

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	1.00	1.00		1.00	1.00			0.91			0.91	
Frpb, ped/bikes	1.00	0.98		1.00	0.99			0.99			1.00	
Flpb, ped/bikes	0.94	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.95		1.00	0.98			0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1665	1735		1761	1804			4981			5038	
Flt Permitted	0.74	1.00		0.30	1.00			0.79			0.93	
Satd. Flow (perm)	1301	1735		555	1804			3932			4707	
Volume (vph)	211	186	98	14	18	3	50	659	47	7	1084	38
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)	234	207	109	16	20	3	56	732	52	8	1204	42
Lane Group Flow (vph)	234	316	0	16	23	0	0	840	0	0	1254	0
Confl. Peds. (#/hr)	56		27	27		56	39		42	42		39
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	25.0	18.0		25.0	18.0			43.0			34.0	
Effective Green, g (s)	24.0	19.0		24.0	19.0			44.0			35.0	
Actuated g/C Ratio	0.30	0.24		0.30	0.24			0.55			0.44	
Clearance Time (s)	2.0	5.0		2.0	5.0			5.0			5.0	
Lane Grp Cap (vph)	413	412		242	428			2228			2059	
v/s Ratio Prot	c0.04	c0.18		0.00	0.01			c0.02				
v/s Ratio Perm	0.13			0.02				0.18			c0.27	
v/c Ratio	0.57	0.77		0.07	0.05			0.38			0.61	
Uniform Delay, d1	23.0	28.4		20.3	23.6			10.2			17.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	5.5	12.8		0.5	0.2			0.5			1.4	
Delay (s)	28.6	41.3		20.8	23.8			10.7			18.6	
Level of Service	C	D		C	C			B			B	
Approach Delay (s)		35.9			22.6			10.7			18.6	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Cycle Length (s)	80.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	51.7%	ICU Level of Service	A
c Critical Lane Group			

ZONING COMMISSION
District of Columbia
CASE NO.02-50
EXHIBIT NO.20A2



Movement												
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	1.00	1.00		1.00	1.00			0.91			0.91	
Frpb, ped/bikes	1.00	0.95		1.00	0.96			0.99			0.99	
Flpb, ped/bikes	0.94	1.00		0.96	1.00			1.00			1.00	
Frt	1.00	0.93		1.00	0.95			0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1659	1642		1698	1695			4924			4992	
Flt Permitted	0.69	1.00		0.62	1.00			0.68			0.90	
Satd. Flow (perm)	1196	1642		1111	1695			3361			4513	
Volume (vph)	178	65	64	83	66	34	132	965	102	15	860	78
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)	198	72	71	92	73	38	147	1072	113	17	956	87
Lane Group Flow (vph)	198	143	0	92	111	0	0	1332	0	0	1060	0
Confl. Peds. (#/hr)	73		57	57		73	17		56	56		17
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	25.0	18.0		25.0	18.0			43.0			34.0	
Effective Green, g (s)	24.0	19.0		24.0	19.0			44.0			35.0	
Actuated g/C Ratio	0.30	0.24		0.30	0.24			0.55			0.44	
Clearance Time (s)	2.0	5.0		2.0	5.0			5.0			5.0	
Lane Grp Cap (vph)	388	390		370	403			1946			1974	
v/s Ratio Prot	c0.03	0.09		0.02	0.07			c0.04				
v/s Ratio Perm	c0.12			0.06				c0.33			0.23	
v/c Ratio	0.51	0.37		0.25	0.28			0.68			0.54	
Uniform Delay, d1	22.4	25.5		20.7	24.9			13.0			16.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	4.7	2.6		1.6	1.7			2.0			1.1	
Delay (s)	27.1	28.1		22.3	26.6			15.0			17.6	
Level of Service	C	C		C	C			B			B	
Approach Delay (s)		27.5			24.7			15.0			17.6	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	18.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.1%	ICU Level of Service	D
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑↑			↑↑↑
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	0	923	33	16	1502
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (veh/h)	0	0	1026	37	17	1669
Pedestrians	28					
Lane Width (ft)	0.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	1662	388			1090	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
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			97	
cM capacity (veh/h)	86	610			636	

