

HCM Unsignalized Intersection Capacity Analysis 1: 10th Avenue & Florida Avenue

Background AM (South)

																			
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER	SER2							
Lane Configurations																			
Sign Control		Stop			Stop			Stop		Stop									
Volume (vph)	11	33	6	28	27	243	10	214	15	165	169	29							
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	36	7	30	29	264	11	233	16	179	184	32							
Direction, Lane #	EB 1	WB 1	NB 1	SE 1	SE 2														
Volume Total (vph)	54	324	260	179	215														
Volume Left (vph)	12	30	11	179	0														
Volume Right (vph)	7	264	16	0	32														
Hadj (s)	0.01	-0.44	0.00	0.53	-0.07														
Departure Headway (s)	6.3	5.3	5.7	6.5	5.9														
Degree Utilization, x	0.10	0.48	0.41	0.32	0.35														
Capacity (veh/h)	478	636	586	526	581														
Control Delay (s)	10.0	13.0	12.6	11.4	10.9														
Approach Delay (s)	10.0	13.0	12.6	11.1															
Approach LOS	A	B	B	B															
Intersection Summary																			
Delay			12.0																
HCM Level of Service			B																
Intersection Capacity Utilization			52.5%	ICU Level of Service	A														
Analysis Period (min)			15																

HCM Signalized Intersection Capacity Analysis

2: Barry Place & Sherman Street

Background AM (South)

												
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			0.95	1.00
Flt		1.00			0.97			0.98			1.00	0.85
Flt Protected		0.98			1.00			1.00			1.00	1.00
Satd. Flow (prot)		1823			1806			3482			3528	1583
Flt Permitted		0.80			0.99			0.81			0.81	1.00
Satd. Flow (perm)		1498			1790			2815			2852	1583
Volume (vph)	91	121	1	7	132	37	2	330	40	72	1089	165
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)	99	132	1	8	143	40	2	359	43	78	1184	179
RTOR Reduction (vph)	0	0	0	0	10	0	0	9	0	0	0	107
Lane Group Flow (vph)	0	232	0	0	181	0	0	395	0	0	1262	72
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		65.0			65.0			25.0			25.0	25.0
Effective Green, g (s)		66.0			66.0			26.0			26.0	26.0
Actuated g/C Ratio		0.66			0.66			0.26			0.26	0.26
Clearance Time (s)		5.0			5.0			5.0			5.0	5.0
Lane Grp Cap (vph)		989			1181			732			742	412
v/s Ratio Prot												
v/s Ratio Perm		c0.15			0.10			0.14			c0.44	0.05
v/c Ratio		0.23			0.15			0.54			1.70	0.18
Uniform Delay, d1		6.8			6.4			31.8			37.0	28.7
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.6			0.3			2.8			321.1	0.9
Delay (s)		7.4			6.7			34.7			358.1	29.6
Level of Service		A			A			C			F	C
Approach Delay (s)		7.4			6.7			34.7			317.3	
Approach LOS		A			A			C			F	
Intersection Summary												
HCM Average Control Delay		209.1										
HCM Volume to Capacity ratio		0.65										
Actuated Cycle Length (s)		100.0							8.0			
Intersection Capacity Utilization		77.0%							D			
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis 3: Barry Place & 9th Street

Background AM (South)

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Sign Control		Stop	Stop		Stop			
Volume (vph)	15	218	166	39	17	11		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Hourly flow rate (vph)	16	237	180	42	18	12		
Direction, Lane #	EB 1	WB 1	SB 1	SB 2				
Volume Total (vph)	253	223	18	12				
Volume Left (vph)	16	0	18	0				
Volume Right (vph)	0	42	0	12				
Hadj (s)	0.05	-0.08	0.53	-0.67				
Departure Headway (s)	4.3	4.2	6.1	4.9				
Degree Utilization, x	0.30	0.26	0.03	0.02				
Capacity (veh/h)	832	840	548	672				
Control Delay (s)	9.1	8.6	8.1	6.7				
Approach Delay (s)	9.1	8.6	7.5					
Approach LOS	A	A	A					
Intersection Summary								
Delay			8.8					
HCM Level of Service			A					
Intersection Capacity Utilization			33.8%	ICU Level of Service	A			
Analysis Period (min)			15					

HCM Unsignalized Intersection Capacity Analysis 4: Barry Place & 8th Street

Background AM (South)

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	152	33	10	159	46	39
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	165	36	11	173	50	42
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)				282		
pX, platoon unblocked						
vC, conflicting volume			201		378	183
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			201		378	183
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		92	95
cM capacity (veh/h)			1371		619	859
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	201	184	92			
Volume Left	0	11	50			
Volume Right	36	0	42			
cSH	1700	1371	710			
Volume to Capacity	0.12	0.01	0.13			
Queue Length 95th (ft)	0	1	11			
Control Delay (s)	0.0	0.5	10.8			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.5	10.8			
Approach LOS			B			
Intersection Summary						
Average Delay			2.3			
Intersection Capacity Utilization		28.2%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Signalized Intersection Capacity Analysis
5: Barry Place & Georgia Avenue

Background AM (South)

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT			TT	TT	
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	0.93			1.00	0.99	
Flt Protected	0.98			0.99	1.00	
Satd. Flow (prot)	1695			3512	3515	
Flt Permitted	0.98			0.56	1.00	
Satd. Flow (perm)	1695			1976	3515	
Volume (vph)	96	95	95	521	1363	64
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	104	103	103	566	1482	70
RTOR Reduction (vph)	35	0	0	0	3	0
Lane Group Flow (vph)	172	0	0	669	1549	0
Turn Type		D.P+P				
Protected Phases	4		3	2 3	2	
Permitted Phases			2			
Actuated Green, G (s)	14.0			74.0	54.0	
Effective Green, g (s)	14.0			74.0	54.0	
Actuated g/C Ratio	0.14			0.74	0.54	
Clearance Time (s)	4.0				4.0	
Lane Grp Cap (vph)	237			1769	1898	
v/s Ratio Prot	c0.10			c0.08	c0.44	
v/s Ratio Perm				0.20		
v/c Ratio	0.72			0.38	0.82	
Uniform Delay, d1	41.2			4.7	18.9	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	17.5			0.6	4.0	
Delay (s)	58.7			5.3	22.9	
Level of Service	E			A	C	
Approach Delay (s)	58.7			5.3	22.9	
Approach LOS	E			A	C	
Intersection Summary						
HCM Average Control Delay		21.1		HCM Level of Service		C
HCM Volume to Capacity ratio		0.70				
Actuated Cycle Length (s)		100.0		Sum of lost time (s)	12.0	
Intersection Capacity Utilization		78.0%		ICU Level of Service		D
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
6: Florida Avenue & Sherman Street

Background AM (South)

