

HCM Signalized Intersection Capacity Analysis

2: Airport Blvd & Aviation Blvd

17/12/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕	↖		↖	↖	↖	↕	↕
Volume (vph)	13	316	74	197	787	675	90	46	166	191	33	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.5		3.0	4.5	3.0		3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00	0.99	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85		1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	0.98	
Satd. Flow (prot)	1752	3336		1752	3438	1540		1786	1545	1665	1646	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	0.98	
Satd. Flow (perm)	1752	3336		1752	3438	1540		1786	1545	1665	1646	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	14	351	82	219	874	750	100	51	184	212	37	31
RTOR Reduction (vph)	0	18	0	0	0	280	0	0	154	0	8	0
Lane Group Flow (vph)	14	415	0	219	874	470	0	151	30	142	130	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	3%	5%	3%	3%	5%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot			Prot		pm+ov	Split		Perm	Split		
Protected Phases	1	6		5	2	7	8	8		7	7	
Permitted Phases						2			8			
Actuated Green, G (s)	0.3	14.1		17.1	30.9	42.0		10.4	10.4	11.1	11.1	
Effective Green, g (s)	1.3	15.1		18.1	31.9	44.0		11.4	11.4	12.1	12.1	
Actuated g/C Ratio	0.02	0.22		0.26	0.45	0.63		0.16	0.16	0.17	0.17	
Clearance Time (s)	4.0	5.5		4.0	5.5	4.0		4.0	4.0	4.0	4.0	
Vehicle Extension (s)	1.5	2.5		1.5	2.5	1.5		1.5	1.5	1.5	1.5	
Lane Grp Cap (vph)	32	718		452	1562	965		290	251	287	284	
v/s Ratio Prot	0.01	c0.12		0.12	c0.25	0.08		c0.08		c0.09	0.08	
v/s Ratio Perm						0.22			0.02			
v/c Ratio	0.44	0.58		0.48	0.56	0.49		0.52	0.12	0.49	0.46	
Uniform Delay, d1	34.1	24.7		22.1	14.0	7.0		26.9	25.1	26.3	26.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.5	0.9		0.3	0.4	0.1		0.8	0.1	0.5	0.4	
Delay (s)	37.5	25.6		22.4	14.4	7.2		27.7	25.2	26.8	26.5	
Level of Service	D	C		C	B	A		C	C	C	C	
Approach Delay (s)		26.0			12.4			26.3			26.7	
Approach LOS		C			B			C			C	

Intersection Summary

HCM Average Control Delay	17.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.2	Sum of lost time (s)	10.5
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

2: Airport Blvd & Aviation Blvd

17/12/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	773	34	119	346	154	48	24	114	502	19	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.5		3.0	4.5	3.0		3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00	1.00	0.95	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00	0.97	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85		1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	0.96	
Satd. Flow (prot)	1752	3415		1752	3438	1542		1786	1529	1665	1655	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	0.96	
Satd. Flow (perm)	1752	3415		1752	3438	1542		1786	1529	1665	1655	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	27	859	38	132	384	171	53	27	127	558	21	30
RTOR Reduction (vph)	0	3	0	0	0	56	0	0	113	0	4	0
Lane Group Flow (vph)	27	894	0	132	384	115	0	80	14	307	298	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	3%	5%	3%	3%	5%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot			Prot		pm+ov	Split		Perm	Split		
Protected Phases	1	6		5	2	7	8	8		7	7	
Permitted Phases						2			8			
Actuated Green, G (s)	1.4	25.0		8.0	31.6	48.0		7.3	7.3	16.4	16.4	
Effective Green, g (s)	2.4	26.0		9.0	32.6	50.0		8.3	8.3	17.4	17.4	
Actuated g/C Ratio	0.03	0.35		0.12	0.44	0.67		0.11	0.11	0.23	0.23	
Clearance Time (s)	4.0	5.5		4.0	5.5	4.0		4.0	4.0	4.0	4.0	
Vehicle Extension (s)	1.5	2.5		1.5	2.5	1.5		1.5	1.5	1.5	1.5	
Lane Grp Cap (vph)	57	1197		213	1510	1039		200	171	390	388	
v/s Ratio Prot	0.02	c0.26		c0.08	0.11	0.03		c0.04		c0.18	0.18	
v/s Ratio Perm						0.05			0.01			
v/c Ratio	0.47	0.75		0.62	0.25	0.11		0.40	0.08	0.79	0.77	
Uniform Delay, d1	35.3	21.2		31.0	13.1	4.3		30.6	29.5	26.7	26.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.3	2.4		3.7	0.1	0.0		0.5	0.1	9.3	8.0	
Delay (s)	37.5	23.6		34.7	13.2	4.3		31.1	29.6	36.0	34.5	
Level of Service	D	C		C	B	A		C	C	D	C	
Approach Delay (s)		24.1			15.1			30.2			35.3	
Approach LOS		C			B			C			D	

























