

HCM Unsignalized Intersection Capacity Analysis
3: Georgia Ave NW & Girard St NW


















Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	16	125	13	1275	893	31
Future Volume (Veh/h)	16	125	13	1275	893	31
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	17	133	14	1356	950	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				336	431	
pX, platoon unblocked	0.86	0.84	0.84			
vC, conflicting volume	1672	492	983			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	610	14	599			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	85	98			
cM capacity (veh/h)	359	893	818			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	150	466	904	633	350	
Volume Left	17	14	0	0	0	
Volume Right	133	0	0	0	33	
cSH	764	818	1700	1700	1700	
Volume to Capacity	0.20	0.02	0.53	0.37	0.21	
Queue Length 95th (ft)	18	1	0	0	0	
Control Delay (s)	10.9	0.5	0.0	0.0	0.0	
Lane LOS	B	A				
Approach Delay (s)	10.9	0.2		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay	0.7					
Intersection Capacity Utilization	65.5%			ICU Level of Service	C	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis

4: Georgia Ave NW & Girard St NW

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12/10/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	1	3	0	0	0	1	1273	22	7	1007	1
Future Volume (Veh/h)	2	1	3	0	0	0	1	1273	22	7	1007	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	2	1	3	0	0	0	1	1340	23	7	1060	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								205			562	
pX, platoon unblocked	0.85	0.85	0.86	0.85	0.85	0.77	0.86			0.77		
vC, conflicting volume	1746	2440	530	1901	2428	682	1061			1363		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	748	1567	112	931	1554	3	733			884		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	100	100	100	100	100			99		
cM capacity (veh/h)	252	92	786	184	94	835	742			589		
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2							
Volume Total	6	671	693	537	531							
Volume Left	2	1	0	7	0							
Volume Right	3	0	23	0	1							
cSH	265	742	1700	589	1700							
Volume to Capacity	0.02	0.00	0.41	0.01	0.31							
Queue Length 95th (ft)	2	0	0	1	0							
Control Delay (s)	18.9	0.0	0.0	0.3	0.0							
Lane LOS	C	A		A								
Approach Delay (s)	18.9	0.0		0.2								
Approach LOS	C											
Intersection Summary												
Average Delay			0.1									
Intersection Capacity Utilization			50.6%		ICU Level of Service				A			
Analysis Period (min)			15									



Lane Group	NBT	SBT
Lane Group Flow (vph)	1363	1070
v/c Ratio	0.74	0.56
Control Delay	5.8	15.3
Queue Delay	0.0	0.0
Total Delay	5.8	15.3
Queue Length 50th (ft)	62	241
Queue Length 95th (ft)	51	301
Internal Link Dist (ft)	68	125
Turn Bay Length (ft)		
Base Capacity (vph)	1853	1909
Starvation Cap Reductn	2	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.74	0.56
Intersection Summary		

HCM Signalized Intersection Capacity Analysis
5: Georgia Ave NW & Fairmont St NW



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↑↑	↑↑	
Traffic Volume (vph)	0	0	57	1265	988	49
Future Volume (vph)	0	0	57	1265	988	49
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Total Lost time (s)				3.5	3.5	
Lane Util. Factor				0.95	0.95	
Frt				1.00	0.99	
Flt Protected				1.00	1.00	
Satd. Flow (prot)				3148	3133	
Flt Permitted				0.82	1.00	
Satd. Flow (perm)				2600	3133	
Peak-hour factor, PHF	0.90	0.90	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	0	59	1304	1019	51
RTOR Reduction (vph)	0	0	0	0	3	0
Lane Group Flow (vph)	0	0	0	1363	1067	0
Heavy Vehicles (%)	2%	2%	3%	3%	3%	2%
Turn Type			pm+pt	NA	NA	
Protected Phases			5	2	6	
Permitted Phases			2			
Actuated Green, G (s)				82.0	71.0	
Effective Green, g (s)				84.0	73.0	
Actuated g/C Ratio				0.70	0.61	
Clearance Time (s)				5.5	5.5	
Lane Grp Cap (vph)				1854	1905	
v/s Ratio Prot				c0.05	0.34	
v/s Ratio Perm				c0.47		
v/c Ratio				0.74	0.56	
Uniform Delay, d1				11.1	14.0	
Progression Factor				0.31	1.00	
Incremental Delay, d2				2.2	1.2	
Delay (s)				5.6	15.2	
Level of Service				A	B	
Approach Delay (s)	0.0			5.6	15.2	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Queues
6: Georgia Ave NW & Fairmont St NW



Lane Group	WBL	NBT	SBT
Lane Group Flow (vph)	85	1303	999
v/c Ratio	0.22	0.60	0.45
Control Delay	20.5	7.6	0.6
Queue Delay	0.0	0.1	0.1
Total Delay	20.5	7.7	0.7
Queue Length 50th (ft)	24	87	1
Queue Length 95th (ft)	68	97	1
Internal Link Dist (ft)	247	132	68
Turn Bay Length (ft)			
Base Capacity (vph)	383	2165	2207
Starvation Cap Reductn	0	150	331
Spillback Cap Reductn	2	155	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.22	0.65	0.53
Intersection Summary			

HCM Signalized Intersection Capacity Analysis
6: Georgia Ave NW & Fairmont St NW

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Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↕↕			↕↕
Traffic Volume (vph)	40	45	1290	0	0	989
Future Volume (vph)	40	45	1290	0	0	989
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		3.5			3.5
Lane Util. Factor	1.00		0.95			0.95
Frbp, ped/bikes	0.99		1.00			1.00
Flpb, ped/bikes	1.00		1.00			1.00
Frt	0.93		1.00			1.00
Flt Protected	0.98		1.00			1.00
Satd. Flow (prot)	1419		3094			3154
Flt Permitted	0.98		1.00			1.00
Satd. Flow (perm)	1419		3094			3154
Peak-hour factor, PHF	0.99	0.99	0.99	0.90	0.90	0.99
Adj. Flow (vph)	40	45	1303	0	0	999
RTOR Reduction (vph)	34	0	0	0	0	0
Lane Group Flow (vph)	51	0	1303	0	0	999
Confl. Peds. (#/hr)		2				
Heavy Vehicles (%)	10%	7%	5%	2%	2%	3%
Turn Type	Prot		NA			NA
Protected Phases	4		2			2
Permitted Phases						
Actuated Green, G (s)	27.5		82.0			82.0
Effective Green, g (s)	29.5		84.0			84.0
Actuated g/C Ratio	0.25		0.70			0.70
Clearance Time (s)	5.0		5.5			5.5
Lane Grp Cap (vph)	348		2165			2207
v/s Ratio Prot	c0.04		c0.42			0.32
v/s Ratio Perm						
v/c Ratio	0.15		0.60			0.45
Uniform Delay, d1	35.4		9.3			7.9
Progression Factor	1.00		0.68			0.00
Incremental Delay, d2	0.9		1.1			0.6
Delay (s)	36.3		7.4			0.6
Level of Service	D		A			A
Approach Delay (s)	36.3		7.4			0.6
Approach LOS	D		A			A
Intersection Summary						
HCM 2000 Control Delay			5.6		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.52			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	14.0
Intersection Capacity Utilization			63.8%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

