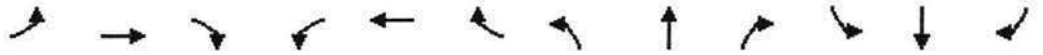
Appendix B

Existing Levels of Service

ZONING COMMISSION
District of Columbia
CASE NO.04-22
EXHIBIT NO.21B



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)		3.0			3.0			3.0			3.0	3.0
Lane Util. Factor		0.95			0.95			1.00			1.00	1.00
Frpb, ped/bikes		0.99			0.99			1.00			1.00	0.78
Flpb, ped/bikes		1.00			1.00			0.92			1.00	1.00
Frt		0.98			1.00			1.00			1.00	0.85
Flt Protected		0.99			1.00			0.98			1.00	1.00
Satd. Flow (prot)		3398			3477			1666			1860	1241
Flt Permitted		0.70			0.95			0.83			1.00	1.00
Satd. Flow (perm)		2385			3318			1411			1855	1241
Volume (vph)	41	228	48	3	1013	26	79	89	3	2	93	246
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)	46	253	53	3	1126	29	88	99	3	2	103	273
RTOR Reduction (vph)	0	14	0	0	2	0	0	1	0	0	0	139
Lane Group Flow (vph)	0	338	0	0	1156	0	0	189	0	0	105	134
Confl. Peds. (#/hr)	225		18	18		225	111		29	29		111
Turn Type	pm+pt			Perm			Perm			Perm		Perm
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		51.0			36.0			39.0			39.0	39.0
Effective Green, g (s)		52.0			37.0			42.0			42.0	42.0
Actuated g/C Ratio		0.52			0.37			0.42			0.42	0.42
Clearance Time (s)		5.0			4.0			6.0			6.0	6.0
Lane Grp Cap (vph)		1362			1228			593			779	521
v/s Ratio Prot		c0.03										
v/s Ratio Perm		0.10			c0.35			c0.13			0.06	0.11
v/c Ratio		0.25			0.94			0.32			0.13	0.26
Uniform Delay, d1		13.2			30.5			19.4			17.8	18.9
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.4			15.0			1.4			0.4	1.2
Delay (s)		13.7			45.5			20.8			18.2	20.1
Level of Service		B			D			C			B	C
Approach Delay (s)		13.7			45.5			20.8			19.5	
Approach LOS		B			D			C			B	

Intersection Summary			
HCM Average Control Delay	33.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	74.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	4	0	0	51	0	93	1	144	1	1	99	5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	0	0	57	0	103	1	160	1	1	110	6
Pedestrians					90			45			5	
Lane Width (ft)					12.0			12.0			12.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					7			4			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)								1316				
pX, platoon unblocked												
vC, conflicting volume	386	368	158	413	371	256	116			251		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	386	368	158	413	371	256	116			251		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	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	100	100	88	100	86	100			100		
cM capacity (veh/h)	460	518	854	461	516	721	1473			1216		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	4	160	162	117
Volume Left	4	57	1	1
Volume Right	0	103	1	6
cSH	460	601	1473	1216
Volume to Capacity	0.01	0.27	0.00	0.00
Queue Length 95th (ft)	1	27	0	0
Control Delay (s)	12.9	13.2	0.1	0.1
Lane LOS	B	B	A	A
Approach Delay (s)	12.9	13.2	0.1	0.1
Approach LOS	B	B		

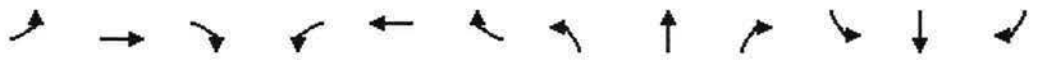
Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	30.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	7	4	18	12	37	11	210	30	17	140	12
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	8	4	20	13	41	12	233	33	19	156	13

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	12	74	279	188
Volume Left (vph)	0	20	12	19
Volume Right (vph)	4	41	33	13
Hadj (s)	-0.18	-0.24	-0.03	0.01
Departure Headway (s)	4.9	4.7	4.3	4.4
Degree Utilization, x	0.02	0.10	0.33	0.23
Capacity (veh/h)	658	689	815	782
Control Delay (s)	7.9	8.2	9.4	8.7
Approach Delay (s)	7.9	8.2	9.4	8.7
Approach LOS	A	A	A	A

Intersection Summary			
Delay	9.0		
HCM Level of Service	A		
Intersection Capacity Utilization	34.6%	ICU Level of Service	A
Analysis Period (min)	15		