Intersection Summary

HCM Average Control Delay	24.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	74.2	Sum of lost time (s)	13.5
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

1: Airport & Brickway

17/12/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 					 		
Volume (vph)	121	264	19	102	476	138	2	0	55	11	4	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		0.97	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.98		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	0.85		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1752	3402		1752	3318		1752	1544		3400	1586	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1752	3402		1752	3318		1752	1544		3400	1586	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	134	293	21	113	529	153	2	0	61	12	4	24
RTOR Reduction (vph)	0	7	0	0	36	0	0	57	0	0	22	0
Lane Group Flow (vph)	134	307	0	113	646	0	2	4	0	12	6	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Heavy Vehicles (%)	3%	5%	3%	3%	5%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	3.6	14.5		3.6	14.5		0.5	1.5		0.7	1.7	
Effective Green, g (s)	4.6	15.5		4.6	15.5		1.5	2.5		1.7	2.7	
Actuated g/C Ratio	0.13	0.43		0.13	0.43		0.04	0.07		0.05	0.07	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	222	1453		222	1417		72	106		159	118	
v/s Ratio Prot	c0.08	0.09		0.06	c0.19		0.00	c0.00		0.00	c0.00	
v/s Ratio Perm												
v/c Ratio	0.60	0.21		0.51	0.46		0.03	0.04		0.08	0.05	
Uniform Delay, d1	15.0	6.6		14.8	7.4		16.7	15.8		16.5	15.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.6	0.1		1.8	0.2		0.2	0.2		0.2	0.2	
Delay (s)	19.6	6.6		16.6	7.6		16.9	15.9		16.8	15.8	
Level of Service	B	A		B	A		B	B		B	B	
Approach Delay (s)		10.5			8.9			16.0			16.1	
Approach LOS		B			A			B			B	
Intersection Summary												
HCM Average Control Delay			10.0			HCM Level of Service				A		
HCM Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			36.3			Sum of lost time (s)			9.0			
Intersection Capacity Utilization			40.4%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

1: Airport & Brickway

17/12/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	↖
Volume (vph)	18	468	10	32	321	20	46	4	89	134	6	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		0.97	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.86		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1719	3426		1719	3403		1719	1511		3335	1532	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1719	3426		1719	3403		1719	1511		3335	1532	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	20	520	11	36	357	22	51	4	99	149	7	79
RTOR Reduction (vph)	0	2	0	0	7	0	0	88	0	0	64	0
Lane Group Flow (vph)	20	529	0	36	372	0	51	15	0	149	22	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	0.5	13.6		1.1	14.2		1.4	3.2		4.7	6.5	
Effective Green, g (s)	1.5	14.6		2.1	15.2		2.4	4.2		5.7	7.5	
Actuated g/C Ratio	0.04	0.38		0.05	0.39		0.06	0.11		0.15	0.19	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	67	1296		94	1340		107	164		492	298	
v/s Ratio Prot	0.01	c0.15		c0.02	0.11		0.03	c0.01		c0.04	0.01	
v/s Ratio Perm												
v/c Ratio	0.30	0.41		0.38	0.28		0.48	0.09		0.30	0.07	
Uniform Delay, d1	18.0	8.8		17.6	8.0		17.5	15.5		14.7	12.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.5	0.2		2.6	0.1		3.3	0.2		0.3	0.1	
Delay (s)	20.5	9.0		20.2	8.1		20.8	15.7		15.0	12.8	
Level of Service	C	A		C	A		C	B		B	B	
Approach Delay (s)		9.4			9.1			17.4			14.2	
Approach LOS		A			A			B			B	

