (v), veh/h	0.0	529.3	12.1	263.8	0.0	59.3	0.0	0.0
Group Sat. Flow (s), veh/h/ln	0.0	1888.2	1656.7	1654.7	0.0	1635.3	0.0	0.0
Queue Serve Time (g_s), s	0.0	20.4	0.6	13.3	0.0	1.6	0.0	0.0
Cycle Queue Clear Time (g_c), s	0.0	20.4	0.6	13.3	0.0	1.6	0.0	0.0
Prot RT Sat Flow Rate (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff. Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion RT Outside Lane (P_R)	0.000	0.008	1.000	1.000	0.000	1.000	0.000	0.000
Lane Group Capacity (c), veh/h	0.0	987.4	93.7	364.5	0.0	855.1	0.0	0.0
Volume-to-Capacity Ratio (X)	0.000	0.536	0.129	0.724	0.000	0.069	0.000	0.000
Available Capacity (c_a), veh/h	0.0	1163.7	121.6	364.5	0.0	855.1	0.0	0.0
Upstream Filter Factor (I)	0.000	0.831	1.000	1.000	0.000	1.000	0.000	0.000
Uniform Delay (d1), s/veh	0.0	20.9	40.3	32.5	0.0	10.6	0.0	0.0
Incremental Delay (d2), s/veh	0.0	1.4	0.6	7.0	0.0	0.1	0.0	0.0
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	22.3	40.9	39.5	0.0	10.7	0.0	0.0
First-Term Queue (Q1), veh/ln	0.0	9.4	0.3	5.3	0.0	0.5	0.0	0.0
Second-Term Queue (Q2), veh/ln	0.0	0.4	0.0	0.7	0.0	0.0	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	1.000	1.000	0.000	1.000	0.000	0.000
Percentile Back of Queue (Q%), veh/ln	0.0	9.8	0.3	6.0	0.0	0.6	0.0	0.0
Percentile Storage Ratio (RQ%)	0.00	0.15	0.08	0.75	0.00	0.07	0.00	0.00
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM Average Control Delay	27.7							
HCM Level of Service	C							

HCM Signalized Intersection Capacity Analysis

16: Dreher Connector Road & W Main St

3/11/2015




















Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations	↑	↑	↑	↑	↑	↑
Volume (vph)	322	317	53	986	109	308
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1900	1615	1805	1900	1805	1615
Flt Permitted	1.00	1.00	0.47	1.00	0.95	1.00
Satd. Flow (perm)	1900	1615	893	1900	1805	1615
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	358	352	59	1096	121	342
RTOR Reduction (vph)	0	136	0	0	0	285
Lane Group Flow (vph)	358	216	59	1096	121	57
Turn Type	NA	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	39.2	39.2	45.2	45.2	10.6	10.6
Effective Green, g (s)	39.2	39.2	45.2	45.2	10.6	10.6
Actuated g/C Ratio	0.61	0.61	0.71	0.71	0.17	0.17
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1167	992	661	1346	300	268
v/s Ratio Prot	0.19		0.00	c0.58	c0.07	
v/s Ratio Perm		0.13	0.06			0.04
v/c Ratio	0.31	0.22	0.09	0.81	0.40	0.21
Uniform Delay, d1	5.8	5.5	3.1	6.4	23.8	23.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.1	0.1	3.9	0.9	0.4
Delay (s)	6.0	5.6	3.2	10.3	24.7	23.4
Level of Service	A	A	A	B	C	C
Approach Delay (s)	5.8			9.9	23.7	
Approach LOS	A			A	C	

Intersection Summary

HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	63.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 Signalized Intersection Capacity Analysis 22: 305 WB Off Ramp/305 WB On Ramp & W Main St

6/17/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	72	558	0	0	711	288	0	0	0	250	247	183
Number	7	4	14	3	8	18				5	2	12
Initial Q, veh	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
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	0	0	1900	1900				1900	1900	1900
Adj Flow Rate, veh/h	80	620	0	0	790	0				276	277	0
Adj No. of Lanes	1	1	0	0	1	0				1	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	0	0	0				0	0	0
Opposing Right Turn Influence	Yes			No						Yes		
Cap, veh/h	231	1044	0	0	1044	0				671	704	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Prop Arrive On Green	0.55	0.55	0.00	0.00	0.55	0.00				0.37	0.37	0.00
Ln Grp Delay, s/veh	34.5	15.6	0.0	0.0	19.7	0.0				25.2	24.8	0.0
Ln Grp LOS	C	B			B					C	C	
Approach Vol, veh/h		700			790						553	
Approach Delay, s/veh		17.8			19.7						25.0	
Approach LOS		B			B						C	
Timer:		1	2	3	4	5	6	7	8			
Assigned Phs			2		4				8			
Case No			10.0		6.0				8.0			
Phs Duration (G+Y+Rc), s			41.1		58.9				58.9			
Change Period (Y+Rc), s			4.0		4.0				4.0			
Max Green (Gmax), s			28.0		64.0				64.0			
Max Allow Headway (MAH), s			4.5		5.3				5.3			
Max Q Clear (g_c+I1), s			13.3		44.1				34.1			
Green Ext Time (g_e), s			2.2		10.9				13.5			
Prob of Phs Call (p_c)			1.00		1.00				1.00			
Prob of Max Out (p_x)			0.00		0.49				0.31			
Left-Turn Movement Data												
Assigned Mvmt			5		7				3			
Mvmt Sat Flow, veh/h			1810		697				0			
Through Movement Data												
Assigned Mvmt			2		4				8			
Mvmt Sat Flow, veh/h			1900		1900				1900			
Right-Turn Movement Data												
Assigned Mvmt			12		14				18			
Mvmt Sat Flow, veh/h			0		0				0			
Left Lane Group Data												
Assigned Mvmt		0	5	0	7	0	0	0	3			
Lane Assignment												
Lanes in Grp		0	1	0	1	0	0	0	0			

HCM 2010 Signalized Intersection Capacity Analysis

22: 305 WB Off Ramp/305 WB On Ramp & W Main St

6/17/2015

Grp Vol (v), veh/h	0	276	0	80	0	0	0	0
Grp Sat Flow (s), veh/h/ln	0	1810	0	697	0	0	0	0
Q Serve Time (g_s), s	0.0	11.3	0.0	10.0	0.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	11.3	0.0	42.1	0.0	0.0	0.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	1810	0	697	0	0	0	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	0.0	54.9	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	22.9	0.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	54.9
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	671	0	231	0	0	0	0
V/C Ratio (X)	0.00	0.41	0.00	0.35	0.00	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	671	0	295	0	0	0	0
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	23.4	0.0	33.6	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.9	0.0	0.9	0.0	0.0	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
Control Delay (d), s/veh	0.0	25.2	0.0	34.5	0.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	5.7	0.0	1.9	0.0	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.3	0.0	0.1	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (-26165%), veh/ln	0.0	6.0	0.0	2.0	0.0	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.16	0.00	1.00	0.00	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	0	0	8
Lane Assignment		T		T				T
Lanes in Grp	0	1	0	1	0	0	0	1
Grp Vol (v), veh/h	0	277	0	620	0	0	0	790
Grp Sat Flow (s), veh/h/ln	0	1900	0	1900	0	0	0	1900
Q Serve Time (g_s), s	0.0	10.7	0.0	21.8	0.0	0.0	0.0	32.1
Cycle Q Clear Time (g_c), s	0.0	10.7	0.0	21.8	0.0	0.0	0.0	32.1
Lane Grp Cap (c), veh/h	0	704	0	1044	0	0	0	1044
V/C Ratio (X)	0.00	0.39	0.00	0.59	0.00	0.00	0.00	0.76
Avail Cap (c_a), veh/h	0	704	0	1216	0	0	0	1216
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	23.2	0.0	15.1	0.0	0.0	0.0	17.4
Incr Delay (d2), s/veh	0.0	1.6	0.0	0.6	0.0	0.0	0.0	2.4
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	24.8	0.0	15.6	0.0	0.0	0.0	19.7
1st-Term Q (Q1), veh/ln	0.0	5.6	0.0	11.4	0.0	0.0	0.0	16.7
2nd-Term Q (Q2), veh/ln	0.0	0.3	0.0	0.2	0.0	0.0	0.0	0.7

HCM 2010 Signalized Intersection Capacity Analysis

22: 305 WB Off Ramp/305 WB On Ramp & W Main St

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3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (-26165%), veh/ln	0.0	5.9	0.0	11.5	0.0	0.0	0.0	17.4
%ile Storage Ratio (RQ%)	0.00	0.15	0.00	0.77	0.00	0.00	0.00	2.57
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data

Assigned Mvmt	0	12	0	14	0	0	0	18
Lane Assignment								
Lanes in Grp	0	0	0	0	0	0	0	0
Grp Vol (v), veh/h	0	0	0	0	0	0	0	0
Grp Sat Flow (s), veh/h/ln	0	0	0	0	0	0	0	0
Q Serve Time (g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	0	0	0	0	0	0	0
V/C Ratio (X)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	0	0	0	0	0	0	0
Upstream Filter (I)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	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
Control Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (-26165%), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary

HCM 2010 Ctrl Delay	20.5
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Intersection

Intersection Delay (sec/veh): 11

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Volume (vph)	369	10	10	189	118	417
Conflicting Peds. (#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	Yield	Yield	None	None
Storage Length	200			100	150	0
Median Width		12	12		12	
Grade (%)		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	0	0	0	0	0	0
Movement Flow Rate	410	11	11	210	131	463
Number of Lanes	1	1	1	1	1	1

Major/Minor	Major 1		Major 2			
Conflicting Flow Rate - All	221	0	0	0	842	11
Stage 1	0	0	0	0	11	0
Stage 2	0	0	0	0	831	0
Follow-up Headway	2.2	-	0	0	3.5	3.3
Pot Capacity-1 Maneuver	1360	-	-	-	337	1085
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	431	-
Mov Capacity-1 Maneuver	1360	-	-	-	235.6	1085
Mov Capacity-2 Maneuver	-	-	-	-	235.6	-
Stage 1	-	-	-	-	# 0	-
Stage 2	-	-	-	-	301.3	-

Approach	EB	WB	SW
HCM Control Delay (s)	8.6	0	16.755
HCM LOS	A	A	C

Lane	EBL	EBT	WBT	WBR	SWLn1	SWLn2
Capacity (vph)					236	1085
HCM Control Delay (s)	8.785	-	-	-	37.8	10.8
HCM Lane VC Ratio	0.301	-	0	-	0.556	0.427
HCM Lane LOS	A	-	-	-	E	B
HCM 95th Percentile Queue (veh)	1.281	-	0	-	3.044	2.175

HCM 2010 TWSC
18: Dreher Ave & Dreher Connector Road

3/11/2015

Intersection

Intersection Delay (sec/veh): 2.9

Movement	EBL	EBR	NEL	NET	SWT	SWR
Volume (vph)	83	35	85	111	109	312
Conflicting Peds. (#/hr)	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
Right Turn Channelized	Yield	Yield	Yield	Yield	None	None
Storage Length	0	100	150			0
Median Width	12			12	12	
Grade (%)	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles(%)	0	0	0	0	0	0
Movement Flow Rate	92	39	94	123	121	347
Number of Lanes	1	1	1	1	1	1

Major/Minor	Major 1				Major 2	
Conflicting Flow Rate - All	433	121	468	0	0	0
Stage 1	121	0	0	0	0	0
Stage 2	312	0	0	0	0	0
Follow-up Headway	3.5	3.3	2.2	-	0	0
Pot Capacity-1 Maneuver	584	935	1104	-	-	-
Stage 1	909	-	-	-	-	-
Stage 2	747	-	-	-	-	-
Mov Capacity-1 Maneuver	533.8	935	1104	-	-	-
Mov Capacity-2 Maneuver	533.8	-	-	-	-	-
Stage 1	# 0	-	-	-	-	-
Stage 2	682.8	-	-	-	-	-



















Approach	EB	NE	SW
HCM Control Delay (s)	11.884	3.7	0
HCM LOS	B	A	A

Lane	NEL	NET	EBLn1	EBLn2	SWT	SWR
Capacity (vph)			534	935		
HCM Control Delay (s)	8.566	-	13.1	9	-	-
HCM Lane VC Ratio	0.086	-	0.173	0.042	0	-
HCM Lane LOS	A	-	B	A	-	-
HCM 95th Percentile Queue (veh)	0.28	-	0.619	0.13	0	-

