















APPENDIX M

BUILD WITH MITIGATION CAPACITY ANALYSIS

HCM 2010 Signalized Intersection Summary
3: 8th St #2 & Market St

Build w/ Mitigation
Timing Plan: Fri Street Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑						↑↑	
Volume (veh/h)	0	788	249	0	514	0	0	0	0	73	803	60
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	12	0	0	6	0				0	11	0
Ped-Bike Adj(A_pbT)	1.00		0.83	1.00		1.00				1.00		0.68
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	0.0	181.7	189.0	0.0	176.6	0.0				181.4	177.9	181.4
Adj Flow Rate, veh/h	0	838	265	0	547	0				78	854	64
Adj No. of Lanes	0	3	0	0	2	0				0	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	5	5	0	7	0				0	2	0
Cap, veh/h	0	1477	436	0	866	0				104	1293	96
Arrive On Green	0.00	0.82	0.82	0.00	0.82	0.00				0.15	0.15	0.15
Sat Flow, veh/h	0	3710	1105	0	3533	0				253	2896	228
Grp Volume(v), veh/h	0	780	323	0	547	0				544	0	452
Grp Sat Flow(s),veh/h/ln	0	1653	1346	0	1060	0				1766	0	1611
Q Serve(g_s), s	0.0	4.9	5.1	0.0	5.9	0.0				17.6	0.0	15.8
Cycle Q Clear(g_c), s	0.0	4.9	5.1	0.0	5.9	0.0				17.6	0.0	15.8
Prop In Lane	0.00		0.82	0.00		0.00				0.14		0.14
Lane Grp Cap(c), veh/h	0	1350	556	0	866	0				780	0	715
V/C Ratio(X)	0.00	0.58	0.58	0.00	0.63	0.00				0.70	0.00	0.63
Avail Cap(c_a), veh/h	0	1350	550	0	866	0				780	0	711
HCM Platoon Ratio	1.00	2.00	2.00	1.00	2.00	1.00				0.33	0.33	0.33
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	3.8	3.8	0.0	3.9	0.0				22.2	0.0	21.4
Incr Delay (d2), s/veh	0.0	1.8	4.4	0.0	3.5	0.0				5.1	0.0	4.2
Initial Q Delay(d3),s/veh	0.0	0.6	0.9	0.0	0.9	0.0				1.2	0.0	1.2
%ile BackOfQ(95%),veh/ln	0.0	5.0	4.9	0.0	4.2	0.0				15.6	0.0	13.3
LnGrp Delay(d),s/veh	0.0	6.2	9.1	0.0	8.4	0.0				28.5	0.0	26.8
LnGrp LOS		A	A		A					C		C
Approach Vol, veh/h		1103			547						996	
Approach Delay, s/veh		7.0			8.4						27.7	
Approach LOS		A			A						C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		29.0		31.0		29.0						
Change Period (Y+Rc), s		6.0		6.0		6.0						
Max Green Setting (Gmax), s		23.0		25.0		23.0						
Max Q Clear Time (g_c+I1), s		7.1		19.6		7.9						
Green Ext Time (p_c), s		9.2		0.0		8.9						
Intersection Summary												
HCM 2010 Ctrl Delay			15.1									
HCM 2010 LOS			B									

