



APPENDIX L
BUILD CAPACITY ANALYSIS

INTERSECTION		Friday Peak Hour of Street Traffic						Friday Casino Peak Hour						Saturday Casino Peak Hour					
		EXISTING CONDITIONS			BUILD CONDITIONS			EXISTING CONDITIONS			BUILD CONDITIONS			EXISTING CONDITIONS			BUILD CONDITIONS		
		LOS	Delay (Secs)	95% Queue (feet)	LOS	Delay (Secs)	95% Queue (feet)	LOS	Delay (Secs)	95% Queue (feet)	LOS	Delay (Secs)	95% Queue (feet)	LOS	Delay (Secs)	95% Queue (feet)	LOS	Delay (Secs)	95% Queue (feet)
8th Street & Callowhill Street	Overall Intersection	B	13.7	-	B	13.8	-	B	12.3	-	B	12.6	-	B	12.0	-	B	12.4	-
	WB Left	B	13.8	132.0	B	14.4	146.0	B	13.5	123.0	B	14.2	140.0	B	13.4	120.0	B	14.3	145.0
	WB Thru	B	14.5	163.0	B	14.5	163.0	B	12.3	95.0	B	12.3	95.0	B	11.7	77.0	B	11.7	77.0
	SB Thru/Right	B	12.2	89.0	B	12.2	89.0	B	11.2	55.0	B	11.2	55.0	B	10.9	47.0	B	10.9	47.0
8th Street & Vine Street (Westbound Local)	Overall Intersection	C	20.6	-	C	20.1	-	B	20.0	-	B	19.3	-	B	19.9	-	B	19.0	-
	WB Left	B	10.7	m68	B	10.7	89.0	B	11.5	54.0	B	11.6	82.0	B	11.5	60.0	B	11.7	102.0
	WB Thru	B	19.6	386.0	B	19.1	394.0	B	18.9	312.0	B	18.3	319.0	B	19.2	337.0	B	18.4	348.0
	SB Thru/Right	C	26.8	163.0	C	27.1	169.0	C	26.0	127.0	C	26.0	136.0	C	25.4	116.0	C	25.8	128.0
8th Street & Vine Street (Eastbound Local)	Overall Intersection	E	57.3	-	E	58.2	-	C	26.9	-	C	29.9	-	C	27.1	-	C	30.3	-
	EB Thru (Vine)	D	51.0	#267	E	55.7	#284	D	35.4	132	D	36.2	144	C	34.3	112	D	35.4	130
	EB Right (Vine)	F	123.1	#317	F	123.1	#317	D	37.4	115	D	37.4	115	D	35.6	100	D	35.6	100
	EB Thru/Right (Ramp V8)	B	12.8	96	B	13.5	123	B	14.5	167	B	15.7	206	B	14.5	170	B	15.5	206
	EB Right (Ramp V8)	B	13.0	93	B	13.7	122	B	14.7	157	B	16.1	204	B	13.7	121	B	16.1	206
	SB Left/Thru	C	34.4	190	D	42.4	#235	C	31.7	124	D	40.7	164	D	36.0	109	D	43.9	167
7th Street & Vine Street (SR 301-676 WB Local)	Overall Intersection	C	20.3	-	C	20.7	-	B	17.8	-	B	18.1	-	B	17.7	-	B	18.3	-
	WB Thru	C	20.2	297	C	20.7	315	B	17.9	217	B	18.4	236	B	18.2	227	B	19.0	255
	WB Right	B	13.1	0	B	13.1	0	B	13.1	1	B	13.1	1	B	13.1	0	B	13.1	0
	NB Left	B	16.7	113	B	17.4	142	B	16.0	86	B	16.8	119	B	15.8	78	B	17.1	126
Franklin Street & Vine Street (Eastbound Local)	Overall Intersection	B	19.4	-	B	20.0	-	B	17.2	-	B	17.7	-	B	16.9	-	B	17.8	-
	EB Left	B	18.5	154	B	18.7	163	B	16.8	69	B	17.2	94	B	16.4	50	B	17.1	87
	NB Thru	C	20.2	228	C	20.9	255	B	17.5	125	B	18.2	151	B	17.4	119	B	18.3	157
9th Street & Vine Street (Eastbound Local)	Overall Intersection	A	2.3	-	A	2.8	-	A	2.3	-	A	2.8	-	A	2.6	-	A	3.4	-
	EB Thru	A	0.0	0	A	0.0	0	A	0.0	0	A	0.0	0	A	0.0	0.0	A	0.0	0.0
	NB Right	B	15.0	34	C	15.8	42	B	10.4	12	B	10.6	16	B	10.2	13.0	B	10.5	19.0
7th Street & Franklin Street	Overall Intersection	A	2.8	-	A	3.7	-	A	3.0	-	A	4.2	-	A	2.8	-	A	4.2	-
	EB Left	B	11.9	40	B	13.4	61	B	11.1	24	B	12.2	42	B	10.0	18	B	11.1	39
	NB Thru	A	0.0	0	A	0.0	0	A	0.0	0	A	0.0	0	A	0.0	0	A	0.0	0
8th Street & Site Exit	Overall Intersection	-	-	-	A	3.1	-	-	-	-	A	5.2	-	-	-	-	A	8.1	-
	WB Right	-	-	-	B	10.9	35	-	-	-	B	12.6	52	-	-	-	C	16.6	113.0
	NB Thru	-	-	-	A	0.0	0	-	-	-	A	0.0	0	-	-	-	A	0.0	0.0
8th Street & Parking Lot	Overall Intersection	-	-	-	A	2.7	-	-	-	-	A	2.3	-	-	-	-	A	3.9	-
	SB Left/Thru	-	-	-	A	2.5	4	-	-	-	A	2.7	6.0	-	-	-	A	3.7	9
	SB Thru	-	-	-	A	0.0	0	-	-	-	A	0.0	0.0	-	-	-	A	0.0	0
	WB Left	-	-	-	C	15.1	20	-	-	-	B	11.3	15.0	-	-	-	C	15.4	36
8th Street & Site Driveway	Overall Intersection	-	-	-	A	0.0	-	-	-	-	A	0.0	-	-	-	-	A	0.0	-
	SB Thru/Right	-	-	-	A	0.0	0	-	-	-	A	0.0	0	-	-	-	A	0.0	0
	SB Thru	-	-	-	A	0.0	0	-	-	-	A	0.0	0	-	-	-	A	0.0	0
2nd Street & Race Street	Overall Intersection	B	17.3	-	B	17.3	-	B	14.5	-	B	14.6	-	B	12.3	-	B	12.3	-
	EB Thru/Right	B	15.2	229	B	15.3	230	B	11.1	143	B	11.3	148	A	9.4	87	A	9.4	88
	SB Left/Thru	C	20.5	172	C	20.5	172	B	18.7	152	B	18.7	152	B	16.0	96	B	16.0	96
3rd Street & Race Street	Overall Intersection	B	14.3	-	B	14.3	-	B	14.2	-	B	14.2	-	B	12.2	-	B	12.1	-
	EB Left/Thru	B	10.2	168	B	10.2	170	B	10.2	117	B	10.2	118	A	6.8	33	A	6.7	33
	NB Thru/Right	C	23.0	163	C	23.0	163	C	21.9	133	C	21.9	133	C	20.8	101	C	20.8	101
4th Street & Race Street	Overall Intersection	C	20.7	-	C	20.8	-	B	17.4	-	B	17.4	-	B	16.4	-	B	16.4	-
	EB Thru/Right	B	17.5	277	B	17.5	280	B	14.9	190	B	14.9	192	B	13.5	126	B	13.5	128
	SB Left/Thru	C	25.3	237	C	25.3	237	C	21.6	145	C	21.6	145	C	20.8	114	C	20.8	114
5th Street & Race Street	Overall Intersection	B	16.0	-	B	16.0	-	B	13.0	-	B	13.0	-	B	12.1	-	B	12.2	-
	EB Left/Thru	B	17.4	153	B	17.4	153	B	13.9	125	B	13.9	125	B	12.6	97.5	B	12.7	100.0
	EB Thru	B	18.2	245	B	18.2	248	B	14.4	158	B	14.4	160	B	12.9	112.5	B	13.0	112.5
	NB Thru	B	14.8	220	B	14.8	220	B	11.5	83	B	11.5	83	B	11.6	87.5	B	11.6	87.5
	NB Right	B	11.2	30	B	11.2	30	B	10.4	15	B	10.4	15	B	10.7	25.0	B	10.7	25.0
6th Street & Race Street	Overall Intersection	B	10.3	-	B	10.5	-	A	9.2	-	A	9.0	-	A	8.6	-	A	8.3	-
	EB Thru	A	8.9	151	A	9.2	161	A	5.1	20	A	5.3	25	A	4.4	15	A	4.8	21
	EB Right	A	6.7	m28	A	6.6	m28	A	4.7	14	A	4.8	14	A	4.5	13	A	4.7	15
	SB Left/Thru	B	13.7	117	B	13.7	117	B	13.3	109	B	13.3	109	B	12.6	90	B	12.6	90
7th Street & Race Street	Overall Intersection	B	17.6	-	B	17.9	-	B	14.8	-	B	15.0	-	B	15.3	-	B	15.5	-
	EB Left/Thru	B	16.6	63	B	16.3	75	C	34.7	25	C	34.7	25	D	41.1	50.0	D	41.1	50.0
	EB Thru	B	13.0	153	B	13.2	158	B	11.3	70	B	11.5	80	B	11.0	55.0	B	11.3	70.0
	NB Thru	C	21.7	270	C	22.0	280	B	18.3	155	B	18.6	173	B	17.8	132.5	B	18.3	157.5
	NB Right	C	25.2	260	C	26.3	275	B	17.3	73	B	17.8	93	B	16.8	62.5	B	17.7	92.5
8th Street & Race Street	Overall Intersection	B	12.7	-	B	14.0	-	B	10.5	-	B	11.8	-	B	10.1	-	B	11.9	-
	EB Thru/Right	B	10.9	142	B	11.9	169	A	7.4	45	A	8.5	75	A	7.6	48	A	9.5	102
	SB Left	B	17.2	169	B	20.0	219	B	14.1	117	B	16.5	162	B	13.1	97	B	14.1	122
	SB Left/Thru	B	13.8	125	B	14.8	151	B	12.4	89	B	13.5	121	B	11.9	75	B	13.7	129
9th Street & Race Street	Overall Intersection	B	17.8	-	C	21.7	-	B	11.3	-	B	15.4	-	B	11.5	-	B	18.9	-
	EB Left/Thru	B	16.9	205	B	17.0	205	B	12.9	90	B	12.3	90	B	12.3	87	B	12.3	88
	NB Thru/Right	B	19.0	151	C	26.7	#201	B	10.2	71	B	17.6	132	B	10.8	79	C	22.8	165
5th Street & Arch Street	Overall Intersection	C	27.4	-	C	27.0	-	B	11.7	-	B	11.7	-	B	10.0	-	A	10.0	-
	WB Thru/Right	B	13.4	110	B	13.4	111	B	11.5	61	B	11.5	61	B	11.1	49.0	B	11.1	50.0
	NB Left	B	14.3	m54	B	14.3	m54	B	10.8	m43	B	10.8	m43	A	9.1	m31	A	9.0	m31
	NB Thru	C	34.9	m#239	D	34.5	m#233	B	11.9	132	B	11.9	132	A	9.7	90.0	A	9.6	92.0
6th Street & Arch Street	Overall Intersection	B	10.3	-	B	10.3	-	A	8.1	-	A	8.1	-	A	7.5	-	A	7.4	-
	WB Left/Thru	B	14.3	156	B	14.3	156	B	12.9	114	B	12.8	115	B	10.8	85	B	10.8	86
	SB Thru/Right	A	7.7	56	A	7.7	56	A	5.1	28	A	5.0	28	A	5.6	29	A	5.5	30
7th Street																			

INTERSECTION		Friday Peak Hour of Street Traffic						Friday Casino Peak Hour						Saturday Casino Peak Hour					
		EXISTING CONDITIONS			BUILD CONDITIONS			EXISTING CONDITIONS			BUILD CONDITIONS			EXISTING CONDITIONS			BUILD CONDITIONS		
		LOS	Delay (Secs)	95% Queue (feet)	LOS	Delay (Secs)	95% Queue (feet)	LOS	Delay (Secs)	95% Queue (feet)	LOS	Delay (Secs)	95% Queue (feet)	LOS	Delay (Secs)	95% Queue (feet)	LOS	Delay (Secs)	95% Queue (feet)
10th Street & Arch Street	Overall Intersection	B	12.1	-	B	12.9	-	B	11.1	-	B	12.4	-	B	10.2	-	B	12.0	-
	WB Left/Thru	B	10.9	100	B	12.2	109	A	8.1	62	B	10.7	82	A	7.2	50	B	10.7	76
	SB Thru/Right	B	13.9	103	B	13.9	103	B	14.2	108	B	14.2	108	B	13.5	92	B	13.5	92
5th Street & Market Street	Overall Intersection	C	34.1	-	C	34.3	-	B	17.0	-	B	17.1	-	B	15.4	-	B	15.4	-
	EB Left	D	40.0	158	D	42.7	170	B	13.0	120	B	13.3	120	B	11.1	92.5	B	11.4	95.0
	EB Thru	A	8.0	98	A	8.1	103	A	7.6	78	A	7.6	80	A	7.5	67.5	A	7.6	77.5
	WB Thru	B	18.1	128	B	18.5	135	B	17.0	108	B	17.3	118	B	16.1	82.5	B	16.5	95.0
	WB Thru/Right	C	21.4	98	C	21.9	105	B	17.3	100	B	17.7	108	B	16.2	80.0	B	16.6	92.5
	NB Left/Thru	E	61.6	453	E	61.6	453	C	27.7	220	C	27.7	220	C	24.3	185.0	C	24.3	185.0
	NB Thru/Right	D	45.7	368	D	45.7	368	C	26.7	208	C	26.7	208	C	24.9	172.5	C	24.9	172.5
6th Street & Market Street	Overall Intersection	C	21.4	-	C	21.5	-	B	18.7	-	B	18.7	-	B	17.7	-	B	17.9	-
	EB Thru	C	23.3	308	C	23.6	315	C	20.1	223	C	20.4	233	B	19.7	207.5	C	20.0	220.0
	EB Right	B	18.3	80	B	18.8	93	B	16.8	60	B	17.2	70	B	17.0	65.0	B	17.6	85.0
	WB Left	C	28.8	43	C	29.6	43	C	20.7	43	C	21.3	43	B	18.5	27.5	B	19.4	30.0
	WB Thru	B	10.9	45	B	11.0	50	B	11.1	60	B	11.2	65	B	11.0	55.0	B	11.2	62.5
	SB Left/Thru	C	22.9	253	C	22.9	253	C	21.4	218	C	21.4	218	B	19.7	170.0	B	19.7	170.0
	SB Right	C	21.7	253	C	21.7	253	C	20.5	218	C	20.5	218	B	19.0	172.5	B	19.0	172.5
Market Street & 7th Street	Overall Intersection	C	26.2	-	C	30.0	-	B	17.9	-	B	18.8	-	B	17.2	-	B	18.8	-
	EB Thru	B	17.9	253	B	13.9	218	B	15.5	163	B	15.7	172.5	B	15.0	128	B	15.3	148
	WB Thru	B	11.6	78	B	11.6	78	B	14.4	90	B	14.4	90.0	B	14.4	90	B	14.4	90
	WB Right	B	11.1	43	B	11.4	58	B	13.0	25	B	13.5	42.5	B	13.3	33	B	14.1	65
	NB Left/Thru	D	47.9	418	E	67.9	528	C	24.3	190	C	26.5	227.5	C	23.3	165	C	26.6	228
	NB Thru/Right	D	39.4	343	D	47.4	400	C	23.5	183	C	25.1	217.5	C	23.1	150	C	25.6	210
Market Street & 8th Street	Overall Intersection	B	13.8	-	C	22.0	-	B	15.3	-	C	34.0	-	B	14.2	-	D	50.0	-
	EB Thru	A	0.5	8	A	0.9	10.0	A	0.4	5	A	0.5	7.5	A	0.4	5	A	0.6	8
	EB Thru/Right	A	1.5	13	A	3.0	20.0	A	0.9	10	A	1.6	12.5	A	1.0	10	A	3.3	25
	WB Thru	B	15.6	175	B	15.6	177.5	B	14.8	140	B	14.8	142.5	B	14.4	120	B	14.5	125
	SB Left/Thru	C	30.8	275	D	52.9	452.5	C	31.9	308	F	80.8	647.5	C	29.9	283	F	118.6	890
	SB Thru/Right	C	31.9	215	D	45.9	335.0	C	30.5	250	E	58.7	450.0	C	29.1	228	F	84.7	585
Market Street & 9th Street	Overall Intersection	B	10.6	-	D	51.0	-	A	6.2	-	C	20.8	-	A	7.1	-	E	59.7	-
	EB Thru	A	0.5	5.0	A	0.5	5.0	A	0.3	2.5	A	0.3	2.5	A	0.2	2.5	A	0.2	2.5
	WB Thru	A	1.5	15.0	A	1.5	15.0	A	1.2	12.5	A	1.2	12.5	A	0.6	7.5	A	0.6	7.5
	WB Thru/Right	A	1.5	15.0	A	1.8	15.0	A	1.2	12.5	A	1.3	15.0	A	0.7	7.5	A	0.7	7.5
	NB Left/Thru	C	34.1	277.5	F	136.2	872.5	C	24.3	192.5	E	57.5	500.0	C	24.0	185.0	F	130.0	927.5
	NB Thru/Right	D	39.4	223	F	143.5	543	C	25.0	137.5	D	52.9	295.0	C	25.3	127.5	F	116.0	475.0
10th Street & Market Street	Overall Intersection	A	9.6	-	A	9.7	-	A	8.6	-	A	8.7	-	A	8.5	-	A	8.6	-
	EB Thru	A	8.5	97.5	A	8.6	100.0	A	8.0	75.0	A	8.1	77.5	A	7.7	55.0	A	7.8	60.0
	EB Thru/Right	A	9.5	80.0	A	9.6	82.5	A	8.6	67.5	A	8.7	72.5	A	8.0	52.5	A	8.2	60.0
	WB Thru	A	0.4	5.0	A	0.5	5.0	A	0.3	2.5	A	0.3	2.5	A	0.3	2.5	A	0.3	2.5
	SB Left/Thru	B	17.5	115.0	B	17.8	122.5	B	16.5	92.5	B	16.8	102.5	B	16.4	85.0	B	16.9	97.5
	SB Thru	B	17.0	105.0	B	17.2	112.5	B	16.1	92.5	B	16.4	92.5	B	16.1	75.0	B	16.5	90.0
	SB Right	C	22.4	62.5	C	22.4	62.5	B	17.5	62.5	B	17.5	62.5	B	19.7	60.0	B	19.7	60.0
5th Street & Chestnut Street	Overall Intersection	C	20.2	-	C	20.0	-	B	19.7	-	B	19.1	-	B	19.7	-	B	18.6	-
	EB Left	B	13.2	m62	B	12.9	m61	B	13.9	m42	B	12.8	m39	B	14.4	46.0	B	12.3	m41
	EB Thru	B	13.8	106.0	B	13.6	111.0	B	16.2	97.0	B	15.2	97.0	B	17.2	106.0	B	15.3	103.0
	NB Thru/Right	C	25.1	193.0	C	25.0	193.0	C	23.2	141.0	C	22.8	140.0	C	22.8	130.0	C	22.6	130.0
6th Street & Chestnut Street	Overall Intersection	B	14.6	-	B	14.7	-	B	11.4	-	B	12.4	-	B	10.2	-	B	11.5	-
	EB Left	B	16.2	m140	B	16.5	m132	B	11.9	134.0	B	14.2	152.0	B	11.7	117.0	B	14.9	m126
	EB Thru	B	17.0	m71	B	16.7	m65	B	11.7	m78	B	13.9	m78	B	12.0	m60	B	14.9	m58
	SB Left	B	13.3	m53	B	13.1	m53	B	11.3	57.0	B	11.2	57.0	A	9.2	51.0	A	9.1	50.0
South 7th Street & Chestnut Street	Overall Intersection	C	31.6	-	D	39.1	-	C	24.6	-	C	24.1	-	C	24.8	-	C	24.6	-
	EB Left/Thru	D	35.9	m#278	D	50.8	m#351	C	26.5	223.0	C	25.5	259.0	C	25.7	240.0	C	25.8	#313
	NB Thru/Right	C	27.6	216.0	C	27.6	222.0	C	23.0	148.0	C	22.8	155.0	C	23.5	105.0	C	22.6	113.0
South 8th Street & Chestnut Street	Overall Intersection	B	19.9	-	C	20.4	-	A	9.6	-	B	10.7	-	A	9.3	-	B	11.3	-
	EB Thru/Right	C	31.2	#355	C	30.9	#355	B	15.4	220.0	B	15.5	224.0	B	13.9	174.0	B	14.0	181.0
	SB Left/Thru	B	10.1	93.0	B	12.4	m119	A	5.4	m28	A	7.8	m41	A	6.1	33.0	A	9.9	m66
South 9th Street & Chestnut Street	Overall Intersection	B	14.3	-	B	15.0	-	B	11.3	-	B	11.8	-	B	11.0	-	B	12.1	-
	EB Left/Thru	B	13.8	180.0	B	14.2	187.0	B	11.6	125.0	B	12.0	131.0	B	11.7	115.0	B	12.5	125.0
	NB Thru/Right	B	14.7	89.0	B	15.6	106.0	B	11.0	58.0	B	11.7	65.0	B	10.4	54.0	B	11.8	66.0
10th Street & Chestnut Street	Overall Intersection	B	14.2	-	B	14.3	-	B	13.7	-	B	13.8	-	B	13.7	-	B	13.6	-
	EB Thru/Right	B	18.7	190.0	B	19.1	197.0	B	17.8	173.0	B	18.4	182.0	B	16.9	161.0	B	17.7	174.0
	SB Left/Thru	B	10.4	70.0	B	10.2	70.0	A	9.4	50.0	A	9.1	51.0	A	8.9	32.0	A	8.2	32.0
5th Street & Walnut Street	Overall Intersection	C	24.3	-	C	26.8	-	B	15.6	-	B	17.1	-	B	15.9	-	B	18.5	-
	WB Thru	B	12.2	90.0	B	12.2	92.5	B	12.2	95.0	B	12.3	97.5	B	12.4	105.0	B	12.5	107.5
	WB Thru/Right	B	12.5	85.0	B	12.6	87.5	B	12.4	90.0	B	12.4	95.0	B	12.5	100.0	B	12.6	102.5
	NB Left/Thru	D	54.3	112.5	E	58.8	97.5	C	31.6	62.5	D	46.9	67.5	C	33.3	65.0	E	58.0	95.0
6th Street & Walnut Street	Overall Intersection	C	27.6	367.5	C	31.8	412.5	B	16.7	210.0	B	17.4	220.0	B	16.9	222.5	B	17.7	237.5
	Overall Intersection	B	12.0	-	B	12.4	-	B	10.2	-	B	10.8	-	A	9.2	-	B	10.1	-
	WB Left/Thru	B	10.9	109.0	B	11.9	116.0	A	7.9	80.0	A	9.4	106.0	A	7.7	57.0	A	9.9	96.0
7th Street & Walnut Street	Overall Intersection	B	16.4	-	B	16.8	-	B	16.5	-	B	17.0	-	B	17.1	-	B	17.8	-
	WB Thru/Right	B	18.3	79.0	B	18.7	84.0	B	19.8	121.0	C	20.6	131.0	C	20.6	117.0	C	21.7	133.0
	NB Left/Thru	B	15.1	142.0	B	15.4</													

FRIDAY STREET PEAK HOUR LOS

Queues
2: 7th St & Chestnut St

7/22/2013



Lane Group	EBT	NBT
Lane Group Flow (vph)	779	796
v/c Ratio	1.01	0.65
Control Delay	52.8	28.3
Queue Delay	0.0	0.0
Total Delay	52.8	28.3
Queue Length 50th (ft)	~272	168
Queue Length 95th (ft)	m#351	222
Internal Link Dist (ft)	336	210
Turn Bay Length (ft)		
Base Capacity (vph)	774	1224
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.01	0.65

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

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↑						↑↔				
Volume (vph)	254	471	0	0	0	0	0	559	181	0	0	0
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)		4.5						4.5				
Lane Util. Factor		*0.60						0.95				
Frpb, ped/bikes		1.00						0.93				
Flpb, ped/bikes		0.94						1.00				
Frt		1.00						0.96				
Flt Protected		0.98						1.00				
Satd. Flow (prot)		1822						2880				
Flt Permitted		0.98						1.00				
Satd. Flow (perm)		1822						2880				
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)	273	506	0	0	0	0	0	601	195	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	779	0	0	0	0	0	796	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)		774						1224				
v/s Ratio Prot								c0.28				
v/s Ratio Perm		0.43										
v/c Ratio		1.01						0.65				
Uniform Delay, d1		17.2						13.7				
Progression Factor		1.58						1.84				
Incremental Delay, d2		23.6						2.4				
Delay (s)		50.8						27.6				
Level of Service		D						C				
Approach Delay (s)		50.8			0.0			27.6			0.0	
Approach LOS		D			A			C			A	
Intersection Summary												
HCM 2000 Control Delay			39.1					HCM 2000 Level of Service			D	
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			60.0					Sum of lost time (s)		9.0		
Intersection Capacity Utilization			54.9%					ICU Level of Service		A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