Movement	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	410	410	242	350	668	668
Volume Left	0	0	0	17	0	0
Volume Right	0	0	37	0	0	0
cSH	1700	1700	1700	636	1700	1700
Volume to Capacity	0.24	0.24	0.14	0.03	0.39	0.39
Queue Length (ft)	0	0	0	2	0	0
Control Delay (s)	0.0	0.0	0.0	0.9	0.0	0.0
Lane LOS				A		
Approach Delay (s)	0.0			0.2		
Approach LOS						

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	38.9%	ICU Level of Service	A



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑↑			↑↑↑
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	0	1421	18	16	1230
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (veh/h)	0	0	1579	20	18	1367
Pedestrians	45					
Lane Width (ft)	0.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	2125	581			1644	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
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			95	
cM capacity (veh/h)	41	457			390	

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	632	632	336	291	547	547
Volume Left	0	0	0	18	0	0
Volume Right	0	0	20	0	0	0
cSH	1700	1700	1700	390	1700	1700
Volume to Capacity	0.37	0.37	0.20	0.05	0.32	0.32
Queue Length (ft)	0	0	0	4	0	0
Control Delay (s)	0.0	0.0	0.0	1.6	0.0	0.0
Lane LOS				A		
Approach Delay (s)	0.0			0.3		
Approach LOS						

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	34.3%	ICU Level of Service	A



Movement	EBL	EBT	SEL	SET	NWL	NWT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	4	262	2058	4	23	801
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (veh/h)	4	291	2287	4	26	890
Pedestrians	7					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	1					
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	2792	1153			2298	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	66	0			88	
cM capacity (veh/h)	13	190			215	

Direction, Lane #	EB 1	SE 1	SE 2	NW 1	NW 2	NW 3
Volume Total	296	1524	767	26	445	445
Volume Left	4	0	0	26	0	0
Volume Right	291	0	4	0	0	0
cSH	158	1700	1700	215	1700	1700
Volume to Capacity	1.88	0.90	0.45	0.12	0.26	0.26
Queue Length (ft)	556	0	0	10	0	0
Control Delay (s)	466.1	0.0	0.0	24.0	0.0	0.0
Lane LOS	F			C		
Approach Delay (s)	466.1	0.0		0.7		
Approach LOS	F					

Intersection Summary			
Average Delay	39.5		
Intersection Capacity Utilization	88.3%	ICU Level of Service	D



Movement	EBL	EBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	10	103	605	32	173	1742
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (veh/h)	11	114	672	36	192	1936
Pedestrians	8					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	1					
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	2050	362			716	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	70	82			78	
cM capacity (veh/h)	37	631			875	

Direction, Lane #	EB 1	SE 1	SE 2	NW 1	NW 2	SW 1
Volume Total	126	448	260	192	968	968
Volume Left	11	0	0	192	0	0
Volume Right	114	0	36	0	0	0
cSH	262	1700	1700	875	1700	1700
Volume to Capacity	0.48	0.26	0.15	0.22	0.57	0.57
Queue Length (ft)	60	0	0	21	0	0
Control Delay (s)	30.7	0.0	0.0	10.3	0.0	0.0
Lane LOS	D			B		
Approach Delay (s)	30.7	0.0		0.9		
Approach LOS	D					

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	67.9%	ICU Level of Service	B