						
Movement	NBT	NBR	SBL	SBT	SWL	SWR
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	1.00	1.00
Fr _t	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	1863			1863	1770	1583
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	1863			1863	1770	1583
Volume (vph)	239	0	0	203	1092	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	260	0	0	221	1187	5
RTOR Reduction (vph)	0	0	0	0	0	2
Lane Group Flow (vph)	260	0	0	221	1187	3
Turn Type					Perm	
Protected Phases	2			6	8	
Permitted Phases						8
Actuated Green, G (s)	32.0			32.0	60.0	60.0
Effective Green, g (s)	32.0			32.0	60.0	60.0
Actuated g/C Ratio	0.32			0.32	0.60	0.60
Clearance Time (s)	4.0			4.0	4.0	4.0
Lane Grp Cap (vph)	596			596	1062	950
v/s Ratio Prot	c0.14			0.12	c0.67	
v/s Ratio Perm						0.00
v/c Ratio	0.44			0.37	1.12	0.00
Uniform Delay, d ₁	26.9			26.2	20.0	8.0
Progression Factor	1.40			1.00	2.30	2.64
Incremental Delay, d ₂	2.2			1.8	54.4	0.0
Delay (s)	39.9			28.0	100.3	21.1
Level of Service	D			C	F	C
Approach Delay (s)	39.9			28.0	100.0	
Approach LOS	D			C	F	
Intersection Summary						
HCM Average Control Delay		81.2		HCM Level of Service		F
HCM Volume to Capacity ratio		0.88				
Actuated Cycle Length (s)		100.0		Sum of lost time (s)	8.0	
Intersection Capacity Utilization		79.7%		ICU Level of Service		D
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
7: Bryant Street & Georgia Avenue

Background AM (South)

												
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	
Lane Util. Factor								0.95			0.95	
Flt								0.98			1.00	
Flt Protected								1.00			0.99	
Satd. Flow (prot)								3481			3505	
Flt Permitted								1.00			0.63	
Satd. Flow (perm)								3481			2240	
Volume (vph)	0	0	0	0	0	0	0	616	75	287	1171	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	0	670	82	312	1273	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	12	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	0	740	0	0	1585	0
Turn Type										Prot		
Protected Phases								2		1	1 2	
Permitted Phases												
Actuated Green, G (s)								46.0			72.0	
Effective Green, g (s)								46.0			72.0	
Actuated g/C Ratio								0.57			0.90	
Clearance Time (s)								4.0				
Lane Grp Cap (vph)								2002			2427	
v/s Ratio Prot								0.21			c0.21	
v/s Ratio Perm											c0.38	
v/c Ratio								0.37			0.65	
Uniform Delay, d1								9.2			1.0	
Progression Factor								1.00			1.00	
Incremental Delay, d2								0.5			1.4	
Delay (s)								9.7			2.4	
Level of Service								A			A	
Approach Delay (s)		0.0			0.0			9.7			2.4	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM Average Control Delay		4.7										
HCM Volume to Capacity ratio		0.65										
Actuated Cycle Length (s)		80.0										
Intersection Capacity Utilization		66.8%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
8: W Street & Florida Avenue

Background AM (South)

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	12	116	0	600	1295	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	126	0	652	1408	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)				856	318	
pX, platoon unblocked	0.87					
vC, conflicting volume	2060	704	1408			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2218	704	1408			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	59	67	100			
cM capacity (veh/h)	32	380	481			
Direction, Lane #	EB 1	EB 2	NB 1	SB 1	SB 2	
Volume Total	13	126	652	704	704	
Volume Left	13	0	0	0	0	
Volume Right	0	126	0	0	0	
cSH	32	380	1700	1700	1700	
Volume to Capacity	0.41	0.33	0.38	0.41	0.41	
Queue Length 95th (ft)	33	36	0	0	0	
Control Delay (s)	178.8	19.1	0.0	0.0	0.0	
Lane LOS	F	C				
Approach Delay (s)	34.1		0.0	0.0		
Approach LOS	D					
Intersection Summary						
Average Delay			2.2			
Intersection Capacity Utilization			49.6%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis
9: W Street & Georgia Avenue

Background AM (South)

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		↑↑			↑↑
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
Flt	0.92		1.00			1.00
Flt Protected	0.98		1.00			1.00
Satd. Flow (prot)	1681		3539			3539
Flt Permitted	0.98		1.00			1.00
Satd. Flow (perm)	1681		3539			3539
Volume (vph)	156	222	469	0	0	1171
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	170	241	510	0	0	1273
RTOR Reduction (vph)	51	0	0	0	0	0
Lane Group Flow (vph)	360	0	510	0	0	1273
Turn Type						
Protected Phases	3		2			2
Permitted Phases						
Actuated Green, G (s)	34.0		58.0			58.0
Effective Green, g (s)	34.0		58.0			58.0
Actuated g/C Ratio	0.34		0.58			0.58
Clearance Time (s)	4.0		4.0			4.0
Lane Grp Cap (vph)	572		2053			2053
v/s Ratio Prot	c0.21		0.14			c0.36
v/s Ratio Perm						
v/c Ratio	0.63		0.25			0.62
Uniform Delay, d1	27.7		10.3			13.8
Progression Factor	1.00		0.85			1.00
Incremental Delay, d2	5.2		0.3			1.4
Delay (s)	32.9		9.1			15.2
Level of Service	C		A			B
Approach Delay (s)	32.9		9.1			15.2
Approach LOS	C		A			B
Intersection Summary						
HCM Average Control Delay			17.1		HCM Level of Service	B
HCM Volume to Capacity ratio			0.62			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			61.3%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

ALL-WAY STOP CONTROL ANALYSIS									
General Information					Site Information				
Analyst	JWW				Intersection	Florida/9th/V Streets			
Agency/Co	Wells & Associates LLC				Jurisdiction	Washington DC			
Date Performed	8/29/2006				Analysis Year	2007 BG Conditions			
Analysis Time Period	AM Peak Period								
Project ID 2799 Atlantic South (August 2006 Addendum)									
East/West Street 9th Street/V Street					North/South Street Florida/9th Street				
Volume Adjustments and Site Characteristics									
Approach	Eastbound			Westbound					
Movement	L	T	R	L	T	R			
Volume	25	91	439	65	87	25			
%Thrus Left Lane	55			50					
Approach	Northbound			Southbound					
Movement	L	T	R	L	T	R			
Volume	159	27	13	16	31	31			
%Thrus Left Lane	45			50					
	Eastbound		Westbound		Northbound		Southbound		
	L1	L2	L1	L2	L1	L2	L1	L2	
Configuration	LT	TR	LTR		LT	TR	LTR		
PHF	0.90	0.90	0.90		0.90	0.90	0.90		
Flow Rate	82	532	195		189	30	85		
% Heavy Vehicles	2	2	2		2	2	2		
No. Lanes	2		1		2		1		
Geometry Group	5		4b		5		4b		
Duration T	0.25								
Saturation Headway Adjustment Worksheet									
Prop. Left-Turns	0.3	0.0	0.4		0.9	0.0	0.2		
Prop. Right-Turns	0.0	0.9	0.1		0.0	0.5	0.4		
Prop. Heavy Vehicle									
hLT-adj	0.5	0.5	0.2	0.2	0.5	0.5	0.2	0.2	
hRT-adj	-0.7	-0.7	-0.6	-0.6	-0.7	-0.7	-0.6	-0.6	
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	
hadj, computed	6.12	6.12	6.12		6.12	6.12	6.12		
Departure Headway and Service Time									
hd, initial value	3.20	3.20	3.20		3.20	3.20	3.20		
x, initial	0.07	0.47	0.17		0.17	0.03	0.08		
hd, final value	6.12	6.12	6.12		6.12	6.12	6.12		
x, final value	0.14	0.78	0.35		0.39	0.05	0.17		
Move up time m	2.3		2.3		2.3		2.3		
Service Time	3.8	3.0	3.8	3.0	3.8	3.0	3.8	3.0	
Capacity and Level of Service									
	Eastbound		Westbound		Northbound		Southbound		
	L1	L2	L1	L2	L1	L2	L1	L2	
Capacity	332	669	445		439	280	335		
Delay	9.81	24.48	12.69		14.55	9.61	11.12		
LOS	A	C	B		B	A	B		
Approach Delay	22.52		12.69		13.87		11.12		
LOS	C		B		B		B		
Intersection Delay	18.23								
Intersection LOS	C								

