

HCM Unsignalized Intersection Capacity Analysis

1: N St SE & 1st Street SE

8/18/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	11	64	21	61	138	50	1	95	28	6	39	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	70	23	66	150	54	1	103	30	7	42	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)	663											
pX, platoon unblocked												
vC, conflicting volume	240	193	23	212	179	67	46			134		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	240	193	23	212	179	67	46			134		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	90	98	90	79	94	100			100		
cM capacity (veh/h)	547	697	1049	653	710	983	1560			1449		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	104	271	53	82	28	24						
Volume Left	12	66	1	0	7	0						
Volume Right	23	54	0	30	0	3						
cSH	728	735	1560	1700	1449	1700						
Volume to Capacity	0.14	0.37	0.00	0.05	0.00	0.01						
Queue Length 95th (ft)	12	42	0	0	0	0						
Control Delay (s)	10.8	12.7	0.2	0.0	1.8	0.0						
Lane LOS	B	B	A		A							
Approach Delay (s)	10.8	12.7	0.1		1.0							
Approach LOS	B	B										
Intersection Summary												
Average Delay	8.2											
Intersection Capacity Utilization	32.9%		ICU Level of Service				A					
Analysis Period (min)	15											

HCM Signalized Intersection Capacity Analysis

4: Potomac Ave &

8/18/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95			0.91			0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.92			1.00			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00			1.00	1.00
Satd. Flow (prot)	1652	1739	1478	1652	3056			4731			3303	1478
Flt Permitted	0.72	1.00	1.00	0.72	1.00			1.00			1.00	1.00
Satd. Flow (perm)	1252	1739	1478	1255	3056			4731			3303	1478
Volume (vph)	25	50	100	82	25	25	0	2429	52	0	3744	50
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)	27	54	109	89	27	27	0	2640	57	0	4070	54
RTOR Reduction (vph)	0	0	0	0	7	0	0	2	0	0	0	10
Lane Group Flow (vph)	27	54	109	89	47	0	0	2695	0	0	4070	44
Turn Type	Perm		Perm	Perm								Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8								6
Actuated Green, G (s)	16.0	16.0	16.0	16.0	16.0			72.0			72.0	72.0
Effective Green, g (s)	18.0	18.0	18.0	18.0	18.0			74.0			74.0	74.0
Actuated g/C Ratio	0.18	0.18	0.18	0.18	0.18			0.74			0.74	0.74
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0			6.0			6.0	6.0
Lane Grp Cap (vph)	225	313	266	226	550			3501			2444	1094
v/s Ratio Prot		0.03			0.02			0.57			c1.23	
v/s Ratio Perm	0.02		c0.07	0.07								0.03
v/c Ratio	0.12	0.17	0.41	0.39	0.09			0.77			1.67	0.04
Uniform Delay, d1	34.4	34.7	36.3	36.2	34.2			7.9			13.0	3.5
Progression Factor	1.00	1.00	1.00	0.95	0.95			1.00			1.00	1.00
Incremental Delay, d2	1.1	1.2	4.6	5.1	0.3			1.7			301.2	0.1
Delay (s)	35.5	35.9	40.9	39.6	32.8			9.5			314.2	3.6
Level of Service	D	D	D	D	C			A			F	A
Approach Delay (s)		38.7			37.0			9.5			310.2	
Approach LOS		D			D			A			F	
Intersection Summary												
HCM Average Control Delay		184.2						HCM Level of Service			F	
HCM Volume to Capacity ratio		1.42										
Actuated Cycle Length (s)		100.0						Sum of lost time (s)		8.0		
Intersection Capacity Utilization		124.2%						ICU Level of Service		H		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis 11: M St SW & Local S Cap SB

8/18/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑					↑	↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.0	3.0		3.0					3.0	3.0	
Lane Util. Factor		0.91	1.00		0.91					0.95	0.95	
Frt		1.00	0.85		1.00					1.00	0.98	
Flt Protected		1.00	1.00		1.00					0.95	0.99	
Satd. Flow (prot)		4577	1425		4554					1513	1546	
Flt Permitted		1.00	1.00		0.68					0.95	0.99	
Satd. Flow (perm)		4577	1425		3127					1513	1546	
Volume (vph)	0	875	1245	171	1544	0	0	0	0	341	213	43
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)	0	972	1383	190	1716	0	0	0	0	379	237	48
RTOR Reduction (vph)	0	0	335	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	972	1048	0	1906	0	0	0	0	324	334	0
Turn Type		Perm D,P+P								Split		
Protected Phases		4		3	3 4					6	6	
Permitted Phases			4	4								
Actuated Green, G (s)		38.0	38.0		68.0					16.0	16.0	
Effective Green, g (s)		39.0	39.0		72.0					19.0	19.0	
Actuated g/C Ratio		0.39	0.39		0.72					0.19	0.19	
Clearance Time (s)		4.0	4.0							6.0	6.0	
Lane Grp Cap (vph)		1785	556		2722					287	294	
v/s Ratio Prot		0.21			c0.23					0.21	c0.22	
v/s Ratio Perm			c0.74		0.27							
v/c Ratio		0.54	1.89		0.70					1.13	1.14	
Uniform Delay, d1		23.6	30.5		7.9					40.5	40.5	
Progression Factor		1.00	1.00		0.38					1.00	1.00	
Incremental Delay, d2		1.2	405.1		0.5					92.5	94.8	
Delay (s)		24.8	435.6		3.6					133.0	135.3	
Level of Service		C	F		A					F	F	
Approach Delay (s)		266.0			3.6			0.0			134.2	
Approach LOS		F			A			A			F	
Intersection Summary												
HCM Average Control Delay		146.7				HCM Level of Service		F				
HCM Volume to Capacity ratio		1.30										
Actuated Cycle Length (s)		100.0				Sum of lost time (s)		9.0				
Intersection Capacity Utilization		150.8%				ICU Level of Service		H				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis 12: M St SE & Local S Cap NB

8/18/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑		↱	↕				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.0			3.0		3.0	3.0				
Lane Util. Factor		0.91			0.91		*0.95	0.95				
Frt		1.00			0.97		1.00	0.98				
Flt Protected		1.00			1.00		0.95	0.98				
Satd. Flow (prot)		4572			4445		1513	1535				
Flt Permitted		0.90			1.00		0.95	0.98				
Satd. Flow (perm)		4107			4445		1513	1535				
Volume (vph)	26	1189	0	0	1042	247	672	281	73	0	0	0
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)	29	1321	0	0	1158	274	747	312	81	0	0	0
RTOR Reduction (vph)	0	0	0	0	39	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	1350	0	0	1393	0	561	573	0	0	0	0
Turn Type	D.P+P						Split					
Protected Phases	7	5	7		5		2	2				
Permitted Phases	5											
Actuated Green, G (s)		54.0			38.0		30.0	30.0				
Effective Green, g (s)		58.0			39.0		33.0	33.0				
Actuated g/C Ratio		0.58			0.39		0.33	0.33				
Clearance Time (s)					4.0		6.0	6.0				
Lane Grp Cap (vph)		2470			1734		499	507				
v/s Ratio Prot		c0.10			c0.31		0.37	c0.37				
v/s Ratio Perm		0.21										
v/c Ratio		0.55			0.80		1.12	1.13				
Uniform Delay, d1		12.9			27.1		33.5	33.5				
Progression Factor		0.12			0.77		1.00	1.00				
Incremental Delay, d2		0.6			3.8		79.0	80.9				
Delay (s)		2.2			24.8		112.5	114.4				
Level of Service		A			C		F	F				
Approach Delay (s)		2.2			24.8			113.5			0.0	
Approach LOS		A			C			F			A	
Intersection Summary												
HCM Average Control Delay			42.8		HCM Level of Service				D			
HCM Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			100.0		Sum of lost time (s)				9.0			
Intersection Capacity Utilization			84.1%		ICU Level of Service				E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
13: M St SE & 1st Street SE