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)		3.0			3.0			3.0			3.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.97			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.98			0.99			0.99			0.97	
Flt Protected		1.00			1.00			0.97			1.00	
Satd. Flow (prot)		3345			3485			1778			1803	
Flt Permitted		0.91			0.94			0.68			0.99	
Satd. Flow (perm)		3065			3281			1236			1792	
Volume (vph)	9	178	31	28	896	38	148	76	23	4	97	25
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)	10	198	34	31	996	42	164	84	26	4	108	28
RTOR Reduction (vph)	0	12	0	0	3	0	0	4	0	0	9	0
Lane Group Flow (vph)	0	230	0	0	1066	0	0	271	0	0	131	0
Confl. Peds. (#/hr)	25		68	68		25	3		6	6		3
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		63.0			63.0			29.0			29.0	
Effective Green, g (s)		64.0			64.0			30.0			30.0	
Actuated g/C Ratio		0.64			0.64			0.30			0.30	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Lane Grp Cap (vph)		1962			2100			371			538	
v/s Ratio Prot												
v/s Ratio Perm		0.07			c0.32			c0.22			0.07	
v/c Ratio		0.12			0.51			0.73			0.24	
Uniform Delay, d1		7.0			9.6			31.4			26.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.1			0.9			11.9			1.1	
Delay (s)		7.1			10.5			43.3			27.5	
Level of Service		A			B			D			C	
Approach Delay (s)		7.1			10.5			43.3			27.5	
Approach LOS		A			B			D			C	

Intersection Summary			
HCM Average Control Delay	16.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	80.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	0	0	43	77	84	31	150	0	0	111	48
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	0	48	86	93	34	167	0	0	123	53

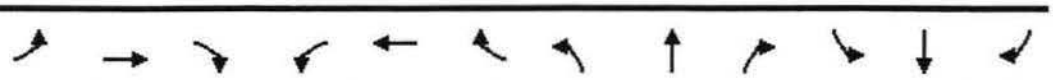
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	227	201	177
Volume Left (vph)	48	34	0
Volume Right (vph)	93	0	53
Hadj (s)	-0.17	0.07	-0.15
Departure Headway (s)	4.6	4.7	4.6
Degree Utilization, x	0.29	0.27	0.22
Capacity (veh/h)	726	720	740
Control Delay (s)	9.5	9.5	8.9
Approach Delay (s)	9.5	9.5	8.9
Approach LOS	A	A	A

Intersection Summary			
Delay		9.3	
HCM Level of Service		A	
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		



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)		3.0			3.0			3.0			3.0	
Lane Util. Factor		0.91			0.91			1.00			1.00	
Frpb, ped/bikes		1.00			0.99			0.99			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		0.99			0.99			0.99			0.95	
Flt Protected		0.99			1.00			0.98			0.99	
Satd. Flow (prot)		4964			4975			1784			1728	
Flt Permitted		0.73			0.90			0.81			0.86	
Satd. Flow (perm)		3623			4461			1460			1499	
Volume (vph)	48	344	40	61	1612	145	87	160	26	22	53	39
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)	53	382	44	68	1791	161	97	178	29	24	59	43
RTOR Reduction (vph)	0	12	0	0	10	0	0	4	0	0	19	0
Lane Group Flow (vph)	0	467	0	0	2010	0	0	300	0	0	107	0
Confl. Peds. (#/hr)	25		10	10		25	23		24	24		23
Turn Type	pm+pt			Perm			Perm			Perm		
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		69.0			59.0			19.0			19.0	
Effective Green, g (s)		72.0			62.0			22.0			22.0	
Actuated g/C Ratio		0.72			0.62			0.22			0.22	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		2702			2766			321			330	
v/s Ratio Prot		c0.01										
v/s Ratio Perm		0.11			c0.45			c0.21			0.07	
v/c Ratio		0.17			0.73			0.93			0.33	
Uniform Delay, d1		4.5			13.1			38.3			32.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.1			1.7			36.1			2.6	
Delay (s)		4.6			14.8			74.4			35.4	
Level of Service		A			B			E			D	
Approach Delay (s)		4.6			14.8			74.4			35.4	
Approach LOS		A			B			E			D	

Intersection Summary			
HCM Average Control Delay	20.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	8	16	24	0	0	0	52	249	17	19	116	20
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	9	18	27	0	0	0	58	277	19	21	129	22

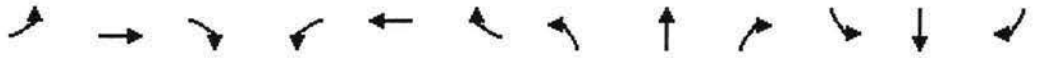
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	53	353	172
Volume Left (vph)	9	58	21
Volume Right (vph)	27	19	22
Hadj (s)	-0.23	0.03	-0.02
Departure Headway (s)	4.8	4.3	4.4
Degree Utilization, x	0.07	0.42	0.21
Capacity (veh/h)	671	830	793
Control Delay (s)	8.2	10.3	8.5
Approach Delay (s)	8.2	10.3	8.5
Approach LOS	A	B	A

