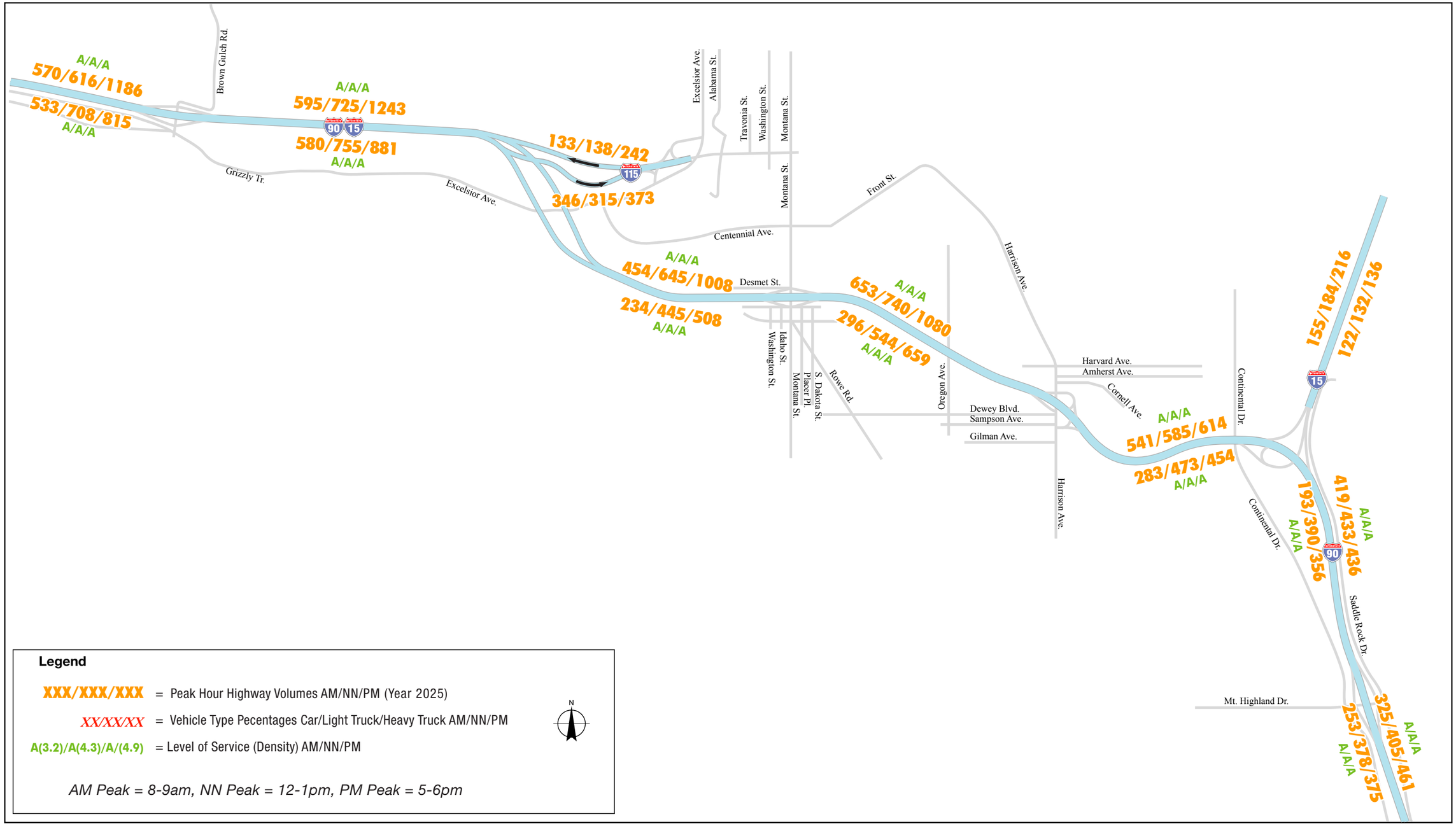
FUTURE (YEAR 2025) CONDITIONS
TRAFFIC INFORMATION



Legend

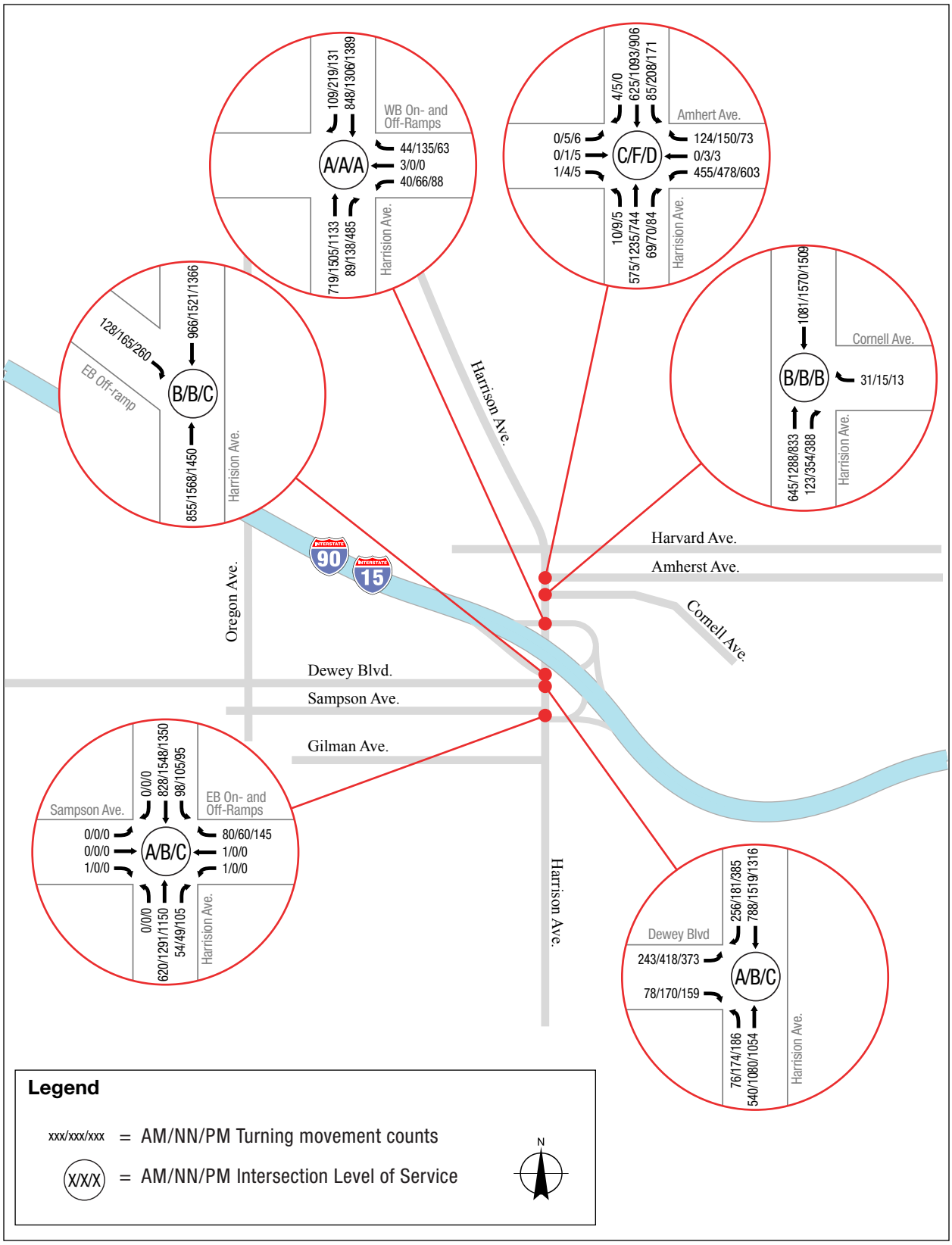
XXX/XXX/XXX = Peak Hour Highway Volumes AM/NN/PM (Year 2025)

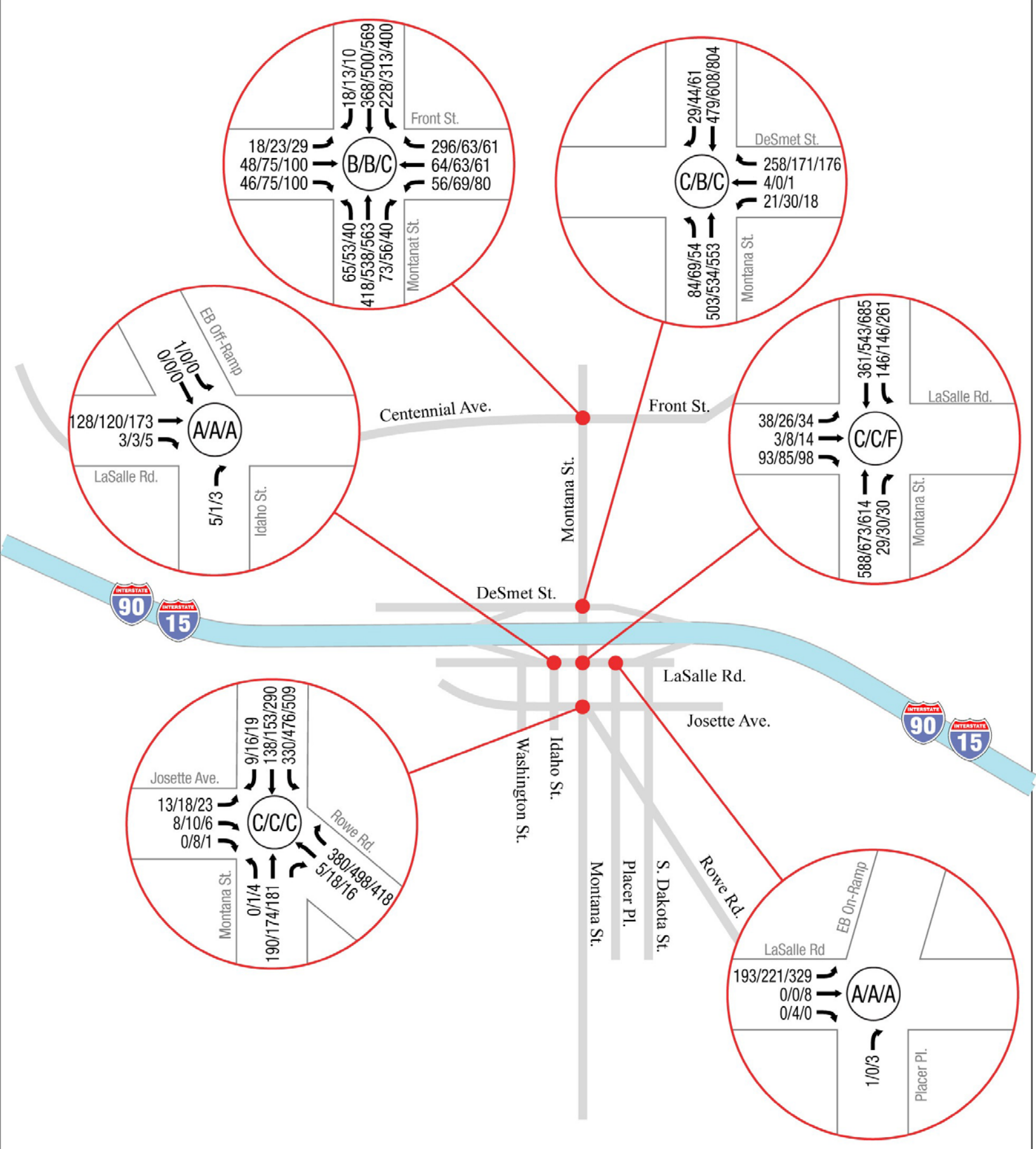
XX/XX/XX = Vehicle Type Pecentages Car/Light Truck/Heavy Truck AM/NN/PM

A(3.2)/A(4.3)/A/(4.9) = Level of Service (Density) AM/NN/PM

AM Peak = 8-9am, NN Peak = 12-1pm, PM Peak = 5-6pm

N


A/A/A
109/219/131
848/1306/1389
WB On- and Off-Ramps
44/135/63
3/0/0
40/66/88
719/1505/1133
89/138/485
Harrision Ave.
C/F/D
4/5/0
625/1093/906
85/208/171
Amhert Ave.
0/5/6
0/1/5
1/4/5
124/150/73
0/3/3
455/478/603
10/9/5
575/1235/744
69/70/84
Harrision Ave.
B/B/C
966/1521/1366
128/165/260
EB Off-ramp
855/1568/1450
Harrision Ave.
B/B/B
1081/1570/1509
Cornell Ave.
31/15/13
645/1288/833
123/354/388
Harrision Ave.
Harrison Ave.
Harvard Ave.
Amherst Ave.
Cornell Ave.
Oregon Ave.
90
15
Dewey Blvd.
Sampson Ave.
Gilman Ave.
Harrison Ave.
A/B/C
0/0/0
828/1548/1350
98/105/95
Sampson Ave.
EB On- and Off-Ramps
0/0/0
0/0/0
1/0/0
80/60/145
1/0/0
1/0/0
0/0/0
620/1291/1150
54/49/105
Harrision Ave.
A/B/C
256/181/385
788/1519/1316
Dewey Blvd
243/418/373
78/170/159
76/174/186
540/1080/1054
Harrision Ave.
Legend
xxx/xxx/xxx = AM/NN/PM Turning movement counts
X/X/X = AM/NN/PM Intersection Level of Service
N