HCM Signalized Intersection Capacity Analysis

2: 7th St & Chestnut St













Build w/ Mitigation
Timing Plan: Fri Street Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕						↕↕				
Volume (vph)	277	477	0	0	0	0	0	568	181	0	0	0
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)		4.5						4.5				
Lane Util. Factor		*0.60						0.95				
Frpb, ped/bikes		1.00						0.93				
Flpb, ped/bikes		0.94						1.00				
Frt		1.00						0.96				
Flt Protected		0.98						1.00				
Satd. Flow (prot)		1825						2868				
Flt Permitted		0.98						1.00				
Satd. Flow (perm)		1825						2868				
Peak-hour factor, PHF	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	298	513	0	0	0	0	0	611	195	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	811	0	0	0	0	0	806	0	0	0	0
Confl. Peds. (#/hr)	256		256	216		216	372		372	548		546
Heavy Vehicles (%)	2%	7%	2%	2%	2%	2%	2%	2%	7%	2%	2%	2%
Bus Blockages (#/hr)	0	8	0	0	0	0	0	7	0	0	0	0
Parking (#/hr)	0						0					
Turn Type	Perm	NA						NA				
Protected Phases		2						8				
Permitted Phases	2											
Actuated Green, G (s)		26.0						22.0				
Effective Green, g (s)		27.5						23.5				
Actuated g/C Ratio		0.46						0.39				
Clearance Time (s)		6.0						6.0				
Lane Grp Cap (vph)		836						1123				
v/s Ratio Prot								c0.28				
v/s Ratio Perm		0.44										
v/c Ratio		0.97						0.72				
Uniform Delay, d1		15.8						15.4				
Progression Factor		1.54						1.64				
Incremental Delay, d2		14.9						3.6				
Delay (s)		39.4						28.9				
Level of Service		D						C				
Approach Delay (s)		39.4			0.0			28.9			0.0	
Approach LOS		D			A			C			A	
Intersection Summary												
HCM 2000 Control Delay			34.2					HCM 2000 Level of Service			C	
HCM 2000 Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			60.0					Sum of lost time (s)		9.0		
Intersection Capacity Utilization			55.9%					ICU Level of Service		B		
Analysis Period (min)			15									
c Critical Lane Group												

















HCM 2010 Signalized Intersection Summary
5: 9th St #1 & Market St

Build w/ Mitigation
Timing Plan: Fri Street Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑			↑↑	↑			
Volume (veh/h)	0	1020	0	0	544	56	107	662	269	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	9	0	0	9	0	0	15	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.71	1.00		0.72			
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	0.0	176.6	0.0	0.0	166.1	189.0	181.4	176.4	177.9			
Adj Flow Rate, veh/h	0	1062	0	0	567	58	111	690	280			
Adj No. of Lanes	0	3	0	0	2	0	0	2	1			
Peak Hour Factor	0.92	0.96	0.92	0.92	0.96	0.96	0.96	0.96	0.96			
Percent Heavy Veh, %	0	7	0	0	15	15	2	3	2			
Cap, veh/h	0	1298	0	0	943	90	186	1323	482			
Arrive On Green	0.00	0.82	0.00	0.00	0.82	0.82	0.15	0.15	0.15			
Sat Flow, veh/h	0	4593	0	0	2940	232	453	2964	1091			
Grp Volume(v), veh/h	0	1062	0	0	247	378	427	374	280			
Grp Sat Flow(s),veh/h/ln	0	1060	0	0	997	1510	1741	1676	1091			
Q Serve(g_s), s	0.0	11.1	0.0	0.0	5.4	5.5	13.7	12.3	14.4			
Cycle Q Clear(g_c), s	0.0	11.1	0.0	0.0	5.4	5.5	13.7	12.3	14.4			
Prop In Lane	0.00		0.00	0.00		0.15	0.26		1.00			
Lane Grp Cap(c), veh/h	0	1298	0	0	407	620	770	740	482			
V/C Ratio(X)	0.00	0.82	0.00	0.00	0.61	0.61	0.55	0.51	0.58			
Avail Cap(c_a), veh/h	0	1298	0	0	407	617	769	740	482			
HCM Platoon Ratio	1.00	2.00	1.00	1.00	2.00	2.00	0.33	0.33	0.33			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	0.0	4.5	0.0	0.0	3.9	3.9	20.6	20.1	20.4			
Incr Delay (d2), s/veh	0.0	5.8	0.0	0.0	6.6	4.4	2.9	2.5	5.0			
Initial Q Delay(d3),s/veh	0.0	1.9	0.0	0.0	2.2	1.0	1.5	1.5	0.0			
%ile BackOfQ(95%),veh/ln	0.0	7.3	0.0	0.0	4.7	6.1	12.7	11.3	8.7			
LnGrp Delay(d),s/veh	0.0	12.2	0.0	0.0	12.8	9.3	25.0	24.0	25.5			
LnGrp LOS		B			B	A	C	C	C			
Approach Vol, veh/h		1062			625			1081				
Approach Delay, s/veh		12.2			10.6			24.8				
Approach LOS		B			B			C				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		29.0				29.0		31.0				
Change Period (Y+Rc), s		6.0				6.0		6.0				
Max Green Setting (Gmax), s		23.0				23.0		25.0				
Max Q Clear Time (g_c+I1), s		13.1				7.5		16.4				
Green Ext Time (p_c), s		6.6				9.1		0.2				
Intersection Summary												
HCM 2010 Ctrl Delay					16.8							
HCM 2010 LOS					B							













