















**APPENDIX L**  
**BUILD CAPACITY ANALYSIS**

**FRIDAY STREET PEAK HOUR LOS**

HCM 2010 Signalized Intersection Summary  
1: 7th St & Market St

Build Conditions  
1/23/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑	↑		↑↑				
Volume (veh/h)	0	1215	0	0	320	122	71	815	107	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	3	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.86	1.00		0.70			
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	0.0	180.0	0.0	0.0	154.9	189.0	181.4	178.5	181.4			
Adj Flow Rate, veh/h	0	1279	0	0	337	128	75	858	113			
Adj No. of Lanes	0	3	0	0	2	1	0	2	0			
Peak Hour Factor	0.92	0.95	0.92	0.92	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	0	5	0	0	22	0	0	2	0			
Cap, veh/h	0	1647	0	0	1496	421	22	983	116			
Arrive On Green	0.00	0.34	0.00	0.00	0.34	0.34	0.11	0.11	0.11			
Sat Flow, veh/h	0	4680	0	0	3021	827	215	2564	356			
Grp Volume(v), veh/h	0	1279	0	0	337	128	557	0	489			
Grp Sat Flow(s),veh/h/ln	0	1080	0	0	1472	827	1596	0	1539			
Q Serve(g_s), s	0.0	21.2	0.0	0.0	4.9	6.8	20.5	0.0	18.9			
Cycle Q Clear(g_c), s	0.0	21.2	0.0	0.0	4.9	6.8	20.5	0.0	18.9			
Prop In Lane	0.00		0.00	0.00		1.00	0.13		0.23			
Lane Grp Cap(c), veh/h	0	1647	0	0	1496	421	548	0	530			
V/C Ratio(X)	0.00	0.78	0.00	0.00	0.23	0.30	1.02	0.00	0.92			
Avail Cap(c_a), veh/h	0	1647	0	0	1496	421	545	0	526			
HCM Platoon Ratio	1.00	0.67	1.00	1.00	0.67	0.67	0.33	0.33	0.33			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	16.7	0.0	0.0	11.3	12.0	26.6	0.0	26.0			
Incr Delay (d2), s/veh	0.0	3.7	0.0	0.0	0.3	1.9	42.7	0.0	24.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	9.6	0.0	0.8			
%ile BackOfQ(95%),veh/ln	0.0	11.2	0.0	0.0	3.7	3.2	29.5	0.0	17.4			
LnGrp Delay(d),s/veh	0.0	20.4	0.0	0.0	11.7	13.8	78.9	0.0	50.9			
LnGrp LOS		C			B	B	F		D			
Approach Vol, veh/h		1279			465			1046				
Approach Delay, s/veh		20.4			12.3			65.8				
Approach LOS		C			B			E				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		35.0				35.0		25.0				
Change Period (Y+Rc), s		6.0				6.0		6.0				
Max Green Setting (Gmax), s		29.0				29.0		19.0				
Max Q Clear Time (g_c+I1), s		23.2				8.8		22.5				
Green Ext Time (p_c), s		4.4				11.4		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay					36.1							
HCM 2010 LOS					D							



Lane Group	EBT	NBT
Lane Group Flow (vph)	811	806
v/c Ratio	1.05	0.66
Control Delay	65.0	28.4
Queue Delay	0.0	0.0
Total Delay	65.0	28.4
Queue Length 50th (ft)	~295	171
Queue Length 95th (ft)	m#376	225
Internal Link Dist (ft)	336	210
Turn Bay Length (ft)		
Base Capacity (vph)	771	1226
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.05	0.66

**Intersection Summary**

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

# HCM Signalized Intersection Capacity Analysis

## 2: 7th St & Chestnut St

Build Conditions

1/23/2014



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		0.93						1.00				
Frt		1.00						0.96				
Flt Protected		0.98						1.00				
Satd. Flow (prot)		1816						2885				
Flt Permitted		0.98						1.00				
Satd. Flow (perm)		1816						2885				
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)		24.0						24.0				
Effective Green, g (s)		25.5						25.5				
Actuated g/C Ratio		0.42						0.42				
Clearance Time (s)		6.0						6.0				
Lane Grp Cap (vph)		771						1226				
v/s Ratio Prot								c0.28				
v/s Ratio Perm		0.45										
v/c Ratio		1.05						0.66				
Uniform Delay, d1		17.2						13.8				
Progression Factor		1.52						1.83				
Incremental Delay, d2		36.9						2.5				
Delay (s)		63.1						27.6				
Level of Service		E						C				
Approach Delay (s)		63.1			0.0			27.6			0.0	
Approach LOS		E			A			C			A	
















### Intersection Summary

HCM 2000 Control Delay	45.4	HCM 2000 Level of Service	D
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  
3: 8th St #2 & Market St

Build Conditions  
1/23/2014

												
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		0.86	1.00		1.00				1.00		0.65
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	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	1908	576	0	1113	0				22	930	57
Arrive On Green	0.00	1.00	1.00	0.00	0.17	0.00				0.11	0.11	0.11
Sat Flow, veh/h	0	3758	1123	0	3533	0				240	2735	216
Grp Volume(v), veh/h	0	770	333	0	547	0				574	0	422
Grp Sat Flow(s),veh/h/ln	0	1653	1411	0	1060	0				1767	0	1425
Q Serve(g_s), s	0.0	0.0	0.0	0.0	14.0	0.0				19.5	0.0	17.6
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	14.0	0.0				19.5	0.0	17.6
Prop In Lane	0.00		0.80	0.00		0.00				0.14		0.15
Lane Grp Cap(c), veh/h	0	1736	745	0	1113	0				577	0	474
V/C Ratio(X)	0.00	0.44	0.45	0.00	0.49	0.00				1.00	0.00	0.89
Avail Cap(c_a), veh/h	0	1736	741	0	1113	0				574	0	463
HCM Platoon Ratio	1.00	2.00	2.00	1.00	0.33	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	0.0	0.0	0.0	17.9	0.0				26.8	0.0	26.1
Incr Delay (d2), s/veh	0.0	0.8	1.9	0.0	1.6	0.0				36.4	0.0	21.3
Initial Q Delay(d3),s/veh	0.0	0.3	0.4	0.0	0.4	0.0				32.3	0.0	8.8
%ile BackOfQ(95%),veh/ln	0.0	0.4	0.8	0.0	8.1	0.0				27.0	0.0	16.5
LnGrp Delay(d),s/veh	0.0	1.1	2.3	0.0	19.8	0.0				95.5	0.0	56.2
LnGrp LOS		A	A		B					F		E
Approach Vol, veh/h		1103			547						996	
Approach Delay, s/veh		1.5			19.8						78.9	
Approach LOS		A			B						E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		36.0		24.0		36.0						
Change Period (Y+Rc), s		6.0		6.0		6.0						
Max Green Setting (Gmax), s		30.0		18.0		30.0						
Max Q Clear Time (g_c+I1), s		2.0		21.5		16.0						
Green Ext Time (p_c), s		12.5		0.0		8.4						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			34.4									
HCM 2010 LOS			C									

Queues  
4: 8th St & Chestnut St

Build Conditions  
1/23/2014



Lane Group	EBT	SBT
Lane Group Flow (vph)	708	978
v/c Ratio	0.93	0.78
Control Delay	33.8	13.8
Queue Delay	0.0	0.0
Total Delay	33.8	13.8
Queue Length 50th (ft)	197	77
Queue Length 95th (ft)	#355	m83
Internal Link Dist (ft)	398	143
Turn Bay Length (ft)		
Base Capacity (vph)	765	1261
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.93	0.78

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

# HCM Signalized Intersection Capacity Analysis

## 4: 8th St & Chestnut St

Build Conditions  
1/23/2014















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑									↑↑		
Volume (vph)	0	494	122	0	0	0	0	0	0	228	623	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		0.94									1.00		
Flpb, ped/bikes		1.00									0.93		
Frt		0.97									1.00		
Flt Protected		1.00									0.99		
Satd. Flow (prot)		1801									2967		
Flt Permitted		1.00									0.99		
Satd. Flow (perm)		1801									2967		
Peak-hour factor, PHF	0.92	0.87	0.87	0.92	0.92	0.92	0.92	0.92	0.92	0.87	0.87	0.92	
Adj. Flow (vph)	0	568	140	0	0	0	0	0	0	262	716	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	708	0	0	0	0	0	0	0	0	978	0	
Confl. Peds. (#/hr)	422		422	449		449	269		269	376		376	
Heavy Vehicles (%)	2%	6%	0%	2%	2%	2%	2%	2%	2%	0%	2%	2%	
Bus Blockages (#/hr)	0	11	0	0	0	0	0	0	0	0	10	0	
Parking (#/hr)	0											0	
Turn Type		NA								Perm	NA		
Protected Phases		2									4		
Permitted Phases										4			
Actuated Green, G (s)		24.0									24.0		
Effective Green, g (s)		25.5									25.5		
Actuated g/C Ratio		0.42									0.42		
Clearance Time (s)		6.0									6.0		
Lane Grp Cap (vph)		765									1260		
v/s Ratio Prot		c0.39											
v/s Ratio Perm											0.33		
v/c Ratio		0.93									0.78		
Uniform Delay, d1		16.3									14.8		
Progression Factor		0.93									0.64		
Incremental Delay, d2		15.6									3.7		
Delay (s)		30.8									13.3		
Level of Service		C									B		
Approach Delay (s)		30.8			0.0			0.0			13.3		
Approach LOS		C			A			A			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			20.6									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			54.3%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													



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

Build Conditions  
1/23/2014

												
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		0.78	1.00		0.68			
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	176.6	0.0	0.0	166.1	189.0	181.4	176.8	181.4			
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	0			
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	0	3	0			
Cap, veh/h	0	1669	0	0	1219	119	29	680	187			
Arrive On Green	0.00	1.00	0.00	0.00	1.00	1.00	0.11	0.11	0.11			
Sat Flow, veh/h	0	4593	0	0	2966	235	278	1750	766			
Grp Volume(v), veh/h	0	1062	0	0	244	381	701	0	380			
Grp Sat Flow(s),veh/h/ln	0	1060	0	0	997	1540	1754	0	1040			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	19.5	0.0	19.5			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	19.5	0.0	19.5			
Prop In Lane	0.00		0.00	0.00		0.15	0.16		0.74			
Lane Grp Cap(c), veh/h	0	1669	0	0	523	811	573	0	383			
V/C Ratio(X)	0.00	0.64	0.00	0.00	0.47	0.47	1.22	0.00	0.99			
Avail Cap(c_a), veh/h	0	1669	0	0	523	809	570	0	338			
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	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	26.8	0.0	26.8			
Incr Delay (d2), s/veh	0.0	1.9	0.0	0.0	3.0	2.0	115.5	0.0	44.2			
Initial Q Delay(d3),s/veh	0.0	0.6	0.0	0.0	1.0	0.4	37.5	0.0	67.2			
%ile BackOfQ(95%),veh/ln	0.0	0.6	0.0	0.0	0.9	0.9	57.7	0.0	23.6			
LnGrp Delay(d),s/veh	0.0	2.4	0.0	0.0	4.0	2.4	179.8	0.0	138.2			
LnGrp LOS		A			A	A	F		F			
Approach Vol, veh/h		1062			625			1081				
Approach Delay, s/veh		2.4			3.0			165.2				
Approach LOS		A			A			F				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		36.0				36.0		24.0				
Change Period (Y+Rc), s		6.0				6.0		6.0				
Max Green Setting (Gmax), s		30.0				30.0		18.0				
Max Q Clear Time (g_c+I1), s		2.0				2.0		21.5				
Green Ext Time (p_c), s		12.6				12.6		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay					66.1							
HCM 2010 LOS					E							



Lane Group	EBT	NBT
Lane Group Flow (vph)	602	804
v/c Ratio	0.64	0.72
Control Delay	14.8	16.3
Queue Delay	0.0	0.0
Total Delay	14.8	16.3
Queue Length 50th (ft)	96	72
Queue Length 95th (ft)	189	119
Internal Link Dist (ft)	343	223
Turn Bay Length (ft)		
Base Capacity (vph)	934	1123
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.64	0.72
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 6: 9th St/9th St #1 & Chestnut St

Build Conditions  
1/23/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕						↕↕				
Volume (vph)	121	421	0	0	0	0	0	549	175	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						0.94				
Flpb, ped/bikes		0.96						1.00				
Frt		1.00						0.96				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		1967						2996				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		1967						2996				
Peak-hour factor, PHF	0.90	0.90	0.92	0.92	0.92	0.92	0.92	0.90	0.90	0.92	0.92	0.92
Adj. Flow (vph)	134	468	0	0	0	0	0	610	194	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	602	0	0	0	0	0	804	0	0	0	0
Confl. Peds. (#/hr)	265		265	253		253	279		279	520		520
Heavy Vehicles (%)	0%	0%	2%	2%	2%	2%	2%	0%	0%	2%	2%	2%
Bus Blockages (#/hr)	0	12	0	0	0	0	0	9	0	0	0	0
Parking (#/hr)	0								0			
Turn Type	Perm	NA						NA				
Protected Phases		2						8				
Permitted Phases	2											
Actuated Green, G (s)		27.0						21.0				
Effective Green, g (s)		28.5						22.5				
Actuated g/C Ratio		0.48						0.38				
Clearance Time (s)		6.0						6.0				
Lane Grp Cap (vph)		934						1123				
v/s Ratio Prot								c0.27				
v/s Ratio Perm		0.31										
v/c Ratio		0.64						0.72				
Uniform Delay, d1		11.9						16.0				
Progression Factor		0.95						0.76				
Incremental Delay, d2		3.0						3.8				
Delay (s)		14.3						16.0				
Level of Service		B						B				
Approach Delay (s)		14.3			0.0			16.0			0.0	
Approach LOS		B			A			B			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			15.3					HCM 2000 Level of Service			B	
HCM 2000 Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			60.0					Sum of lost time (s)			9.0	
Intersection Capacity Utilization			45.7%					ICU Level of Service			A	
Analysis Period (min)			15									
c Critical Lane Group												



Lane Group	EBT	NBT
Lane Group Flow (vph)	978	995
v/c Ratio	0.70	1.19dr
Control Delay	17.4	32.4
Queue Delay	0.0	0.0
Total Delay	17.4	32.4
Queue Length 50th (ft)	144	154
Queue Length 95th (ft)	206	#258
Internal Link Dist (ft)	674	621
Turn Bay Length (ft)		
Base Capacity (vph)	1402	1128
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.70	0.88

#### Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis  
7: 9th St #1/9th St & Race St/Race St #1

Build Conditions  
1/23/2014



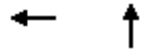
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕						↕↕				
Volume (vph)	51	869	0	0	0	0	0	298	637	0	0	0
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)		5.0						5.0				
Lane Util. Factor		0.95						0.95				
Frpb, ped/bikes		1.00						0.93				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.90				
Flt Protected		1.00						1.00				
Satd. Flow (prot)		3301						2762				
Flt Permitted		1.00						1.00				
Satd. Flow (perm)		3301						2762				
Peak-hour factor, PHF	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.92	0.92	0.92
Adj. Flow (vph)	54	924	0	0	0	0	0	317	678	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	978	0	0	0	0	0	995	0	0	0	0
Confl. Peds. (#/hr)	80		80	25		25	125		125	58		58
Heavy Vehicles (%)	0%	1%	2%	2%	2%	2%	2%	0%	2%	2%	2%	2%
Parking (#/hr)			0				0					
Turn Type	Perm	NA						NA				
Protected Phases		2						8				
Permitted Phases	2											
Actuated Green, G (s)		25.0						24.0				
Effective Green, g (s)		25.5						24.5				
Actuated g/C Ratio		0.42						0.41				
Clearance Time (s)		5.5						5.5				
Lane Grp Cap (vph)		1402						1127				
v/s Ratio Prot								c0.36				
v/s Ratio Perm		0.30										
v/c Ratio		0.70						1.19dr				
Uniform Delay, d1		14.1						16.4				
Progression Factor		1.00						1.36				
Incremental Delay, d2		2.9						8.7				
Delay (s)		17.0						31.1				
Level of Service		B						C				
Approach Delay (s)		17.0			0.0			31.1			0.0	
Approach LOS		B			A			C			A	

Intersection Summary

HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

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

c Critical Lane Group



Lane Group	WBT	NBT
Lane Group Flow (vph)	532	725
v/c Ratio	0.29	0.56
Control Delay	19.1	15.8
Queue Delay	0.0	0.0
Total Delay	19.1	15.8
Queue Length 50th (ft)	60	101
Queue Length 95th (ft)	86	148
Internal Link Dist (ft)	382	135
Turn Bay Length (ft)		
Base Capacity (vph)	1851	1285
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.29	0.56
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
8: 7th St & Walnut St

Build Conditions  
1/23/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑			↑↑					
Volume (vph)	0	0	0	0	392	113	107	581	0	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					0.91			0.95					
Frbp, ped/bikes					0.97			1.00					
Flpb, ped/bikes					1.00			0.97					
Frt					0.97			1.00					
Flt Protected					1.00			0.99					
Satd. Flow (prot)					4195			3150					
Flt Permitted					1.00			0.99					
Satd. Flow (perm)					4195			3150					
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.95	0.95	0.95	0.95	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	0	413	119	113	612	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	532	0	0	725	0	0	0	0	
Confl. Peds. (#/hr)	131		131	206		206	231		231	187		187	
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	7%	2%	2%	2%	2%	2%	
Bus Blockages (#/hr)	0	0	0	0	15	0	0	0	0	0	0	0	
Turn Type					NA		Perm	NA					
Protected Phases					6			8					
Permitted Phases							8						
Actuated Green, G (s)					25.0			23.0					
Effective Green, g (s)					26.5			24.5					
Actuated g/C Ratio					0.44			0.41					
Clearance Time (s)					6.0			6.0					
Lane Grp Cap (vph)					1852			1286					
v/s Ratio Prot					0.13								
v/s Ratio Perm								0.23					
v/c Ratio					0.29			0.56					
Uniform Delay, d1					10.7			13.6					
Progression Factor					1.73			1.00					
Incremental Delay, d2					0.4			1.8					
Delay (s)					18.8			15.4					
Level of Service					B			B					
Approach Delay (s)		0.0			18.8			15.4			0.0		
Approach LOS		A			B			B			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			16.9		HCM 2000 Level of Service				B				
HCM 2000 Volume to Capacity ratio			0.42										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				9.0				
Intersection Capacity Utilization			42.0%		ICU Level of Service				A				
Analysis Period (min)			15										
c Critical Lane Group													



Lane Group	EBT	EBR	SBT	SEL	SER
Lane Group Flow (vph)	630	540	849	257	243
v/c Ratio	0.93	1.14	0.90	0.29	0.31
Control Delay	59.1	121.8	47.2	14.1	14.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	59.1	121.8	47.2	14.1	14.4
Queue Length 50th (ft)	187	~205	185	81	81
Queue Length 95th (ft)	#292	#317	#254	131	134
Internal Link Dist (ft)	164		246	146	
Turn Bay Length (ft)					
Base Capacity (vph)	675	473	948	873	784
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.93	1.14	0.90	0.29	0.31

**Intersection Summary**

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



HCM Signalized Intersection Capacity Analysis  
9: 8th St #2 & Vine Street

Build Conditions  
1/23/2014



















Movement	EBT	EBR	SBL	SBT	SEL	SER
Lane Configurations	↑↑	↑↑		↑↑↑	↑↑	↑
Volume (vph)	586	502	155	634	150	310
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100
Total Lost time (s)	4.0	4.0		3.5	4.0	4.0
Lane Util. Factor	0.95	0.88		0.91	1.00	0.95
Frbp, ped/bikes	1.00	1.00		1.00	0.98	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.85		1.00	0.95	0.85
Flt Protected	1.00	1.00		0.99	0.97	1.00
Satd. Flow (prot)	3687	2584		5174	1729	1552
Flt Permitted	1.00	1.00		0.99	0.97	1.00
Satd. Flow (perm)	3687	2584		5174	1729	1552
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.92	0.92
Adj. Flow (vph)	630	540	167	682	163	337
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	630	540	0	849	257	243
Confl. Peds. (#/hr)		46			64	64
Heavy Vehicles (%)	1%	6%	0%	3%	2%	2%
Bus Blockages (#/hr)	0	33	0	0	0	0
Turn Type	NA	Prot	Split	NA	Prot	Prot
Protected Phases	2	2	4	4	1	1
Permitted Phases						
Actuated Green, G (s)	15.0	15.0		15.0	44.0	44.0
Effective Green, g (s)	16.5	16.5		16.5	45.5	45.5
Actuated g/C Ratio	0.18	0.18		0.18	0.51	0.51
Clearance Time (s)	5.5	5.5		5.0	5.5	5.5
Lane Grp Cap (vph)	675	473		948	874	784
v/s Ratio Prot	0.17	c0.21		c0.16	0.15	c0.16
v/s Ratio Perm						
v/c Ratio	0.93	1.14		0.90	0.29	0.31
Uniform Delay, d1	36.2	36.8		35.9	12.9	13.0
Progression Factor	1.00	1.00		0.95	1.00	1.00
Incremental Delay, d2	21.7	86.4		12.2	0.9	1.0
Delay (s)	57.9	123.1		46.5	13.8	14.1
Level of Service	E	F		D	B	B
Approach Delay (s)	88.0			46.5	13.9	
Approach LOS	F			D	B	

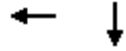
Intersection Summary

HCM 2000 Control Delay	59.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

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

Build Conditions  
1/23/2014

												
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)	0.86		1.00	1.00		0.65	1.00		0.64			
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	368	1138	0	0	501	219	50	922	61			
Arrive On Green	0.14	0.54	0.00	0.00	0.32	0.34	0.11	0.10	0.10			
Sat Flow, veh/h	1748	2800	0	0	2171	689	262	2838	226			
Grp Volume(v), veh/h	472	622	0	0	185	231	475	0	435			
Grp Sat Flow(s),veh/h/ln	1748	1050	0	0	1028	1147	1658	0	1667			
Q Serve(g_s), s	8.5	11.6	0.0	0.0	8.9	10.2	17.1	0.0	15.4			
Cycle Q Clear(g_c), s	8.5	11.6	0.0	0.0	8.9	10.2	17.1	0.0	15.4			
Prop In Lane	1.00		0.00	0.00		0.60	0.16		0.14			
Lane Grp Cap(c), veh/h	368	1138	0	0	334	377	513	0	521			
V/C Ratio(X)	1.28	0.55	0.00	0.00	0.55	0.61	0.93	0.00	0.83			
Avail Cap(c_a), veh/h	483	1138	0	0	334	373	511	0	514			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	14.6	9.1	0.0	0.0	16.9	16.9	26.6	0.0	25.8			
Incr Delay (d2), s/veh	147.1	1.9	0.0	0.0	6.5	7.3	25.1	0.0	14.6			
Initial Q Delay(d3),s/veh	22.5	0.1	0.0	0.0	0.6	0.5	9.3	0.0	4.0			
%ile BackOfQ(95%),veh/ln	40.9	6.7	0.0	0.0	5.9	7.4	18.7	0.0	15.2			
LnGrp Delay(d),s/veh	184.2	11.1	0.0	0.0	23.9	24.7	61.1	0.0	44.3			
LnGrp LOS	F	B			C	C	E		D			
Approach Vol, veh/h		1094			416			910				
Approach Delay, s/veh		85.7			24.4			53.1				
Approach LOS		F			C			D				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		37.0			13.0	24.0		23.0				
Change Period (Y+Rc), s		5.0			5.0	5.0		5.0				
Max Green Setting (Gmax), s		32.0			8.0	19.0		18.0				
Max Q Clear Time (g_c+I1), s		13.6			10.5	12.2		19.1				
Green Ext Time (p_c), s		6.3			0.0	3.4		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay					62.9							
HCM 2010 LOS					E							



Lane Group	WBT	SBT
Lane Group Flow (vph)	652	1026
v/c Ratio	0.51	0.56
Control Delay	14.6	7.8
Queue Delay	0.0	0.0
Total Delay	14.6	7.8
Queue Length 50th (ft)	114	44
Queue Length 95th (ft)	157	56
Internal Link Dist (ft)	322	632
Turn Bay Length (ft)		
Base Capacity (vph)	1286	1827
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.51	0.56
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 13: 6th St & Arch St

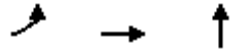
Build Conditions  
1/23/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑						↑↑↑	
Volume (vph)	0	0	0	139	441	0	0	0	0	0	745	168
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					0.95						0.91	
Frbp, ped/bikes					1.00						0.98	
Flpb, ped/bikes					0.98						1.00	
Frt					1.00						0.97	
Flt Protected					0.99						1.00	
Satd. Flow (prot)					3029						4301	
Flt Permitted					0.99						1.00	
Satd. Flow (perm)					3029						4301	
Peak-hour factor, PHF	0.92	0.92	0.92	0.89	0.89	0.92	0.92	0.92	0.92	0.92	0.89	0.89
Adj. Flow (vph)	0	0	0	156	496	0	0	0	0	0	837	189
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	652	0	0	0	0	0	1026	0
Confl. Peds. (#/hr)	96		96	108		108	176		176	177		177
Heavy Vehicles (%)	2%	2%	2%	9%	6%	2%	2%	2%	2%	2%	6%	7%
Bus Blockages (#/hr)	0	0	0	0	3	0	0	0	0	0	0	0
Parking (#/hr)						0				0		
Turn Type				Perm	NA						NA	
Protected Phases					6						4	
Permitted Phases				6								
Actuated Green, G (s)					24.0						24.0	
Effective Green, g (s)					25.5						25.5	
Actuated g/C Ratio					0.42						0.42	
Clearance Time (s)					6.0						6.0	
Lane Grp Cap (vph)					1287						1827	
v/s Ratio Prot											c0.24	
v/s Ratio Perm					0.22							
v/c Ratio					0.51						0.56	
Uniform Delay, d1					12.6						13.0	
Progression Factor					1.03						0.50	
Incremental Delay, d2					1.3						1.2	
Delay (s)					14.3						7.7	
Level of Service					B						A	
Approach Delay (s)		0.0			14.3			0.0			7.7	
Approach LOS		A			B			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			10.2								HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			60.0								Sum of lost time (s)	9.0
Intersection Capacity Utilization			46.7%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
14: 5th St & Chestnut St

Build Conditions  
1/23/2014



Lane Group	EBL	EBT	NBT
Lane Group Flow (vph)	182	336	678
v/c Ratio	0.35	0.47	0.50
Control Delay	13.5	14.0	25.5
Queue Delay	0.0	0.0	0.0
Total Delay	13.5	14.0	25.5
Queue Length 50th (ft)	29	54	143
Queue Length 95th (ft)	m61	113	193
Internal Link Dist (ft)		348	499
Turn Bay Length (ft)			
Base Capacity (vph)	513	714	1347
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.35	0.47	0.50

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 14: 5th St & Chestnut St

Build Conditions  
 1/23/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↖						↕	↗	↘	↕	↖
Volume (vph)	177	326	0	0	0	0	0	583	75	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						4.5				
Lane Util. Factor	1.00	1.00						0.95				
Frpb, ped/bikes	1.00	1.00						0.97				
Flpb, ped/bikes	0.74	1.00						1.00				
Frt	1.00	1.00						0.98				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1209	1680						3171				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1209	1680						3171				
Peak-hour factor, PHF	0.97	0.97	0.92	0.92	0.92	0.92	0.97	0.97	0.97	0.92	0.92	0.92
Adj. Flow (vph)	182	336	0	0	0	0	0	601	77	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	182	336	0	0	0	0	0	678	0	0	0	0
Confl. Peds. (#/hr)	364		364	389		389	196		196	414		414
Heavy Vehicles (%)	3%	5%	2%	2%	2%	2%	2%	1%	1%	2%	2%	2%
Turn Type	Perm	NA						NA				
Protected Phases		2						8				
Permitted Phases	2											
Actuated Green, G (s)	24.0	24.0						24.0				
Effective Green, g (s)	25.5	25.5						25.5				
Actuated g/C Ratio	0.42	0.42						0.42				
Clearance Time (s)	6.0	6.0						6.0				
Lane Grp Cap (vph)	513	714						1347				
v/s Ratio Prot		c0.20						c0.21				
v/s Ratio Perm	0.15											
v/c Ratio	0.35	0.47						0.50				
Uniform Delay, d1	11.7	12.4						12.6				
Progression Factor	0.97	0.94						1.88				
Incremental Delay, d2	1.6	1.8						1.2				
Delay (s)	12.9	13.5						24.9				
Level of Service	B	B						C				
Approach Delay (s)		13.3			0.0			24.9			0.0	
Approach LOS		B			A			C			A	

Intersection Summary

HCM 2000 Control Delay	19.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
 16: 8th St #2 & Site Driveway

Build Conditions  
 1/23/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations					↑↑	
Volume (veh/h)	0	0	0	0	714	338
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	776	367
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				376	190	
pX, platoon unblocked	0.72	0.72	0.72			
vC, conflicting volume	960	572	1143			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	152	0	409			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	590	777	821			
<b>Direction, Lane #</b>	<b>SB 1</b>	<b>SB 2</b>				
Volume Total	517	626				
Volume Left	0	0				
Volume Right	0	367				
cSH	1700	1700				
Volume to Capacity	0.30	0.37				
Queue Length 95th (ft)	0	0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0					
Approach LOS						
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			31.0%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
17: 9th St #1 & Site Driveway

Build Conditions  
1/23/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑↑	↑↑			
Volume (veh/h)	0	368	670	0	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	400	728	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)			364			181
pX, platoon unblocked	0.90	0.90			0.90	
vC, conflicting volume	728	364			728	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	490	87			490	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	54			100	
cM capacity (veh/h)	459	863			968	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2
Volume Total	200	200	364	364
Volume Left	0	0	0	0
Volume Right	200	200	0	0
cSH	863	863	1700	1700
Volume to Capacity	0.23	0.23	0.21	0.21
Queue Length 95th (ft)	22	22	0	0
Control Delay (s)	10.4	10.4	0.0	0.0
Lane LOS	B	B		
Approach Delay (s)	10.4		0.0	
Approach LOS	B			

Intersection Summary			
Average Delay		3.7	
Intersection Capacity Utilization		45.7%	ICU Level of Service A
Analysis Period (min)		15	



HCM Unsignalized Intersection Capacity Analysis  
 18: 8th St/8th St #2 & Parking Garage

Build Conditions  
 1/23/2014



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						 
Volume (veh/h)	123	0	0	0	113	601
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	134	0	0	0	123	653
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)			223			343
pX, platoon unblocked						
vC, conflicting volume	572	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	572	0			0	
tC, single (s)	*7.1	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	67	100			92	
cM capacity (veh/h)	399	1084			1622	

















Direction, Lane #	WB 1	SB 1	SB 2
Volume Total	134	341	436
Volume Left	134	123	0
Volume Right	0	0	0
cSH	399	1622	1700
Volume to Capacity	0.33	0.08	0.26
Queue Length 95th (ft)	36	6	0
Control Delay (s)	18.5	3.1	0.0
Lane LOS	C	A	
Approach Delay (s)	18.5	1.4	
Approach LOS	C		

Intersection Summary			
Average Delay		3.9	
Intersection Capacity Utilization		30.8%	ICU Level of Service A
Analysis Period (min)		15	

\* User Entered Value

HCM 2010 Signalized Intersection Summary  
21: 10th St & Market St

Build Conditions  
1/23/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	686	101	0	423	0	0	0	0	113	312	90
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	5	0	0	5	0				0	5	5
Ped-Bike Adj(A_pbT)	1.00		0.64	1.00		1.00				1.00		0.55
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	179.6	189.0	0.0	158.8	0.0				189.0	183.6	181.7
Adj Flow Rate, veh/h	0	715	105	0	441	0				118	325	94
Adj No. of Lanes	0	3	0	0	2	0				0	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96				0.96	0.96	0.96
Percent Heavy Veh, %	0	6	6	0	19	0				4	0	4
Cap, veh/h	0	1649	232	0	1001	0				285	865	274
Arrive On Green	0.00	0.52	0.52	0.00	1.00	0.00				0.32	0.32	0.32
Sat Flow, veh/h	0	3846	446	0	3176	0				898	2638	844
Grp Volume(v), veh/h	0	486	334	0	441	0				235	208	94
Grp Sat Flow(s),veh/h/ln	0	1078	1419	0	953	0				1791	1744	844
Q Serve(g_s), s	0.0	8.3	8.8	0.0	0.0	0.0				6.1	5.5	5.1
Cycle Q Clear(g_c), s	0.0	8.3	8.8	0.0	0.0	0.0				6.1	5.5	5.1
Prop In Lane	0.00		0.31	0.00		0.00				0.50		1.00
Lane Grp Cap(c), veh/h	0	1132	747	0	1001	0				583	567	274
V/C Ratio(X)	0.00	0.43	0.45	0.00	0.44	0.00				0.40	0.37	0.34
Avail Cap(c_a), veh/h	0	1132	745	0	1001	0				582	567	274
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	8.9	8.9	0.0	0.0	0.0				15.9	15.6	15.9
Incr Delay (d2), s/veh	0.0	1.2	1.9	0.0	1.4	0.0				2.1	1.8	3.4
Initial Q Delay(d3),s/veh	0.0	0.1	0.1	0.0	0.3	0.0				0.2	0.2	3.6
%ile BackOfQ(95%),veh/ln	0.0	5.0	7.0	0.0	0.4	0.0				6.4	5.6	3.5
LnGrp Delay(d),s/veh	0.0	10.2	10.9	0.0	1.7	0.0				18.2	17.7	22.9
LnGrp LOS		B	B		A					B	B	C
Approach Vol, veh/h		820			441						537	
Approach Delay, s/veh		10.5			1.7						18.8	
Approach LOS		B			A						B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		36.0		24.0		36.0						
Change Period (Y+Rc), s		6.0		6.0		6.0						
Max Green Setting (Gmax), s		30.0		18.0		30.0						
Max Q Clear Time (g_c+I1), s		10.8		8.1		2.0						
Green Ext Time (p_c), s		7.6		0.0		8.8						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			10.8									
HCM 2010 LOS			B									



Lane Group	EBT	SBT
Lane Group Flow (vph)	502	605
v/c Ratio	0.69	0.46
Control Delay	20.1	10.3
Queue Delay	0.0	0.0
Total Delay	20.1	10.3
Queue Length 50th (ft)	117	54
Queue Length 95th (ft)	199	70
Internal Link Dist (ft)	521	472
Turn Bay Length (ft)		
Base Capacity (vph)	728	1307
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.69	0.46
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
22: 10th St & Chestnut St

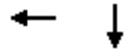
Build Conditions  
1/23/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑									↑↑		
Volume (vph)	0	366	121	0	0	0	0	0	0	112	475	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		0.92									1.00		
Flpb, ped/bikes		1.00									0.94		
Frt		0.96									1.00		
Flt Protected		1.00									0.99		
Satd. Flow (prot)		1714									3075		
Flt Permitted		1.00									0.99		
Satd. Flow (perm)		1714									3075		
Peak-hour factor, PHF	0.92	0.97	0.97	0.92	0.92	0.92	0.92	0.92	0.92	0.97	0.97	0.92	
Adj. Flow (vph)	0	377	125	0	0	0	0	0	0	115	490	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	502	0	0	0	0	0	0	0	0	605	0	
Confl. Peds. (#/hr)	663		663	462		462	432		432	445		445	
Heavy Vehicles (%)	2%	7%	4%	2%	2%	2%	2%	2%	2%	5%	1%	2%	
Bus Blockages (#/hr)	0	12	0	0	0	0	0	0	0	0	0	0	
Parking (#/hr)	0											0	
Turn Type		NA								Perm	NA		
Protected Phases		2									4		
Permitted Phases										4			
Actuated Green, G (s)		24.0									24.0		
Effective Green, g (s)		25.5									25.5		
Actuated g/C Ratio		0.42									0.42		
Clearance Time (s)		6.0									6.0		
Lane Grp Cap (vph)		728									1306		
v/s Ratio Prot		c0.29											
v/s Ratio Perm											0.20		
v/c Ratio		0.69									0.46		
Uniform Delay, d1		14.0									12.4		
Progression Factor		1.00									0.73		
Incremental Delay, d2		5.3									1.1		
Delay (s)		19.3									10.1		
Level of Service		B									B		
Approach Delay (s)		19.3			0.0			0.0			10.1		
Approach LOS		B			A			A			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			14.3		HCM 2000 Level of Service							B	
HCM 2000 Volume to Capacity ratio			0.58										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)						9.0		
Intersection Capacity Utilization			44.0%		ICU Level of Service						A		
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
24: 10th St & Walnut St

Build Conditions  
1/23/2014



Lane Group	WBT	SBT
Lane Group Flow (vph)	574	504
v/c Ratio	0.32	0.40
Control Delay	7.8	14.9
Queue Delay	0.0	0.0
Total Delay	7.8	14.9
Queue Length 50th (ft)	15	63
Queue Length 95th (ft)	21	87
Internal Link Dist (ft)	360	507
Turn Bay Length (ft)		
Base Capacity (vph)	1813	1260
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.32	0.40
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
24: 10th St & Walnut St