Intersection Summary			
Delay		9.6	
HCM Level of Service		A	
Intersection Capacity Utilization	42.8%	ICU Level of Service	A
Analysis Period (min)		15	



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)		3.0			3.0			3.0			3.0	3.0
Lane Util. Factor		0.95			0.95			1.00			1.00	1.00
Frpb, ped/bikes		1.00			0.97			1.00			1.00	0.79
Flpb, ped/bikes		0.96			1.00			0.94			1.00	1.00
Frt		0.99			0.99			1.00			1.00	0.85
Flt Protected		0.99			1.00			0.98			1.00	1.00
Satd. Flow (prot)		3344			3425			1724			1854	1244
Flt Permitted		0.77			0.94			0.86			0.99	1.00
Satd. Flow (perm)		2587			3233			1505			1833	1244
Volume (vph)	133	608	52	5	329	15	48	81	2	8	135	269
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)	148	676	58	6	366	17	53	90	2	9	150	299
RTOR Reduction (vph)	0	5	0	0	3	0	0	1	0	0	0	160
Lane Group Flow (vph)	0	877	0	0	386	0	0	144	0	0	159	139
Confl. Peds. (#/hr)	262		6	6		262	110		23	23		110
Turn Type	pm+pt			Perm			Perm			Perm		Perm
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		53.0			38.0			37.0			37.0	37.0
Effective Green, g (s)		54.0			39.0			40.0			40.0	40.0
Actuated g/C Ratio		0.54			0.39			0.40			0.40	0.40
Clearance Time (s)		5.0			4.0			6.0			6.0	6.0
Lane Grp Cap (vph)		1488			1261			602			733	498
v/s Ratio Prot		c0.07										
v/s Ratio Perm		c0.25			0.12			0.10			0.09	c0.11
v/c Ratio		0.59			0.31			0.24			0.22	0.28
Uniform Delay, d1		15.5			21.1			19.9			19.7	20.3
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		1.7			0.6			0.9			0.7	1.4
Delay (s)		17.2			21.8			20.9			20.4	21.7
Level of Service		B			C			C			C	C
Approach Delay (s)		17.2			21.8			20.9			21.2	
Approach LOS		B			C			C			C	

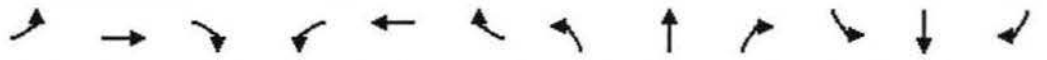
Intersection Summary			
HCM Average Control Delay	19.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	34	1	22	0	0	0	4	207	2	0	175	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	38	1	24	0	0	0	4	230	2	0	194	0
Pedestrians		3			54			3			22	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			4			0			2	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)								1316				
pX, platoon unblocked												
vC, conflicting volume	459	493	200	516	491	307	197			286		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	459	493	200	516	491	307	197			286		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	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 %	92	100	97	100	100	100	100			100		
cM capacity (veh/h)	482	453	836	416	454	687	1372			1218		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	63	0	237	194
Volume Left	38	0	4	0
Volume Right	24	0	2	0
cSH	575	1700	1372	1700
Volume to Capacity	0.11	0.00	0.00	0.11
Queue Length 95th (ft)	9	0	0	0
Control Delay (s)	12.0	0.0	0.2	0.0
Lane LOS	B	A	A	
Approach Delay (s)	12.0	0.0	0.2	0.0
Approach LOS	B	A		

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	29.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	12	12	14	6	2	9	0	218	49	19	140	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	13	13	16	7	2	10	0	242	54	21	156	2

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	42	19	297	179
Volume Left (vph)	13	7	0	21
Volume Right (vph)	16	10	54	2
Hadj (s)	-0.12	-0.21	-0.08	0.05
Departure Headway (s)	4.8	4.8	4.2	4.4
Degree Utilization, x	0.06	0.03	0.34	0.22
Capacity (veh/h)	668	670	843	788
Control Delay (s)	8.1	7.9	9.3	8.6
Approach Delay (s)	8.1	7.9	9.3	8.6
Approach LOS	A	A	A	A

Intersection Summary			
Delay	9.0		
HCM Level of Service	A		
Intersection Capacity Utilization	38.9%	ICU Level of Service	A
Analysis Period (min)	15		