HCM 2010 Signalized Intersection Summary
 12: 5th St & Market St

Build w/ Mitigation
 Timing Plan: Fri Street Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	439	578	0	0	258	129	70	722	55	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	3	3	0	0	4	0	0	10	0			
Ped-Bike Adj(A_pbT)	0.88		1.00	1.00		0.60	1.00		0.65			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	0.90	1.00	1.00			
Adj Sat Flow, veh/h/ln	183.5	175.0	0.0	0.0	171.3	189.0	189.0	185.7	189.0			
Adj Flow Rate, veh/h	472	622	0	0	277	139	75	776	59			
Adj No. of Lanes	1	2	0	0	2	0	0	2	0			
Peak Hour Factor	0.93	0.93	0.92	0.92	0.93	0.93	0.93	0.93	0.93			
Percent Heavy Veh, %	3	8	0	0	15	15	0	2	0			
Cap, veh/h	484	1068	0	0	373	141	76	1018	71			
Arrive On Green	0.21	0.51	0.00	0.00	0.22	0.24	0.12	0.11	0.11			
Sat Flow, veh/h	1748	2800	0	0	2128	661	262	2844	227			
Grp Volume(v), veh/h	472	622	0	0	190	226	474	0	436			
Grp Sat Flow(s),veh/h/ln	1748	1050	0	0	1028	1075	1658	0	1675			
Q Serve(g_s), s	11.8	12.4	0.0	0.0	10.5	12.4	16.8	0.0	15.2			
Cycle Q Clear(g_c), s	11.8	12.4	0.0	0.0	10.5	12.4	16.8	0.0	15.2			
Prop In Lane	1.00		0.00	0.00		0.61	0.16		0.14			
Lane Grp Cap(c), veh/h	484	1068	0	0	231	249	567	0	577			
V/C Ratio(X)	0.97	0.58	0.00	0.00	0.82	0.91	0.84	0.00	0.76			
Avail Cap(c_a), veh/h	498	1068	0	0	231	242	566	0	572			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33			
Upstream Filter(l)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	14.3	10.4	0.0	0.0	22.3	22.6	25.3	0.0	24.5			
Incr Delay (d2), s/veh	35.1	2.3	0.0	0.0	26.8	37.5	13.6	0.0	8.9			
Initial Q Delay(d3),s/veh	11.0	0.1	0.0	0.0	3.0	5.1	3.4	0.0	2.2			
%ile BackOfQ(95%),veh/ln	20.0	7.3	0.0	0.0	8.6	10.9	16.0	0.0	14.0			
LnGrp Delay(d),s/veh	60.4	12.9	0.0	0.0	52.1	65.1	42.3	0.0	35.6			
LnGrp LOS	E	B			D	E	D		D			
Approach Vol, veh/h		1094			416			910				
Approach Delay, s/veh		33.4			59.2			39.1				
Approach LOS		C			E			D				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		35.0			17.0	18.0		25.0				
Change Period (Y+Rc), s		5.0			5.0	5.0		5.0				
Max Green Setting (Gmax), s		30.0			12.0	13.0		20.0				
Max Q Clear Time (g_c+I1), s		14.4			13.8	14.4		18.8				
Green Ext Time (p_c), s		5.9			0.0	0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			40.0									
HCM 2010 LOS			D									













HCM 2010 Signalized Intersection Summary
3: 8th St #2 & Market St

Build w/ Mitigation
Timing Plan: Friday Casino Pe

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑						↑↑	
Volume (veh/h)	0	680	280	0	430	0	0	0	0	77	1023	46
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.77	1.00		1.00				1.00		0.87
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	0.90
Adj Sat Flow, veh/h/ln	0.0	183.3	189.0	0.0	176.6	0.0				181.4	179.5	181.4
Adj Flow Rate, veh/h	0	723	298	0	457	0				82	1088	49
Adj No. of Lanes	0	3	0	0	2	0				0	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	4	4	0	7	0				0	1	0
Cap, veh/h	0	1306	470	0	830	0				99	1371	65
Arrive On Green	0.00	0.13	0.13	0.00	0.78	0.00				0.15	0.15	0.15
Sat Flow, veh/h	0	3501	1200	0	3533	0				216	2991	142
Grp Volume(v), veh/h	0	723	298	0	457	0				677	0	542
Grp Sat Flow(s),veh/h/ln	0	1668	1200	0	1060	0				1784	0	1565
Q Serve(g_s), s	0.0	12.2	14.1	0.0	4.9	0.0				22.1	0.0	19.9
Cycle Q Clear(g_c), s	0.0	12.2	14.1	0.0	4.9	0.0				22.1	0.0	19.9
Prop In Lane	0.00		1.00	0.00		0.00				0.12		0.09
Lane Grp Cap(c), veh/h	0	1306	470	0	830	0				818	0	717
V/C Ratio(X)	0.00	0.55	0.63	0.00	0.55	0.00				0.83	0.00	0.76
Avail Cap(c_a), veh/h	0	1306	470	0	830	0				818	0	717
HCM Platoon Ratio	1.00	0.33	0.33	1.00	2.00	1.00				0.33	0.33	0.33
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	21.2	22.0	0.0	4.5	0.0				23.2	0.0	22.2
Incr Delay (d2), s/veh	0.0	1.7	6.4	0.0	2.6	0.0				9.5	0.0	7.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	9.9	9.4	0.0	2.8	0.0				19.0	0.0	15.3
LnGrp Delay(d),s/veh	0.0	22.9	28.4	0.0	7.1	0.0				32.6	0.0	29.5
LnGrp LOS		C	C		A					C		C
Approach Vol, veh/h		1021			457						1219	
Approach Delay, s/veh		24.5			7.1						31.2	
Approach LOS		C			A						C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		28.0		32.0		28.0						
Change Period (Y+Rc), s		6.0		6.0		6.0						
Max Green Setting (Gmax), s		22.0		26.0		22.0						
Max Q Clear Time (g_c+I1), s		16.1		24.1		6.9						
Green Ext Time (p_c), s		4.0		0.0		8.2						
Intersection Summary												
HCM 2010 Ctrl Delay			24.6									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary
5: 9th St #1 & Market St