4: 8th St & Chestnut St

7/22/2013



Lane Group	EBT	SBT
Lane Group Flow (vph)	708	932
v/c Ratio	0.93	0.73
Control Delay	33.9	12.7
Queue Delay	0.0	0.0
Total Delay	33.9	12.7
Queue Length 50th (ft)	197	85
Queue Length 95th (ft)	#355	m119
Internal Link Dist (ft)	398	143
Turn Bay Length (ft)		
Base Capacity (vph)	765	1269
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.93	0.73

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

7/22/2013



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	199	612	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									2988		
Flt Permitted		1.00									0.99		
Satd. Flow (perm)		1801									2988		
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	229	703	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	932	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									1269		
v/s Ratio Prot		c0.39											
v/s Ratio Perm											0.31		
v/c Ratio		0.93									0.73		
Uniform Delay, d1		16.3									14.4		
Progression Factor		0.93									0.64		
Incremental Delay, d2		15.7									3.1		
Delay (s)		30.9									12.4		
Level of Service		C									B		
Approach Delay (s)		30.9			0.0			0.0			12.4		
Approach LOS		C			A			A			B		
Intersection Summary													
HCM 2000 Control Delay			20.4									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.83										
Actuated Cycle Length (s)			60.0									Sum of lost time (s)	9.0
Intersection Capacity Utilization			53.1%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Queues

6: 9th St & Chestnut St

7/22/2013



Lane Group	EBT	NBT
Lane Group Flow (vph)	597	790
v/c Ratio	0.64	0.70
Control Delay	14.7	16.0
Queue Delay	0.0	0.0
Total Delay	14.7	16.0
Queue Length 50th (ft)	95	71
Queue Length 95th (ft)	187	106
Internal Link Dist (ft)	343	223
Turn Bay Length (ft)		
Base Capacity (vph)	935	1121
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.64	0.70
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

6: 9th St & Chestnut St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕						↕↕				
Volume (vph)	116	421	0	0	0	0	0	536	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)		1970						2990				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		1970						2990				
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)	129	468	0	0	0	0	0	596	194	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	597	0	0	0	0	0	790	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)		935						1121				
v/s Ratio Prot								c0.26				
v/s Ratio Perm		0.30										
v/c Ratio		0.64						0.70				
Uniform Delay, d1		11.9						15.9				
Progression Factor		0.95						0.75				
Incremental Delay, d2		2.9						3.7				
Delay (s)		14.2						15.6				
Level of Service		B						B				
Approach Delay (s)		14.2			0.0			15.6			0.0	
Approach LOS		B			A			B			A	
Intersection Summary												
HCM 2000 Control Delay			15.0					HCM 2000 Level of Service			B	
HCM 2000 Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			60.0					Sum of lost time (s)		9.0		
Intersection Capacity Utilization			45.2%					ICU Level of Service		A		
Analysis Period (min)			15									
c Critical Lane Group												



Lane Group	EBT	NBT
Lane Group Flow (vph)	976	927
v/c Ratio	0.70	1.09dr
Control Delay	17.4	27.9
Queue Delay	0.0	0.0
Total Delay	17.4	27.9
Queue Length 50th (ft)	144	138
Queue Length 95th (ft)	205	#201
Internal Link Dist (ft)	674	621
Turn Bay Length (ft)		
Base Capacity (vph)	1402	1132
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.70	0.82

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 & Race St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔						↔↔				
Volume (vph)	51	867	0	0	0	0	0	289	583	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						2773				
Flt Permitted		1.00						1.00				
Satd. Flow (perm)		3301						2773				
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	922	0	0	0	0	0	307	620	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	976	0	0	0	0	0	927	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						1132				
v/s Ratio Prot								c0.33				
v/s Ratio Perm		0.30										
v/c Ratio		0.70						1.09dr				
Uniform Delay, d1		14.1						15.8				
Progression Factor		1.00						1.32				
Incremental Delay, d2		2.9						5.9				
Delay (s)		17.0						26.7				
Level of Service		B						C				
Approach Delay (s)		17.0			0.0			26.7			0.0	
Approach LOS		B			A			C			A	

Intersection Summary

HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		

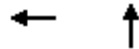
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

Queues

8: 7th St & Walnut St

7/22/2013



Lane Group	WBT	NBT
Lane Group Flow (vph)	522	718
v/c Ratio	0.28	0.56
Control Delay	18.9	15.7
Queue Delay	0.0	0.0
Total Delay	18.9	15.7
Queue Length 50th (ft)	58	100
Queue Length 95th (ft)	84	147
Internal Link Dist (ft)	382	135
Turn Bay Length (ft)		
Base Capacity (vph)	1855	1286
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.28	0.56
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

8: 7th St & Walnut St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑			↑↑					
Volume (vph)	0	0	0	0	388	108	105	577	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)					4201			3151					
Flt Permitted					1.00			0.99					
Satd. Flow (perm)					4201			3151					
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	408	114	111	607	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	522	0	0	718	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)					1855			1286					
v/s Ratio Prot					0.12								
v/s Ratio Perm								0.23					
v/c Ratio					0.28			0.56					
Uniform Delay, d1					10.7			13.6					
Progression Factor					1.72			1.00					
Incremental Delay, d2					0.3			1.8					
Delay (s)					18.7			15.4					
Level of Service					B			B					
Approach Delay (s)		0.0			18.7			15.4			0.0		
Approach LOS		A			B			B			A		
Intersection Summary													
HCM 2000 Control Delay			16.8									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.41										
Actuated Cycle Length (s)			60.0									Sum of lost time (s)	9.0
Intersection Capacity Utilization			41.6%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Queues
9: 8th St & Vine Street

7/22/2013



Lane Group	EBT	EBR	SBT	SEL	SER
Lane Group Flow (vph)	620	540	809	241	222
v/c Ratio	0.92	1.14	0.85	0.27	0.28
Control Delay	56.8	121.8	43.0	13.8	14.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	56.8	121.8	43.0	13.8	14.1
Queue Length 50th (ft)	183	~205	176	75	72
Queue Length 95th (ft)	#284	#317	#235	123	122
Internal Link Dist (ft)	164		246	146	
Turn Bay Length (ft)					
Base Capacity (vph)	675	473	948	879	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	0.92	1.14	0.85	0.27	0.28

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 & Vine Street

7/22/2013



Movement	EBT	EBR	SBL	SBT	SEL	SER
Lane Configurations	↑↑	↑↑		↑↑↑	↑↑	↑
Volume (vph)	577	502	155	597	150	276
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		5173	1740	1552
Flt Permitted	1.00	1.00		0.99	0.97	1.00
Satd. Flow (perm)	3687	2584		5173	1740	1552
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.92	0.92
Adj. Flow (vph)	620	540	167	642	163	300
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	620	540	0	809	241	222
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	NA	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	879	784
v/s Ratio Prot	0.17	c0.21		c0.16	0.14	c0.14
v/s Ratio Perm						
v/c Ratio	0.92	1.14		0.85	0.27	0.28
Uniform Delay, d1	36.1	36.8		35.6	12.8	12.8
Progression Factor	1.00	1.00		0.93	1.00	1.00
Incremental Delay, d2	19.6	86.4		9.2	0.8	0.9
Delay (s)	55.7	123.1		42.4	13.5	13.7
Level of Service	E	F		D	B	B
Approach Delay (s)	87.1			42.4	13.6	
Approach LOS	F			D	B	

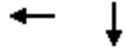
Intersection Summary

HCM 2000 Control Delay	58.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Queues

13: 6th St & Arch St

7/22/2013



Lane Group	WBT	SBT
Lane Group Flow (vph)	649	1026
v/c Ratio	0.50	0.56
Control Delay	14.6	7.8
Queue Delay	0.0	0.0
Total Delay	14.6	7.8
Queue Length 50th (ft)	113	44
Queue Length 95th (ft)	156	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	0.50	0.56
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

13: 6th St & Arch St

7/22/2013

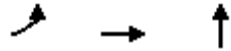


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑						↑↑↑	
Volume (vph)	0	0	0	139	439	0	0	0	0	0	745	168
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)					4.5						4.5	
Lane Util. Factor					0.95						0.91	
Frbp, ped/bikes					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)					3028						4301	
Flt Permitted					0.99						1.00	
Satd. Flow (perm)					3028						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	493	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	649	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)					1286						1827	
v/s Ratio Prot											c0.24	
v/s Ratio Perm					0.21							
v/c Ratio					0.50						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	
Intersection Summary												
HCM 2000 Control Delay			10.3		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

7/22/2013



Lane Group	EBL	EBT	NBT
Lane Group Flow (vph)	182	332	678
v/c Ratio	0.35	0.46	0.50
Control Delay	13.5	14.1	25.5
Queue Delay	0.0	0.0	0.0
Total Delay	13.5	14.1	25.5
Queue Length 50th (ft)	29	54	143
Queue Length 95th (ft)	m61	111	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	0.46	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

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗						↕	↗	↘	↘	↖
Volume (vph)	177	322	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	332	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	332	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	0.46						0.50				
Uniform Delay, d1	11.7	12.4						12.6				
Progression Factor	0.97	0.95						1.89				
Incremental Delay, d2	1.6	1.8						1.2				
Delay (s)	12.9	13.6						25.0				
Level of Service	B	B						C				
Approach Delay (s)		13.3			0.0			25.0			0.0	
Approach LOS		B			A			C			A	

Intersection Summary

HCM 2000 Control Delay	20.0	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)	9.0
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

16: Site Driveway & 8th St

9/18/2013



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations					↑↑	
Volume (veh/h)	0	0	0	0	679	251
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	738	273
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	0.74	0.74	0.74			
vC, conflicting volume	874	505	1011			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	112	0	298			
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)	642	798	928			
Direction, Lane #	SB 1	SB 2				
Volume Total	492	519				
Volume Left	0	0				
Volume Right	0	273				
cSH	1700	1700				
Volume to Capacity	0.29	0.31				
Queue Length 95th (ft)	0	0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0					
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			27.6%		ICU Level of Service	A
Analysis Period (min)			15			

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

7/22/2013



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕			
Volume (veh/h)	0	266	652	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	289	709	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	709	354			709	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	447	52			447	
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	68			100	
cM capacity (veh/h)	485	901			996	

Direction, Lane #	WB 1	NB 1	NB 2
Volume Total	289	354	354
Volume Left	0	0	0
Volume Right	289	0	0
cSH	901	1700	1700
Volume to Capacity	0.32	0.21	0.21
Queue Length 95th (ft)	35	0	0
Control Delay (s)	10.9	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.9	0.0	
Approach LOS	B		

Intersection Summary			
Average Delay		3.1	
Intersection Capacity Utilization		45.2%	ICU Level of Service A
Analysis Period (min)		15	

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

7/22/2013



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↶					↷↷
Volume (veh/h)	89	0	0	0	84	595
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)	97	0	0	0	91	647
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	506	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	506	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 %	79	100			94	
cM capacity (veh/h)	451	1084			1622	

Direction, Lane #	WB 1	SB 1	SB 2
Volume Total	97	307	431
Volume Left	97	91	0
Volume Right	0	0	0
cSH	451	1622	1700
Volume to Capacity	0.21	0.06	0.25
Queue Length 95th (ft)	20	4	0
Control Delay (s)	15.1	2.5	0.0
Lane LOS	C	A	
Approach Delay (s)	15.1	1.0	
Approach LOS	C		

Intersection Summary			
Average Delay		2.7	
Intersection Capacity Utilization	28.2%	ICU Level of Service	A
Analysis Period (min)	15		

* User Entered Value

Queues

22: 10th St & Chestnut St

7/22/2013



Lane Group	EBT	SBT
Lane Group Flow (vph)	497	595
v/c Ratio	0.68	0.46
Control Delay	19.9	10.4
Queue Delay	0.0	0.0
Total Delay	19.9	10.4
Queue Length 50th (ft)	115	53
Queue Length 95th (ft)	197	70
Internal Link Dist (ft)	521	472
Turn Bay Length (ft)		
Base Capacity (vph)	727	1304
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.68	0.46
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

22: 10th St & Chestnut St

7/22/2013

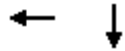


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑									↑↑		
Volume (vph)	0	361	121	0	0	0	0	0	0	112	466	0	
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	
Total Lost time (s)		4.5									4.5		
Lane Util. Factor		*0.60									0.95		
Frbp, ped/bikes		0.91									1.00		
Flpb, ped/bikes		1.00									0.94		
Frt		0.96									1.00		
Flt Protected		1.00									0.99		
Satd. Flow (prot)		1712									3071		
Flt Permitted		1.00									0.99		
Satd. Flow (perm)		1712									3071		
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	372	125	0	0	0	0	0	0	115	480	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	497	0	0	0	0	0	0	0	0	595	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)		727									1305		
v/s Ratio Prot		c0.29											
v/s Ratio Perm											0.19		
v/c Ratio		0.68									0.46		
Uniform Delay, d1		14.0									12.3		
Progression Factor		1.00									0.74		
Incremental Delay, d2		5.2									1.1		
Delay (s)		19.1									10.2		
Level of Service		B									B		
Approach Delay (s)		19.1			0.0			0.0			10.2		
Approach LOS		B			A			A			B		
Intersection Summary													
HCM 2000 Control Delay			14.3									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			43.6%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Queues

24: 10th St & Walnut St

7/22/2013



Lane Group	WBT	SBT
Lane Group Flow (vph)	572	494
v/c Ratio	0.32	0.39
Control Delay	7.9	14.7
Queue Delay	0.0	0.0
Total Delay	7.9	14.7
Queue Length 50th (ft)	15	61
Queue Length 95th (ft)	21	85
Internal Link Dist (ft)	360	507
Turn Bay Length (ft)		
Base Capacity (vph)	1813	1262
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.32	0.39
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

24: 10th St & Walnut St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑						↑↑	
Volume (vph)	0	0	0	95	454	0	0	0	0	0	383	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					0.91						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)					4270						2970	
Flt Permitted					0.99						1.00	
Satd. Flow (perm)					4270						2970	
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	99	473	0	0	0	0	0	399	95
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	494	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						1262	
v/s Ratio Prot											c0.17	
v/s Ratio Perm					0.13							
v/c Ratio					0.32						0.39	
Uniform Delay, d1					11.5						11.9	
Progression Factor					0.64						1.14	
Incremental Delay, d2					0.4						0.8	
Delay (s)					7.8						14.4	
Level of Service					A						B	
Approach Delay (s)		0.0			7.8			0.0			14.4	
Approach LOS		A			A			A			B	
Intersection Summary												
HCM 2000 Control Delay			10.9		HCM 2000 Level of Service					B		
HCM 2000 Volume to Capacity ratio			0.35									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				9.0			
Intersection Capacity Utilization			35.8%		ICU Level of Service				A			
Analysis Period (min)			15									
c Critical Lane Group												

Queues

25: 8th St & Arch St

7/22/2013



Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	553	778	169
v/c Ratio	0.44	0.60	0.36
Control Delay	8.0	19.2	19.5
Queue Delay	0.0	0.0	0.0
Total Delay	8.0	19.2	19.5
Queue Length 50th (ft)	42	96	39
Queue Length 95th (ft)	m48	150	m77
Internal Link Dist (ft)	373	120	
Turn Bay Length (ft)			
Base Capacity (vph)	1258	1303	469
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.44	0.60	0.36

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

25: 8th St & Arch St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕↕						↕↕	↗
Volume (vph)	0	0	0	129	391	0	0	0	0	0	731	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)					2960						3192	1150
Flt Permitted					0.99						1.00	1.00
Satd. Flow (perm)					2960						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	137	416	0	0	0	0	0	778	169
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	553	0	0	0	0	0	778	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)					1258						1303	469
v/s Ratio Prot											c0.24	
v/s Ratio Perm					0.19							0.15
v/c Ratio					0.44						0.60	0.36
Uniform Delay, d1					12.2						13.9	12.3
Progression Factor					0.56						1.24	1.37
Incremental Delay, d2					1.0						1.6	1.7
Delay (s)					7.8						18.8	18.6
Level of Service					A						B	B
Approach Delay (s)		0.0			7.8			0.0			18.8	
Approach LOS		A			A			A			B	
Intersection Summary												
HCM 2000 Control Delay			14.7								HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			60.0							10.0		
Intersection Capacity Utilization			46.6%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												

Queues

26: 7th St & Arch St

7/22/2013



Lane Group	WBT	WBR	NBT
Lane Group Flow (vph)	409	219	1005
v/c Ratio	0.31	0.40	0.77
Control Delay	12.2	14.9	15.7
Queue Delay	0.0	0.0	0.0
Total Delay	12.2	14.9	15.7
Queue Length 50th (ft)	67	70	201
Queue Length 95th (ft)	106	127	m198
Internal Link Dist (ft)	389		653
Turn Bay Length (ft)			
Base Capacity (vph)	1318	541	1297
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	0.77

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

26: 7th St & Arch St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑	↑		↑↑					
Volume (vph)	0	0	0	0	384	206	132	813	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		3177					
Flt Permitted					1.00	1.00		0.99					
Satd. Flow (perm)					3103	1275		3177					
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	409	219	140	865	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	409	219	0	1005	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		1297					
v/s Ratio Prot					0.13								
v/s Ratio Perm						c0.17		0.32					
v/c Ratio					0.31	0.40		0.77					
Uniform Delay, d1					11.4	12.0		15.4					
Progression Factor					1.01	1.02		0.86					
Incremental Delay, d2					0.5	1.9		1.9					
Delay (s)					12.0	14.2		15.1					
Level of Service					B	B		B					
Approach Delay (s)		0.0			12.8			15.1			0.0		
Approach LOS		A			B			B			A		
Intersection Summary													
HCM 2000 Control Delay			14.2		HCM 2000 Level of Service				B				
HCM 2000 Volume to Capacity ratio			0.59										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				10.0				
Intersection Capacity Utilization			54.6%		ICU Level of Service				A				
Analysis Period (min)			15										
c Critical Lane Group													

Queues

28: 9th St & Arch St

7/22/2013



Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	645	269	736
v/c Ratio	0.51	0.50	0.55
Control Delay	17.3	24.6	23.4
Queue Delay	0.0	0.0	0.0
Total Delay	17.3	24.6	23.4
Queue Length 50th (ft)	77	86	125
Queue Length 95th (ft)	126	m104	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	0.50	0.55

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

28: 9th St & Arch St

7/22/2013

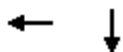


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑		↑	↑↑				
Volume (vph)	0	0	0	0	497	109	253	692	0	0	0	0
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)					5.0		5.0	5.0				
Lane Util. Factor					0.95		1.00	0.95				
Frbp, ped/bikes					0.98		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	269	736	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	269	736	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			c0.23				
v/s Ratio Perm							0.20					
v/c Ratio					0.51		0.50	0.55				
Uniform Delay, d1					12.6		13.2	13.6				
Progression Factor					1.24		1.61	1.60				
Incremental Delay, d2					1.3		2.3	1.2				
Delay (s)					17.0		23.5	22.9				
Level of Service					B		C	C				
Approach Delay (s)		0.0			17.0			23.1			0.0	
Approach LOS		A			B			C			A	
Intersection Summary												
HCM 2000 Control Delay			20.7		HCM 2000 Level of Service				C			
HCM 2000 Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				10.0			
Intersection Capacity Utilization			46.1%		ICU Level of Service				A			
Analysis Period (min)			15									
c Critical Lane Group												

Queues

29: 10th St & Arch St

7/22/2013



Lane Group	WBT	SBT
Lane Group Flow (vph)	817	511
v/c Ratio	0.64	0.43
Control Delay	12.5	14.2
Queue Delay	0.0	0.0
Total Delay	12.5	14.2
Queue Length 50th (ft)	84	66
Queue Length 95th (ft)	109	103
Internal Link Dist (ft)	371	412
Turn Bay Length (ft)		
Base Capacity (vph)	1278	1189
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.64	0.43
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

29: 10th St & Arch St

7/22/2013

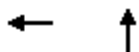


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑						↑↑	
Volume (vph)	0	0	0	152	583	0	0	0	0	0	353	107
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)					5.0						5.0	
Lane Util. Factor					0.95						0.95	
Frbp, ped/bikes					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)					3008						2915	
Flt Permitted					0.99						1.00	
Satd. Flow (perm)					3008						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	169	648	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	817	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)					1278						1190	
v/s Ratio Prot											c0.18	
v/s Ratio Perm					0.27							
v/c Ratio					0.64						0.43	
Uniform Delay, d1					13.6						12.7	
Progression Factor					0.74						1.00	
Incremental Delay, d2					2.2						1.1	
Delay (s)					12.2						13.9	
Level of Service					B						B	
Approach Delay (s)		0.0			12.2			0.0			13.9	
Approach LOS		A			B			A			B	
Intersection Summary												
HCM 2000 Control Delay			12.9								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			47.7%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												

Queues

33: 9th St & Walnut St

7/22/2013



Lane Group	WBT	NBT
Lane Group Flow (vph)	585	511
v/c Ratio	0.34	0.39
Control Delay	9.9	13.0
Queue Delay	0.0	0.0
Total Delay	9.9	13.0
Queue Length 50th (ft)	23	64
Queue Length 95th (ft)	31	97
Internal Link Dist (ft)	368	360
Turn Bay Length (ft)		
Base Capacity (vph)	1719	1300
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.34	0.39
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

33: 9th St & Walnut St

7/22/2013

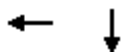


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑			↑↑				
Volume (vph)	0	0	0	0	432	112	94	381	0	0	0	0
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)					4.5			4.5				
Lane Util. Factor					0.91			0.95				
Frbp, ped/bikes					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)					4048			3059				
Flt Permitted					1.00			0.99				
Satd. Flow (perm)					4048			3059				
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	465	120	101	410	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	585	0	0	511	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)					1720			1300				
v/s Ratio Prot					c0.14							
v/s Ratio Perm								0.17				
v/c Ratio					0.34			0.39				
Uniform Delay, d1					11.6			11.9				
Progression Factor					0.80			1.00				
Incremental Delay, d2					0.5			0.9				
Delay (s)					9.8			12.8				
Level of Service					A			B				
Approach Delay (s)		0.0			9.8			12.8			0.0	
Approach LOS		A			A			B			A	
Intersection Summary												
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			36.6%					ICU Level of Service		A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

34: Walnut St & 8th St

7/22/2013



Lane Group	WBT	SBT
Lane Group Flow (vph)	561	621
v/c Ratio	0.32	0.53
Control Delay	10.0	4.7
Queue Delay	0.0	0.0
Total Delay	10.0	4.7
Queue Length 50th (ft)	28	23
Queue Length 95th (ft)	54	m30
Internal Link Dist (ft)	353	489
Turn Bay Length (ft)		
Base Capacity (vph)	1760	1176
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.32	0.53

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

34: Walnut St & 8th St

7/22/2013

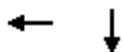


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑						↑↑	
Volume (vph)	0	0	0	85	408	0	0	0	0	0	406	141
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)					4.5						4.5	
Lane Util. Factor					0.91						0.95	
Frbp, ped/bikes					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)					4144						2769	
Flt Permitted					0.99						1.00	
Satd. Flow (perm)					4144						2769	
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	464	0	0	0	0	0	461	160
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	561	0	0	0	0	0	621	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)					1761						1176	
v/s Ratio Prot											c0.22	
v/s Ratio Perm					0.14							
v/c Ratio					0.32						0.53	
Uniform Delay, d1					11.5						12.8	
Progression Factor					0.82						0.27	
Incremental Delay, d2					0.5						1.1	
Delay (s)					9.9						4.6	
Level of Service					A						A	
Approach Delay (s)		0.0			9.9			0.0			4.6	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM 2000 Control Delay			7.1		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			37.8%		ICU Level of Service						A	
Analysis Period (min)			15									
c Critical Lane Group												

Queues

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

7/22/2013



Lane Group	WBT	SBT
Lane Group Flow (vph)	469	831
v/c Ratio	0.42	0.60
Control Delay	12.1	13.0
Queue Delay	0.0	0.0
Total Delay	12.1	13.0
Queue Length 50th (ft)	76	127
Queue Length 95th (ft)	116	218
Internal Link Dist (ft)	357	488
Turn Bay Length (ft)		
Base Capacity (vph)	1107	1387
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.42	0.60
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

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

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑						↑↑	
Volume (vph)	0	0	0	93	343	0	0	0	0	0	640	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)					2955						2921	
Flt Permitted					0.99						1.00	
Satd. Flow (perm)					2955						2921	
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	369	0	0	0	0	0	688	143
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	469	0	0	0	0	0	831	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)					1108						1387	
v/s Ratio Prot											c0.28	
v/s Ratio Perm					0.16							
v/c Ratio					0.42						0.60	
Uniform Delay, d1					13.9						11.6	
Progression Factor					0.77						0.96	
Incremental Delay, d2					1.1						1.6	
Delay (s)					11.9						12.7	
Level of Service					B						B	
Approach Delay (s)		0.0			11.9			0.0			12.7	
Approach LOS		A			B			A			B	
Intersection Summary												
HCM 2000 Control Delay			12.4								HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			60.0							9.0		
Intersection Capacity Utilization			46.7%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												

