	Lane 1			Lane 2			Lane 3	
L	T	R		T	R	L	T	
N	N	N	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Data for Computing Effect of Delay to Major Street Vehicles:

	Eastbound	Westbound
Shared ln volume, major th vehicles:	0	418
Shared ln volume, major rt vehicles:	0	0
Sat flow rate, major th vehicles:	1700	1700
Sat flow rate, major rt vehicles:	1700	1700
Number of major street through lanes:	1	2

Length of study period, hrs: 0.25

Worksheet 4 Critical Gap and Follow-up time calculation.

Critical Gap Calculations:

Movement	4	7	9
t c,base	4.1	7.5	6.9
t c,hv	2.0	2.0	2.0
P hv	0.00	0.00	0.00
t c,g		0.2	0.1
G	0.00	0.00	0.00
t 3,lt	0.0	0.7	0.0
t c,T:			
1 stage	0.00	0.00	0.00
t c			
1 stage	4.1	6.8	6.9

Follow Up Time Calculations:

Movement	4	7	9
t f,base	2.2	3.5	3.3
t f,HV	1.0	1.0	1.0
P hv	0.00	0.00	0.00
t f	2.2	3.5	3.3

Worksheet 6 Impedance and capacity equations

Step 1: RT from Minor St.	9	12
Conflicting Flows	532	
Potential Capacity	498	
Pedestrian Impedance Factor	1.00	
Movement Capacity	498	
Probability of Queue free St.	0.93	

Step 2: LT from Major St.	4	1
Conflicting Flows	540	
Potential Capacity	1039	
Pedestrian Impedance Factor	1.00	
Movement Capacity	1039	
Probability of Queue free St.	0.99	
Maj. L Shared In. Prob. Queue Free St.	0.98	

Step 4: LT from Minor St.	7	10

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Conflicting Flows	976
Potential Capacity	25[redacted]
Pedestrian Impedance Factor	1.00
Maj. L, Min T Impedance factor	0.98
Maj. L, Min T Adj. Imp Factor.	0.99
Cap. Adj. factor due to Impeding mvmnt	0.99
Movement Capacity	249

Worksheet 8 Shared Lane Calculations

Shared Lane Calculations

Movement	7	8	9	10	11	12
v(vph)	109	34				
Movement Capacity	249	498				
Shared Lane Capacity	283					

Worksheet 10 delay,queue length, and LOS

Movement	1	4	7	8	9	10	11	12
v(vph)	13	143						
C m(vph)	1039	283						
v/c	0.01	0.51						
95% queue length								
Control Delay	8.5	30.1						
LOS	A	D						
Approach Delay			30.1					
Approach LOS			D					

Worksheet 11 Shared Major LT Impedance and Delay

Rank 1 Delay Calculations

Movement	2	5
P oj	1.00	0.99
V i1	0	418
V i2	0	0
S i1	1700	1700
S i2	1700	1700
P* 0j	1.00	0.98
D maj left	0.0	8.5
N number major st lanes	1	2
Delay, rank 1 mvmts	0.0	0.1

HCS: Unsignalized Intersections Release 3.1c

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: CAB
Intersection: Reservoir Road & French Embassy
Count Date: CAB
Time Period: AM Total Future

Intersection Orientation: East-West Major St.

Vehicle Volume Data:

Movements:	1	2	5	6	10	12
Volume:	90	1350	431	25	11	4
HFR:	90	1350	431	25	11	4
PHF:	1.00	1.00	1.00	1.00	1.00	1.00
PHV:	0.00	0.00	0.00	0.00	0.00	0.00

Pedestrian Volume Data:

Movements:

Flow:
Lane width:
Walk speed:
% Blockage:

Median Type: None
# of vehicles: 0

Flared approach Movements:

# of vehicles: Northbound 0
# of vehicles: Southbound 0

Lane usage for movements 1,2&3 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
Y	N	N	N	Y	N	N	Y	N

Channelized: N
Grade: 0.00

Lane usage for movements 4,5&6 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
N	Y	N	N	N	Y	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 7,8&9 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
N	N	N	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 10,11&12 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R		T	R	L	T	
Y	N	Y	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Data for Computing Effect of Delay to Major Street Vehicles:

	Eastbound	Westbound
Shared ln volume, major th vehicles:	0	443
Shared ln volume, major rt vehicles:	0	0
Sat flow rate, major th vehicles:	1700	1700
Sat flow rate, major rt vehicles:	1700	1700
Number of major street through lanes:	2	1

Length of study period, hrs: 0.25

Worksheet 4 Critical Gap and Follow-up time calculation.

Critical Gap Calculations:

Movement	1	10	12
t c,base	4.1	7.5	6.9
t c,hv	2.0	2.0	2.0
P hv	0.00	0.00	0.00
t c,g		0.2	0.1
G	0.00	0.00	0.00
t 3,lt	0.0	0.7	0.0
t c,T:			
1 stage	0.00	0.00	0.00

t c

1 stage	4.1	6.8	6.9

Follow Up Time Calculations:

Movement	1	10	12
t f,base	2.2	3.5	3.3
t f,HV	1.0	1.0	1.0
P hv	0.00	0.00	0.00
t f	2.2	3.5	3.3

Worksheet 6 Impedance and capacity equations

Step 1: RT from Minor St.	9	12
Conflicting Flows		431
Potential Capacity		578
Pedestrian Impedance Factor		1.00
Movement Capacity		578
Probability of Queue free St.		0.99

Step 2: LT from Major St.	4	1
Conflicting Flows		456
Potential Capacity		1115
Pedestrian Impedance Factor		1.00
Movement Capacity		1115
Probability of Queue free St.		0.92

Step 4: LT from Minor St.	7	10
Conflicting Flows		1286

Potential Capacity	159
Pedestrian Impedance Factor	1.00
Maj. L, Min T Impedance factor	0.92
Maj. L, Min T Adj. Imp Factor.	0.94
Cap. Adj. factor due to Impeding mvmnt	0.94
Movement Capacity	149

Worksheet 8 Shared Lane Calculations

Shared Lane Calculations

Movement	7	8	9	10	11	12
v(vph)			11		4	
Movement Capacity				149		578
Shared Lane Capacity				186		

Worksheet 10 delay,queue length, and LOS

Movement	1	4	7	8	9	10	11	12
v(vph)	90				15			
C m(vph)	1115					186		
v/c	0.08				0.08			
95% queue length								
Control Delay	8.5					26.1		
LOS	A					D		
Approach Delay							26.1	
Approach LOS							D	

HCS: Unsignalized Intersections Release 3.1c

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: CAB
Intersection: Reservoir Road & French Embassy
Count Date: CAB
Time Period: PM Total Futue

Intersection Orientation: East-West Major St.