8/18/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑			↑↑			↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		0.91			0.91			0.95			0.95	
Frt		1.00			1.00			0.93			0.93	
Flt Protected		1.00			1.00			0.98			0.98	
Satd. Flow (prot)		4557			4555			2787			2698	
Flt Permitted		0.90			0.91			0.82			0.84	
Satd. Flow (perm)		4085			4131			2342			2305	
Volume (vph)	21	1061	24	22	1011	27	67	19	80	22	9	24
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)	23	1179	27	24	1123	30	74	21	89	24	10	27
RTOR Reduction (vph)	0	2	0	0	3	0	0	63	0	0	19	0
Lane Group Flow (vph)	0	1227	0	0	1174	0	0	121	0	0	42	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)										10	10	10
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		4		3	4 3			2			6	
Permitted Phases	4			4 3			2			6		
Actuated Green, G (s)		44.0			58.0			26.0			26.0	
Effective Green, g (s)		47.0			62.0			29.0			29.0	
Actuated g/C Ratio		0.47			0.62			0.29			0.29	
Clearance Time (s)		6.0						6.0			6.0	
Lane Grp Cap (vph)		1920			2625			679			668	
v/s Ratio Prot					c0.07							
v/s Ratio Perm		c0.30			0.21			c0.05			0.02	
v/c Ratio		0.64			0.45			0.18			0.06	
Uniform Delay, d1		20.1			10.0			26.6			25.7	
Progression Factor		0.65			1.00			0.93			1.00	
Incremental Delay, d2		1.3			0.6			0.6			0.2	
Delay (s)		14.5			10.5			25.3			25.9	
Level of Service		B			B			C			C	
Approach Delay (s)		14.5			10.5			25.3			25.9	
Approach LOS		B			B			C			C	
Intersection Summary												
HCM Average Control Delay			13.8			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)				9.0		
Intersection Capacity Utilization			57.4%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis 1: N St SE & 1st St SE

8/18/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	59	238	141	137	107	26	4	96	272	88	187	13
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	64	259	153	149	116	28	4	104	296	96	203	14
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)											663	
pX, platoon unblocked												
vC, conflicting volume	549	810	109	836	670	200	217			400		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	549	810	109	836	670	200	217			400		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	77	9	83	0	66	97	100			92		
cM capacity (veh/h)	280	285	924	44	344	808	1349			1155		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	476	293	57	348	197	116						
Volume Left	64	149	4	0	96	0						
Volume Right	153	28	0	296	0	14						
cSH	366	78	1349	1700	1155	1700						
Volume to Capacity	1.30	3.75	0.00	0.20	0.08	0.07						
Queue Length 95th (ft)	548	Err	0	0	7	0						
Control Delay (s)	184.4	Err	0.6	0.0	4.5	0.0						
Lane LOS	F	F	A		A							
Approach Delay (s)	184.4	Err	0.1		2.8							
Approach LOS	F	F										
Intersection Summary												
Average Delay		2033.1										
Intersection Capacity Utilization		70.6%			ICU Level of Service				C			
Analysis Period (min)		15										

HCM Signalized Intersection Capacity Analysis
4: Potomac Ave & South Capitol Street

8/18/2006



Movement	WBL	WBR	NBL	NBR	SEL	SER
Lane Configurations		↰↱	↰↱↱	↰		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0		
Lane Util. Factor		0.88	0.94	0.86		
Flt		0.85	1.00	0.85		
Flt Protected		1.00	0.95	1.00		
Satd. Flow (prot)		2601	4658	1271		
Flt Permitted		1.00	0.95	1.00		
Satd. Flow (perm)		2601	4658	1271		
Volume (vph)	0	431	4234	412	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	468	4602	448	0	0
RTOR Reduction (vph)	0	0	12	91	0	0
Lane Group Flow (vph)	0	468	4590	357	0	0
Turn Type	custom		Perm			
Protected Phases		4	2			
Permitted Phases		4		2		
Actuated Green, G (s)		17.0	91.0	91.0		
Effective Green, g (s)		19.0	93.0	93.0		
Actuated g/C Ratio		0.16	0.78	0.78		
Clearance Time (s)		6.0	6.0	6.0		
Lane Grp Cap (vph)		412	3610	985		
v/s Ratio Prot		c0.18	c0.99			
v/s Ratio Perm				0.28		
v/c Ratio		1.14	1.27	0.36		
Uniform Delay, d1		50.5	13.5	4.2		
Progression Factor		1.00	1.00	1.00		
Incremental Delay, d2		86.9	124.4	1.0		
Delay (s)		137.4	137.9	5.3		
Level of Service		F	F	A		
Approach Delay (s)	137.4		126.1		0.0	
Approach LOS	F		F		A	

Intersection Summary			
HCM Average Control Delay	127.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.25		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	86.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis 11: M St SW & Local S Cap SB

8/18/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑					↑	↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.0	3.0		3.0					3.0	3.0	
Lane Util. Factor		0.91	1.00		0.91					0.95	0.95	
Flt		1.00	0.85		1.00					1.00	0.94	
Flt Protected		1.00	1.00		1.00					0.95	0.98	
Satd. Flow (prot)		4577	1425		4556					1513	1467	
Flt Permitted		1.00	1.00		0.67					0.95	0.98	
Satd. Flow (perm)		4577	1425		3062					1513	1467	
Volume (vph)	0	1102	448	289	2817	0	0	0	0	673	84	181
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)	0	1224	498	321	3130	0	0	0	0	748	93	201
RTOR Reduction (vph)	0	0	388	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	1224	110	0	3451	0	0	0	0	533	506	0
Turn Type		Perm D.P+P									Split	
Protected Phases		4		3	3 4					6	6	
Permitted Phases			4	4								
Actuated Green, G (s)		21.0	21.0		64.0					20.0	20.0	
Effective Green, g (s)		22.0	22.0		68.0					23.0	23.0	
Actuated g/C Ratio		0.22	0.22		0.68					0.23	0.23	
Clearance Time (s)		4.0	4.0							6.0	6.0	
Lane Grp Cap (vph)		1007	314		2769					348	337	
v/s Ratio Prot		0.27			c0.57					c0.35	0.34	
v/s Ratio Perm			0.08		c0.27							
v/c Ratio		1.22	0.35		1.25					1.53	1.50	
Uniform Delay, d1		39.0	32.9		16.0					38.5	38.5	
Progression Factor		1.00	1.00		0.54					1.00	1.00	
Incremental Delay, d2		106.2	3.0		111.1					253.3	240.6	
Delay (s)		145.2	36.0		119.7					291.8	279.1	
Level of Service		F	D		F					F	F	
Approach Delay (s)		113.6			119.7			0.0			285.6	
Approach LOS		F			F			A			F	
Intersection Summary												
HCM Average Control Delay		145.8			HCM Level of Service			F				
HCM Volume to Capacity ratio		1.32										
Actuated Cycle Length (s)		100.0			Sum of lost time (s)			9.0				
Intersection Capacity Utilization		137.1%			ICU Level of Service			H				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
12: M St SE & Local S Cap NB

