

ALL-WAY STOP CONTROL ANALYSIS								
General Information					Site Information			
Analyst	JWW				Intersection	Florida/9th/V Streets		
Agency/Co	Wells & Associates LLC				Jurisdiction	Washington DC		
Date Performed	8/29/2006				Analysis Year	2007 TF Conditions		
Analysis Time Period	AM Peak Period							
Project ID								
East/West Street 9th Street/V Street					North/South Street Florida/9th Street			
Volume Adjustments and Site Characteristics								
Approach	Eastbound				Westbound			
Movement	L	T	R		L	T	R	
Volume	25	98	438		82	105	25	
%Thrus Left Lane	55				50			
Approach	Northbound				Southbound			
Movement	L	T	R		L	T	R	
Volume	158	27	19		16	31	31	
%Thrus Left Lane	45				50			
	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	TR	LTR		LT	TR	LTR	
PHF	0.90	0.90	0.90		0.90	0.90	0.90	
Flow Rate	85	536	234		188	37	85	
% Heavy Vehicles	2	2	2		2	2	2	
No. Lanes	2		1		2		1	
Geometry Group	5		4b		5		4b	
Duration, T	0.25							
Saturation Headway Adjustment Worksheet								
Prop Left-Turns	0.3	0.0	0.4		0.9	0.0	0.2	
Prop Right-Turns	0.0	0.9	0.1		0.0	0.6	0.4	
Prop Heavy Vehicle								
hLT-adj	0.5	0.5	0.2	0.2	0.5	0.5	0.2	0.2
hRT-adj	-0.7	-0.7	-0.6	-0.6	-0.7	-0.7	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	6.23	6.23	6.23		6.23	6.23	6.23	
Departure Headway and Service Time								
hd, initial value	3.20	3.20	3.20		3.20	3.20	3.20	
x, initial	0.08	0.48	0.21		0.17	0.03	0.08	
hd, final value	6.23	6.23	6.23		6.23	6.23	6.23	
x, final value	0.15	0.81	0.43		0.39	0.07	0.17	
Move up time, m	2.3		2.3		2.3		2.3	
Service Time	3.9	3.1	3.9	3.1	3.9	3.1	3.9	3.1
Capacity and Level of Service								
	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	335	654	484		438	287	335	
Delay	10.01	26.97	14.14		14.96	9.81	11.43	
LOS	B	D	B		B	A	B	
Approach Delay	24.64		14.14		14.11		11.43	
LOS	C		B		B		B	
Intersection Delay	19.54							
Intersection LOS	C							

ZONING COMMISSION
 District of Columbia
 CASE NO.05-17A/05-32A
 EXHIBIT NO.5A4

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

Total Future AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	24	97	50	14	150	29	23	32	27	15	11	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	26	105	54	15	163	32	25	35	29	16	12	18
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage veh												
Upstream signal (ft)					311							
pX, platoon unblocked												
vC, conflicting volume	195			160			418	410	133	441	421	179
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	195			160			418	410	133	441	421	179
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			99			95	93	97	97	98	98
cM capacity (veh/h)	1379			1419			512	516	917	473	508	864
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	186	210	89	47								
Volume Left	26	15	25	16								
Volume Right	54	32	29	18								
cSH	1379	1419	601	589								
Volume to Capacity	0.02	0.01	0.15	0.08								
Queue Length 95th (ft)	1	1	13	6								
Control Delay (s)	1.2	0.6	12.0	11.6								
Lane LOS	A	A	B	B								
Approach Delay (s)	1.2	0.6	12.0	11.6								
Approach LOS			B	B								
Intersection Summary												
Average Delay			3.7									
Intersection Capacity Utilization			27.7%		ICU Level of Service				A			
Analysis Period (min)			15									

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

Total Future AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95	1.00		0.95		1.00	0.95	
Fr _t		0.98			1.00	0.85		1.00		1.00	1.00	
Flt Protected		1.00			1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)		3459			3539	1583		3502		1770	3524	
Flt Permitted		1.00			1.00	1.00		0.63		0.35	1.00	
Satd. Flow (perm)		3459			3539	1583		2214		660	3524	
Volume (vph)	0	558	99	0	868	156	68	363	8	275	1119	32
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	607	108	0	943	170	74	395	9	299	1216	35
RTOR Reduction (vph)	0	15	0	0	0	100	0	1	0	0	2	0
Lane Group Flow (vph)	0	700	0	0	943	70	0	477	0	299	1249	0
Turn Type						Perm	Perm			pm+pt		
Protected Phases		4			8			2		1	6	
Permitted Phases						8	2			6		
Actuated Green, G (s)		41.0			41.0	41.0		36.0		51.0	51.0	
Effective Green, g (s)		41.0			41.0	41.0		36.0		51.0	51.0	
Actuated g/C Ratio		0.41			0.41	0.41		0.36		0.51	0.51	
Clearance Time (s)		4.0			4.0	4.0		4.0		4.0	4.0	
Lane Grp Cap (vph)		1418			1451	649		797		459	1797	
v/s Ratio Prot		0.20			0.27					0.07	0.35	
v/s Ratio Perm						0.04		0.22		0.26		
v/c Ratio		0.49			0.65	0.11		0.60		0.65	0.70	
Uniform Delay, d ₁		21.8			23.7	18.2		26.1		15.3	18.6	
Progression Factor		1.00			1.00	1.00		1.00		0.61	0.65	
Incremental Delay, d ₂		1.2			2.3	0.3		3.3		3.8	1.2	
Delay (s)		23.1			26.0	18.5		29.4		13.1	13.4	
Level of Service		C			C	B		C		B	B	
Approach Delay (s)		23.1			24.9			29.4			13.3	
Approach LOS		C			C			C			B	

Intersection Summary

HCM Average Control Delay	20.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

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

Total Future AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	38	770	33	17	984	42	10	3	3	26	19	31
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	41	837	36	18	1070	46	11	3	3	28	21	34
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)		301										
pX, platoon unblocked				0.86			0.86	0.86	0.86	0.86	0.86	
vC, conflicting volume	1115			873			1375	2090	436	1635	2085	379
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1115			695			1276	2104	190	1578	2098	379
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			98			81	92	100	49	49	95
cM capacity (veh/h)	622			774			57	40	708	55	40	618
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1					
Volume Total	460	454	286	535	313	17	83					
Volume Left	41	0	18	0	0	11	28					
Volume Right	0	36	0	0	46	3	34					
cSH	622	1700	774	1700	1700	63	77					
Volume to Capacity	0.07	0.27	0.02	0.31	0.18	0.28	1.08					
Queue Length 95th (ft)	5	0	2	0	0	25	149					
Control Delay (s)	1.9	0.0	0.9	0.0	0.0	83.4	220.5					
Lane LOS	A		A			F	F					
Approach Delay (s)	1.0		0.2			83.4	220.5					
Approach LOS						F	F					
Intersection Summary												
Average Delay			9.7									
Intersection Capacity Utilization			58.2%	ICU Level of Service				B				
Analysis Period (min)			15									

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

Total Future AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.97			0.97			0.99			0.99	
Flt Protected		0.98			0.99			1.00			1.00	
Satd. Flow (prot)		1770			1783			3503			3487	
Flt Permitted		0.86			0.90			0.78			0.93	
Satd. Flow (perm)		1546			1619			2735			3239	
Volume (vph)	49	55	33	28	51	22	40	399	18	33	1033	104
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	53	60	36	30	55	24	43	434	20	36	1123	113
RTOR Reduction (vph)	0	11	0	0	10	0	0	3	0	0	7	0
Lane Group Flow (vph)	0	138	0	0	99	0	0	494	0	0	1265	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		18.0			18.0			74.0			74.0	
Effective Green, g (s)		18.0			18.0			74.0			74.0	
Actuated g/C Ratio		0.18			0.18			0.74			0.74	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Lane Grp Cap (vph)		278			291			2024			2397	
v/s Ratio Prot												
v/s Ratio Perm		c0.09			0.06			0.18			c0.39	
v/c Ratio		0.49			0.34			0.24			0.53	
Uniform Delay, d1		36.9			35.8			4.1			5.5	
Progression Factor		1.01			1.00			1.00			0.26	
Incremental Delay, d2		6.2			3.2			0.3			0.7	
Delay (s)		43.5			39.0			4.4			2.1	
Level of Service		D			D			A			A	
Approach Delay (s)		43.5			39.0			4.4			2.1	
Approach LOS		D			D			A			A	

Intersection Summary

HCM Average Control Delay	7.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

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

Total Future AM

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↖↗			
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	0	373	6	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	405	7	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						299
pX, platoon unblocked						
vC, conflicting volume	409	206			412	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	409	206			412	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	571	800			1143	

Direction, Lane #	WB 1	NB 1	NB 2
Volume Total	0	270	142
Volume Left	0	0	0
Volume Right	0	0	7
cSH	1700	1700	1700
Volume to Capacity	0.00	0.16	0.08
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	
Approach LOS	A		

Intersection Summary

Average Delay	0.0		
Intersection Capacity Utilization	13.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
19: V Street & Parcel A and D

Total Future AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	7	120	4	4	177	11	9	0	14	38	0	26
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	130	4	4	192	12	10	0	15	41	0	28
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)					431							
pX, platoon unblocked												
vC, conflicting volume	204			135			383	361	133	370	357	198
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	204			135			383	361	133	370	357	198
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			98	100	98	93	100	97
cM capacity (veh/h)	1367			1450			552	561	917	573	564	843
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	142	209	25	70								
Volume Left	8	4	10	41								
Volume Right	4	12	15	28								
cSH	1367	1450	728	659								
Volume to Capacity	0.01	0.00	0.03	0.11								
Queue Length 95th (ft)	0	0	3	9								
Control Delay (s)	0.5	0.2	10.1	11.1								
Lane LOS	A	A	B	B								
Approach Delay (s)	0.5	0.2	10.1	11.1								
Approach LOS			B	B								
Intersection Summary												
Average Delay			2.5									
Intersection Capacity Utilization			23.7%		ICU Level of Service				A			
Analysis Period (min)			15									

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

Total Future PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER	SER2
Lane Configurations												
Sign Control		Stop			Stop			Stop		Stop		
Volume (vph)	13	10	2	1	13	184	10	272	6	278	236	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	11	2	1	14	200	11	296	7	302	257	10
Direction, Lane #	EB 1	WB 1	NB 1	SE 1	SE 2							
Volume Total (vph)	27	215	313	302	266							
Volume Left (vph)	14	1	11	302	0							
Volume Right (vph)	2	200	7	0	10							
Hadj (s)	0.09	-0.52	0.03	0.53	0.01							
Departure Headway (s)	6.6	5.5	5.5	6.1	5.6							
Degree Utilization, x	0.05	0.33	0.47	0.52	0.42							
Capacity (veh/h)	457	600	634	571	625							
Control Delay (s)	9.9	11.1	13.3	14.3	11.3							
Approach Delay (s)	9.9	11.1	13.3	12.9								
Approach LOS	A	B	B	B								
Intersection Summary												
Delay			12.6									
HCM Level of Service			B									
Intersection Capacity Utilization			53.5%			ICU Level of Service			A			
Analysis Period (min)			15									

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

Total Future PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	4.0
Lane Util. Factor		1.00			1.00			0.95			0.95	1.00
Frt		1.00			0.96			1.00			1.00	0.85
Flt Protected		0.98			0.99			1.00			1.00	1.00
Satd. Flow (prot)		1822			1769			3524			3522	1583
Flt Permitted		0.80			0.94			0.95			0.52	1.00
Satd. Flow (perm)		1482			1677			3345			1837	1583
Volume (vph)	120	169	5	23	100	60	8	970	26	52	483	90
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	184	5	25	109	65	9	1054	28	57	525	98
RTOR Reduction (vph)	0	1	0	0	1	0	0	1	0	0	0	73
Lane Group Flow (vph)	0	318	0	0	198	0	0	1090	0	0	582	25
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		65.0			65.0			25.0			25.0	25.0
Effective Green, g (s)		66.0			66.0			26.0			26.0	26.0
Actuated g/C Ratio		0.66			0.66			0.26			0.26	0.26
Clearance Time (s)		5.0			5.0			5.0			5.0	5.0
Lane Grp Cap (vph)		978			1107			870			478	412
v/s Ratio Prot												
v/s Ratio Perm		c0.21			0.12			c0.33			0.32	0.02
v/c Ratio		0.33			0.18			1.25			1.22	0.06
Uniform Delay, d1		7.4			6.6			37.0			37.0	27.8
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.9			0.4			123.0			115.7	0.3
Delay (s)		8.2			6.9			160.0			152.7	28.1
Level of Service		A			A			F			F	C
Approach Delay (s)		8.2			6.9			160.0			134.8	
Approach LOS		A			A			F			F	

Intersection Summary

HCM Average Control Delay	118.1	HCM Level of Service	F
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

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

Total Future PM

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

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

Total Future PM

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

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

Total Future PM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				 	 	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	1.00			0.95	0.95	
Frt	0.95			1.00	0.99	
Flt Protected	0.97			1.00	1.00	
Satd. Flow (prot)	1714			3526	3489	
Flt Permitted	0.97			0.67	1.00	
Satd. Flow (perm)	1714			2385	3489	
Volume (vph)	172	106	65	793	1214	126
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	187	115	71	862	1320	137
RTOR Reduction (vph)	22	0	0	0	8	0
Lane Group Flow (vph)	280	0	0	933	1449	0
Turn Type			D.P+P			
Protected Phases	4		3	2 3	2	
Permitted Phases			2			
Actuated Green, G (s)	14.0			74.0	54.0	
Effective Green, g (s)	14.0			74.0	54.0	
Actuated g/C Ratio	0.14			0.74	0.54	
Clearance Time (s)	4.0				4.0	
Lane Grp Cap (vph)	240			1993	1884	
v/s Ratio Prot	c0.16			c0.09	c0.42	
v/s Ratio Perm				0.25		
v/c Ratio	1.17			0.47	0.77	
Uniform Delay, d1	43.0			5.2	18.1	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	110.1			0.8	3.1	
Delay (s)	153.1			6.0	21.2	
Level of Service	F			A	C	
Approach Delay (s)	153.1			6.0	21.2	
Approach LOS	F			A	C	
Intersection Summary						
HCM Average Control Delay		30.7		HCM Level of Service		C
HCM Volume to Capacity ratio		0.76				
Actuated Cycle Length (s)		100.0		Sum of lost time (s)	12.0	
Intersection Capacity Utilization		87.4%		ICU Level of Service	E	
Analysis Period (min)		15				
c Critical Lane Group						

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

Total Future PM

	↑	↗	↖	↓	↘	↙
Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↑			↑	↘	↙
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	4.0
Lane Util. Factor	1.00			1.00	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	1863			1863	1770	1583
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	1863			1863	1770	1583
Volume (vph)	288	0	0	239	511	5
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	313	0	0	260	555	5
RTOR Reduction (vph)	0	0	0	0	0	2
Lane Group Flow (vph)	313	0	0	260	555	3
Turn Type						Perm
Protected Phases	2			6	8	
Permitted Phases						8
Actuated Green, G (s)	32.0			32.0	60.0	60.0
Effective Green, g (s)	32.0			32.0	60.0	60.0
Actuated g/C Ratio	0.32			0.32	0.60	0.60
Clearance Time (s)	4.0			4.0	4.0	4.0
Lane Grp Cap (vph)	596			596	1062	950
v/s Ratio Prot	c0.17			0.14	c0.31	
v/s Ratio Perm						0.00
v/c Ratio	0.53			0.44	0.52	0.00
Uniform Delay, d1	27.8			26.9	11.7	8.0
Progression Factor	1.54			1.00	2.54	2.70
Incremental Delay, d2	2.4			2.3	0.2	0.0
Delay (s)	45.3			29.2	29.7	21.6
Level of Service	D			C	C	C
Approach Delay (s)	45.3			29.2	29.7	
Approach LOS	D			C	C	
Intersection Summary						
HCM Average Control Delay		33.9		HCM Level of Service		C
HCM Volume to Capacity ratio		0.52				
Actuated Cycle Length (s)		100.0		Sum of lost time (s)		8.0
Intersection Capacity Utilization		50.1%		ICU Level of Service		A
Analysis Period (min)		15				
c Critical Lane Group						

Total Future PM

Synchro 6 Report
Page 6

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

Total Future PM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations					 	
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	44	179	0	1255	750	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	48	195	0	1364	815	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)					318	
pX, platoon unblocked						
vC, conflicting volume	2179	408	815			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2179	408	815			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	67	100			
cM capacity (veh/h)	39	593	808			
Direction, Lane #	EB 1	EB 2	NB 1	SB 1	SB 2	
Volume Total	48	195	1364	408	408	
Volume Left	48	0	0	0	0	
Volume Right	0	195	0	0	0	
cSH	39	593	1700	1700	1700	
Volume to Capacity	1.22	0.33	0.80	0.24	0.24	
Queue Length 95th (ft)	120	36	0	0	0	
Control Delay (s)	373.9	14.0	0.0	0.0	0.0	
Lane LOS	F	B				
Approach Delay (s)	85.0		0.0	0.0		
Approach LOS	F					

Intersection Summary

Average Delay	8.5			
Intersection Capacity Utilization	76.1%	ICU Level of Service	D	
Analysis Period (min)	15			

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

Total Future PM

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑↑			↑↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0			4.0
Lane Util. Factor	1.00		0.95			0.95
Frt	0.92		1.00			1.00
Flt Protected	0.98		1.00			1.00
Satd. Flow (prot)	1684		3539			3539
Flt Permitted	0.98		1.00			1.00
Satd. Flow (perm)	1684		3539			3539
Volume (vph)	156	202	758	0	0	857
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	170	220	824	0	0	932
RTOR Reduction (vph)	47	0	0	0	0	0
Lane Group Flow (vph)	343	0	824	0	0	932
Turn Type						
Protected Phases	3		2			2
Permitted Phases						
Actuated Green, G (s)	34.0		58.0			58.0
Effective Green, g (s)	34.0		58.0			58.0
Actuated g/C Ratio	0.34		0.58			0.58
Clearance Time (s)	4.0		4.0			4.0
Lane Grp Cap (vph)	573		2053			2053
v/s Ratio Prot	c0.20		0.23			c0.26
v/s Ratio Perm						
v/c Ratio	0.60		0.40			0.45
Uniform Delay, d1	27.3		11.5			12.0
Progression Factor	1.00		0.75			1.00
Incremental Delay, d2	4.6		0.5			0.7
Delay (s)	31.9		9.1			12.7
Level of Service	C		A			B
Approach Delay (s)	31.9		9.1			12.7
Approach LOS	C		A			B
Intersection Summary						
HCM Average Control Delay		14.8		HCM Level of Service		B
HCM Volume to Capacity ratio		0.51				
Actuated Cycle Length (s)		100.0		Sum of lost time (s)		8.0
Intersection Capacity Utilization		51.4%		ICU Level of Service		A
Analysis Period (min)		15				
c Critical Lane Group						

ALL-WAY STOP CONTROL ANALYSIS									
General Information					Site Information				
Analyst		JWW			Intersection		Florida/9th/V Streets		
Agency/Co		Wells & Associates LLC			Jurisdiction		Washington DC		
Date Performed		8/29/2006			Analysis Year		2007 TF Conditions		
Analysis Time Period		PM Peak Period							
Project ID 2799 Atlantic South (August 2006 Addendum)									
East/West Street 9th Street/V Street					North/South Street Florida/9th Street				
Volume Adjustments and Site Characteristics									
Approach		Eastbound			Westbound				
Movement		L	T	R	L	T	R		
Volume		42	105	260	101	168	28		
%Thrus Left Lane		55			50				
Approach		Northbound			Southbound				
Movement		L	T	R	L	T	R		
Volume		354	52	32	35	37	34		
%Thrus Left Lane		45			50				
		Eastbound		Westbound		Northbound		Southbound	
		L1	L2	L1	L2	L1	L2	L1	L2
Configuration		LT	TR	LTR		LT	TR	LTR	
PHF		0.90	0.90	0.90		0.90	0.90	0.90	
Flow Rate		109	341	329		418	67	116	
% Heavy Vehicles		2	2	2		2	2	2	
No. Lanes		2		1		2		1	
Geometry Group		5		4b		5		4b	
Duration, T		0.25							
Saturation Headway Adjustment Worksheet									
Prop Left-Turns		0.4	0.0	0.3		0.9	0.0	0.3	
Prop Right-Turns		0.0	0.8	0.1		0.0	0.5	0.3	
Prop Heavy Vehicle									
hLT-adj		0.5	0.5	0.2	0.2	0.5	0.5	0.2	0.2
hRT-adj		-0.7	-0.7	-0.6	-0.6	-0.7	-0.7	-0.6	-0.6
hHV-adj		1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed		8.04	8.04	8.04		8.04	8.04	8.04	
Departure Headway and Service Time									
hd initial value		3.20	3.20	3.20		3.20	3.20	3.20	
x initial		0.10	0.30	0.29		0.37	0.06	0.10	
hd final value		8.04	8.04	8.04		8.04	8.04	8.04	
x, final value		0.24	0.68	0.72		0.93	0.13	0.28	
Move-up time, m		2.3		2.3		2.3		2.3	
Service Time		5.7	4.9	5.7	4.9	5.7	4.9	5.7	4.9
Capacity and Level of Service									
		Eastbound		Westbound		Northbound		Southbound	
		L1	L2	L1	L2	L1	L2	L1	L2
Capacity		359	481	439		445	317	366	
Delay		13.30	24.07	28.66		55.66	10.98	14.84	
LOS		B	C	D		F	B	B	
Approach Delay		21.46		28.66		49.49		14.84	
LOS		C		D		E		B	
Intersection Delay		32.47							
Intersection LOS		D							

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

Total Future PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	9	117	42	18	222	73	74	26	44	33	16	32
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	127	46	20	241	79	80	28	48	36	17	35
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)					310							
pX, platoon unblocked												
vC, conflicting volume	321			173			533	529	150	552	512	281
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	321			173			533	529	150	552	512	281
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			81	94	95	91	96	95
cM capacity (veh/h)	1239			1404			417	445	896	394	455	758
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	183	340	157	88								
Volume Left	10	20	80	36								
Volume Right	46	79	48	35								
cSH	1239	1404	505	503								
Volume to Capacity	0.01	0.01	0.31	0.18								
Queue Length 95th (ft)	1	1	33	16								
Control Delay (s)	0.5	0.6	15.3	13.7								
Lane LOS	A	A	C	B								
Approach Delay (s)	0.5	0.6	15.3	13.7								
Approach LOS			C	B								
Intersection Summary												
Average Delay			5.1									
Intersection Capacity Utilization			40.4%		ICU Level of Service					A		
Analysis Period (min)			15									

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

Total Future PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↑		↑↑		↑	↑↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95	1.00		0.95		1.00	0.95	
Frt		0.98			1.00	0.85		1.00		1.00	0.99	
Flt Protected		1.00			1.00	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		3472			3539	1583		3526		1770	3510	
Flt Permitted		1.00			1.00	1.00		0.88		0.10	1.00	
Satd. Flow (perm)		3472			3539	1583		3095		186	3510	
Volume (vph)	0	785	114	0	716	207	49	938	9	274	606	35
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	853	124	0	778	225	53	1020	10	298	659	38
RTOR Reduction (vph)	0	11	0	0	0	133	0	1	0	0	4	0
Lane Group Flow (vph)	0	966	0	0	778	92	0	1082	0	298	693	0
Turn Type						Perm	Perm			pm+pt		
Protected Phases		4			8			2		1	6	
Permitted Phases						8	2			6		
Actuated Green, G (s)		41.0			41.0	41.0		36.0		51.0	51.0	
Effective Green, g (s)		41.0			41.0	41.0		36.0		51.0	51.0	
Actuated g/C Ratio		0.41			0.41	0.41		0.36		0.51	0.51	
Clearance Time (s)		4.0			4.0	4.0		4.0		4.0	4.0	
Lane Grp Cap (vph)		1424			1451	649		1114		269	1790	
v/s Ratio Prot		c0.28			0.22					c0.12	0.20	
v/s Ratio Perm						0.06		0.35		c0.44		
v/c Ratio		0.68			0.54	0.14		0.97		1.11	0.39	
Uniform Delay, d1		24.1			22.3	18.5		31.5		28.0	15.0	
Progression Factor		1.00			1.00	1.00		1.00		0.94	1.02	
Incremental Delay, d2		2.6			1.4	0.5		20.9		85.9	0.6	
Delay (s)		26.7			23.7	18.9		52.4		112.2	15.9	
Level of Service		C			C	B		D		F	B	
Approach Delay (s)		26.7			22.7			52.4			44.7	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM Average Control Delay		37.0					HCM Level of Service			D		
HCM Volume to Capacity ratio		0.90										
Actuated Cycle Length (s)		100.0					Sum of lost time (s)			8.0		
Intersection Capacity Utilization		80.8%					ICU Level of Service			D		
Analysis Period (min)		15										
c Critical Lane Group												

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

Total Future PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	78	965	24	24	879	49	10	19	4	30	11	33
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	85	1049	26	26	955	53	11	21	4	33	12	36
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)		301										
pX, platoon unblocked				0.78			0.78	0.78	0.78	0.78	0.78	
vC, conflicting volume	1009			1075			1644	2292	538	1743	2279	345
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1009			816			1544	2374	127	1671	2357	345
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	88			96			64	8	99	0	48	94
cM capacity (veh/h)	683			631			30	22	702	9	23	651
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1					
Volume Total	609	551	265	478	292	36	80					
Volume Left	85	0	26	0	0	11	33					
Volume Right	0	26	0	0	53	4	36					
cSH	683	1700	631	1700	1700	28	18					
Volume to Capacity	0.12	0.32	0.04	0.28	0.17	1.29	4.38					
Queue Length 95th (ft)	11	0	3	0	0	105	Err					
Control Delay (s)	3.2	0.0	1.6	0.0	0.0	479.6	Err					
Lane LOS	A		A			F	F					
Approach Delay (s)	1.7		0.4			479.6	Err					
Approach LOS						F	F					

Intersection Summary

Average Delay	356.5						
Intersection Capacity Utilization	64.6%		ICU Level of Service		C		
Analysis Period (min)	15						

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

Total Future PM

												
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	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.96			0.97			1.00			0.98	
Flt Protected		0.99			0.99			0.99			1.00	
Satd. Flow (prot)		1765			1789			3511			3466	
Flt Permitted		0.74			0.73			0.71			0.93	
Satd. Flow (perm)		1327			1327			2513			3234	
Volume (vph)	54	82	55	62	107	39	97	665	8	17	727	113
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	59	89	60	67	116	42	105	723	9	18	790	123
RTOR Reduction (vph)	0	15	0	0	8	0	0	1	0	0	12	0
Lane Group Flow (vph)	0	193	0	0	217	0	0	836	0	0	919	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		18.0			18.0			74.0			74.0	
Effective Green, g (s)		18.0			18.0			74.0			74.0	
Actuated g/C Ratio		0.18			0.18			0.74			0.74	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Lane Grp Cap (vph)		239			239			1860			2393	
v/s Ratio Prot												
v/s Ratio Perm		0.15			0.16			0.33			0.28	
v/c Ratio		0.81			0.91			0.45			0.38	
Uniform Delay, d1		39.3			40.2			5.1			4.7	
Progression Factor		1.01			1.00			1.00			0.41	
Incremental Delay, d2		24.7			38.4			0.8			0.4	
Delay (s)		64.5			78.5			5.9			2.3	
Level of Service		E			E			A			A	
Approach Delay (s)		64.5			78.5			5.9			2.3	
Approach LOS		E			E			A			A	
Intersection Summary												
HCM Average Control Delay		17.3										
HCM Volume to Capacity ratio		0.54										
Actuated Cycle Length (s)		100.0							8.0			
Intersection Capacity Utilization		71.1%										
Analysis Period (min)		15										
c Critical Lane Group												

[illegible]

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

Total Future PM

												
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	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.96			0.97			1.00			0.98	
Flt Protected		0.99			0.99			0.99			1.00	
Satd. Flow (prot)		1765			1789			3511			3466	
Flt Permitted		0.74			0.73			0.71			0.93	
Satd. Flow (perm)		1327			1327			2513			3234	
Volume (vph)	54	82	55	62	107	39	97	665	8	17	727	113
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	59	89	60	67	116	42	105	723	9	18	790	123
RTOR Reduction (vph)	0	15	0	0	8	0	0	1	0	0	12	0
Lane Group Flow (vph)	0	193	0	0	217	0	0	836	0	0	919	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		18.0			18.0			74.0			74.0	
Effective Green, g (s)		18.0			18.0			74.0			74.0	
Actuated g/C Ratio		0.18			0.18			0.74			0.74	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Lane Grp Cap (vph)		239			239			1860			2393	
v/s Ratio Prot												
v/s Ratio Perm		0.15			0.16			0.33			0.28	
v/c Ratio		0.81			0.91			0.45			0.38	
Uniform Delay, d1		39.3			40.2			5.1			4.7	
Progression Factor		1.01			1.00			1.00			0.41	
Incremental Delay, d2		24.7			38.4			0.8			0.4	
Delay (s)		64.5			78.5			5.9			2.3	
Level of Service		E			E			A			A	
Approach Delay (s)		64.5			78.5			5.9			2.3	
Approach LOS		E			E			A			A	
Intersection Summary												
HCM Average Control Delay		17.3										
HCM Volume to Capacity ratio		0.54										
Actuated Cycle Length (s)		100.0							8.0			
Intersection Capacity Utilization		71.1%										
Analysis Period (min)		15										
c Critical Lane Group												

Table C-1

Atlantic North

Peak Hour Intersection Levels of Service ¹ (August 2006 Addendum)

Intersection	Type of Control	<u>2007 Background Conditions</u>		<u>2007 Total Future Conditions</u>	
		PM	PM	PM	PM
Florida Avenue/Sherman Avenue/ University Dorms/Bryant Street Extension	Roundabout				
Southeastbound		C[28.3]	B[11.5]	D[46.4]	B[12.1]
Northwestbound		A[5.9]	A[6.0]	A[5.9]	A[6.1]
Southwestbound		B[12.6]	B[15.2]	B[12.7]	B[15.4]
Westbound		B[10.7]	B[13.2]	A[10.0]	B[12.6]
Southbound		<u>B[13.6]</u>	<u>B[13.1]</u>	<u>B[14.7]</u>	<u>B[13.4]</u>
Overall		B[13.5]	A[8.9]	B[16.9]	A[9.1]

Notes ¹ Analysis performed using aaSidra 2.0

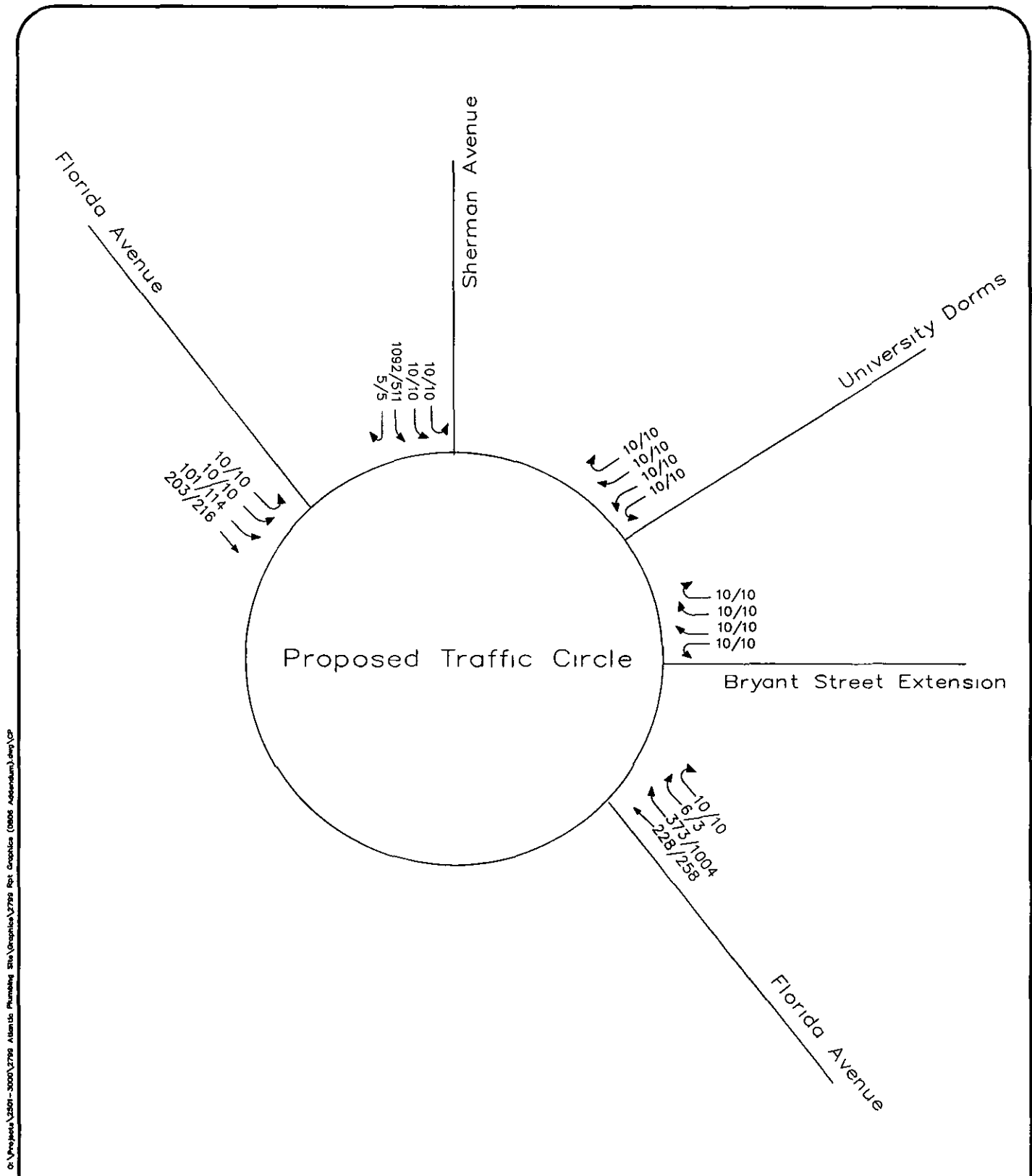
Table C-2

Atlantic South

Peak Hour Intersection Levels of Service ¹ (August 2006 Addendum)

Intersection	Type of Control	<u>2007 Background Conditions</u>		<u>2007 Total Future Conditions</u>	
		PM	PM	PM	PM
Florida Avenue/Sherman Avenue/ University Dorms/Bryant Street Extension	Roundabout				
Southeastbound		C[30.5]	B[12.2]	D[46.4]	B[12.1]
Northwestbound		A[5.9]	A[6.1]	A[5.9]	A[6.1]
Southwestbound		B[12.7]	B[15.4]	B[12.7]	B[15.4]
Westbound		A[9.9]	B[12.7]	A[10.0]	B[12.6]
Southbound		<u>B[14.0]</u>	<u>B[13.3]</u>	<u>B[14.7]</u>	<u>B[13.4]</u>
Overall		B[14.1]	A[9.1]	B[16.9]	A[9.1]

Notes ¹ Analysis performed using aaSidra 2.0



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Figure C-1
Background Traffic Circle Peak Hour Volumes
(Atlantic North - August 2006 Addendum)



G:\Projects\2501-3000\2796 Atlantic Plumbing Site\Graphics\2796 Plt Graphics (2006 Addendum).dmg\CP

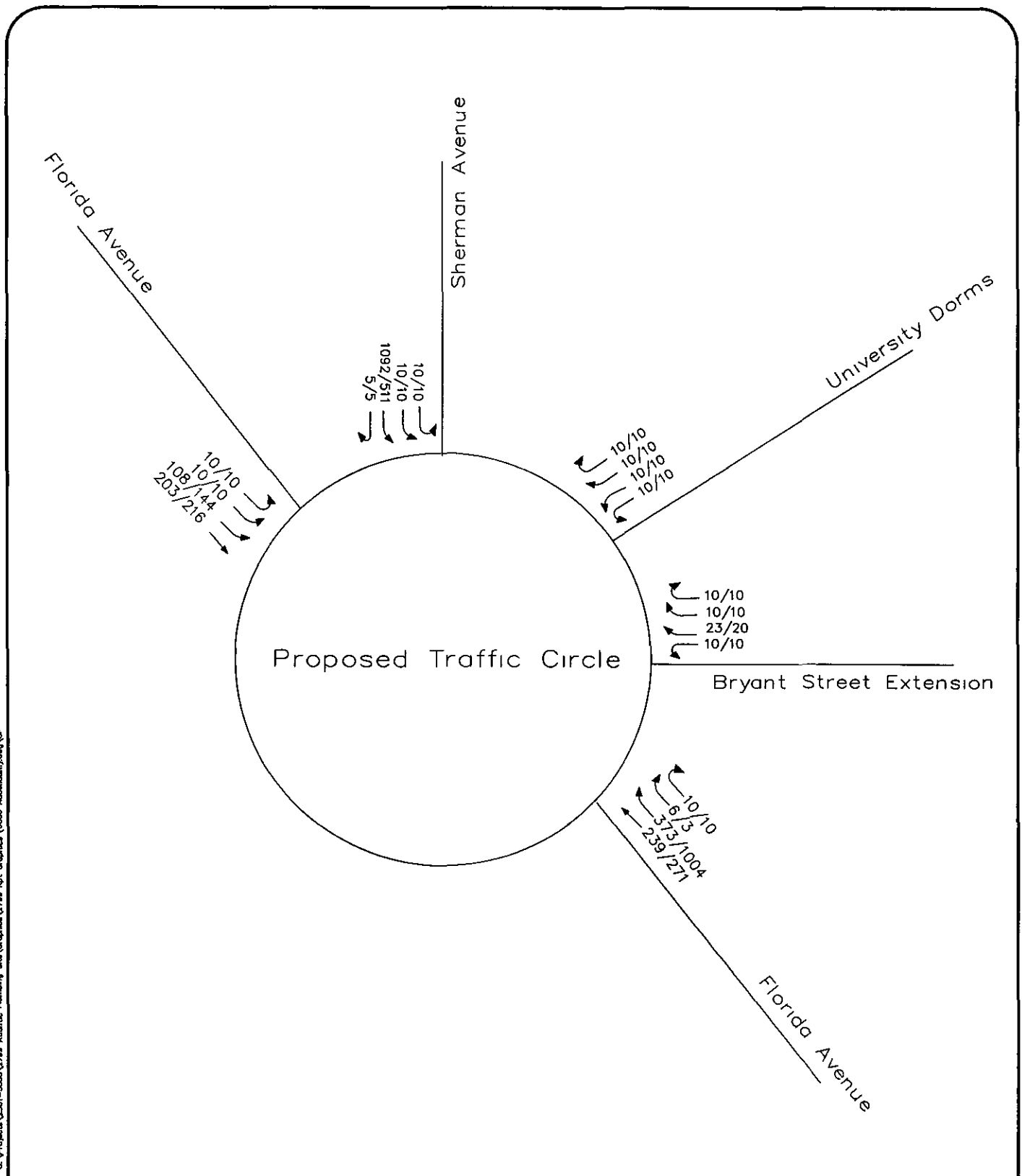


Figure C-2
Background Traffic Circle Peak Hour Volumes
(Atlantic South - August 2006 Addendum)



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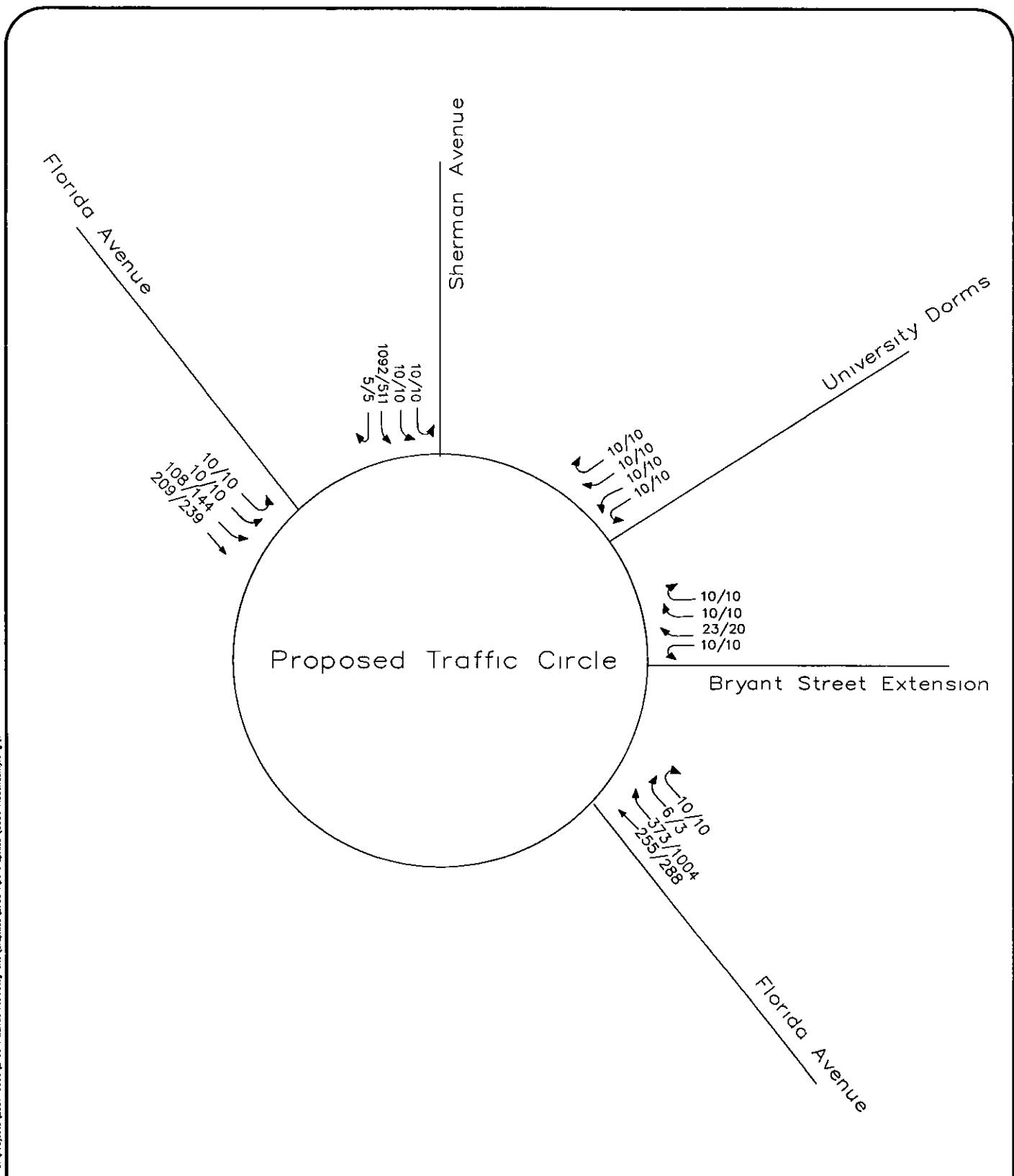


Figure C-3
Total Future Traffic Circle Peak Hour Volumes
(Atlantic North and Atlantic South – August 2006 Addendum)



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

Total Future PM

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	1	1004	3	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1	1091	3	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						299
pX, platoon unblocked						
vC, conflicting volume	1093	547			1095	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1093	547			1095	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	209	481			633	
Direction, Lane #	WB 1	NB 1	NB 2			
Volume Total	1	728	367			
Volume Left	0	0	0			
Volume Right	1	0	3			
cSH	481	1700	1700			
Volume to Capacity	0.00	0.43	0.22			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	12.5	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	12.5	0.0				
Approach LOS	B					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			37.8%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
19: V Street & Parcel A and D

Total Future PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	29	129	13	18	269	43	10	0	12	26	0	19
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	32	140	14	20	292	47	11	0	13	28	0	21
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)					430							
pX, platoon unblocked												
vC, conflicting volume	339			154			586	589	147	578	572	316
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	339			154			586	589	147	578	572	316
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 %	97			99			97	100	99	93	100	97
cM capacity (veh/h)	1220			1426			398	404	900	408	413	725
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	186	359	24	49								
Volume Left	32	20	11	28								
Volume Right	14	47	13	21								
cSH	1220	1426	572	500								
Volume to Capacity	0.03	0.01	0.04	0.10								
Queue Length 95th (ft)	2	1	3	8								
Control Delay (s)	1.6	0.5	11.6	13.0								
Lane LOS	A	A	B	B								
Approach Delay (s)	1.6	0.5	11.6	13.0								
Approach LOS			B	B								
Intersection Summary												
Average Delay			2.3									
Intersection Capacity Utilization			29.7%			ICU Level of Service			A			
Analysis Period (min)			15									

Appendix C

Updated Feasibility Analysis (Traffic Circle Analysis)

Table C-1

Atlantic North

Peak Hour Intersection Levels of Service ¹ (August 2006 Addendum)

Intersection	Type of Control	<u>2007 Background Conditions</u>		<u>2007 Total Future Conditions</u>	
		PM	PM	PM	PM
Florida Avenue/Sherman Avenue/ University Dorms/Bryant Street Extension	Roundabout				
Southeastbound		C[28.3]	B[11.5]	D[46.4]	B[12.1]
Northwestbound		A[5.9]	A[6.0]	A[5.9]	A[6.1]
Southwestbound		B[12.6]	B[15.2]	B[12.7]	B[15.4]
Westbound		B[10.7]	B[13.2]	A[10.0]	B[12.6]
Southbound		<u>B[13.6]</u>	<u>B[13.1]</u>	<u>B[14.7]</u>	<u>B[13.4]</u>
Overall		B[13.5]	A[8.9]	B[16.9]	A[9.1]

Notes

¹ Analysis performed using aaSidra 2.0

Table C-2

Atlantic South

Peak Hour Intersection Levels of Service ¹ (August 2006 Addendum)

Intersection	Type of Control	<u>2007 Background Conditions</u>		<u>2007 Total Future Conditions</u>	
		PM	PM	PM	PM
Florida Avenue/Sherman Avenue/ University Dorms/Bryant Street Extension	Roundabout				
Southeastbound		C[30.5]	B[12.2]	D[46.4]	B[12.1]
Northwestbound		A[5.9]	A[6.1]	A[5.9]	A[6.1]
Southwestbound		B[12.7]	B[15.4]	B[12.7]	B[15.4]
Westbound		A[9.9]	B[12.7]	A[10.0]	B[12.6]
Southbound		<u>B[14.0]</u>	<u>B[13.3]</u>	<u>B[14.7]</u>	<u>B[13.4]</u>
Overall		B[14.1]	A[9.1]	B[16.9]	A[9.1]

Notes

¹ Analysis performed using aaSidra 2.0

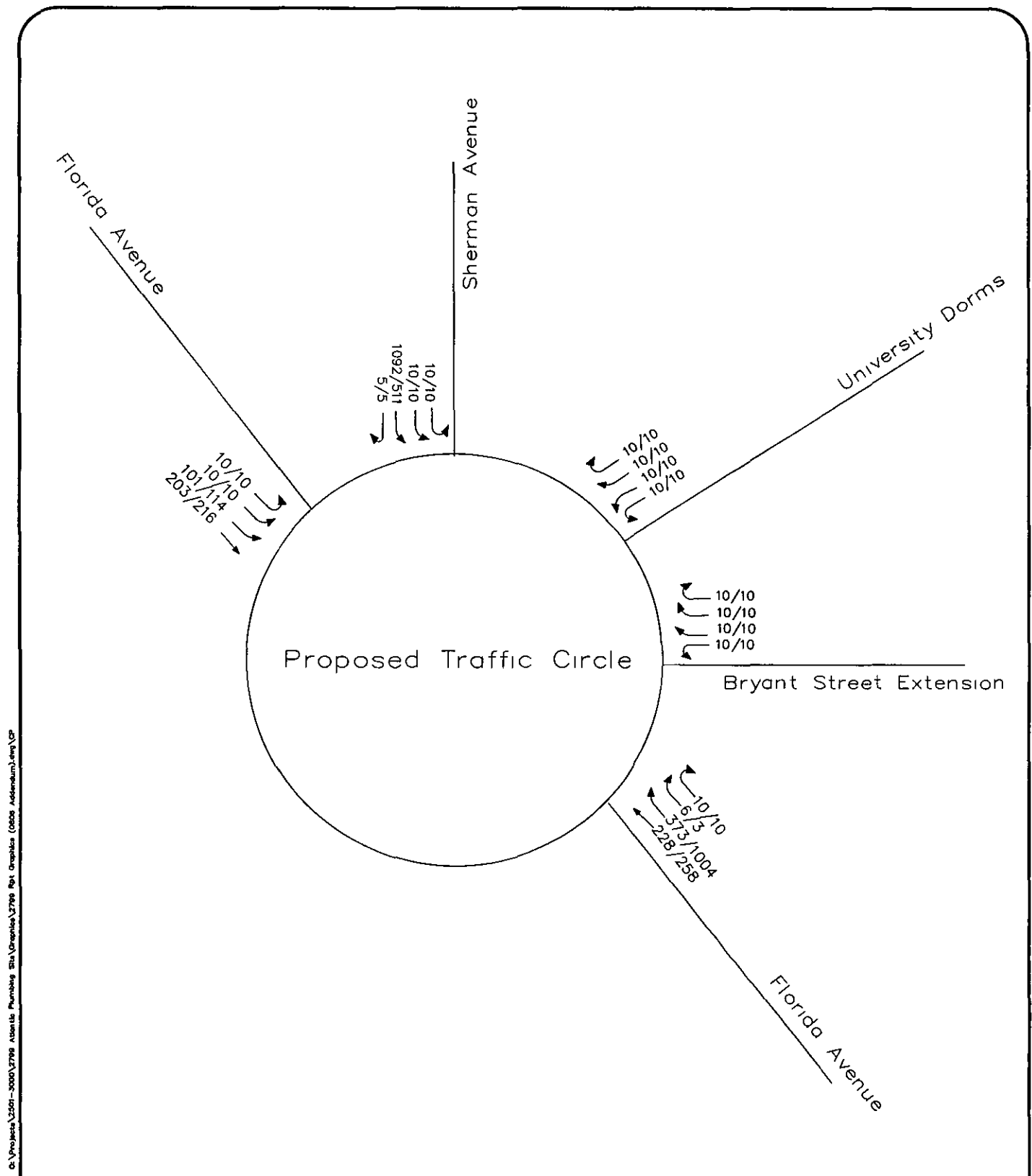
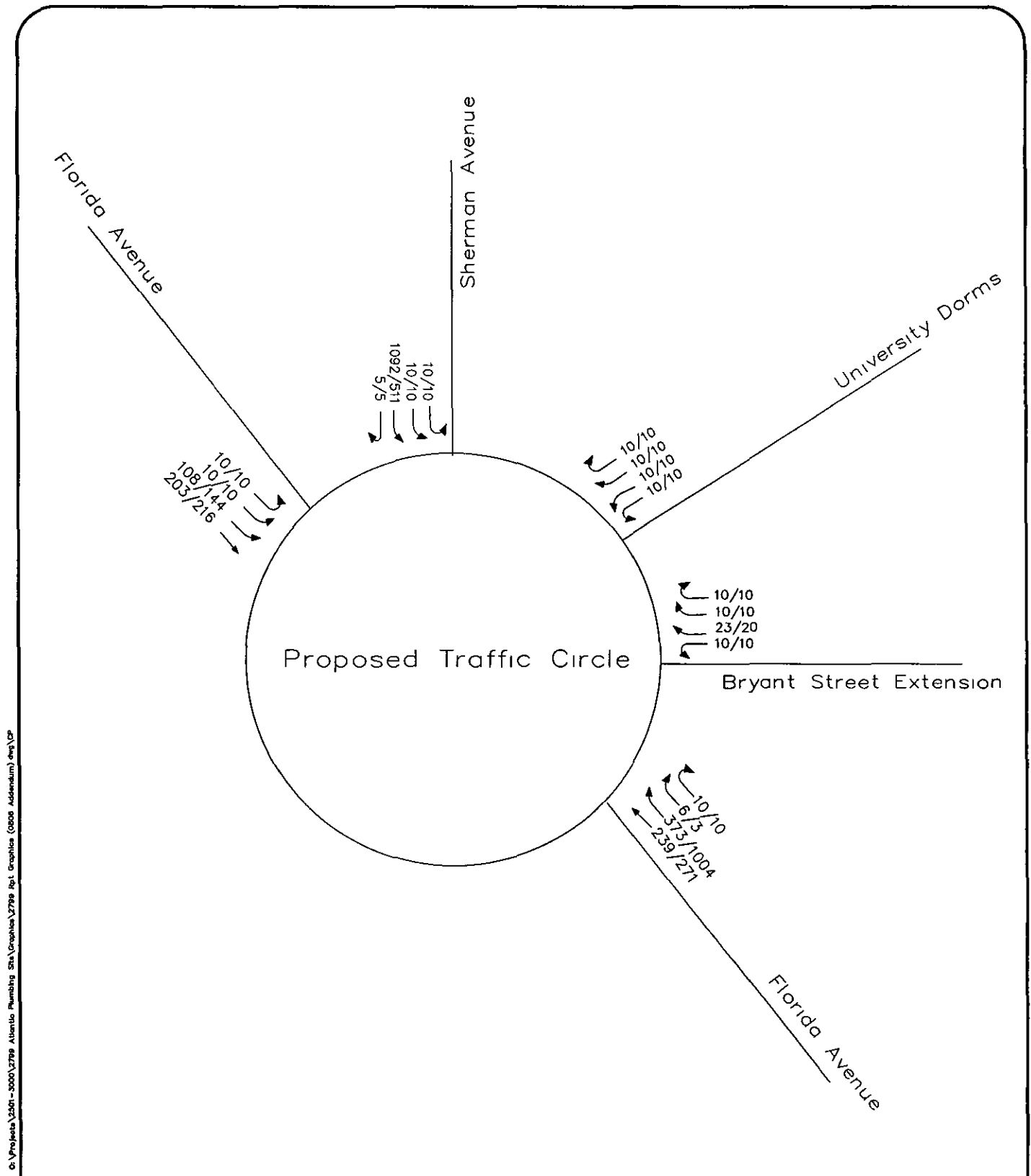


Figure C-1
Background Traffic Circle Peak Hour Volumes
(Atlantic North – August 2006 Addendum)

North
Schematic



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Figure C-2
Background Traffic Circle Peak Hour Volumes
(Atlantic South – August 2006 Addendum)

North
Schematic

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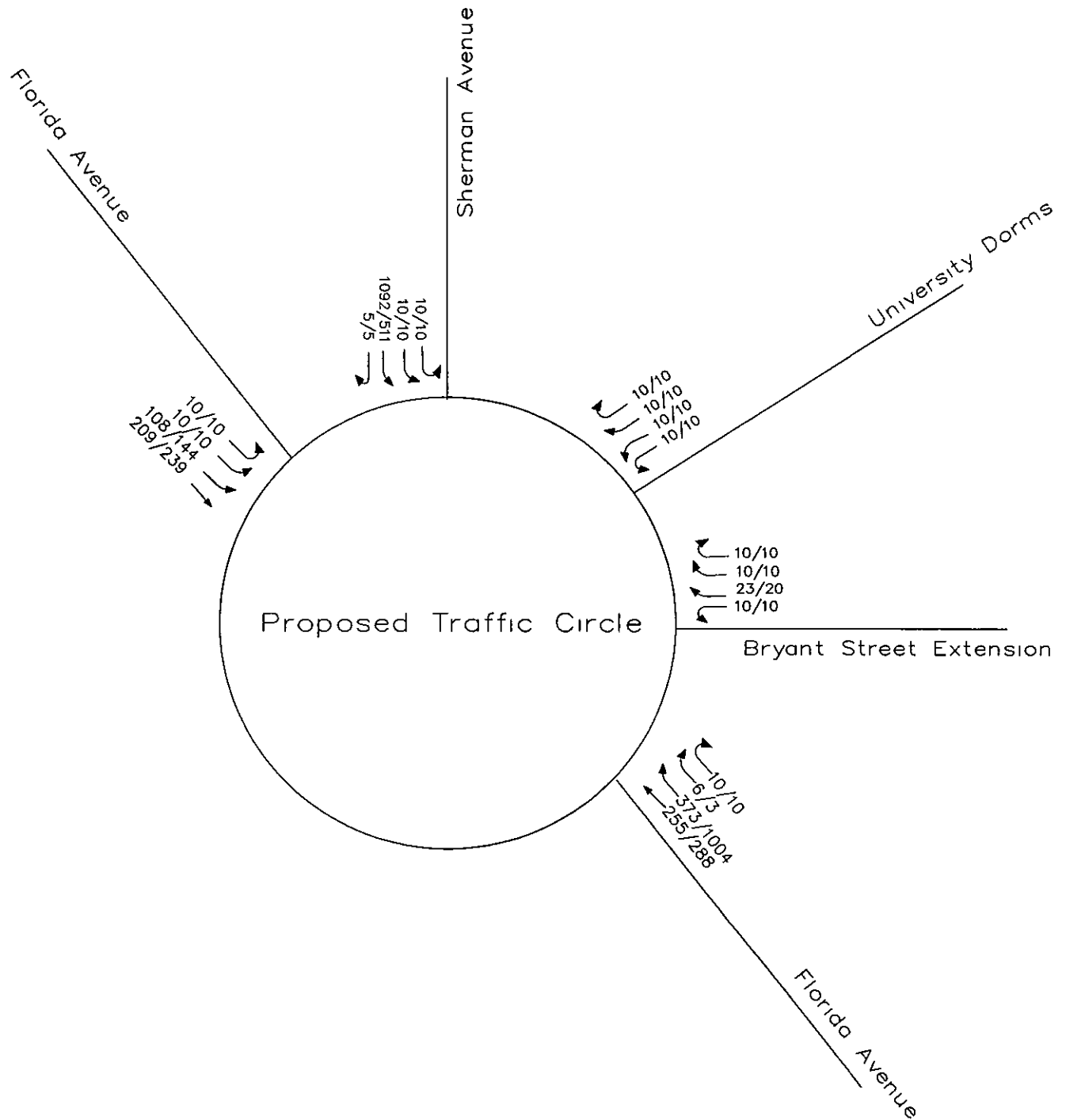


Figure C-3
Total Future Traffic Circle Peak Hour Volumes
(Atlantic North and Atlantic South - August 2006 Addendum)

N
Scheme II

Wells & Associates

Jim Watson

Registered User No. 38423

Licence Type: Professional, Multi Computer

Time and Date of Analysis 1:50 PM, Aug 29, 2006

Filename: O:\Projects\2501-3000\2799 Atlantic Plumbing Site\Analysis\August 2006 Addendum\AaSidra Analysis (8.06 Addendum)\BgAM N.OUT

Title

Subtitle

Intersection ID:

aaTraffic SIDRA US Highway Capacity Manual (2000) Version

RUN INFORMATION

* Basic Parameters:

Intersection Type: Roundabout

Driving on the right-hand side of the road

Input data specified in US units

Default Values File No. 11

Peak flow period (for performance): 30 minutes

Unit time (for volumes): 60 minutes (Total Flow Period)

Delay definition: Control delay

Geometric delay included

HCM Delay and Queue Models option selected

Level of Service based on: Delay (HCM method)

Queue definition: Back of queue, 95th Percentile

Title

Subtitle

Intersection ID:

DEFAULT PARAMETERS

Default values for some of the important general parameters:
(Default Values File: DEF11.SDF)

1. Basic saturation flow: 1900 tcu/h

This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	L E F T		T H R O U G H		R I G H T	
	LV	HV	LV	HV	LV	HV
Normal	1.053	2.000	1.000	2.000	1.176	2.000
Restricted	1.303	2.500			1.426	2.500

3. Opposed turn parameters (Roundabout)

	Crit. Gap	Fol.up Hdway	Min. Deps	% Exit Flow Opposing
Left turns :	V	V	2.5	0
Through :	V	V	2.5	0
Right turns :	V	V	2.5	0

4. Cruise speed= 40 mi/h, Approach Distance= 1800 ft

5. Queue space per vehicle in feet

Light vehicles: 25.0 Heavy vehicles: 45.0

A full list of input data defaults and ranges is given in the Input Guide part of aaSIDRA User Guide.

Title
 Subtitle
 Intersection ID:
 Roundabout

Table S.0 - TRAFFIC FLOW DATA

Mov No.	Left		Through		Right		Flow Scale	Peak Flow Factor
	LV	HV	LV	HV	LV	HV		
VEHICLES Demand flows in veh/hour as used by the program								
SouthEast: NB Florida Avenue								
72	0	0	620	13	17	1	1.00	0.95
East: Bryant Street Extension								
22	10	1	10	1	21	1	1.00	0.95
NorthEast: University Dorns								
62	21	1	0	0	21	1	1.00	0.95
North: Sherman Avenue								
42	21	1	972	20	5	1	1.00	0.95
NorthWest: SB Florida Avenue								
82	21	1	314	6	0	0	1.00	0.95

Based on unit time = 60 minutes.
 Flow Scale and Peak Hour Factor effects included in flow values.

Title
 Subtitle
 Intersection ID:
 Roundabout

Table R.0 - ROUNDABOUT BASIC PARAMETERS

Cent Island Diam (ft)	Circ Width (ft)	Insc Diam. (ft)	No.of Circ. Lanes	No.of Entry Lanes	Av.Ent Lane Width (ft)	Circulating/Exiting Stream				
						Flow (veh/ h)	%HV	Adjust. Flow (pcu/h)	%Exit Incl.	Cap. Constr. Effect
SouthEast: NB Florida Avenue										
80	30	140	2	2	15.00	159	2.0	159	0	N
East: Bryant Street Extension										
80	30	140	2	1	15.00	671	2.0	671	0	N
NorthEast: University Dorns										
80	30	140	2	1	15.00	675	2.0	675	0	N
North: Sherman Avenue										
80	30	140	2	1	15.00	293	2.0	293	0	N
NorthWest: SB Florida Avenue										
80	30	140	2	1	15.00	1044	2.0	1044	0	N

Title
 Subtitle

Roundabout

Table R.1 - ROUNDABOUT GAP ACCEPTANCE PARAMETERS

Turn	Lane No.	Lane Type	Circ/Exit Flow (pcu/h)	Intra-Bunch Headway (s)	Prop. Bunched Vehicles	Critical Gap (s)	Follow Up Headway (s)
SouthEast: NB Florida Avenue							
Thru	1	Subdominant	159	2.00	0.198	3.52	2.41
	2	Dominant	159	2.00	0.198	3.01	2.06
Right	2	Dominant	159	2.00	0.198	3.01	2.06
East: Bryant Street Extension							
Left	1	Dominant	671	1.28	0.450	3.58	2.75
Thru	1	Dominant	671	1.28	0.450	3.58	2.75
Right	1	Dominant	671	1.28	0.450	3.58	2.75
NorthEast: University Dorns							
Left	1	Dominant	675	1.28	0.451	3.57	2.75
Right	1	Dominant	675	1.28	0.451	3.57	2.75
North: Sherman Avenue							
Left	1	Dominant	293	1.37	0.243	2.95	2.08
Thru	1	Dominant	293	1.37	0.243	2.95	2.08
Right	1	Dominant	293	1.37	0.243	2.95	2.08
NorthWest: SB Florida Avenue							
Left	1	Dominant	1044	2.00	0.765	3.09	2.61
Thru	1	Dominant	1044	2.00	0.765	3.09	2.61

Title

Subtitle

Intersection ID:

Roundabout

Table R.5 - ROUNDABOUT CAPACITY & LEVEL OF SERVICE - aaSIDRA & HCM MODELS

Mov No.	Dem Flow (veh /h)	aaSIDRA					HCM 2000 Lower					HCM 2000 Upper				
		Cap. (veh /h)	Deg. Satn x	Av. Delay (sec)	LOS		Cap. (veh /h)	Deg. Satn x	Av. Delay (sec)	LOS		Cap. (veh /h)	Deg. Satn x	Av. Delay (sec)	LOS	
SouthEast: NB Florida Avenue																
72 TR	651	2808	0.232	5.9	A	-	-	-	NA	-	-	-	-	NA	-	-
		2808	0.232	5.9	A	-	-	-	NA	-	-	-	-	NA	-	-
East: Bryant Street Extension																
22 LTR	44	820	0.054	10.7	B	-	-	-	NA	-	-	-	-	NA	-	-
		820	0.054	10.7	B	-	-	-	NA	-	-	-	-	NA	-	-
NorthEast: University Dorns																
62 LR	44	836	0.053	12.6	B	-	-	-	NA	-	-	-	-	NA	-	-
		836	0.053	12.6	B	-	-	-	NA	-	-	-	-	NA	-	-
North: Sherman Avenue																
42 LTR	1020	1451	0.703	13.6	B	-	-	-	NA	-	-	-	-	NA	-	-
		1451	0.703	13.6	B	-	-	-	NA	-	-	-	-	NA	-	-

82 LT	342	467	0.732	28.3	C	-	-	-	-	NA	-	-	-	-	NA	-	-	-
		467	0.732	28.3	C	-	-	-	-	NA	-	-	-	-	NA	-	-	-
ALL VEHICLES: 6382 0.732 13.5 B - - - - NA - - - - - - - - NA - - - -																		

NA Values for this roundabout capacity model have not been calculated because the model was not applicable for the given roundabout conditions. Note that the HCM models are only applicable to single-lane roundabouts with circulating flows less than 1200 veh/h. Also note that results are not calculated for any of the models for slip lane or continuous movements. See aaSIDRA Output Guide Appendix Section A3.8 for roundabout limits.

Title
Subtitle
Intersection ID:
Roundabout

Table R.6 - ROUNDABOUT ALTERNATIVE CAPACITY MODELS

Mov No.	Dem Flow (veh /h)	aaSIDRA		NAASRA 1986		Ger. Linear		Ger. GapAcc	
		Cap. (veh /h)	Deg. Satn x	Cap. (veh /h)	% Diff from aaSIDRA	Cap. (veh /h)	% Diff from aaSIDRA	Cap. (veh /h)	% Diff from aaSIDRA

SouthEast: NB Florida Avenue									
72 TR	651	2808	0.232	3152	12.3	1300	-53.7	2217	-21.0
		2808	0.232	3152	12.3	1300	-53.7	2217	-21.0

East: Bryant Street Extension									
22 LTR	44	820	0.054	1003	22.3	877	7.0	712	-13.2
		820	0.054	1003	22.3	877	7.0	712	-13.2

NorthEast: University Dorns									
62 LR	44	836	0.053	1020	22.0	892	6.7	723	-13.5
		836	0.053	1020	22.0	892	6.7	723	-13.5

North: Sherman Avenue									
42 LTR	1020	1451	0.703	1408	-3.0	1094	-24.6	997	-31.3
		1451	0.703	1408	-3.0	1094	-24.6	997	-31.3

NorthWest: SB Florida Avenue									
82 LT	342	467	0.732	744	59.3	696	49.0	523	12.0
		467	0.732	744	59.3	696	49.0	523	12.0

ALL VEHICLES:		6382	0.732	7327	14.8	4859	-23.9	5172	-19.0

Title
Subtitle
Intersection ID:
Roundabout

Table S.2 - MOVEMENT CAPACITY PARAMETERS

Mov No.	Dem Flow	Total Opng	%HV	Adjust. Opng	Total Cap.	Prac. Deg.	Prac. Spare	Lane Util	Deg. Satn
---------	----------	------------	-----	--------------	------------	------------	-------------	-----------	-----------

	/h)	(veh/h)	(pcu/h)	/h)	xp	(%)	(%)	x
SouthEast: NB Florida Avenue								
72 TR	651	159	2.0	159	2808	0.85	267	100 0.232
East: Bryant Street Extension								
22 LTR	44	671	2.0	671	820	0.85	1484	100 0.054
NorthEast: University Dorms								
62 LR	44	675	2.0	675	836	0.85	1515	100 0.053
North: Sherman Avenue								
42 LTR	1020	293	2.0	293	1451	0.85	21	100 0.703
NorthWest: SB Florida Avenue								
82 LT	342	1044	2.0	1044	467	0.85	16	100 0.732*

Title
Subtitle
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Roundabout

Table S.3 - INTERSECTION PARAMETERS

Intersection Level of Service	=	B
Worst movement Level of Service	=	C
Average intersection delay (s)	=	13.5
Largest average movement delay (s)	=	28.3
Largest back of queue, 95% (ft)	=	188
Performance Index	=	52.78
Degree of saturation (highest)	=	0.732
Practical Spare Capacity (lowest)	=	16 %
Total vehicle capacity, all lanes (veh/h)	=	6381
Total vehicle flow (veh/h)	=	2101
Total person flow (pers/h)	=	2521
Total vehicle delay (veh-h/h)	=	7.89
Total person delay (pers-h/h)	=	9.46
Total effective vehicle stops (veh/h)	=	3102
Total effective person stops (pers/h)	=	3722
Total vehicle travel (veh-mi/h)	=	891.4
Total cost (\$/h)	=	389.64
Total fuel (ga/h)	=	44.8
Total CO2 (kg/h)	=	424.58

Title
Subtitle
Intersection ID:
Roundabout

Table S.5 - MOVEMENT PERFORMANCE

Mov No.	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue 95% Back (vehs)	Queue (ft)	Perf. Index	Aver. Speed (mph)
SouthEast: NB Florida Avenue									
72 TR	1.07	1.28	5.9	0.22	0.94	1.1	29	11.96	54.3
East: Bryant Street Extension									
22 LTR	0.13	0.16	10.7	0.42	1.36	0.2	6	0.99	49.8
NorthEast: University Dorms									
62 LR	0.15	0.18	12.6	0.43	1.45	0.2	6	1.05	48.3

Title
 Subtitle
 Intersection ID:
 Roundabout

Table S.8 - LANE FLOW AND CAPACITY INFORMATION

Lan No.	Mov No.	Dem Flow (veh/h)				Min Cap (veh /h)	Tot Cap (veh /h)	Deg. Satn x	Lane Util %	
		Lef	Thru	Rig	Tot					
SouthEast: NB Florida Avenue										
1	T	72	0	298	0	298	150	1286	0.232	100
2	TR	72	0	335	18	353	150	1522	0.232	100
East: Bryant Street Extension										
1	LTR	22	11	11	22	44	44	820	0.054	100
NorthEast: University Dorms										
1	LR	62	22	0	22	44	44	836	0.053	100
North: Sherman Avenue										
1	LTR	42	22	992	6	1020	150	1451	0.703	100
NorthWest: SB Florida Avenue										
1	LT	82	22	320	0	342	150	467	0.733	100

For roundabouts, the capacity value for continuous movements is obtained as the basic saturation flow without any adjustments. Saturation flow scale applies if specified.

Title
 Subtitle
 Intersection ID:
 Roundabout

Table S.10 - MOVEMENT CAPACITY AND PERFORMANCE SUMMARY

Mov No.	Mov Typ	Dem Flow (veh /h)	Total Cap. (veh /h)	Lane Util (%)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	95% Back of Queue (veh)	Perf. Index
SouthEast: NB Florida Avenue									
72	TR	651	2808	100	0.232	5.9	0.94	1.1	11.96
East: Bryant Street Extension									
22	LTR	44	820	100	0.054	10.7	1.36	0.2	0.99
NorthEast: University Dorns									
62	LR	44	836	100	0.053	12.6	1.45	0.2	1.05
North: Sherman Avenue									
42	LTR	1020	1451	100	0.703	13.6	1.50	6.3	25.42
NorthWest: SB Florida Avenue									
82	LT	342	467	100	0.732*	28.3	2.43	7.4	13.37

* Maximum degree of saturation

Title

Intersection ID:
Roundabout

Table S.12A - FUEL CONSUMPTION, EMISSIONS AND COST - TOTAL

Mov No.	Fuel Total gal/h	Cost Total \$/h	HC Total kg/h	CO Total kg/h	NOX Total kg/h	CO2 Total kg/h
SouthEast: NB Florida Avenue 72 TR	12.2	104.58	0.182	8.43	0.281	116.0
	12.2	104.58	0.182	8.43	0.281	116.0
East: Bryant Street Extension 22 LTR	0.9	7.74	0.014	0.71	0.022	8.7
	0.9	7.74	0.014	0.71	0.022	8.7
NorthEast: University Dorns 62 LR	1.0	8.10	0.015	0.75	0.022	9.0
	1.0	8.10	0.015	0.75	0.022	9.0
North: Sherman Avenue 42 LTR	22.6	193.43	0.365	18.18	0.535	214.4
	22.6	193.43	0.365	18.18	0.535	214.4
NorthWest: SB Florida Avenue 82 LT	8.1	75.79	0.131	6.20	0.186	76.5
	8.1	75.79	0.131	6.20	0.186	76.5
INTERSECTION:	44.8	389.64	0.708	34.27	1.047	424.6

PARAMETERS USED IN COST CALCULATIONS

Pump price of fuel (\$/US gal)	=	1.600
Fuel resource cost factor	=	0.70
Ratio of running cost to fuel cost	=	3.0
Average income (\$/h)	=	17.00
Time value factor	=	0.40
Average occupancy (persons/veh)	=	1.2
Light vehicle mass (1000 lb)	=	3.1
Heavy vehicle mass (1000 lb)	=	24.0
Light vehicle idle fuel rate (US gal/h)	=	0.360
Heavy vehicle idle fuel rate (US gal/h)	=	0.530

The idle fuel and vehicle mass parameters given above are the default values (data given in RIDES may override some of these parameters).

Title
Subtitle
Intersection ID:
Roundabout

Table S.12B - FUEL CONSUMPTION, EMISSIONS AND COST - RATE

Mov No.	Fuel Eff. mpg	Cost Rate \$/mi	HC Rate g/km	CO Rate g/km	NOX Rate g/km	CO2 Rate g/km
------------	---------------------	-----------------------	--------------------	--------------------	---------------------	---------------------

SouthEast: NB Florida Avenue						
72 TR	221.3	0.24	0.418	19.34	0.644	265.9
	221.3	0.24	0.418	19.34	0.644	265.9
East: Bryant Street Extension						
22 LTR	202.3	0.26	0.482	23.72	0.726	291.5
	202.3	0.26	0.482	23.72	0.726	291.5
NorthEast: University Dorns						
62 LR	197.4	0.27	0.502	24.85	0.743	298.4
	197.4	0.27	0.502	24.85	0.743	298.4
North: Sherman Avenue						
42 LTR	194.1	0.27	0.517	25.72	0.757	303.3
	194.1	0.27	0.517	25.72	0.757	303.3
NorthWest: SB Florida Avenue						
82 LT	178.0	0.33	0.566	26.77	0.805	330.6
	178.0	0.33	0.566	26.77	0.805	330.6
INTERSECTION:	198.9	0.27	0.494	23.89	0.730	296.0

Title
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Roundabout

Table S.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h)				%HV	Adj. Basic Satf.	Eff Grn (secs) 1st 2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (ft)	Shrt Lane (ft)
	L	T	R	Tot							
SouthEast: NB Florida Avenue											
1 T		298		298	2			0.232	5.9	28	
2 TR		335	18	353	2			0.232	5.9	29	
	0	633	18	651	2			0.232	5.9	29	
East: Bryant Street Extension											
1 LTR	11	11	22	44	7			0.054	10.7	6	
	11	11	22	44	7			0.054	10.7	6	
NorthEast: University Dorns											
1 LR	22		22	44	5			0.053	12.6	6	
	22	0	22	44	5			0.053	12.6	6	
North: Sherman Avenue											
1 LTR	22	992	6	1020	2			0.703	13.6	161	
	22	992	6	1020	2			0.703	13.6	161	
NorthWest: SB Florida Avenue											
1 LT	22	320		342	2			0.733	28.3	188	
	22	320	0	342	2			0.733	28.3	188	
ALL VEHICLES											
				Total Flow	% HV			Max X	Aver. Delay	Max Queue	
				2101	2			0.732	13.5	188	

From Approach	To Approach	Negn Radius (ft)	Negn Speed (mph)	Negn Dist. (ft)	Appr. Dist. (ft)	Downstream Distance (ft)
SouthEast: NB Florida Avenue						

East	87.1	18.7	54.5	1800	369
NorthEast	153.9	24.8	98.5	1800	405
North	153.9	24.8	131.4	1800	405

East: Bryant Street Extension

SouthEast	52.0	14.4	245.0	1800	561
NorthEast	73.2	17.1	32.8	1800	378
North	102.1	20.2	54.2	1800	378
NorthWest	153.9	24.8	98.5	1800	405

NorthEast: University Dorns

SouthEast	52.0	14.4	204.2	1800	541
East	52.0	14.4	245.0	1800	541
North	73.2	17.1	32.8	1800	378
NorthWest	102.1	20.2	54.2	1800	378

North: Sherman Avenue

SouthEast	52.0	14.4	163.4	1800	480
East	52.0	14.4	204.2	1800	541
NorthEast	52.0	14.4	245.0	1800	541
NorthWest	73.2	17.1	32.8	1800	370

NorthWest: SB Florida Avenue

SouthEast	153.9	24.8	131.4	1800	418
East	52.0	14.4	163.4	1800	418
NorthEast	52.0	14.4	204.2	1800	541
North	52.0	14.4	245.0	1800	541

Downstream distance is distance travelled from the stopline until exit cruise speed is reached (includes negotiation distance). Acceleration distance is weighted for light and heavy vehicles. The same distance applies for both stopped and unstopped vehicles.

Title
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Roundabout

Table D.1 - LANE DELAYS

Lane No.	Mov No.	Deg. Satn x	Stop-line		Delay Total dSL	Delay (seconds/veh)				Geom dig	Control dic
			1st dl	2nd d2		Acc. Dec. dn	Queuing Total MvUp dq	Stopd (Idle) di			
SouthEast: NB Florida Avenue											
1 T	72	0.232	0.5	0.0	0.5	1.6	0.0	0.0	0.0	5.4	5.9
2 TR	72	0.232	0.4	0.0	0.4	1.5	0.0	0.0	0.0	5.5	5.9
East: Bryant Street Extension											
1 LTR	22	0.054	2.0	0.0	2.0	2.4	0.0	0.0	0.0	8.7	10.7
NorthEast: University Dorns											
1 LR	62	0.053	2.0	0.0	2.0	2.2	0.0	0.0	0.0	10.6	12.6
North: Sherman Avenue											
1 LTR	42	0.703	1.3	0.4	1.7	2.2	0.0	0.0	0.0	11.9	13.6
NorthWest: SB Florida Avenue											
1 LT	82	0.733	10.0	10.8	20.8	5.0	15.9	5.2	10.6	7.5	28.3

dn is average stop-start delay for all vehicles queued and unqueued

Title
Subtitle

Table D.2 - LANE STOPS

Lane No.	Deg. Satn	-- Effective Stop Rate --				Prop. Queued	Queue Move-up
	x	he1	he2	Geom. Rate hig	Overall h	pq	Rate hqm
SouthEast: NB Florida Avenue							
1 T	0.232	0.13	0.00	0.34	0.47	0.238	0.00
2 TR	0.232	0.12	0.00	0.35	0.47	0.220	0.00
East: Bryant Street Extension							
1 LTR	0.054	0.35	0.00	0.34	0.68	0.429	0.00
NorthEast: University Dorns							
1 LR	0.053	0.35	0.00	0.38	0.72	0.430	0.00
North: Sherman Avenue							
1 LTR	0.703	0.36	0.02	0.37	0.75	0.481	0.04
NorthWest: SB Florida Avenue							
1 LT	0.733	0.83	0.29	0.09	1.22	0.832	0.83

hg is the average value for all movements in a shared lane
hqm is average queue move-up rate for all vehicles queued and unqueued

Title
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Table D.3 - LANE QUEUES

	Deg.	Ovrfl.	Average (veh)			Percentile (veh)					Queue
Lane	Satn	Queue									Stor.
No.	x	No	Nb1	Nb2	Nb	70%	85%	90%	95%	98%	Ratio
SouthEast: NB Florida Avenue											
1 T	0.232	0.0	0.4	0.0	0.4	0.7	0.8	0.9	1.1	1.3	0.02
2 TR	0.232	0.0	0.4	0.0	0.4	0.7	0.8	0.9	1.1	1.3	0.02
East: Bryant Street Extension											
1 LTR	0.054	0.0	0.1	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.00
NorthEast: University Dorns											
1 LR	0.053	0.0	0.1	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.00
North: Sherman Avenue											
1 LTR	0.703	0.1	1.8	0.2	2.1	3.6	4.4	5.1	6.3	7.4	0.09
NorthWest: SB Florida Avenue											
1 LT	0.733	1.0	1.4	1.0	2.5	4.2	5.2	5.9	7.4	8.6	0.10

Values printed in this table are back of queue (vehicles).

Title
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Roundabout

Table D.4 - MOVEMENT SPEEDS (mph)

		App. Speeds		Exit Speeds		Queue Move-up		Av. Section Spd	
Mov		-----		-----		1st	2nd	-----	
No.		Cruise	Negn	Negn	Cruise	Grn	Grn	Running	Overall

SouthEast: NB Florida Avenue									
72		40.0	24.6	24.6	40.0			33.7	33.7

East: Bryant Street Extension									
22		40.0	19.1	19.1	40.0			31.0	31.0

NorthEast: University Dorns									
62		40.0	16.5	16.5	40.0			30.0	30.0

North: Sherman Avenue									
42		40.0	14.4	14.4	40.0	29.5		29.4	29.4

NorthWest: SB Florida Avenue									
82		40.0	20.9	20.9	40.0	18.3		27.3	22.9

"Running Speed" is the average speed excluding stopped periods.

--- End of aaSIDRA Output ---

Wells & Associates

Jim Watson

Registered User No. 38423

Licence Type: Professional, Multi Computer

Time and Date of Analysis 1:51 PM, Aug 29, 2006

Filename: O:\Projects\2501-3000\2799 Atlantic Plumbing Site\Analysis\August 2006 Addendum\AaSidra Analysis (8.06 Addendum)\BgAMS.OUT

Title

Subtitle

Intersection ID:

aaTraffic SIDRA US Highway Capacity Manual (2000) Version

RUN INFORMATION

* Basic Parameters:

Intersection Type: Roundabout

Driving on the right-hand side of the road

Input data specified in US units

Default Values File No. 11

Peak flow period (for performance): 30 minutes

Unit time (for volumes): 60 minutes (Total Flow Period)

Delay definition: Control delay

Geometric delay included

HCM Delay and Queue Models option selected

Level of Service based on: Delay (HCM method)

Queue definition: Back of queue, 95th Percentile

Title

Subtitle

Intersection ID:

DEFAULT PARAMETERS

Default values for some of the important general parameters:
(Default Values File: DEF11.SDF)

1. Basic saturation flow: 1900 tcu/h

This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	L E F T		T H R O U G H		R I G H T	
	LV	HV	LV	HV	LV	HV
Normal	1.053	2.000	1.000	2.000	1.176	2.000
Restricted	1.303	2.500			1.426	2.500

3. Opposed turn parameters (Roundabout)

	Crit. Gap	Fol.up Hdway	Min. Deps	% Exit Flow Opposing
Left turns :	V	V	2.5	0
Through :	V	V	2.5	0
Right turns:	V	V	2.5	0

4. Cruise speed= 40 mi/h, Approach Distance= 1800 ft

5. Queue space per vehicle in feet

Light vehicles: 25.0 Heavy vehicles: 45.0

A full list of input data defaults and ranges is given in the
Input Guide part of aaSIDRA User Guide.

Title
Subtitle
Intersection ID:
Roundabout

Table S.0 - TRAFFIC FLOW DATA

Mov No.	Left		Through		Right		Flow Scale	Peak Flow Factor
	LV	HV	LV	HV	LV	HV		
VEHICLES Demand flows in veh/hour as used by the program								
SouthEast: NB Florida Avenue								
72	0	0	631	13	17	1	1.00	0.95
East: Bryant Street Extension								
22	10	1	24	1	21	1	1.00	0.95
NorthEast: University Dorms								
62	21	1	0	0	21	1	1.00	0.95
North: Sherman Avenue								
42	21	1	972	20	5	1	1.00	0.95
NorthWest: SB Florida Avenue								
82	21	1	321	7	0	0	1.00	0.95

Based on unit time = 60 minutes.
Flow Scale and Peak Hour Factor effects included in flow values.

Title
Subtitle
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Roundabout

Table R.0 - ROUNDABOUT BASIC PARAMETERS

Cent Island Diam (ft)	Circ Width (ft)	Insc Diam. (ft)	No.of Circ. Lanes	No.of Entry Lanes	Av.Ent Lane Width (ft)	Circulating/Exiting Stream				
						Flow (veh/ h)	%HV	Adjust. Flow (pcu/h)	%Exit Incl.	Cap. Constr. Effect
SouthEast: NB Florida Avenue										
80	30	140	2	2	15.00	166	2.0	166	0	N
East: Bryant Street Extension										
80	30	140	2	1	15.00	682	2.0	682	0	N
NorthEast: University Dorms										
80	30	140	2	1	15.00	700	2.0	700	0	N
North: Sherman Avenue										
80	30	140	2	1	15.00	318	2.0	318	0	N
NorthWest: SB Florida Avenue										
80	30	140	2	1	15.00	1044	2.0	1044	0	N

Title
Subtitle

Intersection ID:
Roundabout

Table R.1 - ROUNDABOUT GAP ACCEPTANCE PARAMETERS

Turn	Lane No.	Lane Type	Circ/Exit Flow (pcu/h)	Intra-Bunch Headway (s)	Prop. Bunched Vehicles	Critical Gap (s)	Follow Up Headway (s)
SouthEast: NB Florida Avenue							
Thru	1	Subdominant	166	2.00	0.206	3.52	2.42
	2	Dominant	166	2.00	0.206	3.03	2.08
Right	2	Dominant	166	2.00	0.206	3.03	2.08
East: Bryant Street Extension							
Left	1	Dominant	682	1.28	0.455	3.56	2.75
Thru	1	Dominant	682	1.28	0.455	3.56	2.75
Right	1	Dominant	682	1.28	0.455	3.56	2.75
NorthEast: University Dorns							
Left	1	Dominant	700	1.29	0.467	3.54	2.74
Right	1	Dominant	700	1.29	0.467	3.54	2.74
North: Sherman Avenue							
Left	1	Dominant	318	1.39	0.265	2.97	2.11
Thru	1	Dominant	318	1.39	0.265	2.97	2.11
Right	1	Dominant	318	1.39	0.265	2.97	2.11
NorthWest: SB Florida Avenue							
Left	1	Dominant	1044	2.00	0.765	3.09	2.61
Thru	1	Dominant	1044	2.00	0.765	3.09	2.61

Title
Subtitle
Intersection ID:
Roundabout

Table R.5 - ROUNDABOUT CAPACITY & LEVEL OF SERVICE - aaSIDRA & HCM MODELS

Mov No.	Dem Flow (veh /h)	aaSIDRA				HCM 2000 Lower				HCM 2000 Upper			
		Cap. (veh /h)	Deg. Satn x	Av. Delay (sec)	LOS	Cap. (veh /h)	Deg. Satn x	Av. Delay (sec)	LOS	Cap. (veh /h)	Deg. Satn x	Av. Delay (sec)	LOS
SouthEast: NB Florida Avenue													
72 TR	662	2774	0.239	5.9	A	-	-	-	NA	-	-	-	NA
		2774	0.239	5.9	A	-	-	-	NA	-	-	-	NA
East: Bryant Street Extension													
22 LTR	58	826	0.070	9.9	A	-	-	-	NA	-	-	-	NA
		826	0.070	9.9	A	-	-	-	NA	-	-	-	NA
NorthEast: University Dorns													
62 LR	44	825	0.053	12.7	B	-	-	-	NA	-	-	-	NA
		825	0.053	12.7	B	-	-	-	NA	-	-	-	NA
North: Sherman Avenue													
42 LTR	1020	1412	0.722	14.0	B	-	-	-	NA	-	-	-	NA
		1412	0.722	14.0	B	-	-	-	NA	-	-	-	NA

Northwest: SB Florida Avenue										
82 LT	350	458	0.764	30.5	C	-	-	-	NA	-
		458	0.764	30.5	C	-	-	-	NA	-
ALL VEHICLES: 6295 0.764 14.1 B - - - - NA - - - - - - - - NA - - - -										

NA Values for this roundabout capacity model have not been calculated because the model was not applicable for the given roundabout conditions. Note that the HCM models are only applicable to single-lane roundabouts with circulating flows less than 1200 veh/h. Also note that results are not calculated for any of the models for slip lane or continuous movements. See aaSIDRA Output Guide Appendix Section A3.8 for roundabout limits.

Title
Subtitle
Intersection ID:
Roundabout

Table R.6 - ROUNDABOUT ALTERNATIVE CAPACITY MODELS

Mov No.	Dem Flow (veh /h)	aaSIDRA		NAASRA 1986		Ger. Linear		Ger. GapAcc		
		Cap. (veh /h)	Deg. Satn x	Cap. (veh /h)	% Diff from aaSIDRA	Cap. (veh /h)	% Diff from aaSIDRA	Cap. (veh /h)	% Diff from aaSIDRA	
SouthEast: NB Florida Avenue										
72 TR	662	2774	0.239	3132	12.9	1297	-53.2	2205	-20.5	
		2774	0.239	3132	12.9	1297	-53.2	2205	-20.5	
East: Bryant Street Extension										
22 LTR	58	826	0.070	1006	21.8	882	6.8	713	-13.7	
		826	0.070	1006	21.8	882	6.8	713	-13.7	
NorthEast: University Dorns										
62 LR	44	825	0.053	998	21.0	879	6.5	707	-14.3	
		825	0.053	998	21.0	879	6.5	707	-14.3	
North: Sherman Avenue										
42 LTR	1020	1412	0.722	1378	-2.4	1081	-23.4	977	-30.8	
		1412	0.722	1378	-2.4	1081	-23.4	977	-30.8	
NorthWest: SB Florida Avenue										
82 LT	350	458	0.764	744	62.4	696	52.0	533	16.4	
		458	0.764	744	62.4	696	52.0	533	16.4	
ALL VEHICLES:		6295	0.764	7258	15.3	4835	-23.2	5135	-18.4	

Title
Subtitle
Intersection ID:
Roundabout

Table S.2 - MOVEMENT CAPACITY PARAMETERS

Mov No.	Dem Flow	Total Opng	%HV	Adjust. Opng	Total Cap.	Prac. Deg.	Prac. Spare	Lane Util	Deg. Satn
---------	----------	------------	-----	--------------	------------	------------	-------------	-----------	-----------

	(veh/h)	flow (veh/h)	flow (pcu/h)	(veh/h)	sat xp	cap. (%)	(%)	x
SouthEast: NB Florida Avenue								
72 TR	662	166	2.0	166	2774	0.85	256	100 0.239
East: Bryant Street Extension								
22 LTR	58	682	2.0	682	826	0.85	1111	100 0.070
NorthEast: University Dorms								
62 LR	44	700	2.0	700	825	0.85	1494	100 0.053
North: Sherman Avenue								
42 LTR	1020	318	2.0	318	1412	0.85	18	100 0.722
NorthWest: SB Florida Avenue								
82 LT	350	1044	2.0	1044	458	0.85	11	100 0.764*

Title
Subtitle
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Roundabout

Table S.3 - INTERSECTION PARAMETERS

Intersection Level of Service	=	B
Worst movement Level of Service	=	C
Average intersection delay (s)	=	14.1
Largest average movement delay (s)	=	30.5
Largest back of queue, 95% (ft)	=	207
Performance Index	=	54.86
Degree of saturation (highest)	=	0.764
Practical Spare Capacity (lowest)	=	11 %
Total vehicle capacity, all lanes (veh/h)	=	6295
Total vehicle flow (veh/h)	=	2134
Total person flow (pers/h)	=	2561
Total vehicle delay (veh-h/h)	=	8.34
Total person delay (pers-h/h)	=	10.00
Total effective vehicle stops (veh/h)	=	3238
Total effective person stops (pers/h)	=	3885
Total vehicle travel (veh-mi/h)	=	905.2
Total cost (\$/h)	=	398.06
Total fuel (ga/h)	=	45.7
Total CO2 (kg/h)	=	432.64

Title
Subtitle
Intersection ID:
Roundabout

Table S.5 - MOVEMENT PERFORMANCE

Mov No.	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue 95% Back (vehs)	Queue (ft)	Perf. Index	Aver. Speed (mph)
SouthEast: NB Florida Avenue									
72 TR	1.09	1.31	5.9	0.23	0.95	1.2	30	12.20	54.2
East: Bryant Street Extension									
22 LTR	0.16	0.19	9.9	0.43	1.35	0.3	7	1.29	50.5
NorthEast: University Dorms									
62 LR	0.16	0.19	12.7	0.43	1.46	0.2	6	1.05	48.3

North: Sherman Avenue	42 LTR	3.96	4.75	14.0	0.51	1.55	7.0	177	26.04	47.1
-----------------------	--------	------	------	------	------	------	-----	-----	-------	------

NorthWest: SB Florida Avenue	82 LT	2.97	3.56	30.5	0.83	2.53	8.1	207	14.28	35.7
------------------------------	-------	------	------	------	------	------	-----	-----	-------	------

Title
Subtitle
Intersection ID:
Roundabout

Table S.6 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (ft)	Perf. Index	Aver. Speed (mph)
SouthEast: NB Florida Avenue									
662	0.239	1.09	1.31	5.9	0.237	0.95	30	12.20	33.7
East: Bryant Street Extension									
58	0.070	0.16	0.19	9.9	0.435	1.35	7	1.29	31.4
NorthEast: University Dorms									
44	0.053	0.16	0.19	12.7	0.437	1.46	6	1.05	30.0
North: Sherman Avenue									
1020	0.722	3.96	4.75	14.0	0.516	1.55	177	26.04	29.3
NorthWest: SB Florida Avenue									
350	0.764	2.97	3.56	30.5	0.837	2.53	207	14.28	22.2
INTERSECTION (persons):									
2561	0.764		10.00	14.1	0.478	1.52		54.86	46.7

Queue values in this table are 95% back of queue (feet).

Title
Subtitle
Intersection ID:
Roundabout

Table S.7 - LANE PERFORMANCE

Lane No.	Mov No.	Dem Flow (veh/h)	Cap (veh/h)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	Queue 95% Back (vehs)	Queue (ft)	Short Lane (ft)
SouthEast: NB Florida Avenue									
1 T	72	304	1274	0.239	5.9	0.48	1.2	29	
2 TR	72	358	1500	0.239	5.9	0.47	1.2	30	
East: Bryant Street Extension									
1 LTR	22	58	826	0.070	9.9	0.67	0.3	7	
NorthEast: University Dorms									
1 LR	62	44	825	0.053	12.7	0.73	0.2	6	
North: Sherman Avenue									
1 LTR	42	1020	1412	0.722	14.0	0.78	7.0	177	
NorthWest: SB Florida Avenue									
1 LT	82	350	458	0.764	30.5	1.27	8.1	207	

Title
 Subtitle
 Intersection ID:
 Roundabout

Table S.8 - LANE FLOW AND CAPACITY INFORMATION

Lan. No.	Mov No.	Dem Flow (veh/h)				Min Cap	Tot Cap	Deg. Satn	Lane Util	
		Lef	Thru	Rig	Tot	(veh /h)	(veh /h)	x	%	
SouthEast: NB Florida Avenue										
1	T	72	0	304	0	304	150	1274	0.239	100
2	TR	72	0	340	18	358	150	1500	0.239	100
East: Bryant Street Extension										
1	LTR	22	11	25	22	58	58	826	0.070	100
NorthEast: University Dorns										
1	LR	62	22	0	22	44	44	825	0.053	100
North: Sherman Avenue										
1	LTR	42	22	992	6	1020	150	1412	0.722	100
NorthWest: SB Florida Avenue										
1	LT	82	22	328	0	350	150	458	0.764	100

For roundabouts, the capacity value for continuous movements is obtained as the basic saturation flow without any adjustments. Saturation flow scale applies if specified.

Title
 Subtitle
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 Roundabout

Table S.10 - MOVEMENT CAPACITY AND PERFORMANCE SUMMARY

Mov No.	Mov Typ	Dem Flow (veh /h)	Total Cap. (veh /h)	Lane Util (%)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	95% Back of Queue (veh)	Perf. Index
SouthEast: NB Florida Avenue									
72	TR	662	2774	100	0.239	5.9	0.95	1.2	12.20
East: Bryant Street Extension									
22	LTR	58	826	100	0.070	9.9	1.35	0.3	1.29
NorthEast: University Dorns									
62	LR	44	825	100	0.053	12.7	1.46	0.2	1.05
North: Sherman Avenue									
42	LTR	1020	1412	100	0.722	14.0	1.55	7.0	26.04
NorthWest: SB Florida Avenue									
82	LT	350	458	100	0.764*	30.5	2.53	8.1	14.28

* Maximum degree of saturation

Title

Subtitle
 Intersection ID:
 Roundabout

Table S.12A - FUEL CONSUMPTION, EMISSIONS AND COST - TOTAL

Mov No.	Fuel Total gal/h	Cost Total \$/h	HC Total kg/h	CO Total kg/h	NOX Total kg/h	CO2 Total kg/h
SouthEast: NB Florida Avenue						
72 TR	12.5	106.40	0.186	8.60	0.286	118.1
	12.5	106.40	0.186	8.60	0.286	118.1
East: Bryant Street Extension						
22 LTR	1.2	10.01	0.018	0.90	0.028	11.3
	1.2	10.01	0.018	0.90	0.028	11.3
NorthEast: University Dorns						
62 LR	1.0	8.10	0.015	0.75	0.022	9.0
	1.0	8.10	0.015	0.75	0.022	9.0
North: Sherman Avenue						
42 LTR	22.7	193.54	0.366	18.24	0.537	214.7
	22.7	193.54	0.366	18.24	0.537	214.7
NorthWest: SB Florida Avenue						
82 LT	8.4	80.00	0.137	6.42	0.193	79.6
	8.4	80.00	0.137	6.42	0.193	79.6
INTERSECTION:	45.7	398.06	0.722	34.92	1.066	432.6

PARAMETERS USED IN COST CALCULATIONS

Pump price of fuel (\$/US gal)	=	1.600
Fuel resource cost factor	=	0.70
Ratio of running cost to fuel cost	=	3.0
Average income (\$/h)	=	17.00
Time value factor	=	0.40
Average occupancy (persons/veh)	=	1.2
Light vehicle mass (1000 lb)	=	3.1
Heavy vehicle mass (1000 lb)	=	24.0
Light vehicle idle fuel rate (US gal/h)	=	0.360
Heavy vehicle idle fuel rate (US gal/h)	=	0.530

The idle fuel and vehicle mass parameters given above are the default values (data given in RIDES may override some of these parameters).

Title
 Subtitle
 Intersection ID:
 Roundabout

Table S.12B - FUEL CONSUMPTION, EMISSIONS AND COST - RATE

Mov No.	Fuel Eff. mpg	Cost Rate \$/mi	HC Rate g/km	CO Rate g/km	NOX Rate g/km	CO2 Rate g/km
------------	---------------------	-----------------------	--------------------	--------------------	---------------------	---------------------

72 TR	221.1	0.24	0.419	19.40	0.646	266.2
	221.1	0.24	0.419	19.40	0.646	266.2

East: Bryant Street Extension						
22 LTR	205.1	0.26	0.471	23.04	0.715	287.3
	205.1	0.26	0.471	23.04	0.715	287.3

NorthEast: University Dorns						
62 LR	197.3	0.27	0.503	24.87	0.744	298.6
	197.3	0.27	0.503	24.87	0.744	298.6

North: Sherman Avenue						
42 LTR	193.8	0.27	0.518	25.80	0.759	303.7
	193.8	0.27	0.518	25.80	0.759	303.7

NorthWest: SB Florida Avenue						
82 LT	175.3	0.34	0.578	27.10	0.813	335.8
	175.3	0.34	0.578	27.10	0.813	335.8

INTERSECTION:	198.2	0.27	0.496	23.97	0.732	297.0

Title
Subtitle
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Roundabout

Table S.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h)				%HV	Adj. Basic Satf.	Eff Grn (secs) 1st 2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (ft)	Shrt Lane (ft)
	L	T	R	Tot							

SouthEast: NB Florida Avenue											
1 T		304		304	2			0.239	5.9	29	
2 TR		340	18	358	2			0.239	5.9	30	

	0	644	18	662	2			0.239	5.9	30	

East: Bryant Street Extension											
1 LTR	11	25	22	58	5			0.070	9.9	7	

	11	25	22	58	5			0.070	9.9	7	

NorthEast: University Dorns											
1 LR	22		22	44	5			0.053	12.7	6	

	22	0	22	44	5			0.053	12.7	6	

North: Sherman Avenue											
1 LTR	22	992	6	1020	2			0.722	14.0	177	

	22	992	6	1020	2			0.722	14.0	177	

NorthWest: SB Florida Avenue											
1 LT	22	328		350	2			0.764	30.5	207	

	22	328	0	350	2			0.764	30.5	207	
=====											
ALL VEHICLES				Total Flow	% HV			Max X	Aver. Delay	Max Queue	
				2134	2			0.764	14.1	207	

Total flow period = 60 minutes. Peak flow period = 30 minutes.

Queue values in this table are 95% back of queue (feet).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

Title
Subtitle
Intersection ID:
Roundabout

Table S.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS
SouthEast: NB Florida Avenue		662	2774	0.239	5.9	A
72 TR		662	2774	0.239	5.9	A
East: Bryant Street Extension		58	826	0.070	9.9	A
22 LTR		58	826	0.070	9.9	A
NorthEast: University Dorms		44	825	0.053	12.7	B
62 LR		44	825	0.053	12.7	B
North: Sherman Avenue		1020	1412	0.722	14.0	B
42 LTR		1020	1412	0.722	14.0	B
NorthWest: SB Florida Avenue		350	458	0.764*	30.5	C
82 LT		350	458	0.764	30.5	C
ALL VEHICLES:		2134	6295	0.764	14.1	B

Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition used.

For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

Title
Subtitle
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Roundabout

Table D.0 - GEOMETRIC DELAY DATA

From Approach	To Approach	Negn Radius (ft)	Negn Speed (mph)	Negn Dist. (ft)	Appr. Dist. (ft)	Downstream Distance (ft)
SouthEast: NB Florida Avenue						

East	52.0	14.4	54.5	1800	369
NorthEast	87.1	18.7	54.5	1800	369
North	153.9	24.8	98.5	1800	405
NorthWest	153.9	24.8	131.4	1800	405

East: Bryant Street Extension

SouthEast	52.0	14.4	245.0	1800	561
NorthEast	73.2	17.1	32.8	1800	378
North	102.1	20.2	54.2	1800	378
NorthWest	153.9	24.8	98.5	1800	405

NorthEast: University Dorms

SouthEast	52.0	14.4	204.2	1800	541
East	52.0	14.4	245.0	1800	541
North	73.2	17.1	32.8	1800	378
NorthWest	102.1	20.2	54.2	1800	378

North: Sherman Avenue

SouthEast	52.0	14.4	163.4	1800	480
East	52.0	14.4	204.2	1800	541
NorthEast	52.0	14.4	245.0	1800	541
NorthWest	73.2	17.1	32.8	1800	370

NorthWest: SB Florida Avenue

SouthEast	153.9	24.8	131.4	1800	420
East	52.0	14.4	163.4	1800	420
NorthEast	52.0	14.4	204.2	1800	541
North	52.0	14.4	245.0	1800	541

Downstream distance is distance travelled from the stopline until exit cruise speed is reached (includes negotiation distance). Acceleration distance is weighted for light and heavy vehicles. The same distance applies for both stopped and unstopped vehicles.

Title
 Subtitle
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 Roundabout

Table D.1 - LANE DELAYS

Lane No.	Mov No.	Deg. Satn x	Stop-line		Delay Total dSL	Delay (seconds/veh)					Geom dig	Control dic
			1st d1	2nd d2		Acc. Dec. dn	Queuing dq	MvUp dqm	Stopd (Idle) di			
SouthEast: NB Florida Avenue												
1	T	72	0.239	0.5	0.0	0.5	1.6	0.0	0.0	0.0	5.4	5.9
2	TR	72	0.239	0.4	0.0	0.4	1.5	0.0	0.0	0.0	5.5	5.9
East: Bryant Street Extension												
1	LTR	22	0.070	2.0	0.0	2.0	2.5	0.0	0.0	0.0	7.9	9.9
NorthEast: University Dorms												
1	LR	62	0.053	2.0	0.0	2.0	2.2	0.0	0.0	0.0	10.6	12.7
North: Sherman Avenue												
1	LTR	42	0.722	1.5	0.6	2.1	2.3	0.0	0.0	0.0	11.9	14.0
NorthWest: SB Florida Avenue												
1	LT	82	0.764	10.1	12.9	23.0	5.0	18.0	6.1	12.0	7.6	30.5

dn is average stop-start delay for all vehicles queued and unqueued

Title
 Subtitle

Intersection ID:
Roundabout

Table D.2 - LANE STOPS

	Deg.	-- Effective	Stop	Rate --		Prop.	Queue
Lane	Satn		Geom.	Overall		Queued	Move-up
No.	x	he1	he2	hig	h	pq	Rate
							hqm

SouthEast: NB Florida Avenue							
1 T	0.239	0.14	0.00	0.33	0.48	0.246	0.00
2 TR	0.239	0.12	0.00	0.35	0.47	0.229	0.00

East: Bryant Street Extension							
1 LTR	0.070	0.36	0.00	0.31	0.67	0.435	0.00

NorthEast: University Dorms							
1 LR	0.053	0.36	0.00	0.37	0.73	0.437	0.00

North: Sherman Avenue							
1 LTR	0.722	0.40	0.03	0.35	0.78	0.516	0.06

NorthWest: SB Florida Avenue							
1 LT	0.764	0.84	0.34	0.09	1.27	0.837	0.95

hg is the average value for all movements in a shared lane

hqm is average queue move-up rate for all vehicles queued and unqueued

Title
Subtitle
Intersection ID:
Roundabout

Table D.3 - LANE QUEUES

Lane No.	Deg. Satn	Ovrfl. Queue	Average (veh)			Percentile (veh)					Queue Stor. Ratio
	x	No	Nb1	Nb2	Nb	70%	85%	90%	95%	98%	
SouthEast: NB Florida Avenue											
1 T	0.239	0.0	0.4	0.0	0.4	0.7	0.8	0.9	1.2	1.3	0.02
2 TR	0.239	0.0	0.4	0.0	0.4	0.7	0.8	0.9	1.2	1.4	0.02
East: Bryant Street Extension											
1 LTR	0.070	0.0	0.1	0.0	0.1	0.2	0.2	0.2	0.3	0.3	0.00
NorthEast: University Dorns											
1 LR	0.053	0.0	0.1	0.0	0.1	0.1	0.2	0.2	0.2	0.3	0.00
North: Sherman Avenue											
1 LTR	0.722	0.2	1.9	0.4	2.3	4.0	4.9	5.6	7.0	8.1	0.10
NorthWest: SB Florida Avenue											
1 LT	0.764	1.2	1.5	1.2	2.7	4.6	5.7	6.5	8.1	9.5	0.11

Values printed in this table are back of queue (vehicles).

Title
Subtitle
Intersection ID:
Roundabout

Table D.4 - MOVEMENT SPEEDS (mph)

Mov No.	App. Speeds		Exit Speeds		Queue Move-up		Av. Section Spd	
	-----		-----		-----		-----	
	Cruise	Negn	Negn	Cruise	1st Grn	2nd Grn	Running	Overall

SouthEast: NB Florida Avenue								
72	40.0	24.6	24.6	40.0			33.7	33.7

East: Bryant Street Extension								
22	40.0	20.5	20.5	40.0			31.4	31.4

NorthEast: University Dorms								
62	40.0	16.5	16.5	40.0			30.0	30.0

North: Sherman Avenue								
42	40.0	14.4	14.4	40.0	28.4		29.3	29.3

NorthWest: SB Florida Avenue								
82	40.0	20.8	20.8	40.0	18.3		26.9	22.2

"Running Speed" is the average speed excluding stopped periods.