HCM Unsignalized Intersection Capacity Analysis
7: 6th St NW & Fairmont St NW



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations				↑	↘	
Traffic Volume (veh/h)	0	0	0	31	104	0
Future Volume (Veh/h)	0	0	0	31	104	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.85	0.85	0.90
Hourly flow rate (vph)	0	0	0	36	122	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)	327					
pX, platoon unblocked						
vC, conflicting volume			0		36	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		36	0
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			100		87	100
cM capacity (veh/h)			1623		964	1085
Direction, Lane #	WB 1	NB 1				
Volume Total	36	122				
Volume Left	0	122				
Volume Right	0	0				
cSH	1700	964				
Volume to Capacity	0.02	0.13				
Queue Length 95th (ft)	0	11				
Control Delay (s)	0.0	9.3				
Lane LOS		A				
Approach Delay (s)	0.0	9.3				
Approach LOS		A				
Intersection Summary						
Average Delay			7.2			
Intersection Capacity Utilization			16.4%	ICU Level of Service	A	
Analysis Period (min)			15			



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	203	41	1131	1085
v/c Ratio	0.40	0.09	0.57	0.56
Control Delay	37.6	21.9	12.2	3.1
Queue Delay	0.0	0.0	0.1	0.0
Total Delay	37.6	21.9	12.3	3.1
Queue Length 50th (ft)	127	14	227	28
Queue Length 95th (ft)	198	42	283	36
Internal Link Dist (ft)	705		607	132
Turn Bay Length (ft)		25		
Base Capacity (vph)	511	439	1982	1944
Starvation Cap Reductn	0	0	0	6
Spillback Cap Reductn	0	0	126	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.40	0.09	0.61	0.56

Intersection Summary

HCM Signalized Intersection Capacity Analysis

8: Georgia Ave NW & Euclid St NW

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Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	191	39	0	1063	1020	0
Future Volume (vph)	191	39	0	1063	1020	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	16	16	10	10	10	10
Total Lost time (s)	3.0	3.0		3.0	3.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frbp, ped/bikes	1.00	0.93		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1805	1508		2973	2916	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1805	1508		2973	2916	
Peak-hour factor, PHF	0.94	0.94	0.90	0.94	0.94	0.90
Adj. Flow (vph)	203	41	0	1131	1085	0
RTOR Reduction (vph)	0	12	0	0	0	0
Lane Group Flow (vph)	203	29	0	1131	1085	0
Confl. Peds. (#/hr)		34				
Heavy Vehicles (%)	2%	2%	2%	2%	4%	2%
Turn Type	Prot	Perm		NA	NA	
Protected Phases	8			2	6	
Permitted Phases		8				
Actuated Green, G (s)	32.0	32.0		78.0	78.0	
Effective Green, g (s)	34.0	34.0		80.0	80.0	
Actuated g/C Ratio	0.28	0.28		0.67	0.67	
Clearance Time (s)	5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	511	427		1982	1944	
v/s Ratio Prot	c0.11			c0.38	0.37	
v/s Ratio Perm		0.02				
v/c Ratio	0.40	0.07		0.57	0.56	
Uniform Delay, d1	34.7	31.4		10.8	10.6	
Progression Factor	1.00	1.00		1.00	0.19	
Incremental Delay, d2	2.3	0.3		1.2	1.1	
Delay (s)	37.0	31.7		12.0	3.1	
Level of Service	D	C		B	A	
Approach Delay (s)	36.1			12.0	3.1	
Approach LOS	D			B	A	
Intersection Summary						
HCM 2000 Control Delay			10.4		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.52			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	6.0
Intersection Capacity Utilization			63.8%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Queues
 9: Georgia Ave NW & Howard PI NW



Lane Group	NBT	SBT
Lane Group Flow (vph)	1157	1111
v/c Ratio	0.54	0.60
Control Delay	3.4	7.7
Queue Delay	0.5	0.2
Total Delay	3.9	7.9
Queue Length 50th (ft)	74	155
Queue Length 95th (ft)	m72	206
Internal Link Dist (ft)	410	607
Turn Bay Length (ft)		
Base Capacity (vph)	2159	1855
Starvation Cap Reductn	514	0
Spillback Cap Reductn	0	201
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.70	0.67

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
9: Georgia Ave NW & Howard PI NW















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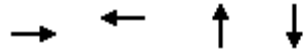


Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑			↑↑
Traffic Volume (vph)	0	0	1036	75	51	1016
Future Volume (vph)	0	0	1036	75	51	1016
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10
Grade (%)	-10%		5%			-5%
Total Lost time (s)			3.0			3.0
Lane Util. Factor			0.95			0.95
Frt			0.99			1.00
Flt Protected			1.00			1.00
Satd. Flow (prot)			2854			2984
Flt Permitted			1.00			0.82
Satd. Flow (perm)			2854			2459
Peak-hour factor, PHF	0.90	0.90	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	1079	78	53	1058
RTOR Reduction (vph)	0	0	5	0	0	0
Lane Group Flow (vph)	0	0	1152	0	0	1111
Heavy Vehicles (%)	2%	2%	2%	10%	2%	4%
Turn Type			NA		Perm	NA
Protected Phases			2			6
Permitted Phases					6	
Actuated Green, G (s)			81.0			81.0
Effective Green, g (s)			83.0			83.0
Actuated g/C Ratio			0.75			0.75
Clearance Time (s)			5.0			5.0
Vehicle Extension (s)			1.0			1.0
Lane Grp Cap (vph)			2153			1855
v/s Ratio Prot			0.40			
v/s Ratio Perm						c0.45
v/c Ratio			0.54			0.60
Uniform Delay, d1			5.6			6.0
Progression Factor			0.57			1.00
Incremental Delay, d2			0.2			1.4
Delay (s)			3.4			7.5
Level of Service			A			A
Approach Delay (s)	0.0		3.4			7.5
Approach LOS	A		A			A
Intersection Summary						
HCM 2000 Control Delay			5.4		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.48			
Actuated Cycle Length (s)			110.0		Sum of lost time (s)	7.0
Intersection Capacity Utilization			74.0%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

HCM Unsignalized Intersection Capacity Analysis
 10: 6th St NW & Howard PI NW

Howard University CMP
 12/10/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	43	53	21	0	19	0	0	0	0	0	0
Future Volume (Veh/h)	62	43	53	21	0	19	0	0	0	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		-13%			-10%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.90	0.93	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	67	46	57	23	0	20	0	0	0	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	20	0	0	80	0	0	0			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	20	0	0	80	0	0	0			0		
tC, single (s)	7.2	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.6	4.0	3.4	3.5	4.0	3.4	2.2			2.2		
p0 queue free %	93	95	95	97	100	98	100			100		
cM capacity (veh/h)	955	896	1073	827	896	1073	1623			1623		
Direction, Lane #	EB 1	WB 1										
Volume Total	170	43										
Volume Left	67	23										
Volume Right	57	20										
cSH	974	926										
Volume to Capacity	0.17	0.05										
Queue Length 95th (ft)	16	4										
Control Delay (s)	9.5	9.1										
Lane LOS	A	A										
Approach Delay (s)	9.5	9.1										
Approach LOS	A	A										
Intersection Summary												
Average Delay			9.4									
Intersection Capacity Utilization			14.6%		ICU Level of Service					A		
Analysis Period (min)			15									