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	1.00	1.00		1.00	1.00			0.91			0.91	
Frpb, ped/bikes	1.00	0.94		1.00	0.96			0.98			0.95	
Flpb, ped/bikes	0.93	1.00		0.95	1.00			1.00			1.00	
Frt	1.00	0.95		1.00	0.96			0.98			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1638	1658		1690	1717			4843			4683	
Flt Permitted	0.65	1.00		0.44	1.00			0.70			0.93	
Satd. Flow (perm)	1116	1658		787	1717			3417			4365	
Volume (vph)	123	142	71	141	86	31	112	680	125	6	688	190
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)	137	158	79	157	96	34	124	756	139	7	764	211
Lane Group Flow (vph)	137	237	0	157	130	0	0	1019	0	0	982	0
Confl. Peds. (#/hr)	97		121	121		97	83		49	49		83
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	25.0	18.0		25.0	18.0			43.0			34.0	
Effective Green, g (s)	24.0	19.0		24.0	19.0			44.0			35.0	
Actuated g/C Ratio	0.30	0.24		0.30	0.24			0.55			0.44	
Clearance Time (s)	2.0	5.0		2.0	5.0			5.0			5.0	
Lane Grp Cap (vph)	367	394		293	408			1968			1910	
v/s Ratio Prot	0.02	c0.14		c0.03	0.08			c0.03				
v/s Ratio Perm	0.09			0.13				c0.25			0.22	
v/c Ratio	0.37	0.60		0.54	0.32			0.52			0.51	
Uniform Delay, d1	21.4	27.1		22.4	25.2			11.3			16.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.9	6.6		6.9	2.0			1.0			1.0	
Delay (s)	24.3	33.8		29.2	27.2			12.3			17.3	
Level of Service	C	C		C	C			B			B	
Approach Delay (s)		30.3			28.3			12.3			17.3	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	18.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	C
c Critical Lane Group			



Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (veh/h)	5	248	234	2	0	19
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (veh/h)	6	276	260	2	0	21

Volume Total (vph)	281	262	21
Volume Left (vph)	6	0	0
Volume Right (vph)	0	2	21
Hadj (s)	0.0	0.0	-0.6
Departure Headway (s)	4.3	4.9	4.5
Degree Utilization, x	0.33	0.36	0.03
Capacity (veh/h)	829	588	749
Control Delay (s)	9.4	10.5	7.6
Approach Delay (s)	9.4	10.5	7.6
Approach LOS	A	B	A

Delay		9.9	
HCM Level of Service		A	
Intersection Capacity Utilization	27.2%	ICU Level of Service	A



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	1.00	1.00		1.00	1.00			0.91			0.91	
Frpb, ped/bikes	1.00	0.97		1.00	0.96			0.99			1.00	
Flpb, ped/bikes	0.92	1.00		0.99	1.00			1.00			1.00	
Frt	1.00	0.95		1.00	0.95			0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1635	1708		1751	1710			4968			5046	
Flt Permitted	0.74	1.00		0.30	1.00			0.79			0.93	
Satd. Flow (perm)	1270	1708		552	1710			3922			4709	
Volume (vph)	211	186	98	24	18	8	50	659	49	8	1084	38
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)	234	207	109	27	20	9	56	732	54	9	1204	42
Lane Group Flow (vph)	234	316	0	27	29	0	0	842	0	0	1255	0
Confl. Peds. (#/hr)	73		57	57		73	17		56	56		17
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	25.0	18.0		25.0	18.0			43.0			34.0	
Effective Green, g (s)	24.0	19.0		24.0	19.0			44.0			35.0	
Actuated g/C Ratio	0.30	0.24		0.30	0.24			0.55			0.44	
Clearance Time (s)	2.0	5.0		2.0	5.0			5.0			5.0	
Lane Grp Cap (vph)	404	406		241	406			2222			2060	
v/s Ratio Prot	c0.04	c0.19		0.01	0.02			c0.02				
v/s Ratio Perm	0.14			0.03				0.18			c0.27	
v/c Ratio	0.58	0.78		0.11	0.07			0.38			0.61	
Uniform Delay, d1	23.1	28.5		20.4	23.7			10.2			17.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	5.9	13.7		0.9	0.3			0.5			1.4	
Delay (s)	29.1	42.2		21.4	24.0			10.7			18.6	
Level of Service	C	D		C	C			B			B	
Approach Delay (s)		36.6			22.7			10.7			18.6	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM Average Control Delay	19.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Cycle Length (s)	80.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
c Critical Lane Group			



