

Appendix H

Future Intersections Levels of Service

HCM Signalized Intersection Capacity Analysis

1: E. Glebe Road & US Route 1

3/29/2006

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	4.0	4.0		
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95		
Frt	1.00	0.88		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		
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)	1770	1647		1770	1863	1583	1770	3539	1583	1770	3525		
Flt Permitted	0.56	1.00		0.32	1.00	1.00	0.07	1.00	1.00	0.05	1.00		
Satd. Flow (perm)	1043	1647		596	1863	1583	137	3539	1583	101	3525		
Volume (vph)	247	65	219	15	27	75	190	2039	37	174	1322	35	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	260	68	231	16	28	79	200	2146	39	183	1392	37	
RTOR Reduction (vph)	0	100	0	0	0	12	0	0	2	0	1	0	
Lane Group Flow (vph)	260	199	0	16	28	67	200	2146	37	183	1428	0	
Turn Type	pm+pt			Perm		pm+ov	pm+pt		Perm	pm+pt			
Protected Phases	7	4			8	1	5	2		1	6		
Permitted Phases	4			8		8	2		2		6		
Actuated Green, G (s)	21.9	21.9		11.5	11.5	29.5	108.1	85.1	85.1	91.1	73.1		
Effective Green, g (s)	22.9	22.9		12.5	12.5	31.5	109.1	86.1	86.1	93.1	74.1		
Actuated g/C Ratio	0.16	0.16		0.09	0.09	0.22	0.78	0.62	0.62	0.66	0.53		
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		
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)	204	269		53	166	401	468	2176	974	294	1866		
v/s Ratio Prot	c0.06	0.12			0.02	0.02	0.09	c0.61		c0.08	0.40		
v/s Ratio Perm	c0.15			0.03		0.02	0.24		0.02	0.33			
v/c Ratio	1.27	0.74		0.30	0.17	0.17	0.43	0.99	0.04	0.62	0.77		
Uniform Delay, d1	58.4	55.7		59.7	58.9	43.7	26.2	26.4	10.6	58.3	26.1		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.08	0.60	0.35	1.00	1.00		
Incremental Delay, d2	156.0	10.5		3.2	0.5	0.2	0.4	12.0	0.0	4.1	3.1		
Delay (s)	214.4	66.2		62.9	59.4	43.9	28.5	27.9	3.8	62.4	29.1		
Level of Service	F	E		E	E	D	C	C	A	E	C		
Approach Delay (s)		135.1			49.9			27.5			32.9		
Approach LOS		F			D			C			C		
Intersection Summary													
HCM Average Control Delay			42.8									HCM Level of Service	D
HCM Volume to Capacity ratio			0.98										
Actuated Cycle Length (s)			140.0									Sum of lost time (s)	12.0
Intersection Capacity Utilization			99.7%									ICU Level of Service	F
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis

2: Hume & US Route 1

3/29/2006



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	1.00			0.91	0.95	
Frt	0.96			1.00	1.00	
Flt Protected	0.97			1.00	1.00	
Satd. Flow (prot)	1723			5084	3537	
Flt Permitted	0.97			0.94	1.00	
Satd. Flow (perm)	1723			4764	3537	
Volume (vph)	28	13	9	2238	1548	8
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	29	14	9	2356	1629	8
RTOR Reduction (vph)	13	0	0	0	0	0
Lane Group Flow (vph)	30	0	0	2365	1637	0
Turn Type			Prot			
Protected Phases	8		5	2 5	6 7	
Permitted Phases						
Actuated Green, G (s)	11.5			108.1	83.5	
Effective Green, g (s)	12.5			109.1	84.5	
Actuated g/C Ratio	0.09			0.78	0.60	
Clearance Time (s)	5.0					
Vehicle Extension (s)	3.0					
Lane Grp Cap (vph)	154			3783	2135	
v/s Ratio Prot	c0.02			c0.14	c0.46	
v/s Ratio Perm				0.35		
v/c Ratio	0.20			0.63	0.77	
Uniform Delay, d1	59.1			6.6	20.5	
Progression Factor	1.00			1.40	0.33	
Incremental Delay, d2	0.6			0.2	1.2	
Delay (s)	59.7			9.5	8.0	
Level of Service	E			A	A	
Approach Delay (s)	59.7			9.5	8.0	
Approach LOS	E			A	A	


















Intersection Summary

HCM Average Control Delay	9.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

3: Swann Ave. & US Route 1

3/29/2006

												
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	
Lane Util. Factor		1.00			1.00			0.95		1.00	0.95	
Frt		0.98			0.88			1.00		1.00	1.00	
Flt Protected		0.96			1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1749			1625			3536		1770	3533	
Flt Permitted		0.80			0.98			0.94		0.03	1.00	
Satd. Flow (perm)		1452			1598			3339		65	3533	
Volume (vph)	30	0	6	3	0	32	9	2210	12	80	1555	19
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	0	6	3	0	34	9	2326	13	84	1637	20
RTOR Reduction (vph)	0	6	0	0	32	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	32	0	0	5	0	0	2348	0	84	1657	0
Turn Type	Perm		Perm		Perm		pm+pt					
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		5.9			5.9			110.2		124.1	124.1	
Effective Green, g (s)		6.9			6.9			111.2		125.1	125.1	
Actuated g/C Ratio		0.05			0.05			0.79		0.89	0.89	
Clearance Time (s)		5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		72			79			2652		179	3157	
v/s Ratio Prot										0.03	c0.47	
v/s Ratio Perm		c0.02			0.00			c0.70		0.39		
v/c Ratio		0.45			0.06			0.89		0.47	0.52	
Uniform Delay, d1		64.7			63.5			10.0		34.8	1.5	
Progression Factor		1.00			1.00			0.43		2.48	0.03	
Incremental Delay, d2		4.4			0.3			2.9		1.3	0.4	
Delay (s)		69.1			63.8			7.1		87.6	0.5	
Level of Service		E			E			A		F	A	
Approach Delay (s)		69.1			63.8			7.1			4.7	
Approach LOS		E			E			A			A	
Intersection Summary												
HCM Average Control Delay			7.2					HCM Level of Service		A		
HCM Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			140.0					Sum of lost time (s)		12.0		
Intersection Capacity Utilization			84.5%					ICU Level of Service		E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Custis Ave & US Route 1