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	24	105	781	500
v/c Ratio	0.16	0.58	0.69	0.39
Control Delay	27.3	41.5	7.5	7.5
Queue Delay	0.0	0.0	0.7	0.0
Total Delay	27.3	41.5	8.3	7.5
Queue Length 50th (ft)	6	43	115	125
Queue Length 95th (ft)	29	95	m195	164
Internal Link Dist (ft)	690	766	403	656
Turn Bay Length (ft)				
Base Capacity (vph)	152	181	1137	1268
Starvation Cap Reductn	0	0	126	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.16	0.58	0.77	0.39

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
 11: 4th St NW/5th St NW & Howard PI NW/McMillan Dr NW



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	8	1	12	43	1	45	8	634	22	1	420	4
Future Volume (vph)	8	1	12	43	1	45	8	634	22	1	420	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	8	8	8	12	12	12	12	12	8	15	15	8
Grade (%)		-13%			6%			6%			0%	
Total Lost time (s)		5.0			5.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frbp, ped/bikes		0.73			0.98			1.00			1.00	
Flpb, ped/bikes		1.00			0.79			1.00			1.00	
Frt		0.92			0.93			1.00			1.00	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		1013			1124			1610			1789	
Flt Permitted		0.88			0.83			0.99			1.00	
Satd. Flow (perm)		912			960			1602			1788	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	9	1	14	51	1	53	9	746	26	1	494	5
RTOR Reduction (vph)	0	12	0	0	33	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	12	0	0	72	0	0	780	0	0	500	0
Confl. Peds. (#/hr)	4		108	108		4	2		14	14		2
Heavy Vehicles (%)	2%	2%	2%	5%	2%	2%	2%	2%	9%	2%	5%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			6			2	
Permitted Phases	4			4			6			2		
Actuated Green, G (s)		15.0			15.0			76.0			76.0	
Effective Green, g (s)		17.0			17.0			78.0			78.0	
Actuated g/C Ratio		0.15			0.15			0.71			0.71	
Clearance Time (s)		7.0			7.0			6.0			6.0	
Lane Grp Cap (vph)		140			148			1135			1267	
v/s Ratio Prot												
v/s Ratio Perm		0.01			0.08			0.49			0.28	
v/c Ratio		0.09			0.49			0.69			0.39	
Uniform Delay, d1		39.8			42.5			9.1			6.5	
Progression Factor		1.00			1.00			0.62			1.00	
Incremental Delay, d2		1.2			11.0			1.6			0.9	
Delay (s)		41.1			53.5			7.2			7.4	
Level of Service		D			D			A			A	
Approach Delay (s)		41.1			53.5			7.2			7.4	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Queues
12: Sherman Ave NW & Barry PI NW



Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	351	194	80	27	401	85	97	507
v/c Ratio	0.85	0.47	0.19	0.07	0.43	0.13	0.27	0.28
Control Delay	52.8	31.1	6.5	11.6	15.6	3.4	14.9	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.8	31.1	6.5	11.6	15.6	3.4	14.9	12.7
Queue Length 50th (ft)	225	103	0	8	154	2	33	90
Queue Length 95th (ft)	#395	174	32	22	227	24	68	122
Internal Link Dist (ft)	139	246			167			404
Turn Bay Length (ft)			100	110		100	95	
Base Capacity (vph)	412	416	417	386	935	653	356	1802
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.47	0.19	0.07	0.43	0.13	0.27	0.28

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
 12: Sherman Ave NW & Barry PI NW



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕	↕	↕	↑	↕	↕	↕↕	
Traffic Volume (vph)	142	190	5	61	125	77	26	385	82	93	455	32
Future Volume (vph)	142	190	5	61	125	77	26	385	82	93	455	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	9	9	12	12	12	10	12	10
Grade (%)		-1%			3%			0%				-3%
Total Lost time (s)		4.0			4.0	4.0	3.5	3.5	3.5	3.5	3.5	
Lane Util. Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	0.95	
Frbp, ped/bikes		1.00			1.00	0.84	1.00	1.00	0.83	1.00	1.00	
Flpb, ped/bikes		0.96			0.99	1.00	0.95	1.00	1.00	0.95	1.00	
Frt		1.00			1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected		0.98			0.98	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1578			1410	996	1518	1660	1099	1367	3191	
Flt Permitted		0.70			0.79	1.00	0.43	1.00	1.00	0.44	1.00	
Satd. Flow (perm)		1120			1131	996	685	1660	1099	632	3191	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	148	198	5	64	130	80	27	401	85	97	474	33
RTOR Reduction (vph)	0	1	0	0	0	51	0	0	34	0	5	0
Lane Group Flow (vph)	0	350	0	0	194	29	27	401	51	97	502	0
Confl. Peds. (#/hr)	51		59	59		51	26		33	33		26
Heavy Vehicles (%)	2%	2%	2%	3%	5%	9%	2%	3%	10%	7%	2%	3%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2				6
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)		38.5			38.5	38.5	60.0	60.0	60.0	60.0	60.0	
Effective Green, g (s)		40.5			40.5	40.5	62.0	62.0	62.0	62.0	62.0	
Actuated g/C Ratio		0.37			0.37	0.37	0.56	0.56	0.56	0.56	0.56	
Clearance Time (s)		6.0			6.0	6.0	5.5	5.5	5.5	5.5	5.5	
Lane Grp Cap (vph)		412			416	366	386	935	619	356	1798	
v/s Ratio Prot								c0.24				0.16
v/s Ratio Perm		c0.31			0.17	0.03	0.04		0.05	0.15		
v/c Ratio		0.85			0.47	0.08	0.07	0.43	0.08	0.27	0.28	
Uniform Delay, d1		32.0			26.5	22.6	10.9	13.8	11.0	12.4	12.4	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		19.3			3.7	0.4	0.4	1.4	0.3	1.9	0.4	
Delay (s)		51.3			30.2	23.1	11.3	15.2	11.2	14.3	12.8	
Level of Service		D			C	C	B	B	B	B	B	
Approach Delay (s)		51.3			28.1			14.4			13.0	
Approach LOS		D			C			B			B	

Intersection Summary		
HCM 2000 Control Delay	23.5	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.59	C
Actuated Cycle Length (s)	110.0	Sum of lost time (s)
Intersection Capacity Utilization	81.1%	7.5
Analysis Period (min)	15	ICU Level of Service
		D
c	Critical Lane Group	

Queues
13: Georgia Ave NW & Barry PI NW



Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	258	117	1020	975	155
v/c Ratio	0.96	0.58	1.00	1.15	0.42
Control Delay	84.1	17.4	16.2	99.4	5.2
Queue Delay	0.0	0.0	26.4	0.0	0.0
Total Delay	84.1	17.4	42.6	99.4	5.2
Queue Length 50th (ft)	164	31	96	~813	6
Queue Length 95th (ft)	#330	m20	m61	#1064	27
Internal Link Dist (ft)	494		293	410	
Turn Bay Length (ft)		125			
Base Capacity (vph)	269	202	1022	851	368
Starvation Cap Reductn	0	0	75	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.96	0.58	1.08	1.15	0.42

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
 13: Georgia Ave NW & Barry PI NW