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)		3.0			3.0			3.0			3.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.98			1.00			0.99			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.99			0.99			0.97			0.98	
Flt Protected		1.00			1.00			0.98			0.99	
Satd. Flow (prot)		3425			3491			1741			1798	
Flt Permitted		0.95			0.94			0.72			0.92	
Satd. Flow (perm)		3253			3274			1280			1663	
Volume (vph)	13	767	73	6	243	12	96	87	54	29	116	24
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	14	852	81	7	270	13	107	97	60	32	129	27
RTOR Reduction (vph)	0	7	0	0	3	0	0	10	0	0	6	0
Lane Group Flow (vph)	0	940	0	0	287	0	0	254	0	0	182	0
Confl. Peds. (#/hr)	28		63	63		28	9		23	23		9
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		67.0			67.0			25.0			25.0	
Effective Green, g (s)		68.0			68.0			26.0			26.0	
Actuated g/C Ratio		0.68			0.68			0.26			0.26	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Lane Grp Cap (vph)		2212			2226			333			432	
v/s Ratio Prot												
v/s Ratio Perm		c0.29			0.09			c0.20			0.11	
v/c Ratio		0.42			0.13			0.76			0.42	
Uniform Delay, d1		7.2			5.6			34.1			30.7	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.6			0.1			15.1			3.0	
Delay (s)		7.8			5.7			49.3			33.8	
Level of Service		A			A			D			C	
Approach Delay (s)		7.8			5.7			49.3			33.8	
Approach LOS		A			A			D			C	

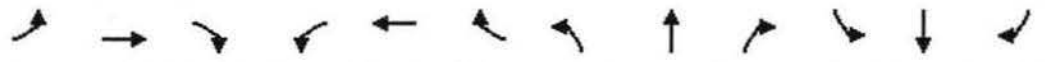
Intersection Summary			
HCM Average Control Delay	16.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	0	0	10	25	43	13	122	0	0	147	20
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	0	11	28	48	14	136	0	0	163	22

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	87	150	186
Volume Left (vph)	11	14	0
Volume Right (vph)	48	0	22
Hadj (s)	-0.27	0.05	-0.04
Departure Headway (s)	4.4	4.3	4.2
Degree Utilization, x	0.11	0.18	0.22
Capacity (veh/h)	759	801	831
Control Delay (s)	7.9	8.3	8.4
Approach Delay (s)	7.9	8.3	8.4
Approach LOS	A	A	A

Intersection Summary			
Delay		8.3	
HCM Level of Service		A	
Intersection Capacity Utilization	36.4%	ICU Level of Service	A
Analysis Period (min)		15	



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)		3.0			3.0			3.0			3.0	
Lane Util. Factor		0.91			0.91			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			0.99			0.99	
Flpb, ped/bikes		1.00			1.00			0.99			0.99	
Frt		0.99			0.99			0.98			0.97	
Flt Protected		1.00			1.00			0.98			0.98	
Satd. Flow (prot)		5015			5018			1767			1728	
Flt Permitted		0.77			0.90			0.78			0.71	
Satd. Flow (perm)		3894			4506			1401			1253	
Volume (vph)	130	1390	53	10	594	35	55	92	30	93	84	57
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)	144	1544	59	11	660	39	61	102	33	103	93	63
RTOR Reduction (vph)	0	4	0	0	6	0	0	7	0	0	12	0
Lane Group Flow (vph)	0	1743	0	0	704	0	0	189	0	0	247	0
Confl. Peds. (#/hr)	18		29	29		18	24		22	22		24
Turn Type	pm+pt			Perm			Perm			Perm		
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		68.0			53.0			20.0			20.0	
Effective Green, g (s)		71.0			56.0			23.0			23.0	
Actuated g/C Ratio		0.71			0.56			0.23			0.23	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		2899			2523			322			288	
v/s Ratio Prot		c0.07										
v/s Ratio Perm		c0.35			0.16			0.13			c0.20	
v/c Ratio		0.60			0.28			0.59			0.86	
Uniform Delay, d1		7.3			11.5			34.3			36.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.9			0.3			7.6			26.8	
Delay (s)		8.3			11.7			41.9			63.7	
Level of Service		A			B			D			E	
Approach Delay (s)		8.3			11.7			41.9			63.7	
Approach LOS		A			B			D			E	

Intersection Summary			
HCM Average Control Delay	16.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↕			↕	
Sign Control		Stop			Yield			Stop			Stop	
Volume (vph)	9	34	50	0	0	0	15	164	21	14	191	10
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	10	38	56	0	0	0	17	182	23	16	212	11

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	103	222	239
Volume Left (vph)	10	17	16
Volume Right (vph)	56	23	11
Hadj (s)	-0.27	-0.01	0.02
Departure Headway (s)	4.7	4.4	4.4
Degree Utilization, x	0.13	0.27	0.29
Capacity (veh/h)	703	789	785
Control Delay (s)	8.4	9.0	9.2
Approach Delay (s)	8.4	9.0	9.2
Approach LOS	A	A	A

Intersection Summary			
Delay		9.0	
HCM Level of Service		A	
Intersection Capacity Utilization	34.7%	ICU Level of Service	A
Analysis Period (min)	15		

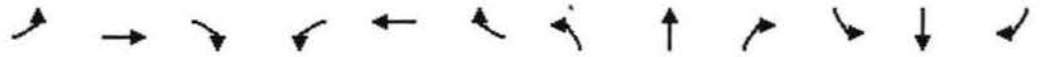
Appendix C

Background Future Levels of Service



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)		3.0			3.0			3.0			3.0	3.0
Lane Util. Factor		0.95			0.95			1.00			1.00	1.00
Frpb, ped/bikes		0.99			0.98			1.00			1.00	0.78
Flpb, ped/bikes		1.00			1.00			0.93			1.00	1.00
Frt		0.98			1.00			1.00			1.00	0.85
Flt Protected		0.99			1.00			0.98			1.00	1.00
Satd. Flow (prot)		3397			3457			1701			1859	1241
Flt Permitted		0.67			0.95			0.84			0.99	1.00
Satd. Flow (perm)		2297			3296			1464			1851	1241
Volume (vph)	43	239	50	6	1061	36	83	127	3	3	102	257
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)	48	266	56	7	1179	40	92	141	3	3	113	286
RTOR Reduction (vph)	0	14	0	0	3	0	0	1	0	0	0	141
Lane Group Flow (vph)	0	356	0	0	1223	0	0	235	0	0	116	145
Confl. Peds. (#/hr)	225		18	18		225	111		29	29		111
Turn Type	pm+pt			Perm			Perm			Perm		Perm
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		51.0			37.0			39.0			39.0	39.0
Effective Green, g (s)		52.0			37.0			42.0			42.0	42.0
Actuated g/C Ratio		0.52			0.37			0.42			0.42	0.42
Clearance Time (s)		4.0			3.0			6.0			6.0	6.0
Lane Grp Cap (vph)		1326			1220			615			777	521
v/s Ratio Prot		c0.03										
v/s Ratio Perm		0.11			c0.37			c0.16			0.06	0.12
v/c Ratio		0.27			1.00			0.38			0.15	0.28
Uniform Delay, d1		13.4			31.5			20.0			17.9	19.0
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.5			26.5			1.8			0.4	1.3
Delay (s)		13.9			58.0			21.8			18.4	20.4
Level of Service		B			E			C			B	C
Approach Delay (s)		13.9			58.0			21.8			19.8	
Approach LOS		B			E			C			B	

Intersection Summary			
HCM Average Control Delay	40.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	76.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	4	0	0	53	0	97	1	245	1	1	116	5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	0	0	59	0	108	1	272	1	1	129	6
Pedestrians					90			45			5	
Lane Width (ft)					12.0			12.0			12.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					7			4			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)								1316				
pX, platoon unblocked												
vC, conflicting volume	522	499	177	544	502	368	134			363		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	522	499	177	544	502	368	134			363		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	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	100	100	84	100	83	100			100		
cM capacity (veh/h)	361	437	834	377	436	624	1450			1106		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	4	167	274	136
Volume Left	4	59	1	1
Volume Right	0	108	1	6
cSH	361	507	1450	1106
Volume to Capacity	0.01	0.33	0.00	0.00
Queue Length 95th (ft)	1	36	0	0
Control Delay (s)	15.1	15.5	0.0	0.1
Lane LOS	C	C	A	A
Approach Delay (s)	15.1	15.5	0.0	0.1
Approach LOS	C	C		

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	31.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	7	4	19	13	39	12	248	31	18	162	13
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	8	4	21	14	43	13	276	34	20	180	14

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	12	79	323	214
Volume Left (vph)	0	21	13	20
Volume Right (vph)	4	43	34	14
Hadj (s)	-0.18	-0.24	-0.02	0.01
Departure Headway (s)	5.0	4.9	4.3	4.5
Degree Utilization, x	0.02	0.11	0.39	0.27
Capacity (veh/h)	626	660	805	769
Control Delay (s)	8.1	8.5	10.1	9.1
Approach Delay (s)	8.1	8.5	10.1	9.1
Approach LOS	A	A	B	A

Intersection Summary			
Delay	9.5		
HCM Level of Service	A		
Intersection Capacity Utilization	37.1%	ICU Level of Service	A
Analysis Period (min)	15		