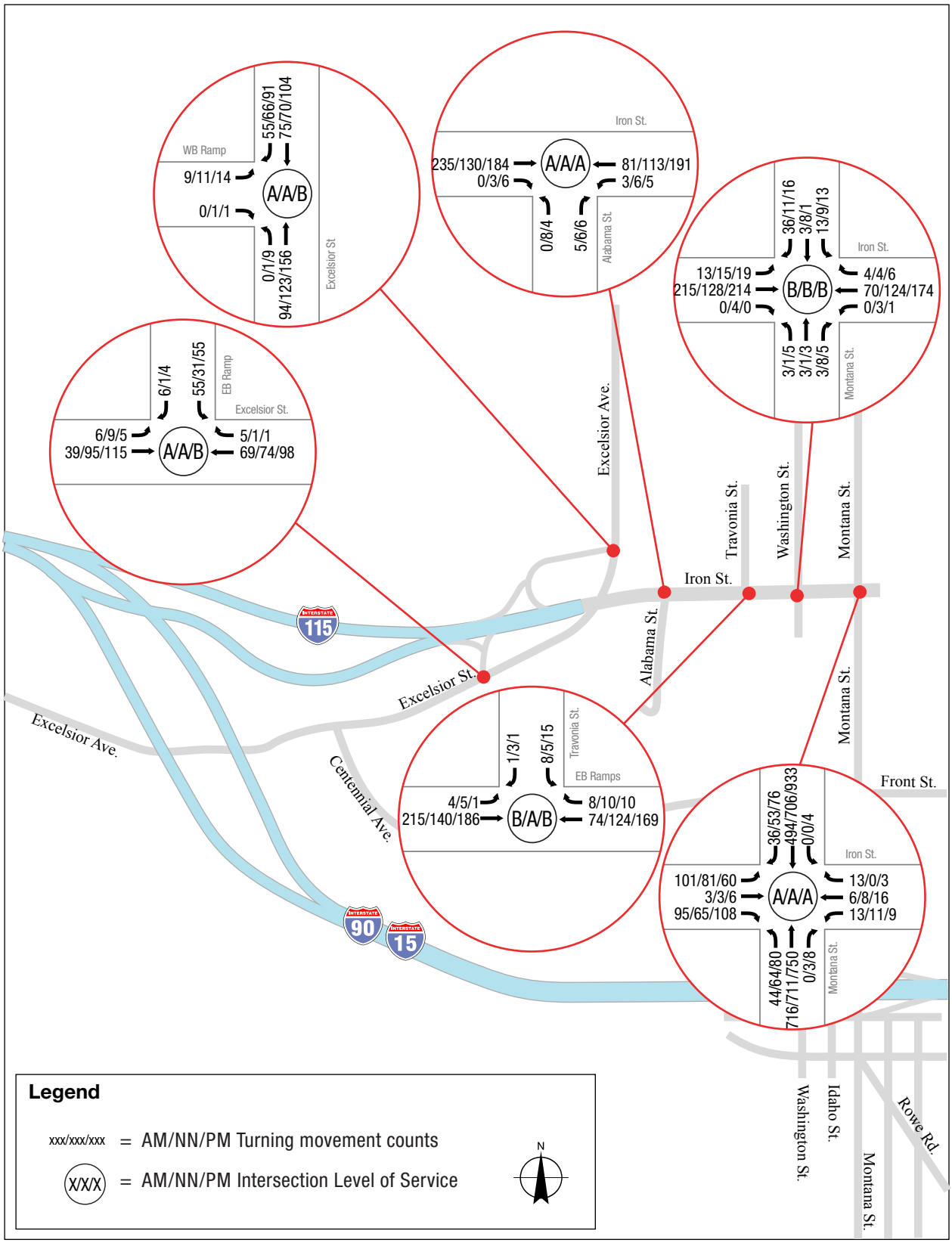


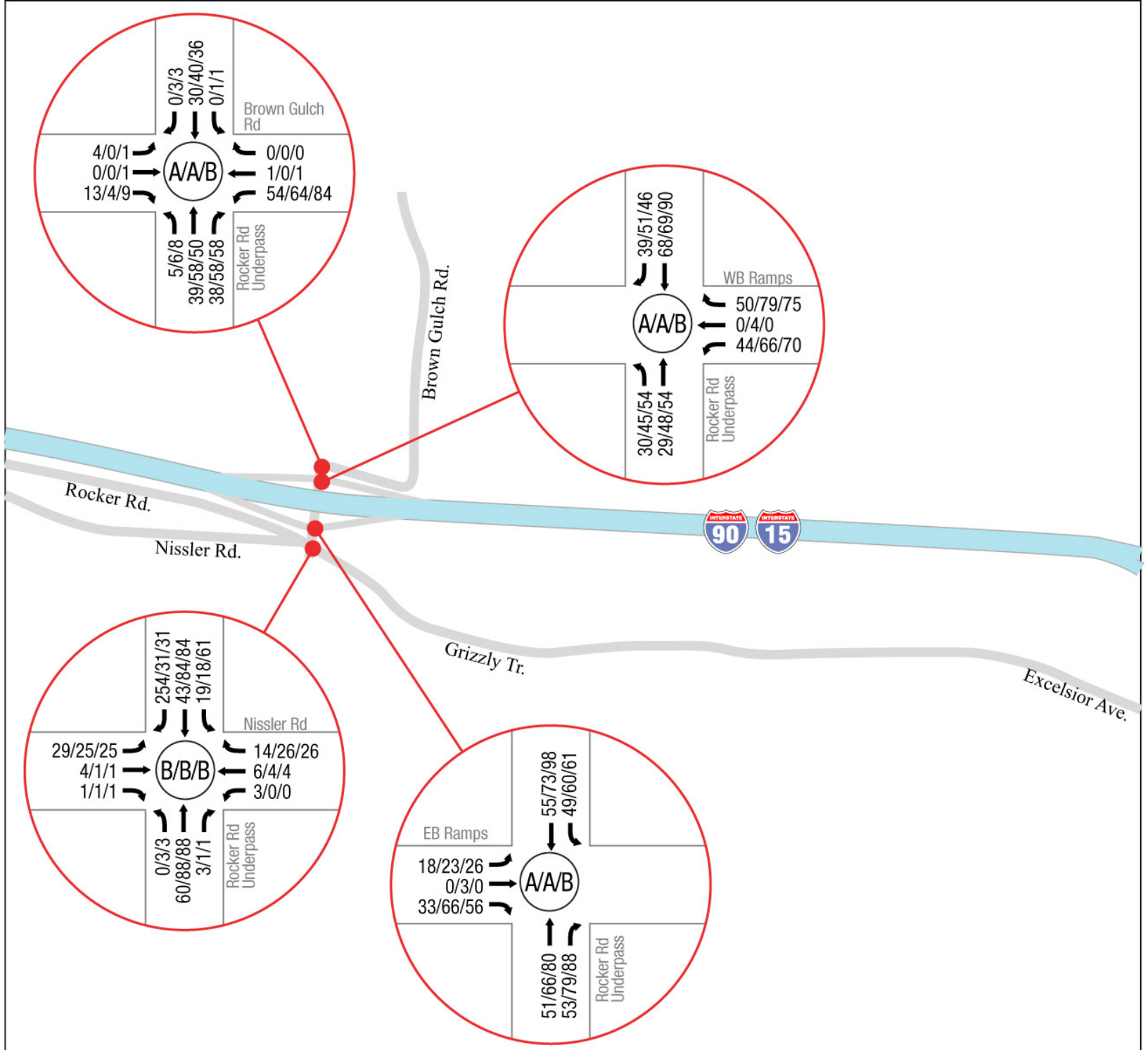
Legend

xxx/xxx/xxx = AM/NN/PM Turning movement counts

(X/X/X) = AM/NN/PM Intersection Level of Service

N


WB Ramp
55/66/91
75/70/104
9/11/14
A/A/B
0/1/1
0/1/9
94/123/156
Excelsior St
Iron St.
235/130/184
0/3/6
A/A/A
81/113/191
3/6/5
0/8/4
5/6/6
Alabama St.
36/11/16
3/8/1
13/9/13
Iron St.
13/15/19
215/128/214
0/4/0
B/B/B
4/4/6
70/124/174
0/3/1
3/1/5
3/1/3
3/8/5
Montana St.
6/1/4
55/31/55
EB Ramp
Excelsior St.
6/9/5
39/95/115
A/A/B
5/1/1
69/74/98
Excelsior Ave.
Travonia St.
Washington St.
Montana St.
Iron St.
Alabama St.
Excelsior St.
Excelsior Ave.
Centennial Ave.
1/3/1
8/5/15
Travonia St.
EB Ramps
4/5/1
215/140/186
B/A/B
8/10/10
74/124/169
Montana St.
Front St.
36/53/76
494/706/933
0/0/4
Iron St.
101/81/60
3/3/6
95/65/108
A/A/A
13/0/3
6/8/16
13/11/9
44/64/80
716/711/750
0/3/8
Montana St.
INTERSTATE 115
INTERSTATE 90
INTERSTATE 15
Washington St.
Idaho St.
Montana St.
Rowe Rd.
Legend
xxx/xxx/xxx = AM/NN/PM Turning movement counts
X/X/X = AM/NN/PM Intersection Level of Service
N

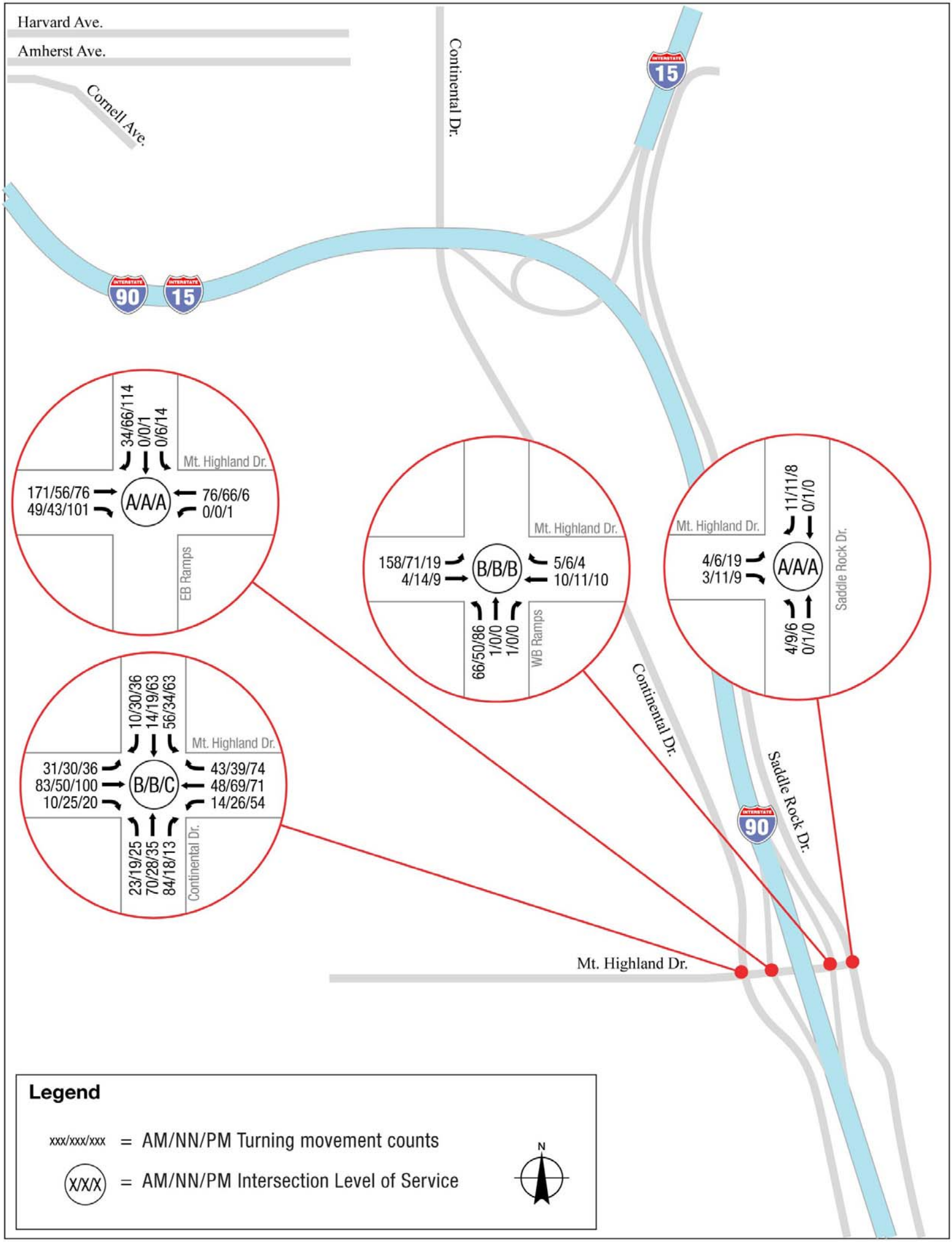


Legend

xxx/xxx/xxx = AM/NN/PM Turning movement counts

(X/X/X) = AM/NN/PM Intersection Level of Service

N

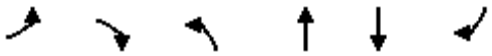

Harvard Ave.
Amherst Ave.
Cornell Ave.
Continental Dr.
15
90
15
34/66/114
0/0/1
0/6/14
Mt. Highland Dr.
171/56/76
49/43/101
A/A/A
76/66/6
0/0/1
EB Ramps
158/71/19
4/14/9
B/B/B
5/6/4
10/11/10
Mt. Highland Dr.
66/50/86
1/0/0
1/0/0
WB Ramps
Mt. Highland Dr.
11/11/8
0/1/0
4/6/19
3/11/9
A/A/A
4/9/6
0/1/0
Saddle Rock Dr.
10/30/36
14/19/63
56/34/63
Mt. Highland Dr.
31/30/36
83/50/100
10/25/20
B/B/C
43/39/74
48/69/71
14/26/54
23/19/25
70/28/35
84/18/13
Continental Dr.
Continental Dr.
Saddle Rock Dr.
90
Mt. Highland Dr.
Legend
xxx/xxx/xxx = AM/NN/PM Turning movement counts
X/X/X = AM/NN/PM Intersection Level of Service
N

FUTURE (YEAR 2025) CONDITIONS
SYNCHRO LEVEL OF SERVICE OUTPUTS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	0	0	116	0	920	84	76	1080	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	0	0	0	0	0	148	0	1173	107	97	1378	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											398	
pX, platoon unblocked	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
vC, conflicting volume	0	0	0	0	0	0	0			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0	0	0	0	0	0	0			0		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	0	0	0	0	0	0			0		
cM capacity (veh/h)	0	0	0	0	0	0	0			0		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	0	148	469	469	342	97	551	551	276
Volume Left	0	0	0	0	0	97	0	0	0
Volume Right	0	148	0	0	107	0	0	0	0
cSH	0	0	0	0	0	0	0	0	0
Volume to Capacity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A	A				A			
Approach Delay (s)	0.0	0.0	0.0			0.0			
Approach LOS	A	A							

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	48.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	208	0	1160	1093	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	0	271	0	1510	1423	0
Pedestrians	11					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	1					
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				114	442	
pX, platoon unblocked	0.96	0.94	0.94			
vC, conflicting volume	1938	485	1434			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1615	329	1337			
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	56	100			
cM capacity (veh/h)	90	622	477			

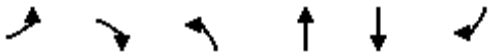
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	271	503	503	503	474	474	474
Volume Left	0	0	0	0	0	0	0
Volume Right	271	0	0	0	0	0	0
cSH	622	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.44	0.30	0.30	0.30	0.28	0.28	0.28
Queue Length 95th (ft)	55	0	0	0	0	0	0
Control Delay (s)	15.2	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	C						
Approach Delay (s)	15.2	0.0			0.0		
Approach LOS	C						

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	10	666	310	0	1207
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	14	905	421	0	1640
Pedestrians	4					
Lane Width (ft)	11.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			334			158
pX, platoon unblocked	0.88	0.95			0.95	
vC, conflicting volume	1456	456			1330	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1070	382			1298	
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	98			100	
cM capacity (veh/h)	190	586			504	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	14	452	452	421	547	547	547
Volume Left	0	0	0	0	0	0	0
Volume Right	14	0	0	421	0	0	0
cSH	586	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.02	0.27	0.27	0.25	0.32	0.32	0.32
Queue Length 95th (ft)	2	0	0	0	0	0	0
Control Delay (s)	11.3	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B						
Approach Delay (s)	11.3	0.0			0.0		
Approach LOS	B						