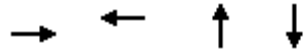
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	145	95	109	949	907	144
Future Volume (vph)	145	95	109	949	907	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	10	10	10	10
Grade (%)	4%			3%	-5%	
Total Lost time (s)	3.0		3.0	3.0	3.0	3.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.77		1.00	1.00	1.00	0.43
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.95		1.00	1.00	1.00	0.85
Flt Protected	0.97		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1089		1464	1541	1588	581
Flt Permitted	0.97		0.06	1.00	1.00	1.00
Satd. Flow (perm)	1089		99	1541	1588	581
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	156	102	117	1020	975	155
RTOR Reduction (vph)	22	0	0	0	0	57
Lane Group Flow (vph)	236	0	117	1020	975	98
Confl. Peds. (#/hr)		259	128			128
Heavy Vehicles (%)	7%	2%	2%	2%	3%	4%
Turn Type	Prot		pm+pt	NA	NA	Perm
Protected Phases	8		5	2	6	
Permitted Phases			2			6
Actuated Green, G (s)	23.0		71.0	71.0	57.0	57.0
Effective Green, g (s)	25.0		73.0	73.0	59.0	59.0
Actuated g/C Ratio	0.23		0.66	0.66	0.54	0.54
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	247		202	1022	851	311
v/s Ratio Prot	c0.22		0.06	c0.66	c0.61	
v/s Ratio Perm			0.32			0.17
v/c Ratio	0.96		0.58	1.00	1.15	0.32
Uniform Delay, d1	42.0		43.3	18.4	25.5	14.2
Progression Factor	1.00		0.51	0.28	0.77	0.53
Incremental Delay, d2	47.2		1.1	8.0	77.3	2.2
Delay (s)	89.1		23.1	13.1	97.0	9.7
Level of Service	F		C	B	F	A
Approach Delay (s)	89.1			14.1	85.0	
Approach LOS	F			B	F	

Intersection Summary			
HCM 2000 Control Delay	53.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	88.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 14: 6th St NW & College St NW



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰					↱
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	37	0	0	0	27	74
Future Volume (vph)	37	0	0	0	27	74
Peak Hour Factor	0.92	0.90	0.90	0.90	0.92	0.92
Hourly flow rate (vph)	40	0	0	0	29	80
Direction, Lane #	WB 1	SB 1				
Volume Total (vph)	40	109				
Volume Left (vph)	40	29				
Volume Right (vph)	0	0				
Hadj (s)	0.23	0.11				
Departure Headway (s)	4.4	4.1				
Degree Utilization, x	0.05	0.12				
Capacity (veh/h)	799	858				
Control Delay (s)	7.6	7.7				
Approach Delay (s)	7.6	7.7				
Approach LOS	A	A				
Intersection Summary						
Delay			7.7			
Level of Service			A			
Intersection Capacity Utilization			16.0%	ICU Level of Service		A
Analysis Period (min)			15			



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	306	7	710	604
v/c Ratio	1.79	0.03	0.69	0.52
Control Delay	402.2	26.3	6.7	7.4
Queue Delay	1.4	0.0	0.1	1.0
Total Delay	403.6	26.3	6.8	8.4
Queue Length 50th (ft)	~299	2	130	138
Queue Length 95th (ft)	#440	13	m176	161
Internal Link Dist (ft)	696	244	287	403
Turn Bay Length (ft)				
Base Capacity (vph)	171	261	1031	1159
Starvation Cap Reductn	0	0	28	77
Spillback Cap Reductn	13	0	26	308
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.94	0.03	0.71	0.71

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
15: 4th St NW & College St NW



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	120	1	139	2	1	3	68	534	2	1	455	58
Future Volume (vph)	120	1	139	2	1	3	68	534	2	1	455	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			6%			-8%	
Total Lost time (s)		3.0			3.0			3.0			3.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frbp, ped/bikes		0.61			0.84			1.00			0.94	
Flpb, ped/bikes		0.81			1.00			0.98			1.00	
Frt		0.93			0.92			1.00			0.98	
Flt Protected		0.98			0.99			0.99			1.00	
Satd. Flow (prot)		735			1287			1586			1569	
Flt Permitted		0.85			0.95			0.88			1.00	
Satd. Flow (perm)		639			1235			1400			1568	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	141	1	164	2	1	4	80	628	2	1	535	68
RTOR Reduction (vph)	0	38	0	0	3	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	268	0	0	4	0	0	710	0	0	600	0
Confl. Peds. (#/hr)	108		422	422		108	158		195	195		158
Heavy Vehicles (%)	4%	2%	2%	2%	2%	2%	3%	2%	2%	2%	5%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			6			2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)		21.0			21.0			79.0			79.0	
Effective Green, g (s)		23.0			23.0			81.0			81.0	
Actuated g/C Ratio		0.21			0.21			0.74			0.74	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)		133			258			1030			1154	
v/s Ratio Prot												
v/s Ratio Perm		c0.42			0.00			c0.51			0.38	
v/c Ratio		2.02			0.01			0.69			0.52	
Uniform Delay, d1		43.5			34.5			7.8			6.2	
Progression Factor		1.00			1.00			0.51			0.92	
Incremental Delay, d2		482.3			0.1			2.4			1.6	
Delay (s)		525.8			34.6			6.4			7.3	
Level of Service		F			C			A			A	
Approach Delay (s)		525.8			34.6			6.4			7.3	
Approach LOS		F			C			A			A	
Intersection Summary												
HCM 2000 Control Delay			104.5									F
HCM 2000 Volume to Capacity ratio			0.98									
Actuated Cycle Length (s)			110.0						6.0			
Intersection Capacity Utilization			105.6%									G
Analysis Period (min)			15									
c Critical Lane Group												



Lane Group	EBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	42	1115	209	215	764
v/c Ratio	0.16	1.17	0.26	1.40	0.69
Control Delay	25.5	104.1	8.9	214.3	2.2
Queue Delay	0.0	0.3	0.0	0.0	1.8
Total Delay	25.5	104.5	8.9	214.3	4.0
Queue Length 50th (ft)	14	-948	54	-163	24
Queue Length 95th (ft)	45	m#1111	m65	m#127	m20
Internal Link Dist (ft)	190	279			293
Turn Bay Length (ft)			100	125	
Base Capacity (vph)	265	950	809	154	1105
Starvation Cap Reductn	0	61	0	0	191
Spillback Cap Reductn	0	9	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.16	1.25	0.26	1.40	0.84

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
 16: Georgia Ave NW & Bryant St NW


















