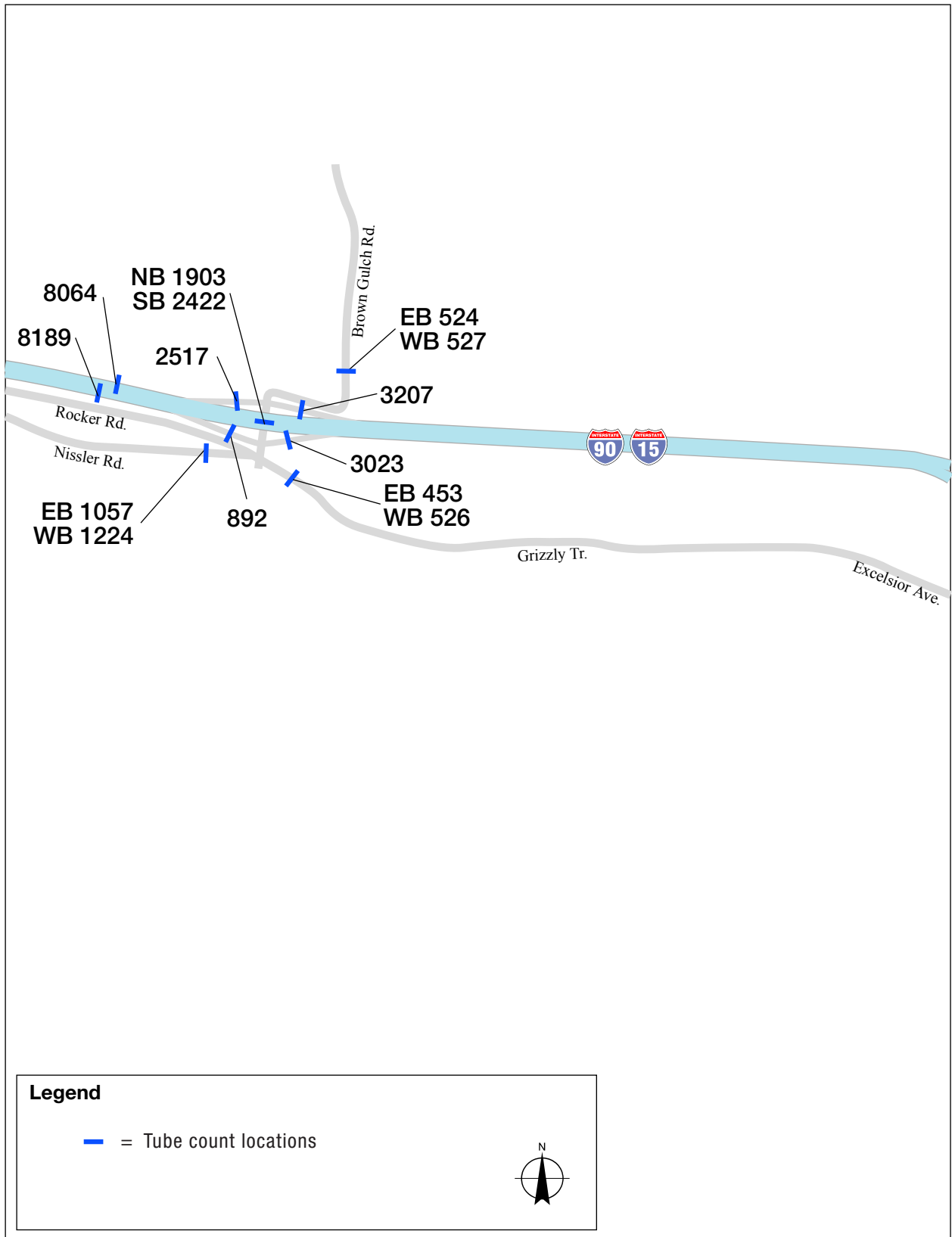
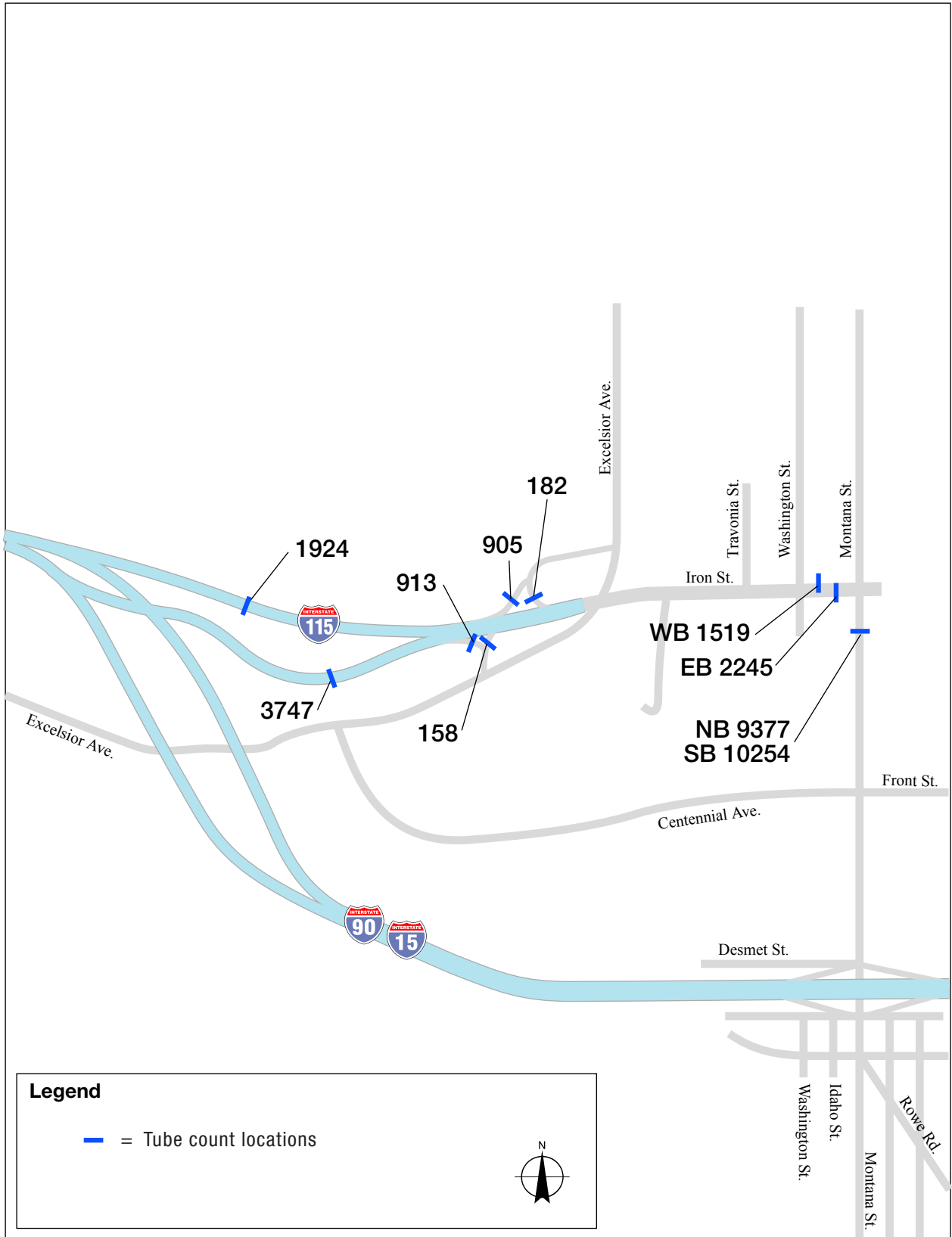
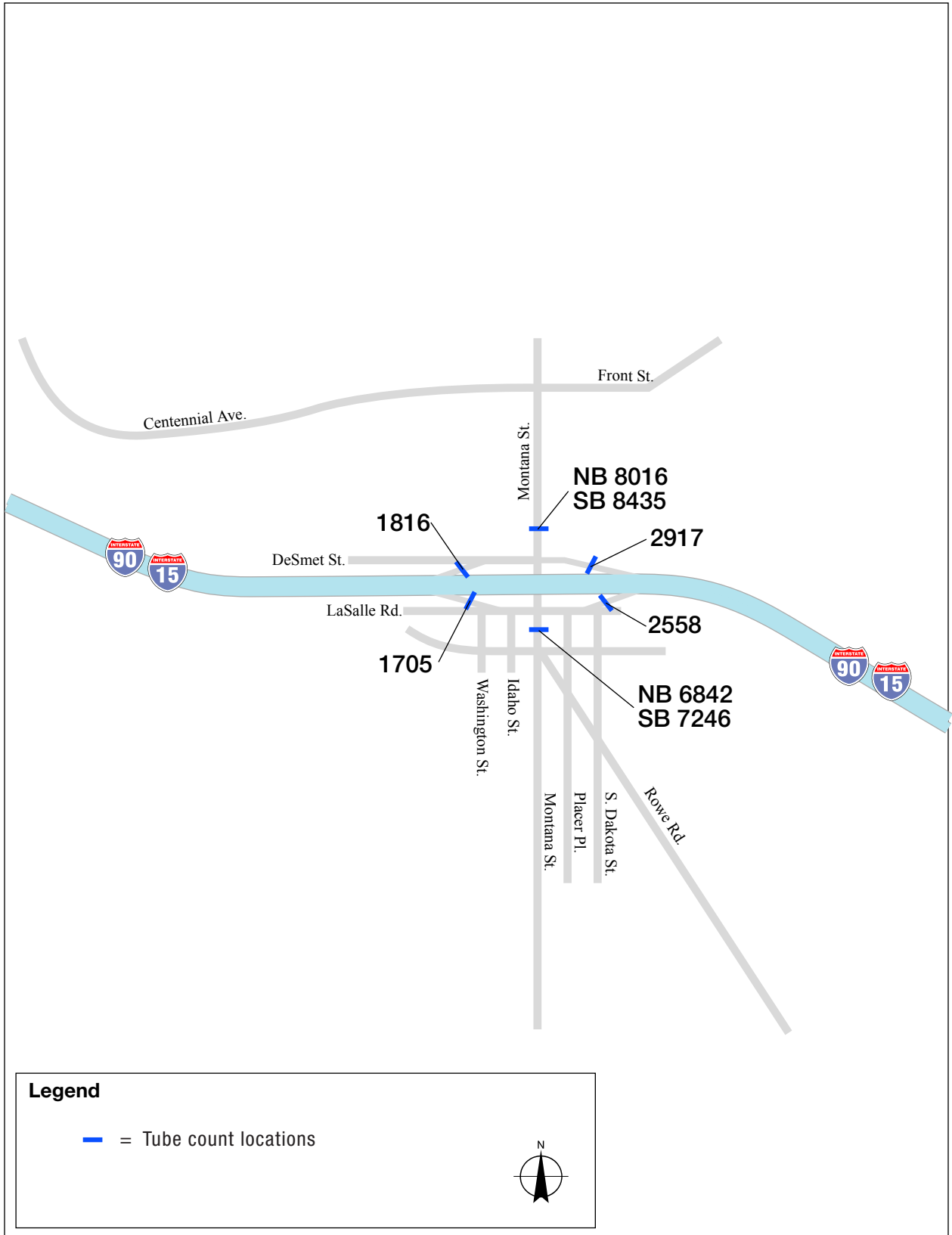
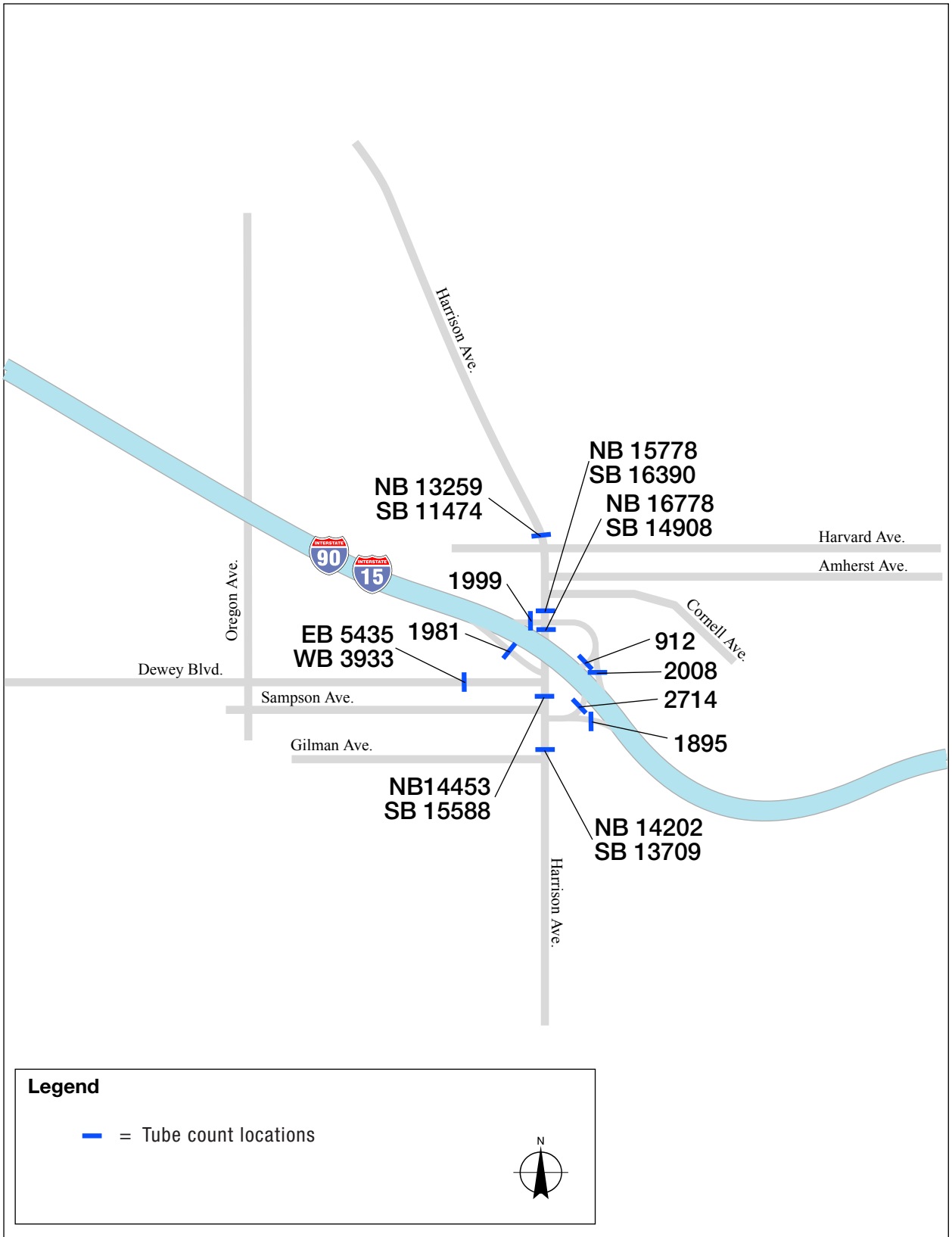