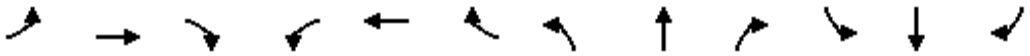
Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	33.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	0.97	1.00	1.00	0.91	0.91	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.97	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1583	1770	5085	4721	
Flt Permitted	0.95	1.00	0.08	1.00	1.00	
Satd. Flow (perm)	3433	1583	146	5085	4721	
Volume (vph)	298	127	149	843	1053	308
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor (vph)	125%	125%	125%	125%	125%	125%
Adj. Flow (vph)	380	162	190	1075	1343	393
RTOR Reduction (vph)	0	132	0	0	40	0
Lane Group Flow (vph)	380	30	190	1075	1696	0
Confl. Peds. (#/hr)			3			3
Turn Type		Perm	pm+pt			
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	14.9	14.9	64.1	64.1	50.5	
Effective Green, g (s)	16.9	16.9	65.1	65.1	51.5	
Actuated g/C Ratio	0.19	0.19	0.72	0.72	0.57	
Clearance Time (s)	6.0	6.0	4.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	645	297	279	3678	2701	
v/s Ratio Prot	c0.11		c0.07	0.21	0.36	
v/s Ratio Perm		0.02	c0.42			
v/c Ratio	0.59	0.10	0.68	0.29	0.63	
Uniform Delay, d1	33.4	30.3	16.9	4.4	12.9	
Progression Factor	1.00	1.00	1.00	1.00	0.59	
Incremental Delay, d2	1.4	0.2	6.7	0.2	1.1	
Delay (s)	34.8	30.4	23.6	4.6	8.7	
Level of Service	C	C	C	A	A	
Approach Delay (s)	33.5			7.4	8.7	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	12.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	12	15	11	11	11	11	11	11
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					1.00	1.00		0.91			0.91	
Frpb, ped/bikes					1.00	1.00		0.99			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		0.96			0.99	
Flt Protected					0.95	1.00		1.00			1.00	
Satd. Flow (prot)					1770	1742		4659			4842	
Flt Permitted					0.95	1.00		1.00			1.00	
Satd. Flow (perm)					1770	1742		4659			4842	
Volume (vph)	0	0	0	70	0	50	0	906	388	0	1111	105
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor (vph)	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%
Adj. Flow (vph)	0	0	0	91	0	65	0	1180	505	0	1447	137
RTOR Reduction (vph)	0	0	0	0	0	58	0	41	0	0	6	0
Lane Group Flow (vph)	0	0	0	0	91	7	0	1644	0	0	1578	0
Confl. Peds. (#/hr)									9			8
Turn Type				Perm		Perm						
Protected Phases					8			2			6	
Permitted Phases				8		8						
Actuated Green, G (s)					8.3	8.3		71.1			71.1	
Effective Green, g (s)					9.3	9.3		72.7			72.7	
Actuated g/C Ratio					0.10	0.10		0.81			0.81	
Clearance Time (s)					5.0	5.0		5.6			5.6	
Vehicle Extension (s)					3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)					183	180		3763			3911	
v/s Ratio Prot								c0.35			0.33	
v/s Ratio Perm					0.05	0.00						
v/c Ratio					0.50	0.04		0.44			0.40	
Uniform Delay, d1					38.1	36.3		2.6			2.5	
Progression Factor					1.00	1.00		1.21			0.65	
Incremental Delay, d2					2.1	0.1		0.4			0.3	
Delay (s)					40.3	36.4		3.5			1.9	
Level of Service					D	D		A			A	
Approach Delay (s)		0.0			38.7			3.5			1.9	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM Average Control Delay	4.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
21: Amherst Ave & Harrison Ave

12/2/2006

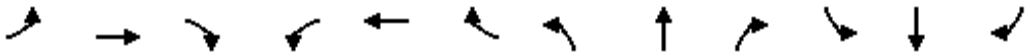
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	12	11	11
Total Lost time (s)		4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor		1.00		*0.80	0.95			0.95		1.00	0.91	
Frpb, ped/bikes		0.99		1.00	1.00			1.00		1.00	1.00	
Flpb, ped/bikes		1.00		0.99	1.00			1.00		1.00	1.00	
Frt		0.94		1.00	0.97			0.98		1.00	1.00	
Flt Protected		0.97		0.95	0.96			1.00		0.95	1.00	
Satd. Flow (prot)		1688		1408	1645			3361		1770	4916	
Flt Permitted		0.97		0.75	0.76			0.95		0.15	1.00	
Satd. Flow (perm)		1688		1112	1303			3187		287	4916	
Volume (vph)	5	0	4	482	2	58	4	595	67	137	725	0
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor (vph)	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%
Adj. Flow (vph)	6	0	5	615	3	74	5	759	85	175	925	0
RTOR Reduction (vph)	0	5	0	0	6	0	0	10	0	0	0	0
Lane Group Flow (vph)	0	6	0	308	378	0	0	839	0	175	925	0
Confl. Peds. (#/hr)			4	4					1	1		
Turn Type	Split			Perm			Perm			pm+pt		
Protected Phases	4	4			8			2		1	6	
Permitted Phases				8			2			6		
Actuated Green, G (s)		1.3		40.7	40.7			20.4		32.4	32.4	
Effective Green, g (s)		2.3		41.7	41.7			22.0		34.0	34.0	
Actuated g/C Ratio		0.03		0.46	0.46			0.24		0.38	0.38	
Clearance Time (s)		5.0		5.0	5.0			5.6		4.0	5.6	
Vehicle Extension (s)		2.5		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		43		515	604			779		240	1857	
v/s Ratio Prot		c0.00								c0.06	0.19	
v/s Ratio Perm				0.28	c0.29			c0.26		0.21		
v/c Ratio		0.14		0.60	0.63			1.08		0.73	0.50	
Uniform Delay, d1		42.9		17.9	18.2			34.0		22.4	21.5	
Progression Factor		1.00		1.00	1.00			0.93		1.00	1.00	
Incremental Delay, d2		1.1		1.9	2.0			54.1		10.6	1.0	
Delay (s)		44.0		19.8	20.3			85.9		32.9	22.4	
Level of Service		D		B	C			F		C	C	
Approach Delay (s)		44.0			20.1			85.9			24.1	
Approach LOS		D			C			F			C	

Intersection Summary			
HCM Average Control Delay	42.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
11: DeSmet Rd & Montana St

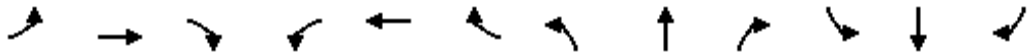
12/2/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	14	1	141	43	442	0	0	643	49
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	0	0	0	20	1	205	62	642	0	0	935	71
Pedestrians		6			4							
Lane Width (ft)		0.0			12.0							
Walking Speed (ft/s)		4.0			4.0							
Percent Blockage		0			0							
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)								852				
pX, platoon unblocked												
vC, conflicting volume	1628	1748	509	1239	1783	325	1012			646		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1628	1748	509	1239	1783	325	1012			646		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	83	98	69	91			100		
cM capacity (veh/h)	43	77	509	122	73	668	681			932		

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	21	206	62	321	321	623	383
Volume Left	20	0	62	0	0	0	0
Volume Right	0	205	0	0	0	0	71
cSH	119	650	681	1700	1700	1700	1700
Volume to Capacity	0.18	0.32	0.09	0.19	0.19	0.37	0.23
Queue Length 95th (ft)	15	34	8	0	0	0	0
Control Delay (s)	41.6	13.1	10.8	0.0	0.0	0.0	0.0
Lane LOS	E	B	B				
Approach Delay (s)	15.7		1.0			0.0	
Approach LOS	C						

Intersection Summary				
Average Delay	2.2			
Intersection Capacity Utilization	46.9%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	27	11	78	0	0	0	0	491	24	209	548	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	39	16	112	0	0	0	0	705	34	300	787	0
Pedestrians					4							
Lane Width (ft)					0.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)								435				
pX, platoon unblocked												
vC, conflicting volume	1741	2132	394	1841	2115	374	787			744		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1741	2132	394	1841	2115	374	787			744		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	4	50	81	100	100	100	100			65		
cM capacity (veh/h)	40	32	605	17	33	623	828			859		

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	47	120	470	270	300	394	394
Volume Left	39	0	0	0	300	0	0
Volume Right	0	112	0	34	0	0	0
cSH	39	277	1700	1700	859	1700	1700
Volume to Capacity	1.21	0.43	0.28	0.16	0.35	0.23	0.23
Queue Length 95th (ft)	118	52	0	0	39	0	0
Control Delay (s)	374.1	27.6	0.0	0.0	11.4	0.0	0.0
Lane LOS	F	D			B		
Approach Delay (s)	124.7		0.0		3.2		
Approach LOS	F						

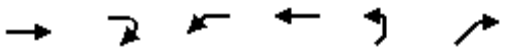
Intersection Summary			
Average Delay	12.1		
Intersection Capacity Utilization	46.9%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection Sign configuration not allowed in HCM analysis.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	NBR2	SWL	SWR
Lane Configurations											
Sign Control		Free			Free		Stop			Stop	
Grade		0%			0%		0%			0%	
Volume (veh/h)	263	6	0	0	0	0	0	0	2	0	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	378	9	0	0	0	0	0	0	3	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type							None			None	
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	0			9			764	764	9	764	0
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			9			764	764	9	764	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.2			2.2			3.5	4.0	3.3	4.0	3.3
p0 queue free %	77			100			100	100	100	100	100
cM capacity (veh/h)	1623			1611			263	256	1073	256	1085

Direction, Lane #	EB 1	EB 2	NB 1
Volume Total	378	9	3
Volume Left	378	0	0
Volume Right	0	0	3
cSH	1623	1700	1073
Volume to Capacity	0.23	0.01	0.00
Queue Length 95th (ft)	23	0	0
Control Delay (s)	7.9	0.0	8.4
Lane LOS	A		A
Approach Delay (s)	7.7		8.4
Approach LOS			A

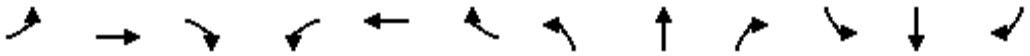
Intersection Summary				
Average Delay	7.7			
Intersection Capacity Utilization	21.5%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	0	0	90	3	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	122	4	0	0

Direction, Lane #	WB 1	WB 2
Volume Total (vph)	122	4
Volume Left (vph)	122	0
Volume Right (vph)	0	0
Hadj (s)	0.53	0.03
Departure Headway (s)	5.0	4.5
Degree Utilization, x	0.17	0.01
Capacity (veh/h)	706	782
Control Delay (s)	7.9	6.4
Approach Delay (s)	7.8	
Approach LOS	A	

Intersection Summary			
Delay	7.8		
HCM Level of Service	A		
Intersection Capacity Utilization	9.6%	ICU Level of Service	A
Analysis Period (min)	15		



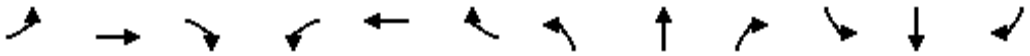
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0		4.0			4.0			4.0	
Lane Util. Factor	0.95	0.95	1.00		1.00			0.95			0.95	
Frpb, ped/bikes	1.00	1.00	1.00		1.00			1.00			1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00			1.00			1.00	
Frt	1.00	1.00	0.85		0.99			1.00			0.99	
Flt Protected	0.95	0.96	1.00		0.98			1.00			1.00	
Satd. Flow (prot)	1625	1700	1583		1809			3517			3498	
Flt Permitted	0.95	0.96	1.00		0.88			0.73			0.95	
Satd. Flow (perm)	1625	1700	1583		1611			2567			3334	
Volume (vph)	48	5	86	7	13	2	64	600	6	3	746	61
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor (vph)	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%
Adj. Flow (vph)	67	7	119	10	18	3	89	833	8	4	1036	85
RTOR Reduction (vph)	0	0	109	0	3	0	0	0	0	0	3	0
Lane Group Flow (vph)	35	39	10	0	28	0	0	930	0	0	1122	0
Confl. Peds. (#/hr)									2	2		
Turn Type	Split		Perm	Perm			Perm			Perm		
Protected Phases	4	4			8			2			6	
Permitted Phases			4	8			2			6		
Actuated Green, G (s)	6.5	6.5	6.5		3.3			65.2			65.2	
Effective Green, g (s)	7.5	7.5	7.5		4.3			66.2			66.2	
Actuated g/C Ratio	0.08	0.08	0.08		0.05			0.74			0.74	
Clearance Time (s)	5.0	5.0	5.0		5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)	135	142	132		77			1888			2452	
v/s Ratio Prot	0.02	c0.02										
v/s Ratio Perm			0.01		c0.02			c0.36			0.34	
v/c Ratio	0.26	0.27	0.08		0.37			0.49			0.46	
Uniform Delay, d1	38.6	38.7	38.1		41.5			4.9			4.7	
Progression Factor	1.00	1.00	1.00		1.00			0.50			1.00	
Incremental Delay, d2	1.0	1.1	0.2		2.9			0.8			0.6	
Delay (s)	39.7	39.8	38.3		44.5			3.3			5.4	
Level of Service	D	D	D		D			A			A	
Approach Delay (s)		38.8			44.5			3.3			5.4	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0		4.0	4.0		4.0	
Lane Util. Factor	1.00			1.00	1.00		1.00	1.00		1.00	
Frpb, ped/bikes	0.99			1.00	1.00		1.00	1.00		1.00	
Flpb, ped/bikes	1.00			1.00	1.00		1.00	1.00		1.00	
Frt	0.97			1.00	1.00		1.00	0.99		0.87	
Flt Protected	0.96			0.95	1.00		0.95	1.00		1.00	
Satd. Flow (prot)	1728			1770	1863		1770	1845		1618	
Flt Permitted	0.96			0.55	1.00		0.95	1.00		1.00	
Satd. Flow (perm)	1728			1022	1863		1770	1845		1618	
Volume (vph)	18	5	1	3	145	0	407	232	15	13	334
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Growth Factor (vph)	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%
Adj. Flow (vph)	26	7	1	4	208	0	585	333	22	19	480
RTOR Reduction (vph)	1	0	0	0	0	0	0	2	0	419	0
Lane Group Flow (vph)	33	0	0	4	208	0	585	353	0	80	0
Confl. Peds. (#/hr)			1			1					
Turn Type	Prot			Perm			Prot				
Protected Phases	4				2		1	6		8	
Permitted Phases				2							
Actuated Green, G (s)	3.4			16.1	16.1		40.1	61.2		10.4	
Effective Green, g (s)	4.4			17.1	17.1		41.1	62.2		11.4	
Actuated g/C Ratio	0.05			0.19	0.19		0.46	0.69		0.13	
Clearance Time (s)	5.0			5.0	5.0		5.0	5.0		5.0	
Vehicle Extension (s)	3.0			3.0	3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)	84			194	354		808	1275		205	
v/s Ratio Prot	c0.02				c0.11		c0.33	0.19		c0.05	
v/s Ratio Perm				0.00							
v/c Ratio	0.39			0.02	0.59		0.72	0.28		0.39	
Uniform Delay, d1	41.5			29.6	33.2		19.8	5.3		36.1	
Progression Factor	1.00			1.00	1.00		0.88	0.80		1.00	
Incremental Delay, d2	3.0			0.2	7.0		3.2	0.5		1.2	
Delay (s)	44.5			29.8	40.2		20.6	4.8		37.3	
Level of Service	D			C	D		C	A		D	
Approach Delay (s)	44.5				40.0			14.7		37.3	
Approach LOS	D				D			B		D	