3/29/2006



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	
Lane Util. Factor		1.00			1.00			0.95		1.00	0.95	
Frt		0.95			0.90			1.00		1.00	1.00	
Flt Protected		0.97			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		1720			1658			3538		1770	3532	
Flt Permitted		0.78			0.97			0.95		0.05	1.00	
Satd. Flow (perm)		1376			1614			3351		89	3532	
Volume (vph)	60	3	35	6	5	36	7	2190	2	14	1623	21
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	63	3	37	6	5	38	7	2305	2	15	1708	22
RTOR Reduction (vph)	0	17	0	0	12	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	86	0	0	37	0	0	2314	0	15	1730	0
Turn Type	Perm		Perm			Perm			Perm			
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		13.2			13.2			116.8		116.8	116.8	
Effective Green, g (s)		14.2			14.2			117.8		117.8	117.8	
Actuated g/C Ratio		0.10			0.10			0.84		0.84	0.84	
Clearance Time (s)		5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		140			164			2820		75	2972	
v/s Ratio Prot											0.49	
v/s Ratio Perm		c0.06			0.02			c0.69		0.17		
v/c Ratio		0.61			0.23			0.82		0.20	0.58	
Uniform Delay, d1		60.3			57.9			5.7		2.1	3.4	
Progression Factor		1.00			1.00			0.19		0.68	0.57	
Incremental Delay, d2		7.7			0.7			0.9		5.3	0.7	
Delay (s)		68.0			58.6			2.0		6.7	2.7	
Level of Service		E			E			A		A	A	
Approach Delay (s)		68.0			58.6			2.0			2.7	
Approach LOS		E			E			A			A	






















Intersection Summary

HCM Average Control Delay	4.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	86.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

5: Howell Ave. & US Route 1

3/29/2006

												
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	1.00	1.00	0.95	
Frt		0.94		1.00	0.88		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1710		1770	1643		1770	3539	1583	1770	3537	
Flt Permitted		0.84		0.79	1.00		0.15	1.00	1.00	0.03	1.00	
Satd. Flow (perm)		1474		1478	1643		287	3539	1583	64	3537	
Volume (vph)	17	3	16	22	3	10	6	2635	33	75	1477	7
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	18	3	17	23	3	11	6	2774	35	79	1555	7
RTOR Reduction (vph)	0	16	0	0	11	0	0	0	1	0	0	0
Lane Group Flow (vph)	0	22	0	23	3	0	6	2774	34	79	1562	0
Turn Type	Perm		Perm		pm+pt		Perm		pm+pt			
Protected Phases	8		4		5		2		1		6	
Permitted Phases	8		4		2		2		6			
Actuated Green, G (s)	5.3		5.3		112.5		111.4		124.7		118.6	
Effective Green, g (s)	6.3		6.3		114.5		112.4		125.7		119.6	
Actuated g/C Ratio	0.04		0.04		0.82		0.80		0.90		0.85	
Clearance Time (s)	5.0		5.0		5.0		5.0		5.0		5.0	
Vehicle Extension (s)	3.0		3.0		3.0		3.0		3.0		3.0	
Lane Grp Cap (vph)	66		67		74		257		2841		1271	
v/s Ratio Prot			0.00		0.00		c0.78		c0.03		0.44	
v/s Ratio Perm	0.01		c0.02		0.02		0.02		0.38			
v/c Ratio	0.33		0.34		0.05		0.02		0.98		0.52	
Uniform Delay, d1	64.8		64.8		64.0		2.5		12.6		2.7	
Progression Factor	1.00		1.00		1.00		1.05		0.68		1.25	
Incremental Delay, d2	2.9		3.1		0.3		0.0		10.2		0.5	
Delay (s)	67.7		67.9		64.2		2.6		18.7		3.8	
Level of Service	E		E		E		A		A		A	
Approach Delay (s)	67.7		66.5		18.5		7.8					
Approach LOS	E		E		B		A					
Intersection Summary												
HCM Average Control Delay	15.4		HCM Level of Service				B					
HCM Volume to Capacity ratio	0.91											
Actuated Cycle Length (s)	140.0		Sum of lost time (s)				12.0					
Intersection Capacity Utilization	90.9%		ICU Level of Service				E					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 6: Monroe Ave & Main St

3/29/2006



Movement	EBL	EBR	NEL	NET	SWT	SWR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	0.95		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1771		1770	1863	1863	1583
Flt Permitted	0.95		0.64	1.00	1.00	1.00
Satd. Flow (perm)	1771		1193	1863	1863	1583
Volume (vph)	947	16	7	126	102	329
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	997	17	7	133	107	346
RTOR Reduction (vph)	1	0	0	0	0	255
Lane Group Flow (vph)	1013	0	7	133	107	91
Turn Type			Perm			Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Actuated Green, G (s)	94.3		35.7	35.7	35.7	35.7
Effective Green, g (s)	95.3		36.7	36.7	36.7	36.7
Actuated g/C Ratio	0.68		0.26	0.26	0.26	0.26
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1206		313	488	488	415
v/s Ratio Prot	c0.57			c0.07	0.06	
v/s Ratio Perm			0.01			0.06
v/c Ratio	0.84		0.02	0.27	0.22	0.22
Uniform Delay, d1	16.7		38.3	41.0	40.4	40.4
Progression Factor	1.00		1.00	1.00	0.78	1.33
Incremental Delay, d2	5.4		0.1	1.4	0.7	0.8
Delay (s)	22.1		38.5	42.4	32.0	54.4
Level of Service	C		D	D	C	D
Approach Delay (s)	22.1			42.2	49.1	
Approach LOS	C			D	D	

Intersection Summary

HCM Average Control Delay	31.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

7: Slaters Lane & US Route 1

3/29/2006



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↔↔	↕↕↕	↗	↖	↕↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		0.88	0.91	1.00	1.00	0.95
Frt		0.85	1.00	0.85	1.00	1.00
Flt Protected		1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)		2787	5085	1583	1770	3539
Flt Permitted		1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)		2787	5085	1583	1770	3539
Volume (vph)	0	204	2634	442	498	1698
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	215	2773	465	524	1787
RTOR Reduction (vph)	0	1	0	70	0	0
Lane Group Flow (vph)	0	214	2773	395	524	1787
Turn Type		custom		Perm	Prot	
Protected Phases			2		1 8	6
Permitted Phases		8 1		2		
Actuated Green, G (s)		48.3	81.7	81.7	48.3	100.0
Effective Green, g (s)		49.3	82.7	82.7	49.3	101.0
Actuated g/C Ratio		0.35	0.59	0.59	0.35	0.72
Clearance Time (s)			5.0	5.0		5.0
Vehicle Extension (s)			3.0	3.0		3.0
Lane Grp Cap (vph)		981	3004	935	623	2553
v/s Ratio Prot			c0.55		c0.30	0.50
v/s Ratio Perm		0.08		0.25		
v/c Ratio		0.22	0.92	0.42	0.84	0.70
Uniform Delay, d1		31.8	25.8	15.6	41.7	11.0
Progression Factor		1.00	1.00	1.00	1.06	0.91
Incremental Delay, d2		0.1	6.1	1.4	8.8	1.4
Delay (s)		31.9	31.9	17.0	53.2	11.4
Level of Service		C	C	B	D	B
Approach Delay (s)	31.9		29.8			20.9
Approach LOS	C		C			C