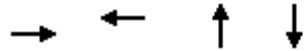
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕						↕	↕	↕	↕		
Traffic Volume (vph)	20	5	17	0	0	0	5	1066	201	206	715	19	
Future Volume (vph)	20	5	17	0	0	0	5	1066	201	206	715	19	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	12	12	10	12	10	12	10	10	10	10	12	
Grade (%)		0%			0%			2%				-3%	
Total Lost time (s)		3.5						3.5	3.5	3.0	3.5		
Lane Util. Factor		1.00						1.00	1.00	1.00	1.00		
Frbp, ped/bikes		1.00						1.00	1.00	1.00	1.00		
Flpb, ped/bikes		0.75						1.00	1.00	1.00	1.00		
Frt		0.95						1.00	0.85	1.00	1.00		
Flt Protected		0.98						1.00	1.00	0.95	1.00		
Satd. Flow (prot)		1158						1519	1291	1509	1538		
Flt Permitted		0.98						1.00	1.00	0.06	1.00		
Satd. Flow (perm)		1158						1515	1291	88	1538		
Peak-hour factor, PHF	1.00	1.00	1.00	0.90	0.90	0.90	1.00	0.96	0.96	0.96	0.96	1.00	
Adj. Flow (vph)	20	5	17	0	0	0	5	1110	209	215	745	19	
RTOR Reduction (vph)	0	13	0	0	0	0	0	0	0	0	1	0	
Lane Group Flow (vph)	0	29	0	0	0	0	0	1115	209	215	763	0	
Confl. Peds. (#/hr)	259												
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	4%	2%	5%	2%	
Turn Type	Perm	NA					Perm	NA	Perm	pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4						2		2	6			
Actuated Green, G (s)		22.0						67.0	67.0	77.0	77.0		
Effective Green, g (s)		24.0						69.0	69.0	79.0	79.0		
Actuated g/C Ratio		0.22						0.63	0.63	0.72	0.72		
Clearance Time (s)		5.5						5.5	5.5	5.0	5.5		
Vehicle Extension (s)		1.0						1.0	1.0	1.0	1.0		
Lane Grp Cap (vph)		252						950	809	153	1104		
v/s Ratio Prot										c0.09	0.50		
v/s Ratio Perm		0.02						0.74	0.16	c0.91			
v/c Ratio		0.11						1.17	0.26	1.41	0.69		
Uniform Delay, d1		34.5						20.5	9.1	37.4	8.7		
Progression Factor		1.00						0.90	0.92	1.66	0.20		
Incremental Delay, d2		0.9						83.0	0.3	186.0	0.3		
Delay (s)		35.4						101.4	8.7	248.2	2.1		
Level of Service		D						F	A	F	A		
Approach Delay (s)		35.4			0.0			86.8			56.1		
Approach LOS		D			A			F			E		
Intersection Summary													
HCM 2000 Control Delay			73.1		HCM 2000 Level of Service					E			
HCM 2000 Volume to Capacity ratio			1.13										
Actuated Cycle Length (s)			110.0		Sum of lost time (s)					10.0			
Intersection Capacity Utilization			121.6%		ICU Level of Service					H			
Analysis Period (min)			15										

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 17: 6th St NW & Bryant St NW

Howard University CMP
 12/10/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	390	95	0	0	0	0	0	38	43	50	0
Future Volume (Veh/h)	0	390	95	0	0	0	0	0	38	43	50	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.85	0.85	0.90	0.90	0.90	0.90	0.90	0.85	0.85	0.85	0.90
Hourly flow rate (vph)	0	459	112	0	0	0	0	0	45	51	59	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		339			770							
pX, platoon unblocked												
vC, conflicting volume	0			571			544	515	515	560	571	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			571			544	515	515	560	571	0
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 %	100			100			100	100	92	87	86	100
cM capacity (veh/h)	1623			1002			402	464	560	404	431	1085
Direction, Lane #	EB 1	NB 1	SB 1									
Volume Total	571	45	110									
Volume Left	0	0	51									
Volume Right	112	45	0									
cSH	1700	560	418									
Volume to Capacity	0.34	0.08	0.26									
Queue Length 95th (ft)	0	7	26									
Control Delay (s)	0.0	12.0	16.7									
Lane LOS		B	C									
Approach Delay (s)	0.0	12.0	16.7									
Approach LOS		B	C									
Intersection Summary												
Average Delay			3.3									
Intersection Capacity Utilization			48.1%		ICU Level of Service				A			
Analysis Period (min)			15									



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	429	197	512	659
v/c Ratio	1.12	0.78	0.66	0.97
Control Delay	112.1	44.1	2.6	42.1
Queue Delay	0.0	0.9	0.3	41.2
Total Delay	112.1	45.0	2.9	83.3
Queue Length 50th (ft)	~352	88	0	359
Queue Length 95th (ft)	m#432	#221	m0	m#530
Internal Link Dist (ft)	690	359	289	287
Turn Bay Length (ft)				
Base Capacity (vph)	384	253	779	682
Starvation Cap Reductn	0	0	40	0
Spillback Cap Reductn	0	6	0	110
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.12	0.80	0.69	1.15

Intersection Summary

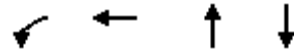
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
18: 4th St NW & Bryant St NW

Howard University CMP
12/10/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		↕			↕			↕			↕			
Traffic Volume (vph)	121	222	43	90	0	87	0	424	37	66	527	0		
Future Volume (vph)	121	222	43	90	0	87	0	424	37	66	527	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width	10	10	10	14	14	14	11	11	8	11	11	8		
Grade (%)		0%			0%			5%			-8%			
Total Lost time (s)		3.0			3.0			3.0			3.0			
Lane Util. Factor		1.00			1.00			1.00			1.00			
Frbp, ped/bikes		0.94			0.61			0.94			1.00			
Flpb, ped/bikes		0.88			1.00			1.00			1.00			
Frt		0.98			0.93			0.99			1.00			
Flt Protected		0.98			0.98			1.00			0.99			
Satd. Flow (prot)		1249			938			1473			1637			
Flt Permitted		0.82			0.61			1.00			0.79			
Satd. Flow (perm)		1046			592			1473			1295			
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90		
Adj. Flow (vph)	134	247	48	100	0	97	0	471	41	73	586	0		
RTOR Reduction (vph)	0	4	0	0	38	0	0	3	0	0	0	0		
Lane Group Flow (vph)	0	425	0	0	159	0	0	509	0	0	659	0		
Confl. Peds. (#/hr)	422		150	150		422			253	253				
Heavy Vehicles (%)	3%	2%	6%	10%	2%	6%	2%	2%	2%	8%	4%	2%		
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA			
Protected Phases		4			4			2			2			
Permitted Phases	4			4						2				
Actuated Green, G (s)		38.0			38.0			56.0			56.0			
Effective Green, g (s)		40.0			40.0			58.0			58.0			
Actuated g/C Ratio		0.36			0.36			0.53			0.53			
Clearance Time (s)		5.0			5.0			5.0			5.0			
Lane Grp Cap (vph)		380			215			776			682			
v/s Ratio Prot								0.35						
v/s Ratio Perm		c0.41			0.27						c0.51			
v/c Ratio		1.12			0.74			0.66			0.97			
Uniform Delay, d1		35.0			30.5			18.8			25.1			
Progression Factor		0.98			1.00			0.00			0.86			
Incremental Delay, d2		79.6			20.2			2.5			18.7			
Delay (s)		113.9			50.7			2.6			40.3			
Level of Service		F			D			A			D			
Approach Delay (s)		113.9			50.7			2.6			40.3			
Approach LOS		F			D			A			D			
Intersection Summary														
HCM 2000 Control Delay			48.3									HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio			1.01											
Actuated Cycle Length (s)			110.0								10.0			
Intersection Capacity Utilization			99.2%										ICU Level of Service	F
Analysis Period (min)			15											
c Critical Lane Group														



Lane Group	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	408	410	996	747
v/c Ratio	1.82	1.04	0.86	0.64
Control Delay	416.1	83.1	7.9	2.2
Queue Delay	1.9	25.6	48.6	51.8
Total Delay	418.1	108.7	56.4	54.0
Queue Length 50th (ft)	~432	~175	208	8
Queue Length 95th (ft)	#629	#375	m187	12
Internal Link Dist (ft)		302	370	279
Turn Bay Length (ft)				
Base Capacity (vph)	224	394	1160	1175
Starvation Cap Reductn	0	0	331	59
Spillback Cap Reductn	27	134	271	507
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	2.07	1.58	1.20	1.12

Intersection Summary

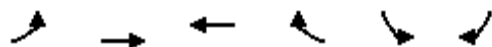
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
 19: Georgia Ave NW & W St NW



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations				↖	↗			↖			↗		
Traffic Volume (vph)	0	0	0	388	16	374	13	934	0	0	686	25	
Future Volume (vph)	0	0	0	388	16	374	13	934	0	0	686	25	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	12	12	10	12	10	12	10	10	10	10	12	
Grade (%)		0%			1%			1%			-2%		
Total Lost time (s)				3.0	3.0			3.5			3.5		
Lane Util. Factor				1.00	1.00			1.00			1.00		
Frbp, ped/bikes				1.00	0.92			1.00			1.00		
Flpb, ped/bikes				0.88	1.00			1.00			1.00		
Frt				1.00	0.86			1.00			1.00		
Flt Protected				0.95	1.00			1.00			1.00		
Satd. Flow (prot)				1297	1309			1526			1530		
Flt Permitted				0.95	1.00			0.99			1.00		
Satd. Flow (perm)				1297	1309			1511			1530		
Peak-hour factor, PHF	0.90	0.90	0.90	0.95	1.00	0.95	1.00	0.95	0.90	0.90	0.95	1.00	
Adj. Flow (vph)	0	0	0	408	16	394	13	983	0	0	722	25	
RTOR Reduction (vph)	0	0	0	0	169	0	0	0	0	0	1	0	
Lane Group Flow (vph)	0	0	0	408	241	0	0	996	0	0	746	0	
Confl. Peds. (#/hr)				38		21							
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	5%	2%	
Turn Type				Perm	NA		Perm	NA			NA		
Protected Phases					4			2			6		
Permitted Phases				4			2						
Actuated Green, G (s)				17.0	17.0			82.5			82.5		
Effective Green, g (s)				19.0	19.0			84.5			84.5		
Actuated g/C Ratio				0.17	0.17			0.77			0.77		
Clearance Time (s)				5.0	5.0			5.5			5.5		
Lane Grp Cap (vph)				224	226			1160			1175		
v/s Ratio Prot					0.18						0.49		
v/s Ratio Perm				c0.31				c0.66					
v/c Ratio				1.82	1.07			0.86			0.63		
Uniform Delay, d1				45.5	45.5			8.7			5.8		
Progression Factor				1.09	1.23			0.67			0.04		
Incremental Delay, d2				386.4	78.3			0.8			1.9		
Delay (s)				435.8	134.5			6.7			2.2		
Level of Service				F	F			A			A		
Approach Delay (s)		0.0			284.8			6.7			2.2		
Approach LOS		A			F			A			A		
Intersection Summary													
HCM 2000 Control Delay			94.2		HCM 2000 Level of Service				F				
HCM 2000 Volume to Capacity ratio			1.03										
Actuated Cycle Length (s)			110.0		Sum of lost time (s)				6.5				
Intersection Capacity Utilization			101.4%		ICU Level of Service				G				
Analysis Period (min)			15										
c Critical Lane Group													

HCM Unsignalized Intersection Capacity Analysis
 20: W St NW & 6th St NW



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑			↗
Traffic Volume (veh/h)	0	0	563	22	0	152
Future Volume (Veh/h)	0	0	563	22	0	152
Sign Control		Free	Free		Stop	
Grade		0%	1%		0%	
Peak Hour Factor	0.90	0.90	0.85	1.00	0.90	0.85
Hourly flow rate (vph)	0	0	662	22	0	179
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		382	771			
pX, platoon unblocked						
vC, conflicting volume	684				673	673
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	684				673	673
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	61
cM capacity (veh/h)	909				421	455
Direction, Lane #	WB 1	SB 1				
Volume Total	684	179				
Volume Left	0	0				
Volume Right	22	179				
cSH	1700	455				
Volume to Capacity	0.40	0.39				
Queue Length 95th (ft)	0	46				
Control Delay (s)	0.0	17.9				
Lane LOS		C				
Approach Delay (s)	0.0	17.9				
Approach LOS		C				
Intersection Summary						
Average Delay			3.7			
Intersection Capacity Utilization			51.5%		ICU Level of Service	A
Analysis Period (min)			15			



Lane Group	NBT	SBT	SBR
Lane Group Flow (vph)	554	386	336
v/c Ratio	0.79	0.88	0.63
Control Delay	35.6	38.9	10.5
Queue Delay	0.0	33.6	0.6
Total Delay	35.6	72.5	11.1
Queue Length 50th (ft)	323	280	96
Queue Length 95th (ft)	460	m308	m102
Internal Link Dist (ft)	301	289	
Turn Bay Length (ft)			110
Base Capacity (vph)	698	439	537
Starvation Cap Reductn	0	73	41
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.79	1.05	0.68

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
21: 4th St NW & W St NW

Howard University CMP
12/10/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations								↕			↕	↕	
Traffic Volume (vph)	0	0	0	0	0	0	7	460	20	9	331	296	
Future Volume (vph)	0	0	0	0	0	0	7	460	20	9	331	296	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	14	14	14	14	14	14	10	10	8	10	10	10	
Grade (%)		0%			0%			2%			-4%		
Total Lost time (s)								3.0			3.0	3.0	
Lane Util. Factor								1.00			1.00	1.00	
Frt								0.99			1.00	0.85	
Flt Protected								1.00			1.00	1.00	
Satd. Flow (prot)								1534			1535	1318	
Flt Permitted								1.00			0.98	1.00	
Satd. Flow (perm)								1534			1512	1318	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.88	0.88	0.88	0.88	0.88	0.88	
Adj. Flow (vph)	0	0	0	0	0	0	8	523	23	10	376	336	
RTOR Reduction (vph)	0	0	0	0	0	0	0	2	0	0	0	154	
Lane Group Flow (vph)	0	0	0	0	0	0	0	552	0	0	386	182	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	10%	2%	6%	5%	
Turn Type								Split	NA		Perm	NA	Perm
Protected Phases								2	2			4	
Permitted Phases										4			4
Actuated Green, G (s)								48.0			30.0	30.0	
Effective Green, g (s)								50.0			32.0	32.0	
Actuated g/C Ratio								0.45			0.29	0.29	
Clearance Time (s)								5.0			5.0	5.0	
Lane Grp Cap (vph)								697			439	383	
v/s Ratio Prot								c0.36					
v/s Ratio Perm											c0.26	0.14	
v/c Ratio								0.79			0.88	0.48	
Uniform Delay, d1								25.6			37.2	32.1	
Progression Factor								1.00			0.78	0.72	
Incremental Delay, d2								9.0			8.4	1.4	
Delay (s)								34.6			37.4	24.5	
Level of Service								C			D	C	
Approach Delay (s)		0.0			0.0			34.6			31.4		
Approach LOS		A			A			C			C		

Intersection Summary			
HCM 2000 Control Delay	32.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBT	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	263	85	155	769	59	907	216
v/c Ratio	0.93	0.34	0.37	1.49	0.14	1.18	0.27
Control Delay	75.3	37.3	7.9	241.9	3.1	105.2	3.3
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.1	0.0
Total Delay	75.3	37.3	7.9	242.2	3.1	105.3	3.3
Queue Length 50th (ft)	164	49	0	~761	4	~774	25
Queue Length 95th (ft)	#329	96	52	m#595	m2	m#710	m36
Internal Link Dist (ft)	191	145		200		370	
Turn Bay Length (ft)					115		150
Base Capacity (vph)	282	253	414	515	434	768	792
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	4	24	0	10	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.34	0.38	1.57	0.14	1.20	0.27