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)		3.0			3.0			3.0			3.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.95			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			0.99			1.00			1.00	
Frt		0.97			0.99			0.99			0.97	
Flt Protected		1.00			1.00			0.97			1.00	
Satd. Flow (prot)		3235			3469			1783			1805	
Flt Permitted		0.92			0.91			0.68			0.99	
Satd. Flow (perm)		2967			3180			1239			1794	
Volume (vph)	9	187	58	57	940	40	158	106	28	4	105	26
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	10	208	64	63	1044	44	176	118	31	4	117	29
RTOR Reduction (vph)	0	23	0	0	3	0	0	4	0	0	8	0
Lane Group Flow (vph)	0	259	0	0	1148	0	0	322	0	0	142	0
Confl. Peds. (#/hr)	25		68	68		25	3		6	6		3
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		63.0			63.0			29.0			29.0	
Effective Green, g (s)		64.0			64.0			30.0			30.0	
Actuated g/C Ratio		0.64			0.64			0.30			0.30	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Lane Grp Cap (vph)		1899			2035			372			538	
v/s Ratio Prot												
v/s Ratio Perm		0.09			c0.36			c0.26			0.08	
v/c Ratio		0.14			0.56			0.86			0.26	
Uniform Delay, d1		7.1			10.1			33.1			26.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.1			1.1			22.5			1.2	
Delay (s)		7.2			11.3			55.6			27.8	
Level of Service		A			B			E			C	
Approach Delay (s)		7.2			11.3			55.6			27.8	
Approach LOS		A			B			E			C	

Intersection Summary			
HCM Average Control Delay	19.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	0	0	45	81	88	32	157	0	0	116	50
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	0	50	90	98	36	174	0	0	129	56

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	238	210	184
Volume Left (vph)	50	36	0
Volume Right (vph)	98	0	56
Hadj (s)	-0.17	0.07	-0.15
Departure Headway (s)	4.7	4.8	4.6
Degree Utilization, x	0.31	0.28	0.24
Capacity (veh/h)	719	713	732
Control Delay (s)	9.7	9.6	9.0
Approach Delay (s)	9.7	9.6	9.0
Approach LOS	A	A	A

Intersection Summary			
Delay		9.5	
HCM Level of Service		A	
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)		15	

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)		3.0			3.0			3.0			3.0	
Lane Util. Factor		0.91			0.91			1.00			1.00	
Frpb, ped/bikes		1.00			0.99			0.99			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frt		0.99			0.99			0.99			0.95	
Flt Protected		0.99			1.00			0.98			0.99	
Satd. Flow (prot)		4967			4982			1785			1726	
Flt Permitted		0.71			0.89			0.79			0.84	
Satd. Flow (perm)		3557			4456			1437			1472	
Volume (vph)	50	378	42	64	1817	152	91	167	27	23	55	41
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)	56	420	47	71	2019	169	101	186	30	26	61	46
RTOR Reduction (vph)	0	12	0	0	9	0	0	4	0	0	19	0
Lane Group Flow (vph)	0	511	0	0	2250	0	0	313	0	0	114	0
Confl. Peds. (#/hr)	25		10	10		25	23		24	24		23
Turn Type	pm+pt			Perm			Perm			Perm		
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		69.0			59.0			19.0			19.0	
Effective Green, g (s)		72.0			62.0			22.0			22.0	
Actuated g/C Ratio		0.72			0.62			0.22			0.22	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		2660			2763			316			324	
v/s Ratio Prot		c0.01										
v/s Ratio Perm		0.12			c0.50			c0.22			0.08	
v/c Ratio		0.19			0.81			0.99			0.35	
Uniform Delay, d1		4.5			14.6			38.9			33.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.2			2.8			48.4			3.0	
Delay (s)		4.7			17.3			87.3			36.0	
Level of Service		A			B			F			D	
Approach Delay (s)		4.7			17.3			87.3			36.0	
Approach LOS		A			B			F			D	

Intersection Summary			
HCM Average Control Delay	22.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	8	17	25	0	0	0	54	260	18	20	121	21
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	9	19	28	0	0	0	60	289	20	22	134	23

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	56	369	180
Volume Left (vph)	9	60	22
Volume Right (vph)	28	20	23
Hadj (s)	-0.23	0.03	-0.02
Departure Headway (s)	4.9	4.3	4.4
Degree Utilization, x	0.08	0.44	0.22
Capacity (veh/h)	663	827	788
Control Delay (s)	8.3	10.5	8.6
Approach Delay (s)	8.3	10.5	8.6
Approach LOS	A	B	A

Intersection Summary			
Delay	9.8		
HCM Level of Service	A		
Intersection Capacity Utilization	43.8%	ICU Level of Service	A
Analysis Period (min)	15		