--- End of aaSIDRA Output ---

Wells & Associates

Jim Watson

Registered User No. 38423

Licence Type: Professional, Multi Computer

Time and Date of Analysis 10:30 AM, Aug 29, 2006

Filename: O:\Projects\2501-3000\2799 Atlantic Plumbing Site\Analysis\August 2006 Addendum\AaSidra Analysis (8.06 Addendum)\BgPMN.OUT

Title
 Subtitle
 Intersection ID:

aaTraffic SIDRA US Highway Capacity Manual (2000) Version

RUN INFORMATION

* Basic Parameters:

Intersection Type: Roundabout
 Driving on the right-hand side of the road
 Input data specified in US units
 Default Values File No. 11
 Peak flow period (for performance): 30 minutes
 Unit time (for volumes): 60 minutes (Total Flow Period)
 Delay definition: Control delay
 Geometric delay included
 HCM Delay and Queue Models option selected
 Level of Service based on: Delay (HCM method)
 Queue definition: Back of queue, 95th Percentile

Title
 Subtitle
 Intersection ID:

DEFAULT PARAMETERS

Default values for some of the important general parameters:
 (Default Values File: DEF11.SDF)

1. Basic saturation flow: 1900 tcu/h

This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	L E F T		T H R O U G H		R I G H T	
	LV	HV	LV	HV	LV	HV
Normal	1.053	2.000	1.000	2.000	1.176	2.000
Restricted	1.303	2.500			1.426	2.500

3. Opposed turn parameters (Roundabout)

	Crit. Gap	Fol.up Hdway	Min. Deps	% Exit Flow Opposing
Left turns :	V	V	2.5	0
Through :	V	V	2.5	0
Right turns:	V	V	2.5	0

4. Cruise speed= 40 mi/h, Approach Distance= 1800 ft

5. Queue space per vehicle in feet

Light vehicles: 25.0 Heavy vehicles: 45.0

A full list of input data defaults and ranges is given in the
Input Guide part of aaSIDRA User Guide.

Title
Subtitle
Intersection ID:
Roundabout

Table S.0 - TRAFFIC FLOW DATA

Mov No.	Left		Through		Right		Flow Scale	Peak Flow Factor	
	LV	HV	LV	HV	LV	HV			
VEHICLES Demand flows in veh/hour as used by the program									
SouthEast: NB Florida Avenue									
72	0	0	1302	27	13	1	1.00	0.95	
East: Bryant Street Extension									
22	10	1	10	1	21	1	1.00	0.95	
NorthEast: University Dorms									
62	21	1	0	0	21	1	1.00	0.95	
North: Sherman Avenue									
42	21	1	527	11	10	1	1.00	0.95	
NorthWest: SB Florida Avenue									
82	21	1	340	7	0	0	1.00	0.95	

Based on unit time = 60 minutes.
Flow Scale and Peak Hour Factor effects included in flow values.

Title
Subtitle
Intersection ID:
Roundabout

Table R.0 - ROUNDABOUT BASIC PARAMETERS

Cent Island Diam (ft)	Circ Width (ft)	Insc Diam. (ft)	No.of Circ. Lanes	No.of Entry Lanes	Av.Ent Lane Width (ft)	Circulating/Exiting Stream				
						Flow (veh/ h)	%HV	Adjust. Flow (pcu/h)	%Exit Incl.	Cap. Constr. Effect
SouthEast: NB Florida Avenue										
80	30	140	2	2	15.00	173	2.0	173	0	N
East: Bryant Street Extension										
80	30	140	2	1	15.00	1363	2.0	1363	0	N
NorthEast: University Dorms										
80	30	140	2	1	15.00	1371	2.0	1371	0	N
North: Sherman Avenue										
80	30	140	2	1	15.00	324	2.0	324	0	N
NorthWest: SB Florida Avenue										
80	30	140	2	1	15.00	591	2.0	591	0	N

Title
Subtitle

Intersection ID:
Roundabout

Table R.1 - ROUNDABOUT GAP ACCEPTANCE PARAMETERS

Turn	Lane No.	Lane Type	Circ/Exit Flow (pcu/h)	Intra-Bunch Headway (s)	Prop. Bunched Vehicles	Critical Gap (s)	Follow Up Headway (s)
SouthEast: NB Florida Avenue							
Thru	1	Dominant	173	2.00	0.213	2.75	1.89
	2	Subdominant	173	2.00	0.213	3.30	2.27
Right	2	Subdominant	173	2.00	0.213	3.30	2.27
East: Bryant Street Extension							
Left	1	Dominant	1363	1.28	0.702	2.82	2.49
Thru	1	Dominant	1363	1.28	0.702	2.82	2.49
Right	1	Dominant	1363	1.28	0.702	2.82	2.49
NorthEast: University Dorns							
Left	1	Dominant	1371	1.29	0.707	2.81	2.49
Right	1	Dominant	1371	1.29	0.707	2.81	2.49
North: Sherman Avenue							
Left	1	Dominant	324	1.39	0.268	3.43	2.44
Thru	1	Dominant	324	1.39	0.268	3.43	2.44
Right	1	Dominant	324	1.39	0.268	3.43	2.44
NorthWest: SB Florida Avenue							
Left	1	Dominant	591	2.00	0.560	3.58	2.70
Thru	1	Dominant	591	2.00	0.560	3.58	2.70

Title
Subtitle
Intersection ID:
Roundabout

Table R.5 - ROUNDABOUT CAPACITY & LEVEL OF SERVICE - aaSIDRA & HCM MODELS

Mov No.	Dem Flow (veh /h)	aaSIDRA				HCM 2000 Lower				HCM 2000 Upper			
		Cap. (veh /h)	Deg. Satn x	Av. Delay (sec)	LOS	Cap. (veh /h)	Deg. Satn x	Av. Delay (sec)	LOS	Cap. (veh /h)	Deg. Satn x	Av. Delay (sec)	LOS
SouthEast: NB Florida Avenue													
72 TR	1343	3055	0.440	6.0	A	-	-	-	NA	-	-	-	NA
		3055	0.440	6.0	A	-	-	-	NA	-	-	-	NA
East: Bryant Street Extension													
22 LTR	44	593	0.074	13.2	B	-	-	-	NA	-	-	-	NA
		593	0.074	13.2	B	-	-	-	NA	-	-	-	NA
NorthEast: University Dorns													
62 LR	44	599	0.073	15.2	B	-	-	-	NA	-	-	-	NA
		599	0.073	15.2	B	-	-	-	NA	-	-	-	NA
North: Sherman Avenue													
42 LTR	571	1184	0.482	13.1	B	-	-	-	NA	-	-	-	NA
		1184	0.482	13.1	B	-	-	-	NA	-	-	-	NA

NorthWest: SB Florida Avenue										
82 LT	369	822	0.449	11.5	B	-	-	-	NA	-

		822	0.449	11.5	B	-	-	-	NA	-

ALL VEHICLES:	6253	0.482	8.9	A	-	-	-	-	NA	-

NA Values for this roundabout capacity model have not been calculated because the model was not applicable for the given roundabout conditions. Note that the HCM models are only applicable to single-lane roundabouts with circulating flows less than 1200 veh/h. Also note that results are not calculated for any of the models for slip lane or continuous movements. See aaSIDRA Output Guide Appendix Section A3.8 for roundabout limits.

Title
Subtitle
Intersection ID:
Roundabout

Table R.6 - ROUNDABOUT ALTERNATIVE CAPACITY MODELS

Mov No.	Dem Flow (veh /h)	aaSIDRA		NAASRA 1986		Ger. Linear		Ger. GapAcc		
		Cap. (veh /h)	Deg. Satn x	Cap. (veh /h)	% Diff from aaSIDRA	Cap. (veh /h)	% Diff from aaSIDRA	Cap. (veh /h)	% Diff from aaSIDRA	
SouthEast: NB Florida Avenue										
72 TR	1343	3055	0.440	3116	2.0	1293	-57.7	2192	-28.2	
		3055	0.440	3116	2.0	1293	-57.7	2192	-28.2	
East: Bryant Street Extension										
22 LTR	44	593	0.074	553	-6.7	542	-8.6	357	-39.8	
		593	0.074	553	-6.7	542	-8.6	357	-39.8	
NorthEast: University Dorns										
62 LR	44	599	0.073	561	-6.3	550	-8.2	361	-39.7	
		599	0.073	561	-6.3	550	-8.2	361	-39.7	
North: Sherman Avenue										
42 LTR	571	1184	0.482	1371	15.8	1083	-8.5	972	-17.9	
		1184	0.482	1371	15.8	1083	-8.5	972	-17.9	
NorthWest: SB Florida Avenue										
82 LT	369	822	0.449	1095	33.2	937	14.0	779	-5.2	
		822	0.449	1095	33.2	937	14.0	779	-5.2	
ALL VEHICLES:		6253	0.482	6696	7.1	4405	-29.6	4661	-25.5	

Title
Subtitle
Intersection ID:
Roundabout

Table S.2 - MOVEMENT CAPACITY PARAMETERS

Mov No.	Dem Flow	Total Opng	%HV	Adjust. Opng	Total Cap.	Prac. Deg.	Prac. Spare	Lane Util	Deg. Satn
------------	-------------	---------------	-----	-----------------	---------------	---------------	----------------	--------------	--------------

North: Sherman Avenue									
42 LTR	2.08	2.50	13.1	0.40	1.49	2.8	70	13.85	47.6
NorthWest: SB Florida Avenue									
82 LT	1.17	1.41	11.5	0.59	1.57	3.0	76	9.23	49.5

Title
Subtitle
Intersection ID:
Roundabout

Table S.6 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (ft)	Perf. Index	Aver. Speed (mph)
SouthEast: NB Florida Avenue									
1343	0.440	2.24	2.69	6.0	0.277	0.97	67	25.11	33.5
East: Bryant Street Extension									
44	0.074	0.16	0.19	13.2	0.593	1.60	8	1.11	29.7
NorthEast: University Dorms									
44	0.073	0.19	0.22	15.2	0.599	1.66	8	1.16	28.7
North: Sherman Avenue									
571	0.482	2.08	2.50	13.1	0.407	1.49	70	13.85	29.6
NorthWest: SB Florida Avenue									
369	0.449	1.17	1.41	11.5	0.597	1.57	76	9.23	30.7
INTERSECTION (persons):									
2845	0.482		7.01	8.9	0.370	1.21		50.47	51.3

Queue values in this table are 95% back of queue (feet).

Title
Subtitle
Intersection ID:
Roundabout

Table S.7 - LANE PERFORMANCE

Lane No.	Mov No.	Dem Flow (veh/h)	Cap (veh/h)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	Q u e u e 95% Back (vehs)	Short Lane (ft)
SouthEast: NB Florida Avenue								
1 T	72	738	1678	0.440	5.9	0.48	2.6	67
2 TR	72	605	1377	0.440	6.1	0.49	2.6	66
East: Bryant Street Extension								
1 LTR	22	44	593	0.074	13.2	0.80	0.3	8
NorthEast: University Dorms								
1 LR	62	44	599	0.074	15.2	0.83	0.3	8
North: Sherman Avenue								
1 LTR	42	571	1184	0.482	13.1	0.75	2.8	70
NorthWest: SB Florida Avenue								
1 LT	82	369	822	0.449	11.5	0.79	3.0	76

Title
 Subtitle
 Intersection ID:
 Roundabout

Table S.8 - LANE FLOW AND CAPACITY INFORMATION

Lan No.	Mov No.	Dem Flow (veh/h)				Min Cap	Tot Cap	Deg. Satn	Lane Util
		Lef	Thru	Rig	Tot	(veh /h)	(veh /h)	x	%
SouthEast: NB Florida Avenue									
1	T	72	0	738	0	738	150	1678	0.440 100
2	TR	72	0	591	14	605	150	1377	0.440 100
East: Bryant Street Extension									
1	LTR	22	11	11	22	44	44	593	0.074 100
NorthEast: University Dorms									
1	LR	62	22	0	22	44	44	599	0.074 100
North: Sherman Avenue									
1	LTR	42	22	538	11	571	150	1184	0.482 100
NorthWest: SB Florida Avenue									
1	LT	82	22	347	0	369	150	822	0.449 100

For roundabouts, the capacity value for continuous movements is obtained as the basic saturation flow without any adjustments. Saturation flow scale applies if specified.

Title
 Subtitle
 Intersection ID:
 Roundabout

Table S.10 - MOVEMENT CAPACITY AND PERFORMANCE SUMMARY

Mov No.	Mov Typ	Dem Flow (veh /h)	Total Cap. (veh /h)	Lane Util (%)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	95% Back of Queue (veh)	Perf. Index
SouthEast: NB Florida Avenue									
72	TR	1343	3055	100	0.440	6.0	0.97	2.6	25.11
East: Bryant Street Extension									
22	LTR	44	593	100	0.074	13.2	1.60	0.3	1.11
NorthEast: University Dorms									
62	LR	44	599	100	0.073	15.2	1.66	0.3	1.16
North: Sherman Avenue									
42	LTR	571	1184	100	0.482*	13.1	1.49	2.8	13.85
NorthWest: SB Florida Avenue									
82	LT	369	822	100	0.449	11.5	1.57	3.0	9.23

* Maximum degree of saturation

Title

Subtitle
Intersection ID:
Roundabout

Table S.12A - FUEL CONSUMPTION, EMISSIONS AND COST - TOTAL

Mov No.	Fuel Total gal/h	Cost Total \$/h	HC Total kg/h	CO Total kg/h	NOX Total kg/h	CO2 Total kg/h
SouthEast: NB Florida Avenue						
72 TR	25.4	216.15	0.379	17.68	0.586	240.7
	25.4	216.15	0.379	17.68	0.586	240.7
East: Bryant Street Extension						
22 LTR	0.9	7.92	0.015	0.73	0.022	8.9
	0.9	7.92	0.015	0.73	0.022	8.9
NorthEast: University Dorns						
62 LR	1.0	8.31	0.016	0.77	0.023	9.2
	1.0	8.31	0.016	0.77	0.023	9.2
North: Sherman Avenue						
42 LTR	12.6	108.09	0.203	10.10	0.298	119.6
	12.6	108.09	0.203	10.10	0.298	119.6
NorthWest: SB Florida Avenue						
82 LT	7.7	64.23	0.120	5.96	0.183	72.8
	7.7	64.23	0.120	5.96	0.183	72.8
INTERSECTION:	47.6	404.69	0.733	35.24	1.112	451.1

PARAMETERS USED IN COST CALCULATIONS

Pump price of fuel (\$/US gal)	=	1.600
Fuel resource cost factor	=	0.70
Ratio of running cost to fuel cost	=	3.0
Average income (\$/h)	=	17.00
Time value factor	=	0.40
Average occupancy (persons/veh)	=	1.2
Light vehicle mass (1000 lb)	=	3.1
Heavy vehicle mass (1000 lb)	=	24.0
Light vehicle idle fuel rate (US gal/h)	=	0.360
Heavy vehicle idle fuel rate (US gal/h)	=	0.530

The idle fuel and vehicle mass parameters given above are the default values (data given in RIDES may override some of these parameters).

Title
Subtitle
Intersection ID:
Roundabout

Table S.12B - FUEL CONSUMPTION, EMISSIONS AND COST - RATE

Mov No.	Fuel Eff. mpg	Cost Rate \$/mi	HC Rate g/km	CO Rate g/km	NOX Rate g/km	CO2 Rate g/km
------------	---------------------	-----------------------	--------------------	--------------------	---------------------	---------------------

SouthEast: NB Florida Avenue						
72 TR	220.0	0.24	0.421	19.64	0.651	267.5
	220.0	0.24	0.421	19.64	0.651	267.5
East: Bryant Street Extension						
22 LTR	198.3	0.27	0.495	24.52	0.744	297.3
	198.3	0.27	0.495	24.52	0.744	297.3
NorthEast: University Dorns						
62 LR	194.0	0.28	0.514	25.45	0.757	303.6
	194.0	0.28	0.514	25.45	0.757	303.6
North: Sherman Avenue						
42 LTR	194.7	0.27	0.514	25.53	0.753	302.3
	194.7	0.27	0.514	25.53	0.753	302.3
NorthWest: SB Florida Avenue						
82 LT	201.9	0.26	0.481	23.86	0.734	291.6
	201.9	0.26	0.481	23.86	0.734	291.6
INTERSECTION:	209.4	0.25	0.456	21.95	0.693	281.0

Title
Subtitle
Intersection ID:
Roundabout

Table S.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h)				%HV	Adj. Basic Satf.	Eff Grn (secs) 1st 2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (ft)	Shrt Lane (ft)
	L	T	R	Tot							
SouthEast: NB Florida Avenue											
1 T		738		738	2			0.440	5.9	67	
2 TR		591	14	605	2			0.440	6.1	66	
	0	1329	14	1343	2			0.440	6.0	67	
East: Bryant Street Extension											
1 LTR	11	11	22	44	7			0.074	13.2	8	
	11	11	22	44	7			0.074	13.2	8	
NorthEast: University Dorms											
1 LR	22		22	44	5			0.074	15.2	8	
	22	0	22	44	5			0.074	15.2	8	
North: Sherman Avenue											
1 LTR	22	538	11	571	2			0.482	13.1	70	
	22	538	11	571	2			0.482	13.1	70	
NorthWest: SB Florida Avenue											
1 LT	22	347		369	2			0.449	11.5	76	
	22	347	0	369	2			0.449	11.5	76	
ALL VEHICLES											
				Total Flow	% HV			Max X	Aver. Delay	Max Queue	
				2371	2			0.482	8.9	76	

Total flow period = 60 minutes. Peak flow period = 30 minutes.

Queue values in this table are 95% back of queue (feet).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

Title
Subtitle
Intersection ID:
Roundabout

Table S.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS
SouthEast: NB Florida Avenue						
72 TR		1343	3055	0.440	6.0	A
		1343	3055	0.440	6.0	A
East: Bryant Street Extension						
22 LTR		44	593	0.074	13.2	B
		44	593	0.074	13.2	B
NorthEast: University Dorns						
62 LR		44	599	0.073	15.2	B
		44	599	0.073	15.2	B
North: Sherman Avenue						
42 LTR		571	1184	0.482*	13.1	B
		571	1184	0.482	13.1	B
NorthWest: SB Florida Avenue						
82 LT		369	822	0.449	11.5	B
		369	822	0.449	11.5	B
ALL VEHICLES:		2371	6252	0.482	8.9	A

Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition used.

For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

Title
Subtitle
Intersection ID:
Roundabout

Table D.0 - GEOMETRIC DELAY DATA

From Approach	To Approach	Negn Radius (ft)	Negn Speed (mph)	Negn Dist. (ft)	Appr. Dist. (ft)	Downstream Distance (ft)
SouthEast: NB Florida Avenue						

NorthEast	87.1	18.7	54.5	1800	367
North	153.9	24.8	98.5	1800	405
NorthWest	153.9	24.8	131.4	1800	405

East: Bryant Street Extension

SouthEast	52.0	14.4	245.0	1800	561
NorthEast	73.2	17.1	32.8	1800	378
North	102.1	20.2	54.2	1800	378
NorthWest	153.9	24.8	98.5	1800	405

NorthEast: University Dorms

SouthEast	52.0	14.4	204.2	1800	541
East	52.0	14.4	245.0	1800	541
North	73.2	17.1	32.8	1800	378
NorthWest	102.1	20.2	54.2	1800	378

North: Sherman Avenue

SouthEast	52.0	14.4	163.4	1800	480
East	52.0	14.4	204.2	1800	541
NorthEast	52.0	14.4	245.0	1800	541
NorthWest	73.2	17.1	32.8	1800	370

NorthWest: SB Florida Avenue

SouthEast	153.9	24.8	131.4	1800	420
East	52.0	14.4	163.4	1800	420
NorthEast	52.0	14.4	204.2	1800	541
North	52.0	14.4	245.0	1800	541

Downstream distance is distance travelled from the stopline until exit cruise speed is reached (includes negotiation distance). Acceleration distance is weighted for light and heavy vehicles. The same distance applies for both stopped and unstopped vehicles.

Title
 Subtitle
 Intersection ID:
 Roundabout

Table D.1 - LANE DELAYS

Delay (seconds/veh)											
Lane No.	Mov No.	Deg.	Stop-line	Delay	Acc.	Queuing	Stopd	Geom	Control		
		Satn x	1st d1	2nd d2	Total dSL	Dec. dn	Total dq			MvUp dqm	(Idle) di
SouthEast: NB Florida Avenue											
1 T	72	0.440	0.5	0.0	0.5	1.8	0.0	0.0	0.0	5.4	5.9
2 TR	72	0.440	0.7	0.0	0.7	1.9	0.0	0.0	0.0	5.5	6.1
East: Bryant Street Extension											
1 LTR	22	0.074	4.5	0.0	4.5	3.3	1.2	0.0	1.2	8.7	13.2
NorthEast: University Dorms											
1 LR	62	0.074	4.6	0.0	4.6	3.0	1.6	0.0	1.6	10.6	15.2
North: Sherman Avenue											
1 LTR	42	0.482	1.3	0.0	1.3	1.9	0.0	0.0	0.0	11.9	13.1
NorthWest: SB Florida Avenue											
1 LT	82	0.449	3.7	0.3	3.9	3.5	0.4	0.3	0.1	7.5	11.5

dn is average stop-start delay for all vehicles queued and unqueued

Title
 Subtitle

Intersection ID:
Roundabout

Table D.2 - LANE STOPS

	Deg.	-- Effective	Stop	Rate --		Queue	
Lane	Satn		Geom.	Overall	Prop.	Move-up	
No.	x	he1	he2	hig	h	Queued	Rate
						pq	hqm
SouthEast: NB Florida Avenue							
1 T	0.440	0.15	0.00	0.33	0.48	0.265	0.00
2 TR	0.440	0.18	0.00	0.32	0.49	0.292	0.00
East: Bryant Street Extension							
1 LTR	0.074	0.56	0.00	0.24	0.80	0.593	0.00
NorthEast: University Dorms							
1 LR	0.074	0.57	0.00	0.27	0.83	0.599	0.00
North: Sherman Avenue							
1 LTR	0.482	0.32	0.00	0.43	0.75	0.407	0.00
NorthWest: SB Florida Avenue							
1 LT	0.449	0.55	0.01	0.22	0.79	0.597	0.04

hg is the average value for all movements in a shared lane

hqm is average queue move-up rate for all vehicles queued and unqueued

Title
Subtitle
Intersection ID:
Roundabout

Table D.3 - LANE QUEUES

	Deg.	Ovrfl.	Average (veh)			Percentile (veh)					Queue
Lane	Satn	Queue									Stor.
No.	x	No	Nb1	Nb2	Nb	70%	85%	90%	95%	98%	Ratio
SouthEast: NB Florida Avenue											
1 T	0.440	0.0	0.8	0.0	0.8	1.5	1.9	2.1	2.6	3.1	0.04
2 TR	0.440	0.0	0.8	0.0	0.8	1.5	1.9	2.1	2.6	3.0	0.04
East: Bryant Street Extension											
1 LTR	0.074	0.0	0.1	0.0	0.1	0.2	0.2	0.3	0.3	0.4	0.00
NorthEast: University Dorms											
1 LR	0.074	0.0	0.1	0.0	0.1	0.2	0.2	0.3	0.3	0.4	0.00
North: Sherman Avenue											
1 LTR	0.482	0.0	0.9	0.0	0.9	1.6	2.0	2.2	2.8	3.2	0.04
NorthWest: SB Florida Avenue											
1 LT	0.449	0.0	0.9	0.1	1.0	1.8	2.1	2.4	3.0	3.5	0.04

Values printed in this table are back of queue (vehicles).

Title
Subtitle
Intersection ID:
Roundabout

Table D.4 - MOVEMENT SPEEDS (mph)

Mov No.	App. Speeds		Exit Speeds		Queue Move-up		Av. Section Spd	
	Cruise	Negn	Negn	Cruise	1st Grn	2nd Grn	Running	Overall
SouthEast: NB Florida Avenue								
72	40.0	24.7	24.7	40.0			33.5	33.5
East: Bryant Street Extension								
22	40.0	19.1	19.1	40.0			30.4	29.7
NorthEast: University Dorns								
62	40.0	16.5	16.5	40.0			29.5	28.7
North: Sherman Avenue								
42	40.0	14.5	14.5	40.0			29.6	29.6
NorthWest: SB Florida Avenue								
82	40.0	20.8	20.8	40.0	21.4		30.8	30.7

"Running Speed" is the average speed excluding stopped periods.

--- End of aaSIDRA Output ---

Wells & Associates

Jim Watson . Registered User No. 38423

Licence Type: Professional, Multi Computer

Time and Date of Analysis 10:35 AM, Aug 29, 2006

Filename: O:\Projects\2501-3000\2799 Atlantic Plumbing Site\Analysis\August 2006 Addendum\AaSidra Analysis (8.06 Addendum)\BgPMS.OUT

Title

Subtitle

Intersection ID:

aaTraffic SIDRA US Highway Capacity Manual (2000) Version

RUN INFORMATION

* Basic Parameters:

Intersection Type: Roundabout

Driving on the right-hand side of the road

Input data specified in US units

Default Values File No. 11

Peak flow period (for performance): 30 minutes

Unit time (for volumes): 60 minutes (Total Flow Period)

Delay definition: Control delay

Geometric delay included

HCM Delay and Queue Models option selected

Level of Service based on: Delay (HCM method)

Queue definition: Back of queue, 95th Percentile

Title

Subtitle

Intersection ID:

DEFAULT PARAMETERS

Default values for some of the important general parameters:
(Default Values File: DEF11.SDF)

1. Basic saturation flow: 1900 tcu/h

This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	L E F T		T H R O U G H		R I G H T	
	LV	HV	LV	HV	LV	HV
Normal	1.053	2.000	1.000	2.000	1.176	2.000
Restricted	1.303	2.500			1.426	2.500

3. Opposed turn parameters (Roundabout)

	Crit.	Fol.up	Min.	% Exit Flow
	Gap	Hdway	Deps	Opposing
Left turns :	V	V	2.5	0
Through :	V	V	2.5	0
Right turns:	V	V	2.5	0

4. Cruise speed= 40 mi/h, Approach Distance= 1800 ft

5. Queue space per vehicle in feet

Light vehicles: 25.0 Heavy vehicles: 45.0

A full list of input data defaults and ranges is given in the Input Guide part of aaSIDRA User Guide.

Title
 Subtitle
 Intersection ID:
 Roundabout

Table S.0 - TRAFFIC FLOW DATA

Mov No.	Left		Through		Right		Flow Scale	Peak Flow Factor	
	LV	HV	LV	HV	LV	HV			
VEHICLES Demand flows in veh/hour as used by the program									
SouthEast: NB Florida Avenue 72	0	0	1315	27	13	1	1.00	0.95	
East: Bryant Street Extension 22	10	1	21	1	21	1	1.00	0.95	
NorthEast: University Dorms 62	21	1	0	0	21	1	1.00	0.95	
North: Sherman Avenue 42	21	1	527	11	10	1	1.00	0.95	
NorthWest: SB Florida Avenue 82	21	1	371	8	0	0	1.00	0.95	

Based on unit time = 60 minutes.
 Flow Scale and Peak Hour Factor effects included in flow values.