**EXISTING CONDITIONS
TRAFFIC INFORMATION**





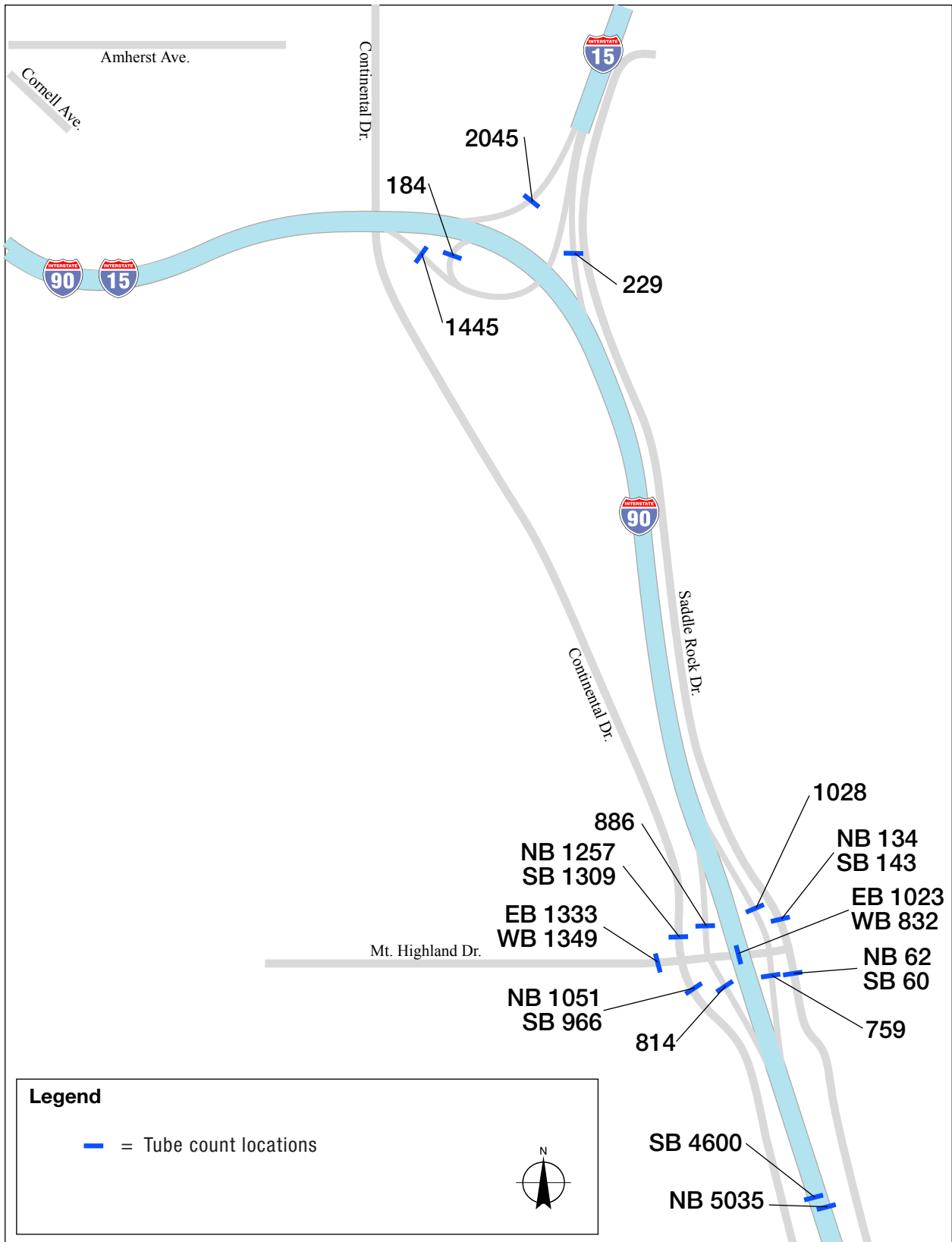


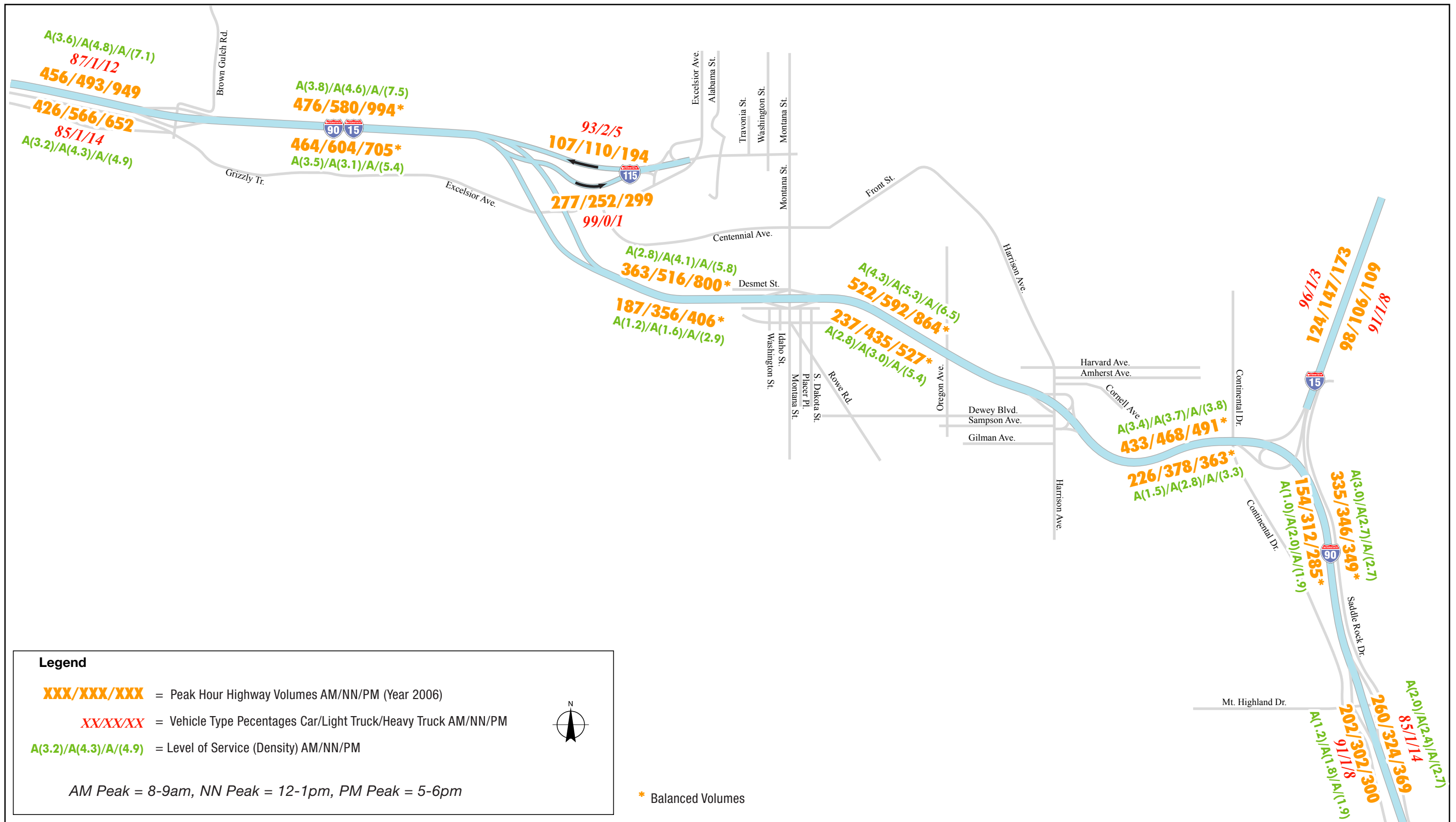


Legend

— = Tube count locations







A(3.6)/A(4.8)/A(7.1)
87/1/12
456/493/949
426/566/652
85/1/14
A(3.2)/A(4.3)/A(4.9)

A(3.8)/A(4.6)/A(7.5)
476/580/994*

464/604/705*
A(3.5)/A(3.1)/A(5.4)

93/2/5
107/110/194

277/252/299
99/0/1

A(2.8)/A(4.1)/A(5.8)
363/516/800*

187/356/406*
A(1.2)/A(1.6)/A(2.9)

A(4.3)/A(5.3)/A(6.5)
522/592/864*

237/435/527*
A(2.8)/A(3.0)/A(5.4)

A(3.4)/A(3.7)/A(3.8)
433/468/491*

226/378/363*
A(1.5)/A(2.8)/A(3.3)

A(3.0)/A(2.7)/A(2.7)
335/346/349*

154/312/285*
A(1.0)/A(2.0)/A(1.9)

96/1/3
124/147/173

601/901/98
98/106/96

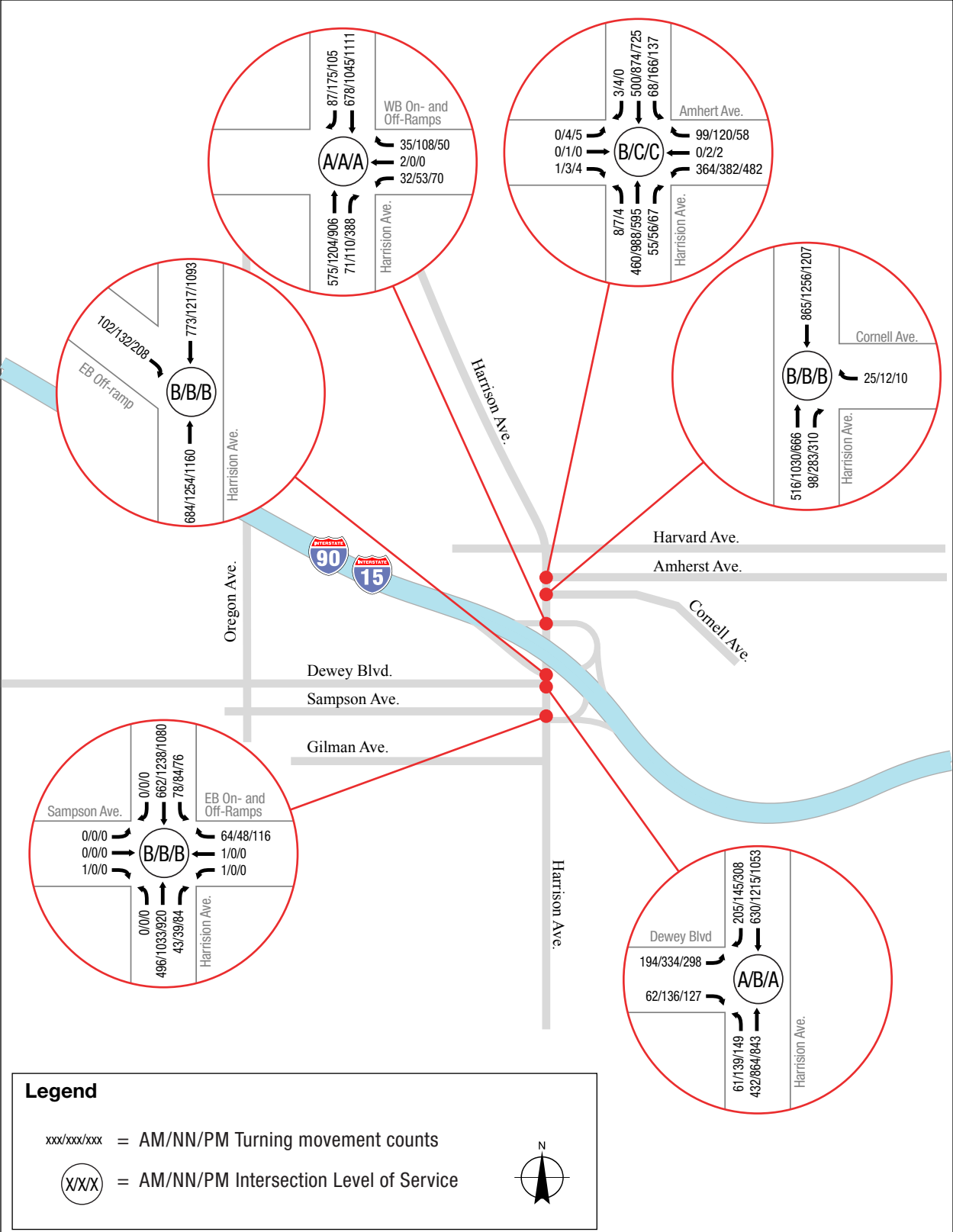
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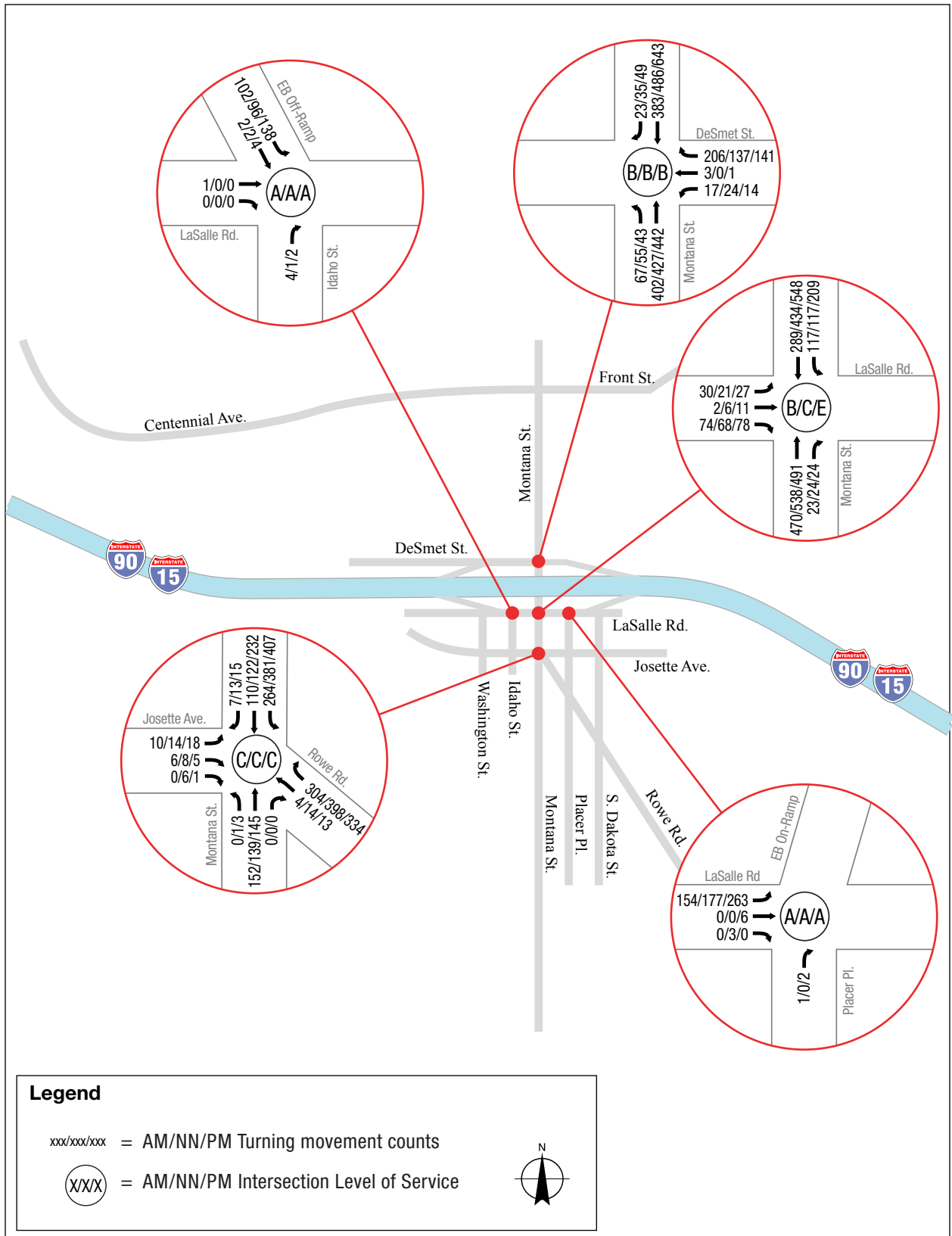
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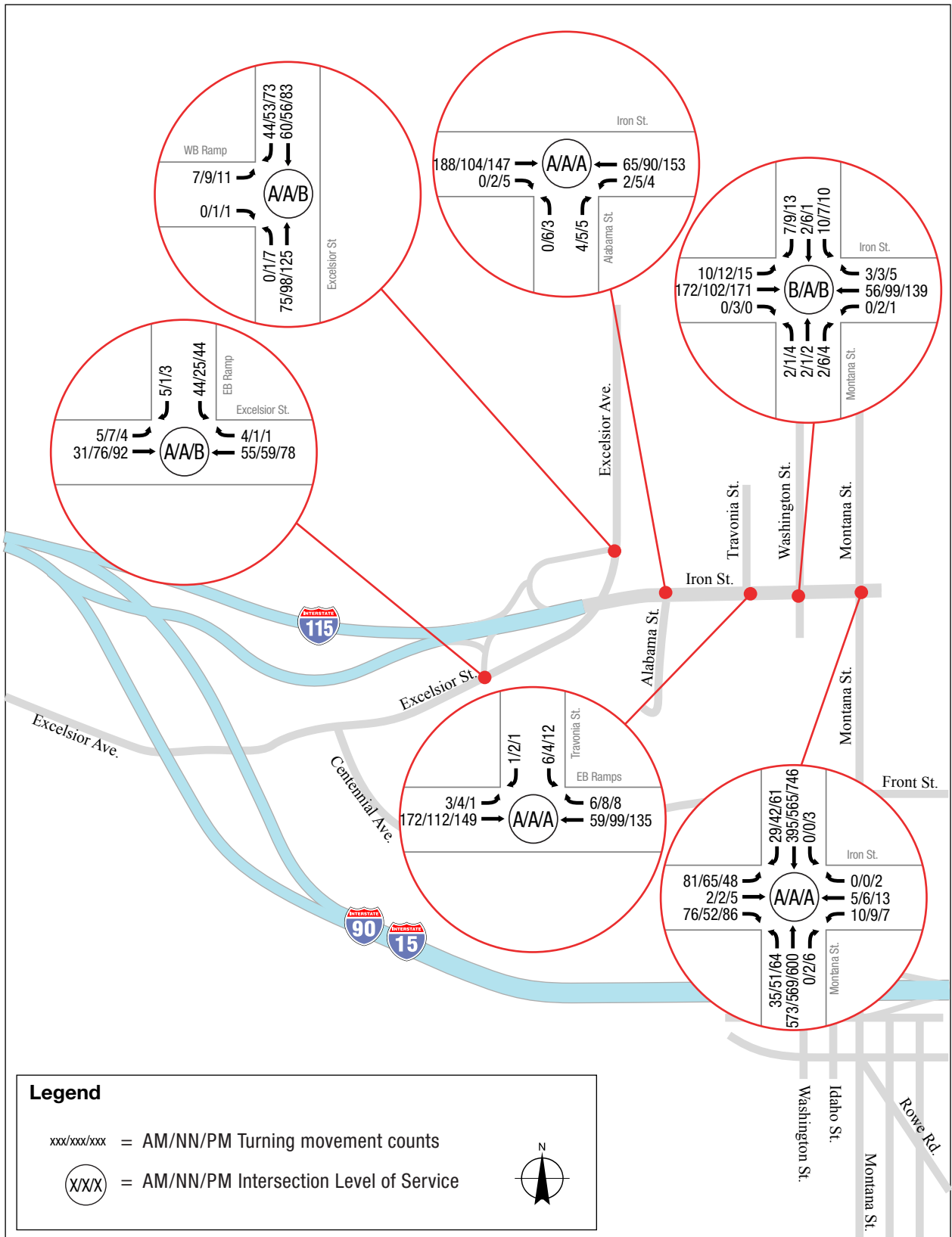
A(2.0)/A(2.4)/A(2.7)
260/324/369

