

HCM 2010 Signalized Intersection Capacity Analysis  
 8: Dreher Ave/School Drive & Main Street

3/26/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	113	432	40	161	345	207	28	66	183	103	28	54
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	1456	1706	1706	1660	1613	1602	1561	1691	1691	1609	1609	1609
Lanes	1	1	0	1	1	1	1	1	0	1	1	0
Lane Assignment												
Capacity, veh/h	537	1100	95	0	1146	950	242	79	262	61	106	205
Proportion Arriving On Green	0.71	0.71	0.71	0.01	0.71	0.70	0.23	0.23	0.23	0.22	0.22	0.22
Movement Delay, s/veh	13.6	0.0	10.6	0.0	8.9	8.8	52.6	0.0	82.8	509.6	0.0	49.6
Movement LOS	B		B		A	A	D		F	F		D
Approach Volume, veh/h		669			600			344			201	
Approach Delay, s/veh		11.1			8.9			79.8			305.7	
Approach LOS		B			A			E			F	
Timer:		1	2	3	4	5	6	7	8			
Assigned Phase			2		4		6		8			
Case No			6.3		6.0		3.0		6.0			
Phase Duration (G+Y+Rc), s			111.60		38.40		111.60		38.40			
Change Period (Y+Rc), s			7.00		6.00		7.00		6.00			
Max. Allowable Headway (MAH), s			3.68		4.63		3.68		4.63			
Maximum Green Setting (Gmax), s			85.90		32.40		104.60		32.40			
Max. Queue Clearance Time (g_c+I1), s			25.64		34.40		15.14		32.31			
Green Extension Time (g_e), s			4.21		0.00		4.21		0.03			
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			
<b>Left-Turn Movement Data</b>												
Assigned Movement			5		7				3			
Mvmt. Sat Flow, veh/h			784.58		920.29				1091.41			
<b>Through Movement Data</b>												
Assigned Movement			2		4		6		8			
Mvmt. Sat Flow, veh/h			1547.98		492.10		1613.21		345.33			
<b>Right-Turn Movement Data</b>												
Assigned Movement			12		14		16		18			
Mvmt. Sat Flow, veh/h			133.98		949.06		1361.84		1144.05			
<b>Left Lane Group Data</b>												
Assigned Movement		0	5	0	7	0	0	0	3			
Lane Assignment			L		L				L			
Lanes in Group		0	1	0	1	0	0	0	1			
Group Volume (v), veh/h		0.0	122.8	0.0	112.0	0.0	0.0	0.0	34.6			
Group Sat. Flow (s), veh/h/ln		0.0	784.6	0.0	920.3	0.0	0.0	0.0	1091.4			
Queue Serve Time (g_s), s		0.0	10.5	0.0	2.1	0.0	0.0	0.0	4.0			
Cycle Queue Clear Time (g_c), s		0.0	23.6	0.0	32.4	0.0	0.0	0.0	11.8			