Queues

40: 5th St & Arch St

7/22/2013



Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	568	200	1386
v/c Ratio	0.45	0.35	1.01
Control Delay	13.7	14.9	37.0
Queue Delay	0.0	0.0	0.0
Total Delay	13.7	14.9	37.0
Queue Length 50th (ft)	73	50	~227
Queue Length 95th (ft)	111	m54	m#233
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

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑		↑	↑↑					
Volume (vph)	0	0	0	0	362	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)					2966		1359	3247					
Flt Permitted					1.00		0.95	1.00					
Satd. Flow (perm)					2966		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	385	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	568	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	16.4					
Delay (s)					13.4		14.3	34.5					
Level of Service					B		B	C					
Approach Delay (s)		0.0			13.4			31.9			0.0		
Approach LOS		A			B			C			A		
Intersection Summary													
HCM 2000 Control Delay			27.0		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			61.7%		ICU Level of Service				B				
Analysis Period (min)			15										
c Critical Lane Group													

Queues

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

7/22/2013



Lane Group	EBT	EBR	SBL	SBT
Lane Group Flow (vph)	444	134	123	809
v/c Ratio	0.65	0.50	0.28	0.58
Control Delay	17.3	18.4	13.8	13.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	17.3	18.4	13.8	13.9
Queue Length 50th (ft)	118	60	25	90
Queue Length 95th (ft)	m132	m65	m53	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	0.50	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

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑	↗							↖	↑↑		
Volume (vph)	0	413	125	0	0	0	0	0	0	114	752	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	444	134	0	0	0	0	0	0	123	809	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	444	134	0	0	0	0	0	0	123	809	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		c0.27									c0.25		
v/s Ratio Perm			0.21							0.12			
v/c Ratio		0.65	0.50							0.28	0.58		
Uniform Delay, d1		13.7	12.6							11.2	13.2		
Progression Factor		1.07	1.10							1.04	0.92		
Incremental Delay, d2		1.9	2.7							1.4	1.6		
Delay (s)		16.5	16.7							13.1	13.7		
Level of Service		B	B							B	B		
Approach Delay (s)		16.6			0.0			0.0			13.6		
Approach LOS		B			A			A			B		
Intersection Summary													
HCM 2000 Control Delay			14.7									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.61										
Actuated Cycle Length (s)			60.0									Sum of lost time (s)	9.0
Intersection Capacity Utilization			50.2%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Queues

46: Race St & 8th St

7/22/2013



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	1441	348	1078
v/c Ratio	0.72	0.66	0.60
Control Delay	12.1	21.0	15.1
Queue Delay	0.0	0.0	0.0
Total Delay	12.1	21.0	15.1
Queue Length 50th (ft)	96	111	111
Queue Length 95th (ft)	169	210	151
Internal Link Dist (ft)	378		453
Turn Bay Length (ft)			
Base Capacity (vph)	1996	530	1796
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.72	0.66	0.60
Intersection Summary			

HCM Signalized Intersection Capacity Analysis

46: Race St & 8th St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑								↘	↑↑↑		
Volume (vph)	0	1305	79	0	0	0	0	0	0	566	803	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		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)		4699								1248	4228		
Flt Permitted		1.00								0.95	0.99		
Satd. Flow (perm)		4699								1248	4228		
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	1359	82	0	0	0	0	0	0	590	836	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	1441	0	0	0	0	0	0	0	348	1078	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	1796		
v/s Ratio Prot		c0.31											
v/s Ratio Perm										c0.28	0.25		
v/c Ratio		0.72								0.66	0.60		
Uniform Delay, d1		14.3								13.8	13.3		
Progression Factor		0.72								1.00	1.00		
Incremental Delay, d2		1.5								6.2	1.5		
Delay (s)		11.9								20.0	14.8		
Level of Service		B								B	B		
Approach Delay (s)		11.9			0.0			0.0			16.1		
Approach LOS		B			A			A			B		
Intersection Summary													
HCM 2000 Control Delay			14.0									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			55.4%									ICU Level of Service	B
Analysis Period (min)			15										
c Critical Lane Group													

Queues

49: 6th St & Race St

7/22/2013



Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	1806	185	919
v/c Ratio	0.72	0.32	0.51
Control Delay	9.4	6.8	13.9
Queue Delay	0.0	0.0	0.0
Total Delay	9.4	6.8	13.9
Queue Length 50th (ft)	138	17	85
Queue Length 95th (ft)	161	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	0.72	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

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		↑↑↑	↑								↑↑↑			
Volume (vph)	0	1734	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			
Frpb, 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	1806	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	1806	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		0.72	0.32								0.51			
Uniform Delay, d1		14.3	11.5								12.7			
Progression Factor		0.54	0.46								1.00			
Incremental Delay, d2		1.6	1.3								1.0			
Delay (s)		9.2	6.6								13.7			
Level of Service		A	A								B			
Approach Delay (s)		9.0			0.0			0.0			13.7			
Approach LOS		A			A			A			B			
Intersection Summary														
HCM 2000 Control Delay			10.5									HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio			0.61											
Actuated Cycle Length (s)			60.0								9.0		Sum of lost time (s)	
Intersection Capacity Utilization			50.1%										ICU Level of Service	A
Analysis Period (min)			15											
c Critical Lane Group														

Queues

50: 3rd St & Race St

7/22/2013



Lane Group	EBT	NBT
Lane Group Flow (vph)	1094	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)	125	116
Queue Length 95th (ft)	170	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
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

50: 3rd St & Race St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕						↕↕				
Volume (vph)	117	900	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	968	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	1094	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	
Intersection Summary												
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												

Queues

59: 4th St & Race St

7/22/2013



Lane Group	EBT	SBT
Lane Group Flow (vph)	1047	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)	280	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
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

59: 4th St & Race St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		↑↑									↑↑			
Volume (vph)	0	832	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			
Frbp, 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	895	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	1047	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		15.6									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			
Intersection Summary														
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								9.7		Sum of lost time (s)	
Intersection Capacity Utilization			58.9%										ICU Level of Service	B
Analysis Period (min)			15											

c Critical Lane Group

Queues

63: Race St & 2nd Street

7/22/2013



Lane Group	EBT	SBT
Lane Group Flow (vph)	1194	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)	230	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
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

63: Race St & 2nd Street

7/22/2013

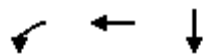


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		↑↑									↑↑			
Volume (vph)	0	828	223	0	0	0	0	0	0	110	562	0		
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100		
Total Lost time (s)		4.5									4.5			
Lane Util. Factor		0.95									0.95			
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	941	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	1194	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			
Intersection Summary														
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			60.8%										ICU Level of Service	B
Analysis Period (min)			15											
c Critical Lane Group														

Queues

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

7/22/2013



Lane Group	WBL	WBT	SBT
Lane Group Flow (vph)	320	2373	766
v/c Ratio	0.16	0.63	0.52
Control Delay	10.8	19.3	27.3
Queue Delay	0.0	16.5	0.5
Total Delay	10.8	35.8	27.8
Queue Length 50th (ft)	68	352	130
Queue Length 95th (ft)	89	394	169
Internal Link Dist (ft)		254	248
Turn Bay Length (ft)			
Base Capacity (vph)	2038	3782	1483
Starvation Cap Reductn	0	1462	334
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.16	1.02	0.67
Intersection Summary			

HCM Signalized Intersection Capacity Analysis

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

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔↔	↑↑↑↑						↑↑↑↑	
Volume (vph)	0	0	0	307	2278	0	0	0	0	0	476	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						4856	
Flt Permitted				0.95	1.00						1.00	
Satd. Flow (perm)				3563	6610						4856	
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	320	2373	0	0	0	0	0	496	270
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	320	2373	0	0	0	0	0	766	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						1483	
v/s Ratio Prot					c0.36						c0.16	
v/s Ratio Perm				0.09								
v/c Ratio				0.16	0.63						0.52	
Uniform Delay, d1				9.0	12.8						25.8	
Progression Factor				1.17	1.44						1.00	
Incremental Delay, d2				0.1	0.6						1.3	
Delay (s)				10.7	19.1						27.1	
Level of Service				B	B						C	
Approach Delay (s)		0.0			18.1			0.0			27.1	
Approach LOS		A			B			A			C	
Intersection Summary												
HCM 2000 Control Delay			20.1		HCM 2000 Level of Service					C		
HCM 2000 Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			90.0		Sum of lost time (s)			11.0				
Intersection Capacity Utilization			60.1%		ICU Level of Service					B		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

71: 7th St & Vine St/Route 30

7/22/2013



Lane Group	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	2141	3	580	1560
v/c Ratio	0.70	0.00	0.36	0.68
Control Delay	20.9	0.0	16.5	22.2
Queue Delay	3.9	0.0	2.0	48.7
Total Delay	24.8	0.0	18.5	70.8
Queue Length 50th (ft)	272	0	102	252
Queue Length 95th (ft)	315	0	142	304
Internal Link Dist (ft)	594			178
Turn Bay Length (ft)		500		
Base Capacity (vph)	3047	777	1602	2280
Starvation Cap Reductn	0	0	838	976
Spillback Cap Reductn	807	0	10	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.96	0.00	0.76	1.20

Intersection Summary

HCM Signalized Intersection Capacity Analysis

71: 7th St & Vine St/Route 30

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑	↗	↘	↑↑↑				
Volume (vph)	0	0	0	0	2034	3	551	1482	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				
Fr _t					1.00	0.85	1.00	1.00				
Fl _t Protected					1.00	1.00	0.95	1.00				
Satd. Flow (prot)					6610	1644	3605	5195				
Fl _t 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	2141	3	580	1560	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	2141	1	560	1560	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					c0.32			c0.30				
v/s Ratio Perm						0.00	0.16					
v/c Ratio					0.70	0.00	0.35	0.68				
Uniform Delay, d1					19.3	13.1	16.8	20.2				
Progression Factor					1.00	1.00	1.00	1.00				
Incremental Delay, d2					1.4	0.0	0.6	1.7				
Delay (s)					20.7	13.1	17.4	21.9				
Level of Service					C	B	B	C				
Approach Delay (s)		0.0			20.7			20.7			0.0	
Approach LOS		A			C			C			A	

Intersection Summary

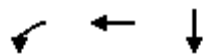
HCM 2000 Control Delay	20.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Queues

73: 8th St & Callowhill St

7/22/2013



Lane Group	WBL	WBT	SBT
Lane Group Flow (vph)	355	868	497
v/c Ratio	0.46	0.56	0.34
Control Delay	14.8	14.7	12.4
Queue Delay	0.0	0.0	0.0
Total Delay	14.8	14.7	12.4
Queue Length 50th (ft)	88	118	60
Queue Length 95th (ft)	146	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	0.46	0.56	0.34
Intersection Summary			

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

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↕						↕	↘
Volume (vph)	0	0	0	312	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	355	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	355	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				0.46	0.56						0.34	
Uniform Delay, d1				12.4	13.0						11.6	
Progression Factor				1.00	1.00						1.00	
Incremental Delay, d2				2.0	1.5						0.6	
Delay (s)				14.4	14.5						12.2	
Level of Service				B	B						B	
Approach Delay (s)		0.0			14.4			0.0			12.2	
Approach LOS		A			B			A			B	
Intersection Summary												
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 & 7th St

7/22/2013

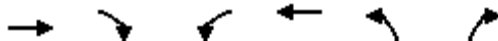


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	329	0	0	873	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.92	0.92	0.90	0.92	0.92
Hourly flow rate (vph)	366	0	0	970	0	0
Pedestrians	35			63	63	
Lane Width (ft)	10.0			10.0	0.0	
Walking Speed (ft/s)	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	0.80					
vC, conflicting volume	583	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 %	54	100	100			
cM capacity (veh/h)	793	867	1531			
Direction, Lane #	EB 1	NB 1	NB 2			
Volume Total	366	485	485			
Volume Left	366	0	0			
Volume Right	0	0	0			
cSH	793	1700	1700			
Volume to Capacity	0.46	0.29	0.29			
Queue Length 95th (ft)	61	0	0			
Control Delay (s)	13.4	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	13.4	0.0				
Approach LOS	B					
Intersection Summary						
Average Delay			3.7			
Intersection Capacity Utilization		54.8%		ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

89: 9th Street & Vine Street

7/22/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑					↗
Volume (veh/h)	829	0	0	0	0	179
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	195
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	63
cM capacity (veh/h)			746		276	526

Direction, Lane #	EB 1	EB 2	NB 1
Volume Total	451	451	195
Volume Left	0	0	0
Volume Right	0	0	195
cSH	1700	1700	526
Volume to Capacity	0.27	0.27	0.37
Queue Length 95th (ft)	0	0	42
Control Delay (s)	0.0	0.0	15.8
Lane LOS			C
Approach Delay (s)	0.0		15.8
Approach LOS			C

Intersection Summary			
Average Delay		2.8	
Intersection Capacity Utilization	40.6%		ICU Level of Service A
Analysis Period (min)		15	

Queues

96: 7th St & Vine Street

7/22/2013



Lane Group	EBL	NBT
Lane Group Flow (vph)	959	1307
v/c Ratio	0.42	0.57
Control Delay	17.8	21.1
Queue Delay	1.0	0.0
Total Delay	18.8	21.1
Queue Length 50th (ft)	129	210
Queue Length 95th (ft)	163	255
Internal Link Dist (ft)	60	232
Turn Bay Length (ft)		
Base Capacity (vph)	2308	2306
Starvation Cap Reductn	1010	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.74	0.57
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

96: 7th St & Vine Street

7/22/2013



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	←←←			→→→		
Volume (vph)	882	0	0	1202	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		
Frpb, ped/bikes	1.00			1.00		
Flpb, ped/bikes	1.00			1.00		
Fr t	1.00			1.00		
Fl t Protected	0.95			1.00		
Satd. Flow (prot)	5148			5211		
Fl t 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)	959	0	0	1307	0	0
RTOR Reduction (vph)	29	0	0	0	0	0
Lane Group Flow (vph)	930	0	0	1307	0	0
Confl. Peds. (#/hr)	10	10	10			
Bus Blockages (#/hr)	0	0	0	5	0	0
Turn Type	NA			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			c0.25		
v/s Ratio Perm						
v/c Ratio	0.41			0.57		
Uniform Delay, d1	18.2			19.9		
Progression Factor	1.00			1.00		
Incremental Delay, d2	0.5			1.0		
Delay (s)	18.7			20.9		
Level of Service	B			C		
Approach Delay (s)	18.7			20.9		0.0
Approach LOS	B			C		A













Intersection Summary

HCM 2000 Control Delay	20.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	96.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

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
















7/22/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑	↗		↔				
Volume (veh/h)	0	1201	0	0	320	113	68	785	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			
Lanes	0	3	0	0	2	1	0	2	0			
Cap, veh/h	0	2745	0	0	1575	701	73	870	125			
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	5400	0	0	3098	1379	213	2547	367			
Grp Volume(v), veh/h	0	1264	0	0	337	119	540	0	471			
Grp Sat Flow(s),veh/h/ln	0	1800	0	0	1549	1379	1596	0	1531			
Q Serve(g_s), s	0.0	11.0	0.0	0.0	4.6	3.6	20.3	0.0	18.2			
Cycle Q Clear(g_c), s	0.0	11.0	0.0	0.0	4.6	3.6	20.3	0.0	18.2			
Prop In Lane	0.00		0.00	0.00		1.00	0.13		0.24			
Lane Grp Cap(c), veh/h	0	2745	0	0	1575	701	545	0	523			
V/C Ratio(X)	0.00	0.46	0.00	0.00	0.21	0.17	0.99	0.00	0.90			
Avail Cap(c_a), veh/h	0	2745	0	0	1575	701	545	0	523			
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	13.3	0.0	0.0	11.3	10.9	26.5	0.0	25.6			
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	0.3	0.5	36.1	0.0	21.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	5.3	0.0	0.6			
%ile Back of Q (95%), veh/ln	0.0	8.7	0.0	0.0	3.1	2.3	21.1	0.0	16.0			
Lane Grp Delay (d), s/veh	0.0	13.9	0.0	0.0	11.6	11.4	67.9	0.0	47.4			
Lane Grp LOS		B			B	B	E		D			
Approach Vol, veh/h		1264			456			1011				
Approach Delay, s/veh		13.9			11.5			58.4				
Approach LOS		B			B			E				
Timer												
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		13.0			6.6			22.3				
Green Ext Time (p_c), s		9.7			12.0			0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				30.0								
HCM 2010 LOS				C								
Notes												

HCM 2010 Signalized Intersection Summary













3: 8th St & Market St

9/18/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	774	216	0	511	0	0	0	0	73	714	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	181.5	189.0	0.0	176.6	0.0				181.4	177.9	181.4
Lanes	0	3	0	0	2	0				0	2	0
Cap, veh/h	0	2080	572	0	1855	0				86	868	77
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	3961	1090	0	3533	0				264	2672	237
Grp Volume(v), veh/h	0	753	300	0	544	0				523	0	379
Grp Sat Flow(s),veh/h/ln	0	1815	1421	0	1766	0				1766	0	1407
Q Serve(g_s), s	0.0	0.0	0.0	0.0	8.0	0.0				17.6	0.0	15.8
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	8.0	0.0				17.6	0.0	15.8
Prop In Lane	0.00		0.77	0.00		0.00				0.15		0.17
Lane Grp Cap(c), veh/h	0	1906	746	0	1855	0				574	0	457
V/C Ratio(X)	0.00	0.40	0.40	0.00	0.29	0.00				0.91	0.00	0.83
Avail Cap(c_a), veh/h	0	1906	746	0	1855	0				574	0	457
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	15.1	0.0				25.9	0.0	25.2
Incr Delay (d2), s/veh	0.0	0.6	1.6	0.0	0.4	0.0				21.0	0.0	15.8
Initial Q Delay(d3),s/veh	0.0	0.2	0.3	0.0	0.1	0.0				7.4	0.0	6.1
%ile Back of Q (95%), veh/ln	0.0	0.3	0.7	0.0	7.1	0.0				18.5	0.0	13.4
Lane Grp Delay (d), s/veh	0.0	0.8	2.0	0.0	15.6	0.0				54.4	0.0	47.1
Lane Grp LOS		A	A		B					D		D
Approach Vol, veh/h		1053			544						902	
Approach Delay, s/veh		1.1			15.6						51.3	
Approach LOS		A			B						D	
Timer												
Assigned Phs		2			6						4	
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			10.0						19.6	
Green Ext Time (p_c), s		12.0			10.2						0.0	
Intersection Summary												
HCM 2010 Ctrl Delay			22.4									
HCM 2010 LOS			C									
Notes												

















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

9/18/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑			↑↑				
Volume (veh/h)	0	1011	0	0	541	56	99	587	232	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			
Lanes	0	3	0	0	2	0	0	2	0			
Cap, veh/h	0	2782	0	0	1510	154	95	571	245			
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	5299	0	0	2877	294	292	1757	753			
Grp Volume(v), veh/h	0	1053	0	0	324	298	619	0	337			
Grp Sat Flow(s),veh/h/ln	0	1766	0	0	1661	1510	1753	0	1049			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	19.5	0.0	19.3			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	19.5	0.0	19.3			
Prop In Lane	0.00		0.00	0.00		0.19	0.17		0.72			
Lane Grp Cap(c), veh/h	0	2782	0	0	872	793	570	0	341			
V/C Ratio(X)	0.00	0.38	0.00	0.00	0.37	0.38	1.09	0.00	0.99			
Avail Cap(c_a), veh/h	0	2782	0	0	872	793	570	0	341			
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	26.7			
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	1.2	1.4	63.2	0.0	46.0			
Initial Q Delay(d3),s/veh	0.0	0.1	0.0	0.0	0.3	0.4	47.4	0.0	74.0			
%ile Back of Q (95%), veh/ln	0.0	0.2	0.0	0.0	0.6	0.6	35.2	0.0	21.9			
Lane Grp Delay (d), s/veh	0.0	0.5	0.0	0.0	1.5	1.7	137.4	0.0	146.7			
Lane Grp LOS		A			A	A	F		F			
Approach Vol, veh/h		1053			622			956				
Approach Delay, s/veh		0.5			1.6			140.7				
Approach LOS		A			A			F				
Timer												
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		12.5			12.5			0.0				
Intersection Summary												
HCM 2010 Ctrl Delay					51.7							
HCM 2010 LOS					D							
Notes												

















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

7/22/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	439	570	0	0	249	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)	0.85		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	171.5	189.0	189.0	185.7	189.0			
Lanes	1	2	0	0	2	0	0	2	0			
Cap, veh/h	511	1896	0	0	611	277	81	875	70			
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	3500	0	0	1878	852	262	2838	226			
Grp Volume(v), veh/h	472	613	0	0	241	166	475	0	435			
Grp Sat Flow(s),veh/h/ln	1748	1750	0	0	1715	1015	1658	0	1667			
Q Serve(g_s), s	8.5	5.8	0.0	0.0	6.6	7.8	17.1	0.0	15.4			
Cycle Q Clear(g_c), s	8.5	5.8	0.0	0.0	6.6	7.8	17.1	0.0	15.4			
Prop In Lane	1.00		0.00	0.00		0.84	0.16		0.14			
Lane Grp Cap(c), veh/h	511	1896	0	0	557	330	511	0	514			
V/C Ratio(X)	0.92	0.32	0.00	0.00	0.43	0.50	0.93	0.00	0.85			
Avail Cap(c_a), veh/h	511	1896	0	0	557	330	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	14.7	7.6	0.0	0.0	15.9	16.0	26.3	0.0	25.6			
Incr Delay (d2), s/veh	24.8	0.5	0.0	0.0	2.4	5.4	25.6	0.0	15.7			
Initial Q Delay(d3),s/veh	3.3	0.0	0.0	0.0	0.2	0.5	9.7	0.0	4.4			
%ile Back of Q (95%), veh/ln	6.8	4.1	0.0	0.0	5.4	4.2	18.1	0.0	14.7			
Lane Grp Delay (d), s/veh	42.7	8.1	0.0	0.0	18.5	21.9	61.6	0.0	45.7			
Lane Grp LOS	D	A			B	C	E		D			
Approach Vol, veh/h		1085			407			910				
Approach Delay, s/veh		23.2			19.9			54.0				
Approach LOS		C			B			D				
Timer												
Assigned Phs	5	2			6			8				
Phs Duration (G+Y+Rc), s	13.0	37.0			24.0			23.0				
Change Period (Y+Rc), s	5.0	5.0			5.0			5.0				
Max Green Setting (Gmax), s	8.0	32.0			19.0			18.0				
Max Q Clear Time (g_c+I1), s	10.5	7.8			9.8			19.1				
Green Ext Time (p_c), s	0.0	6.8			4.2			0.0				
Intersection Summary												
HCM 2010 Ctrl Delay					34.3							
HCM 2010 LOS					C							
Notes												













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

7/22/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	677	101	0	412	0	0	0	0	113	303	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	183.5	181.7
Lanes	0	3	0	0	2	0				0	2	1
Cap, veh/h	0	2242	318	0	1668	0				305	873	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	4271	606	0	3176	0				938	2686	844
Grp Volume(v), veh/h	0	587	223	0	429	0				225	209	94
Grp Sat Flow(s),veh/h/ln	0	1796	1284	0	1588	0				1788	1835	844
Q Serve(g_s), s	0.0	5.6	6.0	0.0	0.0	0.0				5.8	5.2	5.1
Cycle Q Clear(g_c), s	0.0	5.6	6.0	0.0	0.0	0.0				5.8	5.2	5.1
Prop In Lane	0.00		0.47	0.00		0.00				0.52		1.00
Lane Grp Cap(c), veh/h	0	1886	674	0	1668	0				581	596	274
V/C Ratio(X)	0.00	0.31	0.33	0.00	0.26	0.00				0.39	0.35	0.34
Avail Cap(c_a), veh/h	0	1886	674	0	1668	0				581	596	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	8.1	8.2	0.0	0.0	0.0				15.6	15.4	15.4
Incr Delay (d2), s/veh	0.0	0.4	1.3	0.0	0.4	0.0				1.9	1.6	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.1	0.0	0.1	0.0				0.2	0.2	3.6
%ile Back of Q (95%), veh/ln	0.0	4.0	3.3	0.0	0.2	0.0				4.9	4.5	2.5
Lane Grp Delay (d), s/veh	0.0	8.6	9.6	0.0	0.5	0.0				17.8	17.2	22.4
Lane Grp LOS		A	A		A					B	B	C
Approach Vol, veh/h		810			429						528	
Approach Delay, s/veh		8.8			0.5						18.4	
Approach LOS		A			A						B	
Timer												
Assigned Phs		2			6						4	
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		8.0			2.0						7.8	
Green Ext Time (p_c), s		8.0			8.7						2.2	
Intersection Summary												
HCM 2010 Ctrl Delay			9.7									
HCM 2010 LOS			A									
Notes												

