Intersection Summary

HCM Average Control Delay	26.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	86.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

8: Potomac Ave & US Route 1

3/29/2006

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1583	3539	1583	1770	5085
Flt Permitted	0.95	1.00	1.00	1.00	0.05	1.00
Satd. Flow (perm)	3433	1583	3539	1583	88	5085
Volume (vph)	801	364	1704	1134	42	1220
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	843	383	1794	1194	44	1284
RTOR Reduction (vph)	0	11	0	43	0	0
Lane Group Flow (vph)	843	372	1794	1151	44	1284
Turn Type	custom		custom		pm+pt	
Protected Phases	4		2		1	6
Permitted Phases		4 1		2 4		6
Actuated Green, G (s)	42.3	51.3	80.7	127.0	89.7	89.7
Effective Green, g (s)	42.3	51.3	80.7	127.0	89.7	89.7
Actuated g/C Ratio	0.30	0.37	0.58	0.91	0.64	0.64
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)	1037	580	2040	1436	116	3258
v/s Ratio Prot	0.25		c0.51		0.01	0.25
v/s Ratio Perm		c0.24		c0.73	0.23	
v/c Ratio	0.81	0.64	0.88	0.80	0.38	0.39
Uniform Delay, d1	45.2	36.7	25.5	2.2	26.5	12.1
Progression Factor	1.05	0.79	0.39	8.02	1.81	1.03
Incremental Delay, d2	2.5	1.2	2.8	1.6	1.9	0.3
Delay (s)	49.9	30.1	12.9	19.3	49.9	12.7
Level of Service	D	C	B	B	D	B
Approach Delay (s)	43.7		15.4			14.0
Approach LOS	D		B			B
Intersection Summary						
HCM Average Control Delay			21.3	HCM Level of Service		C
HCM Volume to Capacity ratio			0.82			
Actuated Cycle Length (s)			140.0	Sum of lost time (s)		4.0
Intersection Capacity Utilization			82.2%	ICU Level of Service		E
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

9: Potomac Ave & Main St

3/29/2006



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
Lane Util. Factor		0.95		1.00	0.95		0.95	0.95			1.00	1.00
Frt		0.97		1.00	1.00		1.00	0.96			1.00	0.85
Flt Protected		1.00		0.95	1.00		0.95	0.97			1.00	1.00
Satd. Flow (prot)		3423		1770	3539		1681	1656			1863	1583
Flt Permitted		1.00		0.95	1.00		0.95	0.97			1.00	1.00
Satd. Flow (perm)		3423		1770	3539		1681	1656			1863	1583
Volume (vph)	0	954	267	104	201	0	869	79	124	0	61	99
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1004	281	109	212	0	915	83	131	0	64	104
RTOR Reduction (vph)	0	17	0	0	0	0	0	8	0	0	0	97
Lane Group Flow (vph)	0	1268	0	109	212	0	573	548	0	0	64	7
Turn Type				Prot			Split			Split		Perm
Protected Phases		2		1			3	3		4		4
Permitted Phases					6							4
Actuated Green, G (s)		53.6		17.5	75.1		43.0	43.0			9.9	9.9
Effective Green, g (s)		53.6		17.5	75.1		43.0	43.0			9.9	9.9
Actuated g/C Ratio		0.38		0.12	0.54		0.31	0.31			0.07	0.07
Clearance Time (s)		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
Lane Grp Cap (vph)		1311		221	1898		516	509			132	112
v/s Ratio Prot		c0.37		c0.06			c0.34	0.33			c0.03	
v/s Ratio Perm					0.06							0.00
v/c Ratio		0.97		0.49	0.11		1.11	1.08			0.48	0.07
Uniform Delay, d1		42.3		57.1	16.0		48.5	48.5			62.6	60.7
Progression Factor		0.78		1.06	1.10		0.90	0.90			1.00	1.00
Incremental Delay, d2		13.3		1.7	0.1		68.0	56.5			2.8	0.2
Delay (s)		46.4		62.4	17.6		111.6	100.0			65.4	61.0
Level of Service		D		E	B		F	F			E	E
Approach Delay (s)		46.4			32.8			105.9			62.7	
Approach LOS		D			C			F			E	

Intersection Summary

HCM Average Control Delay	69.0	HCM Level of Service	E
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	90.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis

10: E. Glebe Road & Main St

3/29/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	59	205	65	38	232	15	56	0	55	0	0	4
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	62	216	68	40	244	16	59	0	58	0	0	4

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	346	300	117	4
Volume Left (vph)	62	40	59	0
Volume Right (vph)	68	16	58	4
Hadj (s)	-0.05	0.03	-0.16	-0.57
Departure Headway (s)	4.5	4.7	5.2	5.0
Degree Utilization, x	0.44	0.39	0.17	0.01
Capacity (veh/h)	770	744	610	601
Control Delay (s)	11.0	10.6	9.3	8.1
Approach Delay (s)	11.0	10.6	9.3	8.1
Approach LOS	B	B	A	A

Intersection Summary			
Delay		10.6	
HCM Level of Service		B	
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

11: Swann Ave. & Main St

3/29/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	112	0	43	12	0	17	44	66	7	12	119	27
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	118	0	45	13	0	18	46	69	7	13	125	28

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	163	31	123	166
Volume Left (vph)	118	13	46	13
Volume Right (vph)	45	18	7	28
Hadj (s)	0.01	-0.23	0.07	-0.05
Departure Headway (s)	4.6	4.6	4.6	4.5
Degree Utilization, x	0.21	0.04	0.16	0.21
Capacity (veh/h)	727	721	735	761
Control Delay (s)	8.9	7.7	8.5	8.6
Approach Delay (s)	8.9	7.7	8.5	8.6
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.6	
HCM Level of Service		A	
Intersection Capacity Utilization	40.4%		ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

12: Custis Ave & Main St

3/29/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	31	3	25	20	2	16	25	122	3	11	120	46
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	33	3	26	21	2	17	26	128	3	12	126	48

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	62	40	158	186
Volume Left (vph)	33	21	26	12
Volume Right (vph)	26	17	3	48
Hadj (s)	-0.12	-0.11	0.06	-0.11
Departure Headway (s)	4.6	4.6	4.4	4.2
Degree Utilization, x	0.08	0.05	0.19	0.22
Capacity (veh/h)	717	710	789	820
Control Delay (s)	8.0	7.9	8.4	8.4
Approach Delay (s)	8.0	7.9	8.4	8.4
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.3	
HCM Level of Service		A	
Intersection Capacity Utilization	26.5%		ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

13: Howell Ave. & Main St

3/29/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	1	10	117	167	13	7	13	123	2	5	145	23
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	11	123	176	14	7	14	129	2	5	153	24