# HCM 2010 Signalized Intersection Capacity Analysis

## 8: Dreher Ave/School Drive & Main Street

3/26/2015

Perm LT Sat Flow Rate (s_l), veh/h/ln	0.0	784.6	0.0	920.3	0.0	0.0	0.0	1091.4
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	106.6	0.0	32.4	0.0	0.0	0.0	34.4
Perm LT Serve Time (g_u), s	0.0	93.5	0.0	2.1	0.0	0.0	0.0	26.6
Perm LT Que Serve Time (g_ps), s	0.0	10.5	0.0	2.1	0.0	0.0	0.0	4.0
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	1.000	0.000	1.000	0.000	0.000	0.000	1.000
Lane Group Capacity (c), veh/h	0.0	536.8	0.0	60.8	0.0	0.0	0.0	241.9
Volume-to-Capacity Ratio (X)	0.000	0.229	0.000	1.841	0.000	0.000	0.000	0.143
Available Capacity (c_a), veh/h	0.0	536.8	0.0	60.8	0.0	0.0	0.0	241.9
Upstream Filter Factor (I)	0.000	1.000	0.000	1.000	0.000	0.000	0.000	1.000
Uniform Delay (d1), s/veh	0.0	12.6	0.0	74.8	0.0	0.0	0.0	52.4
Incremental Delay (d2), s/veh	0.0	1.0	0.0	434.8	0.0	0.0	0.0	0.3
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	13.6	0.0	509.6	0.0	0.0	0.0	52.6
First-Term Queue (Q1), veh/ln	0.0	1.8	0.0	2.4	0.0	0.0	0.0	1.1
Second-Term Queue (Q2), veh/ln	0.0	0.1	0.0	7.3	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	0.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	2.0	0.0	9.7	0.0	0.0	0.0	1.1
Percentile Storage Ratio (RQ%)	0.00	0.39	0.00	2.50	0.00	0.00	0.00	0.36
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	12.8	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	0.5	0.0	0.0	0.0	0.0
<b>Middle Lane Group Data</b>								
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	375.0	0.0	0.0
Group Sat. Flow (s), veh/h/ln	0.0	0.0	0.0	0.0	0.0	1613.2	0.0	0.0
Queue Serve Time (g_s), s	0.0	0.0	0.0	0.0	0.0	13.1	0.0	0.0
Cycle Queue Clear Time (g_c), s	0.0	0.0	0.0	0.0	0.0	13.1	0.0	0.0
Lane Group Capacity (c), veh/h	0.0	0.0	0.0	0.0	0.0	1146.5	0.0	0.0
Volume-to-Capacity Ratio (X)	0.000	0.000	0.000	0.000	0.000	0.327	0.000	0.000
Available Capacity (c_a), veh/h	0.0	0.0	0.0	0.0	0.0	1146.5	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	8.2	0.0	0.0
Incremental Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.8	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	8.9	0.0	0.0
First-Term Queue (Q1), veh/ln	0.0	0.0	0.0	0.0	0.0	4.4	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	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	4.6	0.0	0.0
Percentile Storage Ratio (RQ%)	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00

HCM 2010 Signalized Intersection Capacity Analysis  
 8: Dreher Ave/School Drive & Main Street

3/26/2015

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
<b>Right Lane Group Data</b>								
Assigned Movement	0	12	0	14	0	16	0	18
Lane Assignment		T+R		T+R		R		T+R
Lanes in Group	0	1	0	1	0	1	0	1
Group Volume (v), veh/h	0.0	545.8	0.0	89.1	0.0	225.0	0.0	309.4
Group Sat. Flow (s), veh/h/ln	0.0	1682.0	0.0	1441.2	0.0	1361.8	0.0	1489.4
Queue Serve Time (g_s), s	0.0	20.8	0.0	7.8	0.0	9.0	0.0	30.3
Cycle Queue Clear Time (g_c), s	0.0	20.8	0.0	7.8	0.0	9.0	0.0	30.3
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	0.080	0.000	0.659	0.000	1.000	0.000	0.768
Lane Group Capacity (c), veh/h	0.0	1195.3	0.0	311.3	0.0	949.7	0.0	341.6
Volume-to-Capacity Ratio (X)	0.000	0.457	0.000	0.286	0.000	0.237	0.000	0.906
Available Capacity (c_a), veh/h	0.0	1195.3	0.0	311.3	0.0	949.7	0.0	341.6
Upstream Filter Factor (I)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Uniform Delay (d1), s/veh	0.0	9.3	0.0	49.1	0.0	8.2	0.0	56.2
Incremental Delay (d2), s/veh	0.0	1.3	0.0	0.5	0.0	0.6	0.0	26.6
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	10.6	0.0	49.6	0.0	8.8	0.0	82.8
First-Term Queue (Q1), veh/ln	0.0	7.2	0.0	2.9	0.0	2.6	0.0	11.3
Second-Term Queue (Q2), veh/ln	0.0	0.4	0.0	0.0	0.0	0.2	0.0	2.5
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	1.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	7.6	0.0	2.9	0.0	2.7	0.0	13.8
Percentile Storage Ratio (RQ%)	0.00	0.39	0.00	0.50	0.00	0.35	0.00	0.64
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
<b>Intersection Summary</b>								
HCM Average Control Delay	56.1							
HCM Level of Service	E							