Intersection Summary			
HCM Average Control Delay	25.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	13	12	12	11	11	11	11	10	11	11	11
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99			1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.93			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1711	1767			1751	1506	1711	3380		1711	3411	
Flt Permitted	0.55	1.00			0.45	1.00	0.42	1.00		0.36	1.00	
Satd. Flow (perm)	987	1767			806	1506	748	3380		657	3411	
Volume (vph)	23	80	80	64	49	272	32	370	32	320	455	8
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor (vph)	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%
Adj. Flow (vph)	31	108	108	86	66	366	43	497	43	430	612	11
RTOR Reduction (vph)	0	49	0	0	0	299	0	6	0	0	1	0
Lane Group Flow (vph)	31	167	0	0	152	67	43	534	0	430	622	0
Confl. Peds. (#/hr)			2			3						3
Turn Type	Perm			Perm		Perm	pm+pt			pm+pt		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	15.4	15.4			15.4	15.4	45.6	41.6		64.6	55.6	
Effective Green, g (s)	16.4	16.4			16.4	16.4	47.6	42.6		65.6	56.6	
Actuated g/C Ratio	0.18	0.18			0.18	0.18	0.53	0.47		0.73	0.63	
Clearance Time (s)	5.0	5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	180	322			147	274	449	1600		701	2145	
v/s Ratio Prot		0.09					0.01	0.16		c0.13	0.18	
v/s Ratio Perm	0.03				c0.19	0.04	0.05			c0.32		
v/c Ratio	0.17	0.52			1.03	0.24	0.10	0.33		0.61	0.29	
Uniform Delay, d1	31.1	33.2			36.8	31.5	10.2	14.8		5.4	7.6	
Progression Factor	1.00	1.00			1.00	1.00	0.82	0.87		0.46	0.52	
Incremental Delay, d2	0.5	1.4			83.5	0.5	0.1	0.5		1.5	0.3	
Delay (s)	31.5	34.6			120.3	32.0	8.5	13.4		3.9	4.3	
Level of Service	C	C			F	C	A	B		A	A	
Approach Delay (s)		34.3			57.9			13.0			4.1	
Approach LOS		C			E			B			A	

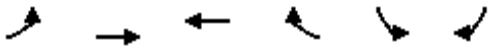
Intersection Summary			
HCM Average Control Delay	21.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	147	5	4	153	3	5
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	195	7	5	203	4	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			202		311	101
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			202		311	101
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1367		654	935

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	130	72	5	102	102	11
Volume Left	0	0	5	0	0	4
Volume Right	0	7	0	0	0	7
cSH	1700	1700	1367	1700	1700	805
Volume to Capacity	0.08	0.04	0.00	0.06	0.06	0.01
Queue Length 95th (ft)	0	0	0	0	0	1
Control Delay (s)	0.0	0.0	7.6	0.0	0.0	9.5
Lane LOS			A			A
Approach Delay (s)	0.0		0.2			9.5
Approach LOS						A

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	15.3%	ICU Level of Service	A
Analysis Period (min)	15		



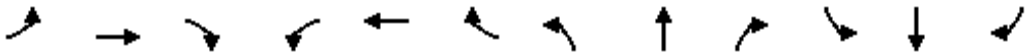
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	1	149	135	8	12	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	1	198	180	11	16	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)			1227			
pX, platoon unblocked						
vC, conflicting volume	190				287	95
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	190				287	95
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				98	100
cM capacity (veh/h)	1381				680	943

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	1	99	99	120	70	17
Volume Left	1	0	0	0	0	16
Volume Right	0	0	0	0	11	1
cSH	1381	1700	1700	1700	1700	695
Volume to Capacity	0.00	0.06	0.06	0.07	0.04	0.02
Queue Length 95th (ft)	0	0	0	0	0	2
Control Delay (s)	7.6	0.0	0.0	0.0	0.0	10.3
Lane LOS	A					B
Approach Delay (s)	0.1			0.0		10.3
Approach LOS						B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	15.1%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
9: Iron St & Washington St

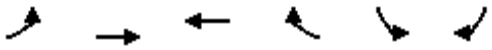
12/2/2006



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)	15	171	0	1	139	5	4	2	4	10	1	13
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	20	223	0	1	181	7	5	3	5	13	1	17
Pedestrians		2										
Lane Width (ft)		11.7										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					672							
pX, platoon unblocked												
vC, conflicting volume	188			223			374	452	111	344	449	96
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	188			223			374	452	111	344	449	96
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 %	99			100			99	99	99	98	100	98
cM capacity (veh/h)	1384			1343			539	494	921	574	496	940

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	20	148	74	1	121	67	13	31
Volume Left	20	0	0	1	0	0	5	13
Volume Right	0	0	0	0	0	7	5	17
cSH	1384	1700	1700	1343	1700	1700	633	721
Volume to Capacity	0.01	0.09	0.04	0.00	0.07	0.04	0.02	0.04
Queue Length 95th (ft)	1	0	0	0	0	0	2	3
Control Delay (s)	7.6	0.0	0.0	7.7	0.0	0.0	10.8	10.2
Lane LOS	A			A			B	B
Approach Delay (s)	0.6			0.1			10.8	10.2
Approach LOS							B	B

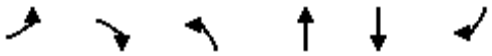
Intersection Summary				
Average Delay	1.3			
Intersection Capacity Utilization	23.2%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	4	92	78	1	44	3
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	6	140	119	2	67	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	120				272	120
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	120				272	120
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				91	100
cM capacity (veh/h)	1467				714	932

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	146	120	72
Volume Left	6	0	67
Volume Right	0	2	5
cSH	1467	1700	725
Volume to Capacity	0.00	0.07	0.10
Queue Length 95th (ft)	0	0	8
Control Delay (s)	0.3	0.0	10.5
Lane LOS	A		B
Approach Delay (s)	0.3	0.0	10.5
Approach LOS			B

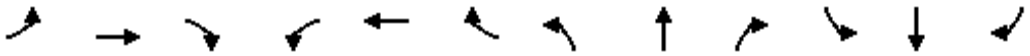
Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	20.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	11	1	7	125	83	73
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	17	2	11	188	125	110
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	389	180	235			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	389	180	235			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	100	99			
cM capacity (veh/h)	610	863	1332			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	18	199	235
Volume Left	17	11	0
Volume Right	2	0	110
cSH	625	1332	1700
Volume to Capacity	0.03	0.01	0.14
Queue Length 95th (ft)	2	1	0
Control Delay (s)	10.9	0.5	0.0
Lane LOS	B	A	
Approach Delay (s)	10.9	0.5	0.0
Approach LOS	B		

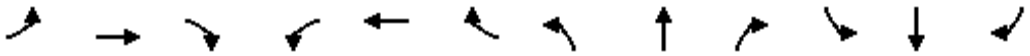
Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	25.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	20	1	1	0	3	21	2	70	1	14	67	25
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	27	1	1	0	4	28	3	93	1	19	89	33
Pedestrians					1							
Lane Width (ft)					12.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	272	244	106	245	260	95	122			95		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	272	244	106	245	260	95	122			95		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	100	100	100	99	97	100			99		
cM capacity (veh/h)	650	648	949	698	635	961	1465			1497		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	29	32	97	141
Volume Left	27	0	3	19
Volume Right	1	28	1	33
cSH	659	903	1465	1497
Volume to Capacity	0.04	0.04	0.00	0.01
Queue Length 95th (ft)	3	3	0	1
Control Delay (s)	10.7	9.1	0.2	1.1
Lane LOS	B	A	A	A
Approach Delay (s)	10.7	9.1	0.2	1.1
Approach LOS	B	A		

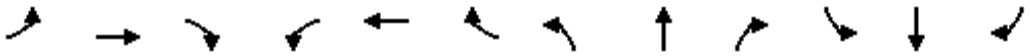
Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	28.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	21	0	45	0	0	0	0	64	70	49	78	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	27	0	59	0	0	0	0	83	91	64	102	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	358	404	102	417	358	129	102			174		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	358	404	102	417	358	129	102			174		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	100	94	100	100	100	100			95		
cM capacity (veh/h)	577	511	954	495	542	921	1491			1402		

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	86	174	165
Volume Left	27	0	64
Volume Right	59	91	0
cSH	789	1700	1402
Volume to Capacity	0.11	0.10	0.05
Queue Length 95th (ft)	9	0	4
Control Delay (s)	10.1	0.0	3.2
Lane LOS	B		A
Approach Delay (s)	10.1	0.0	3.2
Approach LOS	B		

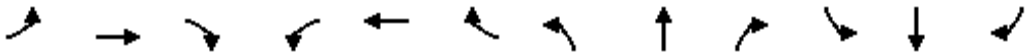
Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	33.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	56	0	60	43	43	0	0	72	37
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	74	0	80	57	57	0	0	96	49
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	372	292	120	292	316	57	145			57		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	372	292	120	292	316	57	145			57		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	88	100	92	96			100		
cM capacity (veh/h)	522	594	931	640	576	1009	1437			1547		

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	74	80	114	145
Volume Left	74	0	57	0
Volume Right	0	80	0	49
cSH	640	1009	1437	1700
Volume to Capacity	0.12	0.08	0.04	0.09
Queue Length 95th (ft)	10	6	3	0
Control Delay (s)	11.4	8.9	4.0	0.0
Lane LOS	B	A	A	
Approach Delay (s)	10.1		4.0	0.0
Approach LOS	B			

Intersection Summary				
Average Delay	4.9			
Intersection Capacity Utilization	27.8%	ICU Level of Service	A	
Analysis Period (min)	15			



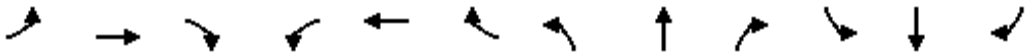
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	1	7	67	1	0	6	40	46	1	29	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1	1	10	93	1	0	8	56	64	1	40	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	149	181	42	159	150	88	43			119		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	149	181	42	159	150	88	43			119		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	88	100	100	99			100		
cM capacity (veh/h)	813	709	1029	794	737	971	1566			1468		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	12	94	128	44
Volume Left	1	93	8	1
Volume Right	10	0	64	3
cSH	953	793	1566	1468
Volume to Capacity	0.01	0.12	0.01	0.00
Queue Length 95th (ft)	1	10	0	0
Control Delay (s)	8.8	10.2	0.5	0.2
Lane LOS	A	B	A	A
Approach Delay (s)	8.8	10.2	0.5	0.2
Approach LOS	A	B		

Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	27.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
22: Mt Highland Dr & Continental Dr

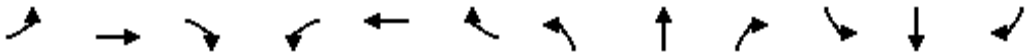
12/2/2006



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)	12	40	20	21	55	31	15	22	14	27	15	24
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	16	54	27	28	74	42	20	30	19	36	20	32
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	116			81			293	272	67	284	264	95
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	116			81			293	272	67	284	264	95
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			98			97	95	98	94	97	97
cM capacity (veh/h)	1473			1517			608	617	996	617	622	962

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	97	144	69	89
Volume Left	16	28	20	36
Volume Right	27	42	19	32
cSH	1473	1517	685	711
Volume to Capacity	0.01	0.02	0.10	0.12
Queue Length 95th (ft)	1	1	8	11
Control Delay (s)	1.3	1.6	10.8	10.8
Lane LOS	A	A	B	B
Approach Delay (s)	1.3	1.6	10.8	10.8
Approach LOS			B	B

Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	24.3%	ICU Level of Service	A
Analysis Period (min)	15		



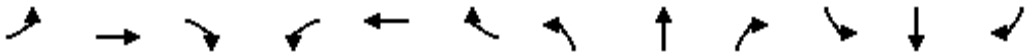
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	45	34	0	53	0	0	0	0	5	0	53
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	62	47	0	73	0	0	0	0	7	0	73
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	73			109			231	158	85	158	181	73
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	73			109			231	158	85	158	181	73
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	99	100	93
cM capacity (veh/h)	1527			1482			671	734	974	808	713	989

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	109	73	80
Volume Left	0	0	7
Volume Right	47	0	73
cSH	1700	1482	970
Volume to Capacity	0.06	0.00	0.08
Queue Length 95th (ft)	0	0	7
Control Delay (s)	0.0	0.0	9.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.0
Approach LOS			A

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	16.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
24: Mt Highland Dr & WB on-ramp

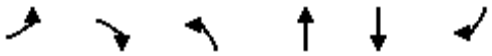
12/2/2006



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)	57	11	0	0	9	5	40	0	0	0	0	0
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	91	18	0	0	14	8	64	0	0	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	22			18			219	223	18	219	219	18
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	22			18			219	223	18	219	219	18
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 %	94			100			91	100	100	100	100	100
cM capacity (veh/h)	1593			1599			705	637	1061	705	641	1060

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	109	22	64
Volume Left	91	0	64
Volume Right	0	8	0
cSH	1593	1700	705
Volume to Capacity	0.06	0.01	0.09
Queue Length 95th (ft)	5	0	7
Control Delay (s)	6.3	0.0	10.6
Lane LOS	A		B
Approach Delay (s)	6.3	0.0	10.6
Approach LOS			B

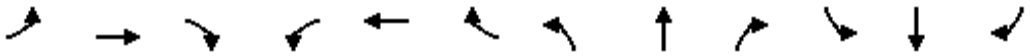
Intersection Summary			
Average Delay	7.0		
Intersection Capacity Utilization	21.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	5	9	7	1	1	9
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	9	15	12	2	2	15

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	24	14	17
Volume Left (vph)	9	12	0
Volume Right (vph)	15	0	15
Hadj (s)	-0.28	0.21	-0.51
Departure Headway (s)	3.7	4.2	3.5
Degree Utilization, x	0.02	0.02	0.02
Capacity (veh/h)	963	845	1028
Control Delay (s)	6.8	7.2	6.5
Approach Delay (s)	6.8	7.2	6.5
Approach LOS	A	A	A

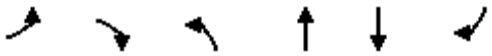
Intersection Summary			
Delay	6.8		
HCM Level of Service	A		
Intersection Capacity Utilization	17.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	0	0	48	0	1033	39	84	1238	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	0	0	0	67	0	1435	54	117	1719	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											398	
pX, platoon unblocked	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
vC, conflicting volume	0	0	0	0	0	0	0			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0	0	0	0	0	0	0			0		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	0	0	0	0	0	0			0		
cM capacity (veh/h)	0	0	0	0	0	0	0			0		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	0	67	574	574	341	117	688	688	344
Volume Left	0	0	0	0	0	117	0	0	0
Volume Right	0	67	0	0	54	0	0	0	0
cSH	0	0	0	0	0	0	0	0	0
Volume to Capacity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A	A				A			
Approach Delay (s)	0.0	0.0	0.0			0.0			
Approach LOS	A	A							

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	45.6%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	132	0	1254	1217	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	170	0	1616	1568	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				114	442	
pX, platoon unblocked	0.96	0.93	0.93			
vC, conflicting volume	2107	523	1568			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1728	328	1456			
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	73	100			
cM capacity (veh/h)	76	619	427			

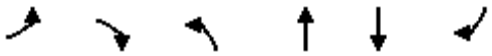
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	170	539	539	539	523	523	523
Volume Left	0	0	0	0	0	0	0
Volume Right	170	0	0	0	0	0	0
cSH	619	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.27	0.32	0.32	0.32	0.31	0.31	0.31
Queue Length 95th (ft)	28	0	0	0	0	0	0
Control Delay (s)	13.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B						
Approach Delay (s)	13.0	0.0			0.0		
Approach LOS	B						