Build Conditions  
1/23/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑						↑↑	
Volume (vph)	0	0	0	96	455	0	0	0	0	0	389	95
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					0.91						0.95	
Frbp, ped/bikes					1.00						0.94	
Flpb, ped/bikes					0.96						1.00	
Frt					1.00						0.97	
Flt Protected					0.99						1.00	
Satd. Flow (prot)					4269						2965	
Flt Permitted					0.99						1.00	
Satd. Flow (perm)					4269						2965	
Peak-hour factor, PHF	0.92	0.92	0.92	0.96	0.96	0.92	0.92	0.92	0.92	0.92	0.96	0.96
Adj. Flow (vph)	0	0	0	100	474	0	0	0	0	0	405	99
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	574	0	0	0	0	0	504	0
Confl. Peds. (#/hr)	355		355	325		325	502		502	405		405
Heavy Vehicles (%)	2%	2%	2%	4%	6%	2%	2%	2%	2%	2%	4%	1%
Bus Blockages (#/hr)	0	0	0	0	12	0	0	0	0	0	0	0
Turn Type				Perm	NA						NA	
Protected Phases					6						4	
Permitted Phases				6								
Actuated Green, G (s)					24.0						24.0	
Effective Green, g (s)					25.5						25.5	
Actuated g/C Ratio					0.42						0.42	
Clearance Time (s)					6.0						6.0	
Lane Grp Cap (vph)					1814						1260	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.13							
v/c Ratio					0.32						0.40	
Uniform Delay, d1					11.5						12.0	
Progression Factor					0.64						1.16	
Incremental Delay, d2					0.4						0.8	
Delay (s)					7.7						14.6	
Level of Service					A						B	
Approach Delay (s)		0.0			7.7			0.0			14.6	
Approach LOS		A			A			A			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			11.0		HCM 2000 Level of Service						B	
HCM 2000 Volume to Capacity ratio			0.36									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				9.0			
Intersection Capacity Utilization			36.2%		ICU Level of Service				A			
Analysis Period (min)			15									
c Critical Lane Group												



Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	572	854	169
v/c Ratio	0.46	0.66	0.36
Control Delay	8.1	25.0	23.6
Queue Delay	0.0	0.0	0.0
Total Delay	8.1	25.0	23.6
Queue Length 50th (ft)	45	133	49
Queue Length 95th (ft)	m51	190	m85
Internal Link Dist (ft)	373	120	
Turn Bay Length (ft)			
Base Capacity (vph)	1255	1303	469
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.46	0.66	0.36

**Intersection Summary**

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

HCM Signalized Intersection Capacity Analysis  
25: 8th St #2 & Arch St

Build Conditions  
1/23/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕↕						↕↕	↗
Volume (vph)	0	0	0	147	391	0	0	0	0	0	803	159
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	0.80
Flpb, ped/bikes					0.97						1.00	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.99						1.00	1.00
Satd. Flow (prot)					2952						3192	1150
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					2952						3192	1150
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	156	416	0	0	0	0	0	854	169
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	572	0	0	0	0	0	854	169
Confl. Peds. (#/hr)	230		230	165		165	253		253	257		257
Heavy Vehicles (%)	2%	2%	2%	3%	9%	2%	2%	2%	2%	2%	5%	3%
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)					25.0						24.0	24.0
Effective Green, g (s)					25.5						24.5	24.5
Actuated g/C Ratio					0.42						0.41	0.41
Clearance Time (s)					5.5						5.5	5.5
Lane Grp Cap (vph)					1254						1303	469
v/s Ratio Prot											c0.27	
v/s Ratio Perm					0.19							0.15
v/c Ratio					0.46						0.66	0.36
Uniform Delay, d1					12.3						14.3	12.3
Progression Factor					0.56						1.56	1.69
Incremental Delay, d2					1.1						2.0	1.7
Delay (s)					8.0						24.4	22.5
Level of Service					A						C	C
Approach Delay (s)		0.0			8.0			0.0			24.1	
Approach LOS		A			A			A			C	

Intersection Summary

HCM 2000 Control Delay	18.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	49.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group





Lane Group	WBT	WBR	NBT
Lane Group Flow (vph)	411	219	1044
v/c Ratio	0.31	0.40	0.81
Control Delay	12.2	14.8	16.3
Queue Delay	0.0	0.0	0.0
Total Delay	12.2	14.8	16.3
Queue Length 50th (ft)	67	70	211
Queue Length 95th (ft)	106	127	m202
Internal Link Dist (ft)	389		653
Turn Bay Length (ft)			
Base Capacity (vph)	1318	541	1294
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.31	0.40	0.81

**Intersection Summary**

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

HCM Signalized Intersection Capacity Analysis  
26: 7th St & Arch St

Build Conditions  
1/23/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑	↑		↑↑					
Volume (vph)	0	0	0	0	386	206	148	834	0	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		5.0					
Lane Util. Factor					0.95	1.00		0.95					
Frbp, ped/bikes					1.00	0.89		1.00					
Flpb, ped/bikes					1.00	1.00		0.98					
Frt					1.00	0.85		1.00					
Flt Protected					1.00	1.00		0.99					
Satd. Flow (prot)					3103	1275		3169					
Flt Permitted					1.00	1.00		0.99					
Satd. Flow (perm)					3103	1275		3169					
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.94	0.94	0.94	0.94	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	0	411	219	157	887	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	411	219	0	1044	0	0	0	0	
Confl. Peds. (#/hr)	133		133	144		144	218		218	207		207	
Heavy Vehicles (%)	2%	2%	2%	2%	8%	2%	5%	2%	2%	2%	2%	2%	
Bus Blockages (#/hr)	0	0	0	0	0	6	0	0	0	0	0	0	
Parking (#/hr)							0		0				
Turn Type					NA	Perm	Perm	NA					
Protected Phases					6			8					
Permitted Phases						6	8						
Actuated Green, G (s)					25.0	25.0		24.0					
Effective Green, g (s)					25.5	25.5		24.5					
Actuated g/C Ratio					0.42	0.42		0.41					
Clearance Time (s)					5.5	5.5		5.5					
Lane Grp Cap (vph)					1318	541		1294					
v/s Ratio Prot					0.13								
v/s Ratio Perm						c0.17		0.33					
v/c Ratio					0.31	0.40		0.81					
Uniform Delay, d1					11.4	12.0		15.7					
Progression Factor					1.00	1.02		0.86					
Incremental Delay, d2					0.5	1.9		2.0					
Delay (s)					12.0	14.2		15.4					
Level of Service					B	B		B					
Approach Delay (s)		0.0			12.8			15.4			0.0		
Approach LOS		A			B			B			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			14.4		HCM 2000 Level of Service				B				
HCM 2000 Volume to Capacity ratio			0.60										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				10.0				
Intersection Capacity Utilization			55.6%		ICU Level of Service				B				
Analysis Period (min)			15										
c Critical Lane Group													



Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	645	281	804
v/c Ratio	0.51	0.52	0.60
Control Delay	17.4	24.9	24.3
Queue Delay	0.0	0.0	0.0
Total Delay	17.4	24.9	24.3
Queue Length 50th (ft)	80	91	140
Queue Length 95th (ft)	124	m100	m137
Internal Link Dist (ft)	344		682
Turn Bay Length (ft)			
Base Capacity (vph)	1277	540	1333
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.51	0.52	0.60

**Intersection Summary**

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

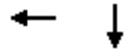
HCM Signalized Intersection Capacity Analysis  
28: 9th St #1 & Arch St

Build Conditions  
1/23/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑		↑	↑↑				
Volume (vph)	0	0	0	0	497	109	264	756	0	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	5.0				
Lane Util. Factor					0.95		1.00	0.95				
Frbp, ped/bikes					0.98		1.00	1.00				
Flpb, ped/bikes					1.00		0.82	1.00				
Frt					0.97		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					3006		1324	3266				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					3006		1324	3266				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.94	0.94	0.94	0.94	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	529	116	281	804	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	645	0	281	804	0	0	0	0
Confl. Peds. (#/hr)	244		244	138		138	243		243	366		366
Heavy Vehicles (%)	2%	2%	2%	2%	7%	0%	4%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	3	0	0	3	0	0	0	0
Parking (#/hr)				0		0						
Turn Type					NA		Perm	NA				
Protected Phases					6			8				
Permitted Phases							8					
Actuated Green, G (s)					25.0		24.0	24.0				
Effective Green, g (s)					25.5		24.5	24.5				
Actuated g/C Ratio					0.42		0.41	0.41				
Clearance Time (s)					5.5		5.5	5.5				
Lane Grp Cap (vph)					1277		540	1333				
v/s Ratio Prot					c0.21			c0.25				
v/s Ratio Perm							0.21					
v/c Ratio					0.51		0.52	0.60				
Uniform Delay, d1					12.6		13.3	13.9				
Progression Factor					1.25		1.64	1.63				
Incremental Delay, d2					1.3		1.9	1.1				
Delay (s)					17.1		23.7	23.8				
Level of Service					B		C	C				
Approach Delay (s)		0.0			17.1			23.8			0.0	
Approach LOS		A			B			C			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			21.3		HCM 2000 Level of Service				C			
HCM 2000 Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				10.0			
Intersection Capacity Utilization			47.9%		ICU Level of Service				A			
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	WBT	SBT
Lane Group Flow (vph)	828	511
v/c Ratio	0.65	0.43
Control Delay	13.0	14.2
Queue Delay	0.0	0.0
Total Delay	13.0	14.2
Queue Length 50th (ft)	87	66
Queue Length 95th (ft)	115	103
Internal Link Dist (ft)	371	412
Turn Bay Length (ft)		
Base Capacity (vph)	1274	1189
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.65	0.43
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
29: 10th St & Arch St

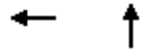
Build Conditions  
1/23/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑						↑↑	
Volume (vph)	0	0	0	161	584	0	0	0	0	0	353	107
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						0.93	
Flpb, ped/bikes					0.94						1.00	
Frt					1.00						0.97	
Flt Protected					0.99						1.00	
Satd. Flow (prot)					2999						2915	
Flt Permitted					0.99						1.00	
Satd. Flow (perm)					2999						2915	
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.92	0.92	0.92	0.92	0.92	0.90	0.90
Adj. Flow (vph)	0	0	0	179	649	0	0	0	0	0	392	119
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	828	0	0	0	0	0	511	0
Confl. Peds. (#/hr)	559		559	378		378	342		342	391		391
Heavy Vehicles (%)	2%	2%	2%	2%	4%	2%	2%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	3	0	0	0	0	0	3	0
Parking (#/hr)				0		0						0
Turn Type				Perm	NA						NA	
Protected Phases					6						4	
Permitted Phases				6								
Actuated Green, G (s)					25.0						24.0	
Effective Green, g (s)					25.5						24.5	
Actuated g/C Ratio					0.42						0.41	
Clearance Time (s)					5.5						5.5	
Lane Grp Cap (vph)					1274						1190	
v/s Ratio Prot											c0.18	
v/s Ratio Perm					0.28							
v/c Ratio					0.65						0.43	
Uniform Delay, d1					13.7						12.7	
Progression Factor					0.76						1.00	
Incremental Delay, d2					2.3						1.1	
Delay (s)					12.7						13.9	
Level of Service					B						B	
Approach Delay (s)		0.0			12.7			0.0			13.9	
Approach LOS		A			B			A			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			13.2								HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			60.0							10.0		
Intersection Capacity Utilization			48.0%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
33: 9th St & Walnut St

Build Conditions  
1/23/2014



Lane Group	WBT	NBT
Lane Group Flow (vph)	595	518
v/c Ratio	0.35	0.40
Control Delay	10.0	13.1
Queue Delay	0.0	0.0
Total Delay	10.0	13.1
Queue Length 50th (ft)	23	65
Queue Length 95th (ft)	32	99
Internal Link Dist (ft)	368	360
Turn Bay Length (ft)		
Base Capacity (vph)	1715	1300
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.35	0.40
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
33: 9th St & Walnut St

Build Conditions  
1/23/2014

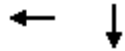


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑			↑↑					
Volume (vph)	0	0	0	0	435	118	94	388	0	0	0	0	
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	
Total Lost time (s)					4.5			4.5					
Lane Util. Factor					0.91			0.95					
Frbp, ped/bikes					0.97			1.00					
Flpb, ped/bikes					1.00			0.96					
Frt					0.97			1.00					
Flt Protected					1.00			0.99					
Satd. Flow (prot)					4036			3062					
Flt Permitted					1.00			0.99					
Satd. Flow (perm)					4036			3062					
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.93	0.93	0.93	0.93	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	0	468	127	101	417	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	595	0	0	518	0	0	0	0	
Confl. Peds. (#/hr)	202		202	198		198	309		309	396		396	
Heavy Vehicles (%)	2%	2%	2%	2%	7%	15%	3%	4%	2%	2%	2%	2%	
Bus Blockages (#/hr)	0	0	0	0	21	0	0	0	0	0	0	0	
Parking (#/hr)									0				
Turn Type					NA		Perm	NA					
Protected Phases					6			8					
Permitted Phases							8						
Actuated Green, G (s)					24.0			24.0					
Effective Green, g (s)					25.5			25.5					
Actuated g/C Ratio					0.42			0.42					
Clearance Time (s)					6.0			6.0					
Lane Grp Cap (vph)					1715			1301					
v/s Ratio Prot					0.15								
v/s Ratio Perm								0.17					
v/c Ratio					0.35			0.40					
Uniform Delay, d1					11.6			11.9					
Progression Factor					0.80			1.00					
Incremental Delay, d2					0.5			0.9					
Delay (s)					9.8			12.9					
Level of Service					A			B					
Approach Delay (s)		0.0			9.8			12.9			0.0		
Approach LOS		A			A			B			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			11.2		HCM 2000 Level of Service				B				
HCM 2000 Volume to Capacity ratio			0.37										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				9.0				
Intersection Capacity Utilization			37.1%		ICU Level of Service				A				
Analysis Period (min)			15										
c Critical Lane Group													



Queues  
34: Walnut St & 8th St

Build Conditions  
1/23/2014



Lane Group	WBT	SBT
Lane Group Flow (vph)	567	634
v/c Ratio	0.32	0.54
Control Delay	10.0	4.6
Queue Delay	0.0	0.0
Total Delay	10.0	4.6
Queue Length 50th (ft)	27	23
Queue Length 95th (ft)	56	m31
Internal Link Dist (ft)	353	489
Turn Bay Length (ft)		
Base Capacity (vph)	1762	1175
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.32	0.54

Intersection Summary

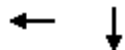
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
34: Walnut St & 8th St

Build Conditions  
1/23/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑						↑↑	
Volume (vph)	0	0	0	85	414	0	0	0	0	0	414	144
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					0.91						0.95	
Frbp, ped/bikes					1.00						0.92	
Flpb, ped/bikes					0.95						1.00	
Frt					1.00						0.96	
Flt Protected					0.99						1.00	
Satd. Flow (prot)					4146						2768	
Flt Permitted					0.99						1.00	
Satd. Flow (perm)					4146						2768	
Peak-hour factor, PHF	0.92	0.92	0.92	0.88	0.88	0.92	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	0	0	0	97	470	0	0	0	0	0	470	164
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	567	0	0	0	0	0	634	0
Confl. Peds. (#/hr)	46		46	430		430	200		200	555		555
Heavy Vehicles (%)	2%	2%	2%	1%	9%	2%	2%	2%	2%	2%	4%	6%
Bus Blockages (#/hr)	0	0	0	0	11	0	0	0	0	0	10	0
Parking (#/hr)				0						0		
Turn Type				Perm	NA						NA	
Protected Phases					6						4	
Permitted Phases				6								
Actuated Green, G (s)					24.0						24.0	
Effective Green, g (s)					25.5						25.5	
Actuated g/C Ratio					0.42						0.42	
Clearance Time (s)					6.0						6.0	
Lane Grp Cap (vph)					1762						1176	
v/s Ratio Prot											c0.23	
v/s Ratio Perm					0.14							
v/c Ratio					0.32						0.54	
Uniform Delay, d1					11.5						12.9	
Progression Factor					0.82						0.27	
Incremental Delay, d2					0.5						1.0	
Delay (s)					9.9						4.5	
Level of Service					A						A	
Approach Delay (s)		0.0			9.9			0.0			4.5	
Approach LOS		A			A			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			7.0		HCM 2000 Level of Service						A	
HCM 2000 Volume to Capacity ratio			0.43									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)						9.0	
Intersection Capacity Utilization			38.2%		ICU Level of Service						A	
Analysis Period (min)			15									
c Critical Lane Group												



Lane Group	WBT	SBT
Lane Group Flow (vph)	478	839
v/c Ratio	0.43	0.60
Control Delay	12.5	13.1
Queue Delay	0.0	0.0
Total Delay	12.5	13.1
Queue Length 50th (ft)	78	131
Queue Length 95th (ft)	120	220
Internal Link Dist (ft)	357	488
Turn Bay Length (ft)		
Base Capacity (vph)	1109	1387
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.43	0.60
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
 37: 6th Street/6th St & Walnut St

Build Conditions  
 1/23/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑						↑↑	
Volume (vph)	0	0	0	93	352	0	0	0	0	0	647	133
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					0.95						0.95	
Frbp, ped/bikes					1.00						0.96	
Flpb, ped/bikes					0.95						1.00	
Frt					1.00						0.97	
Flt Protected					0.99						1.00	
Satd. Flow (prot)					2958						2923	
Flt Permitted					0.99						1.00	
Satd. Flow (perm)					2958						2923	
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.93	0.93
Adj. Flow (vph)	0	0	0	100	378	0	0	0	0	0	696	143
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	478	0	0	0	0	0	839	0
Confl. Peds. (#/hr)	314		314	298		298	477		477	378		378
Heavy Vehicles (%)	2%	2%	2%	1%	8%	2%	2%	2%	2%	2%	1%	5%
Parking (#/hr)	0			0			0			0		0
Turn Type				Perm	NA						NA	
Protected Phases					6						4	
Permitted Phases				6								
Actuated Green, G (s)					21.0						27.0	
Effective Green, g (s)					22.5						28.5	
Actuated g/C Ratio					0.38						0.48	
Clearance Time (s)					6.0						6.0	
Lane Grp Cap (vph)					1109						1388	
v/s Ratio Prot											c0.29	
v/s Ratio Perm					0.16							
v/c Ratio					0.43						0.60	
Uniform Delay, d1					14.0						11.6	
Progression Factor					0.79						0.96	
Incremental Delay, d2					1.2						1.6	
Delay (s)					12.3						12.8	
Level of Service					B						B	
Approach Delay (s)		0.0			12.3			0.0			12.8	
Approach LOS		A			B			A			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			12.6		HCM 2000 Level of Service					B		
HCM 2000 Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				9.0			
Intersection Capacity Utilization			47.1%		ICU Level of Service				A			
Analysis Period (min)			15									
c Critical Lane Group												



Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	570	200	1386
v/c Ratio	0.45	0.35	1.01
Control Delay	13.7	15.0	36.7
Queue Delay	0.0	0.0	0.0
Total Delay	13.7	15.0	36.7
Queue Length 50th (ft)	73	50	~227
Queue Length 95th (ft)	111	m54	m#231
Internal Link Dist (ft)	526		282
Turn Bay Length (ft)		100	
Base Capacity (vph)	1260	577	1379
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.45	0.35	1.01

**Intersection Summary**

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

# HCM Signalized Intersection Capacity Analysis

## 40: 5th St & Arch St

Build Conditions













1/23/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑		↑	↑↑					
Volume (vph)	0	0	0	0	364	172	188	1303	0	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	4.5					
Lane Util. Factor					0.95		1.00	0.95					
Frbp, ped/bikes					0.96		1.00	1.00					
Flpb, ped/bikes					1.00		0.87	1.00					
Frt					0.95		1.00	1.00					
Flt Protected					1.00		0.95	1.00					
Satd. Flow (prot)					2967		1359	3247					
Flt Permitted					1.00		0.95	1.00					
Satd. Flow (perm)					2967		1359	3247					
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.94	0.94	0.94	0.94	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	0	387	183	200	1386	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	570	0	200	1386	0	0	0	0	
Confl. Peds. (#/hr)	259		259	182		182	187		187	191		191	
Heavy Vehicles (%)	2%	2%	2%	2%	3%	1%	7%	3%	2%	2%	2%	2%	
Bus Blockages (#/hr)	0	0	0	0	2	0	0	1	0	0	0	0	
Parking (#/hr)				0					0				
Turn Type					NA		Perm	NA					
Protected Phases					6			8					
Permitted Phases							8						
Actuated Green, G (s)					24.0		24.0	24.0					
Effective Green, g (s)					25.5		25.5	25.5					
Actuated g/C Ratio					0.42		0.42	0.42					
Clearance Time (s)					6.0		6.0	6.0					
Lane Grp Cap (vph)					1260		577	1379					
v/s Ratio Prot					c0.19			c0.43					
v/s Ratio Perm							0.15						
v/c Ratio					0.45		0.35	1.01					
Uniform Delay, d1					12.3		11.6	17.2					
Progression Factor					1.00		1.18	1.05					
Incremental Delay, d2					1.2		0.6	16.2					
Delay (s)					13.5		14.3	34.2					
Level of Service					B		B	C					
Approach Delay (s)		0.0			13.5			31.7			0.0		
Approach LOS		A			B			C			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			26.9		HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio			0.73										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				9.0				
Intersection Capacity Utilization			61.8%		ICU Level of Service				B				
Analysis Period (min)			15										
c Critical Lane Group													

HCM 2010 Signalized Intersection Summary  
41: 6th Street/6th St & Market St

Build Conditions  
1/23/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗	↖	↑↑						↖↑	↗
Volume (veh/h)	0	950	137	48	251	0	0	0	0	124	591	114
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	3	3	3	3	0				0	1	1
Ped-Bike Adj(A_pbT)	1.00		0.81	0.97		1.00				1.00		0.68
Parking Bus, Adj	1.00	1.00	0.98	1.00	1.00	1.00				0.90	1.00	0.90
Adj Sat Flow, veh/h/ln	0.0	181.7	189.0	178.3	176.6	0.0				189.0	188.3	162.9
Adj Flow Rate, veh/h	0	1000	144	51	264	0				131	622	120
Adj No. of Lanes	0	2	1	1	2	0				0	2	1
Peak Hour Factor	0.92	0.95	0.95	0.95	0.95	0.92				0.95	0.95	0.95
Percent Heavy Veh, %	0	4	0	6	7	0				16	0	16
Cap, veh/h	0	1467	323	171	901	0				242	1226	362
Arrive On Green	0.00	0.14	0.14	0.43	0.43	0.00				0.14	0.14	0.14
Sat Flow, veh/h	0	3544	761	413	2826	0				573	2883	851
Grp Volume(v), veh/h	0	1000	144	51	264	0				381	372	120
Grp Sat Flow(s),veh/h/ln	0	1726	761	413	1060	0				1666	1789	851
Q Serve(g_s), s	0.0	16.5	10.4	7.2	4.9	0.0				12.8	11.5	7.6
Cycle Q Clear(g_c), s	0.0	16.5	10.4	23.7	4.9	0.0				12.8	11.5	7.6
Prop In Lane	0.00		1.00	1.00		0.00				0.34		1.00
Lane Grp Cap(c), veh/h	0	1467	323	171	901	0				708	760	362
V/C Ratio(X)	0.00	0.68	0.45	0.30	0.29	0.00				0.54	0.49	0.33
Avail Cap(c_a), veh/h	0	1467	323	182	901	0				708	760	362
HCM Platoon Ratio	1.00	0.33	0.33	1.00	1.00	1.00				0.33	0.33	0.33
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	22.0	19.7	25.7	11.4	0.0				20.3	19.8	18.2
Incr Delay (d2), s/veh	0.0	2.6	4.4	4.4	0.8	0.0				2.9	2.2	2.5
Initial Q Delay(d3),s/veh	0.0	0.1	1.1	3.2	0.1	0.0				0.0	0.0	0.1
%ile BackOfQ(95%),veh/ln	0.0	13.3	5.1	2.4	3.0	0.0				10.7	10.3	3.8
LnGrp Delay(d),s/veh	0.0	24.7	25.3	33.2	12.4	0.0				23.3	22.1	20.8
LnGrp LOS		C	C	C	B					C	C	C
Approach Vol, veh/h		1144			315						873	
Approach Delay, s/veh		24.8			15.8						22.4	
Approach LOS		C			B						C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		30.0		30.0		30.0						
Change Period (Y+Rc), s		6.0		6.0		6.0						
Max Green Setting (Gmax), s		24.0		24.0		24.0						
Max Q Clear Time (g_c+I1), s		18.5		14.8		25.7						
Green Ext Time (p_c), s		3.9		0.0		0.0						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				22.7								
HCM 2010 LOS				C								



Lane Group	EBT	EBR	SBL	SBT
Lane Group Flow (vph)	448	135	123	815
v/c Ratio	0.65	0.51	0.28	0.58
Control Delay	17.3	18.1	13.7	13.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	17.3	18.1	13.7	13.9
Queue Length 50th (ft)	119	60	26	91
Queue Length 95th (ft)	m129	m63	m52	141
Internal Link Dist (ft)	389			512
Turn Bay Length (ft)			50	
Base Capacity (vph)	687	266	442	1396
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.65	0.51	0.28	0.58

**Intersection Summary**

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



HCM Signalized Intersection Capacity Analysis  
42: 6th St/6th Street & Chestnut St















Build Conditions  
1/23/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑	↗							↖	↑↑		
Volume (vph)	0	417	126	0	0	0	0	0	0	114	758	0	
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	
Total Lost time (s)		4.5	4.5							4.5	4.5		
Lane Util. Factor		1.00	*0.60							1.00	0.95		
Frpb, ped/bikes		1.00	0.73							1.00	1.00		
Flpb, ped/bikes		1.00	1.00							0.68	1.00		
Frt		1.00	0.85							1.00	1.00		
Flt Protected		1.00	1.00							0.95	1.00		
Satd. Flow (prot)		1618	628							1040	3286		
Flt Permitted		1.00	1.00							0.95	1.00		
Satd. Flow (perm)		1618	628							1040	3286		
Peak-hour factor, PHF	0.92	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.92	
Adj. Flow (vph)	0	448	135	0	0	0	0	0	0	123	815	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	448	135	0	0	0	0	0	0	123	815	0	
Confl. Peds. (#/hr)	369		369	476		476	192		192	548		548	
Heavy Vehicles (%)	2%	9%	0%	2%	2%	2%	2%	2%	2%	10%	2%	2%	
Bus Blockages (#/hr)	0	0	12	0	0	0	0	0	0	0	0	0	
Turn Type		NA	Perm							Perm	NA		
Protected Phases		2									4		
Permitted Phases			2							4			
Actuated Green, G (s)		24.0	24.0							24.0	24.0		
Effective Green, g (s)		25.5	25.5							25.5	25.5		
Actuated g/C Ratio		0.42	0.42							0.42	0.42		
Clearance Time (s)		6.0	6.0							6.0	6.0		
Lane Grp Cap (vph)		687	266							442	1396		
v/s Ratio Prot		c0.28									c0.25		
v/s Ratio Perm			0.22							0.12			
v/c Ratio		0.65	0.51							0.28	0.58		
Uniform Delay, d1		13.7	12.6							11.2	13.2		
Progression Factor		1.08	1.11							1.04	0.91		
Incremental Delay, d2		1.6	2.3							1.4	1.6		
Delay (s)		16.5	16.4							13.1	13.6		
Level of Service		B	B							B	B		
Approach Delay (s)		16.5			0.0			0.0			13.6		
Approach LOS		B			A			A			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			14.7									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.62										
Actuated Cycle Length (s)			60.0									Sum of lost time (s)	9.0
Intersection Capacity Utilization			50.6%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

HCM 2010 Signalized Intersection Summary  
43: 5th St & Walnut St

Build Conditions  
1/23/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	0	313	79	86	601	0	0	0	0
Number				1	6	16	3	8	18			
Initial Q (Qb), veh				0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)				1.00		0.84	1.00		1.00			
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln				0.0	178.3	189.0	189.0	183.3	0.0			
Adj Flow Rate, veh/h				0	329	83	91	633	0			
Adj No. of Lanes				0	2	0	0	2	0			
Peak Hour Factor				0.92	0.95	0.95	0.95	0.95	0.92			
Percent Heavy Veh, %				0	6	6	2	2	0			
Cap, veh/h				0	1100	269	208	1258	0			
Arrive On Green				0.00	0.43	0.43	0.43	0.43	0.00			
Sat Flow, veh/h				0	2677	632	314	3042	0			
Grp Volume(v), veh/h				0	212	200	379	345	0			
Grp Sat Flow(s),veh/h/ln				0	1694	1526	1689	1584	0			
Q Serve(g_s), s				0.0	4.9	5.2	4.2	9.6	0.0			
Cycle Q Clear(g_c), s				0.0	4.9	5.2	9.5	9.6	0.0			
Prop In Lane				0.00		0.41	0.24		0.00			
Lane Grp Cap(c), veh/h				0	720	648	792	673	0			
V/C Ratio(X)				0.00	0.29	0.31	0.48	0.51	0.00			
Avail Cap(c_a), veh/h				0	720	648	792	673	0			
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)				0.00	1.00	1.00	1.00	1.00	0.00			
Uniform Delay (d), s/veh				0.0	11.3	11.4	12.6	12.7	0.0			
Incr Delay (d2), s/veh				0.0	1.0	1.2	2.1	2.8	0.0			
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln				0.0	4.5	4.3	8.6	8.2	0.0			
LnGrp Delay(d),s/veh				0.0	12.4	12.7	14.6	15.5	0.0			
LnGrp LOS					B	B	B	B				
Approach Vol, veh/h					412			724				
Approach Delay, s/veh					12.5			15.0				
Approach LOS					B			B				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs						6		8				
Phs Duration (G+Y+Rc), s						30.0		30.0				
Change Period (Y+Rc), s						6.0		6.0				
Max Green Setting (Gmax), s						24.0		24.0				
Max Q Clear Time (g_c+I1), s						7.2		11.6				
Green Ext Time (p_c), s						2.0		3.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				14.1								
HCM 2010 LOS				B								



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	1500	366	1134
v/c Ratio	0.75	0.69	0.63
Control Delay	12.5	22.7	15.5
Queue Delay	0.0	0.0	0.0
Total Delay	12.5	22.7	15.5
Queue Length 50th (ft)	110	119	118
Queue Length 95th (ft)	m175	#239	162
Internal Link Dist (ft)	378		453
Turn Bay Length (ft)			
Base Capacity (vph)	1998	530	1804
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.75	0.69	0.63

**Intersection Summary**

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis  
46: 8th St #2 & Race St #1
















Build Conditions  
1/23/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑								↘	↑↑↑		
Volume (vph)	0	1359	81	0	0	0	0	0	0	566	874	0	
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	
Total Lost time (s)		4.5								4.5	4.5		
Lane Util. Factor		0.91								0.86	0.86		
Frb, ped/bikes		0.99								1.00	1.00		
Flpb, ped/bikes		1.00								0.91	0.98		
Frt		0.99								1.00	1.00		
Flt Protected		1.00								0.95	0.99		
Satd. Flow (prot)		4700								1248	4246		
Flt Permitted		1.00								0.95	0.99		
Satd. Flow (perm)		4700								1248	4246		
Peak-hour factor, PHF	0.96	0.96	0.96	0.92	0.92	0.92	0.92	0.92	0.92	0.96	0.96	0.92	
Adj. Flow (vph)	0	1416	84	0	0	0	0	0	0	590	910	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	1500	0	0	0	0	0	0	0	366	1134	0	
Confl. Peds. (#/hr)	134		134	17		17	112		112	129		129	
Heavy Vehicles (%)	2%	1%	1%	2%	2%	2%	2%	2%	2%	5%	3%	2%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	6	0	
Parking (#/hr)			0										
Turn Type		NA								Perm	NA		
Protected Phases		2									4		
Permitted Phases										4			
Actuated Green, G (s)		24.0								24.0	24.0		
Effective Green, g (s)		25.5								25.5	25.5		
Actuated g/C Ratio		0.42								0.42	0.42		
Clearance Time (s)		6.0								6.0	6.0		
Lane Grp Cap (vph)		1997								530	1804		
v/s Ratio Prot		c0.32											
v/s Ratio Perm										c0.29	0.27		
v/c Ratio		0.75								0.69	0.63		
Uniform Delay, d1		14.6								14.0	13.5		
Progression Factor		0.73								1.00	1.00		
Incremental Delay, d2		1.6								7.2	1.7		
Delay (s)		12.3								21.2	15.2		
Level of Service		B								C	B		
Approach Delay (s)		12.3			0.0			0.0			16.7		
Approach LOS		B			A			A			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			14.5									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.72										
Actuated Cycle Length (s)			60.0									Sum of lost time (s)	9.0
Intersection Capacity Utilization			56.5%									ICU Level of Service	B
Analysis Period (min)			15										
c Critical Lane Group													

HCM 2010 Signalized Intersection Summary  
48: 7th St & Race St

Build Conditions  
1/23/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	21	1489	0	0	0	0	0	859	383	0	0	0
Number	5	2	12				3	8	18			
Initial Q (Qb), veh	0	1	0				0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.92			
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	189.0	181.8	0.0				0.0	185.3	185.3			
Adj Flow Rate, veh/h	23	1551	0				0	895	399			
Adj No. of Lanes	0	5	0				0	2	1			
Peak Hour Factor	0.92	0.96	0.92				0.92	0.96	0.96			
Percent Heavy Veh, %	4	4	0				0	2	2			
Cap, veh/h	84	3020	0				0	1496	616			
Arrive On Green	0.43	0.43	0.00				0.00	0.14	0.14			
Sat Flow, veh/h	49	7421	0				0	3613	1450			
Grp Volume(v), veh/h	397	1177	0				0	895	399			
Grp Sat Flow(s),veh/h/ln	1796	1340	0				0	1760	1450			
Q Serve(g_s), s	0.0	9.7	0.0				0.0	14.3	15.6			
Cycle Q Clear(g_c), s	9.6	9.7	0.0				0.0	14.3	15.6			
Prop In Lane	0.06		0.00				0.00		1.00			
Lane Grp Cap(c), veh/h	827	2278	0				0	1496	616			
V/C Ratio(X)	0.48	0.52	0.00				0.00	0.60	0.65			
Avail Cap(c_a), veh/h	827	2278	0				0	1496	616			
HCM Platoon Ratio	1.00	1.00	1.00				1.00	0.33	0.33			
Upstream Filter(I)	1.00	1.00	0.00				0.00	1.00	1.00			
Uniform Delay (d), s/veh	12.7	12.7	0.0				0.0	21.0	21.5			
Incr Delay (d2), s/veh	2.0	0.8	0.0				0.0	1.8	5.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	9.0	6.6	0.0				0.0	11.8	11.6			
LnGrp Delay(d),s/veh	14.7	13.6	0.0				0.0	22.8	26.7			
LnGrp LOS	B	B						C	C			
Approach Vol, veh/h		1574						1294				
Approach Delay, s/veh		13.9						24.0				
Approach LOS		B						C				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2						8				
Phs Duration (G+Y+Rc), s		30.0						30.0				
Change Period (Y+Rc), s		6.0						6.0				
Max Green Setting (Gmax), s		24.0						24.0				
Max Q Clear Time (g_c+I1), s		11.7						17.6				
Green Ext Time (p_c), s		7.3						3.9				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			18.4									
HCM 2010 LOS			B									



Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	1842	185	919
v/c Ratio	0.74	0.32	0.51
Control Delay	9.6	6.9	13.9
Queue Delay	0.0	0.0	0.0
Total Delay	9.6	6.9	13.9
Queue Length 50th (ft)	144	17	85
Queue Length 95th (ft)	174	m28	117
Internal Link Dist (ft)	400		133
Turn Bay Length (ft)			
Base Capacity (vph)	2503	570	1808
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.74	0.32	0.51