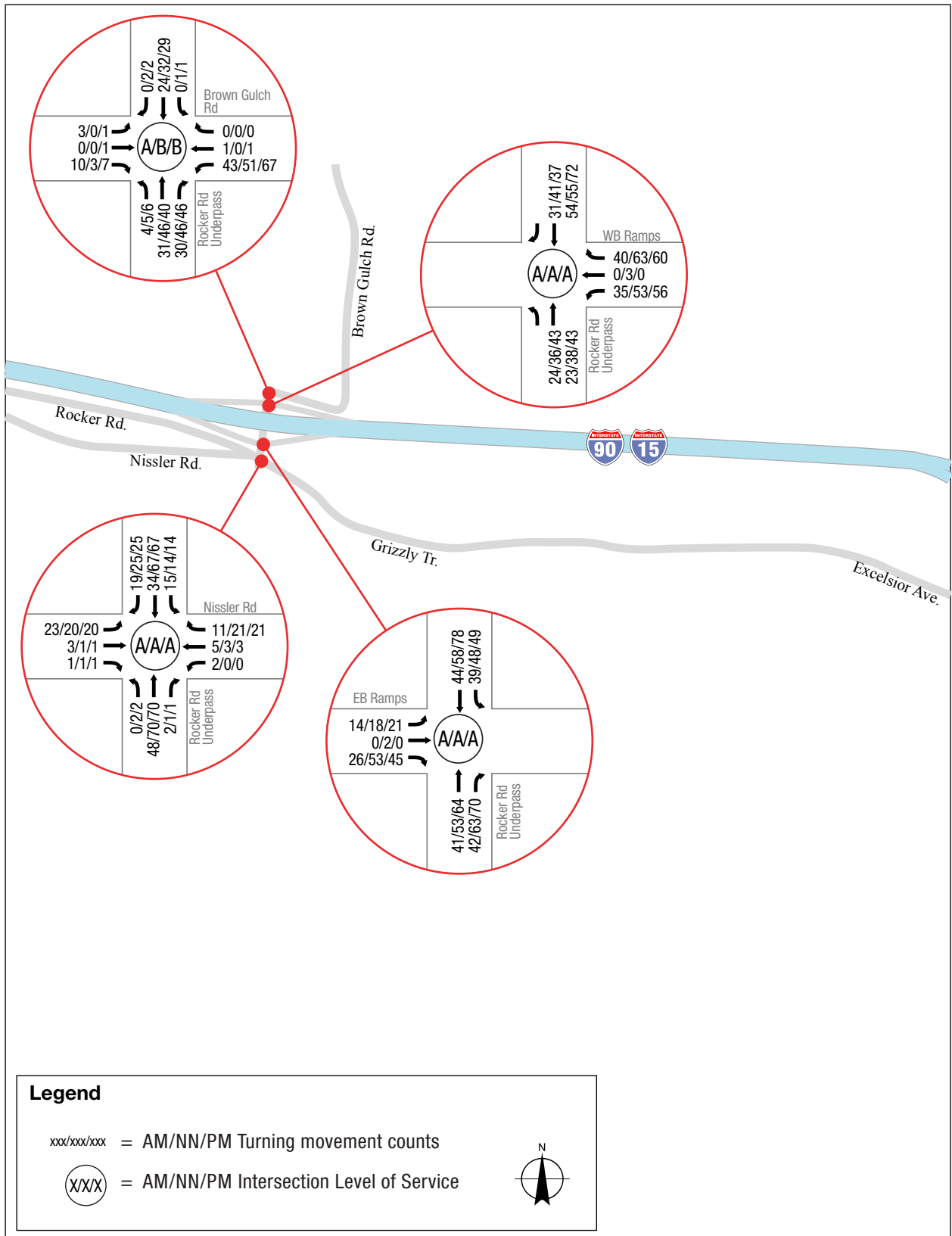
85/1/14
202/302/300
91/1/8

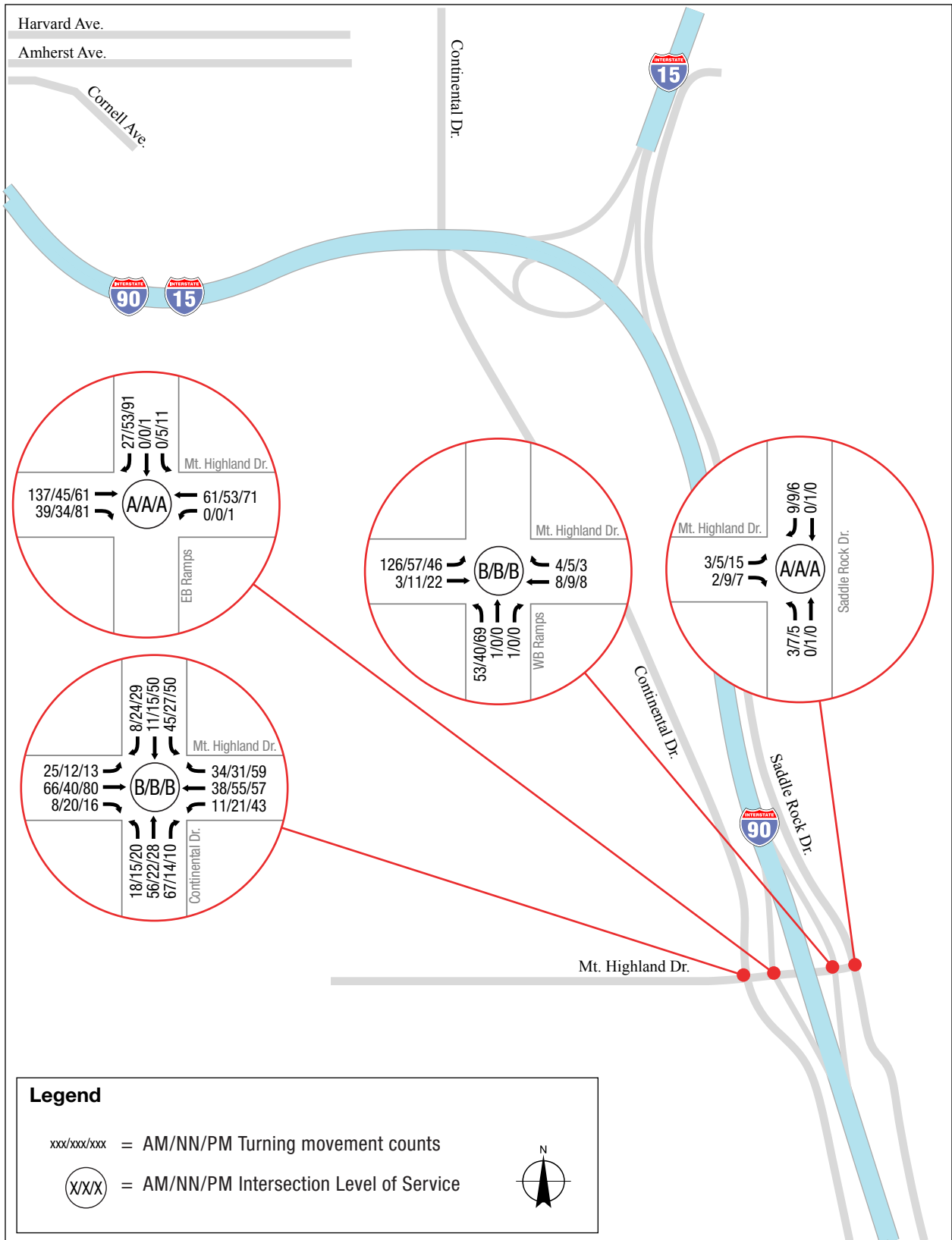
A(1.2)/A(1.8)/A(1.9)











**EXISTING CONDITIONS
SYNCHRO LEVEL OF SERVICE OUTPUTS**

HCM Unsignalized Intersection Capacity Analysis

1: Nissler Rd & Rocker

12/1/2006



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)	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)	26	3	1	2	6	13	0	55	2	17	39	22
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	156	142	50	144	152	56	61			57		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	156	142	50	144	152	56	61			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 %	97	100	100	100	99	99	100			99		
cM capacity (veh/h)	788	741	1018	815	732	1010	1542			1547		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	31	21	57	78
Volume Left	26	2	0	17
Volume Right	1	13	2	22
cSH	789	892	1542	1547
Volume to Capacity	0.04	0.02	0.00	0.01
Queue Length 95th (ft)	3	2	0	1
Control Delay (s)	9.7	9.1	0.0	1.7
Lane LOS	A	A		A
Approach Delay (s)	9.7	9.1	0.0	1.7
Approach LOS	A	A		

Intersection Summary			
Average Delay		3.3	
Intersection Capacity Utilization	24.4%	ICU Level of Service	A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

2: EB off-ramp & Rocker

12/1/2006



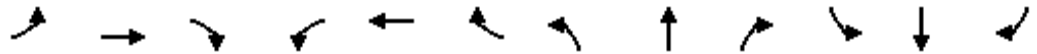
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↕			↕	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	14	0	26	0	0	0	0	41	42	39	44	0
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	18	0	33	0	0	0	0	52	53	49	56	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	233	259	56	266	233	78	56			105		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	233	259	56	266	233	78	56			105		
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	97	100	100	100	100			97		
cM capacity (veh/h)	704	624	1011	648	645	982	1549			1486		

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	51	105	105
Volume Left	18	0	49
Volume Right	33	53	0
cSH	877	1700	1486
Volume to Capacity	0.06	0.06	0.03
Queue Length 95th (ft)	5	0	3
Control Delay (s)	9.4	0.0	3.7
Lane LOS	A		A
Approach Delay (s)	9.4	0.0	3.7
Approach LOS	A		