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

7/22/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗	↖	↑↑						↖↑	↗
Volume (veh/h)	0	942	131	48	239	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
Lanes	0	2	1	1	2	0				0	2	1
Cap, veh/h	0	1545	539	190	1501	0				250	1259	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	3635	1268	418	3533	0				588	2961	851
Grp Volume(v), veh/h	0	992	138	51	252	0				371	382	120
Grp Sat Flow(s),veh/h/ln	0	1817	1268	418	1766	0				1666	1883	851
Q Serve(g_s), s	0.0	15.5	5.8	6.9	2.7	0.0				12.4	11.2	7.6
Cycle Q Clear(g_c), s	0.0	15.5	5.8	22.4	2.7	0.0				12.4	11.2	7.6
Prop In Lane	0.00		1.00	1.00		0.00				0.35		1.00
Lane Grp Cap(c), veh/h	0	1545	539	190	1501	0				708	800	362
V/C Ratio(X)	0.00	0.64	0.26	0.27	0.17	0.00				0.52	0.48	0.33
Avail Cap(c_a), veh/h	0	1545	539	190	1501	0				708	800	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	21.5	17.3	23.7	10.7	0.0				20.2	19.6	18.1
Incr Delay (d2), s/veh	0.0	2.1	1.1	3.4	0.2	0.0				2.8	2.0	2.5
Initial Q Delay(d3),s/veh	0.0	0.1	0.3	2.5	0.0	0.0				0.0	0.0	0.1
%ile Back of Q (95%), veh/ln	0.0	12.6	3.7	1.7	2.0	0.0				10.1	10.1	3.6
Lane Grp Delay (d), s/veh	0.0	23.6	18.8	29.6	11.0	0.0				22.9	21.7	20.6
Lane Grp LOS		C	B	C	B					C	C	C
Approach Vol, veh/h		1130			303						873	
Approach Delay, s/veh		23.0			14.1						22.1	
Approach LOS		C			B						C	
Timer												
Assigned Phs		2			6						4	
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		17.5			24.4						14.4	
Green Ext Time (p_c), s		4.3			0.0						3.5	
Intersection Summary												
HCM 2010 Ctrl Delay			21.5									
HCM 2010 LOS			C									
Notes												
















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

7/22/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	0	311	79	80	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	183.4	0.0			
Lanes				0	2	0	0	2	0			
Cap, veh/h				0	1127	276	120	709	0			
Arrive On Green				0.00	0.43	0.43	0.43	0.43	0.00			
Sat Flow, veh/h				0	2651	650	0	1669	0			
Grp Volume(v), veh/h				0	216	194	84	633	0			
Grp Sat Flow(s),veh/h/ln				0	1783	1518	0	1669	0			
Q Serve(g_s), s				0.0	4.8	5.0	0.0	21.1	0.0			
Cycle Q Clear(g_c), s				0.0	4.8	5.0	25.5	21.1	0.0			
Prop In Lane				0.00		0.43	1.00		0.00			
Lane Grp Cap(c), veh/h				0	758	645	120	709	0			
V/C Ratio(X)				0.00	0.29	0.30	0.70	0.89	0.00			
Avail Cap(c_a), veh/h				0	758	645	120	709	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	11.3	11.4	30.0	16.0	0.0			
Incr Delay (d2), s/veh				0.0	0.9	1.2	28.8	15.9	0.0			
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0			
%ile Back of Q (95%), veh/ln				0.0	3.7	3.5	3.9	16.5	0.0			
Lane Grp Delay (d), s/veh				0.0	12.2	12.6	58.8	31.8	0.0			
Lane Grp LOS					B	B	E	C				
Approach Vol, veh/h					410			717				
Approach Delay, s/veh					12.4			35.0				
Approach LOS					B			D				
Timer												
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					7.0			27.5				
Green Ext Time (p_c), s					2.0			0.0				
Intersection Summary												
HCM 2010 Ctrl Delay					26.8							
HCM 2010 LOS					C							
Notes												
















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

7/22/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	21	1463	0	0	0	0	0	847	375	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			
Lanes	0	5	0				0	2	1			
Cap, veh/h	69	3115	0				0	1575	616			
Arrive On Green	0.43	0.43	0.00				0.00	0.14	0.14			
Sat Flow, veh/h	0	7330	0				0	3706	1450			
Grp Volume(v), veh/h	155	1392	0				0	882	391			
Grp Sat Flow(s),veh/h/ln	713	1654	0				0	1853	1450			
Q Serve(g_s), s	0.0	9.2	0.0				0.0	13.3	15.3			
Cycle Q Clear(g_c), s	25.5	9.2	0.0				0.0	13.3	15.3			
Prop In Lane	0.15		0.00				0.00		1.00			
Lane Grp Cap(c), veh/h	372	2812	0				0	1575	616			
V/C Ratio(X)	0.42	0.49	0.00				0.00	0.56	0.63			
Avail Cap(c_a), veh/h	372	2812	0				0	1575	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	12.8	12.6	0.0				0.0	20.6	21.4			
Incr Delay (d2), s/veh	3.4	0.6	0.0				0.0	1.4	4.9			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0			
%ile Back of Q (95%), veh/ln	3.0	6.3	0.0				0.0	11.2	11.0			
Lane Grp Delay (d), s/veh	16.3	13.2	0.0				0.0	22.0	26.3			
Lane Grp LOS	B	B						C	C			
Approach Vol, veh/h		1547						1273				
Approach Delay, s/veh		13.5						23.3				
Approach LOS		B						C				
Timer												
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		27.5						17.3				
Green Ext Time (p_c), s		0.0						4.0				
Intersection Summary												
HCM 2010 Ctrl Delay			17.9									
HCM 2010 LOS			B									
Notes												

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

7/22/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	707	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			
Lanes	0	2	0				0	2	1			
Cap, veh/h	64	1178	0				0	1575	499			
Arrive On Green	0.43	0.43	0.00				0.00	0.43	0.43			
Sat Flow, veh/h	0	2771	0				0	3706	1175			
Grp Volume(v), veh/h	298	472	0				0	918	71			
Grp Sat Flow(s),veh/h/ln	1068	1703	0				0	1853	1175			
Q Serve(g_s), s	0.0	13.2	0.0				0.0	11.4	2.2			
Cycle Q Clear(g_c), s	25.5	13.2	0.0				0.0	11.4	2.2			
Prop In Lane	0.06		0.00				0.00		1.00			
Lane Grp Cap(c), veh/h	517	724	0				0	1575	499			
V/C Ratio(X)	0.58	0.65	0.00				0.00	0.58	0.14			
Avail Cap(c_a), veh/h	517	724	0				0	1575	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	12.8	13.7	0.0				0.0	13.2	10.6			
Incr Delay (d2), s/veh	4.6	4.5	0.0				0.0	1.6	0.6			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0			
%ile Back of Q (95%), veh/ln	6.1	9.9	0.0				0.0	8.8	1.2			
Lane Grp Delay (d), s/veh	17.4	18.2	0.0				0.0	14.8	11.2			
Lane Grp LOS	B	B						B	B			
Approach Vol, veh/h		770						989				
Approach Delay, s/veh		17.9						14.5				
Approach LOS		B						B				
Timer												
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		27.5						13.4				
Green Ext Time (p_c), s		0.0						4.5				
Intersection Summary												
HCM 2010 Ctrl Delay			16.0									
HCM 2010 LOS			B									
Notes												

FRIDAY CASINO PEAK HOUR LOS

Queues

2: 7th St & Chestnut St

7/22/2013



Lane Group	EBT	NBT
Lane Group Flow (vph)	546	576
v/c Ratio	0.67	0.44
Control Delay	26.5	23.2
Queue Delay	0.0	0.0
Total Delay	26.5	23.2
Queue Length 50th (ft)	176	108
Queue Length 95th (ft)	259	155
Internal Link Dist (ft)	336	210
Turn Bay Length (ft)		
Base Capacity (vph)	814	1313
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.67	0.44
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

2: 7th St & Chestnut St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕						↕↕				
Volume (vph)	180	334	0	0	0	0	0	422	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)		1917						3091				
Flt Permitted		0.98						1.00				
Satd. Flow (perm)		1917						3091				
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)	191	355	0	0	0	0	0	449	127	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	546	0	0	0	0	0	576	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)		814						1313				
v/s Ratio Prot								c0.19				
v/s Ratio Perm		0.28										
v/c Ratio		0.67						0.44				
Uniform Delay, d1		13.9						12.2				
Progression Factor		1.60						1.78				
Incremental Delay, d2		3.2						1.0				
Delay (s)		25.5						22.8				
Level of Service		C						C				
Approach Delay (s)		25.5			0.0			22.8			0.0	
Approach LOS		C			A			C			A	

Intersection Summary

HCM 2000 Control Delay	24.1	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)	9.0
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Queues

4: 8th St & Chestnut St

7/22/2013



Lane Group	EBT	SBT
Lane Group Flow (vph)	542	863
v/c Ratio	0.68	0.66
Control Delay	16.0	7.9
Queue Delay	0.0	0.0
Total Delay	16.0	7.9
Queue Length 50th (ft)	101	39
Queue Length 95th (ft)	224	m41
Internal Link Dist (ft)	398	143
Turn Bay Length (ft)		
Base Capacity (vph)	802	1312
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.68	0.66

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

4: 8th St & Chestnut St

7/22/2013



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	197	614	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									0.96		
Frt		0.97									1.00		
Flt Protected		1.00									0.99		
Satd. Flow (prot)		1889									3088		
Flt Permitted		1.00									0.99		
Satd. Flow (perm)		1889									3088		
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	210	653	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	863	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									1312		
v/s Ratio Prot		c0.29											
v/s Ratio Perm											0.28		
v/c Ratio		0.68									0.66		
Uniform Delay, d1		13.9									13.8		
Progression Factor		0.81									0.47		
Incremental Delay, d2		4.2									1.2		
Delay (s)		15.5									7.8		
Level of Service		B									A		
Approach Delay (s)		15.5			0.0			0.0			7.8		
Approach LOS		B			A			A			A		
Intersection Summary													
HCM 2000 Control Delay			10.7									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.67										
Actuated Cycle Length (s)			60.0									Sum of lost time (s)	9.0
Intersection Capacity Utilization			49.5%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Queues

6: 9th St & Chestnut St

7/22/2013



Lane Group	EBT	NBT
Lane Group Flow (vph)	454	509
v/c Ratio	0.47	0.44
Control Delay	12.4	11.9
Queue Delay	0.0	0.0
Total Delay	12.4	11.9
Queue Length 50th (ft)	58	45
Queue Length 95th (ft)	131	65
Internal Link Dist (ft)	343	223
Turn Bay Length (ft)		
Base Capacity (vph)	962	1146
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.47	0.44
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

6: 9th St & Chestnut St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕						↕↕				
Volume (vph)	75	366	0	0	0	0	0	374	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)		2026						3057				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		2026						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)	77	377	0	0	0	0	0	386	123	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	454	0	0	0	0	0	509	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)		962						1146				
v/s Ratio Prot								c0.17				
v/s Ratio Perm		0.22										
v/c Ratio		0.47						0.44				
Uniform Delay, d1		10.7						14.1				
Progression Factor		1.00						0.74				
Incremental Delay, d2		1.3						1.2				
Delay (s)		12.0						11.7				
Level of Service		B						B				
Approach Delay (s)		12.0			0.0			11.7			0.0	
Approach LOS		B			A			B			A	
Intersection Summary												
HCM 2000 Control Delay			11.8					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			35.9%					ICU Level of Service		A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues
7: 9th St & Race St

7/22/2013



Lane Group	EBT	NBT
Lane Group Flow (vph)	484	677
v/c Ratio	0.35	0.58
Control Delay	12.5	18.0
Queue Delay	0.0	0.0
Total Delay	12.5	18.0
Queue Length 50th (ft)	58	78
Queue Length 95th (ft)	90	132
Internal Link Dist (ft)	674	621
Turn Bay Length (ft)		
Base Capacity (vph)	1391	1168
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.35	0.58
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

7: 9th St & Race St

7/22/2013

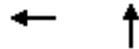


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔						↔↔				
Volume (vph)	68	377	0	0	0	0	0	240	383	0	0	0
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)		5.0						5.0				
Lane Util. Factor		0.95						0.95				
Frbp, ped/bikes		1.00						0.95				
Flpb, ped/bikes		0.99						1.00				
Frt		1.00						0.91				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		3274						2860				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		3274						2860				
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	410	0	0	0	0	0	261	416	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	484	0	0	0	0	0	677	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						1167				
v/s Ratio Prot								c0.24				
v/s Ratio Perm		0.15										
v/c Ratio		0.35						0.58				
Uniform Delay, d1		11.6						13.8				
Progression Factor		1.00						1.13				
Incremental Delay, d2		0.7						2.0				
Delay (s)		12.3						17.6				
Level of Service		B						B				
Approach Delay (s)		12.3			0.0			17.6			0.0	
Approach LOS		B			A			B			A	
Intersection Summary												
HCM 2000 Control Delay			15.4					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)		10.0		
Intersection Capacity Utilization			43.6%					ICU Level of Service		A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

8: 7th St & Walnut St

7/22/2013



Lane Group	WBT	NBT
Lane Group Flow (vph)	522	506
v/c Ratio	0.39	0.38
Control Delay	21.0	13.5
Queue Delay	0.0	0.0
Total Delay	21.0	13.5
Queue Length 50th (ft)	90	64
Queue Length 95th (ft)	131	98
Internal Link Dist (ft)	382	135
Turn Bay Length (ft)		
Base Capacity (vph)	1333	1318
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.39	0.38
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

8: 7th St & Walnut St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑			↑↑					
Volume (vph)	0	0	0	0	403	77	120	355	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					0.98			1.00					
Flt Protected					1.00			0.99					
Satd. Flow (prot)					3019			3227					
Flt Permitted					1.00			0.99					
Satd. Flow (perm)					3019			3227					
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	438	84	128	378	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	522	0	0	506	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)					1333			1317					
v/s Ratio Prot					0.17								
v/s Ratio Perm								0.16					
v/c Ratio					0.39			0.38					
Uniform Delay, d1					11.3			12.5					
Progression Factor					1.75			1.00					
Incremental Delay, d2					0.8			0.9					
Delay (s)					20.6			13.3					
Level of Service					C			B					
Approach Delay (s)		0.0			20.6			13.3			0.0		
Approach LOS		A			C			B			A		
Intersection Summary													
HCM 2000 Control Delay			17.0									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			38.6%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Queues
9: 8th St & Vine Street

7/22/2013



Lane Group	EBT	EBR	SBT	SEL	SER
Lane Group Flow (vph)	363	250	587	392	355
v/c Ratio	0.53	0.53	0.61	0.44	0.45
Control Delay	36.5	37.9	41.0	16.0	16.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	36.5	37.9	41.0	16.0	16.5
Queue Length 50th (ft)	99	73	126	134	129
Queue Length 95th (ft)	144	115	164	206	204
Internal Link Dist (ft)	164		246	146	
Turn Bay Length (ft)					
Base Capacity (vph)	682	473	957	899	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	0.53	0.53	0.61	0.44	0.45

Intersection Summary

HCM Signalized Intersection Capacity Analysis

9: 8th St & Vine Street

7/22/2013



Movement	EBT	EBR	SBL	SBT	SEL	SER
Lane Configurations	↑↑	↑↑		↑↑↑	↑↑	↑
Volume (vph)	334	230	87	453	273	414
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	0.96	1.00
Satd. Flow (prot)	3724	2584		5220	1777	1567
Flt Permitted	1.00	1.00		0.99	0.96	1.00
Satd. Flow (perm)	3724	2584		5220	1777	1567
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	363	250	95	492	297	450
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	363	250	0	587	392	355
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	NA	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	898	792
v/s Ratio Prot	c0.10	0.10		c0.11	0.22	c0.23
v/s Ratio Perm						
v/c Ratio	0.53	0.53		0.61	0.44	0.45
Uniform Delay, d1	33.3	33.2		33.8	14.1	14.2
Progression Factor	1.00	1.00		1.12	1.00	1.00
Incremental Delay, d2	3.0	4.2		2.9	1.5	1.8
Delay (s)	36.2	37.4		40.7	15.7	16.1
Level of Service	D	D		D	B	B
Approach Delay (s)	36.7			40.7	15.8	
Approach LOS	D			D	B	

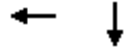
Intersection Summary

HCM 2000 Control Delay	29.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Queues

13: 6th St & Arch St

7/22/2013



Lane Group	WBT	SBT
Lane Group Flow (vph)	500	772
v/c Ratio	0.37	0.41
Control Delay	13.1	5.1
Queue Delay	0.0	0.0
Total Delay	13.1	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)	1338	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

7/22/2013

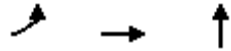


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕↕						↕↕↕	
Volume (vph)	0	0	0	112	328	0	0	0	0	0	589	91
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)					4.5						4.5	
Lane Util. Factor					0.95						0.91	
Frbp, ped/bikes					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	373	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	500	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					0.37						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	
Intersection Summary												
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

7/22/2013



Lane Group	EBL	EBT	NBT
Lane Group Flow (vph)	122	316	492
v/c Ratio	0.20	0.44	0.36
Control Delay	13.2	15.7	23.6
Queue Delay	0.0	0.0	0.0
Total Delay	13.2	15.7	23.6
Queue Length 50th (ft)	25	67	95
Queue Length 95th (ft)	m39	97	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	0.44	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

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗						↕	↘	↗	↘	↗
Volume (vph)	113	294	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	316	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	316	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	0.44						0.36				
Uniform Delay, d1	10.8	12.2						11.7				
Progression Factor	1.12	1.11						1.92				
Incremental Delay, d2	0.6	1.7						0.7				
Delay (s)	12.8	15.2						23.2				
Level of Service	B	B						C				
Approach Delay (s)		14.5			0.0			23.2			0.0	
Approach LOS		B			A			C			A	

Intersection Summary

HCM 2000 Control Delay	19.1	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	67.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

16: Site Driveway & 8th St

9/18/2013



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations					↑↑	
Volume (veh/h)	0	0	0	0	826	324
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	898	352
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	1074	625	1250			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	244	0	496			
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)	506	758	744			
Direction, Lane #	SB 1	SB 2				
Volume Total	599	651				
Volume Left	0	0				
Volume Right	0	352				
cSH	1700	1700				
Volume to Capacity	0.35	0.38				
Queue Length 95th (ft)	0	0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0					
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			33.4%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

17: 9th St & Site Driveway

7/22/2013



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕			
Volume (veh/h)	0	310	449	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	337	488	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	0.98	0.98			0.98	
vC, conflicting volume	488	244			488	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	435	186			435	
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	58			100	
cM capacity (veh/h)	538	807			1098	

Direction, Lane #	WB 1	NB 1	NB 2
Volume Total	337	244	244
Volume Left	0	0	0
Volume Right	337	0	0
cSH	807	1700	1700
Volume to Capacity	0.42	0.14	0.14
Queue Length 95th (ft)	52	0	0
Control Delay (s)	12.6	0.0	0.0
Lane LOS	B		
Approach Delay (s)	12.6	0.0	
Approach LOS	B		

Intersection Summary			
Average Delay		5.2	
Intersection Capacity Utilization		35.9%	ICU Level of Service
Analysis Period (min)		15	A

HCM Unsignalized Intersection Capacity Analysis

18: 8th St & Parking Garage

7/22/2013



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰					↰↰
Volume (veh/h)	103	0	0	0	108	718
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)	112	0	0	0	117	780
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	0.81					
vC, conflicting volume	625	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	79	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 %	84	100			93	
cM capacity (veh/h)	686	1084			1622	

Direction, Lane #	WB 1	SB 1	SB 2
Volume Total	112	378	520
Volume Left	112	117	0
Volume Right	0	0	0
cSH	686	1622	1700
Volume to Capacity	0.16	0.07	0.31
Queue Length 95th (ft)	15	6	0
Control Delay (s)	11.3	2.7	0.0
Lane LOS	B	A	
Approach Delay (s)	11.3	1.1	
Approach LOS	B		

Intersection Summary			
Average Delay		2.3	
Intersection Capacity Utilization		32.6%	ICU Level of Service A
Analysis Period (min)		15	

* User Entered Value

Queues

22: 10th St & Chestnut St

7/22/2013



Lane Group	EBT	SBT
Lane Group Flow (vph)	509	490
v/c Ratio	0.67	0.36
Control Delay	19.1	9.2
Queue Delay	0.0	0.0
Total Delay	19.1	9.2
Queue Length 50th (ft)	117	40
Queue Length 95th (ft)	182	51
Internal Link Dist (ft)	521	472
Turn Bay Length (ft)		
Base Capacity (vph)	763	1359
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.67	0.36
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

22: 10th St & Chestnut St

7/22/2013

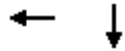


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑									↑↑		
Volume (vph)	0	327	111	0	0	0	0	0	0	71	350	0	
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	
Total Lost time (s)		4.5									4.5		
Lane Util. Factor		*0.60									0.95		
Frpb, 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)		1797									3197		
Flt Permitted		1.00									0.99		
Satd. Flow (perm)		1797									3197		
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	380	129	0	0	0	0	0	0	83	407	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	509	0	0	0	0	0	0	0	0	490	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)		763									1358		
v/s Ratio Prot		c0.28											
v/s Ratio Perm											0.15		
v/c Ratio		0.67									0.36		
Uniform Delay, d1		13.8									11.7		
Progression Factor		1.00									0.71		
Incremental Delay, d2		4.6									0.7		
Delay (s)		18.4									9.1		
Level of Service		B									A		
Approach Delay (s)		18.4			0.0			0.0			9.1		
Approach LOS		B			A			A			A		
Intersection Summary													
HCM 2000 Control Delay			13.8									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.51										
Actuated Cycle Length (s)			60.0									Sum of lost time (s)	9.0
Intersection Capacity Utilization			37.4%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Queues

24: 10th St & Walnut St

7/22/2013



Lane Group	WBT	SBT
Lane Group Flow (vph)	541	397
v/c Ratio	0.40	0.32
Control Delay	6.7	15.4
Queue Delay	0.0	0.0
Total Delay	6.7	15.4
Queue Length 50th (ft)	15	52
Queue Length 95th (ft)	21	76
Internal Link Dist (ft)	360	507
Turn Bay Length (ft)		
Base Capacity (vph)	1360	1251
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.40	0.32
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

24: 10th St & Walnut St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑						↑↑	
Volume (vph)	0	0	0	66	443	0	0	0	0	0	274	100
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)					3199						2944	
Flt Permitted					0.99						1.00	
Satd. Flow (perm)					3199						2944	
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	70	471	0	0	0	0	0	291	106
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	541	0	0	0	0	0	397	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)					1359						1251	
v/s Ratio Prot											c0.13	
v/s Ratio Perm					0.17							
v/c Ratio					0.40						0.32	
Uniform Delay, d1					11.9						11.5	
Progression Factor					0.48						1.26	
Incremental Delay, d2					0.8						0.6	
Delay (s)					6.6						15.1	
Level of Service					A						B	
Approach Delay (s)		0.0			6.6			0.0			15.1	
Approach LOS		A			A			A			B	
Intersection Summary												
HCM 2000 Control Delay			10.2		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			38.2%		ICU Level of Service				A			
Analysis Period (min)			15									
c Critical Lane Group												

Queues

25: 8th St & Arch St

7/22/2013



Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	422	745	123
v/c Ratio	0.32	0.56	0.23
Control Delay	7.0	16.6	16.0
Queue Delay	0.0	0.0	0.0
Total Delay	7.0	16.6	16.0
Queue Length 50th (ft)	33	77	24
Queue Length 95th (ft)	44	131	59
Internal Link Dist (ft)	373	120	
Turn Bay Length (ft)			
Base Capacity (vph)	1314	1341	537
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.32	0.56	0.23
Intersection Summary			

HCM Signalized Intersection Capacity Analysis

25: 8th St & Arch St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations					↕↕						↕↕	↕		
Volume (vph)	0	0	0	111	277	0	0	0	0	0	685	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					0.99						1.00	1.00		
Satd. Flow (prot)					3091						3286	1316		
Flt Permitted					0.99						1.00	1.00		
Satd. Flow (perm)					3091						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	121	301	0	0	0	0	0	745	123		
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0		
Lane Group Flow (vph)	0	0	0	0	422	0	0	0	0	0	745	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)					1313						1341	537		
v/s Ratio Prot											c0.23			
v/s Ratio Perm					0.14							0.09		
v/c Ratio					0.32						0.56	0.23		
Uniform Delay, d1					11.5						13.6	11.6		
Progression Factor					0.55						1.09	1.26		
Incremental Delay, d2					0.6						1.5	0.9		
Delay (s)					6.9						16.2	15.4		
Level of Service					A						B	B		
Approach Delay (s)		0.0			6.9			0.0			16.1			
Approach LOS		A			A			A			B			
Intersection Summary														
HCM 2000 Control Delay			13.1									HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio			0.44											
Actuated Cycle Length (s)			60.0								10.0		Sum of lost time (s)	
Intersection Capacity Utilization			41.6%										ICU Level of Service	A
Analysis Period (min)			15											
c Critical Lane Group														

Queues

26: 7th St & Arch St

7/22/2013



Lane Group	WBT	WBR	NBT
Lane Group Flow (vph)	323	137	592
v/c Ratio	0.24	0.23	0.46
Control Delay	12.7	13.5	13.2
Queue Delay	0.0	0.0	0.0
Total Delay	12.7	13.5	13.2
Queue Length 50th (ft)	54	44	113
Queue Length 95th (ft)	90	90	155
Internal Link Dist (ft)	389		653
Turn Bay Length (ft)			
Base Capacity (vph)	1343	594	1300
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	0.46
Intersection Summary			

HCM Signalized Intersection Capacity Analysis

26: 7th St & Arch St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑	↗		↖↖					
Volume (vph)	0	0	0	0	294	125	98	440	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		3186					
Flt Permitted					1.00	1.00		0.99					
Satd. Flow (perm)					3162	1399		3186					
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	323	137	108	484	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	323	137	0	592	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		1300					
v/s Ratio Prot					c0.10								
v/s Ratio Perm						0.10		0.19					
v/c Ratio					0.24	0.23		0.46					
Uniform Delay, d1					11.0	11.0		12.9					
Progression Factor					1.10	1.10		0.93					
Incremental Delay, d2					0.4	0.9		1.0					
Delay (s)					12.5	13.0		13.0					
Level of Service					B	B		B					
Approach Delay (s)		0.0			12.6			13.0			0.0		
Approach LOS		A			B			B			A		
Intersection Summary													
HCM 2000 Control Delay			12.8		HCM 2000 Level of Service						B		
HCM 2000 Volume to Capacity ratio			0.35										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)						10.0		
Intersection Capacity Utilization			34.9%		ICU Level of Service						A		
Analysis Period (min)			15										
c Critical Lane Group													

Queues

28: 9th St & Arch St

7/22/2013



Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	426	185	535
v/c Ratio	0.32	0.32	0.39
Control Delay	16.4	23.8	23.6
Queue Delay	0.0	0.0	0.0
Total Delay	16.4	23.8	23.6
Queue Length 50th (ft)	47	60	92
Queue Length 95th (ft)	82	m72	m105
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	0.32	0.39

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

28: 9th St & Arch St

7/22/2013

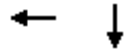


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑		↑	↑↑				
Volume (vph)	0	0	0	0	320	67	168	487	0	0	0	0
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)					5.0		5.0	5.0				
Lane Util. Factor					0.95		1.00	0.95				
Frbp, 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	185	535	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	185	535	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			c0.16				
v/s Ratio Perm							0.13					
v/c Ratio					0.32		0.32	0.39				
Uniform Delay, d1					11.5		12.1	12.5				
Progression Factor					1.34		1.83	1.81				
Incremental Delay, d2					0.6		0.8	0.5				
Delay (s)					16.1		22.9	23.2				
Level of Service					B		C	C				
Approach Delay (s)		0.0			16.1			23.1			0.0	
Approach LOS		A			B			C			A	
Intersection Summary												
HCM 2000 Control Delay			20.5		HCM 2000 Level of Service				C			
HCM 2000 Volume to Capacity ratio			0.36									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				10.0			
Intersection Capacity Utilization			33.7%		ICU Level of Service				A			
Analysis Period (min)			15									
c Critical Lane Group												

Queues

29: 10th St & Arch St

7/22/2013



Lane Group	WBT	SBT
Lane Group Flow (vph)	584	537
v/c Ratio	0.48	0.46
Control Delay	10.9	14.5
Queue Delay	0.0	0.0
Total Delay	10.9	14.5
Queue Length 50th (ft)	57	71
Queue Length 95th (ft)	82	108
Internal Link Dist (ft)	371	412
Turn Bay Length (ft)		
Base Capacity (vph)	1227	1176
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.48	0.46
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

29: 10th St & Arch St

7/22/2013

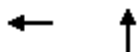


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕↕						↕↕	
Volume (vph)	0	0	0	145	381	0	0	0	0	0	327	157
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)					5.0						5.0	
Lane Util. Factor					0.95						0.95	
Frbp, ped/bikes					1.00						0.92	
Flpb, ped/bikes					0.94						1.00	
Frt					1.00						0.95	
Flt Protected					0.99						1.00	
Satd. Flow (prot)					2889						2884	
Flt Permitted					0.99						1.00	
Satd. Flow (perm)					2889						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	161	423	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	584	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)					1227						1177	
v/s Ratio Prot											c0.19	
v/s Ratio Perm					0.20							
v/c Ratio					0.48						0.46	
Uniform Delay, d1					12.4						12.9	
Progression Factor					0.76						1.00	
Incremental Delay, d2					1.3						1.3	
Delay (s)					10.7						14.2	
Level of Service					B						B	
Approach Delay (s)		0.0			10.7			0.0			14.2	
Approach LOS		A			B			A			B	
Intersection Summary												
HCM 2000 Control Delay			12.4								HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			60.0							10.0		
Intersection Capacity Utilization			43.5%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												

Queues

33: 9th St & Walnut St

7/22/2013



Lane Group	WBT	NBT
Lane Group Flow (vph)	588	335
v/c Ratio	0.47	0.25
Control Delay	9.5	11.7
Queue Delay	0.0	0.0
Total Delay	9.5	11.7
Queue Length 50th (ft)	24	38
Queue Length 95th (ft)	33	63
Internal Link Dist (ft)	368	360
Turn Bay Length (ft)		
Base Capacity (vph)	1251	1334
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.47	0.25
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

33: 9th St & Walnut St

7/22/2013

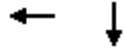


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑			↑↑				
Volume (vph)	0	0	0	0	460	81	69	239	0	0	0	0
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)					4.5			4.5				
Lane Util. Factor					0.95			0.95				
Frbp, ped/bikes					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)					2942			3141				
Flt Permitted					1.00			0.99				
Satd. Flow (perm)					2942			3141				
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	500	88	75	260	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	588	0	0	335	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)					1250			1334				
v/s Ratio Prot					c0.20							
v/s Ratio Perm								0.11				
v/c Ratio					0.47			0.25				
Uniform Delay, d1					12.4			11.1				
Progression Factor					0.66			1.00				
Incremental Delay, d2					1.2			0.5				
Delay (s)					9.3			11.6				
Level of Service					A			B				
Approach Delay (s)		0.0			9.3			11.6			0.0	
Approach LOS		A			A			B			A	
Intersection Summary												
HCM 2000 Control Delay			10.1					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			36.6%					ICU Level of Service			A	
Analysis Period (min)			15									
c Critical Lane Group												

Queues

34: Walnut St & 8th St

7/22/2013



Lane Group	WBT	SBT
Lane Group Flow (vph)	556	480
v/c Ratio	0.44	0.39
Control Delay	11.7	3.6
Queue Delay	0.0	0.0
Total Delay	11.7	3.6
Queue Length 50th (ft)	68	14
Queue Length 95th (ft)	115	21
Internal Link Dist (ft)	353	489
Turn Bay Length (ft)		
Base Capacity (vph)	1272	1244
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.44	0.39
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

34: Walnut St & 8th St

7/22/2013

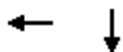


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑						↑↑	
Volume (vph)	0	0	0	80	443	0	0	0	0	0	351	101
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)					4.5						4.5	
Lane Util. Factor					0.95						0.95	
Frbp, ped/bikes					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)					2994						2927	
Flt Permitted					0.99						1.00	
Satd. Flow (perm)					2994						2927	
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	471	0	0	0	0	0	373	107
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	556	0	0	0	0	0	480	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						1243	
v/s Ratio Prot											c0.16	
v/s Ratio Perm					0.19							
v/c Ratio					0.44						0.39	
Uniform Delay, d1					12.2						11.9	
Progression Factor					0.86						0.24	
Incremental Delay, d2					1.0						0.7	
Delay (s)					11.5						3.5	
Level of Service					B						A	
Approach Delay (s)		0.0			11.5			0.0			3.5	
Approach LOS		A			B			A			A	
Intersection Summary												
HCM 2000 Control Delay			7.8		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			40.5%		ICU Level of Service				A			
Analysis Period (min)			15									
c Critical Lane Group												

Queues

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

7/22/2013



Lane Group	WBT	SBT
Lane Group Flow (vph)	436	695
v/c Ratio	0.37	0.49
Control Delay	9.6	12.0
Queue Delay	0.0	0.0
Total Delay	9.6	12.0
Queue Length 50th (ft)	69	73
Queue Length 95th (ft)	106	184
Internal Link Dist (ft)	357	488
Turn Bay Length (ft)		
Base Capacity (vph)	1182	1409
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.37	0.49
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

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

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑						↑↑	
Volume (vph)	0	0	0	65	340	0	0	0	0	0	510	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)					3152						2968	
Flt Permitted					0.99						1.00	
Satd. Flow (perm)					3152						2968	
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	366	0	0	0	0	0	548	147
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	436	0	0	0	0	0	695	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						1409	
v/s Ratio Prot											c0.23	
v/s Ratio Perm					0.14							
v/c Ratio					0.37						0.49	
Uniform Delay, d1					13.6						10.8	
Progression Factor					0.63						0.98	
Incremental Delay, d2					0.8						1.1	
Delay (s)					9.4						11.7	
Level of Service					A						B	
Approach Delay (s)		0.0			9.4			0.0			11.7	
Approach LOS		A			A			A			B	
Intersection Summary												
HCM 2000 Control Delay			10.8		HCM 2000 Level of Service					B		
HCM 2000 Volume to Capacity ratio			0.44									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				9.0			
Intersection Capacity Utilization			42.4%		ICU Level of Service				A			
Analysis Period (min)			15									
c Critical Lane Group												

Queues

40: 5th St & Arch St

7/22/2013



Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	324	122	731
v/c Ratio	0.24	0.20	0.52
Control Delay	11.7	11.2	12.1
Queue Delay	0.0	0.0	0.0
Total Delay	11.7	11.2	12.1
Queue Length 50th (ft)	37	20	73
Queue Length 95th (ft)	61	m43	m132
Internal Link Dist (ft)	526		282
Turn Bay Length (ft)		100	
Base Capacity (vph)	1327	610	1393
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.24	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

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑		↑	↑↑					
Volume (vph)	0	0	0	0	240	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)					3124		1436	3279					
Flt Permitted					1.00		0.95	1.00					
Satd. Flow (perm)					3124		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	245	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	324	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)					1327		610	1393					
v/s Ratio Prot					c0.10			c0.22					
v/s Ratio Perm							0.08						
v/c Ratio					0.24		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		10.8	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		
Intersection Summary													
HCM 2000 Control Delay			11.7		HCM 2000 Level of Service						B		
HCM 2000 Volume to Capacity ratio			0.38										
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

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

7/22/2013



Lane Group	EBT	EBR	SBL	SBT
Lane Group Flow (vph)	401	112	124	643
v/c Ratio	0.58	0.35	0.25	0.46
Control Delay	14.8	14.9	11.7	11.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	14.8	14.9	11.7	11.5
Queue Length 50th (ft)	76	35	22	61
Queue Length 95th (ft)	152	m78	57	112
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	0.58	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

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑	↗							↖	↑↑		
Volume (vph)	0	369	103	0	0	0	0	0	0	114	592	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	401	112	0	0	0	0	0	0	124	643	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	401	112	0	0	0	0	0	0	124	643	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									c0.19		
v/s Ratio Perm			0.15							0.10			
v/c Ratio		0.58	0.35							0.25	0.46		
Uniform Delay, d1		13.1	11.6							11.1	12.3		
Progression Factor		0.86	0.99							0.91	0.83		
Incremental Delay, d2		2.9	2.4							1.1	1.0		
Delay (s)		14.2	13.9							11.2	11.3		
Level of Service		B	B							B	B		
Approach Delay (s)		14.1			0.0			0.0			11.3		
Approach LOS		B			A			A			B		
Intersection Summary													
HCM 2000 Control Delay			12.4									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			43.5%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Queues
46: Race St & 8th St

7/22/2013



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	847	290	907
v/c Ratio	0.43	0.53	0.49
Control Delay	8.6	17.2	13.7
Queue Delay	0.0	0.0	0.0
Total Delay	8.6	17.2	13.7
Queue Length 50th (ft)	50	86	87
Queue Length 95th (ft)	75	162	121
Internal Link Dist (ft)	378		453
Turn Bay Length (ft)			
Base Capacity (vph)	1989	547	1844
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.43	0.53	0.49
Intersection Summary			

HCM Signalized Intersection Capacity Analysis

46: Race St & 8th St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑								↘	↑↑↑		
Volume (vph)	0	693	69	0	0	0	0	0	0	322	755	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		0.99								1.00	1.00		
Flpb, ped/bikes		1.00								0.93	0.99		
Frt		0.99								1.00	1.00		
Flt Protected		1.00								0.95	1.00		
Satd. Flow (prot)		4683								1289	4341		
Flt Permitted		1.00								0.95	1.00		
Satd. Flow (perm)		4683								1289	4341		
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	770	77	0	0	0	0	0	0	358	839	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	847	0	0	0	0	0	0	0	290	907	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)		1990								547	1844		
v/s Ratio Prot		c0.18											
v/s Ratio Perm										c0.22	0.21		
v/c Ratio		0.43								0.53	0.49		
Uniform Delay, d1		12.1								12.8	12.5		
Progression Factor		0.65								1.00	1.00		
Incremental Delay, d2		0.6								3.7	0.9		
Delay (s)		8.5								16.5	13.5		
Level of Service		A								B	B		
Approach Delay (s)		8.5			0.0			0.0			14.2		
Approach LOS		A			A			A			B		
Intersection Summary													
HCM 2000 Control Delay			11.8									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)	9.0
Intersection Capacity Utilization			38.9%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Queues
49: 6th St & Race St

7/22/2013



Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	920	95	897
v/c Ratio	0.37	0.16	0.48
Control Delay	5.3	5.0	13.5
Queue Delay	0.0	0.0	0.0
Total Delay	5.3	5.0	13.5
Queue Length 50th (ft)	20	7	81
Queue Length 95th (ft)	25	14	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	0.37	0.16	0.48
Intersection Summary			

HCM Signalized Intersection Capacity Analysis

49: 6th St & Race St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗								↖↑↑	
Volume (vph)	0	810	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	
Frpb, 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	920	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	920	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		c0.16										
v/s Ratio Perm			0.07								0.20	
v/c Ratio		0.37	0.16								0.48	
Uniform Delay, d1		11.8	10.6								12.5	
Progression Factor		0.41	0.40								1.00	
Incremental Delay, d2		0.4	0.6								0.9	
Delay (s)		5.3	4.8								13.3	
Level of Service		A	A								B	
Approach Delay (s)		5.2			0.0			0.0			13.3	
Approach LOS		A			A			A			B	
Intersection Summary												
HCM 2000 Control Delay			9.0								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			34.8%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												

Queues

50: 3rd St & Race St

7/22/2013



Lane Group	EBT	NBT
Lane Group Flow (vph)	885	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)	94	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	110	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.57	0.41
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

50: 3rd St & Race St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕						↕↕				
Volume (vph)	104	657	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				
Frpb, 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	764	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	885	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		1.1						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	
Intersection Summary												
HCM 2000 Control Delay			14.2					HCM 2000 Level of Service		B		
HCM 2000 Volume to Capacity ratio			0.48									
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

Queues

59: 4th St & Race St

7/22/2013



Lane Group	EBT	SBT
Lane Group Flow (vph)	792	479
v/c Ratio	0.48	0.40
Control Delay	15.1	21.9
Queue Delay	0.0	0.0
Total Delay	15.1	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
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

59: 4th St & Race St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		↑↑									↑↑			
Volume (vph)	0	635	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	690	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	792	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		13.9									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			
Intersection Summary														
HCM 2000 Control Delay			17.4									HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio			0.44											
Actuated Cycle Length (s)			90.0								9.7		Sum of lost time (s)	
Intersection Capacity Utilization			44.9%										ICU Level of Service	A
Analysis Period (min)			15											
c Critical Lane Group														

Queues

63: Race St & 2nd Street

7/22/2013



Lane Group	EBT	SBT
Lane Group Flow (vph)	868	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)	148	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
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

63: Race St & 2nd Street

7/22/2013

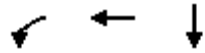


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑									↑↑		
Volume (vph)	0	611	188	0	0	0	0	0	0	76	543	0	
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	
Total Lost time (s)		4.5									4.5		
Lane Util. Factor		0.95									0.95		
Frbp, 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)		3160									3279		
Flt Permitted		1.00									0.99		
Satd. Flow (perm)		3160									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	664	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	868	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		c0.27											
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		
Intersection Summary													
HCM 2000 Control Delay			14.6									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			52.3%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Queues

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

7/22/2013



Lane Group	WBL	WBT	SBT
Lane Group Flow (vph)	299	2164	631
v/c Ratio	0.15	0.57	0.43
Control Delay	11.7	18.5	26.2
Queue Delay	0.0	3.2	0.0
Total Delay	11.7	21.7	26.2
Queue Length 50th (ft)	60	311	104
Queue Length 95th (ft)	82	319	127
Internal Link Dist (ft)		254	248
Turn Bay Length (ft)			
Base Capacity (vph)	2031	3820	1451
Starvation Cap Reductn	0	1525	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.15	0.94	0.43
Intersection Summary			

HCM Signalized Intersection Capacity Analysis

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

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔	↑↑↑						↑↑↑	
Volume (vph)	0	0	0	251	1818	0	0	0	0	0	243	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)				3550	6676						4749	
Flt Permitted				0.95	1.00						1.00	
Satd. Flow (perm)				3550	6676						4749	
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	299	2164	0	0	0	0	0	289	342
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	299	2164	0	0	0	0	0	631	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						1451	
v/s Ratio Prot					c0.32						c0.13	
v/s Ratio Perm				0.08								
v/c Ratio				0.15	0.57						0.43	
Uniform Delay, d1				9.0	12.2						25.0	
Progression Factor				1.28	1.46						1.00	
Incremental Delay, d2				0.1	0.6						1.0	
Delay (s)				11.6	18.3						26.0	
Level of Service				B	B						C	
Approach Delay (s)		0.0			17.5			0.0			26.0	
Approach LOS		A			B			A			C	
Intersection Summary												
HCM 2000 Control Delay			19.3		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)			11.0				
Intersection Capacity Utilization			45.8%		ICU Level of Service					A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

71: 7th St & Vine St/Route 30

7/22/2013



Lane Group	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	1731	10	494	1058
v/c Ratio	0.56	0.01	0.31	0.46
Control Delay	18.5	0.0	15.7	18.6
Queue Delay	0.2	0.0	1.3	4.2
Total Delay	18.7	0.0	17.0	22.8
Queue Length 50th (ft)	200	0	84	150
Queue Length 95th (ft)	236	1	119	186
Internal Link Dist (ft)	594			178
Turn Bay Length (ft)		500		
Base Capacity (vph)	3078	787	1605	2302
Starvation Cap Reductn	0	0	866	1143
Spillback Cap Reductn	482	0	3	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.67	0.01	0.67	0.91

Intersection Summary

HCM Signalized Intersection Capacity Analysis

71: 7th St & Vine St/Route 30

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑↑	↗	↘↘	↑↑↑↑				
Volume (vph)	0	0	0	0	1610	9	459	984	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	1731	10	494	1058	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	1731	5	474	1058	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	0.13					
v/c Ratio					0.56	0.01	0.30	0.46				
Uniform Delay, d1					17.6	13.1	16.3	17.7				
Progression Factor					1.00	1.00	1.00	1.00				
Incremental Delay, d2					0.7	0.0	0.5	0.7				
Delay (s)					18.4	13.1	16.8	18.4				
Level of Service					B	B	B	B				
Approach Delay (s)		0.0			18.4			17.9			0.0	
Approach LOS		A			B			B			A	

Intersection Summary

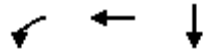
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Queues

73: 8th St & Callowhill St

7/22/2013



Lane Group	WBL	WBT	SBT
Lane Group Flow (vph)	348	546	307
v/c Ratio	0.45	0.35	0.21
Control Delay	14.7	12.5	11.4
Queue Delay	0.0	0.0	0.0
Total Delay	14.7	12.5	11.4
Queue Length 50th (ft)	85	66	35
Queue Length 95th (ft)	140	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	0.45	0.35	0.21

Intersection Summary

HCM Signalized Intersection Capacity Analysis

73: 8th St & Callowhill St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↕						↕	↘
Volume (vph)	0	0	0	303	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	
Frnt				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	348	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	348	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				c0.19								
v/c Ratio				0.45	0.35						0.21	
Uniform Delay, d1				12.3	11.7						10.9	
Progression Factor				1.00	1.00						1.00	
Incremental Delay, d2				1.9	0.6						0.3	
Delay (s)				14.2	12.3						11.2	
Level of Service				B	B						B	
Approach Delay (s)		0.0			13.0			0.0			11.2	
Approach LOS		A			B			A			B	
Intersection Summary												
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			30.0%		ICU Level of Service			A				
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

77: Franklin St & 7th St

7/22/2013



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↵			↑↑		
Volume (veh/h)	262	0	0	503	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)	291	0	0	559	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	0.91					
vC, conflicting volume	359	80	22			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	106	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 %	63	100	100			
cM capacity (veh/h)	792	904	1564			

Direction, Lane #	EB 1	NB 1	NB 2
Volume Total	291	279	279
Volume Left	291	0	0
Volume Right	0	0	0
cSH	792	1700	1700
Volume to Capacity	0.37	0.16	0.16
Queue Length 95th (ft)	42	0	0
Control Delay (s)	12.2	0.0	0.0
Lane LOS	B		
Approach Delay (s)	12.2	0.0	
Approach LOS	B		

Intersection Summary			
Average Delay		4.2	
Intersection Capacity Utilization		38.6%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

89: 9th Street & Vine Street

7/22/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑					↗
Volume (veh/h)	373	0	0	0	0	133
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	140
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	82
cM capacity (veh/h)			1153		546	780

Direction, Lane #	EB 1	EB 2	NB 1
Volume Total	196	196	140
Volume Left	0	0	0
Volume Right	0	0	140
cSH	1700	1700	780
Volume to Capacity	0.12	0.12	0.18
Queue Length 95th (ft)	0	0	16
Control Delay (s)	0.0	0.0	10.6
Lane LOS			B
Approach Delay (s)	0.0		10.6
Approach LOS			B

Intersection Summary			
Average Delay		2.8	
Intersection Capacity Utilization	28.4%		ICU Level of Service A
Analysis Period (min)		15	

Queues

96: 7th St & Vine Street

7/22/2013



Lane Group	EBL	NBT
Lane Group Flow (vph)	754	832
v/c Ratio	0.31	0.36
Control Delay	11.9	18.3
Queue Delay	0.4	0.0
Total Delay	12.3	18.3
Queue Length 50th (ft)	67	119
Queue Length 95th (ft)	94	151
Internal Link Dist (ft)	60	232
Turn Bay Length (ft)		
Base Capacity (vph)	2411	2306
Starvation Cap Reductn	1063	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.56	0.36
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

96: 7th St & Vine Street

7/22/2013



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	←←←			→→→		
Volume (vph)	694	0	0	765	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		
Frft	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)	754	0	0	832	0	0
RTOR Reduction (vph)	133	0	0	0	0	0
Lane Group Flow (vph)	621	0	0	832	0	0
Confl. Peds. (#/hr)	10	10	10			
Bus Blockages (#/hr)	0	0	0	5	0	0
Turn Type	NA			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			c0.16		
v/s Ratio Perm						
v/c Ratio	0.27			0.36		
Uniform Delay, d1	17.0			17.7		
Progression Factor	1.00			1.00		
Incremental Delay, d2	0.3			0.4		
Delay (s)	17.2			18.2		
Level of Service	B			B		
Approach Delay (s)	17.2			18.2		0.0
Approach LOS	B			B		A













Intersection Summary

HCM 2000 Control Delay	17.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	96.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group













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

7/22/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑	↑		↑↑				
Volume (veh/h)	0	766	0	0	294	73	64	463	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			
Lanes	0	3	0	0	2	1	0	2	0			
Cap, veh/h	0	2771	0	0	1747	807	119	899	113			
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	5452	0	0	3436	1588	350	2633	331			
Grp Volume(v), veh/h	0	798	0	0	306	76	307	0	300			
Grp Sat Flow(s),veh/h/ln	0	1817	0	0	1718	1588	1603	0	1710			
Q Serve(g_s), s	0.0	7.7	0.0	0.0	4.6	2.4	10.9	0.0	9.9			
Cycle Q Clear(g_c), s	0.0	7.7	0.0	0.0	4.6	2.4	10.9	0.0	9.9			
Prop In Lane	0.00		0.00	0.00		1.00	0.22		0.19			
Lane Grp Cap(c), veh/h	0	2771	0	0	1747	807	548	0	584			
V/C Ratio(X)	0.00	0.29	0.00	0.00	0.18	0.09	0.56	0.00	0.51			
Avail Cap(c_a), veh/h	0	2771	0	0	1747	807	548	0	584			
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	15.5	0.0	0.0	14.2	13.3	22.4	0.0	21.9			
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.2	0.2	4.1	0.0	3.2			
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 Back of Q (95%), veh/ln	0.0	6.9	0.0	0.0	3.6	1.7	9.1	0.0	8.7			
Lane Grp Delay (d), s/veh	0.0	15.7	0.0	0.0	14.4	13.5	26.5	0.0	25.1			
Lane Grp LOS		B			B	B	C		C			
Approach Vol, veh/h		798			382			607				
Approach Delay, s/veh		15.7			14.2			25.8				
Approach LOS		B			B			C				
Timer												
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		9.7			6.6			12.9				
Green Ext Time (p_c), s		7.2			7.7			1.7				
Intersection Summary												
HCM 2010 Ctrl Delay					18.8							
HCM 2010 LOS					B							
Notes												