**Intersection Summary**

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

# HCM Signalized Intersection Capacity Analysis

## 49: 6th St & Race St

Build Conditions  
1/23/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		↑↑↑	↗								↖↑↑			
Volume (vph)	0	1768	178	0	0	0	0	0	0	169	713	0		
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100		
Total Lost time (s)		4.5	4.5								4.5			
Lane Util. Factor		0.86	1.00								0.91			
Frbp, ped/bikes		1.00	0.91								1.00			
Flpb, ped/bikes		1.00	1.00								1.00			
Frt		1.00	0.85								1.00			
Flt Protected		1.00	1.00								0.99			
Satd. Flow (prot)		5891	1342								4253			
Flt Permitted		1.00	1.00								0.99			
Satd. Flow (perm)		5891	1342								4253			
Peak-hour factor, PHF	0.96	0.96	0.96	0.92	0.92	0.92	0.92	0.92	0.92	0.96	0.96	0.92		
Adj. Flow (vph)	0	1842	185	0	0	0	0	0	0	176	743	0		
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0		
Lane Group Flow (vph)	0	1842	185	0	0	0	0	0	0	0	919	0		
Confl. Peds. (#/hr)	109		109	3		3	88		88	26		26		
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	2%	8%	2%		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	33	0		
Turn Type		NA	Perm							Perm	NA			
Protected Phases		2									4			
Permitted Phases			2							4				
Actuated Green, G (s)		24.0	24.0								24.0			
Effective Green, g (s)		25.5	25.5								25.5			
Actuated g/C Ratio		0.42	0.42								0.42			
Clearance Time (s)		6.0	6.0								6.0			
Lane Grp Cap (vph)		2503	570								1807			
v/s Ratio Prot		c0.31												
v/s Ratio Perm			0.14								0.22			
v/c Ratio		0.74	0.32								0.51			
Uniform Delay, d1		14.4	11.5								12.7			
Progression Factor		0.54	0.46								1.00			
Incremental Delay, d2		1.7	1.3								1.0			
Delay (s)		9.4	6.6								13.7			
Level of Service		A	A								B			
Approach Delay (s)		9.2			0.0			0.0			13.7			
Approach LOS		A			A			A			B			
<b>Intersection Summary</b>														
HCM 2000 Control Delay			10.6									HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio			0.62											
Actuated Cycle Length (s)			60.0								9.0		Sum of lost time (s)	
Intersection Capacity Utilization			50.6%										ICU Level of Service	A
Analysis Period (min)			15											
c Critical Lane Group														



Lane Group	EBT	NBT
Lane Group Flow (vph)	1095	518
v/c Ratio	0.67	0.48
Control Delay	10.4	23.3
Queue Delay	0.2	0.0
Total Delay	10.6	23.3
Queue Length 50th (ft)	127	116
Queue Length 95th (ft)	169	163
Internal Link Dist (ft)	370	275
Turn Bay Length (ft)		
Base Capacity (vph)	1626	1073
Starvation Cap Reductn	94	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.71	0.48
<b>Intersection Summary</b>		



HCM Signalized Intersection Capacity Analysis  
50: 3rd St & Race St

Build Conditions  
1/23/2014




















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕						↕↕				
Volume (vph)	117	901	0	0	0	0	0	301	180	0	0	0
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)		5.8						4.9				
Lane Util. Factor		0.95						0.95				
Frpb, ped/bikes		1.00						0.96				
Flpb, ped/bikes		0.99						1.00				
Frt		1.00						0.94				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		3219						2858				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		3219						2858				
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)	126	969	0	0	0	0	0	324	194	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1095	0	0	0	0	0	518	0	0	0	0
Confl. Peds. (#/hr)	89		89	115			115	121		121	33	
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	7%	5%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	6	0	0	0
Parking (#/hr)	0								0			
Turn Type	Perm	NA						NA				
Protected Phases		2						8				
Permitted Phases	2											
Actuated Green, G (s)		45.0						33.3				
Effective Green, g (s)		45.5						33.8				
Actuated g/C Ratio		0.51						0.38				
Clearance Time (s)		6.3						5.4				
Lane Grp Cap (vph)		1627						1073				
v/s Ratio Prot								c0.18				
v/s Ratio Perm		0.34										
v/c Ratio		0.67						0.48				
Uniform Delay, d1		16.7						21.4				
Progression Factor		0.51						1.00				
Incremental Delay, d2		1.8						1.6				
Delay (s)		10.2						23.0				
Level of Service		B						C				
Approach Delay (s)		10.2			0.0			23.0			0.0	
Approach LOS		B			A			C			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			14.3					HCM 2000 Level of Service			B	
HCM 2000 Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			90.0					Sum of lost time (s)		10.7		
Intersection Capacity Utilization			57.3%					ICU Level of Service		B		
Analysis Period (min)			15									

c Critical Lane Group

HCM 2010 Signalized Intersection Summary  
52: 5th St & Race St

Build Conditions  
1/23/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 						 				
Volume (veh/h)	17	708	0	0	0	0	0	863	67	0	0	0
Number	5	2	12				3	8	18			
Initial Q (Qb), veh	0	0	0				0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.94			
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	0.90			
Adj Sat Flow, veh/h/ln	189.0	187.2	0.0				0.0	185.3	162.9			
Adj Flow Rate, veh/h	18	753	0				0	918	71			
Adj No. of Lanes	0	2	0				0	2	1			
Peak Hour Factor	0.94	0.94	0.92				0.92	0.94	0.94			
Percent Heavy Veh, %	1	1	0				0	2	16			
Cap, veh/h	77	1462	0				0	1496	499			
Arrive On Green	0.43	0.43	0.00				0.00	0.43	0.43			
Sat Flow, veh/h	34	3525	0				0	3613	1175			
Grp Volume(v), veh/h	413	358	0				0	918	71			
Grp Sat Flow(s),veh/h/ln	1856	1618	0				0	1760	1175			
Q Serve(g_s), s	0.0	9.8	0.0				0.0	12.2	2.2			
Cycle Q Clear(g_c), s	9.8	9.8	0.0				0.0	12.2	2.2			
Prop In Lane	0.04		0.00				0.00		1.00			
Lane Grp Cap(c), veh/h	851	688	0				0	1496	499			
V/C Ratio(X)	0.48	0.52	0.00				0.00	0.61	0.14			
Avail Cap(c_a), veh/h	851	688	0				0	1496	499			
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00				0.00	1.00	1.00			
Uniform Delay (d), s/veh	12.7	12.7	0.0				0.0	13.4	10.6			
Incr Delay (d2), s/veh	2.0	2.8	0.0				0.0	1.9	0.6			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	9.2	8.6	0.0				0.0	10.4	1.4			
LnGrp Delay(d),s/veh	14.7	15.6	0.0				0.0	15.3	11.2			
LnGrp LOS	B	B						B	B			
Approach Vol, veh/h		771						989				
Approach Delay, s/veh		15.1						15.0				
Approach LOS		B						B				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2						8				
Phs Duration (G+Y+Rc), s		30.0						30.0				
Change Period (Y+Rc), s		6.0						6.0				
Max Green Setting (Gmax), s		24.0						24.0				
Max Q Clear Time (g_c+I1), s		11.8						14.2				
Green Ext Time (p_c), s		3.4						4.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			15.0									
HCM 2010 LOS			B									



Lane Group	EBT	SBT
Lane Group Flow (vph)	1048	739
v/c Ratio	0.64	0.62
Control Delay	17.9	25.7
Queue Delay	0.5	0.0
Total Delay	18.4	25.7
Queue Length 50th (ft)	213	176
Queue Length 95th (ft)	281	237
Internal Link Dist (ft)	410	408
Turn Bay Length (ft)		
Base Capacity (vph)	1647	1191
Starvation Cap Reductn	237	0
Spillback Cap Reductn	46	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.74	0.62
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 59: 4th St & Race St

Build Conditions  
1/23/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑									↑↑		
Volume (vph)	0	833	141	0	0	0	0	0	0	161	526	0	
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	
Total Lost time (s)		4.8									4.9		
Lane Util. Factor		0.95									0.95		
Frpb, ped/bikes		0.99									1.00		
Flpb, ped/bikes		1.00									0.99		
Frt		0.98									1.00		
Flt Protected		1.00									0.99		
Satd. Flow (prot)		3190									3173		
Flt Permitted		1.00									0.99		
Satd. Flow (perm)		3190									3173		
Peak-hour factor, PHF	0.92	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.92	
Adj. Flow (vph)	0	896	152	0	0	0	0	0	0	173	566	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	1048	0	0	0	0	0	0	0	0	739	0	
Confl. Peds. (#/hr)	55		55	37		37	41		41	37		37	
Heavy Vehicles (%)	2%	2%	3%	2%	2%	2%	2%	2%	2%	0%	4%	2%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	3	0	
Parking (#/hr)												0	
Turn Type		NA								Perm	NA		
Protected Phases		2									4		
Permitted Phases										4			
Actuated Green, G (s)		45.0									33.3		
Effective Green, g (s)		46.5									33.8		
Actuated g/C Ratio		0.52									0.38		
Clearance Time (s)		6.3									5.4		
Lane Grp Cap (vph)		1648									1191		
v/s Ratio Prot		c0.33											
v/s Ratio Perm											0.23		
v/c Ratio		0.64									0.62		
Uniform Delay, d1		15.7									22.9		
Progression Factor		1.00									1.00		
Incremental Delay, d2		1.9									2.4		
Delay (s)		17.5									25.3		
Level of Service		B									C		
Approach Delay (s)		17.5			0.0			0.0			25.3		
Approach LOS		B			A			A			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			20.8									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.63										
Actuated Cycle Length (s)			90.0									Sum of lost time (s)	9.7
Intersection Capacity Utilization			59.0%									ICU Level of Service	B
Analysis Period (min)			15										
c Critical Lane Group													



Lane Group	EBT	SBT
Lane Group Flow (vph)	1195	764
v/c Ratio	0.76	0.69
Control Delay	15.8	20.9
Queue Delay	0.0	0.0
Total Delay	15.8	20.9
Queue Length 50th (ft)	167	122
Queue Length 95th (ft)	231	172
Internal Link Dist (ft)	462	479
Turn Bay Length (ft)		
Base Capacity (vph)	1573	1107
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.76	0.69
<b>Intersection Summary</b>		

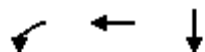
HCM Signalized Intersection Capacity Analysis  
63: Race St & 2nd Street

Build Conditions  
1/23/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		↑↑									↑↑			
Volume (vph)	0	829	223	0	0	0	0	0	0	110	562	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		0.95									0.95			
Frpb, ped/bikes		0.99									1.00			
Flpb, ped/bikes		1.00									1.00			
Frt		0.97									1.00			
Flt Protected		1.00									0.99			
Satd. Flow (prot)		3097									3241			
Flt Permitted		1.00									0.99			
Satd. Flow (perm)		3097									3241			
Peak-hour factor, PHF	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.88	0.88	0.88		
Adj. Flow (vph)	0	942	253	0	0	0	0	0	0	125	639	0		
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0		
Lane Group Flow (vph)	0	1195	0	0	0	0	0	0	0	0	764	0		
Confl. Peds. (#/hr)	69		69	50		50	86		86	9		9		
Heavy Vehicles (%)	2%	3%	6%	2%	2%	2%	2%	2%	2%	1%	2%	2%		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	3	0		
Parking (#/hr)			0									0		
Turn Type		NA								Perm	NA			
Protected Phases		2									4			
Permitted Phases										4				
Actuated Green, G (s)		30.0									20.0			
Effective Green, g (s)		30.5									20.5			
Actuated g/C Ratio		0.51									0.34			
Clearance Time (s)		5.0									5.0			
Lane Grp Cap (vph)		1574									1107			
v/s Ratio Prot		c0.39												
v/s Ratio Perm											0.24			
v/c Ratio		0.76									0.69			
Uniform Delay, d1		11.8									17.0			
Progression Factor		1.00									1.00			
Incremental Delay, d2		3.5									3.5			
Delay (s)		15.3									20.5			
Level of Service		B									C			
Approach Delay (s)		15.3			0.0			0.0			20.5			
Approach LOS		B			A			A			C			
<b>Intersection Summary</b>														
HCM 2000 Control Delay			17.3									HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio			0.73											
Actuated Cycle Length (s)			60.0								9.0		Sum of lost time (s)	
Intersection Capacity Utilization			60.9%										ICU Level of Service	B
Analysis Period (min)			15											

c Critical Lane Group



Lane Group	WBL	WBT	SBT
Lane Group Flow (vph)	349	2414	775
v/c Ratio	0.17	0.64	0.52
Control Delay	10.8	19.2	27.4
Queue Delay	0.0	15.5	0.6
Total Delay	10.8	34.7	27.9
Queue Length 50th (ft)	73	354	132
Queue Length 95th (ft)	95	397	171
Internal Link Dist (ft)		254	248
Turn Bay Length (ft)			
Base Capacity (vph)	2038	3782	1485
Starvation Cap Reductn	0	1416	334
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.17	1.02	0.67
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
70: 8th Street/8th St & Vine St

Build Conditions  
1/23/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations				↔	↑↑↑						↑↑↑			
Volume (vph)	0	0	0	335	2317	0	0	0	0	0	485	259		
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100		
Total Lost time (s)				5.0	5.0						6.0			
Lane Util. Factor				0.97	0.86						0.91			
Frbp, ped/bikes				1.00	1.00						0.99			
Flpb, ped/bikes				0.99	1.00						1.00			
Frt				1.00	1.00						0.95			
Flt Protected				0.95	1.00						1.00			
Satd. Flow (prot)				3563	6610						4859			
Flt Permitted				0.95	1.00						1.00			
Satd. Flow (perm)				3563	6610						4859			
Peak-hour factor, PHF	0.92	0.92	0.92	0.96	0.96	0.92	0.92	0.92	0.92	0.92	0.96	0.96		
Adj. Flow (vph)	0	0	0	349	2414	0	0	0	0	0	505	270		
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0		
Lane Group Flow (vph)	0	0	0	349	2414	0	0	0	0	0	775	0		
Confl. Peds. (#/hr)	59		59	26		26				4		4		
Heavy Vehicles (%)	2%	2%	2%	0%	2%	2%	2%	2%	2%	2%	4%	1%		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	6	0		
Turn Type				Perm	NA						NA			
Protected Phases					6						4			
Permitted Phases				6										
Actuated Green, G (s)				51.0	51.0						27.0			
Effective Green, g (s)				51.5	51.5						27.5			
Actuated g/C Ratio				0.57	0.57						0.31			
Clearance Time (s)				5.5	5.5						6.5			
Lane Grp Cap (vph)				2038	3782						1484			
v/s Ratio Prot					c0.37						c0.16			
v/s Ratio Perm				0.10										
v/c Ratio				0.17	0.64						0.52			
Uniform Delay, d1				9.1	13.0						25.8			
Progression Factor				1.16	1.41						1.00			
Incremental Delay, d2				0.1	0.6						1.3			
Delay (s)				10.7	19.0						27.1			
Level of Service				B	B						C			
Approach Delay (s)		0.0			17.9			0.0			27.1			
Approach LOS		A			B			A			C			
<b>Intersection Summary</b>														
HCM 2000 Control Delay			19.9									HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio			0.60											
Actuated Cycle Length (s)			90.0								11.0		Sum of lost time (s)	
Intersection Capacity Utilization			60.6%										ICU Level of Service	B
Analysis Period (min)			15											
c Critical Lane Group														



Queues

71: 7th St & Vine St/Route 30

Build Conditions

1/23/2014



Lane Group	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	2171	3	621	1572
v/c Ratio	0.71	0.00	0.39	0.69
Control Delay	21.1	0.0	16.9	22.3
Queue Delay	5.7	0.0	2.5	48.6
Total Delay	26.8	0.0	19.4	70.9
Queue Length 50th (ft)	277	0	111	255
Queue Length 95th (ft)	321	0	153	308
Internal Link Dist (ft)	594			178
Turn Bay Length (ft)		500		
Base Capacity (vph)	3047	777	1602	2280
Starvation Cap Reductn	0	0	826	973
Spillback Cap Reductn	820	0	10	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.97	0.00	0.80	1.20

Intersection Summary

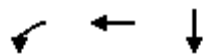
HCM Signalized Intersection Capacity Analysis  
71: 7th St & Vine St/Route 30

Build Conditions  
1/23/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑↑	↗	↘↘	↑↑↑↑					
Volume (vph)	0	0	0	0	2062	3	590	1493	0	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	4.5	4.5					
Lane Util. Factor					0.86	1.00	0.97	0.91					
Frbp, ped/bikes					1.00	0.99	1.00	1.00					
Flpb, ped/bikes					1.00	1.00	1.00	1.00					
Frt					1.00	0.85	1.00	1.00					
Flt Protected					1.00	1.00	0.95	1.00					
Satd. Flow (prot)					6610	1644	3605	5195					
Flt Permitted					1.00	1.00	0.95	1.00					
Satd. Flow (perm)					6610	1644	3605	5195					
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.95	0.95	0.95	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	0	2171	3	621	1572	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	2	20	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	2171	1	601	1572	0	0	0	0	
Confl. Peds. (#/hr)	33		33	2		2	3		3	2		2	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	0%	0%	3%	2%	2%	2%	2%	
Turn Type					NA	Perm	Perm	NA					
Protected Phases					6			8					
Permitted Phases						6	8						
Actuated Green, G (s)					40.0	40.0	38.0	38.0					
Effective Green, g (s)					41.5	41.5	39.5	39.5					
Actuated g/C Ratio					0.46	0.46	0.44	0.44					
Clearance Time (s)					6.0	6.0	6.0	6.0					
Lane Grp Cap (vph)					3047	758	1582	2280					
v/s Ratio Prot					c0.33			c0.30					
v/s Ratio Perm						0.00	0.17						
v/c Ratio					0.71	0.00	0.38	0.69					
Uniform Delay, d1					19.5	13.1	17.0	20.3					
Progression Factor					1.00	1.00	1.00	1.00					
Incremental Delay, d2					1.4	0.0	0.7	1.7					
Delay (s)					20.9	13.1	17.7	22.0					
Level of Service					C	B	B	C					
Approach Delay (s)		0.0			20.9			20.8			0.0		
Approach LOS		A			C			C			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			20.9		HCM 2000 Level of Service						C		
HCM 2000 Volume to Capacity ratio			0.70										
Actuated Cycle Length (s)			90.0		Sum of lost time (s)						9.0		
Intersection Capacity Utilization			60.6%		ICU Level of Service						B		
Analysis Period (min)			15										

c Critical Lane Group



Lane Group	WBL	WBT	SBT
Lane Group Flow (vph)	365	868	497
v/c Ratio	0.48	0.56	0.34
Control Delay	15.1	14.7	12.4
Queue Delay	0.0	0.0	0.0
Total Delay	15.1	14.7	12.4
Queue Length 50th (ft)	91	118	60
Queue Length 95th (ft)	151	163	89
Internal Link Dist (ft)		389	389
Turn Bay Length (ft)			
Base Capacity (vph)	766	1551	1466
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.48	0.56	0.34
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
73: 8th St & Callowhill St

Build Conditions  
1/23/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↕						↕	↘
Volume (vph)	0	0	0	321	764	0	0	0	0	0	392	46
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)				4.5	4.5						4.5	
Lane Util. Factor				1.00	0.95						0.95	
Frbp, ped/bikes				1.00	1.00						1.00	
Flpb, ped/bikes				0.99	1.00						1.00	
Frt				1.00	1.00						0.98	
Flt Protected				0.95	1.00						1.00	
Satd. Flow (prot)				1804	3651						3451	
Flt Permitted				0.95	1.00						1.00	
Satd. Flow (perm)				1804	3651						3451	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	0	0	0	365	868	0	0	0	0	0	445	52
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	365	868	0	0	0	0	0	497	0
Confl. Peds. (#/hr)	35		35	17		17	2		2	17		17
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	6	0
Turn Type				Perm	NA						NA	
Protected Phases					6						4	
Permitted Phases				6								
Actuated Green, G (s)				24.0	24.0						24.0	
Effective Green, g (s)				25.5	25.5						25.5	
Actuated g/C Ratio				0.42	0.42						0.42	
Clearance Time (s)				6.0	6.0						6.0	
Lane Grp Cap (vph)				766	1551						1466	
v/s Ratio Prot					c0.24						c0.14	
v/s Ratio Perm				0.20								
v/c Ratio				0.48	0.56						0.34	
Uniform Delay, d1				12.4	13.0						11.6	
Progression Factor				1.00	1.00						1.00	
Incremental Delay, d2				2.1	1.5						0.6	
Delay (s)				14.6	14.5						12.2	
Level of Service				B	B						B	
Approach Delay (s)		0.0			14.5			0.0			12.2	
Approach LOS		A			B			A			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			13.8		HCM 2000 Level of Service					B		
HCM 2000 Volume to Capacity ratio			0.45									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				9.0			
Intersection Capacity Utilization			37.9%		ICU Level of Service				A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis  
77: Franklin St #1 & 7th St #1

Build Conditions  
1/23/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↙			↑↑		
Volume (veh/h)	358	0	0	885	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.92	0.92	0.90	0.92	0.92
Hourly flow rate (vph)	398	0	0	983	0	0
Pedestrians	35			63	63	
Lane Width (ft)	10.0			10.0	0.0	
Walking Speed (ft/s)	3.5			3.5	3.5	
Percent Blockage	3			5	0	
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				285	312	
pX, platoon unblocked	0.79					
vC, conflicting volume	590	98	35			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	98	35			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	49	100	100			
cM capacity (veh/h)	786	867	1531			

Direction, Lane #	EB 1	NB 1	NB 2
Volume Total	398	492	492
Volume Left	398	0	0
Volume Right	0	0	0
cSH	786	1700	1700
Volume to Capacity	0.51	0.29	0.29
Queue Length 95th (ft)	72	0	0
Control Delay (s)	14.2	0.0	0.0
Lane LOS	B		
Approach Delay (s)	14.2	0.0	
Approach LOS	B		

Intersection Summary			
Average Delay		4.1	
Intersection Capacity Utilization	58.2%		ICU Level of Service
Analysis Period (min)		15	B

HCM Unsignalized Intersection Capacity Analysis  
89: 9th Street & Vine Street

Build Conditions  
1/23/2014



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑					↗
Volume (veh/h)	829	0	0	0	0	188
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	901	0	0	0	0	204
Pedestrians				32	3	
Lane Width (ft)				0.0	10.0	
Walking Speed (ft/s)				3.5	3.5	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)				456		
pX, platoon unblocked						
vC, conflicting volume			904		904	486
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			904		904	486
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	61
cM capacity (veh/h)			746		276	526

Direction, Lane #	EB 1	EB 2	NB 1
Volume Total	451	451	204
Volume Left	0	0	0
Volume Right	0	0	204
cSH	1700	1700	526
Volume to Capacity	0.27	0.27	0.39
Queue Length 95th (ft)	0	0	46
Control Delay (s)	0.0	0.0	16.1
Lane LOS			C
Approach Delay (s)	0.0		16.1
Approach LOS			C

Intersection Summary			
Average Delay		3.0	
Intersection Capacity Utilization	40.8%		ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	NBT
Lane Group Flow (vph)	968	1351
v/c Ratio	0.42	0.59
Control Delay	18.1	21.4
Queue Delay	1.0	0.0
Total Delay	19.1	21.4
Queue Length 50th (ft)	132	220
Queue Length 95th (ft)	166	266
Internal Link Dist (ft)	60	232
Turn Bay Length (ft)		
Base Capacity (vph)	2304	2306
Starvation Cap Reductn	1007	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.75	0.59
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
 96: 7th St #1/7th St & Vine Street

Build Conditions  
 1/23/2014



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	←←←			↑↑↑		
Volume (vph)	891	0	0	1243	0	0
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100
Total Lost time (s)	5.5			5.5		
Lane Util. Factor	0.94			0.91		
Frbp, ped/bikes	1.00			1.00		
Flpb, ped/bikes	1.00			1.00		
Frt	1.00			1.00		
Flt Protected	0.95			1.00		
Satd. Flow (prot)	5148			5211		
Flt Permitted	0.95			1.00		
Satd. Flow (perm)	5148			5211		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	968	0	0	1351	0	0
RTOR Reduction (vph)	25	0	0	0	0	0
Lane Group Flow (vph)	943	0	0	1351	0	0
Confl. Peds. (#/hr)	10	10	10			
Bus Blockages (#/hr)	0	0	0	5	0	0
Turn Type	Prot			NA		
Protected Phases	2			8		
Permitted Phases						
Actuated Green, G (s)	42.0			42.0		
Effective Green, g (s)	42.5			42.5		
Actuated g/C Ratio	0.44			0.44		
Clearance Time (s)	6.0			6.0		
Lane Grp Cap (vph)	2279			2306		
v/s Ratio Prot	c0.18			c0.26		
v/s Ratio Perm						
v/c Ratio	0.41			0.59		
Uniform Delay, d1	18.3			20.1		
Progression Factor	1.00			1.00		
Incremental Delay, d2	0.6			1.1		
Delay (s)	18.8			21.2		
Level of Service	B			C		
Approach Delay (s)	18.8			21.2	0.0	
Approach LOS	B			C	A	

Intersection Summary

HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	96.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		













c Critical Lane Group



**FRIDAY CASINO PEAK HOUR LOS**

HCM 2010 Signalized Intersection Summary  
1: 7th St & Market St

Build Conditions  
Timing Plan: Friday Casino Pe

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑	↑		↑↑				
Volume (veh/h)	0	781	0	0	294	84	67	495	56	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		0.99	1.00		0.93			
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	0.0	181.7	0.0	0.0	171.8	189.0	181.4	180.0	181.4			
Adj Flow Rate, veh/h	0	814	0	0	306	88	70	516	58			
Adj No. of Lanes	0	3	0	0	2	1	0	2	0			
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	4	0	0	10	0	0	1	0			
Cap, veh/h	0	1663	0	0	1659	484	118	909	107			
Arrive On Green	0.00	0.17	0.00	0.00	0.17	0.17	0.11	0.11	0.11			
Sat Flow, veh/h	0	4725	0	0	3350	953	345	2661	312			
Grp Volume(v), veh/h	0	814	0	0	306	88	326	0	318			
Grp Sat Flow(s),veh/h/ln	0	1090	0	0	1632	953	1603	0	1715			
Q Serve(g_s), s	0.0	13.5	0.0	0.0	4.8	4.8	11.6	0.0	10.5			
Cycle Q Clear(g_c), s	0.0	13.5	0.0	0.0	4.8	4.8	11.6	0.0	10.5			
Prop In Lane	0.00		0.00	0.00		1.00	0.21		0.18			
Lane Grp Cap(c), veh/h	0	1663	0	0	1659	484	548	0	586			
V/C Ratio(X)	0.00	0.49	0.00	0.00	0.18	0.18	0.59	0.00	0.54			
Avail Cap(c_a), veh/h	0	1663	0	0	1659	484	548	0	586			
HCM Platoon Ratio	1.00	0.33	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	0.00	1.00			
Uniform Delay (d), s/veh	0.0	17.9	0.0	0.0	14.3	14.3	22.7	0.0	22.2			
Incr Delay (d2), s/veh	0.0	1.0	0.0	0.0	0.2	0.8	4.7	0.0	3.6			
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	7.6	0.0	0.0	4.0	2.5	9.8	0.0	9.4			
LnGrp Delay(d),s/veh	0.0	18.9	0.0	0.0	14.5	15.1	27.4	0.0	25.8			
LnGrp LOS		B			B	B	C		C			
Approach Vol, veh/h		814			394			644				
Approach Delay, s/veh		18.9			14.7			26.6				
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		35.0				35.0		25.0				
Change Period (Y+Rc), s		6.0				6.0		6.0				
Max Green Setting (Gmax), s		29.0				29.0		19.0				
Max Q Clear Time (g_c+I1), s		15.5				6.8		13.6				
Green Ext Time (p_c), s		6.1				7.8		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				20.7								
HCM 2010 LOS				C								

Queues  
2: 7th St & Chestnut St

Build Conditions  
Timing Plan: Friday Casino Pe



Lane Group	EBT	NBT
Lane Group Flow (vph)	578	588
v/c Ratio	0.71	0.45
Control Delay	26.6	23.1
Queue Delay	0.0	0.0
Total Delay	26.6	23.1
Queue Length 50th (ft)	186	110
Queue Length 95th (ft)	270	156
Internal Link Dist (ft)	336	210
Turn Bay Length (ft)		
Base Capacity (vph)	813	1315
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.71	0.45
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 2: 7th St & Chestnut St













Build Conditions  
Timing Plan: Friday Casino Pe



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕						↕↕				
Volume (vph)	204	339	0	0	0	0	0	433	119	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						0.98				
Flpb, ped/bikes		0.97						1.00				
Frt		1.00						0.97				
Flt Protected		0.98						1.00				
Satd. Flow (prot)		1913						3094				
Flt Permitted		0.98						1.00				
Satd. Flow (perm)		1913						3094				
Peak-hour factor, PHF	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.92	0.92	0.92
Adj. Flow (vph)	217	361	0	0	0	0	0	461	127	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	578	0	0	0	0	0	588	0	0	0	0
Confl. Peds. (#/hr)	110		110	46		46	134		134	131		131
Heavy Vehicles (%)	0%	6%	2%	2%	2%	2%	2%	1%	1%	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)		24.0						24.0				
Effective Green, g (s)		25.5						25.5				
Actuated g/C Ratio		0.42						0.42				
Clearance Time (s)		6.0						6.0				
Lane Grp Cap (vph)		813						1314				
v/s Ratio Prot								c0.19				
v/s Ratio Perm		0.30										
v/c Ratio		0.71						0.45				
Uniform Delay, d1		14.2						12.2				
Progression Factor		1.53						1.76				
Incremental Delay, d2		3.8						1.1				
Delay (s)		25.5						22.7				
Level of Service		C						C				
Approach Delay (s)		25.5			0.0			22.7			0.0	
Approach LOS		C			A			C			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			24.1					HCM 2000 Level of Service			C	
HCM 2000 Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			60.0					Sum of lost time (s)		9.0		
Intersection Capacity Utilization			43.5%					ICU Level of Service		A		
Analysis Period (min)			15									
c Critical Lane Group												

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

Build Conditions  
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		0.83	1.00		1.00				1.00		0.81
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	1751	678	0	1113	0				70	968	46
Arrive On Green	0.00	1.00	1.00	0.00	0.17	0.00				0.11	0.11	0.11
Sat Flow, veh/h	0	3501	1291	0	3533	0				215	2980	141
Grp Volume(v), veh/h	0	723	298	0	457	0				680	0	539
Grp Sat Flow(s),veh/h/ln	0	1668	1291	0	1060	0				1784	0	1552
Q Serve(g_s), s	0.0	0.0	0.0	0.0	11.5	0.0				19.5	0.0	19.5
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	11.5	0.0				19.5	0.0	19.5
Prop In Lane	0.00		1.00	0.00		0.00				0.12		0.09
Lane Grp Cap(c), veh/h	0	1751	678	0	1113	0				580	0	504
V/C Ratio(X)	0.00	0.41	0.44	0.00	0.41	0.00				1.17	0.00	1.07
Avail Cap(c_a), veh/h	0	1751	678	0	1113	0				580	0	504
HCM Platoon Ratio	1.00	2.00	2.00	1.00	0.33	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	0.0	0.0	0.0	16.5	0.0				26.8	0.0	26.8
Incr Delay (d2), s/veh	0.0	0.7	2.1	0.0	1.1	0.0				94.8	0.0	59.8
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	0.3	0.7	0.0	6.4	0.0				44.8	0.0	30.1
LnGrp Delay(d),s/veh	0.0	0.7	2.1	0.0	17.7	0.0				121.6	0.0	86.6
LnGrp LOS		A	A		B					F		F
Approach Vol, veh/h		1021			457						1219	
Approach Delay, s/veh		1.1			17.7						106.1	
Approach LOS		A			B						F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		36.0		24.0		36.0						
Change Period (Y+Rc), s		6.0		6.0		6.0						
Max Green Setting (Gmax), s		30.0		18.0		30.0						
Max Q Clear Time (g_c+I1), s		2.0		21.5		13.5						
Green Ext Time (p_c), s		11.1		0.0		8.5						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			51.4									
HCM 2010 LOS			D									

Queues  
4: 8th St & Chestnut St

Build Conditions  
Timing Plan: Friday Casino Pe



Lane Group	EBT	SBT
Lane Group Flow (vph)	542	906
v/c Ratio	0.68	0.69
Control Delay	16.0	8.7
Queue Delay	0.0	0.0
Total Delay	16.0	8.7
Queue Length 50th (ft)	102	50
Queue Length 95th (ft)	225	m48
Internal Link Dist (ft)	398	143
Turn Bay Length (ft)		
Base Capacity (vph)	802	1306
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.68	0.69

Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

## 4: 8th St & Chestnut St













Build Conditions  
Timing Plan: Friday Casino Pe



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑									↑↑		
Volume (vph)	0	415	95	0	0	0	0	0	0	227	625	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		0.98									1.00		
Flpb, ped/bikes		1.00									0.95		
Frt		0.97									1.00		
Flt Protected		1.00									0.99		
Satd. Flow (prot)		1889									3073		
Flt Permitted		1.00									0.99		
Satd. Flow (perm)		1889									3073		
Peak-hour factor, PHF	0.92	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.92	
Adj. Flow (vph)	0	441	101	0	0	0	0	0	0	241	665	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	542	0	0	0	0	0	0	0	0	906	0	
Confl. Peds. (#/hr)	162		162	196		196	118		118	240		240	
Heavy Vehicles (%)	2%	5%	0%	2%	2%	2%	2%	2%	2%	0%	1%	2%	
Bus Blockages (#/hr)	0	11	0	0	0	0	0	0	0	0	10	0	
Parking (#/hr)	0											0	
Turn Type		NA								Perm	NA		
Protected Phases		2									4		
Permitted Phases										4			
Actuated Green, G (s)		24.0									24.0		
Effective Green, g (s)		25.5									25.5		
Actuated g/C Ratio		0.42									0.42		
Clearance Time (s)		6.0									6.0		
Lane Grp Cap (vph)		802									1306		
v/s Ratio Prot		c0.29											
v/s Ratio Perm											0.29		
v/c Ratio		0.68									0.69		
Uniform Delay, d1		13.9									14.1		
Progression Factor		0.81									0.51		
Incremental Delay, d2		4.2									1.2		
Delay (s)		15.5									8.5		
Level of Service		B									A		
Approach Delay (s)		15.5			0.0			0.0			8.5		
Approach LOS		B			A			A			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			11.1									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.68										
Actuated Cycle Length (s)			60.0									Sum of lost time (s)	9.0
Intersection Capacity Utilization			50.7%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

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

Build Conditions  
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		0.85	1.00		0.69			
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	173.4	0.0	0.0	174.4	189.0	181.4	177.7	181.4			
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	0			
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	0	2	0			
Cap, veh/h	0	1639	0	0	1296	121	78	566	263			
Arrive On Green	0.00	1.00	0.00	0.00	1.00	1.00	0.11	0.11	0.11			
Sat Flow, veh/h	0	4508	0	0	3166	231	240	1740	809			
Grp Volume(v), veh/h	0	833	0	0	262	415	654	0	346			
Grp Sat Flow(s),veh/h/ln	0	1040	0	0	1046	1654	1765	0	1024			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	19.5	0.0	19.5			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	19.5	0.0	19.5			
Prop In Lane	0.00		0.00	0.00		0.14	0.14		0.79			
Lane Grp Cap(c), veh/h	0	1639	0	0	549	868	574	0	333			
V/C Ratio(X)	0.00	0.51	0.00	0.00	0.48	0.48	1.14	0.00	1.04			
Avail Cap(c_a), veh/h	0	1639	0	0	549	868	574	0	333			
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	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	26.8	0.0	26.8			
Incr Delay (d2), s/veh	0.0	1.1	0.0	0.0	2.9	1.9	82.8	0.0	59.6			
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	0.3	0.0	0.0	0.8	0.8	40.9	0.0	19.9			
LnGrp Delay(d),s/veh	0.0	1.1	0.0	0.0	2.9	1.9	109.6	0.0	86.4			
LnGrp LOS		A			A	A	F		F			
Approach Vol, veh/h		833			677			1000				
Approach Delay, s/veh		1.1			2.3			101.6				
Approach LOS		A			A			F				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		36.0				36.0		24.0				
Change Period (Y+Rc), s		6.0				6.0		6.0				
Max Green Setting (Gmax), s		30.0				30.0		18.0				
Max Q Clear Time (g_c+I1), s		2.0				2.0		21.5				
Green Ext Time (p_c), s		10.8				10.8		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				41.5								
HCM 2010 LOS				D								



Queues  
6: 9th St/9th St #1 & Chestnut St

Build Conditions  
Timing Plan: Friday Casino Pe



Lane Group	EBT	NBT
Lane Group Flow (vph)	461	525
v/c Ratio	0.48	0.46
Control Delay	12.5	12.1
Queue Delay	0.0	0.0
Total Delay	12.5	12.1
Queue Length 50th (ft)	60	47
Queue Length 95th (ft)	135	67
Internal Link Dist (ft)	343	223
Turn Bay Length (ft)		
Base Capacity (vph)	960	1149
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.48	0.46
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 6: 9th St/9th St #1 & Chestnut St