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	12	1030	283	0	1256
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	0	16	1341	368	0	1635
Pedestrians	2					
Lane Width (ft)	11.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			334			158
pX, platoon unblocked	0.90	0.88			0.88	
vC, conflicting volume	1888	673			1712	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1283	489			1672	
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	97			100	
cM capacity (veh/h)	140	460			333	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	16	671	671	368	545	545	545
Volume Left	0	0	0	0	0	0	0
Volume Right	16	0	0	368	0	0	0
cSH	460	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.03	0.39	0.39	0.22	0.32	0.32	0.32
Queue Length 95th (ft)	3	0	0	0	0	0	0
Control Delay (s)	13.1	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B						
Approach Delay (s)	13.1	0.0			0.0		
Approach LOS	B						

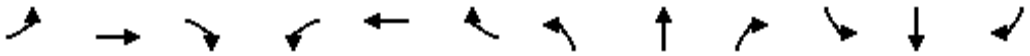
Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	45.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	0.97	1.00	1.00	0.91	0.91	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1583	1770	5085	4825	
Flt Permitted	0.95	1.00	0.08	1.00	1.00	
Satd. Flow (perm)	3433	1583	147	5085	4825	
Volume (vph)	334	136	139	864	1215	145
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99
Growth Factor (vph)	125%	125%	125%	125%	125%	125%
Adj. Flow (vph)	422	172	176	1091	1534	183
RTOR Reduction (vph)	0	137	0	0	11	0
Lane Group Flow (vph)	422	35	176	1091	1706	0
Confl. Peds. (#/hr)			2			2
Turn Type		Perm	pm+pt			
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	16.1	16.1	62.9	62.9	49.6	
Effective Green, g (s)	18.1	18.1	63.9	63.9	50.6	
Actuated g/C Ratio	0.20	0.20	0.71	0.71	0.56	
Clearance Time (s)	6.0	6.0	4.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	690	318	272	3610	2713	
v/s Ratio Prot	c0.12		c0.07	0.21	0.35	
v/s Ratio Perm		0.02	c0.39			
v/c Ratio	0.61	0.11	0.65	0.30	0.63	
Uniform Delay, d1	32.7	29.4	15.3	4.8	13.3	
Progression Factor	1.00	1.00	1.00	1.00	0.65	
Incremental Delay, d2	1.6	0.2	5.2	0.2	1.1	
Delay (s)	34.4	29.5	20.5	5.0	9.8	
Level of Service	C	C	C	A	A	
Approach Delay (s)	33.0			7.2	9.8	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		

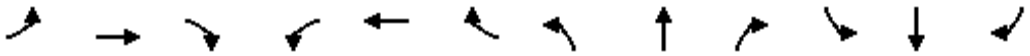
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	11	12	15	11	11	11	11	11	11
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					1.00	1.00		0.91			0.91	
Frpb, ped/bikes					1.00	0.99		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		0.99			0.98	
Flt Protected					0.95	1.00		1.00			1.00	
Satd. Flow (prot)					1770	1719		4854			4795	
Flt Permitted					0.95	1.00		1.00			1.00	
Satd. Flow (perm)					1770	1719		4854			4795	
Volume (vph)	0	0	0	53	0	108	0	1204	110	0	1045	175
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor (vph)	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%
Adj. Flow (vph)	0	0	0	68	0	139	0	1552	142	0	1347	226
RTOR Reduction (vph)	0	0	0	0	0	29	0	7	0	0	14	0
Lane Group Flow (vph)	0	0	0	0	68	110	0	1688	0	0	1559	0
Confl. Peds. (#/hr)						1						3
Turn Type				Perm		Perm						
Protected Phases					8			2			6	
Permitted Phases				8		8						
Actuated Green, G (s)					10.5	10.5		68.9			68.9	
Effective Green, g (s)					11.5	11.5		70.5			70.5	
Actuated g/C Ratio					0.13	0.13		0.78			0.78	
Clearance Time (s)					5.0	5.0		5.6			5.6	
Vehicle Extension (s)					3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)					226	220		3802			3756	
v/s Ratio Prot								c0.35			0.33	
v/s Ratio Perm					0.04	c0.06						
v/c Ratio					0.30	0.50		0.44			0.42	
Uniform Delay, d1					35.6	36.6		3.2			3.1	
Progression Factor					1.00	1.00		1.25			0.57	
Incremental Delay, d2					0.8	1.8		0.4			0.3	
Delay (s)					36.4	38.4		4.4			2.1	
Level of Service					D	D		A			A	
Approach Delay (s)		0.0			37.7			4.4			2.1	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM Average Control Delay	5.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



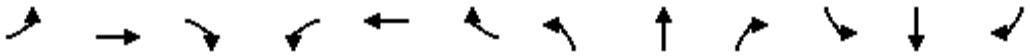
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	12	11	11
Total Lost time (s)		4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor		1.00		0.95	0.95			0.95		1.00	0.91	
Frpb, ped/bikes		0.99		1.00	1.00			1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.95		1.00	0.94			0.99		1.00	1.00	
Flt Protected		0.98		0.95	0.97			1.00		0.95	1.00	
Satd. Flow (prot)		1708		1674	1607			3389		1770	4912	
Flt Permitted		0.98		0.75	0.82			0.94		0.15	1.00	
Satd. Flow (perm)		1708		1324	1355			3195		271	4912	
Volume (vph)	4	1	3	382	2	120	7	988	56	166	874	4
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor (vph)	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%
Adj. Flow (vph)	5	1	4	487	3	153	9	1260	71	212	1115	5
RTOR Reduction (vph)	0	4	0	0	23	0	0	4	0	0	1	0
Lane Group Flow (vph)	0	6	0	286	334	0	0	1336	0	212	1119	0
Confl. Peds. (#/hr)			3	3					1	1		
Turn Type	Split			Perm			Perm			pm+pt		
Protected Phases	4	4			8			2		1	6	
Permitted Phases				8			2			6		
Actuated Green, G (s)		1.3		36.4	36.4			21.9		36.7	36.7	
Effective Green, g (s)		2.3		37.4	37.4			23.5		38.3	38.3	
Actuated g/C Ratio		0.03		0.42	0.42			0.26		0.43	0.43	
Clearance Time (s)		5.0		5.0	5.0			5.6		4.0	5.6	
Vehicle Extension (s)		2.5		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		44		550	563			834		295	2090	
v/s Ratio Prot		c0.00								c0.09	0.23	
v/s Ratio Perm				0.22	c0.25			c0.42		0.22		
v/c Ratio		0.14		0.52	0.59			1.60		0.72	0.54	
Uniform Delay, d1		42.9		19.6	20.4			33.2		21.1	19.2	
Progression Factor		1.00		1.00	1.00			0.93		1.00	1.00	
Incremental Delay, d2		1.1		0.9	1.7			275.8		8.1	1.0	
Delay (s)		43.9		20.5	22.1			306.8		29.2	20.2	
Level of Service		D		C	C			F		C	C	
Approach Delay (s)		43.9			21.4			306.8			21.6	
Approach LOS		D			C			F			C	

Intersection Summary			
HCM Average Control Delay	136.6	HCM Level of Service	F
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	92.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
11: DeSmet Rd & Montana St

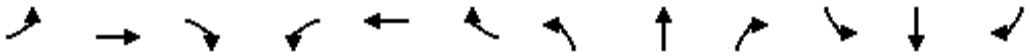
12/2/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	24	0	137	55	427	0	0	486	35
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	32	0	182	73	568	0	0	646	47
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)								852				
pX, platoon unblocked												
vC, conflicting volume	1282	1384	346	1037	1407	284	693			568		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1282	1384	346	1037	1407	284	693			568		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	82	100	74	92			100		
cM capacity (veh/h)	85	131	650	174	127	713	898			1000		

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	32	182	73	284	284	431	262
Volume Left	32	0	73	0	0	0	0
Volume Right	0	182	0	0	0	0	47
cSH	174	713	898	1700	1700	1700	1700
Volume to Capacity	0.18	0.26	0.08	0.17	0.17	0.25	0.15
Queue Length 95th (ft)	16	25	7	0	0	0	0
Control Delay (s)	30.3	11.8	9.4	0.0	0.0	0.0	0.0
Lane LOS	D	B	A				
Approach Delay (s)	14.5		1.1			0.0	
Approach LOS	B						

Intersection Summary				
Average Delay	2.5			
Intersection Capacity Utilization	41.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	21	6	68	0	0	0	0	538	24	117	434	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	28	8	89	0	0	0	0	708	32	154	571	0
Pedestrians					2							
Lane Width (ft)					0.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)								435				
pX, platoon unblocked												
vC, conflicting volume	1233	1620	286	1413	1605	372	571			741		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1233	1620	286	1413	1605	372	571			741		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	76	91	87	100	100	100	100			82		
cM capacity (veh/h)	115	84	711	69	86	626	998			861		

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	32	93	472	268	154	286	286
Volume Left	28	0	0	0	154	0	0
Volume Right	0	89	0	32	0	0	0
cSH	110	540	1700	1700	861	1700	1700
Volume to Capacity	0.29	0.17	0.28	0.16	0.18	0.17	0.17
Queue Length 95th (ft)	27	16	0	0	16	0	0
Control Delay (s)	50.6	13.0	0.0	0.0	10.1	0.0	0.0
Lane LOS	F	B			B		
Approach Delay (s)	22.5		0.0		2.1		
Approach LOS	C						

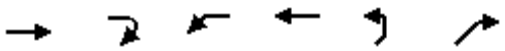
Intersection Summary				
Average Delay	2.7			
Intersection Capacity Utilization	41.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection Sign configuration not allowed in HCM analysis.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	NBR2	SWL	SWR
Lane Configurations											
Sign Control		Free			Free		Stop			Stop	
Grade		0%			0%		0%			0%	
Volume (veh/h)	177	0	3	0	0	0	0	0	0	0	0
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	270	0	5	0	0	0	0	0	0	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type							None			None	
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	0			5			542	542	2	544	0
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			5			542	542	2	544	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.2			2.2			3.5	4.0	3.3	4.0	3.3
p0 queue free %	83			100			100	100	100	100	100
cM capacity (veh/h)	1623			1617			394	373	1082	372	1085

Direction, Lane #	EB 1	EB 2	NB 1
Volume Total	270	5	0
Volume Left	270	0	0
Volume Right	0	5	0
cSH	1623	1700	1700
Volume to Capacity	0.17	0.00	0.00
Queue Length 95th (ft)	15	0	0
Control Delay (s)	7.7	0.0	0.0
Lane LOS	A		A
Approach Delay (s)	7.5		0.0
Approach LOS			A

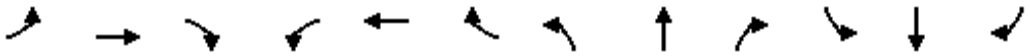
Intersection Summary				
Average Delay	7.5			
Intersection Capacity Utilization	15.6%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	0	0	85	5	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	115	7	0	0

Direction, Lane #	WB 1	WB 2
Volume Total (vph)	115	7
Volume Left (vph)	115	0
Volume Right (vph)	0	0
Hadj (s)	0.53	0.03
Departure Headway (s)	5.0	4.5
Degree Utilization, x	0.16	0.01
Capacity (veh/h)	706	782
Control Delay (s)	7.8	6.4
Approach Delay (s)	7.7	
Approach LOS	A	

Intersection Summary			
Delay	7.7		
HCM Level of Service	A		
Intersection Capacity Utilization	9.2%	ICU Level of Service	A
Analysis Period (min)	15		

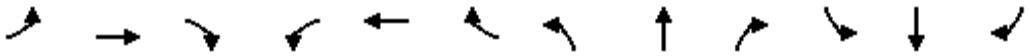


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0		4.0			4.0			4.0	
Lane Util. Factor	0.95	0.95	1.00		1.00			0.95			0.95	
Frt	1.00	1.00	0.85		1.00			1.00			0.99	
Flt Protected	0.95	0.96	1.00		0.97			1.00			1.00	
Satd. Flow (prot)	1625	1691	1583		1808			3523			3503	
Flt Permitted	0.95	0.96	1.00		1.00			0.81			1.00	
Satd. Flow (perm)	1625	1691	1583		1863			2882			3503	
Volume (vph)	65	2	52	9	6	0	51	569	2	0	565	42
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor (vph)	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%
Adj. Flow (vph)	87	3	70	12	8	0	69	765	3	0	759	56
RTOR Reduction (vph)	0	0	64	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	44	46	6	0	20	0	0	837	0	0	813	0
Turn Type	Split		Perm	Perm			Perm			Perm		
Protected Phases	4	4			8			2			6	
Permitted Phases			4	8			2			6		
Actuated Green, G (s)	6.7	6.7	6.7		1.6			66.7			66.7	
Effective Green, g (s)	7.7	7.7	7.7		2.6			67.7			67.7	
Actuated g/C Ratio	0.09	0.09	0.09		0.03			0.75			0.75	
Clearance Time (s)	5.0	5.0	5.0		5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)	139	145	135		54			2168			2635	
v/s Ratio Prot	0.03	c0.03									0.23	
v/s Ratio Perm			0.00		c0.01			c0.29				
v/c Ratio	0.32	0.32	0.04		0.37			0.39			0.31	
Uniform Delay, d1	38.7	38.7	37.8		42.9			3.9			3.6	
Progression Factor	1.00	1.00	1.00		1.00			0.29			1.00	
Incremental Delay, d2	1.3	1.3	0.1		4.2			0.5			0.3	
Delay (s)	40.0	39.9	37.9		47.1			1.6			3.9	
Level of Service	D	D	D		D			A			A	
Approach Delay (s)		39.1			47.1			1.6			3.9	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	6.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0		4.0	4.0		4.0	
Lane Util. Factor	1.00			1.00	1.00		1.00	1.00		1.00	
Frpb, ped/bikes	1.00			1.00	1.00		1.00	1.00		0.99	
Flpb, ped/bikes	1.00			1.00	1.00		1.00	1.00		1.00	
Frt	0.93			1.00	1.00		1.00	0.99		0.87	
Flt Protected	0.98			0.95	1.00		0.95	1.00		1.00	
Satd. Flow (prot)	1695			1770	1863		1770	1836		1596	
Flt Permitted	0.98			0.65	1.00		0.95	1.00		1.00	
Satd. Flow (perm)	1695			1204	1863		1770	1836		1596	
Volume (vph)	14	8	6	1	139	0	381	122	13	14	398
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor (vph)	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%
Adj. Flow (vph)	18	10	8	1	181	0	496	159	17	18	518
RTOR Reduction (vph)	7	0	0	0	0	0	0	2	0	450	0
Lane Group Flow (vph)	29	0	0	1	181	0	496	174	0	86	0
Confl. Peds. (#/hr)											1
Turn Type	Prot			Perm			Prot				
Protected Phases	4				2		1	6		8	
Permitted Phases				2							
Actuated Green, G (s)	4.8			17.0	17.0		37.3	59.3		10.9	
Effective Green, g (s)	5.8			18.0	18.0		38.3	60.3		11.9	
Actuated g/C Ratio	0.06			0.20	0.20		0.43	0.67		0.13	
Clearance Time (s)	5.0			5.0	5.0		5.0	5.0		5.0	
Vehicle Extension (s)	3.0			3.0	3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)	109			241	373		753	1230		211	
v/s Ratio Prot	c0.02				c0.10		c0.28	0.09		c0.05	
v/s Ratio Perm				0.00							
v/c Ratio	0.26			0.00	0.49		0.66	0.14		0.41	
Uniform Delay, d1	40.1			28.8	31.9		20.6	5.4		35.8	
Progression Factor	1.00			1.00	1.00		0.85	0.78		1.00	
Incremental Delay, d2	1.3			0.0	4.5		2.0	0.2		1.3	
Delay (s)	41.3			28.9	36.4		19.5	4.5		37.1	
Level of Service	D			C	D		B	A		D	
Approach Delay (s)	41.3				36.3			15.6		37.1	
Approach LOS	D				D			B		D	

Intersection Summary			
HCM Average Control Delay	27.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	84.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	13	12	12	11	11	11	11	10	11	11	11
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99			1.00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.93			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1711	1766			1755	1508	1711	3365		1711	3409	
Flt Permitted	0.52	1.00			0.54	1.00	0.41	1.00		0.27	1.00	
Satd. Flow (perm)	943	1766			973	1508	747	3365		494	3409	
Volume (vph)	18	60	60	55	50	230	42	430	45	250	400	10
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Growth Factor (vph)	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%
Adj. Flow (vph)	27	91	91	84	76	351	64	655	69	381	610	15
RTOR Reduction (vph)	0	49	0	0	0	289	0	7	0	0	1	0
Lane Group Flow (vph)	27	133	0	0	160	62	64	717	0	381	624	0
Confl. Peds. (#/hr)			3			2			1			
Turn Type	Perm			Perm		Perm	pm+pt			pm+pt		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	15.0	15.0			15.0	15.0	47.2	41.7		65.0	54.5	
Effective Green, g (s)	16.0	16.0			16.0	16.0	49.2	42.7		66.0	55.5	
Actuated g/C Ratio	0.18	0.18			0.18	0.18	0.55	0.47		0.73	0.62	
Clearance Time (s)	5.0	5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	168	314			173	268	478	1597		623	2102	
v/s Ratio Prot		0.08					0.01	0.21		c0.13	0.18	
v/s Ratio Perm	0.03				c0.16	0.04	0.06			c0.32		
v/c Ratio	0.16	0.42			0.92	0.23	0.13	0.45		0.61	0.30	
Uniform Delay, d1	31.3	32.9			36.4	31.7	9.6	15.8		6.2	8.1	
Progression Factor	1.00	1.00			1.00	1.00	0.82	0.88		0.62	0.78	
Incremental Delay, d2	0.5	0.9			46.8	0.4	0.1	0.8		1.8	0.4	
Delay (s)	31.8	33.8			83.2	32.2	8.0	14.6		5.6	6.7	
Level of Service	C	C			F	C	A	B		A	A	
Approach Delay (s)		33.5			48.2			14.1			6.3	
Approach LOS		C			D			B			A	

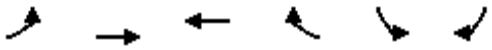
Intersection Summary			
HCM Average Control Delay	19.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	104	2	5	90	6	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	141	3	7	122	8	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			144		217	72
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			144		217	72
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1436		748	975

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	94	50	7	61	61	15
Volume Left	0	0	7	0	0	8
Volume Right	0	3	0	0	0	7
cSH	1700	1700	1436	1700	1700	836
Volume to Capacity	0.06	0.03	0.00	0.04	0.04	0.02
Queue Length 95th (ft)	0	0	0	0	0	1
Control Delay (s)	0.0	0.0	7.5	0.0	0.0	9.4
Lane LOS			A			A
Approach Delay (s)	0.0		0.4			9.4
Approach LOS						A

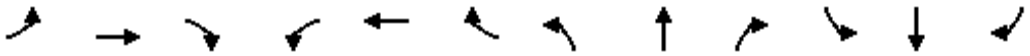
Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	15.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	4	112	99	8	4	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	156	138	11	6	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)			1227			
pX, platoon unblocked						
vC, conflicting volume	149				232	74
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	149				232	74
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1430				733	972

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	6	78	78	92	57	8
Volume Left	6	0	0	0	0	6
Volume Right	0	0	0	0	11	3
cSH	1430	1700	1700	1700	1700	798
Volume to Capacity	0.00	0.05	0.05	0.05	0.03	0.01
Queue Length 95th (ft)	0	0	0	0	0	1
Control Delay (s)	7.5	0.0	0.0	0.0	0.0	9.6
Lane LOS	A					A
Approach Delay (s)	0.3			0.0		9.6
Approach LOS						A

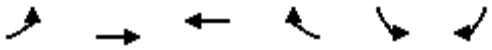
Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	14.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	12	102	3	2	99	3	1	1	6	7	6	9
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	16	136	4	3	132	4	1	1	8	9	8	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					672							
pX, platoon unblocked												
vC, conflicting volume	136			140			257	311	70	247	311	68
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	136			140			257	311	70	247	311	68
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 %	99			100			100	100	99	99	99	99
cM capacity (veh/h)	1446			1441			654	595	979	672	595	982

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	16	90	49	3	88	48	11	29
Volume Left	16	0	0	3	0	0	1	9
Volume Right	0	0	4	0	0	4	8	12
cSH	1446	1700	1700	1441	1700	1700	856	742
Volume to Capacity	0.01	0.05	0.03	0.00	0.05	0.03	0.01	0.04
Queue Length 95th (ft)	1	0	0	0	0	0	1	3
Control Delay (s)	7.5	0.0	0.0	7.5	0.0	0.0	9.3	10.1
Lane LOS	A			A			A	B
Approach Delay (s)	0.8			0.1			9.3	10.1
Approach LOS							A	B

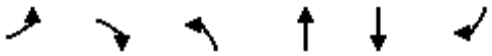
Intersection Summary				
Average Delay	1.6			
Intersection Capacity Utilization	20.3%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	7	76	59	1	25	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	10	106	82	1	35	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	83				208	83
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	83				208	83
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				96	100
cM capacity (veh/h)	1514				776	977

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	115	83	36
Volume Left	10	0	35
Volume Right	0	1	1
cSH	1514	1700	782
Volume to Capacity	0.01	0.05	0.05
Queue Length 95th (ft)	0	0	4
Control Delay (s)	0.7	0.0	9.8
Lane LOS	A		A
Approach Delay (s)	0.7	0.0	9.8
Approach LOS			A

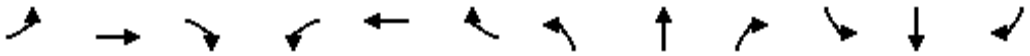
Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	22.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	9	1	1	98	56	53
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	13	1	1	144	82	78
Pedestrians	3					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	271	124	163			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	271	124	163			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	100	100			
cM capacity (veh/h)	715	924	1412			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	15	146	160
Volume Left	13	1	0
Volume Right	1	0	78
cSH	732	1412	1700
Volume to Capacity	0.02	0.00	0.09
Queue Length 95th (ft)	2	0	0
Control Delay (s)	10.0	0.1	0.0
Lane LOS	B	A	
Approach Delay (s)	10.0	0.1	0.0
Approach LOS	B		

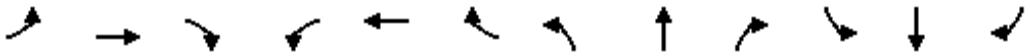
Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	18.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	20	1	1	0	3	21	2	70	1	14	67	25
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	27	1	1	0	4	28	3	93	1	19	89	33
Pedestrians					1							
Lane Width (ft)					12.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	272	244	106	245	260	95	122			95		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	272	244	106	245	260	95	122			95		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	100	100	100	99	97	100			99		
cM capacity (veh/h)	650	648	949	698	635	961	1465			1497		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	29	32	97	141
Volume Left	27	0	3	19
Volume Right	1	28	1	33
cSH	659	903	1465	1497
Volume to Capacity	0.04	0.04	0.00	0.01
Queue Length 95th (ft)	3	3	0	1
Control Delay (s)	10.7	9.1	0.2	1.1
Lane LOS	B	A	A	A
Approach Delay (s)	10.7	9.1	0.2	1.1
Approach LOS	B	A		

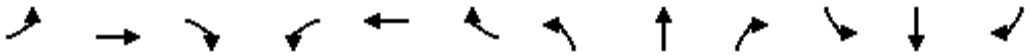
Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	28.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	18	2	53	0	0	0	0	53	63	48	58	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	23	3	68	0	0	0	0	68	81	62	75	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	307	348	75	377	307	109	75			149		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	307	348	75	377	307	109	75			149		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	100	93	100	100	100	100			96		
cM capacity (veh/h)	624	551	987	521	580	945	1525			1432		

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	94	149	137
Volume Left	23	0	62
Volume Right	68	81	0
cSH	847	1700	1432
Volume to Capacity	0.11	0.09	0.04
Queue Length 95th (ft)	9	0	3
Control Delay (s)	9.8	0.0	3.6
Lane LOS	A		A
Approach Delay (s)	9.8	0.0	3.6
Approach LOS	A		

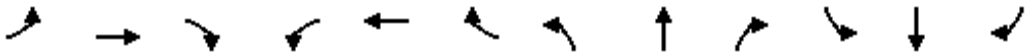
Intersection Summary				
Average Delay		3.7		
Intersection Capacity Utilization	30.9%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	53	3	63	36	38	0	0	55	41
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	70	4	84	48	51	0	0	73	55
Pedestrians		1										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	333	248	101	247	275	51	129			51		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	333	248	101	247	275	51	129			51		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	90	99	92	97			100		
cM capacity (veh/h)	552	633	954	689	612	1018	1457			1556		

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	72	86	98	128
Volume Left	70	0	48	0
Volume Right	0	84	0	55
cSH	687	1002	1457	1700
Volume to Capacity	0.11	0.09	0.03	0.08
Queue Length 95th (ft)	9	7	3	0
Control Delay (s)	10.9	8.9	3.8	0.0
Lane LOS	B	A	A	
Approach Delay (s)	9.8		3.8	0.0
Approach LOS	A			

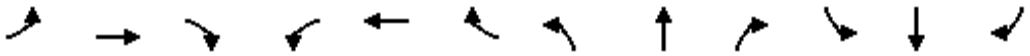
Intersection Summary				
Average Delay	5.0			
Intersection Capacity Utilization	22.9%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	3	51	0	0	5	46	46	1	32	2
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	0	0	4	74	0	0	7	67	67	1	47	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	166	199	48	170	167	100	49			134		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	166	199	48	170	167	100	49			134		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	91	100	100	100			100		
cM capacity (veh/h)	795	693	1021	787	721	955	1557			1451		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	4	74	141	51
Volume Left	0	74	7	1
Volume Right	4	0	67	3
cSH	1021	787	1557	1451
Volume to Capacity	0.00	0.09	0.00	0.00
Queue Length 95th (ft)	0	8	0	0
Control Delay (s)	8.5	10.1	0.4	0.2
Lane LOS	A	B	A	A
Approach Delay (s)	8.5	10.1	0.4	0.2
Approach LOS	A	B		

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	26.4%	ICU Level of Service	A
Analysis Period (min)	15		



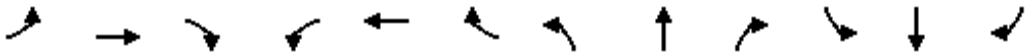
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	25	66	8	11	38	34	18	56	67	45	11	8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	35	92	11	15	53	47	25	78	93	62	15	11
Pedestrians								1				
Lane Width (ft)								12.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	100			104			293	298	98	406	280	76
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	100			104			293	298	98	406	280	76
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			96	87	90	86	97	99
cM capacity (veh/h)	1493			1487			622	593	957	440	607	985

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	138	115	196	89
Volume Left	35	15	25	62
Volume Right	11	47	93	11
cSH	1493	1487	729	498
Volume to Capacity	0.02	0.01	0.27	0.18
Queue Length 95th (ft)	2	1	27	16
Control Delay (s)	2.0	1.1	11.7	13.8
Lane LOS	A	A	B	B
Approach Delay (s)	2.0	1.1	11.7	13.8
Approach LOS			B	B

Intersection Summary			
Average Delay	7.3		
Intersection Capacity Utilization	35.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
23: Mt Highland Dr & EB off-ramp

12/2/2006

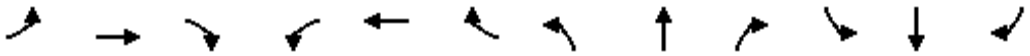


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	137	39	0	61	0	0	0	0	0	0	27
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	0	199	57	0	89	0	0	0	0	0	0	39
Pedestrians								1				
Lane Width (ft)								0.0				
Walking Speed (ft/s)								4.0				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	89			257			356	317	228	316	345	89
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	89			257			356	317	228	316	345	89
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	96
cM capacity (veh/h)	1507			1308			575	599	811	637	578	969

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	256	89	39
Volume Left	0	0	0
Volume Right	57	0	39
cSH	1700	1308	969
Volume to Capacity	0.15	0.00	0.04
Queue Length 95th (ft)	0	0	3
Control Delay (s)	0.0	0.0	8.9
Lane LOS			A
Approach Delay (s)	0.0	0.0	8.9
Approach LOS			A

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	22.0%	ICU Level of Service	A
Analysis Period (min)	15		

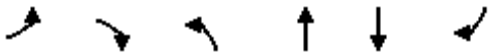
HCM Unsignalized Intersection Capacity Analysis
24: Mt Highland Dr & WB on-ramp 12/2/2006



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)	126	3	0	0	8	4	53	1	1	0	0	0
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	192	5	0	0	12	6	81	2	2	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	18			5			404	407	5	406	404	15
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	18			5			404	407	5	406	404	15
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 %	88			100			84	100	100	100	100	100
cM capacity (veh/h)	1598			1617			506	469	1079	502	471	1064

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	197	18	84
Volume Left	192	0	81
Volume Right	0	6	2
cSH	1598	1700	510
Volume to Capacity	0.12	0.01	0.16
Queue Length 95th (ft)	10	0	15
Control Delay (s)	7.4	0.0	13.4
Lane LOS	A		B
Approach Delay (s)	7.4	0.0	13.4
Approach LOS			B

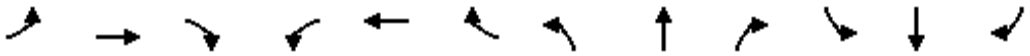
Intersection Summary			
Average Delay	8.6		
Intersection Capacity Utilization	26.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	3	2	3	0	0	9
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	4	3	4	0	0	13

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	7	4	13
Volume Left (vph)	4	4	0
Volume Right (vph)	3	0	13
Hadj (s)	-0.09	0.23	-0.57
Departure Headway (s)	3.8	4.2	3.4
Degree Utilization, x	0.01	0.01	0.01
Capacity (veh/h)	924	850	1065
Control Delay (s)	6.9	7.2	6.4
Approach Delay (s)	6.9	7.2	6.4
Approach LOS	A	A	A