HCM Unsignalized Intersection Capacity Analysis
12: V Street & 8th Street

Background AM (South)

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	24	89	7	15	148	29	11	45	29	15	16	17
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)	26	97	8	16	161	32	12	49	32	16	17	18
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)					306							
pX, platoon unblocked												
vC, conflicting volume	192			104			389	378	101	418	366	177
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	192			104			389	378	101	418	366	177
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			99			98	91	97	97	97	98
cM capacity (veh/h)	1381			1487			532	538	955	480	546	866
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	130	209	92	52								
Volume Left	26	16	12	16								
Volume Right	8	32	32	18								
cSH	1381	1487	631	599								
Volume to Capacity	0.02	0.01	0.15	0.09								
Queue Length 95th (ft)	1	1	13	7								
Control Delay (s)	1.7	0.7	11.7	11.6								
Lane LOS	A	A	B	B								
Approach Delay (s)	1.7	0.7	11.7	11.6								
Approach LOS			B	B								
Intersection Summary												
Average Delay			4.2									
Intersection Capacity Utilization			24.3%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
14: U Street & Florida Avenue

Background AM (South)

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	
Lane Util. Factor		0.95			0.95	1.00		0.95		1.00	0.95	
Friction		0.98			1.00	0.85		1.00		1.00	1.00	
Flt Protected		1.00			1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)		3458			3539	1583		3502		1770	3524	
Flt Permitted		1.00			1.00	1.00		0.63		0.36	1.00	
Satd. Flow (perm)		3458			3539	1583		2229		662	3524	
Volume (vph)	0	552	99	0	846	156	68	362	8	275	1105	32
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	600	108	0	920	170	74	393	9	299	1201	35
RTOR Reduction (vph)	0	15	0	0	0	100	0	1	0	0	2	0
Lane Group Flow (vph)	0	693	0	0	920	70	0	475	0	299	1234	0
Turn Type						Perm	Perm			pm+pt		
Protected Phases		4			8			2		1	6	
Permitted Phases						8	2			6		
Actuated Green, G (s)		41.0			41.0	41.0		36.0		51.0	51.0	
Effective Green, g (s)		41.0			41.0	41.0		36.0		51.0	51.0	
Actuated g/C Ratio		0.41			0.41	0.41		0.36		0.51	0.51	
Clearance Time (s)		4.0			4.0	4.0		4.0		4.0	4.0	
Lane Grp Cap (vph)		1418			1451	649		802		460	1797	
v/s Ratio Prot		0.20			c0.26					0.07	c0.35	
v/s Ratio Perm						0.04		0.21		0.26		
v/c Ratio		0.49			0.63	0.11		0.59		0.65	0.69	
Uniform Delay, d1		21.8			23.5	18.2		26.0		15.3	18.5	
Progression Factor		1.00			1.00	1.00		1.00		0.94	0.94	
Incremental Delay, d2		1.2			2.1	0.3		3.2		6.9	2.2	
Delay (s)		23.0			25.6	18.5		29.2		21.2	19.6	
Level of Service		C			C	B		C		C	B	
Approach Delay (s)		23.0			24.5			29.2			19.9	
Approach LOS		C			C			C			B	
Intersection Summary												
HCM Average Control Delay		23.0			HCM Level of Service			C				
HCM Volume to Capacity ratio		0.66										
Actuated Cycle Length (s)		100.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		77.2%			ICU Level of Service			D				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
15: Florida Avenue & 8th Street

Background AM (South)

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	32	770	32	17	984	36	10	15	3	8	20	9
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)	35	837	35	18	1070	39	11	16	3	9	22	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)		301										
pX, platoon unblocked				0.87			0.87	0.87	0.87	0.87	0.87	
vC, conflicting volume	1109			872			1338	2070	436	1626	2067	376
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1109			697			1235	2080	193	1567	2078	376
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			98			83	61	100	80	48	98
cM capacity (veh/h)	626			775			63	42	706	43	42	621
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1					
Volume Total	453	453	286	535	307	30	40					
Volume Left	35	0	18	0	0	11	9					
Volume Right	0	35	0	0	39	3	10					
cSH	626	1700	775	1700	1700	54	55					
Volume to Capacity	0.06	0.27	0.02	0.31	0.18	0.56	0.74					
Queue Length 95th (ft)	4	0	2	0	0	55	77					
Control Delay (s)	1.6	0.0	0.9	0.0	0.0	136.5	170.3					
Lane LOS	A		A			F	F					
Approach Delay (s)	0.8		0.2			136.5	170.3					
Approach LOS						F	F					
Intersection Summary												
Average Delay			5.7									
Intersection Capacity Utilization			55.8%		ICU Level of Service				B			
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
17: V Street & Georgia Avenue

Background AM (South)

												
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	1.00			0.95			0.95	
Frt		0.97		1.00	0.95			0.99			0.99	
Flt Protected		0.98		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1767		1770	1777			3497			3487	
Flt Permitted		0.87		0.58	1.00			0.77			0.93	
Satd. Flow (perm)		1560		1072	1777			2690			3251	
Volume (vph)	47	51	33	28	50	22	40	339	18	33	1033	104
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)	51	55	36	30	54	24	43	368	20	36	1123	113
RTOR Reduction (vph)	0	12	0	0	16	0	0	3	0	0	7	0
Lane Group Flow (vph)	0	130	0	30	62	0	0	428	0	0	1265	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		18.0		18.0	18.0			74.0			74.0	
Effective Green, g (s)		18.0		18.0	18.0			74.0			74.0	
Actuated g/C Ratio		0.18		0.18	0.18			0.74			0.74	
Clearance Time (s)		4.0		4.0	4.0			4.0			4.0	
Lane Grp Cap (vph)		281		193	320			1991			2406	
v/s Ratio Prot					0.03							
v/s Ratio Perm		c0.08		0.03				0.16			c0.39	
v/c Ratio		0.46		0.16	0.19			0.21			0.53	
Uniform Delay, d1		36.7		34.6	34.8			4.0			5.5	
Progression Factor		1.02		1.00	1.00			1.00			0.26	
Incremental Delay, d2		5.4		1.7	1.3			0.2			0.6	
Delay (s)		42.8		36.3	36.2			4.3			2.1	
Level of Service		D		D	D			A			A	
Approach Delay (s)		42.8			36.2			4.3			2.1	
Approach LOS		D			D			A			A	
Intersection Summary												
HCM Average Control Delay		7.4				HCM Level of Service		A				
HCM Volume to Capacity ratio		0.51										
Actuated Cycle Length (s)		100.0				Sum of lost time (s)		8.0				
Intersection Capacity Utilization		67.9%				ICU Level of Service		C				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
18: University Dorns & Sherman Street