8/18/2006

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑		↑	↑				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.0			3.0		3.0	3.0				
Lane Util. Factor		0.91			0.91		*0.95	0.95				
Frt		1.00			0.99		1.00	0.99				
Flt Protected		1.00			1.00		0.95	0.96				
Satd. Flow (prot)		4559			4535		1513	1507				
Flt Permitted		0.66			1.00		0.95	0.96				
Satd. Flow (perm)		3034			4535		1513	1507				
Volume (vph)	141	1634	0	0	1019	66	2087	38	88	0	0	0
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)	157	1816	0	0	1132	73	2319	42	98	0	0	0
RTOR Reduction (vph)	0	0	0	0	7	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	1973	0	0	1198	0	1263	1193	0	0	0	0
Turn Type	D.P+P						Split					
Protected Phases	7	5 7			5		2	2				
Permitted Phases	5											
Actuated Green, G (s)		41.0			21.0		43.0	43.0				
Effective Green, g (s)		45.0			22.0		46.0	46.0				
Actuated g/C Ratio		0.45			0.22		0.46	0.46				
Clearance Time (s)					4.0		6.0	6.0				
Lane Grp Cap (vph)		1716			998		696	693				
v/s Ratio Prot		c0.26			c0.26		c0.83	0.79				
v/s Ratio Perm		0.25										
v/c Ratio		1.15			1.20		1.81	1.72				
Uniform Delay, d1		27.5			39.0		27.0	27.0				
Progression Factor		0.26			0.91		1.00	1.00				
Incremental Delay, d2		68.1			98.0		372.3	330.6				
Delay (s)		75.2			133.4		399.3	357.6				
Level of Service		E			F		F	F				
Approach Delay (s)		75.2			133.4		379.0				0.0	
Approach LOS		E			F		F				A	
Intersection Summary												
HCM Average Control Delay		220.2					HCM Level of Service		F			
HCM Volume to Capacity ratio		1.50										
Actuated Cycle Length (s)		100.0					Sum of lost time (s)		9.0			
Intersection Capacity Utilization		140.1%					ICU Level of Service		H			
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

13: M St SE & 1st St SE

8/18/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔↔			↔↔↔			↔↔			↔↔		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	3.0			3.0			3.0			3.0		
Lane Util. Factor	0.91			0.91			0.95			0.95		
Frt	0.98			0.99			0.94			0.95		
Flt Protected	1.00			0.99			0.98			0.99		
Satd. Flow (prot)	4504			4517			2829			2781		
Flt Permitted	0.89			0.64			0.82			0.87		
Satd. Flow (perm)	4002			2912			2362			2459		
Volume (vph)	23	1252	143	173	1011	51	57	34	60	22	43	28
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)	26	1391	159	192	1123	57	63	38	67	24	48	31
RTOR Reduction (vph)	0	14	0	0	5	0	0	50	0	0	23	0
Lane Group Flow (vph)	0	1563	0	0	1367	0	0	118	0	0	80	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)										10	10	10
Turn Type	Perm				pm+pt				Perm		Perm	
Protected Phases	4				3		4 3		2		6	
Permitted Phases	4				4 3				2		6	
Actuated Green, G (s)	52.0				62.0				22.0		22.0	
Effective Green, g (s)	55.0				66.0				25.0		25.0	
Actuated g/C Ratio	0.55				0.66				0.25		0.25	
Clearance Time (s)	6.0				6.0				6.0		6.0	
Lane Grp Cap (vph)	2201				2098				591		615	
v/s Ratio Prot					c0.07							
v/s Ratio Perm	c0.39				0.36				c0.05		0.03	
v/c Ratio	0.71				0.65				0.20		0.13	
Uniform Delay, d1	16.6				10.1				29.6		29.1	
Progression Factor	0.77				1.00				1.00		1.00	
Incremental Delay, d2	0.2				1.6				0.8		0.4	
Delay (s)	12.9				11.7				30.4		29.5	
Level of Service	B				B				C		C	
Approach Delay (s)	12.9				11.7				30.4		29.5	
Approach LOS	B				B				C		C	
Intersection Summary												
HCM Average Control Delay	13.8			HCM Level of Service					B			
HCM Volume to Capacity ratio	0.56											
Actuated Cycle Length (s)	100.0			Sum of lost time (s)					9.0			
Intersection Capacity Utilization	78.0%			ICU Level of Service					D			
Analysis Period (min)	15											
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
1: N St SE & 1st Street SE

8/18/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	12	129	23	311	239	55	1	104	166	6	43	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	140	25	338	260	60	1	113	180	7	47	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)											663	
pX, platoon unblocked												
vC, conflicting volume	310	358	26	337	270	147	51			293		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	310	358	26	337	270	147	51			293		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	75	98	27	59	93	100			99		
cM capacity (veh/h)	390	564	1044	466	632	874	1553			1265		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	178	658	58	237	30	28						
Volume Left	13	338	1	0	7	0						
Volume Right	25	60	0	180	0	4						
cSH	582	545	1553	1700	1265	1700						
Volume to Capacity	0.31	1.21	0.00	0.14	0.01	0.02						
Queue Length 95th (ft)	32	605	0	0	0	0						
Control Delay (s)	13.9	133.5	0.1	0.0	1.7	0.0						
Lane LOS	B	F	A		A							
Approach Delay (s)	13.9	133.5	0.0		0.9							
Approach LOS	B	F										
Intersection Summary												
Average Delay			76.1									
Intersection Capacity Utilization			61.0%				ICU Level of Service			B		
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
4: Potomac Ave & South Capitol Street

8/18/2006

						
Movement	WBL	WBR	NBL	NBR	SEL	SER
Lane Configurations		↑↑	↑↑↑	↑		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0		
Lane Util. Factor		0.88	0.94	0.86		
Frt		0.85	1.00	0.85		
Flt Protected		1.00	0.95	1.00		
Satd. Flow (prot)		2601	4658	1271		
Flt Permitted		1.00	0.95	1.00		
Satd. Flow (perm)		2601	4658	1271		
Volume (vph)	0	451	2875	277	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	490	3125	301	0	0
RTOR Reduction (vph)	0	3	56	90	0	0
Lane Group Flow (vph)	0	487	3069	211	0	0
Turn Type	custom		Perm			
Protected Phases		4	2			
Permitted Phases		4		2		
Actuated Green, G (s)		28.0	82.0	82.0		
Effective Green, g (s)		28.0	84.0	84.0		
Actuated g/C Ratio		0.23	0.70	0.70		
Clearance Time (s)		4.0	6.0	6.0		
Lane Grp Cap (vph)		607	3261	890		
v/s Ratio Prot		c0.19	c0.66			
v/s Ratio Perm				0.17		
v/c Ratio		0.80	0.94	0.24		
Uniform Delay, d1		43.4	15.8	6.5		
Progression Factor		1.00	1.00	1.00		
Incremental Delay, d2		10.7	7.0	0.6		
Delay (s)		54.1	22.8	7.1		
Level of Service		D	C	A		
Approach Delay (s)	54.1		21.4		0.0	
Approach LOS	D		C		A	
Intersection Summary						
HCM Average Control Delay		25.5		HCM Level of Service		C
HCM Volume to Capacity ratio		0.91				
Actuated Cycle Length (s)		120.0		Sum of lost time (s)		8.0
Intersection Capacity Utilization		59.9%		ICU Level of Service		B
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis 11: M St SW & Local S Cap SB

8/18/2006

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑					↑	↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.0	3.0		3.0					3.0	3.0	
Lane Util. Factor		0.91	1.00		0.91					0.95	0.95	
Frt		1.00	0.85		1.00					1.00	0.94	
Flt Protected		1.00	1.00		1.00					0.95	1.00	
Satd. Flow (prot)		4577	1425		4558					1513	1490	
Flt Permitted		1.00	1.00		0.65					0.95	1.00	
Satd. Flow (perm)		4577	1425		2959					1513	1490	
Volume (vph)	0	1358	1571	180	1979	0	0	0	0	403	232	176
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)	0	1509	1746	200	2199	0	0	0	0	448	258	196
RTOR Reduction (vph)	0	0	343	0	0	0	0	0	0	0	18	0
Lane Group Flow (vph)	0	1509	1403	0	2399	0	0	0	0	442	442	0
Turn Type		Perm D.P+P								Split		
Protected Phases		4		3	3 4					6	6	
Permitted Phases			4	4								
Actuated Green, G (s)		34.0	34.0		66.0					18.0	18.0	
Effective Green, g (s)		35.0	35.0		70.0					21.0	21.0	
Actuated g/C Ratio		0.35	0.35		0.70					0.21	0.21	
Clearance Time (s)		4.0	4.0							6.0	6.0	
Lane Grp Cap (vph)		1602	499		2631					318	313	
v/s Ratio Prot		0.33			c0.32					0.29	c0.30	
v/s Ratio Perm			c0.98		0.32							
v/c Ratio		0.94	2.81		0.91					1.39	1.41	
Uniform Delay, d1		31.5	32.5		12.4					39.5	39.5	
Progression Factor		1.00	1.00		1.14					1.00	1.00	
Incremental Delay, d2		12.4	821.2		0.6					193.7	203.2	
Delay (s)		43.9	853.7		14.8					233.2	242.7	
Level of Service		D	F		B					F	F	
Approach Delay (s)		478.3			14.8			0.0			238.1	
Approach LOS		F			B			A			F	
Intersection Summary												
HCM Average Control Delay		275.6			HCM Level of Service			F				
HCM Volume to Capacity ratio		1.76										
Actuated Cycle Length (s)		100.0			Sum of lost time (s)			9.0				
Intersection Capacity Utilization		189.8%			ICU Level of Service			H				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis 12: M St SE & Local S Cap NB

8/18/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑↑			↑↑↑			↑	↑				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.0			3.0		3.0	3.0				
Lane Util. Factor		0.91			0.91		*0.95	0.95				
Frt		1.00			0.97		1.00	0.98				
Flt Protected		0.99			1.00		0.95	0.98				
Satd. Flow (prot)		4546			4439		1513	1533				
Flt Permitted		0.67			1.00		0.95	0.98				
Satd. Flow (perm)		3072			4439		1513	1533				
Volume (vph)	242	1521	0	0	1296	327	862	306	77	0	0	0
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)	269	1690	0	0	1440	363	958	340	86	0	0	0
RTOR Reduction (vph)	0	0	0	0	44	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	1959	0	0	1759	0	682	697	0	0	0	0
Turn Type	D.P+P						Split					
Protected Phases	7	5 7			5		2	2				
Permitted Phases	5											
Actuated Green, G (s)		52.0			34.0		32.0	32.0				
Effective Green, g (s)		56.0			35.0		35.0	35.0				
Actuated g/C Ratio		0.56			0.35		0.35	0.35				
Clearance Time (s)					4.0		6.0	6.0				
Lane Grp Cap (vph)		2030			1554		530	537				
v/s Ratio Prot		c0.20			c0.40		0.45	c0.45				
v/s Ratio Perm		0.34										
v/c Ratio		0.97			1.13		1.29	1.30				
Uniform Delay, d1		21.1			32.5		32.5	32.5				
Progression Factor		0.36			0.80		1.00	1.00				
Incremental Delay, d2		2.0			67.1		142.8	147.2				
Delay (s)		9.5			93.0		175.3	179.7				
Level of Service		A			F		F	F				
Approach Delay (s)		9.5			93.0			177.5			0.0	
Approach LOS		A			F			F			A	
Intersection Summary												
HCM Average Control Delay		83.9					HCM Level of Service	F				
HCM Volume to Capacity ratio		1.16										
Actuated Cycle Length (s)		100.0					Sum of lost time (s)	9.0				
Intersection Capacity Utilization		122.1%					ICU Level of Service	H				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis 13: M St SE & 1st Street SE

8/18/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔↔			↔↔↔			↔↔			↔↔		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	3.0			3.0			3.0			3.0		
Lane Util. Factor	0.91			0.91			0.95			0.95		
Frt	1.00			1.00			0.93			0.94		
Flt Protected	1.00			1.00			0.98			0.98		
Satd. Flow (prot)	4560			4557			2787			2701		
Flt Permitted	0.88			0.85			0.82			0.82		
Satd. Flow (perm)	4013			3896			2321			2268		
Volume (vph)	23	1379	26	34	1322	29	73	21	87	24	10	26
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)	26	1532	29	38	1469	32	81	23	97	27	11	29
RTOR Reduction (vph)	0	2	0	0	2	0	0	73	0	0	22	0
Lane Group Flow (vph)	0	1585	0	0	1537	0	0	128	0	0	45	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)										10	10	10
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases	4			3			2			6		
Permitted Phases	4			4 3			2			6		
Actuated Green, G (s)	52.0			62.0			22.0			22.0		
Effective Green, g (s)	55.0			66.0			25.0			25.0		
Actuated g/C Ratio	0.55			0.66			0.25			0.25		
Clearance Time (s)	6.0						6.0			6.0		
Lane Grp Cap (vph)	2207			2644			580			567		
v/s Ratio Prot				c0.06								
v/s Ratio Perm	c0.40			0.32			c0.06			0.02		
v/c Ratio	0.72			0.58			0.22			0.08		
Uniform Delay, d1	16.7			9.4			29.8			28.7		
Progression Factor	1.15			1.00			1.00			1.00		
Incremental Delay, d2	0.5			0.9			0.9			0.3		
Delay (s)	19.8			10.3			30.6			29.0		
Level of Service	B			B			C			C		
Approach Delay (s)	19.8			10.3			30.6			29.0		
Approach LOS	B			B			C			C		
Intersection Summary												
HCM Average Control Delay	16.3			HCM Level of Service			B					
HCM Volume to Capacity ratio	0.57											
Actuated Cycle Length (s)	100.0			Sum of lost time (s)			9.0					
Intersection Capacity Utilization	74.1%			ICU Level of Service			D					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