Title
 Subtitle
 Intersection ID:
 Roundabout

Table R.0 - ROUNDABOUT BASIC PARAMETERS

Cent Island Diam (ft)	Circ Width (ft)	Insc Diam. (ft)	No.of Circ. Lanes	No.of Entry Lanes	Av.Ent Lane Width (ft)	Circulating/Exiting Stream				
						Flow (veh/ h)	%HV	Adjust. Flow (pcu/h)	%Exit Incl.	Cap. Constr. Effect
SouthEast: NB Florida Avenue 80	30	140	2	2	15.00	204	2.0	204	0	N
East: Bryant Street Extension 80	30	140	2	1	15.00	1377	2.0	1377	0	N
NorthEast: University Dorms 80	30	140	2	1	15.00	1395	2.0	1395	0	N
North: Sherman Avenue 80	30	140	2	1	15.00	348	2.0	348	0	N
NorthWest: SB Florida Avenue 80	30	140	2	1	15.00	591	2.0	591	0	N

Title
 Subtitle

Intersection ID:
Roundabout

Table R.1 - ROUNDABOUT GAP ACCEPTANCE PARAMETERS

Turn	Lane No.	Lane Type	Circ/Exit Flow (pcu/h)	Intra-Bunch Headway (s)	Prop. Bunched Vehicles	Critical Gap (s)	Follow Up Headway (s)
SouthEast: NB Florida Avenue							
Thru	1	Dominant	204	2.00	0.247	2.76	1.91
	2	Subdominant	204	2.00	0.247	3.29	2.28
Right	2	Subdominant	204	2.00	0.247	3.29	2.28
East: Bryant Street Extension							
Left	1	Dominant	1377	1.28	0.705	2.81	2.48
Thru	1	Dominant	1377	1.28	0.705	2.81	2.48
Right	1	Dominant	1377	1.28	0.705	2.81	2.48
NorthEast: University Dorns							
Left	1	Dominant	1395	1.29	0.715	2.80	2.48
Right	1	Dominant	1395	1.29	0.715	2.80	2.48
North: Sherman Avenue							
Left	1	Dominant	348	1.40	0.287	3.47	2.48
Thru	1	Dominant	348	1.40	0.287	3.47	2.48
Right	1	Dominant	348	1.40	0.287	3.47	2.48
NorthWest: SB Florida Avenue							
Left	1	Dominant	591	2.00	0.560	3.57	2.70
Thru	1	Dominant	591	2.00	0.560	3.57	2.70

Title
Subtitle
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Roundabout

Table R.5 - ROUNDABOUT CAPACITY & LEVEL OF SERVICE - aaSIDRA & HCM MODELS

Mov No.	Dem Flow (veh /h)	aaSIDRA					HCM 2000 Lower					HCM 2000 Upper						
		Cap. (veh /h)	Deg. Satn x	Av. Delay (sec)	LOS		Cap. (veh /h)	Deg. Satn x	Av. Delay (sec)	LOS		Cap. (veh /h)	Deg. Satn x	Av. Delay (sec)	LOS			
SouthEast: NB Florida Avenue																		
72 TR	1356	2963	0.458	6.1	A	-	-	-	NA	-	-	-	-	-	NA	-	-	-
		2963	0.458	6.1	A	-	-	-	NA	-	-	-	-	-	NA	-	-	-
East: Bryant Street Extension																		
22 LTR	55	586	0.094	12.7	B	-	-	-	NA	-	-	-	-	-	NA	-	-	-
		586	0.094	12.7	B	-	-	-	NA	-	-	-	-	-	NA	-	-	-
NorthEast: University Dorns																		
62 LR	44	579	0.076	15.4	B	-	-	-	NA	-	-	-	-	-	NA	-	-	-
		579	0.076	15.4	B	-	-	-	NA	-	-	-	-	-	NA	-	-	-
North: Sherman Avenue																		
42 LTR	571	1142	0.500	13.3	B	-	-	-	NA	-	-	-	-	-	NA	-	-	-
		1142	0.500	13.3	B	-	-	-	NA	-	-	-	-	-	NA	-	-	-

NorthWest: SB Florida Avenue
 82 LT 401 822 0.488 12.2 B - - - - NA - - - - NA - - - -
 822 0.488 12.2 B - - - - NA - - - - NA - - - -
 ALL VEHICLES: 6092 0.500 9.1 A - - - - NA - - - - NA - - - -

NA Values for this roundabout capacity model have not been calculated because the model was not applicable for the given roundabout conditions. Note that the HCM models are only applicable to single-lane roundabouts with circulating flows less than 1200 veh/h. Also note that results are not calculated for any of the models for slip lane or continuous movements. See aaSIDRA Output Guide Appendix Section A3.8 for roundabout limits.

Title
 Subtitle
 Intersection ID:
 Roundabout

Table R.6 - ROUNDABOUT ALTERNATIVE CAPACITY MODELS

Mov No.	Dem Flow (veh /h)	aaSIDRA		NAASRA 1986		Ger. Linear		Ger. GapAcc		
		Cap. (veh /h)	Deg. Satn x	Cap. (veh /h)	% Diff from aaSIDRA	Cap. (veh /h)	% Diff from aaSIDRA	Cap. (veh /h)	% Diff from aaSIDRA	

SouthEast: NB Florida Avenue										
72 TR	1356	2963	0.458	3034	2.4	1277	-56.9	2139	-27.8	

		2963	0.458	3034	2.4	1277	-56.9	2139	-27.8	

East: Bryant Street Extension										
22 LTR	55	586	0.094	553	-5.6	557	-4.9	356	-39.2	

		586	0.094	553	-5.6	557	-4.9	356	-39.2	

NorthEast: University Dorns										
62 LR	44	579	0.076	549	-5.2	552	-4.7	351	-39.4	

		579	0.076	549	-5.2	552	-4.7	351	-39.4	

North: Sherman Avenue										
42 LTR	571	1142	0.500	1343	17.6	1073	-6.0	953	-16.5	

		1142	0.500	1343	17.6	1073	-6.0	953	-16.5	

NorthWest: SB Florida Avenue										
82 LT	401	822	0.488	1095	33.2	937	14.0	779	-5.2	

		822	0.488	1095	33.2	937	14.0	779	-5.2	

ALL VEHICLES:		6092	0.500	6574	7.9	4396	-27.8	4578	-24.9	

Title
 Subtitle
 Intersection ID:
 Roundabout

Table S.2 - MOVEMENT CAPACITY PARAMETERS

Mov No.	Dem Flow	Total Opng	%HV	Adjust. Opng	Total Cap.	Prac. Deg.	Prac. Spare	Lane Util	Deg. Satn
------------	-------------	---------------	-----	-----------------	---------------	---------------	----------------	--------------	--------------

North: Sherman Avenue
 42 LTR 2.11 2.53 13.3 0.43 1.52 2.9 74 13.99 47.5

NorthWest: SB Florida Avenue
 82 LT 1.35 1.63 12.2 0.61 1.63 3.5 89 10.33 48.8

Title
 Subtitle
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 Roundabout

Table S.6 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (ft)	Perf. Index	Aver. Speed (mph)
SouthEast: NB Florida Avenue									
1356	0.458	2.31	2.78	6.1	0.312	1.00	72	25.76	33.4
East: Bryant Street Extension									
55	0.094	0.19	0.23	12.7	0.600	1.61	10	1.39	30.0
NorthEast: University Dorms									
44	0.076	0.19	0.23	15.4	0.608	1.67	9	1.17	28.6
North: Sherman Avenue									
571	0.500	2.11	2.53	13.3	0.430	1.52	74	13.99	29.5
NorthWest: SB Florida Avenue									
401	0.488	1.35	1.63	12.2	0.612	1.63	89	10.33	30.3
INTERSECTION (persons):									
2912	0.500		7.39	9.1	0.401	1.25		52.64	51.0

Queue values in this table are 95% back of queue (feet).

Title
 Subtitle
 Intersection ID:
 Roundabout

Table S.7 - LANE PERFORMANCE

Lane No.	Mov No.	Dem Flow (veh /h)	Cap (veh /h)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	Q u e u e 95% Back (vehs)	Short Lane (ft)
SouthEast: NB Florida Avenue								
1 T	72	744	1625	0.458	6.0	0.49	2.8	72
2 TR	72	612	1337	0.458	6.3	0.51	2.8	71
East: Bryant Street Extension								
1 LTR	22	55	586	0.094	12.7	0.80	0.4	10
NorthEast: University Dorms								
1 LR	62	44	579	0.076	15.4	0.84	0.3	9
North: Sherman Avenue								
1 LTR	42	571	1142	0.500	13.3	0.76	2.9	74
NorthWest: SB Florida Avenue								
1 LT	82	401	822	0.488	12.2	0.81	3.5	89

Title
 Subtitle
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 Roundabout

Table S.8 - LANE FLOW AND CAPACITY INFORMATION

Lan No.	Mov No.	Dem Flow (veh/h)				Min Cap (veh /h)	Tot Cap (veh /h)	Deg. Satn x	Lane Util %	
		Lef	Thru	Rig	Tot					
SouthEast: NB Florida Avenue										
1	T	72	0	744	0	744	150	1625	0.458	100
2	TR	72	0	598	14	612	150	1337	0.458	100
East: Bryant Street Extension										
1	LTR	22	11	22	22	55	55	586	0.094	100
NorthEast: University Dorns										
1	LR	62	22	0	22	44	44	579	0.076	100
North: Sherman Avenue										
1	LTR	42	22	538	11	571	150	1142	0.500	100
NorthWest: SB Florida Avenue										
1	LT	82	22	379	0	401	150	822	0.488	100

For roundabouts, the capacity value for continuous movements is obtained as the basic saturation flow without any adjustments. Saturation flow scale applies if specified.

Title
 Subtitle
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 Roundabout

Table S.10 - MOVEMENT CAPACITY AND PERFORMANCE SUMMARY

Mov No.	Mov Typ	Dem Flow (veh /h)	Total Cap. (veh /h)	Lane Util (%)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	95% Back of Queue (veh)	Perf. Index
SouthEast: NB Florida Avenue									
72	TR	1356	2963	100	0.458	6.1	1.00	2.8	25.76
East: Bryant Street Extension									
22	LTR	55	586	100	0.094	12.7	1.61	0.4	1.39
NorthEast: University Dorns									
62	LR	44	579	100	0.076	15.4	1.67	0.3	1.17
North: Sherman Avenue									
42	LTR	571	1142	100	0.500*	13.3	1.52	2.9	13.99
NorthWest: SB Florida Avenue									
82	LT	401	822	100	0.488	12.2	1.63	3.5	10.33

* Maximum degree of saturation

Title

Subtitle
Intersection ID:
Roundabout

Table S.12A - FUEL CONSUMPTION, EMISSIONS AND COST - TOTAL

Mov No.	Fuel Total gal/h	Cost Total \$/h	HC Total kg/h	CO Total kg/h	NOX Total kg/h	CO2 Total kg/h
SouthEast: NB Florida Avenue						
72 TR	25.8	218.68	0.386	18.10	0.597	244.3
	25.8	218.68	0.386	18.10	0.597	244.3
East: Bryant Street Extension						
22 LTR	1.2	9.75	0.018	0.90	0.027	10.9
	1.2	9.75	0.018	0.90	0.027	10.9
NorthEast: University Dorns						
62 LR	1.0	8.33	0.016	0.77	0.023	9.2
	1.0	8.33	0.016	0.77	0.023	9.2
North: Sherman Avenue						
42 LTR	12.6	108.13	0.204	10.12	0.299	119.7
	12.6	108.13	0.204	10.12	0.299	119.7
NorthWest: SB Florida Avenue						
82 LT	8.5	70.90	0.133	6.59	0.201	80.1
	8.5	70.90	0.133	6.59	0.201	80.1
INTERSECTION:	49.0	415.79	0.756	36.48	1.148	464.2

PARAMETERS USED IN COST CALCULATIONS

Pump price of fuel (\$/US gal)	=	1.600
Fuel resource cost factor	=	0.70
Ratio of running cost to fuel cost	=	3.0
Average income (\$/h)	=	17.00
Time value factor	=	0.40
Average occupancy (persons/veh)	=	1.2
Light vehicle mass (1000 lb)	=	3.1
Heavy vehicle mass (1000 lb)	=	24.0
Light vehicle idle fuel rate (US gal/h)	=	0.360
Heavy vehicle idle fuel rate (US gal/h)	=	0.530

The idle fuel and vehicle mass parameters given above are the default values (data given in RIDES may override some of these parameters).

Title
Subtitle
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Roundabout

Table S.12B - FUEL CONSUMPTION, EMISSIONS AND COST - RATE

Mov No.	Fuel Eff. mpg	Cost Rate \$/mi	HC Rate g/km	CO Rate g/km	NOX Rate g/km	CO2 Rate g/km
------------	---------------------	-----------------------	--------------------	--------------------	---------------------	---------------------

SouthEast: NB Florida Avenue						
72 TR	218.9	0.24	0.424	19.92	0.657	268.9
	218.9	0.24	0.424	19.92	0.657	268.9
East: Bryant Street Extension						
22 LTR	200.2	0.26	0.488	24.09	0.737	294.3
	200.2	0.26	0.488	24.09	0.737	294.3
NorthEast: University Dorns						
62 LR	193.8	0.28	0.515	25.48	0.758	303.9
	193.8	0.28	0.515	25.48	0.758	303.9
North: Sherman Avenue						
42 LTR	194.5	0.27	0.515	25.58	0.754	302.6
	194.5	0.27	0.515	25.58	0.754	302.6
NorthWest: SB Florida Avenue						
82 LT	199.9	0.26	0.488	24.24	0.741	294.4
	199.9	0.26	0.488	24.24	0.741	294.4
INTERSECTION:	208.4	0.25	0.460	22.19	0.698	282.4

Title
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Table S.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h)				%HV	Adj. Basic Satf.	Eff Grn (secs) 1st 2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (ft)	Shrt Lane (ft)
	L	T	R	Tot							
SouthEast: NB Florida Avenue											
1 T		744		744	2			0.458	6.0	72	
2 TR		598	14	612	2			0.458	6.3	71	
	0	1342	14	1356	2			0.458	6.1	72	
East: Bryant Street Extension											
1 LTR	11	22	22	55	5			0.094	12.7	10	
	11	22	22	55	5			0.094	12.7	10	
NorthEast: University Dorms											
1 LR	22		22	44	5			0.076	15.4	9	
	22	0	22	44	5			0.076	15.4	9	
North: Sherman Avenue											
1 LTR	22	538	11	571	2			0.500	13.3	74	
	22	538	11	571	2			0.500	13.3	74	
NorthWest: SB Florida Avenue											
1 LT	22	379		401	2			0.488	12.2	89	
	22	379	0	401	2			0.488	12.2	89	
ALL VEHICLES											
				Total Flow	% HV			Max X	Aver. Delay	Max Queue	
				2427	2			0.500	9.1	89	

Total flow period = 60 minutes. Peak flow period = 30 minutes.

Queue values in this table are 95% back of queue (feet).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

Title
Subtitle
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Roundabout

Table S.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS
SouthEast: NB Florida Avenue						
72 TR		1356	2963	0.458	6.1	A
		1356	2963	0.458	6.1	A
East: Bryant Street Extension						
22 LTR		55	586	0.094	12.7	B
		55	586	0.094	12.7	B
NorthEast: University Dorms						
62 LR		44	579	0.076	15.4	B
		44	579	0.076	15.4	B
North: Sherman Avenue						
42 LTR		571	1142	0.500*	13.3	B
		571	1142	0.500	13.3	B
NorthWest: SB Florida Avenue						
82 LT		401	822	0.488	12.2	B
		401	822	0.488	12.2	B
ALL VEHICLES:						
		2427	6091	0.500	9.1	A

Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition used.

For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

Title
Subtitle
Intersection ID:
Roundabout

Table D.0 - GEOMETRIC DELAY DATA

From Approach	To Approach	Negn Radius (ft)	Negn Speed (mph)	Negn Dist. (ft)	Appr. Dist. (ft)	Downstream Distance (ft)
SouthEast: NB Florida Avenue						

East	62.7	15.8	32.8	1800	367
NorthEast	87.1	18.7	54.5	1800	367
North	153.9	24.8	98.5	1800	405
NorthWest	153.9	24.8	131.4	1800	405

East: Bryant Street Extension

SouthEast	52.0	14.4	245.0	1800	561
NorthEast	73.2	17.1	32.8	1800	378
North	102.1	20.2	54.2	1800	378
NorthWest	153.9	24.8	98.5	1800	405

NorthEast: University Dorms

SouthEast	52.0	14.4	204.2	1800	541
East	52.0	14.4	245.0	1800	541
North	73.2	17.1	32.8	1800	378
NorthWest	102.1	20.2	54.2	1800	378

North: Sherman Avenue

SouthEast	52.0	14.4	163.4	1800	480
East	52.0	14.4	204.2	1800	541
NorthEast	52.0	14.4	245.0	1800	541
NorthWest	73.2	17.1	32.8	1800	370

NorthWest: SB Florida Avenue

SouthEast	153.9	24.8	131.4	1800	425
East	52.0	14.4	163.4	1800	425
NorthEast	52.0	14.4	204.2	1800	541
North	52.0	14.4	245.0	1800	541

Downstream distance is distance travelled from the stopline until exit cruise speed is reached (includes negotiation distance). Acceleration distance is weighted for light and heavy vehicles. The same distance applies for both stopped and unstopped vehicles.

Title
 Subtitle
 Intersection ID:
 Roundabout

Table D.1 - LANE DELAYS

-----Delay (seconds/veh)-----											
Lane	Mov	Deg.	Stop-line	Delay	Acc.	Queuing	Stopd				
No.	No.	Satn	1st	2nd	Total	Dec.	Total	MvUp	(Idle)	Geom	Control
		x	dl	d2	dSL	dn	dq	dqm	di	dig	dic

SouthEast: NB Florida Avenue											
1 T	72	0.458	0.6	0.0	0.6	2.0	0.0	0.0	0.0	5.4	6.0
2 TR	72	0.458	0.8	0.0	0.8	2.2	0.0	0.0	0.0	5.5	6.3

East: Bryant Street Extension											
1 LTR	22	0.094	4.6	0.0	4.6	3.5	1.1	0.0	1.1	8.1	12.7

NorthEast: University Dorms											
1 LR	62	0.076	4.8	0.0	4.8	3.1	1.7	0.0	1.7	10.6	15.4

North: Sherman Avenue											
1 LTR	42	0.500	1.4	0.0	1.4	2.0	0.0	0.0	0.0	11.9	13.3

NorthWest: SB Florida Avenue											
1 LT	82	0.488	3.8	0.6	4.3	3.6	0.8	0.5	0.3	7.8	12.2

dn is average stop-start delay for all vehicles queued and unqueued

Title
 Subtitle

Intersection ID:
Roundabout

Table D.2 - LANE STOPS

	Deg.	-- Effective	Stop	Rate --		Prop.	Queue
Lane	Satn		Geom.	Overall		Queued	Move-up
No.	x	he1	he2	hig	h	pg	Rate
						hqm	
SouthEast: NB Florida Avenue							
1 T	0.458	0.18	0.00	0.31	0.49	0.299	0.00
2 TR	0.458	0.21	0.00	0.30	0.51	0.327	0.00
East: Bryant Street Extension							
1 LTR	0.094	0.58	0.00	0.22	0.80	0.600	0.00
NorthEast: University Dorms							
1 LR	0.076	0.58	0.00	0.26	0.84	0.608	0.00
North: Sherman Avenue							
1 LTR	0.500	0.35	0.00	0.41	0.76	0.430	0.00
NorthWest: SB Florida Avenue							
1 LT	0.488	0.57	0.03	0.22	0.81	0.612	0.07

hg is the average value for all movements in a shared lane

hqm is average queue move-up rate for all vehicles queued and unqueued

Title
Subtitle
Intersection ID:
Roundabout

Table D.3 - LANE QUEUES

Lane No.	Deg. Satn	Ovrfl. Queue	Average (veh)			Percentile (veh)					Queue Stor. Ratio
	x	No	Nb1	Nb2	Nb	70%	85%	90%	95%	98%	
SouthEast: NB Florida Avenue											
1 T	0.458	0.0	0.9	0.0	0.9	1.7	2.0	2.3	2.8	3.3	0.04
2 TR	0.458	0.0	0.9	0.0	0.9	1.6	2.0	2.2	2.8	3.2	0.04
East: Bryant Street Extension											
1 LTR	0.094	0.0	0.1	0.0	0.1	0.2	0.3	0.3	0.4	0.5	0.01
NorthEast: University Dorms											
1 LR	0.076	0.0	0.1	0.0	0.1	0.2	0.2	0.3	0.3	0.4	0.00
North: Sherman Avenue											
1 LTR	0.500	0.0	0.9	0.0	0.9	1.7	2.1	2.3	2.9	3.4	0.04
NorthWest: SB Florida Avenue											
1 LT	0.488	0.1	1.0	0.1	1.1	2.0	2.5	2.8	3.5	4.1	0.05

Values printed in this table are back of queue (vehicles).

Title
Subtitle
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Roundabout

Table D.4 - MOVEMENT SPEEDS (mph)

Mov No.	App. Speeds		Exit Speeds		Queue Move-up		Av. Section Spd	
	Cruise	Negn	Negn	Cruise	1st Grn	2nd Grn	Running	Overall

SouthEast: NB Florida Avenue								
72	40.0	24.7	24.7	40.0			33.4	33.4

East: Bryant Street Extension								
22	40.0	20.3	20.3	40.0			30.7	30.0

NorthEast: University Dorms								
62	40.0	16.5	16.5	40.0			29.5	28.6

North: Sherman Avenue								
42	40.0	14.5	14.5	40.0			29.5	29.5

NorthWest: SB Florida Avenue								
82	40.0	20.3	20.3	40.0	21.5		30.5	30.3

"Running Speed" is the average speed excluding stopped periods.

--- End of aaSIDRA Output ---

Wells & Associates

Jim Watson

Registered User No. 38423

Licence Type: Professional, Multi Computer

Time and Date of Analysis 1:51 PM, Aug 29,2006

Filename: O:\Projects\2501-3000\2799 Atlantic Plumbing Site\Analysis\August 2006 Addendum\AaSidra Analysis (8.06 Addendum)\TfAM.OUT

Title

Subtitle

Intersection ID:

aaTraffic SIDRA US Highway Capacity Manual (2000) Version

RUN INFORMATION

* Basic Parameters:

Intersection Type: Roundabout

Driving on the right-hand side of the road

Input data specified in US units

Default Values File No. 11

Peak flow period (for performance): 30 minutes

Unit time (for volumes): 60 minutes (Total Flow Period)

Delay definition: Control delay

Geometric delay included

HCM Delay and Queue Models option selected

Level of Service based on: Delay (HCM method)

Queue definition: Back of queue, 95th Percentile

Title

Subtitle

Intersection ID:

DEFAULT PARAMETERS

Default values for some of the important general parameters:
(Default Values File: DEF11.SDF)

1. Basic saturation flow: 1900 tcu/h

This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	L E F T		T H R O U G H		R I G H T	
	LV	HV	LV	HV	LV	HV
Normal	1.053	2.000	1.000	2.000	1.176	2.000
Restricted	1.303	2.500			1.426	2.500

3. Opposed turn parameters (Roundabout)

	Crit. Gap	Fol.up Hdway	Min. Deps	% Exit Flow Opposing
Left turns :	V	V	2.5	0
Through :	V	V	2.5	0
Right turns:	V	V	2.5	0

4. Cruise speed= 40 mi/h, Approach Distance= 1800 ft

5. Queue space per vehicle in feet

Light vehicles: 25.0 Heavy vehicles: 45.0

A full list of input data defaults and ranges is given in the Input Guide part of aaSIDRA User Guide.

Title
 Subtitle
 Intersection ID:
 Roundabout

Table S.0 - TRAFFIC FLOW DATA

Mov No.	Left		Through		Right		Flow Scale	Peak Flow Factor
	LV	HV	LV	HV	LV	HV		
VEHICLES Demand flows in veh/hour as used by the program								
SouthEast: NB Florida Avenue								
72	0	0	648	13	17	1	1.00	0.95
East: Bryant Street Extension								
22	10	1	24	1	21	1	1.00	0.95
NorthEast: University Dorms								
62	21	1	0	0	21	1	1.00	0.95
North: Sherman Avenue								
42	21	1	1023	21	5	1	1.00	0.95
NorthWest: SB Florida Avenue								
82	21	1	327	7	0	0	1.00	0.95

Based on unit time = 60 minutes.
 Flow Scale and Peak Hour Factor effects included in flow values.

Title
 Subtitle
 Intersection ID:
 Roundabout

Table R.0 - ROUNDABOUT BASIC PARAMETERS

Cent Island Diam (ft)	Circ Width (ft)	Insc Diam. (ft)	No.of Circ. Lanes	No.of Entry Lanes	Av.Ent Lane Width (ft)	Circulating/Exiting Stream				
						Flow (veh/ h)	%HV	Adjust. Flow (pcu/h)	%Exit Incl.	Cap. Constr. Effect
SouthEast: NB Florida Avenue										
80	30	140	2	2	15.00	166	2.0	166	0	N
East: Bryant Street Extension										
80	30	140	2	1	15.00	699	2.0	699	0	N
NorthEast: University Dorms										
80	30	140	2	1	15.00	717	2.0	717	0	N
North: Sherman Avenue										
80	30	140	2	1	15.00	335	2.0	335	0	N
NorthWest: SB Florida Avenue										
80	30	140	2	1	15.00	1097	2.0	1097	0	N

Title
 Subtitle

Intersection ID:
Roundabout

Table R.1 - ROUNDABOUT GAP ACCEPTANCE PARAMETERS

Turn	Lane No.	Lane Type	Circ/Exit Flow (pcu/h)	Intra-Bunch Headway (s)	Prop. Bunched Vehicles	Critical Gap (s)	Follow Up Headway (s)
SouthEast: NB Florida Avenue							
Thru	1	Subdominant	166	2.00	0.206	3.52	2.42
	2	Dominant	166	2.00	0.206	3.01	2.07
Right	2	Dominant	166	2.00	0.206	3.01	2.07
East: Bryant Street Extension							
Left	1	Dominant	699	1.29	0.464	3.54	2.74
Thru	1	Dominant	699	1.29	0.464	3.54	2.74
Right	1	Dominant	699	1.29	0.464	3.54	2.74
NorthEast: University Dorms							
Left	1	Dominant	717	1.30	0.475	3.51	2.74
Right	1	Dominant	717	1.30	0.475	3.51	2.74
North: Sherman Avenue							
Left	1	Dominant	335	1.39	0.276	2.98	2.12
Thru	1	Dominant	335	1.39	0.276	2.98	2.12
Right	1	Dominant	335	1.39	0.276	2.98	2.12
NorthWest: SB Florida Avenue							
Left	1	Dominant	1097	2.00	0.782	3.02	2.59
Thru	1	Dominant	1097	2.00	0.782	3.02	2.59

Title
Subtitle
Intersection ID:
Roundabout

Table R.5 - ROUNDABOUT CAPACITY & LEVEL OF SERVICE - aaSIDRA & HCM MODELS

Mov No.	Dem Flow (veh /h)	aaSIDRA					HCM 2000 Lower					HCM 2000 Upper						
		Cap. (veh /h)	Deg. Satn x	Av. Delay (sec)	LOS		Cap. (veh /h)	Deg. Satn x	Av. Delay (sec)	LOS		Cap. (veh /h)	Deg. Satn x	Av.* Delay (sec)	LOS			
SouthEast: NB Florida Avenue																		
72 TR	679	2782	0.244	5.9	A	-	-	-	-	NA	-	-	-	-	NA	-	-	-
		2782	0.244	5.9	A	-	-	-	-	NA	-	-	-	-	NA	-	-	-
East: Bryant Street Extension																		
22 LTR	58	819	0.071	10.0	A	-	-	-	-	NA	-	-	-	-	NA	-	-	-
		819	0.071	10.0	A	-	-	-	-	NA	-	-	-	-	NA	-	-	-
NorthEast: University Dorms																		
62 LR	44	819	0.054	12.7	B	-	-	-	-	NA	-	-	-	-	NA	-	-	-
		819	0.054	12.7	B	-	-	-	-	NA	-	-	-	-	NA	-	-	-
North: Sherman Avenue																		
42 LTR	1072	1387	0.773	14.7	B	-	-	-	-	NA	-	-	-	-	NA	-	-	-
		1387	0.773	14.7	B	-	-	-	-	NA	-	-	-	-	NA	-	-	-

NorthWest: SB Florida Avenue
 82 LT 356 408 0.873 46.4 D - - - - NA - - - - NA - - - -
 408 0.873 46.4 D - - - - NA - - - - NA - - - -
 ALL VEHICLES: 6215 0.873 16.9 B - - - - NA - - - - NA - - - -

NA Values for this roundabout capacity model have not been calculated because the model was not applicable for the given roundabout conditions. Note that the HCM models are only applicable to single-lane roundabouts with circulating flows less than 1200 veh/h. Also note that results are not calculated for any of the models for slip lane or continuous movements. See aaSIDRA Output Guide Appendix Section A3.8 for roundabout limits.