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	135	197	145	182
Volume Left (vph)	1	176	14	5
Volume Right (vph)	123	7	2	24
Hadj (s)	-0.51	0.19	0.04	-0.04
Departure Headway (s)	4.5	5.1	5.0	4.9
Degree Utilization, x	0.17	0.28	0.20	0.25
Capacity (veh/h)	724	658	661	681
Control Delay (s)	8.4	10.1	9.3	9.5
Approach Delay (s)	8.4	10.1	9.3	9.5
Approach LOS	A	B	A	A

Intersection Summary			
Delay		9.4	
HCM Level of Service		A	
Intersection Capacity Utilization	42.2%		ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis

14: E. Glebe Road & Potomac Ave

3/29/2006



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	0.97	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	3539	3446	
Flt Permitted	0.95	1.00	0.52	1.00	1.00	
Satd. Flow (perm)	1770	1583	962	3539	3446	
Volume (vph)	25	124	165	785	240	51
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	131	174	826	253	54
RTOR Reduction (vph)	0	118	0	0	15	0
Lane Group Flow (vph)	26	13	174	826	292	0
Turn Type	Perm pm+pt					
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	5.8	5.8	54.2	54.2	41.8	
Effective Green, g (s)	6.8	6.8	55.2	55.2	42.8	
Actuated g/C Ratio	0.10	0.10	0.79	0.79	0.61	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	172	154	856	2791	2107	
v/s Ratio Prot	c0.01		0.02	c0.23	0.08	
v/s Ratio Perm		0.01	0.14			
v/c Ratio	0.15	0.08	0.20	0.30	0.14	
Uniform Delay, d1	29.0	28.8	1.9	2.0	5.8	
Progression Factor	1.00	1.00	1.05	1.13	1.00	
Incremental Delay, d2	0.4	0.2	0.1	0.3	0.1	
Delay (s)	29.4	29.0	2.1	2.6	5.9	
Level of Service	C	C	A	A	A	
Approach Delay (s)	29.1			2.5	5.9	
Approach LOS	C			A	A	

Intersection Summary

HCM Average Control Delay	6.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	33.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 15: Swann Ave. & Potomac Ave

3/29/2006



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	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	
Fr _t	1.00	0.85		1.00	1.00	
Fl _t Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1770	1583		3537	3532	
Fl _t Permitted	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1583		3361	3532	
Volume (vph)	6	4	12	938	362	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	6	4	13	987	381	5
RTOR Reduction (vph)	0	4	0	0	0	0
Lane Group Flow (vph)	6	0	0	1000	386	0
Turn Type		Perm	Perm			
Protected Phases	4			2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	1.3	1.3		58.7	58.7	
Effective Green, g (s)	2.3	2.3		59.7	59.7	
Actuated g/C Ratio	0.03	0.03		0.85	0.85	
Clearance Time (s)	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	58	52		2866	3012	
v/s Ratio Prot	c0.00				0.11	
v/s Ratio Perm		0.00		c0.30		
v/c Ratio	0.10	0.00		0.35	0.13	
Uniform Delay, d ₁	32.8	32.7		1.1	0.9	
Progression Factor	1.00	1.00		0.03	0.27	
Incremental Delay, d ₂	0.8	0.0		0.3	0.1	
Delay (s)	33.6	32.8		0.4	0.3	
Level of Service	C	C		A	A	
Approach Delay (s)	33.3			0.4	0.3	
Approach LOS	C			A	A	

Intersection Summary

HCM Average Control Delay	0.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 16: Custis Ave & Potomac Ave

3/29/2006



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	1.00			0.95	0.95	
Frt	1.00			1.00	1.00	
Flt Protected	0.95			1.00	1.00	
Satd. Flow (prot)	1770			3539	3532	
Flt Permitted	0.95			1.00	1.00	
Satd. Flow (perm)	1770			3539	3532	
Volume (vph)	7	0	0	942	367	5
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	7	0	0	992	386	5
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	7	0	0	992	391	0
Turn Type			Perm			
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	1.3			58.7	58.7	
Effective Green, g (s)	2.3			59.7	59.7	
Actuated g/C Ratio	0.03			0.85	0.85	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	58			3018	3012	
v/s Ratio Prot	c0.00			c0.28	0.11	
v/s Ratio Perm						
v/c Ratio	0.12			0.33	0.13	
Uniform Delay, d1	32.9			1.1	0.9	
Progression Factor	1.00			1.75	0.83	
Incremental Delay, d2	0.9			0.3	0.1	
Delay (s)	33.8			2.1	0.8	
Level of Service	C			A	A	
Approach Delay (s)	33.8			2.1	0.8	
Approach LOS	C			A	A	
Intersection Summary						
HCM Average Control Delay			1.9		HCM Level of Service	A
HCM Volume to Capacity ratio			0.32			
Actuated Cycle Length (s)			70.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			38.0%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
 17: Howell Ave. & Potomac Ave

3/29/2006



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	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		1.00	1.00	0.97	
Flt Protected	0.97		0.95	1.00	1.00	
Satd. Flow (prot)	1730		1770	3539	3448	
Flt Permitted	0.97		0.47	1.00	1.00	
Satd. Flow (perm)	1730		868	3539	3448	
Volume (vph)	12	5	149	929	334	69
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	13	5	157	978	352	73
RTOR Reduction (vph)	5	0	0	0	10	0
Lane Group Flow (vph)	13	0	157	978	415	0
Turn Type			pm+pt			
Protected Phases	8		5	2	6	
Permitted Phases			2			
Actuated Green, G (s)	1.4		58.6	58.6	48.3	
Effective Green, g (s)	2.4		59.6	59.6	49.3	
Actuated g/C Ratio	0.03		0.85	0.85	0.70	
Clearance Time (s)	5.0		5.0	5.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	59		820	3013	2428	
v/s Ratio Prot	c0.01		0.02	c0.28	0.12	
v/s Ratio Perm			0.15			
v/c Ratio	0.22		0.19	0.32	0.17	
Uniform Delay, d1	32.9		1.0	1.1	3.5	
Progression Factor	1.00		1.78	2.86	1.26	
Incremental Delay, d2	1.9		0.0	0.1	0.2	
Delay (s)	34.8		1.8	3.1	4.5	
Level of Service	C		A	A	A	
Approach Delay (s)	34.8			2.9	4.5	
Approach LOS	C			A	A	
























Intersection Summary

HCM Average Control Delay	3.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