HCM 2010 Signalized Intersection Capacity Analysis  
 9: 9th St & Main Street

3/26/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	150	391	14	1	321	133	29	56	49	256	6	41
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	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Sat. Flow Rate, veh/h/ln	1597	1597	1597	1652	1652	1636	1639	1639	1639	1710	1711	1711
Lanes	0	2	0	0	1	1	0	1	0	1	1	0
Lane Assignment												
Capacity, veh/h	0	1654	143	25	989	752	97	214	154	309	38	471
Proportion Arriving On Green	0.00	0.60	0.60	0.47	0.47	0.47	0.35	0.35	0.35	0.35	0.35	0.35
Movement Delay, s/veh	0.0	15.1	15.2	23.3	0.0	19.7	37.5	0.0	0.0	88.0	0.0	34.1
Movement LOS		B	B	C		B	D			F		C
Approach Volume, veh/h		500			571			193			362	
Approach Delay, s/veh		15.1			22.2			37.5			76.0	
Approach LOS		B			C			D			E	
Timer:		1	2	3	4	5	6	7	8			
Assigned Phase			2		4		6		8			
Case No			4.0		6.0		7.3		8.0			
Phase Duration (G+Y+Rc), s			94.10		55.90		94.10		55.90			
Change Period (Y+Rc), s			4.50		6.00		4.50		6.00			
Max. Allowable Headway (MAH), s			3.86		4.60		3.86		4.60			
Maximum Green Setting (Gmax), s			89.60		49.90		89.60		49.90			
Max. Queue Clearance Time (g_c+I1), s			14.07		53.90		25.68		17.95			
Green Extension Time (g_e), s			3.74		0.00		3.74		2.66			
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		0.000			
<b>Left-Turn Movement Data</b>												
Assigned Movement					7		1		3			
Mvmt. Sat Flow, veh/h					1087.74		8.27		246.12			
<b>Through Movement Data</b>												
Assigned Movement			2		4		6		8			
Mvmt. Sat Flow, veh/h			2754.33		109.54		1639.20		571.81			
<b>Right-Turn Movement Data</b>												
Assigned Movement			12		14		16		18			
Mvmt. Sat Flow, veh/h			238.55		1360.93		1251.55		444.74			
<b>Left Lane Group Data</b>												
Assigned Movement		0	0	0	7	0	1	0	3			
Lane Assignment					L		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	281.3	0.0	398.3	0.0	193.2			
Group Sat. Flow (s), veh/h/ln		0.0	0.0	0.0	1087.7	0.0	1647.5	0.0	1262.7			
Queue Serve Time (g_s), s		0.0	0.0	0.0	36.0	0.0	0.0	0.0	7.7			
Cycle Queue Clear Time (g_c), s		0.0	0.0	0.0	51.9	0.0	23.7	0.0	15.9			

# HCM 2010 Signalized Intersection Capacity Analysis

## 9: 9th St & Main Street

3/26/2015

Perm LT Sat Flow Rate (s_l), veh/h/ln	0.0	0.0	0.0	1087.7	0.0	478.2	0.0	760.4
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	51.9	0.0	90.1	0.0	51.9
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	36.0	0.0	78.0	0.0	46.2
Perm LT Que Serve Time (g_ps), s	0.0	0.0	0.0	36.0	0.0	0.0	0.0	7.7
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	72.8	0.0	8.2
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	23.7	0.0	8.2
Proportion LT Inside Lane (P_L)	0.000	0.000	0.000	1.000	0.000	0.005	0.000	0.195
Lane Group Capacity (c), veh/h	0.0	0.0	0.0	308.7	0.0	1013.7	0.0	465.6
Volume-to-Capacity Ratio (X)	0.000	0.000	0.000	0.911	0.000	0.393	0.000	0.415
Available Capacity (c_a), veh/h	0.0	0.0	0.0	308.7	0.0	1013.7	0.0	465.6
Upstream Filter Factor (I)	0.000	0.000	0.000	1.000	0.000	0.919	0.000	1.000
Uniform Delay (d1), s/veh	0.0	0.0	0.0	58.3	0.0	22.2	0.0	36.9
Incremental Delay (d2), s/veh	0.0	0.0	0.0	29.6	0.0	1.1	0.0	0.6
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	0.0	0.0	88.0	0.0	23.3	0.0	37.5
First-Term Queue (Q1), veh/ln	0.0	0.0	0.0	10.8	0.0	9.9	0.0	5.5
Second-Term Queue (Q2), veh/ln	0.0	0.0	0.0	2.5	0.0	0.3	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	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.0	0.0	13.4	0.0	10.1	0.0	5.6
Percentile Storage Ratio (RQ%)	0.00	0.00	0.00	2.50	0.00	0.53	0.00	0.36
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
<b>Middle Lane Group Data</b>								
Assigned Movement	0	2	0	4	0	6	0	8
Lane Assignment	T							
Lanes in Group	0	1	0	0	0	0	0	0
Group Volume (v), veh/h	0.0	266.0	0.0	0.0	0.0	0.0	0.0	0.0
Group Sat. Flow (s), veh/h/ln	0.0	1597.4	0.0	0.0	0.0	0.0	0.0	0.0
Queue Serve Time (g_s), s	0.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clear Time (g_c), s	0.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane Group Capacity (c), veh/h	0.0	959.5	0.0	0.0	0.0	0.0	0.0	0.0
Volume-to-Capacity Ratio (X)	0.000	0.277	0.000	0.000	0.000	0.000	0.000	0.000
Available Capacity (c_a), veh/h	0.0	959.5	0.0	0.0	0.0	0.0	0.0	0.0
Upstream Filter Factor (I)	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000
Uniform Delay (d1), s/veh	0.0	14.3	0.0	0.0	0.0	0.0	0.0	0.0
Incremental Delay (d2), s/veh	0.0	0.7	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	15.1	0.0	0.0	0.0	0.0	0.0	0.0
First-Term Queue (Q1), veh/ln	0.0	4.5	0.0	0.0	0.0	0.0	0.0	0.0
Second-Term Queue (Q2), veh/ln	0.0	0.2	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	4.7	0.0	0.0	0.0	0.0	0.0	0.0
Percentile Storage Ratio (RQ%)	0.00	0.41	0.00	0.00	0.00	0.00	0.00	0.00