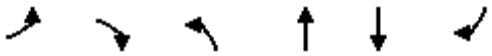
Intersection Summary			
Delay	6.7		
HCM Level of Service	A		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	1	1	1	64	0	496	43	78	662	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	0	1	1	1	86	0	667	58	105	890	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											398	
pX, platoon unblocked	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
vC, conflicting volume	0	0	0	0	0	0	0			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0	0	0	0	0	0	0			0		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	0	0	0	0	0	0			0		
cM capacity (veh/h)	0	0	0	0	0	0	0			0		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	1	89	267	267	191	105	356	356	178
Volume Left	0	1	0	0	0	105	0	0	0
Volume Right	1	86	0	0	58	0	0	0	0
cSH	0	0	0	0	0	0	0	0	0
Volume to Capacity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A	A				A			
Approach Delay (s)	0.0	0.0	0.0			0.0			
Approach LOS	A	A							

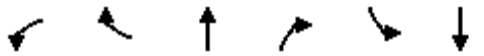
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	34.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	102	0	684	773	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	137	0	919	1039	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				114	442	
pX, platoon unblocked	0.98	0.99	0.99			
vC, conflicting volume	1345	346	1039			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1277	330	1027			
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	79	100			
cM capacity (veh/h)	154	661	668			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	137	306	306	306	346	346	346
Volume Left	0	0	0	0	0	0	0
Volume Right	137	0	0	0	0	0	0
cSH	661	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.21	0.18	0.18	0.18	0.20	0.20	0.20
Queue Length 95th (ft)	19	0	0	0	0	0	0
Control Delay (s)	11.9	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B						
Approach Delay (s)	11.9	0.0			0.0		
Approach LOS	B						

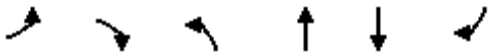
Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	33.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	25	516	98	0	865
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	0	37	759	144	0	1272
Pedestrians	1					
Lane Width (ft)	11.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			334			158
pX, platoon unblocked	0.92	0.97			0.97	
vC, conflicting volume	1184	380			904	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	913	334			873	
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	94			100	
cM capacity (veh/h)	250	643			747	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	37	379	379	144	424	424	424
Volume Left	0	0	0	0	0	0	0
Volume Right	37	0	0	144	0	0	0
cSH	643	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.06	0.22	0.22	0.08	0.25	0.25	0.25
Queue Length 95th (ft)	5	0	0	0	0	0	0
Control Delay (s)	10.9	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B						
Approach Delay (s)	10.9	0.0			0.0		
Approach LOS	B						

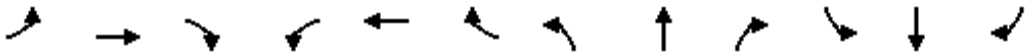
Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	27.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	0.97	1.00	1.00	0.91	0.91	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1583	1769	5085	4705	
Flt Permitted	0.95	1.00	0.20	1.00	1.00	
Satd. Flow (perm)	3433	1583	372	5085	4705	
Volume (vph)	194	62	61	432	630	205
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor (vph)	125%	125%	125%	125%	125%	125%
Adj. Flow (vph)	266	85	84	593	865	282
RTOR Reduction (vph)	0	72	0	0	36	0
Lane Group Flow (vph)	266	13	84	593	1111	0
Confl. Peds. (#/hr)			3			3
Turn Type		Perm	pm+pt			
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	11.7	11.7	67.3	67.3	57.8	
Effective Green, g (s)	13.7	13.7	68.3	68.3	58.8	
Actuated g/C Ratio	0.15	0.15	0.76	0.76	0.65	
Clearance Time (s)	6.0	6.0	4.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	523	241	368	3859	3074	
v/s Ratio Prot	c0.08		c0.01	0.12	c0.24	
v/s Ratio Perm		0.01	0.16			
v/c Ratio	0.51	0.05	0.23	0.15	0.36	
Uniform Delay, d1	35.1	32.6	3.4	3.0	7.1	
Progression Factor	1.00	1.00	1.00	1.00	0.51	
Incremental Delay, d2	0.8	0.1	0.3	0.1	0.3	
Delay (s)	35.8	32.7	3.7	3.0	3.9	
Level of Service	D	C	A	A	A	
Approach Delay (s)	35.1			3.1	3.9	
Approach LOS	D			A	A	

Intersection Summary			
HCM Average Control Delay	8.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	42.2%	ICU Level of Service	A
Analysis Period (min)	15		

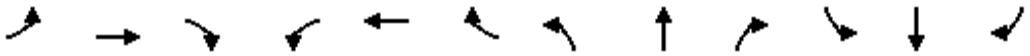
c Critical Lane Group



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
Lane Width	12	12	12	11	12	15	11	11	11	11	11	11
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					1.00	1.00		0.91			0.91	
Frpb, ped/bikes					1.00	0.99		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		0.98			0.98	
Flt Protected					0.96	1.00		1.00			1.00	
Satd. Flow (prot)					1779	1719		4834			4832	
Flt Permitted					0.96	1.00		1.00			1.00	
Satd. Flow (perm)					1779	1719		4834			4832	
Volume (vph)	0	0	0	32	2	35	0	575	71	0	678	87
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor (vph)	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%
Adj. Flow (vph)	0	0	0	44	3	49	0	799	99	0	942	121
RTOR Reduction (vph)	0	0	0	0	0	45	0	7	0	0	8	0
Lane Group Flow (vph)	0	0	0	0	47	4	0	891	0	0	1055	0
Confl. Peds. (#/hr)						1						
Turn Type				Perm		Perm						
Protected Phases					8			2			6	
Permitted Phases				8		8						
Actuated Green, G (s)					6.5	6.5		72.9			72.9	
Effective Green, g (s)					7.5	7.5		74.5			74.5	
Actuated g/C Ratio					0.08	0.08		0.83			0.83	
Clearance Time (s)					5.0	5.0		5.6			5.6	
Vehicle Extension (s)					3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)					148	143		4001			4000	
v/s Ratio Prot								0.18			c0.22	
v/s Ratio Perm					0.03	0.00						
v/c Ratio					0.32	0.03		0.22			0.26	
Uniform Delay, d1					38.8	37.9		1.6			1.7	
Progression Factor					1.00	1.00		1.68			0.74	
Incremental Delay, d2					1.2	0.1		0.1			0.1	
Delay (s)					40.1	38.0		2.9			1.4	
Level of Service					D	D		A			A	
Approach Delay (s)		0.0			39.0			2.9			1.4	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM Average Control Delay	3.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	31.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



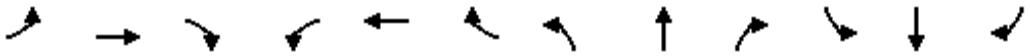
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	12	11	11
Total Lost time (s)		4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor		1.00		0.95	0.95			0.95		1.00	0.91	
Frpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00		1.00	1.00	
Frt		0.86		1.00	0.94			0.98		1.00	1.00	
Flt Protected		1.00		0.95	0.97			1.00		0.95	1.00	
Satd. Flow (prot)		1611		1681	1617			3356		1769	4911	
Flt Permitted		1.00		0.76	0.81			0.94		0.14	1.00	
Satd. Flow (perm)		1611		1340	1355			3156		269	4911	
Volume (vph)	0	0	1	364	0	99	8	460	55	68	500	3
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Growth Factor (vph)	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%
Adj. Flow (vph)	0	0	1	523	0	142	11	661	79	98	718	4
RTOR Reduction (vph)	0	1	0	0	18	0	0	10	0	0	1	0
Lane Group Flow (vph)	0	0	0	301	346	0	0	741	0	98	721	0
Confl. Peds. (#/hr)							4		2	2		4
Turn Type	Split			Perm			Perm			pm+pt		
Protected Phases	4	4			8			2		1	6	
Permitted Phases				8			2			6		
Actuated Green, G (s)		1.2		38.6	38.6			24.2		34.6	34.6	
Effective Green, g (s)		2.2		39.6	39.6			25.8		36.2	36.2	
Actuated g/C Ratio		0.02		0.44	0.44			0.29		0.40	0.40	
Clearance Time (s)		5.0		5.0	5.0			5.6		4.0	5.6	
Vehicle Extension (s)		2.5		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		39		590	596			905		215	1975	
v/s Ratio Prot		c0.00								c0.03	0.15	
v/s Ratio Perm				0.22	c0.26			c0.23		0.15		
v/c Ratio		0.00		0.51	0.58			0.82		0.46	0.37	
Uniform Delay, d1		42.8		18.2	18.9			29.9		19.1	18.8	
Progression Factor		1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.0		0.7	1.4			8.1		1.5	0.5	
Delay (s)		42.8		18.9	20.3			38.1		20.7	19.4	
Level of Service		D		B	C			D		C	B	
Approach Delay (s)		42.8			19.7			38.1			19.5	
Approach LOS		D			B			D			B	

Intersection Summary			
HCM Average Control Delay	25.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
11: DeSmet Rd & Montana St

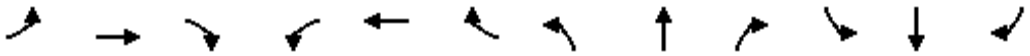
12/2/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	17	3	206	67	402	0	0	383	23
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	0	0	24	4	289	94	565	0	0	538	32
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)								852				
pX, platoon unblocked												
vC, conflicting volume	1316	1307	285	1022	1323	282	570			565		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1316	1307	285	1022	1323	282	570			565		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	86	97	60	91			100		
cM capacity (veh/h)	62	144	712	177	140	715	998			1003		

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	26	291	94	282	282	359	212
Volume Left	24	0	94	0	0	0	0
Volume Right	0	289	0	0	0	0	32
cSH	173	694	998	1700	1700	1700	1700
Volume to Capacity	0.15	0.42	0.09	0.17	0.17	0.21	0.12
Queue Length 95th (ft)	13	52	8	0	0	0	0
Control Delay (s)	29.5	13.9	9.0	0.0	0.0	0.0	0.0
Lane LOS	D	B	A				
Approach Delay (s)	15.2		1.3			0.0	
Approach LOS	C						

Intersection Summary				
Average Delay	3.7			
Intersection Capacity Utilization	40.1%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	30	2	74	0	0	0	0	470	23	117	289	0
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	44	3	108	0	0	0	0	683	33	170	420	0
Pedestrians					1			2				
Lane Width (ft)					0.0			12.0				
Walking Speed (ft/s)					4.0			4.0				
Percent Blockage					0			0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)								435				
pX, platoon unblocked												
vC, conflicting volume	1102	1478	212	1362	1461	359	420			718		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1102	1478	212	1362	1461	359	420			718		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	69	97	86	100	100	100	100			81		
cM capacity (veh/h)	142	101	792	77	103	637	1136			879		

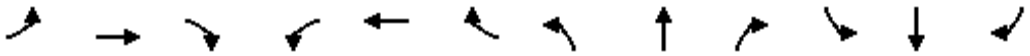
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	45	109	455	261	170	210	210
Volume Left	44	0	0	0	170	0	0
Volume Right	0	108	0	33	0	0	0
cSH	140	726	1700	1700	879	1700	1700
Volume to Capacity	0.32	0.15	0.27	0.15	0.19	0.12	0.12
Queue Length 95th (ft)	32	13	0	0	18	0	0
Control Delay (s)	42.6	10.8	0.0	0.0	10.1	0.0	0.0
Lane LOS	E	B			B		
Approach Delay (s)	20.1		0.0		2.9		
Approach LOS	C						

Intersection Summary				
Average Delay	3.3			
Intersection Capacity Utilization	40.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	NBR2	SWL	SWR
Lane Configurations											
Sign Control		Free			Free		Stop			Stop	
Grade		0%			0%		0%			0%	
Volume (veh/h)	154	0	0	0	0	0	0	0	1	0	0
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	238	0	0	0	0	0	0	0	2	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type							None			None	
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	0			0			475	475	0	475	0
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			0			475	475	0	475	0
tC, single (s)	4.1			4.1			7.1	6.5	6.2	6.5	6.2
tC, 2 stage (s)											
tF (s)	2.2			2.2			3.5	4.0	3.3	4.0	3.3
p0 queue free %	85			100			100	100	100	100	100
cM capacity (veh/h)	1623			1623			444	417	1085	417	1085

Direction, Lane #	EB 1	EB 2	NB 1
Volume Total	238	0	2
Volume Left	238	0	0
Volume Right	0	0	2
cSH	1623	1700	1085
Volume to Capacity	0.15	0.00	0.00
Queue Length 95th (ft)	13	0	0
Control Delay (s)	7.6	0.0	8.3
Lane LOS	A		A
Approach Delay (s)	7.6		8.3
Approach LOS			A

Intersection Summary			
Average Delay	7.6		
Intersection Capacity Utilization	14.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	12	12	12	12	12	12	12	12	12
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		1.00			0.95			0.95	
Frpb, ped/bikes	1.00	1.00	1.00		1.00			1.00			1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00			1.00			1.00	
Frt	1.00	1.00	0.85		1.00			1.00			0.99	
Flt Protected	0.95	0.95	1.00		0.97			1.00			1.00	
Satd. Flow (prot)	1625	1689	1583		1801			3529			3503	
Flt Permitted	0.95	0.95	1.00		0.80			0.88			1.00	
Satd. Flow (perm)	1625	1689	1583		1492			3118			3503	
Volume (vph)	81	2	76	10	5	0	35	573	0	0	395	29
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Growth Factor (vph)	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%
Adj. Flow (vph)	121	3	113	15	7	0	52	853	0	0	588	43
RTOR Reduction (vph)	0	0	102	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	61	63	11	0	22	0	0	905	0	0	628	0
Confl. Peds. (#/hr)	1					1			4	4		
Turn Type	Split		Perm	Perm			Perm			Perm		
Protected Phases	4	4			8			2			6	
Permitted Phases			4	8			2			6		
Actuated Green, G (s)	7.5	7.5	7.5		3.2			64.3			64.3	
Effective Green, g (s)	8.5	8.5	8.5		4.2			65.3			65.3	
Actuated g/C Ratio	0.09	0.09	0.09		0.05			0.73			0.73	
Clearance Time (s)	5.0	5.0	5.0		5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)	153	160	150		70			2262			2542	
v/s Ratio Prot	c0.04	0.04									0.18	
v/s Ratio Perm			0.01		c0.01			c0.29				
v/c Ratio	0.40	0.39	0.07		0.31			0.40			0.25	
Uniform Delay, d1	38.3	38.3	37.2		41.5			4.8			4.1	
Progression Factor	1.00	1.00	1.00		1.00			0.55			1.00	
Incremental Delay, d2	1.7	1.6	0.2		2.6			0.5			0.2	
Delay (s)	40.1	39.9	37.4		44.1			3.1			4.4	
Level of Service	D	D	D		D			A			A	
Approach Delay (s)		38.7			44.1			3.1			4.4	
Approach LOS		D			D			A			A	