Intersection Summary		
Average Delay		3.3
Intersection Capacity Utilization	21.1%	ICU Level of Service
Analysis Period (min)		15
		A

HCM Unsignalized Intersection Capacity Analysis
 3: WB on-ramp & Rocker

12/1/2006



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	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	38	0	43	26	25	0	0	59	34
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	198	155	78	153	172	25	94			25		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	198	155	78	153	172	25	94			25		
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	95	100	96	98			100		
cM capacity (veh/h)	719	724	983	804	709	1051	1500			1589		

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	38	43	51	92
Volume Left	38	0	26	0
Volume Right	0	43	0	34
cSH	804	1051	1500	1700
Volume to Capacity	0.05	0.04	0.02	0.05
Queue Length 95th (ft)	4	3	1	0
Control Delay (s)	9.7	8.6	3.9	0.0
Lane LOS	A	A	A	
Approach Delay (s)	9.1		3.9	0.0
Approach LOS	A			

Intersection Summary			
Average Delay		4.2	
Intersection Capacity Utilization	19.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis

4: Browns Gulch & Rocker

12/1/2006



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)	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)	3	0	11	48	1	0	4	35	34	0	27	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	88	104	27	99	88	52	27			69		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	88	104	27	99	88	52	27			69		
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	94	100	100	100			100		
cM capacity (veh/h)	894	783	1049	872	800	1016	1587			1533		

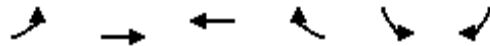
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	15	49	73	27
Volume Left	3	48	4	0
Volume Right	11	0	34	0
cSH	1008	870	1587	1533
Volume to Capacity	0.01	0.06	0.00	0.00
Queue Length 95th (ft)	1	5	0	0
Control Delay (s)	8.6	9.4	0.5	0.0
Lane LOS	A	A	A	
Approach Delay (s)	8.6	9.4	0.5	0.0
Approach LOS	A	A		

Intersection Summary			
Average Delay		3.8	
Intersection Capacity Utilization	21.7%	ICU Level of Service	A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

5: Excelsior & EB I-115

12/1/2006



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)	6	36	64	5	51	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	69				114	66
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	69				114	66
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				94	99
cM capacity (veh/h)	1532				879	997

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	42	69	57
Volume Left	6	0	51
Volume Right	0	5	6
cSH	1532	1700	890
Volume to Capacity	0.00	0.04	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	1.0	0.0	9.3
Lane LOS	A		A
Approach Delay (s)	1.0	0.0	9.3
Approach LOS			A

Intersection Summary			
Average Delay		3.4	
Intersection Capacity Utilization	15.9%	ICU Level of Service	A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 6: WB I-115 & Excelsior

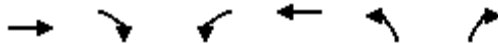
12/1/2006



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)	8	0	0	84	67	49
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	176	92	117			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	176	92	117			
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)	813	965	1472			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	8	84	117			
Volume Left	8	0	0			
Volume Right	0	0	49			
cSH	813	1472	1700			
Volume to Capacity	0.01	0.00	0.07			
Queue Length 95th (ft)	1	0	0			
Control Delay (s)	9.5	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	9.5	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization		15.8%		ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
7: Iron St & Alabama St

12/1/2006



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)	238	0	3	82	0	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			238		284	119
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			238		284	119
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)			1326		681	910
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	159	79	3	41	41	5
Volume Left	0	0	3	0	0	0
Volume Right	0	0	0	0	0	5
cSH	1700	1700	1326	1700	1700	910
Volume to Capacity	0.09	0.05	0.00	0.02	0.02	0.01
Queue Length 95th (ft)	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	7.7	0.0	0.0	9.0
Lane LOS			A			A
Approach Delay (s)	0.0		0.2			9.0
Approach LOS						A
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			15.2%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 8: Iron St & Travonia Street

12/1/2006



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)	4	232	80	8	8	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	88				208	44
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	88				208	44
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)	1506				759	1017
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	4	116	116	53	35	9
Volume Left	4	0	0	0	0	8
Volume Right	0	0	0	0	8	1
cSH	1506	1700	1700	1700	1700	788
Volume to Capacity	0.00	0.07	0.07	0.03	0.02	0.01
Queue Length 95th (ft)	0	0	0	0	0	1
Control Delay (s)	7.4	0.0	0.0	0.0	0.0	9.6
Lane LOS	A					A
Approach Delay (s)	0.1			0.0		9.6
Approach LOS						A
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			14.8%		ICU Level of Service	A
Analysis Period (min)			15			

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

12/1/2006



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)	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)	13	223	0	0	73	4	3	3	3	13	3	9
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	77			223			296	326	112	216	324	38
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	77			223			296	326	112	216	324	38
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	100	98	100	99
cM capacity (veh/h)	1520			1343			622	586	920	712	587	1025


















Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	13	149	74	0	48	28	8	25
Volume Left	13	0	0	0	0	0	3	13
Volume Right	0	0	0	0	0	4	3	9
cSH	1520	1700	1700	1700	1700	1700	681	783
Volume to Capacity	0.01	0.09	0.04	0.00	0.03	0.02	0.01	0.03
Queue Length 95th (ft)	1	0	0	0	0	0	1	2
Control Delay (s)	7.4	0.0	0.0	0.0	0.0	0.0	10.3	9.7
Lane LOS	A						B	A
Approach Delay (s)	0.4		0.0				10.3	9.7
Approach LOS							B	A

Intersection Summary		
Average Delay		1.2
Intersection Capacity Utilization	17.2%	ICU Level of Service
Analysis Period (min)		15
A		

HCM Unsignalized Intersection Capacity Analysis


















11: DeSmet Rd & Montana St

12/1/2006

												
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	19	3	231	75	452	0	0	430	26
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	1053	1046	228	817	1058	226	456				452	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1053	1046	228	817	1058	226	456				452	
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	92	98	70	93				100	
cM capacity (veh/h)	119	212	775	254	208	777	1101				1105	
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2					
Volume Total	21	233	75	226	226	287	169					
Volume Left	19	0	75	0	0	0	0					
Volume Right	0	231	0	0	0	0	26					
cSH	250	762	1101	1700	1700	1700	1700					
Volume to Capacity	0.08	0.31	0.07	0.13	0.13	0.17	0.10					
Queue Length 95th (ft)	7	32	5	0	0	0	0					
Control Delay (s)	20.7	11.8	8.5	0.0	0.0	0.0	0.0					
Lane LOS	C	B	A									
Approach Delay (s)	12.5	1.2		0.0								
Approach LOS	B											
Intersection Summary												
Average Delay			3.1									
Intersection Capacity Utilization			34.3%			ICU Level of Service			A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 12: LaSalle Rd & Montana St

12/1/2006

												
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)	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)	35	2	86	0	0	0	0	547	27	136	336	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	881	1182	170	1090	1169	288	336			574		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	881	1182	170	1090	1169	288	336			574		
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 %	84	99	90	100	100	100	100			86		
cM capacity (veh/h)	216	163	843	135	166	709	1220			995		
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2	SB 3					
Volume Total	36	87	364	209	136	168	168					
Volume Left	35	0	0	0	136	0	0					
Volume Right	0	86	0	27	0	0	0					
cSH	213	798	1700	1700	995	1700	1700					
Volume to Capacity	0.17	0.11	0.21	0.12	0.14	0.10	0.10					
Queue Length 95th (ft)	15	9	0	0	12	0	0					
Control Delay (s)	25.3	10.1	0.0	0.0	9.2	0.0	0.0					
Lane LOS	D	B			A							
Approach Delay (s)	14.5		0.0		2.6							
Approach LOS	B											
Intersection Summary												
Average Delay			2.6									
Intersection Capacity Utilization			34.3%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 14: LaSalle Rd & EB on-ramp

12/1/2006



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)	190	0	0	0	0	0	0	0	1	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			380			380	0	380	0
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0	0			380			380	0	380	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 %	88	100			100			100	100	100	100
cM capacity (veh/h)	1623	1623			526			488	1085	488	1085

Direction, Lane #	EB 1	EB 2	NB 1
Volume Total	190	0	1
Volume Left	190	0	0
Volume Right	0	0	1
cSH	1623	1700	1085
Volume to Capacity	0.12	0.00	0.00
Queue Length 95th (ft)	10	0	0
Control Delay (s)	7.5	0.0	8.3
Lane LOS	A		A
Approach Delay (s)	7.5		8.3
Approach LOS			A

Intersection Summary		
Average Delay		7.5
Intersection Capacity Utilization	11.9%	ICU Level of Service
Analysis Period (min)		15
A		

HCM Signalized Intersection Capacity Analysis

10: Iron St & Montana St

12/1/2006



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	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	
Frbp, 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		1803			3529			3502	
Flt Permitted	0.95	0.95	1.00		1.00			0.90			1.00	
Satd. Flow (perm)	1625	1689	1583		1863			3187			3502	
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
Adj. Flow (vph)	96	2	90	12	6	0	42	682	0	0	470	35
RTOR Reduction (vph)	0	0	82	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	48	50	8	0	18	0	0	724	0	0	503	0
Conf. 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)	6.8	6.8	6.8		1.6			66.6			66.6	
Effective Green, g (s)	7.8	7.8	7.8		2.6			67.6			67.6	
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)	141	146	137		54			2394			2630	
v/s Ratio Prot	0.03	c0.03									0.14	
v/s Ratio Perm			0.00		c0.01			c0.23				
v/c Ratio	0.34	0.34	0.06		0.33			0.30			0.19	
Uniform Delay, d1	38.7	38.7	37.7		42.9			3.6			3.3	
Progression Factor	1.00	1.00	1.00		1.00			0.51			1.00	
Incremental Delay, d2	1.4	1.4	0.2		3.6			0.3			0.2	
Delay (s)	40.1	40.1	37.9		46.5			2.2			3.4	
Level of Service	D	D	D		D			A			A	
Approach Delay (s)		39.0			46.5			2.2			3.4	
Approach LOS		D			D			A			A	
Intersection Summary												
HCM Average Control Delay			8.0					HCM Level of Service			A	
HCM Volume to Capacity ratio			0.31									
Actuated Cycle Length (s)			90.0					Sum of lost time (s)		12.0		
Intersection Capacity Utilization			46.5%					ICU Level of Service		A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

15: Josette Ave & Montana St

12/1/2006



Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations	W		W	W		W	W		W	
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)	1716			1863		1770	1847		1614	
Flt Permitted	0.97			1.00		0.95	1.00		1.00	
Satd. Flow (perm)	1716			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
Adj. Flow (vph)	12	7	0	181	0	314	131	8	5	362
RTOR Reduction (vph)	0	0	0	0	0	0	1	0	323	0
Lane Group Flow (vph)	19	0	0	181	0	314	138	0	44	0
Turn Type	Prot		Perm			Prot				
Protected Phases	4			2		1	6		8	
Permitted Phases			2							
Actuated Green, G (s)	1.6			31.8		28.0	64.8		8.6	
Effective Green, g (s)	2.6			32.8		29.0	65.8		9.6	
Actuated g/C Ratio	0.03			0.36		0.32	0.73		0.11	
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)	50			679		570	1350		172	
v/s Ratio Prot	c0.01			c0.10		c0.18	0.07		c0.03	
v/s Ratio Perm										
v/c Ratio	0.38			0.27		0.55	0.10		0.25	
Uniform Delay, d1	42.9			20.1		25.1	3.5		36.9	
Progression Factor	1.00			1.00		1.06	0.83		1.00	
Incremental Delay, d2	4.8			1.0		1.1	0.2		0.8	
Delay (s)	47.7			21.1		27.9	3.1		37.7	
Level of Service	D			C		C	A		D	
Approach Delay (s)	47.7			21.1			20.3		37.7	
Approach LOS	D			C			C		D	
Intersection Summary										
HCM Average Control Delay			27.2			HCM Level of Service			C	
HCM Volume to Capacity ratio			0.38							
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			16.0	
Intersection Capacity Utilization			58.3%			ICU Level of Service			B	
Analysis Period (min)			15							
c	Critical Lane Group									

HCM Signalized Intersection Capacity Analysis

26: Front Street & Montana St

12/1/2006
























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	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	
Frbp, 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	1768			1759	1508	1711	3334		1711	3398	
Flt Permitted	0.61	1.00			0.81	1.00	0.53	1.00		0.43	1.00	
Satd. Flow (perm)	1096	1768			1453	1508	952	3334		782	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
Adj. Flow (vph)	17	46	45	55	62	289	63	407	71	222	359	17
RTOR Reduction (vph)	0	39	0	0	0	248	0	9	0	0	2	0
Lane Group Flow (vph)	17	52	0	0	117	41	63	469	0	222	374	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)	11.8	11.8			11.8	11.8	59.4	54.1		67.0	57.9	
Effective Green, g (s)	12.8	12.8			12.8	12.8	61.4	55.1		69.0	58.9	
Actuated g/C Ratio	0.14	0.14			0.14	0.14	0.68	0.61		0.77	0.65	
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)	156	251			207	214	703	2041		704	2224	
v/s Ratio Prot		0.03					0.01	0.14		c0.04	0.11	
v/s Ratio Perm	0.02				c0.08	0.03	0.05			c0.21		
v/c Ratio	0.11	0.21			0.57	0.19	0.09	0.23		0.32	0.17	
Uniform Delay, d1	33.6	34.1			36.0	34.0	4.7	7.9		3.0	6.0	
Progression Factor	1.00	1.00			1.00	1.00	0.92	0.91		0.64	0.76	
Incremental Delay, d2	0.3	0.4			3.5	0.4	0.1	0.3		0.3	0.2	
Delay (s)	33.9	34.5			39.5	34.5	4.4	7.4		2.2	4.7	
Level of Service	C	C			D	C	A	A		A	A	
Approach Delay (s)		34.4			35.9			7.1			3.8	
Approach LOS		C			D			A			A	

Intersection Summary

HCM Average Control Delay	14.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 16: EB ramps & Harrison Ave

12/1/2006

												
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	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	69	0	533	46	84	712	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	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	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	0	0	0	0
cM capacity (veh/h)	0	0	0	0	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	71	213	213	153	84	285	285	142			
Volume Left	0	1	0	0	0	84	0	0	0			
Volume Right	1	69	0	0	46	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			30.2%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 18: EB off-ramp & Harrison Ave

12/1/2006



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	110	0	735	831	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					
vC, conflicting volume	1076	277	831			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1043	277	831			
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	85	100			
cM capacity (veh/h)	221	720	797			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	110	245	245	245	277	277	277
Volume Left	0	0	0	0	0	0	0
Volume Right	110	0	0	0	0	0	0
cSH	720	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.15	0.14	0.14	0.14	0.16	0.16	0.16
Queue Length 95th (ft)	13	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		0.7	
Intersection Capacity Utilization	27.9%		ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 20: Cornell Ave & Harrison Ave

12/1/2006



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	29	607	115	0	1018
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	0.95	0.99			0.99	
vC, conflicting volume	947	305			723	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	813	293			715	
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	96			100	
cM capacity (veh/h)	300	698			875	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	29	304	304	115	339	339	339
Volume Left	0	0	0	0	0	0	0
Volume Right	29	0	0	115	0	0	0
cSH	698	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.04	0.18	0.18	0.07	0.20	0.20	0.20
Queue Length 95th (ft)	3	0	0	0	0	0	0
Control Delay (s)	10.4	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B						
Approach Delay (s)	10.4	0.0			0.0		
Approach LOS	B						

Intersection Summary			
Average Delay		0.2	
Intersection Capacity Utilization	24.3%	ICU Level of Service	A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
 17: Dewey Blvd & Harrison Ave

12/1/2006



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	
Frbp, 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	0.27	1.00	1.00	
Satd. Flow (perm)	3433	1583	498	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
Adj. Flow (vph)	213	68	67	475	692	225
RTOR Reduction (vph)	0	59	0	0	35	0
Lane Group Flow (vph)	213	9	67	475	882	0
Conf. Peds. (#/hr)			3			3
Turn Type		Perm pm+pt				
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	10.4	10.4	68.6	68.6	59.4	
Effective Green, g (s)	12.4	12.4	69.6	69.6	60.4	
Actuated g/C Ratio	0.14	0.14	0.77	0.77	0.67	
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)	473	218	459	3932	3158	
v/s Ratio Prot	c0.06		c0.01	0.09	c0.19	
v/s Ratio Perm		0.01	0.10			
v/c Ratio	0.45	0.04	0.15	0.12	0.28	
Uniform Delay, d1	35.7	33.7	2.7	2.6	6.0	
Progression Factor	1.00	1.00	1.00	1.00	0.55	
Incremental Delay, d2	0.7	0.1	0.1	0.1	0.2	
Delay (s)	36.4	33.7	2.8	2.6	3.5	
Level of Service	D	C	A	A	A	
Approach Delay (s)	35.7			2.6	3.5	
Approach LOS	D			A	A	

Intersection Summary

HCM Average Control Delay	8.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	38.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 19: WB off-ramp/WB on-ramp & Harrison Ave

12/1/2006



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	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	
Frbp, 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					0.95	1.00		1.00			1.00	
Satd. Flow (prot)					1779	1719		4835			4832	
Flt Permitted					0.95	1.00		1.00			1.00	
Satd. Flow (perm)					1779	1719		4835			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
Adj. Flow (vph)	0	0	0	36	2	39	0	639	79	0	753	97
RTOR Reduction (vph)	0	0	0	0	0	36	0	7	0	0	7	0
Lane Group Flow (vph)	0	0	0	0	38	3	0	711	0	0	843	0
Confl. Peds. (#/hr)						1						
Turn Type				Perm		Perm						
Protected Phases					8			2			6	
Permitted Phases				8		8						
Actuated Green, G (s)					4.9	4.9		74.5			74.5	
Effective Green, g (s)					5.9	5.9		76.1			76.1	
Actuated g/C Ratio					0.07	0.07		0.85			0.85	
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)					117	113		4088			4086	
v/s Ratio Prot								0.15			c0.17	
v/s Ratio Perm					0.02	0.00						
v/c Ratio					0.32	0.02		0.17			0.21	
Uniform Delay, d1					40.1	39.4		1.3			1.3	
Progression Factor					1.00	1.00		1.76			0.78	
Incremental Delay, d2					1.6	0.1		0.1			0.1	
Delay (s)					41.8	39.4		2.3			1.1	
Level of Service					D	D		A			A	
Approach Delay (s)		0.0			40.6			2.3			1.1	
Approach LOS		A			D			A			A	
Intersection Summary												
HCM Average Control Delay			3.5		HCM Level of Service						A	
HCM Volume to Capacity ratio			0.21									
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												

HCM Signalized Intersection Capacity Analysis

21: Amherst Ave & Harrison Ave

12/1/2006



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		0.95	0.95			0.95		1.00	0.91	
Frbp, 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	1616			3356		1769	4911	
Flt Permitted		1.00		0.76	0.81			0.95		0.32	1.00	
Satd. Flow (perm)		1611		1340	1355			3174		593	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
Adj. Flow (vph)	0	0	1	418	0	114	9	529	63	78	575	3
RTOR Reduction (vph)	0	1	0	0	23	0	0	8	0	0	0	0
Lane Group Flow (vph)	0	0	0	241	268	0	0	593	0	78	578	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		25.7	25.7			37.6		47.5	47.5	
Effective Green, g (s)		2.2		26.7	26.7			39.2		49.1	49.1	
Actuated g/C Ratio		0.02		0.30	0.30			0.44		0.55	0.55	
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		398	402			1382		401	2679	
v/s Ratio Prot		c0.00								0.01	c0.12	
v/s Ratio Perm				0.18	c0.20			c0.19		0.09		
v/c Ratio		0.00		0.61	0.67			0.43		0.19	0.22	
Uniform Delay, d1		42.8		27.1	27.7			17.6		10.4	10.5	
Progression Factor		1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.0		2.6	4.1			1.0		0.2	0.2	
Delay (s)		42.8		29.7	31.9			18.5		10.7	10.7	
Level of Service		D		C	C			B		B	B	
Approach Delay (s)		42.8			30.9			18.5			10.7	
Approach LOS		D			C			B			B	

Intersection Summary

HCM Average Control Delay	19.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

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

12/1/2006



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)	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)	28	73	9	12	42	38	20	62	74	50	12	9
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	80			83			235	239	79	324	224	61
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	80			83			235	239	79	324	224	61
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			97	90	92	91	98	99
cM capacity (veh/h)	1518			1513			688	644	981	527	656	1004

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	110	92	157	71
Volume Left	28	12	20	50
Volume Right	9	38	74	9
cSH	1518	1513	777	581
Volume to Capacity	0.02	0.01	0.20	0.12
Queue Length 95th (ft)	1	1	19	10
Control Delay (s)	2.0	1.0	10.8	12.1
Lane LOS	A	A	B	B
Approach Delay (s)	2.0	1.0	10.8	12.1
Approach LOS			B	B

Intersection Summary			
Average Delay		6.7	
Intersection Capacity Utilization	29.5%	ICU Level of Service	A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

23: Mt Highland Dr & EB off-ramp

12/1/2006



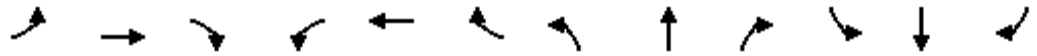
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷						↷	↶
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	137	39	0	61	0	0	0	0	0	0	27
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	0	159	45	0	71	0	0	0	0	0	0	31
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	71			206			285	254	183	253	277	71
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	71			206			285	254	183	253	277	71
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	97
cM capacity (veh/h)	1529			1366			646	650	859	700	631	992

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	205	71	31
Volume Left	0	0	0
Volume Right	45	0	31
cSH	1700	1366	992
Volume to Capacity	0.12	0.00	0.03
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.0	8.7
Lane LOS			A
Approach Delay (s)	0.0	0.0	8.7
Approach LOS			A

Intersection Summary		
Average Delay		0.9
Intersection Capacity Utilization	19.7%	ICU Level of Service
Analysis Period (min)		15
		A

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

12/1/2006



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)	154	4	0	0	10	5	65	1	1	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	15			4			323	326	4	325	323	12
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	15			4			323	326	4	325	323	12
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 %	90			100			89	100	100	100	100	100
cM capacity (veh/h)	1603			1618			584	536	1080	580	537	1068

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	157	15	67
Volume Left	154	0	65
Volume Right	0	5	1
cSH	1603	1700	588
Volume to Capacity	0.10	0.01	0.11
Queue Length 95th (ft)	8	0	10
Control Delay (s)	7.3	0.0	11.9
Lane LOS	A		B
Approach Delay (s)	7.3	0.0	11.9
Approach LOS			B

Intersection Summary		
Average Delay		8.2
Intersection Capacity Utilization	23.8%	ICU Level of Service
Analysis Period (min)		15
		A

HCM Unsignalized Intersection Capacity Analysis
 25: Mt Highland Dr & Saddle Rock Dr

12/1/2006



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	2	4	0	0	11
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total (vph)	6	4	11			
Volume Left (vph)	4	4	0			
Volume Right (vph)	2	0	11			
Hadj (s)	-0.09	0.23	-0.57			
Departure Headway (s)	3.8	4.2	3.3			
Degree Utilization, x	0.01	0.00	0.01			
Capacity (veh/h)	927	852	1066			
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			

HCM Unsignalized Intersection Capacity Analysis

1: Nissler Rd & Rocker

12/1/2006



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)	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)	21	1	1	0	3	22	2	74	1	15	71	27
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	218	195	85	196	208	76	98			77		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	218	195	85	196	208	76	98			77		
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	100	100	100	98	100			99		
cM capacity (veh/h)	713	692	974	754	681	984	1495			1521		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	23	26	78	113
Volume Left	21	0	2	15
Volume Right	1	22	1	27
cSH	721	932	1495	1521
Volume to Capacity	0.03	0.03	0.00	0.01
Queue Length 95th (ft)	3	2	0	1
Control Delay (s)	10.2	9.0	0.2	1.0
Lane LOS	B	A	A	A
Approach Delay (s)	10.2	9.0	0.2	1.0
Approach LOS	B	A		

Intersection Summary			
Average Delay		2.5	
Intersection Capacity Utilization	26.7%	ICU Level of Service	A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 2: EB off-ramp & Rocker

12/1/2006



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)	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)	19	2	55	0	0	0	0	55	65	49	60	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	246	278	60	302	246	87	60			120		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	246	278	60	302	246	87	60			120		
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	95	100	100	100	100			97		
cM capacity (veh/h)	690	608	1006	598	634	971	1544			1468		

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	75	120	109
Volume Left	19	0	49
Volume Right	55	65	0
cSH	889	1700	1468
Volume to Capacity	0.08	0.07	0.03
Queue Length 95th (ft)	7	0	3
Control Delay (s)	9.4	0.0	3.6
Lane LOS	A		A
Approach Delay (s)	9.4	0.0	3.6
Approach LOS	A		

Intersection Summary		
Average Delay		3.6
Intersection Capacity Utilization	23.4%	ICU Level of Service A
Analysis Period (min)		15

HCM Unsignalized Intersection Capacity Analysis

3: WB on-ramp & Rocker

12/1/2006



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	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	56	3	67	38	40	0	0	59	44
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	267	198	81	197	220	40	103			40		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	267	198	81	197	220	40	103			40		
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	92	100	93	97			100		
cM capacity (veh/h)	626	679	979	747	661	1031	1489			1569		

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	58	69	79	102
Volume Left	56	0	38	0
Volume Right	0	67	0	44
cSH	744	1018	1489	1700
Volume to Capacity	0.08	0.07	0.03	0.06
Queue Length 95th (ft)	6	5	2	0
Control Delay (s)	10.2	8.8	3.7	0.0
Lane LOS	B	A	A	
Approach Delay (s)	9.5		3.7	0.0
Approach LOS	A			

Intersection Summary			
Average Delay		4.9	
Intersection Capacity Utilization	21.0%	ICU Level of Service	A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

4: Browns Gulch & Rocker

12/1/2006



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	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	3	59	0	0	6	53	53	1	37	2
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	133	159	38	136	134	80	40			107		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	133	159	38	136	134	80	40			107		
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	93	100	100	100			100		
cM capacity (veh/h)	837	730	1033	829	754	980	1570			1484		

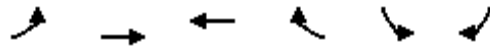
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	3	59	113	41
Volume Left	0	59	6	1
Volume Right	3	0	53	2
cSH	1033	829	1570	1484
Volume to Capacity	0.00	0.07	0.00	0.00
Queue Length 95th (ft)	0	6	0	0
Control Delay (s)	8.5	9.7	0.4	0.2
Lane LOS	A	A	A	A
Approach Delay (s)	8.5	9.7	0.4	0.2
Approach LOS	A	A		

Intersection Summary			
Average Delay		3.0	
Intersection Capacity Utilization	23.8%	ICU Level of Service	A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

5: Excelsior & EB I-115

12/1/2006



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)	8	84	66	1	28	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	67				166	66
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	67				166	66
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				97	100
cM capacity (veh/h)	1535				820	998
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	92	67	29			
Volume Left	8	0	28			
Volume Right	0	1	1			
cSH	1535	1700	826			
Volume to Capacity	0.01	0.04	0.03			
Queue Length 95th (ft)	0	0	3			
Control Delay (s)	0.7	0.0	9.5			
Lane LOS	A		A			
Approach Delay (s)	0.7	0.0	9.5			
Approach LOS			A			
Intersection Summary						
Average Delay			1.8			
Intersection Capacity Utilization		19.8%		ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 6: WB I-115 & Excelsior

12/1/2006



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)	11	1	1	115	66	62
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	218	100	131			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	218	100	131			
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	953	1450			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	12	116	128			
Volume Left	11	1	0			
Volume Right	1	0	62			
cSH	783	1450	1700			
Volume to Capacity	0.02	0.00	0.08			
Queue Length 95th (ft)	1	0	0			
Control Delay (s)	9.7	0.1	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.7	0.1	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			17.0%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
7: Iron St & Alabama St

12/1/2006

	→	↘	↙	←	↖	↗
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)	113	2	5	98	7	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			115		174	58
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			115		174	58
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)			1471		796	996
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	75	40	5	49	49	12
Volume Left	0	0	5	0	0	7
Volume Right	0	2	0	0	0	5
cSH	1700	1700	1471	1700	1700	876
Volume to Capacity	0.04	0.02	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	7.5	0.0	0.0	9.2
Lane LOS			A			A
Approach Delay (s)	0.0		0.4			9.2
Approach LOS						A
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			14.2%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 8: Iron St & Travonia Street

12/1/2006






















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)	4	124	110	9	4	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	119				186	59
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	119				186	59
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)	1467				784	994
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	4	62	62	73	46	7
Volume Left	4	0	0	0	0	4
Volume Right	0	0	0	0	9	2
cSH	1467	1700	1700	1700	1700	843
Volume to Capacity	0.00	0.04	0.04	0.04	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	9.3
Lane LOS	A					A
Approach Delay (s)	0.3			0.0		9.3
Approach LOS						A
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			13.3%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