# HCM 2010 Signalized Intersection Capacity Analysis

## 9: 9th St & Main Street

3/26/2015

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		T+R		R		
Lanes in Group	0	1	0	1	0	1	0	0
Group Volume (v), veh/h	0.0	234.0	0.0	80.5	0.0	172.7	0.0	0.0
Group Sat. Flow (s), veh/h/ln	0.0	1395.5	0.0	1470.5	0.0	1251.5	0.0	0.0
Queue Serve Time (g_s), s	0.0	12.1	0.0	5.7	0.0	12.3	0.0	0.0
Cycle Queue Clear Time (g_c), s	0.0	12.1	0.0	5.7	0.0	12.3	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	0.171	0.000	0.926	0.000	1.000	0.000	0.352
Lane Group Capacity (c), veh/h	0.0	838.2	0.0	508.8	0.0	751.8	0.0	0.0
Volume-to-Capacity Ratio (X)	0.000	0.279	0.000	0.158	0.000	0.230	0.000	0.000
Available Capacity (c_a), veh/h	0.0	838.2	0.0	508.8	0.0	751.8	0.0	0.0
Upstream Filter Factor (I)	0.000	1.000	0.000	1.000	0.000	0.919	0.000	0.000
Uniform Delay (d1), s/veh	0.0	14.4	0.0	33.9	0.0	19.1	0.0	0.0
Incremental Delay (d2), s/veh	0.0	0.8	0.0	0.1	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	15.2	0.0	34.1	0.0	19.7	0.0	0.0
First-Term Queue (Q1), veh/ln	0.0	3.9	0.0	2.1	0.0	3.9	0.0	0.0
Second-Term Queue (Q2), veh/ln	0.0	0.2	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	4.1	0.0	2.1	0.0	4.0	0.0	0.0
Percentile Storage Ratio (RQ%)	0.00	0.36	0.00	0.04	0.00	0.21	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	33.8
HCM Level of Service	C