1: E. Glebe Road & US Route 1

3/29/2006

												
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	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.89		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
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)	1770	1651		1770	1863	1583	1770	3539	1583	1770	3499	
Flt Permitted	0.47	1.00		0.32	1.00	1.00	0.05	1.00	1.00	0.09	1.00	
Satd. Flow (perm)	873	1651		588	1863	1583	97	3539	1583	174	3499	
Volume (vph)	159	65	203	67	92	232	340	1511	11	173	1937	157
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	167	68	214	71	97	244	358	1591	12	182	2039	165
RTOR Reduction (vph)	0	89	0	0	0	28	0	0	1	0	4	0
Lane Group Flow (vph)	167	193	0	71	97	216	358	1591	11	182	2200	0
Turn Type	pm+pt			Perm		pm+ov	pm+pt		Perm	pm+pt		
Protected Phases	7	4		8	8	1	5	2		1	6	
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)	25.5	25.5		16.5	16.5	31.0	104.5	85.0	85.0	86.5	72.0	
Effective Green, g (s)	26.5	26.5		17.5	17.5	33.0	105.5	86.0	86.0	88.5	73.0	
Actuated g/C Ratio	0.19	0.19		0.12	0.12	0.24	0.75	0.61	0.61	0.63	0.52	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
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)	197	313		74	233	418	414	2174	972	287	1824	
v/s Ratio Prot	c0.03	0.12			0.05	0.06	c0.18	0.45		0.07	c0.63	
v/s Ratio Perm	c0.13			0.12		0.08	0.48		0.01	0.33		
v/c Ratio	0.85	0.62		0.96	0.42	0.52	0.86	0.73	0.01	0.63	1.21	
Uniform Delay, d1	55.4	52.1		60.9	56.5	46.6	55.7	18.9	10.5	20.3	33.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.01	0.49	0.31	1.00	1.00	
Incremental Delay, d2	27.1	3.6		89.6	1.2	1.1	12.6	1.6	0.0	4.5	98.1	
Delay (s)	82.5	55.7		150.5	57.7	47.7	68.6	10.8	3.3	24.8	131.6	
Level of Service	F	E		F	E	D	E	B	A	C	F	
Approach Delay (s)		65.7			67.8			21.3			123.5	
Approach LOS		E			E			C			F	
Intersection Summary												
HCM Average Control Delay			75.6				HCM Level of Service		E			
HCM Volume to Capacity ratio			1.05									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)		12.0			
Intersection Capacity Utilization			113.3%				ICU Level of Service		H			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2: Hume & US Route 1

3/29/2006



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	1.00			0.91	0.95	
Fr _t	0.92			1.00	1.00	
Fl _t Protected	0.98			1.00	1.00	
Satd. Flow (prot)	1675			5080	3531	
Fl _t Permitted	0.98			0.73	1.00	
Satd. Flow (perm)	1675			3713	3531	
Volume (vph)	8	12	36	1854	2175	32
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	8	13	38	1952	2289	34
RTOR Reduction (vph)	11	0	0	0	1	0
Lane Group Flow (vph)	10	0	0	1990	2322	0
Turn Type			Prot			
Protected Phases	8		5	2 5	6 7	
Permitted Phases						
Actuated Green, G (s)	16.5			104.5	81.0	
Effective Green, g (s)	17.5			105.5	82.0	
Actuated g/C Ratio	0.12			0.75	0.59	
Clearance Time (s)	5.0					
Vehicle Extension (s)	3.0					
Lane Grp Cap (vph)	209			3076	2068	
v/s Ratio Prot	c0.01			c0.13	c0.66	
v/s Ratio Perm				0.36		
v/c Ratio	0.05			0.65	1.12	
Uniform Delay, d ₁	53.9			8.3	29.0	
Progression Factor	1.00			0.93	0.28	
Incremental Delay, d ₂	0.1			0.3	56.0	
Delay (s)	54.0			8.0	64.3	
Level of Service	D			A	E	
Approach Delay (s)	54.0			8.0	64.3	
Approach LOS	D			A	E	
Intersection Summary						
HCM Average Control Delay			38.4		HCM Level of Service	D
HCM Volume to Capacity ratio			0.88			
Actuated Cycle Length (s)			140.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			73.1%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

3: Swann Ave. & US Route 1

3/29/2006



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	
Lane Util. Factor		1.00			1.00			0.95		1.00	0.95	
Frt		0.97			0.93			1.00		1.00	1.00	
Flt Protected		0.96			0.98			1.00		0.95	1.00	
Satd. Flow (prot)		1737			1695			3536		1770	3536	
Flt Permitted		0.62			0.83			0.95		0.06	1.00	
Satd. Flow (perm)		1125			1449			3362		107	3536	
Volume (vph)	59	0	18	53	0	52	3	1884	10	75	2118	14
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	62	0	19	56	0	55	3	1983	11	79	2229	15
RTOR Reduction (vph)	0	9	0	0	30	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	72	0	0	81	0	0	1997	0	79	2244	0
Turn Type	Perm		Perm		Perm		pm+pt					
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		12.6			12.6			104.1		117.4	117.4	
Effective Green, g (s)		13.6			13.6			105.1		118.4	118.4	
Actuated g/C Ratio		0.10			0.10			0.75		0.85	0.85	
Clearance Time (s)		5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		109			141			2524		201	2990	
v/s Ratio Prot										0.03	c0.63	
v/s Ratio Perm		c0.06			0.06			c0.59		0.31		
v/c Ratio		0.66			0.58			0.79		0.39	0.75	
Uniform Delay, d1		61.0			60.4			10.7		16.2	4.6	
Progression Factor		1.00			1.00			1.06		2.44	0.94	
Incremental Delay, d2		14.0			5.6			1.2		0.1	0.2	
Delay (s)		75.0			66.0			12.6		39.7	4.4	
Level of Service		E			E			B		D	A	
Approach Delay (s)		75.0			66.0			12.6			5.6	
Approach LOS		E			E			B			A	


















Intersection Summary

HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

4: Custis Ave & US Route 1






















3/29/2006

												
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	
Lane Util. Factor		1.00			1.00			0.95		1.00	0.95	
Frt		0.95			0.92			1.00		1.00	1.00	
Flt Protected		0.98			1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1728			1705			3535		1770	3530	
Flt Permitted		0.87			0.98			0.85		0.09	1.00	
Satd. Flow (perm)		1544			1679			3009		167	3530	
Volume (vph)	21	6	15	3	10	20	23	1861	6	33	2186	39
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	22	6	16	3	11	21	24	1959	6	35	2301	41
RTOR Reduction (vph)	0	12	0	0	20	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	32	0	0	15	0	0	1989	0	35	2342	0
Turn Type	Perm		Perm		Perm		Perm		Perm		Perm	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.1			7.1			122.9		122.9	122.9	
Effective Green, g (s)		8.1			8.1			123.9		123.9	123.9	
Actuated g/C Ratio		0.06			0.06			0.88		0.88	0.88	
Clearance Time (s)		5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		89			97			2663		148	3124	
v/s Ratio Prot											c0.66	
v/s Ratio Perm		c0.02			0.01			0.66		0.21		
v/c Ratio		0.36			0.16			0.75		0.24	0.75	
Uniform Delay, d1		63.4			62.7			2.7		1.2	2.8	
Progression Factor		1.00			1.00			1.17		0.20	0.18	
Incremental Delay, d2		2.4			0.8			1.0		2.6	1.2	
Delay (s)		65.9			63.5			4.2		2.8	1.7	
Level of Service		E			E			A		A	A	
Approach Delay (s)		65.9			63.5			4.2			1.7	
Approach LOS		E			E			A			A	
Intersection Summary												
HCM Average Control Delay			3.9					HCM Level of Service			A	
HCM Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			140.0					Sum of lost time (s)		8.0		
Intersection Capacity Utilization			80.4%					ICU Level of Service		D		
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis

5: Howell Ave. & US Route 1

3/29/2006

												
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	1.00	1.00	0.95	
Frt		0.95		1.00	0.86		1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.97		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1722		1770	1604		1770	3539	1583	1770	3534	
Flt Permitted		0.84		0.74	1.00		0.04	1.00	1.00	0.04	1.00	
Satd. Flow (perm)		1481		1385	1604		74	3539	1583	67	3534	
Volume (vph)	10	2	8	65	7	83	32	2324	9	22	2134	22
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	2	8	68	7	87	34	2446	9	23	2246	23
RTOR Reduction (vph)	0	7	0	0	47	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	14	0	68	47	0	34	2446	9	23	2269	0
Turn Type	Perm		Perm		pm+pt		Perm		pm+pt			
Protected Phases	4		8		5		2		1		6	
Permitted Phases	4		8		2		2		6			
Actuated Green, G (s)	11.8		11.8		113.6		109.8		112.8		109.4	
Effective Green, g (s)	12.8		12.8		115.6		110.8		114.8		110.4	
Actuated g/C Ratio	0.09		0.09		0.83		0.79		0.82		0.79	
Clearance Time (s)	5.0		5.0		5.0		5.0		5.0		5.0	
Vehicle Extension (s)	3.0		3.0		3.0		3.0		3.0		3.0	
Lane Grp Cap (vph)	135		127		147		119		2801		1253	
v/s Ratio Prot			0.03		c0.01		c0.69		0.01		0.64	
v/s Ratio Perm	0.01		c0.05		0.23		0.01		0.17			
v/c Ratio	0.10		0.54		0.32		0.29		0.87		0.21	
Uniform Delay, d1	58.3		60.8		59.5		16.1		9.9		21.8	
Progression Factor	1.00		1.00		1.00		3.30		0.88		0.65	
Incremental Delay, d2	0.3		4.3		1.3		1.0		3.1		0.0	
Delay (s)	58.7		65.0		60.8		54.2		11.8		2.0	
Level of Service	E		E		E		D		B		A	
Approach Delay (s)	58.7		62.6				12.3				4.7	
Approach LOS	E		E				B				A	
Intersection Summary												
HCM Average Control Delay	10.6		HCM Level of Service				B					
HCM Volume to Capacity ratio	0.80											
Actuated Cycle Length (s)	140.0		Sum of lost time (s)				8.0					
Intersection Capacity Utilization	80.7%		ICU Level of Service				D					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

6: Monroe & Main

3/29/2006



Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	0.96		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1764		1770	1863	1863	1583
Flt Permitted	0.96		0.67	1.00	1.00	1.00
Satd. Flow (perm)	1764		1244	1863	1863	1583
Volume (vph)	529	37	4	241	106	559
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	557	39	4	254	112	588
RTOR Reduction (vph)	2	0	0	0	0	344
Lane Group Flow (vph)	594	0	4	254	112	244
Turn Type			Perm			Perm
Protected Phases	6			4	8	
Permitted Phases			4			8
Actuated Green, G (s)	73.0		57.0	57.0	57.0	57.0
Effective Green, g (s)	74.0		58.0	58.0	58.0	58.0
Actuated g/C Ratio	0.53		0.41	0.41	0.41	0.41
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	932		515	772	772	656
v/s Ratio Prot	c0.34			0.14	0.06	
v/s Ratio Perm			0.00			c0.15
v/c Ratio	0.64		0.01	0.33	0.15	0.37
Uniform Delay, d1	23.5		24.1	27.8	25.5	28.4
Progression Factor	1.00		1.00	1.00	0.60	0.91
Incremental Delay, d2	3.3		0.0	1.1	0.2	1.0
Delay (s)	26.8		24.1	28.9	15.5	26.9
Level of Service	C		C	C	B	C
Approach Delay (s)	26.8			28.9	25.1	
Approach LOS	C			C	C	

Intersection Summary

HCM Average Control Delay	26.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

7: Slaters Lane & US Route 1

















3/29/2006



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗↗	↕↕↕	↘	↘	↕↕
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		0.88	0.91	1.00	1.00	0.95
Frt		0.85	1.00	0.85	1.00	1.00
Flt Protected		1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)		2787	5085	1583	1770	3539
Flt Permitted		1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)		2787	5085	1583	1770	3539
Volume (vph)	0	421	1995	379	376	2850
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	443	2100	399	396	3000
RTOR Reduction (vph)	0	6	0	114	0	0
Lane Group Flow (vph)	0	437	2100	285	396	3000
Turn Type		custom		Perm	Prot	
Protected Phases			2		1 8	6
Permitted Phases		8 1		2		
Actuated Green, G (s)		43.7	86.3	86.3	43.7	101.0
Effective Green, g (s)		44.7	87.3	87.3	44.7	102.0
Actuated g/C Ratio		0.32	0.62	0.62	0.32	0.73
Clearance Time (s)			5.0	5.0		5.0
Vehicle Extension (s)			3.0	3.0		3.0
Lane Grp Cap (vph)		890	3171	987	565	2578
v/s Ratio Prot			0.41		c0.22	c0.85
v/s Ratio Perm		0.16		0.18		
v/c Ratio		0.49	0.66	0.29	0.70	1.16
Uniform Delay, d1		38.5	16.9	12.1	41.8	19.0
Progression Factor		1.00	1.00	1.00	1.07	0.82
Incremental Delay, d2		0.4	1.1	0.7	2.3	76.4
Delay (s)		38.9	18.0	12.8	47.0	92.1
Level of Service		D	B	B	D	F
Approach Delay (s)	38.9		17.2			86.8
Approach LOS	D		B			F
Intersection Summary						
HCM Average Control Delay			56.0		HCM Level of Service	E
HCM Volume to Capacity ratio			1.07			
Actuated Cycle Length (s)			140.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			82.8%		ICU Level of Service	E
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
8: Potomac Ave & US Route 1