Intersection Summary

HCM Average Control Delay	11.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	38.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	37.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

55: Airport Blvd & Skylane

17/12/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	43	11	67	80	161	19	92	127	271	128	22
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	10	48	12	74	89	179	21	102	141	301	142	24
Pedestrians		5			5			5			5	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	273			65			411	494	58	508	328	99
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	273			65			411	494	58	508	328	99
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			95			95	77	86	4	74	97
cM capacity (veh/h)	1268			1512			402	441	992	313	548	941

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2
Volume Total	10	48	12	74	89	179	21	243	301	167
Volume Left	10	0	0	74	0	0	21	0	301	0
Volume Right	0	0	12	0	0	179	0	141	0	24
cSH	1268	1700	1700	1512	1700	1700	402	651	313	584
Volume to Capacity	0.01	0.03	0.01	0.05	0.05	0.11	0.05	0.37	0.96	0.29
Queue Length 95th (ft)	1	0	0	4	0	0	4	43	247	29
Control Delay (s)	7.9	0.0	0.0	7.5	0.0	0.0	14.5	13.8	78.8	13.6
Lane LOS	A			A			B	B	F	B
Approach Delay (s)	1.1			1.6			13.9		55.5	
Approach LOS							B		F	

Intersection Summary

Average Delay	26.5
Intersection Capacity Utilization	48.8%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis

55: Airport Blvd & Skylane

17/12/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	25	110	29	109	72	236	9	88	53	171	174	19
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	28	122	32	121	80	262	10	98	59	190	193	21
Pedestrians		5			5			5			5	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	347			159			628	772	132	618	542	90
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	347			159			628	772	132	618	542	90
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			91			95	66	93	24	51	98
cM capacity (veh/h)	1190			1396			214	289	902	249	392	952

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2
Volume Total	28	122	32	121	80	262	10	157	190	214
Volume Left	28	0	0	121	0	0	10	0	190	0
Volume Right	0	0	32	0	0	262	0	59	0	21
cSH	1190	1700	1700	1396	1700	1700	214	388	249	416
Volume to Capacity	0.02	0.07	0.02	0.09	0.05	0.15	0.05	0.40	0.76	0.52
Queue Length 95th (ft)	2	0	0	7	0	0	4	48	138	72
Control Delay (s)	8.1	0.0	0.0	7.8	0.0	0.0	22.7	20.4	54.5	22.5
Lane LOS	A			A			C	C	F	C
Approach Delay (s)	1.2			2.0			20.6		37.5	
Approach LOS							C		E	

Intersection Summary

Average Delay	16.3
Intersection Capacity Utilization	41.2%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis

33: Airport Blvd & NB Offramp

17/12/2010



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↑
Volume (veh/h)	0	293	547	0	0	743
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	326	608	0	0	826
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		70	150			
pX, platoon unblocked						
vC, conflicting volume	608				933	608
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	608				933	608
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	0
cM capacity (veh/h)	956				292	494

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	326	608	826
Volume Left	0	0	0
Volume Right	0	0	826
cSH	1700	1700	494
Volume to Capacity	0.19	0.36	1.67
Queue Length 95th (ft)	0	0	1198
Control Delay (s)	0.0	0.0	331.5
Lane LOS			F
Approach Delay (s)	0.0	0.0	331.5
Approach LOS			F