9: Iron St & Washington St


















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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)	13	109	3	2	105	3	1	1	6	7	6	10
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	109			112			205	248	56	198	248	54
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	109			112			205	248	56	198	248	54
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)	1480			1476			716	646	999	732	646	1001
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	13	72	39	2	70	38	9	23				
Volume Left	13	0	0	2	0	0	1	7				
Volume Right	0	0	3	0	0	3	6	10				
cSH	1480	1700	1700	1476	1700	1700	894	790				
Volume to Capacity	0.01	0.04	0.02	0.00	0.04	0.02	0.01	0.03				
Queue Length 95th (ft)	1	0	0	0	0	0	1	2				
Control Delay (s)	7.5	0.0	0.0	7.4	0.0	0.0	9.1	9.7				
Lane LOS	A			A			A	A				
Approach Delay (s)	0.8			0.1			9.1	9.7				
Approach LOS							A	A				
Intersection Summary												
Average Delay			1.6									
Intersection Capacity Utilization			17.3%	ICU Level of Service				A				
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

















11: DeSmet Rd & Montana St

12/1/2006

												
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	26	0	146	59	454	0	0	517	37
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	1026	1107	277	830	1126	227	554				454	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1026	1107	277	830	1126	227	554				454	
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	90	100	81	94				100	
cM capacity (veh/h)	147	197	720	251	192	776	1012				1103	
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2					
Volume Total	26	146	59	227	227	345	210					
Volume Left	26	0	59	0	0	0	0					
Volume Right	0	146	0	0	0	0	37					
cSH	251	776	1012	1700	1700	1700	1700					
Volume to Capacity	0.10	0.19	0.06	0.13	0.13	0.20	0.12					
Queue Length 95th (ft)	8	17	5	0	0	0	0					
Control Delay (s)	21.0	10.7	8.8	0.0	0.0	0.0	0.0					
Lane LOS	C	B	A									
Approach Delay (s)	12.2	1.0		0.0								
Approach LOS	B											
Intersection Summary												
Average Delay	2.1											
Intersection Capacity Utilization	35.5%		ICU Level of Service				A					
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
 12: LaSalle Rd & Montana St

12/1/2006

												
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)	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)	22	6	72	0	0	0	0	566	25	123	457	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	986	1297	228	1130	1284	298	457			594		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	986	1297	228	1130	1284	298	457			594		
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 %	88	96	91	100	100	100	100			87		
cM capacity (veh/h)	182	141	774	125	143	698	1100			978		
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2	SB 3					
Volume Total	25	75	378	214	123	228	228					
Volume Left	22	0	0	0	123	0	0					
Volume Right	0	72	0	25	0	0	0					
cSH	176	650	1700	1700	978	1700	1700					
Volume to Capacity	0.14	0.11	0.22	0.13	0.13	0.13	0.13					
Queue Length 95th (ft)	12	10	0	0	11	0	0					
Control Delay (s)	28.9	11.3	0.0	0.0	9.2	0.0	0.0					
Lane LOS	D	B			A							
Approach Delay (s)	15.7		0.0		2.0							
Approach LOS	C											
Intersection Summary												
Average Delay			2.1									
Intersection Capacity Utilization			35.5%		ICU Level of Service					A		
Analysis Period (min)			15									

Intersection Sign configuration not allowed in HCM analysis.

HCM Unsignalized Intersection Capacity Analysis
 14: LaSalle Rd & EB on-ramp

12/1/2006



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)	216	0	4	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	4			434			434	2	435	0	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0	4			434			434	2	435	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 %	87	100			100			100	100	100	100	
cM capacity (veh/h)	1623	1618			478			447	1082	446	1085	

Direction, Lane #	EB 1	EB 2	NB 1
Volume Total	216	4	0
Volume Left	216	0	0
Volume Right	0	4	0
cSH	1623	1700	1700
Volume to Capacity	0.13	0.00	0.00
Queue Length 95th (ft)	11	0	0
Control Delay (s)	7.6	0.0	0.0
Lane LOS	A		A
Approach Delay (s)	7.4		0.0
Approach LOS			A

Intersection Summary		
Average Delay		7.4
Intersection Capacity Utilization	13.1%	ICU Level of Service
Analysis Period (min)		15
A		

HCM Signalized Intersection Capacity Analysis

10: Iron St & Montana St

12/1/2006



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	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	
Flt	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	1690	1583		1806			3523			3503	
Flt Permitted	0.95	0.95	1.00		1.00			0.85			1.00	
Satd. Flow (perm)	1625	1690	1583		1863			3015			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
Adj. Flow (vph)	70	2	56	10	6	0	55	612	2	0	608	45
RTOR Reduction (vph)	0	0	51	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	35	37	5	0	16	0	0	669	0	0	651	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)	6.3	6.3	6.3		1.6			67.1			67.1	
Effective Green, g (s)	7.3	7.3	7.3		2.6			68.1			68.1	
Actuated g/C Ratio	0.08	0.08	0.08		0.03			0.76			0.76	
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)	132	137	128		54			2281			2651	
v/s Ratio Prot	0.02	c0.02									0.19	
v/s Ratio Perm			0.00		c0.01			c0.22				
v/c Ratio	0.27	0.27	0.04		0.30			0.29			0.25	
Uniform Delay, d1	38.8	38.8	38.1		42.8			3.4			3.3	
Progression Factor	1.00	1.00	1.00		1.00			0.25			1.00	
Incremental Delay, d2	1.1	1.1	0.1		3.1			0.3			0.2	
Delay (s)	39.9	39.9	38.2		45.9			1.2			3.5	
Level of Service	D	D	D		D			A			A	
Approach Delay (s)		39.2			45.9			1.2			3.5	
Approach LOS		D			D			A			A	

Intersection Summary

HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

15: Josette Ave & Montana St

12/1/2006



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	
Frbp, 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	0.97			0.95	1.00		0.95	1.00		1.00	
Satd. Flow (prot)	1697			1770	1863		1770	1835		1596	
Flt Permitted	0.97			0.67	1.00		0.95	1.00		1.00	
Satd. Flow (perm)	1697			1243	1863		1770	1835		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
Adj. Flow (vph)	15	8	6	1	145	0	397	127	14	15	415
RTOR Reduction (vph)	6	0	0	0	0	0	0	2	0	366	0
Lane Group Flow (vph)	23	0	0	1	145	0	397	139	0	64	0
Conf. Peds. (#/hr)											1
Turn Type	Prot			Perm			Prot				
Protected Phases	4				2		1	6		8	
Permitted Phases				2							
Actuated Green, G (s)	3.2			18.8	18.8		38.4	62.2		9.6	
Effective Green, g (s)	4.2			19.8	19.8		39.4	63.2		10.6	
Actuated g/C Ratio	0.05			0.22	0.22		0.44	0.70		0.12	
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)	79			273	410		775	1289		188	
v/s Ratio Prot	c0.01				c0.08		c0.22	0.08		c0.04	
v/s Ratio Perm				0.00							
v/c Ratio	0.29			0.00	0.35		0.51	0.11		0.34	
Uniform Delay, d1	41.5			27.4	29.7		18.3	4.3		36.5	
Progression Factor	1.00			1.00	1.00		0.81	0.81		1.00	
Incremental Delay, d2	2.1			0.0	2.4		0.6	0.2		1.1	
Delay (s)	43.5			27.4	32.1		15.4	3.7		37.6	
Level of Service	D			C	C		B	A		D	
Approach Delay (s)	43.5				32.0			12.3		37.6	
Approach LOS	D				C			B		D	

Intersection Summary

HCM Average Control Delay	25.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	70.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis






















26: Front Street & Montana St

12/1/2006

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	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	
Frbp, 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	0.59	1.00			0.61	1.00	0.47	1.00		0.37	1.00	
Satd. Flow (perm)	1054	1766			1097	1508	844	3365		672	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
Adj. Flow (vph)	22	73	73	67	61	280	51	524	55	305	488	12
RTOR Reduction (vph)	0	51	0	0	0	237	0	6	0	0	1	0
Lane Group Flow (vph)	22	95	0	0	128	43	51	573	0	305	499	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)	12.8	12.8			12.8	12.8	54.8	50.8		67.2	58.2	
Effective Green, g (s)	13.8	13.8			13.8	13.8	56.8	51.8		68.2	59.2	
Actuated g/C Ratio	0.15	0.15			0.15	0.15	0.63	0.58		0.76	0.66	
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)	162	271			168	231	581	1937		652	2242	
v/s Ratio Prot		0.05					0.00	0.17		c0.06	0.15	
v/s Ratio Perm	0.02				c0.12	0.03	0.05			c0.29		
v/c Ratio	0.14	0.35			0.76	0.19	0.09	0.30		0.47	0.22	
Uniform Delay, d1	32.9	34.1			36.5	33.2	6.3	9.8		3.8	6.2	
Progression Factor	1.00	1.00			1.00	1.00	0.86	0.92		0.56	0.74	
Incremental Delay, d2	0.4	0.8			18.3	0.4	0.1	0.4		0.5	0.2	
Delay (s)	33.3	34.9			54.8	33.6	5.5	9.3		2.6	4.8	
Level of Service	C	C			D	C	A	A		A	A	
Approach Delay (s)		34.7			40.2			9.0			4.0	
Approach LOS		C			D			A			A	
Intersection Summary												
HCM Average Control Delay			15.5				HCM Level of Service				B	
HCM Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)				8.0	
Intersection Capacity Utilization			52.3%				ICU Level of Service				A	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
 16: EB ramps & Harrison Ave

12/1/2006

												
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	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	53	0	1148	43	93	1376	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	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	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	0	0	0	0
cM capacity (veh/h)	0	0	0	0	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	53	459	459	273	93	550	550	275			
Volume Left	0	0	0	0	0	93	0	0	0			
Volume Right	0	53	0	0	43	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			38.8%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 18: EB off-ramp & Harrison Ave

12/1/2006



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	136	0	1293	1255	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	0.98	0.98			
vC, conflicting volume	1686	418	1255			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1529	362	1216			
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	78	100			
cM capacity (veh/h)	103	621	557			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	136	431	431	431	418	418	418
Volume Left	0	0	0	0	0	0	0
Volume Right	136	0	0	0	0	0	0
cSH	621	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.22	0.25	0.25	0.25	0.25	0.25	0.25
Queue Length 95th (ft)	21	0	0	0	0	0	0
Control Delay (s)	12.4	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B						
Approach Delay (s)	12.4	0.0			0.0		
Approach LOS	B						

Intersection Summary			
Average Delay		0.6	
Intersection Capacity Utilization	38.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
 20: Cornell Ave & Harrison Ave

12/1/2006



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	12	1073	295	0	1308
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	0.94	0.93			0.93	
vC, conflicting volume	1511	538			1370	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1169	434			1325	
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)	175	531			482	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	12	536	536	295	436	436	436
Volume Left	0	0	0	0	0	0	0
Volume Right	12	0	0	295	0	0	0
cSH	531	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.02	0.32	0.32	0.17	0.26	0.26	0.26
Queue Length 95th (ft)	2	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		0.1	
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
 17: Dewey Blvd & Harrison Ave

12/1/2006



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	
Frbp, 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	0.14	1.00	1.00	
Satd. Flow (perm)	3433	1583	264	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
Adj. Flow (vph)	337	137	140	873	1227	146
RTOR Reduction (vph)	0	113	0	0	10	0
Lane Group Flow (vph)	337	24	140	873	1363	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)	13.6	13.6	65.4	65.4	53.5	
Effective Green, g (s)	15.6	15.6	66.4	66.4	54.5	
Actuated g/C Ratio	0.17	0.17	0.74	0.74	0.61	
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)	595	274	327	3752	2922	
v/s Ratio Prot	c0.10		c0.04	0.17	c0.28	
v/s Ratio Perm		0.01	0.28			
v/c Ratio	0.57	0.09	0.43	0.23	0.47	
Uniform Delay, d1	34.1	31.2	5.1	3.7	9.8	
Progression Factor	1.00	1.00	1.00	1.00	0.66	
Incremental Delay, d2	1.2	0.1	0.9	0.1	0.5	
Delay (s)	35.3	31.4	6.0	3.9	6.9	
Level of Service	D	C	A	A	A	
Approach Delay (s)	34.2			4.2	6.9	
Approach LOS	C			A	A	
Intersection Summary						
HCM Average Control Delay			10.5		HCM Level of Service	B
HCM Volume to Capacity ratio			0.48			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			54.0%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
 19: WB off-ramp/WB on-ramp & Harrison Ave

12/1/2006



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	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	
Frbp, 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
Adj. Flow (vph)	0	0	0	55	0	111	0	1241	113	0	1077	180
RTOR Reduction (vph)	0	0	0	0	0	63	0	5	0	0	11	0
Lane Group Flow (vph)	0	0	0	0	55	48	0	1349	0	0	1246	0
Conf. Peds. (#/hr)						1					3	
Turn Type				Perm		Perm						
Protected Phases					8			2			6	
Permitted Phases				8		8						
Actuated Green, G (s)					7.1	7.1		72.3			72.3	
Effective Green, g (s)					8.1	8.1		73.9			73.9	
Actuated g/C Ratio					0.09	0.09		0.82			0.82	
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)					159	155		3986			3937	
v/s Ratio Prot								0.28			0.26	
v/s Ratio Perm					0.03	0.03						
v/c Ratio					0.35	0.31		0.34			0.32	
Uniform Delay, d1					38.5	38.3		2.0			1.9	
Progression Factor					1.00	1.00		1.31			0.67	
Incremental Delay, d2					1.3	1.1		0.2			0.2	
Delay (s)					39.8	39.5		2.8			1.5	
Level of Service					D	D		A			A	
Approach Delay (s)		0.0			39.6			2.8			1.5	
Approach LOS		A			D			A			A	
Intersection Summary												
HCM Average Control Delay			4.4		HCM Level of Service						A	
HCM Volume to Capacity ratio			0.34									
Actuated Cycle Length (s)			90.0		Sum of lost time (s)					8.0		
Intersection Capacity Utilization			39.7%		ICU Level of Service						A	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

21: Amherst Ave & Harrison Ave

12/1/2006



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		0.95	0.95			0.95		1.00	0.91	
Frbp, 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)		1715		1674	1607			3389		1770	4912	
Flt Permitted		0.98		0.75	0.82			0.95		0.11	1.00	
Satd. Flow (perm)		1715		1326	1356			3215		211	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
Adj. Flow (vph)	4	1	3	390	2	122	7	1008	57	169	892	4
RTOR Reduction (vph)	0	3	0	0	27	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	5	0	229	258	0	0	1069	0	169	896	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		24.3	24.3			36.0		48.8	48.8	
Effective Green, g (s)		2.3		25.3	25.3			37.6		50.4	50.4	
Actuated g/C Ratio		0.03		0.28	0.28			0.42		0.56	0.56	
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		373	381			1343		271	2751	
v/s Ratio Prot		c0.00								c0.06	0.18	
v/s Ratio Perm				0.17	c0.19			c0.33		0.29		
v/c Ratio		0.12		0.61	0.68			0.80		0.62	0.33	
Uniform Delay, d1		42.9		28.1	28.7			22.8		14.5	10.7	
Progression Factor		1.00		1.00	1.00			0.95		1.00	1.00	
Incremental Delay, d2		0.9		3.0	4.7			4.8		4.4	0.3	
Delay (s)		43.7		31.1	33.4			26.4		18.9	11.0	
Level of Service		D		C	C			C		B	B	
Approach Delay (s)		43.7			32.4			26.4			12.2	
Approach LOS		D			C			C			B	
Intersection Summary												
HCM Average Control Delay			21.9								HCM Level of Service	C
HCM Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			90.0								Sum of lost time (s)	16.0
Intersection Capacity Utilization			77.2%								ICU Level of Service	D
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