Background AM (South)

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	0	373	6	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	405	7	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)					299	
pX, platoon unblocked						
vC, conflicting volume	409	206			412	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	409	206			412	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	571	800			1143	
Direction, Lane #	WB 1	NB 1	NB 2			
Volume Total	0	270	142			
Volume Left	0	0	0			
Volume Right	0	0	7			
cSH	1700	1700	1700			
Volume to Capacity	0.00	0.16	0.08			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0				
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			13.8%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
1: 10th Avenue & Florida Avenue

Background PM (South)

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER	SER2
Lane Configurations												
Sign Control		Stop			Stop			Stop		Stop		
Volume (vph)	13	10	2	1	13	184	10	255	6	278	213	9
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)	14	11	2	1	14	200	11	277	7	302	232	10
Direction, Lane #	EB 1	WB 1	NB 1	SE 1	SE 2							
Volume Total (vph)	27	215	295	302	241							
Volume Left (vph)	14	1	11	302	0							
Volume Right (vph)	2	200	7	0	10							
Hadj (s)	0.09	-0.52	0.03	0.53	0.01							
Departure Headway (s)	6.5	5.4	5.4	6.1	5.6							
Degree Utilization, x	0.05	0.32	0.44	0.51	0.37							
Capacity (veh/h)	466	610	637	574	628							
Control Delay (s)	9.8	11.0	12.7	14.1	10.7							
Approach Delay (s)	9.8	11.0	12.7	12.6								
Approach LOS	A	B	B	B								
Intersection Summary												
Delay			12.2									
HCM Level of Service			B									
Intersection Capacity Utilization			52.6%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
2: Barry Place & Sherman Street

Background PM (South)

												
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			0.95	1.00
Frt		1.00			0.96			1.00			1.00	0.85
Flt Protected		0.98			0.99			1.00			1.00	1.00
Satd. Flow (prot)		1822			1769			3524			3522	1583
Flt Permitted		0.80			0.94			0.95			0.52	1.00
Satd. Flow (perm)		1482			1677			3345			1837	1583
Volume (vph)	120	169	5	23	100	60	8	970	26	52	483	90
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)	130	184	5	25	109	65	9	1054	28	57	525	98
RTOR Reduction (vph)	0	1	0	0	1	0	0	1	0	0	0	73
Lane Group Flow (vph)	0	318	0	0	198	0	0	1090	0	0	582	25
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		65.0			65.0			25.0			25.0	25.0
Effective Green, g (s)		66.0			66.0			26.0			26.0	26.0
Actuated g/C Ratio		0.66			0.66			0.26			0.26	0.26
Clearance Time (s)		5.0			5.0			5.0			5.0	5.0
Lane Grp Cap (vph)		978			1107			870			478	412
v/s Ratio Prot												
v/s Ratio Perm		c0.21			0.12			c0.33			0.32	0.02
v/c Ratio		0.33			0.18			1.25			1.22	0.06
Uniform Delay, d1		7.4			6.6			37.0			37.0	27.8
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.9			0.4			123.0			115.7	0.3
Delay (s)		8.2			6.9			160.0			152.7	28.1
Level of Service		A			A			F			F	C
Approach Delay (s)		8.2			6.9			160.0			134.8	
Approach LOS		A			A			F			F	
Intersection Summary												
HCM Average Control Delay	118.1			HCM Level of Service			F					
HCM Volume to Capacity ratio	0.59											
Actuated Cycle Length (s)	100.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	82.1%			ICU Level of Service			E					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
3: Barry Place & 9th Street

Background PM (South)

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Sign Control		Stop	Stop		Stop			
Volume (vph)	20	226	147	53	34	35		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Hourly flow rate (vph)	22	246	160	58	37	38		
Direction, Lane #	EB 1	WB 1	SB 1	SB 2				
Volume Total (vph)	267	217	37	38				
Volume Left (vph)	22	0	37	0				
Volume Right (vph)	0	58	0	38				
Hadj (s)	0.05	-0.12	0.53	-0.67				
Departure Headway (s)	4.4	4.3	6.1	4.9				
Degree Utilization, x	0.33	0.26	0.06	0.05				
Capacity (veh/h)	802	812	546	669				
Control Delay (s)	9.5	8.7	8.3	7.0				
Approach Delay (s)	9.5	8.7	7.6					
Approach LOS	A	A	A					
Intersection Summary								
Delay			9.0					
HCM Level of Service			A					
Intersection Capacity Utilization			37.3%	ICU Level of Service	A			
Analysis Period (min)			15					

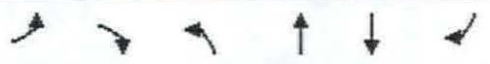
HCM Unsignalized Intersection Capacity Analysis
4: Barry Place & 8th Street

Background PM (South)

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↖	↗	
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	193	68	14	177	23	85
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	210	74	15	192	25	92
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh						
Upstream signal (ft)				282		
pX, platoon unblocked						
vC, conflicting volume			284		470	247
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			284		470	247
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		95	88
cM capacity (veh/h)			1279		546	792
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	284	208	117			
Volume Left	0	15	25			
Volume Right	74	0	92			
cSH	1700	1279	723			
Volume to Capacity	0.17	0.01	0.16			
Queue Length 95th (ft)	0	1	14			
Control Delay (s)	0.0	0.7	10.9			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.7	10.9			
Approach LOS			B			
Intersection Summary						
Average Delay			2.3			
Intersection Capacity Utilization			34.0%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis
5: Barry Place & Georgia Avenue

Background PM (South)