Intersection Summary			
Average Delay		155.6	
Intersection Capacity Utilization		74.8%	ICU Level of Service
Analysis Period (min)		15	D

HCM Unsignalized Intersection Capacity Analysis

33: Airport Blvd & NB Offramp

17/12/2010



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↗
Volume (veh/h)	0	672	164	0	0	240
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	747	182	0	0	267
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		70	150			
pX, platoon unblocked						
vC, conflicting volume	182				929	182
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	182				929	182
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	69
cM capacity (veh/h)	1375				293	858

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	747	182	267
Volume Left	0	0	0
Volume Right	0	0	267
cSH	1700	1700	858
Volume to Capacity	0.44	0.11	0.31
Queue Length 95th (ft)	0	0	33
Control Delay (s)	0.0	0.0	11.1
Lane LOS			B
Approach Delay (s)	0.0	0.0	11.1
Approach LOS			B

Intersection Summary			
Average Delay		2.5	
Intersection Capacity Utilization		38.7%	ICU Level of Service
Analysis Period (min)		15	A

HCM Unsignalized Intersection Capacity Analysis

63: Airport Blvd & SB 101 Offramp

17/12/2010



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↘	↗
Volume (veh/h)	0	208	1290	0	85	369
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	231	1433	0	94	410
Pedestrians		5	5		5	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		1255	561			
pX, platoon unblocked						
vC, conflicting volume	1438				1674	1443
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1438				1674	1443
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				9	0
cM capacity (veh/h)	461				104	158
Direction, Lane #	EB 1	WB 1	SB 1	SB 2		
Volume Total	231	1433	94	410		
Volume Left	0	0	94	0		
Volume Right	0	0	0	410		
cSH	1700	1700	104	158		
Volume to Capacity	0.14	0.84	0.91	2.59		
Queue Length 95th (ft)	0	0	135	894		
Control Delay (s)	0.0	0.0	141.2	779.4		
Lane LOS			F	F		
Approach Delay (s)	0.0	0.0	659.9			
Approach LOS			F			
Intersection Summary						
Average Delay			153.5			
Intersection Capacity Utilization			49.2%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 63: Airport Blvd & SB 101 Offramp

17/12/2010






















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↘	↘
Volume (veh/h)	0	562	404	0	110	215
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	624	449	0	122	239
Pedestrians		5	5		5	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		1255	561			
pX, platoon unblocked						
vC, conflicting volume	454				1083	459
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	454				1083	459
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				48	60
cM capacity (veh/h)	1087				237	591

Direction, Lane #	EB 1	WB 1	SB 1	SB 2
Volume Total	624	449	122	239
Volume Left	0	0	122	0
Volume Right	0	0	0	239
cSH	1700	1700	237	591
Volume to Capacity	0.37	0.26	0.52	0.40
Queue Length 95th (ft)	0	0	67	49
Control Delay (s)	0.0	0.0	35.3	15.2
Lane LOS			E	C
Approach Delay (s)	0.0	0.0	22.0	
Approach LOS			C	

Intersection Summary			
Average Delay		5.5	
Intersection Capacity Utilization		43.5%	ICU Level of Service
Analysis Period (min)		15	A

HCM Unsignalized Intersection Capacity Analysis
6: River Rd & Laughlin

17/12/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	120	339	1	18	277	197	1	10	35	41	5	17
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	133	377	1	20	308	219	1	11	39	46	6	19
Pedestrians		5			5			5			5	
Lane Width (ft)		12.0			12.0			12.0			14.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												1
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	532			383			1014	1221	387	1155	1112	427
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	532			383			1014	1221	387	1155	1112	427
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	87			98			99	93	94	66	97	97
cM capacity (veh/h)	1016			1155			177	150	649	133	174	615
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	133	378	20	527	51	70						
Volume Left	133	0	20	0	1	46						
Volume Right	0	1	0	219	39	19						
cSH	1016	1700	1155	1700	365	181						
Volume to Capacity	0.13	0.22	0.02	0.31	0.14	0.39						
Queue Length 95th (ft)	11	0	1	0	12	42						
Control Delay (s)	9.1	0.0	8.2	0.0	16.5	37.0						
Lane LOS	A		A		C	E						
Approach Delay (s)	2.4		0.3		16.5	37.0						
Approach LOS					C	E						
Intersection Summary												
Average Delay			4.1									
Intersection Capacity Utilization			53.3%		ICU Level of Service		A					
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
6: River Rd & aughlin Rd

17/12/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	23	477	0	23	468	26	0	4	10	247	13	89
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	26	530	0	26	520	29	0	4	11	274	14	99
Pedestrians		5			5			5			5	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												1
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	554			535			1219	1191	540	1190	1177	544
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	554			535			1219	1191	540	1190	1177	544
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			97			100	97	98	0	92	81
cM capacity (veh/h)	997			1014			112	174	532	148	178	528

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	26	530	26	549	16	388
Volume Left	26	0	26	0	0	274
Volume Right	0	0	0	29	11	99
cSH	997	1700	1014	1700	335	183
Volume to Capacity	0.03	0.31	0.03	0.32	0.05	2.12
Queue Length 95th (ft)	2	0	2	0	4	760
Control Delay (s)	8.7	0.0	8.6	0.0	16.3	564.7
Lane LOS	A		A		C	F
Approach Delay (s)	0.4		0.4		16.3	564.7
Approach LOS					C	F

Intersection Summary		
Average Delay		143.3
Intersection Capacity Utilization	53.9%	ICU Level of Service
Analysis Period (min)		15
		A

HCM Unsignalized Intersection Capacity Analysis

47: River Rd & Slusser

05/01/2011



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	129	339	214	66	71	30
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	143	377	238	73	79	33
Pedestrians		5	5		5	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						2
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	316				948	284
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	316				948	284
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	88				68	96
cM capacity (veh/h)	1222				250	741

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	143	377	311	112
Volume Left	143	0	0	79
Volume Right	0	0	73	33
cSH	1222	1700	1700	356
Volume to Capacity	0.12	0.22	0.18	0.32
Queue Length 95th (ft)	10	0	0	33
Control Delay (s)	8.3	0.0	0.0	21.2
Lane LOS	A			C
Approach Delay (s)	2.3		0.0	21.2
Approach LOS				C

Intersection Summary				
Average Delay			3.8	
Intersection Capacity Utilization		37.9%		ICU Level of Service
Analysis Period (min)		15		A

HCM Unsignalized Intersection Capacity Analysis

47: River Rd & Slusser

16/08/2011



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↗		↖	↗
Volume (veh/h)	45	328	341	58	143	111
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	50	364	379	64	159	123
Pedestrians		5	5		5	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						2
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	448				886	421
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	448				886	421
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				46	80
cM capacity (veh/h)	1092				295	621

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	50	364	443	282
Volume Left	50	0	0	159
Volume Right	0	0	64	123
cSH	1092	1700	1700	523
Volume to Capacity	0.05	0.21	0.26	0.54
Queue Length 95th (ft)	4	0	0	79
Control Delay (s)	8.5	0.0	0.0	22.6
Lane LOS	A			C
Approach Delay (s)	1.0		0.0	22.6
Approach LOS				C

Intersection Summary			
Average Delay		6.0	
Intersection Capacity Utilization		43.6%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

45: Shiloh Rd & Conde Lane

13/10/2011



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↷		↶	
Volume (veh/h)	28	617	680	165	97	30
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	31	686	756	183	108	33
Pedestrians		5	5		5	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	TWLTL			
Median storage veh			2			
Upstream signal (ft)		658				
pX, platoon unblocked					0.75	
vC, conflicting volume	944				1605	857
vC1, stage 1 conf vol					852	
vC2, stage 2 conf vol					753	
vCu, unblocked vol	944				1641	857
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	96				64	91
cM capacity (veh/h)	720				301	352

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	31	686	939	141
Volume Left	31	0	0	108
Volume Right	0	0	183	33
cSH	720	1700	1700	311
Volume to Capacity	0.04	0.40	0.55	0.45
Queue Length 95th (ft)	3	0	0	56
Control Delay (s)	10.2	0.0	0.0	25.8
Lane LOS	B			D
Approach Delay (s)	0.4		0.0	25.8
Approach LOS				D

Intersection Summary			
Average Delay		2.2	
Intersection Capacity Utilization		60.8%	ICU Level of Service B
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

45: Shiloh Rd & Conde Lane

13/10/2011



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	14	740	600	160	48	20
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	16	822	667	178	53	22
Pedestrians		5	5		5	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	TWLTL			
Median storage (veh)			2			
Upstream signal (ft)		658				
pX, platoon unblocked					0.90	
vC, conflicting volume	849				1619	766
vC1, stage 1 conf vol					761	
vC2, stage 2 conf vol					858	
vCu, unblocked vol	849				1632	766
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	98				83	94
cM capacity (veh/h)	781				305	398

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	16	822	844	76
Volume Left	16	0	0	53
Volume Right	0	0	178	22
cSH	781	1700	1700	328
Volume to Capacity	0.02	0.48	0.50	0.23
Queue Length 95th (ft)	2	0	0	22
Control Delay (s)	9.7	0.0	0.0	19.2
Lane LOS	A			C
Approach Delay (s)	0.2		0.0	19.2
Approach LOS				C

Intersection Summary			
Average Delay		0.9	
Intersection Capacity Utilization		53.5%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis

31: Shiloh Rd & NB 101 Ramps

17/12/2010



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑	↘	↗
Volume (vph)	367	0	0	555	465	257
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.95			1.00	1.00	0.88
Frbp, ped/bikes	1.00			1.00	1.00	0.97
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frft	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3438			1810	1719	2639
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3438			1810	1719	2639
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	408	0	0	617	517	286
RTOR Reduction (vph)	0	0	0	0	0	151
Lane Group Flow (vph)	408	0	0	617	517	135
Confl. Peds. (#/hr)		5	5		5	5
Turn Type						Perm
Protected Phases	4			8	2	
Permitted Phases						2
Actuated Green, G (s)	22.5			22.5	25.2	25.2
Effective Green, g (s)	23.5			23.5	26.2	26.2
Actuated g/C Ratio	0.42			0.42	0.47	0.47
Clearance Time (s)	4.0			4.0	4.0	4.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	1451			764	809	1241
v/s Ratio Prot	0.12			c0.34	c0.30	
v/s Ratio Perm						0.05
v/c Ratio	0.28			0.81	0.64	0.11
Uniform Delay, d1	10.6			14.1	11.2	8.2
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.1			6.3	3.8	0.2
Delay (s)	10.7			20.4	15.0	8.4
Level of Service	B			C	B	A
Approach Delay (s)	10.7			20.4	12.7	
Approach LOS	B			C	B	

Intersection Summary

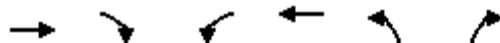
HCM Average Control Delay	14.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	55.7	Sum of lost time (s)	6.0
Intersection Capacity Utilization	88.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