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	1.00	1.00		1.00	1.00			0.91			0.91	
Frpb, ped/bikes	1.00	0.95		1.00	0.96			0.99			0.99	
Flpb, ped/bikes	0.94	1.00		0.96	1.00			1.00			1.00	
Frt	1.00	0.93		1.00	0.95			0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1660	1642		1698	1689			4914			4990	
Flt Permitted	0.68	1.00		0.62	1.00			0.68			0.89	
Satd. Flow (perm)	1190	1642		1111	1689			3352			4439	
Volume (vph)	178	65	64	88	66	36	132	965	111	20	860	78
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)	198	72	71	98	73	40	147	1072	123	22	956	87
Lane Group Flow (vph)	198	143	0	98	113	0	0	1342	0	0	1065	0
Confl. Peds. (#/hr)	73		57	57		73	17		56	56		17
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	25.0	18.0		25.0	18.0			43.0			34.0	
Effective Green, g (s)	24.0	19.0		24.0	19.0			44.0			35.0	
Actuated g/C Ratio	0.30	0.24		0.30	0.24			0.55			0.44	
Clearance Time (s)	2.0	5.0		2.0	5.0			5.0			5.0	
Lane Grp Cap (vph)	386	390		370	401			1941			1942	
v/s Ratio Prot	c0.03	0.09		0.02	0.07			c0.04				
v/s Ratio Perm	c0.12			0.06				c0.34			0.24	
v/c Ratio	0.51	0.37		0.26	0.28			0.69			0.55	
Uniform Delay, d1	22.4	25.5		20.8	24.9			13.1			16.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	4.8	2.6		1.7	1.8			2.0			1.1	
Delay (s)	27.2	28.1		22.6	26.7			15.1			17.8	
Level of Service	C	C		C	C			B			B	
Approach Delay (s)		27.6			24.8			15.1			17.8	
Approach LOS		C			C			B			B	

Intersection Summary				
HCM Average Control Delay	18.2	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.62			
Cycle Length (s)	80.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	85.4%	ICU Level of Service	D	
c Critical Lane Group				



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑↑			↑↑↑
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	0	928	33	15	1503
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (veh/h)	0	0	1031	37	17	1670
Pedestrians	45					
Lane Width (ft)	0.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None					
Median storage veh)						
yC, conflicting volume	1684	407			1113	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
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			97	
cM capacity (veh/h)	83	593			623	

Directing Lane #	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	412	412	243	351	668	668
Volume Left	0	0	0	17	0	0
Volume Right	0	0	37	0	0	0
cSH	1700	1700	1700	623	1700	1700
Volume to Capacity	0.24	0.24	0.14	0.03	0.39	0.39
Queue Length (ft)	0	0	0	2	0	0
Control Delay (s)	0.0	0.0	0.0	0.9	0.0	0.0
Lane LOS				A		
Approach Delay (s)	0.0			0.2		
Approach LOS						

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	38.9%	ICU Level of Service	A



Movement	EBL	EBT	NBL	NBT	SBL	SBT
Lane Configurations			↑↑↑			↑↑↑
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	0	1423	18	16	1235
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (veh/h)	0	0	1581	20	18	1372
Pedestrians	45					
Lane Width (ft)	0.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	2129	582			1646	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
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			95	
cM capacity (veh/h)	41	456			389	

Direction, Lane #	EB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	632	632	336	292	549	549
Volume Left	0	0	0	18	0	0
Volume Right	0	0	20	0	0	0
cSH	1700	1700	1700	389	1700	1700
Volume to Capacity	0.37	0.37	0.20	0.05	0.32	0.32
Queue Length (ft)	0	0	0	4	0	0
Control Delay (s)	0.0	0.0	0.0	1.6	0.0	0.0
Lane LOS				A		
Approach Delay (s)	0.0			0.3		
Approach LOS						

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	34.4%	ICU Level of Service	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	5	266	2058	5	23	801
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (veh/h)	6	296	2287	6	26	890
Pedestrians	8					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	1					
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	2794	1154			2300	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	57	0			88	
cM capacity (veh/h)	13	189			214	

Direction, Lane #	EB 1	SB 1	SB 2	NB 1	NB 2	NB 3
Volume Total	301	1524	768	26	445	445
Volume Left	6	0	0	26	0	0
Volume Right	296	0	6	0	0	0
cSH	151	1700	1700	214	1700	1700
Volume to Capacity	1.99	0.90	0.45	0.12	0.26	0.26
Queue Length (ft)	588	0	0	10	0	0
Control Delay (s)	518.6	0.0	0.0	24.1	0.0	0.0
Lane LOS	F			C		
Approach Delay (s)	518.6	0.0		0.7		
Approach LOS	F					