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑↑	↑↑	
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	0.95			1.00	0.99	
Flt Protected	0.97			1.00	1.00	
Satd. Flow (prot)	1714			3526	3489	
Flt Permitted	0.97			0.68	1.00	
Satd. Flow (perm)	1714			2390	3489	
Volume (vph)	172	106	65	791	1209	126
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	187	115	71	860	1314	137
RTOR Reduction (vph)	22	0	0	0	8	0
Lane Group Flow (vph)	280	0	0	931	1443	0
Turn Type			D.P+P			
Protected Phases	4		3	2 3	2	
Permitted Phases			2			
Actuated Green, G (s)	14.0			74.0	54.0	
Effective Green, g (s)	14.0			74.0	54.0	
Actuated g/C Ratio	0.14			0.74	0.54	
Clearance Time (s)	4.0				4.0	
Lane Grp Cap (vph)	240			1996	1884	
v/s Ratio Prot	c0.16			c0.09	c0.41	
v/s Ratio Perm				0.25		
v/c Ratio	1.17			0.47	0.77	
Uniform Delay, d1	43.0			5.2	18.0	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	110.1			0.8	3.0	
Delay (s)	153.1			5.9	21.1	
Level of Service	F			A	C	
Approach Delay (s)	153.1			5.9	21.1	
Approach LOS	F			A	C	
Intersection Summary						
HCM Average Control Delay			30.7		HCM Level of Service	C
HCM Volume to Capacity ratio			0.76			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			87.2%		ICU Level of Service	E
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
6: Florida Avenue & Sherman Street

Background PM (South)

	↑	↗	↘	↓	↙	↖
Movement	NBT	NBR	SBL	SBT	SWL	SWR
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	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	1863			1863	1770	1583
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	1863			1863	1770	1583
Volume (vph)	271	0	0	216	511	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	295	0	0	235	555	5
RTOR Reduction (vph)	0	0	0	0	0	2
Lane Group Flow (vph)	295	0	0	235	555	3
Turn Type					Perm	
Protected Phases	2			6	8	
Permitted Phases						8
Actuated Green, G (s)	32.0			32.0	60.0	60.0
Effective Green, g (s)	32.0			32.0	60.0	60.0
Actuated g/C Ratio	0.32			0.32	0.60	0.60
Clearance Time (s)	4.0			4.0	4.0	4.0
Lane Grp Cap (vph)	596			596	1062	950
v/s Ratio Prot	c0.16			0.13	c0.31	
v/s Ratio Perm						0.00
v/c Ratio	0.49			0.39	0.52	0.00
Uniform Delay, d1	27.5			26.5	11.7	8.0
Progression Factor	1.56			1.00	2.54	2.70
Incremental Delay, d2	2.1			2.0	0.2	0.0
Delay (s)	45.0			28.4	29.7	21.6
Level of Service	D			C	C	C
Approach Delay (s)	45.0			28.4	29.7	
Approach LOS	D			C	C	
Intersection Summary						
HCM Average Control Delay		33.5		HCM Level of Service		C
HCM Volume to Capacity ratio		0.51				
Actuated Cycle Length (s)		100.0		Sum of lost time (s)		8.0
Intersection Capacity Utilization		49.2%		ICU Level of Service		A
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
7: Bryant Street & Georgia Avenue

Background PM (South)

												
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	
Lane Util. Factor								0.95			0.95	
Frt								0.98			1.00	
Flt Protected								1.00			0.99	
Satd. Flow (prot)								3482			3473	
Flt Permitted								1.00			0.53	
Satd. Flow (perm)								3482			1864	
Volume (vph)	0	0	0	0	0	0	0	855	103	386	891	38
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	0	929	112	420	968	41
RTOR Reduction (vph)	0	0	0	0	0	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	0	1030	0	0	1429	0
Turn Type										Prot		
Protected Phases								2		1	1 2	
Permitted Phases												
Actuated Green, G (s)								46.0			72.0	
Effective Green, g (s)								46.0			72.0	
Actuated g/C Ratio								0.57			0.90	
Clearance Time (s)								4.0				
Lane Grp Cap (vph)								2002			2201	
v/s Ratio Prot								0.30			c0.21	
v/s Ratio Perm											c0.37	
v/c Ratio								0.51			0.65	
Uniform Delay, d1								10.3			1.0	
Progression Factor								1.00			1.00	
Incremental Delay, d2								0.9			1.5	
Delay (s)								11.2			2.5	
Level of Service								B			A	
Approach Delay (s)		0.0			0.0			11.2			2.5	
Approach LOS		A			A			B			A	
Intersection Summary												
HCM Average Control Delay			6.1					HCM Level of Service			A	
HCM Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			80.0					Sum of lost time (s)		8.0		
Intersection Capacity Utilization			70.6%					ICU Level of Service		C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
8: W Street & Florida Avenue

Background PM (South)

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	44	179	0	1238	727	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	48	195	0	1346	790	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)				881	318	
pX, platoon unblocked						
vC, conflicting volume	2136	395	790			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2136	395	790			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	68	100			
cM capacity (veh/h)	42	604	826			
Direction, Lane #	EB 1	EB 2	NB 1	SB 1	SB 2	
Volume Total	48	195	1346	395	395	
Volume Left	48	0	0	0	0	
Volume Right	0	195	0	0	0	
cSH	42	604	1700	1700	1700	
Volume to Capacity	1.14	0.32	0.79	0.23	0.23	
Queue Length 95th (ft)	115	35	0	0	0	
Control Delay (s)	332.0	13.8	0.0	0.0	0.0	
Lane LOS	F	B				
Approach Delay (s)	76.6		0.0	0.0		
Approach LOS	F					
Intersection Summary						
Average Delay			7.8			
Intersection Capacity Utilization			75.2%	ICU Level of Service		D
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis
9: W Street & Georgia Avenue

Background PM (South)

						
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
Lane Util. Factor	1.00		0.95			0.95
Frt	0.92		1.00			1.00
Flt Protected	0.98		1.00			1.00
Satd. Flow (prot)	1684		3539			3539
Flt Permitted	0.98		1.00			1.00
Satd. Flow (perm)	1684		3539			3539
Volume (vph)	156	202	756	0	0	852
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	170	220	822	0	0	926
RTOR Reduction (vph)	47	0	0	0	0	0
Lane Group Flow (vph)	343	0	822	0	0	926
Turn Type						
Protected Phases	3		2			2
Permitted Phases						
Actuated Green, G (s)	34.0		58.0			58.0
Effective Green, g (s)	34.0		58.0			58.0
Actuated g/C Ratio	0.34		0.58			0.58
Clearance Time (s)	4.0		4.0			4.0
Lane Grp Cap (vph)	573		2053			2053
v/s Ratio Prot	c0.20		0.23			c0.26
v/s Ratio Perm						
v/c Ratio	0.60		0.40			0.45
Uniform Delay, d1	27.3		11.5			11.9
Progression Factor	1.00		0.76			1.00
Incremental Delay, d2	4.6		0.5			0.7
Delay (s)	31.9		9.3			12.7
Level of Service	C		A			B
Approach Delay (s)	31.9		9.3			12.7
Approach LOS	C		A			B
Intersection Summary						
HCM Average Control Delay			14.9		HCM Level of Service	B
HCM Volume to Capacity ratio			0.51			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			51.3%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