31: Shiloh Rd & NB 101 Ramps

17/12/2010



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑	↘	↗
Volume (vph)	484	0	0	459	450	530
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			3.0	3.0	3.0
Lane Util. Factor	0.95			1.00	1.00	0.88
Frbp, ped/bikes	1.00			1.00	1.00	0.97
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frft	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3438			1810	1719	2636
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3438			1810	1719	2636
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	538	0	0	510	500	589
RTOR Reduction (vph)	0	0	0	0	0	340
Lane Group Flow (vph)	538	0	0	510	500	249
Confl. Peds. (#/hr)		5	5		5	5
Turn Type						Perm
Protected Phases	4			8	2	
Permitted Phases						2
Actuated Green, G (s)	16.6			16.6	16.3	16.3
Effective Green, g (s)	17.6			17.6	17.3	17.3
Actuated g/C Ratio	0.43			0.43	0.42	0.42
Clearance Time (s)	4.0			4.0	4.0	4.0
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Lane Grp Cap (vph)	1479			779	727	1115
v/s Ratio Prot	0.16			c0.28	c0.29	
v/s Ratio Perm						0.09
v/c Ratio	0.36			0.65	0.69	0.22
Uniform Delay, d1	7.9			9.2	9.6	7.5
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.2			2.0	5.3	0.5
Delay (s)	8.0			11.2	14.9	8.0
Level of Service	A			B	B	A
Approach Delay (s)	8.0			11.2	11.1	
Approach LOS	A			B	B	

Intersection Summary

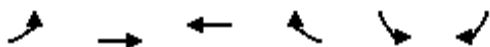
HCM Average Control Delay	10.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	40.9	Sum of lost time (s)	6.0
Intersection Capacity Utilization	99.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

36: Shiloh Rd & SB 101 Ramp

17/12/2010



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↘	↗
Volume (veh/h)	0	327	705	0	110	235
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	363	783	0	122	261
Pedestrians		5	5		5	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						4
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			998			
pX, platoon unblocked	0.85				0.85	0.85
vC, conflicting volume	788				1157	793
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	660				1095	666
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				38	32
cM capacity (veh/h)	771				198	385

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	363	783	383
Volume Left	0	0	122
Volume Right	0	0	261
cSH	1700	1700	565
Volume to Capacity	0.21	0.46	0.68
Queue Length 95th (ft)	0	0	129
Control Delay (s)	0.0	0.0	37.4
Lane LOS			E
Approach Delay (s)	0.0	0.0	37.4
Approach LOS			E

Intersection Summary			
Average Delay		9.4	
Intersection Capacity Utilization		99.2%	ICU Level of Service F
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

36: Shiloh Rd & SB 101 Ramp

17/12/2010



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↘	↗
Volume (veh/h)	0	560	731	0	166	118
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	622	812	0	184	131
Pedestrians		5	5		5	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						4
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			998			
pX, platoon unblocked	0.94				0.94	0.94
vC, conflicting volume	817				1444	822
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	772				1441	777
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				0	64
cM capacity (veh/h)	775				135	367

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	622	812	316
Volume Left	0	0	184
Volume Right	0	0	131
cSH	1700	1700	196
Volume to Capacity	0.37	0.48	1.61
Queue Length 95th (ft)	0	0	517
Control Delay (s)	0.0	0.0	339.8
Lane LOS			F
Approach Delay (s)	0.0	0.0	339.8
Approach LOS			F

Intersection Summary			
Average Delay		61.3	
Intersection Capacity Utilization		98.7%	ICU Level of Service
Analysis Period (min)		15	F