Build w/ Mitigation
Timing Plan: Friday Casino Pe

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑			↑↑	↑			
Volume (veh/h)	0	741	0	0	551	52	79	568	243	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.79	1.00		0.74			
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	0.0	173.4	0.0	0.0	174.4	189.0	181.4	177.7	177.9			
Adj Flow Rate, veh/h	0	833	0	0	619	58	89	638	273			
Adj No. of Lanes	0	3	0	0	2	0	0	2	1			
Peak Hour Factor	0.92	0.89	0.92	0.92	0.89	0.89	0.89	0.89	0.89			
Percent Heavy Veh, %	0	9	0	0	9	9	2	2	2			
Cap, veh/h	0	1222	0	0	960	90	185	1394	515			
Arrive On Green	0.00	0.78	0.00	0.00	0.13	0.13	0.15	0.15	0.15			
Sat Flow, veh/h	0	4508	0	0	3148	229	403	3041	1123			
Grp Volume(v), veh/h	0	833	0	0	263	414	388	339	273			
Grp Sat Flow(s),veh/h/ln	0	1040	0	0	1046	1634	1757	1688	1123			
Q Serve(g_s), s	0.0	7.4	0.0	0.0	14.3	14.4	12.1	11.0	13.5			
Cycle Q Clear(g_c), s	0.0	7.4	0.0	0.0	14.3	14.4	12.1	11.0	13.5			
Prop In Lane	0.00		0.00	0.00		0.14	0.23		1.00			
Lane Grp Cap(c), veh/h	0	1222	0	0	410	640	805	774	515			
V/C Ratio(X)	0.00	0.68	0.00	0.00	0.64	0.65	0.48	0.44	0.53			
Avail Cap(c_a), veh/h	0	1222	0	0	410	640	805	774	515			
HCM Platoon Ratio	1.00	2.00	1.00	1.00	0.33	0.33	0.33	0.33	0.33			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	0.0	4.8	0.0	0.0	22.1	22.2	18.9	18.4	19.5			
Incr Delay (d2), s/veh	0.0	3.1	0.0	0.0	7.5	5.0	2.1	1.8	3.9			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.0	4.0	0.0	0.0	8.7	11.9	10.5	9.4	8.3			
LnGrp Delay(d),s/veh	0.0	7.8	0.0	0.0	29.7	27.2	21.0	20.2	23.4			
LnGrp LOS		A			C	C	C	C	C			
Approach Vol, veh/h		833			677			1000				
Approach Delay, s/veh		7.8			28.1			21.4				
Approach LOS		A			C			C				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		28.0				28.0		32.0				
Change Period (Y+Rc), s		6.0				6.0		6.0				
Max Green Setting (Gmax), s		22.0				22.0		26.0				
Max Q Clear Time (g_c+I1), s		9.4				16.4		15.5				
Green Ext Time (p_c), s		7.1				3.8		0.3				
Intersection Summary												
HCM 2010 Ctrl Delay					18.7							
HCM 2010 LOS					B							

HCM Signalized Intersection Capacity Analysis

25: 8th St #2 & Arch St

Build w/ Mitigation
Timing Plan: SAT Casino Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↕↕						↕↕	↗	
Volume (vph)	0	0	0	152	250	0	0	0	0	0	890	128	
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	
Total Lost time (s)					5.0						5.0	5.0	
Lane Util. Factor					0.95						0.95	1.00	
Frbp, ped/bikes					1.00						1.00	0.93	
Flpb, ped/bikes					0.99						1.00	1.00	
Frt					1.00						1.00	0.85	
Flt Protected					0.98						1.00	1.00	
Satd. Flow (prot)					3113						3286	1311	
Flt Permitted					0.98						1.00	1.00	
Satd. Flow (perm)					3113						3286	1311	
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.94	0.94	
Adj. Flow (vph)	0	0	0	162	266	0	0	0	0	0	947	136	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	428	0	0	0	0	0	947	136	
Confl. Peds. (#/hr)	35		35	30		30	65		65	81		81	
Heavy Vehicles (%)	2%	2%	2%	0%	6%	2%	2%	2%	2%	2%	2%	5%	
Bus Blockages (#/hr)	0	0	0	0	5	0	0	0	0	0	0	4	
Parking (#/hr)				0		0							
Turn Type				Perm	NA						NA	Perm	
Protected Phases					6						4		
Permitted Phases				6								4	
Actuated Green, G (s)					23.5						25.5	25.5	
Effective Green, g (s)					24.0						26.0	26.0	
Actuated g/C Ratio					0.40						0.43	0.43	
Clearance Time (s)					5.5						5.5	5.5	
Lane Grp Cap (vph)					1245						1423	568	
v/s Ratio Prot											c0.29		
v/s Ratio Perm					0.14							0.10	
v/c Ratio					0.34						0.67	0.24	
Uniform Delay, d1					12.5						13.5	10.7	
Progression Factor					0.69						1.45	1.59	
Incremental Delay, d2					0.7						2.0	0.8	
Delay (s)					9.3						21.7	18.0	
Level of Service					A						C	B	
Approach Delay (s)		0.0			9.3			0.0			21.2		
Approach LOS		A			A			A			C		
Intersection Summary													
HCM 2000 Control Delay			17.8									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.51										
Actuated Cycle Length (s)			60.0									Sum of lost time (s)	10.0
Intersection Capacity Utilization			48.2%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis

7: 9th St #1/9th St & Race St/Race St #1

Build w/ Mitigation
Timing Plan: SAT Casino Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔						↔↔				
Volume (vph)	120	332	0	0	0	0	0	288	584	0	0	0
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)		5.0						5.0				
Lane Util. Factor		0.95						0.95				
Frbp, ped/bikes		1.00						0.94				
Flpb, ped/bikes		0.98						1.00				
Frt		1.00						0.90				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		3215						2806				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		3215						2806				
Peak-hour factor, PHF	0.96	0.96	0.92	0.92	0.92	0.92	0.92	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	125	346	0	0	0	0	0	300	608	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	471	0	0	0	0	0	908	0	0	0	0
Confl. Peds. (#/hr)	105		105	34		34	121		121	103		103
Heavy Vehicles (%)	0%	1%	2%	2%	2%	2%	2%	0%	1%	2%	2%	2%
Parking (#/hr)			0				0					
Turn Type	Perm	NA						NA				
Protected Phases		2						8				
Permitted Phases	2											
Actuated Green, G (s)		23.5						25.5				
Effective Green, g (s)		24.0						26.0				
Actuated g/C Ratio		0.40						0.43				
Clearance Time (s)		5.5						5.5				
Lane Grp Cap (vph)		1286						1215				
v/s Ratio Prot								c0.32				
v/s Ratio Perm		0.15										
v/c Ratio		0.37						0.99dr				
Uniform Delay, d1		12.7						14.2				
Progression Factor		1.00						1.27				
Incremental Delay, d2		0.8						3.7				
Delay (s)		13.5						21.8				
Level of Service		B						C				
Approach Delay (s)		13.5			0.0			21.8			0.0	
Approach LOS		B			A			C			A	

Intersection Summary













HCM 2000 Control Delay	19.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group
















HCM 2010 Signalized Intersection Summary
5: 9th St #1 & Market St

Build w/ Mitigation
Timing Plan: SAT Casino Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑			↑↑	↑			
Volume (veh/h)	0	662	0	0	366	45	93	703	340	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	5	0	0	4	0	0	4	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.80	1.00		0.70			
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	0.0	183.5	0.0	0.0	178.5	189.0	181.4	179.9	179.6			
Adj Flow Rate, veh/h	0	704	0	0	389	48	99	748	362			
Adj No. of Lanes	0	3	0	0	2	0	0	2	1			
Peak Hour Factor	0.92	0.94	0.92	0.92	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	0	3	0	0	6	6	1	1	1			
Cap, veh/h	0	1349	0	0	993	119	169	1371	475			
Arrive On Green	0.00	0.82	0.00	0.00	0.82	0.82	0.15	0.15	0.15			
Sat Flow, veh/h	0	4771	0	0	3135	296	390	3098	1075			
Grp Volume(v), veh/h	0	704	0	0	170	267	452	395	362			
Grp Sat Flow(s),veh/h/ln	0	1101	0	0	1071	1646	1779	1709	1075			
Q Serve(g_s), s	0.0	4.1	0.0	0.0	2.6	2.6	14.2	12.8	19.4			
Cycle Q Clear(g_c), s	0.0	4.1	0.0	0.0	2.6	2.6	14.2	12.8	19.4			
Prop In Lane	0.00		0.00	0.00		0.18	0.22		1.00			
Lane Grp Cap(c), veh/h	0	1349	0	0	437	673	786	755	475			
V/C Ratio(X)	0.00	0.52	0.00	0.00	0.39	0.40	0.58	0.52	0.76			
Avail Cap(c_a), veh/h	0	1349	0	0	437	672	786	755	475			
HCM Platoon Ratio	1.00	2.00	1.00	1.00	2.00	2.00	0.33	0.33	0.33			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	0.0	3.7	0.0	0.0	3.5	3.5	20.5	19.9	22.6			
Incr Delay (d2), s/veh	0.0	1.4	0.0	0.0	2.6	1.7	3.1	2.6	11.0			
Initial Q Delay(d3),s/veh	0.0	0.2	0.0	0.0	0.2	0.1	0.1	0.1	0.0			
%ile BackOfQ(95%),veh/ln	0.0	2.5	0.0	0.0	2.1	2.8	12.4	11.0	11.6			
LnGrp Delay(d),s/veh	0.0	5.3	0.0	0.0	6.4	5.4	23.7	22.6	33.6			
LnGrp LOS		A			A	A	C	C	C			
Approach Vol, veh/h		704			437			1209				
Approach Delay, s/veh		5.3			5.8			26.3				
Approach LOS		A			A			C				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		29.0				29.0		31.0				
Change Period (Y+Rc), s		6.0				6.0		6.0				
Max Green Setting (Gmax), s		23.0				23.0		25.0				
Max Q Clear Time (g_c+I1), s		6.1				4.6		21.4				
Green Ext Time (p_c), s		6.3				6.6		0.3				
Intersection Summary												
HCM 2010 Ctrl Delay				16.2								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary
3: 8th St #2 & Market St