Intersection Summary			
Average Delay	44.7		
Intersection Capacity Utilization	88.7%	ICU Level of Service	D



Movement						
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	11	105	605	33	176	1742
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (veh/h)	12	117	672	37	196	1936
Pedestrians	8					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	1					
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	2057	362			717	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	67	81			78	
cM capacity (veh/h)	37	630			874	

Direction, Lane #	EB 1	SE 1	SE 2	NW 1	NW 2	NW 3
Volume Total	129	448	261	196	968	968
Volume Left	12	0	0	196	0	0
Volume Right	117	0	37	0	0	0
cSH	249	1700	1700	874	1700	1700
Volume to Capacity	0.52	0.26	0.15	0.22	0.57	0.57
Queue Length (ft)	68	0	0	21	0	0
Control Delay (s)	34.0	0.0	0.0	10.3	0.0	0.0
Lane LOS	D			B		
Approach Delay (s)	34.0	0.0		0.9		
Approach LOS	D					

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	68.1%	ICU Level of Service	B



Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	3	241	35	1	5	15
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (veh/h)	3	268	39	1	6	17
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume	40				314	39
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
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				99	98
cM capacity (veh/h)	1570				677	1032

Volume Total	271	40	22
Volume Left	3	0	6
Volume Right	0	1	17
cSH	1570	1700	913
Volume to Capacity	0.00	0.02	0.02
Queue Length (ft)	0	0	2
Control Delay (s)	0.1	0.0	9.0
Lane LOS	A		A
Approach Delay (s)	0.1	0.0	9.0
Approach LOS			A

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	24.9%	ICU Level of Service	A



Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	14	182	183	4	3	7
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (veh/h)	16	202	203	4	3	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume	208				439	206
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
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				99	99
cM capacity (veh/h)	1363				569	835

Volume Total	218	208	11
Volume Left	16	0	3
Volume Right	0	4	8
cSH	1363	1700	732
Volume to Capacity	0.01	0.12	0.02
Queue Length (ft)	1	0	1
Control Delay (s)	0.6	0.0	10.0
Lane LOS	A		A
Approach Delay (s)	0.6	0.0	10.0
Approach LOS			A

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	24.4%	ICU Level of Service	A



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	1.00	1.00		1.00	1.00			0.91			0.91	
Frpb, ped/bikes	1.00	0.94		1.00	0.95			0.98			0.95	
Flpb, ped/bikes	0.93	1.00		0.95	1.00			1.00			1.00	
Frt	1.00	0.95		1.00	0.96			0.98			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1643	1658		1690	1697			4823			4683	
Flt Permitted	0.63	1.00		0.44	1.00			0.70			0.91	
Satd. Flow (perm)	1095	1658		787	1697			3401			4286	
Volume (vph)	123	142	71	154	86	37	112	680	140	14	688	190
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)	137	158	79	171	96	41	124	756	156	16	764	211
Lane Group Flow (vph)	137	237	0	171	137	0	0	1036	0	0	991	0
Confl. Peds. (#/hr)	97		121	121		97	83		49	49		83
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	25.0	18.0		25.0	18.0			43.0			34.0	
Effective Green, g (s)	24.0	19.0		24.0	19.0			44.0			35.0	
Actuated g/C Ratio	0.30	0.24		0.30	0.24			0.55			0.44	
Clearance Time (s)	2.0	5.0		2.0	5.0			5.0			5.0	
Lane Grp Cap (vph)	363	394		293	403			1959			1875	
v/s Ratio Prot	0.02	c0.14		c0.04	0.08			c0.03				
v/s Ratio Perm	0.09			0.14				c0.26			0.23	
v/c Ratio	0.38	0.60		0.58	0.34			0.53			0.53	
Uniform Delay, d1	21.4	27.1		23.0	25.3			11.4			16.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	3.0	6.6		8.2	2.3			1.0			1.1	
Delay (s)	24.4	33.8		31.2	27.6			12.4			17.5	
Level of Service	C	C		C	C			B			B	
Approach Delay (s)		30.3			29.6			12.4			17.5	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	18.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
c Critical Lane Group			



Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	28	248	234	9	6	38
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (veh/h)	31	276	260	10	7	42
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume	270				603	265
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				99	95
cM capacity (veh/h)	1293				451	774

Volume Total	307	270	49
Volume Left	31	0	7
Volume Right	0	10	42
cSH	1293	1700	705
Volume to Capacity	0.02	0.16	0.07
Queue Length (ft)	2	0	6
Control Delay (s)	1.0	0.0	10.5
Lane LOS	A		B
Approach Delay (s)	1.0	0.0	10.5
Approach LOS			B

Average Delay		1.3	
Intersection Capacity Utilization	40.1%	ICU Level of Service	A



Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (veh/h)	5	254	241	2	0	19
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (veh/h)	6	282	268	2	0	21

Volume Total (vph)	288	270	21
Volume Left (vph)	6	0	0
Volume Right (vph)	0	2	21
Hadj (s)	0.0	0.0	-0.6
Departure Headway (s)	4.3	4.9	4.5
Degree Utilization, x	0.34	0.37	0.03
Capacity (veh/h)	826	587	743
Control Delay (s)	9.5	10.7	7.7
Approach Delay (s)	9.5	10.7	7.7
Approach LOS	A	B	A

Delay			10.0			
HCM Level of Service			B			
Intersection Capacity Utilization		27.6%		ICU Level of Service		A

Appendix C

Vehicle Delay

As shown on Tables C1 and C2, the Wisconsin Avenue/Calvert Street, Wisconsin Avenue/Davis Street, and Massachusetts Avenue Observatory Circle intersections presently operate with acceptable delays of 33.0 seconds per vehicle or less during both the AM and PM peak hours.

These intersections are anticipated to operate with delays of 39.5 seconds per vehicle or less during both the AM and PM peak hours, without development of the subject site.

With the development of the subject site, these intersections are projected to continue to operate with acceptable delays of 44.7 seconds per vehicle or less during both the AM and PM peak hours.

The St. Luke's Condominiums are projected to add no more than a fraction of a second delay at the Wisconsin Avenue/Calvert Street and Wisconsin Avenue/Davis Street intersections. The project would theoretically add no more than 5.2 seconds of delay during the AM peak hour at the Massachusetts Avenue/ Observatory Circle intersection.

Table C1
St. Lukes Condominiums
Weekday Intersection Vehicle Delay (1) (2)

Location	Operating Condition	Intersection Approach	Levels of Service					
			Existing Conditions		Background Future Conditions		Total Future Conditions	
			AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
1. Wisconsin Avenue/ Calvert Street	Signalized	**OVERALL**	**19.4**	**17.7**	**19.7**	**18**	**19.9**	**18.2**
2. Wisconsin Avenue/ Davis Street	Unsignalized	**OVERALL**	**0.1**	**0.2**	**0.1**	**0.2**	**0.1**	**0.2**
3. Massachusetts Avenue/ Observatory Circle	Unsignalized	**OVERALL**	**33**	**1.8**	**39.5**	**2**	**44.7**	**2.2**
4. Calvert Street/ Site Driveway	Unsignalized	**OVERALL**	**n/a**	**n/a**	**n/a**	**n/a**	**0.7**	**0.6**

Notes: (1) Intersection analyses based on Synchro Version 5.0 software.
(2) Average delays in seconds per vehicle.

Table C2
St Luke's Condominiums
Intersection Vehicle Delay Summary Saturday Midday Peak Hour (1) (2)

Location	Operating Condition	Intersection Approach	Levels of Service		
			Existing Conditions	Background Future Conditions	Total Future Conditions
1. Wisconsin Avenue/ Calvert Street	Signalized	**OVERALL**	**18.1**	**18.4**	**18.7**
2. Calvert Street/ 36th Street	Unsignalized	**OVERALL**	**9.7**	**9.9**	**10**

Notes: (1) Intersection analyses based on Synchro Version 5.0 software.
(2) Average delays in seconds per vehicle.