ALL-WAY STOP CONTROL ANALYSIS									
General Information					Site Information				
Analyst		JWW			Intersection		Florida/9th/V Streets		
Agency/Co		Wells & Associates LLC			Jurisdiction		Washington DC		
Date Performed		8/29/2006			Analysis Year		2007 BG Conditions		
Analysis Time Period		PM Peak Period							
Project ID 2799 Atlantic South (August 2006 Addendum)									
East/West Street 9th Street/V Street					North/South Street Florida/9th Street				
Volume Adjustments and Site Characteristics									
Approach		Eastbound			Westbound				
Movement		L	T	R	L	T	R		
Volume		42	82	260	89	151	28		
%Thrus Left Lane		55			50				
Approach		Northbound			Southbound				
Movement		L	T	R	L	T	R		
Volume		356	52	12	35	37	34		
%Thrus Left Lane		45			50				
		Eastbound		Westbound		Northbound		Southbound	
		L1	L2	L1	L2	L1	L2	L1	L2
Configuration		LT	TR	LTR		LT	TR	LTR	
PHF		0.90	0.90	0.90		0.90	0.90	0.90	
Flow Rate		96	329	296		420	45	116	
% Heavy Vehicles		2	2	2		2	2	2	
No. Lanes		2		1		2		1	
Geometry Group		5		4b		5		4b	
Duration T		0.25							
Saturation Headway Adjustment Worksheet									
Prop Left-Turns		0.5	0.0	0.3		0.9	0.0	0.3	
Prop Right-Turns		0.0	0.9	0.1		0.0	0.3	0.3	
Prop Heavy Vehicle									
hLT-adj		0.5	0.5	0.2	0.2	0.5	0.5	0.2	0.2
hRT-adj		-0.7	-0.7	-0.6	-0.6	-0.7	-0.7	-0.6	-0.6
hHV-adj		1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj computed		7.84	7.84	7.84		7.84	7.84	7.84	
Departure Headway and Service Time									
hd initial value		3.20	3.20	3.20		3.20	3.20	3.20	
x, initial		0.09	0.29	0.26		0.37	0.04	0.10	
hd, final value		7.84	7.84	7.84		7.84	7.84	7.84	
x, final value		0.21	0.64	0.64		0.91	0.09	0.27	
Move-up time m		2.3		2.3		2.3		2.3	
Service Time		5.5	4.7	5.5	4.7	5.5	4.7	5.5	4.7
Capacity and Level of Service									
		Eastbound		Westbound		Northbound		Southbound	
		L1	L2	L1	L2	L1	L2	L1	L2
Capacity		346	495	443		458	295	366	
Delay		12.60	21.08	23.02		49.71	10.48	14.10	
LOS		B	C	C		E	B	B	
Approach Delay		19.16		23.02		45.92		14.10	
LOS		C		C		E		B	
Intersection Delay		29.14							
Intersection LOS		D							

HCM Unsignalized Intersection Capacity Analysis
12: V Street & 8th Street

Background PM (South)

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	9	110	10	19	212	73	24	27	45	33	28	32
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)	10	120	11	21	230	79	26	29	49	36	30	35
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)					304							
pX, platoon unblocked	0.96						0.96	0.96		0.96	0.96	0.96
vC, conflicting volume	310			130			506	496	125	520	461	270
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	283			130			487	476	125	501	440	241
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			94	94	95	91	94	95
cM capacity (veh/h)	1231			1455			422	459	926	410	481	767
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	140	330	104	101								
Volume Left	10	21	26	36								
Volume Right	11	79	49	35								
cSH	1231	1455	584	515								
Volume to Capacity	0.01	0.01	0.18	0.20								
Queue Length 95th (ft)	1	1	16	18								
Control Delay (s)	0.6	0.6	12.5	13.7								
Lane LOS	A	A	B	B								
Approach Delay (s)	0.6	0.6	12.5	13.7								
Approach LOS			B	B								
Intersection Summary												
Average Delay			4.4									
Intersection Capacity Utilization			35.8%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
14: U Street & Florida Avenue

Background PM (South)

												
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	
Lane Util. Factor		0.95			0.95	1.00		0.95		1.00	0.95	
Frt		0.98			1.00	0.85		1.00		1.00	0.99	
Flt Protected		1.00			1.00	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		3470			3539	1583		3525		1770	3510	
Flt Permitted		1.00			1.00	1.00		0.88		0.10	1.00	
Satd. Flow (perm)		3470			3539	1583		3099		186	3510	
Volume (vph)	0	760	114	0	702	207	49	924	9	274	591	35
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	826	124	0	763	225	53	1004	10	298	642	38
RTOR Reduction (vph)	0	12	0	0	0	133	0	1	0	0	4	0
Lane Group Flow (vph)	0	938	0	0	763	92	0	1066	0	298	676	0
Turn Type						Perm	Perm			pm+pt		
Protected Phases		4			8			2		1	6	
Permitted Phases						8	2			6		
Actuated Green, G (s)		41.0			41.0	41.0		36.0		51.0	51.0	
Effective Green, g (s)		41.0			41.0	41.0		36.0		51.0	51.0	
Actuated g/C Ratio		0.41			0.41	0.41		0.36		0.51	0.51	
Clearance Time (s)		4.0			4.0	4.0		4.0		4.0	4.0	
Lane Grp Cap (vph)		1423			1451	649		1116		269	1790	
v/s Ratio Prot		c0.27			0.22					c0.12	0.19	
v/s Ratio Perm						0.06		0.34		c0.44		
v/c Ratio		0.66			0.53	0.14		0.96		1.11	0.38	
Uniform Delay, d1		23.9			22.2	18.5		31.2		27.9	14.9	
Progression Factor		1.00			1.00	1.00		1.00		0.93	0.99	
Incremental Delay, d2		2.4			1.4	0.5		18.2		85.9	0.6	
Delay (s)		26.3			23.6	18.9		49.4		111.7	15.2	
Level of Service		C			C	B		D		F	B	
Approach Delay (s)		26.3			22.5			49.4			44.6	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM Average Control Delay		36.0					HCM Level of Service			D		
HCM Volume to Capacity ratio		0.89										
Actuated Cycle Length (s)		100.0					Sum of lost time (s)		8.0			
Intersection Capacity Utilization		79.3%					ICU Level of Service		D			
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
15: Florida Avenue & 8th Street

Background PM (South)

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	53	965	24	24	879	27	10	17	4	15	23	19
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)	58	1049	26	26	955	29	11	18	4	16	25	21
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)		301										
pX, platoon unblocked				0.79			0.79	0.79	0.79	0.79	0.79	
vC, conflicting volume	985			1075			1581	2214	538	1676	2212	333
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	985			829			1470	2271	149	1589	2269	333
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			96			22	33	99	32	10	97
cM capacity (veh/h)	697			631			14	28	688	24	28	663
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1					
Volume Total	582	551	265	478	268	34	62					
Volume Left	58	0	26	0	0	11	16					
Volume Right	0	26	0	0	29	4	21					
cSH	697	1700	631	1700	1700	23	39					
Volume to Capacity	0.08	0.32	0.04	0.28	0.16	1.45	1.61					
Queue Length 95th (ft)	7	0	3	0	0	107	162					
Control Delay (s)	2.2	0.0	1.6	0.0	0.0	594.2	528.3					
Lane LOS	A		A			F	F					
Approach Delay (s)	1.1		0.4			594.2	528.3					
Approach LOS						F	F					
Intersection Summary												
Average Delay		24.3										
Intersection Capacity Utilization		61.0%				ICU Level of Service			B			
Analysis Period (min)		15										