1: N St SE & 1st St SE

8/18/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.96			0.99			0.89			0.99	
Flt Protected		0.99			0.98			1.00			0.98	
Satd. Flow (prot)		1652			1674			2939			3232	
Flt Permitted		0.92			0.62			0.95			0.70	
Satd. Flow (perm)		1528			1063			2800			2297	
Volume (vph)	59	238	141	137	107	26	4	96	272	88	187	13
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)	64	259	153	149	116	28	4	104	296	96	203	14
RTOR Reduction (vph)	0	17	0	0	4	0	0	195	0	0	3	0
Lane Group Flow (vph)	0	459	0	0	289	0	0	209	0	0	310	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		58.0			58.0			34.0			34.0	
Effective Green, g (s)		58.0			58.0			34.0			34.0	
Actuated g/C Ratio		0.58			0.58			0.34			0.34	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Lane Grp Cap (vph)		886			617			952			781	
v/s Ratio Prot												
v/s Ratio Perm		c0.30			0.27			0.07			c0.13	
v/c Ratio		0.52			0.47			0.22			0.40	
Uniform Delay, d1		12.6			12.1			23.5			25.2	
Progression Factor		1.00			1.00			1.00			1.01	
Incremental Delay, d2		2.2			2.5			0.5			1.2	
Delay (s)		14.8			14.7			24.1			26.7	
Level of Service		B			B			C			C	
Approach Delay (s)		14.8			14.7			24.1			26.7	
Approach LOS		B			B			C			C	
Intersection Summary												
HCM Average Control Delay		19.8										
HCM Volume to Capacity ratio		0.47										
Actuated Cycle Length (s)		100.0										
Intersection Capacity Utilization		70.6%										
Analysis Period (min)		15										
HCM Level of Service B Sum of lost time (s) 8.0 ICU Level of Service C												
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

1: N St SE & 1st St SE

8/23/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	59	238	141	137	107	26	4	96	272	88	187	13
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	64	259	153	149	116	28	4	104	296	96	203	14
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total (vph)	323	153	149	145	57	348	197	116				
Volume Left (vph)	64	0	149	0	4	0	96	0				
Volume Right (vph)	0	153	0	28	0	296	0	14				
Hadj (s)	0.13	-0.67	0.53	-0.10	0.07	-0.56	0.28	-0.05				
Departure Headway (s)	7.5	6.7	8.2	7.5	7.5	6.9	7.9	7.6				
Degree Utilization, x	0.67	0.28	0.34	0.30	0.12	0.67	0.43	0.24				
Capacity (veh/h)	469	518	419	452	456	500	436	451				
Control Delay (s)	23.0	11.1	14.1	12.6	10.3	21.4	15.5	11.8				
Approach Delay (s)	19.2		13.3		19.8		14.1					
Approach LOS	C		B		C		B					
Intersection Summary												
Delay			17.1									
HCM Level of Service			C									
Intersection Capacity Utilization			56.4%		ICU Level of Service				B			
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

1: N St SE & 1st St SE

8/18/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.98			0.99			0.91			0.99	
Flt Protected		1.00			0.97			1.00			0.99	
Satd. Flow (prot)		1699			1674			2999			3249	
Flt Permitted		0.95			0.75			0.95			0.91	
Satd. Flow (perm)		1627			1282			2864			2989	
Volume (vph)	12	129	23	311	239	55	1	104	166	6	43	4
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)	13	140	25	338	260	60	1	113	180	7	47	4
RTOR Reduction (vph)	0	6	0	0	4	0	0	148	0	0	3	0
Lane Group Flow (vph)	0	172	0	0	654	0	0	146	0	0	55	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		74.0			74.0			18.0			18.0	
Effective Green, g (s)		74.0			74.0			18.0			18.0	
Actuated g/C Ratio		0.74			0.74			0.18			0.18	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Lane Grp Cap (vph)		1204			949			516			538	
v/s Ratio Prot												
v/s Ratio Perm		0.11			0.51			0.05			0.02	
v/c Ratio		0.14			0.69			0.28			0.10	
Uniform Delay, d1		3.8			6.9			35.4			34.2	
Progression Factor		1.00			1.00			1.00			1.28	
Incremental Delay, d2		0.2			4.1			1.4			0.3	
Delay (s)		4.0			11.0			36.8			44.1	
Level of Service		A			B			D			D	
Approach Delay (s)		4.0			11.0			36.8			44.1	
Approach LOS		A			B			D			D	
Intersection Summary												
HCM Average Control Delay		18.0										
HCM Volume to Capacity ratio		0.61										
Actuated Cycle Length (s)		100.0										
Intersection Capacity Utilization		61.0%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

1: N St SE & 1st Street SE

8/23/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	12	129	23	311	239	55	1	104	166	6	43	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	140	25	338	260	60	1	113	180	7	47	4
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total (vph)	153	25	338	320	58	237	30	28				
Volume Left (vph)	13	0	338	0	1	0	7	0				
Volume Right (vph)	0	25	0	60	0	180	0	4				
Hadj (s)	0.08	-0.67	0.53	-0.10	0.04	-0.50	0.14	-0.08				
Departure Headway (s)	6.5	5.8	6.3	5.7	6.7	6.2	7.2	7.0				
Degree Utilization, x	0.28	0.04	0.60	0.51	0.11	0.41	0.06	0.05				
Capacity (veh/h)	524	586	554	615	507	555	461	475				
Control Delay (s)	10.8	7.8	17.1	13.3	9.3	12.1	9.4	9.2				
Approach Delay (s)	10.3		15.2		11.5		9.3					
Approach LOS	B		C		B		A					
Intersection Summary												
Delay			13.3									
HCM Level of Service			B									
Intersection Capacity Utilization			43.7%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

1: N St SE & 1st Street SE

8/23/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Volume (veh/h)	54	154	157	26	56	24	12	114	54	81	252	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	59	167	171	28	61	26	13	124	59	88	274	13
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)											663	
pX, platoon unblocked												
vC, conflicting volume	601	665	143	747	642	91	287				183	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	601	665	143	747	642	91	287				183	
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	81	52	81	80	83	97	99				94	
cM capacity (veh/h)	308	351	878	144	362	948	1272				1390	
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	397	115	75	121	225	150						
Volume Left	59	28	13	0	88	0						
Volume Right	171	26	0	59	0	13						
cSH	460	294	1272	1700	1390	1700						
Volume to Capacity	0.86	0.39	0.01	0.07	0.06	0.09						
Queue Length 95th (ft)	221	45	1	0	5	0						
Control Delay (s)	44.9	24.9	1.4	0.0	3.4	0.0						
Lane LOS	E	C	A		A							
Approach Delay (s)	44.9	24.9	0.6	2.0								
Approach LOS	E	C										
Intersection Summary												
Average Delay	19.9											
Intersection Capacity Utilization	49.2%			ICU Level of Service			A					
Analysis Period (min)	15											

HCM Signalized Intersection Capacity Analysis 4: Potomac Avenue & South Capitol Street