F

DRAFT

DEVELOPMENT AND CONSTRUCTION AGREEMENT

THIS DEVELOPMENT AND CONSTRUCTION AGREEMENT ("**Construction Agreement**") is made this _____ day of _____, 2003, by and between St. Luke's Condominium, LLC ("**SLC**") a District of Columbia limited liability company, its successors and assigns and Advisory Neighborhood Commission 3B ("**ANC 3B**"), Advisory Neighborhood Commission 3C ("**ANC 3C**"), the Massachusetts Avenue Heights Citizens Association ("**MAHCA**"), and the Glover Park Citizens Association ("**GPCA**") (collectively, the "Neighborhood Organizations").

RECITALS

WHEREAS, as a condition of the Zoning Commission's approval of the SLC application for a Planned Unit Development and Zoning Map Amendment application for the property located at the intersection of Wisconsin Avenue and Calvert Street, NW, Lot 815, Square 1935 (the "**Subject Site**"), SLC agrees to enter into the following Construction Agreement with the members of the Neighborhood Organizations, upon the terms below; and

WHEREAS, the members of the Neighborhood Organizations and SLC seek to mitigate any adverse impact on the surrounding neighborhood resulting from construction activity related to SLC's plans to construct a residential development (the "**Project**") on the Subject Site.

NOW, THEREFORE, in consideration of the mutual promises contained herein, the receipt of which are hereby acknowledged, the parties hereto, hereby agree as follows:

1. **Communication**.

   a. **SLC Representative.** SLC shall designate a representative ("**Representative**") to be the key contact for interaction with the Neighborhood Organizations and members of the community. The Representative will have a local office and be accessible during all business hours. At any time construction activity is occurring on the Subject Site, the Representative or his/her designee shall be available on-site or by telephone to receive complaints or other communications from the Neighborhood Organizations or members of the community. The name and work telephone number of the Representative or his/her appointed designee shall be conspicuously posted on the Subject Site and shall be readily available to members of the community. In addition, a name and telephone number of a person designated by SLC to contact in case of emergency during hours in which no construction activity is occurring shall be readily available to members of the community.

b. **SLC Representative Duties.** The Representative and his/her designee will be able to answer questions and receive comments about the site activities, address any concerns the Neighborhood Organizations and members of the community might have throughout the construction process, and have authority to remedy promptly violations of this Construction Agreement and enforce its provisions. The Representative, designee and emergency contact shall:

(i) receive notice of violations of this Construction Agreement;

(ii) respond as soon as possible, to the person who has reported the violation; and

(iii) act to remedy the violation as soon as possible.

c. **Neighborhood Organization Contact Person.** In turn, the Neighborhood Organizations will designate a contact person ("**Contact Person**"), who may change from time to time, to represent the Neighborhood Organizations. The initial Contact Person will be determined prior to the start of construction activity on the Subject Site. The Contact Person will receive and disseminate information from SLC to the community. SLC shall provide to the Contact Person, and keep updated, the names of and pertinent information about the Representative, the designee and emergency contact, including their home phone numbers and beeper numbers, as appropriate.

2. **Construction**. SLC shall require that all their personnel and vendors, including supply and service vendors will comply with all applicable District of Columbia Municipal Regulations applicable to hours of work, noise, dirt, trash, and public health and safety. The following is a discussion of construction-related issues and shall be binding on SLC, its subcontractors and any successors and/or assigns of SLC.

a. **Permits**. SLC will secure all permits that are required to complete the Project.

b. **Site Management**.

(i) SLC will erect and maintain construction fencing and barricades in order to screen and secure the site during the construction process. SLC and its contractors will work with the members of the Neighborhood Organizations and the Department of Consumer and Regulatory Affairs to maintain temporary storm water management systems throughout the Project's construction until such time as the permanent facilities are constructed, approved and functioning such that there shall be no adverse water impacts on the adjacent neighborhood.

(ii) A minimum amount of lighting will be provided at the Subject Site at night. These lights will be sufficient to provide necessary security and to comply with federal and municipal safety standards.

c. **Cleanliness.** SLC will remove rubbish and construction debris continuously during the construction period during the normal construction workday and during periods of weekend construction work. In addition, SLC will monitor and police the construction site daily or more often as required to ensure cleanliness. SLC will also undertake a program of pest control to ensure that no increase in pest activity occurs during the construction period.

d. **Work Hours.**

(i) The normal construction work week will be Monday through Friday from 7:00 a.m. until 7:00 p.m., and Saturday from 8:00 a.m. until 4:00 p.m. All trucks for delivery of all materials, construction or otherwise, will arrive, depart and operate on the Subject Site only during the foregoing hours.