HCM Signalized Intersection Capacity Analysis

51: Shiloh Rd & Golf Course

17/12/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (vph)	2	363	127	470	170	57	22	7	60	217	7	3	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)	1752	1748		1752	1810	1568	1752	1845	1568	1752	1769		
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (perm)	1752	1748		1752	1810	1568	1752	1845	1568	1752	1769		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	2	403	141	522	189	63	24	8	67	241	8	3	
RTOR Reduction (vph)	0	10	0	0	0	22	0	0	41	0	2	0	
Lane Group Flow (vph)	2	534	0	522	189	41	24	8	26	241	9	0	
Confl. Peds. (#/hr)													
Heavy Vehicles (%)	3%	5%	3%	3%	5%	3%	3%	3%	3%	3%	3%	3%	
Turn Type	Prot			Prot		Perm	Prot		pm+ov	Prot			
Protected Phases	7	4		3	8		5	2	3	1	6		
Permitted Phases						8			2				
Actuated Green, G (s)	1.1	39.4		36.8	75.1	75.1	5.9	6.1	42.9	18.7	18.9		
Effective Green, g (s)	2.1	40.4		37.8	76.1	76.1	6.9	7.1	44.9	19.7	19.9		
Actuated g/C Ratio	0.02	0.35		0.32	0.65	0.65	0.06	0.06	0.38	0.17	0.17		
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	31	604		566	1177	1020	103	112	602	295	301		
v/s Ratio Prot	0.00	c0.31		c0.30	0.10		0.01	c0.00	0.01	c0.14	0.00		
v/s Ratio Perm						0.03			0.00				
v/c Ratio	0.06	0.88		0.92	0.16	0.04	0.23	0.07	0.04	0.82	0.03		
Uniform Delay, d1	56.5	36.1		38.2	8.0	7.3	52.5	51.8	22.6	46.9	40.5		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2	0.9	14.3		20.7	0.1	0.0	1.2	1.2	0.0	15.9	0.2		
Delay (s)	57.4	50.4		58.9	8.0	7.4	53.7	53.1	22.6	62.8	40.7		
Level of Service	E	D		E	A	A	D	D	C	E	D		
Approach Delay (s)		50.4			42.3			32.6			61.8		
Approach LOS		D			D			C			E		
Intersection Summary													
HCM Average Control Delay			47.3									HCM Level of Service	D
HCM Volume to Capacity ratio			0.83										
Actuated Cycle Length (s)			117.0									Sum of lost time (s)	12.0
Intersection Capacity Utilization			81.6%									ICU Level of Service	D
Analysis Period (min)			15										
c	Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

51: Shiloh Rd & Golf Course

17/12/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↗	↖	↗	↗	↖	↗	
Volume (vph)	2	210	38	130	338	140	115	54	420	105	19	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1752	1773		1752	1810	1568	1752	1845	1568	1752	1783	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1752	1773		1752	1810	1568	1752	1845	1568	1752	1783	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2	233	42	144	376	156	128	60	467	117	21	6
RTOR Reduction (vph)	0	12	0	0	0	91	0	0	177	0	4	0
Lane Group Flow (vph)	2	263	0	144	376	65	128	60	290	117	23	0
Confl. Peds. (#/hr)												
Heavy Vehicles (%)	3%	5%	3%	3%	5%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot			Prot		Perm	Prot		pm+ov	Prot		
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	0.3	12.9		13.6	26.2	26.2	5.9	17.3	30.9	5.2	16.6	
Effective Green, g (s)	1.3	13.9		14.6	27.2	27.2	6.9	18.3	32.9	6.2	17.6	
Actuated g/C Ratio	0.02	0.21		0.22	0.42	0.42	0.11	0.28	0.51	0.10	0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	35	379		394	757	656	186	519	794	167	483	
v/s Ratio Prot	0.00	c0.15		c0.08	c0.21		c0.07	0.03	c0.08	c0.07	0.01	
v/s Ratio Perm						0.04			0.10			
v/c Ratio	0.06	0.69		0.37	0.50	0.10	0.69	0.12	0.36	0.70	0.05	
Uniform Delay, d1	31.2	23.6		21.3	13.9	11.5	28.0	17.3	9.7	28.5	17.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	5.4		0.6	0.5	0.1	10.1	0.5	0.3	12.5	0.2	
Delay (s)	31.9	29.0		21.9	14.4	11.5	38.1	17.8	10.0	41.0	17.7	
Level of Service	C	C		C	B	B	D	B	B	D	B	
Approach Delay (s)		29.1			15.3			16.2			36.6	
Approach LOS		C			B			B			D	

Intersection Summary

HCM Average Control Delay	19.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			