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

9/18/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑						↑↑	
Volume (veh/h)	0	665	241	0	427	0	0	0	0	77	909	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	183.1	189.0	0.0	176.6	0.0				181.4	179.5	181.4
Lanes	0	3	0	0	2	0				0	2	0
Cap, veh/h	0	1927	674	0	1855	0				77	953	51
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	3671	1284	0	3533	0				238	2933	156
Grp Volume(v), veh/h	0	705	258	0	454	0				614	0	484
Grp Sat Flow(s),veh/h/ln	0	1831	1292	0	1766	0				1783	0	1545
Q Serve(g_s), s	0.0	0.0	0.0	0.0	6.7	0.0				19.5	0.0	18.7
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	6.7	0.0				19.5	0.0	18.7
Prop In Lane	0.00		0.99	0.00		0.00				0.13		0.10
Lane Grp Cap(c), veh/h	0	1923	678	0	1855	0				579	0	502
V/C Ratio(X)	0.00	0.37	0.38	0.00	0.24	0.00				1.06	0.00	0.96
Avail Cap(c_a), veh/h	0	1923	678	0	1855	0				579	0	502
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	14.5	0.0				26.8	0.0	26.4
Incr Delay (d2), s/veh	0.0	0.5	1.6	0.0	0.3	0.0				54.0	0.0	32.3
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 Back of Q (95%), veh/ln	0.0	0.3	0.5	0.0	5.7	0.0				25.9	0.0	18.0
Lane Grp Delay (d), s/veh	0.0	0.5	1.6	0.0	14.8	0.0				80.8	0.0	58.7
Lane Grp LOS		A	A		B					F		E
Approach Vol, veh/h		963			454						1098	
Approach Delay, s/veh		0.8			14.8						71.1	
Approach LOS		A			B						E	
Timer												
Assigned Phs		2			6						4	
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			8.7						21.5	
Green Ext Time (p_c), s		10.5			9.3						0.0	
Intersection Summary												
HCM 2010 Ctrl Delay			34.0									
HCM 2010 LOS			C									
Notes												

















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

9/18/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑			↑↑				
Volume (veh/h)	0	730	0	0	548	52	71	490	201	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			
Lanes	0	3	0	0	2	0	0	2	0			
Cap, veh/h	0	2731	0	0	1620	152	82	575	255			
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	5202	0	0	3085	289	254	1769	784			
Grp Volume(v), veh/h	0	820	0	0	347	327	556	0	301			
Grp Sat Flow(s),veh/h/ln	0	1734	0	0	1744	1631	1765	0	1042			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	18.9	0.0	17.1			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	18.9	0.0	17.1			
Prop In Lane	0.00		0.00	0.00		0.18	0.14		0.75			
Lane Grp Cap(c), veh/h	0	2731	0	0	915	856	573	0	339			
V/C Ratio(X)	0.00	0.30	0.00	0.00	0.38	0.38	0.97	0.00	0.89			
Avail Cap(c_a), veh/h	0	2731	0	0	915	856	573	0	339			
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	26.5	0.0	25.7			
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	1.2	1.3	31.0	0.0	27.2			
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 Back of Q (95%), veh/ln	0.0	0.1	0.0	0.0	0.5	0.6	20.0	0.0	11.8			
Lane Grp Delay (d), s/veh	0.0	0.3	0.0	0.0	1.2	1.3	57.5	0.0	52.9			
Lane Grp LOS		A			A	A	E		D			
Approach Vol, veh/h		820			674			857				
Approach Delay, s/veh		0.3			1.2			55.9				
Approach LOS		A			A			E				
Timer												
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			20.9				
Green Ext Time (p_c), s		10.7			10.7			0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				20.8								
HCM 2010 LOS				C								
Notes												

















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

7/22/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	280	503	0	0	330	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			
Lanes	1	2	0	0	2	0	0	2	0			
Cap, veh/h	547	1988	0	0	894	211	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	3670	0	0	2750	650	398	2605	331			
Grp Volume(v), veh/h	286	513	0	0	220	199	293	0	272			
Grp Sat Flow(s),veh/h/ln	1731	1835	0	0	1821	1580	1668	0	1666			
Q Serve(g_s), s	5.9	4.5	0.0	0.0	5.6	5.8	10.1	0.0	9.3			
Cycle Q Clear(g_c), s	5.9	4.5	0.0	0.0	5.6	5.8	10.1	0.0	9.3			
Prop In Lane	1.00		0.00	0.00		0.41	0.24		0.20			
Lane Grp Cap(c), veh/h	547	1988	0	0	592	514	514	0	514			
V/C Ratio(X)	0.52	0.26	0.00	0.00	0.37	0.39	0.57	0.00	0.53			
Avail Cap(c_a), veh/h	547	1988	0	0	592	514	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	9.8	7.3	0.0	0.0	15.5	15.5	23.1	0.0	22.8			
Incr Delay (d2), s/veh	3.5	0.3	0.0	0.0	1.8	2.2	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 Back of Q (95%), veh/ln	4.8	3.2	0.0	0.0	4.7	4.3	8.8	0.0	8.3			
Lane Grp Delay (d), s/veh	13.3	7.6	0.0	0.0	17.3	17.7	27.7	0.0	26.7			
Lane Grp LOS	B	A			B	B	C		C			
Approach Vol, veh/h		799			419			565				
Approach Delay, s/veh		9.7			17.5			27.2				
Approach LOS		A			B			C				
Timer												
Assigned Phs	5	2			6			8				
Phs Duration (G+Y+Rc), s	13.0	37.0			24.0			23.0				
Change Period (Y+Rc), s	5.0	5.0			5.0			5.0				
Max Green Setting (Gmax), s	8.0	32.0			19.0			18.0				
Max Q Clear Time (g_c+I1), s	7.9	6.5			7.8			12.1				
Green Ext Time (p_c), s	0.0	5.8			4.1			1.6				
Intersection Summary												
HCM 2010 Ctrl Delay				17.1								
HCM 2010 LOS				B								
Notes												



















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

7/22/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	557	93	0	415	0	0	0	0	73	281	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
Lanes	0	3	0	0	2	0				0	2	1
Cap, veh/h	0	2338	373	0	1855	0				234	956	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	4454	711	0	3533	0				720	2941	1094
Grp Volume(v), veh/h	0	480	204	0	437	0				194	179	112
Grp Sat Flow(s),veh/h/ln	0	1843	1479	0	1766	0				1813	1849	1094
Q Serve(g_s), s	0.0	4.3	4.6	0.0	0.0	0.0				4.9	4.3	4.6
Cycle Q Clear(g_c), s	0.0	4.3	4.6	0.0	0.0	0.0				4.9	4.3	4.6
Prop In Lane	0.00		0.48	0.00		0.00				0.40		1.00
Lane Grp Cap(c), veh/h	0	1935	777	0	1855	0				589	601	356
V/C Ratio(X)	0.00	0.25	0.26	0.00	0.24	0.00				0.33	0.30	0.31
Avail Cap(c_a), veh/h	0	1935	777	0	1855	0				589	601	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	7.8	7.9	0.0	0.0	0.0				15.3	15.1	15.2
Incr Delay (d2), s/veh	0.0	0.3	0.8	0.0	0.3	0.0				1.5	1.3	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 Back of Q (95%), veh/ln	0.0	3.1	2.9	0.0	0.1	0.0				4.1	3.7	2.5
Lane Grp Delay (d), s/veh	0.0	8.1	8.7	0.0	0.3	0.0				16.8	16.4	17.5
Lane Grp LOS		A	A		A					B	B	B
Approach Vol, veh/h		684			437						485	
Approach Delay, s/veh		8.3			0.3						16.8	
Approach LOS		A			A						B	
Timer												
Assigned Phs		2			6						4	
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		6.6			2.0						6.9	
Green Ext Time (p_c), s		7.1			7.5						2.0	
Intersection Summary												
HCM 2010 Ctrl Delay			8.7									
HCM 2010 LOS			A									
Notes												















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

7/22/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	674	107	64	318	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
Lanes	0	2	1	1	2	0				0	2	1
Cap, veh/h	0	1560	622	269	1545	0				292	1192	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	3670	1464	601	3635	0				687	2806	1010
Grp Volume(v), veh/h	0	709	113	67	335	0				312	322	77
Grp Sat Flow(s),veh/h/ln	0	1835	1464	601	1817	0				1636	1856	1010
Q Serve(g_s), s	0.0	10.6	4.1	5.7	3.5	0.0				10.5	9.5	4.0
Cycle Q Clear(g_c), s	0.0	10.6	4.1	16.3	3.5	0.0				10.5	9.5	4.0
Prop In Lane	0.00		1.00	1.00		0.00				0.42		1.00
Lane Grp Cap(c), veh/h	0	1560	622	269	1545	0				695	789	429
V/C Ratio(X)	0.00	0.45	0.18	0.25	0.22	0.00				0.45	0.41	0.18
Avail Cap(c_a), veh/h	0	1560	622	269	1545	0				695	789	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	19.4	16.6	19.1	10.9	0.0				19.3	18.9	16.6
Incr Delay (d2), s/veh	0.0	1.0	0.6	2.2	0.3	0.0				2.1	1.6	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 Back of Q (95%), veh/ln	0.0	9.3	2.8	1.7	2.6	0.0				8.7	8.7	2.0
Lane Grp Delay (d), s/veh	0.0	20.4	17.2	21.3	11.2	0.0				21.4	20.5	17.5
Lane Grp LOS		C	B	C	B					C	C	B
Approach Vol, veh/h		822			402						711	
Approach Delay, s/veh		19.9			12.9						20.6	
Approach LOS		B			B						C	
Timer												
Assigned Phs		2			6							4
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		12.6			18.3						12.5	
Green Ext Time (p_c), s		5.5			3.3						3.0	
Intersection Summary												
HCM 2010 Ctrl Delay			18.7									
HCM 2010 LOS			B									
Notes												
















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

7/22/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	0	357	66	63	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	178.7	0.0			
Lanes				0	2	0	0	2	0			
Cap, veh/h				0	1276	231	120	691	0			
Arrive On Green				0.00	0.43	0.43	0.43	0.43	0.00			
Sat Flow, veh/h				0	3003	544	0	1626	0			
Grp Volume(v), veh/h				0	229	216	66	423	0			
Grp Sat Flow(s),veh/h/ln				0	1843	1703	0	1626	0			
Q Serve(g_s), s				0.0	4.9	5.0	0.0	12.1	0.0			
Cycle Q Clear(g_c), s				0.0	4.9	5.0	25.5	12.1	0.0			
Prop In Lane				0.00		0.32	1.00		0.00			
Lane Grp Cap(c), veh/h				0	783	724	120	691	0			
V/C Ratio(X)				0.00	0.29	0.30	0.55	0.61	0.00			
Avail Cap(c_a), veh/h				0	783	724	120	691	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	11.3	11.4	30.0	13.4	0.0			
Incr Delay (d2), s/veh				0.0	0.9	1.1	16.9	4.0	0.0			
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0			
%ile Back of Q (95%), veh/ln				0.0	3.9	3.8	2.7	8.8	0.0			
Lane Grp Delay (d), s/veh				0.0	12.3	12.4	46.9	17.4	0.0			
Lane Grp LOS					B	B	D	B				
Approach Vol, veh/h					445			489				
Approach Delay, s/veh					12.3			21.4				
Approach LOS					B			C				
Timer												
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					7.0			27.5				
Green Ext Time (p_c), s					2.1			0.0				
Intersection Summary												
HCM 2010 Ctrl Delay					17.1							
HCM 2010 LOS					B							
Notes												
















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

7/22/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	27	741	0	0	0	0	0	477	134	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			
Lanes	0	5	0				0	2	1			
Cap, veh/h	120	2840	0				0	1575	619			
Arrive On Green	0.43	0.43	0.00				0.00	0.14	0.14			
Sat Flow, veh/h	0	6682	0				0	3706	1456			
Grp Volume(v), veh/h	29	797	0				0	513	144			
Grp Sat Flow(s),veh/h/ln	0	1670	0				0	1853	1456			
Q Serve(g_s), s	0.0	4.7	0.0				0.0	7.5	5.3			
Cycle Q Clear(g_c), s	25.5	4.7	0.0				0.0	7.5	5.3			
Prop In Lane	1.00		0.00				0.00		1.00			
Lane Grp Cap(c), veh/h	120	2840	0				0	1575	619			
V/C Ratio(X)	0.24	0.28	0.00				0.00	0.33	0.23			
Avail Cap(c_a), veh/h	120	2840	0				0	1575	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	30.0	11.3	0.0				0.0	18.0	17.1			
Incr Delay (d2), s/veh	4.7	0.2	0.0				0.0	0.6	0.9			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0			
%ile Back of Q (95%), veh/ln	1.0	3.2	0.0				0.0	6.9	3.7			
Lane Grp Delay (d), s/veh	34.7	11.5	0.0				0.0	18.6	18.0			
Lane Grp LOS	C	B						B	B			
Approach Vol, veh/h		826						657				
Approach Delay, s/veh		12.3						18.5				
Approach LOS		B						B				
Timer												
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		27.5						9.5				
Green Ext Time (p_c), s		0.0						3.3				
Intersection Summary												
HCM 2010 Ctrl Delay			15.0									
HCM 2010 LOS			B									
Notes												

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

7/22/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	565	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			
Lanes	0	2	0				0	2	1			
Cap, veh/h	61	1321	0				0	1575	563			
Arrive On Green	0.43	0.43	0.00				0.00	0.43	0.43			
Sat Flow, veh/h	0	3108	0				0	3706	1324			
Grp Volume(v), veh/h	274	331	0				0	404	36			
Grp Sat Flow(s),veh/h/ln	1405	1703	0				0	1853	1324			
Q Serve(g_s), s	0.0	8.3	0.0				0.0	4.2	1.0			
Cycle Q Clear(g_c), s	25.5	8.3	0.0				0.0	4.2	1.0			
Prop In Lane	0.01		0.00				0.00		1.00			
Lane Grp Cap(c), veh/h	658	724	0				0	1575	563			
V/C Ratio(X)	0.42	0.46	0.00				0.00	0.26	0.06			
Avail Cap(c_a), veh/h	658	724	0				0	1575	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	12.3	0.0				0.0	11.1	10.2			
Incr Delay (d2), s/veh	1.9	2.1	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 Back of Q (95%), veh/ln	5.0	6.4	0.0				0.0	3.3	0.6			
Lane Grp Delay (d), s/veh	13.9	14.4	0.0				0.0	11.5	10.4			
Lane Grp LOS	B	B						B	B			
Approach Vol, veh/h		605						440				
Approach Delay, s/veh		14.2						11.4				
Approach LOS		B						B				
Timer												
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		27.5						6.2				
Green Ext Time (p_c), s		0.0						2.3				
Intersection Summary												
HCM 2010 Ctrl Delay			13.0									
HCM 2010 LOS			B									
Notes												

SATURDAY CASINO PEAK HOUR LOS

Queues

2: 7th St & Chestnut St

7/22/2013



Lane Group	EBT	NBT
Lane Group Flow (vph)	631	391
v/c Ratio	0.78	0.30
Control Delay	27.3	23.1
Queue Delay	0.0	0.0
Total Delay	27.3	23.1
Queue Length 50th (ft)	210	74
Queue Length 95th (ft)	#313	113
Internal Link Dist (ft)	336	210
Turn Bay Length (ft)		
Base Capacity (vph)	810	1296
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.78	0.30

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

2: 7th St & Chestnut St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕						↕↕				
Volume (vph)	230	382	0	0	0	0	0	288	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						0.96				
Flt Protected		0.98						1.00				
Satd. Flow (prot)		1907						3051				
Flt Permitted		0.98						1.00				
Satd. Flow (perm)		1907						3051				
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)	237	394	0	0	0	0	0	297	94	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	631	0	0	0	0	0	391	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)		810						1296				
v/s Ratio Prot								c0.13				
v/s Ratio Perm		0.33										
v/c Ratio		0.78						0.30				
Uniform Delay, d1		14.8						11.4				
Progression Factor		1.37						1.94				
Incremental Delay, d2		5.5						0.5				
Delay (s)		25.8						22.6				
Level of Service		C						C				
Approach Delay (s)		25.8			0.0			22.6			0.0	
Approach LOS		C			A			C			A	
Intersection Summary												
HCM 2000 Control Delay			24.6					HCM 2000 Level of Service			C	
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			60.0					Sum of lost time (s)		9.0		
Intersection Capacity Utilization			40.7%					ICU Level of Service		A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

4: 8th St & Chestnut St

7/22/2013



Lane Group	EBT	SBT
Lane Group Flow (vph)	503	915
v/c Ratio	0.62	0.70
Control Delay	14.5	10.1
Queue Delay	0.0	0.0
Total Delay	14.5	10.1
Queue Length 50th (ft)	92	66
Queue Length 95th (ft)	181	m66
Internal Link Dist (ft)	398	143
Turn Bay Length (ft)		
Base Capacity (vph)	808	1298
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.62	0.70

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

4: 8th St & Chestnut St

7/22/2013



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	273	532	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									0.96		
Frt		0.96									1.00		
Flt Protected		1.00									0.98		
Satd. Flow (prot)		1903									3056		
Flt Permitted		1.00									0.98		
Satd. Flow (perm)		1903									3056		
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	310	605	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	915	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									1298		
v/s Ratio Prot		c0.26											
v/s Ratio Perm											0.30		
v/c Ratio		0.62									0.70		
Uniform Delay, d1		13.5									14.2		
Progression Factor		0.81									0.58		
Incremental Delay, d2		3.1									1.7		
Delay (s)		14.0									9.9		
Level of Service		B									A		
Approach Delay (s)		14.0			0.0			0.0			9.9		
Approach LOS		B			A			A			A		
Intersection Summary													
HCM 2000 Control Delay			11.3									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.66										
Actuated Cycle Length (s)			60.0									Sum of lost time (s)	9.0
Intersection Capacity Utilization			47.7%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Queues
6: 9th St & Chestnut St

7/22/2013



Lane Group	EBT	NBT
Lane Group Flow (vph)	499	646
v/c Ratio	0.53	0.55
Control Delay	12.9	12.1
Queue Delay	0.0	0.0
Total Delay	12.9	12.1
Queue Length 50th (ft)	61	52
Queue Length 95th (ft)	125	66
Internal Link Dist (ft)	343	223
Turn Bay Length (ft)		
Base Capacity (vph)	940	1165
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.53	0.55
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

6: 9th St & Chestnut St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕						↕↕				
Volume (vph)	76	338	0	0	0	0	0	419	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)		1980						3108				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		1980						3108				
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)	92	407	0	0	0	0	0	505	141	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	499	0	0	0	0	0	646	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)		940						1165				
v/s Ratio Prot								c0.21				
v/s Ratio Perm		0.25										
v/c Ratio		0.53						0.55				
Uniform Delay, d1		11.1						14.8				
Progression Factor		0.96						0.67				
Incremental Delay, d2		1.9						1.9				
Delay (s)		12.5						11.8				
Level of Service		B						B				
Approach Delay (s)		12.5			0.0			11.8			0.0	
Approach LOS		B			A			B			A	
Intersection Summary												
HCM 2000 Control Delay			12.1					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			45.4%					ICU Level of Service		A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues
7: 9th St & Race St

7/22/2013



Lane Group	EBT	NBT
Lane Group Flow (vph)	469	805
v/c Ratio	0.34	0.90dr
Control Delay	12.5	23.4
Queue Delay	0.0	0.0
Total Delay	12.5	23.4
Queue Length 50th (ft)	57	111
Queue Length 95th (ft)	88	165
Internal Link Dist (ft)	674	621
Turn Bay Length (ft)		
Base Capacity (vph)	1368	1149
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.34	0.70

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

7: 9th St & Race St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕						↕↕				
Volume (vph)	120	330	0	0	0	0	0	273	500	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						0.94				
Flpb, ped/bikes		0.98						1.00				
Frt		1.00						0.90				
Flt Protected		0.99						1.00				
Satd. Flow (prot)		3219						2814				
Flt Permitted		0.99						1.00				
Satd. Flow (perm)		3219						2814				
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	344	0	0	0	0	0	284	521	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	469	0	0	0	0	0	805	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						1149				
v/s Ratio Prot								c0.29				
v/s Ratio Perm		0.15										
v/c Ratio		0.34						0.90dr				
Uniform Delay, d1		11.6						14.7				
Progression Factor		1.00						1.33				
Incremental Delay, d2		0.7						3.3				
Delay (s)		12.3						22.8				
Level of Service		B						C				
Approach Delay (s)		12.3			0.0			22.8			0.0	
Approach LOS		B			A			C			A	

Intersection Summary

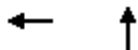
HCM 2000 Control Delay	18.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	49.0%	ICU Level of Service	A
Analysis Period (min)	15		

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

c Critical Lane Group

Queues
8: 7th St & Walnut St

7/22/2013



Lane Group	WBT	NBT
Lane Group Flow (vph)	560	626
v/c Ratio	0.41	0.48
Control Delay	22.2	14.6
Queue Delay	0.0	0.0
Total Delay	22.2	14.6
Queue Length 50th (ft)	102	84
Queue Length 95th (ft)	133	112
Internal Link Dist (ft)	382	135
Turn Bay Length (ft)		
Base Capacity (vph)	1358	1303
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.41	0.48
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

8: 7th St & Walnut St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑			↑↑					
Volume (vph)	0	0	0	0	383	82	128	392	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)					3076			3192					
Flt Permitted					1.00			0.99					
Satd. Flow (perm)					3076			3192					
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	461	99	154	472	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	560	0	0	626	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)					1358			1303					
v/s Ratio Prot					0.18								
v/s Ratio Perm								0.20					
v/c Ratio					0.41			0.48					
Uniform Delay, d1					11.4			13.1					
Progression Factor					1.82			1.00					
Incremental Delay, d2					0.9			1.3					
Delay (s)					21.7			14.3					
Level of Service					C			B					
Approach Delay (s)		0.0			21.7			14.3			0.0		
Approach LOS		A			C			B			A		
Intersection Summary													
HCM 2000 Control Delay			17.8									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.44										
Actuated Cycle Length (s)			60.0									Sum of lost time (s)	9.0
Intersection Capacity Utilization			39.7%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Queues
9: 8th St & Vine Street

7/22/2013



Lane Group	EBT	EBR	SBT	SEL	SER
Lane Group Flow (vph)	326	214	593	394	357
v/c Ratio	0.48	0.44	0.62	0.43	0.45
Control Delay	35.7	36.1	44.1	15.9	16.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	35.7	36.1	44.1	15.9	16.6
Queue Length 50th (ft)	88	61	128	135	130
Queue Length 95th (ft)	130	100	167	206	206
Internal Link Dist (ft)	164		246	146	
Turn Bay Length (ft)					
Base Capacity (vph)	675	482	958	917	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	0.48	0.44	0.62	0.43	0.45

Intersection Summary

HCM Signalized Intersection Capacity Analysis

9: 8th St & Vine Street

7/22/2013



Movement	EBT	EBR	SBL	SBT	SEL	SER
Lane Configurations	↑↑	↑↑		↑↑↑	↑↑	↑
Volume (vph)	300	197	65	480	285	406
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	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00
Fr _t	1.00	0.85		1.00	0.97	0.85
Fl _t Protected	1.00	1.00		0.99	0.96	1.00
Satd. Flow (prot)	3687	2633		5227	1814	1567
Fl _t Permitted	1.00	1.00		0.99	0.96	1.00
Satd. Flow (perm)	3687	2633		5227	1814	1567
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	326	214	71	522	310	441
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	326	214	0	593	394	357
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	NA	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	917	792
v/s Ratio Prot	c0.09	0.08		c0.11	0.22	c0.23
v/s Ratio Perm						
v/c Ratio	0.48	0.44		0.62	0.43	0.45
Uniform Delay, d ₁	32.9	32.7		33.9	14.1	14.2
Progression Factor	1.00	1.00		1.21	1.00	1.00
Incremental Delay, d ₂	2.5	2.9		2.9	1.5	1.9
Delay (s)	35.4	35.6		43.9	15.5	16.1
Level of Service	D	D		D	B	B
Approach Delay (s)	35.5			43.9	15.8	
Approach LOS	D			D	B	