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
22: Georgia Ave NW & V ST NW

Howard University CMP
12/10/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕	↕		↕	↕
Traffic Volume (vph)	161	0	91	82	0	149	104	635	57	76	795	207
Future Volume (vph)	161	0	91	82	0	149	104	635	57	76	795	207
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	12	12	12	10	10	10	10	10	10
Grade (%)		3%			-1%			1%			-2%	
Total Lost time (s)		3.5			3.5	3.5		4.0	4.0		4.0	4.0
Lane Util. Factor		1.00			1.00	1.00		1.00	1.00		1.00	1.00
Frbp, ped/bikes		0.97			1.00	0.86		1.00	0.48		1.00	0.84
Flpb, ped/bikes		0.93			0.98	1.00		1.00	1.00		1.00	1.00
Frt		0.95			1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected		0.97			0.95	1.00		0.99	1.00		1.00	1.00
Satd. Flow (prot)		1289			1480	1141		1492	629		1536	1104
Flt Permitted		0.74			0.62	1.00		0.51	1.00		0.75	1.00
Satd. Flow (perm)		988			962	1141		772	629		1151	1104
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	168	0	95	85	0	155	108	661	59	79	828	216
RTOR Reduction (vph)	0	22	0	0	0	114	0	0	14	0	0	54
Lane Group Flow (vph)	0	241	0	0	85	41	0	769	45	0	907	162
Confl. Peds. (#/hr)	38		16	16		38	50		157	157		50
Heavy Vehicles (%)	2%	0%	2%	8%	0%	10%	10%	5%	2%	10%	4%	4%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		8			4			2			6	
Permitted Phases	8			4		4	2		2	6		6
Actuated Green, G (s)		27.0			27.0	27.0		71.5	71.5		71.5	71.5
Effective Green, g (s)		29.0			29.0	29.0		73.5	73.5		73.5	73.5
Actuated g/C Ratio		0.26			0.26	0.26		0.67	0.67		0.67	0.67
Clearance Time (s)		5.5			5.5	5.5		6.0	6.0		6.0	6.0
Lane Grp Cap (vph)		260			253	300		515	420		769	737
v/s Ratio Prot												
v/s Ratio Perm		c0.24			0.09	0.04		c1.00	0.07		0.79	0.15
v/c Ratio		0.93			0.34	0.14		1.49	0.11		1.18	0.22
Uniform Delay, d1		39.5			32.7	30.9		18.2	6.5		18.2	7.1
Progression Factor		1.00			1.00	1.00		0.70	1.01		1.11	1.57
Incremental Delay, d2		39.7			3.6	0.9		222.9	0.0		82.1	0.1
Delay (s)		79.2			36.3	31.9		235.6	6.7		102.3	11.2
Level of Service		E			D	C		F	A		F	B
Approach Delay (s)		79.2			33.4			219.3			84.8	
Approach LOS		E			C			F			F	

Intersection Summary

HCM 2000 Control Delay	124.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.33		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	7.5
Intersection Capacity Utilization	128.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 23: Georgia Ave NW & HU Hospital



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↔			↔
Traffic Volume (veh/h)	0	0	817	35	44	907
Future Volume (Veh/h)	0	0	817	35	44	907
Sign Control	Stop		Free		Free	
Grade	0%		1%		-2%	
Peak Hour Factor	0.90	0.90	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	0	0	851	36	46	945
Pedestrians			43			16
Lane Width (ft)			12.0			12.0
Walking Speed (ft/s)			4.0			4.0
Percent Blockage			4			1
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)			259			280
pX, platoon unblocked	0.69	0.68			0.68	
vC, conflicting volume	1949	885			887	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1106	596			599	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			93	
cM capacity (veh/h)	143	338			665	
Direction, Lane #	NB 1	SB 1				
Volume Total	887	991				
Volume Left	0	46				
Volume Right	36	0				
cSH	1700	665				
Volume to Capacity	0.52	0.07				
Queue Length 95th (ft)	0	6				
Control Delay (s)	0.0	2.1				
Lane LOS			A			
Approach Delay (s)	0.0	2.1				
Approach LOS						
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization			96.2%	ICU Level of Service	F	
Analysis Period (min)			15			



Lane Group	EBT	WBT	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	575	1111	561	387	584	63
v/c Ratio	0.57	1.09	1.23	1.29	0.70	0.12
Control Delay	28.9	87.9	154.6	170.0	22.9	6.3
Queue Delay	0.0	0.0	0.0	0.0	2.7	0.0
Total Delay	28.9	87.9	154.6	170.0	25.6	6.3
Queue Length 50th (ft)	164	-465	-492	-311	280	5
Queue Length 95th (ft)	219	#586	#698	m#276	m254	m6
Internal Link Dist (ft)	189	477	172		179	
Turn Bay Length (ft)				100		160
Base Capacity (vph)	1014	1022	456	299	839	545
Starvation Cap Reductn	0	0	0	0	150	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.57	1.09	1.23	1.29	0.85	0.12

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
 24: 7th St NW/Georgia Ave NW & Florida Ave NW



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑		↑	↑	↑
Traffic Volume (vph)	2	432	78	3	662	324	0	493	6	344	520	56
Future Volume (vph)	2	432	78	3	662	324	0	493	6	344	520	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	10	10	10	10	10	10
Grade (%)		1%			1%			2%			-2%	
Total Lost time (s)		4.0			4.0			4.0		3.0	4.0	4.0
Lane Util. Factor		0.95			0.95			1.00		1.00	1.00	1.00
Frbp, ped/bikes		0.95			0.95			0.99		1.00	1.00	0.72
Flpb, ped/bikes		1.00			1.00			1.00		1.00	1.00	1.00
Frt		0.98			0.95			1.00		1.00	1.00	0.85
Flt Protected		1.00			1.00			1.00		0.95	1.00	1.00
Satd. Flow (prot)		2726			2741			1321		1458	1565	969
Flt Permitted		0.95			0.95			1.00		0.10	1.00	1.00
Satd. Flow (perm)		2595			2614			1321		160	1565	969
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	2	485	88	3	744	364	0	554	7	387	584	63
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	0	26
Lane Group Flow (vph)	0	575	0	0	1111	0	0	560	0	387	584	37
Confl. Peds. (#/hr)	43		97	97		43	165		447	447		165
Heavy Vehicles (%)	2%	7%	5%	2%	4%	2%	2%	7%	2%	5%	3%	2%
Parking (#/hr)								0	0			
Turn Type	Perm	NA		Perm	NA			NA		pm+pt	NA	Perm
Protected Phases		6			2			8		7	4	
Permitted Phases	6			2						4		4
Actuated Green, G (s)		41.0			41.0			36.0		57.0	57.0	57.0
Effective Green, g (s)		43.0			43.0			38.0		59.0	59.0	59.0
Actuated g/C Ratio		0.39			0.39			0.35		0.54	0.54	0.54
Clearance Time (s)		6.0			6.0			6.0		5.0	6.0	6.0
Lane Grp Cap (vph)		1014			1021			456		298	839	519
v/s Ratio Prot								0.42		c0.21	0.37	
v/s Ratio Perm		0.22			c0.42					c0.48		0.04
v/c Ratio		0.57			1.09			1.23		1.30	0.70	0.07
Uniform Delay, d1		26.2			33.5			36.0		33.1	18.9	12.3
Progression Factor		1.00			1.00			1.00		1.19	1.11	1.51
Incremental Delay, d2		2.3			55.3			121.0		140.4	1.2	0.1
Delay (s)		28.5			88.8			157.0		179.8	22.1	18.6
Level of Service		C			F			F		F	C	B
Approach Delay (s)		28.5			88.8			157.0			80.9	
Approach LOS		C			F			F			F	