3/29/2006

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			  
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	1583	3539	1583	1770	5085
Flt Permitted	0.95	1.00	1.00	1.00	0.06	1.00
Satd. Flow (perm)	3433	1583	3539	1583	108	5085
Volume (vph)	1303	310	1503	913	7	1836
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1372	326	1582	961	7	1933
RTOR Reduction (vph)	0	5	0	88	0	0
Lane Group Flow (vph)	1372	321	1582	873	7	1933
Turn Type	custom		custom		pm+pt	
Protected Phases	4		2		1	6
Permitted Phases		4 1		2 4		6
Actuated Green, G (s)	58.0	66.0	65.0	127.0	74.0	74.0
Effective Green, g (s)	58.0	67.0	65.0	127.0	74.0	74.0
Actuated g/C Ratio	0.41	0.48	0.46	0.91	0.53	0.53
Clearance Time (s)	4.0		4.0		5.0	4.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	1422	758	1643	1436	116	2688
v/s Ratio Prot	c0.40		c0.45		0.00	c0.38
v/s Ratio Perm		0.20		0.55	0.03	
v/c Ratio	0.96	0.42	0.96	0.61	0.06	0.72
Uniform Delay, d1	40.0	23.9	36.3	1.3	30.6	25.1
Progression Factor	0.99	0.98	0.75	71.19	0.97	0.86
Incremental Delay, d2	13.1	0.3	12.7	0.6	0.1	1.0
Delay (s)	52.9	23.7	39.9	96.3	29.9	22.6
Level of Service	D	C	D	F	C	C
Approach Delay (s)	47.3		61.2			22.6
Approach LOS	D		E			C
Intersection Summary						
HCM Average Control Delay			45.2	HCM Level of Service		D
HCM Volume to Capacity ratio			0.96			
Actuated Cycle Length (s)			140.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization			86.7%	ICU Level of Service	E	
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

9: Potomac Ave & Main

3/29/2006



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
Lane Util. Factor		0.95		1.00	0.95		0.95	0.95			1.00	1.00
Frt		0.93		1.00	1.00		1.00	0.94			1.00	0.85
Flt Protected		1.00		0.95	1.00		0.95	0.98			1.00	1.00
Satd. Flow (prot)		3302		1770	3539		1681	1623			1863	1583
Flt Permitted		1.00		0.95	1.00		0.95	0.98			1.00	1.00
Satd. Flow (perm)		3302		1770	3539		1681	1623			1863	1583
Volume (vph)	0	529	427	164	780	0	565	49	156	0	74	272
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	557	449	173	821	0	595	52	164	0	78	286
RTOR Reduction (vph)	0	101	0	0	0	0	0	18	0	0	0	70
Lane Group Flow (vph)	0	905	0	173	821	0	411	382	0	0	78	216
Turn Type				Prot			Split			Split		Perm
Protected Phases		2		1			3	3		4	4	
Permitted Phases					6							4
Actuated Green, G (s)		46.0		15.6	66.6		39.1	39.1			22.3	22.3
Effective Green, g (s)		46.0		16.6	66.6		39.1	39.1			22.3	22.3
Actuated g/C Ratio		0.33		0.12	0.48		0.28	0.28			0.16	0.16
Clearance Time (s)		4.0		5.0	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
Lane Grp Cap (vph)		1085		210	1684		469	453			297	252
v/s Ratio Prot		c0.27		c0.10			c0.24	0.24			0.04	
v/s Ratio Perm					0.23							c0.14
v/c Ratio		0.83		0.82	0.49		0.88	0.84			0.26	0.86
Uniform Delay, d1		43.5		60.3	25.1		48.1	47.6			51.6	57.3
Progression Factor		0.85		0.85	1.07		0.91	0.91			1.00	1.00
Incremental Delay, d2		6.2		20.8	0.9		14.5	11.6			0.5	23.9
Delay (s)		43.0		72.3	27.9		58.3	54.7			52.1	81.2
Level of Service		D		E	C		E	D			D	F
Approach Delay (s)		43.0			35.6			56.5			75.0	
Approach LOS		D			D			E			E	

Intersection Summary

HCM Average Control Delay	47.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	79.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis

10: E. Glebe Road & Main

3/29/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	327	64	106	339	10	28	0	78	7	0	67
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	344	67	112	357	11	29	0	82	7	0	71

















Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	422	479	112	78
Volume Left (vph)	11	112	29	7
Volume Right (vph)	67	11	82	71
Hadj (s)	-0.06	0.07	-0.35	-0.49
Departure Headway (s)	5.1	5.1	6.0	5.9
Degree Utilization, x	0.60	0.68	0.18	0.13
Capacity (veh/h)	676	682	508	506
Control Delay (s)	15.4	18.5	10.3	9.8
Approach Delay (s)	15.4	18.5	10.3	9.8
Approach LOS	C	C	B	A

Intersection Summary			
Delay		15.8	
HCM Level of Service		C	
Intersection Capacity Utilization	70.6%		ICU Level of Service C
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

11: Swann Ave. & Main

3/29/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	62	0	37	24	0	11	39	93	26	29	243	86
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	65	0	39	25	0	12	41	98	27	31	256	91
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	104	37	166	377								
Volume Left (vph)	65	25	41	31								
Volume Right (vph)	39	12	27	91								
Hadj (s)	-0.06	-0.02	-0.02	-0.09								
Departure Headway (s)	5.1	5.3	4.7	4.4								
Degree Utilization, x	0.15	0.05	0.22	0.46								
Capacity (veh/h)	631	598	730	791								
Control Delay (s)	9.0	8.6	9.0	11.1								
Approach Delay (s)	9.0	8.6	9.0	11.1								
Approach LOS	A	A	A	B								
Intersection Summary												
Delay			10.1									
HCM Level of Service			B									
Intersection Capacity Utilization			35.4%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

12: Custis Ave & Main

3/29/2006

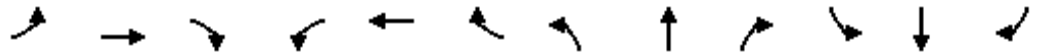


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	54	5	34	11	6	9	15	81	1	35	243	55
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	57	5	36	12	6	9	16	85	1	37	256	58
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	98	27	102	351								
Volume Left (vph)	57	12	16	37								
Volume Right (vph)	36	9	1	58								
Hadj (s)	-0.07	-0.09	0.06	-0.04								
Departure Headway (s)	4.9	5.0	4.7	4.3								
Degree Utilization, x	0.13	0.04	0.13	0.42								
Capacity (veh/h)	669	645	734	809								
Control Delay (s)	8.6	8.2	8.4	10.4								
Approach Delay (s)	8.6	8.2	8.4	10.4								
Approach LOS	A	A	A	B								
Intersection Summary												
Delay			9.6									
HCM Level of Service			A									
Intersection Capacity Utilization			37.4%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