(ii) SLC will make good faith efforts to limit work that is likely to disturb the residents of the adjacent neighborhoods to weekdays, except where limitations on work during the week require work on Saturdays to meet the requirements of construction teams for a 40 hour work week.

(iii) SLC will not permit any activity on the Subject Site that requires the movement of heavy vehicle traffic or other significant traffic, to or from, the Subject Site or which generates sound levels in excess of sixty decibels (60 db) or otherwise is likely to significantly disturb the residents of the adjacent neighborhoods prior to 7:00 AM or after 6:30 PM on weekdays and prior to 9:00 AM or after 4:00 PM on weekends.

e. **Contractors and Subcontractors.** SLC will require that all contractors and subcontractors be contractually required to follow the terms of, and comply with, the policies set forth in this Construction Agreement.

f. **Traffic, Loading, and Parking.**

(i) All construction related vehicular access to the Subject Site shall be from Wisconsin Avenue and Calvert Street west of 36th Street and such construction related traffic will not traverse Fulton Street, Edwards Street, Davis Street, Observatory Circle, 35th Place, 36th Street, or 36th Place.

(ii) SLC will use its best efforts to ensure that construction related traffic will not impede rush hour traffic on Wisconsin Avenue and Calvert Streets, that no lanes on either Wisconsin Avenue or Calvert Streets will be closed or blocked before or during construction and that all queuing or staging of construction vehicles will occur on the Subject Site and not on adjacent streets.

(iii) Parking for all construction workers will be provided for on the Subject Site.

3. **Pre-Construction Surveys.** SLC shall perform pre-construction surveys of all homes on the ____ block of Davis Street. **[Woody – Please confirm.]** Such surveys shall provide the parties a reference point from which to determine the effect of the construction work on the Subject Site on the surveyed properties and the improvements thereon. The surveys shall be performed at SLC's sole cost and expense. All reports generated as a result of the surveys shall be provided to both SLC and the surveyed property owner.

4. **Condition of Zoning Commission Approval**. This Construction Agreement shall be submitted as part of SLC's PUD and Zoning Map Amendment application to the Zoning Commission and shall be incorporated in and become a condition of any Zoning Commission approval for the Project.

5. **Remedies**. This Construction Agreement does not limit any common law or statutory rights or remedies available to any person relating to damages sustained to person or property attributable to construction activities on the Subject Site.

6. **Severability**. This Construction Agreement and the rights and obligations of the parties hereunder shall be construed in accordance with the laws of the District of Columbia. If any term, provision, covenant or agreement contained herein, or the application thereof to any person or circumstances, shall be held to be invalid, illegal or unenforceable, the validity of the remainder of this Construction Agreement or the application of such term, provision, covenant or agreement to the persons or circumstances other than those to which it is held invalid or unenforceable, shall not be affected thereby.

7. **Authority to Execute**. Each of the parties executing this Construction Agreement represents and warrants to each of the other parties hereto that: (i) it has the full power and authority to enter into this Construction Agreement and to consummate the transaction described herein without obtaining any further approvals or consents, and (ii) the entering into of the Construction Agreement will not constitute or result in a violation or breach by any such party of any judgment, order, writ, injunction or decree issued against or imposed upon it or any agreement to which it is a party or by which it is bound.

8. **Counterparts**. This Construction Agreement may be executed in counterparts and via original or facsimile signature.

DRAFT

IN WITNESS WHEREOF, the parties hereto have signed and delivered these presents as their own free act and deed as of the date and year first herein above written.

ST. LUKE'S CONDOMINIUM LLC, a District of Columbia Limited Liability Company

By: _____
John Wood Bolton
Its: President

ADVISORY NEIGHBORHOOD COMMISSION 3B

By: _____

Its:

ADVISORY NEIGHBORHOOD COMMISSION 3C

By: _____

Its:

THE MASSACHUSETTS HEIGHTS CITIZENS ASSOCIATION

By: _____

Its:

THE GLOVER PARK CITIZENS ASSOCIATION

By: _____

Its: