Appendix L

Cumulative + Project Conditions

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1702	78	47	1408	155	63
Ideal Flow (vphpl)	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
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1600	1583	1770	1600	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1600	1583	1770	1600	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1850	85	51	1530	168	68
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1850	85	51	1530	168	68
Turn Type		Perm	Prot			Perm
Protected Phases	2		1	6	8	
Permitted Phases		2				8
Actuated Green, G (s)	80.1	80.1	3.3	87.1	13.4	13.4
Effective Green, g (s)	82.1	82.1	3.0	89.1	13.6	13.6
Actuated g/C Ratio	0.74	0.74	0.03	0.80	0.12	0.12
Clearance Time (s)	6.0	6.0	3.7	6.0	4.2	4.2
Vehicle Extension (s)	1.5	1.5	3.0	1.5	2.0	2.0
Lane Grp Cap (vph)	1187	1174	48	1288	217	194
v/s Ratio Prot	c1.16		0.03	c0.96	c0.09	
v/s Ratio Perm		0.05				0.04
v/c Ratio	1.56	0.07	1.06	1.19	0.77	0.35
Uniform Delay, d1	14.3	3.9	53.8	10.8	47.1	44.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	255.5	0.0	148.7	92.6	14.4	0.4
Delay (s)	269.8	3.9	202.6	103.4	61.5	44.9
Level of Service	F	A	F	F	E	D
Approach Delay (s)	258.1			106.6	56.7	
Approach LOS	F			F	E	

Intersection Summary

HCM Average Control Delay	181.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.46		
Actuated Cycle Length (s)	110.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	104.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	174	1562	29	110	1299	303	73	39	79	127	32	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.94			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.98			0.96	1.00
Satd. Flow (prot)	1770	1600	1553	1703	1600	1583		1719			1784	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.61			0.53	1.00
Satd. Flow (perm)	1770	1863	1553	1703	1863	1583		1074			988	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	189	1698	32	120	1412	329	79	42	86	138	35	90
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	189	1698	32	120	1412	329	0	207	0	0	173	90
Heavy Vehicles (%)	2%	2%	4%	6%	2%	2%	3%	2%	2%	2%	4%	2%
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		4
Actuated Green, G (s)	11.4	76.0	76.0	7.5	72.1	72.1		23.0			23.0	23.0
Effective Green, g (s)	10.9	78.0	78.0	7.0	74.1	74.1		23.0			23.0	23.0
Actuated g/C Ratio	0.09	0.65	0.65	0.06	0.62	0.62		0.19			0.19	0.19
Clearance Time (s)	3.5	6.0	6.0	3.5	6.0	6.0		4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	161	1040	1009	99	988	978		206			189	303
v/s Ratio Prot	c0.11	c1.06		0.07	0.88							
v/s Ratio Perm			0.02			0.21		c0.19			0.18	0.06
v/c Ratio	1.17	1.63	0.03	1.21	1.43	0.34		1.00			0.92	0.30
Uniform Delay, d1	54.6	21.0	7.5	56.5	23.0	11.1		48.5			47.5	41.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	125.4	289.1	0.1	158.2	199.0	0.9		64.0			42.0	0.6
Delay (s)	179.9	310.1	7.6	214.7	222.0	12.0		112.5			89.5	42.1
Level of Service	F	F	A	F	F	B		F			F	D
Approach Delay (s)		292.2			184.4			112.5			73.3	
Approach LOS		F			F			F			E	

Intersection Summary

HCM Average Control Delay	222.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.49		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	115.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	188	1567	13	18	1420	424	16	12	27	416	25	276
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		0.97	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.90		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3200		1770	3200	1568	1770	1670		3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3200		1770	3200	1568	1770	1670		3433	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	204	1703	14	20	1543	461	17	13	29	452	27	300
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	204	1717	0	20	1543	461	17	42	0	452	27	300
Heavy Vehicles (%)	2%	2%	2%	2%	4%	3%	2%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		pm+ov	Split			Split		Perm
Protected Phases	5	2		1	6	7	8	8		7	7	
Permitted Phases						6						7
Actuated Green, G (s)	7.9	38.9		0.7	31.7	49.8	2.2	2.2		18.1	18.1	18.1
Effective Green, g (s)	8.1	40.9		0.9	33.7	52.4	2.4	2.4		19.4	19.4	19.4
Actuated g/C Ratio	0.10	0.51		0.01	0.42	0.66	0.03	0.03		0.24	0.24	0.24
Clearance Time (s)	4.2	6.0		4.2	6.0	5.3	4.2	4.2		5.3	5.3	5.3
Vehicle Extension (s)	2.5	2.5		3.0	2.5	2.5	2.0	2.0		2.5	2.5	2.5
Lane Grp Cap (vph)	180	1644		20	1355	1032	53	50		837	454	386
v/s Ratio Prot	c0.12	0.54		0.01	c0.48	0.11	0.01	c0.03		0.13	0.01	
v/s Ratio Perm						0.19						c0.19
v/c Ratio	1.13	1.04		1.00	1.14	0.45	0.32	0.84		0.54	0.06	0.78
Uniform Delay, d1	35.7	19.3		39.3	22.9	6.6	37.8	38.4		26.2	23.1	28.1
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	107.5	34.8		201.2	71.9	0.2	1.3	68.8		0.6	0.0	9.1
Delay (s)	143.2	54.1		240.6	94.9	6.8	39.1	107.2		26.8	23.1	37.2
Level of Service	F	D		F	F	A	D	F		C	C	D
Approach Delay (s)		63.6			76.2			87.6			30.7	
Approach LOS		E			E			F			C	

Intersection Summary

HCM Average Control Delay	63.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	79.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	665	1345	1672	14	0	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0			4.0
Lane Util. Factor	1.00	0.95	0.95			0.88
Frt	1.00	1.00	1.00			0.85
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1770	3200	3200			2760
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1770	3200	3200			2760
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	723	1462	1817	15	0	207
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	723	1462	1832	0	0	207
Heavy Vehicles (%)	2%	2%	3%	2%	2%	3%
Turn Type	Prot					Over
Protected Phases	5	2	6			5
Permitted Phases						
Actuated Green, G (s)	45.4	120.0	64.0			45.4
Effective Green, g (s)	46.0	120.0	66.0			46.0
Actuated g/C Ratio	0.38	1.00	0.55			0.38
Clearance Time (s)	4.6	2.0	6.0			4.6
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	679	3200	1760			1058
v/s Ratio Prot	c0.41	0.46	c0.57			0.08
v/s Ratio Perm						
v/c Ratio	1.06	0.46	1.04			0.20
Uniform Delay, d1	37.0	0.0	27.0			24.7
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	53.1	0.1	32.9			0.1
Delay (s)	90.1	0.1	59.9			24.8
Level of Service	F	A	E			C
Approach Delay (s)		29.9	59.9		24.8	
Approach LOS		C	E		C	

Intersection Summary

HCM Average Control Delay	42.7	HCM Level of Service	D
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	90.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	340	1001	4	3	1502	564	13	10	8	252	2	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	1.00	1.00		0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1600	1583	1770	1600	1583	1770	1737		3433	1863	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1600	1583	1770	1600	1583	1770	1737		3433	1863	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	370	1088	4	3	1633	613	14	11	9	274	2	186
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	370	1088	4	3	1633	613	14	20	0	274	2	186
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	20.8	110.6	110.6	0.8	90.4	90.4	1.5	8.7		12.4	19.2	19.2
Effective Green, g (s)	21.0	112.6	112.6	0.8	92.4	92.4	1.7	8.7		12.4	19.4	19.4
Actuated g/C Ratio	0.14	0.75	0.75	0.01	0.61	0.61	0.01	0.06		0.08	0.13	0.13
Clearance Time (s)	4.2	6.0	6.0	4.0	6.0	6.0	4.2	4.0		4.0	4.2	4.2
Vehicle Extension (s)	4.5	4.5	4.5	3.0	4.5	4.5	4.5	3.0		3.0	3.5	3.5
Lane Grp Cap (vph)	247	1197	1184	9	982	972	20	100		283	240	202
v/s Ratio Prot	c0.21	0.68		0.00	c1.02		0.01	0.01		c0.08	0.00	
v/s Ratio Perm			0.00			0.39						c0.12
v/c Ratio	1.50	0.91	0.00	0.33	1.66	0.63	0.70	0.20		0.97	0.01	0.92
Uniform Delay, d1	64.8	14.9	4.8	74.6	29.0	18.3	74.1	67.6		68.9	57.2	64.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	244.2	10.5	0.0	20.6	302.8	1.7	81.3	1.0		44.3	0.0	42.1
Delay (s)	309.0	25.4	4.8	95.2	331.9	20.0	155.4	68.6		113.1	57.2	106.9
Level of Service	F	C	A	F	F	B	F	E		F	E	F
Approach Delay (s)		97.1			246.6			104.3			110.4	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	178.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.50		
Actuated Cycle Length (s)	150.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	121.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	1166	56	26	1922	55	64	2	37	33	1	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	0.98			1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.86			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.95	1.00
Satd. Flow (prot)	1770	1600	1583	1770	1600	1545	1770	1562			1772	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.73	1.00			0.71	1.00
Satd. Flow (perm)	1770	1600	1583	1770	1600	1545	1365	1562			1325	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	42	1267	61	28	2089	60	70	2	40	36	1	90
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	42	1267	61	28	2089	60	70	42	0	0	37	90
Confl. Peds. (#/hr)				1		1			1	1		
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		4
Actuated Green, G (s)	4.0	109.0	109.0	3.8	108.8	108.8	13.1	13.1			13.1	13.1
Effective Green, g (s)	3.7	111.0	111.0	3.5	110.8	110.8	13.2	13.2			13.2	13.2
Actuated g/C Ratio	0.03	0.79	0.79	0.03	0.79	0.79	0.09	0.09			0.09	0.09
Clearance Time (s)	3.7	6.0	6.0	3.7	6.0	6.0	4.1	4.1			4.1	4.1
Vehicle Extension (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	47	1271	1258	44	1269	1225	129	148			125	150
v/s Ratio Prot	c0.02	0.79		0.02	c1.31			0.03				
v/s Ratio Perm			0.04			0.04	0.05				0.03	c0.06
v/c Ratio	0.89	1.00	0.05	0.64	1.65	0.05	0.54	0.28			0.30	0.60
Uniform Delay, d1	67.8	14.2	3.1	67.5	14.4	3.1	60.4	58.9			58.9	60.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	91.2	24.3	0.0	26.4	294.3	0.0	4.6	1.1			1.3	6.6
Delay (s)	159.0	38.5	3.1	93.9	308.8	3.1	65.0	59.9			60.2	67.3
Level of Service	F	D	A	F	F	A	E	E			E	E
Approach Delay (s)		40.6			297.6			63.1			65.3	
Approach LOS		D			F			E			E	

Intersection Summary

HCM Average Control Delay	189.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.52		
Actuated Cycle Length (s)	139.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	120.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1063	173	293	1741	262	303
Ideal Flow (vphpl)	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	0.97	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1600	1583	3433	1600	1770	1546
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1600	1583	3433	1600	1770	1546
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1155	188	318	1892	285	329
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1155	188	318	1892	285	329
Confl. Peds. (#/hr)			1		1	1
Turn Type		Perm	Prot			Perm
Protected Phases	2		1	6	8	
Permitted Phases		2				8
Actuated Green, G (s)	74.9	74.9	12.4	91.0	19.3	19.3
Effective Green, g (s)	76.9	76.9	12.1	93.0	19.0	19.0
Actuated g/C Ratio	0.64	0.64	0.10	0.78	0.16	0.16
Clearance Time (s)	6.0	6.0	3.7	6.0	3.7	3.7
Vehicle Extension (s)	2.5	2.5	2.5	2.5	3.0	3.0
Lane Grp Cap (vph)	1025	1014	346	1240	280	245
v/s Ratio Prot	0.72		0.09	c1.18	0.16	
v/s Ratio Perm		0.12				c0.21
v/c Ratio	1.13	0.19	0.92	1.53	1.02	1.34
Uniform Delay, d1	21.5	8.8	53.5	13.5	50.5	50.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	69.8	0.1	28.4	240.8	58.4	179.1
Delay (s)	91.4	8.8	81.9	254.3	108.9	229.6
Level of Service	F	A	F	F	F	F
Approach Delay (s)	79.8			229.4	173.6	
Approach LOS	E			F	F	

Intersection Summary

HCM Average Control Delay	173.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.49		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	112.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	1258	102	169	1797	19	229	2	286	12	2	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.96	1.00
Satd. Flow (prot)	1770	1600	1583	3400	1600			1758	1583		1785	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.96	1.00
Satd. Flow (perm)	1770	1600	1583	3400	1600			1758	1583		1785	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	1367	111	184	1953	21	249	2	311	13	2	9
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	7	1367	111	184	1974	0	0	251	311	0	15	9
Heavy Vehicles (%)	2%	2%	2%	3%	2%	2%	3%	2%	2%	2%	2%	2%
Turn Type	Prot		Perm	Prot			Split		Perm	Split		Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			2						8			4
Actuated Green, G (s)	1.0	88.6	88.6	6.1	93.4			33.0	33.0		4.6	4.6
Effective Green, g (s)	1.0	90.6	90.6	5.8	95.4			33.0	33.0		4.6	4.6
Actuated g/C Ratio	0.01	0.60	0.60	0.04	0.64			0.22	0.22		0.03	0.03
Clearance Time (s)	4.0	6.0	6.0	3.7	6.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	2.5	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	12	966	956	131	1018			387	348		55	49
v/s Ratio Prot	0.00	0.85		c0.05	c1.23			0.14			c0.01	
v/s Ratio Perm			0.07						c0.20			0.01
v/c Ratio	0.58	1.42	0.12	1.40	1.94			0.65	0.89		0.27	0.18
Uniform Delay, d1	74.3	29.7	12.6	72.1	27.3			53.2	56.8		71.1	70.9
Progression Factor	1.00	1.00	1.00	0.98	1.32			1.00	1.00		1.00	1.00
Incremental Delay, d2	56.2	193.0	0.2	186.3	422.9			3.7	23.9		2.7	1.8
Delay (s)	130.5	222.7	12.9	256.7	459.0			56.9	80.7		73.7	72.7
Level of Service	F	F	B	F	F			E	F		E	E
Approach Delay (s)		206.5			441.7			70.1			73.3	
Approach LOS		F			F			E			E	

Intersection Summary

HCM Average Control Delay	307.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.59		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	121.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	1512	42	76	1853	2	130	2	178	2	2	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00			1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	1.00
Satd. Flow (prot)	1770	1600	1583	3273	1600			1775	1542		1817	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	1.00
Satd. Flow (perm)	1770	1600	1583	3273	1600			1775	1542		1817	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	1643	46	83	2014	2	141	2	193	2	2	2
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	2	1643	46	83	2016	0	0	143	193	0	4	2
Confl. Peds. (#/hr)				1		1			1	1		
Heavy Vehicles (%)	2%	2%	2%	7%	3%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot		Perm	Prot			Split		Perm	Split		Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			2						3			4
Actuated Green, G (s)	1.3	104.1	104.1	11.0	113.8			12.3	12.3		5.5	5.5
Effective Green, g (s)	1.0	106.1	106.1	10.7	115.8			12.0	12.0		5.2	5.2
Actuated g/C Ratio	0.01	0.71	0.71	0.07	0.77			0.08	0.08		0.03	0.03
Clearance Time (s)	3.7	6.0	6.0	3.7	6.0			3.7	3.7		3.7	3.7
Vehicle Extension (s)	3.0	3.0	3.0	2.5	3.0			2.5	2.5		2.5	2.5
Lane Grp Cap (vph)	12	1132	1120	233	1235			142	123		63	55
v/s Ratio Prot	0.00	1.03		c0.03	c1.26			0.08			c0.00	
v/s Ratio Perm			0.03						c0.13			0.00
v/c Ratio	0.17	1.45	0.04	0.36	1.63			1.01	1.57		0.06	0.04
Uniform Delay, d1	74.1	22.0	6.6	66.4	17.1			69.0	69.0		70.0	70.0
Progression Factor	0.88	1.22	1.34	1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	0.6	203.6	0.0	0.7	288.3			77.4	291.5		0.3	0.2
Delay (s)	66.2	230.5	8.9	67.1	305.4			146.4	360.5		70.4	70.2
Level of Service	E	F	A	E	F			F	F		E	E
Approach Delay (s)		224.2			296.0			269.4			70.3	
Approach LOS		F			F			F			E	

Intersection Summary

HCM Average Control Delay	264.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.56		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	118.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	27	0	0	0	0	7	2	274	0	2	108	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.61	0.92	0.61	0.92	0.92	0.92	0.83	0.83	0.92	0.92	0.59	0.59
Hourly flow rate (vph)	44	0	0	0	0	8	2	330	0	2	183	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											621	
pX, platoon unblocked												
vC, conflicting volume	536	528	189	528	534	330	195			330		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	536	528	189	528	534	330	195			330		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	90	100	100	100	100	99	100			100		
cM capacity (veh/h)	449	454	853	460	450	711	1378			1229		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	44	8	333	197
Volume Left	44	0	2	2
Volume Right	0	8	0	12
cSH	449	711	1378	1229
Volume to Capacity	0.10	0.01	0.00	0.00
Queue Length 95th (ft)	8	1	0	0
Control Delay (s)	13.9	10.1	0.1	0.1
Lane LOS	B	B	A	A
Approach Delay (s)	13.9	10.1	0.1	0.1
Approach LOS	B	B		

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	30.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	19	1673	1522	7	3	409
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.88	0.88	0.91	0.91	0.70	0.70
Hourly flow rate (vph)	22	1901	1673	8	4	584
Pedestrians		1	1		1	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1681				3619	1675
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1681				3619	1675
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	94				22	0
cM capacity (veh/h)	380				6	118

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	22	1901	1673	8	4	584
Volume Left	22	0	0	0	4	0
Volume Right	0	0	0	8	0	584
cSH	380	1700	1700	1700	6	118
Volume to Capacity	0.06	1.12	0.98	0.00	0.78	4.96
Queue Length 95th (ft)	4	0	0	0	30	Err
Control Delay (s)	15.0	0.0	0.0	0.0	1085.1	Err
Lane LOS	C				F	F
Approach Delay (s)	0.2		0.0		9934.1	
Approach LOS					F	

Intersection Summary			
Average Delay	1395.0		
Intersection Capacity Utilization	112.2%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	63	10	30	2	43	19	76	34	3	28	32	276
Peak Hour Factor	0.68	0.68	0.68	0.44	0.44	0.44	0.50	0.50	0.50	0.83	0.83	0.83
Hourly flow rate (vph)	93	15	44	5	98	43	152	68	6	34	39	333

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	151	145	152	74	34	371
Volume Left (vph)	93	5	152	0	34	0
Volume Right (vph)	44	43	0	6	0	333
Hadj (s)	0.00	-0.14	0.53	-0.02	0.59	-0.59
Departure Headway (s)	5.8	5.6	6.4	5.9	6.3	5.1
Degree Utilization, x	0.24	0.23	0.27	0.12	0.06	0.53
Capacity (veh/h)	561	569	529	574	543	677
Control Delay (s)	10.6	10.3	10.6	8.5	8.5	12.5
Approach Delay (s)	10.6	10.3	9.9		12.2	
Approach LOS	B	B	A		B	

Intersection Summary			
Delay	11.1		
HCM Level of Service	B		
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	39	35	42	491	11	54	21	210	34	64	40	8
Peak Hour Factor	0.82	0.82	0.82	0.75	0.75	0.75	0.82	0.82	0.82	0.70	0.70	0.70
Hourly flow rate (vph)	48	43	51	655	15	72	26	256	41	91	57	11

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	141	741	26	298	91	69
Volume Left (vph)	48	655	26	0	91	0
Volume Right (vph)	51	72	0	41	0	11
Hadj (s)	-0.12	0.15	0.60	-0.06	0.53	-0.05
Departure Headway (s)	6.7	6.0	7.7	7.1	8.1	7.5
Degree Utilization, x	0.26	1.23	0.05	0.58	0.20	0.14
Capacity (veh/h)	507	590	454	492	428	460
Control Delay (s)	12.0	139.4	10.0	18.3	11.9	10.5
Approach Delay (s)	12.0	139.4	17.6		11.3	
Approach LOS	B	F	C		B	

Intersection Summary			
Delay	82.4		
HCM Level of Service	F		
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	564	441	0	0	355	603	296	1	98	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	0.99			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (prot)	1770	1792			1845	1583		1771	1563			
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (perm)	1770	1792			1845	1583		1771	1563			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	613	479	0	0	386	655	322	1	107	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	613	479	0	0	386	655	0	323	107	0	0	0
Confl. Peds. (#/hr)			1	1			1		1			
Heavy Vehicles (%)	2%	6%	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot					Perm	Perm		Perm			
Protected Phases	5	2			6			8				
Permitted Phases						6	8		8			
Actuated Green, G (s)	14.3	48.2			30.2	30.2		17.7	17.7			
Effective Green, g (s)	14.0	50.2			32.2	32.2		18.6	18.6			
Actuated g/C Ratio	0.18	0.65			0.42	0.42		0.24	0.24			
Clearance Time (s)	3.7	6.0			6.0	6.0		4.9	4.9			
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)	323	1171			774	664		429	379			
v/s Ratio Prot	c0.35	0.27			0.21							
v/s Ratio Perm						c0.41		0.18	0.07			
v/c Ratio	1.90	0.41			0.50	0.99		0.75	0.28			
Uniform Delay, d1	31.4	6.3			16.4	22.1		27.0	23.7			
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2	415.5	1.1			0.5	31.2		7.3	0.4			
Delay (s)	446.9	7.3			16.9	53.3		34.3	24.1			
Level of Service	F	A			B	D		C	C			
Approach Delay (s)		254.1			39.8			31.7			0.0	
Approach LOS		F			D			C			A	

Intersection Summary

HCM Average Control Delay	129.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	76.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	145.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	767	341	148	503	0	0	0	0	238	6	398
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0						4.0	4.0
Lane Util. Factor		1.00		1.00	1.00						1.00	1.00
Frpb, ped/bikes		1.00		1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00						1.00	1.00
Frt		0.96		1.00	1.00						1.00	0.85
Flt Protected		1.00		0.95	1.00						0.95	1.00
Satd. Flow (prot)		1724		1770	1845						1739	1524
Flt Permitted		1.00		0.95	1.00						0.95	1.00
Satd. Flow (perm)		1724		1770	1845						1739	1524
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	834	371	161	547	0	0	0	0	259	7	433
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1205	0	161	547	0	0	0	0	0	266	433
Confl. Peds. (#/hr)				1		1			1	1		
Heavy Vehicles (%)	2%	5%	7%	2%	3%	2%	2%	2%	2%	4%	2%	6%
Turn Type				Prot						Perm		Perm
Protected Phases		2		1	6						4	
Permitted Phases										4		4
Actuated Green, G (s)		47.3		10.1	61.1						18.0	18.0
Effective Green, g (s)		49.3		9.8	63.1						18.9	18.9
Actuated g/C Ratio		0.55		0.11	0.70						0.21	0.21
Clearance Time (s)		6.0		3.7	6.0						4.9	4.9
Vehicle Extension (s)		3.0		3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		944		193	1294						365	320
v/s Ratio Prot		c0.70		c0.09	0.30							
v/s Ratio Perm											0.15	c0.28
v/c Ratio		1.28		0.83	0.42						0.73	1.35
Uniform Delay, d1		20.4		39.3	5.7						33.2	35.6
Progression Factor		1.00		1.00	1.00						1.00	1.00
Incremental Delay, d2		132.7		25.5	1.0						12.1	178.1
Delay (s)		153.0		64.8	6.7						45.2	213.7
Level of Service		F		E	A						D	F
Approach Delay (s)		153.0			19.9			0.0			149.6	
Approach LOS		F			B			A			F	

Intersection Summary

HCM Average Control Delay	116.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	145.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	3	1	1062	5	0	0	0	0	172	3	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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	3	1	1154	5	0	0	0	0	187	3	7
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	5			4			2326	2318	4	2318	2318	5
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	5			4			2326	2318	4	2318	2318	5
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.0	3.3
p0 queue free %	100			28			100	100	100	0	69	99
cM capacity (veh/h)	1616			1611			9	11	1080	11	11	1078

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	4	1160	197
Volume Left	0	1154	187
Volume Right	1	0	7
cSH	1700	1611	11
Volume to Capacity	0.00	0.72	18.02
Queue Length 95th (ft)	0	170	Err
Control Delay (s)	0.0	12.6	Err
Lane LOS		B	F
Approach Delay (s)	0.0	12.6	Err
Approach LOS			F

Intersection Summary			
Average Delay	1456.3		
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	175	0	0	1066	1	1158
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	190	0	0	1159	1	1259
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			190		1349	190
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			190		1349	190
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		99	0
cM capacity (veh/h)			1384		166	846

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	190	1159	1260
Volume Left	0	0	1
Volume Right	0	0	1259
cSH	1700	1700	843
Volume to Capacity	0.11	0.68	1.49
Queue Length 95th (ft)	0	0	1498
Control Delay (s)	0.0	0.0	243.6
Lane LOS			F
Approach Delay (s)	0.0	0.0	243.6
Approach LOS			F

Intersection Summary			
Average Delay	117.6		
Intersection Capacity Utilization	134.5%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	10	1323	1065	171	9	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	1438	1158	186	10	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						3
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1343				2710	1251
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1343				2710	1251
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				57	99
cM capacity (veh/h)	513				23	211

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	1449	1343	11
Volume Left	11	0	10
Volume Right	0	186	1
cSH	513	1700	25
Volume to Capacity	0.02	0.79	0.43
Queue Length 95th (ft)	2	0	33
Control Delay (s)	1.8	0.0	229.3
Lane LOS	A		F
Approach Delay (s)	1.8	0.0	229.3
Approach LOS			F

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	87.6%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	358	659	336	357	595	94	350	883	595	176	607	239
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	5.3
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		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	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3460		1770	3539	1583	1770	3539	1561
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3460		1770	3539	1583	1770	3539	1561
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	389	716	365	388	647	102	380	960	647	191	660	260
RTOR Reduction (vph)	0	0	159	0	11	0	0	0	207	0	0	187
Lane Group Flow (vph)	389	716	206	388	738	0	380	960	440	191	660	73
Confl. Peds. (#/hr)	2					2				2		2
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	14.8	26.4	26.4	16.7	28.3		19.3	40.7	40.7	9.9	31.3	31.3
Effective Green, g (s)	14.5	27.7	27.7	16.4	29.6		19.0	42.0	42.0	9.6	32.6	31.3
Actuated g/C Ratio	0.13	0.25	0.25	0.15	0.26		0.17	0.38	0.38	0.09	0.29	0.28
Clearance Time (s)	3.7	5.3	5.3	3.7	5.3		3.7	5.3	5.3	3.7	5.3	5.3
Vehicle Extension (s)	3.0	3.5	3.5	3.0	3.5		3.0	4.0	4.0	3.0	4.0	4.0
Lane Grp Cap (vph)	446	878	393	504	917		301	1331	595	152	1033	437
v/s Ratio Prot	c0.11	0.20		0.11	c0.21		c0.21	0.27		0.11	0.19	
v/s Ratio Perm			0.13						c0.28			0.05
v/c Ratio	0.87	0.82	0.52	0.77	0.80		1.26	0.72	0.74	1.26	0.64	0.17
Uniform Delay, d1	47.7	39.6	36.3	45.8	38.4		46.4	29.8	30.1	51.0	34.4	30.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	16.9	6.0	1.4	7.0	5.3		142.0	3.4	8.0	157.9	3.0	0.8
Delay (s)	64.6	45.6	37.8	52.8	43.7		188.4	33.2	38.1	208.9	37.5	31.2
Level of Service	E	D	D	D	D		F	C	D	F	D	C
Approach Delay (s)		48.7			46.8			64.5			65.5	
Approach LOS		D			D			E			E	

Intersection Summary

HCM Average Control Delay	57.1	HCM Level of Service	E
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	111.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	88.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	571	676	2	2	640	184	2	6	8	187	2	440
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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)	621	735	2	2	696	200	2	7	9	203	2	478
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												4
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	896			737			2678	2877	736	2788	2778	796
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	896			737			2678	2877	736	2788	2778	796
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 %	18			100			0	0	98	0	35	0
cM capacity (veh/h)	754			869			0	3	419	0	3	387

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	621	737	2	896	17	684
Volume Left	621	0	2	0	2	203
Volume Right	0	2	0	200	9	478
cSH	754	1700	869	1700	0	0
Volume to Capacity	0.82	0.43	0.00	0.53	Err	Err
Queue Length 95th (ft)	227	0	0	0	Err	Err
Control Delay (s)	27.9	0.0	9.2	0.0	Err	Err
Lane LOS	D		A		F	F
Approach Delay (s)	12.8		0.0		Err	Err
Approach LOS					F	F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	103.6%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	663	636	41	158	698	199	71	293	226	265	449	1013
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	0.99		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	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	3502		1770	3539	1561	1770	3286		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	3502		1770	3539	1561	1770	3286		1770	1863	1583
Peak-hour factor, PHF	0.77	0.77	0.77	0.91	0.91	0.91	0.85	0.85	0.85	0.91	0.91	0.91
Adj. Flow (vph)	861	826	53	174	767	219	84	345	266	291	493	1113
RTOR Reduction (vph)	0	0	0	0	0	168	0	0	0	0	0	225
Lane Group Flow (vph)	861	879	0	174	767	51	84	611	0	291	493	888
Confl. Peds. (#/hr)			1	2		1	1		2	1		
Turn Type	Prot			Prot		Perm	Prot			Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6						4
Actuated Green, G (s)	19.3	31.3		14.2	25.7	25.7	3.0	28.7		25.8	52.0	52.0
Effective Green, g (s)	19.8	33.8		13.7	27.7	27.7	2.5	31.2		25.3	54.0	54.0
Actuated g/C Ratio	0.16	0.28		0.11	0.23	0.23	0.02	0.26		0.21	0.45	0.45
Clearance Time (s)	4.5	6.5		3.5	6.0	6.0	3.5	6.5		3.5	6.0	6.0
Vehicle Extension (s)	1.0	4.5		1.0	4.5	4.5	1.0	4.5		1.0	4.5	4.5
Lane Grp Cap (vph)	566	986		202	817	360	37	854		373	838	712
v/s Ratio Prot	c0.25	c0.25		0.10	0.22		c0.05	0.19		0.16	0.26	
v/s Ratio Perm						0.03						c0.56
v/c Ratio	1.52	0.89		0.86	0.94	0.14	2.27	0.72		0.78	0.59	1.25
Uniform Delay, d1	50.1	41.3		52.2	45.3	36.7	58.8	40.4		44.7	24.7	33.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	243.5	12.0		28.4	19.7	0.8	648.3	3.3		9.4	1.4	122.8
Delay (s)	293.6	53.4		80.7	65.0	37.5	707.0	43.6		54.1	26.1	155.8
Level of Service	F	D		F	E	D	F	D		D	C	F
Approach Delay (s)		172.2			62.2			123.8			106.5	
Approach LOS		F			E			F			F	

Intersection Summary

HCM Average Control Delay	120.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	96.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	494	47	2	950	12	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	537	51	2	1033	13	1
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			588		1083	294
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			588		1083	294
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		94	100
cM capacity (veh/h)			983		211	702

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	358	230	346	688	14
Volume Left	0	0	2	0	13
Volume Right	0	51	0	0	1
cSH	1700	1700	983	1700	223
Volume to Capacity	0.21	0.14	0.00	0.40	0.06
Queue Length 95th (ft)	0	0	0	0	5
Control Delay (s)	0.0	0.0	0.1	0.0	22.2
Lane LOS			A		C
Approach Delay (s)	0.0		0.0		22.2
Approach LOS					C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	37.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1137	52	45	1997	74	87
Ideal Flow (vphpl)	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
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1600	1583	1770	1600	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1600	1583	1770	1600	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1236	57	49	2171	80	95
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1236	57	49	2171	80	95
Turn Type		Perm	Prot			Perm
Protected Phases	2		1	6	8	
Permitted Phases		2				8
Actuated Green, G (s)	86.7	86.7	6.8	97.2	11.1	11.1
Effective Green, g (s)	88.7	88.7	6.5	99.2	11.3	11.3
Actuated g/C Ratio	0.75	0.75	0.05	0.84	0.10	0.10
Clearance Time (s)	6.0	6.0	3.7	6.0	4.2	4.2
Vehicle Extension (s)	1.5	1.5	3.0	1.5	2.0	2.0
Lane Grp Cap (vph)	1198	1185	97	1339	169	151
v/s Ratio Prot	0.77		0.03	c1.36	0.05	
v/s Ratio Perm		0.04				c0.06
v/c Ratio	1.03	0.05	0.51	1.62	0.47	0.63
Uniform Delay, d1	14.9	3.9	54.4	9.6	50.8	51.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	34.5	0.0	4.1	283.1	0.8	5.8
Delay (s)	49.4	3.9	58.5	292.7	51.5	57.4
Level of Service	D	A	E	F	D	E
Approach Delay (s)	47.4			287.6	54.7	
Approach LOS	D			F	D	

Intersection Summary

HCM Average Control Delay	192.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.52		
Actuated Cycle Length (s)	118.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	115.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	105	1100	19	54	1739	211	32	41	140	310	52	271
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.91			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.99			0.96	1.00
Satd. Flow (prot)	1770	1600	1583	1770	1600	1583		1685			1786	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.75			0.52	1.00
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583		1266			973	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	114	1196	21	59	1890	229	35	45	152	337	57	295
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	114	1196	21	59	1890	229	0	232	0	0	394	295
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		4
Actuated Green, G (s)	4.5	40.0	40.0	3.2	38.7	38.7		24.0			24.0	24.0
Effective Green, g (s)	4.0	42.0	42.0	2.7	40.7	40.7		24.0			24.0	24.0
Actuated g/C Ratio	0.05	0.52	0.52	0.03	0.50	0.50		0.30			0.30	0.30
Clearance Time (s)	3.5	6.0	6.0	3.5	6.0	6.0		4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	88	833	824	59	807	798		377			289	471
v/s Ratio Prot	c0.06	0.75		0.03	c1.18							
v/s Ratio Perm			0.01			0.14		0.18			c0.40	0.19
v/c Ratio	1.30	1.44	0.03	1.00	2.34	0.29		0.62			1.36	0.63
Uniform Delay, d1	38.4	19.4	9.4	39.0	20.0	11.6		24.4			28.3	24.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	194.3	203.0	0.1	117.2	607.8	0.9		3.0			184.2	2.6
Delay (s)	232.7	222.3	9.5	156.2	627.8	12.5		27.4			212.6	27.1
Level of Service	F	F	A	F	F	B		C			F	C
Approach Delay (s)		219.9			550.3			27.4			133.2	
Approach LOS		F			F			C			F	

Intersection Summary

HCM Average Control Delay	358.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.94		
Actuated Cycle Length (s)	80.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	134.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	292	1243	15	30	1758	565	19	30	42	309	20	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	0.99		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	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.91		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3200		1770	3200	1561	1656	1682		3433	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3200		1770	3200	1561	1656	1682		3433	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	317	1351	16	33	1911	614	21	33	46	336	22	248
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	317	1367	0	33	1911	614	21	79	0	336	22	248
Confl. Peds. (#/hr)				1		1			1	1		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	9%	2%	2%	2%	2%	2%
Turn Type	Prot			Prot		pm+ov	Split			Split		Perm
Protected Phases	5	2		1	6	7	8	8		7	7	
Permitted Phases						6						7
Actuated Green, G (s)	8.8	42.1		2.1	35.4	52.8	4.0	4.0		17.4	17.4	17.4
Effective Green, g (s)	9.0	44.1		2.3	37.4	55.4	4.2	4.2		18.7	18.7	18.7
Actuated g/C Ratio	0.11	0.52		0.03	0.44	0.65	0.05	0.05		0.22	0.22	0.22
Clearance Time (s)	4.2	6.0		4.2	6.0	5.3	4.2	4.2		5.3	5.3	5.3
Vehicle Extension (s)	2.5	2.5		3.0	2.5	2.5	2.0	2.0		2.5	2.5	2.5
Lane Grp Cap (vph)	187	1654		48	1403	1014	82	83		753	408	347
v/s Ratio Prot	c0.18	0.43		0.02	c0.60	0.13	0.01	c0.05		0.10	0.01	
v/s Ratio Perm						0.26						c0.16
v/c Ratio	1.70	0.83		0.69	1.36	0.61	0.26	0.95		0.45	0.05	0.71
Uniform Delay, d1	38.2	17.4		41.1	24.0	8.6	39.0	40.4		28.8	26.3	30.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	334.8	3.5		33.8	167.6	0.9	0.6	81.7		0.3	0.0	6.4
Delay (s)	372.9	20.8		74.9	191.6	9.5	39.6	122.2		29.1	26.4	37.2
Level of Service	F	C		E	F	A	D	F		C	C	D
Approach Delay (s)		87.1			146.4			104.8			32.3	
Approach LOS		F			F			F			C	

Intersection Summary

HCM Average Control Delay	111.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	85.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	90.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	197	1397	1745	21	0	608
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0			4.0
Lane Util. Factor	1.00	0.95	0.95			0.88
Frt	1.00	1.00	1.00			0.85
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1770	3200	3200			2787
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1770	3200	3200			2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	1518	1897	23	0	661
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	214	1518	1920	0	0	661
Turn Type	Prot					Over
Protected Phases	5	2	6			5
Permitted Phases						
Actuated Green, G (s)	21.8	79.2	46.8			21.8
Effective Green, g (s)	22.4	79.2	48.8			22.4
Actuated g/C Ratio	0.28	1.00	0.62			0.28
Clearance Time (s)	4.6	2.0	6.0			4.6
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	501	3200	1972			788
v/s Ratio Prot	0.12	0.47	c0.60			c0.24
v/s Ratio Perm						
v/c Ratio	0.43	0.47	0.97			0.84
Uniform Delay, d1	23.2	0.0	14.6			26.7
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.6	0.1	14.5			7.8
Delay (s)	23.8	0.1	29.0			34.5
Level of Service	C	A	C			C
Approach Delay (s)		3.0	29.0		34.5	
Approach LOS		A	C		C	

Intersection Summary

HCM Average Control Delay	19.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	79.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	122	1263	12	10	1529	240	7	5	5	489	5	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	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	1.00	1.00		0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1600	1583	1770	1600	1583	1770	1723		3433	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1600	1583	1770	1600	1583	1770	1723		3433	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	133	1373	13	11	1662	261	8	5	5	532	5	250
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	133	1373	13	11	1662	261	8	10	0	532	5	250
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						4
Actuated Green, G (s)	7.8	103.9	103.9	1.6	97.5	97.5	0.8	3.3		22.4	24.5	24.5
Effective Green, g (s)	8.0	105.9	105.9	1.6	99.5	99.5	1.0	3.3		22.4	24.7	24.7
Actuated g/C Ratio	0.05	0.71	0.71	0.01	0.67	0.67	0.01	0.02		0.15	0.17	0.17
Clearance Time (s)	4.2	6.0	6.0	4.0	6.0	6.0	4.2	4.0		4.0	4.2	4.2
Vehicle Extension (s)	4.5	4.5	4.5	3.0	4.5	4.5	4.5	3.0		3.0	3.5	3.5
Lane Grp Cap (vph)	95	1136	1124	19	1067	1056	12	38		515	308	262
v/s Ratio Prot	c0.08	0.86		0.01	c1.04		0.00	0.01		c0.15	0.00	
v/s Ratio Perm			0.01			0.16						c0.16
v/c Ratio	1.40	1.21	0.01	0.58	1.56	0.25	0.67	0.26		1.03	0.02	0.95
Uniform Delay, d1	70.6	21.6	6.3	73.5	24.8	9.9	73.9	71.8		63.4	52.1	61.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	231.6	102.3	0.0	36.3	255.6	0.2	102.1	3.7		48.4	0.0	43.1
Delay (s)	302.2	124.0	6.3	109.8	280.4	10.1	176.0	75.4		111.8	52.1	104.8
Level of Service	F	F	A	F	F	B	F	E		F	D	F
Approach Delay (s)		138.6			243.0			120.1			109.2	
Approach LOS		F			F			F			F	

Intersection Summary

HCM Average Control Delay	180.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.42		
Actuated Cycle Length (s)	149.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	117.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	66	1613	78	23	1615	35	86	6	37	44	5	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.87			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.96	1.00
Satd. Flow (prot)	1770	1600	1583	1770	1600	1583	1770	1625			1782	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.72	1.00			0.71	1.00
Satd. Flow (perm)	1770	1600	1583	1770	1600	1583	1346	1625			1331	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	1753	85	25	1755	38	93	7	40	48	5	85
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	72	1753	85	25	1755	38	93	47	0	0	53	85
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		4
Actuated Green, G (s)	5.3	110.5	110.5	2.3	107.5	107.5	14.9	14.9			14.9	14.9
Effective Green, g (s)	5.0	112.5	112.5	2.0	109.5	109.5	15.0	15.0			15.0	15.0
Actuated g/C Ratio	0.04	0.80	0.80	0.01	0.77	0.77	0.11	0.11			0.11	0.11
Clearance Time (s)	3.7	6.0	6.0	3.7	6.0	6.0	4.1	4.1			4.1	4.1
Vehicle Extension (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	63	1272	1259	25	1238	1225	143	172			141	168
v/s Ratio Prot	c0.04	c1.10		0.01	c1.10			0.03				
v/s Ratio Perm			0.05			0.02	c0.07				0.04	0.05
v/c Ratio	1.14	1.38	0.07	1.00	1.42	0.03	0.65	0.27			0.38	0.51
Uniform Delay, d1	68.2	14.5	3.1	69.8	16.0	3.7	60.7	58.2			58.9	59.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	157.6	175.2	0.0	180.0	192.7	0.0	10.1	0.9			1.7	2.4
Delay (s)	225.8	189.7	3.2	249.8	208.7	3.7	70.9	59.1			60.6	62.1
Level of Service	F	F	A	F	F	A	E	E			E	E
Approach Delay (s)		182.7			205.0			66.9			61.5	
Approach LOS		F			F			E			E	

Intersection Summary

HCM Average Control Delay	184.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	141.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	104.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1516	178	243	1397	276	460
Ideal Flow (vphpl)	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	0.97	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1600	1583	3433	1600	1770	1546
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1600	1583	3433	1600	1770	1546
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1648	193	264	1518	300	500
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1648	193	264	1518	300	500
Confl. Peds. (#/hr)			1		1	1
Heavy Vehicles (%)	2%	2%	2%	4%	2%	2%
Turn Type		Perm	Prot			Perm
Protected Phases	2		1	6	8	
Permitted Phases		2				8
Actuated Green, G (s)	86.0	86.0	8.3	98.0	32.3	32.3
Effective Green, g (s)	88.0	88.0	8.0	100.0	32.0	32.0
Actuated g/C Ratio	0.63	0.63	0.06	0.71	0.23	0.23
Clearance Time (s)	6.0	6.0	3.7	6.0	3.7	3.7
Vehicle Extension (s)	2.5	2.5	2.5	2.5	3.0	3.0
Lane Grp Cap (vph)	1006	995	196	1143	405	353
v/s Ratio Prot	c1.03		0.08	c0.95	0.17	
v/s Ratio Perm		0.12				c0.32
v/c Ratio	1.64	0.19	1.35	1.33	0.74	1.42
Uniform Delay, d1	26.0	11.0	66.0	20.0	50.1	54.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	291.7	0.1	186.0	153.8	7.1	203.4
Delay (s)	317.7	11.1	252.0	173.8	57.3	257.4
Level of Service	F	B	F	F	E	F
Approach Delay (s)	285.6			185.4	182.3	
Approach LOS	F			F	F	

Intersection Summary

HCM Average Control Delay	226.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.58		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	115.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	1745	228	301	1480	10	154	2	311	6	2	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.96	1.00
Satd. Flow (prot)	1770	1600	1583	3433	1600			1775	1568		1793	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.96	1.00
Satd. Flow (perm)	1770	1600	1583	3433	1600			1775	1568		1793	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	1897	248	327	1609	11	167	2	338	7	2	7
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	3	1897	248	327	1620	0	0	169	338	0	9	7
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	2%
Turn Type	Prot		Perm	Prot			Split		Perm	Split		Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases			2						8			4
Actuated Green, G (s)	0.8	92.6	92.6	5.3	96.8			31.5	31.5		2.9	2.9
Effective Green, g (s)	0.8	94.6	94.6	5.0	98.8			31.5	31.5		2.9	2.9
Actuated g/C Ratio	0.01	0.63	0.63	0.03	0.66			0.21	0.21		0.02	0.02
Clearance Time (s)	4.0	6.0	6.0	3.7	6.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	2.5	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	9	1009	998	114	1054			373	329		35	31
v/s Ratio Prot	0.00	c1.19		c0.10	1.01			0.10			c0.01	
v/s Ratio Perm			0.16						c0.22			0.00
v/c Ratio	0.33	1.88	0.25	2.87	1.54			0.45	1.03		0.26	0.23
Uniform Delay, d1	74.3	27.7	12.1	72.5	25.6			51.7	59.2		72.5	72.4
Progression Factor	1.00	1.00	1.00	1.04	0.77			1.00	1.00		1.00	1.00
Incremental Delay, d2	20.6	399.8	0.6	843.0	242.1			0.9	56.8		3.9	3.7
Delay (s)	94.9	427.5	12.7	918.2	261.9			52.6	116.1		76.4	76.1
Level of Service	F	F	B	F	F			D	F		E	E
Approach Delay (s)		379.2			372.1			94.9			76.3	
Approach LOS		F			F			F			E	

Intersection Summary

HCM Average Control Delay	343.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.68		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	125.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	1930	132	161	1703	2	85	3	122	2	2	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00			1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	0.97		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	1.00
Satd. Flow (prot)	1770	1600	1583	3273	1600			1777	1539		1817	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.98	1.00
Satd. Flow (perm)	1770	1600	1583	3273	1600			1777	1539		1817	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	2098	143	175	1851	2	92	3	133	2	2	3
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	3	2098	143	175	1853	0	0	95	133	0	4	3
Confl. Peds. (#/hr)				1		1			1	1		
Heavy Vehicles (%)	2%	2%	2%	7%	3%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot		Perm	Prot			Split		Perm	Split		Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			2						3			4
Actuated Green, G (s)	1.3	100.9	100.9	17.2	116.8			9.3	9.3		5.5	5.5
Effective Green, g (s)	1.0	102.9	102.9	16.9	118.8			9.0	9.0		5.2	5.2
Actuated g/C Ratio	0.01	0.69	0.69	0.11	0.79			0.06	0.06		0.03	0.03
Clearance Time (s)	3.7	6.0	6.0	3.7	6.0			3.7	3.7		3.7	3.7
Vehicle Extension (s)	3.0	3.0	3.0	2.5	3.0			2.5	2.5		2.5	2.5
Lane Grp Cap (vph)	12	1098	1086	369	1267			107	92		63	55
v/s Ratio Prot	0.00	c1.31		c0.05	c1.16			0.05			c0.00	
v/s Ratio Perm			0.09						c0.09			0.00
v/c Ratio	0.25	1.91	0.13	0.47	1.46			0.89	1.45		0.06	0.05
Uniform Delay, d1	74.1	23.5	8.1	62.4	15.6			70.0	70.5		70.0	70.0
Progression Factor	1.10	1.26	0.86	1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	1.0	410.1	0.0	0.7	212.5			52.5	251.2		0.3	0.3
Delay (s)	82.2	439.9	7.0	63.1	228.1			122.5	321.7		70.4	70.3
Level of Service	F	F	A	E	F			F	F		E	E
Approach Delay (s)		411.8			213.9			238.7			70.3	
Approach LOS		F			F			F			E	

Intersection Summary

HCM Average Control Delay	313.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.78		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	122.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	0	0	0	0	4	1	183	0	8	243	37
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.71	0.92	0.71	0.92	0.92	0.92	0.80	0.80	0.92	0.92	0.87	0.87
Hourly flow rate (vph)	28	0	0	0	0	4	1	229	0	9	279	43
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											621	
pX, platoon unblocked												
vC, conflicting volume	554	549	301	549	570	229	322			229		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	554	549	301	549	570	229	322			229		
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 %	94	100	100	100	100	99	100			99		
cM capacity (veh/h)	438	440	739	444	428	811	1238			1339		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	28	4	230	331
Volume Left	28	0	1	9
Volume Right	0	4	0	43
cSH	438	811	1238	1339
Volume to Capacity	0.06	0.01	0.00	0.01
Queue Length 95th (ft)	5	0	0	0
Control Delay (s)	13.8	9.5	0.1	0.3
Lane LOS	B	A	A	A
Approach Delay (s)	13.8	9.5	0.1	0.3
Approach LOS	B	A		

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	35.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	69	1985	1817	47	4	49
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	75	2158	1975	51	4	53
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	2026				4283	1975
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2026				4283	1975
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	73				0	31
cM capacity (veh/h)	280				2	78

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	75	2158	1975	51	4	53
Volume Left	75	0	0	0	4	0
Volume Right	0	0	0	51	0	53
cSH	280	1700	1700	1700	2	78
Volume to Capacity	0.27	1.27	1.16	0.03	2.83	0.69
Queue Length 95th (ft)	26	0	0	0	37	80
Control Delay (s)	22.5	0.0	0.0	0.0	4542.4	119.5
Lane LOS	C				F	F
Approach Delay (s)	0.8		0.0		453.3	
Approach LOS					F	

Intersection Summary			
Average Delay	6.4		
Intersection Capacity Utilization	114.5%	ICU Level of Service	H
Analysis Period (min)	15		

12: Hwy 68 EB Ramps & Portola Dr.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	39	20	43	2	30	26	93	40	2	67	119	137
Peak Hour Factor	0.90	0.90	0.90	0.71	0.71	0.71	0.57	0.57	0.57	0.87	0.87	0.87
Hourly flow rate (vph)	43	22	48	3	42	37	163	70	4	77	137	157

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	113	82	163	74	77	294
Volume Left (vph)	43	3	163	0	77	0
Volume Right (vph)	48	37	0	4	0	157
Hadj (s)	-0.14	-0.23	0.53	0.00	0.53	-0.34
Departure Headway (s)	5.3	5.3	6.0	5.4	5.9	5.0
Degree Utilization, x	0.17	0.12	0.27	0.11	0.13	0.41
Capacity (veh/h)	611	606	578	630	588	697
Control Delay (s)	9.4	9.0	10.0	7.9	8.5	10.2
Approach Delay (s)	9.4	9.0	9.3		9.8	
Approach LOS	A	A	A		A	

Intersection Summary			
Delay	9.5		
HCM Level of Service	A		
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

13: Hwy 68 WB Ramps & Portola Dr.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	34	11	22	261	45	175	25	127	27	38	40	26
Peak Hour Factor	0.69	0.69	0.69	0.87	0.87	0.87	0.81	0.81	0.81	0.79	0.79	0.79
Hourly flow rate (vph)	49	16	32	300	52	201	31	157	33	48	51	33

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	97	553	31	190	48	84
Volume Left (vph)	49	300	31	0	48	0
Volume Right (vph)	32	201	0	33	0	33
Hadj (s)	-0.04	-0.07	0.53	-0.09	0.53	-0.24
Departure Headway (s)	5.8	5.1	7.1	6.5	7.3	6.5
Degree Utilization, x	0.16	0.78	0.06	0.34	0.10	0.15
Capacity (veh/h)	553	553	469	515	454	506
Control Delay (s)	9.9	23.5	9.3	11.5	9.9	9.4
Approach Delay (s)	9.9	23.5	11.2		9.6	
Approach LOS	A	C	B		A	

Intersection Summary			
Delay	17.6		
HCM Level of Service	C		
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	336	775	0	0	275	285	182	1	147	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	0.99			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (prot)	1752	1863			1863	1553		1770	1562			
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (perm)	1752	1863			1863	1553		1770	1562			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	365	842	0	0	299	310	198	1	160	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	365	842	0	0	299	310	0	199	160	0	0	0
Confl. Peds. (#/hr)			2				2		2			
Heavy Vehicles (%)	3%	2%	2%	2%	2%	4%	2%	2%	2%	2%	2%	2%
Turn Type	Prot					Perm	Perm		Perm			
Protected Phases	5	2			6			8				
Permitted Phases						6	8		8			
Actuated Green, G (s)	11.3	28.2			13.2	13.2		10.8	10.8			
Effective Green, g (s)	11.0	30.2			15.2	15.2		11.7	11.7			
Actuated g/C Ratio	0.22	0.61			0.30	0.30		0.23	0.23			
Clearance Time (s)	3.7	6.0			6.0	6.0		4.9	4.9			
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)	386	1128			567	473		415	366			
v/s Ratio Prot	c0.21	c0.45			0.16							
v/s Ratio Perm						0.20		0.11	0.10			
v/c Ratio	0.95	0.75			0.53	0.66		0.48	0.44			
Uniform Delay, d1	19.2	7.1			14.4	15.1		16.5	16.3			
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2	31.8	4.5			0.9	3.3		0.9	0.8			
Delay (s)	51.0	11.6			15.3	18.3		17.3	17.1			
Level of Service	D	B			B	B		B	B			
Approach Delay (s)		23.5			16.8			17.3			0.0	
Approach LOS		C			B			B			A	

Intersection Summary

HCM Average Control Delay	20.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	49.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	130.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	608	374	122	335	0	0	0	0	503	6	665
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0						4.0	4.0
Lane Util. Factor		1.00		1.00	1.00						1.00	1.00
Frpb, ped/bikes		0.99		1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00		1.00	1.00						1.00	1.00
Frt		0.95		1.00	1.00						1.00	0.85
Flt Protected		1.00		0.95	1.00						0.95	1.00
Satd. Flow (prot)		1737		1770	1845						1775	1583
Flt Permitted		1.00		0.95	1.00						0.95	1.00
Satd. Flow (perm)		1737		1770	1845						1775	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	661	407	133	364	0	0	0	0	547	7	723
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1068	0	133	364	0	0	0	0	0	554	723
Confl. Peds. (#/hr)			2	2								
Heavy Vehicles (%)	2%	3%	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%
Turn Type				Prot						Perm		Perm
Protected Phases		2		1	6						4	
Permitted Phases										4		4
Actuated Green, G (s)		59.4		8.9	72.0						27.1	27.1
Effective Green, g (s)		61.4		8.6	74.0						28.0	28.0
Actuated g/C Ratio		0.56		0.08	0.67						0.25	0.25
Clearance Time (s)		6.0		3.7	6.0						4.9	4.9
Vehicle Extension (s)		3.0		3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		970		138	1241						452	403
v/s Ratio Prot		c0.61		c0.08	0.20							
v/s Ratio Perm											0.31	c0.46
v/c Ratio		1.10		0.96	0.29						1.23	1.79
Uniform Delay, d1		24.3		50.5	7.3						41.0	41.0
Progression Factor		1.00		1.00	1.00						1.00	1.00
Incremental Delay, d2		60.6		65.1	0.6						119.9	367.1
Delay (s)		84.9		115.6	7.9						160.9	408.1
Level of Service		F		F	A						F	F
Approach Delay (s)		84.9			36.8			0.0			300.9	
Approach LOS		F			D			A			F	

Intersection Summary

HCM Average Control Delay	173.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.29		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	130.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	2	1214	2	0	0	0	0	171	1	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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	2	1320	2	0	0	0	0	186	1	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	2			2			2643	2642	1	2642	2643	2
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2			2			2643	2642	1	2642	2643	2
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.0	3.3
p0 queue free %	100			18			100	100	100	0	74	100
cM capacity (veh/h)	1620			1614			4	4	1083	5	4	1082

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	2	1322	187
Volume Left	0	1320	186
Volume Right	2	0	0
cSH	1700	1614	5
Volume to Capacity	0.00	0.82	41.18
Queue Length 95th (ft)	0	262	Err
Control Delay (s)	0.0	16.2	Err
Lane LOS		C	F
Approach Delay (s)	0.0	16.2	Err
Approach LOS			F

Intersection Summary			
Average Delay	1251.5		
Intersection Capacity Utilization	90.2%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	171	0	0	1216	0	1000
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	186	0	0	1322	0	1087
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			186		1508	186
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			186		1508	186
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			100		100	0
cM capacity (veh/h)			1389		133	841

Direction, Lane #	EB 1	WB 1	NB 1	NB 2
Volume Total	186	1322	0	1087
Volume Left	0	0	0	0
Volume Right	0	0	0	1087
cSH	1700	1700	1700	841
Volume to Capacity	0.11	0.78	0.00	1.29
Queue Length 95th (ft)	0	0	0	1018
Control Delay (s)	0.0	0.0	0.0	157.6
Lane LOS			A	F
Approach Delay (s)	0.0	0.0	157.6	
Approach LOS			F	

Intersection Summary			
Average Delay	66.0		
Intersection Capacity Utilization	77.6%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Volume (veh/h)	6	1165	1214	179	5	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	1266	1320	195	5	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						3
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1514				2599	1320
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1514				2599	1320
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				80	99
cM capacity (veh/h)	441				27	192

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SW 1
Volume Total	7	1266	1320	195	8
Volume Left	7	0	0	0	5
Volume Right	0	0	0	195	2
cSH	441	1700	1700	1700	38
Volume to Capacity	0.01	0.74	0.78	0.11	0.20
Queue Length 95th (ft)	1	0	0	0	16
Control Delay (s)	13.3	0.0	0.0	0.0	127.8
Lane LOS	B				F
Approach Delay (s)	0.1		0.0		127.8
Approach LOS					F

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	475	598	340	678	818	156	355	854	486	149	994	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	5.3
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1557	3433	3445		1770	3539	1560	1770	3539	1558
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1557	3433	3445		1770	3539	1560	1770	3539	1558
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	516	650	370	737	889	170	386	928	528	162	1080	304
RTOR Reduction (vph)	0	0	139	0	11	0	0	0	309	0	0	146
Lane Group Flow (vph)	516	650	231	737	1048	0	386	928	219	162	1080	158
Confl. Peds. (#/hr)	4		3	2		3	3		2	3		3
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	21.9	28.4	28.4	32.9	39.4		24.3	49.7	49.7	16.0	41.4	41.4
Effective Green, g (s)	21.6	29.7	29.7	32.6	40.7		24.0	51.0	51.0	15.7	42.7	41.4
Actuated g/C Ratio	0.15	0.20	0.20	0.22	0.28		0.17	0.35	0.35	0.11	0.29	0.29
Clearance Time (s)	3.7	5.3	5.3	3.7	5.3		3.7	5.3	5.3	3.7	5.3	5.3
Vehicle Extension (s)	3.0	3.5	3.5	3.0	3.5		3.0	4.0	4.0	3.0	4.0	4.0
Lane Grp Cap (vph)	511	725	319	772	967		293	1245	549	192	1042	445
v/s Ratio Prot	0.15	0.18		c0.21	c0.30		c0.22	0.26		0.09	c0.31	
v/s Ratio Perm			0.15						0.14			0.10
v/c Ratio	1.01	0.90	0.72	0.95	1.08		1.32	0.75	0.40	0.84	1.04	0.35
Uniform Delay, d1	61.7	56.2	53.8	55.5	52.2		60.5	41.3	35.4	63.4	51.1	41.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	42.3	14.0	8.2	21.8	54.5		164.9	4.1	2.2	27.2	37.8	2.2
Delay (s)	104.0	70.1	62.0	77.3	106.6		225.4	45.4	37.6	90.6	88.9	43.4
Level of Service	F	E	E	E	F		F	D	D	F	F	D
Approach Delay (s)		79.5			94.6			80.9			80.1	
Approach LOS		E			F			F			F	

Intersection Summary

HCM Average Control Delay	84.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	101.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	720	656	3	7	900	144	1	3	5	193	2	811
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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)	783	713	3	8	978	157	1	3	5	210	2	882
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												4
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1135			716			3274	3430	715	3357	3353	1057
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1135			716			3274	3430	715	3357	3353	1057
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 %	0			99			0	0	99	0	0	0
cM capacity (veh/h)	616			884			0	0	431	0	0	274

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	783	716	8	1135	10	1093
Volume Left	783	0	8	0	1	210
Volume Right	0	3	0	157	5	882
cSH	616	1700	884	1700	0	0
Volume to Capacity	1.27	0.42	0.01	0.67	Err	Err
Queue Length 95th (ft)	762	0	1	0	Err	Err
Control Delay (s)	155.9	0.0	9.1	0.0	Err	Err
Lane LOS	F		A		F	F
Approach Delay (s)	81.4		0.1		Err	Err
Approach LOS					F	F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	123.5%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	692	412	39	463	491	384	58	783	692	299	805	423
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	3493		1770	3539	1583	1770	3290		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	3493		1770	3539	1583	1770	3290		1770	1863	1583
Peak-hour factor, PHF	0.77	0.77	0.77	0.91	0.91	0.91	0.85	0.85	0.85	0.91	0.91	0.91
Adj. Flow (vph)	899	535	51	509	540	422	68	921	814	329	885	465
RTOR Reduction (vph)	0	0	0	0	0	151	0	0	0	0	0	63
Lane Group Flow (vph)	899	586	0	509	540	271	68	1735	0	329	885	402
Turn Type	Prot			Prot		Perm	Prot			Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6						4
Actuated Green, G (s)	38.5	46.8		29.7	37.5	37.5	3.0	36.0		17.5	51.0	51.0
Effective Green, g (s)	39.0	49.3		29.2	39.5	39.5	2.5	38.5		17.0	53.0	53.0
Actuated g/C Ratio	0.26	0.33		0.19	0.26	0.26	0.02	0.26		0.11	0.35	0.35
Clearance Time (s)	4.5	6.5		3.5	6.0	6.0	3.5	6.5		3.5	6.0	6.0
Vehicle Extension (s)	1.0	4.5		1.0	4.5	4.5	1.0	4.5		1.0	4.5	4.5
Lane Grp Cap (vph)	893	1148		345	932	417	30	844		201	658	559
v/s Ratio Prot	c0.26	0.17		c0.29	0.15		0.04	c0.53		c0.19	0.48	
v/s Ratio Perm						c0.17						0.25
v/c Ratio	1.01	0.51		1.48	0.58	0.65	2.27	2.06		1.64	1.34	0.72
Uniform Delay, d1	55.5	40.6		60.4	48.0	49.1	73.8	55.8		66.5	48.5	42.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	31.8	1.6		229.0	2.6	7.6	662.4	479.2		308.0	165.3	5.0
Delay (s)	87.3	42.2		289.4	50.7	56.7	736.1	534.9		374.5	213.8	47.0
Level of Service	F	D		F	D	E	F	F		F	F	D
Approach Delay (s)		69.5			135.0			542.5			199.1	
Approach LOS		E			F			F			F	

Intersection Summary

HCM Average Control Delay	250.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	112.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	928	34	2	525	58	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1009	37	2	571	63	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			1046		1317	523
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1046		1317	523
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		58	99
cM capacity (veh/h)			661		148	499

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	672	373	192	380	66
Volume Left	0	0	2	0	63
Volume Right	0	37	0	0	3
cSH	1700	1700	661	1700	154
Volume to Capacity	0.40	0.22	0.00	0.22	0.43
Queue Length 95th (ft)	0	0	0	0	48
Control Delay (s)	0.0	0.0	0.2	0.0	45.1
Lane LOS			A		E
Approach Delay (s)	0.0		0.1		45.1
Approach LOS					E

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	36.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCS+: Two-Lane Highways Release 5.2

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Two-Way Two-Lane Highway Segment Analysis

Analyst	LM
Agency/Co.	HMM
Date Performed	10/15/2008
Analysis Time Period	Cumulative AM
Highway	68
From/To	San Benancio Rd. / Torero Dr.
Jurisdiction	
Analysis Year	
Description 252572	

Input Data

Highway class Class 1					
Shoulder width	6.0	ft	Peak-hour factor, PHF	0.92	
Lane width	12.0	ft	% Trucks and buses	4	%
Segment length	1.4	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	100	%
Grade: Length		mi	Access points/mi	4	/mi
Up/down		%			

Two-way hourly volume, V 3623 veh/h
Directional split 53 / 47 %

Average Travel Speed

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.1	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor,	0.996	
Two-way flow rate,(note-1) vp	3954	pc/h
Highest directional split proportion (note-2)	2096	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	60.0	mi/h
Adj. for lane and shoulder width, fLS	0.0	mi/h
Adj. for access points, fA	1.0	mi/h
Free-flow speed, FFS	59.0	mi/h
Adjustment for no-passing zones, fnp		mi/h
Average travel speed, ATS		mi/h

Percent Time-Spent-Following

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.0	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	1.000	
Two-way flow rate,(note-1) vp	3938	pc/h
Highest directional split proportion (note-2)	2087	
Base percent time-spent-following, BPTSF	96.9	%
Adj.for directional distribution and no-passing zones, fd/np	1.6	
Percent time-spent-following, PTSF	98.5	%

Level of Service and Other Performance Measures

Level of service, LOS		
Volume to capacity ratio, v/c	1.24	
Peak 15-min vehicle-miles of travel, VMT15	1378	veh-mi
Peak-hour vehicle-miles of travel, VMT60	5072	veh-mi
Peak 15-min total travel time, TT15		veh-h

Notes:
1. If vp >= 3200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split vp >= 1700 pc/h, terminate analysis-the LOS is F.

HCS+: Two-Lane Highways Release 5.2

Phone:
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Two-Way Two-Lane Highway Segment Analysis

Analyst	LM
Agency/Co.	HMM
Date Performed	10/15/2008
Analysis Time Period	Cum AM
Highway	68
From/To	Torero Dr. / Begin-End Freeway
Jurisdiction	
Analysis Year	
Description 252572	

Input Data

Highway class Class 1					
Shoulder width	6.0	ft	Peak-hour factor, PHF	0.92	
Lane width	12.0	ft	% Trucks and buses	4	%
Segment length	0.6	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	100	%
Grade: Length		mi	Access points/mi	1	/mi
Up/down		%			

Two-way hourly volume, V 3205 veh/h
Directional split 54 / 46 %

Average Travel Speed

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.1	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor,	0.996	
Two-way flow rate,(note-1) vp	3498	pc/h
Highest directional split proportion (note-2)	1889	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	60.0	mi/h
Adj. for lane and shoulder width, fLS	0.0	mi/h
Adj. for access points, fA	0.3	mi/h
Free-flow speed, FFS	59.8	mi/h
Adjustment for no-passing zones, fnp		mi/h
Average travel speed, ATS		mi/h

Percent Time-Spent-Following

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.0	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	1.000	
Two-way flow rate,(note-1) vp	3484	pc/h
Highest directional split proportion (note-2)	1881	
Base percent time-spent-following, BPTSF	95.3	%
Adj.for directional distribution and no-passing zones, fd/np	1.7	
Percent time-spent-following, PTSF	97.0	%

Level of Service and Other Performance Measures

Level of service, LOS		
Volume to capacity ratio, v/c	1.09	
Peak 15-min vehicle-miles of travel, VMT15	523	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1923	veh-mi
Peak 15-min total travel time, TT15		veh-h

Notes:
1. If vp >= 3200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split vp >= 1700 pc/h, terminate analysis-the LOS is F.

HCS+: Two-Lane Highways Release 5.2

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Two-Way Two-Lane Highway Segment Analysis

Analyst	LM
Agency/Co.	HMM
Date Performed	10/15/2008
Analysis Time Period	Cumulative AM
Highway	218
From/To	Highway 68 / General Jim Moore
Jurisdiction	
Analysis Year	
Description 252572	

Input Data

Highway class Class 1					
Shoulder width	6.0	ft	Peak-hour factor, PHF	0.92	
Lane width	12.0	ft	% Trucks and buses	2	%
Segment length	0.7	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	100	%
Grade: Length		mi	Access points/mi	9	/mi
Up/down		%			

Two-way hourly volume, v 1340 veh/h
Directional split 53 / 47 %

Average Travel Speed

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.1	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor,	0.998	
Two-way flow rate,(note-1) vp	1459	pc/h
Highest directional split proportion (note-2)	773	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	60.0	mi/h
Adj. for lane and shoulder width, fLS	0.0	mi/h
Adj. for access points, fA	2.3	mi/h
Free-flow speed, FFS	57.8	mi/h
Adjustment for no-passing zones, fnp	1.6	mi/h
Average travel speed, ATS	44.8	mi/h

Percent Time-Spent-Following

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.0	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	1.000	
Two-way flow rate,(note-1) vp	1457	pc/h
Highest directional split proportion (note-2)	772	
Base percent time-spent-following, BPTSF	72.2	%
Adj.for directional distribution and no-passing zones, fd/np	7.6	
Percent time-spent-following, PTSF	79.8	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.46	
Peak 15-min vehicle-miles of travel, VMT15	255	veh-mi
Peak-hour vehicle-miles of travel, VMT60	938	veh-mi
Peak 15-min total travel time, TT15	5.7	veh-h

Notes:
1. If vp >= 3200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split vp >= 1700 pc/h, terminate analysis-the LOS is F.

HCS+: Two-Lane Highways Release 5.2

Phone: Fax:
E-Mail:

Two-Way Two-Lane Highway Segment Analysis

Analyst	LM
Agency/Co.	HMM
Date Performed	10/15/2008
Analysis Time Period	Cumulative AM
Highway	Reservation Road
From/To	Davis Road / Highway 68
Jurisdiction	
Analysis Year	
Description 252572	

Input Data

Highway class Class 1					
Shoulder width	6.0	ft	Peak-hour factor, PHF	0.92	
Lane width	12.0	ft	% Trucks and buses	6	%
Segment length	1.8	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	100	%
Grade: Length		mi	Access points/mi	7	/mi
Up/down		%			

Two-way hourly volume, v	2009	veh/h	
Directional split	53 / 47	%	

Average Travel Speed

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.1	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor,	0.994	
Two-way flow rate,(note-1) vp	2197	pc/h
Highest directional split proportion (note-2)	1164	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	60.0	mi/h
Adj. for lane and shoulder width, fLS	0.0	mi/h
Adj. for access points, fA	1.8	mi/h
Free-flow speed, FFS	58.3	mi/h
Adjustment for no-passing zones, fnp	1.1	mi/h
Average travel speed, ATS	40.1	mi/h

Percent Time-Spent-Following

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.0	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	1.000	
Two-way flow rate,(note-1) vp	2184	pc/h
Highest directional split proportion (note-2)	1158	
Base percent time-spent-following, BPTSF	85.3	%
Adj.for directional distribution and no-passing zones, fd/np	3.7	
Percent time-spent-following, PTSF	89.1	%

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.69	
Peak 15-min vehicle-miles of travel, VMT15	983	veh-mi
Peak-hour vehicle-miles of travel, VMT60	3616	veh-mi
Peak 15-min total travel time, TT15	24.5	veh-h

Notes:
1. If vp >= 3200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split vp >= 1700 pc/h, terminate analysis-the LOS is F.

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Two-Way Two-Lane Highway Segment Analysis

Analyst	LM
Agency/Co.	HMM
Date Performed	10/15/2008
Analysis Time Period	Cumulative AM
Highway	Davis Road
From/To	Reservation Road / Blanco Road
Jurisdiction	
Analysis Year	
Description 252572	

Input Data

Highway class Class 1					
Shoulder width	6.0	ft	Peak-hour factor, PHF	0.92	
Lane width	12.0	ft	% Trucks and buses	3	%
Segment length	2.1	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	100	%
Grade: Length		mi	Access points/mi	3	/mi
Up/down		%			

Two-way hourly volume, V	2238	veh/h	
Directional split	53 / 47	%	

Average Travel Speed

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.1	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor,	0.997	
Two-way flow rate,(note-1) vp	2440	pc/h
Highest directional split proportion (note-2)	1293	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	60.0	mi/h
Adj. for lane and shoulder width, fLS	0.0	mi/h
Adj. for access points, fA	0.8	mi/h
Free-flow speed, FFS	59.3	mi/h
Adjustment for no-passing zones, fnp	1.1	mi/h
Average travel speed, ATS	39.2	mi/h

Percent Time-Spent-Following

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.0	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	1.000	
Two-way flow rate,(note-1) vp	2433	pc/h
Highest directional split proportion (note-2)	1289	
Base percent time-spent-following, BPTSF	88.2	%
Adj.for directional distribution and no-passing zones, fd/np	2.9	
Percent time-spent-following, PTSF	91.1	%

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.76	
Peak 15-min vehicle-miles of travel, VMT15	1277	veh-mi
Peak-hour vehicle-miles of travel, VMT60	4700	veh-mi
Peak 15-min total travel time, TT15	32.5	veh-h

Notes:
1. If vp >= 3200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split vp >= 1700 pc/h, terminate analysis-the LOS is F.

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Two-Way Two-Lane Highway Segment Analysis

Analyst	LM
Agency/Co.	HMM
Date Performed	10/15/2008
Analysis Time Period	Cumulative PM
Highway	68
From/To	San Benancio Rd. / Torero Dr.
Jurisdiction	
Analysis Year	
Description 252572	

Input Data

Highway class Class 1					
Shoulder width	6.0	ft	Peak-hour factor, PHF	0.92	
Lane width	12.0	ft	% Trucks and buses	4	%
Segment length	1.4	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	100	%
Grade: Length		mi	Access points/mi	4	/mi
Up/down		%			

Two-way hourly volume, V 3921 veh/h
Directional split 54 / 46 %

Average Travel Speed

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.1	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor,	0.996	
Two-way flow rate,(note-1) vp	4279	pc/h
Highest directional split proportion (note-2)	2311	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	60.0	mi/h
Adj. for lane and shoulder width, fLS	0.0	mi/h
Adj. for access points, fA	1.0	mi/h
Free-flow speed, FFS	59.0	mi/h
Adjustment for no-passing zones, fnp		mi/h
Average travel speed, ATS		mi/h

Percent Time-Spent-Following

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.0	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	1.000	
Two-way flow rate,(note-1) vp	4262	pc/h
Highest directional split proportion (note-2)	2301	
Base percent time-spent-following, BPTSF	97.6	%
Adj.for directional distribution and no-passing zones, fd/np	1.7	
Percent time-spent-following, PTSF	99.4	%

Level of Service and Other Performance Measures

Level of service, LOS		
Volume to capacity ratio, v/c	1.34	
Peak 15-min vehicle-miles of travel, VMT15	1492	veh-mi
Peak-hour vehicle-miles of travel, VMT60	5489	veh-mi
Peak 15-min total travel time, TT15		veh-h

Notes:
1. If vp >= 3200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split vp >= 1700 pc/h, terminate analysis-the LOS is F.

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Two-Way Two-Lane Highway Segment Analysis

Analyst	LM
Agency/Co.	HMM
Date Performed	10/15/2008
Analysis Time Period	Cumulative PM
Highway	68
From/To	Torero Dr. / Begin-End Freeway
Jurisdiction	
Analysis Year	
Description 252572	

Input Data

Highway class Class 1					
Shoulder width	6.0	ft	Peak-hour factor, PHF	0.92	
Lane width	12.0	ft	% Trucks and buses	4	%
Segment length	0.6	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	100	%
Grade: Length		mi	Access points/mi	1	/mi
Up/down		%			

Two-way hourly volume, v 3853 veh/h
Directional split 54 / 46 %

Average Travel Speed

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.1	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor,	0.996	
Two-way flow rate,(note-1) vp	4205	pc/h
Highest directional split proportion (note-2)	2271	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	60.0	mi/h
Adj. for lane and shoulder width, fLS	0.0	mi/h
Adj. for access points, fA	0.3	mi/h
Free-flow speed, FFS	59.8	mi/h
Adjustment for no-passing zones, fnp		mi/h
Average travel speed, ATS		mi/h

Percent Time-Spent-Following

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.0	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	1.000	
Two-way flow rate,(note-1) vp	4188	pc/h
Highest directional split proportion (note-2)	2262	
Base percent time-spent-following, BPTSF	97.5	%
Adj.for directional distribution and no-passing zones, fd/np	1.7	
Percent time-spent-following, PTSF	99.2	%

Level of Service and Other Performance Measures

Level of service, LOS		
Volume to capacity ratio, v/c	1.31	
Peak 15-min vehicle-miles of travel, VMT15	628	veh-mi
Peak-hour vehicle-miles of travel, VMT60	2312	veh-mi
Peak 15-min total travel time, TT15		veh-h

Notes:
1. If vp >= 3200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split vp >= 1700 pc/h, terminate analysis-the LOS is F.

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Two-Way Two-Lane Highway Segment Analysis

Analyst	LM
Agency/Co.	HMM
Date Performed	10/15/2008
Analysis Time Period	Cumulative PM
Highway	218
From/To	Highway 68 / General Jim Moore
Jurisdiction	
Analysis Year	
Description 252572	

Input Data

Highway class Class 1					
Shoulder width	6.0	ft	Peak-hour factor, PHF	0.92	
Lane width	12.0	ft	% Trucks and buses	2	%
Segment length	0.7	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	100	%
Grade: Length		mi	Access points/mi	9	/mi
Up/down		%			

Two-way hourly volume, V 1444 veh/h
Directional split 61 / 39 %

Average Travel Speed

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.1	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor,	0.998	
Two-way flow rate,(note-1) vp	1573	pc/h
Highest directional split proportion (note-2)	960	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	60.0	mi/h
Adj. for lane and shoulder width, fLS	0.0	mi/h
Adj. for access points, fA	2.3	mi/h
Free-flow speed, FFS	57.8	mi/h
Adjustment for no-passing zones, fnp	1.5	mi/h
Average travel speed, ATS	44.0	mi/h

Percent Time-Spent-Following

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.0	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	1.000	
Two-way flow rate,(note-1) vp	1570	pc/h
Highest directional split proportion (note-2)	958	
Base percent time-spent-following, BPTSF	74.8	%
Adj.for directional distribution and no-passing zones, fd/np	7.0	
Percent time-spent-following, PTSF	81.9	%

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.49	
Peak 15-min vehicle-miles of travel, VMT15	275	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1011	veh-mi
Peak 15-min total travel time, TT15	6.2	veh-h

Notes:
1. If vp >= 3200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split vp >= 1700 pc/h, terminate analysis-the LOS is F.

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Two-Way Two-Lane Highway Segment Analysis

Analyst	LM
Agency/Co.	HMM
Date Performed	10/15/2008
Analysis Time Period	Cumulative PM
Highway	Reservation Road
From/To	Davis Road / Highway 68
Jurisdiction	
Analysis Year	
Description 252572	

Input Data

Highway class Class 1					
Shoulder width	6.0	ft	Peak-hour factor, PHF	0.92	
Lane width	12.0	ft	% Trucks and buses	6	%
Segment length	1.8	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	100	%
Grade: Length		mi	Access points/mi	7	/mi
Up/down		%			

Two-way hourly volume, v 1982 veh/h
Directional split 51 / 49 %

Average Travel Speed

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.1	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor,	0.994	
Two-way flow rate,(note-1) vp	2167	pc/h
Highest directional split proportion (note-2)	1105	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	60.0	mi/h
Adj. for lane and shoulder width, fLS	0.0	mi/h
Adj. for access points, fA	1.8	mi/h
Free-flow speed, FFS	58.3	mi/h
Adjustment for no-passing zones, fnp	1.1	mi/h
Average travel speed, ATS	40.3	mi/h

Percent Time-Spent-Following

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.0	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	1.000	
Two-way flow rate,(note-1) vp	2154	pc/h
Highest directional split proportion (note-2)	1099	
Base percent time-spent-following, BPTSF	84.9	%
Adj.for directional distribution and no-passing zones, fd/np	3.9	
Percent time-spent-following, PTSF	88.8	%

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.68	
Peak 15-min vehicle-miles of travel, VMT15	969	veh-mi
Peak-hour vehicle-miles of travel, VMT60	3568	veh-mi
Peak 15-min total travel time, TT15	24.0	veh-h

Notes:
1. If vp >= 3200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split vp >= 1700 pc/h, terminate analysis-the LOS is F.

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Two-Way Two-Lane Highway Segment Analysis

Analyst	LM
Agency/Co.	HMM
Date Performed	10/15/2008
Analysis Time Period	Cumulative PM
Highway	Davis Road
From/To	Reservation Road / Blanco Road
Jurisdiction	
Analysis Year	
Description 252572	

Input Data

Highway class Class 1					
Shoulder width	6.0	ft	Peak-hour factor, PHF	0.92	
Lane width	12.0	ft	% Trucks and buses	3	%
Segment length	2.1	mi	% Recreational vehicles	0	%
Terrain type	Level		% No-passing zones	100	%
Grade: Length		mi	Access points/mi	3	/mi
Up/down		%			

Two-way hourly volume, v	2840	veh/h	
Directional split	52 / 48	%	

Average Travel Speed

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.1	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor,	0.997	
Two-way flow rate,(note-1) vp	3096	pc/h
Highest directional split proportion (note-2)	1610	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, Vf	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	60.0	mi/h
Adj. for lane and shoulder width, fLS	0.0	mi/h
Adj. for access points, fA	0.8	mi/h
Free-flow speed, FFS	59.3	mi/h
Adjustment for no-passing zones, fnp	0.8	mi/h
Average travel speed, ATS	34.5	mi/h

Percent Time-Spent-Following

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.0	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	1.000	
Two-way flow rate,(note-1) vp	3087	pc/h
Highest directional split proportion (note-2)	1605	
Base percent time-spent-following, BPTSF	93.4	%
Adj.for directional distribution and no-passing zones, fd/np	1.7	
Percent time-spent-following, PTSF	95.1	%

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.97	
Peak 15-min vehicle-miles of travel, VMT15	1621	veh-mi
Peak-hour vehicle-miles of travel, VMT60	5964	veh-mi
Peak 15-min total travel time, TT15	47.0	veh-h

Notes:
1. If vp >= 3200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split vp >= 1700 pc/h, terminate analysis-the LOS is F.