Vehicle Volume Data:

Movements:	1	2	5	6	10	12
Volume:	9	542	793	31	21	47
HFR:	9	542	793	31	21	47
PHF:	1.00	1.00	1.00	1.00	1.00	1.00
PHV:	0.00	0.00	0.00	0.00	0.00	0.00

Pedestrian Volume Data:

Movements:

Flow:
Lane width:
Walk speed:
% Blockage:

Median Type: None
# of vehicles: 0

Flared approach Movements:

# of vehicles: Northbound 0
# of vehicles: Southbound 0

Lane usage for movements 1,2&3 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
N	Y	N	Y	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 4,5&6 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
N	Y	N	N	Y	Y	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 7,8&9 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
N	N	N	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 10,11&12 approach:

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v				
v/c ratio from Capacity Worksheet, X				
Primary phase effective green, g				
Secondary phase effective green, gq				
(From Supplemental Permitted LT Worksheet), gu				
Cycle length, C 70.0 Red =(C-g-gq-gu), r				
Arrivals: v/(3600(max(X,1.0))), qa				
Primary ph. departures: s/3600, sp				
Secondary ph. departures: s(gq+gu)/(gu*3600), ss				
XPerm				
XProt				
XCase				
Queue at beginning of green arrow, Qa				
Queue at beginning of unsaturated green, Qu				
Residual queue, Qr				
Uniform Delay, d1				

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay 8.3 sec/veh Intersection LOS A

ERROR MESSAGES

No errors to report.

HCS: Signalized Intersections Release 3.1c

Inter: Reservoir Road & 38th Street
Analyst: CAB
Date: 03/23/2000
E/W St: Reservoir Road

City/St: Washington, DC
Proj #: 1701-001 BG2
Period: AM Total Future 2010
N/S St: 38th Street / Entrance 1 GU

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	2	0	0	1	1	1	1	0	0	1	1
LGConfig		LTR			LT	R	L	TR			LT	R
Volume	36	901	244	192	395	8	94	0	140	49	0	8
Lane Width		12.0			12.0	12.0	12.0	12.0			12.0	12.0
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	54.0					8.0		
Yellow	4.0					4.0		
All Red	0.0					0.0		

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	2315	3001	0.57	0.771	3.6	A	3.6	A
Westbound								
LT	585	758	1.11	0.771	80.8	F	79.7	E
R	1246	1615	0.01	0.771	1.8	A		
Northbound								
L	147	1284	0.71	0.114	44.4	D		
TR	185	1615	0.84	0.114	58.6	E	52.9	D
Southbound								
LT	109	950	0.50	0.114	32.6	C	31.9	C
R	185	1615	0.05	0.114	27.7	C		

Intersection Delay = 31.9 (sec/veh) Intersection LOS = C

HCS: Signalized Intersections Release 3.1c

Chad A. Baird
Gorove/Slade Associates, Inc.
1140 Connecticut Avenue NW
Suite 700
Washington, DC 20036
Phone: (202)296-8625 Fax: (202)785-8825
E-Mail: CBaird@GSATrans.com

OPERATIONAL ANALYSIS

Intersection:	Reservoir Road & 38th Street
City/State:	Washington, DC
Analyst:	CAB
Project No:	1701-001 BG2
Time Period Analyzed:	AM Total Future 2010
Date:	03/23/2000
East/West Street Name:	Reservoir Road
North/South Street Name:	38th Street / Entrance 1 GU

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	36	901	244	192	395	8	94	0	140	49	0	8
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PK 15 Vol	10	250	68	53	110	2	26	0	39	14	0	2
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat		1900			1900	1900	1900	1900			1900	1900
ParkExist												
NumPark												
% Heavy Veh	0	0	0	0	0	0	0	0	0	0	0	0
No. Lanes	0	2	0	0	1	1	1	1	0	0	1	1
LGConfig		LTR			LT	R	L	TR			LT	R
Lane Width		12.0			12.0	12.0	12.0	12.0			12.0	12.0
RTOR Vol			0			0			0			0
Adj Flow		1312			652	9	104	156			54	9
%InSharedLn												
Prop Turns	0.03		0.21	0.33					1.00	1.00		
NumPeds			0			0			0			0
NumBus		0			0	0	0	0			0	0

Duration 0.25 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet		0.0			0.0	0.0	0.0	0.0			0.0	0.0
Arriv. Type		3			3	3	3	3			3	3
Unit Ext.		3.0			3.0	3.0	3.0	3.0			3.0	3.0
I Factor		1.000			1.000			1.000			1.000	
Lost Time		2.0			2.0	2.0	2.0	2.0			2.0	2.0
Ext of g		2.0			2.0	2.0	2.0	2.0			2.0	2.0
Ped Min g		3.0			3.0			3.0			3.0	

PHASE DATA

Phase Combination	1	2	3	4		5	6	7	8
EB Left	A				NB Left	A			
Thru	A				Thru	A			
Right	A				Right	A			
Peds					Peds				
WB Left	A				SB Left	A			
Thru	A				Thru	A			
Right	A				Right	A			
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	54.0					8.0			
Yellow	4.0					4.0			
All Red	0.0					0.0			

Cycle Length: 70.0 secs

VOLUME ADJUSTMENT WORKSHEET

Appr./ Movement	Mvt Volume	PHF	Flow Rate	No. Lanes	Lane Group	RTOR	Adjusted Flow Rate In Lane Grp	Prop. Left Turns	Prop. Right Turns
Eastbound									
Left	36	0.90	40	0					
Thru	901	0.90	1001	2	LTR		1312	0.03	0.21
Right	244	0.90	271	0		0			
Westbound									
Left	192	0.90	213	0					
Thru	395	0.90	439	1	LT		652	0.33	
Right	8	0.90	9	1	R	0	9		
Northbound									
Left	94	0.90	104	1	L		104		
Thru	0	0.90	0	1	TR		156		1.00
Right	140	0.90	156	0		0			
Southbound									
Left	49	0.90	54	0					
Thru	0	0.90	0	1	LT		54	1.00	
Right	8	0.90	9	1	R	0	9		

* Value entered by user.

SATURATION FLOW ADJUSTMENT WORKSHEET

Appr/ Lane Group	Ideal Sat Flow	f W	f HV	f G	f P	f BB	f A	f LU	f RT	f LT	Adj Sat Flow
Eastbound							Sec LT Adj/LT Sat:		----		
LTR	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	0.969	0.858	3001

Westbound							Sec LT Adj/LT Sat:		----		
LT	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	1.000	0.399	758
R	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	0.850	----	1615
Northbound							Sec LT Adj/LT Sat:				
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.676	1284
TR	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	0.850	1.000	1615

Southbound							Sec LT Adj/LT Sat:		----		
LT	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	1.000	0.500	950
R	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	0.850	----	1615

CAPACITY ANALYSIS WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Pri.							
Sec.							
Left							
Thru	LTR	1312	3001	0.44	0.771	2315	0.57
Right							
Westbound							
Pri.							
Sec.							
Left							
Thru	LT	652	758	# 0.86	0.771	585	1.11
Right	R	9	1615	0.01	0.771	1246	0.01
Northbound							
Pri.							
Sec.							
Left	L	104	1284	0.08	0.114	147	0.71
Thru	TR	156	1615	# 0.10	0.114	185	0.84
Right							
Southbound							
Pri.							
Sec.							
Left							
Thru	LT	54	950	0.06	0.114	109	0.50
Right	R	9	1615	0.01	0.114	185	0.05