13: Howell Ave. & Main

3/29/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	1	40	32	103	55	4	139	93	37	3	243	29
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	42	34	108	58	4	146	98	39	3	256	31

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	77	171	283	289
Volume Left (vph)	1	108	146	3
Volume Right (vph)	34	4	39	31
Hadj (s)	-0.23	0.15	0.05	-0.03
Departure Headway (s)	5.5	5.6	5.1	5.0
Degree Utilization, x	0.12	0.27	0.40	0.40
Capacity (veh/h)	570	578	663	681
Control Delay (s)	9.2	10.7	11.4	11.3
Approach Delay (s)	9.2	10.7	11.4	11.3
Approach LOS	A	B	B	B

Intersection Summary			
Delay		11.0	
HCM Level of Service		B	
Intersection Capacity Utilization	58.4%		ICU Level of Service B
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis

14: E. Glebe Road & Potomac Ave

3/29/2006



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	3539	3507	
Flt Permitted	0.95	1.00	0.24	1.00	1.00	
Satd. Flow (perm)	1770	1583	444	3539	3507	
Volume (vph)	77	239	170	476	799	51
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	81	252	179	501	841	54
RTOR Reduction (vph)	0	218	0	0	4	0
Lane Group Flow (vph)	81	34	179	501	891	0
Turn Type	Perm pm+pt					
Protected Phases	8		5	2	6	
Permitted Phases		8	2			
Actuated Green, G (s)	8.4	8.4	51.6	51.6	38.3	
Effective Green, g (s)	9.4	9.4	52.6	52.6	39.3	
Actuated g/C Ratio	0.13	0.13	0.75	0.75	0.56	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	238	213	510	2659	1969	
v/s Ratio Prot	c0.05		c0.05	0.14	c0.25	
v/s Ratio Perm		0.02	0.22			
v/c Ratio	0.34	0.16	0.35	0.19	0.45	
Uniform Delay, d1	27.5	26.8	3.6	2.5	9.0	
Progression Factor	1.00	1.00	3.31	1.17	1.00	
Incremental Delay, d2	0.9	0.4	0.4	0.2	0.8	
Delay (s)	28.3	27.2	12.4	3.1	9.8	
Level of Service	C	C	B	A	A	
Approach Delay (s)	27.4			5.5	9.8	
Approach LOS	C			A	A	

Intersection Summary

HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 15: Swann Ave. & Potomac Ave

3/29/2006



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	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	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1770	1583		3537	3532	
Flt Permitted	0.95	1.00		0.94	1.00	
Satd. Flow (perm)	1770	1583		3333	3532	
Volume (vph)	6	20	9	643	1024	14
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	6	21	9	677	1078	15
RTOR Reduction (vph)	0	20	0	0	0	0
Lane Group Flow (vph)	6	1	0	686	1093	0
Turn Type		Perm	Perm			
Protected Phases	8			2	6	
Permitted Phases		8	2			
Actuated Green, G (s)	1.4	1.4		58.6	58.6	
Effective Green, g (s)	2.4	2.4		59.6	59.6	
Actuated g/C Ratio	0.03	0.03		0.85	0.85	
Clearance Time (s)	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	61	54		2838	3007	
v/s Ratio Prot	c0.00				c0.31	
v/s Ratio Perm		0.00		0.21		
v/c Ratio	0.10	0.01		0.24	0.36	
Uniform Delay, d1	32.8	32.7		1.0	1.1	
Progression Factor	1.00	1.00		0.88	0.11	
Incremental Delay, d2	0.7	0.1		0.2	0.3	
Delay (s)	33.5	32.8		1.1	0.4	
Level of Service	C	C		A	A	
Approach Delay (s)	32.9			1.1	0.4	
Approach LOS	C			A	A	

Intersection Summary

HCM Average Control Delay	1.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	40.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 16: Custis Ave & Potomac Ave

3/29/2006



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	1.00			0.95	0.95	
Frt	1.00			1.00	1.00	
Flt Protected	0.95			1.00	1.00	
Satd. Flow (prot)	1770			3539	3531	
Flt Permitted	0.95			1.00	1.00	
Satd. Flow (perm)	1770			3539	3531	
Volume (vph)	6	0	0	650	1029	15
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	6	0	0	684	1083	16
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	6	0	0	684	1099	0
Turn Type			Perm			
Protected Phases	8			2	6	
Permitted Phases			2			
Actuated Green, G (s)	1.3			58.7	58.7	
Effective Green, g (s)	2.3			59.7	59.7	
Actuated g/C Ratio	0.03			0.85	0.85	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	58			3018	3011	
v/s Ratio Prot	c0.00			0.19	c0.31	
v/s Ratio Perm						
v/c Ratio	0.10			0.23	0.36	
Uniform Delay, d1	32.8			0.9	1.1	
Progression Factor	1.00			0.40	0.57	
Incremental Delay, d2	0.8			0.2	0.3	
Delay (s)	33.6			0.5	1.0	
Level of Service	C			A	A	
Approach Delay (s)	33.6			0.5	1.0	
Approach LOS	C			A	A	

Intersection Summary

HCM Average Control Delay	0.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	40.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 17: Howell Ave. & Potomac Ave

3/29/2006



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	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	0.99		1.00	1.00	0.99	
Flt Protected	0.95		0.95	1.00	1.00	
Satd. Flow (prot)	1767		1770	3539	3493	
Flt Permitted	0.95		0.21	1.00	1.00	
Satd. Flow (perm)	1767		387	3539	3493	
Volume (vph)	63	3	97	587	929	89
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	66	3	102	618	978	94
RTOR Reduction (vph)	3	0	0	0	6	0
Lane Group Flow (vph)	66	0	102	618	1066	0
Turn Type			pm+pt			
Protected Phases	8		5	2	6	
Permitted Phases			2			
Actuated Green, G (s)	5.3		54.7	54.7	44.9	
Effective Green, g (s)	6.3		55.7	55.7	45.9	
Actuated g/C Ratio	0.09		0.80	0.80	0.66	
Clearance Time (s)	5.0		5.0	5.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	159		423	2816	2290	
v/s Ratio Prot	c0.04		0.02	c0.17	c0.31	
v/s Ratio Perm			0.17			
v/c Ratio	0.42		0.24	0.22	0.47	
Uniform Delay, d1	30.1		2.6	1.8	6.0	
Progression Factor	1.00		2.57	0.43	1.06	
Incremental Delay, d2	1.8		0.1	0.1	0.7	
Delay (s)	31.9		6.9	0.8	7.0	
Level of Service	C		A	A	A	
Approach Delay (s)	31.9			1.7	7.0	
Approach LOS	C			A	A	

Intersection Summary

HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			