Build Conditions  
Timing Plan: Friday Casino Pe



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕						↕↕				
Volume (vph)	81	366	0	0	0	0	0	390	119	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						0.96				
Flpb, ped/bikes		0.99						1.00				
Frt		1.00						0.96				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		2023						3064				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		2023						3064				
Peak-hour factor, PHF	0.97	0.97	0.92	0.92	0.92	0.92	0.92	0.97	0.97	0.92	0.92	0.92
Adj. Flow (vph)	84	377	0	0	0	0	0	402	123	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	461	0	0	0	0	0	525	0	0	0	0
Confl. Peds. (#/hr)	105		105	104		104	176		176	258		258
Heavy Vehicles (%)	0%	0%	2%	2%	2%	2%	2%	0%	0%	2%	2%	2%
Bus Blockages (#/hr)	0	12	0	0	0	0	0	9	0	0	0	0
Parking (#/hr)	0								0			
Turn Type	Perm	NA						NA				
Protected Phases		2						8				
Permitted Phases	2											
Actuated Green, G (s)		27.0						21.0				
Effective Green, g (s)		28.5						22.5				
Actuated g/C Ratio		0.48						0.38				
Clearance Time (s)		6.0						6.0				
Lane Grp Cap (vph)		960						1149				
v/s Ratio Prot								c0.17				
v/s Ratio Perm		0.23										
v/c Ratio		0.48						0.46				
Uniform Delay, d1		10.7						14.1				
Progression Factor		1.01						0.75				
Incremental Delay, d2		1.3						1.3				
Delay (s)		12.1						11.8				
Level of Service		B						B				
Approach Delay (s)		12.1			0.0			11.8			0.0	
Approach LOS		B			A			B			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			12.0					HCM 2000 Level of Service			B	
HCM 2000 Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			60.0					Sum of lost time (s)			9.0	
Intersection Capacity Utilization			36.4%					ICU Level of Service			A	
Analysis Period (min)			15									
c Critical Lane Group												

Queues

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

Build Conditions

Timing Plan: Friday Casino Pe



Lane Group	EBT	NBT
Lane Group Flow (vph)	486	750
v/c Ratio	0.35	0.65
Control Delay	12.6	20.9
Queue Delay	0.0	0.0
Total Delay	12.6	20.9
Queue Length 50th (ft)	59	97
Queue Length 95th (ft)	91	151
Internal Link Dist (ft)	674	621
Turn Bay Length (ft)		
Base Capacity (vph)	1391	1160
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.35	0.65
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

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

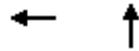
Build Conditions  
Timing Plan: Friday Casino Pe



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕						↕↕				
Volume (vph)	68	379	0	0	0	0	0	250	440	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		0.99						1.00				
Frt		1.00						0.90				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		3274						2842				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		3274						2842				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	74	412	0	0	0	0	0	272	478	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	486	0	0	0	0	0	750	0	0	0	0
Confl. Peds. (#/hr)	68		68	47			47	106		106	109	109
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)		25.0						24.0				
Effective Green, g (s)		25.5						24.5				
Actuated g/C Ratio		0.42						0.41				
Clearance Time (s)		5.5						5.5				
Lane Grp Cap (vph)		1391						1160				
v/s Ratio Prot								c0.26				
v/s Ratio Perm		0.15										
v/c Ratio		0.35						0.65				
Uniform Delay, d1		11.6						14.3				
Progression Factor		1.00						1.24				
Incremental Delay, d2		0.7						2.6				
Delay (s)		12.3						20.4				
Level of Service		B						C				
Approach Delay (s)		12.3			0.0			20.4			0.0	
Approach LOS		B			A			C			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			17.2					HCM 2000 Level of Service			B	
HCM 2000 Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			60.0					Sum of lost time (s)		10.0		
Intersection Capacity Utilization			46.0%					ICU Level of Service		A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
8: 7th St & Walnut St

Build Conditions  
Timing Plan: Friday Casino Pe



Lane Group	WBT	NBT
Lane Group Flow (vph)	532	513
v/c Ratio	0.40	0.39
Control Delay	21.3	13.6
Queue Delay	0.0	0.0
Total Delay	21.3	13.6
Queue Length 50th (ft)	92	65
Queue Length 95th (ft)	134	100
Internal Link Dist (ft)	382	135
Turn Bay Length (ft)		
Base Capacity (vph)	1330	1316
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.40	0.39
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 8: 7th St & Walnut St

Build Conditions  
Timing Plan: Friday Casino Pe



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑			↑↑					
Volume (vph)	0	0	0	0	407	83	123	359	0	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					0.95			0.95					
Frbp, ped/bikes					0.99			1.00					
Flpb, ped/bikes					1.00			0.98					
Frt					0.97			1.00					
Flt Protected					1.00			0.99					
Satd. Flow (prot)					3012			3226					
Flt Permitted					1.00			0.99					
Satd. Flow (perm)					3012			3226					
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	0	442	90	131	382	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	532	0	0	513	0	0	0	0	
Confl. Peds. (#/hr)	62		62	67		67	96		96	126		126	
Heavy Vehicles (%)	2%	2%	2%	2%	3%	10%	0%	1%	2%	2%	2%	2%	
Bus Blockages (#/hr)	0	0	0	0	15	0	0	0	0	0	0	0	
Turn Type					NA		Perm	NA					
Protected Phases					6			8					
Permitted Phases							8						
Actuated Green, G (s)					25.0			23.0					
Effective Green, g (s)					26.5			24.5					
Actuated g/C Ratio					0.44			0.41					
Clearance Time (s)					6.0			6.0					
Lane Grp Cap (vph)					1330			1317					
v/s Ratio Prot					0.18								
v/s Ratio Perm								0.16					
v/c Ratio					0.40			0.39					
Uniform Delay, d1					11.4			12.5					
Progression Factor					1.76			1.00					
Incremental Delay, d2					0.8			0.9					
Delay (s)					20.8			13.4					
Level of Service					C			B					
Approach Delay (s)		0.0			20.8			13.4			0.0		
Approach LOS		A			C			B			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			17.2									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.39										
Actuated Cycle Length (s)			60.0									Sum of lost time (s)	9.0
Intersection Capacity Utilization			39.1%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
9: 8th St #2 & Vine Street

Build Conditions  
Timing Plan: Friday Casino Pe

	→	↘	↓	↙	↘
Lane Group	EBT	EBR	SBT	SEL	SER
Lane Group Flow (vph)	374	250	640	411	383
v/c Ratio	0.55	0.53	0.67	0.46	0.48
Control Delay	36.8	37.9	41.1	16.4	17.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	36.8	37.9	41.1	16.4	17.2
Queue Length 50th (ft)	102	73	138	143	143
Queue Length 95th (ft)	148	115	178	220	224
Internal Link Dist (ft)	164		246	146	
Turn Bay Length (ft)					
Base Capacity (vph)	682	473	957	893	792
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.55	0.53	0.67	0.46	0.48
<b>Intersection Summary</b>					

HCM Signalized Intersection Capacity Analysis  
 9: 8th St #2 & Vine Street

Build Conditions  
 Timing Plan: Friday Casino Pe



















Movement	EBT	EBR	SBL	SBT	SEL	SER
Lane Configurations	↑↑	↑↑		↑↑↑	↑↑	↑
Volume (vph)	344	230	87	501	273	457
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100
Total Lost time (s)	4.0	4.0		3.5	4.0	4.0
Lane Util. Factor	0.95	0.88		0.91	1.00	0.95
Frbp, ped/bikes	1.00	1.00		1.00	0.99	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.85		1.00	0.96	0.85
Flt Protected	1.00	1.00		0.99	0.97	1.00
Satd. Flow (prot)	3724	2584		5222	1769	1567
Flt Permitted	1.00	1.00		0.99	0.97	1.00
Satd. Flow (perm)	3724	2584		5222	1769	1567
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	374	250	95	545	297	497
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	374	250	0	640	411	383
Confl. Peds. (#/hr)		24	3		24	24
Heavy Vehicles (%)	0%	6%	0%	2%	2%	1%
Bus Blockages (#/hr)	0	33	0	0	0	0
Turn Type	NA	Prot	Split	NA	Prot	Prot
Protected Phases	2	2	4	4	1	1
Permitted Phases						
Actuated Green, G (s)	15.0	15.0		15.0	44.0	44.0
Effective Green, g (s)	16.5	16.5		16.5	45.5	45.5
Actuated g/C Ratio	0.18	0.18		0.18	0.51	0.51
Clearance Time (s)	5.5	5.5		5.0	5.5	5.5
Lane Grp Cap (vph)	682	473		957	894	792
v/s Ratio Prot	c0.10	0.10		c0.12	0.23	c0.24
v/s Ratio Perm						
v/c Ratio	0.55	0.53		0.67	0.46	0.48
Uniform Delay, d1	33.4	33.2		34.2	14.3	14.6
Progression Factor	1.00	1.00		1.09	1.00	1.00
Incremental Delay, d2	3.2	4.2		3.6	1.7	2.1
Delay (s)	36.5	37.4		40.8	16.0	16.7
Level of Service	D	D		D	B	B
Approach Delay (s)	36.9			40.8	16.3	
Approach LOS	D			D	B	

Intersection Summary			
HCM 2000 Control Delay	30.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



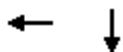
HCM 2010 Signalized Intersection Summary  
12: 5th St & Market St

Build Conditions  
Timing Plan: Friday Casino Pe

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	280	511	0	0	341	80	69	432	53	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)	0.94		1.00	1.00		0.86	1.00		0.72			
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	181.7	183.5	0.0	0.0	182.1	189.0	189.0	187.5	189.0			
Adj Flow Rate, veh/h	286	521	0	0	348	82	70	441	54			
Adj No. of Lanes	1	2	0	0	2	0	0	2	0			
Peak Hour Factor	0.98	0.98	0.92	0.92	0.98	0.98	0.98	0.98	0.98			
Percent Heavy Veh, %	4	3	0	0	4	4	0	1	0			
Cap, veh/h	522	1193	0	0	718	167	123	803	102			
Arrive On Green	0.14	0.54	0.00	0.00	0.32	0.34	0.11	0.10	0.10			
Sat Flow, veh/h	1731	2936	0	0	2939	513	398	2605	331			
Grp Volume(v), veh/h	286	521	0	0	169	261	293	0	272			
Grp Sat Flow(s),veh/h/ln	1731	1101	0	0	1092	1631	1668	0	1666			
Q Serve(g_s), s	5.9	8.5	0.0	0.0	7.4	7.7	10.1	0.0	9.3			
Cycle Q Clear(g_c), s	5.9	8.5	0.0	0.0	7.4	7.7	10.1	0.0	9.3			
Prop In Lane	1.00		0.00	0.00		0.31	0.24		0.20			
Lane Grp Cap(c), veh/h	522	1193	0	0	355	530	514	0	514			
V/C Ratio(X)	0.55	0.44	0.00	0.00	0.48	0.49	0.57	0.00	0.53			
Avail Cap(c_a), veh/h	522	1193	0	0	355	530	514	0	514			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	10.2	8.3	0.0	0.0	16.2	16.1	23.1	0.0	22.8			
Incr Delay (d2), s/veh	4.1	1.2	0.0	0.0	4.5	3.2	4.5	0.0	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	6.1	4.9	0.0	0.0	4.8	7.0	9.1	0.0	8.4			
LnGrp Delay(d),s/veh	14.3	9.4	0.0	0.0	20.7	19.4	27.7	0.0	26.7			
LnGrp LOS	B	A			C	B	C		C			
Approach Vol, veh/h		807			430			565				
Approach Delay, s/veh		11.2			19.9			27.2				
Approach LOS		B			B			C				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		37.0			13.0	24.0		23.0				
Change Period (Y+Rc), s		5.0			5.0	5.0		5.0				
Max Green Setting (Gmax), s		32.0			8.0	19.0		18.0				
Max Q Clear Time (g_c+I1), s		10.5			7.9	9.7		12.1				
Green Ext Time (p_c), s		5.6			0.0	3.7		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			18.3									
HCM 2010 LOS			B									

Queues  
13: 6th St & Arch St

Build Conditions  
Timing Plan: Friday Casino Pe



Lane Group	WBT	SBT
Lane Group Flow (vph)	502	772
v/c Ratio	0.37	0.41
Control Delay	13.0	5.1
Queue Delay	0.0	0.0
Total Delay	13.0	5.1
Queue Length 50th (ft)	79	21
Queue Length 95th (ft)	115	28
Internal Link Dist (ft)	322	632
Turn Bay Length (ft)		
Base Capacity (vph)	1339	1903
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.37	0.41
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

## 13: 6th St & Arch St

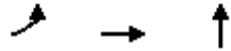
Build Conditions  
Timing Plan: Friday Casino Pe



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕↕						↕↕↕	
Volume (vph)	0	0	0	112	330	0	0	0	0	0	589	91
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					0.95						0.91	
Frbp, ped/bikes					1.00						0.99	
Flpb, ped/bikes					0.99						1.00	
Frt					1.00						0.98	
Flt Protected					0.99						1.00	
Satd. Flow (prot)					3150						4479	
Flt Permitted					0.99						1.00	
Satd. Flow (perm)					3150						4479	
Peak-hour factor, PHF	0.92	0.92	0.92	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.88	0.88
Adj. Flow (vph)	0	0	0	127	375	0	0	0	0	0	669	103
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	502	0	0	0	0	0	772	0
Confl. Peds. (#/hr)	23		23	63		63	94		94	102		102
Heavy Vehicles (%)	2%	2%	2%	4%	3%	2%	2%	2%	2%	2%	3%	12%
Bus Blockages (#/hr)	0	0	0	0	3	0	0	0	0	0	0	0
Parking (#/hr)						0				0		
Turn Type				Perm	NA						NA	
Protected Phases					6						4	
Permitted Phases				6								
Actuated Green, G (s)					24.0						24.0	
Effective Green, g (s)					25.5						25.5	
Actuated g/C Ratio					0.42						0.42	
Clearance Time (s)					6.0						6.0	
Lane Grp Cap (vph)					1338						1903	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.16							
v/c Ratio					0.38						0.41	
Uniform Delay, d1					11.8						12.0	
Progression Factor					1.02						0.37	
Incremental Delay, d2					0.8						0.6	
Delay (s)					12.8						5.0	
Level of Service					B						A	
Approach Delay (s)		0.0			12.8			0.0			5.0	
Approach LOS		A			B			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			8.1		HCM 2000 Level of Service					A		
HCM 2000 Volume to Capacity ratio			0.39									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					9.0		
Intersection Capacity Utilization			37.5%		ICU Level of Service					A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
14: 5th St & Chestnut St

Build Conditions  
Timing Plan: Friday Casino Pe



Lane Group	EBL	EBT	NBT
Lane Group Flow (vph)	122	322	492
v/c Ratio	0.20	0.45	0.36
Control Delay	12.9	15.5	23.6
Queue Delay	0.0	0.0	0.0
Total Delay	12.9	15.5	23.6
Queue Length 50th (ft)	24	66	95
Queue Length 95th (ft)	m39	99	140
Internal Link Dist (ft)		348	499
Turn Bay Length (ft)			
Base Capacity (vph)	620	720	1381
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.20	0.45	0.36

Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

## 14: 5th St & Chestnut St

Build Conditions  
Timing Plan: Friday Casino Pe



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↖						↕	↗	↘	↕	↖
Volume (vph)	113	299	0	0	0	0	0	406	51	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						4.5				
Lane Util. Factor	1.00	1.00						0.95				
Frpb, ped/bikes	1.00	1.00						0.99				
Flpb, ped/bikes	0.91	1.00						1.00				
Frt	1.00	1.00						0.98				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1459	1696						3252				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1459	1696						3252				
Peak-hour factor, PHF	0.93	0.93	0.92	0.92	0.92	0.92	0.97	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	122	322	0	0	0	0	0	437	55	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	122	322	0	0	0	0	0	492	0	0	0	0
Confl. Peds. (#/hr)	134		134	195		195	85		85	349		349
Heavy Vehicles (%)	4%	4%	2%	2%	2%	2%	2%	0%	0%	2%	2%	2%
Turn Type	Perm	NA						NA				
Protected Phases		2						8				
Permitted Phases	2											
Actuated Green, G (s)	24.0	24.0						24.0				
Effective Green, g (s)	25.5	25.5						25.5				
Actuated g/C Ratio	0.42	0.42						0.42				
Clearance Time (s)	6.0	6.0						6.0				
Lane Grp Cap (vph)	620	720						1382				
v/s Ratio Prot		c0.19						c0.15				
v/s Ratio Perm	0.08											
v/c Ratio	0.20	0.45						0.36				
Uniform Delay, d1	10.8	12.2						11.7				
Progression Factor	1.10	1.08						1.92				
Incremental Delay, d2	0.6	1.8						0.7				
Delay (s)	12.5	14.9						23.1				
Level of Service	B	B						C				
Approach Delay (s)		14.3			0.0			23.1			0.0	
Approach LOS		B			A			C			A	

### Intersection Summary

HCM 2000 Control Delay	18.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
 16: 8th St #2 & Site Driveway

Build Conditions  
 Timing Plan: Friday Casino Pe



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations					↑↑	
Volume (veh/h)	0	0	0	0	868	435
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	943	473
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				376	190	
pX, platoon unblocked	0.70	0.70	0.70			
vC, conflicting volume	1180	708	1416			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	390	0	729			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	409	756	607			
<b>Direction, Lane #</b>	<b>SB 1</b>	<b>SB 2</b>				
Volume Total	629	787				
Volume Left	0	0				
Volume Right	0	473				
cSH	1700	1700				
Volume to Capacity	0.37	0.46				
Queue Length 95th (ft)	0	0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0					
Approach LOS						
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			37.6%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
17: 9th St #1 & Site Driveway

Build Conditions  
Timing Plan: Friday Casino Pe



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑↑	↑↑			
Volume (veh/h)	0	416	471	0	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	452	512	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)			364			181
pX, platoon unblocked	0.96	0.96			0.96	
vC, conflicting volume	512	256			512	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	416	150			416	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	46			100	
cM capacity (veh/h)	544	837			1097	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2
Volume Total	226	226	256	256
Volume Left	0	0	0	0
Volume Right	226	226	0	0
cSH	837	837	1700	1700
Volume to Capacity	0.27	0.27	0.15	0.15
Queue Length 95th (ft)	27	27	0	0
Control Delay (s)	10.9	10.9	0.0	0.0
Lane LOS	B	B		
Approach Delay (s)	10.9		0.0	
Approach LOS	B			

Intersection Summary			
Average Delay		5.1	
Intersection Capacity Utilization		36.4%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis  
 18: 8th St/8th St #2 & Parking Garage

Build Conditions  
 Timing Plan: Friday Casino Pe



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰					↱↰
Volume (veh/h)	139	0	0	0	145	723
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	151	0	0	0	158	786
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)			223			343
pX, platoon unblocked	0.78					
vC, conflicting volume	708	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	62	0			0	
tC, single (s)	*7.1	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	77	100			90	
cM capacity (veh/h)	657	1084			1622	

Direction, Lane #	WB 1	SB 1	SB 2
Volume Total	151	420	524
Volume Left	151	158	0
Volume Right	0	0	0
cSH	657	1622	1700
Volume to Capacity	0.23	0.10	0.31
Queue Length 95th (ft)	22	8	0
Control Delay (s)	12.1	3.3	0.0
Lane LOS	B	A	
Approach Delay (s)	12.1	1.5	
Approach LOS	B		













Intersection Summary			
Average Delay		3.0	
Intersection Capacity Utilization		35.5%	ICU Level of Service A
Analysis Period (min)		15	

\* User Entered Value



HCM 2010 Signalized Intersection Summary  
 21: 10th St/10th Street & Market St

Build Conditions  
 Timing Plan: Friday Casino Pe

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑						↑↑	↑
Volume (veh/h)	0	568	93	0	426	0	0	0	0	73	291	106
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		0.78	1.00		1.00				1.00		0.69
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	184.3	189.0	0.0	176.6	0.0				189.0	184.9	185.3
Adj Flow Rate, veh/h	0	598	98	0	448	0				77	306	112
Adj No. of Lanes	0	3	0	0	2	0				0	2	1
Peak Hour Factor	0.96	0.95	0.95	0.96	0.95	0.96				0.95	0.95	0.95
Percent Heavy Veh, %	0	3	3	0	7	0				2	1	2
Cap, veh/h	0	1715	273	0	1113	0				223	938	356
Arrive On Green	0.00	0.52	0.52	0.00	1.00	0.00				0.32	0.32	0.32
Sat Flow, veh/h	0	4003	521	0	3533	0				685	2887	1094
Grp Volume(v), veh/h	0	400	296	0	448	0				204	179	112
Grp Sat Flow(s),veh/h/ln	0	1106	1576	0	1060	0				1815	1757	1094
Q Serve(g_s), s	0.0	6.3	6.6	0.0	0.0	0.0				5.1	4.6	4.6
Cycle Q Clear(g_c), s	0.0	6.3	6.6	0.0	0.0	0.0				5.1	4.6	4.6
Prop In Lane	0.00		0.33	0.00		0.00				0.38		1.00
Lane Grp Cap(c), veh/h	0	1161	827	0	1113	0				590	571	356
V/C Ratio(X)	0.00	0.34	0.36	0.00	0.40	0.00				0.35	0.31	0.31
Avail Cap(c_a), veh/h	0	1161	827	0	1113	0				590	571	356
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	8.3	8.3	0.0	0.0	0.0				15.4	15.2	15.2
Incr Delay (d2), s/veh	0.0	0.8	1.2	0.0	1.1	0.0				1.6	1.4	2.3
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	3.6	5.5	0.0	0.3	0.0				5.1	4.3	2.9
LnGrp Delay(d),s/veh	0.0	9.1	9.5	0.0	1.1	0.0				17.0	16.7	17.5
LnGrp LOS		A	A		A					B	B	B
Approach Vol, veh/h		696			448						495	
Approach Delay, s/veh		9.3			1.1						17.0	
Approach LOS		A			A						B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		36.0		24.0		36.0						
Change Period (Y+Rc), s		6.0		6.0		6.0						
Max Green Setting (Gmax), s		30.0		18.0		30.0						
Max Q Clear Time (g_c+I1), s		8.6		7.1		2.0						
Green Ext Time (p_c), s		7.0		0.1		7.6						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			9.4									
HCM 2010 LOS			A									

Queues  
22: 10th St & Chestnut St

Build Conditions  
Timing Plan: Friday Casino Pe



Lane Group	EBT	SBT
Lane Group Flow (vph)	516	502
v/c Ratio	0.68	0.37
Control Delay	19.4	9.1
Queue Delay	0.0	0.0
Total Delay	19.4	9.1
Queue Length 50th (ft)	119	40
Queue Length 95th (ft)	185	51
Internal Link Dist (ft)	521	472
Turn Bay Length (ft)		
Base Capacity (vph)	764	1360
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.68	0.37
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 22: 10th St & Chestnut St

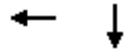
Build Conditions  
Timing Plan: Friday Casino Pe



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑									↑↑		
Volume (vph)	0	333	111	0	0	0	0	0	0	71	360	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		0.95									1.00		
Flpb, ped/bikes		1.00									0.97		
Frt		0.96									1.00		
Flt Protected		1.00									0.99		
Satd. Flow (prot)		1799									3200		
Flt Permitted		1.00									0.99		
Satd. Flow (perm)		1799									3200		
Peak-hour factor, PHF	0.92	0.86	0.86	0.92	0.92	0.92	0.92	0.92	0.92	0.86	0.86	0.92	
Adj. Flow (vph)	0	387	129	0	0	0	0	0	0	83	419	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	516	0	0	0	0	0	0	0	0	502	0	
Confl. Peds. (#/hr)	284		284	190		190	243		243	238		238	
Heavy Vehicles (%)	2%	6%	1%	2%	2%	2%	2%	2%	2%	1%	1%	2%	
Bus Blockages (#/hr)	0	12	0	0	0	0	0	0	0	0	0	0	
Parking (#/hr)	0											0	
Turn Type		NA								Perm	NA		
Protected Phases		2									4		
Permitted Phases										4			
Actuated Green, G (s)		24.0									24.0		
Effective Green, g (s)		25.5									25.5		
Actuated g/C Ratio		0.42									0.42		
Clearance Time (s)		6.0									6.0		
Lane Grp Cap (vph)		764									1360		
v/s Ratio Prot		c0.29											
v/s Ratio Perm											0.16		
v/c Ratio		0.68									0.37		
Uniform Delay, d1		13.9									11.8		
Progression Factor		1.00									0.70		
Incremental Delay, d2		4.7									0.7		
Delay (s)		18.7									9.0		
Level of Service		B									A		
Approach Delay (s)		18.7			0.0			0.0			9.0		
Approach LOS		B			A			A			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			13.9									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.52										
Actuated Cycle Length (s)			60.0									Sum of lost time (s)	9.0
Intersection Capacity Utilization			37.8%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
24: 10th St & Walnut St

Build Conditions  
Timing Plan: Friday Casino Pe



Lane Group	WBT	SBT
Lane Group Flow (vph)	545	409
v/c Ratio	0.40	0.33
Control Delay	6.6	15.6
Queue Delay	0.0	0.0
Total Delay	6.6	15.6
Queue Length 50th (ft)	15	54
Queue Length 95th (ft)	21	78
Internal Link Dist (ft)	360	507
Turn Bay Length (ft)		
Base Capacity (vph)	1358	1248
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.40	0.33
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
24: 10th St & Walnut St

Build Conditions  
Timing Plan: Friday Casino Pe



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑						↑↑	
Volume (vph)	0	0	0	68	445	0	0	0	0	0	279	105
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					0.95						0.95	
Frbp, ped/bikes					1.00						0.94	
Flpb, ped/bikes					0.99						1.00	
Frt					1.00						0.96	
Flt Protected					0.99						1.00	
Satd. Flow (prot)					3197						2937	
Flt Permitted					0.99						1.00	
Satd. Flow (perm)					3197						2937	
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	72	473	0	0	0	0	0	297	112
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	545	0	0	0	0	0	409	0
Confl. Peds. (#/hr)	211		211	132		132	302		302	284		284
Heavy Vehicles (%)	2%	2%	2%	3%	0%	2%	2%	2%	2%	2%	4%	1%
Bus Blockages (#/hr)	0	0	0	0	12	0	0	0	0	0	0	0
Turn Type				Perm	NA						NA	
Protected Phases					6						4	
Permitted Phases				6								
Actuated Green, G (s)					24.0						24.0	
Effective Green, g (s)					25.5						25.5	
Actuated g/C Ratio					0.42						0.42	
Clearance Time (s)					6.0						6.0	
Lane Grp Cap (vph)					1358						1248	
v/s Ratio Prot											c0.14	
v/s Ratio Perm					0.17							
v/c Ratio					0.40						0.33	
Uniform Delay, d1					12.0						11.5	
Progression Factor					0.48						1.27	
Incremental Delay, d2					0.8						0.6	
Delay (s)					6.5						15.3	
Level of Service					A						B	
Approach Delay (s)		0.0			6.5			0.0			15.3	
Approach LOS		A			A			A			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			10.3								HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.36									
Actuated Cycle Length (s)			60.0								Sum of lost time (s)	9.0
Intersection Capacity Utilization			38.6%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
25: 8th St #2 & Arch St

Build Conditions  
Timing Plan: Friday Casino Pe



Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	446	845	123
v/c Ratio	0.34	0.63	0.23
Control Delay	7.3	24.4	21.5
Queue Delay	0.0	0.0	0.0
Total Delay	7.3	24.4	21.5
Queue Length 50th (ft)	37	128	34
Queue Length 95th (ft)	50	184	m71
Internal Link Dist (ft)	373	120	
Turn Bay Length (ft)			
Base Capacity (vph)	1311	1341	537
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.34	0.63	0.23

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
25: 8th St #2 & Arch St

Build Conditions  
Timing Plan: Friday Casino Pe



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↕↕						↕↕	↕	
Volume (vph)	0	0	0	133	277	0	0	0	0	0	777	113	
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	0.91	
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)					3086						3286	1316	
Flt Permitted					0.98						1.00	1.00	
Satd. Flow (perm)					3086						3286	1316	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	145	301	0	0	0	0	0	845	123	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	446	0	0	0	0	0	845	123	
Confl. Peds. (#/hr)	67		67	45		45	103		103	109		109	
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	2%	2%	2%	2%	2%	2%	
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)					25.0						24.0	24.0	
Effective Green, g (s)					25.5						24.5	24.5	
Actuated g/C Ratio					0.42						0.41	0.41	
Clearance Time (s)					5.5						5.5	5.5	
Lane Grp Cap (vph)					1311						1341	537	
v/s Ratio Prot											c0.26		
v/s Ratio Perm					0.14							0.09	
v/c Ratio					0.34						0.63	0.23	
Uniform Delay, d1					11.6						14.1	11.6	
Progression Factor					0.56						1.55	1.71	
Incremental Delay, d2					0.7						1.9	0.9	
Delay (s)					7.2						23.8	20.6	
Level of Service					A						C	C	
Approach Delay (s)		0.0			7.2			0.0			23.4		
Approach LOS		A			A			A			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			18.3									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.48										
Actuated Cycle Length (s)			60.0									Sum of lost time (s)	10.0
Intersection Capacity Utilization			44.8%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
26: 7th St & Arch St

Build Conditions  
Timing Plan: Friday Casino Pe



Lane Group	WBT	WBR	NBT
Lane Group Flow (vph)	325	137	638
v/c Ratio	0.24	0.23	0.49
Control Delay	12.7	13.5	13.3
Queue Delay	0.0	0.0	0.0
Total Delay	12.7	13.5	13.3
Queue Length 50th (ft)	54	44	121
Queue Length 95th (ft)	90	90	164
Internal Link Dist (ft)	389		653
Turn Bay Length (ft)			
Base Capacity (vph)	1343	594	1297
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.24	0.23	0.49
<b>Intersection Summary</b>			



# HCM Signalized Intersection Capacity Analysis

## 26: 7th St & Arch St

Build Conditions  
Timing Plan: Friday Casino Pe



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑	↗		↖↖					
Volume (vph)	0	0	0	0	296	125	119	461	0	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		5.0					
Lane Util. Factor					0.95	1.00		0.95					
Frbp, ped/bikes					1.00	0.97		1.00					
Flpb, ped/bikes					1.00	1.00		0.99					
Frt					1.00	0.85		1.00					
Flt Protected					1.00	1.00		0.99					
Satd. Flow (prot)					3162	1399		3178					
Flt Permitted					1.00	1.00		0.99					
Satd. Flow (perm)					3162	1399		3178					
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.91	0.91	0.91	0.91	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	0	325	137	131	507	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	325	137	0	638	0	0	0	0	
Confl. Peds. (#/hr)	44		44	19		19	89		89	122		122	
Heavy Vehicles (%)	2%	2%	2%	2%	6%	2%	3%	3%	2%	2%	2%	2%	
Bus Blockages (#/hr)	0	0	0	0	0	6	0	0	0	0	0	0	
Parking (#/hr)							0		0				
Turn Type					NA	Perm	Perm	NA					
Protected Phases					6			8					
Permitted Phases						6	8						
Actuated Green, G (s)					25.0	25.0		24.0					
Effective Green, g (s)					25.5	25.5		24.5					
Actuated g/C Ratio					0.42	0.42		0.41					
Clearance Time (s)					5.5	5.5		5.5					
Lane Grp Cap (vph)					1343	594		1297					
v/s Ratio Prot					c0.10								
v/s Ratio Perm						0.10		0.20					
v/c Ratio					0.24	0.23		0.49					
Uniform Delay, d1					11.1	11.0		13.1					
Progression Factor					1.10	1.10		0.90					
Incremental Delay, d2					0.4	0.9		1.1					
Delay (s)					12.5	13.0		13.0					
Level of Service					B	B		B					
Approach Delay (s)		0.0			12.7			13.0			0.0		
Approach LOS		A			B			B			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			12.9		HCM 2000 Level of Service						B		
HCM 2000 Volume to Capacity ratio			0.36										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)						10.0		
Intersection Capacity Utilization			36.1%		ICU Level of Service						A		
Analysis Period (min)			15										
c Critical Lane Group													



Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	426	197	609
v/c Ratio	0.32	0.34	0.45
Control Delay	16.4	24.0	24.4
Queue Delay	0.0	0.0	0.0
Total Delay	16.4	24.0	24.4
Queue Length 50th (ft)	51	65	107
Queue Length 95th (ft)	83	m67	m104
Internal Link Dist (ft)	344		682
Turn Bay Length (ft)			
Base Capacity (vph)	1311	585	1360
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.32	0.34	0.45

**Intersection Summary**

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

HCM Signalized Intersection Capacity Analysis  
28: 9th St #1 & Arch St

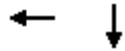
Build Conditions  
Timing Plan: Friday Casino Pe



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑		↑	↑↑					
Volume (vph)	0	0	0	0	320	67	179	554	0	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	5.0					
Lane Util. Factor					0.95		1.00	0.95					
Frbp, ped/bikes					0.99		1.00	1.00					
Flpb, ped/bikes					1.00		0.90	1.00					
Frt					0.97		1.00	1.00					
Flt Protected					1.00		0.95	1.00					
Satd. Flow (prot)					3085		1435	3331					
Flt Permitted					1.00		0.95	1.00					
Satd. Flow (perm)					3085		1435	3331					
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.91	0.91	0.91	0.91	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	0	352	74	197	609	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	426	0	197	609	0	0	0	0	
Confl. Peds. (#/hr)	89		89	65		65	137		137	205		205	
Heavy Vehicles (%)	2%	2%	2%	2%	5%	0%	5%	0%	2%	2%	2%	2%	
Bus Blockages (#/hr)	0	0	0	0	3	0	0	3	0	0	0	0	
Parking (#/hr)				0		0							
Turn Type					NA		Perm	NA					
Protected Phases					6			8					
Permitted Phases							8						
Actuated Green, G (s)					25.0		24.0	24.0					
Effective Green, g (s)					25.5		24.5	24.5					
Actuated g/C Ratio					0.42		0.41	0.41					
Clearance Time (s)					5.5		5.5	5.5					
Lane Grp Cap (vph)					1311		585	1360					
v/s Ratio Prot					c0.14			c0.18					
v/s Ratio Perm							0.14						
v/c Ratio					0.32		0.34	0.45					
Uniform Delay, d1					11.5		12.2	12.9					
Progression Factor					1.35		1.86	1.84					
Incremental Delay, d2					0.6		0.5	0.3					
Delay (s)					16.1		23.1	23.9					
Level of Service					B		C	C					
Approach Delay (s)		0.0			16.1			23.7			0.0		
Approach LOS		A			B			C			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			21.1		HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio			0.39										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				10.0				
Intersection Capacity Utilization			35.6%		ICU Level of Service				A				
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
29: 10th St & Arch St

Build Conditions  
Timing Plan: Friday Casino Pe



Lane Group	WBT	SBT
Lane Group Flow (vph)	598	537
v/c Ratio	0.49	0.46
Control Delay	11.8	14.5
Queue Delay	0.0	0.0
Total Delay	11.8	14.5
Queue Length 50th (ft)	62	71
Queue Length 95th (ft)	87	108
Internal Link Dist (ft)	371	412
Turn Bay Length (ft)		
Base Capacity (vph)	1224	1176
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.49	0.46
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
29: 10th St & Arch St

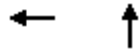
Build Conditions  
Timing Plan: Friday Casino Pe



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑						↑↑	
Volume (vph)	0	0	0	155	383	0	0	0	0	0	327	157
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						0.92	
Flpb, ped/bikes					0.93						1.00	
Frt					1.00						0.95	
Flt Protected					0.99						1.00	
Satd. Flow (prot)					2881						2884	
Flt Permitted					0.99						1.00	
Satd. Flow (perm)					2881						2884	
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.92	0.92	0.92	0.92	0.92	0.90	0.90
Adj. Flow (vph)	0	0	0	172	426	0	0	0	0	0	363	174
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	598	0	0	0	0	0	537	0
Confl. Peds. (#/hr)	444		444	322		322	188		188	331		331
Heavy Vehicles (%)	2%	2%	2%	3%	8%	2%	2%	2%	2%	2%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	3	0	0	0	0	0	3	0
Parking (#/hr)				0		0						0
Turn Type				Perm	NA						NA	
Protected Phases					6						4	
Permitted Phases				6								
Actuated Green, G (s)					25.0						24.0	
Effective Green, g (s)					25.5						24.5	
Actuated g/C Ratio					0.42						0.41	
Clearance Time (s)					5.5						5.5	
Lane Grp Cap (vph)					1224						1177	
v/s Ratio Prot											c0.19	
v/s Ratio Perm					0.21							
v/c Ratio					0.49						0.46	
Uniform Delay, d1					12.5						12.9	
Progression Factor					0.81						1.00	
Incremental Delay, d2					1.4						1.3	
Delay (s)					11.5						14.2	
Level of Service					B						B	
Approach Delay (s)		0.0			11.5			0.0			14.2	
Approach LOS		A			B			A			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			12.8		HCM 2000 Level of Service						B	
HCM 2000 Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					10.0		
Intersection Capacity Utilization			43.8%		ICU Level of Service					A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
33: 9th St & Walnut St

Build Conditions  
Timing Plan: Friday Casino Pe



Lane Group	WBT	NBT
Lane Group Flow (vph)	599	345
v/c Ratio	0.48	0.26
Control Delay	9.6	11.8
Queue Delay	0.0	0.0
Total Delay	9.6	11.8
Queue Length 50th (ft)	25	40
Queue Length 95th (ft)	40	65
Internal Link Dist (ft)	368	360
Turn Bay Length (ft)		
Base Capacity (vph)	1246	1335
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.48	0.26
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 33: 9th St & Walnut St