HCM 2010 Signalized Intersection Capacity Analysis

3: Broad St & 307 WB On Ramp/307 WB Exit Ramp

3/11/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	120	1	440	320	327	0	0	289	470
Movement Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj. Factor (A _{pbT})	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj. Factors	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 Rate, veh/h/ln	1900	1900	1900	1863	1863	1863	1872	1872	1900	1900	1863	1863
Lanes	0	0	0	0	1	1	1	1	0	0	1	1
Lane Assignment												
Capacity, veh/h	0	0	0	336	3	302	0	1242	0	0	1236	1051
Proportion Arriving On Green	0.00	0.00	0.00	0.19	0.19	0.19	0.00	0.66	0.00	0.00	0.66	0.66
Movement Delay, s/veh	0.0	0.0	0.0	20.2	0.0	165.5	0.0	4.4	0.0	0.0	4.2	6.2
Movement LOS				C		F		A			A	A
Approach Volume, veh/h		0			514			355			825	
Approach Delay, s/veh		0.0			128.3			4.4			5.5	
Approach LOS					F			A			A	
Timer:		1	2	3	4	5	6	7	8			
Assigned Phase			2	8			6					
Case No			4.0	11.0			7.0					
Phase Duration (G+Y+Rc), s			40.50	14.50			40.50					
Change Period (Y+Rc), s			4.00	4.00			4.00					
Max. Allowable Headway (MAH), s			4.62	4.36			4.62					
Maximum Green Setting (Gmax), s			36.50	10.50			25.20					
Max. Queue Clearance Time (g _c +I1), s			6.34	12.50			10.81					
Green Extension Time (g _e), s			6.71	0.00			5.24					
Probability of Phase Call (p _c)			1.000	1.000			1.000					
Probability of Max Out (p _x)			0.048	1.000			0.313					
Left-Turn Movement Data												
Assigned Movement				3								
Mvmt. Sat Flow, veh/h				1760.07								
Through Movement Data												
Assigned Movement			2	8			6					
Mvmt. Sat Flow, veh/h			1872.06	14.67			1862.75					
Right-Turn Movement Data												
Assigned Movement			12	18			16					
Mvmt. Sat Flow, veh/h			0.00	1583.33			1583.33					
Left Lane Group Data												
Assigned Movement		0	0	3	0	0	0	0	0			
Lane Assignment				L+T								
Lanes in Group		0	0	1	0	0	0	0	0			
Group Volume (v), veh/h		0.0	0.0	131.5	0.0	0.0	0.0	0.0	0.0			
Group Sat. Flow (s), veh/h/ln		0.0	0.0	1774.7	0.0	0.0	0.0	0.0	0.0			
Queue Serve Time (g _s), s		0.0	0.0	3.6	0.0	0.0	0.0	0.0	0.0			
Cycle Queue Clear Time (g _c), s		0.0	0.0	3.6	0.0	0.0	0.0	0.0	0.0			

HCM 2010 Signalized Intersection Capacity Analysis

3: Broad St & 307 WB On Ramp/307 WB Exit Ramp

3/11/2015

Perm LT Sat Flow Rate (s_l), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shared LT Sat Flow (s_sh), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Eff. Green (g_p), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Que Serve Time (g_ps), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	36.5	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion LT Inside Lane (P_L)	0.000	0.000	0.992	0.000	0.000	0.000	0.000	0.000
Lane Group Capacity (c), veh/h	0.0	0.0	338.8	0.0	0.0	0.0	0.0	0.0
Volume-to-Capacity Ratio (X)	0.000	0.000	0.388	0.000	0.000	0.000	0.000	0.000
Available Capacity (c_a), veh/h	0.0	0.0	338.8	0.0	0.0	0.0	0.0	0.0
Upstream Filter Factor (I)	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000
Uniform Delay (d1), s/veh	0.0	0.0	19.4	0.0	0.0	0.0	0.0	0.0
Incremental Delay (d2), s/veh	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	20.2	0.0	0.0	0.0	0.0	0.0
First-Term Queue (Q1), veh/ln	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0
Second-Term Queue (Q2), veh/ln	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0
Percentile Storage Ratio (RQ%)	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data

Assigned Movement	0	2	8	0	0	6	0	0
Lane Assignment	T					T		
Lanes in Group	0	1	0	0	0	1	0	0
Group Volume (v), veh/h	0.0	355.4	0.0	0.0	0.0	314.1	0.0	0.0
Group Sat. Flow (s), veh/h/ln	0.0	1872.1	0.0	0.0	0.0	1862.7	0.0	0.0
Queue Serve Time (g_s), s	0.0	4.3	0.0	0.0	0.0	3.8	0.0	0.0
Cycle Queue Clear Time (g_c), s	0.0	4.3	0.0	0.0	0.0	3.8	0.0	0.0
Lane Group Capacity (c), veh/h	0.0	1242.4	0.0	0.0	0.0	1236.2	0.0	0.0
Volume-to-Capacity Ratio (X)	0.000	0.286	0.000	0.000	0.000	0.254	0.000	0.000
Available Capacity (c_a), veh/h	0.0	1242.4	0.0	0.0	0.0	1236.2	0.0	0.0
Upstream Filter Factor (I)	0.000	1.000	0.000	0.000	0.000	1.000	0.000	0.000
Uniform Delay (d1), s/veh	0.0	3.8	0.0	0.0	0.0	3.7	0.0	0.0
Incremental Delay (d2), s/veh	0.0	0.6	0.0	0.0	0.0	0.5	0.0	0.0
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	4.4	0.0	0.0	0.0	4.2	0.0	0.0
First-Term Queue (Q1), veh/ln	0.0	0.9	0.0	0.0	0.0	0.8	0.0	0.0
Second-Term Queue (Q2), veh/ln	0.0	0.2	0.0	0.0	0.0	0.2	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	1.000	0.000	0.000	1.000	0.000	0.000
Percentile Back of Queue (Q%), veh/ln	0.0	1.1	0.0	0.0	0.0	0.9	0.0	0.0
Percentile Storage Ratio (RQ%)	0.00	0.14	0.00	0.00	0.00	0.17	0.00	0.00

HCM 2010 Signalized Intersection Capacity Analysis

3: Broad St & 307 WB On Ramp/307 WB Exit Ramp

3/11/2015

Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Movement	0	12	18	0	0	16	0	0
Lane Assignment	R			R				
Lanes in Group	0	0	1	0	0	1	0	0
Group Volume (v), veh/h	0.0	0.0	382.6	0.0	0.0	510.9	0.0	0.0
Group Sat. Flow (s), veh/h/ln	0.0	0.0	1583.3	0.0	0.0	1583.3	0.0	0.0
Queue Serve Time (g_s), s	0.0	0.0	10.5	0.0	0.0	8.8	0.0	0.0
Cycle Queue Clear Time (g_c), s	0.0	0.0	10.5	0.0	0.0	8.8	0.0	0.0
Prot RT Sat Flow Rate (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff. Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion RT Outside Lane (P_R)	0.000	0.000	1.000	0.000	0.000	1.000	0.000	0.000
Lane Group Capacity (c), veh/h	0.0	0.0	302.3	0.0	0.0	1050.8	0.0	0.0
Volume-to-Capacity Ratio (X)	0.000	0.000	1.266	0.000	0.000	0.486	0.000	0.000
Available Capacity (c_a), veh/h	0.0	0.0	302.3	0.0	0.0	1050.8	0.0	0.0
Upstream Filter Factor (I)	0.000	0.000	1.000	0.000	0.000	1.000	0.000	0.000
Uniform Delay (d1), s/veh	0.0	0.0	22.2	0.0	0.0	4.6	0.0	0.0
Incremental Delay (d2), s/veh	0.0	0.0	143.3	0.0	0.0	1.6	0.0	0.0
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	165.5	0.0	0.0	6.2	0.0	0.0
First-Term Queue (Q1), veh/ln	0.0	0.0	3.5	0.0	0.0	1.5	0.0	0.0
Second-Term Queue (Q2), veh/ln	0.0	0.0	12.0	0.0	0.0	0.5	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	1.000	0.000	0.000	1.000	0.000	0.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.0	15.6	0.0	0.0	2.0	0.0	0.0
Percentile Storage Ratio (RQ%)	0.00	0.00	7.91	0.00	0.00	1.02	0.00	0.00
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	20.1	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM Average Control Delay	42.5							
HCM Level of Service	D							

