

# **Appendix E**

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## **Traffic Technical Data**

Table \_\_\_\_\_  
**Estimated Project Trip Generation - 526 Beds**

Trip Type	Number of Staff/Visitors/ Deliveries	Daily Trips	A.M. Peak (Highest Hour between 7:00-9:00 A.M.)			P.M. Peak (Highest Hour between 4:00-6:00 P.M.)		
			In	Out	Total	In	Out	Total
			<b>Employee Trips</b>					
Jail Custody Operations Day Shift (6:00 a.m. – 6:00 p.m.)	34	68						
Jail Custody Operations Night Shift (6:00 p.m. – 6:00 a.m.)	23	46				23	23	
Jail Custody Operations Business Shift (8:00 a.m. – 5:00 p.m.)	11	22	11		11	11	11	
Jail Administrative (8:00 a.m. – 5:00 p.m.)	13	26	13		13	13	13	
Jail Support (8:00 a.m. – 5:00 p.m.)	25	50	25		25	25	25	
Jail Administrative Day Shift (Sheriff Lt) (6:00 a.m. – 6:00 p.m.)	1	2						
Jail Administrative Night Shift (Sheriff Lt) (6:00 p.m. – 6:00 a.m.)	1	2				1	1	
Staff Secure Facility Administrative (8:00 a.m. – 5:00 p.m.)	6	12	6		6	6	6	
Staff Secure Facility Security Team A/C (Days) (6:00 a.m. – 6:00 p.m.)	9	18						
Staff Secure Facility Security Team B/D (Nights) (6:00 p.m. – 6:00 a.m.)	8	16				8	8	
<b>Employee Trip Total</b>	<b>131</b>	<b>262</b>	<b>55</b>	<b>0</b>	<b>55</b>	<b>38</b>	<b>49</b>	<b>87</b>
Staff Secure Facility Program Providers	2	4	1	1	2	1	1	2
Staff Secure Facility Inmate Trips	5	10	3	3	6	3	3	6
Jail Visitor Trips	110	220	28	28	55	28	28	55
Staff Secure Facility Visitor Trips	18	36	5	5	10	5	5	10
Jail Delivery and Service Vehicles	9	18	1	1	2	1	1	2
Staff Secure Facility Delivery and Service Vehicles	2	4	1	1	2	1	1	2
<b>Project Totals</b>	<b>277</b>	<b>554</b>	<b>93</b>	<b>38</b>	<b>132</b>	<b>76</b>	<b>87</b>	<b>164</b>

Notes:

- Staff Secure Facility Inmate Trips are assumed to occur in vans or other multi-passenger vehicles, with three vehicles during a peak hour.
- Visitors include business and professional visitors, volunteers/service providers, and inmate family visits. It is assumed ¼ of all visitor trips occur during a peak hour.
- Delivery and Service vehicle trips for the Jail are assumed to have one delivery during each peak hour. All other deliveries would occur throughout the day outside of peak hours.
- Delivery and Service vehicle trips for the Staff Secure Facility are assumed to be proportional based on the ratio of residents to the jail residents.

Sources: NAPA COUNTY NEW JAIL OPTIONS: Downtown Jail and Out of Downtown Alternative Site, Table 6, by CGL Companies, October 25, 2012; Memo from Liz Habkirk to Bob Goble, Revised EIR Question Answers, March 8, 2013.

Table \_\_\_\_\_  
**Estimated Project Trip Generation -366 Beds**

Trip Type	Number of Staff/Visitors/ Deliveries	Daily Trips	A.M. Peak (highest hour between 7:00 a.m. - 9:00 a.m.)			P.M. Peak (highest hour between 4:00 p.m. - 6:00 p.m.)		
			In	Out	Total	In	Out	Total
<b>Employee Trips</b>								
Jail Custody Operations Day Shift (6:00 a.m. – 6:00 p.m.)	25	50						
Jail Custody Operations Night Shift (6:00 p.m. – 6:00 a.m.)	17	34				17		34
Jail Custody Operations Business Shift (8:00 a.m. – 5:00 p.m.)	9	18	9		9		9	9
Jail Administrative (8:00 a.m. – 5:00 p.m.)	12	24	12		12		12	12
Jail Support (8:00 a.m. – 5:00 p.m.)	20	40	20		20		20	20
Jail Administrative Day Shift (Sheriff Lt) - <i>not included in 366 bed Jail</i> (6:00 a.m. – 6:00 p.m.)	0	0						
Jail Administrative Night Shift (Sheriff Lt) - <i>not included in 366 bed Jail</i> (6:00 p.m. – 6:00 a.m.)	0	0				0		0
Staff Secure Facility Administrative (8:00 a.m. – 5:00 p.m.)	6	12	6		6	6		6
Staff Secure Facility Security Team A/C (Days) (6:00 a.m. – 6:00 p.m.)	9	18						
Staff Secure Facility Security Team B/D (Nights) (6:00 p.m. – 6:00 a.m.)	8	16				8		8
<b>Employee Trip Total</b>	<b>106</b>	<b>212</b>	<b>47</b>	<b>0</b>	<b>47</b>	<b>31</b>	<b>41</b>	<b>89</b>
Staff Secure Facility Program Providers	2	4	1	1	2	1	1	2
Staff Secure Facility Inmate Trips	5	10	3	3	6	3	3	6
Jail Visitor Trips	78	156	20	20	40	20	20	40
Staff Secure Facility Visitor Trips	18	36	5	5	10	5	5	10
Jail Delivery and Service Vehicles	7	14	1	1	2	1	1	2
Staff Secure Facility Delivery and Service Vehicles	1	4	1	1	2	1	1	2
<b>Project Totals</b>	<b>217</b>	<b>436</b>	<b>77</b>	<b>30</b>	<b>109</b>	<b>61</b>	<b>71</b>	<b>151</b>

Notes:

- Staff Secure Facility Inmate Trips are assumed to occur in vans or other multi-passenger vehicles, with three vehicles during a peak hour.
- Visitors include business and professional visitors, volunteers/service providers, and inmate family visits. It is assumed 1/4 of all visitor trips occur during a peak hour.
- Delivery and Service vehicle trips for the Jail are assumed to have one delivery during each peak hour. All other deliveries would occur throughout the day outside of peak hours.
- Delivery and Service vehicle trips for the Staff Secure Facility are assumed to be proportional based on the ratio of residents to the jail residents.

Sources: NAPA COUNTY NEW JAIL OPTIONS: Downtown Jail and Out of Downtown Alternative Site, Table 5, by CGL Companies, October 25, 2012; Memo from Liz Habkirk to Bob Goble, Revised EIR Question Answers, March 8, 2013.

HCM Signalized Intersection Capacity Analysis

1: 3rd St & Coombs St

7/31/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔		↔	↔			↔			↔		
Volume (vph)	4	219	2	109	354	18	29	30	104	11	34	8	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		5.0			5.0			5.0			5.0		
Lane Util. Factor		0.95			0.95			1.00			1.00		
Frt		1.00			0.99			0.91			0.98		
Flt Protected		1.00			0.99			0.99			0.99		
Satd. Flow (prot)		3532			3480			1688			1805		
Flt Permitted		0.95			0.81			0.95			0.94		
Satd. Flow (perm)		3354			2856			1614			1715		
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)	4	238	2	118	385	20	32	33	113	12	37	9	
RTOR Reduction (vph)	0	1	0	0	4	0	0	74	0	0	6	0	
Lane Group Flow (vph)	0	243	0	0	519	0	0	104	0	0	52	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		4			8			2			6		
Permitted Phases	4			8			2		6				
Actuated Green, G (s)		37.0			37.0			25.0			25.0		
Effective Green, g (s)		37.0			37.0			25.0			25.0		
Actuated g/C Ratio		0.51			0.51			0.35			0.35		
Clearance Time (s)		5.0			5.0			5.0			5.0		
Vehicle Extension (s)		3.0			3.0			3.0			3.0		
Lane Grp Cap (vph)		1723			1467			560			595		
v/s Ratio Prot													
v/s Ratio Perm		0.07			c0.18			c0.06			0.03		
v/c Ratio		0.14			0.35			0.19			0.09		
Uniform Delay, d1		9.2			10.4			16.4			15.8		
Progression Factor		1.00			1.00			1.00			1.00		
Incremental Delay, d2		0.0			0.1			0.2			0.1		
Delay (s)		9.2			10.5			16.6			15.9		
Level of Service		A			B			B			B		
Approach Delay (s)		9.2			10.5			16.6			15.9		
Approach LOS		A			B			B			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay		11.6			HCM 2000 Level of Service				B				
HCM 2000 Volume to Capacity ratio		0.29											
Actuated Cycle Length (s)		72.0			Sum of lost time (s)				10.0				
Intersection Capacity Utilization		95.0%			ICU Level of Service				F				
Analysis Period (min)		15											
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis

1: 3rd St & Coombs St

7/31/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔			↔			↔	
Volume (vph)	4	164	1	128	377	9	98	50	134	29	48	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frt		1.00			1.00			0.94			0.97	
Flt Protected		1.00			0.99			0.98			0.99	
Satd. Flow (prot)		3532			3487			1714			1777	
Flt Permitted		0.95			0.82			0.85			0.87	
Satd. Flow (perm)		3347			2881			1483			1559	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	4	173	1	135	397	9	103	53	141	31	51	26
RTOR Reduction (vph)	0	0	0	0	1	0	0	45	0	0	16	0
Lane Group Flow (vph)	0	178	0	0	540	0	0	252	0	0	92	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		6			
Actuated Green, G (s)		37.0			37.0			25.0			25.0	
Effective Green, g (s)		37.0			37.0			25.0			25.0	
Actuated g/C Ratio		0.51			0.51			0.35			0.35	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1719			1480			514			541	
v/s Ratio Prot												
v/s Ratio Perm		0.05			c0.19			c0.17			0.06	
v/c Ratio		0.10			0.36			0.49			0.17	
Uniform Delay, d1		9.0			10.5			18.5			16.3	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.0			0.2			0.7			0.2	
Delay (s)		9.0			10.6			19.2			16.5	
Level of Service		A			B			B			B	
Approach Delay (s)		9.0			10.6			19.2			16.5	
Approach LOS		A			B			B			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		13.2			HCM 2000 Level of Service				B			
HCM 2000 Volume to Capacity ratio		0.41										
Actuated Cycle Length (s)		72.0			Sum of lost time (s)				10.0			
Intersection Capacity Utilization		97.1%			ICU Level of Service				F			
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
2: 3rd St & Main St

7/31/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Volume (vph)	33	200	7	29	290	45	0	26	41	103	37	47
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
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00			1.00
Frt	1.00	0.99		1.00	0.98			1.00	0.85			0.97
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00			0.97
Satd. Flow (prot)	1770	3520		1770	3468			1863	1583			1751
Flt Permitted	0.95	1.00		0.95	1.00			1.00	1.00			0.81
Satd. Flow (perm)	1770	3520		1770	3468			1863	1583			1463
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)	36	217	8	32	315	49	0	28	45	112	40	51
RTOR Reduction (vph)	0	3	0	0	11	0	0	0	30	0	15	0
Lane Group Flow (vph)	36	222	0	32	353	0	0	28	15	0	188	0
Turn Type	Prot	NA		Prot	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	7	4		3	8			2	3			6
Permitted Phases							2		2		6	
Actuated Green, G (s)	2.1	11.7		3.2	12.8			8.2	11.4			8.2
Effective Green, g (s)	2.1	11.7		3.2	12.8			8.2	11.4			8.2
Actuated g/C Ratio	0.06	0.33		0.09	0.36			0.23	0.32			0.23
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0			4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0			3.0
Lane Grp Cap (vph)	105	1173		161	1264			435	694			341
v/s Ratio Prot	c0.02	0.06		0.02	c0.10			0.02	0.00			
v/s Ratio Perm									0.01			c0.13
v/c Ratio	0.34	0.19		0.20	0.28			0.06	0.02			0.55
Uniform Delay, d1	15.8	8.3		14.8	7.9			10.5	8.1			11.8
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00			1.00
Incremental Delay, d2	2.0	0.1		0.6	0.1			0.1	0.0			1.9
Delay (s)	17.8	8.4		15.4	8.0			10.5	8.1			13.8
Level of Service	B	A		B	A			B	A			B
Approach Delay (s)		9.7			8.6			9.0				13.8
Approach LOS		A			A			A				B
<b>Intersection Summary</b>												
HCM 2000 Control Delay		10.1			HCM 2000 Level of Service				B			
HCM 2000 Volume to Capacity ratio		0.38										
Actuated Cycle Length (s)		35.1			Sum of lost time (s)				12.0			
Intersection Capacity Utilization		40.8%			ICU Level of Service				A			
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
2: 3rd St & Main St

7/31/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Volume (vph)	59	345	4	100	458	80	12	60	113	210	95	75
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
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00			1.00
Frt	1.00	1.00		1.00	0.98			1.00	0.85			0.97
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00			0.97
Satd. Flow (prot)	1770	3533		1770	3460			1847	1583			1764
Flt Permitted	0.95	1.00		0.95	1.00			0.93	1.00			0.79
Satd. Flow (perm)	1770	3533		1770	3460			1733	1583			1426
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	62	363	4	105	482	84	13	63	119	221	100	79
RTOR Reduction (vph)	0	1	0	0	13	0	0	0	56	0	11	0
Lane Group Flow (vph)	62	366	0	105	553	0	0	76	63	0	389	0
Turn Type	Prot	NA		Prot	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	7	4		3	8			2	3			6
Permitted Phases							2		2		6	
Actuated Green, G (s)	4.5	15.7		7.4	18.6			23.4	30.8			23.4
Effective Green, g (s)	4.5	15.7		7.4	18.6			23.4	30.8			23.4
Actuated g/C Ratio	0.08	0.27		0.13	0.32			0.40	0.53			0.40
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0			4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0			3.0
Lane Grp Cap (vph)	136	948		223	1100			693	941			570
v/s Ratio Prot	0.04	0.10		c0.06	c0.16				0.01			
v/s Ratio Perm									0.04	0.03		c0.27
v/c Ratio	0.46	0.39		0.47	0.50			0.11	0.07			0.68
Uniform Delay, d1	25.8	17.5		23.7	16.2			11.0	6.8			14.5
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00			1.00
Incremental Delay, d2	2.4	0.3		1.6	0.4			0.1	0.0			3.4
Delay (s)	28.2	17.7		25.3	16.6			11.1	6.8			17.9
Level of Service	C	B		C	B			B	A			B
Approach Delay (s)		19.3			17.9			8.5				17.9
Approach LOS		B			B			A				B
<b>Intersection Summary</b>												
HCM 2000 Control Delay		17.2			HCM 2000 Level of Service				B			
HCM 2000 Volume to Capacity ratio		0.60										
Actuated Cycle Length (s)		58.5			Sum of lost time (s)				12.0			
Intersection Capacity Utilization		56.4%			ICU Level of Service				B			
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
3: Soscol Ave & 3rd St

7/31/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↗	↘	↔	↗	↘	↔	↗	↘	↔	↗	↘
Volume (vph)	114	225	150	21	187	53	156	712	7	67	620	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	3421		3433	3534		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	3421		3433	3534		1770	3539	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)	124	245	163	23	203	58	170	774	8	73	674	89
RTOR Reduction (vph)	0	0	121	0	33	0	1	0	0	0	0	50
Lane Group Flow (vph)	124	245	42	23	228	0	170	781	0	73	674	39
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	8.8	24.0	24.0	2.2	17.4		9.0	43.5		6.9	41.4	41.4
Effective Green, g (s)	8.8	24.0	24.0	2.2	17.4		9.0	43.5		6.9	41.4	41.4
Actuated g/C Ratio	0.09	0.26	0.26	0.02	0.19		0.10	0.46		0.07	0.44	0.44
Clearance Time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	165	475	404	41	633		328	1635		129	1558	697
v/s Ratio Prot	c0.07	c0.13		0.01	0.07		c0.05	c0.22		0.04	0.19	
v/s Ratio Perm			0.03									0.02
v/c Ratio	0.75	0.52	0.10	0.56	0.36		0.52	0.48		0.57	0.43	0.06
Uniform Delay, d1	41.5	30.0	26.8	45.4	33.4		40.4	17.4		42.1	18.2	15.1
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	17.4	0.9	0.1	16.4	0.4		1.4	1.0		5.6	0.9	0.2
Delay (s)	58.9	31.0	26.9	61.8	33.8		41.8	18.4		47.7	19.1	15.2
Level of Service	E	C	C	E	C		D	B		D	B	B
Approach Delay (s)	36.2			36.1			22.6			21.2		
Approach LOS	D			D			C			C		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	26.4			HCM 2000 Level of Service			C					
HCM 2000 Volume to Capacity ratio	0.55											
Actuated Cycle Length (s)	94.0			Sum of lost time (s)			17.4					
Intersection Capacity Utilization	53.3%			ICU Level of Service			A					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
3: Soscol Ave & 3rd St

7/31/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↗	↘	↔	↗	↘	↔	↗	↘	↔	↗	↘
Volume (vph)	146	276	212	23	195	56	154	792	16	75	861	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	3421		3433	3529		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	3421		3433	3529		1770	3539	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	154	291	223	24	205	59	162	834	17	79	906	177
RTOR Reduction (vph)	0	0	163	0	32	0	1	0	0	0	0	101
Lane Group Flow (vph)	154	291	60	24	232	0	162	850	0	79	906	76
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	9.2	25.1	25.1	2.2	18.1		8.8	40.5		8.8	40.5	40.5
Effective Green, g (s)	9.2	25.1	25.1	2.2	18.1		8.8	40.5		8.8	40.5	40.5
Actuated g/C Ratio	0.10	0.27	0.27	0.02	0.19		0.09	0.43		0.09	0.43	0.43
Clearance Time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	173	497	422	41	658		321	1520		165	1524	682
v/s Ratio Prot	c0.09	c0.16		0.01	0.07		c0.05	0.24		0.04	c0.26	
v/s Ratio Perm			0.04									0.05
v/c Ratio	0.89	0.59	0.14	0.59	0.35		0.50	0.56		0.48	0.59	0.11
Uniform Delay, d1	41.9	29.9	26.2	45.4	32.9		40.5	20.1		40.4	20.5	16.0
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	38.9	1.8	0.2	19.5	0.3		1.2	1.5		2.2	1.7	0.3
Delay (s)	80.8	31.7	26.4	65.0	33.2		41.8	21.5		42.6	22.2	16.3
Level of Service	F	C	C	E	C		D	C		D	C	B
Approach Delay (s)	41.2			35.8			24.8			22.7		
Approach LOS	D			D			C			C		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	28.5			HCM 2000 Level of Service			C					
HCM 2000 Volume to Capacity ratio	0.64											
Actuated Cycle Length (s)	94.0			Sum of lost time (s)			17.4					
Intersection Capacity Utilization	60.6%			ICU Level of Service			B					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Soscol Ave (SR 121)/Soscol Ave & Silverado Trail (SR 121)

7/31/2013

	↑	↖	↗	↓	↙	↘
Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↕↕	↖		↕↕	↗	
Volume (vph)	967	380	10	626	572	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12
Total Lost time (s)	5.0	5.0		5.0	5.0	
Lane Util. Factor	0.95	1.00		0.95	1.00	
Fr <sub>t</sub>	1.00	0.85		1.00	1.00	
Fit Protected	1.00	1.00		1.00	0.95	
Satd. Flow (prot)	3505	1777		3536	1753	
Fit Permitted	1.00	1.00		0.80	0.95	
Satd. Flow (perm)	3505	1777		2826	1753	
Peak-hour factor, PHF	0.73	0.73	0.73	0.73	0.73	0.73
Adj. Flow (vph)	1325	521	14	858	784	21
RTOR Reduction (vph)	0	0	0	0	2	0
Lane Group Flow (vph)	1325	521	0	872	803	0
Heavy Vehicles (%)	3%	3%	2%	2%	3%	2%
Turn Type	NA	custom	Perm	NA	NA	
Protected Phases	2	2 3		6	8	
Permitted Phases			6			
Actuated Green, G (s)	23.0	60.0		23.0	27.0	
Effective Green, g (s)	23.0	56.0		23.0	27.0	
Actuated g/C Ratio	0.38	0.93		0.38	0.45	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	5.0			5.0	4.0	
Lane Grp Cap (vph)	1343	1658		1083	788	
v/s Ratio Prot	c0.38	0.29			c0.46	
v/s Ratio Perm				0.31		
v/c Ratio	0.99	0.31		0.81	1.02	
Uniform Delay, d1	18.3	0.2		16.5	16.5	
Progression Factor	1.01	1.00		1.00	1.00	
Incremental Delay, d2	20.4	0.1		6.4	37.1	
Delay (s)	38.9	0.3		22.9	53.6	
Level of Service	D	A		C	D	
Approach Delay (s)	28.0			22.9	53.6	
Approach LOS	C			C	D	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		32.6		HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio		1.00				
Actuated Cycle Length (s)		60.0		Sum of lost time (s)	10.0	
Intersection Capacity Utilization		67.7%		ICU Level of Service	C	
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

4: Soscol Ave (SR 121)/Soscol Ave & Silverado Trail (SR 121)

7/31/2013

	↑	↖	↗	↓	↙	↘
Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↕↕	↖		↕↕	↗	
Volume (vph)	1064	606	10	1293	612	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12
Total Lost time (s)	5.0	5.0		5.0	5.0	
Lane Util. Factor	0.95	1.00		0.95	1.00	
Fr <sub>t</sub>	1.00	0.85		1.00	1.00	
Fit Protected	1.00	1.00		1.00	0.95	
Satd. Flow (prot)	3505	1777		3538	1753	
Fit Permitted	1.00	1.00		0.94	0.95	
Satd. Flow (perm)	3505	1777		3330	1753	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	1237	705	12	1503	712	21
RTOR Reduction (vph)	0	0	0	0	2	0
Lane Group Flow (vph)	1237	705	0	1515	731	0
Heavy Vehicles (%)	3%	3%	2%	2%	3%	2%
Turn Type	NA	custom	Perm	NA	NA	
Protected Phases	2	2 3		6	8	
Permitted Phases			6			
Actuated Green, G (s)	29.0	65.0		29.0	26.0	
Effective Green, g (s)	29.0	61.0		29.0	26.0	
Actuated g/C Ratio	0.45	0.94		0.45	0.40	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	5.0			5.0	4.0	
Lane Grp Cap (vph)	1563	1667		1485	701	
v/s Ratio Prot	0.35	0.40			c0.42	
v/s Ratio Perm				c0.45		
v/c Ratio	0.79	0.42		1.02	1.04	
Uniform Delay, d1	15.4	0.2		18.0	19.5	
Progression Factor	0.92	1.00		1.00	1.00	
Incremental Delay, d2	3.0	0.1		28.6	45.7	
Delay (s)	17.1	0.3		46.6	65.2	
Level of Service	B	A		D	E	
Approach Delay (s)	11.0			46.6	65.2	
Approach LOS	B			D	E	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		33.4		HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio		1.03				
Actuated Cycle Length (s)		65.0		Sum of lost time (s)	10.0	
Intersection Capacity Utilization		86.1%		ICU Level of Service	E	
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

5: Napa Vallejo Hwy (SR 221)/Soscol Ave (SR 121) & Imola Ave (SR 121)/Imola Ave 7/31/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↗	↘	↔	↗	↘	↔	↗	↘	↔	↗	↘
Volume (vph)	155	306	734	160	283	45	425	823	113	80	1051	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.1	4.0	3.0	4.1		3.5	4.9		3.5	4.6	4.6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1863	1568	1770	1824		3400	3445		1770	3505	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1752	1863	1568	1770	1824		3400	3445		1770	3505	1568
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	174	344	825	180	318	51	478	925	127	90	1181	149
RTOR Reduction (vph)	0	0	0	0	5	0	0	9	0	0	0	93
Lane Group Flow (vph)	174	344	825	180	364	0	478	1043	0	90	1181	56
Heavy Vehicles (%)	3%	2%	3%	2%	2%		3%	3%		2%	3%	3%
Turn Type	Prot	NA	Free	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free									6
Actuated Green, G (s)	12.5	25.6	120.0	16.0	29.1		18.1	53.8		9.1	45.1	45.1
Effective Green, g (s)	12.5	25.6	120.0	16.0	29.1		18.1	53.8		9.1	45.1	45.1
Actuated g/C Ratio	0.10	0.21	1.00	0.13	0.24		0.15	0.45		0.08	0.38	0.38
Clearance Time (s)	3.0	4.1		3.0	4.1		3.5	4.9		3.5	4.6	4.6
Vehicle Extension (s)	3.5	3.0		3.8	3.0		4.0	3.5		3.0	3.5	3.5
Lane Grp Cap (vph)	182	397	1568	236	442		512	1544		134	1317	589
v/s Ratio Prot	c0.10	c0.18		0.10	c0.20		c0.14	0.30		0.05	c0.34	
v/s Ratio Perm			0.53									0.04
v/c Ratio	0.96	0.87	0.53	0.76	0.82		0.93	0.68		0.67	0.90	0.10
Uniform Delay, d1	53.5	45.6	0.0	50.2	43.0		50.4	26.2		54.0	35.3	24.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.74	0.50		0.94	0.99	1.29
Incremental Delay, d2	53.8	17.7	1.3	14.2	11.7		18.9	1.7		5.2	4.4	0.1
Delay (s)	107.3	63.2	1.3	64.4	54.7		56.4	14.8		55.9	39.3	31.4
Level of Service	F	E	A	E	D		E	B		E	D	C
Approach Delay (s)	30.9			57.9			27.8			39.5		
Approach LOS	C			E			C			D		

Intersection Summary

HCM 2000 Control Delay	35.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	81.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

5: Napa Vallejo Hwy (SR 221)/Soscol Ave (SR 121) & Imola Ave (SR 121)/Imola Ave 7/31/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↗	↘	↔	↗	↘	↔	↗	↘	↔	↗	↘
Volume (vph)	193	281	402	85	283	35	704	1041	128	81	933	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.1	4.0	3.0	4.1		3.5	4.9		3.5	4.6	4.6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1863	1568	1770	1832		3400	3451		1770	3505	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1752	1863	1568	1770	1832		3400	3451		1770	3505	1568
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	230	335	479	101	337	42	838	1239	152	96	1111	223
RTOR Reduction (vph)	0	0	0	0	4	0	0	7	0	0	0	152
Lane Group Flow (vph)	230	335	479	101	375	0	838	1384	0	96	1111	71
Heavy Vehicles (%)	3%	2%	3%	2%	2%		3%	3%		2%	3%	3%
Turn Type	Prot	NA	Free	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free									6
Actuated Green, G (s)	15.0	28.6	130.0	16.1	29.7		28.5	60.6		9.2	41.6	41.6
Effective Green, g (s)	15.0	28.6	130.0	16.1	29.7		28.5	60.6		9.2	41.6	41.6
Actuated g/C Ratio	0.12	0.22	1.00	0.12	0.23		0.22	0.47		0.07	0.32	0.32
Clearance Time (s)	3.0	4.1		3.0	4.1		3.5	4.9		3.5	4.6	4.6
Vehicle Extension (s)	3.5	3.0		3.8	3.0		4.0	3.5		3.0	3.5	3.5
Lane Grp Cap (vph)	202	409	1568	219	418		745	1608		125	1121	501
v/s Ratio Prot	c0.13	0.18		0.06	c0.20		c0.25	0.40		0.05	c0.32	
v/s Ratio Perm			0.31									0.05
v/c Ratio	1.14	0.82	0.31	0.46	0.90		1.12	0.86		0.77	0.99	0.14
Uniform Delay, d1	57.5	48.2	0.0	52.9	48.7		50.8	30.9		59.4	44.0	31.5
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.87	0.75		0.93	1.02	1.60
Incremental Delay, d2	105.6	12.1	0.5	2.0	21.3		69.2	4.7		2.6	6.3	0.1
Delay (s)	163.1	60.3	0.5	54.9	69.9		113.3	28.0		57.9	51.4	50.3
Level of Service	F	E	A	D	E		F	C		E	D	D
Approach Delay (s)	55.5			66.8			60.1			51.6		
Approach LOS	E			E			E			D		

Intersection Summary

HCM 2000 Control Delay	57.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	87.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
6: Napa Vallejo Hwy (SR 221) & College Wy/Magnolia Dr

7/31/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	71	3	0	34	0	31	8	1247	205	115	1429	352
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	4.5		4.0	4.5	4.5	
Lane Util. Factor	0.95	0.95		1.00	1.00	1.00	0.95		1.00	0.95	1.00	
Frt	1.00	1.00		1.00	0.85	1.00	0.98		1.00	1.00	0.85	
Flt Protected	0.95	0.96		0.95	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1681	1691		1770	1583	1770	3351		1770	3406	1583	
Flt Permitted	0.95	0.96		0.95	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	1681	1691		1770	1583	1770	3351		1770	3406	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)	77	3	0	37	0	34	9	1355	223	125	1553	383
RTOR Reduction (vph)	0	0	0	0	0	30	0	8	0	0	0	101
Lane Group Flow (vph)	40	40	0	0	37	4	9	1570	0	125	1553	282
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	6%	2%	2%	6%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	3.9	3.9		15.7	15.7	0.8	71.8		12.1	83.1	83.1	
Effective Green, g (s)	3.9	3.9		15.7	15.7	0.8	71.8		12.1	83.1	83.1	
Actuated g/C Ratio	0.03	0.03		0.13	0.13	0.01	0.60		0.10	0.69	0.69	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.5		4.0	4.5	4.5	
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)	54	54		231	207	11	2005		178	2358	1096	
v/s Ratio Prot	c0.02	0.02		c0.02	0.01	c0.47			c0.07	0.46		
v/s Ratio Perm					0.00						0.18	
v/c Ratio	0.74	0.74		0.16	0.02	0.82	0.78		0.70	0.66	0.26	
Uniform Delay, d1	57.5	57.5		46.3	45.5	59.5	18.2		52.2	10.4	6.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00		1.15	0.26	0.00	
Incremental Delay, d2	41.8	41.8		0.3	0.0	167.9	3.1		7.9	0.9	0.4	
Delay (s)	99.3	99.3		46.6	45.5	227.4	21.3		68.1	3.7	0.4	
Level of Service	F	F		D	D	F	C		E	A	A	
Approach Delay (s)	99.3			46.1			22.5		7.0			
Approach LOS	F			D			C		A			

Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
6: Napa Vallejo Hwy (SR 221) & College Wy/Magnolia Dr

7/31/2013


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	216	1	1	199	3	108	13	1552	7	18	1222	152
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	4.5		4.0	4.5	4.5	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95		1.00	0.95	1.00	
Frt	1.00	1.00	0.85	1.00	0.85	1.00	1.00		1.00	1.00	0.85	
Flt Protected	0.95	0.95	1.00	0.95	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1681	1686	1583	1775	1583	1770	3404		1770	3406	1583	
Flt Permitted	0.95	0.95	1.00	0.95	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	1681	1686	1583	1775	1583	1770	3404		1770	3406	1583	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	227	1	1	209	3	114	14	1634	7	19	1286	160
RTOR Reduction (vph)	0	0	1	0	0	66	0	0	0	0	0	60
Lane Group Flow (vph)	113	115	0	0	212	48	14	1641	0	19	1286	100
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	6%	2%	2%	6%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	12.2	12.2	12.2	23.3	23.3	2.0	76.4		1.6	76.0	76.0	
Effective Green, g (s)	12.2	12.2	12.2	23.3	23.3	2.0	76.4		1.6	76.0	76.0	
Actuated g/C Ratio	0.09	0.09	0.09	0.18	0.18	0.02	0.59		0.01	0.58	0.58	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.5		4.0	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	157	158	148	318	283	27	2000		21	1991	925	
v/s Ratio Prot	0.07	c0.07		c0.12	0.01	c0.48			c0.01	0.38		
v/s Ratio Perm			0.00		0.03						0.06	
v/c Ratio	0.72	0.73	0.00	0.67	0.17	0.52	0.82		0.90	0.65	0.11	
Uniform Delay, d1	57.2	57.3	53.4	49.7	45.2	63.5	21.3		64.1	18.0	12.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.31	0.25	0.00	
Incremental Delay, d2	14.6	15.4	0.0	5.2	0.3	15.8	3.9		115.3	1.0	0.1	
Delay (s)	71.9	72.7	53.4	54.9	45.5	79.3	25.3		199.3	5.5	0.2	
Level of Service	E	E	D	D	D	E	C		F	A	A	
Approach Delay (s)	72.2			51.6			25.7		7.4			
Approach LOS	E			D			C		A			

Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
7: Napa Vallejo Hwy (SR 221) & Streblov Dr

7/31/2013




Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔↔	↔	↔↔	↕↕	↕↕	↔↔
Volume (vph)	39	32	268	1400	1284	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	42	35	291	1522	1396	174
RTOR Reduction (vph)	0	33	0	0	0	51
Lane Group Flow (vph)	42	2	291	1522	1396	123
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	5.4	5.4	20.2	79.7	55.5	55.5
Effective Green, g (s)	5.4	5.4	20.2	79.7	55.5	55.5
Actuated g/C Ratio	0.06	0.06	0.22	0.85	0.59	0.59
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	198	91	381	2900	2019	938
v/s Ratio Prot	c0.01		c0.16	0.45	c0.41	
v/s Ratio Perm		0.00				0.08
v/c Ratio	0.21	0.02	0.76	0.52	0.69	0.13
Uniform Delay, d1	42.1	41.6	34.5	1.9	13.1	8.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.1	8.8	0.7	2.0	0.3
Delay (s)	42.6	41.7	43.3	2.5	15.1	8.7
Level of Service	D	D	D	A	B	A
Approach Delay (s)	42.2			9.1	14.4	
Approach LOS	D			A	B	

Intersection Summary			
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	93.6	Sum of lost time (s)	12.5
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
7: Napa Vallejo Hwy (SR 221) & Streblov Dr

7/31/2013



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔↔	↔	↔↔	↕↕	↕↕	↔↔
Volume (vph)	147	134	118	1460	1313	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	155	141	124	1537	1382	123
RTOR Reduction (vph)	0	106	0	0	0	32
Lane Group Flow (vph)	155	35	124	1537	1382	91
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	10.2	10.2	12.5	89.6	73.1	73.1
Effective Green, g (s)	10.2	10.2	12.5	89.6	73.1	73.1
Actuated g/C Ratio	0.09	0.09	0.12	0.83	0.67	0.67
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	323	149	204	2817	2298	1068
v/s Ratio Prot	c0.05		0.07	c0.45	c0.41	
v/s Ratio Perm		0.02				0.06
v/c Ratio	0.48	0.24	0.61	0.55	0.60	0.09
Uniform Delay, d1	46.5	45.4	45.6	2.9	9.6	6.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	0.8	5.1	0.8	1.2	0.2
Delay (s)	47.7	46.3	50.6	3.7	10.8	6.2
Level of Service	D	D	D	A	B	A
Approach Delay (s)	47.0			7.2	10.4	
Approach LOS	D			A	B	

Intersection Summary			
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	108.3	Sum of lost time (s)	12.5
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
8: Napa Vallejo Hwy (SR 221) & Project Access

7/31/2013

Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	↔	↔	↕	↕	↔	↕	
Volume (veh/h)	53	28	1595	62	18	1306	
Sign Control	Stop		Free			Free	
Grade	0%		0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	58	30	1734	67	20	1420	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)		5					
Median type		TWLTL			None		
Median storage (veh)		2					
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume	2483	867			1734		
vC1, stage 1 conf vol	1734						
vC2, stage 2 conf vol	749						
vCu, unblocked vol	2483	867			1734		
IC, single (s)	7.0	7.1			4.3		
IC, 2 stage (s)	6.0						
IF (s)	3.6	3.4			2.3		
p0 queue free %	47	89			94		
cM capacity (veh/h)	109	281			326		
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>
Volume Total	88	867	867	67	20	710	710
Volume Left	58	0	0	0	20	0	0
Volume Right	30	0	0	67	0	0	0
cSH	167	1700	1700	1700	326	1700	1700
Volume to Capacity	0.53	0.51	0.51	0.04	0.06	0.42	0.42
Queue Length 95th (ft)	66	0	0	0	5	0	0
Control Delay (s)	52.4	0.0	0.0	0.0	16.7	0.0	0.0
Lane LOS	F				C		
Approach Delay (s)	52.4	0.0			0.2		
Approach LOS	F						
<b>Intersection Summary</b>							
Average Delay			1.5				
Intersection Capacity Utilization			54.1%	ICU Level of Service		A	
Analysis Period (min)			15				

HCM Unsignalized Intersection Capacity Analysis  
8: Napa Vallejo Hwy (SR 221) & Project Access

7/31/2013

Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	↔	↔	↕	↕	↔	↕	
Volume (veh/h)	12	31	1513	5	6	1470	
Sign Control	Stop		Free			Free	
Grade	0%		0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly flow rate (vph)	13	33	1593	5	6	1547	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)		5					
Median type		TWLTL			None		
Median storage (veh)		2					
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume	2379	796			1593		
vC1, stage 1 conf vol	1593						
vC2, stage 2 conf vol	786						
vCu, unblocked vol	2379	796			1593		
IC, single (s)	7.0	7.1			4.3		
IC, 2 stage (s)	6.0						
IF (s)	3.6	3.4			2.3		
p0 queue free %	90	90			98		
cM capacity (veh/h)	129	313			372		
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>
Volume Total	45	796	796	5	6	774	774
Volume Left	13	0	0	0	6	0	0
Volume Right	33	0	0	5	0	0	0
cSH	434	1700	1700	1700	372	1700	1700
Volume to Capacity	0.10	0.47	0.47	0.00	0.02	0.46	0.46
Queue Length 95th (ft)	9	0	0	0	1	0	0
Control Delay (s)	22.9	0.0	0.0	0.0	14.8	0.0	0.0
Lane LOS	C				B		
Approach Delay (s)	22.9	0.0			0.1		
Approach LOS	C						
<b>Intersection Summary</b>							
Average Delay			0.4				
Intersection Capacity Utilization			51.8%	ICU Level of Service		A	
Analysis Period (min)			15				

HCM Signalized Intersection Capacity Analysis  
 9: Napa Vallejo Hwy (SR 221) & Kaiser Rd

7/31/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	92	41	126	1643	974	301
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	100	45	137	1786	1059	327
RTOR Reduction (vph)	0	42	0	0	0	99
Lane Group Flow (vph)	100	3	137	1786	1059	228
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	8.9	8.9	14.5	101.5	83.0	83.0
Effective Green, g (s)	8.9	8.9	14.5	101.5	83.0	83.0
Actuated g/C Ratio	0.07	0.07	0.12	0.85	0.70	0.70
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	256	118	215	2907	2377	1105
v/s Ratio Prot	c0.03		0.08	c0.52	0.31	
v/s Ratio Perm		0.00				0.14
v/c Ratio	0.39	0.03	0.64	0.61	0.45	0.21
Uniform Delay, d1	52.4	51.0	49.7	2.7	7.9	6.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	0.1	6.1	1.0	0.6	0.4
Delay (s)	53.4	51.1	55.8	3.7	8.5	6.8
Level of Service	D	D	E	A	A	A
Approach Delay (s)	52.7			7.4	8.1	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	118.9	Sum of lost time (s)	12.5
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 9: Napa Vallejo Hwy (SR 221) & Kaiser Rd

7/31/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	274	44	22	1263	1370	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	288	46	23	1329	1442	95
RTOR Reduction (vph)	0	37	0	0	0	25
Lane Group Flow (vph)	288	9	23	1329	1442	70
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	15.5	15.5	4.1	100.2	92.1	92.1
Effective Green, g (s)	15.5	15.5	4.1	100.2	92.1	92.1
Actuated g/C Ratio	0.12	0.12	0.03	0.81	0.74	0.74
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	428	197	58	2747	2525	1173
v/s Ratio Prot	c0.08		0.01	c0.39	c0.42	
v/s Ratio Perm		0.01				0.04
v/c Ratio	0.67	0.05	0.40	0.48	0.57	0.06
Uniform Delay, d1	51.9	47.8	58.8	3.8	7.2	4.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.1	0.1	4.4	0.6	0.9	0.1
Delay (s)	56.1	47.9	63.3	4.4	8.1	4.4
Level of Service	E	D	E	A	A	A
Approach Delay (s)	54.9			5.4	7.9	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay	11.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	124.2	Sum of lost time (s)	12.5
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 10: Napa Vallejo Hwy (SR 221) & Napa Valley Corporate Wy

7/31/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	26	0	30	2	0	2	209	1775	4	0	960	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	0.97	0.95	1.00	0.95	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.85	1.00	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1618	1618	1524	1770	1583	3303	3406	1583	3406	1524	3406	1524
Flt Permitted	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1618	1618	1524	1770	1583	3303	3406	1583	3406	1524	3406	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)	28	0	33	2	0	2	227	1929	4	0	1043	99
RTOR Reduction (vph)	0	0	28	0	0	2	0	0	1	0	0	34
Lane Group Flow (vph)	14	14	5	0	2	0	227	1929	3	0	1043	65
Heavy Vehicles (%)	6%	2%	6%	2%	2%	2%	6%	6%	2%	2%	6%	6%
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4			8		2				6
Actuated Green, G (s)	2.8	2.8	13.8		1.0	1.0	11.0	73.9	73.9		59.4	59.4
Effective Green, g (s)	2.8	2.8	13.8		1.0	1.0	11.0	73.9	73.9		59.4	59.4
Actuated g/C Ratio	0.03	0.03	0.15		0.01	0.01	0.12	0.82	0.82		0.66	0.66
Clearance Time (s)	4.0	4.0	3.5		4.0	4.0	3.5	4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	50	50	233		19	17	402	2790	1296		2242	1003
v/s Ratio Prot	c0.01	0.01	0.00		c0.00		0.07	c0.57			0.31	
v/s Ratio Perm			0.00			0.00		0.00				0.04
v/c Ratio	0.28	0.28	0.02		0.11	0.00	0.56	0.69	0.00		0.47	0.07
Uniform Delay, d1	42.7	42.7	32.5		44.2	44.1	37.3	3.4	1.5		7.6	5.5
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	3.1	3.1	0.0		2.4	0.0	1.8	1.4	0.0		0.7	0.1
Delay (s)	45.8	45.8	32.5		46.6	44.1	39.2	4.8	1.5		8.3	5.6
Level of Service	D	D	C		D	D	D	A	A		A	A
Approach Delay (s)	38.6			45.4			8.4			8.0		
Approach LOS	D			D			A			A		

Intersection Summary	
HCM 2000 Control Delay	8.9 HCM 2000 Level of Service A
HCM 2000 Volume to Capacity ratio	0.70
Actuated Cycle Length (s)	90.2 Sum of lost time (s) 16.0
Intersection Capacity Utilization	70.2% ICU Level of Service C
Analysis Period (min)	15

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 10: Napa Vallejo Hwy (SR 221) & Napa Valley Corporate Wy

7/31/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	105	1	113	5	0	8	31	1181	0	5	1243	189
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	0.97	0.95	1.00	0.95	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.85	1.00	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1618	1624	1524	1770	1583	3303	3406	1770	1583	3303	3406	1524
Flt Permitted	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1618	1624	1524	1770	1583	3303	3406	1770	1583	3303	3406	1524
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	111	1	119	5	0	8	33	1243	0	5	1308	199
RTOR Reduction (vph)	0	0	104	0	0	8	0	0	0	0	0	58
Lane Group Flow (vph)	55	57	15	0	5	0	33	1243	0	5	1308	141
Heavy Vehicles (%)	6%	2%	6%	2%	2%	2%	6%	6%	2%	2%	6%	6%
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4			8		2				6
Actuated Green, G (s)	7.8	7.8	14.0		2.3	2.3	6.2	84.6	84.6		0.8	79.2
Effective Green, g (s)	7.8	7.8	14.0		2.3	2.3	6.2	84.6	84.6		0.8	79.2
Actuated g/C Ratio	0.07	0.07	0.13		0.02	0.02	0.06	0.76	0.76		0.01	0.71
Clearance Time (s)	4.0	4.0	3.5		4.0	4.0	3.5	4.5	4.5		3.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	113	113	191		36	32	183	2584	2584		12	2419
v/s Ratio Prot	0.03	c0.04	0.00		c0.00		c0.01	c0.36			0.00	c0.38
v/s Ratio Perm			0.01			0.00						0.09
v/c Ratio	0.49	0.50	0.08		0.14	0.01	0.18	0.48	0.48		0.42	0.54
Uniform Delay, d1	49.9	50.0	43.1		53.6	53.5	50.2	5.1	5.1		55.1	7.6
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	3.3	3.5	0.2		1.8	0.1	0.5	0.6	0.6		21.8	0.9
Delay (s)	53.2	53.5	43.2		55.4	53.5	50.7	5.8	5.8		76.9	8.5
Level of Service	D	D	D		E	D	D	A	A		E	A
Approach Delay (s)	48.1			54.3			6.9			8.3		
Approach LOS	D			D			A			A		

Intersection Summary	
HCM 2000 Control Delay	10.9 HCM 2000 Level of Service B
HCM 2000 Volume to Capacity ratio	0.51
Actuated Cycle Length (s)	111.5 Sum of lost time (s) 16.0
Intersection Capacity Utilization	55.1% ICU Level of Service B
Analysis Period (min)	15

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

11: Soscol Ferry Rd/Napa Vallejo Hwy (SR 221) & SR 29/SR 12

7/31/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	85	2148	520	20	1527	1868	32	24	8	876	109	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.0	4.0	4.5	4.0	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	1.00	1.00	1.00	0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.95	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fit Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1703	3406	1583	1770	3094	1386	1770	1863	1583	3303	1863	1524
Fit Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1703	3406	1583	1770	3094	1386	1770	1863	1583	3303	1863	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)	92	2335	565	22	1660	2030	35	26	9	952	118	28
RTOR Reduction (vph)	0	0	212	0	39	0	0	0	9	0	0	22
Lane Group Flow (vph)	92	2335	353	22	2494	1157	35	26	0	952	118	6
Heavy Vehicles (%)	6%	6%	2%	2%	6%	6%	2%	2%	2%	6%	2%	6%
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			Free			2			6
Actuated Green, G (s)	6.0	93.0	93.0	2.3	89.3	148.8	5.5	4.4	4.4	32.1	31.0	31.0
Effective Green, g (s)	6.0	93.0	93.0	2.3	89.3	148.8	5.5	4.4	4.4	32.1	31.0	31.0
Actuated g/C Ratio	0.04	0.62	0.62	0.02	0.60	1.00	0.04	0.03	0.03	0.22	0.21	0.21
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5		4.0	4.5	4.5	4.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	68	2128	989	27	1856	1386	65	55	46	712	388	317
v/s Ratio Prot	0.05	0.69		0.01	c0.81		0.02	0.01		c0.29	0.06	
v/s Ratio Perm			0.22			c0.83			0.00			0.00
v/c Ratio	1.35	1.10	0.36	0.81	1.34	0.83	0.54	0.47	0.01	1.34	0.30	0.02
Uniform Delay, d1	71.4	27.9	13.5	73.0	29.8	0.0	70.4	71.1	70.1	58.4	49.8	46.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	229.2	51.8	1.0	95.3	158.4	6.1	8.3	6.3	0.1	161.1	0.4	0.0
Delay (s)	300.6	79.7	14.5	168.3	188.2	6.1	78.7	77.3	70.1	219.5	50.2	46.8
Level of Service	F	E	B	F	F	A	E	E	E	F	D	D
Approach Delay (s)	74.2			131.3			77.1			196.9		
Approach LOS	E			F			E			F		

Intersection Summary

HCM 2000 Control Delay	118.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.36		
Actuated Cycle Length (s)	148.8	Sum of lost time (s)	17.0
Intersection Capacity Utilization	109.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

11: Soscol Ferry Rd/Napa Vallejo Hwy (SR 221) & SR 29/SR 12

7/31/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	36	2972	39	12	1657	977	331	153	254	1169	84	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.0	4.0	4.5	4.0	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	1.00	1.00	1.00	0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fit Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1703	3406	1583	1770	3213	1386	1770	1863	1583	3303	1863	1524
Fit Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1703	3406	1583	1770	3213	1386	1770	1863	1583	3303	1863	1524
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	38	3128	41	13	1744	1028	348	161	267	1231	88	169
RTOR Reduction (vph)	0	0	18	0	5	0	0	0	62	0	0	67
Lane Group Flow (vph)	38	3128	23	13	1934	833	348	161	205	1231	88	102
Heavy Vehicles (%)	6%	6%	2%	2%	6%	6%	2%	2%	2%	6%	2%	6%
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			Free			2			6
Actuated Green, G (s)	4.0	85.3	85.3	1.6	82.9	152.4	30.0	15.5	15.5	33.0	18.5	18.5
Effective Green, g (s)	4.0	85.3	85.3	1.6	82.9	152.4	30.0	15.5	15.5	33.0	18.5	18.5
Actuated g/C Ratio	0.03	0.56	0.56	0.01	0.54	1.00	0.20	0.10	0.10	0.22	0.12	0.12
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5		4.0	4.5	4.5	4.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	44	1906	886	18	1747	1386	348	189	161	715	226	185
v/s Ratio Prot	0.02	c0.92		0.01	0.60		0.20	0.09		c0.37	0.05	
v/s Ratio Perm			0.01			c0.60				c0.13		0.07
v/c Ratio	0.86	1.64	0.03	0.72	1.11	0.60	1.00	0.85	1.27	1.72	0.39	0.55
Uniform Delay, d1	73.9	33.6	15.0	75.2	34.8	0.0	61.2	67.3	68.5	59.7	61.7	63.1
Progression Factor	1.00	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	84.6	290.9	0.1	87.1	57.0	1.9	48.2	29.0	162.5	330.7	1.1	3.5
Delay (s)	158.5	324.5	15.0	162.2	91.8	1.9	109.4	96.3	230.9	390.4	62.9	66.6
Level of Service	F	F	B	F	F	A	F	F	F	F	E	E
Approach Delay (s)	318.5			65.2			148.5			334.2		
Approach LOS	F			E			F			F		

Intersection Summary

HCM 2000 Control Delay	219.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.63		
Actuated Cycle Length (s)	152.4	Sum of lost time (s)	17.0
Intersection Capacity Utilization	142.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
1: 3rd St & Coombs St

7/31/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔		↔	↔			↔			↔		
Volume (vph)	4	222	2	109	355	18	29	30	104	11	34	8	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		5.0			5.0			5.0			5.0		
Lane Util. Factor		0.95			0.95			1.00			1.00		
Frt		1.00			0.99			0.91			0.98		
Flt Protected		1.00			0.99			0.99			0.99		
Satd. Flow (prot)		3532			3480			1688			1805		
Flt Permitted		0.95			0.81			0.95			0.94		
Satd. Flow (perm)		3354			2853			1614			1715		
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)	4	241	2	118	386	20	32	33	113	12	37	9	
RTOR Reduction (vph)	0	1	0	0	4	0	0	74	0	0	6	0	
Lane Group Flow (vph)	0	246	0	0	520	0	0	104	0	0	52	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		4			8			2			6		
Permitted Phases	4			8			2			6			
Actuated Green, G (s)		37.0			37.0			25.0			25.0		
Effective Green, g (s)		37.0			37.0			25.0			25.0		
Actuated g/C Ratio		0.51			0.51			0.35			0.35		
Clearance Time (s)		5.0			5.0			5.0			5.0		
Vehicle Extension (s)		3.0			3.0			3.0			3.0		
Lane Grp Cap (vph)		1723			1466			560			595		
v/s Ratio Prot													
v/s Ratio Perm		0.07			c0.18			c0.06			0.03		
v/c Ratio		0.14			0.35			0.19			0.09		
Uniform Delay, d1		9.2			10.4			16.4			15.8		
Progression Factor		1.00			1.00			1.00			1.00		
Incremental Delay, d2		0.0			0.1			0.2			0.1		
Delay (s)		9.2			10.6			16.6			15.9		
Level of Service		A			B			B			B		
Approach Delay (s)		9.2			10.6			16.6			15.9		
Approach LOS		A			B			B			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay		11.6			HCM 2000 Level of Service							B	
HCM 2000 Volume to Capacity ratio		0.29											
Actuated Cycle Length (s)		72.0			Sum of lost time (s)						10.0		
Intersection Capacity Utilization		95.0%			ICU Level of Service						F		
Analysis Period (min)		15											
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
1: 3rd St & Coombs St

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔			↔			↔	
Volume (vph)	4	166	1	128	380	9	98	50	134	29	48	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frt		1.00			1.00			0.94			0.97	
Flt Protected		1.00			0.99			0.98			0.99	
Satd. Flow (prot)		3532			3487			1714			1777	
Flt Permitted		0.95			0.82			0.85			0.87	
Satd. Flow (perm)		3347			2881			1483			1559	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	4	175	1	135	400	9	103	53	141	31	51	26
RTOR Reduction (vph)	0	0	0	0	1	0	0	45	0	0	16	0
Lane Group Flow (vph)	0	180	0	0	543	0	0	252	0	0	92	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		37.0			37.0			25.0			25.0	
Effective Green, g (s)		37.0			37.0			25.0			25.0	
Actuated g/C Ratio		0.51			0.51			0.35			0.35	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1719			1480			514			541	
v/s Ratio Prot												
v/s Ratio Perm		0.05			c0.19			c0.17			0.06	
v/c Ratio		0.10			0.37			0.49			0.17	
Uniform Delay, d1		9.0			10.5			18.5			16.3	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.0			0.2			0.7			0.2	
Delay (s)		9.0			10.6			19.2			16.5	
Level of Service		A			B			B			B	
Approach Delay (s)		9.0			10.6			19.2			16.5	
Approach LOS		A			B			B			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		13.2			HCM 2000 Level of Service							B
HCM 2000 Volume to Capacity ratio		0.42										
Actuated Cycle Length (s)		72.0			Sum of lost time (s)						10.0	
Intersection Capacity Utilization		97.1%			ICU Level of Service						F	
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
2: 3rd St & Main St

7/31/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Volume (vph)	33	203	7	31	291	45	0	26	47	103	37	47
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
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00			1.00
Frt	1.00	0.99		1.00	0.98			1.00	0.85			0.97
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00			0.97
Satd. Flow (prot)	1770	3521		1770	3468			1863	1583			1751
Flt Permitted	0.95	1.00		0.95	1.00			1.00	1.00			0.81
Satd. Flow (perm)	1770	3521		1770	3468			1863	1583			1463
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)	36	221	8	34	316	49	0	28	51	112	40	51
RTOR Reduction (vph)	0	5	0	0	22	0	0	0	34	0	28	0
Lane Group Flow (vph)	36	224	0	34	343	0	0	28	17	0	175	0
Turn Type	Prot	NA		Prot	NA		Perm	NA	pm+ov		Perm	NA
Protected Phases	7	4		3	8			2	3			6
Permitted Phases							2		2		6	
Actuated Green, G (s)	0.7	7.6		2.3	9.2			7.1	9.4			7.1
Effective Green, g (s)	0.7	7.6		2.3	9.2			7.1	9.4			7.1
Actuated g/C Ratio	0.02	0.26		0.08	0.32			0.24	0.32			0.24
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0			4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0			3.0
Lane Grp Cap (vph)	42	922		140	1100			456	731			358
v/s Ratio Prot	c0.02	0.06		0.02	c0.10			0.02	0.00			c0.12
v/s Ratio Perm									0.01			c0.12
v/c Ratio	0.86	0.24		0.24	0.31			0.06	0.02			0.49
Uniform Delay, d1	14.1	8.4		12.5	7.5			8.4	6.7			9.4
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00			1.00
Incremental Delay, d2	84.5	0.1		0.9	0.2			0.1	0.0			1.1
Delay (s)	98.6	8.6		13.4	7.7			8.5	6.7			10.4
Level of Service	F	A		B	A			A	A			B
Approach Delay (s)		20.8			8.2			7.3				10.4
Approach LOS		C			A			A				B
<b>Intersection Summary</b>												
HCM 2000 Control Delay		12.1										B
HCM 2000 Volume to Capacity ratio		0.41										
Actuated Cycle Length (s)		29.0			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		40.8%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
2: 3rd St & Main St

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Volume (vph)	59	347	4	106	461	80	12	60	118	210	95	75
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
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00			1.00
Frt	1.00	1.00		1.00	0.98			1.00	0.85			0.97
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00			0.97
Satd. Flow (prot)	1770	3533		1770	3461			1847	1583			1764
Flt Permitted	0.95	1.00		0.95	1.00			0.92	1.00			0.79
Satd. Flow (perm)	1770	3533		1770	3461			1722	1583			1426
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	62	365	4	112	485	84	13	63	124	221	100	79
RTOR Reduction (vph)	0	1	0	0	25	0	0	68	0	17	0	0
Lane Group Flow (vph)	62	368	0	112	544	0	0	76	56	0	383	0
Turn Type	Prot	NA		Prot	NA		Perm	NA	pm+ov		Perm	NA
Protected Phases	7	4		3	8			2	3			6
Permitted Phases							2		2		6	
Actuated Green, G (s)	3.0	13.2		4.4	14.6			16.5	20.9			16.5
Effective Green, g (s)	3.0	13.2		4.4	14.6			16.5	20.9			16.5
Actuated g/C Ratio	0.07	0.29		0.10	0.32			0.36	0.45			0.36
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0			4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0			3.0
Lane Grp Cap (vph)	115	1011		168	1096			616	855			510
v/s Ratio Prot	0.04	0.10		c0.06	c0.16				0.01			c0.27
v/s Ratio Perm								0.04	0.03			c0.27
v/c Ratio	0.54	0.36		0.67	0.50			0.12	0.07			0.75
Uniform Delay, d1	20.9	13.1		20.1	12.8			9.9	7.1			13.0
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00			1.00
Incremental Delay, d2	4.8	0.2		9.6	0.4			0.1	0.0			6.2
Delay (s)	25.7	13.3		29.7	13.1			10.0	7.1			19.2
Level of Service	C	B		C	B			B	A			B
Approach Delay (s)		15.1			15.9			8.2				19.2
Approach LOS		B			B			A				B
<b>Intersection Summary</b>												
HCM 2000 Control Delay		15.6										B
HCM 2000 Volume to Capacity ratio		0.66										
Actuated Cycle Length (s)		46.1			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		56.5%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												



HCM Signalized Intersection Capacity Analysis  
3: Soscol Ave & 3rd St

7/31/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↗	↘	↔	↗	↘	↔	↗	↘	↔	↗	↘
Volume (vph)	114	225	159	21	187	53	160	718	7	67	635	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	3421		3433	3534		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	3421		3433	3534		1770	3539	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)	124	245	173	23	203	58	174	780	8	73	690	89
RTOR Reduction (vph)	0	0	130	0	33	0	0	1	0	0	0	49
Lane Group Flow (vph)	124	245	43	23	228	0	174	787	0	73	690	40
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	8.0	23.4	23.4	2.2	17.6		9.1	44.0		7.0	41.9	41.9
Effective Green, g (s)	8.0	23.4	23.4	2.2	17.6		9.1	44.0		7.0	41.9	41.9
Actuated g/C Ratio	0.09	0.25	0.25	0.02	0.19		0.10	0.47		0.07	0.45	0.45
Clearance Time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	150	463	394	41	640		332	1654		131	1577	705
v/s Ratio Prot	c0.07	c0.13		0.01	0.07		c0.05	c0.22		0.04	0.19	
v/s Ratio Perm			0.03									0.03
v/c Ratio	0.83	0.53	0.11	0.56	0.36		0.52	0.48		0.56	0.44	0.06
Uniform Delay, d1	42.3	30.5	27.3	45.4	33.3		40.4	17.1		42.0	17.9	14.8
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	29.6	1.1	0.1	16.4	0.3		1.5	1.0		5.1	0.9	0.2
Delay (s)	71.9	31.6	27.4	61.8	33.6		41.9	18.1		47.1	18.8	15.0
Level of Service	E	C	C	E	C		D	B		D	B	B
Approach Delay (s)	39.5			35.9			22.4			20.8		
Approach LOS	D			D			C			C		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	26.9			HCM 2000 Level of Service			C					
HCM 2000 Volume to Capacity ratio	0.56											
Actuated Cycle Length (s)	94.0			Sum of lost time (s)			17.4					
Intersection Capacity Utilization	53.5%			ICU Level of Service			A					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
3: Soscol Ave & 3rd St

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↗	↘	↔	↗	↘	↔	↗	↘	↔	↗	↘
Volume (vph)	146	276	219	23	195	56	163	806	16	75	873	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	3421		3433	3529		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	3421		3433	3529		1770	3539	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	154	291	231	24	205	59	172	848	17	79	919	177
RTOR Reduction (vph)	0	0	169	0	32	0	0	1	0	0	0	101
Lane Group Flow (vph)	154	291	62	24	232	0	172	864	0	79	919	76
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	9.2	25.1	25.1	2.2	18.1		9.1	40.5		8.8	40.2	40.2
Effective Green, g (s)	9.2	25.1	25.1	2.2	18.1		9.1	40.5		8.8	40.2	40.2
Actuated g/C Ratio	0.10	0.27	0.27	0.02	0.19		0.10	0.43		0.09	0.43	0.43
Clearance Time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	173	497	422	41	658		332	1520		165	1513	676
v/s Ratio Prot	c0.09	c0.16		0.01	0.07		c0.05	0.24		0.04	c0.26	
v/s Ratio Perm			0.04									0.05
v/c Ratio	0.89	0.59	0.15	0.59	0.35		0.52	0.57		0.48	0.61	0.11
Uniform Delay, d1	41.9	29.9	26.3	45.4	32.9		40.4	20.2		40.4	20.8	16.2
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	38.9	1.8	0.2	19.5	0.3		1.4	1.5		2.2	1.8	0.3
Delay (s)	80.8	31.7	26.4	65.0	33.2		41.7	21.7		42.6	22.6	16.5
Level of Service	F	C	C	E	C		D	C		D	C	B
Approach Delay (s)	41.1			35.8			25.0			23.0		
Approach LOS	D			D			C			C		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	28.7			HCM 2000 Level of Service			C					
HCM 2000 Volume to Capacity ratio	0.64											
Actuated Cycle Length (s)	94.0			Sum of lost time (s)			17.4					
Intersection Capacity Utilization	61.1%			ICU Level of Service			B					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Soscol Ave (SR 121)/Soscol Ave & Silverado Trail (SR 121)

7/31/2013

	↑	↖	↗	↓	↙	↘
Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↑↑	↖		↗	↙	↘
Volume (vph)	977	381	10	651	574	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12
Total Lost time (s)	5.0	5.0		5.0	5.0	
Lane Util. Factor	0.95	1.00		0.95	1.00	
Fr <sub>t</sub>	1.00	0.85		1.00	1.00	
Fit Protected	1.00	1.00		1.00	0.95	
Satd. Flow (prot)	3505	1777		3536	1753	
Fit Permitted	1.00	1.00		0.79	0.95	
Satd. Flow (perm)	3505	1777		2790	1753	
Peak-hour factor, PHF	0.73	0.73	0.73	0.73	0.73	0.73
Adj. Flow (vph)	1338	522	14	892	786	21
RTOR Reduction (vph)	0	0	0	0	2	0
Lane Group Flow (vph)	1338	522	0	906	805	0
Heavy Vehicles (%)	3%	3%	2%	2%	3%	2%
Turn Type	NA	custom	Perm	NA	NA	
Protected Phases	2			6	8	
Permitted Phases		2 3	6			
Actuated Green, G (s)	22.9	60.0		22.9	27.1	
Effective Green, g (s)	22.9	56.0		22.9	27.1	
Actuated g/C Ratio	0.38	0.93		0.38	0.45	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	5.0			5.0	4.0	
Lane Grp Cap (vph)	1337	1658		1064	791	
v/s Ratio Prot	c0.38				c0.46	
v/s Ratio Perm		0.29		0.32		
v/c Ratio	1.00	0.31		0.85	1.02	
Uniform Delay, d1	18.6	0.2		17.0	16.4	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	24.8	0.1		8.6	36.6	
Delay (s)	43.3	0.3		25.6	53.1	
Level of Service	D	A		C	D	
Approach Delay (s)	31.3			25.6	53.1	
Approach LOS	C			C	D	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		34.8		HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio		1.01				
Actuated Cycle Length (s)		60.0		Sum of lost time (s)	10.0	
Intersection Capacity Utilization		68.1%		ICU Level of Service	C	
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

4: Soscol Ave (SR 121)/Soscol Ave & Silverado Trail (SR 121)

8/5/2013

	↑	↖	↗	↓	↙	↘
Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↑↑	↖		↗	↙	↘
Volume (vph)	1087	608	10	1313	614	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12
Total Lost time (s)	5.0	5.0		5.0	5.0	
Lane Util. Factor	0.95	1.00		0.95	1.00	
Fr <sub>t</sub>	1.00	0.85		1.00	1.00	
Fit Protected	1.00	1.00		1.00	0.95	
Satd. Flow (prot)	3505	1777		3538	1753	
Fit Permitted	1.00	1.00		0.94	0.95	
Satd. Flow (perm)	3505	1777		3329	1753	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	1264	707	12	1527	714	21
RTOR Reduction (vph)	0	0	0	0	2	0
Lane Group Flow (vph)	1264	707	0	1539	733	0
Heavy Vehicles (%)	3%	3%	2%	2%	3%	2%
Turn Type	NA	custom	Perm	NA	NA	
Protected Phases	2	2 3		6	8	
Permitted Phases		2	6			
Actuated Green, G (s)	29.0	65.0		29.0	26.0	
Effective Green, g (s)	29.0	61.0		29.0	26.0	
Actuated g/C Ratio	0.45	0.94		0.45	0.40	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	5.0			5.0	4.0	
Lane Grp Cap (vph)	1563	1667		1485	701	
v/s Ratio Prot	0.36	0.40			c0.42	
v/s Ratio Perm				c0.46		
v/c Ratio	0.81	0.42		1.04	1.05	
Uniform Delay, d1	15.6	0.2		18.0	19.5	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.6	0.2		33.3	46.6	
Delay (s)	20.2	0.4		51.3	66.1	
Level of Service	C	A		D	E	
Approach Delay (s)	13.1			51.3	66.1	
Approach LOS	B			D	E	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		36.1		HCM 2000 Level of Service		D
HCM 2000 Volume to Capacity ratio		1.04				
Actuated Cycle Length (s)		65.0		Sum of lost time (s)	10.0	
Intersection Capacity Utilization		86.7%		ICU Level of Service	E	
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

5: Napa Vallejo Hwy (SR 221)/Soscol Ave (SR 121) & Imola Ave (SR 121)/Imola Ave 7/31/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↖	↗	↔	↖	↗	↔	↖	↗	↔	↖	↗
Volume (vph)	155	306	742	160	283	45	428	834	113	80	1078	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.1	4.0	3.0	4.1		3.5	4.9		3.5	4.6	4.6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1863	1568	1770	1824		3400	3446		1770	3505	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1752	1863	1568	1770	1824		3400	3446		1770	3505	1568
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	174	344	834	180	318	51	481	937	127	90	1211	149
RTOR Reduction (vph)	0	0	0	0	5	0	0	9	0	0	0	93
Lane Group Flow (vph)	174	344	834	180	364	0	481	1055	0	90	1211	56
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	3%	3%	2%	2%	3%	3%
Turn Type	Prot	NA	Free	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free									6
Actuated Green, G (s)	11.0	24.9	115.0	15.0	28.9		16.5	51.1		8.5	43.4	43.4
Effective Green, g (s)	11.0	24.9	115.0	15.0	28.9		16.5	51.1		8.5	43.4	43.4
Actuated g/C Ratio	0.10	0.22	1.00	0.13	0.25		0.14	0.44		0.07	0.38	0.38
Clearance Time (s)	3.0	4.1		3.0	4.1		3.5	4.9		3.5	4.6	4.6
Vehicle Extension (s)	3.5	3.0		3.8	3.0		4.0	3.5		3.0	3.5	3.5
Lane Grp Cap (vph)	167	403	1568	230	458		487	1531		130	1322	591
v/s Ratio Prot	c0.10	c0.18		0.10	c0.20		c0.14	0.31		0.05	c0.35	
v/s Ratio Perm			0.53									0.04
v/c Ratio	1.04	0.85	0.53	0.78	0.79		0.99	0.69		0.69	0.92	0.10
Uniform Delay, d1	52.0	43.3	0.0	48.4	40.3		49.1	25.6		52.0	34.1	23.1
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.78	0.55		1.00	1.00	1.00
Incremental Delay, d2	81.1	15.9	1.3	16.5	9.2		30.7	1.8		14.8	11.4	0.3
Delay (s)	133.1	59.2	1.3	64.9	49.5		68.9	15.8		66.7	45.5	23.4
Level of Service	F	E	A	E	D		E	B		E	D	C
Approach Delay (s)		33.0			54.5			32.3			44.5	
Approach LOS		C			D			C			D	

Intersection Summary

HCM 2000 Control Delay	38.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	115.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

5: Napa Vallejo Hwy (SR 221)/Soscol Ave (SR 121) & Imola Ave (SR 121)/Imola Ave 8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↖	↗	↔	↖	↗	↔	↖	↗	↔	↖	↗
Volume (vph)	193	281	408	85	283	35	711	1066	128	81	954	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.1	4.0	3.0	4.1		3.5	4.9		3.5	4.6	4.6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1863	1568	1770	1832		3400	3452		1770	3505	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1752	1863	1568	1770	1832		3400	3452		1770	3505	1568
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	230	335	486	101	337	42	846	1269	152	96	1136	223
RTOR Reduction (vph)	0	0	0	0	3	0	0	6	0	0	0	151
Lane Group Flow (vph)	230	335	486	101	376	0	846	1415	0	96	1136	72
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	3%	3%	2%	2%	3%	3%
Turn Type	Prot	NA	Free	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free									6
Actuated Green, G (s)	18.0	31.1	145.0	18.2	31.3		33.5	70.0		10.2	47.0	47.0
Effective Green, g (s)	18.0	31.1	145.0	18.2	31.3		33.5	70.0		10.2	47.0	47.0
Actuated g/C Ratio	0.12	0.21	1.00	0.13	0.22		0.23	0.48		0.07	0.32	0.32
Clearance Time (s)	3.0	4.1		3.0	4.1		3.5	4.9		3.5	4.6	4.6
Vehicle Extension (s)	3.5	3.0		3.8	3.0		4.0	3.5		3.0	3.5	3.5
Lane Grp Cap (vph)	217	399	1568	222	395		785	1666		124	1136	508
v/s Ratio Prot	c0.13	0.18		0.06	c0.21		c0.25	0.41		0.05	c0.32	
v/s Ratio Perm			0.31									0.05
v/c Ratio	1.06	0.84	0.31	0.45	0.95		1.08	0.85		0.77	1.00	0.14
Uniform Delay, d1	63.5	54.6	0.0	58.8	56.1		55.8	32.9		66.3	49.0	34.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.92	0.84		1.00	1.00	1.00
Incremental Delay, d2	77.8	14.3	0.5	1.9	32.8		51.0	4.2		25.4	26.7	0.6
Delay (s)	141.3	68.9	0.5	60.7	89.0		102.1	31.7		91.7	75.7	35.3
Level of Service	F	E	A	E	F		F	C		F	E	D
Approach Delay (s)		53.1			83.0			58.0			70.6	
Approach LOS		D			F			E			D	

Intersection Summary

HCM 2000 Control Delay	62.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	88.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
6: Napa Vallejo Hwy (SR 221) & College Wy/Magnolia Dr

7/31/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	71	3	0	34	0	31	8	1261	205	115	1464	352
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	4.5		4.0	4.5	4.5	
Lane Util. Factor	0.95	0.95		1.00	1.00	1.00	0.95		1.00	0.95	1.00	
Frt	1.00	1.00		1.00	0.85	1.00	0.98		1.00	1.00	0.85	
Fit Protected	0.95	0.96		0.95	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1681	1691		1770	1583	1770	3352		1770	3406	1583	
Fit Permitted	0.95	0.96		0.95	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	1681	1691		1770	1583	1770	3352		1770	3406	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)	77	3	0	37	0	34	9	1371	223	125	1591	383
RTOR Reduction (vph)	0	0	0	0	0	31	0	9	0	0	0	88
Lane Group Flow (vph)	40	40	0	0	37	3	9	1585	0	125	1591	295
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	6%	2%	2%	6%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	3.2	3.2		11.1	11.1	0.8	70.3		13.9	83.4	83.4	
Effective Green, g (s)	3.2	3.2		11.1	11.1	0.8	70.3		13.9	83.4	83.4	
Actuated g/C Ratio	0.03	0.03		0.10	0.10	0.01	0.61		0.12	0.73	0.73	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.5		4.0	4.5	4.5	
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)	46	47		170	152	12	2049		213	2470	1148	
v/s Ratio Prot	c0.02	0.02		c0.02	0.01	c0.47			c0.07	c0.47		
v/s Ratio Perm					0.00						0.19	
v/c Ratio	0.87	0.85		0.22	0.02	0.75	0.77		0.59	0.64	0.26	
Uniform Delay, d1	55.7	55.7		47.9	47.0	57.0	16.5		47.8	8.1	5.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00		1.13	0.26	0.00	
Incremental Delay, d2	83.5	77.3		0.6	0.1	128.3	2.9		2.6	0.8	0.3	
Delay (s)	139.2	132.9		48.6	47.1	185.3	19.4		56.9	2.9	0.3	
Level of Service	F	F		D	D	F	B		E	A	A	
Approach Delay (s)	136.1			47.9			20.3			5.7		
Approach LOS	F			D			C			A		

Intersection Summary			
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	115.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	66.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
6: Napa Vallejo Hwy (SR 221) & College Wy/Magnolia Dr

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	216	1	1	199	3	108	13	1584	7	18	1249	152
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	4.5		4.0	4.5	4.5	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95		1.00	0.95	1.00	
Frt	1.00	1.00	0.85	1.00	0.85	1.00	1.00		1.00	1.00	0.85	
Fit Protected	0.95	0.95	1.00	0.95	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1681	1686	1583	1775	1583	1770	3404		1770	3406	1583	
Fit Permitted	0.95	0.95	1.00	0.95	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	1681	1686	1583	1775	1583	1770	3404		1770	3406	1583	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	227	1	1	209	3	114	14	1667	7	19	1315	160
RTOR Reduction (vph)	0	0	1	0	0	59	0	0	0	0	0	53
Lane Group Flow (vph)	113	115	0	0	212	55	14	1674	0	19	1315	107
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	6%	2%	2%	6%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	13.1	13.1	13.1	24.2	24.2	2.0	88.2		3.0	89.2	89.2	
Effective Green, g (s)	13.1	13.1	13.1	24.2	24.2	2.0	88.2		3.0	89.2	89.2	
Actuated g/C Ratio	0.09	0.09	0.09	0.17	0.17	0.01	0.61		0.02	0.62	0.62	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.5		4.0	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	151	152	143	296	264	24	2070		36	2095	973	
v/s Ratio Prot	0.07	c0.07		c0.12	0.01	c0.49			c0.01	0.39		
v/s Ratio Perm			0.00		0.03						0.07	
v/c Ratio	0.75	0.76	0.00	0.72	0.21	0.58	0.81		0.53	0.63	0.11	
Uniform Delay, d1	64.3	64.4	60.0	57.2	52.1	71.1	21.9		70.3	17.5	11.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.22	0.45	0.22	
Incremental Delay, d2	18.2	19.1	0.0	8.0	0.4	31.3	3.5		8.3	0.9	0.1	
Delay (s)	82.5	83.5	60.0	65.2	52.5	102.4	25.4		93.7	8.8	2.7	
Level of Service	F	F	E	E	D	F	C		F	A	A	
Approach Delay (s)	82.9			60.7			26.1			9.2		
Approach LOS	F			E			C			A		

Intersection Summary			
HCM 2000 Control Delay	25.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
7: Napa Vallejo Hwy (SR 221) & Streblov Dr

7/31/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	39	32	268	1414	1319	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	42	35	291	1537	1434	174
RTOR Reduction (vph)	0	33	0	0	0	61
Lane Group Flow (vph)	42	2	291	1537	1434	113
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	5.1	5.1	15.1	59.8	40.7	40.7
Effective Green, g (s)	5.1	5.1	15.1	59.8	40.7	40.7
Actuated g/C Ratio	0.07	0.07	0.21	0.81	0.55	0.55
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	238	109	364	2774	1888	877
v/s Ratio Prot	c0.01		c0.16	0.45	c0.42	
v/s Ratio Perm		0.00				0.07
v/c Ratio	0.18	0.02	0.80	0.55	0.76	0.13
Uniform Delay, d1	32.2	31.8	27.7	2.3	12.6	7.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.1	11.6	0.8	2.9	0.3
Delay (s)	32.5	31.9	39.3	3.1	15.5	8.1
Level of Service	C	C	D	A	B	A
Approach Delay (s)	32.2			8.9	14.7	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	12.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	73.4	Sum of lost time (s)	12.5
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
7: Napa Vallejo Hwy (SR 221) & Streblov Dr

8/5/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	147	134	118	1492	1340	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	155	141	124	1571	1411	123
RTOR Reduction (vph)	0	123	0	0	0	47
Lane Group Flow (vph)	155	18	124	1571	1411	76
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	8.3	8.3	7.0	49.5	38.5	38.5
Effective Green, g (s)	8.3	8.3	7.0	49.5	38.5	38.5
Actuated g/C Ratio	0.13	0.13	0.11	0.75	0.58	0.58
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	429	198	186	2542	1977	919
v/s Ratio Prot	c0.05		0.07	c0.46	c0.41	
v/s Ratio Perm		0.01				0.05
v/c Ratio	0.36	0.09	0.67	0.62	0.71	0.08
Uniform Delay, d1	26.6	25.7	28.5	4.0	10.0	6.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.2	8.7	1.1	2.2	0.2
Delay (s)	27.1	25.9	37.2	5.1	12.2	6.3
Level of Service	C	C	D	A	B	A
Approach Delay (s)	26.5			7.4	11.7	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	66.3	Sum of lost time (s)	12.5
Intersection Capacity Utilization	58.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
8: Napa Vallejo Hwy (SR 221) & Project Access

7/31/2013

Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	↔	↔	↕	↕	↔	↕	
Volume (veh/h)	70	42	1595	104	53	1306	
Sign Control	Stop		Free			Free	
Grade	0%		0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	76	46	1734	113	58	1420	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)		5					
Median type		TWLTL			None		
Median storage (veh)		2					
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume	2559	867			1734		
vC1, stage 1 conf vol	1734						
vC2, stage 2 conf vol	825						
vCu, unblocked vol	2559	867			1734		
IC, single (s)	7.0	7.1			4.3		
IC, 2 stage (s)	6.0						
IF (s)	3.6	3.4			2.3		
p0 queue free %	28	84			82		
cM capacity (veh/h)	106	281			326		
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>
Volume Total	122	867	867	113	58	710	710
Volume Left	76	0	0	0	58	0	0
Volume Right	46	0	0	113	0	0	0
cSH	170	1700	1700	1700	326	1700	1700
Volume to Capacity	0.72	0.51	0.51	0.07	0.18	0.42	0.42
Queue Length 95th (ft)	110	0	0	0	16	0	0
Control Delay (s)	68.7	0.0	0.0	0.0	18.4	0.0	0.0
Lane LOS	F				C		
Approach Delay (s)	68.7	0.0			0.7		
Approach LOS	F						
<b>Intersection Summary</b>							
Average Delay	2.7						
Intersection Capacity Utilization	54.6%		ICU Level of Service		A		
Analysis Period (min)	15						

HCM Unsignalized Intersection Capacity Analysis  
8: Napa Vallejo Hwy (SR 221) & Project Access

8/5/2013

Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	↔	↔	↕	↕	↔	↕	
Volume (veh/h)	51	63	1513	39	33	1470	
Sign Control	Stop		Free			Free	
Grade	0%		0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly flow rate (vph)	54	66	1593	41	35	1547	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)		5					
Median type		TWLTL			None		
Median storage (veh)		2					
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume	2436	796			1593		
vC1, stage 1 conf vol	1593						
vC2, stage 2 conf vol	843						
vCu, unblocked vol	2436	796			1593		
IC, single (s)	7.0	7.1			4.3		
IC, 2 stage (s)	6.0						
IF (s)	3.6	3.4			2.3		
p0 queue free %	57	79			91		
cM capacity (veh/h)	126	313			372		
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>
Volume Total	120	796	796	41	35	774	774
Volume Left	54	0	0	0	35	0	0
Volume Right	66	0	0	41	0	0	0
cSH	281	1700	1700	1700	372	1700	1700
Volume to Capacity	0.43	0.47	0.47	0.02	0.09	0.46	0.46
Queue Length 95th (ft)	51	0	0	0	8	0	0
Control Delay (s)	34.7	0.0	0.0	0.0	15.7	0.0	0.0
Lane LOS	D				C		
Approach Delay (s)	34.7	0.0			0.3		
Approach LOS	D						
<b>Intersection Summary</b>							
Average Delay	1.4						
Intersection Capacity Utilization	52.4%		ICU Level of Service		A		
Analysis Period (min)	15						

HCM Signalized Intersection Capacity Analysis  
 9: Napa Vallejo Hwy (SR 221) & Kaiser Rd

7/31/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	92	41	126	1685	991	301
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	100	45	137	1832	1077	327
RTOR Reduction (vph)	0	39	0	0	0	155
Lane Group Flow (vph)	100	6	137	1832	1077	172
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	6.5	6.5	5.7	37.2	27.5	27.5
Effective Green, g (s)	6.5	6.5	5.7	37.2	27.5	27.5
Actuated g/C Ratio	0.12	0.12	0.11	0.71	0.53	0.53
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	427	197	193	2427	1794	833
v/s Ratio Prot	c0.03		0.08	c0.54	0.32	
v/s Ratio Perm		0.00				0.11
v/c Ratio	0.23	0.03	0.71	0.75	0.60	0.21
Uniform Delay, d1	20.6	20.1	22.5	4.7	8.5	6.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.1	11.3	2.2	1.5	0.6
Delay (s)	20.9	20.1	33.8	6.9	10.0	7.1
Level of Service	C	C	C	A	B	A
Approach Delay (s)	20.7			8.8	9.4	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay	9.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	52.2	Sum of lost time (s)	12.5
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 9: Napa Vallejo Hwy (SR 221) & Kaiser Rd

8/5/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	274	44	22	1297	1409	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	288	46	23	1365	1483	95
RTOR Reduction (vph)	0	40	0	0	0	35
Lane Group Flow (vph)	288	6	23	1365	1483	60
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	8.0	8.0	0.8	41.7	36.9	36.9
Effective Green, g (s)	8.0	8.0	0.8	41.7	36.9	36.9
Actuated g/C Ratio	0.14	0.14	0.01	0.72	0.63	0.63
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	471	217	24	2440	2159	1003
v/s Ratio Prot	c0.08		0.01	c0.40	c0.44	
v/s Ratio Perm		0.00				0.04
v/c Ratio	0.61	0.03	0.96	0.56	0.69	0.06
Uniform Delay, d1	23.6	21.7	28.7	3.9	6.9	4.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.4	0.1	163.4	0.9	1.8	0.1
Delay (s)	26.0	21.8	192.1	4.8	8.7	4.2
Level of Service	C	C	F	A	A	A
Approach Delay (s)	25.4			7.9	8.4	
Approach LOS	C			A	A	

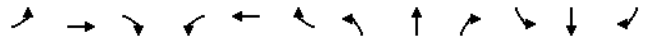
Intersection Summary			
HCM 2000 Control Delay	9.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	58.2	Sum of lost time (s)	12.5
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

10: Napa Vallejo Hwy (SR 221) & Napa Valley Corporate Wy

7/31/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	26	0	30	2	0	2	209	1817	4	0	977	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	0.97	0.95	1.00	0.95	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.85	1.00	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1618	1618	1524	1770	1583	3303	3406	1583	3406	1524	1524	1524
Flt Permitted	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1618	1618	1524	1770	1583	3303	3406	1583	3406	1524	1524	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)	28	0	33	2	0	2	227	1975	4	0	1062	99
RTOR Reduction (vph)	0	0	28	0	0	2	0	0	1	0	0	34
Lane Group Flow (vph)	14	14	5	0	2	0	227	1975	3	0	1062	65
Heavy Vehicles (%)	6%	2%	6%	2%	2%	2%	6%	6%	2%	2%	6%	6%
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4			8		2				6
Actuated Green, G (s)	2.8	2.8	13.8		1.0	1.0	11.0	73.9	73.9		59.4	59.4
Effective Green, g (s)	2.8	2.8	13.8		1.0	1.0	11.0	73.9	73.9		59.4	59.4
Actuated g/C Ratio	0.03	0.03	0.15		0.01	0.01	0.12	0.82	0.82		0.66	0.66
Clearance Time (s)	4.0	4.0	3.5		4.0	4.0	3.5	4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	50	50	233		19	17	402	2790	1296		2242	1003
v/s Ratio Prot	c0.01	0.01	0.00		c0.00		0.07	c0.58			0.31	
v/s Ratio Perm			0.00			0.00		0.00				0.04
v/c Ratio	0.28	0.28	0.02		0.11	0.00	0.56	0.71	0.00		0.47	0.07
Uniform Delay, d1	42.7	42.7	32.5		44.2	44.1	37.3	3.5	1.5		7.6	5.5
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	3.1	3.1	0.0		2.4	0.0	1.8	1.5	0.0		0.7	0.1
Delay (s)	45.8	45.8	32.5		46.6	44.1	39.2	5.1	1.5		8.4	5.6
Level of Service	D	D	C		D	D	D	A	A		A	A
Approach Delay (s)	38.6				45.4			8.6			8.1	
Approach LOS	D				D			A			A	

Intersection Summary

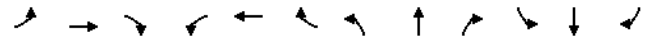
HCM 2000 Control Delay	9.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	90.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

10: Napa Vallejo Hwy (SR 221) & Napa Valley Corporate Wy/Anderson Rd

8/5/2013



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	105	1	113	5	0	8	31	1215	0	5	1282	189
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	0.97	0.95	1.00	0.95	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.85	1.00	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1618	1624	1524	1770	1583	3303	3406	1770	1583	3406	1524	1524
Flt Permitted	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1618	1624	1524	1770	1583	3303	3406	1770	1583	3406	1524	1524
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	111	1	119	5	0	8	33	1279	0	5	1349	199
RTOR Reduction (vph)	0	0	102	0	0	8	0	0	0	0	0	77
Lane Group Flow (vph)	55	57	17	0	5	0	33	1279	0	5	1349	122
Heavy Vehicles (%)	6%	2%	6%	2%	2%	2%	6%	6%	2%	2%	6%	6%
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4			8		2				6
Actuated Green, G (s)	6.8	6.8	10.3		1.1	1.1	3.5	46.1	0.8	43.4	43.4	43.4
Effective Green, g (s)	6.8	6.8	10.3		1.1	1.1	3.5	46.1	0.8	43.4	43.4	43.4
Actuated g/C Ratio	0.10	0.10	0.15		0.02	0.02	0.05	0.65	0.01	0.61	0.61	0.61
Clearance Time (s)	4.0	4.0	3.5		4.0	4.0	3.5	4.5	3.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	155	155	221		27	24	163	2217	20	2087	934	934
v/s Ratio Prot	0.03	c0.04	0.00		c0.00		c0.01	c0.38	0.00	c0.40		
v/s Ratio Perm			0.01			0.00						0.08
v/c Ratio	0.35	0.37	0.08		0.19	0.01	0.20	0.58	0.25	0.65	0.13	0.13
Uniform Delay, d1	29.9	30.0	26.1		34.4	34.3	32.3	6.9	34.7	8.8	5.8	5.8
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	1.4	1.5	0.2		3.3	0.1	0.6	1.1	6.5	1.6	0.3	0.3
Delay (s)	31.3	31.5	26.3		37.7	34.4	32.9	8.0	41.2	10.3	6.1	6.1
Level of Service	C	C	C		D	C	C	A	D	B	A	A
Approach Delay (s)	28.8				35.7			8.6		9.9		
Approach LOS	C				D			A		A		

Intersection Summary

HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	70.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis

11: Soscol Ferry Rd/Napa Vallejo Hwy (SR 221) & SR 29/SR 12

7/31/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↘	↔	↕	↘	↔	↕	↘	↔	↕	↘
Volume (vph)	89	2148	20	1527	1907	32	24	8	891	109	28	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.0	4.5	4.0	4.5	4.0	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	1.00	1.00	0.97	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.95	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fit Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1703	3406	1583	1770	3089	1386	1770	1863	1583	3303	1863	1524
Fit Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1703	3406	1583	1770	3089	1386	1770	1863	1583	3303	1863	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)	97	2335	565	22	1660	2073	35	26	9	968	118	30
RTOR Reduction (vph)	0	0	212	0	42	0	0	0	9	0	0	24
Lane Group Flow (vph)	97	2335	353	22	2530	1161	35	26	0	968	118	6
Heavy Vehicles (%)	6%	6%	2%	2%	6%	6%	2%	2%	2%	6%	2%	6%
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			Free			2			6
Actuated Green, G (s)	6.0	93.0	93.0	2.3	89.3	148.8	5.5	4.4	4.4	32.1	31.0	31.0
Effective Green, g (s)	6.0	93.0	93.0	2.3	89.3	148.8	5.5	4.4	4.4	32.1	31.0	31.0
Actuated g/C Ratio	0.04	0.62	0.62	0.02	0.60	1.00	0.04	0.03	0.03	0.22	0.21	0.21
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5		4.0	4.5	4.5	4.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	68	2128	989	27	1853	1386	65	55	46	712	388	317
v/s Ratio Prot	c0.06	0.69		0.01	c0.82		0.02	0.01		c0.29	0.06	
v/s Ratio Perm			0.22			c0.84			0.00			0.00
v/c Ratio	1.43	1.10	0.36	0.81	1.37	0.84	0.54	0.47	0.01	1.36	0.30	0.02
Uniform Delay, d1	71.4	27.9	13.5	73.0	29.8	0.0	70.4	71.1	70.1	58.4	49.8	46.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	257.8	51.8	1.0	95.3	168.0	6.2	8.3	6.3	0.1	170.9	0.4	0.0
Delay (s)	329.2	79.7	14.5	168.3	197.7	6.2	78.7	77.3	70.1	229.2	50.2	46.8
Level of Service	F	E	B	F	F	A	E	E	E	F	D	D
Approach Delay (s)	75.5			138.3			77.1			205.4		
Approach LOS	E			F			E			F		

Intersection Summary

HCM 2000 Control Delay	123.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.38		
Actuated Cycle Length (s)	148.8	Sum of lost time (s)	17.0
Intersection Capacity Utilization	110.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

11: Soscol Ferry Rd/Napa Vallejo Hwy (SR 221) & SR 29/SR 12

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↘	↔	↕	↘	↔	↕	↘	↔	↕	↘
Volume (vph)	39	2972	39	12	1657	1008	331	153	254	1205	84	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.0	4.5	4.0	4.5	4.0	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	1.00	1.00	0.97	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fit Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1703	3406	1583	1770	3209	1386	1770	1863	1583	3303	1863	1524
Fit Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1703	3406	1583	1770	3209	1386	1770	1863	1583	3303	1863	1524
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	41	3128	41	13	1744	1061	348	161	267	1268	88	174
RTOR Reduction (vph)	0	0	18	0	6	0	0	0	62	0	0	64
Lane Group Flow (vph)	41	3128	23	13	1950	849	348	161	205	1268	88	110
Heavy Vehicles (%)	6%	6%	2%	2%	6%	6%	2%	2%	2%	6%	2%	6%
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			Free			2			6
Actuated Green, G (s)	4.0	85.3	85.3	1.6	82.9	152.4	29.0	15.5	15.5	33.0	19.5	19.5
Effective Green, g (s)	4.0	85.3	85.3	1.6	82.9	152.4	29.0	15.5	15.5	33.0	19.5	19.5
Actuated g/C Ratio	0.03	0.56	0.56	0.01	0.54	1.00	0.19	0.10	0.10	0.22	0.13	0.13
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5		4.0	4.5	4.5	4.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	44	1906	886	18	1745	1386	336	189	161	715	238	195
v/s Ratio Prot	0.02	c0.92		0.01	0.61		0.20	0.09		c0.38	0.05	
v/s Ratio Perm			0.01			c0.61			c0.13			0.07
v/c Ratio	0.93	1.64	0.03	0.72	1.12	0.61	1.04	0.85	1.27	1.77	0.37	0.57
Uniform Delay, d1	74.1	33.6	15.0	75.2	34.8	0.0	61.7	67.3	68.5	59.7	60.8	62.5
Progression Factor	1.00	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	109.0	290.9	0.1	87.1	61.3	2.0	58.6	29.0	162.5	353.7	1.0	3.7
Delay (s)	183.1	324.5	15.0	162.2	96.1	2.0	120.3	96.3	230.9	413.4	61.8	66.2
Level of Service	F	F	B	F	F	A	F	F	F	F	E	E
Approach Delay (s)	318.7			68.1			153.4			353.7		
Approach LOS	F			E			F			F		

Intersection Summary

HCM 2000 Control Delay	225.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.63		
Actuated Cycle Length (s)	152.4	Sum of lost time (s)	17.0
Intersection Capacity Utilization	143.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
1: 3rd St & Coombs St

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔		↔	↔			↔			↔		
Volume (vph)	4	223	2	109	356	18	29	30	104	11	34	8	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		5.0			5.0			5.0			5.0		
Lane Util. Factor		0.95			0.95			1.00			1.00		
Frt		1.00			0.99			0.91			0.98		
Flt Protected		1.00			0.99			0.99			0.99		
Satd. Flow (prot)		3532			3480			1688			1805		
Flt Permitted		0.95			0.81			0.95			0.94		
Satd. Flow (perm)		3355			2853			1614			1715		
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)	4	242	2	118	387	20	32	33	113	12	37	9	
RTOR Reduction (vph)	0	1	0	0	4	0	0	74	0	0	6	0	
Lane Group Flow (vph)	0	247	0	0	521	0	0	104	0	0	52	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		4			8			2			6		
Permitted Phases	4			8			2			6			
Actuated Green, G (s)		37.0			37.0			25.0			25.0		
Effective Green, g (s)		37.0			37.0			25.0			25.0		
Actuated g/C Ratio		0.51			0.51			0.35			0.35		
Clearance Time (s)		5.0			5.0			5.0			5.0		
Vehicle Extension (s)		3.0			3.0			3.0			3.0		
Lane Grp Cap (vph)		1724			1466			560			595		
v/s Ratio Prot													
v/s Ratio Perm		0.07			c0.18			c0.06			0.03		
v/c Ratio		0.14			0.36			0.19			0.09		
Uniform Delay, d1		9.2			10.4			16.4			15.8		
Progression Factor		1.00			1.00			1.00			1.00		
Incremental Delay, d2		0.0			0.1			0.2			0.1		
Delay (s)		9.2			10.6			16.6			15.9		
Level of Service		A			B			B			B		
Approach Delay (s)		9.2			10.6			16.6			15.9		
Approach LOS		A			B			B			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay		11.6			HCM 2000 Level of Service							B	
HCM 2000 Volume to Capacity ratio		0.29											
Actuated Cycle Length (s)		72.0			Sum of lost time (s)						10.0		
Intersection Capacity Utilization		95.0%			ICU Level of Service						F		
Analysis Period (min)		15											
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
1: 3rd St & Coombs St

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔			↔			↔	
Volume (vph)	4	167	1	128	380	9	98	50	134	29	48	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frt		1.00			1.00			0.94			0.97	
Flt Protected		1.00			0.99			0.98			0.99	
Satd. Flow (prot)		3532			3487			1714			1777	
Flt Permitted		0.95			0.82			0.85			0.87	
Satd. Flow (perm)		3347			2879			1483			1559	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	4	176	1	135	400	9	103	53	141	31	51	26
RTOR Reduction (vph)	0	0	0	0	1	0	0	45	0	0	16	0
Lane Group Flow (vph)	0	181	0	0	543	0	0	252	0	0	92	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		37.0			37.0			25.0			25.0	
Effective Green, g (s)		37.0			37.0			25.0			25.0	
Actuated g/C Ratio		0.51			0.51			0.35			0.35	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1719			1479			514			541	
v/s Ratio Prot												
v/s Ratio Perm		0.05			c0.19			c0.17			0.06	
v/c Ratio		0.11			0.37			0.49			0.17	
Uniform Delay, d1		9.0			10.5			18.5			16.3	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.0			0.2			0.7			0.2	
Delay (s)		9.0			10.6			19.2			16.5	
Level of Service		A			B			B			B	
Approach Delay (s)		9.0			10.6			19.2			16.5	
Approach LOS		A			B			B			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		13.2			HCM 2000 Level of Service							B
HCM 2000 Volume to Capacity ratio		0.42										
Actuated Cycle Length (s)		72.0			Sum of lost time (s)						10.0	
Intersection Capacity Utilization		97.1%			ICU Level of Service						F	
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
2: 3rd St & Main St

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Volume (vph)	33	204	7	32	292	45	0	26	48	103	37	47
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
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00			1.00
Frt	1.00	0.99		1.00	0.98			1.00	0.85			0.97
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00			0.97
Satd. Flow (prot)	1770	3521		1770	3468			1863	1583			1751
Flt Permitted	0.95	1.00		0.95	1.00			1.00	1.00			0.81
Satd. Flow (perm)	1770	3521		1770	3468			1863	1583			1463
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)	36	222	8	35	317	49	0	28	52	112	40	51
RTOR Reduction (vph)	0	5	0	0	21	0	0	0	35	0	28	0
Lane Group Flow (vph)	36	225	0	35	345	0	0	28	17	0	175	0
Turn Type	Prot	NA		Prot	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	7	4		3	8			2	3			6
Permitted Phases							2		2		6	
Actuated Green, G (s)	0.7	7.6		2.3	9.2			7.2	9.5			7.2
Effective Green, g (s)	0.7	7.6		2.3	9.2			7.2	9.5			7.2
Actuated g/C Ratio	0.02	0.26		0.08	0.32			0.25	0.33			0.25
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0			4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0			3.0
Lane Grp Cap (vph)	42	919		139	1096			460	734			361
v/s Ratio Prot	c0.02	0.06		0.02	c0.10			0.02	0.00			
v/s Ratio Perm									0.01			c0.12
v/c Ratio	0.86	0.24		0.25	0.31			0.06	0.02			0.49
Uniform Delay, d1	14.2	8.5		12.6	7.6			8.4	6.7			9.4
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00			1.00
Incremental Delay, d2	84.5	0.1		1.0	0.2			0.1	0.0			1.0
Delay (s)	98.6	8.6		13.5	7.7			8.4	6.7			10.4
Level of Service	F	A		B	A			A	A			B
Approach Delay (s)		20.8			8.2			7.3				10.4
Approach LOS		C			A			A				B
<b>Intersection Summary</b>												
HCM 2000 Control Delay			12.1			HCM 2000 Level of Service						B
HCM 2000 Volume to Capacity ratio			0.41									
Actuated Cycle Length (s)			29.1			Sum of lost time (s)						12.0
Intersection Capacity Utilization			40.9%			ICU Level of Service						A
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
2: 3rd St & Main St

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Volume (vph)	59	348	4	107	461	80	12	60	119	210	95	75
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
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00			1.00
Frt	1.00	1.00		1.00	0.98			1.00	0.85			0.97
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00			0.97
Satd. Flow (prot)	1770	3533		1770	3461			1847	1583			1764
Flt Permitted	0.95	1.00		0.95	1.00			0.92	1.00			0.79
Satd. Flow (perm)	1770	3533		1770	3461			1722	1583			1426
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	62	366	4	113	485	84	13	63	125	221	100	79
RTOR Reduction (vph)	0	1	0	0	25	0	0	0	68	0	17	0
Lane Group Flow (vph)	62	369	0	113	544	0	0	76	57	0	383	0
Turn Type	Prot	NA		Prot	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	7	4		3	8			2	3			6
Permitted Phases							2		2		6	
Actuated Green, G (s)	3.0	13.2		4.4	14.6			16.5	20.9			16.5
Effective Green, g (s)	3.0	13.2		4.4	14.6			16.5	20.9			16.5
Actuated g/C Ratio	0.07	0.29		0.10	0.32			0.36	0.45			0.36
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0			4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0			3.0
Lane Grp Cap (vph)	115	1011		168	1096			616	855			510
v/s Ratio Prot	0.04	0.10		c0.06	c0.16				0.01			
v/s Ratio Perm									0.04	0.03		c0.27
v/c Ratio	0.54	0.36		0.67	0.50			0.12	0.07			0.75
Uniform Delay, d1	20.9	13.1		20.2	12.8			9.9	7.1			13.0
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00			1.00
Incremental Delay, d2	4.8	0.2		10.1	0.4			0.1	0.0			6.2
Delay (s)	25.7	13.3		30.3	13.1			10.0	7.1			19.2
Level of Service	C	B		C	B			B	A			B
Approach Delay (s)		15.1			16.0			8.2				19.2
Approach LOS		B			B			A				B
<b>Intersection Summary</b>												
HCM 2000 Control Delay			15.6			HCM 2000 Level of Service						B
HCM 2000 Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			46.1			Sum of lost time (s)						12.0
Intersection Capacity Utilization			56.5%			ICU Level of Service						B
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
3: Soscol Ave & 3rd St

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↗	↘	↔	↗	↘	↔	↗	↘	↔	↗	↘
Volume (vph)	114	225	161	21	187	53	161	720	7	67	639	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	3421		3433	3534		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	3421		3433	3534		1770	3539	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)	124	245	175	23	203	58	175	783	8	73	695	89
RTOR Reduction (vph)	0	0	131	0	33	0	1	0	0	0	0	49
Lane Group Flow (vph)	124	245	44	23	228	0	175	790	0	73	695	40
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	8.0	23.4	23.4	2.2	17.6		9.1	44.0		7.0	41.9	41.9
Effective Green, g (s)	8.0	23.4	23.4	2.2	17.6		9.1	44.0		7.0	41.9	41.9
Actuated g/C Ratio	0.09	0.25	0.25	0.02	0.19		0.10	0.47		0.07	0.45	0.45
Clearance Time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	150	463	394	41	640		332	1654		131	1577	705
v/s Ratio Prot	c0.07	c0.13		0.01	0.07		c0.05	c0.22		0.04	0.20	
v/s Ratio Perm			0.03									0.03
v/c Ratio	0.83	0.53	0.11	0.56	0.36		0.53	0.48		0.56	0.44	0.06
Uniform Delay, d1	42.3	30.5	27.3	45.4	33.3		40.4	17.1		42.0	18.0	14.8
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	29.6	1.1	0.1	16.4	0.3		1.5	1.0		5.1	0.9	0.2
Delay (s)	71.9	31.6	27.4	61.8	33.6		41.9	18.1		47.1	18.9	15.0
Level of Service	E	C	C	E	C		D	B		D	B	B
Approach Delay (s)		39.4			35.9			22.4			20.9	
Approach LOS		D			D			C			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	26.9			HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio	0.56											
Actuated Cycle Length (s)	94.0			Sum of lost time (s)				17.4				
Intersection Capacity Utilization	53.5%			ICU Level of Service				A				
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
3: Soscol Ave & 3rd St

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↗	↘	↔	↗	↘	↔	↗	↘	↔	↗	↘
Volume (vph)	146	276	221	23	195	56	164	809	16	75	876	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	3421		3433	3529		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	3421		3433	3529		1770	3539	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	154	291	233	24	205	59	173	852	17	79	922	177
RTOR Reduction (vph)	0	0	171	0	32	0	1	0	0	0	0	101
Lane Group Flow (vph)	154	291	62	24	232	0	173	868	0	79	922	76
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	9.2	25.1	25.1	2.2	18.1		9.1	40.5		8.8	40.2	40.2
Effective Green, g (s)	9.2	25.1	25.1	2.2	18.1		9.1	40.5		8.8	40.2	40.2
Actuated g/C Ratio	0.10	0.27	0.27	0.02	0.19		0.10	0.43		0.09	0.43	0.43
Clearance Time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	173	497	422	41	658		332	1520		165	1513	676
v/s Ratio Prot	c0.09	c0.16		0.01	0.07		c0.05	0.25		0.04	c0.26	
v/s Ratio Perm			0.04									0.05
v/c Ratio	0.89	0.59	0.15	0.59	0.35		0.52	0.57		0.48	0.61	0.11
Uniform Delay, d1	41.9	29.9	26.3	45.4	32.9		40.4	20.2		40.4	20.8	16.2
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	38.9	1.8	0.2	19.5	0.3		1.5	1.6		2.2	1.8	0.3
Delay (s)	80.8	31.7	26.4	65.0	33.2		41.9	21.8		42.6	22.7	16.5
Level of Service	F	C	C	E	C		D	C		D	C	B
Approach Delay (s)		41.0			35.8			25.1			23.1	
Approach LOS		D			D			C			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	28.7			HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio	0.65											
Actuated Cycle Length (s)	94.0			Sum of lost time (s)				17.4				
Intersection Capacity Utilization	61.3%			ICU Level of Service				B				
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Soscol Ave (SR 121)/Soscol Ave & Silverado Trail (SR 121)

8/5/2013

	↑	↖	↗	↓	↙	↘
Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↕↕	↖		↕↕	↗	
Volume (vph)	979	381	10	656	575	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12
Total Lost time (s)	5.0	5.0		5.0	5.0	
Lane Util. Factor	0.95	1.00		0.95	1.00	
Fr <sub>t</sub>	1.00	0.85		1.00	1.00	
Fit Protected	1.00	1.00		1.00	0.95	
Satd. Flow (prot)	3505	1777		3537	1753	
Fit Permitted	1.00	1.00		0.79	0.95	
Satd. Flow (perm)	3505	1777		2796	1753	
Peak-hour factor, PHF	0.73	0.73	0.73	0.73	0.73	0.73
Adj. Flow (vph)	1341	522	14	899	788	21
RTOR Reduction (vph)	0	0	0	0	2	0
Lane Group Flow (vph)	1341	522	0	913	807	0
Heavy Vehicles (%)	3%	3%	2%	2%	3%	2%
Turn Type	NA	custom	Perm	NA	NA	
Protected Phases	2			6	8	
Permitted Phases		2 3	6			
Actuated Green, G (s)	23.0	60.0		23.0	27.0	
Effective Green, g (s)	23.0	56.0		23.0	27.0	
Actuated g/C Ratio	0.38	0.93		0.38	0.45	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	5.0			5.0	4.0	
Lane Grp Cap (vph)	1343	1658		1071	788	
v/s Ratio Prot	c0.38				c0.46	
v/s Ratio Perm		0.29		0.33		
v/c Ratio	1.00	0.31		0.85	1.02	
Uniform Delay, d1	18.5	0.2		16.9	16.5	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	24.2	0.1		8.6	38.4	
Delay (s)	42.7	0.3		25.5	54.9	
Level of Service	D	A		C	D	
Approach Delay (s)	30.8			25.5	54.9	
Approach LOS	C			C	D	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		34.9		HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio		1.01				
Actuated Cycle Length (s)		60.0		Sum of lost time (s)	10.0	
Intersection Capacity Utilization		68.2%		ICU Level of Service		C
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

4: Soscol Ave (SR 121)/Soscol Ave & Silverado Trail (SR 121)

8/5/2013

	↑	↖	↗	↓	↙	↘
Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↕↕	↖		↕↕	↗	
Volume (vph)	1092	609	10	1317	614	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12
Total Lost time (s)	5.0	5.0		5.0	5.0	
Lane Util. Factor	0.95	1.00		0.95	1.00	
Fr <sub>t</sub>	1.00	0.85		1.00	1.00	
Fit Protected	1.00	1.00		1.00	0.95	
Satd. Flow (prot)	3505	1777		3538	1753	
Fit Permitted	1.00	1.00		0.94	0.95	
Satd. Flow (perm)	3505	1777		3329	1753	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	1270	708	12	1531	714	21
RTOR Reduction (vph)	0	0	0	0	2	0
Lane Group Flow (vph)	1270	708	0	1543	733	0
Heavy Vehicles (%)	3%	3%	2%	2%	3%	2%
Turn Type	NA	custom	Perm	NA	NA	
Protected Phases	2	2 3		6	8	
Permitted Phases			6			
Actuated Green, G (s)	29.0	65.0		29.0	26.0	
Effective Green, g (s)	29.0	61.0		29.0	26.0	
Actuated g/C Ratio	0.45	0.94		0.45	0.40	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	5.0			5.0	4.0	
Lane Grp Cap (vph)	1563	1667		1485	701	
v/s Ratio Prot	0.36	0.40			c0.42	
v/s Ratio Perm				c0.46		
v/c Ratio	0.81	0.42		1.04	1.05	
Uniform Delay, d1	15.6	0.2		18.0	19.5	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.7	0.2		34.2	46.6	
Delay (s)	20.4	0.4		52.2	66.1	
Level of Service	C	A		D	E	
Approach Delay (s)	13.2			52.2	66.1	
Approach LOS	B			D	E	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		36.5		HCM 2000 Level of Service		D
HCM 2000 Volume to Capacity ratio		1.04				
Actuated Cycle Length (s)		65.0		Sum of lost time (s)	10.0	
Intersection Capacity Utilization		86.9%		ICU Level of Service		E
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

5: Napa Vallejo Hwy (SR 221)/Soscol Ave (SR 121) & Imola Ave (SR 121)/Imola Ave 8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↗	↘	↔	↗	↘	↔	↗	↘	↔	↗	↘
Volume (vph)	155	306	743	160	283	45	429	836	113	80	1084	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.1	4.0	3.0	4.1		3.5	4.9		3.5	4.6	4.6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1863	1568	1770	1824		3400	3446		1770	3505	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1752	1863	1568	1770	1824		3400	3446		1770	3505	1568
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	174	344	835	180	318	51	482	939	127	90	1218	149
RTOR Reduction (vph)	0	0	0	0	5	0	0	9	0	0	0	93
Lane Group Flow (vph)	174	344	835	180	364	0	482	1057	0	90	1218	56
Heavy Vehicles (%)	3%	2%	3%	2%	2%		3%	3%		2%	3%	3%
Turn Type	Prot	NA	Free	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free									6
Actuated Green, G (s)	11.0	24.9	115.0	15.0	28.9		16.5	51.1		8.5	43.4	43.4
Effective Green, g (s)	11.0	24.9	115.0	15.0	28.9		16.5	51.1		8.5	43.4	43.4
Actuated g/C Ratio	0.10	0.22	1.00	0.13	0.25		0.14	0.44		0.07	0.38	0.38
Clearance Time (s)	3.0	4.1		3.0	4.1		3.5	4.9		3.5	4.6	4.6
Vehicle Extension (s)	3.5	3.0		3.8	3.0		4.0	3.5		3.0	3.5	3.5
Lane Grp Cap (vph)	167	403	1568	230	458		487	1531		130	1322	591
v/s Ratio Prot	c0.10	c0.18		0.10	c0.20		c0.14	0.31		0.05	c0.35	
v/s Ratio Perm			0.53									0.04
v/c Ratio	1.04	0.85	0.53	0.78	0.79		0.99	0.69		0.69	0.92	0.10
Uniform Delay, d1	52.0	43.3	0.0	48.4	40.3		49.2	25.6		52.0	34.2	23.1
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.77	0.54		1.00	1.00	1.00
Incremental Delay, d2	81.1	15.9	1.3	16.5	9.2		31.1	1.8		14.8	11.9	0.3
Delay (s)	133.1	59.2	1.3	64.9	49.5		69.2	15.7		66.7	46.1	23.4
Level of Service	F	E	A	E	D		E	B		E	D	C
Approach Delay (s)		33.0			54.5			32.4			45.1	
Approach LOS		C			D			C			D	

Intersection Summary

HCM 2000 Control Delay	38.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	115.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	82.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

5: Napa Vallejo Hwy (SR 221)/Soscol Ave (SR 121) & Imola Ave (SR 121)/Imola Ave 8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↗	↘	↔	↗	↘	↔	↗	↘	↔	↗	↘
Volume (vph)	193	281	410	85	283	35	713	1071	128	81	960	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.1	4.0	3.0	4.1		3.5	4.9		3.5	4.6	4.6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1863	1568	1770	1832		3400	3452		1770	3505	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1752	1863	1568	1770	1832		3400	3452		1770	3505	1568
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	230	335	488	101	337	42	849	1275	152	96	1143	223
RTOR Reduction (vph)	0	0	0	0	3	0	0	6	0	0	0	151
Lane Group Flow (vph)	230	335	488	101	376	0	849	1421	0	96	1143	72
Heavy Vehicles (%)	3%	2%	3%	2%	2%		3%	3%		2%	3%	3%
Turn Type	Prot	NA	Free	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free									6
Actuated Green, G (s)	18.0	31.1	145.0	18.2	31.3		33.5	70.0		10.2	47.0	47.0
Effective Green, g (s)	18.0	31.1	145.0	18.2	31.3		33.5	70.0		10.2	47.0	47.0
Actuated g/C Ratio	0.12	0.21	1.00	0.13	0.22		0.23	0.48		0.07	0.32	0.32
Clearance Time (s)	3.0	4.1		3.0	4.1		3.5	4.9		3.5	4.6	4.6
Vehicle Extension (s)	3.5	3.0		3.8	3.0		4.0	3.5		3.0	3.5	3.5
Lane Grp Cap (vph)	217	399	1568	222	395		785	1666		124	1136	508
v/s Ratio Prot	c0.13	0.18		0.06	c0.21		c0.25	0.41		0.05	c0.33	
v/s Ratio Perm			0.31									0.05
v/c Ratio	1.06	0.84	0.31	0.45	0.95		1.08	0.85		0.77	1.01	0.14
Uniform Delay, d1	63.5	54.6	0.0	58.8	56.1		55.8	33.0		66.3	49.0	34.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.91	0.83		1.00	1.00	1.00
Incremental Delay, d2	77.8	14.3	0.5	1.9	32.8		52.3	4.3		25.4	28.2	0.6
Delay (s)	141.3	68.9	0.5	60.7	89.0		103.2	31.8		91.7	77.2	35.3
Level of Service	F	E	A	E	F		F	C		F	E	D
Approach Delay (s)		53.0			83.0			58.5			71.8	
Approach LOS		D			F			E			D	

Intersection Summary

HCM 2000 Control Delay	63.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	88.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
6: Napa Vallejo Hwy (SR 221) & College Wy/Magnolia Dr

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	71	3	0	34	0	31	8	1264	205	115	1471	352
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	4.5		4.0	4.5	4.5	
Lane Util. Factor	0.95	0.95		1.00	1.00	1.00	0.95		1.00	0.95	1.00	
Frt	1.00	1.00		1.00	0.85	1.00	0.98		1.00	1.00	0.85	
Flt Protected	0.95	0.96		0.95	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1681	1691		1770	1583	1770	3352		1770	3406	1583	
Flt Permitted	0.95	0.96		0.95	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	1681	1691		1770	1583	1770	3352		1770	3406	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)	77	3	0	37	0	34	9	1374	223	125	1599	383
RTOR Reduction (vph)	0	0	0	0	0	31	0	8	0	0	0	88
Lane Group Flow (vph)	40	40	0	0	37	3	9	1589	0	125	1599	295
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	6%	2%	2%	6%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	3.2	3.2		11.1	11.1	0.8	70.3		13.9	83.4	83.4	
Effective Green, g (s)	3.2	3.2		11.1	11.1	0.8	70.3		13.9	83.4	83.4	
Actuated g/C Ratio	0.03	0.03		0.10	0.10	0.01	0.61		0.12	0.73	0.73	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.5		4.0	4.5	4.5	
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)	46	47		170	152	12	2049		213	2470	1148	
v/s Ratio Prot	c0.02	0.02		c0.02	0.01	c0.47			c0.07	c0.47		
v/s Ratio Perm					0.00						0.19	
v/c Ratio	0.87	0.85		0.22	0.02	0.75	0.78		0.59	0.65	0.26	
Uniform Delay, d1	55.7	55.7		47.9	47.0	57.0	16.5		47.8	8.2	5.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00		1.13	0.25	0.00	
Incremental Delay, d2	83.5	77.3		0.6	0.1	128.3	2.9		2.6	0.8	0.3	
Delay (s)	139.2	132.9		48.6	47.1	185.3	19.5		56.8	2.9	0.3	
Level of Service	F	F		D	D	F	B		E	A	A	
Approach Delay (s)	136.1			47.9			20.4			5.6		
Approach LOS	F			D			C			A		

Intersection Summary			
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	115.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
6: Napa Vallejo Hwy (SR 221) & College Wy/Magnolia Dr

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	216	1	1	199	3	108	13	1591	7	18	1256	152
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	4.5		4.0	4.5	4.5	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95		1.00	0.95	1.00	
Frt	1.00	1.00	0.85	1.00	0.85	1.00	1.00		1.00	1.00	0.85	
Flt Protected	0.95	0.95	1.00	0.95	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1681	1686	1583	1775	1583	1770	3404		1770	3406	1583	
Flt Permitted	0.95	0.95	1.00	0.95	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	1681	1686	1583	1775	1583	1770	3404		1770	3406	1583	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	227	1	1	209	3	114	14	1675	7	19	1322	160
RTOR Reduction (vph)	0	0	1	0	0	59	0	0	0	0	0	53
Lane Group Flow (vph)	113	115	0	0	212	55	14	1682	0	19	1322	107
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	6%	2%	2%	6%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	13.1	13.1	13.1	24.2	24.2	2.0	88.2		3.0	89.2	89.2	
Effective Green, g (s)	13.1	13.1	13.1	24.2	24.2	2.0	88.2		3.0	89.2	89.2	
Actuated g/C Ratio	0.09	0.09	0.09	0.17	0.17	0.01	0.61		0.02	0.62	0.62	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.5		4.0	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	151	152	143	296	264	24	2070		36	2095	973	
v/s Ratio Prot	0.07	c0.07		c0.12	0.01	c0.49			c0.01	0.39		
v/s Ratio Perm			0.00		0.03						0.07	
v/c Ratio	0.75	0.76	0.00	0.72	0.21	0.58	0.81		0.53	0.63	0.11	
Uniform Delay, d1	64.3	64.4	60.0	57.2	52.1	71.1	22.0		70.3	17.5	11.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.21	0.46	0.24	
Incremental Delay, d2	18.2	19.1	0.0	8.0	0.4	31.3	3.6		8.2	0.9	0.1	
Delay (s)	82.5	83.5	60.0	65.2	52.5	102.4	25.6		92.9	9.0	2.9	
Level of Service	F	F	E	E	D	F	C		F	A	A	
Approach Delay (s)	82.9			60.7			26.2			9.4		
Approach LOS	F			E			C			A		

Intersection Summary			
HCM 2000 Control Delay	26.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
7: Napa Vallejo Hwy (SR 221) & Streblov Dr

8/5/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	39	32	268	1417	1326	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	42	35	291	1540	1441	174
RTOR Reduction (vph)	0	33	0	0	0	61
Lane Group Flow (vph)	42	2	291	1540	1441	113
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	5.1	5.1	15.1	59.8	40.7	40.7
Effective Green, g (s)	5.1	5.1	15.1	59.8	40.7	40.7
Actuated g/C Ratio	0.07	0.07	0.21	0.81	0.55	0.55
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	238	109	364	2774	1888	877
v/s Ratio Prot	c0.01		c0.16	0.45	c0.42	
v/s Ratio Perm		0.00				0.07
v/c Ratio	0.18	0.02	0.80	0.56	0.76	0.13
Uniform Delay, d1	32.2	31.8	27.7	2.3	12.6	7.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.1	11.6	0.8	3.0	0.3
Delay (s)	32.5	31.9	39.3	3.1	15.6	8.2
Level of Service	C	C	D	A	B	A
Approach Delay (s)	32.2			8.9	14.8	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	12.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	73.4	Sum of lost time (s)	12.5
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
7: Napa Vallejo Hwy (SR 221) & Streblov Dr

8/5/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	147	134	118	1499	1347	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	155	141	124	1578	1418	123
RTOR Reduction (vph)	0	123	0	0	0	47
Lane Group Flow (vph)	155	18	124	1578	1418	76
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	8.3	8.3	7.0	49.5	38.5	38.5
Effective Green, g (s)	8.3	8.3	7.0	49.5	38.5	38.5
Actuated g/C Ratio	0.13	0.13	0.11	0.75	0.58	0.58
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	429	198	186	2542	1977	919
v/s Ratio Prot	c0.05		0.07	c0.46	c0.42	
v/s Ratio Perm		0.01				0.05
v/c Ratio	0.36	0.09	0.67	0.62	0.72	0.08
Uniform Delay, d1	26.6	25.7	28.5	4.0	10.0	6.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.2	8.7	1.2	2.3	0.2
Delay (s)	27.1	25.9	37.2	5.1	12.3	6.3
Level of Service	C	C	D	A	B	A
Approach Delay (s)	26.5			7.5	11.8	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	66.3	Sum of lost time (s)	12.5
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



HCM Unsignalized Intersection Capacity Analysis  
8: Napa Vallejo Hwy (SR 221) & Project Access

8/5/2013

Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	↔	↔	↑↑	↔	↔	↑↑	
Volume (veh/h)	74	45	1595	113	60	1306	
Sign Control	Stop		Free			Free	
Grade	0%		0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	80	49	1734	123	65	1420	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)		5					
Median type		TWLTL			None		
Median storage (veh)		2					
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume	2574	867			1734		
vC1, stage 1 conf vol	1734						
vC2, stage 2 conf vol	840						
vCu, unblocked vol	2574	867			1734		
IC, single (s)	7.0	7.1			4.3		
IC, 2 stage (s)	6.0						
IF (s)	3.6	3.4			2.3		
p0 queue free %	24	83			80		
cM capacity (veh/h)	105	281			326		
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>
Volume Total	129	867	867	123	65	710	710
Volume Left	80	0	0	0	65	0	0
Volume Right	49	0	0	123	0	0	0
cSH	169	1700	1700	1700	326	1700	1700
Volume to Capacity	0.76	0.51	0.51	0.07	0.20	0.42	0.42
Queue Length 95th (ft)	123	0	0	0	18	0	0
Control Delay (s)	74.2	0.0	0.0	0.0	18.8	0.0	0.0
Lane LOS	F				C		
Approach Delay (s)	74.2	0.0			0.8		
Approach LOS	F						
<b>Intersection Summary</b>							
Average Delay	3.1						
Intersection Capacity Utilization	60.6%		ICU Level of Service		B		
Analysis Period (min)	15						

HCM Unsignalized Intersection Capacity Analysis  
8: Napa Vallejo Hwy (SR 221) & Project Access

8/5/2013

Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	↔	↔	↑↑	↔	↔	↑↑	
Volume (veh/h)	60	70	1513	47	40	1470	
Sign Control	Stop		Free			Free	
Grade	0%		0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly flow rate (vph)	63	74	1593	49	42	1547	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)		5					
Median type		TWLTL			None		
Median storage (veh)		2					
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume	2451	796			1593		
vC1, stage 1 conf vol	1593						
vC2, stage 2 conf vol	858						
vCu, unblocked vol	2451	796			1593		
IC, single (s)	7.0	7.1			4.3		
IC, 2 stage (s)	6.0						
IF (s)	3.6	3.4			2.3		
p0 queue free %	49	76			89		
cM capacity (veh/h)	125	313			372		
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>
Volume Total	137	796	796	49	42	774	774
Volume Left	63	0	0	0	42	0	0
Volume Right	74	0	0	49	0	0	0
cSH	271	1700	1700	1700	372	1700	1700
Volume to Capacity	0.51	0.47	0.47	0.03	0.11	0.46	0.46
Queue Length 95th (ft)	66	0	0	0	9	0	0
Control Delay (s)	38.5	0.0	0.0	0.0	15.9	0.0	0.0
Lane LOS	E				C		
Approach Delay (s)	38.5	0.0			0.4		
Approach LOS	E						
<b>Intersection Summary</b>							
Average Delay	1.8						
Intersection Capacity Utilization	52.8%		ICU Level of Service		A		
Analysis Period (min)	15						

HCM Signalized Intersection Capacity Analysis  
 9: Napa Vallejo Hwy (SR 221) & Kaiser Rd

8/5/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	92	41	126	1694	995	301
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	100	45	137	1841	1082	327
RTOR Reduction (vph)	0	39	0	0	0	155
Lane Group Flow (vph)	100	6	137	1841	1082	172
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	6.5	6.5	5.7	37.2	27.5	27.5
Effective Green, g (s)	6.5	6.5	5.7	37.2	27.5	27.5
Actuated g/C Ratio	0.12	0.12	0.11	0.71	0.53	0.53
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	427	197	193	2427	1794	833
v/s Ratio Prot	c0.03		0.08	c0.54	0.32	
v/s Ratio Perm		0.00				0.11
v/c Ratio	0.23	0.03	0.71	0.76	0.60	0.21
Uniform Delay, d1	20.6	20.1	22.5	4.7	8.6	6.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.1	11.3	2.3	1.5	0.6
Delay (s)	20.9	20.1	33.8	7.0	10.1	7.1
Level of Service	C	C	C	A	B	A
Approach Delay (s)	20.7			8.8	9.4	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay	9.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	52.2	Sum of lost time (s)	12.5
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 9: Napa Vallejo Hwy (SR 221) & Kaiser Rd

8/5/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	274	44	22	1305	1418	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	288	46	23	1374	1493	95
RTOR Reduction (vph)	0	40	0	0	0	35
Lane Group Flow (vph)	288	6	23	1374	1493	60
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	8.0	8.0	0.8	41.7	36.9	36.9
Effective Green, g (s)	8.0	8.0	0.8	41.7	36.9	36.9
Actuated g/C Ratio	0.14	0.14	0.01	0.72	0.63	0.63
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	471	217	24	2440	2159	1003
v/s Ratio Prot	c0.08		0.01	c0.40	c0.44	
v/s Ratio Perm		0.00				0.04
v/c Ratio	0.61	0.03	0.96	0.56	0.69	0.06
Uniform Delay, d1	23.6	21.7	28.7	3.9	6.9	4.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.4	0.1	163.4	0.9	1.8	0.1
Delay (s)	26.0	21.8	192.1	4.9	8.8	4.2
Level of Service	C	C	F	A	A	A
Approach Delay (s)	25.4			7.9	8.5	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	58.2	Sum of lost time (s)	12.5
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

10: Napa Vallejo Hwy (SR 221) & Napa Valley Corporate Wy/Anderson Rd

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	26	0	30	2	0	2	209	1826	4	0	981	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	0.97	0.95	1.00	0.95	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.85	1.00	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1618	1618	1524	1770	1583	3303	3406	1583	3406	1524	1524	1524
Flt Permitted	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1618	1618	1524	1770	1583	3303	3406	1583	3406	1524	1524	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)	28	0	33	2	0	2	227	1985	4	0	1066	99
RTOR Reduction (vph)	0	0	28	0	0	2	0	0	1	0	0	34
Lane Group Flow (vph)	14	14	5	0	2	0	227	1985	3	0	1066	65
Heavy Vehicles (%)	6%	2%	6%	2%	2%	2%	6%	6%	2%	2%	6%	6%
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4			8		2				6
Actuated Green, G (s)	2.8	2.8	13.8		1.0	1.0	11.0	73.9	73.9		59.4	59.4
Effective Green, g (s)	2.8	2.8	13.8		1.0	1.0	11.0	73.9	73.9		59.4	59.4
Actuated g/C Ratio	0.03	0.03	0.15		0.01	0.01	0.12	0.82	0.82		0.66	0.66
Clearance Time (s)	4.0	4.0	3.5		4.0	4.0	3.5	4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	50	50	233		19	17	402	2790	1296		2242	1003
v/s Ratio Prot	c0.01	0.01	0.00		c0.00		0.07	c0.58			0.31	
v/s Ratio Perm			0.00			0.00		0.00				0.04
v/c Ratio	0.28	0.28	0.02		0.11	0.00	0.56	0.71	0.00		0.48	0.07
Uniform Delay, d1	42.7	42.7	32.5		44.2	44.1	37.3	3.5	1.5		7.7	5.5
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	3.1	3.1	0.0		2.4	0.0	1.8	1.6	0.0		0.7	0.1
Delay (s)	45.8	45.8	32.5		46.6	44.1	39.2	5.1	1.5		8.4	5.6
Level of Service	D	D	C		D	D	D	A	A		A	A
Approach Delay (s)	38.6				45.4			8.6			8.1	
Approach LOS	D				D			A			A	

Intersection Summary

HCM 2000 Control Delay	9.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	90.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

10: Napa Vallejo Hwy (SR 221) & Napa Valley Corporate Wy/Anderson Rd

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	105	1	113	5	0	8	31	1223	0	5	1291	189
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	0.97	0.95	1.00	0.95	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.85	1.00	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1618	1624	1524	1770	1583	3303	3406	1770	1583	3406	1524	1524
Flt Permitted	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1618	1624	1524	1770	1583	3303	3406	1770	1583	3406	1524	1524
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	111	1	119	5	0	8	33	1287	0	5	1359	199
RTOR Reduction (vph)	0	0	102	0	0	8	0	0	0	0	0	77
Lane Group Flow (vph)	55	57	17	0	5	0	33	1287	0	5	1359	122
Heavy Vehicles (%)	6%	2%	6%	2%	2%	2%	6%	6%	2%	2%	6%	6%
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4			8		2				6
Actuated Green, G (s)	6.8	6.8	10.3		1.1	1.1	3.5	46.1	46.1		0.8	43.4
Effective Green, g (s)	6.8	6.8	10.3		1.1	1.1	3.5	46.1	46.1		0.8	43.4
Actuated g/C Ratio	0.10	0.10	0.15		0.02	0.02	0.05	0.65	0.65		0.01	0.61
Clearance Time (s)	4.0	4.0	3.5		4.0	4.0	3.5	4.5	4.5		3.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	155	155	221		27	24	163	2217	2217		20	2087
v/s Ratio Prot	0.03	c0.04	0.00		c0.00		c0.01	c0.38			0.00	c0.40
v/s Ratio Perm			0.01			0.00						0.08
v/c Ratio	0.35	0.37	0.08		0.19	0.01	0.20	0.58	0.58		0.25	0.65
Uniform Delay, d1	29.9	30.0	26.1		34.4	34.3	32.3	6.9	6.9		34.7	8.8
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	1.4	1.5	0.2		3.3	0.1	0.6	1.1	1.1		6.5	1.6
Delay (s)	31.3	31.5	26.3		37.7	34.4	32.9	8.0	8.0		41.2	10.4
Level of Service	C	C	C		D	C	C	A	A		D	B
Approach Delay (s)	28.8				35.7			8.7			10.0	
Approach LOS	C				D			A			A	

Intersection Summary

HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	70.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	56.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis

1: 3rd St & Coombs St

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Volume (vph)	4	254	2	109	424	18	29	30	104	11	34	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0			5.0			5.0		
Lane Util. Factor	0.95			0.95			1.00			1.00		
Frt	1.00			0.99			0.91			0.98		
Flt Protected	1.00			0.99			0.99			0.99		
Satd. Flow (prot)	3533			3487			1688			1805		
Flt Permitted	0.95			0.81			0.95			0.94		
Satd. Flow (perm)	3355			2867			1614			1715		
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)	4	276	2	118	461	20	32	33	113	12	37	9
RTOR Reduction (vph)	0	0	0	0	3	0	0	74	0	0	6	0
Lane Group Flow (vph)	0		282	0		596	0		104	0		52
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	4		8		8		2		6		6	
Permitted Phases	4		8		2		6		6		6	
Actuated Green, G (s)	37.0		37.0		25.0		25.0		25.0		25.0	
Effective Green, g (s)	37.0		37.0		25.0		25.0		25.0		25.0	
Actuated g/C Ratio	0.51		0.51		0.35		0.35		0.35		0.35	
Clearance Time (s)	5.0		5.0		5.0		5.0		5.0		5.0	
Vehicle Extension (s)	3.0		3.0		3.0		3.0		3.0		3.0	
Lane Grp Cap (vph)	1724		1473		560		595		595		595	
v/s Ratio Prot												
v/s Ratio Perm	0.08		c0.21		c0.06		0.03		0.03		0.06	
v/c Ratio	0.16		0.40		0.19		0.09		0.09		0.17	
Uniform Delay, d1	9.3		10.7		16.4		15.8		15.8		16.3	
Progression Factor	1.00		1.00		1.00		1.00		1.00		1.00	
Incremental Delay, d2	0.0		0.2		0.2		0.1		0.1		0.2	
Delay (s)	9.3		10.9		16.6		15.9		15.9		16.5	
Level of Service	A		B		B		B		B		B	
Approach Delay (s)	9.3		10.9		16.6		15.9		15.9		16.5	
Approach LOS	A		B		B		B		B		B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	11.7		HCM 2000 Level of Service		B		B		B		B	
HCM 2000 Volume to Capacity ratio	0.32		0.32		0.32		0.32		0.32		0.32	
Actuated Cycle Length (s)	72.0		Sum of lost time (s)		10.0		10.0		10.0		10.0	
Intersection Capacity Utilization	95.0%		ICU Level of Service		F		F		F		F	
Analysis Period (min)	15		15		15		15		15		15	
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

1: 3rd St & Coombs St

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Volume (vph)	4	244	1	128	467	9	98	50	134	29	48	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0			5.0			5.0		
Lane Util. Factor	0.95			0.95			1.00			1.00		
Frt	1.00			1.00			0.94			0.97		
Flt Protected	1.00			0.99			0.98			0.99		
Satd. Flow (prot)	3534			3495			1714			1777		
Flt Permitted	0.95			0.81			0.85			0.87		
Satd. Flow (perm)	3354			2849			1483			1559		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	4	257	1	135	492	9	103	53	141	31	51	26
RTOR Reduction (vph)	0	0	0	0	1	0	0	45	0	0	16	0
Lane Group Flow (vph)	0		262	0		635	0		252	0		92
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	4		8		8		2		6		6	
Permitted Phases	4		8		2		6		6		6	
Actuated Green, G (s)	37.0		37.0		25.0		25.0		25.0		25.0	
Effective Green, g (s)	37.0		37.0		25.0		25.0		25.0		25.0	
Actuated g/C Ratio	0.51		0.51		0.35		0.35		0.35		0.35	
Clearance Time (s)	5.0		5.0		5.0		5.0		5.0		5.0	
Vehicle Extension (s)	3.0		3.0		3.0		3.0		3.0		3.0	
Lane Grp Cap (vph)	1723		1464		514		541		541		541	
v/s Ratio Prot												
v/s Ratio Perm	0.08		c0.22		c0.17		0.06		0.06		0.06	
v/c Ratio	0.15		0.43		0.49		0.17		0.17		0.17	
Uniform Delay, d1	9.2		10.9		18.5		16.3		16.3		16.3	
Progression Factor	1.00		1.00		1.00		1.00		1.00		1.00	
Incremental Delay, d2	0.0		0.2		0.7		0.2		0.2		0.2	
Delay (s)	9.3		11.2		19.2		16.5		16.5		16.5	
Level of Service	A		B		B		B		B		B	
Approach Delay (s)	9.3		11.2		19.2		16.5		16.5		16.5	
Approach LOS	A		B		B		B		B		B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	13.1		HCM 2000 Level of Service		B		B		B		B	
HCM 2000 Volume to Capacity ratio	0.46		0.46		0.46		0.46		0.46		0.46	
Actuated Cycle Length (s)	72.0		Sum of lost time (s)		10.0		10.0		10.0		10.0	
Intersection Capacity Utilization	97.1%		ICU Level of Service		F		F		F		F	
Analysis Period (min)	15		15		15		15		15		15	
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
2: 3rd St & Main St

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↗	↖ ↗		↖ ↗	↖ ↗			↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗
Volume (vph)	33	280	7	29	360	64	0	26	41	117	37	47
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
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00			1.00
Frt	1.00	1.00		1.00	0.98			1.00	0.85			0.97
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00			0.97
Satd. Flow (prot)	1770	3526		1770	3459			1863	1583			1753
Flt Permitted	0.95	1.00		0.95	1.00			1.00	1.00			0.80
Satd. Flow (perm)	1770	3526		1770	3459			1863	1583			1451
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)	36	304	8	32	391	70	0	28	45	127	40	51
RTOR Reduction (vph)	0	4	0	0	25	0	0	0	31	0	25	0
Lane Group Flow (vph)	36	308	0	32	436	0	0	28	14	0	193	0
Turn Type	Prot	NA		Prot	NA		Perm	NA	pm+ov	Perm	NA	NA
Protected Phases	7	4		3	8			2	3			6
Permitted Phases							2		2		6	
Actuated Green, G (s)	0.6	8.5		1.9	9.8			7.7	9.6			7.7
Effective Green, g (s)	0.6	8.5		1.9	9.8			7.7	9.6			7.7
Actuated g/C Ratio	0.02	0.28		0.06	0.33			0.26	0.32			0.26
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0			4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0			3.0
Lane Grp Cap (vph)	35	995		111	1126			476	715			371
v/s Ratio Prot	c0.02	0.09		0.02	c0.13			0.02	0.00			c0.13
v/s Ratio Perm								0.01				c0.13
v/c Ratio	1.03	0.31		0.29	0.39			0.06	0.02			0.52
Uniform Delay, d1	14.8	8.5		13.5	7.8			8.5	7.0			9.6
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00			1.00
Incremental Delay, d2	160.8	0.2		1.4	0.2			0.1	0.0			1.3
Delay (s)	175.6	8.7		14.9	8.1			8.5	7.0			10.9
Level of Service	F	A		B	A			A	A			B
Approach Delay (s)		25.9			8.5			7.6				10.9
Approach LOS		C			A			A				B
<b>Intersection Summary</b>												
HCM 2000 Control Delay	14.3			HCM 2000 Level of Service			B					
HCM 2000 Volume to Capacity ratio	0.47											
Actuated Cycle Length (s)	30.1			Sum of lost time (s)			12.0					
Intersection Capacity Utilization	43.3%			ICU Level of Service			A					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
2: 3rd St & Main St

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↗	↖ ↗		↖ ↗	↖ ↗			↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗
Volume (vph)	59	380	4	100	548	96	12	60	113	222	95	75
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
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00			1.00
Frt	1.00	1.00		1.00	0.98			1.00	0.85			0.97
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00			0.97
Satd. Flow (prot)	1770	3534		1770	3460			1847	1583			1765
Flt Permitted	0.95	1.00		0.95	1.00			0.92	1.00			0.78
Satd. Flow (perm)	1770	3534		1770	3460			1720	1583			1419
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	62	400	4	105	577	101	13	63	119	234	100	79
RTOR Reduction (vph)	0	1	0	0	24	0	0	0	65	0	16	0
Lane Group Flow (vph)	62	403	0	105	654	0	0	76	54	0	397	0
Turn Type	Prot	NA		Prot	NA		Perm	NA	pm+ov	Perm	NA	NA
Protected Phases	7	4		3	8			2	3			6
Permitted Phases							2		2		6	
Actuated Green, G (s)	3.0	13.9		4.4	15.3			17.2	21.6			17.2
Effective Green, g (s)	3.0	13.9		4.4	15.3			17.2	21.6			17.2
Actuated g/C Ratio	0.06	0.29		0.09	0.32			0.36	0.45			0.36
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0			4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0			3.0
Lane Grp Cap (vph)	111	1034		163	1114			622	853			513
v/s Ratio Prot	0.04	0.11		c0.06	c0.19				0.01			c0.28
v/s Ratio Perm								0.04	0.03			c0.28
v/c Ratio	0.56	0.39		0.64	0.59			0.12	0.06			0.77
Uniform Delay, d1	21.6	13.4		20.8	13.5			10.1	7.3			13.4
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00			1.00
Incremental Delay, d2	6.0	0.2		8.4	0.8			0.1	0.0			7.2
Delay (s)	27.6	13.7		29.2	14.3			10.2	7.3			20.6
Level of Service	C	B		C	B			B	A			C
Approach Delay (s)		15.5			16.3			8.4				20.6
Approach LOS		B			B			A				C
<b>Intersection Summary</b>												
HCM 2000 Control Delay	16.2			HCM 2000 Level of Service			B					
HCM 2000 Volume to Capacity ratio	0.71											
Actuated Cycle Length (s)	47.5			Sum of lost time (s)			12.0					
Intersection Capacity Utilization	60.1%			ICU Level of Service			B					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
3: Soscol Ave (SR 121) & 3rd St

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↑	↗	↖	↑	↗	↖	↑	↗	↖	↑	↗	
Volume (vph)	114	225	244	21	187	53	245	829	7	67	749	82	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		0.97	0.95		1.00	0.95	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00		1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	3421		3433	3535		1770	3539	1583	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	3421		3433	3535		1770	3539	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)	124	245	265	23	203	58	266	901	8	73	814	89	
RTOR Reduction (vph)	0	0	173	0	34	0	0	1	0	0	0	53	
Lane Group Flow (vph)	124	245	92	23	227	0	266	908	0	73	814	36	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	Perm	
Protected Phases	7	4		3	8		5	2		1	6		
Permitted Phases			4									6	
Actuated Green, G (s)	5.0	21.1	21.1	1.8	17.9		13.8	41.3		8.4	35.9	35.9	
Effective Green, g (s)	5.0	21.1	21.1	1.8	17.9		13.8	41.3		8.4	35.9	35.9	
Actuated g/C Ratio	0.06	0.23	0.23	0.02	0.20		0.15	0.46		0.09	0.40	0.40	
Clearance Time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	98	436	371	35	680		526	1622		165	1411	631	
v/s Ratio Prot	c0.07	c0.13		0.01	0.07		c0.08	c0.26		0.04	0.23		
v/s Ratio Perm			0.06									0.02	
v/c Ratio	1.27	0.56	0.25	0.66	0.33		0.51	0.56		0.44	0.58	0.06	
Uniform Delay, d1	42.5	30.4	28.0	43.8	30.9		35.0	17.7		38.6	21.1	16.6	
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	178.1	1.7	0.4	36.6	0.3		0.8	1.4		1.9	1.7	0.2	
Delay (s)	220.6	32.0	28.4	80.4	31.2		35.7	19.1		40.5	22.8	16.8	
Level of Service	F	C	C	F	C		D	B		D	C	B	
Approach Delay (s)		67.4			35.2			22.9			23.6		
Approach LOS		E			D			C			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay	33.5			HCM 2000 Level of Service				C					
HCM 2000 Volume to Capacity ratio	0.61												
Actuated Cycle Length (s)	90.0			Sum of lost time (s)				17.4					
Intersection Capacity Utilization	57.4%			ICU Level of Service				B					
Analysis Period (min)	15												
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
3: Soscol Ave (SR 121) & 3rd St

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↑	↗	↖	↑	↗	↖	↑	↗	↖	↑	↗	
Volume (vph)	146	276	259	23	195	56	260	933	16	75	918	168	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		0.97	0.95		1.00	0.95	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00		1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	3421		3433	3530		1770	3539	1583	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	3421		3433	3530		1770	3539	1583	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	154	291	273	24	205	59	274	982	17	79	966	177	
RTOR Reduction (vph)	0	0	154	0	34	0	0	1	0	0	0	107	
Lane Group Flow (vph)	154	291	119	24	230	0	274	998	0	79	966	70	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	Perm	
Protected Phases	7	4		3	8		5	2		1	6		
Permitted Phases			4									6	
Actuated Green, G (s)	5.0	21.6	21.6	1.8	18.4		13.7	40.8		8.4	35.5	35.5	
Effective Green, g (s)	5.0	21.6	21.6	1.8	18.4		13.7	40.8		8.4	35.5	35.5	
Actuated g/C Ratio	0.06	0.24	0.24	0.02	0.20		0.15	0.45		0.09	0.39	0.39	
Clearance Time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	98	447	379	35	699		522	1600		165	1395	624	
v/s Ratio Prot	c0.09	c0.16		0.01	0.07		c0.08	0.28		0.04	c0.27		
v/s Ratio Perm			0.08									0.04	
v/c Ratio	1.57	0.65	0.32	0.69	0.33		0.52	0.62		0.48	0.69	0.11	
Uniform Delay, d1	42.5	30.8	28.1	43.8	30.5		35.2	18.7		38.7	22.7	17.3	
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	300.4	3.4	0.5	43.6	0.3		1.0	1.8		2.2	2.8	0.4	
Delay (s)	342.9	34.2	28.6	87.4	30.8		36.1	20.6		40.9	25.5	17.6	
Level of Service	F	C	C	F	C		D	C		D	C	B	
Approach Delay (s)		98.3			35.5			23.9			25.4		
Approach LOS		F			D			C			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay	40.6			HCM 2000 Level of Service				D					
HCM 2000 Volume to Capacity ratio	0.70												
Actuated Cycle Length (s)	90.0			Sum of lost time (s)				17.4					
Intersection Capacity Utilization	65.2%			ICU Level of Service				C					
Analysis Period (min)	15												
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
4: Soscol Ave (SR 121) & Silverado Trail (SR 121)

4/8/2013

	↑		↖		↗	
Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↑↑	↖		↗	↖	↗
Volume (vph)	1173	403	10	849	597	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12
Total Lost time (s)	5.0	5.0		5.0	5.0	
Lane Util. Factor	0.95	1.00		0.95	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	1.00	1.00		1.00	0.95	
Satd. Flow (prot)	3505	1777		3537	1753	
Flt Permitted	1.00	1.00		0.75	0.95	
Satd. Flow (perm)	3505	1777		2658	1753	
Peak-hour factor, PHF	0.73	0.73	0.73	0.73	0.73	0.73
Adj. Flow (vph)	1607	552	14	1163	818	21
RTOR Reduction (vph)	0	0	0	0	1	0
Lane Group Flow (vph)	1607	552	0	1177	838	0
Heavy Vehicles (%)	3%	3%	2%	2%	3%	2%
Turn Type	NA	custom	Perm	NA	NA	
Protected Phases	2	2 3		6	8	
Permitted Phases			6			
Actuated Green, G (s)	62.0	130.0		62.0	58.0	
Effective Green, g (s)	62.0	126.0		62.0	58.0	
Actuated g/C Ratio	0.48	0.97		0.48	0.45	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	5.0			5.0	4.0	
Lane Grp Cap (vph)	1671	1722		1267	782	
v/s Ratio Prot	c0.46	0.31			c0.48	
v/s Ratio Perm				0.44		
v/c Ratio	0.96	0.32		0.93	1.07	
Uniform Delay, d1	32.9	0.1		31.9	36.0	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	14.6	0.1		13.2	53.3	
Delay (s)	47.5	0.2		45.1	89.3	
Level of Service	D	A		D	F	
Approach Delay (s)	35.4			45.1	89.3	
Approach LOS	D			D	F	

Intersection Summary			
HCM 2000 Control Delay	49.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
4: Soscol Ave (SR 121) & Silverado Trail (SR 121)

4/8/2013

	↑		↖		↗	
Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↑↑	↖		↗	↖	↗
Volume (vph)	1313	634	10	1396	623	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12
Total Lost time (s)	5.0	5.0		5.0	5.0	
Lane Util. Factor	0.95	1.00		0.95	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	1.00	1.00		1.00	0.95	
Satd. Flow (prot)	3505	1777		3537	1753	
Flt Permitted	1.00	1.00		0.88	0.95	
Satd. Flow (perm)	3505	1777		3103	1753	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	1527	737	12	1623	724	21
RTOR Reduction (vph)	0	0	0	0	1	0
Lane Group Flow (vph)	1527	737	0	1635	744	0
Heavy Vehicles (%)	3%	3%	2%	2%	3%	2%
Turn Type	NA	custom	Perm	NA	NA	
Protected Phases	2	2 3		6	8	
Permitted Phases			6			
Actuated Green, G (s)	61.8	120.0		61.8	48.2	
Effective Green, g (s)	61.8	116.0		61.8	48.2	
Actuated g/C Ratio	0.51	0.97		0.51	0.40	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	5.0			5.0	4.0	
Lane Grp Cap (vph)	1805	1717		1598	704	
v/s Ratio Prot	0.44	0.41			c0.42	
v/s Ratio Perm				c0.53		
v/c Ratio	0.85	0.43		1.02	1.06	
Uniform Delay, d1	25.0	0.1		29.1	35.9	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.1	0.2		28.6	50.1	
Delay (s)	30.1	0.3		57.7	86.0	
Level of Service	C	A		E	F	
Approach Delay (s)	20.4			57.7	86.0	
Approach LOS	C			E	F	

Intersection Summary			
HCM 2000 Control Delay	44.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	89.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



HCM Signalized Intersection Capacity Analysis  
5: Soscol Ave (SR 121) & Imola Ave (SR 121)/Imola Ave

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Volume (vph)	155	306	759	160	283	45	445	1052	113	80	1297	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.1	4.0	3.0	4.1		3.5	4.9		3.5	4.6	4.6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1863	1568	1770	1824		3400	3457		1770	3505	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1752	1863	1568	1770	1824		3400	3457		1770	3505	1568
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	174	344	853	180	318	51	500	1182	127	90	1457	149
RTOR Reduction (vph)	0	0	0	0	5	0	0	6	0	0	0	87
Lane Group Flow (vph)	174	344	853	180	364	0	500	1303	0	90	1457	62
Heavy Vehicles (%)	3%	2%	3%	2%	2%		3%	3%		2%	3%	3%
Turn Type	Prot	NA	Free	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free									6
Actuated Green, G (s)	13.0	28.3	135.0	15.9	31.2		19.5	66.1		9.2	56.1	56.1
Effective Green, g (s)	13.0	28.3	135.0	15.9	31.2		19.5	66.1		9.2	56.1	56.1
Actuated g/C Ratio	0.10	0.21	1.00	0.12	0.23		0.14	0.49		0.07	0.42	0.42
Clearance Time (s)	3.0	4.1		3.0	4.1		3.5	4.9		3.5	4.6	4.6
Vehicle Extension (s)	3.5	3.0		3.8	3.0		4.0	3.5		3.0	3.5	3.5
Lane Grp Cap (vph)	168	390	1568	208	421		491	1692		120	1456	651
v/s Ratio Prot	c0.10	c0.18		0.10	c0.20		c0.15	0.38		0.05	c0.42	
v/s Ratio Perm			0.54									0.04
v/c Ratio	1.04	0.88	0.54	0.87	0.87		1.02	0.77		0.75	1.00	0.10
Uniform Delay, d1	61.0	51.7	0.0	58.5	49.9		57.8	28.2		61.8	39.5	24.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.80	0.63		1.00	1.00	1.00
Incremental Delay, d2	79.2	20.2	1.4	29.8	16.7		35.1	2.0		22.8	23.7	0.3
Delay (s)	140.2	71.9	1.4	88.3	66.6		81.2	19.7		84.6	63.2	24.3
Level of Service	F	E	A	F	E		F	B		F	E	C
Approach Delay (s)		36.7			73.7			36.7			60.9	
Approach LOS		D			E			D			E	

Intersection Summary			
HCM 2000 Control Delay	48.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	88.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
5: Soscol Ave (SR 121) & Imola Ave (SR 121)/Imola Ave

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Volume (vph)	193	281	413	85	283	35	730	1316	128	81	1046	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.1	4.0	3.0	4.1		3.5	4.9		3.5	4.6	4.6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1863	1568	1770	1832		3400	3461		1770	3505	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1752	1863	1568	1770	1832		3400	3461		1770	3505	1568
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	230	335	492	101	337	42	869	1567	152	96	1245	223
RTOR Reduction (vph)	0	0	0	0	3	0	0	5	0	0	0	146
Lane Group Flow (vph)	230	335	492	101	376	0	869	1714	0	96	1245	77
Heavy Vehicles (%)	3%	2%	3%	2%	2%		3%	3%		2%	3%	3%
Turn Type	Prot	NA	Free	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free									6
Actuated Green, G (s)	16.0	30.6	145.0	16.7	31.3		32.5	73.2		9.0	50.0	50.0
Effective Green, g (s)	16.0	30.6	145.0	16.7	31.3		32.5	73.2		9.0	50.0	50.0
Actuated g/C Ratio	0.11	0.21	1.00	0.12	0.22		0.22	0.50		0.06	0.34	0.34
Clearance Time (s)	3.0	4.1		3.0	4.1		3.5	4.9		3.5	4.6	4.6
Vehicle Extension (s)	3.5	3.0		3.8	3.0		4.0	3.5		3.0	3.5	3.5
Lane Grp Cap (vph)	193	393	1568	203	395		762	1747		109	1208	540
v/s Ratio Prot	c0.13	0.18		0.06	c0.21		c0.26	0.50		0.05	c0.36	
v/s Ratio Perm			0.31									0.05
v/c Ratio	1.19	0.85	0.31	0.50	0.95		1.14	0.98		0.88	1.03	0.14
Uniform Delay, d1	64.5	55.0	0.0	60.2	56.1		56.2	35.2		67.5	47.5	32.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.81	0.69		1.00	1.00	1.00
Incremental Delay, d2	126.0	16.2	0.5	2.5	32.8		73.2	12.9		50.7	34.1	0.6
Delay (s)	190.5	71.2	0.5	62.7	89.0		119.1	37.3		118.1	81.6	33.3
Level of Service	F	E	A	E	F		F	D		F	F	C
Approach Delay (s)		64.3			83.4			64.8			76.9	
Approach LOS		E			F			E			E	

Intersection Summary			
HCM 2000 Control Delay	69.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
6: Soscol Ave (SR 121) & College Wy/Magnolia Dr

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Volume (vph)	71	3	0	34	0	31	8	1497	205	115	1700	352
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	4.5		4.0	4.5	4.5
Lane Util. Factor	0.95	0.95		1.00	1.00	1.00	0.95			1.00	0.95	1.00
Frt	1.00	1.00		1.00	0.85	1.00	0.98			1.00	1.00	0.85
Fit Protected	0.95	0.96		0.95	1.00	0.95	1.00			0.95	1.00	1.00
Satd. Flow (prot)	1681	1691		1770	1583	1770	3359			1770	3406	1583
Fit Permitted	0.95	0.96		0.95	1.00	0.95	1.00			0.95	1.00	1.00
Satd. Flow (perm)	1681	1691		1770	1583	1770	3359			1770	3406	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)	77	3	0	37	0	34	9	1627	223	125	1848	383
RTOR Reduction (vph)	0	0	0	0	0	30	0	6	0	0	0	76
Lane Group Flow (vph)	40	40	0	0	37	4	9	1844	0	125	1848	307
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	6%	2%	2%	6%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	4.0	4.0		15.8	15.8		0.8	85.5		13.2	97.9	97.9
Effective Green, g (s)	4.0	4.0		15.8	15.8		0.8	85.5		13.2	97.9	97.9
Actuated g/C Ratio	0.03	0.03		0.12	0.12		0.01	0.63		0.10	0.73	0.73
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.5		4.0	4.5	4.5
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)	49	50		207	185		10	2127		173	2469	1147
v/s Ratio Prot	c0.02	0.02		c0.02			0.01	c0.55		c0.07	0.54	
v/s Ratio Perm					0.00							0.19
v/c Ratio	0.82	0.80		0.18	0.02		0.90	0.87		0.72	0.75	0.27
Uniform Delay, d1	65.1	65.1		53.7	52.8		67.1	20.1		59.1	11.1	6.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.29	0.51	0.04
Incremental Delay, d2	64.0	59.1		0.4	0.0		226.0	5.1		7.6	1.1	0.3
Delay (s)	129.2	124.2		54.2	52.8		293.0	25.2		84.0	6.8	0.6
Level of Service	F	F		D	D		F	C		F	A	A
Approach Delay (s)		126.7			53.5			26.5				9.9
Approach LOS		F			D			C				A

Intersection Summary			
HCM 2000 Control Delay	19.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
6: Soscol Ave (SR 121) & College Wy/Magnolia Dr

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Volume (vph)	216	1	1	199	3	108	13	1854	7	18	1346	152
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	4.5		4.0	4.5	4.5
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	0.95			1.00	0.95	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Fit Protected	0.95	0.95	1.00		0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1686	1583		1775	1583	1770	3404		1770	3406	1583
Fit Permitted	0.95	0.95	1.00		0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1686	1583		1775	1583	1770	3404		1770	3406	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	227	1	1	209	3	114	14	1952	7	19	1417	160
RTOR Reduction (vph)	0	0	1	0	0	59	0	0	0	0	0	49
Lane Group Flow (vph)	113	115	0	0	212	55	14	1959	0	19	1417	111
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	6%	2%	2%	6%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	10.0	10.0	10.0		24.2	24.2	2.0	91.3		3.0	92.3	92.3
Effective Green, g (s)	10.0	10.0	10.0		24.2	24.2	2.0	91.3		3.0	92.3	92.3
Actuated g/C Ratio	0.07	0.07	0.07		0.17	0.17	0.01	0.63		0.02	0.64	0.64
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0	4.0	4.5		4.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	115	116	109		296	264	24	2143		36	2168	1007
v/s Ratio Prot	0.07	c0.07			c0.12		0.01	c0.58		c0.01	0.42	
v/s Ratio Perm			0.00			0.03						0.07
v/c Ratio	0.98	0.99	0.00		0.72	0.21	0.58	0.91		0.53	0.65	0.11
Uniform Delay, d1	67.4	67.5	62.8		57.2	52.1	71.1	23.4		70.3	16.4	10.3
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.34	0.21	0.00
Incremental Delay, d2	78.0	80.6	0.0		8.0	0.4	31.3	7.5		7.6	0.9	0.1
Delay (s)	145.4	148.1	62.8		65.2	52.5	102.4	30.9		101.6	4.3	0.1
Level of Service	F	F	E		E	D	F	C		F	A	A
Approach Delay (s)		146.4			60.7		31.4					5.0
Approach LOS		F			E		C					A

Intersection Summary			
HCM 2000 Control Delay	29.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	76.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
7: Soscol Ave (SR 121) & Streblow Dr

4/8/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	39	85	325	1650	1555	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Fit Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Fit Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	42	92	353	1793	1690	174
RTOR Reduction (vph)	0	86	0	0	0	39
Lane Group Flow (vph)	42	6	353	1793	1690	135
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	7.2	7.2	27.0	99.5	68.5	68.5
Effective Green, g (s)	7.2	7.2	27.0	99.5	68.5	68.5
Actuated g/C Ratio	0.06	0.06	0.23	0.86	0.59	0.59
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	214	98	414	2941	2025	941
v/s Ratio Prot	c0.01		c0.20	0.53	c0.50	
v/s Ratio Perm		0.00				0.09
v/c Ratio	0.20	0.06	0.85	0.61	0.83	0.14
Uniform Delay, d1	51.3	50.8	42.2	2.3	18.8	10.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.3	15.5	1.0	4.2	0.3
Delay (s)	51.7	51.1	57.7	3.2	23.0	10.7
Level of Service	D	D	E	A	C	B
Approach Delay (s)	51.3			12.2	21.9	
Approach LOS	D			B	C	

Intersection Summary			
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	115.2	Sum of lost time (s)	12.5
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
7: Soscol Ave (SR 121) & Streblow Dr

4/8/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	147	168	180	1762	1435	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Fit Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Fit Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	155	177	189	1855	1511	123
RTOR Reduction (vph)	0	155	0	0	0	46
Lane Group Flow (vph)	155	22	189	1855	1511	77
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	8.3	8.3	9.0	49.5	36.5	36.5
Effective Green, g (s)	8.3	8.3	9.0	49.5	36.5	36.5
Actuated g/C Ratio	0.13	0.13	0.14	0.75	0.55	0.55
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	429	198	240	2542	1875	871
v/s Ratio Prot	c0.05		0.11	c0.54	c0.44	
v/s Ratio Perm		0.01				0.05
v/c Ratio	0.36	0.11	0.79	0.73	0.81	0.09
Uniform Delay, d1	26.6	25.7	27.7	4.7	12.0	7.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.3	15.6	1.9	3.8	0.2
Delay (s)	27.1	26.0	43.3	6.6	15.9	7.2
Level of Service	C	C	D	A	B	A
Approach Delay (s)	26.5			10.0	15.2	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	66.3	Sum of lost time (s)	12.5
Intersection Capacity Utilization	64.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
8: Soscol Ave (SR 121) & Project Access

4/8/2013

	↙		↑		↘		
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	↘	↘	↗	↗	↘	↗	
Volume (veh/h)	78	32	1898	82	20	1628	
Sign Control	Stop		Free		Free		
Grade	0%		0%		0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	85	35	2063	89	22	1770	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)		5					
Median type		TWLT			None		
Median storage (veh)			2				
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume	2991	1032			2063		
vC1, stage 1 conf vol	2063						
vC2, stage 2 conf vol	928						
vCu, unblocked vol	2991	1032			2063		
tC, single (s)	7.0	7.1			4.3		
tC, 2 stage (s)	6.0						
tF (s)	3.6	3.4			2.3		
p0 queue free %	0	84			91		
cM capacity (veh/h)	71	217			240		
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>
Volume Total	120	1032	1032	89	22	885	885
Volume Left	85	0	0	0	22	0	0
Volume Right	35	0	0	89	0	0	0
cSH	97	1700	1700	1700	240	1700	1700
Volume to Capacity	1.23	0.61	0.61	0.05	0.09	0.52	0.52
Queue Length 95th (ft)	206	0	0	0	7	0	0
Control Delay (s)	246.3	0.0	0.0	0.0	21.5	0.0	0.0
Lane LOS	F				C		
Approach Delay (s)	246.3	0.0			0.3		
Approach LOS	F						
<b>Intersection Summary</b>							
Average Delay		7.4					
Intersection Capacity Utilization		63.5%			ICU Level of Service		B
Analysis Period (min)		15					

HCM Unsignalized Intersection Capacity Analysis  
8: Soscol Ave (SR 121) & Project Access

4/8/2013

	↙		↑		↘		
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	↘	↘	↗	↗	↘	↗	
Volume (veh/h)	13	31	1877	7	6	1626	
Sign Control	Stop		Free		Free		
Grade	0%		0%		0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly flow rate (vph)	14	33	1976	7	6	1712	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)		5					
Median type		TWLT			None		
Median storage (veh)			2				
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume	2844	988			1976		
vC1, stage 1 conf vol	1976						
vC2, stage 2 conf vol	868						
vCu, unblocked vol	2844	988			1976		
tC, single (s)	7.0	7.1			4.3		
tC, 2 stage (s)	6.0						
tF (s)	3.6	3.4			2.3		
p0 queue free %	83	86			98		
cM capacity (veh/h)	80	232			260		
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>
Volume Total	46	988	988	7	6	856	856
Volume Left	14	0	0	0	6	0	0
Volume Right	33	0	0	7	0	0	0
cSH	272	1700	1700	1700	260	1700	1700
Volume to Capacity	0.17	0.58	0.58	0.00	0.02	0.50	0.50
Queue Length 95th (ft)	15	0	0	0	2	0	0
Control Delay (s)	33.6	0.0	0.0	0.0	19.2	0.0	0.0
Lane LOS	D				C		
Approach Delay (s)	33.6	0.0			0.1		
Approach LOS	D						
<b>Intersection Summary</b>							
Average Delay		0.4					
Intersection Capacity Utilization		61.9%			ICU Level of Service		B
Analysis Period (min)		15					

HCM Signalized Intersection Capacity Analysis  
9: Soscol Ave (SR 121) & Kaiser Rd

4/8/2013

Movement	EBL	EBR	NBL	NBT	SBR	SBL
Lane Configurations						
Volume (vph)	381	147	197	1676	1075	546
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	414	160	214	1822	1168	593
RTOR Reduction (vph)	0	134	0	0	0	316
Lane Group Flow (vph)	414	26	214	1822	1168	277
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	9.8	9.8	9.6	41.5	27.9	27.9
Effective Green, g (s)	9.8	9.8	9.6	41.5	27.9	27.9
Actuated g/C Ratio	0.16	0.16	0.16	0.69	0.47	0.47
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	562	259	284	2363	1589	738
v/s Ratio Prot	c0.12		0.12	c0.53	0.34	
v/s Ratio Perm		0.02				0.17
v/c Ratio	0.74	0.10	0.75	0.77	0.74	0.37
Uniform Delay, d1	23.8	21.3	24.0	6.0	12.9	10.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.0	0.2	10.8	2.5	3.1	1.5
Delay (s)	28.8	21.4	34.7	8.5	16.0	11.8
Level of Service	C	C	C	A	B	B
Approach Delay (s)	26.7			11.3	14.6	
Approach LOS	C			B	B	

Intersection Summary			
HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	59.8	Sum of lost time (s)	12.5
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
9: Soscol Ave (SR 121) & Kaiser Rd

4/8/2013

Movement	EBL	EBR	NBL	NBT	SBR	SBL
Lane Configurations						
Volume (vph)	764	154	237	1138	1340	342
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	804	162	249	1198	1411	360
RTOR Reduction (vph)	0	63	0	0	0	197
Lane Group Flow (vph)	804	99	249	1198	1411	163
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	22.7	22.7	14.0	58.5	40.5	40.5
Effective Green, g (s)	22.7	22.7	14.0	58.5	40.5	40.5
Actuated g/C Ratio	0.25	0.25	0.16	0.65	0.45	0.45
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	868	400	276	2221	1537	714
v/s Ratio Prot	c0.23		c0.14	0.35	c0.41	
v/s Ratio Perm		0.06				0.10
v/c Ratio	0.93	0.25	0.90	0.54	0.92	0.23
Uniform Delay, d1	32.7	26.7	37.2	8.4	23.0	15.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	15.5	0.3	30.0	0.9	10.3	0.7
Delay (s)	48.2	27.0	67.2	9.3	33.3	15.8
Level of Service	D	C	E	A	C	B
Approach Delay (s)	44.6			19.3	29.7	
Approach LOS	D			B	C	

Intersection Summary			
HCM 2000 Control Delay	29.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	89.7	Sum of lost time (s)	12.5
Intersection Capacity Utilization	82.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
10: Soscol Ave (SR 121) & Napa Valley Corporate Wy

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Volume (vph)	75	0	30	2	0	2	218	1831	4	0	1079	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	3.5	4.0	4.0	4.0	3.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.97	0.95	1.00	0.95	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00
Flt Protected	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1618	1618	1524	1770	1583	3303	3406	1583	3406	1524	1618	1524
Flt Permitted	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1618	1618	1524	1770	1583	3303	3406	1583	3406	1524	1618	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)	82	0	33	2	0	2	237	1990	4	0	1173	195
RTOR Reduction (vph)	0	0	27	0	0	2	0	0	1	0	0	73
Lane Group Flow (vph)	41	41	6	0	2	0	237	1990	3	0	1173	122
Heavy Vehicles (%)	6%	2%	6%	2%	2%	2%	6%	6%	2%	2%	6%	6%
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	6.8	6.8	18.2		1.0	1.0	11.4	73.2	73.2		58.3	58.3
Effective Green, g (s)	6.8	6.8	18.2		1.0	1.0	11.4	73.2	73.2		58.3	58.3
Actuated g/C Ratio	0.07	0.07	0.19		0.01	0.01	0.12	0.78	0.78		0.62	0.62
Clearance Time (s)	4.0	4.0	3.5		4.0	4.0	3.5	4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	117	117	296		18	16	402	2666	1239		2123	950
v/s Ratio Prot	c0.03	0.03	0.00		c0.00		0.07	c0.58			0.34	
v/s Ratio Perm			0.00			0.00			0.00			0.08
v/c Ratio	0.35	0.35	0.02		0.11	0.00	0.59	0.75	0.00		0.55	0.13
Uniform Delay, d1	41.2	41.2	30.4		45.8	45.8	38.8	5.3	2.2		10.1	7.2
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	1.8	1.8	0.0		2.7	0.0	2.2	2.0	0.0		1.0	0.3
Delay (s)	43.1	43.1	30.5		48.5	45.8	41.0	7.3	2.2		11.1	7.5
Level of Service	D	D	C		D	D	D	A	A		B	A
Approach Delay (s)		39.5			47.2			10.8				10.6
Approach LOS		D			D			B				B

Intersection Summary			
HCM 2000 Control Delay	11.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	93.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
10: Soscol Ave (SR 121) & Napa Valley Corporate Wy

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Volume (vph)	224	1	130	5	0	8	51	1152	0	5	1280	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.97	0.95	1.00	0.95	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00
Flt Protected	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1618	1623	1524	1770	1583	3303	3406	1583	3406	1524	1618	1524
Flt Permitted	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1618	1623	1524	1770	1583	3303	3406	1583	3406	1524	1618	1524
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	236	1	137	5	0	8	54	1213	0	5	1347	251
RTOR Reduction (vph)	0	0	110	0	0	8	0	0	0	0	0	109
Lane Group Flow (vph)	118	119	27	0	5	0	54	1213	0	5	1347	142
Heavy Vehicles (%)	6%	2%	6%	2%	2%	2%	6%	6%	2%	2%	6%	6%
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	10.5	10.5	14.0		1.1	1.1	3.5	43.0		0.7	40.2	40.2
Effective Green, g (s)	10.5	10.5	14.0		1.1	1.1	3.5	43.0		0.7	40.2	40.2
Actuated g/C Ratio	0.15	0.15	0.20		0.02	0.02	0.05	0.60		0.01	0.56	0.56
Clearance Time (s)	4.0	4.0	3.5		4.0	4.0	3.5	4.5		3.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	238	239	299		27	24	162	2054		17	1920	859
v/s Ratio Prot	0.07	c0.07	0.00		c0.00		c0.02	c0.36		0.00	c0.40	
v/s Ratio Perm			0.01			0.00						0.09
v/c Ratio	0.50	0.50	0.09		0.19	0.01	0.33	0.59		0.29	0.70	0.16
Uniform Delay, d1	28.0	28.0	23.4		34.7	34.6	32.8	8.7		35.1	11.2	7.5
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	1.6	1.6	0.1		3.3	0.1	1.2	1.3		9.4	2.2	0.4
Delay (s)	29.6	29.6	23.6		38.0	34.6	34.0	10.0		44.5	13.4	7.9
Level of Service	C	C	C		D	C	C	A		D	B	A
Approach Delay (s)		27.4			35.9			11.0				12.6
Approach LOS		C			D			B				B

Intersection Summary			
HCM 2000 Control Delay	13.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	71.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
11: Soscol Ave (SR 121) & SR 29/SR 12

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↑↑		↗	↖	↗↑	↖↑	↗	↖	↗	↖↗	↖↑	↗	
Volume (vph)	98	2148	550	76	1525	1918	46	25	94	956	114	61	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.0	4.0	4.5	4.5	4.0	4.5	4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	1.00	1.00	1.00	0.97	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.95	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Fit Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1703	3406	1583	1770	3088	1386	1770	1863	1583	3303	1863	1524	
Fit Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1703	3406	1583	1770	3088	1386	1770	1863	1583	3303	1863	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)	107	2335	598	83	1658	2085	50	27	102	1039	124	66	
RTOR Reduction (vph)	0	0	247	0	44	0	0	0	93	0	0	51	
Lane Group Flow (vph)	107	2335	351	83	2531	1168	50	27	9	1039	124	15	
Heavy Vehicles (%)	6%	6%	2%	2%	6%	6%	2%	2%	2%	6%	2%	6%	
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm	
Protected Phases	7	4		3	8		5	2		1	6		
Permitted Phases			4			Free			2			6	
Actuated Green, G (s)	7.0	86.5	86.5	5.0	84.5	149.6	7.0	8.1	8.1	33.0	34.1	34.1	
Effective Green, g (s)	7.0	86.5	86.5	5.0	84.5	149.6	7.0	8.1	8.1	33.0	34.1	34.1	
Actuated g/C Ratio	0.05	0.58	0.58	0.03	0.56	1.00	0.05	0.05	0.05	0.22	0.23	0.23	
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5		4.0	4.5	4.5	4.0	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	79	1969	915	59	1744	1386	82	100	85	728	424	347	
v/s Ratio Prot	c0.06	0.69		0.05	c0.82		0.03	0.01		c0.31	0.07		
v/s Ratio Perm			0.22			c0.84			0.01			0.01	
v/c Ratio	1.35	1.19	0.38	1.41	1.45	0.84	0.61	0.27	0.11	1.43	0.29	0.04	
Uniform Delay, d1	71.3	31.5	17.1	72.3	32.5	0.0	70.0	67.9	67.3	58.3	47.8	45.0	
Progression Factor	1.00	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	222.0	89.1	1.2	257.9	206.3	6.4	12.2	1.5	0.6	200.2	0.4	0.1	
Delay (s)	293.3	120.7	18.3	330.2	238.9	6.4	82.1	69.4	67.9	258.5	48.2	45.1	
Level of Service	F	F	B	F	F	A	F	E	E	F	D	D	
Approach Delay (s)		106.6			169.9			72.1			225.8		
Approach LOS		F			F			E			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay	152.8			HCM 2000 Level of Service						F			
HCM 2000 Volume to Capacity ratio	1.44												
Actuated Cycle Length (s)	149.6			Sum of lost time (s)						17.0			
Intersection Capacity Utilization	112.8%			ICU Level of Service						H			
Analysis Period (min)	15												
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
11: Soscol Ave (SR 121) & SR 29/SR 12

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↑↑		↗	↖	↗↑	↖↑	↗	↖	↗	↖↗	↖↑	↗	
Volume (vph)	45	2953	82	172	1623	946	371	158	380	1173	87	193	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.0	4.0	4.5	4.5	4.0	4.5	4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	1.00	1.00	1.00	0.97	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Fit Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1703	3406	1583	1770	3216	1386	1770	1863	1583	3303	1863	1524	
Fit Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1703	3406	1583	1770	3216	1386	1770	1863	1583	3303	1863	1524	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	47	3108	86	181	1708	996	391	166	400	1235	92	203	
RTOR Reduction (vph)	0	0	43	0	5	0	0	0	87	0	0	88	
Lane Group Flow (vph)	47	3108	43	181	1882	817	391	166	313	1235	92	115	
Heavy Vehicles (%)	6%	6%	2%	2%	6%	6%	2%	2%	2%	6%	2%	6%	
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm	
Protected Phases	7	4		3	8		5	2		1	6		
Permitted Phases			4			Free			2			6	
Actuated Green, G (s)	5.0	75.5	75.5	10.0	80.5	150.0	32.0	16.5	16.5	31.0	15.5	15.5	
Effective Green, g (s)	5.0	75.5	75.5	10.0	80.5	150.0	32.0	16.5	16.5	31.0	15.5	15.5	
Actuated g/C Ratio	0.03	0.50	0.50	0.07	0.54	1.00	0.21	0.11	0.11	0.21	0.10	0.10	
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5		4.0	4.5	4.5	4.0	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	56	1714	796	118	1725	1386	377	204	174	682	192	157	
v/s Ratio Prot	0.03	c0.91		c0.10	0.59		0.22	0.09		c0.37	0.05		
v/s Ratio Perm			0.03			c0.59			c0.20			0.08	
v/c Ratio	0.84	1.81	0.05	1.53	1.09	0.59	1.04	0.81	1.80	1.81	0.48	0.73	
Uniform Delay, d1	72.1	37.2	19.0	70.0	34.8	0.0	59.0	65.2	66.8	59.5	63.4	65.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	64.6	368.3	0.1	278.1	51.0	1.8	56.3	21.4	380.9	370.7	1.9	16.2	
Delay (s)	136.7	405.6	19.2	348.1	85.7	1.8	115.3	86.6	447.6	430.2	65.3	81.4	
Level of Service	F	F	B	F	F	A	F	F	F	F	E	F	
Approach Delay (s)		391.4			78.4		249.2				362.0		
Approach LOS		F			E		F				F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay	265.5			HCM 2000 Level of Service						F			
HCM 2000 Volume to Capacity ratio	1.79												
Actuated Cycle Length (s)	150.0			Sum of lost time (s)						17.0			
Intersection Capacity Utilization	149.5%			ICU Level of Service						H			
Analysis Period (min)	15												
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis

1: 3rd St & Coombs St

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	257	2	109	425	18	29	30	104	11	34	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frt		1.00			0.99			0.91			0.98	
Flt Protected		1.00			0.99			0.99			0.99	
Satd. Flow (prot)		3533			3487			1688			1805	
Flt Permitted		0.95			0.81			0.95			0.94	
Satd. Flow (perm)		3355			2865			1614			1715	
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)	4	279	2	118	462	20	32	33	113	12	37	9
RTOR Reduction (vph)	0	0	0	0	3	0	0	74	0	0	6	0
Lane Group Flow (vph)	0	285	0	0	597	0	0	104	0	0	52	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		37.0			37.0			25.0			25.0	
Effective Green, g (s)		37.0			37.0			25.0			25.0	
Actuated g/C Ratio		0.51			0.51			0.35			0.35	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1724			1472			560			595	
v/s Ratio Prot												
v/s Ratio Perm		0.08			c0.21			c0.06			0.03	
v/c Ratio		0.17			0.41			0.19			0.09	
Uniform Delay, d1		9.3			10.7			16.4			15.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.0			0.2			0.2			0.1	
Delay (s)		9.3			10.9			16.6			15.9	
Level of Service		A			B			B			B	
Approach Delay (s)		9.3			10.9			16.6			15.9	
Approach LOS		A			B			B			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		11.7			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.32										
Actuated Cycle Length (s)		72.0			Sum of lost time (s)			10.0				
Intersection Capacity Utilization		95.0%			ICU Level of Service			F				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

1: 3rd St & Coombs St

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	246	1	128	470	9	98	50	134	29	48	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frt		1.00			1.00			0.94			0.97	
Flt Protected		1.00			0.99			0.98			0.99	
Satd. Flow (prot)		3535			3495			1714			1777	
Flt Permitted		0.95			0.81			0.85			0.87	
Satd. Flow (perm)		3354			2849			1483			1559	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	4	259	1	135	495	9	103	53	141	31	51	26
RTOR Reduction (vph)	0	0	0	0	1	0	0	45	0	0	16	0
Lane Group Flow (vph)	0	264	0	0	638	0	0	252	0	0	92	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		37.0			37.0			25.0			25.0	
Effective Green, g (s)		37.0			37.0			25.0			25.0	
Actuated g/C Ratio		0.51			0.51			0.35			0.35	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1723			1464			514			541	
v/s Ratio Prot												
v/s Ratio Perm		0.08			c0.22			c0.17			0.06	
v/c Ratio		0.15			0.44			0.49			0.17	
Uniform Delay, d1		9.2			11.0			18.5			16.3	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.0			0.2			0.7			0.2	
Delay (s)		9.3			11.2			19.2			16.5	
Level of Service		A			B			B			B	
Approach Delay (s)		9.3			11.2			19.2			16.5	
Approach LOS		A			B			B			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		13.1			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.46										
Actuated Cycle Length (s)		72.0			Sum of lost time (s)			10.0				
Intersection Capacity Utilization		97.1%			ICU Level of Service			F				
Analysis Period (min)		15										
c Critical Lane Group												



HCM Signalized Intersection Capacity Analysis  
2: 3rd St & Main St

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕↔		↔	↕↔			↕	↕↔		↕↔	
Volume (vph)	33	283	7	31	361	64	0	26	47	117	37	47
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	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	0.98			1.00	0.85		0.97	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00		0.97	
Satd. Flow (prot)	1770	3526		1770	3459			1863	1583		1753	
Flt Permitted	0.95	1.00		0.95	1.00			1.00	1.00		0.80	
Satd. Flow (perm)	1770	3526		1770	3459			1863	1583		1451	
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)	36	308	8	34	392	70	0	28	51	127	40	51
RTOR Reduction (vph)	0	4	0	0	25	0	0	0	34	0	25	0
Lane Group Flow (vph)	36	312	0	34	437	0	0	28	17	0	193	0
Turn Type	Prot	NA		Prot	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	7	4		3	8			2	3		6	
Permitted Phases							2		2		6	
Actuated Green, G (s)	0.6	8.4		2.3	10.1			7.8	10.1		7.8	
Effective Green, g (s)	0.6	8.4		2.3	10.1			7.8	10.1		7.8	
Actuated g/C Ratio	0.02	0.28		0.08	0.33			0.26	0.33		0.26	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	34	971		133	1145			476	731		371	
v/s Ratio Prot	c0.02	0.09		0.02	c0.13			0.02	0.00		c0.13	
v/s Ratio Perm								0.01				
v/c Ratio	1.06	0.32		0.26	0.38			0.06	0.02		0.52	
Uniform Delay, d1	14.9	8.8		13.3	7.8			8.6	6.9		9.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	172.6	0.2		1.0	0.2			0.1	0.0		1.3	
Delay (s)	187.6	9.0		14.3	8.0			8.6	6.9		11.1	
Level of Service	F	A		B	A			A	A		B	
Approach Delay (s)		27.2			8.5			7.5			11.1	
Approach LOS		C			A			A			B	

Intersection Summary		
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.46	B
Actuated Cycle Length (s)	30.5	Sum of lost time (s)
Intersection Capacity Utilization	43.3%	ICU Level of Service
Analysis Period (min)	15	A
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis  
2: 3rd St & Main St

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕↔		↔	↕↔			↕	↕↔		↕↔	
Volume (vph)	59	382	4	106	551	96	12	60	118	222	95	75
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	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	0.98			1.00	0.85		0.97	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00		0.97	
Satd. Flow (prot)	1770	3534		1770	3460			1847	1583		1765	
Flt Permitted	0.95	1.00		0.95	1.00			0.92	1.00		0.78	
Satd. Flow (perm)	1770	3534		1770	3460			1720	1583		1419	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	62	402	4	112	580	101	13	63	124	234	100	79
RTOR Reduction (vph)	0	1	0	0	25	0	0	0	68	0	16	0
Lane Group Flow (vph)	62	405	0	112	656	0	0	76	56	0	397	0
Turn Type	Prot	NA		Prot	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	7	4		3	8			2	3		6	
Permitted Phases							2		2		6	
Actuated Green, G (s)	2.5	13.9		4.4	15.8			17.1	21.5		17.1	
Effective Green, g (s)	2.5	13.9		4.4	15.8			17.1	21.5		17.1	
Actuated g/C Ratio	0.05	0.29		0.09	0.33			0.36	0.45		0.36	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	93	1036		164	1153			620	851		511	
v/s Ratio Prot	0.04	0.11		c0.06	c0.19			0.01			c0.28	
v/s Ratio Perm								0.04	0.03			
v/c Ratio	0.67	0.39		0.68	0.57			0.12	0.07		0.78	
Uniform Delay, d1	22.0	13.4		20.8	13.0			10.1	7.3		13.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	16.6	0.2		11.1	0.6			0.1	0.0		7.3	
Delay (s)	38.6	13.6		32.0	13.6			10.2	7.3		20.8	
Level of Service	D	B		C	B			B	A		C	
Approach Delay (s)		16.9			16.2			8.4			20.8	
Approach LOS		B			B			A			C	

Intersection Summary		
HCM 2000 Control Delay	16.6	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.71	B
Actuated Cycle Length (s)	47.4	Sum of lost time (s)
Intersection Capacity Utilization	60.2%	ICU Level of Service
Analysis Period (min)	15	B
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis  
3: Soscol Ave (SR 121) & 3rd St

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↑	↗	↖	↑	↗	↖	↑	↗	↖	↑	↗	
Volume (vph)	114	225	253	21	187	53	249	835	7	67	764	82	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		0.97	0.95		1.00	0.95	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00		1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	3421		3433	3535		1770	3539	1583	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	3421		3433	3535		1770	3539	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)	124	245	275	23	203	58	271	908	8	73	830	89	
RTOR Reduction (vph)	0	0	171	0	34	0	0	1	0	0	0	54	
Lane Group Flow (vph)	124	245	104	23	227	0	271	915	0	73	830	35	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	Perm	
Protected Phases	7	4		3	8		5	2		1	6		
Permitted Phases			4									6	
Actuated Green, G (s)	5.0	21.1	21.1	1.8	17.9		14.0	41.3		8.4	35.7	35.7	
Effective Green, g (s)	5.0	21.1	21.1	1.8	17.9		14.0	41.3		8.4	35.7	35.7	
Actuated g/C Ratio	0.06	0.23	0.23	0.02	0.20		0.16	0.46		0.09	0.40	0.40	
Clearance Time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	98	436	371	35	680		534	1622		165	1403	627	
v/s Ratio Prot	c0.07	c0.13		0.01	0.07		c0.08	c0.26		0.04	0.23		
v/s Ratio Perm			0.07									0.02	
v/c Ratio	1.27	0.56	0.28	0.66	0.33		0.51	0.56		0.44	0.59	0.06	
Uniform Delay, d1	42.5	30.4	28.2	43.8	30.9		34.8	17.8		38.6	21.4	16.8	
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	178.1	1.7	0.4	36.6	0.3		0.8	1.4		1.9	1.8	0.2	
Delay (s)	220.6	32.0	28.7	80.4	31.2		35.6	19.2		40.5	23.2	16.9	
Level of Service	F	C	C	F	C		D	B		D	C	B	
Approach Delay (s)		66.9			35.2			23.0			23.9		
Approach LOS		E			D			C			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay	33.5			HCM 2000 Level of Service				C					
HCM 2000 Volume to Capacity ratio	0.62												
Actuated Cycle Length (s)	90.0			Sum of lost time (s)				17.4					
Intersection Capacity Utilization	57.9%			ICU Level of Service				B					
Analysis Period (min)	15												
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
3: Soscol Ave (SR 121) & 3rd St

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↑	↗	↖	↑	↗	↖	↑	↗	↖	↑	↗	
Volume (vph)	146	276	266	23	195	56	269	947	16	75	930	168	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		0.97	0.95		1.00	0.95	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00		1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	3421		3433	3530		1770	3539	1583	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	3421		3433	3530		1770	3539	1583	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	154	291	280	24	205	59	283	997	17	79	979	177	
RTOR Reduction (vph)	0	0	153	0	34	0	0	1	0	0	0	108	
Lane Group Flow (vph)	154	291	127	24	230	0	283	1013	0	79	979	69	
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	Perm	
Protected Phases	7	4		3	8		5	2		1	6		
Permitted Phases			4									6	
Actuated Green, G (s)	5.0	21.6	21.6	1.8	18.4		14.1	40.8		8.4	35.1	35.1	
Effective Green, g (s)	5.0	21.6	21.6	1.8	18.4		14.1	40.8		8.4	35.1	35.1	
Actuated g/C Ratio	0.06	0.24	0.24	0.02	0.20		0.16	0.45		0.09	0.39	0.39	
Clearance Time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	98	447	379	35	699		537	1600		165	1380	617	
v/s Ratio Prot	c0.09	c0.16		0.01	0.07		c0.08	0.29		0.04	c0.28		
v/s Ratio Perm			0.08									0.04	
v/c Ratio	1.57	0.65	0.34	0.69	0.33		0.53	0.63		0.48	0.71	0.11	
Uniform Delay, d1	42.5	30.8	28.3	43.8	30.5		34.9	18.9		38.7	23.1	17.5	
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	300.4	3.4	0.5	43.6	0.3		0.9	1.9		2.2	3.1	0.4	
Delay (s)	342.9	34.2	28.8	87.4	30.8		35.8	20.8		40.9	26.3	17.9	
Level of Service	F	C	C	F	C		D	C		D	C	B	
Approach Delay (s)		97.7			35.5			24.1			26.0		
Approach LOS		F			D			C			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay	40.7			HCM 2000 Level of Service				D					
HCM 2000 Volume to Capacity ratio	0.71												
Actuated Cycle Length (s)	90.0			Sum of lost time (s)				17.4					
Intersection Capacity Utilization	65.7%			ICU Level of Service				C					
Analysis Period (min)	15												
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
4: Soscol Ave (SR 121) & Silverado Trail (SR 121)

4/8/2013

	↑	↖	↗	↓	↙	↘
Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↑↑	↖		↗	↙	↘
Volume (vph)	1183	404	10	874	599	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12
Total Lost time (s)	5.0	5.0		5.0	5.0	
Lane Util. Factor	0.95	1.00		0.95	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	1.00	1.00		1.00	0.95	
Satd. Flow (prot)	3505	1777		3537	1753	
Flt Permitted	1.00	1.00		0.74	0.95	
Satd. Flow (perm)	3505	1777		2625	1753	
Peak-hour factor, PHF	0.73	0.73	0.73	0.73	0.73	0.73
Adj. Flow (vph)	1621	553	14	1197	821	21
RTOR Reduction (vph)	0	0	0	0	1	0
Lane Group Flow (vph)	1621	553	0	1211	841	0
Heavy Vehicles (%)	3%	3%	2%	2%	3%	2%
Turn Type	NA	custom	Perm	NA	NA	
Protected Phases	2	2 3		6	8	
Permitted Phases			6			
Actuated Green, G (s)	61.8	130.0		61.8	58.2	
Effective Green, g (s)	61.8	126.0		61.8	58.2	
Actuated g/C Ratio	0.48	0.97		0.48	0.45	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	5.0			5.0	4.0	
Lane Grp Cap (vph)	1666	1722		1247	784	
v/s Ratio Prot	c0.46	0.31			c0.48	
v/s Ratio Perm				0.46		
v/c Ratio	0.97	0.32		0.97	1.07	
Uniform Delay, d1	33.3	0.1		33.2	35.9	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	16.5	0.1		19.4	53.6	
Delay (s)	49.8	0.2		52.7	89.5	
Level of Service	D	A		D	F	
Approach Delay (s)	37.2			52.7	89.5	
Approach LOS	D			D	F	

Intersection Summary			
HCM 2000 Control Delay	52.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
4: Soscol Ave (SR 121) & Silverado Trail (SR 121)