HCM 2010 Signalized Intersection Capacity Analysis  
 10: 8th 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)	45	593	39	8	384	14	65	47	40	56	19	40
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	0.90	1.00	1.00	0.90	1.00	1.00	1.00
Adj. Sat. Flow Rate, veh/h/ln	1666	1666	1666	1762	1762	1762	1667	1667	1667	1691	1691	1691
Lanes	0	2	0	0	1	0	0	1	0	0	1	0
Lane Assignment												
Capacity, veh/h	167	1575	137	65	1094	50	146	104	84	167	68	84
Proportion Arriving On Green	0.66	0.66	0.66	0.39	0.39	0.39	0.23	0.23	0.23	0.23	0.23	0.23
Movement Delay, s/veh	5.9	0.0	6.2	12.5	0.0	0.0	27.8	0.0	0.0	26.1	0.0	0.0
Movement LOS	A		A	B			C			C		
Approach Volume, veh/h		756			483			191			153	
Approach Delay, s/veh		6.0			12.5			27.8			26.1	
Approach LOS		A			B			C			C	
Timer:		1	2	3	4	5	6	7	8			
Assigned Phase			2		4		6		8			
Case No			8.0		8.0		8.0		8.0			
Phase Duration (G+Y+Rc), s			54.10		20.89		54.10		20.89			
Change Period (Y+Rc), s			4.50		5.50		4.50		5.50			
Max. Allowable Headway (MAH), s			3.60		4.48		3.60		4.48			
Maximum Green Setting (Gmax), s			49.60		15.40		49.60		15.40			
Max. Queue Clearance Time (g_c+I1), s			10.60		10.23		16.95		11.41			
Green Extension Time (g_e), s			3.85		0.66		3.82		0.54			
Probability of Phase Call (p_c)			1.000		0.999		1.000		0.999			
Probability of Max Out (p_x)			0.001		0.734		0.003		1.000			
<b>Left-Turn Movement Data</b>												
Assigned Movement			5		7		1		3			
Mvmt. Sat Flow, veh/h			215.14		508.99		55.76		436.82			
<b>Through Movement Data</b>												
Assigned Movement			2		4		6		8			
Mvmt. Sat Flow, veh/h			2234.91		195.55		1556.19		359.84			
<b>Right-Turn Movement Data</b>												
Assigned Movement			12		14		16		18			
Mvmt. Sat Flow, veh/h			198.94		363.57		72.83		361.09			
<b>Left Lane Group Data</b>												
Assigned Movement		0	5	0	7	0	1	0	3			
Lane Assignment			L+T		L+T+R		L+T+R		L+T+R			
Lanes in Group		0	1	0	1	0	1	0	1			
Group Volume (v), veh/h		0.0	378.1	0.0	152.6	0.0	483.4	0.0	191.4			
Group Sat. Flow (s), veh/h/ln		0.0	1319.6	0.0	1068.1	0.0	1684.8	0.0	1157.8			
Queue Serve Time (g_s), s		0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2			
Cycle Queue Clear Time (g_c), s		0.0	7.4	0.0	8.2	0.0	15.0	0.0	9.4			

HCM 2010 Signalized Intersection Capacity Analysis  
 10: 8th St & Main Street/Main Street

3/26/2015

Perm LT Sat Flow Rate (s_l), veh/h/ln	0.0	582.5	0.0	708.1	0.0	480.7	0.0	726.1
Shared LT Sat Flow (s_sh), veh/h/ln	0.0	1367.4	0.0	1085.1	0.0	0.0	0.0	1316.9
Perm LT Eff. Green (g_p), s	0.0	51.6	0.0	17.4	0.0	51.6	0.0	17.4
Perm LT Serve Time (g_u), s	0.0	36.6	0.0	8.0	0.0	43.0	0.0	9.2
Perm LT Que Serve Time (g_ps), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2
Time to First Blk (g_f), s	0.0	10.2	0.0	2.2	0.0	30.2	0.0	3.1
Serve Time pre Blk (g_fs), s	0.0	7.4	0.0	2.2	0.0	15.0	0.0	3.1
Proportion LT Inside Lane (P_L)	0.000	0.163	0.000	0.477	0.000	0.033	0.000	0.377
Lane Group Capacity (c), veh/h	0.0	963.8	0.0	318.6	0.0	1208.9	0.0	334.6
Volume-to-Capacity Ratio (X)	0.000	0.392	0.000	0.479	0.000	0.400	0.000	0.572
Available Capacity (c_a), veh/h	0.0	963.8	0.0	318.7	0.0	1208.9	0.0	334.7
Upstream Filter Factor (I)	0.000	0.560	0.000	1.000	0.000	0.826	0.000	1.000
Uniform Delay (d1), s/veh	0.0	5.2	0.0	25.0	0.0	11.6	0.0	25.5
Incremental Delay (d2), s/veh	0.0	0.7	0.0	1.1	0.0	0.8	0.0	2.3
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	5.9	0.0	26.1	0.0	12.5	0.0	27.8
First-Term Queue (Q1), veh/ln	0.0	2.1	0.0	2.5	0.0	6.4	0.0	3.2
Second-Term Queue (Q2), veh/ln	0.0	0.2	0.0	0.1	0.0	0.3	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	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	2.3	0.0	2.6	0.0	6.7	0.0	3.4
Percentile Storage Ratio (RQ%)	0.00	0.12	0.00	0.24	0.00	0.34	0.00	0.28
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
<b>Middle Lane Group Data</b>								
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  
 10: 8th St & Main Street/Main Street