8/23/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95			0.91			0.95	1.00
Friction	1.00	1.00	0.85	1.00	0.92			0.99			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			1.00			1.00	1.00
Satd. Flow (prot)	1652	1739	1478	1652	3056			4714			3303	1478
Flt Permitted	0.68	1.00	1.00	0.74	1.00			1.00			1.00	1.00
Satd. Flow (perm)	1189	1739	1478	1286	3056			4714			3303	1478
Volume (vph)	25	25	50	189	50	50	0	3653	173	0	1503	50
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)	27	27	54	205	54	54	0	3971	188	0	1634	54
RTOR Reduction (vph)	0	0	44	0	1	0	0	5	0	0	0	14
Lane Group Flow (vph)	27	27	10	205	107	0	0	4154	0	0	1634	40
Turn Type	Perm		Perm	Perm								Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8								6
Actuated Green, G (s)	16.0	16.0	16.0	16.0	16.0			72.0			72.0	72.0
Effective Green, g (s)	18.0	18.0	18.0	18.0	18.0			74.0			74.0	74.0
Actuated g/C Ratio	0.18	0.18	0.18	0.18	0.18			0.74			0.74	0.74
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0			6.0			6.0	6.0
Lane Grp Cap (vph)	214	313	266	231	550			3488			2444	1094
v/s Ratio Prot		0.02			0.04			0.88			0.49	
v/s Ratio Perm	0.02		0.01	0.16								0.03
v/c Ratio	0.13	0.09	0.04	0.89	0.19			1.19			0.67	0.04
Uniform Delay, d1	34.4	34.2	33.8	40.0	34.8			13.0			6.7	3.5
Progression Factor	1.00	1.00	1.00	0.93	0.93			1.00			1.00	1.00
Incremental Delay, d2	1.2	0.5	0.3	35.1	0.8			89.0			1.5	0.1
Delay (s)	35.6	34.7	34.1	72.5	33.2			102.0			8.2	3.5
Level of Service	D	C	C	E	C			F			A	A
Approach Delay (s)		34.6			58.9			102.0			8.0	
Approach LOS		C			E			F			A	
Intersection Summary												
HCM Average Control Delay			73.4			HCM Level of Service				E		
HCM Volume to Capacity ratio			1.13									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			98.2%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
7: Potomac Avenue & Site Drive 1

8/23/2006

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑	↑
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	148	70	107	329	16	33
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	161	76	116	358	17	36
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None		
Median storage (veh)						
Upstream signal (ft)	653					
pX, platoon unblocked						
vC, conflicting volume			237		610	118
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			237		610	118
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			91		96	96
cM capacity (veh/h)			1327		389	911
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	107	130	236	238	53	
Volume Left	0	0	116	0	17	
Volume Right	0	76	0	0	36	
cSH	1700	1700	1327	1700	633	
Volume to Capacity	0.06	0.08	0.09	0.14	0.08	
Queue Length 95th (ft)	0	0	7	0	7	
Control Delay (s)	0.0	0.0	4.3	0.0	11.2	
Lane LOS			A		B	
Approach Delay (s)	0.0		2.1		11.2	
Approach LOS					B	
Intersection Summary						
Average Delay			2.1			
Intersection Capacity Utilization			31.9%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis 11: M St SW & Local S Cap SB

8/23/2006

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑					↑	↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.0	3.0		3.0					3.0	3.0	
Lane Util. Factor		0.91	1.00		0.91					0.95	0.95	
Frt		1.00	0.85		1.00					1.00	0.98	
Flt Protected		1.00	1.00		0.99					0.95	0.97	
Satd. Flow (prot)		4577	1425		4553					1513	1513	
Flt Permitted		1.00	1.00		0.67					0.95	0.97	
Satd. Flow (perm)		4577	1425		3052					1513	1513	
Volume (vph)	0	842	337	279	2352	0	0	0	0	573	77	44
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)	0	936	374	310	2613	0	0	0	0	637	86	49
RTOR Reduction (vph)	0	0	295	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	936	79	0	2923	0	0	0	0	382	384	0
Turn Type		Perm D.P+P								Split		
Protected Phases		4		3	3 4					6	6	
Permitted Phases			4	4								
Actuated Green, G (s)		20.0	20.0		66.0					18.0	18.0	
Effective Green, g (s)		21.0	21.0		70.0					21.0	21.0	
Actuated g/C Ratio		0.21	0.21		0.70					0.21	0.21	
Clearance Time (s)		4.0	4.0							6.0	6.0	
Lane Grp Cap (vph)		961	299		2872					318	318	
v/s Ratio Prot		0.20			c0.50					0.25	c0.25	
v/s Ratio Perm			0.06		c0.21							
v/c Ratio		0.97	0.26		1.02					1.20	1.21	
Uniform Delay, d1		39.2	33.0		15.0					39.5	39.5	
Progression Factor		1.00	1.00		0.56					1.00	1.00	
Incremental Delay, d2		23.4	2.1		10.5					116.8	119.8	
Delay (s)		62.6	35.2		18.9					156.3	159.3	
Level of Service		E	D		B					F	F	
Approach Delay (s)		54.8			18.9			0.0			157.8	
Approach LOS		D			B			A			F	
Intersection Summary												
HCM Average Control Delay		49.7			HCM Level of Service			D				
HCM Volume to Capacity ratio		1.06										
Actuated Cycle Length (s)		100.0			Sum of lost time (s)			9.0				
Intersection Capacity Utilization		111.3%			ICU Level of Service			H				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis 12: M St SE & Local S Cap NB

8/23/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑		↑	↑				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.0			3.0		3.0	3.0				
Lane Util. Factor		0.91			0.91		*0.95	0.95				
Frt		1.00			0.99		1.00	0.99				
Flt Protected		1.00			1.00		0.95	0.96				
Satd. Flow (prot)		4568			4546		1513	1505				
Flt Permitted		0.77			1.00		0.95	0.96				
Satd. Flow (perm)		3539			4546		1513	1505				
Volume (vph)	55	1387	0	0	837	40	1794	35	85	0	0	0
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)	61	1541	0	0	930	44	1993	39	94	0	0	0
RTOR Reduction (vph)	0	0	0	0	5	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	1602	0	0	969	0	1092	1030	0	0	0	0
Turn Type	D.P+P						Split					
Protected Phases	7	5 7			5		2	2				
Permitted Phases	5											
Actuated Green, G (s)		38.0			20.0		46.0	46.0				
Effective Green, g (s)		42.0			21.0		49.0	49.0				
Actuated g/C Ratio		0.42			0.21		0.49	0.49				
Clearance Time (s)					4.0		6.0	6.0				
Lane Grp Cap (vph)		1702			955		741	737				
v/s Ratio Prot		c0.20			c0.21		c0.72	0.68				
v/s Ratio Perm		0.20										
v/c Ratio		0.94			1.01		1.47	1.40				
Uniform Delay, d1		27.8			39.5		25.5	25.5				
Progression Factor		0.19			0.82		1.00	1.00				
Incremental Delay, d2		1.4			30.9		220.5	187.4				
Delay (s)		6.6			63.4		246.0	212.9				
Level of Service		A			E		F	F				
Approach Delay (s)		6.6			63.4		229.9				0.0	
Approach LOS		A			E		F				A	
Intersection Summary												
HCM Average Control Delay		119.3					HCM Level of Service	F				
HCM Volume to Capacity ratio		1.24										
Actuated Cycle Length (s)		100.0					Sum of lost time (s)	9.0				
Intersection Capacity Utilization		119.1%					ICU Level of Service	H				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis 13: M St SE & 1st Street SE