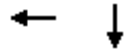
Build Conditions  
Timing Plan: Friday Casino Pe



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑			↑↑				
Volume (vph)	0	0	0	0	463	88	69	248	0	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					0.95			0.95				
Frbp, ped/bikes					0.99			1.00				
Flpb, ped/bikes					1.00			0.97				
Frt					0.98			1.00				
Flt Protected					1.00			0.99				
Satd. Flow (prot)					2932			3144				
Flt Permitted					1.00			0.99				
Satd. Flow (perm)					2932			3144				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	503	96	75	270	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	599	0	0	345	0	0	0	0
Confl. Peds. (#/hr)	136		136	89		89	192		192	280		280
Heavy Vehicles (%)	2%	2%	2%	2%	4%	14%	0%	3%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	21	0	0	0	0	0	0	0
Parking (#/hr)									0			
Turn Type					NA		Perm	NA				
Protected Phases					6			8				
Permitted Phases							8					
Actuated Green, G (s)					24.0			24.0				
Effective Green, g (s)					25.5			25.5				
Actuated g/C Ratio					0.42			0.42				
Clearance Time (s)					6.0			6.0				
Lane Grp Cap (vph)					1246			1336				
v/s Ratio Prot					c0.20							
v/s Ratio Perm								0.11				
v/c Ratio					0.48			0.26				
Uniform Delay, d1					12.5			11.1				
Progression Factor					0.66			1.00				
Incremental Delay, d2					1.2			0.5				
Delay (s)					9.4			11.6				
Level of Service					A			B				
Approach Delay (s)		0.0			9.4			11.6			0.0	
Approach LOS		A			A			B			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			10.2					HCM 2000 Level of Service		B		
HCM 2000 Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			60.0					Sum of lost time (s)		9.0		
Intersection Capacity Utilization			37.0%					ICU Level of Service		A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
34: Walnut St & 8th St

Build Conditions  
Timing Plan: Friday Casino Pe



Lane Group	WBT	SBT
Lane Group Flow (vph)	564	493
v/c Ratio	0.44	0.40
Control Delay	11.8	3.6
Queue Delay	0.0	0.0
Total Delay	11.8	3.6
Queue Length 50th (ft)	71	14
Queue Length 95th (ft)	115	21
Internal Link Dist (ft)	353	489
Turn Bay Length (ft)		
Base Capacity (vph)	1273	1242
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.44	0.40
<b>Intersection Summary</b>		



# HCM Signalized Intersection Capacity Analysis

## 34: Walnut St & 8th St

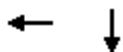
Build Conditions  
Timing Plan: Friday Casino Pe



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑						↑↑	
Volume (vph)	0	0	0	80	450	0	0	0	0	0	359	104
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					0.95						0.95	
Frbp, ped/bikes					1.00						0.94	
Flpb, ped/bikes					0.97						1.00	
Frt					1.00						0.97	
Flt Protected					0.99						1.00	
Satd. Flow (prot)					2995						2924	
Flt Permitted					0.99						1.00	
Satd. Flow (perm)					2995						2924	
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.92	0.92	0.92	0.92	0.88	0.94	0.94
Adj. Flow (vph)	0	0	0	85	479	0	0	0	0	0	382	111
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	564	0	0	0	0	0	493	0
Confl. Peds. (#/hr)	39		39	305		305	114		114	369		369
Heavy Vehicles (%)	2%	2%	2%	0%	6%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	11	0	0	0	0	0	10	0
Parking (#/hr)				0						0		
Turn Type				Perm	NA						NA	
Protected Phases					6						4	
Permitted Phases				6								
Actuated Green, G (s)					24.0						24.0	
Effective Green, g (s)					25.5						25.5	
Actuated g/C Ratio					0.42						0.42	
Clearance Time (s)					6.0						6.0	
Lane Grp Cap (vph)					1272						1242	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.19							
v/c Ratio					0.44						0.40	
Uniform Delay, d1					12.2						11.9	
Progression Factor					0.86						0.24	
Incremental Delay, d2					1.0						0.7	
Delay (s)					11.6						3.5	
Level of Service					B						A	
Approach Delay (s)		0.0			11.6			0.0			3.5	
Approach LOS		A			B			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			7.8		HCM 2000 Level of Service					A		
HCM 2000 Volume to Capacity ratio			0.42									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					9.0		
Intersection Capacity Utilization			41.0%		ICU Level of Service					A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
37: 6th Street/6th St & Walnut St

Build Conditions  
Timing Plan: Friday Casino Pe



Lane Group	WBT	SBT
Lane Group Flow (vph)	447	703
v/c Ratio	0.38	0.50
Control Delay	10.0	11.9
Queue Delay	0.0	0.0
Total Delay	10.0	11.9
Queue Length 50th (ft)	72	73
Queue Length 95th (ft)	110	185
Internal Link Dist (ft)	357	488
Turn Bay Length (ft)		
Base Capacity (vph)	1182	1411
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.38	0.50
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 37: 6th Street/6th St & Walnut St

Build Conditions  
Timing Plan: Friday Casino Pe



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑						↑↑	
Volume (vph)	0	0	0	65	351	0	0	0	0	0	517	137
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					0.95						0.95	
Frbp, ped/bikes					1.00						0.97	
Flpb, ped/bikes					0.99						1.00	
Frt					1.00						0.97	
Flt Protected					0.99						1.00	
Satd. Flow (prot)					3153						2970	
Flt Permitted					0.99						1.00	
Satd. Flow (perm)					3153						2970	
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.93	0.93
Adj. Flow (vph)	0	0	0	70	377	0	0	0	0	0	556	147
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	447	0	0	0	0	0	703	0
Confl. Peds. (#/hr)	144		144	94		94	141		141	220		220
Heavy Vehicles (%)	2%	2%	2%	0%	5%	2%	2%	2%	2%	2%	0%	3%
Parking (#/hr)	0			0			0			0		0
Turn Type				Perm	NA						NA	
Protected Phases					6						4	
Permitted Phases				6								
Actuated Green, G (s)					21.0						27.0	
Effective Green, g (s)					22.5						28.5	
Actuated g/C Ratio					0.38						0.48	
Clearance Time (s)					6.0						6.0	
Lane Grp Cap (vph)					1182						1410	
v/s Ratio Prot											c0.24	
v/s Ratio Perm					0.14							
v/c Ratio					0.38						0.50	
Uniform Delay, d1					13.7						10.8	
Progression Factor					0.66						0.97	
Incremental Delay, d2					0.9						1.2	
Delay (s)					9.9						11.6	
Level of Service					A						B	
Approach Delay (s)		0.0			9.9			0.0			11.6	
Approach LOS		A			A			A			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			11.0								HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.45									
Actuated Cycle Length (s)			60.0								Sum of lost time (s)	9.0
Intersection Capacity Utilization			42.9%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
40: 5th St & Arch St

Build Conditions  
Timing Plan: Friday Casino Pe



Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	326	122	731
v/c Ratio	0.25	0.20	0.52
Control Delay	11.7	11.3	12.1
Queue Delay	0.0	0.0	0.0
Total Delay	11.7	11.3	12.1
Queue Length 50th (ft)	37	20	72
Queue Length 95th (ft)	62	m43	m132
Internal Link Dist (ft)	526		282
Turn Bay Length (ft)		100	
Base Capacity (vph)	1328	610	1393
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.25	0.20	0.52

Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

## 40: 5th St & Arch St













Build Conditions  
Timing Plan: Friday Casino Pe



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑		↑	↑↑					
Volume (vph)	0	0	0	0	242	77	120	716	0	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	4.5					
Lane Util. Factor					0.95		1.00	0.95					
Frbp, ped/bikes					0.99		1.00	1.00					
Flpb, ped/bikes					1.00		0.94	1.00					
Frt					0.96		1.00	1.00					
Flt Protected					1.00		0.95	1.00					
Satd. Flow (prot)					3125		1436	3279					
Flt Permitted					1.00		0.95	1.00					
Satd. Flow (perm)					3125		1436	3279					
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.98	0.98	0.98	0.98	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	0	247	79	122	731	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	326	0	122	731	0	0	0	0	
Confl. Peds. (#/hr)	75		75	21		21	81		81	43		43	
Heavy Vehicles (%)	2%	2%	2%	2%	3%	0%	10%	2%	2%	2%	2%	2%	
Bus Blockages (#/hr)	0	0	0	0	2	0	0	1	0	0	0	0	
Parking (#/hr)				0					0				
Turn Type					NA		Perm	NA					
Protected Phases					6			8					
Permitted Phases							8						
Actuated Green, G (s)					24.0		24.0	24.0					
Effective Green, g (s)					25.5		25.5	25.5					
Actuated g/C Ratio					0.42		0.42	0.42					
Clearance Time (s)					6.0		6.0	6.0					
Lane Grp Cap (vph)					1328		610	1393					
v/s Ratio Prot					c0.10			c0.22					
v/s Ratio Perm							0.08						
v/c Ratio					0.25		0.20	0.52					
Uniform Delay, d1					11.1		10.8	12.8					
Progression Factor					1.00		0.95	0.84					
Incremental Delay, d2					0.4		0.6	1.1					
Delay (s)					11.5		10.9	11.9					
Level of Service					B		B	B					
Approach Delay (s)		0.0			11.5			11.7			0.0		
Approach LOS		A			B			B			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			11.7		HCM 2000 Level of Service				B				
HCM 2000 Volume to Capacity ratio			0.39										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				9.0				
Intersection Capacity Utilization			37.1%		ICU Level of Service				A				
Analysis Period (min)			15										
c Critical Lane Group													

HCM 2010 Signalized Intersection Summary  
 41: 6th Street/6th St & Market St

Build Conditions  
 Timing Plan: Friday Casino Pe

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑						↑↑	↑
Volume (veh/h)	0	682	112	64	333	0	0	0	0	124	478	73
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		0.95	0.99		1.00				1.00		0.82
Parking Bus, Adj	1.00	1.00	0.98	1.00	1.00	1.00				0.90	1.00	0.90
Adj Sat Flow, veh/h/ln	0.0	183.5	185.3	189.0	181.7	0.0				189.0	185.6	160.2
Adj Flow Rate, veh/h	0	718	118	67	351	0				131	503	77
Adj No. of Lanes	0	2	1	1	2	0				0	2	1
Peak Hour Factor	0.92	0.95	0.95	0.95	0.95	0.92				0.95	0.95	0.95
Percent Heavy Veh, %	0	3	2	0	4	0				18	1	18
Cap, veh/h	0	1482	373	260	927	0				284	1161	429
Arrive On Green	0.00	0.14	0.14	0.43	0.43	0.00				0.14	0.14	0.14
Sat Flow, veh/h	0	3578	879	594	2908	0				669	2731	1010
Grp Volume(v), veh/h	0	718	118	67	351	0				320	314	77
Grp Sat Flow(s),veh/h/ln	0	1743	879	594	1090	0				1637	1763	1010
Q Serve(g_s), s	0.0	11.4	7.2	5.8	6.6	0.0				10.8	9.7	4.0
Cycle Q Clear(g_c), s	0.0	11.4	7.2	17.2	6.6	0.0				10.8	9.7	4.0
Prop In Lane	0.00		1.00	1.00		0.00				0.41		1.00
Lane Grp Cap(c), veh/h	0	1482	373	260	927	0				696	749	429
V/C Ratio(X)	0.00	0.48	0.32	0.26	0.38	0.00				0.46	0.42	0.18
Avail Cap(c_a), veh/h	0	1482	373	260	927	0				696	749	429
HCM Platoon Ratio	1.00	0.33	0.33	1.00	1.00	1.00				0.33	0.33	0.33
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	19.7	17.9	19.8	11.8	0.0				19.5	19.0	16.6
Incr Delay (d2), s/veh	0.0	1.1	2.2	2.4	1.2	0.0				2.2	1.7	0.9
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	9.6	3.6	2.0	3.8	0.0				9.1	8.8	2.2
LnGrp Delay(d),s/veh	0.0	20.9	20.2	22.2	13.0	0.0				21.7	20.7	17.5
LnGrp LOS		C	C	C	B					C	C	B
Approach Vol, veh/h		836			418						711	
Approach Delay, s/veh		20.8			14.5						20.8	
Approach LOS		C			B						C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		30.0		30.0		30.0						
Change Period (Y+Rc), s		6.0		6.0		6.0						
Max Green Setting (Gmax), s		24.0		24.0		24.0						
Max Q Clear Time (g_c+I1), s		13.4		12.8		19.2						
Green Ext Time (p_c), s		5.6		0.0		3.0						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			19.4									
HCM 2010 LOS			B									

Queues  
42: 6th St/6th Street & Chestnut St

Build Conditions  
Timing Plan: Friday Casino Pe



Lane Group	EBT	EBR	SBL	SBT
Lane Group Flow (vph)	407	114	124	649
v/c Ratio	0.59	0.35	0.25	0.46
Control Delay	15.6	15.6	11.6	11.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	15.6	15.6	11.6	11.5
Queue Length 50th (ft)	82	38	22	62
Queue Length 95th (ft)	m154	m78	56	113
Internal Link Dist (ft)	389			512
Turn Bay Length (ft)			50	
Base Capacity (vph)	694	322	505	1410
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.59	0.35	0.25	0.46

Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

## 42: 6th St/6th Street & Chestnut St

Build Conditions  
Timing Plan: Friday Casino Pe

















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑	↗							↖	↑↑		
Volume (vph)	0	374	105	0	0	0	0	0	0	114	597	0	
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	
Total Lost time (s)		4.5	4.5							4.5	4.5		
Lane Util. Factor		1.00	*0.60							1.00	0.95		
Frbp, ped/bikes		1.00	0.91							1.00	1.00		
Flpb, ped/bikes		1.00	1.00							0.74	1.00		
Frt		1.00	0.85							1.00	1.00		
Flt Protected		1.00	1.00							0.95	1.00		
Satd. Flow (prot)		1633	758							1189	3318		
Flt Permitted		1.00	1.00							0.95	1.00		
Satd. Flow (perm)		1633	758							1189	3318		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	407	114	0	0	0	0	0	0	124	649	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	407	114	0	0	0	0	0	0	124	649	0	
Confl. Peds. (#/hr)	110		110	147		147	84		84	371		371	
Heavy Vehicles (%)	2%	8%	3%	2%	2%	2%	2%	2%	2%	4%	1%	2%	
Bus Blockages (#/hr)	0	0	12	0	0	0	0	0	0	0	0	0	
Turn Type		NA	Perm							Perm	NA		
Protected Phases		2									4		
Permitted Phases			2							4			
Actuated Green, G (s)		24.0	24.0							24.0	24.0		
Effective Green, g (s)		25.5	25.5							25.5	25.5		
Actuated g/C Ratio		0.42	0.42							0.42	0.42		
Clearance Time (s)		6.0	6.0							6.0	6.0		
Lane Grp Cap (vph)		694	322							505	1410		
v/s Ratio Prot		c0.25									c0.20		
v/s Ratio Perm			0.15							0.10			
v/c Ratio		0.59	0.35							0.25	0.46		
Uniform Delay, d1		13.2	11.7							11.1	12.3		
Progression Factor		0.92	1.04							0.91	0.83		
Incremental Delay, d2		2.9	2.4							1.1	1.0		
Delay (s)		15.0	14.6							11.2	11.3		
Level of Service		B	B							B	B		
Approach Delay (s)		14.9			0.0			0.0			11.3		
Approach LOS		B			A			A			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			12.7									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.52										
Actuated Cycle Length (s)			60.0									Sum of lost time (s)	9.0
Intersection Capacity Utilization			43.9%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													



HCM 2010 Signalized Intersection Summary  
43: 5th St & Walnut St

Build Conditions  
Timing Plan: Friday Casino Pe

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	0	360	66	70	402	0	0	0	0
Number				1	6	16	3	8	18			
Initial Q (Qb), veh				0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)				1.00		0.94	1.00		1.00			
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln				0.0	184.3	189.0	189.0	178.4	0.0			
Adj Flow Rate, veh/h				0	379	69	74	423	0			
Adj No. of Lanes				0	2	0	0	2	0			
Peak Hour Factor				0.92	0.95	0.95	0.95	0.95	0.92			
Percent Heavy Veh, %				0	3	3	4	4	0			
Cap, veh/h				0	1246	224	230	1191	0			
Arrive On Green				0.00	0.43	0.43	0.43	0.43	0.00			
Sat Flow, veh/h				0	3024	527	360	2882	0			
Grp Volume(v), veh/h				0	224	224	261	236	0			
Grp Sat Flow(s),veh/h/ln				0	1751	1708	1619	1542	0			
Q Serve(g_s), s				0.0	5.1	5.2	1.1	6.2	0.0			
Cycle Q Clear(g_c), s				0.0	5.1	5.2	6.1	6.2	0.0			
Prop In Lane				0.00		0.31	0.28		0.00			
Lane Grp Cap(c), veh/h				0	744	726	765	656	0			
V/C Ratio(X)				0.00	0.30	0.31	0.34	0.36	0.00			
Avail Cap(c_a), veh/h				0	744	726	765	656	0			
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(l)				0.00	1.00	1.00	1.00	1.00	0.00			
Uniform Delay (d), s/veh				0.0	11.4	11.4	11.6	11.7	0.0			
Incr Delay (d2), s/veh				0.0	1.0	1.1	1.2	1.5	0.0			
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln				0.0	4.8	4.8	5.7	5.2	0.0			
LnGrp Delay(d),s/veh				0.0	12.4	12.5	12.8	13.2	0.0			
LnGrp LOS					B	B	B	B				
Approach Vol, veh/h					448			497				
Approach Delay, s/veh					12.5			13.0				
Approach LOS					B			B				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs						6		8				
Phs Duration (G+Y+Rc), s						30.0		30.0				
Change Period (Y+Rc), s						6.0		6.0				
Max Green Setting (Gmax), s						24.0		24.0				
Max Q Clear Time (g_c+I1), s						7.2		8.2				
Green Ext Time (p_c), s						2.1		2.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay					12.8							
HCM 2010 LOS					B							

Queues  
46: 8th St #2 & Race St #1

Build Conditions  
Timing Plan: Friday Casino Pe



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	912	311	986
v/c Ratio	0.46	0.57	0.53
Control Delay	9.1	18.1	14.1
Queue Delay	0.0	0.0	0.0
Total Delay	9.1	18.1	14.1
Queue Length 50th (ft)	59	94	97
Queue Length 95th (ft)	90	176	134
Internal Link Dist (ft)	378		453
Turn Bay Length (ft)			
Base Capacity (vph)	1991	547	1852
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.46	0.57	0.53
<b>Intersection Summary</b>			

# HCM Signalized Intersection Capacity Analysis

## 46: 8th St #2 & Race St #1
















Build Conditions  
Timing Plan: Friday Casino Pe



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑								↘	↑↑↑	
Volume (vph)	0	750	71	0	0	0	0	0	0	322	845	0
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)		4.5								4.5	4.5	
Lane Util. Factor		0.91								0.86	0.86	
Frbp, ped/bikes		1.00								1.00	1.00	
Flpb, ped/bikes		1.00								0.93	1.00	
Frt		0.99								1.00	1.00	
Flt Protected		1.00								0.95	1.00	
Satd. Flow (prot)		4687								1289	4356	
Flt Permitted		1.00								0.95	1.00	
Satd. Flow (perm)		4687								1289	4356	
Peak-hour factor, PHF	0.96	0.90	0.90	0.92	0.92	0.92	0.92	0.92	0.92	0.90	0.90	0.92
Adj. Flow (vph)	0	833	79	0	0	0	0	0	0	358	939	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	912	0	0	0	0	0	0	0	311	986	0
Confl. Peds. (#/hr)	63		63	8		8	94		94	99		99
Heavy Vehicles (%)	2%	1%	0%	2%	2%	2%	2%	2%	2%	4%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	6	0
Parking (#/hr)			0									
Turn Type		NA								Perm	NA	
Protected Phases		2									4	
Permitted Phases										4		
Actuated Green, G (s)		24.0								24.0	24.0	
Effective Green, g (s)		25.5								25.5	25.5	
Actuated g/C Ratio		0.42								0.42	0.42	
Clearance Time (s)		6.0								6.0	6.0	
Lane Grp Cap (vph)		1991								547	1851	
v/s Ratio Prot		c0.19										
v/s Ratio Perm										c0.24	0.23	
v/c Ratio		0.46								0.57	0.53	
Uniform Delay, d1		12.3								13.1	12.8	
Progression Factor		0.68								1.00	1.00	
Incremental Delay, d2		0.7								4.2	1.1	
Delay (s)		9.0								17.3	13.9	
Level of Service		A								B	B	
Approach Delay (s)		9.0			0.0			0.0			14.7	
Approach LOS		A			A			A			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			12.4								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)	9.0
Intersection Capacity Utilization			41.3%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												

HCM 2010 Signalized Intersection Summary  
48: 7th St & Race St

Build Conditions  
Timing Plan: Friday Casino Pe

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	27	768	0	0	0	0	0	490	142	0	0	0
Number	5	2	12				3	8	18			
Initial Q (Qb), veh	0	0	0				0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.96			
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	189.0	183.6	0.0				0.0	185.3	178.3			
Adj Flow Rate, veh/h	29	826	0				0	527	153			
Adj No. of Lanes	0	5	0				0	2	1			
Peak Hour Factor	0.92	0.93	0.92				0.92	0.93	0.93			
Percent Heavy Veh, %	3	3	0				0	2	6			
Cap, veh/h	125	2997	0				0	1496	619			
Arrive On Green	0.43	0.43	0.00				0.00	0.14	0.14			
Sat Flow, veh/h	134	7369	0				0	3613	1456			
Grp Volume(v), veh/h	215	640	0				0	527	153			
Grp Sat Flow(s),veh/h/ln	1774	1353	0				0	1760	1456			
Q Serve(g_s), s	0.0	4.6	0.0				0.0	8.1	5.6			
Cycle Q Clear(g_c), s	4.6	4.6	0.0				0.0	8.1	5.6			
Prop In Lane	0.13		0.00				0.00		1.00			
Lane Grp Cap(c), veh/h	822	2300	0				0	1496	619			
V/C Ratio(X)	0.26	0.28	0.00				0.00	0.35	0.25			
Avail Cap(c_a), veh/h	822	2300	0				0	1496	619			
HCM Platoon Ratio	1.00	1.00	1.00				1.00	0.33	0.33			
Upstream Filter(I)	1.00	1.00	0.00				0.00	1.00	1.00			
Uniform Delay (d), s/veh	11.2	11.2	0.0				0.0	18.3	17.2			
Incr Delay (d2), s/veh	0.8	0.3	0.0				0.0	0.7	1.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	4.4	3.1	0.0				0.0	7.4	4.4			
LnGrp Delay(d),s/veh	12.0	11.5	0.0				0.0	19.0	18.2			
LnGrp LOS	B	B						B	B			
Approach Vol, veh/h		855						680				
Approach Delay, s/veh		11.7						18.8				
Approach LOS		B						B				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2						8				
Phs Duration (G+Y+Rc), s		30.0						30.0				
Change Period (Y+Rc), s		6.0						6.0				
Max Green Setting (Gmax), s		24.0						24.0				
Max Q Clear Time (g_c+I1), s		6.6						10.1				
Green Ext Time (p_c), s		4.7						3.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			14.8									
HCM 2010 LOS			B									

Queues  
49: 6th St & Race St

Build Conditions  
Timing Plan: Friday Casino Pe



Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	961	95	897
v/c Ratio	0.39	0.16	0.48
Control Delay	5.6	5.1	13.5
Queue Delay	0.0	0.0	0.0
Total Delay	5.6	5.1	13.5
Queue Length 50th (ft)	21	7	81
Queue Length 95th (ft)	26	15	109
Internal Link Dist (ft)	400		133
Turn Bay Length (ft)			
Base Capacity (vph)	2479	596	1870
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.39	0.16	0.48
<b>Intersection Summary</b>			

# HCM Signalized Intersection Capacity Analysis

## 49: 6th St & Race St

Build Conditions  
Timing Plan: Friday Casino Pe



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗								↖↑↑	
Volume (vph)	0	846	84	0	0	0	0	0	0	201	589	0
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)		4.5	4.5								4.5	
Lane Util. Factor		0.86	1.00								0.91	
Frbp, ped/bikes		1.00	0.95								1.00	
Flpb, ped/bikes		1.00	1.00								1.00	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								0.99	
Satd. Flow (prot)		5835	1404								4402	
Flt Permitted		1.00	1.00								0.99	
Satd. Flow (perm)		5835	1404								4402	
Peak-hour factor, PHF	0.96	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.88	0.88	0.92
Adj. Flow (vph)	0	961	95	0	0	0	0	0	0	228	669	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	961	95	0	0	0	0	0	0	0	897	0
Confl. Peds. (#/hr)	48		48	1		1	97		97	2		2
Heavy Vehicles (%)	2%	4%	2%	2%	2%	2%	2%	2%	2%	1%	4%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	33	0
Turn Type		NA	Perm							Perm	NA	
Protected Phases		2									4	
Permitted Phases			2							4		
Actuated Green, G (s)		24.0	24.0								24.0	
Effective Green, g (s)		25.5	25.5								25.5	
Actuated g/C Ratio		0.42	0.42								0.42	
Clearance Time (s)		6.0	6.0								6.0	
Lane Grp Cap (vph)		2479	596								1870	
v/s Ratio Prot		0.16										
v/s Ratio Perm			0.07								0.20	
v/c Ratio		0.39	0.16								0.48	
Uniform Delay, d1		11.9	10.6								12.5	
Progression Factor		0.43	0.41								1.00	
Incremental Delay, d2		0.4	0.6								0.9	
Delay (s)		5.5	4.9								13.3	
Level of Service		A	A								B	
Approach Delay (s)		5.5			0.0			0.0			13.3	
Approach LOS		A			A			A			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			9.1								HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.43									
Actuated Cycle Length (s)			60.0								Sum of lost time (s)	9.0
Intersection Capacity Utilization			35.4%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
50: 3rd St & Race St

Build Conditions  
Timing Plan: Friday Casino Pe



Lane Group	EBT	NBT
Lane Group Flow (vph)	887	456
v/c Ratio	0.54	0.41
Control Delay	10.3	22.2
Queue Delay	0.1	0.0
Total Delay	10.4	22.2
Queue Length 50th (ft)	92	98
Queue Length 95th (ft)	118	133
Internal Link Dist (ft)	370	275
Turn Bay Length (ft)		
Base Capacity (vph)	1650	1100
Starvation Cap Reductn	109	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.58	0.41
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 50: 3rd St & Race St

Build Conditions  
Timing Plan: Friday Casino Pe


















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕						↕↕				
Volume (vph)	104	659	0	0	0	0	0	245	147	0	0	0
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)		5.8						4.9				
Lane Util. Factor		0.95						0.95				
Frbp, ped/bikes		1.00						0.94				
Flpb, ped/bikes		0.99						1.00				
Frt		1.00						0.94				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		3264						2930				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		3264						2930				
Peak-hour factor, PHF	0.86	0.86	0.92	0.92	0.92	0.92	0.92	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	121	766	0	0	0	0	0	285	171	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	887	0	0	0	0	0	456	0	0	0	0
Confl. Peds. (#/hr)	135		135	165		165	173		173	43		43
Heavy Vehicles (%)	0%	1%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	6	0	0	0
Parking (#/hr)	0								0			
Turn Type	Perm	NA						NA				
Protected Phases		2						8				
Permitted Phases	2											
Actuated Green, G (s)		45.0						33.3				
Effective Green, g (s)		45.5						33.8				
Actuated g/C Ratio		0.51						0.38				
Clearance Time (s)		6.3						5.4				
Lane Grp Cap (vph)		1650						1100				
v/s Ratio Prot								c0.16				
v/s Ratio Perm		0.27										
v/c Ratio		0.54						0.41				
Uniform Delay, d1		15.1						20.8				
Progression Factor		0.60						1.00				
Incremental Delay, d2		1.2						1.2				
Delay (s)		10.2						21.9				
Level of Service		B						C				
Approach Delay (s)		10.2			0.0			21.9			0.0	
Approach LOS		B			A			C			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			14.2					HCM 2000 Level of Service			B	
HCM 2000 Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			90.0					Sum of lost time (s)		10.7		
Intersection Capacity Utilization			47.9%					ICU Level of Service		A		
Analysis Period (min)			15									
c Critical Lane Group												



HCM 2010 Signalized Intersection Summary  
52: 5th St & Race St

Build Conditions  
Timing Plan: Friday Casino Pe

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	567	0	0	0	0	0	380	34	0	0	0
Number	5	2	12				3	8	18			
Initial Q (Qb), veh	0	0	0				0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.94			
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	0.90			
Adj Sat Flow, veh/h/ln	189.0	187.1	0.0				0.0	185.3	183.5			
Adj Flow Rate, veh/h	4	603	0				0	404	36			
Adj No. of Lanes	0	2	0				0	2	1			
Peak Hour Factor	0.94	0.94	0.92				0.92	0.94	0.94			
Percent Heavy Veh, %	1	1	0				0	2	3			
Cap, veh/h	63	1479	0				0	1496	563			
Arrive On Green	0.43	0.43	0.00				0.00	0.43	0.43			
Sat Flow, veh/h	6	3566	0				0	3613	1324			
Grp Volume(v), veh/h	326	281	0				0	404	36			
Grp Sat Flow(s),veh/h/ln	1869	1618	0				0	1760	1324			
Q Serve(g_s), s	0.0	7.3	0.0				0.0	4.5	1.0			
Cycle Q Clear(g_c), s	7.3	7.3	0.0				0.0	4.5	1.0			
Prop In Lane	0.01		0.00				0.00		1.00			
Lane Grp Cap(c), veh/h	855	688	0				0	1496	563			
V/C Ratio(X)	0.38	0.41	0.00				0.00	0.27	0.06			
Avail Cap(c_a), veh/h	855	688	0				0	1496	563			
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00				0.00	1.00	1.00			
Uniform Delay (d), s/veh	12.0	12.0	0.0				0.0	11.2	10.2			
Incr Delay (d2), s/veh	1.3	1.8	0.0				0.0	0.4	0.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	7.2	6.4	0.0				0.0	4.0	0.7			
LnGrp Delay(d),s/veh	13.3	13.8	0.0				0.0	11.6	10.4			
LnGrp LOS	B	B						B	B			
Approach Vol, veh/h		607						440				
Approach Delay, s/veh		13.5						11.5				
Approach LOS		B						B				
<b>Timer</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>				
Assigned Phs		2						8				
Phs Duration (G+Y+Rc), s		30.0						30.0				
Change Period (Y+Rc), s		6.0						6.0				
Max Green Setting (Gmax), s		24.0						24.0				
Max Q Clear Time (g_c+I1), s		9.3						6.5				
Green Ext Time (p_c), s		2.8						2.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			12.7									
HCM 2010 LOS			B									

Queues  
59: 4th St & Race St

Build Conditions  
Timing Plan: Friday Casino Pe



Lane Group	EBT	SBT
Lane Group Flow (vph)	794	479
v/c Ratio	0.48	0.40
Control Delay	15.2	21.9
Queue Delay	0.0	0.0
Total Delay	15.2	21.9
Queue Length 50th (ft)	144	103
Queue Length 95th (ft)	192	145
Internal Link Dist (ft)	410	408
Turn Bay Length (ft)		
Base Capacity (vph)	1665	1203
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.48	0.40
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 59: 4th St & Race St

Build Conditions  
Timing Plan: Friday Casino Pe



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑									↑↑		
Volume (vph)	0	637	94	0	0	0	0	0	0	134	306	0	
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	
Total Lost time (s)		4.8									4.9		
Lane Util. Factor		0.95									0.95		
Frbp, ped/bikes		1.00									1.00		
Flpb, ped/bikes		1.00									0.99		
Frt		0.98									1.00		
Flt Protected		1.00									0.98		
Satd. Flow (prot)		3222									3205		
Flt Permitted		1.00									0.98		
Satd. Flow (perm)		3222									3205		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	692	102	0	0	0	0	0	0	146	333	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	794	0	0	0	0	0	0	0	0	479	0	
Confl. Peds. (#/hr)	46		46	30		30	72		72	28		28	
Heavy Vehicles (%)	2%	1%	5%	2%	2%	2%	2%	2%	2%	1%	2%	2%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	3	0	
Parking (#/hr)												0	
Turn Type		NA								Perm	NA		
Protected Phases		2									4		
Permitted Phases										4			
Actuated Green, G (s)		45.0									33.3		
Effective Green, g (s)		46.5									33.8		
Actuated g/C Ratio		0.52									0.38		
Clearance Time (s)		6.3									5.4		
Lane Grp Cap (vph)		1664									1203		
v/s Ratio Prot		c0.25											
v/s Ratio Perm											0.15		
v/c Ratio		0.48									0.40		
Uniform Delay, d1		14.0									20.6		
Progression Factor		1.00									1.00		
Incremental Delay, d2		1.0									1.0		
Delay (s)		14.9									21.6		
Level of Service		B									C		
Approach Delay (s)		14.9			0.0			0.0			21.6		
Approach LOS		B			A			A			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			17.5									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.44										
Actuated Cycle Length (s)			90.0									Sum of lost time (s)	9.7
Intersection Capacity Utilization			45.0%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
63: Race St & 2nd Street

Build Conditions  
Timing Plan: Friday Casino Pe



Lane Group	EBT	SBT
Lane Group Flow (vph)	870	673
v/c Ratio	0.54	0.60
Control Delay	11.6	19.1
Queue Delay	0.0	0.0
Total Delay	11.6	19.1
Queue Length 50th (ft)	103	103
Queue Length 95th (ft)	149	152
Internal Link Dist (ft)	462	479
Turn Bay Length (ft)		
Base Capacity (vph)	1606	1120
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.54	0.60
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 63: Race St & 2nd Street

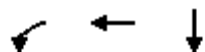
Build Conditions  
Timing Plan: Friday Casino Pe



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑									↑↑		
Volume (vph)	0	613	188	0	0	0	0	0	0	76	543	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		0.95									0.95		
Frbp, ped/bikes		0.99									1.00		
Flpb, ped/bikes		1.00									1.00		
Frt		0.96									1.00		
Flt Protected		1.00									0.99		
Satd. Flow (prot)		3161									3279		
Flt Permitted		1.00									0.99		
Satd. Flow (perm)		3161									3279		
Peak-hour factor, PHF	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.88	
Adj. Flow (vph)	0	666	204	0	0	0	0	0	0	83	590	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	870	0	0	0	0	0	0	0	0	673	0	
Confl. Peds. (#/hr)	74		74	56		56	123		123	8		8	
Heavy Vehicles (%)	2%	1%	1%	2%	2%	2%	2%	2%	2%	0%	1%	2%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	3	0	
Parking (#/hr)			0									0	
Turn Type		NA								Perm	NA		
Protected Phases		2									4		
Permitted Phases										4			
Actuated Green, G (s)		30.0									20.0		
Effective Green, g (s)		30.5									20.5		
Actuated g/C Ratio		0.51									0.34		
Clearance Time (s)		5.0									5.0		
Lane Grp Cap (vph)		1606									1120		
v/s Ratio Prot		c0.28											
v/s Ratio Perm											0.21		
v/c Ratio		0.54									0.60		
Uniform Delay, d1		10.0									16.4		
Progression Factor		1.00									1.00		
Incremental Delay, d2		1.3									2.4		
Delay (s)		11.3									18.7		
Level of Service		B									B		
Approach Delay (s)		11.3			0.0			0.0			18.7		
Approach LOS		B			A			A			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			14.6									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.57										
Actuated Cycle Length (s)			60.0									Sum of lost time (s)	9.0
Intersection Capacity Utilization			52.4%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
70: 8th Street/8th St & Vine St

Build Conditions  
Timing Plan: Friday Casino Pe



Lane Group	WBL	WBT	SBT
Lane Group Flow (vph)	340	2213	686
v/c Ratio	0.17	0.58	0.47
Control Delay	11.8	18.4	26.6
Queue Delay	0.0	3.2	0.0
Total Delay	11.8	21.6	26.6
Queue Length 50th (ft)	68	314	115
Queue Length 95th (ft)	92	322	139
Internal Link Dist (ft)		254	248
Turn Bay Length (ft)			
Base Capacity (vph)	2031	3820	1460
Starvation Cap Reductn	0	1475	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.17	0.94	0.47
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
70: 8th Street/8th St & Vine St