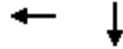
Intersection Summary

HCM 2000 Control Delay	30.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Queues

13: 6th St & Arch St

7/22/2013



Lane Group	WBT	SBT
Lane Group Flow (vph)	403	689
v/c Ratio	0.30	0.36
Control Delay	11.0	5.6
Queue Delay	0.0	0.0
Total Delay	11.0	5.6
Queue Length 50th (ft)	61	23
Queue Length 95th (ft)	86	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
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

13: 6th St & Arch St

7/22/2013

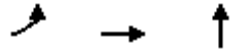


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑						↑↑↑	
Volume (vph)	0	0	0	67	271	0	0	0	0	0	482	97
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)					4.5						4.5	
Lane Util. Factor					0.95						0.91	
Frbp, ped/bikes					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	323	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	403	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					0.29						0.36	
Uniform Delay, d1					11.3						11.7	
Progression Factor					0.90						0.43	
Incremental Delay, d2					0.5						0.5	
Delay (s)					10.8						5.5	
Level of Service					B						A	
Approach Delay (s)		0.0			10.8			0.0			5.5	
Approach LOS		A			B			A			A	
Intersection Summary												
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			32.4%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												

Queues

14: 5th St & Chestnut St

7/22/2013



Lane Group	EBL	EBT	NBT
Lane Group Flow (vph)	121	332	456
v/c Ratio	0.19	0.46	0.33
Control Delay	12.8	15.8	23.0
Queue Delay	0.0	0.0	0.0
Total Delay	12.8	15.8	23.0
Queue Length 50th (ft)	24	72	86
Queue Length 95th (ft)	m41	103	130
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

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗						↕	↗	↘	↕	↖
Volume (vph)	111	305	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	332	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	332	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		c0.19						c0.14				
v/s Ratio Perm	0.08											
v/c Ratio	0.19	0.46						0.33				
Uniform Delay, d1	10.8	12.3						11.5				
Progression Factor	1.09	1.09						1.91				
Incremental Delay, d2	0.6	1.9						0.6				
Delay (s)	12.3	15.3						22.6				
Level of Service	B	B						C				
Approach Delay (s)		14.5			0.0			22.6			0.0	
Approach LOS		B			A			C			A	

Intersection Summary

HCM 2000 Control Delay	18.6	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	64.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

16: Site Driveway & 8th St

9/18/2013



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations					↑↑	
Volume (veh/h)	0	0	0	0	801	468
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	871	509
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	1420	985	1674			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	753	134	1115			
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)	243	626	438			
Direction, Lane #	SB 1	SB 2				
Volume Total	580	799				
Volume Left	0	0				
Volume Right	0	509				
cSH	1700	1700				
Volume to Capacity	0.34	0.47				
Queue Length 95th (ft)	0	0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0					
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			43.8%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

17: 9th St & Site Driveway

7/22/2013



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↗↗			
Volume (veh/h)	0	470	495	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	511	538	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	0.97	0.97			0.97	
vC, conflicting volume	538	269			538	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	450	171			450	
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	37			100	
cM capacity (veh/h)	519	814			1069	

Direction, Lane #	WB 1	NB 1	NB 2
Volume Total	511	269	269
Volume Left	0	0	0
Volume Right	511	0	0
cSH	814	1700	1700
Volume to Capacity	0.63	0.16	0.16
Queue Length 95th (ft)	113	0	0
Control Delay (s)	16.6	0.0	0.0
Lane LOS	C		
Approach Delay (s)	16.6	0.0	
Approach LOS	C		

Intersection Summary			
Average Delay		8.1	
Intersection Capacity Utilization		45.4%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

18: 8th St & Parking Garage

7/22/2013



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	157	0	0	0	156	645
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)	171	0	0	0	170	701
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	0.85					
vC, conflicting volume	690	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	275	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			90	
cM capacity (veh/h)	515	1084			1622	

Direction, Lane #	WB 1	SB 1	SB 2
Volume Total	171	403	467
Volume Left	171	170	0
Volume Right	0	0	0
cSH	515	1622	1700
Volume to Capacity	0.33	0.10	0.27
Queue Length 95th (ft)	36	9	0
Control Delay (s)	15.4	3.7	0.0
Lane LOS	C	A	
Approach Delay (s)	15.4	1.7	
Approach LOS	C		

Intersection Summary			
Average Delay		3.9	
Intersection Capacity Utilization		34.8%	ICU Level of Service A
Analysis Period (min)		15	

* User Entered Value

Queues

22: 10th St & Chestnut St

7/22/2013



Lane Group	EBT	SBT
Lane Group Flow (vph)	504	373
v/c Ratio	0.64	0.27
Control Delay	18.3	8.3
Queue Delay	0.0	0.0
Total Delay	18.3	8.3
Queue Length 50th (ft)	114	26
Queue Length 95th (ft)	174	32
Internal Link Dist (ft)	521	472
Turn Bay Length (ft)		
Base Capacity (vph)	784	1402
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.64	0.27
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

22: 10th St & Chestnut St

7/22/2013

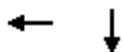


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑									↑↑		
Volume (vph)	0	331	98	0	0	0	0	0	0	32	285	0	
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	
Total Lost time (s)		4.5									4.5		
Lane Util. Factor		*0.60									0.95		
Frpb, ped/bikes		0.97									1.00		
Flpb, ped/bikes		1.00									0.99		
Frt		0.97									1.00		
Flt Protected		1.00									0.99		
Satd. Flow (prot)		1845									3301		
Flt Permitted		1.00									0.99		
Satd. Flow (perm)		1845									3301		
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	389	115	0	0	0	0	0	0	38	335	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	504	0	0	0	0	0	0	0	0	373	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									1402		
v/s Ratio Prot		c0.27											
v/s Ratio Perm											0.11		
v/c Ratio		0.64									0.27		
Uniform Delay, d1		13.6									11.2		
Progression Factor		1.00									0.69		
Incremental Delay, d2		4.0									0.4		
Delay (s)		17.7									8.2		
Level of Service		B									A		
Approach Delay (s)		17.7			0.0			0.0			8.2		
Approach LOS		B			A			A			A		
Intersection Summary													
HCM 2000 Control Delay			13.6									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			34.2%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Queues

24: 10th St & Walnut St

7/22/2013



Lane Group	WBT	SBT
Lane Group Flow (vph)	550	389
v/c Ratio	0.41	0.30
Control Delay	8.1	17.1
Queue Delay	0.0	0.0
Total Delay	8.1	17.1
Queue Length 50th (ft)	20	57
Queue Length 95th (ft)	28	84
Internal Link Dist (ft)	360	507
Turn Bay Length (ft)		
Base Capacity (vph)	1335	1298
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.41	0.30
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

24: 10th St & Walnut St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑						↑↑	
Volume (vph)	0	0	0	49	473	0	0	0	0	0	258	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						0.95	
Flpb, ped/bikes					0.99						1.00	
Frt					1.00						0.95	
Flt Protected					1.00						1.00	
Satd. Flow (prot)					3143						3054	
Flt Permitted					1.00						1.00	
Satd. Flow (perm)					3143						3054	
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	52	498	0	0	0	0	0	272	117
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	550	0	0	0	0	0	389	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						1297	
v/s Ratio Prot											c0.13	
v/s Ratio Perm					0.17							
v/c Ratio					0.41						0.30	
Uniform Delay, d1					12.0						11.4	
Progression Factor					0.59						1.43	
Incremental Delay, d2					0.9						0.6	
Delay (s)					8.0						16.9	
Level of Service					A						B	
Approach Delay (s)		0.0			8.0			0.0			16.9	
Approach LOS		A			A			A			B	
Intersection Summary												
HCM 2000 Control Delay			11.7		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			38.5%		ICU Level of Service				A			
Analysis Period (min)			15									
c Critical Lane Group												

Queues

25: 8th St & Arch St

7/22/2013



Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	397	819	136
v/c Ratio	0.30	0.61	0.26
Control Delay	8.4	18.6	16.9
Queue Delay	0.0	0.0	0.0
Total Delay	8.4	18.6	16.9
Queue Length 50th (ft)	37	95	28
Queue Length 95th (ft)	51	150	66
Internal Link Dist (ft)	373	120	
Turn Bay Length (ft)			
Base Capacity (vph)	1324	1341	533
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.30	0.61	0.26
Intersection Summary			

HCM Signalized Intersection Capacity Analysis

25: 8th St & Arch St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕↕						↕↕	↗
Volume (vph)	0	0	0	123	250	0	0	0	0	0	770	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)					3116						3286	1306
Flt Permitted					0.98						1.00	1.00
Satd. Flow (perm)					3116						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	131	266	0	0	0	0	0	819	136
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	397	0	0	0	0	0	819	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)					1324						1341	533
v/s Ratio Prot											c0.25	
v/s Ratio Perm					0.13							0.10
v/c Ratio					0.30						0.61	0.26
Uniform Delay, d1					11.4						14.0	11.7
Progression Factor					0.68						1.17	1.30
Incremental Delay, d2					0.6						1.8	1.0
Delay (s)					8.2						18.2	16.2
Level of Service					A						B	B
Approach Delay (s)		0.0			8.2			0.0			17.9	
Approach LOS		A			A			A			B	
Intersection Summary												
HCM 2000 Control Delay			15.1								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)	10.0
Intersection Capacity Utilization			43.5%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												

Queues

26: 7th St & Arch St

7/22/2013



Lane Group	WBT	WBR	NBT
Lane Group Flow (vph)	284	112	606
v/c Ratio	0.21	0.18	0.46
Control Delay	11.9	12.4	12.3
Queue Delay	0.0	0.0	0.0
Total Delay	11.9	12.4	12.3
Queue Length 50th (ft)	43	33	106
Queue Length 95th (ft)	75	71	147
Internal Link Dist (ft)	389		653
Turn Bay Length (ft)			
Base Capacity (vph)	1356	609	1307
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	0.46
Intersection Summary			

HCM Signalized Intersection Capacity Analysis

26: 7th St & Arch St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑	↑		↑↑					
Volume (vph)	0	0	0	0	267	105	119	450	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					
Fr t					1.00	0.85		1.00					
Fl t Protected					1.00	1.00		0.99					
Satd. Flow (prot)					3192	1434		3200					
Fl t Permitted					1.00	1.00		0.99					
Satd. Flow (perm)					3192	1434		3200					
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	284	112	127	479	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	284	112	0	606	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		1306					
v/s Ratio Prot					c0.09								
v/s Ratio Perm						0.08		0.19					
v/c Ratio					0.21	0.18		0.46					
Uniform Delay, d1					10.9	10.8		13.0					
Progression Factor					1.05	1.05		0.85					
Incremental Delay, d2					0.3	0.6		1.1					
Delay (s)					11.8	12.0		12.1					
Level of Service					B	B		B					
Approach Delay (s)		0.0			11.8			12.1			0.0		
Approach LOS		A			B			B			A		
Intersection Summary													
HCM 2000 Control Delay			12.0		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)						10.0		
Intersection Capacity Utilization			35.0%		ICU Level of Service						A		
Analysis Period (min)			15										
c Critical Lane Group													

Queues

28: 9th St & Arch St

7/22/2013



Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	440	184	667
v/c Ratio	0.33	0.29	0.50
Control Delay	13.7	23.0	24.4
Queue Delay	0.0	0.0	0.0
Total Delay	13.7	23.0	24.4
Queue Length 50th (ft)	44	59	117
Queue Length 95th (ft)	75	m66	m116
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	0.29	0.50

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

28: 9th St & Arch St

7/22/2013

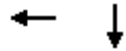


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑		↑	↑↑					
Volume (vph)	0	0	0	0	334	58	164	594	0	0	0	0	
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	
Total Lost time (s)					5.0		5.0	5.0					
Lane Util. Factor					0.95		1.00	0.95					
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	184	667	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	184	667	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			c0.20					
v/s Ratio Perm							0.12						
v/c Ratio					0.33		0.29	0.50					
Uniform Delay, d1					11.5		11.9	13.2					
Progression Factor					1.11		1.81	1.77					
Incremental Delay, d2					0.7		0.6	0.6					
Delay (s)					13.5		22.2	24.0					
Level of Service					B		C	C					
Approach Delay (s)		0.0			13.5			23.6			0.0		
Approach LOS		A			B			C			A		
Intersection Summary													
HCM 2000 Control Delay			20.2		HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio			0.41										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				10.0				
Intersection Capacity Utilization			36.7%		ICU Level of Service				A				
Analysis Period (min)			15										
c Critical Lane Group													

Queues

29: 10th St & Arch St

7/22/2013



Lane Group	WBT	SBT
Lane Group Flow (vph)	547	461
v/c Ratio	0.43	0.39
Control Delay	11.0	13.8
Queue Delay	0.0	0.0
Total Delay	11.0	13.8
Queue Length 50th (ft)	53	59
Queue Length 95th (ft)	76	92
Internal Link Dist (ft)	371	412
Turn Bay Length (ft)		
Base Capacity (vph)	1265	1178
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.43	0.39
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

29: 10th St & Arch St

7/22/2013

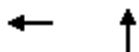


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑						↑↑	
Volume (vph)	0	0	0	132	372	0	0	0	0	0	270	155
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)					5.0						5.0	
Lane Util. Factor					0.95						0.95	
Frbp, ped/bikes					1.00						0.92	
Flpb, ped/bikes					0.95						1.00	
Frt					1.00						0.95	
Flt Protected					0.99						1.00	
Satd. Flow (prot)					2978						2887	
Flt Permitted					0.99						1.00	
Satd. Flow (perm)					2978						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	143	404	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	547	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)					1265						1178	
v/s Ratio Prot											c0.16	
v/s Ratio Perm					0.18							
v/c Ratio					0.43						0.39	
Uniform Delay, d1					12.2						12.5	
Progression Factor					0.80						1.00	
Incremental Delay, d2					1.0						1.0	
Delay (s)					10.7						13.5	
Level of Service					B						B	
Approach Delay (s)		0.0			10.7			0.0			13.5	
Approach LOS		A			B			A			B	
Intersection Summary												
HCM 2000 Control Delay			12.0								HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.41									
Actuated Cycle Length (s)			60.0							10.0		
Intersection Capacity Utilization			41.4%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												

Queues

33: 9th St & Walnut St

7/22/2013



Lane Group	WBT	NBT
Lane Group Flow (vph)	581	469
v/c Ratio	0.46	0.35
Control Delay	9.5	12.6
Queue Delay	0.0	0.0
Total Delay	9.5	12.6
Queue Length 50th (ft)	24	57
Queue Length 95th (ft)	33	88
Internal Link Dist (ft)	368	360
Turn Bay Length (ft)		
Base Capacity (vph)	1260	1328
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.46	0.35
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

33: 9th St & Walnut St

7/22/2013

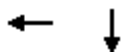


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑			↑↑				
Volume (vph)	0	0	0	0	458	88	94	347	0	0	0	0
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)					4.5			4.5				
Lane Util. Factor					0.95			0.95				
Frbp, ped/bikes					0.97			1.00				
Flpb, ped/bikes					1.00			0.95				
Frt					0.98			1.00				
Flt Protected					1.00			0.99				
Satd. Flow (prot)					2965			3127				
Flt Permitted					1.00			0.99				
Satd. Flow (perm)					2965			3127				
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	487	94	100	369	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	581	0	0	469	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)					1260			1328				
v/s Ratio Prot					c0.20							
v/s Ratio Perm								0.15				
v/c Ratio					0.46			0.35				
Uniform Delay, d1					12.3			11.7				
Progression Factor					0.67			1.00				
Incremental Delay, d2					1.1			0.7				
Delay (s)					9.3			12.4				
Level of Service					A			B				
Approach Delay (s)		0.0			9.3			12.4			0.0	
Approach LOS		A			A			B			A	
Intersection Summary												
HCM 2000 Control Delay			10.7					HCM 2000 Level of Service		B		
HCM 2000 Volume to Capacity ratio			0.41									
Actuated Cycle Length (s)			60.0					Sum of lost time (s)		9.0		
Intersection Capacity Utilization			40.1%					ICU Level of Service		A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

34: Walnut St & 8th St

7/22/2013



Lane Group	WBT	SBT
Lane Group Flow (vph)	568	440
v/c Ratio	0.43	0.37
Control Delay	11.8	4.3
Queue Delay	0.0	0.0
Total Delay	11.8	4.3
Queue Length 50th (ft)	65	16
Queue Length 95th (ft)	107	m23
Internal Link Dist (ft)	353	489
Turn Bay Length (ft)		
Base Capacity (vph)	1321	1204
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.43	0.37

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

34: Walnut St & 8th St

7/22/2013

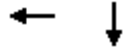


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↕↕						↕↕		
Volume (vph)	0	0	0	67	445	0	0	0	0	0	290	106	
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	
Total Lost time (s)					4.5						4.5		
Lane Util. Factor					0.95						0.95		
Frbp, 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)					3107						2832		
Flt Permitted					0.99						1.00		
Satd. Flow (perm)					3107						2832		
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	494	0	0	0	0	0	322	118	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	568	0	0	0	0	0	440	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)					1320						1203		
v/s Ratio Prot											c0.16		
v/s Ratio Perm					0.18								
v/c Ratio					0.43						0.37		
Uniform Delay, d1					12.1						11.7		
Progression Factor					0.88						0.30		
Incremental Delay, d2					0.9						0.6		
Delay (s)					11.6						4.2		
Level of Service					B						A		
Approach Delay (s)		0.0			11.6			0.0			4.2		
Approach LOS		A			B			A			A		
Intersection Summary													
HCM 2000 Control Delay			8.4		HCM 2000 Level of Service						A		
HCM 2000 Volume to Capacity ratio			0.40										
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

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

7/22/2013



Lane Group	WBT	SBT
Lane Group Flow (vph)	443	565
v/c Ratio	0.37	0.40
Control Delay	10.1	10.4
Queue Delay	0.0	0.0
Total Delay	10.1	10.4
Queue Length 50th (ft)	71	62
Queue Length 95th (ft)	96	108
Internal Link Dist (ft)	357	488
Turn Bay Length (ft)		
Base Capacity (vph)	1196	1408
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.37	0.40
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

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

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑						↑↑	
Volume (vph)	0	0	0	48	346	0	0	0	0	0	392	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)					3190						2964	
Flt Permitted					0.99						1.00	
Satd. Flow (perm)					3190						2964	
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	389	0	0	0	0	0	440	125
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	443	0	0	0	0	0	565	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)					1196						1407	
v/s Ratio Prot											c0.19	
v/s Ratio Perm					0.14							
v/c Ratio					0.37						0.40	
Uniform Delay, d1					13.6						10.2	
Progression Factor					0.67						0.92	
Incremental Delay, d2					0.8						0.8	
Delay (s)					9.9						10.2	
Level of Service					A						B	
Approach Delay (s)		0.0			9.9			0.0			10.2	
Approach LOS		A			A			A			B	
Intersection Summary												
HCM 2000 Control Delay			10.1		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			38.0%		ICU Level of Service				A			
Analysis Period (min)			15									
c Critical Lane Group												

Queues

40: 5th St & Arch St

7/22/2013



Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	262	85	601
v/c Ratio	0.20	0.14	0.43
Control Delay	11.3	9.3	9.8
Queue Delay	0.0	0.0	0.0
Total Delay	11.3	9.3	9.8
Queue Length 50th (ft)	30	13	55
Queue Length 95th (ft)	50	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

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑		↑	↑↑					
Volume (vph)	0	0	0	0	196	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)					3154		1395	3279					
Flt Permitted					1.00		0.95	1.00					
Satd. Flow (perm)					3154		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	200	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	262	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	0.72					
Incremental Delay, d2					0.3		0.4	0.8					
Delay (s)					11.1		9.0	9.6					
Level of Service					B		A	A					
Approach Delay (s)		0.0			11.1			9.5			0.0		
Approach LOS		A			B			A			A		
Intersection Summary													
HCM 2000 Control Delay			10.0		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			31.6%		ICU Level of Service				A				
Analysis Period (min)			15										
c Critical Lane Group													

Queues

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

7/22/2013



Lane Group	EBT	EBR	SBL	SBT
Lane Group Flow (vph)	386	100	142	562
v/c Ratio	0.53	0.30	0.27	0.40
Control Delay	15.5	15.9	9.4	9.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	15.5	15.9	9.4	9.2
Queue Length 50th (ft)	78	33	25	53
Queue Length 95th (ft)	m126	m58	50	78
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	0.53	0.30	0.27	0.40

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

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑	↗							↘	↑↑		
Volume (vph)	0	328	85	0	0	0	0	0	0	121	478	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	386	100	0	0	0	0	0	0	142	562	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	386	100	0	0	0	0	0	0	142	562	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		0.53	0.30							0.27	0.40		
Uniform Delay, d1		12.8	11.4							11.2	11.9		
Progression Factor		1.01	1.17							0.71	0.69		
Incremental Delay, d2		2.0	1.6							1.2	0.8		
Delay (s)		14.9	14.9							9.1	9.1		
Level of Service		B	B							A	A		
Approach Delay (s)		14.9			0.0			0.0			9.1		
Approach LOS		B			A			A			A		
Intersection Summary													
HCM 2000 Control Delay			11.5									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			38.1%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Queues

46: Race St & 8th St

7/22/2013



Lane Group	EBT	SBL	SBT
Lane Group Flow (vph)	909	229	956
v/c Ratio	0.46	0.40	0.51
Control Delay	9.7	14.7	13.9
Queue Delay	0.0	0.0	0.0
Total Delay	9.7	14.7	13.9
Queue Length 50th (ft)	65	63	93
Queue Length 95th (ft)	102	122	129
Internal Link Dist (ft)	378		453
Turn Bay Length (ft)			
Base Capacity (vph)	1991	566	1858
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.46	0.40	0.51
Intersection Summary			

HCM Signalized Intersection Capacity Analysis

46: Race St & 8th St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑								↘	↑↑↑	
Volume (vph)	0	753	75	0	0	0	0	0	0	231	847	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)		4688								1332	4372	
Flt Permitted		1.00								0.95	1.00	
Satd. Flow (perm)		4688								1332	4372	
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	827	82	0	0	0	0	0	0	254	931	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	909	0	0	0	0	0	0	0	229	956	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)		1992								566	1858	
v/s Ratio Prot		c0.19										
v/s Ratio Perm										0.17	0.22	
v/c Ratio		0.46								0.40	0.51	
Uniform Delay, d1		12.3								12.0	12.7	
Progression Factor		0.72								1.00	1.00	
Incremental Delay, d2		0.6								2.1	1.0	
Delay (s)		9.5								14.1	13.7	
Level of Service		A								B	B	
Approach Delay (s)		9.5			0.0			0.0			13.8	
Approach LOS		A			A			A			B	
Intersection Summary												
HCM 2000 Control Delay			11.9								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			39.9%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												

Queues

49: 6th St & Race St

7/22/2013



Lane Group	EBT	EBR	SBT
Lane Group Flow (vph)	779	100	742
v/c Ratio	0.31	0.16	0.40
Control Delay	4.8	4.9	12.7
Queue Delay	0.0	0.0	0.0
Total Delay	4.8	4.9	12.7
Queue Length 50th (ft)	16	7	64
Queue Length 95th (ft)	21	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	0.31	0.16	0.40
Intersection Summary			

HCM Signalized Intersection Capacity Analysis

49: 6th St & Race St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		↑↑↑	↗								↖↑↑			
Volume (vph)	0	693	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			
Frpb, 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	779	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	779	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		c0.13												
v/s Ratio Perm			0.07								0.17			
v/c Ratio		0.31	0.16								0.40			
Uniform Delay, d1		11.4	10.7								11.9			
Progression Factor		0.39	0.39								1.00			
Incremental Delay, d2		0.3	0.6								0.6			
Delay (s)		4.8	4.7								12.6			
Level of Service		A	A								B			
Approach Delay (s)		4.8			0.0			0.0			12.6			
Approach LOS		A			A			A			B			
Intersection Summary														
HCM 2000 Control Delay			8.3									HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio			0.36											
Actuated Cycle Length (s)			60.0								9.0		Sum of lost time (s)	
Intersection Capacity Utilization			30.6%										ICU Level of Service	A
Analysis Period (min)			15											
c Critical Lane Group														

Queues
50: 3rd St & Race St

7/22/2013



Lane Group	EBT	NBT
Lane Group Flow (vph)	580	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
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

50: 3rd St & Race St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕						↕↕				
Volume (vph)	88	399	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	475	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	580	0	0	0	0	0	359	0	0	0	0
Confl. Peds. (#/hr)	63		63	131			131	113		113	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	

Intersection Summary

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	37.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Queues

59: 4th St & Race St

7/22/2013



Lane Group	EBT	SBT
Lane Group Flow (vph)	600	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)	1664	1222
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.36	0.33
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

59: 4th St & Race St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑									↑↑		
Volume (vph)	0	420	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	494	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	600	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		
Intersection Summary													
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			36.1%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Queues

63: Race St & 2nd Street

7/22/2013



Lane Group	EBT	SBT
Lane Group Flow (vph)	561	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
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