Build w/ Mitigation
Timing Plan: SAT Casino Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	675	341	0	386	0	0	0	0	64	1129	61
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.70	1.00		1.00				1.00		0.88
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	0.0	177.8	189.0	0.0	178.3	0.0				181.4	178.8	181.4
Adj Flow Rate, veh/h	0	734	371	0	420	0				70	1227	66
Adj No. of Lanes	0	3	0	0	2	0				0	2	0
Peak Hour Factor	0.94	0.92	0.92	0.94	0.92	0.94				0.92	0.92	0.92
Percent Heavy Veh, %	0	9	9	0	6	0				0	1	0
Cap, veh/h	0	1321	429	0	874	0				76	1394	79
Arrive On Green	0.00	0.82	0.82	0.00	0.82	0.00				0.15	0.15	0.15
Sat Flow, veh/h	0	3396	1052	0	3566	0				173	3157	178
Grp Volume(v), veh/h	0	734	371	0	420	0				722	0	641
Grp Sat Flow(s),veh/h/ln	0	1618	1052	0	1070	0				1780	0	1727
Q Serve(g_s), s	0.0	4.6	13.2	0.0	3.6	0.0				24.0	0.0	21.7
Cycle Q Clear(g_c), s	0.0	4.6	13.2	0.0	3.6	0.0				24.0	0.0	21.7
Prop In Lane	0.00		1.00	0.00		0.00				0.10		0.10
Lane Grp Cap(c), veh/h	0	1321	429	0	874	0				786	0	763
V/C Ratio(X)	0.00	0.56	0.86	0.00	0.48	0.00				0.92	0.00	0.84
Avail Cap(c_a), veh/h	0	1321	429	0	874	0				786	0	763
HCM Platoon Ratio	1.00	2.00	2.00	1.00	2.00	1.00				0.33	0.33	0.33
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	3.7	4.5	0.0	3.6	0.0				24.6	0.0	23.6
Incr Delay (d2), s/veh	0.0	1.7	20.1	0.0	1.9	0.0				17.5	0.0	10.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	3.9	9.6	0.0	2.1	0.0				22.1	0.0	18.5
LnGrp Delay(d),s/veh	0.0	5.4	24.5	0.0	5.5	0.0				42.1	0.0	34.3
LnGrp LOS		A	C		A					D		C
Approach Vol, veh/h		1105			420						1363	
Approach Delay, s/veh		11.8			5.5						38.4	
Approach LOS		B			A						D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		29.0		31.0		29.0						
Change Period (Y+Rc), s		6.0		6.0		6.0						
Max Green Setting (Gmax), s		23.0		25.0		23.0						
Max Q Clear Time (g_c+I1), s		15.2		26.0		5.6						
Green Ext Time (p_c), s		5.3		0.0		9.5						
Intersection Summary												
HCM 2010 Ctrl Delay			23.4									
HCM 2010 LOS			C									