Build Conditions  
Timing Plan: Friday Casino Pe



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔	↑↑↑						↑↑↑	
Volume (vph)	0	0	0	286	1859	0	0	0	0	0	289	287
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)				5.0	5.0						6.0	
Lane Util. Factor				0.97	0.86						0.91	
Frbp, ped/bikes				1.00	1.00						0.99	
Flpb, ped/bikes				0.99	1.00						1.00	
Frt				1.00	1.00						0.93	
Flt Protected				0.95	1.00						1.00	
Satd. Flow (prot)				3550	6676						4781	
Flt Permitted				0.95	1.00						1.00	
Satd. Flow (perm)				3550	6676						4781	
Peak-hour factor, PHF	0.92	0.92	0.92	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.84	0.84
Adj. Flow (vph)	0	0	0	340	2213	0	0	0	0	0	344	342
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	340	2213	0	0	0	0	0	686	0
Confl. Peds. (#/hr)	23		23	14		14	1		1	2		2
Heavy Vehicles (%)	2%	2%	2%	1%	1%	2%	2%	2%	2%	2%	3%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	6	0
Turn Type				Perm	NA						NA	
Protected Phases					6						4	
Permitted Phases				6								
Actuated Green, G (s)				51.0	51.0						27.0	
Effective Green, g (s)				51.5	51.5						27.5	
Actuated g/C Ratio				0.57	0.57						0.31	
Clearance Time (s)				5.5	5.5						6.5	
Lane Grp Cap (vph)				2031	3820						1460	
v/s Ratio Prot					c0.33						c0.14	
v/s Ratio Perm				0.10								
v/c Ratio				0.17	0.58						0.47	
Uniform Delay, d1				9.1	12.3						25.3	
Progression Factor				1.26	1.43						1.00	
Incremental Delay, d2				0.2	0.6						1.1	
Delay (s)				11.6	18.2						26.4	
Level of Service				B	B						C	
Approach Delay (s)		0.0			17.3			0.0			26.4	
Approach LOS		A			B			A			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			19.3		HCM 2000 Level of Service					B		
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			90.0		Sum of lost time (s)			11.0				
Intersection Capacity Utilization			46.5%		ICU Level of Service					A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
71: 7th St & Vine St/Route 30

Build Conditions  
Timing Plan: Friday Casino Pe















Lane Group	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	1769	10	538	1070
v/c Ratio	0.57	0.01	0.34	0.46
Control Delay	18.7	0.0	16.1	18.6
Queue Delay	0.2	0.0	1.6	4.6
Total Delay	18.9	0.0	17.7	23.2
Queue Length 50th (ft)	206	0	93	152
Queue Length 95th (ft)	242	1	130	189
Internal Link Dist (ft)	594			178
Turn Bay Length (ft)		500		
Base Capacity (vph)	3078	787	1605	2302
Starvation Cap Reductn	0	0	853	1140
Spillback Cap Reductn	520	0	3	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.69	0.01	0.72	0.92

Intersection Summary



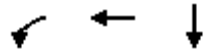
HCM Signalized Intersection Capacity Analysis  
71: 7th St & Vine St/Route 30

Build Conditions  
Timing Plan: Friday Casino Pe

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑↑	↗	↘↘	↑↑↑↑					
Volume (vph)	0	0	0	0	1645	9	500	995	0	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	4.5	4.5					
Lane Util. Factor					0.86	1.00	0.97	0.91					
Frbp, ped/bikes					1.00	1.00	1.00	1.00					
Flpb, ped/bikes					1.00	1.00	1.00	1.00					
Frt					1.00	0.85	1.00	1.00					
Flt Protected					1.00	1.00	0.95	1.00					
Satd. Flow (prot)					6676	1666	3612	5246					
Flt Permitted					1.00	1.00	0.95	1.00					
Satd. Flow (perm)					6676	1666	3612	5246					
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.93	0.93	0.93	0.93	0.95	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	0	1769	10	538	1070	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	5	20	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	1769	5	518	1070	0	0	0	0	
Confl. Peds. (#/hr)	3		3							1		1	
Heavy Vehicles (%)	2%	2%	2%	2%	1%	0%	0%	2%	2%	2%	2%	2%	
Turn Type					NA	Perm	Perm	NA					
Protected Phases					6			8					
Permitted Phases						6	8						
Actuated Green, G (s)					40.0	40.0	38.0	38.0					
Effective Green, g (s)					41.5	41.5	39.5	39.5					
Actuated g/C Ratio					0.46	0.46	0.44	0.44					
Clearance Time (s)					6.0	6.0	6.0	6.0					
Lane Grp Cap (vph)					3078	768	1585	2302					
v/s Ratio Prot					c0.26			c0.20					
v/s Ratio Perm						0.00	0.14						
v/c Ratio					0.57	0.01	0.33	0.46					
Uniform Delay, d1					17.8	13.1	16.5	17.8					
Progression Factor					1.00	1.00	1.00	1.00					
Incremental Delay, d2					0.8	0.0	0.6	0.7					
Delay (s)					18.6	13.1	17.1	18.5					
Level of Service					B	B	B	B					
Approach Delay (s)		0.0			18.5			18.0			0.0		
Approach LOS		A			B			B			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			18.3		HCM 2000 Level of Service				B				
HCM 2000 Volume to Capacity ratio			0.52										
Actuated Cycle Length (s)			90.0		Sum of lost time (s)				9.0				
Intersection Capacity Utilization			46.5%		ICU Level of Service				A				
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
73: 8th St & Callowhill St

Build Conditions  
Timing Plan: Friday Casino Pe



Lane Group	WBL	WBT	SBT
Lane Group Flow (vph)	361	546	307
v/c Ratio	0.47	0.35	0.21
Control Delay	14.9	12.5	11.4
Queue Delay	0.0	0.0	0.0
Total Delay	14.9	12.5	11.4
Queue Length 50th (ft)	89	66	35
Queue Length 95th (ft)	146	95	55
Internal Link Dist (ft)		389	389
Turn Bay Length (ft)			
Base Capacity (vph)	770	1551	1480
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.47	0.35	0.21
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
73: 8th St & Callowhill St

Build Conditions  
Timing Plan: Friday Casino Pe



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↗						↖	↗
Volume (vph)	0	0	0	314	475	0	0	0	0	0	240	27
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)				4.5	4.5						4.5	
Lane Util. Factor				1.00	0.95						0.95	
Frbp, ped/bikes				1.00	1.00						0.99	
Flpb, ped/bikes				0.99	1.00						1.00	
Frt				1.00	1.00						0.98	
Flt Protected				0.95	1.00						1.00	
Satd. Flow (prot)				1814	3651						3484	
Flt Permitted				0.95	1.00						1.00	
Satd. Flow (perm)				1814	3651						3484	
Peak-hour factor, PHF	0.88	0.88	0.88	0.87	0.87	0.88	0.88	0.88	0.88	0.88	0.87	0.87
Adj. Flow (vph)	0	0	0	361	546	0	0	0	0	0	276	31
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	361	546	0	0	0	0	0	307	0
Confl. Peds. (#/hr)	13		13	9		9	3		3	67		67
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	7%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	6	0
Turn Type				Perm	NA						NA	
Protected Phases					6						4	
Permitted Phases				6								
Actuated Green, G (s)				24.0	24.0						24.0	
Effective Green, g (s)				25.5	25.5						25.5	
Actuated g/C Ratio				0.42	0.42						0.42	
Clearance Time (s)				6.0	6.0						6.0	
Lane Grp Cap (vph)				770	1551						1480	
v/s Ratio Prot					0.15						c0.09	
v/s Ratio Perm				c0.20								
v/c Ratio				0.47	0.35						0.21	
Uniform Delay, d1				12.4	11.7						10.9	
Progression Factor				1.00	1.00						1.00	
Incremental Delay, d2				2.0	0.6						0.3	
Delay (s)				14.4	12.3						11.2	
Level of Service				B	B						B	
Approach Delay (s)		0.0			13.1			0.0			11.2	
Approach LOS		A			B			A			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			12.7		HCM 2000 Level of Service					B		
HCM 2000 Volume to Capacity ratio			0.34									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				9.0			
Intersection Capacity Utilization			30.5%		ICU Level of Service				A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis  
77: Franklin St #1 & 7th St #1

Build Conditions  
Timing Plan: Friday Casino Pe



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↵			↑↑		
Volume (veh/h)	292	0	0	516	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.92	0.92	0.90	0.92	0.92
Hourly flow rate (vph)	324	0	0	573	0	0
Pedestrians	22			58	58	
Lane Width (ft)	10.0			10.0	0.0	
Walking Speed (ft/s)	3.5			3.5	3.5	
Percent Blockage	2			5	0	
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				285	312	
pX, platoon unblocked	0.90					
vC, conflicting volume	367	80	22			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	85	80	22			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	60	100	100			
cM capacity (veh/h)	808	904	1564			

Direction, Lane #	EB 1	NB 1	NB 2
Volume Total	324	287	287
Volume Left	324	0	0
Volume Right	0	0	0
cSH	808	1700	1700
Volume to Capacity	0.40	0.17	0.17
Queue Length 95th (ft)	49	0	0
Control Delay (s)	12.4	0.0	0.0
Lane LOS	B		
Approach Delay (s)	12.4	0.0	
Approach LOS	B		

Intersection Summary			
Average Delay		4.5	
Intersection Capacity Utilization	42.0%		ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis  
 89: 9th Street & Vine Street

Build Conditions  
 Timing Plan: Friday Casino Pe



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑					↗
Volume (veh/h)	373	0	0	0	0	143
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.92	0.92	0.92	0.92	0.95
Hourly flow rate (vph)	393	0	0	0	0	151
Pedestrians	25			25	5	
Lane Width (ft)	10.0			0.0	10.0	
Walking Speed (ft/s)	3.5			3.5	3.5	
Percent Blockage	2			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)				456		
pX, platoon unblocked						
vC, conflicting volume			398		423	226
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			398		423	226
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	81
cM capacity (veh/h)			1153		546	780

Direction, Lane #	EB 1	EB 2	NB 1
Volume Total	196	196	151
Volume Left	0	0	0
Volume Right	0	0	151
cSH	1700	1700	780
Volume to Capacity	0.12	0.12	0.19
Queue Length 95th (ft)	0	0	18
Control Delay (s)	0.0	0.0	10.7
Lane LOS			B
Approach Delay (s)	0.0		10.7
Approach LOS			B

Intersection Summary			
Average Delay		3.0	
Intersection Capacity Utilization	28.6%		ICU Level of Service A
Analysis Period (min)		15	

Queues  
 96: 7th St #1/7th St & Vine Street

Build Conditions  
 Timing Plan: Friday Casino Pe



Lane Group	EBL	NBT
Lane Group Flow (vph)	765	878
v/c Ratio	0.32	0.38
Control Delay	12.8	18.5
Queue Delay	0.4	0.0
Total Delay	13.2	18.5
Queue Length 50th (ft)	73	127
Queue Length 95th (ft)	101	160
Internal Link Dist (ft)	60	232
Turn Bay Length (ft)		
Base Capacity (vph)	2393	2306
Starvation Cap Reductn	1060	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.57	0.38
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
 96: 7th St #1/7th St & Vine Street

Build Conditions  
 Timing Plan: Friday Casino Pe



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	←←←			→→→		
Volume (vph)	704	0	0	808	0	0
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100
Total Lost time (s)	5.5			5.5		
Lane Util. Factor	0.94			0.91		
Frbp, ped/bikes	1.00			1.00		
Flpb, ped/bikes	1.00			1.00		
Fr	1.00			1.00		
Flt Protected	0.95			1.00		
Satd. Flow (prot)	5148			5211		
Flt Permitted	0.95			1.00		
Satd. Flow (perm)	5148			5211		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	765	0	0	878	0	0
RTOR Reduction (vph)	115	0	0	0	0	0
Lane Group Flow (vph)	650	0	0	878	0	0
Confl. Peds. (#/hr)	10	10	10			
Bus Blockages (#/hr)	0	0	0	5	0	0
Turn Type	Prot			NA		
Protected Phases	2			8		
Permitted Phases						
Actuated Green, G (s)	42.0			42.0		
Effective Green, g (s)	42.5			42.5		
Actuated g/C Ratio	0.44			0.44		
Clearance Time (s)	6.0			6.0		
Lane Grp Cap (vph)	2279			2306		
v/s Ratio Prot	c0.13			c0.17		
v/s Ratio Perm						
v/c Ratio	0.29			0.38		
Uniform Delay, d1	17.1			17.9		
Progression Factor	1.00			1.00		
Incremental Delay, d2	0.3			0.5		
Delay (s)	17.4			18.4		
Level of Service	B			B		
Approach Delay (s)	17.4			18.4	0.0	
Approach LOS	B			B	A	

Intersection Summary

HCM 2000 Control Delay	17.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	96.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		













c Critical Lane Group

**SATURDAY CASINO PEAK HOUR LOS**



HCM 2010 Signalized Intersection Summary  
1: 7th St & Market St

Build Conditions  
Timing Plan: SAT Casino Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑	↑		↑↑				
Volume (veh/h)	0	698	0	0	283	113	66	442	76	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	3	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.81			
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	0.0	181.7	0.0	0.0	175.0	189.0	181.4	180.4	181.4			
Adj Flow Rate, veh/h	0	727	0	0	311	124	73	486	84			
Adj No. of Lanes	0	3	0	0	2	1	0	2	0			
Peak Hour Factor	0.92	0.96	0.92	0.92	0.91	0.91	0.91	0.91	0.91			
Percent Heavy Veh, %	0	4	0	0	8	0	0	0	0			
Cap, veh/h	0	1663	0	0	1690	485	117	834	147			
Arrive On Green	0.00	0.17	0.00	0.00	0.17	0.17	0.11	0.11	0.11			
Sat Flow, veh/h	0	4725	0	0	3413	954	350	2422	437			
Grp Volume(v), veh/h	0	727	0	0	311	124	335	0	308			
Grp Sat Flow(s),veh/h/ln	0	1090	0	0	1663	954	1606	0	1603			
Q Serve(g_s), s	0.0	12.0	0.0	0.0	4.8	6.8	11.9	0.0	10.9			
Cycle Q Clear(g_c), s	0.0	12.0	0.0	0.0	4.8	6.8	11.9	0.0	10.9			
Prop In Lane	0.00		0.00	0.00		1.00	0.22		0.27			
Lane Grp Cap(c), veh/h	0	1663	0	0	1690	485	549	0	549			
V/C Ratio(X)	0.00	0.44	0.00	0.00	0.18	0.26	0.61	0.00	0.56			
Avail Cap(c_a), veh/h	0	1663	0	0	1690	485	549	0	548			
HCM Platoon Ratio	1.00	0.33	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	0.00	1.00			
Uniform Delay (d), s/veh	0.0	17.3	0.0	0.0	14.3	15.1	22.9	0.0	22.5			
Incr Delay (d2), s/veh	0.0	0.8	0.0	0.0	0.2	1.3	5.0	0.0	4.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1			
%ile BackOfQ(95%),veh/ln	0.0	6.7	0.0	0.0	4.1	3.5	10.3	0.0	9.5			
LnGrp Delay(d),s/veh	0.0	18.1	0.0	0.0	14.5	16.4	28.1	0.0	26.7			
LnGrp LOS		B			B	B	C		C			
Approach Vol, veh/h		727			435			643				
Approach Delay, s/veh		18.1			15.0			27.4				
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		35.0				35.0		25.0				
Change Period (Y+Rc), s		6.0				6.0		6.0				
Max Green Setting (Gmax), s		29.0				29.0		19.0				
Max Q Clear Time (g_c+I1), s		14.0				8.8		13.9				
Green Ext Time (p_c), s		6.2				7.2		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				20.7								
HCM 2010 LOS				C								

Queues  
2: 7th St & Chestnut St

Build Conditions  
Timing Plan: SAT Casino Peak



Lane Group	EBT	NBT
Lane Group Flow (vph)	675	404
v/c Ratio	0.84	0.31
Control Delay	28.9	22.8
Queue Delay	0.0	0.0
Total Delay	28.9	22.8
Queue Length 50th (ft)	225	76
Queue Length 95th (ft)	m#340	115
Internal Link Dist (ft)	336	210
Turn Bay Length (ft)		
Base Capacity (vph)	806	1299
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.84	0.31

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

# HCM Signalized Intersection Capacity Analysis

## 2: 7th St & Chestnut St
















Build Conditions  
Timing Plan: SAT Casino Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕						↕↕				
Volume (vph)	265	390	0	0	0	0	0	301	91	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						0.97				
Flpb, ped/bikes		0.95						1.00				
Frt		1.00						0.97				
Flt Protected		0.98						1.00				
Satd. Flow (prot)		1899						3057				
Flt Permitted		0.98						1.00				
Satd. Flow (perm)		1899						3057				
Peak-hour factor, PHF	0.97	0.97	0.92	0.92	0.92	0.92	0.92	0.97	0.97	0.92	0.92	0.92
Adj. Flow (vph)	273	402	0	0	0	0	0	310	94	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	675	0	0	0	0	0	404	0	0	0	0
Confl. Peds. (#/hr)	187		187	62		62	149		149	219		219
Heavy Vehicles (%)	0%	3%	2%	2%	2%	2%	2%	2%	0%	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)		24.0						24.0				
Effective Green, g (s)		25.5						25.5				
Actuated g/C Ratio		0.42						0.42				
Clearance Time (s)		6.0						6.0				
Lane Grp Cap (vph)		807						1299				
v/s Ratio Prot								c0.13				
v/s Ratio Perm		0.36										
v/c Ratio		0.84						0.31				
Uniform Delay, d1		15.4						11.4				
Progression Factor		1.28						1.91				
Incremental Delay, d2		7.4						0.6				
Delay (s)		27.1						22.4				
Level of Service		C						C				
Approach Delay (s)		27.1			0.0			22.4			0.0	
Approach LOS		C			A			C			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			25.3					HCM 2000 Level of Service			C	
HCM 2000 Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			60.0					Sum of lost time (s)		9.0		
Intersection Capacity Utilization			42.3%					ICU Level of Service		A		
Analysis Period (min)			15									
c Critical Lane Group												

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

Build Conditions  
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		0.75	1.00		1.00				1.00		0.83
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	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	1699	596	0	1123	0				53	971	55
Arrive On Green	0.00	1.00	1.00	0.00	0.17	0.00				0.11	0.11	0.11
Sat Flow, veh/h	0	3396	1135	0	3566	0				164	2987	169
Grp Volume(v), veh/h	0	734	371	0	420	0				761	0	602
Grp Sat Flow(s),veh/h/ln	0	1618	1135	0	1070	0				1780	0	1540
Q Serve(g_s), s	0.0	0.0	0.0	0.0	10.4	0.0				19.5	0.0	19.5
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	10.4	0.0				19.5	0.0	19.5
Prop In Lane	0.00		1.00	0.00		0.00				0.09		0.11
Lane Grp Cap(c), veh/h	0	1699	596	0	1123	0				579	0	500
V/C Ratio(X)	0.00	0.43	0.62	0.00	0.37	0.00				1.31	0.00	1.20
Avail Cap(c_a), veh/h	0	1699	596	0	1123	0				579	0	500
HCM Platoon Ratio	1.00	2.00	2.00	1.00	0.33	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	0.0	0.0	0.0	16.1	0.0				26.8	0.0	26.8
Incr Delay (d2), s/veh	0.0	0.8	4.9	0.0	1.0	0.0				153.6	0.0	109.5
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	0.3	1.4	0.0	5.8	0.0				61.7	0.0	42.3
LnGrp Delay(d),s/veh	0.0	0.8	4.9	0.0	17.0	0.0				180.3	0.0	136.3
LnGrp LOS		A	A		B					F		F
Approach Vol, veh/h		1105			420						1363	
Approach Delay, s/veh		2.2			17.0						160.9	
Approach LOS		A			B						F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		36.0		24.0		36.0						
Change Period (Y+Rc), s		6.0		6.0		6.0						
Max Green Setting (Gmax), s		30.0		18.0		30.0						
Max Q Clear Time (g_c+I1), s		2.0		21.5		12.4						
Green Ext Time (p_c), s		12.0		0.0		9.4						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				79.2								
HCM 2010 LOS				E								

Queues  
4: 8th St & Chestnut St

Build Conditions  
Timing Plan: SAT Casino Peak



Lane Group	EBT	SBT
Lane Group Flow (vph)	503	984
v/c Ratio	0.62	0.76
Control Delay	14.5	11.4
Queue Delay	0.0	0.0
Total Delay	14.5	11.4
Queue Length 50th (ft)	93	74
Queue Length 95th (ft)	183	m64
Internal Link Dist (ft)	398	143
Turn Bay Length (ft)		
Base Capacity (vph)	808	1292
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.62	0.76

Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

## 4: 8th St & Chestnut St













Build Conditions  
Timing Plan: SAT Casino Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑									↑↑		
Volume (vph)	0	339	104	0	0	0	0	0	0	317	549	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		0.98									1.00		
Flpb, ped/bikes		1.00									0.95		
Frt		0.96									1.00		
Flt Protected		1.00									0.98		
Satd. Flow (prot)		1903									3041		
Flt Permitted		1.00									0.98		
Satd. Flow (perm)		1903									3041		
Peak-hour factor, PHF	0.92	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.88	0.88	0.92	
Adj. Flow (vph)	0	385	118	0	0	0	0	0	0	360	624	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	503	0	0	0	0	0	0	0	0	984	0	
Confl. Peds. (#/hr)	94		94	230		230	208		208	185		185	
Heavy Vehicles (%)	2%	4%	0%	2%	2%	2%	2%	2%	2%	1%	1%	2%	
Bus Blockages (#/hr)	0	11	0	0	0	0	0	0	0	0	10	0	
Parking (#/hr)	0											0	
Turn Type		NA								Perm	NA		
Protected Phases		2									4		
Permitted Phases										4			
Actuated Green, G (s)		24.0									24.0		
Effective Green, g (s)		25.5									25.5		
Actuated g/C Ratio		0.42									0.42		
Clearance Time (s)		6.0									6.0		
Lane Grp Cap (vph)		808									1292		
v/s Ratio Prot		c0.26											
v/s Ratio Perm											0.32		
v/c Ratio		0.62									0.76		
Uniform Delay, d1		13.5									14.7		
Progression Factor		0.81									0.62		
Incremental Delay, d2		3.0									1.9		
Delay (s)		14.0									11.1		
Level of Service		B									B		
Approach Delay (s)		14.0			0.0			0.0			11.1		
Approach LOS		B			A			A			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			12.1									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.69										
Actuated Cycle Length (s)			60.0									Sum of lost time (s)	9.0
Intersection Capacity Utilization			49.4%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

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

Build Conditions  
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		0.85	1.00		0.68			
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	183.5	0.0	0.0	178.5	189.0	181.4	179.8	181.4			
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	0			
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	0	1	0			
Cap, veh/h	0	1734	0	0	1285	155	26	638	252			
Arrive On Green	0.00	1.00	0.00	0.00	1.00	1.00	0.11	0.11	0.11			
Sat Flow, veh/h	0	4771	0	0	3154	298	221	1679	869			
Grp Volume(v), veh/h	0	704	0	0	169	268	800	0	409			
Grp Sat Flow(s),veh/h/ln	0	1101	0	0	1071	1668	1787	0	983			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	19.5	0.0	19.5			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	19.5	0.0	19.5			
Prop In Lane	0.00		0.00	0.00		0.18	0.12		0.88			
Lane Grp Cap(c), veh/h	0	1734	0	0	562	876	583	0	342			
V/C Ratio(X)	0.00	0.41	0.00	0.00	0.30	0.31	1.37	0.00	1.20			
Avail Cap(c_a), veh/h	0	1734	0	0	562	876	581	0	319			
HCM Platoon Ratio	1.00	2.00	1.00	1.00	2.00	2.00	0.33	0.33	0.33			
Upstream Filter(l)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	26.8	0.0	26.8			
Incr Delay (d2), s/veh	0.0	0.7	0.0	0.0	1.4	0.9	177.8	0.0	114.0			
Initial Q Delay(d3),s/veh	0.0	0.1	0.0	0.0	0.1	0.1	8.9	0.0	17.4			
%ile BackOfQ(95%),veh/ln	0.0	0.2	0.0	0.0	0.4	0.4	71.2	0.0	31.7			
LnGrp Delay(d),s/veh	0.0	0.8	0.0	0.0	1.5	1.0	213.6	0.0	158.1			
LnGrp LOS		A			A	A	F		F			
Approach Vol, veh/h		704			437			1209				
Approach Delay, s/veh		0.8			1.2			194.8				
Approach LOS		A			A			F				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		36.0				36.0		24.0				
Change Period (Y+Rc), s		6.0				6.0		6.0				
Max Green Setting (Gmax), s		30.0				30.0		18.0				
Max Q Clear Time (g_c+I1), s		2.0				2.0		21.5				
Green Ext Time (p_c), s		7.6				7.6		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay					100.7							
HCM 2010 LOS					F							

Queues  
6: 9th St/9th St #1 & Chestnut St

Build Conditions  
Timing Plan: SAT Casino Peak



Lane Group	EBT	NBT
Lane Group Flow (vph)	508	671
v/c Ratio	0.54	0.57
Control Delay	13.2	12.4
Queue Delay	0.0	0.0
Total Delay	13.2	12.4
Queue Length 50th (ft)	65	55
Queue Length 95th (ft)	128	69
Internal Link Dist (ft)	343	223
Turn Bay Length (ft)		
Base Capacity (vph)	938	1167
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.54	0.57
<b>Intersection Summary</b>		



# HCM Signalized Intersection Capacity Analysis

## 6: 9th St/9th St #1 & Chestnut St

Build Conditions  
Timing Plan: SAT Casino Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕						↕↕				
Volume (vph)	84	338	0	0	0	0	0	440	117	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						0.98				
Flpb, ped/bikes		0.98						1.00				
Frt		1.00						0.97				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		1975						3114				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		1975						3114				
Peak-hour factor, PHF	0.83	0.83	0.92	0.92	0.92	0.92	0.92	0.83	0.83	0.92	0.92	0.92
Adj. Flow (vph)	101	407	0	0	0	0	0	530	141	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	508	0	0	0	0	0	671	0	0	0	0
Confl. Peds. (#/hr)	183		183	258		258	78		78	61		61
Heavy Vehicles (%)	2%	1%	2%	2%	2%	2%	2%	1%	0%	2%	2%	2%
Bus Blockages (#/hr)	0	12	0	0	0	0	0	9	0	0	0	0
Parking (#/hr)	0								0			
Turn Type	Perm	NA						NA				
Protected Phases		2						8				
Permitted Phases	2											
Actuated Green, G (s)		27.0						21.0				
Effective Green, g (s)		28.5						22.5				
Actuated g/C Ratio		0.48						0.38				
Clearance Time (s)		6.0						6.0				
Lane Grp Cap (vph)		938						1167				
v/s Ratio Prot								c0.22				
v/s Ratio Perm		0.26										
v/c Ratio		0.54						0.57				
Uniform Delay, d1		11.1						14.9				
Progression Factor		0.97						0.68				
Incremental Delay, d2		1.9						2.0				
Delay (s)		12.7						12.2				
Level of Service		B						B				
Approach Delay (s)		12.7			0.0			12.2			0.0	
Approach LOS		B			A			B			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			12.4					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)			9.0	
Intersection Capacity Utilization			51.7%					ICU Level of Service			A	
Analysis Period (min)			15									
c Critical Lane Group												

Queues

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

Build Conditions

Timing Plan: SAT Casino Peak



Lane Group	EBT	NBT
Lane Group Flow (vph)	471	908
v/c Ratio	0.34	1.06dr
Control Delay	12.5	28.0
Queue Delay	0.0	0.0
Total Delay	12.5	28.0
Queue Length 50th (ft)	57	135
Queue Length 95th (ft)	88	#197
Internal Link Dist (ft)	674	621
Turn Bay Length (ft)		
Base Capacity (vph)	1368	1142
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.34	0.80

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

# HCM Signalized Intersection Capacity Analysis

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

Build Conditions  
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				
Frpb, ped/bikes		1.00						0.93				
Flpb, ped/bikes		0.98						1.00				
Frt		1.00						0.90				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		3219						2796				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		3219						2796				
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)		25.0						24.0				
Effective Green, g (s)		25.5						24.5				
Actuated g/C Ratio		0.42						0.41				
Clearance Time (s)		5.5						5.5				
Lane Grp Cap (vph)		1368						1141				
v/s Ratio Prot								c0.32				
v/s Ratio Perm		0.15										
v/c Ratio		0.34						1.06dr				
Uniform Delay, d1		11.6						15.6				
Progression Factor		1.00						1.41				
Incremental Delay, d2		0.7						5.0				
Delay (s)		12.3						27.0				
Level of Service		B						C				
Approach Delay (s)		12.3			0.0			27.0			0.0	
Approach LOS		B			A			C			A	

### Intersection Summary

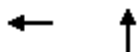
HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		

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

c Critical Lane Group

Queues  
8: 7th St & Walnut St

Build Conditions  
Timing Plan: SAT Casino Peak



Lane Group	WBT	NBT
Lane Group Flow (vph)	577	639
v/c Ratio	0.43	0.49
Control Delay	22.4	14.7
Queue Delay	0.0	0.0
Total Delay	22.4	14.7
Queue Length 50th (ft)	106	86
Queue Length 95th (ft)	137	114
Internal Link Dist (ft)	382	135
Turn Bay Length (ft)		
Base Capacity (vph)	1355	1303
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.43	0.49
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 8: 7th St & Walnut St

Build Conditions  
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	0	389	90	132	398	0	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					0.95			0.95					
Frbp, ped/bikes					0.99			1.00					
Flpb, ped/bikes					1.00			0.97					
Frt					0.97			1.00					
Flt Protected					1.00			0.99					
Satd. Flow (prot)					3070			3191					
Flt Permitted					1.00			0.99					
Satd. Flow (perm)					3070			3191					
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.83	0.83	0.83	0.83	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	0	469	108	159	480	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	577	0	0	639	0	0	0	0	
Confl. Peds. (#/hr)	46		46	84		84	145		145	106		106	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	0%	1%	1%	2%	2%	2%	2%	
Bus Blockages (#/hr)	0	0	0	0	15	0	0	0	0	0	0	0	
Turn Type					NA		Perm	NA					
Protected Phases					6			8					
Permitted Phases							8						
Actuated Green, G (s)					25.0			23.0					
Effective Green, g (s)					26.5			24.5					
Actuated g/C Ratio					0.44			0.41					
Clearance Time (s)					6.0			6.0					
Lane Grp Cap (vph)					1355			1302					
v/s Ratio Prot					0.19								
v/s Ratio Perm								0.20					
v/c Ratio					0.43			0.49					
Uniform Delay, d1					11.5			13.1					
Progression Factor					1.83			1.00					
Incremental Delay, d2					0.9			1.3					
Delay (s)					22.0			14.5					
Level of Service					C			B					
Approach Delay (s)		0.0			22.0			14.5			0.0		
Approach LOS		A			C			B			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			18.0		HCM 2000 Level of Service				B				
HCM 2000 Volume to Capacity ratio			0.46										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				9.0				
Intersection Capacity Utilization			40.4%		ICU Level of Service				A				
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
9: 8th St #2/8th St & Vine Street

Build Conditions  
Timing Plan: SAT Casino Peak



Lane Group	EBT	EBR	SBT	SEL	SER
Lane Group Flow (vph)	342	214	659	420	392
v/c Ratio	0.51	0.44	0.69	0.46	0.49
Control Delay	36.1	36.1	44.8	16.4	17.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	36.1	36.1	44.8	16.4	17.4
Queue Length 50th (ft)	93	61	143	147	147
Queue Length 95th (ft)	136	100	183	223	230
Internal Link Dist (ft)	164		246	146	
Turn Bay Length (ft)					
Base Capacity (vph)	675	482	959	911	792
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.51	0.44	0.69	0.46	0.49

Intersection Summary

HCM Signalized Intersection Capacity Analysis  
 9: 8th St #2/8th St & Vine Street

Build Conditions  
 Timing Plan: SAT Casino Peak



















Movement	EBT	EBR	SBL	SBT	SEL	SER
Lane Configurations	↑↑	↑↑		↑↑↑	↑↑	↑
Volume (vph)	315	197	65	541	285	462
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100
Total Lost time (s)	4.0	4.0		3.5	4.0	4.0
Lane Util. Factor	0.95	0.88		0.91	1.00	0.95
Frbp, ped/bikes	1.00	1.00		1.00	0.99	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00
Fr <sub>t</sub>	1.00	0.85		1.00	0.96	0.85
Fl <sub>t</sub> Protected	1.00	1.00		0.99	0.96	1.00
Satd. Flow (prot)	3687	2633		5229	1802	1567
Fl <sub>t</sub> Permitted	1.00	1.00		0.99	0.96	1.00
Satd. Flow (perm)	3687	2633		5229	1802	1567
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	342	214	71	588	310	502
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	342	214	0	659	420	392
Confl. Peds. (#/hr)		13	1		13	13
Heavy Vehicles (%)	1%	4%	0%	2%	0%	1%
Bus Blockages (#/hr)	0	33	0	0	0	0
Turn Type	NA	Prot	Split	NA	Prot	Prot
Protected Phases	2	2	4	4	1	1
Permitted Phases						
Actuated Green, G (s)	15.0	15.0		15.0	44.0	44.0
Effective Green, g (s)	16.5	16.5		16.5	45.5	45.5
Actuated g/C Ratio	0.18	0.18		0.18	0.51	0.51
Clearance Time (s)	5.5	5.5		5.0	5.5	5.5
Lane Grp Cap (vph)	675	482		958	911	792
v/s Ratio Prot	c0.09	0.08		c0.13	0.23	c0.25
v/s Ratio Perm						
v/c Ratio	0.51	0.44		0.69	0.46	0.49
Uniform Delay, d <sub>1</sub>	33.1	32.7		34.3	14.3	14.7
Progression Factor	1.00	1.00		1.18	1.00	1.00
Incremental Delay, d <sub>2</sub>	2.7	2.9		3.9	1.7	2.2
Delay (s)	35.8	35.6		44.5	16.0	16.9
Level of Service	D	D		D	B	B
Approach Delay (s)	35.7			44.5	16.4	
Approach LOS	D			D	B	

Intersection Summary			
HCM 2000 Control Delay	30.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

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

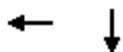
Build Conditions  
 Timing Plan: SAT Casino Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	222	467	0	0	293	53	0	385	55	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)	0.97		1.00	1.00		0.94	1.00		0.81			
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	181.7	183.5	0.0	0.0	184.3	189.0	189.0	187.4	189.0			
Adj Flow Rate, veh/h	241	508	0	0	318	58	0	418	60			
Adj No. of Lanes	1	2	0	0	2	0	0	2	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	4	3	0	0	3	3	0	1	0			
Cap, veh/h	555	1193	0	0	781	141	0	935	132			
Arrive On Green	0.14	0.54	0.00	0.00	0.32	0.34	0.00	0.10	0.10			
Sat Flow, veh/h	1731	2936	0	0	3141	434	0	3126	429			
Grp Volume(v), veh/h	241	508	0	0	144	232	0	243	235			
Grp Sat Flow(s),veh/h/ln	1731	1101	0	0	1106	1732	0	1780	1681			
Q Serve(g_s), s	4.9	8.2	0.0	0.0	6.1	6.2	0.0	7.7	7.9			
Cycle Q Clear(g_c), s	4.9	8.2	0.0	0.0	6.1	6.2	0.0	7.7	7.9			
Prop In Lane	1.00		0.00	0.00		0.25	0.00		0.25			
Lane Grp Cap(c), veh/h	555	1193	0	0	359	563	0	549	518			
V/C Ratio(X)	0.43	0.43	0.00	0.00	0.40	0.41	0.00	0.44	0.45			
Avail Cap(c_a), veh/h	555	1193	0	0	359	563	0	549	518			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00			
Uniform Delay (d), s/veh	9.5	8.2	0.0	0.0	15.7	15.7	0.0	22.1	22.2			
Incr Delay (d2), s/veh	2.5	1.1	0.0	0.0	3.3	2.2	0.0	2.6	2.9			
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	4.8	4.8	0.0	0.0	3.9	5.9	0.0	7.5	7.4			
LnGrp Delay(d),s/veh	12.0	9.3	0.0	0.0	19.0	17.9	0.0	24.7	25.1			
LnGrp LOS	B	A			B	B		C	C			
Approach Vol, veh/h		749			376			478				
Approach Delay, s/veh		10.2			18.3			24.9				
Approach LOS		B			B			C				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		37.0			13.0	24.0		23.0				
Change Period (Y+Rc), s		5.0			5.0	5.0		5.0				
Max Green Setting (Gmax), s		32.0			8.0	19.0		18.0				
Max Q Clear Time (g_c+I1), s		10.2			6.9	8.2		9.9				
Green Ext Time (p_c), s		5.1			0.1	3.8		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			16.5									
HCM 2010 LOS			B									



Queues  
13: 6th St & Arch St

Build Conditions  
Timing Plan: SAT Casino Peak



Lane Group	WBT	SBT
Lane Group Flow (vph)	405	689
v/c Ratio	0.30	0.36
Control Delay	10.9	5.5
Queue Delay	0.0	0.0
Total Delay	10.9	5.5
Queue Length 50th (ft)	61	23
Queue Length 95th (ft)	87	30
Internal Link Dist (ft)	322	632
Turn Bay Length (ft)		
Base Capacity (vph)	1366	1923
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.30	0.36
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 13: 6th St & Arch St