Sum (v/s) critical = 0.96

Lost Time/Cycle, L = 8.00 sec Critical v/c(X) = 1.08

LEVEL OF SERVICE WORKSHEET

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
LTR	0.57	0.771	3.2	1.000	2315	0.16	0.3	0.0	3.6	A	3.6	A
Westbound												
LT	1.11	0.771	8.0	1.000	585	0.50	72.8	0.0	80.8	F	79.7	E
R	0.01	0.771	1.8	1.000	1246	0.11	0.0	0.0	1.8	A		
Northbound												
L	0.71	0.114	29.9	1.000	147	0.27	14.5	0.0	44.4	D		
TR	0.84	0.114	30.4	1.000	185	0.38	28.2	0.0	58.6	E	52.9	D
Southbound												
LT	0.50	0.114	29.1	1.000	109	0.11	3.5	0.0	32.6	C	31.9	C
R	0.05	0.114	27.6	1.000	185	0.11	0.1	0.0	27.7	C		

Intersection Delay = 31.9 (sec/veh) Intersection LOS = C

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

APPROACH - EB	WB	NB	SB
Cycle Length, C 70.0 sec			
Actual Green Time for Lane Group, G		8.0	
Effective Green Time for Lane Group, g		8.0	
Opposing Effective Green Time, go		8.0	
Number of Lanes in Lane Group, N		1	
Number of Opposing Lanes, No		1	
Adjusted Left-Turn Flow Rate, Vlt		104	
Proportion of Left Turns in Opposing Flow, Plto		1.00	
Adjusted Opposing Flow Rate, Vo		54	
Lost Time for Lane Group, tl		4.00	
Left Turns per Cycle: LTC=VltC/3600		2.02	
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo		1.05	
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)		1.00	
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g		0.0	
Opposing Queue Ratio: qro=1-Rpo(go/C)		0.89	
gq=(4.943Volc**0.762)(qro**1.061)-tl, gq<=g		0.51	
gu =g-gq if gq>=gf, =g-gf if gq<gf		7.49	
n=(gq-gf)/2, n>=0		0.26	
Ptho=1-Plto		0.00	
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)}]		1.00	
El1 (Figure 9-7)		1.39	
El2=(1-Ptho**n)/Plto, El2>=1.0		1.00	
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g		0.50	
gdiff=max(gq-gf,0)		0.51	
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)		0.68	
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**			
flt		0.676	

For special case of single-lane approach opposed by multilane approach, see text.

* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.

** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.

For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 70.0 sec				
Actual Green Time for Lane Group, G	54.0	54.0		8.0
Effective Green Time for Lane Group, g	54.0	54.0		8.0
Opposing Effective Green Time, go	54.0	54.0		8.0
Number of Lanes in Lane Group, N	2	1		1
Number of Opposing Lanes, No	1	2		1
Adjusted Left-Turn Flow Rate, Vlt	40	213		54
Proportion of Left Turns in Lane Group, Plt	0.03	0.33		1.00
Proportion of Left Turns in Opposing Flow, Plto	0.33	0.03		0.00
Adjusted Opposing Flow Rate, Vo	652	1312		156
Lost Time for Lane Group, tl	4.00	4.00		4.00
Left Turns per Cycle: LTC=VltC/3600	0.78	4.14		1.05
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo	12.68	13.43		3.03
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)	1.00	1.00		1.00
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g	0.0	0.7		0.0
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.23	0.23		0.89
gq=(4.943Volc**0.762)(qro**1.061)-tl, gq<=g	3.15	3.47		1.88
gu =g-gq if gq>=gf, =g-gf if gq<gf	50.85	50.53		6.12
n=(gq-gf)/2, n>=0	1.58	1.39		0.94
Ptho=1-Plto	0.67	0.97		1.00
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24))}	0.10	0.33		1.00
El1 (Figure 9-7)	2.67	5.36		1.62
El2=(1-Ptho**n)/Plto, El2>=1.0	1.42	1.38		1.00
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g	0.04	0.05		0.50
gdiff=max(gq-gf,0)	3.15	2.78		0.00
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)	0.81	0.40		0.50
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt Primary	0.858	0.399		0.500

For special case of single-lane approach opposed by multilane approach, see text.

* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.

** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.

For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v				
v/c ratio from Capacity Worksheet, X				
Primary phase effective green, g				
Secondary phase effective green, gq				
(From Supplemental Permitted LT Worksheet), gu				
Cycle length, C 70.0 Red =(C-g-gq-gu), r				
Arrivals: v/(3600(max(X,1.0))), qa				
Primary ph. departures: s/3600, sp				
Secondary ph. departures: s(gq+gu)/(gu*3600), ss				
XPerm				
XProt				
XCase				
Queue at beginning of green arrow, Qa				
Queue at beginning of unsaturated green, Qu				
Residual queue, Qr				
Uniform Delay, d1				

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay 31.9 sec/veh Intersection LOS C

ERROR MESSAGES

No errors to report.

HCS: Signalized Intersections Release 3.1c

Inter: Reservoir Road & 38th Street
Analyst: CAB
Date: 03/23/2000
E/W St: Reservoir Road

City/St: Washington, DC
Proj #: 1701-001 BG2
Period: PM Total Future 2010
N/S St: 38th Street / Entrance 1 GU

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	2	0	1	1	0	0	1	1
LGConfig		LT	R		LTR		L	TR			LT	R
Volume	37	440	42	78	602	7	193	0	208	47	0	5
Lane Width		12.0	12.0		12.0		12.0	12.0			12.0	12.0
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	45.0					17.0		
Yellow	4.0					4.0		
All Red	0.0					0.0		

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	1117	1737	0.47	0.643	6.7	A	6.6	A
R	1038	1615	0.05	0.643	4.6	A		
Westbound								
LTR	1717	2671	0.44	0.643	6.4	A	6.4	A
Northbound								
L	334	1374	0.64	0.243	27.9	C		
TR	392	1615	0.59	0.243	25.8	C	26.8	C
Southbound								
LT	232	954	0.22	0.243	21.7	C	21.6	C
R	392	1615	0.02	0.243	20.2	C		

Intersection Delay = 11.9 (sec/veh) Intersection LOS = B

HCS: Signalized Intersections Release 3.1c

Chad A. Baird
Gorove/Slade Associates, Inc.
1140 Connecticut Avenue NW
Suite 700
Washington, DC 20036
Phone: (202)296-8625 Fax: (202)785-8825
E-Mail: CBaird@GSATrans.com

OPERATIONAL ANALYSIS

Intersection:	Reservoir Road & 38th Street
City/State:	Washington, DC
Analyst:	CAB
Project No:	1701-001 BG2
Time Period Analyzed:	PM Total Future 2010
Date:	03/23/2000
East/West Street Name:	Reservoir Road
North/South Street Name:	38th Street / Entrance 1 GU

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	37	440	42	78	602	7	193	0	208	47	0	5
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PK 15 Vol	10	122	12	22	167	2	54	0	58	13	0	2
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat		1900	1900		1900		1900	1900			1900	1900
ParkExist												
NumPark												
% Heavy Veh	0	0	0	0	0	0	0	0	0	0	0	0
No. Lanes	0	1	1	0	2	0	1	1	0	0	1	1
LGConfig		LT	R		LTR		L	TR			LT	R
Lane Width		12.0	12.0		12.0		12.0	12.0			12.0	12.0
RTOR Vol			0			0			0			0
Adj Flow		530	47		764		214	231			52	6
%InSharedLn												
Prop Turns	0.08			0.11		0.01			1.00	1.00		
NumPeds			0			0			0			0
NumBus		0	0		0		0	0			0	0