Intersection							
Intersection Delay (sec/veh):		0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT	Lane
Volume (vph)	0	0	647	162	102	300	Capacity (vph)
Conflicting Peds. (#/hr)	0	0	0	0	0	0	HCM Control Delay (s)
Sign Control	Stop	Stop	Free	Free	Free	Free	HCM Lane VC Ratio
Right Turn Channelized	None	None	None	None	None	None	HCM Lane LOS
Storage Length	0	0	HCM 95th Percentile Queue (veh)				0
Median Width	0		12			12	
Grade (%)	0%		-1%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles(%)	2	2	2	2	2	2	
Movement Flow Rate	0	0	703	176	111	326	
Number of Lanes	0	0	1	0	1	1	
Major/Minor		Major 1		Major 2			
Conflicting Flow Rate - All		0	0	879	0		
Stage 1		0	0	0	0		
Stage 2		0	0	0	0		
Follow-up Headway		-	-	2.218	0		
Pot Capacity-1 Maneuver		-	-	768	-		
Stage 1		-	-	-	-		
Stage 2		-	-	-	-		
Mov Capacity-1 Maneuver		-	-	768	-		
Mov Capacity-2 Maneuver		-	-	-	-		
Stage 1		-	-	-	-		
Stage 2		-	-	-	-		
Approach		NB		SB			
HCM Control Delay (s)		0		2.7			
HCM LOS		A		A			

HCM 2010 TWSC
15: Seventh St & 307 EB Exit Ramp

3/11/2015

Intersection

Intersection Delay (sec/veh): 2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	376	0	272	10	0	10	0	157	0	0	198	0
Conflicting Peds. (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	Yield	Yield	Yield	None	None	None	None	None	None	None	None	None
Storage Length	0		50	20		0	0		0	0		0
Median Width		12			12			0			0	
Grade (%)		0%			0%			-5%			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
Heavy Vehicles(%)	2	2	2	2	2	2	2	2	2	2	2	2
Movement Flow Rate	409	0	296	11	0	11	0	171	0	0	215	0
Number of Lanes	1	0	1	1	0	1	0	1	0	0	1	0

Major/Minor	Minor 1			Minor 1			Major 1			Major 2		
Conflicting Flow Rate - All	391	-	215	534	-	171	-	0	-	-	0	-
Stage 1	215	-	0	171	-	0	-	0	-	-	0	-
Stage 2	176	-	0	363	-	0	-	0	-	-	0	-
Follow-up Headway	3.518	-	3.318	3.518	-	3.318	-	-	-	-	0	-
Pot Capacity-1 Maneuver	568	-	826	457	-	871	-	-	-	-	-	-
Stage 1	787	-	-	831	-	-	-	-	-	-	-	-
Stage 2	826	-	-	656	-	-	-	-	-	-	-	-
Mov Capacity-1 Maneuver	-	-	826	-	-	871	-	-	-	-	-	-
Mov Capacity-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	787	-	-	831	-	-	-	-	-	-	-	-
Stage 2	815.7	-	-	421.2	-	-	-	-	-	-	-	-






















Approach	EB	WB	NB	SB
HCM Control Delay (s)	4.373	4.1	0	0
HCM LOS	A	A	A	A

Lane	NBT	EBLn1	EBLn2	WBLn1	WBLn2	SBT
Capacity (vph)		-	826	-	871	
HCM Control Delay (s)	-	-	11.8	-	9.2	-
HCM Lane VC Ratio	0	-	0.358	-	0.012	0
HCM Lane LOS	-	-	B	-	A	-
HCM 95th Percentile Queue (veh)	0	-	1.632	-	0.038	0

HCM Signalized Intersection Capacity Analysis

8: Dreher Ave/School Drive & Main Street

3/11/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	57	399	64	256	559	107	42	32	158	116	32	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	14	12	11	12	14	12	14	16	14	14	12
Grade (%)		-1%			0%			1%			1%	
Total Lost time (s)	5.0	5.0		5.0	5.0	7.0	4.0	4.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.87		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1337	1706		1525	1613	1397	1483	1521		1567	1489	
Flt Permitted	0.31	1.00		0.14	1.00	1.00	0.67	1.00		0.35	1.00	
Satd. Flow (perm)	435	1706		220	1613	1397	1053	1521		583	1489	
Peak-hour factor, PHF	0.92	0.86	0.92	0.91	0.92	0.92	0.81	0.92	0.77	0.92	0.92	0.92
Adj. Flow (vph)	62	464	70	281	608	116	52	35	205	126	35	65
RTOR Reduction (vph)	0	4	0	0	0	43	0	142	0	0	45	0
Lane Group Flow (vph)	62	530	0	281	608	73	52	98	0	126	55	0
Heavy Vehicles (%)	18%	4%	14%	3%	6%	11%	9%	10%	3%	10%	10%	10%
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	51.0	51.0		70.3	70.3	70.3	32.7	32.7		32.7	32.7	
Effective Green, g (s)	53.0	53.0		72.3	72.3	70.3	34.7	34.7		32.7	32.7	
Actuated g/C Ratio	0.35	0.35		0.48	0.48	0.47	0.23	0.23		0.22	0.22	
Clearance Time (s)	7.0	7.0		7.0	7.0	7.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	154	603		230	777	655	244	352		127	325	
v/s Ratio Prot		0.31		c0.12	0.38			0.06			0.04	
v/s Ratio Perm	0.14			c0.47		0.05	0.05			c0.22		
v/c Ratio	0.40	0.88		1.22	0.78	0.11	0.21	0.28		0.99	0.17	
Uniform Delay, d1	36.6	45.5		33.3	32.3	22.3	46.6	47.4		58.5	47.6	
Progression Factor	1.00	1.00		1.92	0.87	1.28	1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.7	16.6		130.4	7.2	0.3	0.4	0.4		77.2	0.2	
Delay (s)	44.2	62.1		194.5	35.4	28.9	47.1	47.8		135.7	47.9	
Level of Service	D	E		F	D	C	D	D		F	D	
Approach Delay (s)		60.3			79.1			47.7			96.8	
Approach LOS		E			E			D			F	