3/26/2015

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							
Lanes in Group	0	1	0	0	0	0	0	0
Group Volume (v), veh/h	0.0	377.7	0.0	0.0	0.0	0.0	0.0	0.0
Group Sat. Flow (s), veh/h/ln	0.0	1329.4	0.0	0.0	0.0	0.0	0.0	0.0
Queue Serve Time (g_s), s	0.0	8.6	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clear Time (g_c), s	0.0	8.6	0.0	0.0	0.0	0.0	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	0.150	0.000	0.340	0.000	0.043	0.000	0.312
Lane Group Capacity (c), veh/h	0.0	914.8	0.0	0.0	0.0	0.0	0.0	0.0
Volume-to-Capacity Ratio (X)	0.000	0.413	0.000	0.000	0.000	0.000	0.000	0.000
Available Capacity (c_a), veh/h	0.0	914.8	0.0	0.0	0.0	0.0	0.0	0.0
Upstream Filter Factor (I)	0.000	0.560	0.000	0.000	0.000	0.000	0.000	0.000
Uniform Delay (d1), s/veh	0.0	5.4	0.0	0.0	0.0	0.0	0.0	0.0
Incremental Delay (d2), s/veh	0.0	0.8	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	6.2	0.0	0.0	0.0	0.0	0.0	0.0
First-Term Queue (Q1), veh/ln	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0
Second-Term Queue (Q2), veh/ln	0.0	0.2	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	2.4	0.0	0.0	0.0	0.0	0.0	0.0
Percentile Storage Ratio (RQ%)	0.00	0.12	0.00	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

**Intersection Summary**

HCM Average Control Delay	12.6
HCM Level of Service	B

HCM 2010 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)	17	368	20	4	227	13	158	106	138	37	13	31
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	0.90	1.00	1.00	1.00	1.00	1.00	0.90
Adj. Sat. Flow Rate, veh/h/ln	1672	1672	1672	1745	1745	1745	1680	1680	1680	1717	1717	1717
Lanes	0	2	0	0	1	0	0	1	0	0	1	0
Lane Assignment												
Capacity, veh/h	55	1099	58	28	637	58	278	134	159	335	35	193
Proportion Arriving On Green	0.31	0.31	0.31	0.35	0.35	0.35	0.41	0.41	0.41	0.55	0.55	0.55
Movement Delay, s/veh	38.9	0.0	39.1	38.2	0.0	0.0	84.7	0.0	0.0	17.5	0.0	0.0
Movement LOS	D		D	D			F			B		
Approach Volume, veh/h		511			340			590			146	
Approach Delay, s/veh		39.0			38.2			84.7			17.5	
Approach LOS		D			D			F			B	
Timer:		1	2	3	4	5	6	7	8			
Assigned Phase			2		4		6		8			
Case No			8.0		8.0		8.0		8.0			
Phase Duration (G+Y+Rc), s			64.70		85.30		64.70		85.30			
Change Period (Y+Rc), s			5.00		5.00		5.00		5.00			
Max. Allowable Headway (MAH), s			3.51		4.64		3.51		4.64			
Maximum Green Setting (Gmax), s			59.70		80.30		59.70		80.30			
Max. Queue Clearance Time (g_c+I1), s			21.37		11.80		25.15		84.30			
Green Extension Time (g_e), s			2.26		4.26		2.26		0.00			
Probability of Phase Call (p_c)			1.000		1.000		1.000		1.000			
Probability of Max Out (p_x)			0.000		0.000		0.000		1.000			
<b>Left-Turn Movement Data</b>												
Assigned Movement			5		7		1		3			
Mvmt. Sat Flow, veh/h			116.14		507.42		26.63		443.00			
<b>Through Movement Data</b>												
Assigned Movement			2		4		6		8			
Mvmt. Sat Flow, veh/h			2625.68		99.51		1531.68		243.54			
<b>Right-Turn Movement Data</b>												
Assigned Movement			12		14		16		18			
Mvmt. Sat Flow, veh/h			140.20		351.84		141.11		288.97			
<b>Left Lane Group Data</b>												
Assigned Movement		0	5	0	7	0	1	0	3			
Lane Assignment			L+T		L+T+R		L+T+R		L+T+R			
Lanes in Group		0	1	0	1	0	1	0	1			
Group Volume (v), veh/h		0.0	274.4	0.0	145.6	0.0	340.4	0.0	589.7			
Group Sat. Flow (s), veh/h/ln		0.0	1537.3	0.0	958.8	0.0	1699.4	0.0	975.5			
Queue Serve Time (g_s), s		0.0	0.0	0.0	0.0	0.0	0.0	0.0	72.5			
Cycle Queue Clear Time (g_c), s		0.0	19.4	0.0	9.8	0.0	23.2	0.0	82.3			