Title
 Subtitle
 Intersection ID:
 Roundabout

Table R.6 - ROUNDABOUT ALTERNATIVE CAPACITY MODELS

Mov No.	Dem Flow (veh /h)	aaSIDRA		NAASRA 1986		Ger. Linear		Ger. GapAcc	
		Cap. (veh /h)	Deg. Satn x	Cap. (veh /h)	% Diff from aaSIDRA	Cap. (veh /h)	% Diff from aaSIDRA	Cap. (veh /h)	% Diff from aaSIDRA
SouthEast: NB Florida Avenue									
72 TR	679	2782	0.244	3133	12.6	1297	-53.4	2207	-20.7
		2782	0.244	3133	12.6	1297	-53.4	2207	-20.7
East: Bryant Street Extension									
22 LTR	58	819	0.071	991	21.0	873	6.6	703	-14.2
		819	0.071	991	21.0	873	6.6	703	-14.2
NorthEast: University Dorns									
62 LR	44	819	0.054	984	20.1	870	6.2	697	-14.9
		819	0.054	984	20.1	870	6.2	697	-14.9
North: Sherman Avenue									
42 LTR	1072	1387	0.773	1359	-2.0	1072	-22.7	964	-30.5
		1387	0.773	1359	-2.0	1072	-22.7	964	-30.5
NorthWest: SB Florida Avenue									
82 LT	356	408	0.873	711	74.3	669	64.0	539	32.1
		408	0.873	711	74.3	669	64.0	539	32.1
ALL VEHICLES:		6215	0.873	7178	15.5	4781	-23.1	5110	-17.8

Title
 Subtitle
 Intersection ID:
 Roundabout

Table S.2 - MOVEMENT CAPACITY PARAMETERS

Mov No.	Dem Flow	Total Opng	%HV	Adjust. Opng	Total Cap.	Prac. Deg.	Prac. Spare	Lane Util	Deg. Satn
------------	-------------	---------------	-----	-----------------	---------------	---------------	----------------	--------------	--------------

North: Sherman Avenue
 42 LTR 4.37 5.24 14.7 0.57 1.62 8.7 222 28.48 46.8

NorthWest: SB Florida Avenue
 82 LT 4.59 5.51 46.4 0.86 3.11 11.8 300 18.52 28.9

Title
 Subtitle
 Intersection ID:
 Roundabout

Table S.6 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (ft)	Perf. Index	Aver. Speed (mph)
SouthEast: NB Florida Avenue									
679	0.244	1.12	1.34	5.9	0.237	0.95	31	12.52	33.7
East: Bryant Street Extension									
58	0.071	0.16	0.19	10.0	0.440	1.35	8	1.30	31.4
NorthEast: University Dorms									
44	0.054	0.16	0.19	12.7	0.442	1.46	6	1.05	30.0
North: Sherman Avenue									
1072	0.773	4.37	5.24	14.7	0.575	1.62	222	28.48	29.0
NorthWest: SB Florida Avenue									
356	0.873	4.59	5.51	46.4	0.864	3.11	300	18.52	18.0
INTERSECTION (persons):									
2651	0.873		12.47	16.9	0.512	1.64		61.87	44.3

Queue values in this table are 95% back of queue (feet).

Title
 Subtitle
 Intersection ID:
 Roundabout

Table S.7 - LANE PERFORMANCE

Lane No.	Mov No.	Dem Flow (veh /h)	Cap (veh /h)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	Q u e u e 95% Back (vehs)	Short Lane (ft)
SouthEast: NB Florida Avenue								
1 T	72	311	1273	0.244	5.9	0.48	1.2	30
2 TR	72	368	1510	0.244	5.9	0.47	1.2	31
East: Bryant Street Extension								
1 LTR	22	58	819	0.071	10.0	0.68	0.3	8
NorthEast: University Dorms								
1 LR	62	44	819	0.054	12.7	0.73	0.2	6
North: Sherman Avenue								
1 LTR	42	1072	1387	0.773	14.7	0.81	8.7	222
NorthWest: SB Florida Avenue								
1 LT	82	356	408	0.873	46.4	1.56	11.8	300

Title
 Subtitle
 Intersection ID:
 Roundabout

Table S.8 - LANE FLOW AND CAPACITY INFORMATION

Lan No.	Mov No.	Dem Flow (veh/h)				Min Cap	Tot Cap	Deg. Satn	Lane Util	
		Lef	Thru	Rig	Tot	(veh /h)	(veh /h)	x	%	
SouthEast: NB Florida Avenue										
1	T	72	0	311	0	311	150	1273	0.244	100
2	TR	72	0	350	18	368	150	1510	0.244	100
East: Bryant Street Extension										
1	LTR	22	11	25	22	58	58	819	0.071	100
NorthEast: University Dorns										
1	LR	62	22	0	22	44	44	819	0.054	100
North: Sherman Avenue										
1	LTR	42	22	1044	6	1072	150	1387	0.773	100
NorthWest: SB Florida Avenue										
1	LT	82	22	334	0	356	150	408	0.873	100

For roundabouts, the capacity value for continuous movements is obtained as the basic saturation flow without any adjustments. Saturation flow scale applies if specified.

Title
 Subtitle
 Intersection ID:
 Roundabout

Table S.10 - MOVEMENT CAPACITY AND PERFORMANCE SUMMARY

Mov No.	Mov Typ	Dem Flow (veh /h)	Total Cap. (veh /h)	Lane Util (%)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	95% Back of Queue (veh)	Perf. Index
SouthEast: NB Florida Avenue									
72	TR	679	2782	100	0.244	5.9	0.95	1.2	12.52
East: Bryant Street Extension									
22	LTR	58	819	100	0.071	10.0	1.35	0.3	1.30
NorthEast: University Dorns									
62	LR	44	819	100	0.054	12.7	1.46	0.2	1.05
North: Sherman Avenue									
42	LTR	1072	1387	100	0.773	14.7	1.62	8.7	28.48
NorthWest: SB Florida Avenue									
82	LT	356	408	100	0.873*	46.4	3.11	11.8	18.52

* Maximum degree of saturation

Title

Subtitle
Intersection ID:
Roundabout

Table S.12A - FUEL CONSUMPTION, EMISSIONS AND COST - TOTAL

Mov No.	Fuel Total gal/h	Cost Total \$/h	HC Total kg/h	CO Total kg/h	NOX Total kg/h	CO2 Total kg/h
SouthEast: NB Florida Avenue						
72 TR	12.8	109.13	0.190	8.82	0.294	121.1
	12.8	109.13	0.190	8.82	0.294	121.1
East: Bryant Street Extension						
22 LTR	1.2	10.01	0.018	0.90	0.028	11.3
	1.2	10.01	0.018	0.90	0.028	11.3
NorthEast: University Dorms						
62 LR	1.0	8.11	0.015	0.75	0.022	9.0
	1.0	8.11	0.015	0.75	0.022	9.0
North: Sherman Avenue						
42 LTR	24.0	204.52	0.387	19.35	0.568	226.9
	24.0	204.52	0.387	19.35	0.568	226.9
NorthWest: SB Florida Avenue						
82 LT	9.4	97.99	0.157	6.95	0.207	88.9
	9.4	97.99	0.157	6.95	0.207	88.9
INTERSECTION:	48.3	429.75	0.768	36.78	1.119	457.2

PARAMETERS USED IN COST CALCULATIONS

Pump price of fuel (\$/US gal)	=	1.600
Fuel resource cost factor	=	0.70
Ratio of running cost to fuel cost	=	3.0
Average income (\$/h)	=	17.00
Time value factor	=	0.40
Average occupancy (persons/veh)	=	1.2
Light vehicle mass (1000 lb)	=	3.1
Heavy vehicle mass (1000 lb)	=	24.0
Light vehicle idle fuel rate (US gal/h)	=	0.360
Heavy vehicle idle fuel rate (US gal/h)	=	0.530

The idle fuel and vehicle mass parameters given above are the default values (data given in RIDES may override some of these parameters).

Title
Subtitle
Intersection ID:
Roundabout

Table S.12B - FUEL CONSUMPTION, EMISSIONS AND COST - RATE

Mov No.	Fuel Eff. mpg	Cost Rate \$/mi	HC Rate g/km	CO Rate g/km	NOX Rate g/km	CO2 Rate g/km
------------	---------------------	-----------------------	--------------------	--------------------	---------------------	---------------------

SouthEast: NB Florida Avenue						
72 TR	221.1	0.24	0.419	19.40	0.646	266.2
	221.1	0.24	0.419	19.40	0.646	266.2

East: Bryant Street Extension						
22 LTR	205.0	0.26	0.471	23.07	0.715	287.4
	205.0	0.26	0.471	23.07	0.715	287.4

NorthEast: University Dorms						
62 LR	197.2	0.27	0.503	24.89	0.744	298.7
	197.2	0.27	0.503	24.89	0.744	298.7

North: Sherman Avenue						
42 LTR	192.7	0.28	0.521	26.04	0.765	305.4
	192.7	0.28	0.521	26.04	0.765	305.4

NorthWest: SB Florida Avenue						
82 LT	159.5	0.41	0.651	28.85	0.859	369.0
	159.5	0.41	0.651	28.85	0.859	369.0

INTERSECTION:	194.1	0.28	0.509	24.39	0.742	303.2

Title
Subtitle
Intersection ID:
Roundabout

Table S.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h)				%HV	Adj. Basic Satf.	Eff Grn (secs) 1st 2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (ft)	Shrt Lane (ft)
	L	T	R	Tot							
SouthEast: NB Florida Avenue											
1 T		311		311	2			0.244	5.9	30	
2 TR		350	18	368	2			0.244	5.9	31	
	0	661	18	679	2			0.244	5.9	31	
East: Bryant Street Extension											
1 LTR	11	25	22	58	5			0.071	10.0	8	
	11	25	22	58	5			0.071	10.0	8	
NorthEast: University Dorms											
1 LR	22		22	44	5			0.054	12.7	6	
	22	0	22	44	5			0.054	12.7	6	
North: Sherman Avenue											
1 LTR	22	1044	6	1072	2			0.773	14.7	222	
	22	1044	6	1072	2			0.773	14.7	222	
NorthWest: SB Florida Avenue											
1 LT	22	334		356	2			0.873	46.4	300	
	22	334	0	356	2			0.873	46.4	300	
ALL VEHICLES											
				Total Flow	% HV			Max X	Aver. Delay	Max Queue	
				2209	2			0.873	16.9	300	

Total flow period = 60 minutes. Peak flow period = 30 minutes.

Queue values in this table are 95% back of queue (feet).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

Title
Subtitle
Intersection ID:
Roundabout

Table S.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS

SouthEast: NB Florida Avenue 72 TR		679	2782	0.244	5.9	A
		679	2782	0.244	5.9	A

East: Bryant Street Extension 22 LTR		58	819	0.071	10.0	A
		58	819	0.071	10.0	A

NorthEast: University Dorns 62 LR		44	819	0.054	12.7	B
		44	819	0.054	12.7	B

North: Sherman Avenue 42 LTR		1072	1387	0.773	14.7	B
		1072	1387	0.773	14.7	B

NorthWest: SB Florida Avenue 82 LT		356	408	0.873*	46.4	D
		356	408	0.873	46.4	D

ALL VEHICLES:		2209	6216	0.873	16.9	B

Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition used.

For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

Title
Subtitle
Intersection ID:
Roundabout

Table D.0 - GEOMETRIC DELAY DATA

From Approach	To Approach	Negn Radius (ft)	Negn Speed (mph)	Negn Dist. (ft)	Appr. Dist. (ft)	Downstream Distance (ft)
SouthEast: NB Florida Avenue						

East	62.7	13.8	32.8	1800	369
NorthEast	87.1	18.7	54.5	1800	369
North	153.9	24.8	98.5	1800	405
NorthWest	153.9	24.8	131.4	1800	405

East: Bryant Street Extension

SouthEast	52.0	14.4	245.0	1800	561
NorthEast	73.2	17.1	32.8	1800	378
North	102.1	20.2	54.2	1800	378
NorthWest	153.9	24.8	98.5	1800	405

NorthEast: University Dorms

SouthEast	52.0	14.4	204.2	1800	541
East	52.0	14.4	245.0	1800	541
North	73.2	17.1	32.8	1800	378
NorthWest	102.1	20.2	54.2	1800	378

North: Sherman Avenue

SouthEast	52.0	14.4	163.4	1800	480
East	52.0	14.4	204.2	1800	541
NorthEast	52.0	14.4	245.0	1800	541
NorthWest	73.2	17.1	32.8	1800	370

NorthWest: SB Florida Avenue

SouthEast	153.9	24.8	131.4	1800	419
East	52.0	14.4	163.4	1800	419
NorthEast	52.0	14.4	204.2	1800	541
North	52.0	14.4	245.0	1800	541

Downstream distance is distance travelled from the stopline until exit cruise speed is reached (includes negotiation distance). Acceleration distance is weighted for light and heavy vehicles. The same distance applies for both stopped and unstopped vehicles.

Title
Subtitle
Intersection ID:
Roundabout

Table D.1 - LANE DELAYS

Delay (seconds/veh)											
Lane No.	Mov No.	Deg. Satn x	Stop-line		Delay Total dSL	Acc. Dec. dn	Queuing Total dq	MvUp dqm	Stopd (Idle) di	Geom dig	Control dic
			1st dl	2nd d2							
SouthEast: NB Florida Avenue											
1 T	72	0.244	0.5	0.0	0.5	1.7	0.0	0.0	0.0	5.4	5.9
2 TR	72	0.244	0.4	0.0	0.4	1.5	0.0	0.0	0.0	5.5	5.9
East: Bryant Street Extension											
1 LTR	22	0.071	2.1	0.0	2.1	2.6	0.0	0.0	0.0	7.9	10.0
NorthEast: University Dorms											
1 LR	62	0.054	2.1	0.0	2.1	2.2	0.0	0.0	0.0	10.6	12.7
North: Sherman Avenue											
1 LTR	42	0.773	1.8	1.0	2.8	2.6	0.2	0.2	0.0	11.9	14.7
NorthWest: SB Florida Avenue											
1 LT	82	0.873	11.3	27.6	38.9	5.1	33.8	11.1	22.7	7.5	46.4

dn is average stop-start delay for all vehicles queued and unqueued

Title
Subtitle

Intersection ID:
Roundabout

Table D.2 - LANE STOPS

	Deg.	-- Effective	Stop	Rate --		Queue	
Lane	Satn		Geom.	Overall	Prop.	Move-up	
No.	x	he1	he2	hig	h	Queued	Rate
						pq	hqm

SouthEast: NB Florida Avenue							
1 T	0.244	0.14	0.00	0.33	0.48	0.247	0.00
2 TR	0.244	0.12	0.00	0.35	0.47	0.228	0.00

East: Bryant Street Extension							
1 LTR	0.071	0.37	0.00	0.31	0.68	0.440	0.00

NorthEast: University Dorns							
1 LR_	0.054	0.36	0.00	0.37	0.73	0.442	0.00

North: Sherman Avenue							
1 LTR	0.773	0.45	0.05	0.31	0.81	0.575	0.10

NorthWest: SB Florida Avenue							
1 LT	0.873	0.86	0.62	0.07	1.56	0.864	1.76

hg is the average value for all movements in a shared lane
hqm is average queue move-up rate for all vehicles queued and unqueued

Title
Subtitle
Intersection ID:
Roundabout

Table D.3 - LANE QUEUES

Lane No.	Deg. Satn	Ovrfl. Queue	Average (veh)			Percentile (veh)					Queue Stor. Ratio
	x	No	Nb1	Nb2	Nb	70%	85%	90%	95%	98%	
SouthEast: NB Florida Avenue											
1 T	0.244	0.0	0.4	0.0	0.4	0.7	0.8	1.0	1.2	1.4	0.02
2 TR	0.244	0.0	0.4	0.0	0.4	0.7	0.9	1.0	1.2	1.4	0.02
East: Bryant Street Extension											
1 LTR	0.071	0.0	0.1	0.0	0.1	0.2	0.2	0.2	0.3	0.3	0.00
NorthEast: University Dorns											
1 LR	0.054	0.0	0.1	0.0	0.1	0.1	0.2	0.2	0.2	0.3	0.00
North: Sherman Avenue											
1 LTR	0.773	0.3	2.3	0.7	2.9	4.9	6.1	7.0	8.7	10.2	0.12
NorthWest: SB Florida Avenue											
1 LT	0.873	2.3	1.6	2.4	4.0	6.5	8.2	9.4	11.8	13.8	0.17

Values printed in this table are back of queue (vehicles).

Title
Subtitle
Intersection ID:
Roundabout

Table D.4 - MOVEMENT SPEEDS (mph)

Mov No.	App. Speeds		Exit Speeds		Queue Move-up		Av. Section Spd	
	Cruise	Negn	Negn	Cruise	1st Grn	2nd Grn	Running	Overall
SouthEast: NB Florida Avenue								
72	40.0	24.6	24.6	40.0			33.7	33.7
East: Bryant Street Extension								
22	40.0	20.5	20.5	40.0			31.4	31.4
NorthEast: University Dorms								
62	40.0	16.5	16.5	40.0			30.0	30.0
North: Sherman Avenue								
42	40.0	14.4	14.4	40.0	27.7		29.0	29.0
NorthWest: SB Florida Avenue								
82	40.0	20.9	20.9	40.0	18.0		24.6	18.0

"Running Speed" is the average speed excluding stopped periods.

--- End of aaSIDRA Output ---

Wells & Associates

Jim Watson Registered User No. 38423

Licence Type: Professional, Multi Computer

Time and Date of Analysis 10:39 AM, Aug 29, 2006

Filename: O:\Projects\2501-3000\2799 Atlantic Plumbing Site\Analysis\August 2006 Addendum\AaSidra Analysis (8.06 Addendum)\TfPM.OUT

Title
Subtitle
Intersection ID:

aaTraffic SIDRA US Highway Capacity Manual (2000) Version

RUN INFORMATION

* Basic Parameters:
 Intersection Type: Roundabout
 Driving on the right-hand side of the road
 Input data specified in US units
 Default Values File No. 11
 Peak flow period (for performance): 30 minutes
 Unit time (for volumes): 60 minutes (Total Flow Period)
 Delay definition: Control delay
 Geometric delay included
 HCM Delay and Queue Models option selected
 Level of Service based on: Delay (HCM method)
 Queue definition: Back of queue, 95th Percentile

Title
Subtitle
Intersection ID:

DEFAULT PARAMETERS

Default values for some of the important general parameters:
 (Default Values File: DEF11.SDF)

1. Basic saturation flow: 1900 tcu/h

This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	L E F T		T H R O U G H		R I G H T	
	LV	HV	LV	HV	LV	HV
Normal	1.053	2.000	1.000	2.000	1.176	2.000
Restricted	1.303	2.500			1.426	2.500

3. Opposed turn parameters (Roundabout)

	Crit. Gap	Fol.up Hdway	Min. Deps	% Exit Flow Opposing
Left turns :	V	V	2.5	0
Through :	V	V	2.5	0
Right turns:	V	V	2.5	0

4. Cruise speed= 40 mi/h, Approach Distance= 1800 ft

5. Queue space per vehicle in feet

Light vehicles: 25.0 Heavy vehicles: 45.0

A full list of input data defaults and ranges is given in the Input Guide part of aaSIDRA User Guide.

Title
 Subtitle
 Intersection ID:
 Roundabout

Table S.0 - TRAFFIC FLOW DATA

Mov No.	Left		Through		Right		Flow Scale	Peak Flow Factor	
	LV	HV	LV	HV	LV	HV			
VEHICLES Demand flows in veh/hour as used by the program									
SouthEast: NB Florida Avenue									
72	0	0	1333	27	13	1	1.00	0.95	
East: Bryant Street Extension									
22	10	1	21	1	21	1	1.00	0.95	
NorthEast: University Dorns									
62	21	1	0	0	21	1	1.00	0.95	
North: Sherman Avenue									
42	21	1	527	11	5	1	1.00	0.95	
NorthWest: SB Florida Avenue									
82	21	1	395	8	0	0	1.00	0.95	

Based on unit time = 60 minutes.

Flow Scale and Peak Hour Factor effects included in flow values.

Title
 Subtitle
 Intersection ID:
 Roundabout

Table R.0 - ROUNDABOUT BASIC PARAMETERS

Cent Island Diam (ft)	Circ Width (ft)	Insc Diam. (ft)	No.of Circ. Lanes	No.of Entry Lanes	Av.Ent Lane Width (ft)	Circulating/Exiting Stream				
						Flow (veh/ h)	%HV	Adjust. Flow (pcu/h)	%Exit Incl.	Cap. Constr. Effect
SouthEast: NB Florida Avenue										
80	35	150	2	2	15.00	204	2.0	204	0	N
East: Bryant Street Extension										
80	35	150	2	1	15.00	1395	2.0	1395	0	N
NorthEast: University Dorns										
80	35	150	2	1	15.00	1413	2.0	1413	0	N
North: Sherman Avenue										
80	35	150	2	1	15.00	366	2.0	366	0	N
NorthWest: SB Florida Avenue										
80	35	150	2	1	15.00	591	2.0	591	0	N

Title
 Subtitle

Intersection ID:
Roundabout

Table R.1 - ROUNDABOUT GAP ACCEPTANCE PARAMETERS

Turn	Lane No.	Lane Type	Circ/Exit Flow (pcu/h)	Intra-Bunch Headway (s)	Prop. Bunched Vehicles	Critical Gap (s)	Follow Up Headway (s)
SouthEast: NB Florida Avenue							
Thru	1	Dominant	204	2.00	0.247	2.74	1.90
	2	Subdominant	204	2.00	0.247	3.28	2.27
Right	2	Subdominant	204	2.00	0.247	3.28	2.27
East: Bryant Street Extension							
Left	1	Dominant	1395	1.28	0.710	2.76	2.44
Thru	1	Dominant	1395	1.28	0.710	2.76	2.44
Right	1	Dominant	1395	1.28	0.710	2.76	2.44
NorthEast: University Dorms							
Left	1	Dominant	1413	1.29	0.719	2.75	2.43
Right	1	Dominant	1413	1.29	0.719	2.75	2.43
North: Sherman Avenue							
Left	1	Dominant	366	1.39	0.298	3.46	2.48
Thru	1	Dominant	366	1.39	0.298	3.46	2.48
Right	1	Dominant	366	1.39	0.298	3.46	2.48
NorthWest: SB Florida Avenue							
Left	1	Dominant	591	2.00	0.560	3.51	2.66
Thru	1	Dominant	591	2.00	0.560	3.51	2.66

Title
Subtitle
Intersection ID:
Roundabout

Table R.5 - ROUNDABOUT CAPACITY & LEVEL OF SERVICE - aaSIDRA & HCM MODELS

Mov No.	Dem Flow (veh /h)	aaSIDRA				HCM 2000 Lower				HCM 2000 Upper			
		Cap. (veh /h)	Deg. Satn x	Av. Delay (sec)	LOS	Cap. (veh /h)	Deg. Satn x	Av. Delay (sec)	LOS	Cap. (veh /h)	Deg. Satn x	Av. Delay (sec)	LOS
SouthEast: NB Florida Avenue													
72 TR	1374	2973	0.462	6.1	A	-	-	-	NA	-	-	-	NA
		2973	0.462	6.1	A	-	-	-	NA	-	-	-	NA
East: Bryant Street Extension													
22 LTR	55	592	0.093	12.6	B	-	-	-	NA	-	-	-	NA
		592	0.093	12.6	B	-	-	-	NA	-	-	-	NA
NorthEast: University Dorms													
62 LR	44	585	0.075	15.4	B	-	-	-	NA	-	-	-	NA
		585	0.075	15.4	B	-	-	-	NA	-	-	-	NA
North: Sherman Avenue													
42 LTR	566	1128	0.502	13.4	B	-	-	-	NA	-	-	-	NA
		1128	0.502	13.4	B	-	-	-	NA	-	-	-	NA

NorthWest: SB Florida Avenue										
82 LT	425	837	0.508	12.1	B	-	-	-	NA	-

		837	0.508	12.1	B	-	-	-	NA	-

ALL VEHICLES:	6115	0.508	9.1	A	-	-	-	NA	-	-

NA Values for this roundabout capacity model have not been calculated because the model was not applicable for the given roundabout conditions. Note that the HCM models are only applicable to single-lane roundabouts with circulating flows less than 1200 veh/h. Also note that results are not calculated for any of the models for slip lane or continuous movements. See aaSIDRA Output Guide Appendix Section A3.8 for roundabout limits.