Intersection Summary



















HCM Average Control Delay	71.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	45.0
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

9: 9th St & Main Street

3/11/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	177	383	7	2	405	161	43	74	63	301	8	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	11	11	12	11	11	11	10	10	10
Grade (%)		4%			1%			5%			-2%	
Total Lost time (s)		4.0			4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor		0.95			1.00	1.00		1.00		1.00	1.00	
Frt		1.00			1.00	0.85		0.95		1.00	0.87	
Flt Protected		0.98			1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)		2712			1597	1252		1495		1516	1377	
Flt Permitted		0.54			0.99	1.00		0.92		0.50	1.00	
Satd. Flow (perm)		1488			1589	1252		1390		805	1377	
Peak-hour factor, PHF	0.57	0.85	0.35	0.50	0.81	0.77	0.77	0.64	0.72	0.91	1.00	0.55
Adj. Flow (vph)	311	451	20	4	500	209	56	116	88	331	8	64
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	782	0	0	504	209	0	260	0	331	72	0
Heavy Vehicles (%)	9%	3%	0%	0%	3%	4%	2%	3%	0%	1%	13%	0%
Parking (#/hr)		0	0			0						
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)		63.5			63.5	63.5		52.0		52.0	52.0	
Effective Green, g (s)		64.0			64.0	64.0		54.0		54.0	54.0	
Actuated g/C Ratio		0.43			0.43	0.43		0.36		0.36	0.36	
Clearance Time (s)		4.5			4.5	4.5		6.0		6.0	6.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		635			678	534		500		290	496	
v/s Ratio Prot											0.05	
v/s Ratio Perm		c0.53			0.32	0.17		0.19		c0.41		
v/c Ratio		2.12dl			0.74	0.39		0.52		1.14	0.15	
Uniform Delay, d1		43.0			36.1	29.6		37.8		48.0	32.4	
Progression Factor		0.76			0.79	0.81		1.00		1.00	1.00	
Incremental Delay, d2		112.4			6.6	2.0		1.0		96.6	0.1	
Delay (s)		145.2			35.1	25.8		38.8		144.6	32.5	
Level of Service		F			D	C		D		F	C	
Approach Delay (s)		145.2			32.4			38.8			124.6	
Approach LOS		F			C			D			F	

















Intersection Summary

HCM Average Control Delay	91.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	32.0
Intersection Capacity Utilization	84.6%	ICU Level of Service	E
Analysis Period (min)	15		
dl Defacto Left Lane. Recode with 1 though lane as a left lane.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

10: 8th St & Main Street/Main Street

















3/11/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	539	22	6	351	8	65	76	35	43	19	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	13	13	13	10	10	10	10	10	10
Grade (%)		0%			0%			1%			-1%	
Total Lost time (s)		2.5			2.5			3.5			3.5	
Lane Util. Factor		0.95			1.00			1.00			1.00	
Frt		0.99			1.00			0.97			0.93	
Flt Protected		1.00			1.00			0.98			0.98	
Satd. Flow (prot)		3502			1772			1760			1624	
Flt Permitted		0.88			0.98			0.83			0.82	
Satd. Flow (perm)		3021			1733			1405			1397	
Peak-hour factor, PHF	0.73	0.93	0.69	0.50	0.86	0.67	0.90	0.79	0.67	0.77	0.68	0.77
Adj. Flow (vph)	60	580	32	12	408	12	72	96	52	56	28	88
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	672	0	0	432	0	0	220	0	0	172	0
Heavy Vehicles (%)	7%	2%	5%	0%	1%	0%	3%	0%	3%	2%	0%	2%
Parking (#/hr)		0	0	0	0	0	0	0	0			
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		28.9			28.9			16.1			16.1	
Effective Green, g (s)		30.9			30.9			18.1			18.1	
Actuated g/C Ratio		0.41			0.41			0.24			0.24	
Clearance Time (s)		4.5			4.5			5.5			5.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1245			714			339			337	
v/s Ratio Prot												
v/s Ratio Perm		0.22			c0.25			c0.16			0.12	
v/c Ratio		0.54			0.61			0.65			0.51	
Uniform Delay, d1		16.7			17.3			25.6			24.6	
Progression Factor		0.83			0.89			1.00			1.00	
Incremental Delay, d2		0.2			2.1			4.2			1.3	
Delay (s)		14.0			17.4			29.8			25.9	
Level of Service		B			B			C			C	
Approach Delay (s)		14.0			17.4			29.8			25.9	
Approach LOS		B			B			C			C	
Intersection Summary												
HCM Average Control Delay			18.7			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			75.0			Sum of lost time (s)			26.0			
Intersection Capacity Utilization			63.4%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

11: Seventh St/7th St & Main Street /Main Street


3/26/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	411	30	4	250	22	107	136	113	31	26	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	13	13	13	14	14	14	11	11	11
Grade (%)		-1%			2%			4%			-1%	
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		0.95			1.00			1.00			1.00	
Frt		0.99			0.98			0.96			0.95	
Flt Protected		1.00			1.00			0.98			0.98	
Satd. Flow (prot)		2884			1534			1631			1393	
Flt Permitted		0.92			0.99			0.81			0.64	
Satd. Flow (perm)		2654			1525			1342			917	
Peak-hour factor, PHF	0.82	0.79	0.81	0.75	0.74	0.46	0.59	0.72	0.79	0.48	0.86	0.58
Adj. Flow (vph)	28	520	37	5	338	48	181	189	143	65	30	48
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	585	0	0	391	0	0	513	0	0	143	0
Heavy Vehicles (%)	0%	3%	1%	0%	1%	0%	4%	3%	4%	0%	1%	0%
Parking (#/hr)		0	0	0	0	0				0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		67.0			67.0			51.0			51.0	
Effective Green, g (s)		69.0			69.0			53.0			53.0	
Actuated g/C Ratio		0.46			0.46			0.35			0.35	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1221			702			474			324	
v/s Ratio Prot												
v/s Ratio Perm		0.22			0.26			0.38			0.16	
v/c Ratio		0.48			0.56			1.08			0.44	
Uniform Delay, d1		28.1			29.4			48.5			37.2	
Progression Factor		0.61			0.66			0.64			1.00	
Incremental Delay, d2		1.2			3.0			62.1			1.0	
Delay (s)		18.3			22.4			93.4			38.1	
Level of Service		B			C			F			D	
Approach Delay (s)		18.3			22.4			93.4			38.1	
Approach LOS		B			C			F			D	
Intersection Summary												
HCM Average Control Delay			44.6			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			28.0			
Intersection Capacity Utilization			60.3%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