63: Race St & 2nd Street

7/22/2013

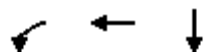


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑↑	
Volume (vph)	0	397	136	0	0	0	0	0	0	40	380	0
Ideal Flow (vphpl)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Total Lost time (s)		4.5									4.5	
Lane Util. Factor		0.95									0.95	
Frbp, ped/bikes		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	418	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	561	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	
Intersection Summary												
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 Street/8th St & Vine St

7/22/2013



Lane Group	WBL	WBT	SBT
Lane Group Flow (vph)	348	2219	588
v/c Ratio	0.17	0.58	0.42
Control Delay	11.8	18.6	26.0
Queue Delay	0.0	4.3	0.0
Total Delay	11.8	22.9	26.0
Queue Length 50th (ft)	71	320	97
Queue Length 95th (ft)	102	348	128
Internal Link Dist (ft)		254	248
Turn Bay Length (ft)			
Base Capacity (vph)	2013	3820	1396
Starvation Cap Reductn	0	1510	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.17	0.96	0.42
Intersection Summary			

HCM Signalized Intersection Capacity Analysis

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

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔	↑↑↑						↑↑↑	
Volume (vph)	0	0	0	310	1975	0	0	0	0	0	237	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						4570	
Flt Permitted				0.95	1.00						1.00	
Satd. Flow (perm)				3519	6676						4570	
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	348	2219	0	0	0	0	0	266	322
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	348	2219	0	0	0	0	0	588	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						1396	
v/s Ratio Prot					c0.33						c0.13	
v/s Ratio Perm				0.10								
v/c Ratio				0.17	0.58						0.42	
Uniform Delay, d1				9.1	12.3						24.9	
Progression Factor				1.26	1.45						1.00	
Incremental Delay, d2				0.2	0.6						0.9	
Delay (s)				11.7	18.4						25.8	
Level of Service				B	B						C	
Approach Delay (s)		0.0			17.5			0.0			25.8	
Approach LOS		A			B			A			C	
Intersection Summary												
HCM 2000 Control Delay			19.0		HCM 2000 Level of Service					B		
HCM 2000 Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			90.0		Sum of lost time (s)			11.0				
Intersection Capacity Utilization			47.0%		ICU Level of Service					A		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

71: 7th St & Vine St/Route 30

7/22/2013



Lane Group	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	1835	6	521	952
v/c Ratio	0.60	0.01	0.33	0.41
Control Delay	19.1	0.0	16.1	17.9
Queue Delay	0.3	0.0	1.5	2.3
Total Delay	19.5	0.0	17.6	20.2
Queue Length 50th (ft)	218	0	89	131
Queue Length 95th (ft)	255	0	126	165
Internal Link Dist (ft)	594			178
Turn Bay Length (ft)		500		
Base Capacity (vph)	3047	772	1574	2348
Starvation Cap Reductn	0	0	831	1218
Spillback Cap Reductn	567	0	4	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.74	0.01	0.70	0.84

Intersection Summary

HCM Signalized Intersection Capacity Analysis

71: 7th St & Vine St/Route 30

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑↑	↗	↘↘	↑↑↑↑				
Volume (vph)	0	0	0	0	1780	6	505	923	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				
Frt					1.00	0.85	1.00	1.00				
Flt Protected					1.00	1.00	0.95	1.00				
Satd. Flow (prot)					6610	1633	3541	5351				
Flt 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	1835	6	521	952	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	1835	3	501	952	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	0.14					
v/c Ratio					0.60	0.00	0.32	0.41				
Uniform Delay, d1					18.1	13.1	16.5	17.2				
Progression Factor					1.00	1.00	1.00	1.00				
Incremental Delay, d2					0.9	0.0	0.5	0.5				
Delay (s)					19.0	13.1	17.1	17.8				
Level of Service					B	B	B	B				
Approach Delay (s)		0.0			19.0			17.5			0.0	
Approach LOS		A			B			B			A	

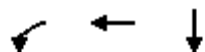
Intersection Summary

HCM 2000 Control Delay	18.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Queues

73: 8th St & Callowhill St

7/22/2013



Lane Group	WBL	WBT	SBT
Lane Group Flow (vph)	359	444	257
v/c Ratio	0.46	0.28	0.17
Control Delay	14.8	11.9	11.1
Queue Delay	0.0	0.0	0.0
Total Delay	14.8	11.9	11.1
Queue Length 50th (ft)	89	52	28
Queue Length 95th (ft)	145	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	0.46	0.28	0.17
Intersection Summary			

HCM Signalized Intersection Capacity Analysis

73: 8th St & Callowhill St

7/22/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↕						↕	↘
Volume (vph)	0	0	0	312	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	359	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	359	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				c0.20								
v/c Ratio				0.46	0.28						0.17	
Uniform Delay, d1				12.4	11.3						10.7	
Progression Factor				1.00	1.00						1.00	
Incremental Delay, d2				2.0	0.5						0.2	
Delay (s)				14.3	11.7						10.9	
Level of Service				B	B						B	
Approach Delay (s)		0.0			12.9			0.0			10.9	
Approach LOS		A			B			A			B	
Intersection Summary												
HCM 2000 Control Delay			12.4		HCM 2000 Level of Service					B		
HCM 2000 Volume to Capacity ratio			0.32									
Actuated Cycle Length (s)			60.0		Sum of lost time (s)				9.0			
Intersection Capacity Utilization			29.0%		ICU Level of Service				A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

77: Franklin St & 7th St

7/22/2013



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↶			↷		
Volume (veh/h)	299	0	0	497	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)	315	0	0	523	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	0.92					
vC, conflicting volume	262	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	37	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 %	65	100	100			
cM capacity (veh/h)	900	1084	1622			
Direction, Lane #	EB 1	NB 1	NB 2			
Volume Total	315	262	262			
Volume Left	315	0	0			
Volume Right	0	0	0			
cSH	900	1700	1700			
Volume to Capacity	0.35	0.15	0.15			
Queue Length 95th (ft)	39	0	0			
Control Delay (s)	11.1	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	11.1	0.0				
Approach LOS	B					
Intersection Summary						
Average Delay			4.2			
Intersection Capacity Utilization		42.2%		ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

89: 9th Street & Vine Street

7/22/2013



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑					↗
Volume (veh/h)	305	0	0	0	0	162
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	171
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	79
cM capacity (veh/h)			1196		596	823

Direction, Lane #	EB 1	EB 2	NB 1
Volume Total	179	179	171
Volume Left	0	0	0
Volume Right	0	0	171
cSH	1700	1700	823
Volume to Capacity	0.11	0.11	0.21
Queue Length 95th (ft)	0	0	19
Control Delay (s)	0.0	0.0	10.5
Lane LOS			B
Approach Delay (s)	0.0		10.5
Approach LOS			B

Intersection Summary			
Average Delay		3.4	
Intersection Capacity Utilization	25.7%		ICU Level of Service A
Analysis Period (min)		15	

Queues

96: 7th St & Vine Street

7/22/2013



Lane Group	EBL	NBT
Lane Group Flow (vph)	707	865
v/c Ratio	0.29	0.38
Control Delay	11.6	18.5
Queue Delay	0.4	0.0
Total Delay	12.0	18.5
Queue Length 50th (ft)	61	125
Queue Length 95th (ft)	87	157
Internal Link Dist (ft)	60	232
Turn Bay Length (ft)		
Base Capacity (vph)	2406	2306
Starvation Cap Reductn	1074	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.53	0.38
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

96: 7th St & Vine Street

7/22/2013















Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	←←←			↑↑↑		
Volume (vph)	650	0	0	796	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		
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)	707	0	0	865	0	0
RTOR Reduction (vph)	127	0	0	0	0	0
Lane Group Flow (vph)	580	0	0	865	0	0
Bus Blockages (#/hr)	0	0	0	5	0	0
Turn Type	NA			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	c0.11			c0.17		
v/s Ratio Perm						
v/c Ratio	0.25			0.38		
Uniform Delay, d1	16.8			17.9		
Progression Factor	1.00			1.00		
Incremental Delay, d2	0.3			0.5		
Delay (s)	17.1			18.3		
Level of Service	B			B		
Approach Delay (s)	17.1			18.3	0.0	
Approach LOS	B			B	A	

Intersection Summary

HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	96.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			
















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

7/22/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑	↑		↑↓				
Volume (veh/h)	0	677	0	0	283	100	62	397	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	180.3	181.4			
Lanes	0	3	0	0	2	1	0	2	0			
Cap, veh/h	0	2771	0	0	1779	808	121	807	162			
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	5452	0	0	3500	1590	355	2361	474			
Grp Volume(v), veh/h	0	705	0	0	311	110	307	0	281			
Grp Sat Flow(s),veh/h/ln	0	1817	0	0	1750	1590	1605	0	1585			
Q Serve(g_s), s	0.0	6.7	0.0	0.0	4.6	3.5	10.9	0.0	10.0			
Cycle Q Clear(g_c), s	0.0	6.7	0.0	0.0	4.6	3.5	10.9	0.0	10.0			
Prop In Lane	0.00		0.00	0.00		1.00	0.22		0.30			
Lane Grp Cap(c), veh/h	0	2771	0	0	1779	808	548	0	542			
V/C Ratio(X)	0.00	0.25	0.00	0.00	0.17	0.14	0.56	0.00	0.52			
Avail Cap(c_a), veh/h	0	2771	0	0	1779	808	548	0	542			
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	15.1	0.0	0.0	14.2	13.7	22.3	0.0	22.0			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.2	0.4	4.1	0.0	3.5			
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 Back of Q (95%), veh/ln	0.0	5.9	0.0	0.0	3.6	2.6	9.1	0.0	8.4			
Lane Grp Delay (d), s/veh	0.0	15.3	0.0	0.0	14.4	14.1	26.6	0.0	25.6			
Lane Grp LOS		B			B	B	C		C			
Approach Vol, veh/h		705			421			588				
Approach Delay, s/veh		15.3			14.3			26.1				
Approach LOS		B			B			C				
Timer												
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		8.7			6.6			12.9				
Green Ext Time (p_c), s		6.9			7.2			1.7				
Intersection Summary												
HCM 2010 Ctrl Delay					18.8							
HCM 2010 LOS					B							
Notes												

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













9/18/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	654	289	0	382	0	0	0	0	64	980	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	177.4	189.0	0.0	178.3	0.0				181.4	178.7	181.4
Lanes	0	3	0	0	2	0				0	2	0
Cap, veh/h	0	1863	594	0	1872	0				60	953	62
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	3548	1132	0	3566	0				185	2931	191
Grp Volume(v), veh/h	0	711	314	0	415	0				673	0	528
Grp Sat Flow(s),veh/h/ln	0	1774	1132	0	1783	0				1778	0	1529
Q Serve(g_s), s	0.0	0.0	0.0	0.0	6.0	0.0				19.5	0.0	19.5
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	6.0	0.0				19.5	0.0	19.5
Prop In Lane	0.00		1.00	0.00		0.00				0.10		0.12
Lane Grp Cap(c), veh/h	0	1863	594	0	1872	0				578	0	497
V/C Ratio(X)	0.00	0.38	0.53	0.00	0.22	0.00				1.16	0.00	1.06
Avail Cap(c_a), veh/h	0	1863	594	0	1872	0				578	0	497
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	14.3	0.0				26.8	0.0	26.8
Incr Delay (d2), s/veh	0.0	0.6	3.3	0.0	0.3	0.0				91.8	0.0	57.9
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 Back of Q (95%), veh/ln	0.0	0.3	1.0	0.0	5.0	0.0				35.2	0.0	23.4
Lane Grp Delay (d), s/veh	0.0	0.6	3.3	0.0	14.5	0.0				118.6	0.0	84.7
Lane Grp LOS		A	A		B					F		F
Approach Vol, veh/h		1025			415						1201	
Approach Delay, s/veh		1.4			14.5						103.7	
Approach LOS		A			B						F	
Timer												
Assigned Phs		2			6						4	
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			8.0						21.5	
Green Ext Time (p_c), s		11.1			9.9						0.0	
Intersection Summary												
HCM 2010 Ctrl Delay			50.0									
HCM 2010 LOS			D									
Notes												

HCM 2010 Signalized Intersection Summary

















5: 9th St & Market St

9/18/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑			↑↑				
Volume (veh/h)	0	647	0	0	362	45	81	588	282	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			
Lanes	0	3	0	0	2	0	0	2	0			
Cap, veh/h	0	2890	0	0	1600	197	74	542	283			
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	5505	0	0	3049	374	228	1667	872			
Grp Volume(v), veh/h	0	688	0	0	223	210	675	0	337			
Grp Sat Flow(s),veh/h/ln	0	1835	0	0	1785	1638	1787	0	980			
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		0.23	0.13		0.89			
Lane Grp Cap(c), veh/h	0	2890	0	0	937	860	581	0	319			
V/C Ratio(X)	0.00	0.24	0.00	0.00	0.24	0.24	1.16	0.00	1.06			
Avail Cap(c_a), veh/h	0	2890	0	0	937	860	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(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	0.2	0.0	0.0	0.6	0.7	90.9	0.0	66.6			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.1	12.4	0.0	22.6			
%ile Back of Q (95%), veh/ln	0.0	0.1	0.0	0.0	0.3	0.3	37.1	0.0	19.0			
Lane Grp Delay (d), s/veh	0.0	0.2	0.0	0.0	0.6	0.7	130.0	0.0	116.0			
Lane Grp LOS		A			A	A	F		F			
Approach Vol, veh/h		688			433			1012				
Approach Delay, s/veh		0.2			0.7			125.4				
Approach LOS		A			A			F				
Timer												
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		7.4			7.4			0.0				
Intersection Summary												
HCM 2010 Ctrl Delay					59.7							
HCM 2010 LOS					E							
Notes												

















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

7/22/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	222	455	0	0	280	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	184.4	189.0	189.0	187.4	189.0			
Lanes	1	2	0	0	2	0	0	2	0			
Cap, veh/h	580	1988	0	0	970	182	0	959	135			
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	3670	0	0	2985	559	0	3111	439			
Grp Volume(v), veh/h	241	495	0	0	186	176	0	249	229			
Grp Sat Flow(s),veh/h/ln	1731	1835	0	0	1844	1700	0	1874	1676			
Q Serve(g_s), s	4.9	4.3	0.0	0.0	4.5	4.7	0.0	7.5	7.7			
Cycle Q Clear(g_c), s	4.9	4.3	0.0	0.0	4.5	4.7	0.0	7.5	7.7			
Prop In Lane	1.00		0.00	0.00		0.33	0.00		0.26			
Lane Grp Cap(c), veh/h	580	1988	0	0	599	552	0	578	517			
V/C Ratio(X)	0.42	0.25	0.00	0.00	0.31	0.32	0.00	0.43	0.44			
Avail Cap(c_a), veh/h	580	1988	0	0	599	552	0	578	517			
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	9.2	7.3	0.0	0.0	15.2	15.1	0.0	22.0	22.1			
Incr Delay (d2), s/veh	2.2	0.3	0.0	0.0	1.3	1.5	0.0	2.3	2.7			
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 Back of Q (95%), veh/ln	3.8	3.1	0.0	0.0	3.8	3.7	0.0	7.4	6.9			
Lane Grp Delay (d), s/veh	11.4	7.6	0.0	0.0	16.5	16.6	0.0	24.3	24.9			
Lane Grp LOS	B	A			B	B		C	C			
Approach Vol, veh/h		736			362			478				
Approach Delay, s/veh		8.8			16.6			24.6				
Approach LOS		A			B			C				
Timer												
Assigned Phs	5	2			6			8				
Phs Duration (G+Y+Rc), s	13.0	37.0			24.0			23.0				
Change Period (Y+Rc), s	5.0	5.0			5.0			5.0				
Max Green Setting (Gmax), s	8.0	32.0			19.0			18.0				
Max Q Clear Time (g_c+I1), s	6.9	6.3			6.7			9.7				
Green Ext Time (p_c), s	0.1	5.2			3.9			1.6				
Intersection Summary												
HCM 2010 Ctrl Delay				15.4								
HCM 2010 LOS				B								
Notes												



















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

7/22/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	422	63	0	378	0	0	0	0	68	246	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	185.4	187.1
Lanes	0	3	0	0	2	0				0	2	1
Cap, veh/h	0	2452	353	0	1890	0				245	947	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	4671	673	0	3600	0				755	2915	1088
Grp Volume(v), veh/h	0	379	178	0	434	0				188	173	95
Grp Sat Flow(s),veh/h/ln	0	1842	1660	0	1800	0				1816	1854	1088
Q Serve(g_s), s	0.0	3.3	3.4	0.0	0.0	0.0				4.7	4.2	3.9
Cycle Q Clear(g_c), s	0.0	3.3	3.4	0.0	0.0	0.0				4.7	4.2	3.9
Prop In Lane	0.00		0.41	0.00		0.00				0.42		1.00
Lane Grp Cap(c), veh/h	0	1934	872	0	1890	0				590	603	354
V/C Ratio(X)	0.00	0.20	0.20	0.00	0.23	0.00				0.32	0.29	0.27
Avail Cap(c_a), veh/h	0	1934	872	0	1890	0				590	603	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	7.5	7.6	0.0	0.0	0.0				15.2	15.1	15.0
Incr Delay (d2), s/veh	0.0	0.2	0.5	0.0	0.3	0.0				1.4	1.2	1.9
Initial Q Delay(d3),s/veh	0.0	0.1	0.1	0.0	0.0	0.0				0.3	0.3	2.8
%ile Back of Q (95%), veh/ln	0.0	2.4	2.4	0.0	0.1	0.0				3.9	3.6	2.4
Lane Grp Delay (d), s/veh	0.0	7.8	8.2	0.0	0.3	0.0				16.9	16.5	19.7
Lane Grp LOS		A	A		A					B	B	B
Approach Vol, veh/h		557			434						456	
Approach Delay, s/veh		7.9			0.3						17.3	
Approach LOS		A			A						B	
Timer												
Assigned Phs		2			6						4	
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		5.4			2.0						6.7	
Green Ext Time (p_c), s		6.1			6.3						1.9	
Intersection Summary												
HCM 2010 Ctrl Delay			8.6									
HCM 2010 LOS			A									
Notes												















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

7/22/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	607	120	45	289	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
Lanes	0	2	1	1	2	0				0	2	1
Cap, veh/h	0	1545	631	279	1560	0				278	1210	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	3635	1486	618	3670	0				653	2848	1098
Grp Volume(v), veh/h	0	667	132	49	318	0				244	250	47
Grp Sat Flow(s),veh/h/ln	0	1817	1486	618	1835	0				1641	1860	1098
Q Serve(g_s), s	0.0	10.1	4.7	3.8	3.3	0.0				8.1	7.3	2.2
Cycle Q Clear(g_c), s	0.0	10.1	4.7	13.9	3.3	0.0				8.1	7.3	2.2
Prop In Lane	0.00		1.00	1.00		0.00				0.40		1.00
Lane Grp Cap(c), veh/h	0	1545	631	279	1560	0				698	791	467
V/C Ratio(X)	0.00	0.43	0.21	0.18	0.20	0.00				0.35	0.32	0.10
Avail Cap(c_a), veh/h	0	1545	631	279	1560	0				698	791	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	19.2	16.9	18.0	10.9	0.0				18.3	18.0	15.8
Incr Delay (d2), s/veh	0.0	0.9	0.8	1.4	0.3	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 Back of Q (95%), veh/ln	0.0	8.8	3.4	1.2	2.5	0.0				6.8	6.9	1.1
Lane Grp Delay (d), s/veh	0.0	20.0	17.6	19.4	11.2	0.0				19.7	19.0	16.2
Lane Grp LOS		C	B	B	B					B	B	B
Approach Vol, veh/h		799			367						541	
Approach Delay, s/veh		19.6			12.2						19.1	
Approach LOS		B			B						B	
Timer												
Assigned Phs		2			6						4	
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		12.1			15.9						10.1	
Green Ext Time (p_c), s		5.4			4.2						2.4	
Intersection Summary												
HCM 2010 Ctrl Delay				17.9								
HCM 2010 LOS				B								
Notes												
















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

7/22/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	0	332	63	69	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	186.7	0.0			
Lanes				0	2	0	0	2	0			
Cap, veh/h				0	1279	240	120	722	0			
Arrive On Green				0.00	0.43	0.43	0.43	0.43	0.00			
Sat Flow, veh/h				0	3010	565	0	1699	0			
Grp Volume(v), veh/h				0	244	232	83	454	0			
Grp Sat Flow(s),veh/h/ln				0	1853	1723	0	1699	0			
Q Serve(g_s), s				0.0	5.2	5.4	0.0	12.6	0.0			
Cycle Q Clear(g_c), s				0.0	5.2	5.4	25.5	12.6	0.0			
Prop In Lane				0.00		0.33	1.00		0.00			
Lane Grp Cap(c), veh/h				0	788	732	120	722	0			
V/C Ratio(X)				0.00	0.31	0.32	0.69	0.63	0.00			
Avail Cap(c_a), veh/h				0	788	732	120	722	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	11.5	30.0	13.5	0.0			
Incr Delay (d2), s/veh				0.0	1.0	1.1	28.0	4.1	0.0			
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0			
%ile Back of Q (95%), veh/ln				0.0	4.3	4.1	3.8	9.5	0.0			
Lane Grp Delay (d), s/veh				0.0	12.5	12.6	58.0	17.7	0.0			
Lane Grp LOS					B	B	E	B				
Approach Vol, veh/h					476			537				
Approach Delay, s/veh					12.5			23.9				
Approach LOS					B			C				
Timer												
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					7.4			27.5				
Green Ext Time (p_c), s					2.3			0.0				
Intersection Summary												
HCM 2010 Ctrl Delay					18.5							
HCM 2010 LOS					B							
Notes												
















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

7/22/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	650	0	0	0	0	0	436	132	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	183.9	0.0				0.0	187.1	189.0			
Lanes	0	5	0				0	2	1			
Cap, veh/h	120	2844	0				0	1591	671			
Arrive On Green	0.43	0.43	0.00				0.00	0.14	0.14			
Sat Flow, veh/h	0	6692	0				0	3743	1578			
Grp Volume(v), veh/h	52	714	0				0	479	145			
Grp Sat Flow(s),veh/h/ln	0	1673	0				0	1871	1578			
Q Serve(g_s), s	0.0	4.1	0.0				0.0	6.9	4.9			
Cycle Q Clear(g_c), s	25.5	4.1	0.0				0.0	6.9	4.9			
Prop In Lane	1.00		0.00				0.00		1.00			
Lane Grp Cap(c), veh/h	120	2844	0				0	1591	671			
V/C Ratio(X)	0.43	0.25	0.00				0.00	0.30	0.22			
Avail Cap(c_a), veh/h	120	2844	0				0	1591	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	30.0	11.1	0.0				0.0	17.8	16.9			
Incr Delay (d2), s/veh	11.0	0.2	0.0				0.0	0.5	0.7			
Initial Q Delay(d3),s/veh	0.1	0.0	0.0				0.0	0.0	0.0			
%ile Back of Q (95%), veh/ln	2.0	2.8	0.0				0.0	6.3	3.7			
Lane Grp Delay (d), s/veh	41.1	11.3	0.0				0.0	18.3	17.7			
Lane Grp LOS	D	B						B	B			
Approach Vol, veh/h		766						624				
Approach Delay, s/veh		13.3						18.1				
Approach LOS		B						B				
Timer												
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		27.5						8.9				
Green Ext Time (p_c), s		0.0						3.2				
Intersection Summary												
HCM 2010 Ctrl Delay			15.5									
HCM 2010 LOS			B									
Notes												

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

7/22/2013

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	379	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			
Lanes	0	2	0				0	2	1			
Cap, veh/h	60	1376	0				0	1591	592			
Arrive On Green	0.43	0.43	0.00				0.00	0.43	0.43			
Sat Flow, veh/h	0	3237	0				0	3743	1392			
Grp Volume(v), veh/h	228	253	0				0	428	59			
Grp Sat Flow(s),veh/h/ln	1534	1703	0				0	1871	1392			
Q Serve(g_s), s	0.0	6.0	0.0				0.0	4.5	1.5			
Cycle Q Clear(g_c), s	25.5	6.0	0.0				0.0	4.5	1.5			
Prop In Lane	0.00		0.00				0.00		1.00			
Lane Grp Cap(c), veh/h	712	724	0				0	1591	592			
V/C Ratio(X)	0.32	0.35	0.00				0.00	0.27	0.10			
Avail Cap(c_a), veh/h	712	724	0				0	1591	592			
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	11.5	11.6	0.0				0.0	11.2	10.4			
Incr Delay (d2), s/veh	1.2	1.3	0.0				0.0	0.4	0.3			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0			
%ile Back of Q (95%), veh/ln	4.0	4.5	0.0				0.0	3.5	1.0			
Lane Grp Delay (d), s/veh	12.7	13.0	0.0				0.0	11.6	10.7			
Lane Grp LOS	B	B						B	B			
Approach Vol, veh/h		481						487				
Approach Delay, s/veh		12.8						11.5				
Approach LOS		B						B				
Timer												
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		27.5						6.5				
Green Ext Time (p_c), s		0.0						2.6				
Intersection Summary												
HCM 2010 Ctrl Delay			12.2									
HCM 2010 LOS			B									
Notes												