22: Mt Highland Dr & Continental Dr

12/1/2006



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)	13	43	22	23	59	33	16	24	15	29	16	26
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	92			65			234	217	54	227	211	76
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	92			65			234	217	54	227	211	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 %	99			99			98	96	99	96	98	97
cM capacity (veh/h)	1502			1538			676	665	1013	685	670	985

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	77	115	55	71
Volume Left	13	23	16	29
Volume Right	22	33	15	26
cSH	1502	1538	738	766
Volume to Capacity	0.01	0.01	0.07	0.09
Queue Length 95th (ft)	1	1	6	8
Control Delay (s)	1.3	1.5	10.3	10.2
Lane LOS	A	A	B	B
Approach Delay (s)	1.3	1.5	10.3	10.2
Approach LOS			B	B

Intersection Summary			
Average Delay		4.9	
Intersection Capacity Utilization	20.8%	ICU Level of Service	A
Analysis Period (min)		15	

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

12/1/2006



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	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	49	37	0	58	0	0	0	0	5	0	58
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	58			87			185	126	68	126	145	58
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	58			87			185	126	68	126	145	58
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	94
cM capacity (veh/h)	1546			1509			731	764	995	847	746	1008

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	87	58	64
Volume Left	0	0	5
Volume Right	37	0	58
cSH	1700	1509	992
Volume to Capacity	0.05	0.00	0.06
Queue Length 95th (ft)	0	0	5
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		2.7
Intersection Capacity Utilization	14.7%	ICU Level of Service
Analysis Period (min)		15
		A

HCM Unsignalized Intersection Capacity Analysis

24: Mt Highland Dr & WB on-ramp

12/1/2006



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)	73	14	0	0	12	6	51	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	18			14			175	178	14	175	175	15
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	18			14			175	178	14	175	175	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 %	95			100			93	100	100	100	100	100
cM capacity (veh/h)	1599			1604			760	683	1066	760	686	1065

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	87	18	51
Volume Left	73	0	51
Volume Right	0	6	0
cSH	1599	1700	760
Volume to Capacity	0.05	0.01	0.07
Queue Length 95th (ft)	4	0	5
Control Delay (s)	6.2	0.0	10.1
Lane LOS	A		B
Approach Delay (s)	6.2	0.0	10.1
Approach LOS			B

Intersection Summary		
Average Delay		6.8
Intersection Capacity Utilization	20.4%	ICU Level of Service
Analysis Period (min)		15
		A

HCM Unsignalized Intersection Capacity Analysis
 25: Mt Highland Dr & Saddle Rock Dr

12/1/2006



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)	7	12	10	1	1	12
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total (vph)	19	11	14			
Volume Left (vph)	7	10	0			
Volume Right (vph)	12	0	12			
Hadj (s)	-0.28	0.21	-0.51			
Departure Headway (s)	3.7	4.2	3.4			
Degree Utilization, x	0.02	0.01	0.01			
Capacity (veh/h)	967	848	1033			
Control Delay (s)	6.7	7.2	6.5			
Approach Delay (s)	6.7	7.2	6.5			
Approach LOS	A	A	A			
Intersection Summary						
Delay			6.8			
HCM Level of Service			A			
Intersection Capacity Utilization			16.0%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

1: Nissler Rd & Rocker

12/1/2006



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)	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)	21	1	1	0	3	22	2	74	1	15	71	27
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	218	195	85	196	208	76	98			77		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	218	195	85	196	208	76	98			77		
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	100	100	100	98	100			99		
cM capacity (veh/h)	713	692	974	754	681	984	1495			1521		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	23	26	78	113
Volume Left	21	0	2	15
Volume Right	1	22	1	27
cSH	721	932	1495	1521
Volume to Capacity	0.03	0.03	0.00	0.01
Queue Length 95th (ft)	3	2	0	1
Control Delay (s)	10.2	9.0	0.2	1.0
Lane LOS	B	A	A	A
Approach Delay (s)	10.2	9.0	0.2	1.0
Approach LOS	B	A		

Intersection Summary			
Average Delay		2.5	
Intersection Capacity Utilization	26.7%	ICU Level of Service	A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

2: EB off-ramp & Rocker

12/1/2006



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)	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)	22	0	47	0	0	0	0	67	73	51	81	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	286	323	81	333	286	103	81			140		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	286	323	81	333	286	103	81			140		
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	95	100	100	100	100			96		
cM capacity (veh/h)	648	574	979	575	601	952	1516			1444		

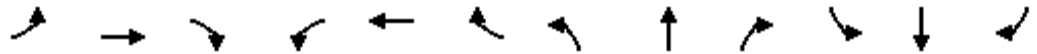
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	69	140	132
Volume Left	22	0	51
Volume Right	47	73	0
cSH	842	1700	1444
Volume to Capacity	0.08	0.08	0.04
Queue Length 95th (ft)	7	0	3
Control Delay (s)	9.7	0.0	3.1
Lane LOS	A		A
Approach Delay (s)	9.7	0.0	3.1
Approach LOS	A		

Intersection Summary		
Average Delay		3.2
Intersection Capacity Utilization	28.4%	ICU Level of Service
Analysis Period (min)		15
		A

HCM Unsignalized Intersection Capacity Analysis

3: WB on-ramp & Rocker

12/1/2006



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	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	60	0	64	46	46	0	0	77	39
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	297	234	96	234	253	46	116			46		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	297	234	96	234	253	46	116			46		
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	92	100	94	97			100		
cM capacity (veh/h)	600	646	960	704	630	1024	1473			1562		
Direction, Lane #	WB 1	WB 2	NB 1	SB 1								
Volume Total	60	64	91	116								
Volume Left	60	0	46	0								
Volume Right	0	64	0	39								
cSH	704	1024	1473	1700								
Volume to Capacity	0.08	0.06	0.03	0.07								
Queue Length 95th (ft)	7	5	2	0								
Control Delay (s)	10.6	8.7	3.9	0.0								
Lane LOS	B	A	A									
Approach Delay (s)	9.6		3.9	0.0								
Approach LOS	A											
Intersection Summary												
Average Delay			4.7									
Intersection Capacity Utilization			21.5%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

4: Browns Gulch & Rocker

12/1/2006

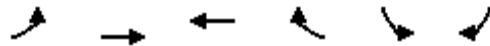


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	1	7	67	1	0	6	40	46	1	29	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1	1	8	74	1	0	7	44	51	1	32	2
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	119	144	33	127	120	70	34			96		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	119	144	33	127	120	70	34			96		
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	91	100	100	100			100		
cM capacity (veh/h)	852	743	1040	836	766	993	1577			1498		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	10	76	102	36								
Volume Left	1	74	7	1								
Volume Right	8	0	51	2								
cSH	973	835	1577	1498								
Volume to Capacity	0.01	0.09	0.00	0.00								
Queue Length 95th (ft)	1	7	0	0								
Control Delay (s)	8.7	9.7	0.5	0.2								
Lane LOS	A	A	A	A								
Approach Delay (s)	8.7	9.7	0.5	0.2								
Approach LOS	A	A										
Intersection Summary												
Average Delay			4.0									
Intersection Capacity Utilization			24.8%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

5: Excelsior & EB I-115

12/1/2006



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)	5	112	95	1	54	4
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	96				218	96
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	96				218	96
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				93	100
cM capacity (veh/h)	1497				768	961
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	117	96	57			
Volume Left	5	0	54			
Volume Right	0	1	4			
cSH	1497	1700	778			
Volume to Capacity	0.00	0.06	0.07			
Queue Length 95th (ft)	0	0	6			
Control Delay (s)	0.3	0.0	10.0			
Lane LOS	A		A			
Approach Delay (s)	0.3	0.0	10.0			
Approach LOS			A			
Intersection Summary						
Average Delay			2.3			
Intersection Capacity Utilization		18.1%		ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
6: WB I-115 & Excelsior

12/1/2006



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)	13	1	8	151	100	88
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	311	144	188			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	311	144	188			
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	99			
cM capacity (veh/h)	677	903	1386			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	14	159	188			
Volume Left	13	8	0			
Volume Right	1	0	88			
cSH	691	1386	1700			
Volume to Capacity	0.02	0.01	0.11			
Queue Length 95th (ft)	2	0	0			
Control Delay (s)	10.3	0.5	0.0			
Lane LOS	B	A				
Approach Delay (s)	10.3	0.5	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization		22.3%		ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
7: Iron St & Alabama St

12/1/2006



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)	156	5	4	163	3	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			162		249	81
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			162		249	81
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)			1415		716	963
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	104	57	4	81	81	9
Volume Left	0	0	4	0	0	3
Volume Right	0	5	0	0	0	5
cSH	1700	1700	1415	1700	1700	853
Volume to Capacity	0.06	0.03	0.00	0.05	0.05	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	9.3
Lane LOS			A			A
Approach Delay (s)	0.0		0.2			9.3
Approach LOS						A
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			14.2%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 8: Iron St & Travonia Street

12/1/2006



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	159	144	9	13	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	152				229	76
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	152				229	76
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)	1426				738	970
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	1	79	79	96	56	14
Volume Left	1	0	0	0	0	13
Volume Right	0	0	0	0	9	1
cSH	1426	1700	1700	1700	1700	752
Volume to Capacity	0.00	0.05	0.05	0.06	0.03	0.02
Queue Length 95th (ft)	0	0	0	0	0	1
Control Delay (s)	7.5	0.0	0.0	0.0	0.0	9.9
Lane LOS	A					A
Approach Delay (s)	0.1			0.0		9.9
Approach LOS						A
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			14.1%		ICU Level of Service	A
Analysis Period (min)			15			

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

12/1/2006



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Sign Control	Free		Free		Free		Stop		Stop		Stop	
Grade	0%		0%		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)	16	178	0	1	145	5	4	2	4	10	1	14
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	150			178			300	361	89	275	359	77
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	150			178			300	361	89	275	359	77
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	100	100	98	100	99
cM capacity (veh/h)	1429			1395			613	558	951	645	560	967

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	16	119	59	1	97	53	10	25
Volume Left	16	0	0	1	0	0	4	10
Volume Right	0	0	0	0	0	5	4	14
cSH	1429	1700	1700	1395	1700	1700	699	781
Volume to Capacity	0.01	0.07	0.03	0.00	0.06	0.03	0.01	0.03
Queue Length 95th (ft)	1	0	0	0	0	0	1	2
Control Delay (s)	7.5	0.0	0.0	7.6	0.0	0.0	10.2	9.8
Lane LOS	A			A			B	A
Approach Delay (s)	0.6			0.1			10.2	9.8
Approach LOS							B	A

Intersection Summary		
Average Delay		1.3
Intersection Capacity Utilization	22.0%	ICU Level of Service
Analysis Period (min)		15
		A

HCM Unsignalized Intersection Capacity Analysis

11: DeSmet Rd & Montana St


















12/1/2006



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	16	1	164	50	514	0	0	748	57
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	1304	1400	408	992	1429	261	811				518	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1304	1400	408	992	1429	261	811				518	
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	91	99	78	94				100	
cM capacity (veh/h)	87	130	592	190	125	735	811				1041	
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2					
Volume Total	17	165	50	257	257	498	306					
Volume Left	16	0	50	0	0	0	0					
Volume Right	0	164	0	0	0	0	57					
cSH	186	723	811	1700	1700	1700	1700					
Volume to Capacity	0.09	0.23	0.06	0.15	0.15	0.29	0.18					
Queue Length 95th (ft)	7	22	5	0	0	0	0					
Control Delay (s)	26.2	11.4	9.7	0.0	0.0	0.0	0.0					
Lane LOS	D	B	A									
Approach Delay (s)	12.8	0.9		0.0								
Approach LOS	B											
Intersection Summary												
Average Delay			1.8									
Intersection Capacity Utilization	39.5%		ICU Level of Service		A							
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 12: LaSalle Rd & Montana St

12/1/2006

												
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)	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)	31	13	90	0	0	0	0	564	28	240	630	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	1393	1706	315	1474	1693	300	630			596		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1393	1706	315	1474	1693	300	630			596		
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 %	62	81	87	100	100	100	100			75		
cM capacity (veh/h)	82	68	681	54	69	696	948			976		
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2	SB 3					
Volume Total	37	96	376	216	240	315	315					
Volume Left	31	0	0	0	240	0	0					
Volume Right	0	90	0	28	0	0	0					
cSH	79	427	1700	1700	976	1700	1700					
Volume to Capacity	0.47	0.22	0.22	0.13	0.25	0.19	0.19					
Queue Length 95th (ft)	49	21	0	0	24	0	0					
Control Delay (s)	85.6	15.8	0.0	0.0	9.9	0.0	0.0					
Lane LOS	F	C			A							
Approach Delay (s)	35.4		0.0		2.7							
Approach LOS	E											
Intersection Summary												
Average Delay			4.4									
Intersection Capacity Utilization			39.5%		ICU Level of Service					A		
Analysis Period (min)			15									

Intersection Sign configuration not allowed in HCM analysis.