HCM 2010 Signalized Intersection Capacity Analysis  
 11: Seventh St/7th St & Main Street /Main Street

3/26/2015

Perm LT Sat Flow Rate (s_l), veh/h/ln	0.0	641.9	0.0	541.0	0.0	571.4	0.0	729.4
Shared LT Sat Flow (s_sh), veh/h/ln	0.0	1672.1	0.0	1049.3	0.0	0.0	0.0	1215.0
Perm LT Eff. Green (g_p), s	0.0	61.7	0.0	82.3	0.0	61.7	0.0	82.3
Perm LT Serve Time (g_u), s	0.0	38.5	0.0	0.0	0.0	42.3	0.0	72.5
Perm LT Que Serve Time (g_ps), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	72.5
Time to First Blk (g_f), s	0.0	22.3	0.0	1.8	0.0	40.8	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	19.4	0.0	1.8	0.0	23.2	0.0	0.0
Proportion LT Inside Lane (P_L)	0.000	0.076	0.000	0.529	0.000	0.016	0.000	0.454
Lane Group Capacity (c), veh/h	0.0	658.2	0.0	562.7	0.0	723.4	0.0	570.1
Volume-to-Capacity Ratio (X)	0.000	0.417	0.000	0.259	0.000	0.470	0.000	1.034
Available Capacity (c_a), veh/h	0.0	658.2	0.0	562.7	0.0	723.4	0.0	570.1
Upstream Filter Factor (I)	0.000	0.939	0.000	1.000	0.000	0.969	0.000	0.619
Uniform Delay (d1), s/veh	0.0	37.1	0.0	17.3	0.0	36.1	0.0	45.9
Incremental Delay (d2), s/veh	0.0	1.8	0.0	0.2	0.0	2.1	0.0	38.8
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	38.9	0.0	17.5	0.0	38.2	0.0	84.7
First-Term Queue (Q1), veh/ln	0.0	8.4	0.0	2.9	0.0	10.1	0.0	21.8
Second-Term Queue (Q2), veh/ln	0.0	0.3	0.0	0.0	0.0	0.4	0.0	6.2
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	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	8.7	0.0	3.0	0.0	10.6	0.0	27.9
Percentile Storage Ratio (RQ%)	0.00	0.45	0.00	0.25	0.00	1.07	0.00	1.85
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	4.9
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
<b>Middle Lane Group Data</b>								
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  
 11: Seventh St/7th St & Main Street /Main Street

3/26/2015

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							
Lanes in Group	0	1	0	0	0	0	0	0
Group Volume (v), veh/h	0.0	236.8	0.0	0.0	0.0	0.0	0.0	0.0
Group Sat. Flow (s), veh/h/ln	0.0	1344.7	0.0	0.0	0.0	0.0	0.0	0.0
Queue Serve Time (g_s), s	0.0	18.6	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clear Time (g_c), s	0.0	18.6	0.0	0.0	0.0	0.0	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	0.104	0.000	0.367	0.000	0.083	0.000	0.296
Lane Group Capacity (c), veh/h	0.0	553.1	0.0	0.0	0.0	0.0	0.0	0.0
Volume-to-Capacity Ratio (X)	0.000	0.428	0.000	0.000	0.000	0.000	0.000	0.000
Available Capacity (c_a), veh/h	0.0	553.1	0.0	0.0	0.0	0.0	0.0	0.0
Upstream Filter Factor (I)	0.000	0.939	0.000	0.000	0.000	0.000	0.000	0.000
Uniform Delay (d1), s/veh	0.0	36.8	0.0	0.0	0.0	0.0	0.0	0.0
Incremental Delay (d2), s/veh	0.0	2.3	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	39.1	0.0	0.0	0.0	0.0	0.0	0.0
First-Term Queue (Q1), veh/ln	0.0	7.2	0.0	0.0	0.0	0.0	0.0	0.0
Second-Term Queue (Q2), veh/ln	0.0	0.3	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	7.5	0.0	0.0	0.0	0.0	0.0	0.0
Percentile Storage Ratio (RQ%)	0.00	0.39	0.00	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