Intersection Summary

HCM 2000 Control Delay	87.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	96.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 25: Georgia Ave NW & Gresham PI NW

Howard University CMP
 12/10/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↔			↔	
Traffic Volume (veh/h)	0	0	0	71	11	180	10	1256	0	0	850	23
Future Volume (Veh/h)	0	0	0	71	11	180	10	1256	0	0	850	23
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.98	0.98	0.98	0.98	0.98	0.90	0.90	0.98	0.98
Hourly flow rate (vph)	0	0	0	72	11	184	10	1282	0	0	867	23
Pedestrians												36
Lane Width (ft)												12.0
Walking Speed (ft/s)												4.0
Percent Blockage												3
Right turn flare (veh)												
Median type								None				None
Median storage (veh)												
Upstream signal (ft)								557				210
pX, platoon unblocked	0.88	0.88	0.83	0.88	0.88	0.79	0.83			0.79		
vC, conflicting volume	1765	2180	445	1736	2192	677	890			1282		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	706	1179	0	672	1192	63	449			828		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	76	93	76	99			100		
cM capacity (veh/h)	196	164	897	297	161	759	916			632		
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2							
Volume Total	267	437	855	578	312							
Volume Left	72	10	0	0	0							
Volume Right	184	0	0	0	23							
cSH	483	916	1700	1700	1700							
Volume to Capacity	0.55	0.01	0.50	0.34	0.18							
Queue Length 95th (ft)	83	1	0	0	0							
Control Delay (s)	21.3	0.3	0.0	0.0	0.0							
Lane LOS	C	A										
Approach Delay (s)	21.3	0.1		0.0								
Approach LOS	C											
Intersection Summary												
Average Delay			2.4									
Intersection Capacity Utilization			72.5%		ICU Level of Service					C		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 26: Florida Ave NW & 10th St NW/Barry PI NW

Howard University CMP
 12/10/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↕	↕	↕
Sign Control		Stop			Stop			Stop			Stop	Stop
Traffic Volume (vph)	25	40	4	4	34	127	6	157	12	266	181	14
Future Volume (vph)	25	40	4	4	34	127	6	157	12	266	181	14
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	27	43	4	4	37	137	6	169	13	286	195	15
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
Volume Total (vph)	74	178	188	286	210							
Volume Left (vph)	27	4	6	286	0							
Volume Right (vph)	4	137	13	0	15							
Hadj (s)	0.07	-0.40	0.04	0.53	0.02							
Departure Headway (s)	6.0	5.3	5.4	6.0	5.5							
Degree Utilization, x	0.12	0.26	0.28	0.48	0.32							
Capacity (veh/h)	538	621	628	583	638							
Control Delay (s)	9.8	10.2	10.5	13.1	9.8							
Approach Delay (s)	9.8	10.2	10.5	11.7								
Approach LOS	A	B	B	B								
Intersection Summary												
Delay			11.0									
Level of Service			B									
Intersection Capacity Utilization			58.1%		ICU Level of Service		B					
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 27: 9th St NW & Barry PI NW



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	5	100	13	21	102	22	11	113	33	45	197	2
Future Volume (vph)	5	100	13	21	102	22	11	113	33	45	197	2
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	5	110	14	23	112	24	12	124	36	49	216	2
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	129	159	172	267								
Volume Left (vph)	5	23	12	49								
Volume Right (vph)	14	24	36	2								
Hadj (s)	-0.01	-0.03	-0.05	0.12								
Departure Headway (s)	5.3	5.2	5.0	5.0								
Degree Utilization, x	0.19	0.23	0.24	0.37								
Capacity (veh/h)	616	628	666	673								
Control Delay (s)	9.5	9.7	9.6	11.0								
Approach Delay (s)	9.5	9.7	9.6	11.0								
Approach LOS	A	A	A	B								

Intersection Summary			
Delay		10.1	
Level of Service		B	
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
 28: 4th St NW & V St NW/V St NW

Howard University CMP
 12/10/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	112	69	40	19	8	17	5	359	5	7	236	91
Future Volume (vph)	112	69	40	19	8	17	5	359	5	7	236	91
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	120	74	43	20	9	18	5	386	5	8	254	98

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	237	47	396	360
Volume Left (vph)	120	20	5	8
Volume Right (vph)	43	18	5	98
Hadj (s)	0.03	-0.09	0.05	-0.08
Departure Headway (s)	6.0	6.4	5.4	5.4
Degree Utilization, x	0.40	0.08	0.60	0.54
Capacity (veh/h)	542	446	632	639
Control Delay (s)	12.9	10.0	16.1	14.4
Approach Delay (s)	12.9	10.0	16.1	14.4
Approach LOS	B	B	C	B

Intersection Summary			
Delay		14.5	
Level of Service		B	
Intersection Capacity Utilization	49.9%		ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 29: 5th St NW & Oakdale PI NW



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↔			↔
Traffic Volume (veh/h)	0	0	100	9	6	118
Future Volume (Veh/h)	0	0	100	9	6	118
Sign Control	Free		Stop		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	0	0	118	11	7	139
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		0	0	70	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		0	0	70	0
tC, single (s)	4.1		6.5	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.0
p0 queue free %	100		87	99	99	84
cM capacity (veh/h)	1623		896	1085	820	896
Direction, Lane #	NB 1	SB 1				
Volume Total	129	146				
Volume Left	0	7				
Volume Right	11	0				
cSH	909	892				
Volume to Capacity	0.14	0.16				
Queue Length 95th (ft)	12	15				
Control Delay (s)	9.6	9.8				
Lane LOS	A	A				
Approach Delay (s)	9.6	9.8				
Approach LOS	A	A				
Intersection Summary						
Average Delay			9.7			
Intersection Capacity Utilization			15.7%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 30: 5th St NW & Parking/V St NW

Howard University CMP
 12/10/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	51	20	88	88	44	22	51	17	6	18	0
Future Volume (vph)	0	51	20	88	88	44	22	51	17	6	18	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	0	60	24	104	104	52	26	60	20	7	21	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	84	260	106	28
Volume Left (vph)	0	104	26	7
Volume Right (vph)	24	52	20	0
Hadj (s)	-0.14	-0.01	-0.03	0.08
Departure Headway (s)	4.4	4.3	4.7	4.9
Degree Utilization, x	0.10	0.31	0.14	0.04
Capacity (veh/h)	783	800	715	670
Control Delay (s)	7.9	9.3	8.4	8.1
Approach Delay (s)	7.9	9.3	8.4	8.1
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.8	
Level of Service		A	
Intersection Capacity Utilization	34.1%	ICU Level of Service	A
Analysis Period (min)		15	