12: Seventh St & Ann St
















3/26/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↔			↔	
Volume (vph)	0	0	0	44	230	33	148	340	0	0	168	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	16	16	16	16	16	16	10	10	10
Grade (%)		0%			2%			-5%			0%	
Total Lost time (s)					4.0			4.5			4.5	
Lane Util. Factor					1.00			1.00			1.00	
Frt					0.98			1.00			0.96	
Flt Protected					0.99			0.99			1.00	
Satd. Flow (prot)					1849			2138			1516	
Flt Permitted					0.99			0.72			1.00	
Satd. Flow (perm)					1849			1555			1516	
Peak-hour factor, PHF	0.92	0.92	0.92	0.52	0.82	0.69	0.82	0.80	0.92	0.92	0.91	0.73
Adj. Flow (vph)	0	0	0	85	280	48	180	425	0	0	185	88
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	13	0
Lane Group Flow (vph)	0	0	0	0	410	0	0	605	0	0	260	0
Heavy Vehicles (%)	0%	0%	0%	2%	1%	0%	1%	2%	0%	0%	1%	0%
Parking (#/hr)				0	0	0					0	0
Turn Type				Perm	NA		pm+pt	NA			NA	
Protected Phases					6		3	8			4	
Permitted Phases				6			8					
Actuated Green, G (s)					62.3			77.2			77.2	
Effective Green, g (s)					63.3			78.2			78.2	
Actuated g/C Ratio					0.42			0.52			0.52	
Clearance Time (s)					5.0			5.5			5.5	
Vehicle Extension (s)					3.0			3.0			3.0	
Lane Grp Cap (vph)					780			811			790	
v/s Ratio Prot											0.17	
v/s Ratio Perm					0.22			c0.39				
v/c Ratio					0.53			0.75			0.33	
Uniform Delay, d1					32.2			28.1			20.7	
Progression Factor					1.00			1.00			0.85	
Incremental Delay, d2					2.5			3.8			0.2	
Delay (s)					34.7			31.9			17.9	
Level of Service					C			C			B	
Approach Delay (s)		0.0			34.7			31.9			17.9	
Approach LOS		A			C			C			B	
Intersection Summary												
HCM Average Control Delay			29.8			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			8.5			
Intersection Capacity Utilization			66.2%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

13: 6th St & Main Street

3/26/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	27	548	19	15	245	34	44	65	61	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	16	16	16	11	11	11	12	12	12
Grade (%)		-1%			2%			-1%			0%	
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		0.95			1.00			1.00				
Frt		0.99			0.98			0.95				
Flt Protected		1.00			1.00			0.99				
Satd. Flow (prot)		2944			1677			1554				
Flt Permitted		0.90			0.93			0.99				
Satd. Flow (perm)		2654			1570			1554				
Peak-hour factor, PHF	0.61	0.90	0.68	0.63	0.83	0.71	0.79	0.68	0.80	0.92	0.92	0.92
Adj. Flow (vph)	44	609	28	24	295	48	56	96	76	0	0	0
RTOR Reduction (vph)	0	1	0	0	3	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	680	0	0	364	0	0	228	0	0	0	0
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	2%	0%	0%	0%	0%
Parking (#/hr)		0	0	0	0	0						
Turn Type	Perm	NA		Perm	NA		Perm	NA				
Protected Phases		2			6			4				
Permitted Phases	2			6			4					
Actuated Green, G (s)		93.4			93.4			27.6				
Effective Green, g (s)		94.4			94.4			28.6				
Actuated g/C Ratio		0.63			0.63			0.19				
Clearance Time (s)		5.0			5.0			5.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		1670			988			296				
v/s Ratio Prot												
v/s Ratio Perm		0.26			0.23			0.15				
v/c Ratio		0.41			0.37			0.77				
Uniform Delay, d1		13.9			13.4			57.6				
Progression Factor		0.54			1.02			1.00				
Incremental Delay, d2		0.6			1.0			11.7				
Delay (s)		8.1			14.7			69.3				
Level of Service		A			B			E				
Approach Delay (s)		8.1			14.7			69.3			0.0	
Approach LOS		A			B			E			A	
Intersection Summary												
HCM Average Control Delay			20.9			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			27.0			
Intersection Capacity Utilization			47.8%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

14: Ann St & Broad St/5th St & Main Street

3/11/2015



Movement	EBT	EBR	NBL2	NBR	SBL	SBT	SBR2
Lane Configurations	↑↑		↖	↗	↖	↑	↗
Volume (vph)	534	84	267	601	78	639	348
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	10	11	10	10	11
Grade (%)	-5%					2%	
Total Lost time (s)	4.5		6.5	4.0	4.0	4.0	6.5
Lane Util. Factor	0.95		1.00	1.00	1.00	1.00	1.00
Frt	0.98		1.00	0.85	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3372		1509	1398	1752	1793	1377
Flt Permitted	1.00		0.07	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3372		105	1398	1752	1792	1377
Peak-hour factor, PHF	0.92	0.91	0.91	0.96	0.81	0.95	0.91
Adj. Flow (vph)	580	92	293	626	96	673	382
RTOR Reduction (vph)	0	0	0	0	0	0	146
Lane Group Flow (vph)	672	0	293	626	96	673	236
Heavy Vehicles (%)	0%	0%	1%	1%	3%	2%	1%
Turn Type	NA		custom	custom	pm+pt	NA	custom
Protected Phases	8		1	6	5	2	
Permitted Phases			6		2		2 8
Actuated Green, G (s)	32.2		82.3	70.5	59.3	54.0	92.7
Effective Green, g (s)	34.7		82.3	73.0	64.3	56.5	92.7
Actuated g/C Ratio	0.23		0.55	0.49	0.43	0.38	0.62
Clearance Time (s)	7.0		6.5	6.5	6.5	6.5	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	780		262	680	751	675	851
v/s Ratio Prot	c0.20		c0.16	0.45	0.01	0.38	
v/s Ratio Perm			c0.45		0.05		0.17
v/c Ratio	0.86		1.12	0.92	0.13	1.00	0.28
Uniform Delay, d1	55.3		51.1	35.8	25.9	46.7	13.2
Progression Factor	0.64		1.00	1.00	0.92	0.94	0.91
Incremental Delay, d2	9.0		91.2	17.8	0.1	31.4	0.2
Delay (s)	44.5		142.3	53.7	23.9	75.4	12.1
Level of Service	D		F	D	C	E	B
Approach Delay (s)	44.5					50.1	
Approach LOS	D					D	

Intersection Summary


















HCM Average Control Delay	59.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	33.0
Intersection Capacity Utilization	83.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM 2010 Signalized Intersection Capacity Analysis