Duration 0.25 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet		0.0	0.0		0.0		0.0	0.0			0.0	0.0
Arriv. Type		3	3		3		3	3			3	3
Unit Ext.		3.0	3.0		3.0		3.0	3.0			3.0	3.0
I Factor		1.000			1.000			1.000			1.000	
Lost Time		2.0	2.0		2.0		2.0	2.0			2.0	2.0
Ext of g		2.0	2.0		2.0		2.0	2.0			2.0	2.0
Ped Min g		3.0			3.0			3.0			3.0	

PHASE DATA

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	45.0					17.0		
Yellow	4.0					4.0		
All Red	0.0					0.0		

Cycle Length: 70.0 secs

VOLUME ADJUSTMENT WORKSHEET

Appr./ Movement	Mvt Volume	PHF	Flow Rate	No. Lanes	Lane Group	RTOR	Adjusted Flow Rate In Lane Grp	Prop. Left Turns	Prop. Right Turns
Eastbound									
Left	37	0.90	41	0					
Thru	440	0.90	489	1	LT		530	0.08	
Right	42	0.90	47	1	R	0	47		
Westbound									
Left	78	0.90	87	0					
Thru	602	0.90	669	2	LTR		764	0.11	0.01
Right	7	0.90	8	0		0			
Northbound									
Left	193	0.90	214	1	L		214		
Thru	0	0.90	0	1	TR		231		1.00
Right	208	0.90	231	0		0			
Southbound									
Left	47	0.90	52	0					
Thru	0	0.90	0	1	LT		52	1.00	
Right	5	0.90	6	1	R	0	6		

* Value entered by user.

SATURATION FLOW ADJUSTMENT WORKSHEET

Appr/ Lane Group	Ideal Sat Flow	f W	f HV	f G	f P	f BB	f A	f LU	f RT	f LT	Adj Sat Flow
Eastbound							Sec LT Adj/LT Sat:		----		
LT	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	1.000	0.914	1737
R	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	0.850	----	1615
Westbound							Sec LT Adj/LT Sat:		----		
LTR	1900	1.000	1.000	1.000	1.000	1.000	1.00	0.95	0.998	0.741	2671

Northbound							Sec LT Adj/LT Sat:				
L	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	----	0.723	1374
TR	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	0.850	1.000	1615

Southbound							Sec LT Adj/LT Sat:		----		
LT	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	1.000	0.502	954
R	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	0.850	----	1615

CAPACITY ANALYSIS WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Pri.							
Sec.							
Left							
Thru	LT	530	1737	# 0.31	0.643	1117	0.47
Right	R	47	1615	0.03	0.643	1038	0.05
Westbound							
Pri.							
Sec.							
Left							
Thru	LTR	764	2671	0.29	0.643	1717	0.44
Right							
Northbound							
Pri.							
Sec.							
Left	L	214	1374	# 0.16	0.243	334	0.64
Thru	TR	231	1615	0.14	0.243	392	0.59
Right							
Southbound							
Pri.							
Sec.							
Left							
Thru	LT	52	954	0.05	0.243	232	0.22
Right	R	6	1615	0.00	0.243	392	0.02

Sum (v/s) critical = 0.46

Lost Time/Cycle, L = 8.00 sec Critical v/c(X) = 0.52

LEVEL OF SERVICE WORKSHEET

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
LT	0.47	0.643	6.4	1.000	1117	0.11	0.3	0.0	6.7	A	6.6	A
R	0.05	0.643	4.6	1.000	1038	0.11	0.0	0.0	4.6	A		
Westbound												
LTR	0.44	0.643	6.3	1.000	1717	0.11	0.2	0.0	6.4	A	6.4	A
Northbound												
L	0.64	0.243	23.8	1.000	334	0.22	4.1	0.0	27.9	C		
TR	0.59	0.243	23.4	1.000	392	0.18	2.3	0.0	25.8	C	26.8	C
Southbound												
LT	0.22	0.243	21.2	1.000	232	0.11	0.5	0.0	21.7	C	21.6	C
R	0.02	0.243	20.1	1.000	392	0.11	0.0	0.0	20.2	C		

Intersection Delay = 11.9 (sec/veh) Intersection LOS = B

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

APPROACH -	EB	WB	NB	SB
Cycle Length, C 70.0 sec				
Actual Green Time for Lane Group, G			17.0	
Effective Green Time for Lane Group, g			17.0	
Opposing Effective Green Time, go			17.0	
Number of Lanes in Lane Group, N			1	
Number of Opposing Lanes, No			1	
Adjusted Left-Turn Flow Rate, Vlt			214	
Proportion of Left Turns in Opposing Flow, Plto			1.00	
Adjusted Opposing Flow Rate, Vo			52	
Lost Time for Lane Group, tl			4.00	
Left Turns per Cycle: LTC=VltC/3600			4.16	
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo			1.01	
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)			1.00	
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g			0.0	
Opposing Queue Ratio: qro=1-Rpo(go/C)			0.76	
gq=(4.943Volc**0.762)(qro**1.061)-tl, gq<=g			0.00	
gu =g-gq if gq>=gf, =g-gf if gq<gf			17.00	
n=(gq-gf)/2, n>=0			0.00	
Ptho=1-Plto			0.00	
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)}]			1.00	
El1 (Figure 9-7)			1.38	
El2=(1-Ptho**n)/Plto, El2>=1.0			1.00	
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g			0.24	
gdiff=max(gq-gf,0)			0.00	
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)			0.72	
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt			0.723	

For special case of single-lane approach opposed by multilane approach, see text.

* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.

** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm. For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 70.0 sec				
Actual Green Time for Lane Group, G	45.0	45.0		17.0
Effective Green Time for Lane Group, g	45.0	45.0		17.0
Opposing Effective Green Time, go	45.0	45.0		17.0
Number of Lanes in Lane Group, N	1	2		1
Number of Opposing Lanes, No	2	1		1
Adjusted Left-Turn Flow Rate, Vlt	41	87		52
Proportion of Left Turns in Lane Group, Plt	0.08	0.11		1.00
Proportion of Left Turns in Opposing Flow, Plto	0.11	0.08		0.00
Adjusted Opposing Flow Rate, Vo	764	530		231
Lost Time for Lane Group, tl	4.00	4.00		4.00
Left Turns per Cycle: LTC=VltC/3600	0.80	1.69		1.01
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo	7.82	10.31		4.49
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)	1.00	1.00		1.00
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g	17.3	0.0		3.2
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.36	0.36		0.76
gq=(4.943Volc**0.762)(qro**1.061)-tl, gq<=g	3.19	6.43		7.56
gu =g-gq if gq>=gf, =g-gf if gq<gf	27.74	38.57		9.44
n=(gq-gf)/2, n>=0	0.00	3.22		2.20
Ptho=1-Plto	0.89	0.92		1.00
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))	0.08	0.36		1.00
El1 (Figure 9-7)	3.09	2.37		1.75
El2=(1-Ptho**n)/Plto, El2>=1.0	1.00	2.95		1.00
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g	0.05	0.06		0.24
gdiff=max(gq-gf,0)	0.00	6.43		0.00
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)	0.91	0.57		0.50
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt Primary	0.914	0.741		0.502

For special case of single-lane approach opposed by multilane approach, see text.

* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.

** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.

For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v				
v/c ratio from Capacity Worksheet, X				
Primary phase effective green, g				
Secondary phase effective green, gq				
(From Supplemental Permitted LT Worksheet), gu				
Cycle length, C 70.0 Red =(C-g-gq-gu), r				
Arrivals: v/(3600(max(X,1.0))), qa				
Primary ph. departures: s/3600, sp				
Secondary ph. departures: s(gq+gu)/(gu*3600), ss				
XPerm				
XProt				
XCase				
Queue at beginning of green arrow, Qa				
Queue at beginning of unsaturated green, Qu				
Residual queue, Qr				
Uniform Delay, d1				

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay 11.9 sec/veh Intersection LOS B

ERROR MESSAGES

No errors to report.

HCS: Signalized Intersections Release 3.1c

Inter: Reservoir Road & 37th Street
Analyst: CAB
Date: 03/23/2000
E/W St: Reservoir Road

City/St: Washington, DC
Proj #: 1701-001 BG2
Period: AM Total Future 2010
N/S St: 37th Street

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	1	0	1	0	0	1	1
LGConfig		LT	R		LT	R		LTR			LT	R
Volume	93	997	1	1	493	35	3	11	5	181	4	102
Lane Width		12.0	12.0		12.0	12.0		12.0			12.0	12.0
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	A				NB Left	A			
Thru	A				Thru	A			
Right	A				Right	A			
Peds					Peds				
WB Left	A				SB Left	A			
Thru	A				Thru	A			
Right	A				Right	A			
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	55.0					15.0			
Yellow	4.0					4.0			
All Red	1.0					1.0			

Cycle Length: 80.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	1187	1726	1.02	0.688	43.8	D	43.8	D
R	1110	1615	0.00	0.688	3.9	A		
Westbound								
LT	1305	1898	0.42	0.688	5.7	A	5.6	A
R	1110	1615	0.04	0.688	4.0	A		
Northbound								
LTR	293	1565	0.07	0.188	26.9	C	26.9	C
Southbound								
LT	255	1359	0.80	0.188	48.0	D	41.3	D
R	303	1615	0.37	0.188	29.2	C		

Intersection Delay = 32.8 (sec/veh) Intersection LOS = C

HCS: Signalized Intersections Release 3.1c

Chad A. Baird
Gorove/Slade Associates, Inc.
1140 Connecticut Avenue NW
Suite 700
Washington, DC 20036
Phone: (202)296-8625 Fax: (202)785-8825
E-Mail: CBaird@GSATrans.com

OPERATIONAL ANALYSIS

Intersection:	Reservoir Road & 37th Street
City/State:	Washington, DC
Analyst:	CAB
Project No:	1701-001 BG2
Time Period Analyzed:	AM Total Future 2010
Date:	03/23/2000
East/West Street Name:	Reservoir Road
North/South Street Name:	37th Street

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	93	997	1	1	493	35	3	11	5	181	4	102
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PK 15 Vol	26	277	1	1	137	10	1	3	2	50	1	28
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat		1900	1900		1900	1900		1900			1900	1900
ParkExist												
NumPark												
% Heavy Veh	0	0	0	0	0	0	0	0	0	0	0	0
No. Lanes	0	1	1	0	1	1	0	1	0	0	1	1
LGConfig		LT	R		LT	R		LTR			LT	R
Lane Width		12.0	12.0		12.0	12.0		12.0			12.0	12.0
RTOR Vol			0			0			0			0
Adj Flow		1211	1		549	39		21			205	113
%InSharedLn												
Prop Turns	0.09			0.00			0.14		0.29	0.98		
NumPeds			0			0			0			0
NumBus		0	0		0	0		0			0	0

Duration 0.25 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet		0.0	0.0		0.0	0.0		0.0			0.0	0.0
Arriv. Type		3	3		3	3		3			3	3
Unit Ext.		3.0	3.0		3.0	3.0		3.0			3.0	3.0
I Factor		1.000			1.000			1.000			1.000	
Lost Time		2.0	2.0		2.0	2.0		2.0			2.0	2.0
Ext of g		2.0	2.0		2.0	2.0		2.0			2.0	2.0
Ped Min g		3.0			3.0			3.0			3.0	

PHASE DATA

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	55.0					15.0		
Yellow	4.0					4.0		
All Red	1.0					1.0		

Cycle Length: 80.0 secs

VOLUME ADJUSTMENT WORKSHEET

Appr./ Movement	Mvt Volume	PHF	Flow Rate	No. Lanes	Lane Group	RTOR	Adjusted Flow Rate In Lane Grp	Prop. Left Turns	Prop. Right Turns
Eastbound									
Left	93	0.90	103	0					
Thru	997	0.90	1108	1	LT		1211	0.09	
Right	1	0.90	1	1	R	0	1		
Westbound									
Left	1	0.90	1	0					
Thru	493	0.90	548	1	LT		549	0.00	
Right	35	0.90	39	1	R	0	39		
Northbound									
Left	3	0.90	3	0					
Thru	11	0.90	12	1	LTR		21	0.14	0.29
Right	5	0.90	6	0		0			
Southbound									
Left	181	0.90	201	0					
Thru	4	0.90	4	1	LT		205	0.98	
Right	102	0.90	113	1	R	0	113		

* Value entered by user.

SATURATION FLOW ADJUSTMENT WORKSHEET

Appr/ Lane Group	Ideal Sat Flow	f W	f HV	f G	f P	f BB	f A	f LU	f RT	f LT	Adj Sat Flow
Eastbound							Sec LT Adj/LT Sat:		----		
LT	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	1.000	0.908	1726
R	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	0.850	----	1615
Westbound							Sec LT Adj/LT Sat:		----		
LT	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	1.000	0.999	1898
R	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	0.850	----	1615
Northbound							Sec LT Adj/LT Sat:		----		
LTR	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	0.861	0.956	1565

Southbound							Sec LT Adj/LT Sat:		----		
LT	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	1.000	0.715	1359
R	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	0.850	----	1615

CAPACITY ANALYSIS WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Pri.							
Sec.							
Left							
Thru	LT	1211	1726	# 0.70	0.688	1187	1.02
Right	R	1	1615	0.00	0.688	1110	0.00
Westbound							
Pri.							
Sec.							
Left							
Thru	LT	549	1898	0.29	0.688	1305	0.42
Right	R	39	1615	0.02	0.688	1110	0.04
Northbound							
Pri.							
Sec.							
Left							
Thru	LTR	21	1565	0.01	0.188	293	0.07
Right							
Southbound							
Pri.							
Sec.							
Left							
Thru	LT	205	1359	# 0.15	0.188	255	0.80
Right	R	113	1615	0.07	0.188	303	0.37

Sum (v/s) critical = 0.85

Lost Time/Cycle, L = 10.00 sec Critical v/c(X) = 0.97

LEVEL OF SERVICE WORKSHEET

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
LT	1.02	0.688	12.5	1.000	1187	0.50	31.3	0.0	43.8	D	43.8	D
R	0.00	0.688	3.9	1.000	1110	0.11	0.0	0.0	3.9	A		
Westbound												
LT	0.42	0.688	5.5	1.000	1305	0.11	0.2	0.0	5.7	A	5.6	A
R	0.04	0.688	4.0	1.000	1110	0.11	0.0	0.0	4.0	A		
Northbound												
LTR	0.07	0.188	26.8	1.000	293	0.11	0.1	0.0	26.9	C	26.9	C
Southbound												
LT	0.80	0.188	31.1	1.000	255	0.35	16.9	0.0	48.0	D	41.3	D
R	0.37	0.188	28.4	1.000	303	0.11	0.8	0.0	29.2	C		