Intersection Summary

HCM Average Control Delay	53.9
HCM Level of Service	D

# 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	13	225	21	155	469	0	0	34	42	
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					0.99			1.00			0.92		
Flt Protected					1.00			0.99			1.00		
Satd. Flow (prot)					1869			2143			1459		
Flt Permitted					1.00			0.89			1.00		
Satd. Flow (perm)					1869			1924			1459		
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	25	274	30	189	586	0	0	37	58	
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	26	0	
Lane Group Flow (vph)	0	0	0	0	327	0	0	775	0	0	69	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)					56.9			82.6			82.6		
Effective Green, g (s)					57.9			83.6			83.6		
Actuated g/C Ratio					0.39			0.56			0.56		
Clearance Time (s)					5.0			5.5			5.5		
Vehicle Extension (s)					3.0			3.0			3.0		
Lane Grp Cap (vph)					721			1072			813		
v/s Ratio Prot											0.05		
v/s Ratio Perm					0.18			0.40					
v/c Ratio					0.45			0.72			0.09		
Uniform Delay, d1					34.3			24.6			15.4		
Progression Factor					1.00			1.00			0.52		
Incremental Delay, d2					2.1			2.4			0.0		
Delay (s)					36.3			27.1			8.1		
Level of Service					D			C			A		
Approach Delay (s)		0.0			36.3			27.1			8.1		
Approach LOS		A			D			C			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			28.1		HCM Level of Service						C		
HCM Volume to Capacity ratio			0.61										
Actuated Cycle Length (s)			150.0		Sum of lost time (s)					8.5			
Intersection Capacity Utilization			60.8%		ICU Level of Service					B			
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)	104	520	14	8	244	45	10	69	36	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		1.00			0.98			0.96				
Flt Protected		0.99			1.00			1.00				
Satd. Flow (prot)		2932			1671			1571				
Flt Permitted		0.76			0.97			1.00				
Satd. Flow (perm)		2246			1618			1571				
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)	170	578	21	13	294	63	13	101	45	0	0	0
RTOR Reduction (vph)	0	1	0	0	3	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	768	0	0	367	0	0	159	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)		119.5			119.5			20.5				
Effective Green, g (s)		120.5			120.5			21.5				
Actuated g/C Ratio		0.80			0.80			0.14				
Clearance Time (s)		5.0			5.0			5.0				
Vehicle Extension (s)		3.0			3.0			3.0				
Lane Grp Cap (vph)		1804			1300			225				
v/s Ratio Prot												
v/s Ratio Perm		0.34			0.23			0.10				
v/c Ratio		0.43			0.28			0.71				
Uniform Delay, d1		4.4			3.8			61.2				
Progression Factor		0.67			1.06			1.00				
Incremental Delay, d2		0.7			0.5			9.7				
Delay (s)		3.6			4.5			70.9				
Level of Service		A			A			E				
Approach Delay (s)		3.6			4.5			70.9			0.0	
Approach LOS		A			A			E			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			12.1					HCM Level of Service		B		
HCM Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			150.0					Sum of lost time (s)		8.0		
Intersection Capacity Utilization			54.7%					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

3/26/2015



Movement	EBT	EBR	NBL2	NBR	SBL	SBT	SBR2
Lane Configurations	↑↑		↖	↗	↖	↑	↗
Volume (vph)	353	115	200	507	87	443	263
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	0.96		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		0.38	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3372		598	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)	384	126	220	528	107	466	289
RTOR Reduction (vph)	0	0	0	0	0	0	51
Lane Group Flow (vph)	510	0	220	528	107	466	238
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)	28.5		107.6	94.6	95.4	88.5	123.5
Effective Green, g (s)	31.0		107.6	97.1	100.4	91.0	123.5
Actuated g/C Ratio	0.21		0.72	0.65	0.67	0.61	0.82
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)	697		508	905	1173	1088	1134
v/s Ratio Prot	c0.15		c0.04	c0.38	0.01	0.26	
v/s Ratio Perm			0.27		0.06		0.17
v/c Ratio	0.73		0.43	0.58	0.09	0.43	0.21
Uniform Delay, d1	55.6		9.4	15.0	8.7	15.7	2.8
Progression Factor	0.99		1.00	1.00	1.10	1.08	1.15
Incremental Delay, d2	3.7		0.6	1.0	0.0	1.2	0.1
Delay (s)	58.6		10.0	16.0	9.6	18.1	3.3
Level of Service	E		A	B	A	B	A
Approach Delay (s)	58.6					12.1	
Approach LOS	E					B	

### Intersection Summary

HCM Average Control Delay	24.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group