24: 5th St & Sarah St

3/11/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	135	82	118	2	245	209	26	85	2	18	484	102
Movement Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj. Factor (A _{pbT})	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj. Factors	1.00	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Sat. Flow Rate, veh/h/ln	1832	1832	1832	1650	1650	1650	1590	1590	1590	1849	1849	1849
Lanes	0	1	0	0	1	1	0	1	0	0	1	0
Lane Assignment												
Capacity, veh/h	0	193	257	90	488	421	209	355	12	103	656	155
Proportion Arriving On Green	0.00	0.30	0.30	0.30	0.30	0.30	0.47	0.47	0.47	0.47	0.47	0.47
Movement Delay, s/veh	0.0	0.0	12.9	13.2	0.0	13.6	7.0	0.0	0.0	12.7	0.0	0.0
Movement LOS			B	B		B	A			B		
Approach Volume, veh/h		225			539			152			663	
Approach Delay, s/veh		12.9			13.4			7.0			12.7	
Approach LOS		B			B			A			B	
Timer:		1	2	3	4	5	6	7	8			
Assigned Phase		2			4	5	6		8			
Case No		4.0			8.0	0.0	7.3		8.0			
Phase Duration (G+Y+Rc), s		16.57			25.27	0.00	16.57		25.27			
Change Period (Y+Rc), s		5.50			7.00	5.50	5.50		7.00			
Max. Allowable Headway (MAH), s		4.23			9.38	0.00	4.23		9.38			
Maximum Green Setting (Gmax), s		33.50			19.00	5.00	23.00		19.00			
Max. Queue Clearance Time (g _c +I1), s		7.17			15.23	0.00	8.39		4.35			
Green Extension Time (g _e), s		3.07			3.04	0.00	2.68		10.35			
Probability of Phase Call (p _c)		1.000			1.000	0.000	1.000		1.000			
Probability of Max Out (p _x)		0.004			1.000	0.000	0.071		0.850			
Left-Turn Movement Data												
Assigned Movement					7	5	1		3			
Mvmt. Sat Flow, veh/h					63.14	0.00	22.09		309.98			
Through Movement Data												
Assigned Movement		2			4		6		8			
Mvmt. Sat Flow, veh/h		642.93			1354.56		1611.04		643.81			
Right-Turn Movement Data												
Assigned Movement			12		14		16		18			
Mvmt. Sat Flow, veh/h			854.80		327.24		1402.63		25.75			
Left Lane Group Data												
Assigned Movement		0	0	0	7	5	1	0	3			
Lane Assignment					L+T+R		L+T		L+T+R			
Lanes in Group		0	0	0	1	0	1	0	1			
Group Volume (v), veh/h		0.0	0.0	0.0	663.3	0.0	295.7	0.0	152.1			
Group Sat. Flow (s), veh/h/ln		0.0	0.0	0.0	1744.9	0.0	1633.1	0.0	979.5			
Queue Serve Time (g _s), s		0.0	0.0	0.0	2.8	0.0	0.0	0.0	0.0			
Cycle Queue Clear Time (g _c), s		0.0	0.0	0.0	13.2	0.0	6.4	0.0	2.3			

Intersection

Intersection Delay (sec/veh): 62

Movement	NBL	NBT	SBT	SBR	SEL	SER
Volume (vph)	0	0	793	113	0	604
Conflicting Peds. (#/hr)	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
Right Turn Channelized	None	None	Free	Free	None	None
Storage Length	0			0	0	0
Median Width		0	0		0	
Grade (%)		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles(%)	2	2	2	2	2	2
Movement Flow Rate	0	0	862	123	0	657
Number of Lanes	0	0	2	0	0	1

Major/Minor

Major 2

Conflicting Flow Rate - All	0	0	-	492
Stage 1	0	0	-	0
Stage 2	0	0	-	0
Follow-up Headway	0	0	-	3.32
Pot Capacity-1 Maneuver	-	-	-	# 522
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Mov Capacity-1 Maneuver	-	-	-	# 522
Mov Capacity-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach

SB

SE

HCM Control Delay (s)	0	155.1
HCM LOS	A	F

Lane	SELn1	SBT	SBR
Capacity (vph)	522		
HCM Control Delay (s)	155.1	-	-
HCM Lane VC Ratio	1.258	0	-
HCM Lane LOS	F	-	-
HCM 95th Percentile Queue (veh)	26.209	0	-

HCM 2010 Signalized Intersection Capacity Analysis

24: 5th St & Sarah St

3/11/2015

Perm LT Sat Flow Rate (s_l), veh/h/ln	0.0	0.0	0.0	726.3	0.0	622.7	0.0	513.7
Shared LT Sat Flow (s_sh), veh/h/ln	0.0	0.0	0.0	1849.5	0.0	1650.2	0.0	786.9
Perm LT Eff. Green (g_p), s	0.0	0.0	0.0	19.8	0.0	12.6	0.0	19.8
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	17.4	0.0	7.4	0.0	6.5
Perm LT Que Serve Time (g_ps), s	0.0	0.0	0.0	2.8	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	10.4	0.0	7.8	0.0	4.2
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	10.4	0.0	6.4	0.0	2.3
Proportion LT Inside Lane (P_L)	0.000	0.000	0.000	0.036	0.000	0.014	0.000	0.316
Lane Group Capacity (c), veh/h	0.0	0.0	0.0	913.7	0.0	577.8	0.0	576.1
Volume-to-Capacity Ratio (X)	0.000	0.000	0.000	0.726	0.000	0.512	0.000	0.264
Available Capacity (c_a), veh/h	0.0	0.0	0.0	943.3	0.0	1035.8	0.0	591.1
Upstream Filter Factor (I)	0.000	0.000	0.000	1.000	0.000	1.000	0.000	1.000
Uniform Delay (d1), s/veh	0.0	0.0	0.0	9.3	0.0	12.5	0.0	6.4
Incremental Delay (d2), s/veh	0.0	0.0	0.0	3.5	0.0	0.7	0.0	0.5
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	12.7	0.0	13.2	0.0	7.0
First-Term Queue (Q1), veh/ln	0.0	0.0	0.0	3.2	0.0	1.8	0.0	0.5
Second-Term Queue (Q2), veh/ln	0.0	0.0	0.0	0.9	0.0	0.1	0.0	0.1
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	0.000	0.000	1.000	1.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.0	0.0	4.1	0.0	1.9	0.0	0.6
Percentile Storage Ratio (RQ%)	0.00	0.00	0.00	0.33	0.00	0.11	0.00	0.04
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data

Assigned Movement	0	2	0	4	0	6	0	8
Lane Assignment								
Lanes in Group	0	0	0	0	0	0	0	0
Group Volume (v), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Group Sat. Flow (s), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Serve Time (g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clear Time (g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Capacity (c), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Volume-to-Capacity Ratio (X)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Available Capacity (c_a), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Upstream Filter Factor (I)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Uniform Delay (d1), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incremental Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
First-Term Queue (Q1), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Second-Term Queue (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile Storage Ratio (RQ%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

HCM 2010 Signalized Intersection Capacity Analysis

24: 5th St & Sarah St

3/11/2015

Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Movement	0	12	0	14	0	16	0	18
Lane Assignment	T+R				R			
Lanes in Group	0	1	0	0	0	1	0	0
Group Volume (v), veh/h	0.0	224.7	0.0	0.0	0.0	243.0	0.0	0.0
Group Sat. Flow (s), veh/h/ln	0.0	1497.7	0.0	0.0	0.0	1402.6	0.0	0.0
Queue Serve Time (g_s), s	0.0	5.2	0.0	0.0	0.0	6.1	0.0	0.0
Cycle Queue Clear Time (g_c), s	0.0	5.2	0.0	0.0	0.0	6.1	0.0	0.0
Prot RT Sat Flow Rate (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff. Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion RT Outside Lane (P_R)	0.000	0.571	0.000	0.188	0.000	1.000	0.000	0.026
Lane Group Capacity (c), veh/h	0.0	449.9	0.0	0.0	0.0	421.4	0.0	0.0
Volume-to-Capacity Ratio (X)	0.000	0.499	0.000	0.000	0.000	0.577	0.000	0.000
Available Capacity (c_a), veh/h	0.0	1253.0	0.0	0.0	0.0	821.4	0.0	0.0
Upstream Filter Factor (I)	0.000	1.000	0.000	0.000	0.000	1.000	0.000	0.000
Uniform Delay (d1), s/veh	0.0	12.0	0.0	0.0	0.0	12.4	0.0	0.0
Incremental Delay (d2), s/veh	0.0	0.9	0.0	0.0	0.0	1.2	0.0	0.0
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	12.9	0.0	0.0	0.0	13.6	0.0	0.0
First-Term Queue (Q1), veh/ln	0.0	1.4	0.0	0.0	0.0	1.5	0.0	0.0
Second-Term Queue (Q2), veh/ln	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	1.6	0.0	0.0	0.0	1.6	0.0	0.0
Percentile Storage Ratio (RQ%)	0.00	0.09	0.00	0.00	0.00	0.27	0.00	0.00
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM Average Control Delay	12.4							
HCM Level of Service	B							

HCM Signalized Intersection Capacity Analysis

20: McConnell St & 4th St

3/11/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↱						↱↰	
Volume (vph)	0	90	19	122	1	0	0	0	0	142	765	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	15	15	15	14	14	14	12	12	12	14	14	14
Grade (%)		1%			-1%			0%			1%	
Total Lost time (s)		4.0			5.0						4.0	
Lane Util. Factor		1.00			1.00						0.95	
Frt		0.98			1.00						1.00	
Flt Protected		1.00			0.95						0.99	
Satd. Flow (prot)		862			1729						1459	
Flt Permitted		1.00			0.48						0.99	
Satd. Flow (perm)		862			872						1459	
Peak-hour factor, PHF	0.92	0.75	0.79	0.78	0.92	0.92	0.92	0.92	0.92	0.85	0.89	0.92
Adj. Flow (vph)	0	120	24	156	1	0	0	0	0	167	860	0
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	139	0	0	157	0	0	0	0	0	1027	0
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	0%	0%	0%	1%	1%	0%
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		4			8						6	
Permitted Phases				8						6		
Actuated Green, G (s)		28.1			28.1						111.9	
Effective Green, g (s)		29.1			28.1						112.9	
Actuated g/C Ratio		0.19			0.19						0.75	
Clearance Time (s)		5.0			5.0						5.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		167			163						1098	
v/s Ratio Prot		0.16										
v/s Ratio Perm					c0.18						0.70	
v/c Ratio		0.83			0.96						0.94	
Uniform Delay, d1		58.1			60.4						15.5	
Progression Factor		1.00			1.00						0.86	
Incremental Delay, d2		28.4			59.2						12.0	
Delay (s)		86.6			119.6						25.3	
Level of Service		F			F						C	
Approach Delay (s)		86.6			119.6			0.0			25.3	
Approach LOS		F			F			A			C	

Intersection Summary


HCM Average Control Delay	43.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

21: McConnell St & 3rd St

3/11/2015

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↻			↻						↻↻	↻
Volume (vph)	0	105	72	16	126	0	0	0	0	9	941	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12	12	12	12	13	11	14
Grade (%)		1%			-2%			0%			-1%	
Total Lost time (s)		4.0			4.0						4.0	4.0
Lane Util. Factor		1.00			1.00						0.95	1.00
Frt		0.95			1.00						1.00	0.85
Flt Protected		1.00			0.99						1.00	1.00
Satd. Flow (prot)		1762			1857						1931	1558
Flt Permitted		1.00			0.87						1.00	1.00
Satd. Flow (perm)		1762			1857						1931	1558
Peak-hour factor, PHF	0.92	0.80	0.90	0.57	0.96	0.92	0.92	0.92	0.92	0.56	0.97	0.74
Adj. Flow (vph)	0	131	80	28	131	0	0	0	0	16	970	155
RTOR Reduction (vph)	0	35	0	0	0	0	0	0	0	0	0	47
Lane Group Flow (vph)	0	176	0	0	159	0	0	0	0	0	986	108
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Turn Type		NA		Perm	NA					Perm	NA	Perm
Protected Phases		4			8						6	
Permitted Phases				8						6		6
Actuated Green, G (s)		13.6			13.6						51.4	51.4
Effective Green, g (s)		14.6			14.6						52.4	52.4
Actuated g/C Ratio		0.19			0.19						0.70	0.70
Clearance Time (s)		5.0			5.0						5.0	5.0
Vehicle Extension (s)		3.0			3.0						3.0	3.0
Lane Grp Cap (vph)		343			361						1349	1089
v/s Ratio Prot		c0.10										
v/s Ratio Perm					0.09						0.51	0.07
v/c Ratio		0.51			0.44						0.73	0.10
Uniform Delay, d1		27.0			26.6						7.0	3.7
Progression Factor		1.00			1.00						1.00	1.00
Incremental Delay, d2		1.3			0.9						3.5	0.2
Delay (s)		28.3			27.5						10.5	3.8
Level of Service		C			C						B	A
Approach Delay (s)		28.3			27.5			0.0			9.6	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM Average Control Delay			14.1		HCM Level of Service					B		
HCM Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			75.0		Sum of lost time (s)					8.0		
Intersection Capacity Utilization			58.1%		ICU Level of Service					B		
Analysis Period (min)			15									
c Critical Lane Group												