Intersection Delay = 32.8 (sec/veh) Intersection LOS = C

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 80.0 sec				
Actual Green Time for Lane Group, G				
Effective Green Time for Lane Group, g				
Opposing Effective Green Time, go				
Number of Lanes in Lane Group, N				
Number of Opposing Lanes, No				
Adjusted Left-Turn Flow Rate, Vlt				
Proportion of Left Turns in Opposing Flow, Plto				
Adjusted Opposing Flow Rate, Vo				
Lost Time for Lane Group, tl				
Left Turns per Cycle: LTC=VltC/3600				
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo				
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)				
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g				
Opposing Queue Ratio: qro=1-Rpo(go/C)				
gq=(4.943Volc**0.762)(qro**1.061)-tl, gq<=g				
gu =g-gq if gq>=gf, =g-gf if gq<gf				
n=(gq-gf)/2, n>=0				
Ptho=1-Plto				
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)}]				
El1 (Figure 9-7)				
El2=(1-Ptho**n)/Plto, El2>=1.0				
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g				
gdiff=max(gq-gf,0)				
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)				
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N** flt				

For special case of single-lane approach opposed by multilane approach, see text.

* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.

** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.

For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 80.0 sec				
Actual Green Time for Lane Group, G	55.0	55.0	15.0	15.0
Effective Green Time for Lane Group, g	55.0	55.0	15.0	15.0
Opposing Effective Green Time, go	55.0	55.0	15.0	15.0
Number of Lanes in Lane Group, N	1	1	1	1
Number of Opposing Lanes, No	1	1	1	1
Adjusted Left-Turn Flow Rate, Vlt	103	1	3	201
Proportion of Left Turns in Lane Group, Plt	0.09	0.00	0.14	0.98
Proportion of Left Turns in Opposing Flow, Plto	0.00	0.09	0.98	0.14
Adjusted Opposing Flow Rate, Vo	549	1211	205	21
Lost Time for Lane Group, tl	5.00	5.00	5.00	5.00
Left Turns per Cycle: LTC=VltC/3600	2.29	0.02	0.07	4.47
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo	12.20	26.91	4.56	0.47
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)	1.00	1.00	1.00	1.00
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g	7.9	45.8	7.8	0.0
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.31	0.31	0.81	0.81
gq=(4.943Volc**0.762)(qro**1.061)-tl, gq<=g	4.68	12.69	7.59	0.00
gu =g-gq if gq>=gf, =g-gf if gq<gf	47.07	9.15	7.17	15.00
n=(gq-gf)/2, n>=0	0.00	0.00	0.00	0.00
Ptho=1-Plto	1.00	0.91	0.02	0.86
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)))	0.09	0.00	0.14	0.98
El1 (Figure 9-7)	2.41	4.56	1.71	1.41
El2=(1-Ptho**n)/Plto, El2>=1.0	1.00	1.00	1.00	1.00
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g	0.04	0.04	0.15	0.26
gdiff=max(gq-gf,0)	0.00	0.00	0.00	0.00
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)	0.91	1.00	0.96	0.72
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt Primary	0.908	0.999	0.956	0.715

For special case of single-lane approach opposed by multilane approach, see text.
* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.
** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.
For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v				
v/c ratio from Capacity Worksheet, X				
Primary phase effective green, g				
Secondary phase effective green, gq				
(From Supplemental Permitted LT Worksheet), gu				
Cycle length, C 80.0 Red =(C-g-gq-gu), r				
Arrivals: v/(3600(max(X,1.0))), qa				
Primary ph. departures: s/3600, sp				
Secondary ph. departures: s(gq+gu)/(gu*3600), ss				
XPerm				
XProt				
XCase				
Queue at beginning of green arrow, Qa				
Queue at beginning of unsaturated green, Qu				
Residual queue, Qr				
Uniform Delay, d1				

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay 32.8 sec/veh Intersection LOS C

ERROR MESSAGES

No errors to report.

HCS: Signalized Intersections Release 3.1c

Inter: Reservoir Road & 37th Street
Analyst: CAB
Date: 03/23/2000
E/W St: Reservoir Road

City/St: Washington, DC
Proj #: 1701-001 BG2
Period: PM Total Future 2010
N/S St: 37th Street

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	1	0	1	0	0	1	1
LGConfig		LT	R		LT	R		LTR			LT	R
Volume	110	586	1	1	580	48	3	12	7	128	5	106
Lane Width		12.0	12.0		12.0	12.0		12.0			12.0	12.0
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	58.0					12.0		
Yellow	4.0					4.0		
All Red	1.0					1.0		

Cycle Length: 80.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	1125	1552	0.69	0.725	7.8	A	7.8	A
R	1171	1615	0.00	0.725	3.0	A		
Westbound								
LT	1377	1899	0.47	0.725	4.8	A	4.7	A
R	1171	1615	0.05	0.725	3.1	A		
Northbound								
LTR	234	1560	0.10	0.150	29.5	C	29.5	C
Southbound								
LT	204	1363	0.73	0.150	44.6	D	39.3	D
R	242	1615	0.49	0.150	32.7	C		

Intersection Delay = 11.6 (sec/veh) Intersection LOS = B

HCS: Signalized Intersections Release 3.1c

Chad A. Baird
Gorove/Slade Associates, Inc.
1140 Connecticut Avenue NW
Suite 700
Washington, DC 20036
Phone: (202)296-8625 Fax: (202)785-8825
E-Mail: CBaird@GSATrans.com

OPERATIONAL ANALYSIS

Intersection:	Reservoir Road & 37th Street
City/State:	Washington, DC
Analyst:	CAB
Project No:	1701-001 BG2
Time Period Analyzed:	PM Total Future 2010
Date:	03/23/2000
East/West Street Name:	Reservoir Road
North/South Street Name:	37th Street

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	110	586	1	1	580	48	3	12	7	128	5	106
PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PK 15 Vol	31	163	1	1	161	13	1	3	2	36	2	29
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat		1900	1900		1900	1900		1900			1900	1900
ParkExist												
NumPark												
% Heavy Veh	0	0	0	0	0	0	0	0	0	0	0	0
No. Lanes	0	1	1	0	1	1	0	1	0	0	1	1
LGConfig		LT	R		LT	R		LTR			LT	R
Lane Width		12.0	12.0		12.0	12.0		12.0			12.0	12.0
RTOR Vol			0			0			0			0
Adj Flow		773	1		645	53		24			148	118
%InSharedLn												
Prop Turns	0.16			0.00			0.13		0.33	0.96		
NumPeds			0			0			0			0
NumBus		0	0		0	0		0			0	0

Duration 0.25 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound		Westbound		Northbound		Southbound	
	L T R		L T R		L T R		L T R	
Init Unmet	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Arriv. Type	3	3	3	3	3		3	3
Unit Ext.	3.0	3.0	3.0	3.0	3.0		3.0	3.0
I Factor	1.000		1.000		1.000		1.000	
Lost Time	2.0	2.0	2.0	2.0	2.0		2.0	2.0
Ext of g	2.0	2.0	2.0	2.0	2.0		2.0	2.0
Ped Min g	3.0		3.0		3.0		3.0	

PHASE DATA

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	58.0				12.0			
Yellow	4.0				4.0			
All Red	1.0				1.0			

Cycle Length: 80.0 secs

VOLUME ADJUSTMENT WORKSHEET

Appr./ Movement	Mvt Volume	PHF	Flow Rate	No. Lanes	Lane Group	RTOR	Adjusted Flow Rate In Lane Grp	Prop. Left Turns	Prop. Right Turns
Eastbound									
Left	110	0.90	122	0					
Thru	586	0.90	651	1	LT		773	0.16	
Right	1	0.90	1	1	R	0	1		
Westbound									
Left	1	0.90	1	0					
Thru	580	0.90	644	1	LT		645	0.00	
Right	48	0.90	53	1	R	0	53		
Northbound									
Left	3	0.90	3	0					
Thru	12	0.90	13	1	LTR		24	0.13	0.33
Right	7	0.90	8	0		0			
Southbound									
Left	128	0.90	142	0					
Thru	5	0.90	6	1	LT		148	0.96	
Right	106	0.90	118	1	R	0	118		

* Value entered by user.

SATURATION FLOW ADJUSTMENT WORKSHEET

Appr/ Lane Group	Ideal Sat Flow	f W	f HV	f G	f P	f BB	f A	f LU	f RT	f LT	Adj Sat Flow
Eastbound							Sec LT Adj/LT Sat:		----		
LT	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	1.000	0.817	1552
R	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	0.850	----	1615
Westbound							Sec LT Adj/LT Sat:		----		
LT	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	1.000	0.999	1899
R	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	0.850	----	1615
Northbound							Sec LT Adj/LT Sat:		----		
LTR	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	0.855	0.961	1560

Southbound							Sec LT Adj/LT Sat:		----		
LT	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	1.000	0.717	1363
R	1900	1.000	1.000	1.000	1.000	1.000	1.00	1.00	0.850	----	1615

CAPACITY ANALYSIS WORKSHEET

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)		Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound								
Pri.								
Sec.								
Left								
Thru	LT	773	1552	#	0.50	0.725	1125	0.69
Right	R	1	1615		0.00	0.725	1171	0.00
Westbound								
Pri.								
Sec.								
Left								
Thru	LT	645	1899		0.34	0.725	1377	0.47
Right	R	53	1615		0.03	0.725	1171	0.05
Northbound								
Pri.								
Sec.								
Left								
Thru	LTR	24	1560		0.02	0.150	234	0.10
Right								
Southbound								
Pri.								
Sec.								
Left								
Thru	LT	148	1363	#	0.11	0.150	204	0.73
Right	R	118	1615		0.07	0.150	242	0.49

Sum (v/s) critical = 0.61

Lost Time/Cycle, L = 10.00 sec Critical v/c(X) = 0.69

LEVEL OF SERVICE WORKSHEET

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
LT	0.69	0.725	6.0	1.000	1125	0.26	1.8	0.0	7.8	A	7.8	A
R	0.00	0.725	3.0	1.000	1171	0.11	0.0	0.0	3.0	A		
Westbound												
LT	0.47	0.725	4.6	1.000	1377	0.11	0.3	0.0	4.8	A	4.7	A
R	0.05	0.725	3.1	1.000	1171	0.11	0.0	0.0	3.1	A		
Northbound												
LTR	0.10	0.150	29.4	1.000	234	0.11	0.2	0.0	29.5	C	29.5	C
Southbound												
LT	0.73	0.150	32.4	1.000	204	0.29	12.1	0.0	44.6	D	39.3	D
R	0.49	0.150	31.2	1.000	242	0.11	1.5	0.0	32.7	C		

Intersection Delay = 11.6 (sec/veh) Intersection LOS = B

SUPPLEMENTAL PERMITTED LT WORKSHEET
for exclusive lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 80.0 sec				
Actual Green Time for Lane Group, G				
Effective Green Time for Lane Group, g				
Opposing Effective Green Time, go				
Number of Lanes in Lane Group, N				
Number of Opposing Lanes, No				
Adjusted Left-Turn Flow Rate, Vlt				
Proportion of Left Turns in Opposing Flow, Plto				
Adjusted Opposing Flow Rate, Vo				
Lost Time for Lane Group, tl				
Left Turns per Cycle: LTC=VltC/3600				
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo				
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)				
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g				
Opposing Queue Ratio: qro=1-Rpo(go/C)				
gq=(4.943Volc**0.762)(qro**1.061)-tl, gq<=g				
gu =g-gq if gq>=gf, =g-gf if gq<gf				
n=(gq-gf)/2, n>=0				
Ptho=1-Plto				
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24)}]				
El1 (Figure 9-7)				
El2=(1-Ptho**n)/Plto, El2>=1.0				
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g				
gdiff=max(gq-gf,0)				
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)				
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N** flt				

For special case of single-lane approach opposed by multilane approach, see text.

* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.

** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.

For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL PERMITTED LT WORKSHEET
for shared lefts

APPROACH	EB	WB	NB	SB
Cycle Length, C 80.0 sec				
Actual Green Time for Lane Group, G	58.0	58.0	12.0	12.0
Effective Green Time for Lane Group, g	58.0	58.0	12.0	12.0
Opposing Effective Green Time, go	58.0	58.0	12.0	12.0
Number of Lanes in Lane Group, N	1	1	1	1
Number of Opposing Lanes, No	1	1	1	1
Adjusted Left-Turn Flow Rate, Vlt	122	1	3	142
Proportion of Left Turns in Lane Group, Plt	0.16	0.00	0.13	0.96
Proportion of Left Turns in Opposing Flow, Plto	0.00	0.16	0.96	0.13
Adjusted Opposing Flow Rate, Vo	645	773	148	24
Lost Time for Lane Group, tl	5.00	5.00	5.00	5.00
Left Turns per Cycle: LTC=VltC/3600	2.71	0.02	0.07	3.16
Opposing Flow per Lane, Per Cycle: Volc=VoC/3600fluo	14.33	17.18	3.29	0.53
Opposing Platoon Ratio, Rpo (Table 9-2 or Eqn 9-7)	1.00	1.00	1.00	1.00
gf=[Gexp(- a * (LTC ** b))]-tl, gf<=g	6.6	48.6	5.3	0.0
Opposing Queue Ratio: qro=1-Rpo(go/C)	0.28	0.28	0.85	0.85
gq=(4.943Volc**0.762)(qro**1.061)-tl, gq<=g	4.56	5.97	5.31	0.00
gu =g-gq if gq>=gf, =g-gf if gq<gf	51.41	9.38	6.69	12.00
n=(gq-gf)/2, n>=0	0.00	0.00	0.02	0.00
Ptho=1-Plto	1.00	0.84	0.04	0.88
Pl*=Plt[1+{(N-1)g/(gf+gu/El1+4.24))}	0.16	0.00	0.13	0.96
El1 (Figure 9-7)	2.65	3.00	1.61	1.41
El2=(1-Ptho**n)/Plto, El2>=1.0	1.00	1.00	1.00	1.00
fmin=2(1+Plt)/g or fmin=2(1+Pl)/g	0.04	0.03	0.19	0.33
gdiff=max(gq-gf,0)	0.00	0.00	0.05	0.00
fm=[gf/g]+[gu/g][1/{1+Pl(El1-1)}], (min=fmin;max=1.00)	0.82	1.00	0.96	0.72
flt=fm=[gf/g]+gdiff[1/{1+Plt(El2-1)}] +[gu/g][1/(1+Plt(El1-1)],(min=fmin;max=1.0) or flt=[fm+0.91(N-1)]/N**				
flt Primary	0.817	0.999	0.961	0.717

For special case of single-lane approach opposed by multilane approach, see text.