8/23/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔↔			↔↔↔			↔↔			↔↔		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		0.91			0.91			0.95			0.95	
Flt		0.98			0.99			0.94			0.95	
Flt Protected		1.00			0.99			0.98			0.99	
Satd. Flow (prot)		4471			4503			2829			2778	
Flt Permitted		0.90			0.65			0.80			0.88	
Satd. Flow (perm)		4026			2947			2314			2460	
Volume (vph)	21	995	177	197	790	47	72	31	63	20	39	26
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)	23	1106	197	219	878	52	80	34	70	22	43	29
RTOR Reduction (vph)	0	24	0	0	5	0	0	50	0	0	21	0
Lane Group Flow (vph)	0	1302	0	0	1144	0	0	134	0	0	73	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)										10	10	10
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		4		3	4 3			2			6	
Permitted Phases	4			4 3			2			6		
Actuated Green, G (s)		46.0			59.0			25.0			25.0	
Effective Green, g (s)		49.0			63.0			28.0			28.0	
Actuated g/C Ratio		0.49			0.63			0.28			0.28	
Clearance Time (s)		6.0						6.0			6.0	
Lane Grp Cap (vph)		1973			2074			648			689	
v/s Ratio Prot					c0.08							
v/s Ratio Perm		c0.32			0.27			c0.06			0.03	
v/c Ratio		0.66			0.55			0.21			0.11	
Uniform Delay, d1		19.2			10.5			27.5			26.7	
Progression Factor		0.78			1.00			1.06			1.00	
Incremental Delay, d2		0.5			1.1			0.6			0.3	
Delay (s)		15.4			11.6			29.9			27.0	
Level of Service		B			B			C			C	
Approach Delay (s)		15.4			11.6			29.9			27.0	
Approach LOS		B			B			C			C	
Intersection Summary												
HCM Average Control Delay		15.2			HCM Level of Service			B				
HCM Volume to Capacity ratio		0.50										
Actuated Cycle Length (s)		100.0			Sum of lost time (s)			9.0				
Intersection Capacity Utilization		69.9%			ICU Level of Service			C				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
16: Potomac Avenue & Site Drive 2

8/23/2006

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↖	↗
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	216	0	1	344	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	235	0	1	374	1	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)	465					
pX, platoon unblocked						
vC, conflicting volume			235		424	117
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			235		424	117
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	100
cM capacity (veh/h)			1330		558	912
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	157	78	126	249	3	
Volume Left	0	0	1	0	1	
Volume Right	0	0	0	0	2	
cSH	1700	1700	1330	1700	753	
Volume to Capacity	0.09	0.05	0.00	0.15	0.00	
Queue Length 95th (ft)	0	0	0	0	0	
Control Delay (s)	0.0	0.0	0.1	0.0	9.8	
Lane LOS			A		A	
Approach Delay (s)	0.0		0.0		9.8	
Approach LOS					A	
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			20.2%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

1: N St SE & 1st Street SE

8/18/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	11	64	32	61	138	50	27	173	28	6	71	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	70	35	66	150	54	29	188	30	7	77	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)											663	
pX, platoon unblocked												
vC, conflicting volume	374	369	40	383	355	109	80			218		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	374	369	40	383	355	109	80			218		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	87	97	86	73	94	98			100		
cM capacity (veh/h)	408	545	1022	470	555	923	1515			1348		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	116	271	123	124	45	42						
Volume Left	12	66	29	0	7	0						
Volume Right	35	54	0	30	0	3						
cSH	609	576	1515	1700	1348	1700						
Volume to Capacity	0.19	0.47	0.02	0.07	0.00	0.02						
Queue Length 95th (ft)	17	62	1	0	0	0						
Control Delay (s)	12.3	16.7	1.9	0.0	1.1	0.0						
Lane LOS	B	C	A		A							
Approach Delay (s)	12.3	16.7	0.9		0.6							
Approach LOS	B	C										
Intersection Summary												
Average Delay			8.6									
Intersection Capacity Utilization			36.8%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis 4: Potomac Avenue & South Capitol Street

8/18/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95			0.91			0.95	1.00
Fr _t	1.00	1.00	0.85	1.00	0.92			1.00			1.00	0.85
Fl _t Protected	0.95	1.00	1.00	0.95	1.00			1.00			1.00	1.00
Satd. Flow (prot)	1652	1739	1478	1652	3056			4726			3303	1478
Fl _t Permitted	0.72	1.00	1.00	0.72	1.00			1.00			1.00	1.00
Satd. Flow (perm)	1252	1739	1478	1255	3056			4726			3303	1478
Volume (vph)	25	50	100	147	25	25	0	2429	73	0	3744	50
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)	27	54	109	160	27	27	0	2640	79	0	4070	54
RTOR Reduction (vph)	0	0	0	0	7	0	0	3	0	0	0	10
Lane Group Flow (vph)	27	54	109	160	47	0	0	2716	0	0	4070	44
Turn Type	Perm		Perm	Perm								Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8								6
Actuated Green, G (s)	16.0	16.0	16.0	16.0	16.0			72.0			72.0	72.0
Effective Green, g (s)	18.0	18.0	18.0	18.0	18.0			74.0			74.0	74.0
Actuated g/C Ratio	0.18	0.18	0.18	0.18	0.18			0.74			0.74	0.74
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0			6.0			6.0	6.0
Lane Grp Cap (vph)	225	313	266	226	550			3497			2444	1094
v/s Ratio Prot		0.03			0.02			0.57			c1.23	
v/s Ratio Perm	0.02		0.07	c0.13								0.03
v/c Ratio	0.12	0.17	0.41	0.71	0.09			0.78			1.67	0.04
Uniform Delay, d1	34.4	34.7	36.3	38.5	34.2			7.9			13.0	3.5
Progression Factor	1.00	1.00	1.00	0.95	0.95			1.00			1.00	1.00
Incremental Delay, d2	1.1	1.2	4.6	17.0	0.3			1.8			301.2	0.1
Delay (s)	35.5	35.9	40.9	53.5	32.6			9.7			314.2	3.6
Level of Service	D	D	D	D	C			A			F	A
Approach Delay (s)		38.7			48.2			9.7			310.2	
Approach LOS		D			D			A			F	
Intersection Summary												
HCM Average Control Delay		182.6				HCM Level of Service		F				
HCM Volume to Capacity ratio		1.48										
Actuated Cycle Length (s)		100.0				Sum of lost time (s)		8.0				
Intersection Capacity Utilization		127.8%				ICU Level of Service		H				
Analysis Period (min)		15										

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
7: Potomac Avenue & Site Drive 2

8/18/2006

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↖	↗
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	144	1	2	186	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	157	1	2	202	1	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)	461					
pX, platoon unblocked						
vC, conflicting volume			158		262	79
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			158		262	79
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	100
cM capacity (veh/h)			1420		703	966
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	104	53	70	135	2	
Volume Left	0	0	2	0	1	
Volume Right	0	1	0	0	1	
cSH	1700	1700	1420	1700	814	
Volume to Capacity	0.06	0.03	0.00	0.08	0.00	
Queue Length 95th (ft)	0	0	0	0	0	
Control Delay (s)	0.0	0.0	0.2	0.0	9.4	
Lane LOS			A		A	
Approach Delay (s)	0.0		0.1		9.4	
Approach LOS					A	
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			16.5%		ICU Level of Service	A
Analysis Period (min)			15			

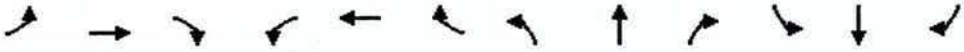
HCM Signalized Intersection Capacity Analysis 11: M St SW & Local S Cap SB