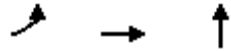
Build Conditions  
Timing Plan: SAT Casino Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕↕						↕↕↕	
Volume (vph)	0	0	0	67	273	0	0	0	0	0	482	97
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					0.95						0.91	
Frbp, ped/bikes					1.00						0.99	
Flpb, ped/bikes					1.00						1.00	
Frt					1.00						0.97	
Flt Protected					0.99						1.00	
Satd. Flow (prot)					3217						4526	
Flt Permitted					0.99						1.00	
Satd. Flow (perm)					3217						4526	
Peak-hour factor, PHF	0.92	0.92	0.92	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.84	0.84
Adj. Flow (vph)	0	0	0	80	325	0	0	0	0	0	574	115
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	405	0	0	0	0	0	689	0
Confl. Peds. (#/hr)	6		6	11		11	52		52	45		45
Heavy Vehicles (%)	2%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	8%
Bus Blockages (#/hr)	0	0	0	0	3	0	0	0	0	0	0	0
Parking (#/hr)						0				0		
Turn Type				Perm	NA						NA	
Protected Phases					6						4	
Permitted Phases				6								
Actuated Green, G (s)					24.0						24.0	
Effective Green, g (s)					25.5						25.5	
Actuated g/C Ratio					0.42						0.42	
Clearance Time (s)					6.0						6.0	
Lane Grp Cap (vph)					1367						1923	
v/s Ratio Prot											c0.15	
v/s Ratio Perm					0.13							
v/c Ratio					0.30						0.36	
Uniform Delay, d1					11.3						11.7	
Progression Factor					0.90						0.42	
Incremental Delay, d2					0.6						0.5	
Delay (s)					10.8						5.4	
Level of Service					B						A	
Approach Delay (s)		0.0			10.8			0.0			5.4	
Approach LOS		A			B			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			7.4								HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.33									
Actuated Cycle Length (s)			60.0								Sum of lost time (s)	9.0
Intersection Capacity Utilization			32.5%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
14: 5th St & Chestnut St

Build Conditions  
Timing Plan: SAT Casino Peak



















Lane Group	EBL	EBT	NBT
Lane Group Flow (vph)	121	338	456
v/c Ratio	0.19	0.46	0.33
Control Delay	12.4	15.5	23.0
Queue Delay	0.0	0.0	0.0
Total Delay	12.4	15.5	23.0
Queue Length 50th (ft)	23	70	86
Queue Length 95th (ft)	m41	105	129
Internal Link Dist (ft)		348	499
Turn Bay Length (ft)			
Base Capacity (vph)	645	728	1374
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.19	0.46	0.33

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
 14: 5th St & Chestnut St

Build Conditions  
 Timing Plan: SAT Casino Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								 				
Volume (vph)	111	311	0	0	0	0	0	360	60	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						4.5				
Lane Util. Factor	1.00	1.00						0.95				
Frpb, ped/bikes	1.00	1.00						0.99				
Flpb, ped/bikes	0.92	1.00						1.00				
Frt	1.00	1.00						0.98				
Flt Protected	0.95	1.00						1.00				
Satd. Flow (prot)	1518	1713						3232				
Flt Permitted	0.95	1.00						1.00				
Satd. Flow (perm)	1518	1713						3232				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.97	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	121	338	0	0	0	0	0	391	65	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	121	338	0	0	0	0	0	456	0	0	0	0
Confl. Peds. (#/hr)	108		108	124		124	71		71	247		247
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	0%	0%	0%	2%	2%	2%
Turn Type	Perm	NA						NA				
Protected Phases		2						8				
Permitted Phases	2											
Actuated Green, G (s)	24.0	24.0						24.0				
Effective Green, g (s)	25.5	25.5						25.5				
Actuated g/C Ratio	0.42	0.42						0.42				
Clearance Time (s)	6.0	6.0						6.0				
Lane Grp Cap (vph)	645	728						1373				
v/s Ratio Prot		c0.20						c0.14				
v/s Ratio Perm	0.08											
v/c Ratio	0.19	0.46						0.33				
Uniform Delay, d1	10.8	12.4						11.5				
Progression Factor	1.06	1.06						1.90				
Incremental Delay, d2	0.6	1.9						0.6				
Delay (s)	12.0	15.0						22.6				
Level of Service	B	B						C				
Approach Delay (s)		14.2			0.0			22.6			0.0	
Approach LOS		B			A			C			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			18.4					HCM 2000 Level of Service			B	
HCM 2000 Volume to Capacity ratio			0.40									
Actuated Cycle Length (s)			60.0					Sum of lost time (s)		9.0		
Intersection Capacity Utilization			64.5%					ICU Level of Service		C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis  
 16: 8th St #2 & Site Driveway

Build Conditions  
 Timing Plan: SAT Casino Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations					↑↑	
Volume (veh/h)	0	0	0	0	857	613
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	932	666
Pedestrians	295					
Lane Width (ft)	0.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				376	190	
pX, platoon unblocked	0.70	0.70	0.70			
vC, conflicting volume	1560	1094	1893			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	936	269	1414			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	184	509	334			
<b>Direction, Lane #</b>	<b>SB 1</b>	<b>SB 2</b>				
Volume Total	621	977				
Volume Left	0	0				
Volume Right	0	666				
cSH	1700	1700				
Volume to Capacity	0.37	0.57				
Queue Length 95th (ft)	0	0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0					
Approach LOS						
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			50.5%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
17: 9th St #1 & Site Driveway

Build Conditions  
Timing Plan: SAT Casino Peak



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑↑	↑↑			
Volume (veh/h)	0	628	524	0	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	683	570	0	0	0
Pedestrians						267
Lane Width (ft)						0.0
Walking Speed (ft/s)						3.5
Percent Blockage						0
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)			364			181
pX, platoon unblocked	0.94	0.94			0.94	
vC, conflicting volume	570	552			570	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	416	397			416	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	0			100	
cM capacity (veh/h)	536	572			1072	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2
Volume Total	341	341	285	285
Volume Left	0	0	0	0
Volume Right	341	341	0	0
cSH	572	572	1700	1700
Volume to Capacity	0.60	0.60	0.17	0.17
Queue Length 95th (ft)	98	98	0	0
Control Delay (s)	20.2	20.2	0.0	0.0
Lane LOS	C	C		
Approach Delay (s)	20.2		0.0	
Approach LOS	C			

Intersection Summary			
Average Delay		11.0	
Intersection Capacity Utilization		51.7%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis  
 18: 8th St/8th St #2 & Parking Garage

Build Conditions  
 Timing Plan: SAT Casino Peak



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰					↱↻
Volume (veh/h)	209	0	0	0	204	653
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	227	0	0	0	222	710
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)			223			343
pX, platoon unblocked	0.79					
vC, conflicting volume	798	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	200	0			0	
tC, single (s)	*7.1	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	56	100			86	
cM capacity (veh/h)	515	1084			1622	

















Direction, Lane #	WB 1	SB 1	SB 2
Volume Total	227	458	473
Volume Left	227	222	0
Volume Right	0	0	0
cSH	515	1622	1700
Volume to Capacity	0.44	0.14	0.28
Queue Length 95th (ft)	56	12	0
Control Delay (s)	17.4	4.3	0.0
Lane LOS	C	A	
Approach Delay (s)	17.4	2.1	
Approach LOS	C		

Intersection Summary			
Average Delay		5.1	
Intersection Capacity Utilization		38.8%	ICU Level of Service A
Analysis Period (min)		15	

\* User Entered Value

HCM 2010 Signalized Intersection Summary  
 21: 10th St & Market St

Build Conditions  
 Timing Plan: SAT Casino Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	437	63	0	395	0	0	0	0	68	261	83
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	7	0	0	4	0				0	6	6
Ped-Bike Adj(A_pbT)	1.00		0.93	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	184.2	189.0	0.0	180.0	0.0				189.0	185.6	187.1
Adj Flow Rate, veh/h	0	502	72	0	454	0				78	300	95
Adj No. of Lanes	0	3	0	0	2	0				0	2	1
Peak Hour Factor	0.96	0.87	0.87	0.96	0.87	0.96				0.87	0.87	0.87
Percent Heavy Veh, %	0	3	3	0	5	0				1	0	1
Cap, veh/h	0	1810	251	0	1134	0				223	942	354
Arrive On Green	0.00	0.52	0.52	0.00	1.00	0.00				0.32	0.32	0.32
Sat Flow, veh/h	0	4173	485	0	3600	0				705	2878	1088
Grp Volume(v), veh/h	0	320	254	0	454	0				201	177	95
Grp Sat Flow(s),veh/h/ln	0	1105	1711	0	1080	0				1820	1763	1088
Q Serve(g_s), s	0.0	4.8	5.0	0.0	0.0	0.0				5.0	4.5	3.9
Cycle Q Clear(g_c), s	0.0	4.8	5.0	0.0	0.0	0.0				5.0	4.5	3.9
Prop In Lane	0.00		0.28	0.00		0.00				0.39		1.00
Lane Grp Cap(c), veh/h	0	1160	899	0	1134	0				592	573	354
V/C Ratio(X)	0.00	0.28	0.28	0.00	0.40	0.00				0.34	0.31	0.27
Avail Cap(c_a), veh/h	0	1160	898	0	1134	0				592	573	354
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	8.1	8.0	0.0	0.0	0.0				15.5	15.3	15.5
Incr Delay (d2), s/veh	0.0	0.6	0.8	0.0	1.1	0.0				1.6	1.4	1.9
Initial Q Delay(d3),s/veh	0.0	0.2	0.1	0.0	0.1	0.0				0.3	0.3	2.8
%ile BackOfQ(95%),veh/ln	0.0	3.2	4.9	0.0	0.3	0.0				5.4	4.7	3.5
LnGrp Delay(d),s/veh	0.0	8.8	8.9	0.0	1.2	0.0				17.4	17.0	20.2
LnGrp LOS		A	A		A					B	B	C
Approach Vol, veh/h		574			454						473	
Approach Delay, s/veh		8.8			1.2						17.8	
Approach LOS		A			A						B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		36.0		24.0		36.0						
Change Period (Y+Rc), s		6.0		6.0		6.0						
Max Green Setting (Gmax), s		30.0		18.0		30.0						
Max Q Clear Time (g_c+I1), s		7.0		7.0		2.0						
Green Ext Time (p_c), s		6.2		0.0		6.5						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			9.4									
HCM 2010 LOS			A									



Queues  
22: 10th St & Chestnut St

Build Conditions  
Timing Plan: SAT Casino Peak



Lane Group	EBT	SBT
Lane Group Flow (vph)	514	391
v/c Ratio	0.66	0.28
Control Delay	18.7	8.1
Queue Delay	0.0	0.0
Total Delay	18.7	8.1
Queue Length 50th (ft)	117	27
Queue Length 95th (ft)	179	33
Internal Link Dist (ft)	521	472
Turn Bay Length (ft)		
Base Capacity (vph)	784	1403
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.66	0.28
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 22: 10th St & Chestnut St

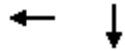
Build Conditions  
Timing Plan: SAT Casino Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑									↑↑		
Volume (vph)	0	339	98	0	0	0	0	0	0	32	300	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		
Frbp, ped/bikes		0.97									1.00		
Flpb, ped/bikes		1.00									0.99		
Frt		0.97									1.00		
Flt Protected		1.00									1.00		
Satd. Flow (prot)		1847									3303		
Flt Permitted		1.00									1.00		
Satd. Flow (perm)		1847									3303		
Peak-hour factor, PHF	0.92	0.85	0.85	0.92	0.92	0.92	0.92	0.92	0.92	0.85	0.85	0.92	
Adj. Flow (vph)	0	399	115	0	0	0	0	0	0	38	353	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	514	0	0	0	0	0	0	0	0	391	0	
Confl. Peds. (#/hr)	174		174	132		132	113		113	141		141	
Heavy Vehicles (%)	2%	6%	1%	2%	2%	2%	2%	2%	2%	0%	0%	2%	
Bus Blockages (#/hr)	0	12	0	0	0	0	0	0	0	0	0	0	
Parking (#/hr)	0											0	
Turn Type		NA								Perm	NA		
Protected Phases		2									4		
Permitted Phases										4			
Actuated Green, G (s)		24.0									24.0		
Effective Green, g (s)		25.5									25.5		
Actuated g/C Ratio		0.42									0.42		
Clearance Time (s)		6.0									6.0		
Lane Grp Cap (vph)		784									1403		
v/s Ratio Prot		c0.28											
v/s Ratio Perm											0.12		
v/c Ratio		0.66									0.28		
Uniform Delay, d1		13.7									11.3		
Progression Factor		1.00									0.67		
Incremental Delay, d2		4.3									0.5		
Delay (s)		18.0									8.0		
Level of Service		B									A		
Approach Delay (s)		18.0			0.0			0.0			8.0		
Approach LOS		B			A			A			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			13.7									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.47										
Actuated Cycle Length (s)			60.0									Sum of lost time (s)	9.0
Intersection Capacity Utilization			34.4%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
24: 10th St & Walnut St

Build Conditions  
Timing Plan: SAT Casino Peak



Lane Group	WBT	SBT
Lane Group Flow (vph)	554	403
v/c Ratio	0.41	0.31
Control Delay	8.0	17.5
Queue Delay	0.0	0.0
Total Delay	8.0	17.5
Queue Length 50th (ft)	20	60
Queue Length 95th (ft)	28	88
Internal Link Dist (ft)	360	507
Turn Bay Length (ft)		
Base Capacity (vph)	1335	1295
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.41	0.31
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 24: 10th St & Walnut St

Build Conditions  
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	51	475	0	0	0	0	0	266	117
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					0.95						0.95	
Frbp, ped/bikes					1.00						0.95	
Flpb, ped/bikes					0.99						1.00	
Frt					1.00						0.95	
Flt Protected					1.00						1.00	
Satd. Flow (prot)					3142						3050	
Flt Permitted					1.00						1.00	
Satd. Flow (perm)					3142						3050	
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.92	0.92	0.92	0.92	0.92	0.95	0.95
Adj. Flow (vph)	0	0	0	54	500	0	0	0	0	0	280	123
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	554	0	0	0	0	0	403	0
Confl. Peds. (#/hr)	111		111	126		126	180		180	202		202
Heavy Vehicles (%)	2%	2%	2%	0%	3%	2%	2%	2%	2%	2%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	12	0	0	0	0	0	0	0
Turn Type				Perm	NA						NA	
Protected Phases					6						4	
Permitted Phases				6								
Actuated Green, G (s)					24.0						24.0	
Effective Green, g (s)					25.5						25.5	
Actuated g/C Ratio					0.42						0.42	
Clearance Time (s)					6.0						6.0	
Lane Grp Cap (vph)					1335						1296	
v/s Ratio Prot											c0.13	
v/s Ratio Perm					0.18							
v/c Ratio					0.41						0.31	
Uniform Delay, d1					12.0						11.4	
Progression Factor					0.58						1.45	
Incremental Delay, d2					0.9						0.6	
Delay (s)					7.8						17.2	
Level of Service					A						B	
Approach Delay (s)		0.0			7.8			0.0			17.2	
Approach LOS		A			A			A			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			11.8								HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.36									
Actuated Cycle Length (s)			60.0								Sum of lost time (s)	9.0
Intersection Capacity Utilization			39.0%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
25: 8th St #2 & Arch St

Build Conditions  
Timing Plan: SAT Casino Peak



Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	428	947	136
v/c Ratio	0.32	0.71	0.26
Control Delay	8.7	26.8	22.3
Queue Delay	0.0	0.0	0.0
Total Delay	8.7	26.8	22.3
Queue Length 50th (ft)	43	152	39
Queue Length 95th (ft)	58	210	m75
Internal Link Dist (ft)	373	120	
Turn Bay Length (ft)			
Base Capacity (vph)	1323	1341	533
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.32	0.71	0.26

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
25: 8th St #2 & Arch St

Build Conditions  
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)					3114						3286	1306
Flt Permitted					0.98						1.00	1.00
Satd. Flow (perm)					3114						3286	1306
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)					25.0						24.0	24.0
Effective Green, g (s)					25.5						24.5	24.5
Actuated g/C Ratio					0.42						0.41	0.41
Clearance Time (s)					5.5						5.5	5.5
Lane Grp Cap (vph)					1323						1341	533
v/s Ratio Prot											c0.29	
v/s Ratio Perm					0.14							0.10
v/c Ratio					0.32						0.71	0.26
Uniform Delay, d1					11.5						14.8	11.7
Progression Factor					0.69						1.60	1.75
Incremental Delay, d2					0.6						2.6	0.9
Delay (s)					8.5						26.2	21.4
Level of Service					A						C	C
Approach Delay (s)		0.0			8.5			0.0			25.6	
Approach LOS		A			A			A			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			20.8									HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			60.0								10.0	Sum of lost time (s)
Intersection Capacity Utilization			48.2%									ICU Level of Service A
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
26: 7th St & Arch St

Build Conditions  
Timing Plan: SAT Casino Peak



Lane Group	WBT	WBR	NBT
Lane Group Flow (vph)	286	112	668
v/c Ratio	0.21	0.18	0.51
Control Delay	11.9	12.4	12.4
Queue Delay	0.0	0.0	0.0
Total Delay	11.9	12.4	12.4
Queue Length 50th (ft)	44	32	118
Queue Length 95th (ft)	75	71	160
Internal Link Dist (ft)	389		653
Turn Bay Length (ft)			
Base Capacity (vph)	1356	609	1302
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.21	0.18	0.51
<b>Intersection Summary</b>			

# HCM Signalized Intersection Capacity Analysis

## 26: 7th St & Arch St

Build Conditions  
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	0	269	105	146	482	0	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		5.0					
Lane Util. Factor					0.95	1.00		0.95					
Frbp, ped/bikes					1.00	0.98		1.00					
Flpb, ped/bikes					1.00	1.00		0.99					
Frt					1.00	0.85		1.00					
Flt Protected					1.00	1.00		0.99					
Satd. Flow (prot)					3192	1434		3188					
Flt Permitted					1.00	1.00		0.99					
Satd. Flow (perm)					3192	1434		3188					
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.94	0.94	0.94	0.94	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	0	286	112	155	513	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	286	112	0	668	0	0	0	0	
Confl. Peds. (#/hr)	36		36	12		12	61		61	47		47	
Heavy Vehicles (%)	2%	2%	2%	2%	5%	0%	9%	1%	2%	2%	2%	2%	
Bus Blockages (#/hr)	0	0	0	0	0	6	0	0	0	0	0	0	
Parking (#/hr)							0		0				
Turn Type					NA	Perm	Perm	NA					
Protected Phases					6			8					
Permitted Phases						6	8						
Actuated Green, G (s)					25.0	25.0		24.0					
Effective Green, g (s)					25.5	25.5		24.5					
Actuated g/C Ratio					0.42	0.42		0.41					
Clearance Time (s)					5.5	5.5		5.5					
Lane Grp Cap (vph)					1356	609		1301					
v/s Ratio Prot					c0.09								
v/s Ratio Perm						0.08		0.21					
v/c Ratio					0.21	0.18		0.51					
Uniform Delay, d1					10.9	10.8		13.3					
Progression Factor					1.05	1.06		0.82					
Incremental Delay, d2					0.3	0.6		1.2					
Delay (s)					11.7	12.0		12.2					
Level of Service					B	B		B					
Approach Delay (s)		0.0			11.8			12.2			0.0		
Approach LOS		A			B			B			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			12.0		HCM 2000 Level of Service						B		
HCM 2000 Volume to Capacity ratio			0.36										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)						10.0		
Intersection Capacity Utilization			36.8%		ICU Level of Service						A		
Analysis Period (min)			15										
c Critical Lane Group													



Queues  
28: 9th St #1 & Arch St

Build Conditions  
Timing Plan: SAT Casino Peak



Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	440	203	778
v/c Ratio	0.33	0.32	0.58
Control Delay	14.0	23.3	25.2
Queue Delay	0.0	0.0	0.0
Total Delay	14.0	23.3	25.2
Queue Length 50th (ft)	48	67	140
Queue Length 95th (ft)	78	m63	m117
Internal Link Dist (ft)	344		682
Turn Bay Length (ft)			
Base Capacity (vph)	1326	628	1347
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.33	0.32	0.58

Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

## 28: 9th St #1 & Arch St

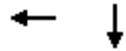
Build Conditions  
Timing Plan: SAT Casino Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑		↑	↑↑				
Volume (vph)	0	0	0	0	334	58	181	692	0	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	5.0				
Lane Util. Factor					0.95		1.00	0.95				
Frbp, ped/bikes					0.99		1.00	1.00				
Flpb, ped/bikes					1.00		0.94	1.00				
Frt					0.98		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					3121		1540	3299				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					3121		1540	3299				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.89	0.89	0.89	0.89	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	375	65	203	778	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	440	0	203	778	0	0	0	0
Confl. Peds. (#/hr)	113		113	73		73	85		85	160		160
Heavy Vehicles (%)	2%	2%	2%	2%	4%	0%	2%	1%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	3	0	0	3	0	0	0	0
Parking (#/hr)				0		0						
Turn Type					NA		Perm	NA				
Protected Phases					6			8				
Permitted Phases							8					
Actuated Green, G (s)					25.0		24.0	24.0				
Effective Green, g (s)					25.5		24.5	24.5				
Actuated g/C Ratio					0.42		0.41	0.41				
Clearance Time (s)					5.5		5.5	5.5				
Lane Grp Cap (vph)					1326		628	1347				
v/s Ratio Prot					c0.14			c0.24				
v/s Ratio Perm							0.13					
v/c Ratio					0.33		0.32	0.58				
Uniform Delay, d1					11.5		12.1	13.7				
Progression Factor					1.14		1.84	1.78				
Incremental Delay, d2					0.7		0.1	0.2				
Delay (s)					13.8		22.4	24.6				
Level of Service					B		C	C				
Approach Delay (s)		0.0			13.8			24.2			0.0	
Approach LOS		A			B			C			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			21.0		HCM 2000 Level of Service				C			
HCM 2000 Volume to Capacity ratio			0.45									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				10.0			
Intersection Capacity Utilization			39.5%		ICU Level of Service				A			
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
29: 10th St & Arch St

Build Conditions  
Timing Plan: SAT Casino Peak



Lane Group	WBT	SBT
Lane Group Flow (vph)	567	461
v/c Ratio	0.45	0.39
Control Delay	11.9	13.8
Queue Delay	0.0	0.0
Total Delay	11.9	13.8
Queue Length 50th (ft)	59	59
Queue Length 95th (ft)	83	92
Internal Link Dist (ft)	371	412
Turn Bay Length (ft)		
Base Capacity (vph)	1259	1178
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.45	0.39
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
29: 10th St & Arch St

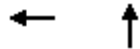
Build Conditions  
Timing Plan: SAT Casino Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕↕						↕↕	
Volume (vph)	0	0	0	147	374	0	0	0	0	0	270	155
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						0.92	
Flpb, ped/bikes					0.94						1.00	
Frt					1.00						0.95	
Flt Protected					0.99						1.00	
Satd. Flow (prot)					2964						2887	
Flt Permitted					0.99						1.00	
Satd. Flow (perm)					2964						2887	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	160	407	0	0	0	0	0	293	168
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	567	0	0	0	0	0	461	0
Confl. Peds. (#/hr)	387		387	295		295	182		182	288		288
Heavy Vehicles (%)	2%	2%	2%	0%	6%	2%	2%	2%	2%	2%	0%	1%
Bus Blockages (#/hr)	0	0	0	0	3	0	0	0	0	0	3	0
Parking (#/hr)				0		0						0
Turn Type				Perm	NA						NA	
Protected Phases					6						4	
Permitted Phases				6								
Actuated Green, G (s)					25.0						24.0	
Effective Green, g (s)					25.5						24.5	
Actuated g/C Ratio					0.42						0.41	
Clearance Time (s)					5.5						5.5	
Lane Grp Cap (vph)					1259						1178	
v/s Ratio Prot											c0.16	
v/s Ratio Perm					0.19							
v/c Ratio					0.45						0.39	
Uniform Delay, d1					12.3						12.5	
Progression Factor					0.86						1.00	
Incremental Delay, d2					1.1						1.0	
Delay (s)					11.6						13.5	
Level of Service					B						B	
Approach Delay (s)		0.0			11.6			0.0			13.5	
Approach LOS		A			B			A			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			12.5		HCM 2000 Level of Service						B	
HCM 2000 Volume to Capacity ratio			0.42									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)					10.0		
Intersection Capacity Utilization			41.9%		ICU Level of Service					A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
33: 9th St & Walnut St

Build Conditions  
Timing Plan: SAT Casino Peak



Lane Group	WBT	NBT
Lane Group Flow (vph)	595	482
v/c Ratio	0.47	0.36
Control Delay	9.6	12.7
Queue Delay	0.0	0.0
Total Delay	9.6	12.7
Queue Length 50th (ft)	25	59
Queue Length 95th (ft)	40	91
Internal Link Dist (ft)	368	360
Turn Bay Length (ft)		
Base Capacity (vph)	1254	1331
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.47	0.36
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 33: 9th St & Walnut St

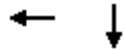
Build Conditions  
Timing Plan: SAT Casino Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑			↑↑				
Volume (vph)	0	0	0	0	462	98	94	359	0	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					0.95			0.95				
Frbp, ped/bikes					0.97			1.00				
Flpb, ped/bikes					1.00			0.95				
Frt					0.97			1.00				
Flt Protected					1.00			0.99				
Satd. Flow (prot)					2951			3132				
Flt Permitted					1.00			0.99				
Satd. Flow (perm)					2951			3132				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.94	0.94	0.94	0.94	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	491	104	100	382	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	595	0	0	482	0	0	0	0
Confl. Peds. (#/hr)	138		138	251		251	317		317	391		391
Heavy Vehicles (%)	2%	2%	2%	2%	2%	5%	1%	1%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	21	0	0	0	0	0	0	0
Parking (#/hr)									0			
Turn Type					NA		Perm	NA				
Protected Phases					6			8				
Permitted Phases							8					
Actuated Green, G (s)					24.0			24.0				
Effective Green, g (s)					25.5			25.5				
Actuated g/C Ratio					0.42			0.42				
Clearance Time (s)					6.0			6.0				
Lane Grp Cap (vph)					1254			1331				
v/s Ratio Prot					0.20							
v/s Ratio Perm								0.15				
v/c Ratio					0.47			0.36				
Uniform Delay, d1					12.4			11.7				
Progression Factor					0.66			1.00				
Incremental Delay, d2					1.2			0.8				
Delay (s)					9.4			12.5				
Level of Service					A			B				
Approach Delay (s)		0.0			9.4			12.5			0.0	
Approach LOS		A			A			B			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			10.8					HCM 2000 Level of Service			B	
HCM 2000 Volume to Capacity ratio			0.42									
Actuated Cycle Length (s)			60.0					Sum of lost time (s)			9.0	
Intersection Capacity Utilization			40.9%					ICU Level of Service			A	
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
34: Walnut St & 8th St

Build Conditions  
Timing Plan: SAT Casino Peak



Lane Group	WBT	SBT
Lane Group Flow (vph)	580	458
v/c Ratio	0.44	0.38
Control Delay	11.9	4.3
Queue Delay	0.0	0.0
Total Delay	11.9	4.3
Queue Length 50th (ft)	66	16
Queue Length 95th (ft)	106	m23
Internal Link Dist (ft)	353	489
Turn Bay Length (ft)		
Base Capacity (vph)	1322	1204
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.44	0.38

Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

## 34: Walnut St & 8th St

Build Conditions  
Timing Plan: SAT Casino Peak

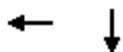


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑						↑↑		
Volume (vph)	0	0	0	67	455	0	0	0	0	0	302	110	
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	
Total Lost time (s)					4.5						4.5		
Lane Util. Factor					0.95						0.95		
Frbp, ped/bikes					1.00						0.92		
Flpb, ped/bikes					0.97						1.00		
Frt					1.00						0.96		
Flt Protected					0.99						1.00		
Satd. Flow (prot)					3110						2834		
Flt Permitted					0.99						1.00		
Satd. Flow (perm)					3110						2834		
Peak-hour factor, PHF	0.92	0.92	0.92	0.90	0.90	0.92	0.92	0.92	0.92	0.88	0.90	0.90	
Adj. Flow (vph)	0	0	0	74	506	0	0	0	0	0	336	122	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	580	0	0	0	0	0	458	0	
Confl. Peds. (#/hr)	28		28	318		318	86		86	395		395	
Heavy Vehicles (%)	2%	2%	2%	0%	2%	2%	2%	2%	2%	2%	2%	5%	
Bus Blockages (#/hr)	0	0	0	0	11	0	0	0	0	0	10	0	
Parking (#/hr)				0						0			
Turn Type				Perm	NA						NA		
Protected Phases					6						4		
Permitted Phases				6									
Actuated Green, G (s)					24.0						24.0		
Effective Green, g (s)					25.5						25.5		
Actuated g/C Ratio					0.42						0.42		
Clearance Time (s)					6.0						6.0		
Lane Grp Cap (vph)					1321						1204		
v/s Ratio Prot											c0.16		
v/s Ratio Perm					0.19								
v/c Ratio					0.44						0.38		
Uniform Delay, d1					12.2						11.8		
Progression Factor					0.88						0.30		
Incremental Delay, d2					1.0						0.6		
Delay (s)					11.7						4.2		
Level of Service					B						A		
Approach Delay (s)		0.0			11.7			0.0			4.2		
Approach LOS		A			B			A			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			8.4		HCM 2000 Level of Service						A		
HCM 2000 Volume to Capacity ratio			0.41										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)						9.0		
Intersection Capacity Utilization			39.8%		ICU Level of Service						A		
Analysis Period (min)			15										
c Critical Lane Group													



Queues  
37: 6th Street/6th St & Walnut St

Build Conditions  
Timing Plan: SAT Casino Peak



Lane Group	WBT	SBT
Lane Group Flow (vph)	457	578
v/c Ratio	0.38	0.41
Control Delay	10.7	11.0
Queue Delay	0.0	0.0
Total Delay	10.7	11.0
Queue Length 50th (ft)	74	63
Queue Length 95th (ft)	106	115
Internal Link Dist (ft)	357	488
Turn Bay Length (ft)		
Base Capacity (vph)	1197	1410
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.38	0.41
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 37: 6th Street/6th St & Walnut St

Build Conditions  
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	48	359	0	0	0	0	0	403	111
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					0.95						0.95	
Frbp, ped/bikes					1.00						0.97	
Flpb, ped/bikes					0.98						1.00	
Frt					1.00						0.97	
Flt Protected					0.99						1.00	
Satd. Flow (prot)					3192						2969	
Flt Permitted					0.99						1.00	
Satd. Flow (perm)					3192						2969	
Peak-hour factor, PHF	0.92	0.92	0.92	0.89	0.89	0.92	0.92	0.92	0.92	0.92	0.89	0.89
Adj. Flow (vph)	0	0	0	54	403	0	0	0	0	0	453	125
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	457	0	0	0	0	0	578	0
Confl. Peds. (#/hr)	129		129	176		176	235		235	196		196
Heavy Vehicles (%)	2%	2%	2%	0%	3%	2%	2%	2%	2%	2%	1%	0%
Parking (#/hr)	0			0			0			0		0
Turn Type				Perm	NA						NA	
Protected Phases					6						4	
Permitted Phases				6								
Actuated Green, G (s)					21.0						27.0	
Effective Green, g (s)					22.5						28.5	
Actuated g/C Ratio					0.38						0.48	
Clearance Time (s)					6.0						6.0	
Lane Grp Cap (vph)					1197						1410	
v/s Ratio Prot											c0.19	
v/s Ratio Perm					0.14							
v/c Ratio					0.38						0.41	
Uniform Delay, d1					13.7						10.3	
Progression Factor					0.70						0.97	
Incremental Delay, d2					0.9						0.8	
Delay (s)					10.5						10.8	
Level of Service					B						B	
Approach Delay (s)		0.0			10.5			0.0			10.8	
Approach LOS		A			B			A			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			10.7		HCM 2000 Level of Service					B		
HCM 2000 Volume to Capacity ratio			0.40									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				9.0			
Intersection Capacity Utilization			38.6%		ICU Level of Service				A			
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
40: 5th St & Arch St

Build Conditions  
Timing Plan: SAT Casino Peak



Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	264	85	601
v/c Ratio	0.20	0.14	0.43
Control Delay	11.3	9.3	9.7
Queue Delay	0.0	0.0	0.0
Total Delay	11.3	9.3	9.7
Queue Length 50th (ft)	30	13	54
Queue Length 95th (ft)	51	m31	92
Internal Link Dist (ft)	526		282
Turn Bay Length (ft)		100	
Base Capacity (vph)	1341	592	1393
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.20	0.14	0.43

Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

## 40: 5th St & Arch St













Build Conditions  
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	0	198	61	83	589	0	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	4.5					
Lane Util. Factor					0.95		1.00	0.95					
Frbp, ped/bikes					0.99		1.00	1.00					
Flpb, ped/bikes					1.00		0.95	1.00					
Frt					0.96		1.00	1.00					
Flt Protected					1.00		0.95	1.00					
Satd. Flow (prot)					3155		1395	3279					
Flt Permitted					1.00		0.95	1.00					
Satd. Flow (perm)					3155		1395	3279					
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.98	0.98	0.98	0.98	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	0	202	62	85	601	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	264	0	85	601	0	0	0	0	
Confl. Peds. (#/hr)	55		55	16		16	72		72	40		40	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	0%	14%	2%	2%	2%	2%	2%	
Bus Blockages (#/hr)	0	0	0	0	2	0	0	1	0	0	0	0	
Parking (#/hr)				0					0				
Turn Type					NA		Perm	NA					
Protected Phases					6			8					
Permitted Phases							8						
Actuated Green, G (s)					24.0		24.0	24.0					
Effective Green, g (s)					25.5		25.5	25.5					
Actuated g/C Ratio					0.42		0.42	0.42					
Clearance Time (s)					6.0		6.0	6.0					
Lane Grp Cap (vph)					1340		592	1393					
v/s Ratio Prot					c0.08			c0.18					
v/s Ratio Perm							0.06						
v/c Ratio					0.20		0.14	0.43					
Uniform Delay, d1					10.8		10.6	12.1					
Progression Factor					1.00		0.81	0.71					
Incremental Delay, d2					0.3		0.4	0.8					
Delay (s)					11.2		9.0	9.5					
Level of Service					B		A	A					
Approach Delay (s)		0.0			11.2			9.5			0.0		
Approach LOS		A			B			A			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			9.9		HCM 2000 Level of Service				A				
HCM 2000 Volume to Capacity ratio			0.31										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				9.0				
Intersection Capacity Utilization			31.7%		ICU Level of Service				A				
Analysis Period (min)			15										
c Critical Lane Group													

HCM 2010 Signalized Intersection Summary  
 41: 6th Street/6th St & Market St

Build Conditions  
 Timing Plan: SAT Casino Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑						↑↑	↑
Volume (veh/h)	0	619	128	45	309	0	0	0	0	88	361	43
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		0.98	0.99		1.00				1.00		0.90
Parking Bus, Adj	1.00	1.00	0.98	1.00	1.00	1.00				0.90	1.00	0.90
Adj Sat Flow, veh/h/ln	0.0	181.7	183.5	189.0	183.5	0.0				189.0	186.0	158.8
Adj Flow Rate, veh/h	0	680	141	49	340	0				97	397	47
Adj No. of Lanes	0	2	1	1	2	0				0	2	1
Peak Hour Factor	0.92	0.91	0.91	0.91	0.91	0.92				0.91	0.91	0.91
Percent Heavy Veh, %	0	4	3	0	3	0				19	2	19
Cap, veh/h	0	1467	379	268	936	0				271	1178	467
Arrive On Green	0.00	0.14	0.14	0.43	0.43	0.00				0.14	0.14	0.14
Sat Flow, veh/h	0	3544	891	606	2936	0				637	2772	1098
Grp Volume(v), veh/h	0	680	141	49	340	0				250	244	47
Grp Sat Flow(s),veh/h/ln	0	1726	891	606	1101	0				1642	1767	1098
Q Serve(g_s), s	0.0	10.9	8.6	4.0	6.3	0.0				8.3	7.5	2.2
Cycle Q Clear(g_c), s	0.0	10.9	8.6	14.9	6.3	0.0				8.3	7.5	2.2
Prop In Lane	0.00		1.00	1.00		0.00				0.39		1.00
Lane Grp Cap(c), veh/h	0	1467	379	268	936	0				698	751	467
V/C Ratio(X)	0.00	0.46	0.37	0.18	0.36	0.00				0.36	0.32	0.10
Avail Cap(c_a), veh/h	0	1467	379	268	936	0				698	751	467
HCM Platoon Ratio	1.00	0.33	0.33	1.00	1.00	1.00				0.33	0.33	0.33
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	19.5	18.5	18.7	11.7	0.0				18.4	18.0	15.8
Incr Delay (d2), s/veh	0.0	1.1	2.8	1.5	1.1	0.0				1.4	1.1	0.4
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	9.2	4.4	1.4	3.7	0.0				7.3	7.0	1.3
LnGrp Delay(d),s/veh	0.0	20.6	21.3	20.2	12.8	0.0				19.8	19.2	16.2
LnGrp LOS		C	C	C	B					B	B	B
Approach Vol, veh/h		821			389						541	
Approach Delay, s/veh		20.7			13.7						19.2	
Approach LOS		C			B						B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		30.0		30.0		30.0						
Change Period (Y+Rc), s		6.0		6.0		6.0						
Max Green Setting (Gmax), s		24.0		24.0		24.0						
Max Q Clear Time (g_c+I1), s		12.9		10.3		16.9						
Green Ext Time (p_c), s		5.6		0.0		4.0						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			18.7									
HCM 2010 LOS			B									