* If Pl>=1 for shared left-turn lanes with N>1, then assume de-facto left-turn lane and redo calculations.

** For permitted left-turns with multiple exclusive left-turn lanes, flt=fm.

For special case of multilane approach opposed by single-lane approach or when gf>gq, see text.

SUPPLEMENTAL UNIFORM DELAY WORKSHEET

	EBLT	WBLT	NBLT	SBLT
Adj. LT Vol from Vol Adjustment Worksheet, v				
v/c ratio from Capacity Worksheet, X				
Primary phase effective green, g				
Secondary phase effective green, gq				
(From Supplemental Permitted LT Worksheet), gu				
Cycle length, C 80.0 Red =(C-g-gq-gu), r				
Arrivals: v/(3600(max(X,1.0))), qa				
Primary ph. departures: s/3600, sp				
Secondary ph. departures: s(gq+gu)/(gu*3600), ss				
XPerm				
XProt				
XCase				
Queue at beginning of green arrow, Qa				
Queue at beginning of unsaturated green, Qu				
Residual queue, Qr				
Uniform Delay, d1				

DELAY/LOS WORKSHEET WITH INITIAL QUEUE

Appr/ Lane Group	Initial Unmet Demand Q veh	Dur. Unmet Demand t hrs.	Uniform Delay Unadj. ds	Uniform Delay Adj. d1 sec	Initial Queue Param. u	Final Unmet Demand Q veh	Initial Queue Delay d3 sec	Lane Group Delay d sec
Eastbound								
Westbound								
Northbound								
Southbound								

Intersection Delay 11.6 sec/veh Intersection LOS B

ERROR MESSAGES

No errors to report.

D. SUMMARY OF 1999/2000 GEORGETOWN UNIVERSITY CALENDAR OF ATHLETIC AND PERFORMING ARTS EVENTS

SUMMARY OF 1999/2000 GEORGETOWN UNIVERSITY CALENDAR OF ATHLETIC AND PERFORMING ARTS EVENTS

EVENT	WEEKDAY AFTERNOON	WEEKDAY EVENING			WEEKEND	TOTAL
(ATTENDANCE)	10AM-2:00PM	2PM-4PM	4AM-7PM	7PM-12AM	ALL DAY	
Football (1000 TO 2500)	0	0	0	0	6	**6**
M Soccer (500 TO 1500)	0	(2) START BEFORE 3:00 PM & (2) START AFTER 3:00 PM	0	0	7	**7**
W Soccer (100 TO 200)	0	1	2	0	4	**7**
Field Hockey (100 TO 200)	0	0	4	0	3	**7**
W Lacrosse (200 TO 500)	0	3	1	0	4	**8**
M Lacrosse (1000 TO 3000)	0	0	0	0	7	**7**
Total	**0**	**8**	**7**	**0**	**31**	**46**
Performing Arts	0	0	0	35	50	**85**
Volleyball (150 TO 250)	0	2	1	2	8	**13**
M Tennis	0	0	0	0	2	**2**
W Tennis	0	0	0	0	3	**3**
Sailing	0	0	0	0	2	**2**
Golf	0	0	0	0	2	**2**
Swimming (100 TO 200)	0	0	1	0	5	**6**
Crew	0	0	0	0	6	**6**
W Basketball (500 TO 2000)	0	0	0	7	7	**14**
M Basketball (1500 TO 2500)	1	0	0	9	12	**22**
Baseball (150 TO 250)	3(1DH)	11	0	0	13(7DH)	**27**
TOTAL	4	21	9	53	141	**228**

E. NORTH CAMPUS PARKING OCCUPANCY SURVEY

Georgetown University North Campus Parking Occupancy Survey

	Total Inventory	Striped Spaces	Stacking Capacity	Weekday Parking Demand	Weekend Parking Demand @ 10 AM	Weekend Parking Demand @ 2 PM
Lot A	169	169	0	160	111	120
Lot B	132	132	0	85	23	18
Lot E	72	72	0	49	38	46
Lot G	49	49	0	45	14	28
Leavey Center Garage	444	399	45	328	142	126
Hospital Parking Garage 1	663	519	144	559	236	221
Hospital Parking Garage 2	965	729	236	949	51	63
North Campus Subtotal	2494	2069	425	2175	615	622
Lot 3		780				
Lot 6		20				
Lot 9		86				
Lot Y		22				
Ryan		14				
White-Gravenor		16				
Weismiller		10				
South Campus Subtotal		1535		*1421		
Campus Total	4029	3604	425	3596		

* South Campus Weekday Parking Demand based on University oberservations

F. SAMPLE MODE CHOICE SURVEY & SURVEY RESULTS

Georgetown University - Campus Survey

1. **Primary Status:**

◯Undergraduate ◯University Visitor ◯Hospital Visitor (non-patient)
◯Graduate ◯Hospital Faculty/Staff ◯Conference Center Visitor
◯University Faculty/Staff ◯Hospital Patient

2. **a. Do you live on campus?** ◯Yes ◯No

b. What is the 5-digit ZIP code of your current residence?

3. **How did you arrive to campus today?**

◯Private Vehicle ◯Metrobus ◯Bicycle ◯Other (explain below)
◯Taxi cab ◯Walk ◯Shuttle

4. **If you came to campus today in a private vehicle, how many people were in the car when you arrived on-campus (including yourself)?**

◯drove alone ◯3
◯2 ◯4 or more

5. **If you came to school in a private vehicle where did you park?**

◯Leavey Center
◯North campus lot or garage (i.e. north of Leavey)
◯South campus lot or garage (i.e. south of Leavey)
◯Metered On-street parking
◯Residential On-street parking
◯Other

6. **What time did you arrive on campus today?**

7. **What time do you except to leave campus today?**

8. **Approxiamately how many times a week do you come on campus?**

Georgetown University - Mode Choice Survey Results

720 People Surveyed

	Primary Status
Undergraduate Students	24%
Graduate Students	8%
University Faculty/Staff	23%
Hospital Faculty/Staff	19%
Hospital Patients	7%
University Visitors	4%
Hospital Visitors	12%
Conference Center Visitors	3%

	Campus Residency
Campus Resident	20%
Off-Campus Resident	80%

	Mode Choice
Private Vehicle	46%
Bus	17%
Taxi	4%
Bicycle	1%
Walk	29%
Other	3%

Note: Bus includes Metrobus and GUTS Shuttle Bus
Other includes persons who were dropped off and chartered buses

	Auto Occupancy
Drove Alone	64%
2 People	20%
3 People	12%
4 or more People	4%

	Parking Location
Leavey Center Garage	39%
North Campus Lot or Garage	31%
South Campus Lot	12%
Metered On-street Parking	8%
Residential On-street Parking	9%
Valet	1%