Title
 Subtitle
 Intersection ID:
 Roundabout

Table R.6 - ROUNDABOUT ALTERNATIVE CAPACITY MODELS

Mov No.	Dem Flow (veh /h)	aaSIDRA		NAASRA 1986		Ger. Linear		Ger. GapAcc		
		Cap. (veh /h)	Deg. Satn x	Cap. (veh /h)	% Diff from aaSIDRA	Cap. (veh /h)	% Diff from aaSIDRA	Cap. (veh /h)	% Diff from aaSIDRA	
SouthEast: NB Florida Avenue										
72 TR	1374	2973	0.462	3034	2.1	1277	-57.0	2139	-28.1	
		2973	0.462	3034	2.1	1277	-57.0	2139	-28.1	
East: Bryant Street Extension										
22 LTR	55	592	0.093	545	-7.9	557	-5.9	348	-41.2	
		592	0.093	545	-7.9	557	-5.9	348	-41.2	
NorthEast: University Dorns										
62 LR	44	585	0.075	541	-7.5	552	-5.6	344	-41.2	
		585	0.075	541	-7.5	552	-5.6	344	-41.2	
North: Sherman Avenue										
42 LTR	566	1128	0.502	1323	17.3	1066	-5.5	939	-16.8	
		1128	0.502	1323	17.3	1066	-5.5	939	-16.8	
NorthWest: SB Florida Avenue										
82 LT	425	837	0.508	1095	30.8	937	11.9	779	-6.9	
		837	0.508	1095	30.8	937	11.9	779	-6.9	
ALL VEHICLES:		6115	0.508	6538	6.9	4389	-28.2	4549	-25.6	

Title
 Subtitle
 Intersection ID:
 Roundabout

Table S.2 - MOVEMENT CAPACITY PARAMETERS

Mov No.	Dem Flow	Total Opng	%HV	Adjust. Opng	Total Cap.	Prac. Deg.	Prac. Spare	Lane Util	Deg. Satn
---------	----------	------------	-----	--------------	------------	------------	-------------	-----------	-----------

	(veh /h)	Flow (veh/h)		Flow (pcu/h)	(veh /h)	Satn xp	Cap. (%)	(%)	x
SouthEast: NB Florida Avenue									
72 TR	1374	204	2.0	204	2973	0.85	84	100	0.462
East: Bryant Street Extension									
22 LTR	55	1395	2.0	1395	592	0.85	815	100	0.093
NorthEast: University Dorns									
62 LR	44	1413	2.0	1413	585	0.85	1030	100	0.075
North: Sherman Avenue									
42 LTR	566	366	2.0	366	1128	0.85	69	100	0.502
NorthWest: SB Florida Avenue									
82 LT	425	591	2.0	591	837	0.85	67	100	0.508*

Title
Subtitle
Intersection ID:
Roundabout

Table S.3 - INTERSECTION PARAMETERS

Intersection Level of Service	=	A
Worst movement Level of Service	=	B
Average intersection delay (s)	=	9.1
Largest average movement delay (s)	=	15.4
Largest back of queue, 95% (ft)	=	96
Performance Index	=	53.55
Degree of saturation (highest)	=	0.508
Practical Spare Capacity (lowest)	=	67 %
Total vehicle capacity, all lanes (veh/h)	=	6115
Total vehicle flow (veh/h)	=	2464
Total person flow (pers/h)	=	2957
Total vehicle delay (veh-h/h)	=	6.23
Total person delay (pers-h/h)	=	7.48
Total effective vehicle stops (veh/h)	=	3088
Total effective person stops (pers/h)	=	3706
Total vehicle travel (veh-mi/h)	=	1037.8
Total cost (\$/h)	=	421.61
Total fuel (ga/h)	=	49.7
Total CO2 (kg/h)	=	470.49

Title
Subtitle
Intersection ID:
Roundabout

Table S.5 - MOVEMENT PERFORMANCE

Mov No.	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue 95% Back (vehs)	Queue (ft)	Perf. Index	Aver. Speed (mph)
SouthEast: NB Florida Avenue									
72 TR	2.31	2.78	6.1	0.31	0.99	2.9	73	26.03	53.8
East: Bryant Street Extension									
22 LTR	0.19	0.23	12.6	0.60	1.61	0.4	10	1.39	48.3
NorthEast: University Dorns									
62 LR	0.19	0.23	15.4	0.61	1.67	0.3	9	1.17	46.0

North: Sherman Avenue
 42 LTR 2.11 2.53 13.4 0.43 1.53 2.9 75 13.97 47.5

NorthWest: SB Florida Avenue
 82 LT 1.43 1.71 12.1 0.61 1.64 3.8 96 11.00 48.9

Title
 Subtitle
 Intersection ID:
 Roundabout

Table S.6 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (ft)	Perf. Index	Aver. Speed (mph)
SouthEast: NB Florida Avenue									
1374	0.462	2.31	2.78	6.1	0.313	0.99	73	26.03	33.4
East: Bryant Street Extension									
55	0.093	0.19	0.23	12.6	0.605	1.61	10	1.39	30.0
NorthEast: University Dorms									
44	0.075	0.19	0.23	15.4	0.612	1.67	9	1.17	28.6
North: Sherman Avenue									
566	0.502	2.11	2.53	13.4	0.439	1.53	75	13.97	29.5
NorthWest: SB Florida Avenue									
425	0.508	1.43	1.71	12.1	0.618	1.64	96	11.00	30.4
INTERSECTION (persons):									
2957	0.508		7.48	9.1	0.406	1.25		53.55	51.0

Queue values in this table are 95% back of queue (feet).

Title
 Subtitle
 Intersection ID:
 Roundabout

Table S.7 - LANE PERFORMANCE

Lane No.	Mov No.	Dem Flow (veh /h)	Cap (veh /h)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	Q u e u e 95% Back (vehs) (ft)	Short Lane (ft)
SouthEast: NB Florida Avenue								
1 T	72	755	1633	0.462	5.9	0.49	2.9 73	
2 TR	72	619	1340	0.462	6.2	0.51	2.8 72	
East: Bryant Street Extension								
1 LTR	22	55	592	0.093	12.6	0.80	0.4 10	
NorthEast: University Dorms								
1 LR	62	44	585	0.075	15.4	0.83	0.3 9	
North: Sherman Avenue								
1 LTR	42	566	1128	0.502	13.4	0.76	2.9 75	
NorthWest: SB Florida Avenue								
1 LT	82	425	837	0.508	12.1	0.82	3.8 96	

Title
 Subtitle
 Intersection ID:
 Roundabout

Table S.8 - LANE FLOW AND CAPACITY INFORMATION

Lan No.	Mov No.	Dem Flow (veh/h)				Min Cap	Tot Cap	Deg.	Lane	
		-----			(veh	(veh	Satn	Util		
		Lef	Thru	Rig	Tot	/h)	/h)	x	%	
SouthEast: NB Florida Avenue										
1	T	72	0	755	0	755	150	1633	0.462	100
2	TR	72	0	605	14	619	150	1340	0.462	100
East: Bryant Street Extension										
1	LTR	22	11	22	22	55	55	592	0.093	100
NorthEast: University Dorms										
1	LR	62	22	0	22	44	44	585	0.075	100
North: Sherman Avenue										
1	LTR	42	22	538	6	566	150	1128	0.502	100
NorthWest: SB Florida Avenue										
1	LT	82	22	403	0	425	150	837	0.508	100

For roundabouts, the capacity value for continuous movements is obtained as the basic saturation flow without any adjustments. Saturation flow scale applies if specified.

Title
 Subtitle
 Intersection ID:
 Roundabout

Table S.10 - MOVEMENT CAPACITY AND PERFORMANCE SUMMARY

Mov No.	Mov Typ	Dem Flow (veh /h)	Total Cap. (veh /h)	Lane Util (%)	Deg. Satn x	Aver. Delay (sec)	Eff. Stop Rate	95% Back of Queue (veh)	Perf. Index
SouthEast: NB Florida Avenue									
72	TR	1374	2973	100	0.462	6.1	0.99	2.9	26.03
East: Bryant Street Extension									
22	LTR	55	592	100	0.093	12.6	1.61	0.4	1.39
NorthEast: University Dorms									
62	LR	44	585	100	0.075	15.4	1.67	0.3	1.17
North: Sherman Avenue									
42	LTR	566	1128	100	0.502	13.4	1.53	2.9	13.97
NorthWest: SB Florida Avenue									
82	LT	425	837	100	0.508*	12.1	1.64	3.8	11.00

* Maximum degree of saturation

Title

Subtitle
Intersection ID:
Roundabout

Table S.12A - FUEL CONSUMPTION, EMISSIONS AND COST - TOTAL

Mov No.	Fuel Total gal/h	Cost Total \$/h	HC Total kg/h	CO Total kg/h	NOX Total kg/h	CO2 Total kg/h
SouthEast: NB Florida Avenue						
72 TR	26.1	221.16	0.389	18.22	0.603	246.9
	26.1	221.16	0.389	18.22	0.603	246.9
East: Bryant Street Extension						
22 LTR	1.2	9.73	0.018	0.89	0.027	10.9
	1.2	9.73	0.018	0.89	0.027	10.9
NorthEast: University Dorns						
62 LR	1.0	8.33	0.016	0.77	0.023	9.2
	1.0	8.33	0.016	0.77	0.023	9.2
North: Sherman Avenue						
42 LTR	12.5	107.35	0.202	10.03	0.296	118.8
	12.5	107.35	0.202	10.03	0.296	118.8
NorthWest: SB Florida Avenue						
82 LT	8.9	75.04	0.140	6.95	0.213	84.7
	8.9	75.04	0.140	6.95	0.213	84.7
INTERSECTION:	49.7	421.61	0.765	36.86	1.162	470.5

PARAMETERS USED IN COST CALCULATIONS

Pump price of fuel (\$/US gal)	=	1.600
Fuel resource cost factor	=	0.70
Ratio of running cost to fuel cost	=	3.0
Average income (\$/h)	=	17.00
Time value factor	=	0.40
Average occupancy (persons/veh)	=	1.2
Light vehicle mass (1000 lb)	=	3.1
Heavy vehicle mass (1000 lb)	=	24.0
Light vehicle idle fuel rate (US gal/h)	=	0.360
Heavy vehicle idle fuel rate (US gal/h)	=	0.530

The idle fuel and vehicle mass parameters given above are the default values (data given in RIDES may override some of these parameters).

Title
Subtitle
Intersection ID:
Roundabout

Table S.12B - FUEL CONSUMPTION, EMISSIONS AND COST - RATE

Mov No.	Fuel Eff. mpg	Cost Rate \$/mi	HC Rate g/km	CO Rate g/km	NOX Rate g/km	CO2 Rate g/km
------------	---------------------	-----------------------	--------------------	--------------------	---------------------	---------------------

SouthEast: NB Florida Avenue						
72 TR	219.5	0.24	0.422	19.79	0.655	268.1
	219.5	0.24	0.422	19.79	0.655	268.1
East: Bryant Street Extension						
22 LTR	200.7	0.26	0.486	23.99	0.735	293.7
	200.7	0.26	0.486	23.99	0.735	293.7
NorthEast: University Dorns						
62 LR	194.3	0.28	0.513	25.36	0.756	303.2
	194.3	0.28	0.513	25.36	0.756	303.2
North: Sherman Avenue						
42 LTR	194.8	0.27	0.514	25.51	0.753	302.1
	194.8	0.27	0.514	25.51	0.753	302.1
NorthWest: SB Florida Avenue						
82 LT	200.6	0.26	0.485	24.06	0.738	293.4
	200.6	0.26	0.485	24.06	0.738	293.4
INTERSECTION:	208.9	0.25	0.458	22.07	0.696	281.7

Title
Subtitle
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Roundabout

Table S.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h)				%HV	Adj. Basic Satf.	Eff Grn (secs) 1st 2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (ft)	Shrt Lane (ft)
	L	T	R	Tot							
SouthEast: NB Florida Avenue											
1 T		755		755	2			0.462	5.9	73	
2 TR		605	14	619	2			0.462	6.2	72	
	0	1360	14	1374	2			0.462	6.1	73	
East: Bryant Street Extension											
1 LTR	11	22	22	55	5			0.093	12.6	10	
	11	22	22	55	5			0.093	12.6	10	
NorthEast: University Dorns											
1 LR	22		22	44	5			0.075	15.4	9	
	22	0	22	44	5			0.075	15.4	9	
North: Sherman Avenue											
1 LTR	22	538	6	566	2			0.502	13.4	75	
	22	538	6	566	2			0.502	13.4	75	
NorthWest: SB Florida Avenue											
1 LT	22	403		425	2			0.508	12.1	96	
	22	403	0	425	2			0.508	12.1	96	
=====											
ALL VEHICLES				Total Flow	% HV			Max X	Aver. Delay	Max Queue	
				2464	2			0.508	9.1	96	

Total flow period = 60 minutes. Peak flow period = 30 minutes.

Queue values in this table are 95% back of queue (feet).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

Title
Subtitle
Intersection ID:
Roundabout

Table S.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS
SouthEast: NB 72 TR		Florida	Avenue			
		1374	2973	0.462	6.1	A
		1374	2973	0.462	6.1	A
East: Bryant Street 22 LTR		Extension				
		55	592	0.093	12.6	B
		55	592	0.093	12.6	B
NorthEast: University 62 LR		Dorms				
		44	585	0.075	15.4	B
		44	585	0.075	15.4	B
North: Sherman Avenue 42 LTR						
		566	1128	0.502	13.4	B
		566	1128	0.502	13.4	B
NorthWest: SB Florida 82 LT		Avenue				
		425	837	0.508*	12.1	B
		425	837	0.508	12.1	B
ALL VEHICLES:		2464	6115	0.508	9.1	A

Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition used.

For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

Title
Subtitle
Intersection ID:
Roundabout

Table D.0 - GEOMETRIC DELAY DATA

From Approach	To Approach	Negn Radius (ft)	Negn Speed (mph)	Negn Dist. (ft)	Appr. Dist. (ft)	Downstream Distance (ft)
SouthEast: NB Florida Avenue						

East	65.4	16.2	32.8	1800	369
NorthEast	90.5	19.0	58.4	1800	369
North	156.6	25.0	104.9	1800	406
NorthWest	156.6	25.0	139.9	1800	406

East: Bryant Street Extension

SouthEast	54.0	14.7	254.5	1800	568
NorthEast	75.9	17.4	32.8	1800	380
North	105.5	20.5	58.1	1800	380
NorthWest	156.6	25.0	104.9	1800	405

NorthEast: University Dorms

SouthEast	54.0	14.7	212.1	1800	547
East	54.0	14.7	254.5	1800	547
North	75.9	17.4	32.8	1800	380
NorthWest	105.5	20.5	58.1	1800	380

North: Sherman Avenue

SouthEast	54.0	14.7	169.6	1800	484
East	54.0	14.7	212.1	1800	547
NorthEast	54.0	14.7	254.5	1800	547
NorthWest	75.9	17.4	32.8	1800	372

NorthWest: SB Florida Avenue

SouthEast	156.6	25.0	139.9	1800	429
East	54.0	14.7	169.6	1800	429
NorthEast	54.0	14.7	212.1	1800	547
North	54.0	14.7	254.5	1800	547

Downstream distance is distance travelled from the stopline until exit cruise speed is reached (includes negotiation distance). Acceleration distance is weighted for light and heavy vehicles. The same distance applies for both stopped and unstopped vehicles.

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Table D.1 - LANE DELAYS

Lane No.	Mov No.	Deg. Satn x	Stop-line		Delay Total dSL	Delay (seconds/veh)						
			1st dl	2nd d2		Acc. Dec. dn	Queuing Total dq	MvUp dqm	Stopd (Idle) di	Geom dig	Control dic	
SouthEast: NB Florida Avenue												
1	T	72	0.462	0.6	0.0	0.6	2.0	0.0	0.0	0.0	5.3	5.9
2	TR	72	0.462	0.8	0.0	0.8	2.2	0.0	0.0	0.0	5.4	6.2
East: Bryant Street Extension												
1	LTR	22	0.093	4.6	0.0	4.6	3.5	1.1	0.0	1.1	8.0	12.6
NorthEast: University Dorms												
1	LR	62	0.075	4.8	0.0	4.8	3.1	1.7	0.0	1.7	10.6	15.4
North: Sherman Avenue												
1	LTR	42	0.502	1.5	0.0	1.5	2.0	0.0	0.0	0.0	11.9	13.4
NorthWest: SB Florida Avenue												
1	LT	82	0.508	3.8	0.7	4.5	3.7	0.8	0.6	0.2	7.6	12.1

dn is average stop-start delay for all vehicles queued and unqueued

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Table D.2 - LANE STOPS

Lane No.	Deg. Satn x	-- Effective Stop Rate --		Geom. Overall h	Prop. Queued pq	Queue Move-up Rate	
	he1	he2	hig			hqm	
SouthEast: NB Florida Avenue							
1 T	0.462	0.18	0.00	0.31	0.49	0.300	0.00
2 TR	0.462	0.21	0.00	0.30	0.51	0.328	0.00
East: Bryant Street Extension							
1 LTR	0.093	0.58	0.00	0.22	0.80	0.605	0.00
NorthEast: University Dorns							
1 LR	0.075	0.58	0.00	0.26	0.83	0.612	0.00
North: Sherman Avenue							
1 LTR	0.502	0.36	0.00	0.40	0.76	0.439	0.00
NorthWest: SB Florida Avenue							
1 LT	0.508	0.57	0.03	0.21	0.82	0.618	0.09

hg is the average value for all movements in a shared lane
hqm is average queue move-up rate for all vehicles queued and unqueued

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Table D.3 - LANE QUEUES

Lane No.	Deg. Satn	Ovrfl. Queue	Average (veh)			Percentile (veh)					Queue Stor. Ratio
	x	No	Nb1	Nb2	Nb	70%	85%	90%	95%	98%	
SouthEast: NB Florida Avenue											
1 T	0.462	0.0	0.9	0.0	0.9	1.7	2.0	2.3	2.9	3.3	0.04
2 TR	0.462	0.0	0.9	0.0	0.9	1.6	2.0	2.3	2.8	3.3	0.04
East: Bryant Street Extension											
1 LTR	0.093	0.0	0.1	0.0	0.1	0.2	0.3	0.3	0.4	0.5	0.01
NorthEast: University Dorns											
1 LR	0.075	0.0	0.1	0.0	0.1	0.2	0.2	0.3	0.3	0.4	0.00
North: Sherman Avenue											
1 LTR	0.502	0.0	0.9	0.0	0.9	1.7	2.1	2.4	2.9	3.4	0.04
NorthWest: SB Florida Avenue											
1 LT	0.508	0.1	1.1	0.1	1.2	2.2	2.7	3.0	3.8	4.4	0.05

Values printed in this table are back of queue (vehicles).

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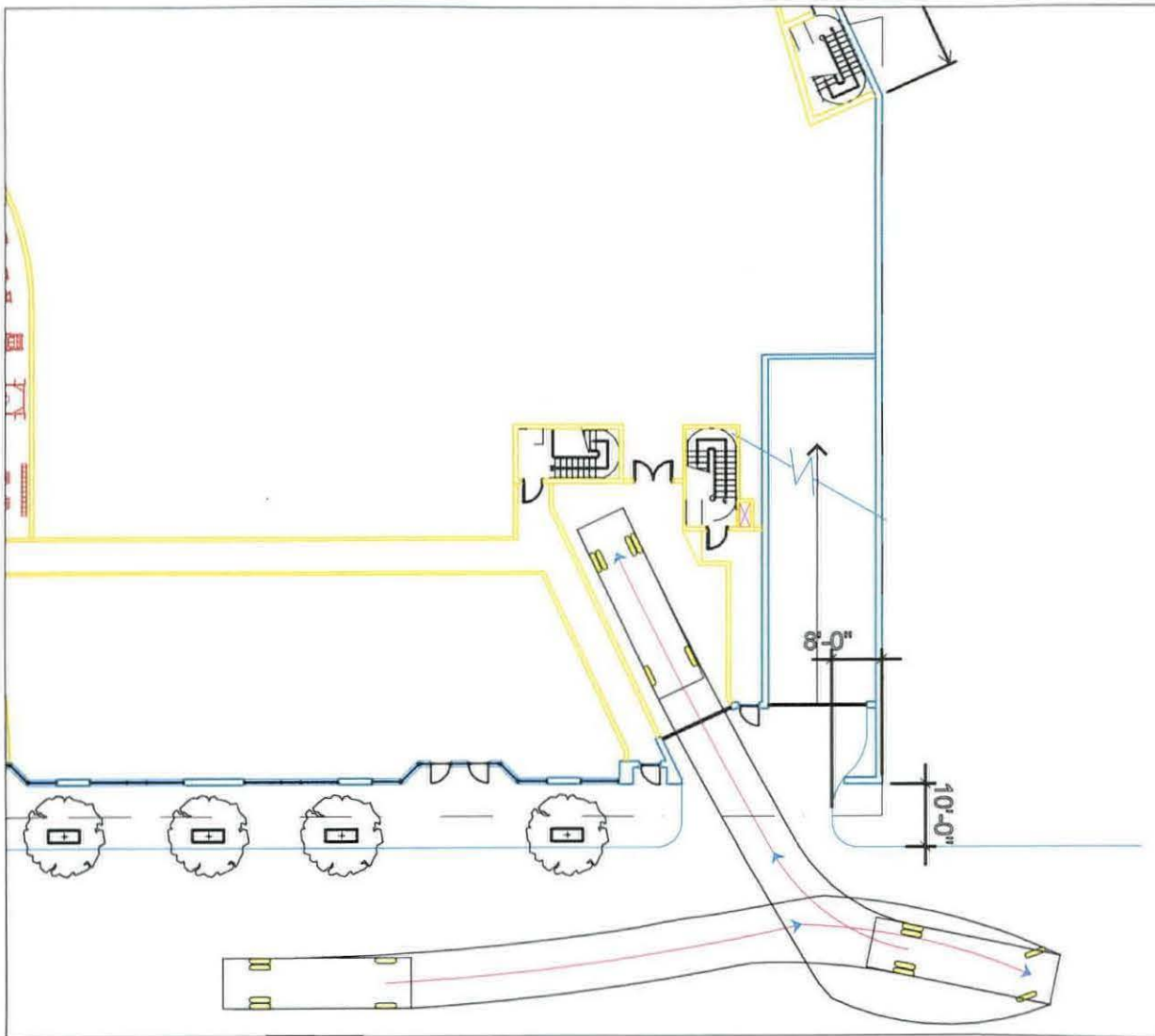
Table D.4 - MOVEMENT SPEEDS (mph)

Mov No.	App. Speeds		Exit Speeds		Queue Move-up		Av. Section Spd	
	Cruise	Negn	Negn	Cruise	1st Grn	2nd Grn	Running	Overall
SouthEast: NB Florida Avenue								
72	40.0	24.9	24.9	40.0			33.4	33.4
East: Bryant Street Extension								
22	40.0	20.5	20.5	40.0			30.7	30.0
NorthEast: University Dorns								
62	40.0	16.8	16.8	40.0			29.5	28.6
North: Sherman Avenue								
42	40.0	14.7	14.7	40.0	25.0		29.5	29.5
NorthWest: SB Florida Avenue								
82	40.0	20.8	20.8	40.0	21.6		30.5	30.4

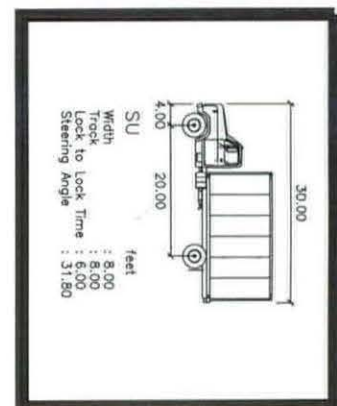
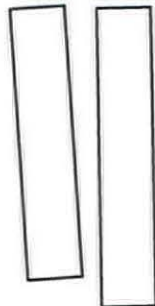
"Running Speed" is the average speed excluding stopped periods.

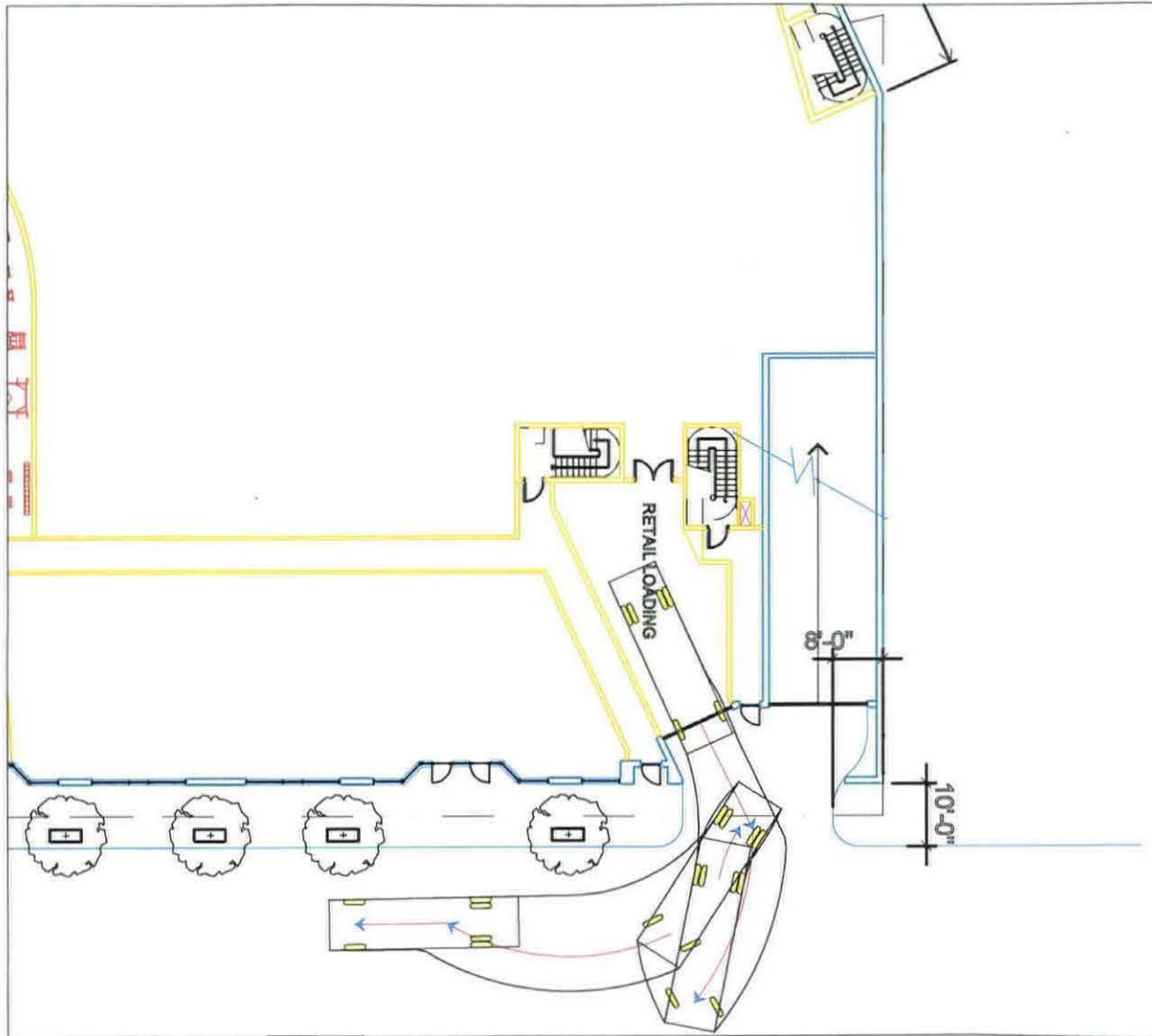
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Appendix D
Loading Analysis



NINTH STREET N.W. (40' R.O.W.)





NINTH STREET N.W. (40' R.O.W.)