Queues  
42: 6th St/6th Street & Chestnut St

Build Conditions  
Timing Plan: SAT Casino Peak



Lane Group	EBT	EBR	SBL	SBT
Lane Group Flow (vph)	393	102	142	572
v/c Ratio	0.54	0.30	0.27	0.41
Control Delay	16.1	16.3	9.4	9.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	16.1	16.3	9.4	9.3
Queue Length 50th (ft)	85	36	26	55
Queue Length 95th (ft)	m121	m56	49	80
Internal Link Dist (ft)	389			512
Turn Bay Length (ft)			50	
Base Capacity (vph)	728	337	535	1410
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.54	0.30	0.27	0.41

Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

## 42: 6th St/6th Street & Chestnut St















Build Conditions  
Timing Plan: SAT Casino Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑	↗							↖	↑↑		
Volume (vph)	0	334	87	0	0	0	0	0	0	121	486	0	
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	
Total Lost time (s)		4.5	4.5							4.5	4.5		
Lane Util. Factor		1.00	*0.60							1.00	0.95		
Frbp, ped/bikes		1.00	0.93							1.00	1.00		
Flpb, ped/bikes		1.00	1.00							0.77	1.00		
Frt		1.00	0.85							1.00	1.00		
Flt Protected		1.00	1.00							0.95	1.00		
Satd. Flow (prot)		1713	793							1260	3318		
Flt Permitted		1.00	1.00							0.95	1.00		
Satd. Flow (perm)		1713	793							1260	3318		
Peak-hour factor, PHF	0.92	0.85	0.85	0.92	0.92	0.92	0.92	0.92	0.92	0.85	0.85	0.92	
Adj. Flow (vph)	0	393	102	0	0	0	0	0	0	142	572	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	393	102	0	0	0	0	0	0	142	572	0	
Confl. Peds. (#/hr)	77		77	149		149	70		70	330		330	
Heavy Vehicles (%)	2%	3%	1%	2%	2%	2%	2%	2%	2%	2%	1%	2%	
Bus Blockages (#/hr)	0	0	12	0	0	0	0	0	0	0	0	0	
Turn Type		NA	Perm							Perm	NA		
Protected Phases		2									4		
Permitted Phases			2							4			
Actuated Green, G (s)		24.0	24.0							24.0	24.0		
Effective Green, g (s)		25.5	25.5							25.5	25.5		
Actuated g/C Ratio		0.42	0.42							0.42	0.42		
Clearance Time (s)		6.0	6.0							6.0	6.0		
Lane Grp Cap (vph)		728	337							535	1410		
v/s Ratio Prot		c0.23									c0.17		
v/s Ratio Perm			0.13							0.11			
v/c Ratio		0.54	0.30							0.27	0.41		
Uniform Delay, d1		12.9	11.4							11.2	12.0		
Progression Factor		1.06	1.21							0.70	0.69		
Incremental Delay, d2		1.9	1.5							1.2	0.8		
Delay (s)		15.5	15.3							9.1	9.1		
Level of Service		B	B							A	A		
Approach Delay (s)		15.5			0.0			0.0			9.1		
Approach LOS		B			A			A			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			11.7									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.47										
Actuated Cycle Length (s)			60.0									Sum of lost time (s)	9.0
Intersection Capacity Utilization			38.7%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

HCM 2010 Signalized Intersection Summary  
43: 5th St & Walnut St

Build Conditions  
Timing Plan: SAT Casino Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	0	336	63	79	377	0	0	0	0
Number				1	6	16	3	8	18			
Initial Q (Qb), veh				0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)				1.00		0.96	1.00		1.00			
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln				0.0	185.3	189.0	189.0	186.4	0.0			
Adj Flow Rate, veh/h				0	405	76	95	454	0			
Adj No. of Lanes				0	2	0	0	2	0			
Peak Hour Factor				0.92	0.83	0.83	0.83	0.83	0.92			
Percent Heavy Veh, %				0	2	2	0	0	0			
Cap, veh/h				0	1250	232	272	1196	0			
Arrive On Green				0.00	0.43	0.43	0.43	0.43	0.00			
Sat Flow, veh/h				0	3034	546	453	2900	0			
Grp Volume(v), veh/h				0	241	240	286	263	0			
Grp Sat Flow(s),veh/h/ln				0	1760	1727	1657	1612	0			
Q Serve(g_s), s				0.0	5.5	5.6	2.7	6.7	0.0			
Cycle Q Clear(g_c), s				0.0	5.5	5.6	6.7	6.7	0.0			
Prop In Lane				0.00		0.32	0.33		0.00			
Lane Grp Cap(c), veh/h				0	748	734	784	685	0			
V/C Ratio(X)				0.00	0.32	0.33	0.36	0.38	0.00			
Avail Cap(c_a), veh/h				0	748	734	784	685	0			
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(l)				0.00	1.00	1.00	1.00	1.00	0.00			
Uniform Delay (d), s/veh				0.0	11.5	11.5	11.8	11.9	0.0			
Incr Delay (d2), s/veh				0.0	1.1	1.2	1.3	1.6	0.0			
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln				0.0	5.1	5.1	6.2	5.9	0.0			
LnGrp Delay(d),s/veh				0.0	12.6	12.7	13.1	13.5	0.0			
LnGrp LOS					B	B	B	B				
Approach Vol, veh/h					481			549				
Approach Delay, s/veh					12.7			13.3				
Approach LOS					B			B				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs						6		8				
Phs Duration (G+Y+Rc), s						30.0		30.0				
Change Period (Y+Rc), s						6.0		6.0				
Max Green Setting (Gmax), s						24.0		24.0				
Max Q Clear Time (g_c+I1), s						7.6		8.7				
Green Ext Time (p_c), s						2.3		2.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				13.0								
HCM 2010 LOS				B								



Queues  
46: 8th St #2 & Race St #1

Build Conditions  
Timing Plan: SAT Casino Peak



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	1005	229	1084
v/c Ratio	0.50	0.40	0.58
Control Delay	10.3	14.7	14.8
Queue Delay	0.0	0.0	0.0
Total Delay	10.3	14.7	14.8
Queue Length 50th (ft)	80	63	110
Queue Length 95th (ft)	m127	122	150
Internal Link Dist (ft)	378		453
Turn Bay Length (ft)			
Base Capacity (vph)	1994	566	1858
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.50	0.40	0.58

Intersection Summary

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

# HCM Signalized Intersection Capacity Analysis

## 46: 8th St #2 & Race St #1
















Build Conditions  
Timing Plan: SAT Casino Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑								↘	↑↑↑		
Volume (vph)	0	837	77	0	0	0	0	0	0	231	964	0	
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	
Total Lost time (s)		4.5								4.5	4.5		
Lane Util. Factor		0.91								0.86	0.86		
Frbp, ped/bikes		1.00								1.00	1.00		
Flpb, ped/bikes		1.00								0.95	1.00		
Frt		0.99								1.00	1.00		
Flt Protected		1.00								0.95	1.00		
Satd. Flow (prot)		4693								1332	4373		
Flt Permitted		1.00								0.95	1.00		
Satd. Flow (perm)		4693								1332	4373		
Peak-hour factor, PHF	0.96	0.91	0.91	0.92	0.92	0.92	0.92	0.92	0.92	0.91	0.91	0.92	
Adj. Flow (vph)	0	920	85	0	0	0	0	0	0	254	1059	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	1005	0	0	0	0	0	0	0	229	1084	0	
Confl. Peds. (#/hr)	34		34	6		6	40		40	68		68	
Heavy Vehicles (%)	2%	1%	1%	2%	2%	2%	2%	2%	2%	3%	3%	2%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	6	0	
Parking (#/hr)			0										
Turn Type		NA								Perm	NA		
Protected Phases		2									4		
Permitted Phases										4			
Actuated Green, G (s)		24.0								24.0	24.0		
Effective Green, g (s)		25.5								25.5	25.5		
Actuated g/C Ratio		0.42								0.42	0.42		
Clearance Time (s)		6.0								6.0	6.0		
Lane Grp Cap (vph)		1994								566	1858		
v/s Ratio Prot		c0.21											
v/s Ratio Perm										0.17	0.25		
v/c Ratio		0.50								0.40	0.58		
Uniform Delay, d1		12.6								12.0	13.2		
Progression Factor		0.75								1.00	1.00		
Incremental Delay, d2		0.7								2.1	1.3		
Delay (s)		10.2								14.1	14.5		
Level of Service		B								B	B		
Approach Delay (s)		10.2			0.0			0.0			14.5		
Approach LOS		B			A			A			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			12.6									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.54										
Actuated Cycle Length (s)			60.0									Sum of lost time (s)	9.0
Intersection Capacity Utilization			43.3%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

HCM 2010 Signalized Intersection Summary  
48: 7th St & Race St

Build Conditions  
Timing Plan: SAT Casino Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	690	0	0	0	0	0	455	144	0	0	0
Number	5	2	12				3	8	18			
Initial Q (Qb), veh	0	2	0				0	1	1			
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	189.0	183.8	0.0				0.0	187.1	189.0			
Adj Flow Rate, veh/h	52	758	0				0	500	158			
Adj No. of Lanes	0	5	0				0	2	1			
Peak Hour Factor	0.91	0.91	0.92				0.92	0.91	0.91			
Percent Heavy Veh, %	3	3	0				0	1	0			
Cap, veh/h	216	2881	0				0	1511	671			
Arrive On Green	0.43	0.43	0.00				0.00	0.14	0.14			
Sat Flow, veh/h	331	7095	0				0	3649	1578			
Grp Volume(v), veh/h	202	608	0				0	500	158			
Grp Sat Flow(s),veh/h/ln	1687	1355	0				0	1778	1578			
Q Serve(g_s), s	0.0	4.4	0.0				0.0	7.6	5.3			
Cycle Q Clear(g_c), s	4.2	4.4	0.0				0.0	7.6	5.3			
Prop In Lane	0.26		0.00				0.00		1.00			
Lane Grp Cap(c), veh/h	793	2304	0				0	1511	671			
V/C Ratio(X)	0.25	0.26	0.00				0.00	0.33	0.24			
Avail Cap(c_a), veh/h	792	2304	0				0	1511	671			
HCM Platoon Ratio	1.00	1.00	1.00				1.00	0.33	0.33			
Upstream Filter(l)	1.00	1.00	0.00				0.00	1.00	1.00			
Uniform Delay (d), s/veh	11.2	11.2	0.0				0.0	18.1	17.2			
Incr Delay (d2), s/veh	0.8	0.3	0.0				0.0	0.6	0.8			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	4.2	3.0	0.0				0.0	7.0	4.6			
LnGrp Delay(d),s/veh	11.9	11.5	0.0				0.0	18.7	18.0			
LnGrp LOS	B	B						B	B			
Approach Vol, veh/h		810						658				
Approach Delay, s/veh		11.6						18.6				
Approach LOS		B						B				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2						8				
Phs Duration (G+Y+Rc), s		30.0						30.0				
Change Period (Y+Rc), s		6.0						6.0				
Max Green Setting (Gmax), s		24.0						24.0				
Max Q Clear Time (g_c+I1), s		6.4						9.6				
Green Ext Time (p_c), s		4.4						3.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			14.7									
HCM 2010 LOS			B									

Queues  
49: 6th St & Race St

Build Conditions  
Timing Plan: SAT Casino Peak



Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	838	100	742
v/c Ratio	0.34	0.16	0.40
Control Delay	5.0	5.0	12.7
Queue Delay	0.0	0.0	0.0
Total Delay	5.0	5.0	12.7
Queue Length 50th (ft)	18	7	64
Queue Length 95th (ft)	23	15	90
Internal Link Dist (ft)	400		133
Turn Bay Length (ft)			
Base Capacity (vph)	2479	609	1869
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.34	0.16	0.40
<b>Intersection Summary</b>			

# HCM Signalized Intersection Capacity Analysis

## 49: 6th St & Race St

Build Conditions  
Timing Plan: SAT Casino Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		↑↑↑	↗								↖↑↑			
Volume (vph)	0	746	89	0	0	0	0	0	0	168	492	0		
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100		
Total Lost time (s)		4.5	4.5								4.5			
Lane Util. Factor		0.86	1.00								0.91			
Frbp, ped/bikes		1.00	0.96								1.00			
Flpb, ped/bikes		1.00	1.00								1.00			
Frt		1.00	0.85								1.00			
Flt Protected		1.00	1.00								0.99			
Satd. Flow (prot)		5835	1435								4400			
Flt Permitted		1.00	1.00								0.99			
Satd. Flow (perm)		5835	1435								4400			
Peak-hour factor, PHF	0.96	0.89	0.89	0.92	0.92	0.92	0.92	0.92	0.92	0.89	0.89	0.92		
Adj. Flow (vph)	0	838	100	0	0	0	0	0	0	189	553	0		
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0		
Lane Group Flow (vph)	0	838	100	0	0	0	0	0	0	0	742	0		
Confl. Peds. (#/hr)	45		45	2		2	2		2	18		18		
Heavy Vehicles (%)	2%	4%	0%	2%	2%	2%	2%	2%	2%	0%	4%	2%		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	33	0		
Turn Type		NA	Perm							Perm	NA			
Protected Phases		2									4			
Permitted Phases			2							4				
Actuated Green, G (s)		24.0	24.0								24.0			
Effective Green, g (s)		25.5	25.5								25.5			
Actuated g/C Ratio		0.42	0.42								0.42			
Clearance Time (s)		6.0	6.0								6.0			
Lane Grp Cap (vph)		2479	609								1870			
v/s Ratio Prot		c0.14												
v/s Ratio Perm			0.07								0.17			
v/c Ratio		0.34	0.16								0.40			
Uniform Delay, d1		11.6	10.7								11.9			
Progression Factor		0.40	0.40								1.00			
Incremental Delay, d2		0.4	0.6								0.6			
Delay (s)		5.0	4.8								12.6			
Level of Service		A	A								B			
Approach Delay (s)		5.0			0.0			0.0			12.6			
Approach LOS		A			A			A			B			
<b>Intersection Summary</b>														
HCM 2000 Control Delay			8.3									HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio			0.37											
Actuated Cycle Length (s)			60.0								9.0		Sum of lost time (s)	
Intersection Capacity Utilization			31.4%										ICU Level of Service	A
Analysis Period (min)			15											
c Critical Lane Group														

Queues  
50: 3rd St & Race St

Build Conditions  
Timing Plan: SAT Casino Peak



Lane Group	EBT	NBT
Lane Group Flow (vph)	582	359
v/c Ratio	0.35	0.32
Control Delay	6.8	21.0
Queue Delay	0.0	0.0
Total Delay	6.8	21.0
Queue Length 50th (ft)	27	75
Queue Length 95th (ft)	33	101
Internal Link Dist (ft)	370	275
Turn Bay Length (ft)		
Base Capacity (vph)	1664	1106
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.35	0.32
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 50: 3rd St & Race St


















Build Conditions  
Timing Plan: SAT Casino Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕						↕↕				
Volume (vph)	88	401	0	0	0	0	0	174	128	0	0	0
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)		5.8						4.9				
Lane Util. Factor		0.95						0.95				
Frpb, ped/bikes		1.00						0.96				
Flpb, ped/bikes		0.99						1.00				
Frt		1.00						0.94				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		3293						2946				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		3293						2946				
Peak-hour factor, PHF	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.84	0.84	0.92	0.92	0.92
Adj. Flow (vph)	105	477	0	0	0	0	0	207	152	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	582	0	0	0	0	0	359	0	0	0	0
Confl. Peds. (#/hr)	63		63	131		131	113		113	35		35
Heavy Vehicles (%)	1%	0%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	6	0	0	0
Parking (#/hr)	0								0			
Turn Type	Perm	NA						NA				
Protected Phases		2						8				
Permitted Phases	2											
Actuated Green, G (s)		45.0						33.3				
Effective Green, g (s)		45.5						33.8				
Actuated g/C Ratio		0.51						0.38				
Clearance Time (s)		6.3						5.4				
Lane Grp Cap (vph)		1664						1106				
v/s Ratio Prot								c0.12				
v/s Ratio Perm		0.18										
v/c Ratio		0.35						0.32				
Uniform Delay, d1		13.4						20.0				
Progression Factor		0.46						1.00				
Incremental Delay, d2		0.6						0.8				
Delay (s)		6.7						20.8				
Level of Service		A						C				
Approach Delay (s)		6.7			0.0			20.8			0.0	
Approach LOS		A			A			C			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			12.1					HCM 2000 Level of Service			B	
HCM 2000 Volume to Capacity ratio			0.34									
Actuated Cycle Length (s)			90.0					Sum of lost time (s)		10.7		
Intersection Capacity Utilization			37.6%					ICU Level of Service		A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 2010 Signalized Intersection Summary  
52: 5th St & Race St

Build Conditions  
Timing Plan: SAT Casino Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 						 				
Volume (veh/h)	1	381	0	0	0	0	0	338	47	0	0	0
Number	5	2	12				3	8	18			
Initial Q (Qb), veh	0	0	0				0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	0.90			
Adj Sat Flow, veh/h/ln	189.0	187.1	0.0				0.0	187.1	185.3			
Adj Flow Rate, veh/h	1	482	0				0	428	59			
Adj No. of Lanes	0	2	0				0	2	1			
Peak Hour Factor	0.79	0.79	0.92				0.92	0.79	0.79			
Percent Heavy Veh, %	1	1	0				0	1	2			
Cap, veh/h	61	1482	0				0	1511	592			
Arrive On Green	0.43	0.43	0.00				0.00	0.43	0.43			
Sat Flow, veh/h	1	3572	0				0	3649	1392			
Grp Volume(v), veh/h	259	224	0				0	428	59			
Grp Sat Flow(s),veh/h/ln	1871	1618	0				0	1778	1392			
Q Serve(g_s), s	0.0	5.5	0.0				0.0	4.7	1.5			
Cycle Q Clear(g_c), s	5.5	5.5	0.0				0.0	4.7	1.5			
Prop In Lane	0.00		0.00				0.00		1.00			
Lane Grp Cap(c), veh/h	855	688	0				0	1511	592			
V/C Ratio(X)	0.30	0.33	0.00				0.00	0.28	0.10			
Avail Cap(c_a), veh/h	855	688	0				0	1511	592			
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00			
Upstream Filter(l)	1.00	1.00	0.00				0.00	1.00	1.00			
Uniform Delay (d), s/veh	11.5	11.5	0.0				0.0	11.3	10.4			
Incr Delay (d2), s/veh	0.9	1.3	0.0				0.0	0.5	0.3			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	5.4	4.8	0.0				0.0	4.4	1.1			
LnGrp Delay(d),s/veh	12.4	12.8	0.0				0.0	11.7	10.7			
LnGrp LOS	B	B						B	B			
Approach Vol, veh/h		483						487				
Approach Delay, s/veh		12.6						11.6				
Approach LOS		B						B				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2						8				
Phs Duration (G+Y+Rc), s		30.0						30.0				
Change Period (Y+Rc), s		6.0						6.0				
Max Green Setting (Gmax), s		24.0						24.0				
Max Q Clear Time (g_c+I1), s		7.5						6.7				
Green Ext Time (p_c), s		2.2						2.6				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			12.1									
HCM 2010 LOS			B									



Queues  
59: 4th St & Race St

Build Conditions  
Timing Plan: SAT Casino Peak



Lane Group	EBT	SBT
Lane Group Flow (vph)	602	405
v/c Ratio	0.36	0.33
Control Delay	13.7	21.0
Queue Delay	0.0	0.0
Total Delay	13.7	21.0
Queue Length 50th (ft)	101	84
Queue Length 95th (ft)	128	114
Internal Link Dist (ft)	410	408
Turn Bay Length (ft)		
Base Capacity (vph)	1665	1222
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.36	0.33
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 59: 4th St & Race St

Build Conditions  
Timing Plan: SAT Casino Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑									↑↑		
Volume (vph)	0	422	90	0	0	0	0	0	0	69	275	0	
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	
Total Lost time (s)		4.8									4.9		
Lane Util. Factor		0.95									0.95		
Frbp, ped/bikes		0.99									1.00		
Flpb, ped/bikes		1.00									0.99		
Frt		0.97									1.00		
Flt Protected		1.00									0.99		
Satd. Flow (prot)		3223									3256		
Flt Permitted		1.00									0.99		
Satd. Flow (perm)		3223									3256		
Peak-hour factor, PHF	0.92	0.85	0.85	0.92	0.92	0.92	0.92	0.92	0.92	0.85	0.85	0.92	
Adj. Flow (vph)	0	496	106	0	0	0	0	0	0	81	324	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	602	0	0	0	0	0	0	0	0	405	0	
Confl. Peds. (#/hr)	32		32	32		32	27		27	32		32	
Heavy Vehicles (%)	2%	0%	4%	2%	2%	2%	2%	2%	2%	0%	1%	2%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	3	0	
Parking (#/hr)												0	
Turn Type		NA								Perm	NA		
Protected Phases		2									4		
Permitted Phases										4			
Actuated Green, G (s)		45.0									33.3		
Effective Green, g (s)		46.5									33.8		
Actuated g/C Ratio		0.52									0.38		
Clearance Time (s)		6.3									5.4		
Lane Grp Cap (vph)		1665									1222		
v/s Ratio Prot		c0.19											
v/s Ratio Perm											0.12		
v/c Ratio		0.36									0.33		
Uniform Delay, d1		12.9									20.0		
Progression Factor		1.00									1.00		
Incremental Delay, d2		0.6									0.7		
Delay (s)		13.5									20.8		
Level of Service		B									C		
Approach Delay (s)		13.5			0.0			0.0			20.8		
Approach LOS		B			A			A			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			16.4									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.35										
Actuated Cycle Length (s)			90.0									Sum of lost time (s)	9.7
Intersection Capacity Utilization			36.2%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Queues  
63: Race St & 2nd Street

Build Conditions  
Timing Plan: SAT Casino Peak



Lane Group	EBT	SBT
Lane Group Flow (vph)	563	442
v/c Ratio	0.35	0.39
Control Delay	9.6	16.3
Queue Delay	0.0	0.0
Total Delay	9.6	16.3
Queue Length 50th (ft)	58	62
Queue Length 95th (ft)	88	96
Internal Link Dist (ft)	462	479
Turn Bay Length (ft)		
Base Capacity (vph)	1603	1131
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.35	0.39
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 63: Race St & 2nd Street

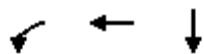
Build Conditions  
Timing Plan: SAT Casino Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑↑	
Volume (vph)	0	399	136	0	0	0	0	0	0	40	380	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		0.95									0.95	
Frbp, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.96									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3154									3313	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3154									3313	
Peak-hour factor, PHF	0.88	0.95	0.95	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.88
Adj. Flow (vph)	0	420	143	0	0	0	0	0	0	42	400	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	563	0	0	0	0	0	0	0	0	442	0
Confl. Peds. (#/hr)	60		60	48		48	48		48	10		10
Heavy Vehicles (%)	2%	1%	1%	2%	2%	2%	2%	2%	2%	0%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	3	0
Parking (#/hr)			0									0
Turn Type		NA								Perm	NA	
Protected Phases		2									4	
Permitted Phases										4		
Actuated Green, G (s)		30.0									20.0	
Effective Green, g (s)		30.5									20.5	
Actuated g/C Ratio		0.51									0.34	
Clearance Time (s)		5.0									5.0	
Lane Grp Cap (vph)		1603									1131	
v/s Ratio Prot		c0.18										
v/s Ratio Perm											0.13	
v/c Ratio		0.35									0.39	
Uniform Delay, d1		8.8									15.0	
Progression Factor		1.00									1.00	
Incremental Delay, d2		0.6									1.0	
Delay (s)		9.4									16.0	
Level of Service		A									B	
Approach Delay (s)		9.4			0.0			0.0			16.0	
Approach LOS		A			A			A			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			12.3								HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			60.0								Sum of lost time (s)	9.0
Intersection Capacity Utilization			39.1%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
70: 8th St & Vine St

Build Conditions  
Timing Plan: SAT Casino Peak



Lane Group	WBL	WBT	SBT
Lane Group Flow (vph)	400	2288	605
v/c Ratio	0.20	0.60	0.43
Control Delay	11.8	18.4	26.2
Queue Delay	0.0	4.2	0.0
Total Delay	11.8	22.6	26.2
Queue Length 50th (ft)	81	325	100
Queue Length 95th (ft)	114	352	132
Internal Link Dist (ft)		254	248
Turn Bay Length (ft)			
Base Capacity (vph)	2013	3820	1400
Starvation Cap Reductn	0	1439	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.20	0.96	0.43
<b>Intersection Summary</b>			

# HCM Signalized Intersection Capacity Analysis

## 70: 8th St & Vine St

Build Conditions  
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	356	2036	0	0	0	0	0	252	287
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)				5.0	5.0						6.0	
Lane Util. Factor				0.97	0.86						0.91	
Frbp, ped/bikes				1.00	1.00						0.99	
Flpb, ped/bikes				0.99	1.00						1.00	
Frt				1.00	1.00						0.92	
Flt Protected				0.95	1.00						1.00	
Satd. Flow (prot)				3519	6676						4586	
Flt Permitted				0.95	1.00						1.00	
Satd. Flow (perm)				3519	6676						4586	
Peak-hour factor, PHF	0.92	0.92	0.92	0.89	0.89	0.92	0.92	0.92	0.92	0.92	0.89	0.89
Adj. Flow (vph)	0	0	0	400	2288	0	0	0	0	0	283	322
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	400	2288	0	0	0	0	0	605	0
Confl. Peds. (#/hr)	7		7	12		12				3		3
Heavy Vehicles (%)	2%	2%	2%	2%	1%	2%	2%	2%	2%	3%	3%	8%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	6	0
Turn Type				Perm	NA						NA	
Protected Phases					6						4	
Permitted Phases				6								
Actuated Green, G (s)				51.0	51.0						27.0	
Effective Green, g (s)				51.5	51.5						27.5	
Actuated g/C Ratio				0.57	0.57						0.31	
Clearance Time (s)				5.5	5.5						6.5	
Lane Grp Cap (vph)				2013	3820						1401	
v/s Ratio Prot					c0.34						c0.13	
v/s Ratio Perm				0.11								
v/c Ratio				0.20	0.60						0.43	
Uniform Delay, d1				9.3	12.5						25.0	
Progression Factor				1.24	1.40						1.00	
Incremental Delay, d2				0.2	0.6						1.0	
Delay (s)				11.7	18.2						26.0	
Level of Service				B	B						C	
Approach Delay (s)		0.0			17.2			0.0			26.0	
Approach LOS		A			B			A			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			18.8		HCM 2000 Level of Service					B		
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			90.0		Sum of lost time (s)			11.0				
Intersection Capacity Utilization			47.9%		ICU Level of Service					A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
71: 7th St & Vine St/Route 30

Build Conditions  
Timing Plan: SAT Casino Peak















Lane Group	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	1882	6	584	969
v/c Ratio	0.62	0.01	0.37	0.41
Control Delay	19.4	0.0	16.6	18.0
Queue Delay	0.4	0.0	2.1	2.5
Total Delay	19.8	0.0	18.7	20.5
Queue Length 50th (ft)	225	0	103	134
Queue Length 95th (ft)	264	0	143	168
Internal Link Dist (ft)	594			178
Turn Bay Length (ft)		500		
Base Capacity (vph)	3047	772	1574	2348
Starvation Cap Reductn	0	0	812	1213
Spillback Cap Reductn	600	0	4	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.77	0.01	0.77	0.85

Intersection Summary

HCM Signalized Intersection Capacity Analysis  
71: 7th St & Vine St/Route 30

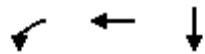
Build Conditions  
Timing Plan: SAT Casino Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑↑	↑	↑↑	↑↑↑				
Volume (vph)	0	0	0	0	1826	6	566	940	0	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	4.5	4.5				
Lane Util. Factor					0.86	1.00	0.97	0.91				
Fr <sub>t</sub>					1.00	0.85	1.00	1.00				
Fl <sub>t</sub> Protected					1.00	1.00	0.95	1.00				
Satd. Flow (prot)					6610	1633	3541	5351				
Fl <sub>t</sub> Permitted					1.00	1.00	0.95	1.00				
Satd. Flow (perm)					6610	1633	3541	5351				
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.97	0.97	0.97	0.97	0.95	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	1882	6	584	969	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	3	20	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1882	3	564	969	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	2%	2%	2%	2%
Turn Type					NA	Perm	Perm	NA				
Protected Phases					6			8				
Permitted Phases						6	8					
Actuated Green, G (s)					40.0	40.0	38.0	38.0				
Effective Green, g (s)					41.5	41.5	39.5	39.5				
Actuated g/C Ratio					0.46	0.46	0.44	0.44				
Clearance Time (s)					6.0	6.0	6.0	6.0				
Lane Grp Cap (vph)					3047	752	1554	2348				
v/s Ratio Prot					c0.28			c0.18				
v/s Ratio Perm						0.00	0.16					
v/c Ratio					0.62	0.00	0.36	0.41				
Uniform Delay, d <sub>1</sub>					18.3	13.1	16.9	17.3				
Progression Factor					1.00	1.00	1.00	1.00				
Incremental Delay, d <sub>2</sub>					0.9	0.0	0.7	0.5				
Delay (s)					19.2	13.1	17.5	17.8				
Level of Service					B	B	B	B				
Approach Delay (s)		0.0			19.2			17.7			0.0	
Approach LOS		A			B			B			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			18.5		HCM 2000 Level of Service				B			
HCM 2000 Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			90.0		Sum of lost time (s)				9.0			
Intersection Capacity Utilization			47.9%		ICU Level of Service				A			
Analysis Period (min)			15									
c Critical Lane Group												



Queues  
73: 8th St & Callowhill St

Build Conditions  
Timing Plan: SAT Casino Peak



Lane Group	WBL	WBT	SBT
Lane Group Flow (vph)	376	444	257
v/c Ratio	0.49	0.28	0.17
Control Delay	15.2	11.9	11.1
Queue Delay	0.0	0.0	0.0
Total Delay	15.2	11.9	11.1
Queue Length 50th (ft)	94	52	28
Queue Length 95th (ft)	153	77	47
Internal Link Dist (ft)		389	389
Turn Bay Length (ft)			
Base Capacity (vph)	774	1566	1513
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.49	0.28	0.17
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
73: 8th St & Callowhill St

Build Conditions  
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	327	386	0	0	0	0	0	206	17
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)				4.5	4.5						4.5	
Lane Util. Factor				1.00	0.95						0.95	
Frbp, ped/bikes				1.00	1.00						1.00	
Flpb, ped/bikes				1.00	1.00						1.00	
Frt				1.00	1.00						0.99	
Flt Protected				0.95	1.00						1.00	
Satd. Flow (prot)				1823	3687						3562	
Flt Permitted				0.95	1.00						1.00	
Satd. Flow (perm)				1823	3687						3562	
Peak-hour factor, PHF	0.88	0.88	0.88	0.87	0.87	0.88	0.88	0.88	0.88	0.88	0.87	0.87
Adj. Flow (vph)	0	0	0	376	444	0	0	0	0	0	237	20
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	376	444	0	0	0	0	0	257	0
Confl. Peds. (#/hr)	16		16	2		2	26		26	28		28
Heavy Vehicles (%)	2%	2%	2%	2%	1%	2%	2%	2%	2%	2%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	6	0
Turn Type				Perm	NA						NA	
Protected Phases					6						4	
Permitted Phases				6								
Actuated Green, G (s)				24.0	24.0						24.0	
Effective Green, g (s)				25.5	25.5						25.5	
Actuated g/C Ratio				0.42	0.42						0.42	
Clearance Time (s)				6.0	6.0						6.0	
Lane Grp Cap (vph)				774	1566						1513	
v/s Ratio Prot					0.12						c0.07	
v/s Ratio Perm				c0.21								
v/c Ratio				0.49	0.28						0.17	
Uniform Delay, d1				12.5	11.3						10.7	
Progression Factor				1.00	1.00						1.00	
Incremental Delay, d2				2.2	0.5						0.2	
Delay (s)				14.7	11.7						10.9	
Level of Service				B	B						B	
Approach Delay (s)		0.0			13.1			0.0			10.9	
Approach LOS		A			B			A			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			12.6		HCM 2000 Level of Service				B			
HCM 2000 Volume to Capacity ratio			0.33									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)			9.0				
Intersection Capacity Utilization			29.7%		ICU Level of Service			A				
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis  
77: Franklin St #1 & 7th St #1

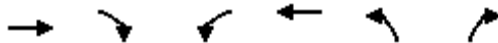
Build Conditions  
Timing Plan: SAT Casino Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↵			↑↑		
Volume (veh/h)	343	0	0	516	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.92	0.92	0.95	0.92	0.92
Hourly flow rate (vph)	361	0	0	543	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				285	312	
pX, platoon unblocked	0.91					
vC, conflicting volume	272	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	10	0	0			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	61	100	100			
cM capacity (veh/h)	922	1084	1622			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>NB 2</b>			
Volume Total	361	272	272			
Volume Left	361	0	0			
Volume Right	0	0	0			
cSH	922	1700	1700			
Volume to Capacity	0.39	0.16	0.16			
Queue Length 95th (ft)	47	0	0			
Control Delay (s)	11.4	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	11.4	0.0				
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			4.5			
Intersection Capacity Utilization		47.4%		ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
89: 9th Street & Vine Street

Build Conditions  
Timing Plan: SAT Casino Peak



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑					↗
Volume (veh/h)	305	0	0	0	0	177
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.92	0.92	0.92	0.92	0.95
Hourly flow rate (vph)	359	0	0	0	0	186
Pedestrians	13			13		
Lane Width (ft)	10.0			0.0		
Walking Speed (ft/s)	3.5			3.5		
Percent Blockage	1			0		
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)				456		
pX, platoon unblocked						
vC, conflicting volume			359		372	192
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			359		372	192
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	77
cM capacity (veh/h)			1196		596	823

Direction, Lane #	EB 1	EB 2	NB 1
Volume Total	179	179	186
Volume Left	0	0	0
Volume Right	0	0	186
cSH	1700	1700	823
Volume to Capacity	0.11	0.11	0.23
Queue Length 95th (ft)	0	0	22
Control Delay (s)	0.0	0.0	10.7
Lane LOS			B
Approach Delay (s)	0.0		10.7
Approach LOS			B

Intersection Summary			
Average Delay		3.6	
Intersection Capacity Utilization	26.3%		ICU Level of Service A
Analysis Period (min)		15	

Queues  
96: 7th St #1/7th St & Vine Street

Build Conditions  
Timing Plan: SAT Casino Peak



Lane Group	EBL	NBT
Lane Group Flow (vph)	723	934
v/c Ratio	0.30	0.41
Control Delay	12.9	18.8
Queue Delay	0.4	0.0
Total Delay	13.3	18.8
Queue Length 50th (ft)	70	137
Queue Length 95th (ft)	97	172
Internal Link Dist (ft)	60	232
Turn Bay Length (ft)		
Base Capacity (vph)	2381	2306
Starvation Cap Reductn	1070	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.55	0.41
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
 96: 7th St #1/7th St & Vine Street

Build Conditions  
 Timing Plan: SAT Casino Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	←←←			↑↑↑		
Volume (vph)	665	0	0	859	0	0
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100
Total Lost time (s)	5.5			5.5		
Lane Util. Factor	0.94			0.91		
Fr <sub>t</sub>	1.00			1.00		
Fl <sub>t</sub> Protected	0.95			1.00		
Satd. Flow (prot)	5148			5211		
Fl <sub>t</sub> Permitted	0.95			1.00		
Satd. Flow (perm)	5148			5211		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	723	0	0	934	0	0
RTOR Reduction (vph)	102	0	0	0	0	0
Lane Group Flow (vph)	621	0	0	934	0	0
Bus Blockages (#/hr)	0	0	0	5	0	0
Turn Type	Prot			NA		
Protected Phases	2			8		
Permitted Phases						
Actuated Green, G (s)	42.0			42.0		
Effective Green, g (s)	42.5			42.5		
Actuated g/C Ratio	0.44			0.44		
Clearance Time (s)	6.0			6.0		
Lane Grp Cap (vph)	2279			2306		
v/s Ratio Prot	c0.12			c0.18		
v/s Ratio Perm						
v/c Ratio	0.27			0.41		
Uniform Delay, d <sub>1</sub>	17.0			18.2		
Progression Factor	1.00			1.00		
Incremental Delay, d <sub>2</sub>	0.3			0.5		
Delay (s)	17.2			18.7		
Level of Service	B			B		
Approach Delay (s)	17.2			18.7	0.0	
Approach LOS	B			B	A	

Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	96.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	53.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			