HCM Unsignalized Intersection Capacity Analysis
 14: LaSalle Rd & EB on-ramp

12/1/2006



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)	302	7	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			7			611	611	7	611	0
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	0			7			611	611	7	611	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 %	81			100			100	100	100	100	100
cM capacity (veh/h)	1623			1614			348	332	1076	332	1085

Direction, Lane #	EB 1	EB 2	NB 1
Volume Total	302	7	2
Volume Left	302	0	0
Volume Right	0	0	2
cSH	1623	1700	1076
Volume to Capacity	0.19	0.00	0.00
Queue Length 95th (ft)	17	0	0
Control Delay (s)	7.7	0.0	8.4
Lane LOS	A		A
Approach Delay (s)	7.6		8.4
Approach LOS			A

Intersection Summary			
Average Delay		7.6	
Intersection Capacity Utilization	17.9%	ICU Level of Service	A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis

10: Iron St & Montana St

12/1/2006



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	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	
Frbp, 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	1701	1583		1812			3517			3499	
Flt Permitted	0.95	0.96	1.00		0.88			0.79			0.95	
Satd. Flow (perm)	1625	1701	1583		1614			2774			3337	
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
Adj. Flow (vph)	53	6	96	8	14	2	71	667	7	3	829	68
RTOR Reduction (vph)	0	0	88	0	2	0	0	0	0	0	3	0
Lane Group Flow (vph)	28	31	8	0	22	0	0	745	0	0	897	0
Conf. 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)	6.1	6.1	6.1		3.1			65.8			65.8	
Effective Green, g (s)	7.1	7.1	7.1		4.1			66.8			66.8	
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)	128	134	125		74			2059			2477	
v/s Ratio Prot	0.02	c0.02										
v/s Ratio Perm			0.00		c0.01			0.27			c0.27	
v/c Ratio	0.22	0.23	0.06		0.30			0.36			0.36	
Uniform Delay, d1	38.9	38.9	38.4		41.6			4.1			4.1	
Progression Factor	1.00	1.00	1.00		1.00			0.58			1.00	
Incremental Delay, d2	0.9	0.9	0.2		2.3			0.5			0.4	
Delay (s)	39.7	39.8	38.6		43.8			2.9			4.5	
Level of Service	D	D	D		D			A			A	
Approach Delay (s)		39.0			43.8			2.9			4.5	
Approach LOS		D			D			A			A	
Intersection Summary												
HCM Average Control Delay			7.3					HCM Level of Service			A	
HCM Volume to Capacity ratio			0.35									
Actuated Cycle Length (s)			90.0					Sum of lost time (s)		12.0		
Intersection Capacity Utilization			58.4%					ICU Level of Service			B	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

15: Josette Ave & Montana St

12/1/2006



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	
Frbp, 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)	1725			1770	1863		1770	1846		1618	
Flt Permitted	0.96			0.59	1.00		0.95	1.00		1.00	
Satd. Flow (perm)	1725			1091	1863		1770	1846		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
Adj. Flow (vph)	21	6	1	3	167	0	468	267	17	15	384
RTOR Reduction (vph)	1	0	0	0	0	0	0	1	0	340	0
Lane Group Flow (vph)	27	0	0	3	167	0	468	283	0	59	0
Conf. Peds. (#/hr)			1			1					
Turn Type	Prot			Perm			Prot				
Protected Phases	4				2		1	6		8	
Permitted Phases				2							
Actuated Green, G (s)	3.3			16.0	16.0		41.5	62.5		9.2	
Effective Green, g (s)	4.3			17.0	17.0		42.5	63.5		10.2	
Actuated g/C Ratio	0.05			0.19	0.19		0.47	0.71		0.11	
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)	82			206	352		836	1302		183	
v/s Ratio Prot	c0.02				c0.09		c0.26	0.15		c0.04	
v/s Ratio Perm				0.00							
v/c Ratio	0.33			0.01	0.47		0.56	0.22		0.32	
Uniform Delay, d1	41.5			29.7	32.5		17.0	4.6		36.7	
Progression Factor	1.00			1.00	1.00		0.86	0.85		1.00	
Incremental Delay, d2	2.4			0.1	4.5		0.8	0.4		1.0	
Delay (s)	43.8			29.8	37.0		15.4	4.3		37.7	
Level of Service	D			C	D		B	A		D	
Approach Delay (s)	43.8				36.9			11.2		37.7	
Approach LOS	D				D			B		D	

Intersection Summary

HCM Average Control Delay	23.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

26: Front Street & Montana St

12/1/2006



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	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	
Frbp, 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	3381		1711	3410	
Flt Permitted	0.60	1.00			0.51	1.00	0.47	1.00		0.45	1.00	
Satd. Flow (perm)	1084	1767			926	1506	846	3381		815	3410	
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
Adj. Flow (vph)	25	86	86	69	53	292	34	398	34	344	489	9
RTOR Reduction (vph)	0	51	0	0	0	248	0	5	0	0	1	0
Lane Group Flow (vph)	25	121	0	0	122	44	34	427	0	344	497	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)	12.7	12.7			12.7	12.7	55.2	51.4		67.3	58.5	
Effective Green, g (s)	13.7	13.7			13.7	13.7	57.2	52.4		68.3	59.5	
Actuated g/C Ratio	0.15	0.15			0.15	0.15	0.64	0.58		0.76	0.66	
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)	165	269			141	229	584	1968		737	2254	
v/s Ratio Prot		0.07					0.00	0.13		c0.06	0.15	
v/s Ratio Perm	0.02				c0.13	0.03	0.03			c0.29		
v/c Ratio	0.15	0.45			0.87	0.19	0.06	0.22		0.47	0.22	
Uniform Delay, d1	33.1	34.7			37.2	33.3	6.1	9.0		3.5	6.1	
Progression Factor	1.00	1.00			1.00	1.00	0.89	0.92		0.55	0.49	
Incremental Delay, d2	0.4	1.2			38.8	0.4	0.0	0.2		0.4	0.2	
Delay (s)	33.5	35.9			76.0	33.7	5.5	8.5		2.4	3.2	
Level of Service	C	D			E	C	A	A		A	A	
Approach Delay (s)		35.6			46.2			8.3			2.9	
Approach LOS		D			D			A			A	

Intersection Summary

HCM Average Control Delay	16.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 16: Sampson Ave & Harrison Ave

12/1/2006

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	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	118	0	939	86	78	1102	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	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	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	0	0	0	0
cM capacity (veh/h)	0	0	0	0	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	118	376	376	273	78	441	441	220			
Volume Left	0	0	0	0	0	78	0	0	0			
Volume Right	0	118	0	0	86	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			41.0%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 18: EB off-ramp & Harrison Ave

12/1/2006



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	217	0	1208	1139	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	0.98	0.98			
vC, conflicting volume	1552	391	1150			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1388	328	1105			
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	66	100			
cM capacity (veh/h)	128	646	607			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	217	403	403	403	380	380	380
Volume Left	0	0	0	0	0	0	0
Volume Right	217	0	0	0	0	0	0
cSH	646	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.34	0.24	0.24	0.24	0.22	0.22	0.22
Queue Length 95th (ft)	37	0	0	0	0	0	0
Control Delay (s)	13.4	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B						
Approach Delay (s)	13.4	0.0			0.0		
Approach LOS	B						

Intersection Summary			
Average Delay		1.1	
Intersection Capacity Utilization	40.7%		ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 20: Cornell Ave & Harrison Ave

12/1/2006



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	11	724	337	0	1312
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	0.92	0.99			0.99	
vC, conflicting volume	1165	366			1065	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	961	351			1056	
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)	232	638			647	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	11	362	362	337	437	437	437
Volume Left	0	0	0	0	0	0	0
Volume Right	11	0	0	337	0	0	0
cSH	638	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.02	0.21	0.21	0.20	0.26	0.26	0.26
Queue Length 95th (ft)	1	0	0	0	0	0	0
Control Delay (s)	10.7	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B						
Approach Delay (s)	10.7	0.0			0.0		
Approach LOS	B						

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization	28.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
 17: Dewey Blvd & Harrison Ave

12/1/2006



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	
Frbp, 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	4722	
Flt Permitted	0.95	1.00	0.14	1.00	1.00	
Satd. Flow (perm)	3433	1583	261	5085	4722	
Volume (vph)	298	127	149	843	1053	308
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	304	130	152	860	1074	314
RTOR Reduction (vph)	0	109	0	0	36	0
Lane Group Flow (vph)	304	21	152	860	1352	0
Conf. Peds. (#/hr)			3			3
Turn Type		Perm pm+pt				
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	12.8	12.8	66.2	66.2	54.1	
Effective Green, g (s)	14.8	14.8	67.2	67.2	55.1	
Actuated g/C Ratio	0.16	0.16	0.75	0.75	0.61	
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)	565	260	331	3797	2891	
v/s Ratio Prot	c0.09		c0.04	0.17	0.29	
v/s Ratio Perm		0.01	c0.30			
v/c Ratio	0.54	0.08	0.46	0.23	0.47	
Uniform Delay, d1	34.5	31.8	5.1	3.5	9.5	
Progression Factor	1.00	1.00	1.00	1.00	0.58	
Incremental Delay, d2	1.0	0.1	1.0	0.1	0.5	
Delay (s)	35.5	32.0	6.1	3.6	6.0	
Level of Service	D	C	A	A	A	
Approach Delay (s)	34.4			4.0	6.0	
Approach LOS	C			A	A	
Intersection Summary						
HCM Average Control Delay			9.6		HCM Level of Service	A
HCM Volume to Capacity ratio			0.47			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			54.1%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

19: WB on-ramp & Harrison Ave

12/1/2006



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	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	
Frbp, 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
Adj. Flow (vph)	0	0	0	73	0	52	0	944	404	0	1157	109
RTOR Reduction (vph)	0	0	0	0	0	47	0	40	0	0	6	0
Lane Group Flow (vph)	0	0	0	0	73	5	0	1308	0	0	1260	0
Conf. Peds. (#/hr)									9			8
Turn Type				Perm		Perm						
Protected Phases					8			2			6	
Permitted Phases				8		8						
Actuated Green, G (s)					7.6	7.6		71.8			71.8	
Effective Green, g (s)					8.6	8.6		73.4			73.4	
Actuated g/C Ratio					0.10	0.10		0.82			0.82	
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)					169	166		3800			3949	
v/s Ratio Prot								0.28			0.26	
v/s Ratio Perm					0.04	0.00						
v/c Ratio					0.43	0.03		0.34			0.32	
Uniform Delay, d1					38.4	36.9		2.1			2.1	
Progression Factor					1.00	1.00		1.34			0.81	
Incremental Delay, d2					1.8	0.1		0.2			0.2	
Delay (s)					40.2	37.0		3.1			1.9	
Level of Service					D	D		A			A	
Approach Delay (s)		0.0			38.8			3.1			1.9	
Approach LOS		A			D			A			A	
Intersection Summary												
HCM Average Control Delay			4.2		HCM Level of Service						A	
HCM Volume to Capacity ratio			0.35									
Actuated Cycle Length (s)			90.0		Sum of lost time (s)					8.0		
Intersection Capacity Utilization			37.0%		ICU Level of Service					A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

21: Amherst Ave & Harrison Ave

12/1/2006



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	
Frbp, 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)		1690		1408	1645			3361		1769	4916	
Flt Permitted		0.97		0.75	0.76			0.95		0.22	1.00	
Satd. Flow (perm)		1690		1114	1305			3197		407	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
Adj. Flow (vph)	5	0	4	492	2	59	4	607	68	140	740	0
RTOR Reduction (vph)	0	4	0	0	8	0	0	9	0	0	0	0
Lane Group Flow (vph)	0	5	0	246	299	0	0	670	0	140	740	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		32.7	32.7			28.0		40.4	40.4	
Effective Green, g (s)		2.3		33.7	33.7			29.6		42.0	42.0	
Actuated g/C Ratio		0.03		0.37	0.37			0.33		0.47	0.47	
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		417	489			1051		317	2294	
v/s Ratio Prot		c0.00								c0.04	0.15	
v/s Ratio Perm				0.22	c0.23			c0.21		0.17		
v/c Ratio		0.12		0.59	0.61			0.64		0.44	0.32	
Uniform Delay, d1		42.9		22.6	22.8			25.6		15.4	15.1	
Progression Factor		1.00		1.00	1.00			0.95		1.00	1.00	
Incremental Delay, d2		0.9		2.1	2.3			2.9		1.0	0.4	
Delay (s)		43.8		24.7	25.1			27.1		16.4	15.4	
Level of Service		D		C	C			C		B	B	
Approach Delay (s)		43.8			25.0			27.1			15.6	
Approach LOS		D			C			C			B	
Intersection Summary												
HCM Average Control Delay			21.9			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			67.2%			ICU Level of Service				C		
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Unsignalized Intersection Capacity Analysis

22: Mt Highland Dr & Continental Dr

12/1/2006



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)	15	91	18	49	65	67	23	32	11	57	57	33
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	133			113			391	364	104	354	340	99
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	133			113			391	364	104	354	340	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 %	99			97			95	94	99	90	90	97
cM capacity (veh/h)	1451			1471			486	537	948	546	555	956

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	124	181	66	147
Volume Left	15	49	23	57
Volume Right	18	67	11	33
cSH	1451	1471	559	608
Volume to Capacity	0.01	0.03	0.12	0.24
Queue Length 95th (ft)	1	3	10	23
Control Delay (s)	1.0	2.2	12.3	12.8
Lane LOS	A	A	B	B
Approach Delay (s)	1.0	2.2	12.3	12.8
Approach LOS			B	B

Intersection Summary			
Average Delay		6.2	
Intersection Capacity Utilization	32.2%	ICU Level of Service	A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

23: Mt Highland Dr & EB off-ramp

12/1/2006



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	67	89	1	78	0	0	0	0	12	1	100
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	79			157			293	194	113	193	238	79
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	79			157			293	194	113	193	238	79
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	90
cM capacity (veh/h)	1518			1423			590	700	940	765	662	981

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	156	79	113
Volume Left	0	1	12
Volume Right	89	0	100
cSH	1700	1423	948
Volume to Capacity	0.09	0.00	0.12
Queue Length 95th (ft)	0	0	10
Control Delay (s)	0.0	0.1	9.3
Lane LOS		A	A
Approach Delay (s)	0.0	0.1	9.3
Approach LOS			A

Intersection Summary		
Average Delay		3.1
Intersection Capacity Utilization	21.1%	ICU Level of Service
Analysis Period (min)		15
		A

HCM Unsignalized Intersection Capacity Analysis

24: Mt Highland Dr & WB on-ramp

12/1/2006



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)	51	24	0	0	9	3	77	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	13			28			141	144	28	138	142	12
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	13			28			141	144	28	138	142	12
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			90	100	100	100	100	100
cM capacity (veh/h)	1605			1580			804	721	1043	810	723	1069

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	76	12	77
Volume Left	51	0	77
Volume Right	0	3	0
cSH	1605	1700	804
Volume to Capacity	0.03	0.01	0.10
Queue Length 95th (ft)	2	0	8
Control Delay (s)	5.0	0.0	10.0
Lane LOS	A		A
Approach Delay (s)	5.0	0.0	10.0
Approach LOS			A

Intersection Summary		
Average Delay		6.9
Intersection Capacity Utilization	21.2%	ICU Level of Service
Analysis Period (min)		15
		A

HCM Unsignalized Intersection Capacity Analysis
 25: Mt Highland Dr & Saddle Rock Dr

12/1/2006



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)	18	8	6	0	0	7
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total (vph)	27	6	7			
Volume Left (vph)	18	6	0			
Volume Right (vph)	8	0	7			
Hadj (s)	-0.02	0.23	-0.57			
Departure Headway (s)	3.9	4.2	3.4			
Degree Utilization, x	0.03	0.01	0.01			
Capacity (veh/h)	912	840	1045			
Control Delay (s)	7.0	7.2	6.4			
Approach Delay (s)	7.0	7.2	6.4			
Approach LOS	A	A	A			
Intersection Summary						
Delay			6.9			
HCM Level of Service			A			
Intersection Capacity Utilization			14.2%	ICU Level of Service	A	
Analysis Period (min)			15			