8/18/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑					↑	↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.0	3.0		3.0					3.0	3.0	
Lane Util. Factor		0.91	1.00		0.91					0.95	0.95	
Flt		1.00	0.85		1.00					1.00	0.98	
Flt Protected		1.00	1.00		1.00					0.95	0.99	
Satd. Flow (prot)		4577	1425		4554					1513	1546	
Flt Permitted		1.00	1.00		0.68					0.95	0.99	
Satd. Flow (perm)		4577	1425		3119					1513	1546	
Volume (vph)	0	887	1245	171	1564	0	0	0	0	351	213	43
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)	0	986	1383	190	1738	0	0	0	0	390	237	48
RTOR Reduction (vph)	0	0	335	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	986	1048	0	1928	0	0	0	0	329	340	0
Turn Type		Perm D.P+P								Split		
Protected Phases		4		3	3 4					6	6	
Permitted Phases			4	4								
Actuated Green, G (s)		38.0	38.0		68.0					16.0	16.0	
Effective Green, g (s)		39.0	39.0		72.0					19.0	19.0	
Actuated g/C Ratio		0.39	0.39		0.72					0.19	0.19	
Clearance Time (s)		4.0	4.0							6.0	6.0	
Lane Grp Cap (vph)		1785	556		2719					287	294	
v/s Ratio Prot		0.22			c0.23					0.22	c0.22	
v/s Ratio Perm			c0.74		0.28							
v/c Ratio		0.55	1.89		0.71					1.15	1.16	
Uniform Delay, d1		23.7	30.5		8.0					40.5	40.5	
Progression Factor		1.00	1.00		0.39					1.00	1.00	
Incremental Delay, d2		1.2	405.1		0.5					98.6	102.1	
Delay (s)		25.0	435.6		3.6					139.1	142.6	
Level of Service		C	F		A					F	F	
Approach Delay (s)		264.7			3.6			0.0			140.9	
Approach LOS		F			A			A			F	
Intersection Summary												
HCM Average Control Delay		146.6			HCM Level of Service			F				
HCM Volume to Capacity ratio		1.31										
Actuated Cycle Length (s)		100.0			Sum of lost time (s)			9.0				
Intersection Capacity Utilization		151.6%			ICU Level of Service			H				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis 12: M St SE & Local S Cap NB

8/18/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑		↑	↑				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)		3.0			3.0		3.0	3.0				
Lane Util. Factor		0.91			0.91		*0.95	0.95				
Frt		1.00			0.97		1.00	0.98				
Flt Protected		1.00			1.00		0.95	0.98				
Satd. Flow (prot)		4572			4437		1513	1535				
Flt Permitted		0.89			1.00		0.95	0.98				
Satd. Flow (perm)		4073			4437		1513	1535				
Volume (vph)	26	1212	0	0	1063	273	672	281	73	0	0	0
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)	29	1347	0	0	1181	303	747	312	81	0	0	0
RTOR Reduction (vph)	0	0	0	0	45	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	1376	0	0	1439	0	561	573	0	0	0	0
Turn Type	D.P+P						Split					
Protected Phases	7	5	7		5		2	2				
Permitted Phases	5											
Actuated Green, G (s)		54.0			38.0		30.0	30.0				
Effective Green, g (s)		58.0			39.0		33.0	33.0				
Actuated g/C Ratio		0.58			0.39		0.33	0.33				
Clearance Time (s)					4.0		6.0	6.0				
Lane Grp Cap (vph)		2457			1730		499	507				
v/s Ratio Prot		c0.11			c0.32		0.37	c0.37				
v/s Ratio Perm		0.22										
v/c Ratio		0.56			0.83		1.12	1.13				
Uniform Delay, d1		13.1			27.5		33.5	33.5				
Progression Factor		0.13			0.79		1.00	1.00				
Incremental Delay, d2		0.6			4.6		79.0	80.9				
Delay (s)		2.3			26.3		112.5	114.4				
Level of Service		A			C		F	F				
Approach Delay (s)		2.3			26.3			113.5			0.0	
Approach LOS		A			C			F			A	
Intersection Summary												
HCM Average Control Delay		42.9					HCM Level of Service	D				
HCM Volume to Capacity ratio		0.88										
Actuated Cycle Length (s)		100.0					Sum of lost time (s)	9.0				
Intersection Capacity Utilization		84.6%					ICU Level of Service	E				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis 13: M St SE & 1st Street SE

8/18/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑↑			↑↑↑			↑↑			↑↑		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	3.0			3.0			3.0			3.0		
Lane Util. Factor	0.91			0.91			0.95			0.95		
Frt	0.99			1.00			0.93			0.93		
Flt Protected	1.00			1.00			0.98			0.98		
Satd. Flow (prot)	4545			4553			2790			2698		
Flt Permitted	0.90			0.88			0.79			0.82		
Satd. Flow (perm)	4074			3991			2259			2256		
Volume (vph)	21	1061	46	32	1011	27	113	19	112	22	9	24
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)	23	1179	51	36	1123	30	126	21	124	24	10	27
RTOR Reduction (vph)	0	4	0	0	3	0	0	88	0	0	19	0
Lane Group Flow (vph)	0	1249	0	0	1186	0	0	183	0	0	42	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Parking (#/hr)										10	10	10
Turn Type	Perm		pm+pt		Perm		Perm		Perm			
Protected Phases	4		3		4 3		2		6			
Permitted Phases	4		4 3		2		6					
Actuated Green, G (s)	44.0		58.0		26.0		26.0					
Effective Green, g (s)	47.0		62.0		29.0		29.0					
Actuated g/C Ratio	0.47		0.62		0.29		0.29					
Clearance Time (s)	6.0		6.0		6.0		6.0					
Lane Grp Cap (vph)	1915		2559		655		654					
v/s Ratio Prot			c0.07									
v/s Ratio Perm	c0.31		0.22		c0.08		0.02					
v/c Ratio	0.65		0.46		0.28		0.06					
Uniform Delay, d1	20.3		10.1		27.4		25.7					
Progression Factor	0.65		1.00		0.96		1.00					
Incremental Delay, d2	1.4		0.6		1.1		0.2					
Delay (s)	14.7		10.7		27.3		25.9					
Level of Service	B		B		C		C					
Approach Delay (s)	14.7		10.7		27.3		25.9					
Approach LOS	B		B		C		C					
Intersection Summary												
HCM Average Control Delay	14.5		HCM Level of Service		B							
HCM Volume to Capacity ratio	0.50											
Actuated Cycle Length (s)	100.0		Sum of lost time (s)		9.0							
Intersection Capacity Utilization	69.9%		ICU Level of Service		C							
Analysis Period (min)	15											
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis 16: Potomac Avenue & Site Drive 1

8/18/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑	↑
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	125	21	41	124	64	104
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	136	23	45	135	70	113
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh						
Upstream signal (ft)	684					
pX, platoon unblocked						
vC, conflicting volume			159		304	79
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			159		304	79
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		89	88
cM capacity (veh/h)			1418		643	965
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	91	68	89	90	183	
Volume Left	0	0	45	0	70	
Volume Right	0	23	0	0	113	
cSH	1700	1700	1418	1700	810	
Volume to Capacity	0.05	0.04	0.03	0.05	0.23	
Queue Length 95th (ft)	0	0	2	0	22	
Control Delay (s)	0.0	0.0	3.9	0.0	10.7	
Lane LOS			A		B	
Approach Delay (s)	0.0		2.0		10.7	
Approach LOS					B	
Intersection Summary						
Average Delay			4.4			
Intersection Capacity Utilization			28.7%		ICU Level of Service	A
Analysis Period (min)			15			