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)		3.0			3.0			3.0			3.0	3.0
Lane Util. Factor		0.95			0.95			1.00			1.00	1.00
Frpb, ped/bikes		1.00			0.97			1.00			1.00	0.79
Flpb, ped/bikes		0.97			1.00			0.95			1.00	1.00
Frt		0.99			0.99			1.00			1.00	0.85
Flt Protected		0.99			1.00			0.98			1.00	1.00
Satd. Flow (prot)		3352			3418			1744			1850	1244
Flt Permitted		0.75			0.94			0.84			0.97	1.00
Satd. Flow (perm)		2550			3216			1496			1807	1244
Volume (vph)	139	638	54	6	344	17	50	92	2	16	175	281
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)	154	709	60	7	382	19	56	102	2	18	194	312
RTOR Reduction (vph)	0	5	0	0	4	0	0	1	0	0	0	158
Lane Group Flow (vph)	0	918	0	0	404	0	0	159	0	0	212	154
Confl. Peds. (#/hr)	262		6	6		262	110		23	23		110
Turn Type	pm+pt			Perm			Perm			Perm		Perm
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		53.0			38.0			37.0			37.0	37.0
Effective Green, g (s)		54.0			39.0			40.0			40.0	40.0
Actuated g/C Ratio		0.54			0.39			0.40			0.40	0.40
Clearance Time (s)		5.0			4.0			6.0			6.0	6.0
Lane Grp Cap (vph)		1473			1254			598			723	498
v/s Ratio Prot		c0.07										
v/s Ratio Perm		c0.26			0.13			0.11			0.12	c0.12
v/c Ratio		0.62			0.32			0.27			0.29	0.31
Uniform Delay, d1		15.9			21.3			20.1			20.4	20.5
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		2.0			0.7			1.1			1.0	1.6
Delay (s)		17.9			22.0			21.2			21.4	22.1
Level of Service		B			C			C			C	C
Approach Delay (s)		17.9			22.0			21.2			21.8	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM Average Control Delay	20.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	36	1	23	0	0	0	4	236	2	0	277	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	40	1	26	0	0	0	4	262	2	0	308	0
Pedestrians		3			54			3			22	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			4			0			2	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)								1316				
pX, platoon unblocked												
vC, conflicting volume	605	638	314	663	637	339	311			318		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	605	638	314	663	637	339	311			318		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	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 %	90	100	96	100	100	100	100			100		
cM capacity (veh/h)	386	374	723	330	375	659	1247			1186		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	67	0	269	308
Volume Left	40	0	4	0
Volume Right	26	0	2	0
cSH	469	1700	1247	1700
Volume to Capacity	0.14	0.00	0.00	0.18
Queue Length 95th (ft)	12	0	0	0
Control Delay (s)	13.9	0.0	0.2	0.0
Lane LOS	B	A	A	
Approach Delay (s)	13.9	0.0	0.2	0.0
Approach LOS	B	A		

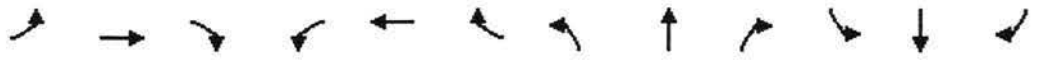
Intersection Summary				
Average Delay	1.5			
Intersection Capacity Utilization	31.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	13	13	15	6	2	9	0	245	51	20	172	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	14	14	17	7	2	10	0	272	57	22	191	2

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	46	19	329	216
Volume Left (vph)	14	7	0	22
Volume Right (vph)	17	10	57	2
Hadj (s)	-0.12	-0.21	-0.07	0.05
Departure Headway (s)	5.0	5.0	4.2	4.5
Degree Utilization, x	0.06	0.03	0.39	0.27
Capacity (veh/h)	642	640	831	780
Control Delay (s)	8.3	8.1	9.9	9.1
Approach Delay (s)	8.3	8.1	9.9	9.1
Approach LOS	A	A	A	A

Intersection Summary				
Delay		9.4		
HCM Level of Service		A		
Intersection Capacity Utilization	41.3%	ICU Level of Service		A
Analysis Period (min)	15			