HCM Signalized Intersection Capacity Analysis
17: V Street & Georgia Avenue

Background PM (South)

												
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	1.00			0.95			0.95	
Frt		0.96		1.00	0.96			1.00			0.98	
Flt Protected		0.99		0.95	1.00			0.99			1.00	
Satd. Flow (prot)		1763		1770	1786			3511			3469	
Flt Permitted		0.78		0.45	1.00			0.71			0.93	
Satd. Flow (perm)		1392		844	1786			2518			3237	
Volume (vph)	52	78	55	62	101	39	97	665	8	17	727	108
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)	57	85	60	67	110	42	105	723	9	18	790	117
RTOR Reduction (vph)	0	16	0	0	14	0	0	1	0	0	11	0
Lane Group Flow (vph)	0	186	0	67	138	0	0	836	0	0	914	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		18.0		18.0	18.0			74.0			74.0	
Effective Green, g (s)		18.0		18.0	18.0			74.0			74.0	
Actuated g/C Ratio		0.18		0.18	0.18			0.74			0.74	
Clearance Time (s)		4.0		4.0	4.0			4.0			4.0	
Lane Grp Cap (vph)		251		152	321			1863			2395	
v/s Ratio Prot					0.08							
v/s Ratio Perm		c0.13		0.08				c0.33			0.28	
v/c Ratio		0.74		0.44	0.43			0.45			0.38	
Uniform Delay, d1		38.8		36.5	36.4			5.1			4.7	
Progression Factor		0.89		1.00	1.00			1.00			0.41	
Incremental Delay, d2		17.7		9.0	4.2			0.8			0.4	
Delay (s)		52.1		45.5	40.6			5.8			2.3	
Level of Service		D		D	D			A			A	
Approach Delay (s)		52.1			42.1			5.8			2.3	
Approach LOS		D			D			A			A	
Intersection Summary												
HCM Average Control Delay		12.3				HCM Level of Service		B				
HCM Volume to Capacity ratio		0.51										
Actuated Cycle Length (s)		100.0				Sum of lost time (s)		8.0				
Intersection Capacity Utilization		76.8%				ICU Level of Service		D				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
18: University Dorns & Sherman Street

Background PM (South)

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕↗			
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	1	1004	3	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1	1091	3	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh						
Upstream signal (ft)						309
pX, platoon unblocked						
vC, conflicting volume	1093	547			1095	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1093	547			1095	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	209	481			633	
Direction, Lane #	WB 1	NB 1	NB 2			
Volume Total	1	728	367			
Volume Left	0	0	0			
Volume Right	1	0	3			
cSH	481	1700	1700			
Volume to Capacity	0.00	0.43	0.22			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	12.5	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	12.5	0.0				
Approach LOS	B					
Intersection Summary						
Average Delay		0.0				
Intersection Capacity Utilization		37.8%	ICU Level of Service		A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis
34: 10th Avenue & Florida Avenue

Total Future AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER	SER2
Lane Configurations												
Sign Control		Stop			Stop			Stop		Stop		
Volume (vph)	11	33	6	28	27	243	10	230	15	165	175	29
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	36	7	30	29	264	11	250	16	179	190	32
Direction, Lane #	EB 1	WB 1	NB 1	SE 1	SE 2							
Volume Total (vph)	54	324	277	179	222							
Volume Left (vph)	12	30	11	179	0							
Volume Right (vph)	7	264	16	0	32							
Hadj (s)	0.01	-0.44	0.01	0.53	-0.07							
Departure Headway (s)	6.4	5.4	5.7	6.5	5.9							
Degree Utilization, x	0.10	0.48	0.44	0.33	0.37							
Capacity (veh/h)	469	627	585	523	576							
Control Delay (s)	10.1	13.2	13.2	11.5	11.1							
Approach Delay (s)	10.1	13.2	13.2	11.3								
Approach LOS	B	B	B	B								

Intersection Summary

Delay	12.3		
HCM Level of Service	B		
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
2: Barry Place & Sherman Street

Total Future AM

												
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			0.95	1.00
Frt		1.00			0.97			0.98			1.00	0.85
Flt Protected		0.98			1.00			1.00			1.00	1.00
Satd. Flow (prot)		1823			1806			3482			3528	1583
Flt Permitted		0.80			0.99			0.81			0.81	1.00
Satd. Flow (perm)		1498			1790			2815			2852	1583
Volume (vph)	91	121	1	7	132	37	2	330	40	72	1089	165
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)	99	132	1	8	143	40	2	359	43	78	1184	179
RTOR Reduction (vph)	0	0	0	0	10	0	0	9	0	0	0	107
Lane Group Flow (vph)	0	232	0	0	181	0	0	395	0	0	1262	72
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		65.0			65.0			25.0			25.0	25.0
Effective Green, g (s)		66.0			66.0			26.0			26.0	26.0
Actuated g/C Ratio		0.66			0.66			0.26			0.26	0.26
Clearance Time (s)		5.0			5.0			5.0			5.0	5.0
Lane Grp Cap (vph)		989			1181			732			742	412
v/s Ratio Prot												
v/s Ratio Perm		c0.15			0.10			0.14			c0.44	0.05
v/c Ratio		0.23			0.15			0.54			1.70	0.18
Uniform Delay, d1		6.8			6.4			31.8			37.0	28.7
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.6			0.3			2.8			321.1	0.9
Delay (s)		7.4			6.7			34.7			358.1	29.6
Level of Service		A			A			C			F	C
Approach Delay (s)		7.4			6.7			34.7			317.3	
Approach LOS		A			A			C			F	
Intersection Summary												
HCM Average Control Delay	209.1			HCM Level of Service			F					
HCM Volume to Capacity ratio	0.65											
Actuated Cycle Length (s)	100.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	77.0%			ICU Level of Service			D					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
3: Barry Place & 9th Street

Total Future AM

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (vph)	15	218	166	39	17	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	237	180	42	18	12
Direction, Lane #	EB 1	WB 1	SB 1	SB 2		
Volume Total (vph)	253	223	18	12		
Volume Left (vph)	16	0	18	0		
Volume Right (vph)	0	42	0	12		
Hadj (s)	0.05	-0.08	0.53	-0.67		
Departure Headway (s)	4.3	4.2	6.1	4.9		
Degree Utilization, x	0.30	0.26	0.03	0.02		
Capacity (veh/h)	832	840	548	672		
Control Delay (s)	9.1	8.6	8.1	6.7		
Approach Delay (s)	9.1	8.6	7.5			
Approach LOS	A	A	A			
Intersection Summary						
Delay	8.8					
HCM Level of Service	A					
Intersection Capacity Utilization	33.8%			ICU Level of Service	A	
Analysis Period (min)	15					

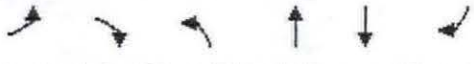
HCM Unsignalized Intersection Capacity Analysis
4: Barry Place & 8th Street