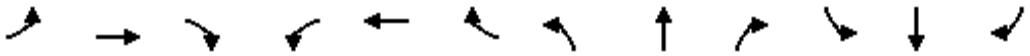
Intersection Summary			
HCM Average Control Delay	8.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations										
Ideal Flow (vphpl)	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		1.00	1.00		1.00	
Frt	0.95			1.00		1.00	0.99		0.87	
Flt Protected	0.97			1.00		0.95	1.00		1.00	
Satd. Flow (prot)	1715			1863		1770	1847		1614	
Flt Permitted	0.97			1.00		0.95	1.00		1.00	
Satd. Flow (perm)	1715			1863		1770	1847		1614	
Volume (vph)	10	6	0	152	0	264	110	7	4	304
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Growth Factor (vph)	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%
Adj. Flow (vph)	15	9	0	226	0	393	164	10	6	452
RTOR Reduction (vph)	0	0	0	0	0	0	1	0	399	0
Lane Group Flow (vph)	24	0	0	226	0	393	173	0	59	0
Turn Type	Prot		Perm			Prot				
Protected Phases	4			2		1	6		8	
Permitted Phases			2							
Actuated Green, G (s)	3.2			20.5		36.7	62.2		9.6	
Effective Green, g (s)	4.2			21.5		37.7	63.2		10.6	
Actuated g/C Ratio	0.05			0.24		0.42	0.70		0.12	
Clearance Time (s)	5.0			5.0		5.0	5.0		5.0	
Vehicle Extension (s)	3.0			3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)	80			445		741	1297		190	
v/s Ratio Prot	c0.01			c0.12		c0.22	0.09		c0.04	
v/s Ratio Perm										
v/c Ratio	0.30			0.51		0.53	0.13		0.31	
Uniform Delay, d1	41.5			29.7		19.5	4.4		36.4	
Progression Factor	1.00			1.00		0.81	0.81		1.00	
Incremental Delay, d2	2.1			4.1		0.7	0.2		0.9	
Delay (s)	43.6			33.8		16.6	3.8		37.3	
Level of Service	D			C		B	A		D	
Approach Delay (s)	43.6			33.8			12.7		37.3	
Approach LOS	D			C			B		D	

Intersection Summary			
HCM Average Control Delay	25.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	13	12	12	11	11	11	11	10	11	11	11
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99			1.00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.93			1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1711	1769			1759	1508	1711	3335		1711	3398	
Flt Permitted	0.54	1.00			0.74	1.00	0.48	1.00		0.37	1.00	
Satd. Flow (perm)	973	1769			1328	1508	870	3335		659	3398	
Volume (vph)	14	38	37	45	51	237	52	334	58	182	294	14
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Growth Factor (vph)	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%	125%
Adj. Flow (vph)	21	58	56	69	78	361	79	509	88	277	448	21
RTOR Reduction (vph)	0	47	0	0	0	302	0	10	0	0	2	0
Lane Group Flow (vph)	21	67	0	0	147	59	79	587	0	277	467	0
Confl. Peds. (#/hr)			3			2			1			
Turn Type	Perm			Perm		Perm	pm+pt			pm+pt		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	13.6	13.6			13.6	13.6	56.8	51.2		66.0	55.8	
Effective Green, g (s)	14.6	14.6			14.6	14.6	58.8	52.2		67.4	56.8	
Actuated g/C Ratio	0.16	0.16			0.16	0.16	0.65	0.58		0.75	0.63	
Clearance Time (s)	5.0	5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	158	287			215	245	630	1934		624	2145	
v/s Ratio Prot		0.04					0.01	0.18		c0.06	0.14	
v/s Ratio Perm	0.02				c0.11	0.04	0.07			c0.28		
v/c Ratio	0.13	0.23			0.68	0.24	0.13	0.30		0.44	0.22	
Uniform Delay, d1	32.3	32.8			35.5	32.9	5.7	9.6		3.9	7.1	
Progression Factor	1.00	1.00			1.00	1.00	0.86	0.86		0.68	0.66	
Incremental Delay, d2	0.4	0.4			8.7	0.5	0.1	0.4		0.5	0.2	
Delay (s)	32.7	33.2			44.2	33.4	5.0	8.7		3.2	4.9	
Level of Service	C	C			D	C	A	A		A	A	
Approach Delay (s)		33.2			36.5			8.2			4.3	
Approach LOS		C			D			A			A	

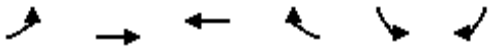
Intersection Summary			
HCM Average Control Delay	15.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	188	0	2	65	0	4
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	297	0	3	103	0	6
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			297		355	149
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			297		355	149
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	99
cM capacity (veh/h)			1261		615	871

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	198	99	3	51	51	6
Volume Left	0	0	3	0	0	0
Volume Right	0	0	0	0	0	6
cSH	1700	1700	1261	1700	1700	871
Volume to Capacity	0.12	0.06	0.00	0.03	0.03	0.01
Queue Length 95th (ft)	0	0	0	0	0	1
Control Delay (s)	0.0	0.0	7.9	0.0	0.0	9.2
Lane LOS			A			A
Approach Delay (s)	0.0		0.2			9.2
Approach LOS						A

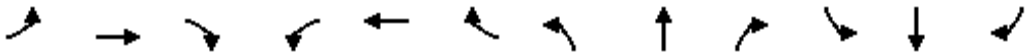
Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	16.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	3	172	59	6	6	1
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	5	291	100	10	10	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)			1227			
pX, platoon unblocked						
vC, conflicting volume	110				260	55
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	110				260	55
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1478				704	1000

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	5	145	145	66	43	12
Volume Left	5	0	0	0	0	10
Volume Right	0	0	0	0	10	2
cSH	1478	1700	1700	1700	1700	735
Volume to Capacity	0.00	0.09	0.09	0.04	0.03	0.02
Queue Length 95th (ft)	0	0	0	0	0	1
Control Delay (s)	7.4	0.0	0.0	0.0	0.0	10.0
Lane LOS	A					A
Approach Delay (s)	0.1			0.0		10.0
Approach LOS						A

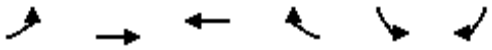
Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	15.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	10	172	0	0	56	3	2	2	2	10	2	7
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Hourly flow rate (vph)	16	279	0	0	91	5	3	3	3	16	3	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					672							
pX, platoon unblocked												
vC, conflicting volume	96			279			370	407	140	270	405	48
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	96			279			370	407	140	270	405	48
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 %	99			100			99	99	100	98	99	99
cM capacity (veh/h)	1496			1280			548	526	883	650	528	1011

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	16	186	93	0	61	35	10	31
Volume Left	16	0	0	0	0	0	3	16
Volume Right	0	0	0	0	0	5	3	11
cSH	1496	1700	1700	1700	1700	1700	617	728
Volume to Capacity	0.01	0.11	0.05	0.00	0.04	0.02	0.02	0.04
Queue Length 95th (ft)	1	0	0	0	0	0	1	3
Control Delay (s)	7.4	0.0	0.0	0.0	0.0	0.0	10.9	10.2
Lane LOS	A						B	B
Approach Delay (s)	0.4			0.0			10.9	10.2
Approach LOS							B	B

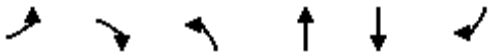
Intersection Summary				
Average Delay	1.3			
Intersection Capacity Utilization	17.4%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	5	31	55	4	44	5
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	7	45	80	6	64	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	86				142	83
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	86				142	83
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				92	99
cM capacity (veh/h)	1511				846	977

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	52	86	71
Volume Left	7	0	64
Volume Right	0	6	7
cSH	1511	1700	858
Volume to Capacity	0.00	0.05	0.08
Queue Length 95th (ft)	0	0	7
Control Delay (s)	1.1	0.0	9.6
Lane LOS	A		A
Approach Delay (s)	1.1	0.0	9.6
Approach LOS			A

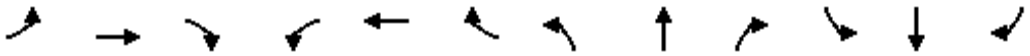
Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	17.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	7	0	0	75	60	44
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	10	0	0	105	84	62
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	221	115	146			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	221	115	146			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	100	100			
cM capacity (veh/h)	768	937	1436			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	10	105	146
Volume Left	10	0	0
Volume Right	0	0	62
cSH	768	1436	1700
Volume to Capacity	0.01	0.00	0.09
Queue Length 95th (ft)	1	0	0
Control Delay (s)	9.8	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.8	0.0	0.0
Approach LOS	A		

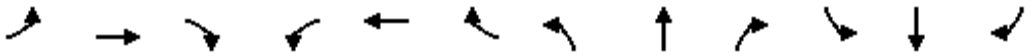
Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	17.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	23	3	1	2	5	11	0	48	2	15	34	19
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	33	4	1	3	7	16	0	69	3	22	49	27
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	195	177	62	180	190	70	76			72		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	195	177	62	180	190	70	76			72		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	99	100	100	99	98	100			99		
cM capacity (veh/h)	738	706	1002	769	695	992	1523			1528		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	39	26	72	98
Volume Left	33	3	0	22
Volume Right	1	16	3	27
cSH	741	862	1523	1528
Volume to Capacity	0.05	0.03	0.00	0.01
Queue Length 95th (ft)	4	2	0	1
Control Delay (s)	10.1	9.3	0.0	1.7
Lane LOS	B	A		A
Approach Delay (s)	10.1	9.3	0.0	1.7
Approach LOS	B	A		

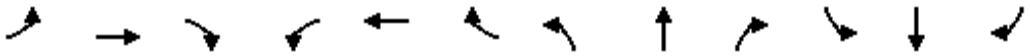
Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	26.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	14	0	26	0	0	0	0	41	42	39	44	0
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	22	0	41	0	0	0	0	65	66	62	70	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	291	324	70	332	291	98	70			131		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	291	324	70	332	291	98	70			131		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	96	100	100	100	100			96		
cM capacity (veh/h)	640	568	993	576	593	958	1531			1454		

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	63	131	131
Volume Left	22	0	62
Volume Right	41	66	0
cSH	832	1700	1454
Volume to Capacity	0.08	0.08	0.04
Queue Length 95th (ft)	6	0	3
Control Delay (s)	9.7	0.0	3.7
Lane LOS	A		A
Approach Delay (s)	9.7	0.0	3.7
Approach LOS	A		

Intersection Summary				
Average Delay		3.4		
Intersection Capacity Utilization		22.3%	ICU Level of Service	A
Analysis Period (min)		15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	35	0	40	24	23	0	0	54	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)	0	0	0	48	0	54	33	31	0	0	73	42
Pedestrians		2										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	247	193	96	191	214	31	117			31		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	247	193	96	191	214	31	117			31		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	94	100	95	98			100		
cM capacity (veh/h)	658	687	960	756	668	1043	1471			1581		

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	48	54	64	115
Volume Left	48	0	33	0
Volume Right	0	54	0	42
cSH	756	1043	1471	1700
Volume to Capacity	0.06	0.05	0.02	0.07
Queue Length 95th (ft)	5	4	2	0
Control Delay (s)	10.1	8.6	3.9	0.0
Lane LOS	B	A	A	
Approach Delay (s)	9.3		3.9	0.0
Approach LOS	A			

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	19.8%	ICU Level of Service	A
Analysis Period (min)	15		

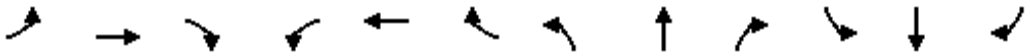
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	3	0	10	43	1	0	4	31	30	0	24	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	4	0	14	60	1	0	6	44	42	0	34	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	110	131	34	124	110	65	34			86		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	110	131	34	124	110	65	34			86		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	93	100	100	100			100		
cM capacity (veh/h)	864	757	1040	837	778	1000	1578			1511		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	18	62	91	34
Volume Left	4	60	6	0
Volume Right	14	0	42	0
cSH	993	836	1578	1511
Volume to Capacity	0.02	0.07	0.00	0.00
Queue Length 95th (ft)	1	6	0	0
Control Delay (s)	8.7	9.7	0.5	0.0
Lane LOS	A	A	A	
Approach Delay (s)	8.7	9.7	0.5	0.0
Approach LOS	A	A		

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	25.1%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
22: Mt Highland Dr & Continental Dr

12/2/2006



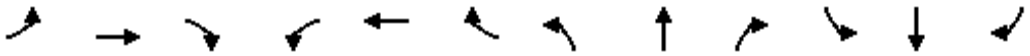
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	13	80	16	43	57	59	20	28	10	50	50	29
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	18	114	23	61	81	84	28	40	14	71	71	41
Pedestrians								4			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	166			140			488	454	129	442	423	124
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	166			140			488	454	129	442	423	124
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			96			93	92	98	85	86	96
cM capacity (veh/h)	1411			1438			397	472	918	462	491	926

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	155	226	82	183
Volume Left	18	61	28	71
Volume Right	23	84	14	41
cSH	1411	1438	481	535
Volume to Capacity	0.01	0.04	0.17	0.34
Queue Length 95th (ft)	1	3	15	38
Control Delay (s)	1.0	2.3	14.0	15.2
Lane LOS	A	A	B	C
Approach Delay (s)	1.0	2.3	14.0	15.2
Approach LOS			B	C

Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	36.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
23: Mt Highland Dr & EB off-ramp

12/2/2006

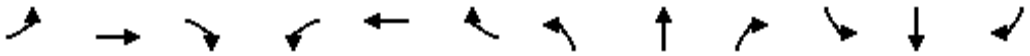


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	61	81	1	71	0	0	0	0	11	1	91
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	84	111	1	98	0	0	0	0	15	1	125
Pedestrians								1			1	
Lane Width (ft)								0.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	99			196			366	242	140	241	297	99
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	99			196			366	242	140	241	297	99
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	98	100	87
cM capacity (veh/h)	1493			1377			511	659	908	712	613	957

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	195	99	141
Volume Left	0	1	15
Volume Right	111	0	125
cSH	1700	1377	918
Volume to Capacity	0.11	0.00	0.15
Queue Length 95th (ft)	0	0	14
Control Delay (s)	0.0	0.1	9.6
Lane LOS		A	A
Approach Delay (s)	0.0	0.1	9.6
Approach LOS			A

Intersection Summary				
Average Delay	3.2			
Intersection Capacity Utilization	24.7%	ICU Level of Service	A	
Analysis Period (min)	15			

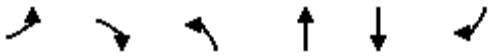
HCM Unsignalized Intersection Capacity Analysis
24: Mt Highland Dr & WB on-ramp 12/2/2006



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)	46	22	0	0	8	3	69	0	0	0	0	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	64	31	0	0	11	4	96	0	0	0	0	0
Pedestrians								4			1	
Lane Width (ft)								12.0			0.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	16			35			176	179	35	173	177	14
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	16			35			176	179	35	173	177	14
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 %	96			100			87	100	100	100	100	100
cM capacity (veh/h)	1601			1572			759	684	1035	764	686	1066

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	94	15	96
Volume Left	64	0	96
Volume Right	0	4	0
cSH	1601	1700	759
Volume to Capacity	0.04	0.01	0.13
Queue Length 95th (ft)	3	0	11
Control Delay (s)	5.1	0.0	10.4
Lane LOS	A		B
Approach Delay (s)	5.1	0.0	10.4
Approach LOS			B

Intersection Summary			
Average Delay	7.2		
Intersection Capacity Utilization	23.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	15	7	5	0	0	6
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	23	11	8	0	0	9

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	33	8	9
Volume Left (vph)	23	8	0
Volume Right (vph)	11	0	9
Hadj (s)	-0.02	0.23	-0.57
Departure Headway (s)	3.9	4.2	3.4
Degree Utilization, x	0.04	0.01	0.01
Capacity (veh/h)	910	835	1039
Control Delay (s)	7.1	7.2	6.4
Approach Delay (s)	7.1	7.2	6.4
Approach LOS	A	A	A

Intersection Summary			
Delay	7.0		
HCM Level of Service	A		
Intersection Capacity Utilization	15.2%	ICU Level of Service	A
Analysis Period (min)	15		