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)		3.0			3.0			3.0			3.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		0.98			1.00			0.99			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.99			0.99			0.96			0.98	
Flt Protected		1.00			1.00			0.98			0.99	
Satd. Flow (prot)		3418			3486			1726			1811	
Flt Permitted		0.95			0.91			0.64			0.91	
Satd. Flow (perm)		3243			3182			1119			1651	
Volume (vph)	14	805	82	12	255	13	126	96	84	30	145	25
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)	16	894	91	13	283	14	140	107	93	33	161	28
RTOR Reduction (vph)	0	7	0	0	4	0	0	13	0	0	5	0
Lane Group Flow (vph)	0	994	0	0	306	0	0	327	0	0	217	0
Confl. Peds. (#/hr)	28		63	63		28	9		23	23		9
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		67.0			67.0			25.0			25.0	
Effective Green, g (s)		68.0			68.0			26.0			26.0	
Actuated g/C Ratio		0.68			0.68			0.26			0.26	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Lane Grp Cap (vph)		2205			2164			291			429	
v/s Ratio Prot												
v/s Ratio Perm		c0.31			0.10			c0.29			0.13	
v/c Ratio		0.45			0.14			1.12			0.51	
Uniform Delay, d1		7.4			5.7			37.0			31.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.7			0.1			89.9			4.2	
Delay (s)		8.0			5.8			126.9			35.7	
Level of Service		A			A			F			D	
Approach Delay (s)		8.0			5.8			126.9			35.7	
Approach LOS		A			A			F			D	

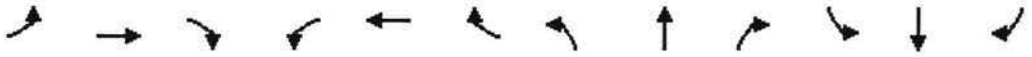
Intersection Summary			
HCM Average Control Delay	32.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	76.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	0	0	10	26	45	14	128	0	0	154	21
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	0	11	29	50	16	142	0	0	171	23

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	90	158	194
Volume Left (vph)	11	16	0
Volume Right (vph)	50	0	23
Hadj (s)	-0.27	0.05	-0.04
Departure Headway (s)	4.4	4.4	4.2
Degree Utilization, x	0.11	0.19	0.23
Capacity (veh/h)	752	797	817
Control Delay (s)	7.9	8.4	8.5
Approach Delay (s)	7.9	8.4	8.5
Approach LOS	A	A	A

Intersection Summary				
Delay		8.4		
HCM Level of Service		A		
Intersection Capacity Utilization	37.7%	ICU Level of Service		A
Analysis Period (min)		15		



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)		3.0			3.0			3.0			3.0	
Lane Util. Factor		0.91			0.91			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			0.99			0.99	
Flpb, ped/bikes		1.00			1.00			0.99			0.99	
Frt		1.00			0.99			0.98			0.97	
Flt Protected		1.00			1.00			0.98			0.98	
Satd. Flow (prot)		5021			5021			1768			1728	
Flt Permitted		0.76			0.89			0.77			0.70	
Satd. Flow (perm)		3841			4480			1382			1233	
Volume (vph)	136	1583	55	10	648	37	58	96	31	97	88	60
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)	151	1759	61	11	720	41	64	107	34	108	98	67
RTOR Reduction (vph)	0	3	0	0	6	0	0	7	0	0	12	0
Lane Group Flow (vph)	0	1968	0	0	766	0	0	198	0	0	261	0
Confl. Peds. (#/hr)	18		29	29		18	24		22	22		24
Turn Type	pm+pt			Perm			Perm			Perm		
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		68.0			53.0			20.0			20.0	
Effective Green, g (s)		71.0			56.0			23.0			23.0	
Actuated g/C Ratio		0.71			0.56			0.23			0.23	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		2869			2509			318			284	
v/s Ratio Prot		c0.08										
v/s Ratio Perm		c0.40			0.17			0.14			c0.21	
v/c Ratio		0.69			0.31			0.62			0.92	
Uniform Delay, d1		8.2			11.7			34.6			37.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.4			0.3			8.9			36.4	
Delay (s)		9.6			12.0			43.5			74.0	
Level of Service		A			B			D			E	
Approach Delay (s)		9.6			12.0			43.5			74.0	
Approach LOS		A			B			D			E	

Intersection Summary			
HCM Average Control Delay	17.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	78.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	9	36	52	0	0	0	16	171	22	15	200	10
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	10	40	58	0	0	0	18	190	24	17	222	11

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	108	232	250
Volume Left (vph)	10	18	17
Volume Right (vph)	58	24	11
Hadj (s)	-0.27	-0.01	0.02
Departure Headway (s)	4.7	4.4	4.4
Degree Utilization, x	0.14	0.29	0.31
Capacity (veh/h)	694	784	778
Control Delay (s)	8.5	9.2	9.4
Approach Delay (s)	8.5	9.2	9.4
Approach LOS	A	A	A

Intersection Summary			
Delay		9.2	
HCM Level of Service		A	
Intersection Capacity Utilization	35.5%	ICU Level of Service	A
Analysis Period (min)		15	