Total Future AM

	→	↘	↙	←	↗	↖
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩			↩	↩	↩
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	152	33	10	159	46	39
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	165	36	11	173	50	42
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh						
Upstream signal (ft)				282		
pX, platoon unblocked						
vC, conflicting volume			201		378	183
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			201		378	183
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		92	95
cM capacity (veh/h)			1371		619	859
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	201	184	92			
Volume Left	0	11	50			
Volume Right	36	0	42			
cSH	1700	1371	710			
Volume to Capacity	0.12	0.01	0.13			
Queue Length 95th (ft)	0	1	11			
Control Delay (s)	0.0	0.5	10.8			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.5	10.8			
Approach LOS			B			
Intersection Summary						
Average Delay			2.3			
Intersection Capacity Utilization			28.2%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis
5: Barry Place & Georgia Avenue

Total Future AM

						
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	0.93			1.00	0.99	
Flt Protected	0.98			0.99	1.00	
Satd. Flow (prot)	1695			3512	3515	
Flt Permitted	0.98			0.56	1.00	
Satd. Flow (perm)	1695			1976	3515	
Volume (vph)	96	95	95	523	1363	64
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	104	103	103	568	1482	70
RTOR Reduction (vph)	35	0	0	0	3	0
Lane Group Flow (vph)	172	0	0	671	1549	0
Turn Type			D.P+P			
Protected Phases	4		3	2 3	2	
Permitted Phases			2			
Actuated Green, G (s)	14.0			74.0	54.0	
Effective Green, g (s)	14.0			74.0	54.0	
Actuated g/C Ratio	0.14			0.74	0.54	
Clearance Time (s)	4.0				4.0	
Lane Grp Cap (vph)	237			1769	1898	
v/s Ratio Prot	c0.10			c0.08	c0.44	
v/s Ratio Perm				0.20		
v/c Ratio	0.72			0.38	0.82	
Uniform Delay, d1	41.2			4.7	18.9	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	17.5			0.6	4.0	
Delay (s)	58.7			5.3	22.9	
Level of Service	E			A	C	
Approach Delay (s)	58.7			5.3	22.9	
Approach LOS	E			A	C	
Intersection Summary						
HCM Average Control Delay		21.1		HCM Level of Service		C
HCM Volume to Capacity ratio		0.70				
Actuated Cycle Length (s)		100.0		Sum of lost time (s)		12.0
Intersection Capacity Utilization		78.1%		ICU Level of Service		D
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
6: Florida Avenue & Sherman Street

Total Future AM

	↑	↗	↘	↓	↙	↖
Movement	NBT	NBR	SBL	SBT	SWL	SWR
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	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	1863			1863	1770	1583
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	1863			1863	1770	1583
Volume (vph)	255	0	0	209	1092	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	277	0	0	227	1187	5
RTOR Reduction (vph)	0	0	0	0	0	2
Lane Group Flow (vph)	277	0	0	227	1187	3
Turn Type					Perm	
Protected Phases	2			6	8	
Permitted Phases						8
Actuated Green, G (s)	32.0			32.0	60.0	60.0
Effective Green, g (s)	32.0			32.0	60.0	60.0
Actuated g/C Ratio	0.32			0.32	0.60	0.60
Clearance Time (s)	4.0			4.0	4.0	4.0
Lane Grp Cap (vph)	596			596	1062	950
v/s Ratio Prot	c0.15			0.12	c0.67	
v/s Ratio Perm						0.00
v/c Ratio	0.46			0.38	1.12	0.00
Uniform Delay, d1	27.2			26.3	20.0	8.0
Progression Factor	1.38			1.00	2.30	2.64
Incremental Delay, d2	2.5			1.8	54.4	0.0
Delay (s)	40.1			28.2	100.3	21.1
Level of Service	D			C	F	C
Approach Delay (s)	40.1			28.2	100.0	
Approach LOS	D			C	F	
Intersection Summary						
HCM Average Control Delay		80.6		HCM Level of Service		F
HCM Volume to Capacity ratio		0.89				
Actuated Cycle Length (s)		100.0		Sum of lost time (s)		8.0
Intersection Capacity Utilization		80.6%		ICU Level of Service		D
Analysis Period (min)		15				
c Critical Lane Group						

Total Future AM

Synchro 6 Report
Page 6

HCM Unsignalized Intersection Capacity Analysis
8: W Street & Florida Avenue

Total Future AM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations					 	
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	12	116	0	618	1302	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	126	0	672	1415	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)				855	318	
pX, platoon unblocked	0.87					
vC, conflicting volume	2087	708	1415			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2248	708	1415			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	58	67	100			
cM capacity (veh/h)	31	377	477			
Direction, Lane #	EB 1	EB 2	NB 1	SB 1	SB 2	
Volume Total	13	126	672	708	708	
Volume Left	13	0	0	0	0	
Volume Right	0	126	0	0	0	
cSH	31	377	1700	1700	1700	
Volume to Capacity	0.42	0.33	0.40	0.42	0.42	
Queue Length 95th (ft)	34	36	0	0	0	
Control Delay (s)	190.6	19.3	0.0	0.0	0.0	
Lane LOS	F	C				
Approach Delay (s)	35.3		0.0	0.0		
Approach LOS	E					
Intersection Summary						
Average Delay			2.2			
Intersection Capacity Utilization			49.8%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis
9: W Street & Georgia Avenue

Total Future AM

						
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
Lane Util. Factor	1.00		0.95			0.95
Frt	0.92		1.00			1.00
Flt Protected	0.98		1.00			1.00
Satd. Flow (prot)	1681		3539			3539
Flt Permitted	0.98		1.00			1.00
Satd. Flow (perm)	1681		3539			3539
Volume (vph)	156	222	471	0	0	1171
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	170	241	512	0	0	1273
RTOR Reduction (vph)	51	0	0	0	0	0
Lane Group Flow (vph)	360	0	512	0	0	1273
Turn Type						
Protected Phases	3		2			2
Permitted Phases						
Actuated Green, G (s)	34.0		58.0			58.0
Effective Green, g (s)	34.0		58.0			58.0
Actuated g/C Ratio	0.34		0.58			0.58
Clearance Time (s)	4.0		4.0			4.0
Lane Grp Cap (vph)	572		2053			2053
v/s Ratio Prot	c0.21		0.14			c0.36
v/s Ratio Perm						
v/c Ratio	0.63		0.25			0.62
Uniform Delay, d1	27.7		10.3			13.8
Progression Factor	1.00		0.82			1.00
Incremental Delay, d2	5.2		0.3			1.4
Delay (s)	32.9		8.8			15.2
Level of Service	C		A			B
Approach Delay (s)	32.9		8.8			15.2
Approach LOS	C		A			B
Intersection Summary						
HCM Average Control Delay	17.0		HCM Level of Service		B	
HCM Volume to Capacity ratio	0.62					
Actuated Cycle Length (s)	100.0		Sum of lost time (s)		8.0	
Intersection Capacity Utilization	61.3%		ICU Level of Service		B	
Analysis Period (min)	15					
c Critical Lane Group						