4/8/2013

	↑	↖	↗	↓	↙	↘
Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↑↑	↖		↗	↙	↘
Volume (vph)	1336	636	10	1416	625	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12
Total Lost time (s)	5.0	5.0		5.0	5.0	
Lane Util. Factor	0.95	1.00		0.95	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	1.00	1.00		1.00	0.95	
Satd. Flow (prot)	3505	1777		3537	1753	
Flt Permitted	1.00	1.00		0.87	0.95	
Satd. Flow (perm)	3505	1777		3091	1753	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	1553	740	12	1647	727	21
RTOR Reduction (vph)	0	0	0	0	1	0
Lane Group Flow (vph)	1553	740	0	1659	747	0
Heavy Vehicles (%)	3%	3%	2%	2%	3%	2%
Turn Type	NA	custom	Perm	NA	NA	
Protected Phases	2	2 3		6	8	
Permitted Phases			6			
Actuated Green, G (s)	50.8	100.0		50.8	39.2	
Effective Green, g (s)	50.8	96.0		50.8	39.2	
Actuated g/C Ratio	0.51	0.96		0.51	0.39	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	5.0			5.0	4.0	
Lane Grp Cap (vph)	1780	1705		1570	687	
v/s Ratio Prot	0.44	0.42			c0.43	
v/s Ratio Perm				c0.54		
v/c Ratio	0.87	0.43		1.06	1.09	
Uniform Delay, d1	21.7	0.1		24.6	30.4	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.2	0.2		39.4	60.4	
Delay (s)	28.0	0.3		64.0	90.8	
Level of Service	C	A		E	F	
Approach Delay (s)	19.1			64.0	90.8	
Approach LOS	B			E	F	

Intersection Summary			
HCM 2000 Control Delay	46.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	90.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
5: Soscol Ave (SR 121) & Imola Ave (SR 121)/Imola Ave

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	155	306	767	160	283	45	448	1063	113	80	1324	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.1	4.0	3.0	4.1		3.5	4.9		3.5	4.6	4.6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.99		1.00	1.00	0.85
Fit Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1863	1568	1770	1824		3400	3458		1770	3505	1568
Fit Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1752	1863	1568	1770	1824		3400	3458		1770	3505	1568
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	174	344	862	180	318	51	503	1194	127	90	1488	149
RTOR Reduction (vph)	0	0	0	0	4	0	0	5	0	0	0	85
Lane Group Flow (vph)	174	344	862	180	365	0	503	1316	0	90	1488	64
Heavy Vehicles (%)	3%	2%	3%	2%	2%		3%	3%		2%	3%	3%
Turn Type	Prot	NA	Free	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free									6
Actuated Green, G (s)	14.0	29.4	145.0	16.3	31.7		21.5	73.1		10.7	62.6	62.6
Effective Green, g (s)	14.0	29.4	145.0	16.3	31.7		21.5	73.1		10.7	62.6	62.6
Actuated g/C Ratio	0.10	0.20	1.00	0.11	0.22		0.15	0.50		0.07	0.43	0.43
Clearance Time (s)	3.0	4.1		3.0	4.1		3.5	4.9		3.5	4.6	4.6
Vehicle Extension (s)	3.5	3.0		3.8	3.0		4.0	3.5		3.0	3.5	3.5
Lane Grp Cap (vph)	169	377	1568	198	398		504	1743		130	1513	676
v/s Ratio Prot	c0.10	c0.18		0.10	c0.20		c0.15	0.38		0.05	c0.42	
v/s Ratio Perm			0.55									0.04
v/c Ratio	1.03	0.91	0.55	0.91	0.92		1.00	0.75		0.69	0.98	0.10
Uniform Delay, d1	65.5	56.5	0.0	63.6	55.4		61.7	28.8		65.5	40.7	24.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.83	0.60		1.00	1.00	1.00
Incremental Delay, d2	77.2	25.8	1.4	39.7	25.5		29.9	1.8		14.8	19.5	0.3
Delay (s)	142.7	82.3	1.4	103.3	80.9		81.4	19.2		80.3	60.2	24.7
Level of Service	F	F	A	F	F		F	B		F	E	C
Approach Delay (s)		39.4			88.2			36.3			58.2	
Approach LOS		D			F			D			E	

Intersection Summary			
HCM 2000 Control Delay	49.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	89.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
5: Soscol Ave (SR 121) & Imola Ave (SR 121)/Imola Ave

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	193	281	419	85	283	35	737	1341	128	81	1067	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.1	4.0	3.0	4.1		3.5	4.9		3.5	4.6	4.6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.99		1.00	1.00	0.85
Fit Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1863	1568	1770	1832		3400	3462		1770	3505	1568
Fit Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1752	1863	1568	1770	1832		3400	3462		1770	3505	1568
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	230	335	499	101	337	42	877	1596	152	96	1270	223
RTOR Reduction (vph)	0	0	0	0	3	0	0	5	0	0	0	146
Lane Group Flow (vph)	230	335	499	101	376	0	877	1743	0	96	1270	77
Heavy Vehicles (%)	3%	2%	3%	2%	2%		3%	3%		2%	3%	3%
Turn Type	Prot	NA	Free	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free									6
Actuated Green, G (s)	16.0	30.6	145.0	16.7	31.3		32.5	74.0		8.2	50.0	50.0
Effective Green, g (s)	16.0	30.6	145.0	16.7	31.3		32.5	74.0		8.2	50.0	50.0
Actuated g/C Ratio	0.11	0.21	1.00	0.12	0.22		0.22	0.51		0.06	0.34	0.34
Clearance Time (s)	3.0	4.1		3.0	4.1		3.5	4.9		3.5	4.6	4.6
Vehicle Extension (s)	3.5	3.0		3.8	3.0		4.0	3.5		3.0	3.5	3.5
Lane Grp Cap (vph)	193	393	1568	203	395		762	1766		100	1208	540
v/s Ratio Prot	c0.13	0.18		0.06	c0.21		c0.26	0.50		0.05	c0.36	
v/s Ratio Perm			0.32									0.05
v/c Ratio	1.19	0.85	0.32	0.50	0.95		1.15	0.99		0.96	1.05	0.14
Uniform Delay, d1	64.5	55.0	0.0	60.2	56.1		56.2	35.0		68.2	47.5	32.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.86	0.77		1.00	1.00	1.00
Incremental Delay, d2	126.0	16.2	0.5	2.5	32.8		77.2	13.7		76.1	40.5	0.6
Delay (s)	190.5	71.2	0.5	62.7	89.0		125.5	40.7		144.3	88.0	33.3
Level of Service	F	E	A	E	F		F	D		F	F	C
Approach Delay (s)		63.8			83.4			69.0			83.7	
Approach LOS		E			F			E			F	

Intersection Summary			
HCM 2000 Control Delay	73.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	92.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
6: Soscol Ave (SR 121) & College Wy/Magnolia Dr

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Volume (vph)	71	3	0	34	0	31	8	1511	205	115	1735	352
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	4.5		4.0	4.5	4.5	
Lane Util. Factor	0.95	0.95		1.00	1.00	1.00	0.95		1.00	0.95	1.00	
Frt	1.00	1.00		1.00	0.85	1.00	0.98		1.00	1.00	0.85	
Fit Protected	0.95	0.96		0.95	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1681	1691		1770	1583	1770	3360		1770	3406	1583	
Fit Permitted	0.95	0.96		0.95	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	1681	1691		1770	1583	1770	3360		1770	3406	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)	77	3	0	37	0	34	9	1642	223	125	1886	383
RTOR Reduction (vph)	0	0	0	0	0	30	0	6	0	0	0	72
Lane Group Flow (vph)	40	40	0	0	37	4	9	1859	0	125	1886	311
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	6%	2%	2%	6%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Prot	NA	Perm	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	5.4	5.4		15.9	15.9		0.8	93.5		13.7	106.4	106.4
Effective Green, g (s)	5.4	5.4		15.9	15.9		0.8	93.5		13.7	106.4	106.4
Actuated g/C Ratio	0.04	0.04		0.11	0.11		0.01	0.64		0.09	0.73	0.73
Clearance Time (s)	4.0	4.0		4.0	4.0		4.5		4.0	4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	62	62		194	173		9	2166		167	2499	1161
v/s Ratio Prot	c0.02	0.02		c0.02			0.01	c0.55		c0.07	0.55	
v/s Ratio Perm					0.00							0.20
v/c Ratio	0.65	0.65		0.19	0.02		1.00	0.86		0.75	0.75	0.27
Uniform Delay, d1	68.9	68.9		58.7	57.6		72.1	20.5		64.0	11.5	6.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.13	0.25	0.03
Incremental Delay, d2	20.7	20.7		0.5	0.1		300.0	4.7		9.3	1.2	0.3
Delay (s)	89.6	89.6		59.2	57.7		372.1	25.2		81.8	4.1	0.5
Level of Service	F	F		E	E		F	C		F	A	A
Approach Delay (s)		89.6			58.5			26.8			7.6	
Approach LOS		F			E			C			A	

Intersection Summary			
HCM 2000 Control Delay	18.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
6: Soscol Ave (SR 121) & College Wy/Magnolia Dr

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Volume (vph)	216	1	1	199	3	108	13	1886	7	18	1373	152
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	4.5		4.0	4.5	4.5	
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	0.95		1.00	0.95	1.00	
Frt	1.00	1.00	0.85		1.00	0.85	1.00		1.00	1.00	0.85	
Fit Protected	0.95	0.95	1.00		0.95	1.00	0.95		0.95	1.00	1.00	
Satd. Flow (prot)	1681	1686	1583		1775	1583	1770		1770	3404	1583	
Fit Permitted	0.95	0.95	1.00		0.95	1.00	0.95		0.95	1.00	1.00	
Satd. Flow (perm)	1681	1686	1583		1775	1583	1770		1770	3406	1583	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	227	1	1	209	3	114	14	1985	7	19	1445	160
RTOR Reduction (vph)	0	0	1	0	0	59	0	0	0	0	0	48
Lane Group Flow (vph)	113	115	0	0	212	55	14	1992	0	19	1445	112
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	6%	2%	2%	6%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Prot	NA	Perm	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	10.0	10.0	10.0		24.2	24.2	2.0	91.3		3.0	92.3	92.3
Effective Green, g (s)	10.0	10.0	10.0		24.2	24.2	2.0	91.3		3.0	92.3	92.3
Actuated g/C Ratio	0.07	0.07	0.07		0.17	0.17	0.01	0.63		0.02	0.64	0.64
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0	4.5		4.0	4.5	4.5	
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)	115	116	109		296	264	24	2143		36	2168	1007
v/s Ratio Prot	0.07	c0.07			c0.12		0.01	c0.59		c0.01	0.42	
v/s Ratio Perm			0.00			0.03						0.07
v/c Ratio	0.98	0.99	0.00		0.72	0.21	0.58	0.93		0.53	0.67	0.11
Uniform Delay, d1	67.4	67.5	62.8		57.2	52.1	71.1	24.0		70.3	16.6	10.3
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.39	0.49	0.05
Incremental Delay, d2	78.0	80.6	0.0		8.0	0.4	31.3	8.7		7.3	0.9	0.1
Delay (s)	145.4	148.1	62.8		65.2	52.5	102.4	32.7		105.2	9.1	0.6
Level of Service	F	F	E		E	D	F	C		F	A	A
Approach Delay (s)		146.4			60.7		33.2				9.4	
Approach LOS		F			E		C				A	

Intersection Summary			
HCM 2000 Control Delay	32.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	77.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
7: Soscol Ave (SR 121) & Streblow Dr

4/8/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	39	85	325	1664	1590	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	42	92	353	1809	1728	174
RTOR Reduction (vph)	0	87	0	0	0	36
Lane Group Flow (vph)	42	5	353	1809	1728	138
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	7.3	7.3	29.0	109.5	76.5	76.5
Effective Green, g (s)	7.3	7.3	29.0	109.5	76.5	76.5
Actuated g/C Ratio	0.06	0.06	0.23	0.87	0.61	0.61
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	200	92	409	2976	2079	966
v/s Ratio Prot	c0.01		c0.20	0.53	c0.51	
v/s Ratio Perm		0.00				0.09
v/c Ratio	0.21	0.06	0.86	0.61	0.83	0.14
Uniform Delay, d1	56.3	55.8	46.2	2.1	19.3	10.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.3	16.9	0.9	4.0	0.3
Delay (s)	56.8	56.0	63.1	3.1	23.3	10.7
Level of Service	E	E	E	A	C	B
Approach Delay (s)	56.3			12.9	22.2	
Approach LOS	E			B	C	

Intersection Summary			
HCM 2000 Control Delay	18.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	125.3	Sum of lost time (s)	12.5
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
7: Soscol Ave (SR 121) & Streblow Dr

4/8/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	147	168	180	1794	1462	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	155	177	189	1888	1539	123
RTOR Reduction (vph)	0	155	0	0	0	44
Lane Group Flow (vph)	155	22	189	1888	1539	79
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	8.3	8.3	8.0	49.5	37.5	37.5
Effective Green, g (s)	8.3	8.3	8.0	49.5	37.5	37.5
Actuated g/C Ratio	0.13	0.13	0.12	0.75	0.57	0.57
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	429	198	213	2542	1926	895
v/s Ratio Prot	c0.05		c0.11	0.55	c0.45	
v/s Ratio Perm		0.01				0.05
v/c Ratio	0.36	0.11	0.89	0.74	0.80	0.09
Uniform Delay, d1	26.6	25.7	28.7	4.8	11.4	6.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.3	32.7	2.0	3.6	0.2
Delay (s)	27.1	26.0	61.4	6.8	15.0	6.8
Level of Service	C	C	E	A	B	A
Approach Delay (s)	26.5			11.8	14.4	
Approach LOS	C			B	B	

Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	66.3	Sum of lost time (s)	12.5
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
8: Soscol Ave (SR 121) & Project Access

4/8/2013

	↙	↖	↑	↗	↘	↓	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	↙	↖	↑↑	↗	↘	↓↓	
Volume (veh/h)	95	46	1898	124	55	1628	
Sign Control	Stop		Free		Free		
Grade	0%		0%		0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	103	50	2063	135	60	1770	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)		5					
Median type		TWLT			None		
Median storage (veh)			2				
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume	3067	1032			2063		
vC1, stage 1 conf vol	2063						
vC2, stage 2 conf vol	1004						
vCu, unblocked vol	3067	1032			2063		
tC, single (s)	7.0	7.1			4.3		
tC, 2 stage (s)	6.0						
tF (s)	3.6	3.4			2.3		
p0 queue free %	0	77			75		
cM capacity (veh/h)	69	217			240		
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	153	1032	1032	135	60	885	885
Volume Left	103	0	0	0	60	0	0
Volume Right	50	0	0	135	0	0	0
cSH	95	1700	1700	1700	240	1700	1700
Volume to Capacity	1.62	0.61	0.61	0.08	0.25	0.52	0.52
Queue Length 95th (ft)	302	0	0	0	24	0	0
Control Delay (s)	399.6	0.0	0.0	0.0	24.9	0.0	0.0
Lane LOS	F				C		
Approach Delay (s)	399.6	0.0			0.8		
Approach LOS	F						
Intersection Summary							
Average Delay		15.0					
Intersection Capacity Utilization		64.4%		ICU Level of Service		C	
Analysis Period (min)		15					

HCM Unsignalized Intersection Capacity Analysis  
8: Soscol Ave (SR 121) & Project Access

4/8/2013

	↙	↖	↑	↗	↘	↓	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	↙	↖	↑↑	↗	↘	↓↓	
Volume (veh/h)	52	63	1877	41	33	1626	
Sign Control	Stop		Free		Free		
Grade	0%		0%		0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly flow rate (vph)	55	66	1976	43	35	1712	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)		5					
Median type		TWLT			None		
Median storage (veh)			2				
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume	2901	988			1976		
vC1, stage 1 conf vol	1976						
vC2, stage 2 conf vol	925						
vCu, unblocked vol	2901	988			1976		
tC, single (s)	7.0	7.1			4.3		
tC, 2 stage (s)	6.0						
tF (s)	3.6	3.4			2.3		
p0 queue free %	31	71			87		
cM capacity (veh/h)	79	232			260		
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	121	988	988	43	35	856	856
Volume Left	55	0	0	0	35	0	0
Volume Right	66	0	0	43	0	0	0
cSH	175	1700	1700	1700	260	1700	1700
Volume to Capacity	0.69	0.58	0.58	0.03	0.13	0.50	0.50
Queue Length 95th (ft)	104	0	0	0	11	0	0
Control Delay (s)	68.5	0.0	0.0	0.0	21.0	0.0	0.0
Lane LOS	F				C		
Approach Delay (s)	68.5	0.0			0.4		
Approach LOS	F						
Intersection Summary							
Average Delay		2.3					
Intersection Capacity Utilization		62.5%		ICU Level of Service		B	
Analysis Period (min)		15					

HCM Signalized Intersection Capacity Analysis  
9: Soscol Ave (SR 121) & Kaiser Rd

4/8/2013

Movement	EBL	EBR	NBL	NBT	SBR	SBL
Lane Configurations						
Volume (vph)	381	147	197	1718	1092	546
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	414	160	214	1867	1187	593
RTOR Reduction (vph)	0	134	0	0	0	316
Lane Group Flow (vph)	414	26	214	1867	1187	277
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	9.8	9.8	9.6	41.5	27.9	27.9
Effective Green, g (s)	9.8	9.8	9.6	41.5	27.9	27.9
Actuated g/C Ratio	0.16	0.16	0.16	0.69	0.47	0.47
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	562	259	284	2363	1589	738
v/s Ratio Prot	c0.12		0.12	c0.55	0.35	
v/s Ratio Perm		0.02				0.17
v/c Ratio	0.74	0.10	0.75	0.79	0.75	0.37
Uniform Delay, d1	23.8	21.3	24.0	6.2	13.1	10.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.0	0.2	10.8	2.8	3.3	1.5
Delay (s)	28.8	21.4	34.7	9.0	16.3	11.8
Level of Service	C	C	C	A	B	B
Approach Delay (s)	26.7			11.6	14.8	
Approach LOS	C			B	B	

Intersection Summary			
HCM 2000 Control Delay	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	59.8	Sum of lost time (s)	12.5
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
9: Soscol Ave (SR 121) & Kaiser Rd

4/8/2013

Movement	EBL	EBR	NBL	NBT	SBR	SBL
Lane Configurations						
Volume (vph)	764	154	237	1172	1379	342
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	804	162	249	1234	1452	360
RTOR Reduction (vph)	0	63	0	0	0	194
Lane Group Flow (vph)	804	99	249	1234	1452	166
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	22.0	22.0	14.0	59.5	41.5	41.5
Effective Green, g (s)	22.0	22.0	14.0	59.5	41.5	41.5
Actuated g/C Ratio	0.24	0.24	0.16	0.66	0.46	0.46
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	839	386	275	2251	1570	729
v/s Ratio Prot	c0.23		c0.14	0.36	c0.43	
v/s Ratio Perm		0.06				0.10
v/c Ratio	0.96	0.26	0.91	0.55	0.92	0.23
Uniform Delay, d1	33.5	27.4	37.3	8.1	22.8	14.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	21.3	0.4	30.6	1.0	10.7	0.7
Delay (s)	54.8	27.8	68.0	9.1	33.5	15.3
Level of Service	D	C	E	A	C	B
Approach Delay (s)	50.3			19.0	29.9	
Approach LOS	D			B	C	

Intersection Summary			
HCM 2000 Control Delay	30.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
10: Soscol Ave (SR 121) & Napa Valley Corporate Wy

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	75	0	30	2	0	2	218	1873	4	0	1096	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	3.5	4.0	4.0	4.0	3.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	0.97	0.95	1.00	0.95	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.85	1.00	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1618	1618	1524	1770	1583	3303	3406	1583	3406	1524	1618	1524
Flt Permitted	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1618	1618	1524	1770	1583	3303	3406	1583	3406	1524	1618	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)	82	0	33	2	0	2	237	2036	4	0	1191	195
RTOR Reduction (vph)	0	0	27	0	0	2	0	0	1	0	0	73
Lane Group Flow (vph)	41	41	6	0	2	0	237	2036	3	0	1191	122
Heavy Vehicles (%)	6%	2%	6%	2%	2%	2%	6%	6%	2%	2%	6%	6%
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4	5	8	8	5	2			1	6	
Permitted Phases			4			8		2				6
Actuated Green, G (s)	6.8	6.8	18.2	1.0	1.0	11.4	73.2	73.2		58.3	58.3	
Effective Green, g (s)	6.8	6.8	18.2	1.0	1.0	11.4	73.2	73.2		58.3	58.3	
Actuated g/C Ratio	0.07	0.07	0.19	0.01	0.01	0.12	0.78	0.78		0.62	0.62	
Clearance Time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	117	117	296	18	16	402	2666	1239		2123	950	
v/s Ratio Prot	c0.03	0.03	0.00	c0.00		0.07	c0.60			0.35		
v/s Ratio Perm			0.00		0.00			0.00				0.08
v/c Ratio	0.35	0.35	0.02	0.11	0.00	0.59	0.76	0.00		0.56	0.13	
Uniform Delay, d1	41.2	41.2	30.4	45.8	45.8	38.8	5.5	2.2		10.2	7.2	
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	1.8	1.8	0.0	2.7	0.0	2.2	2.1	0.0		1.1	0.3	
Delay (s)	43.1	43.1	30.5	48.5	45.8	41.0	7.6	2.2		11.3	7.5	
Level of Service	D	D	C	D	D	D	A	A		B	A	
Approach Delay (s)		39.5			47.2		11.1				10.7	
Approach LOS		D			D		B				B	

Intersection Summary			
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	93.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	74.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
10: Soscol Ave (SR 121) & Napa Valley Corporate Wy

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	224	1	130	5	0	8	51	1186	0	5	1319	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	0.97	0.95	1.00	0.95	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.85	1.00	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1618	1623	1524	1770	1583	3303	3406	1583	3406	1524	1618	1524
Flt Permitted	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1618	1623	1524	1770	1583	3303	3406	1583	3406	1524	1618	1524
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	236	1	137	5	0	8	54	1248	0	5	1388	251
RTOR Reduction (vph)	0	0	110	0	0	8	0	0	0	0	0	109
Lane Group Flow (vph)	118	119	27	0	5	0	54	1248	0	5	1388	142
Heavy Vehicles (%)	6%	2%	6%	2%	2%	2%	6%	6%	2%	2%	6%	6%
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4	5	8	8	5	2			1	6	
Permitted Phases			4			8		2				6
Actuated Green, G (s)	10.5	10.5	14.0	1.1	1.1	3.5	43.0	43.0		0.7	40.2	40.2
Effective Green, g (s)	10.5	10.5	14.0	1.1	1.1	3.5	43.0	43.0		0.7	40.2	40.2
Actuated g/C Ratio	0.15	0.15	0.20	0.02	0.02	0.05	0.60	0.60		0.01	0.56	0.56
Clearance Time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.5	4.5		3.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	238	239	299	27	24	162	2054	2054		17	1920	859
v/s Ratio Prot	0.07	c0.07	0.00	c0.00		0.02	c0.37			0.00	c0.41	
v/s Ratio Perm			0.01		0.00			0.00				0.09
v/c Ratio	0.50	0.50	0.09	0.19	0.01	0.33	0.61	0.61		0.29	0.72	0.16
Uniform Delay, d1	28.0	28.0	23.4	34.7	34.6	32.8	8.9	8.9		35.1	11.4	7.5
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	1.6	1.6	0.1	3.3	0.1	1.2	1.3	1.3		9.4	2.4	0.4
Delay (s)	29.6	29.6	23.6	38.0	34.6	34.0	10.2	10.2		44.5	13.8	7.9
Level of Service	C	C	C	D	C	C	B	B		D	B	A
Approach Delay (s)		27.4			35.9		11.2				13.0	
Approach LOS		C			D		B				B	

Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	71.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	58.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 11: Soscol Ave (SR 121) & SR 29/SR 12

4/8/2013

	↖	→	↗	↖	←	↘	↖	↗	↘	↖	↗	↘
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↑	↖↑↑	↖↗	↖↗	↖↑↑	↖↗	↖↗	↖↗	↖↗	↖↗	↖↗	↖↗
Volume (vph)	102	2148	550	76	1525	1957	46	25	94	971	114	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.0	4.0	4.5	4.5	4.0	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	1.00	1.00	1.00	0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.95	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fit Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1703	3406	1583	1770	3083	1386	1770	1863	1583	3303	1863	1524
Fit Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1703	3406	1583	1770	3083	1386	1770	1863	1583	3303	1863	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)	111	2335	598	83	1658	2127	50	27	102	1055	124	68
RTOR Reduction (vph)	0	0	239	0	48	0	0	0	93	0	0	53
Lane Group Flow (vph)	111	2335	359	83	2567	1170	50	27	9	1055	124	15
Heavy Vehicles (%)	6%	6%	2%	2%	6%	6%	2%	2%	2%	6%	2%	6%
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1		6
Permitted Phases			4			Free			2			6
Actuated Green, G (s)	8.0	87.5	87.5	6.0	85.5	150.6	7.5	7.1	7.1	33.0	32.6	32.6
Effective Green, g (s)	8.0	87.5	87.5	6.0	85.5	150.6	7.5	7.1	7.1	33.0	32.6	32.6
Actuated g/C Ratio	0.05	0.58	0.58	0.04	0.57	1.00	0.05	0.05	0.05	0.22	0.22	0.22
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5		4.0	4.5	4.5	4.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	90	1978	919	70	1750	1386	88	87	74	723	403	329
v/s Ratio Prot	c0.07	0.69		0.05	c0.83		0.03	0.01		c0.32	0.07	
v/s Ratio Perm			0.23			c0.84			0.01			0.01
v/c Ratio	1.23	1.18	0.39	1.19	1.47	0.84	0.57	0.31	0.12	1.46	0.31	0.04
Uniform Delay, d1	71.3	31.5	17.1	72.3	32.5	0.0	70.0	69.4	68.7	58.8	49.5	46.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	170.2	86.8	1.3	166.1	213.3	6.4	8.2	2.0	0.7	214.3	0.4	0.1
Delay (s)	241.5	118.3	18.4	238.4	245.8	6.4	78.1	71.4	69.4	273.1	50.0	46.7
Level of Service	F	F	B	F	F	A	E	E	E	F	D	D
Approach Delay (s)	103.2			173.3			72.2			238.5		
Approach LOS	F			F			E			F		

Intersection Summary			
HCM 2000 Control Delay	155.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.45		
Actuated Cycle Length (s)	150.6	Sum of lost time (s)	17.0
Intersection Capacity Utilization	113.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 11: Soscol Ave (SR 121) & SR 29/SR 12

4/8/2013

	↖	→	↗	↖	←	↘	↖	↗	↘	↖	↗	↘
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↑↑	↖↗	↖↗	↖↑↑	↖↗	↖↗	↖↗	↖↗	↖↗	↖↗	↖↗
Volume (vph)	48	2953	82	172	1623	977	371	158	380	1209	87	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.0	4.0	4.5	4.5	4.0	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	1.00	1.00	1.00	0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fit Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1703	3406	1583	1770	3210	1386	1770	1863	1583	3303	1863	1524
Fit Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1703	3406	1583	1770	3210	1386	1770	1863	1583	3303	1863	1524
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	51	3108	86	181	1708	1028	391	166	400	1273	92	207
RTOR Reduction (vph)	0	0	43	0	6	0	0	0	87	0	0	87
Lane Group Flow (vph)	51	3108	43	181	1908	822	391	166	313	1273	92	120
Heavy Vehicles (%)	6%	6%	2%	2%	6%	6%	2%	2%	2%	6%	2%	6%
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1		6
Permitted Phases			4			Free			2			6
Actuated Green, G (s)	5.0	74.5	74.5	10.0	79.5	150.0	32.0	16.5	16.5	32.0	16.5	16.5
Effective Green, g (s)	5.0	74.5	74.5	10.0	79.5	150.0	32.0	16.5	16.5	32.0	16.5	16.5
Actuated g/C Ratio	0.03	0.50	0.50	0.07	0.53	1.00	0.21	0.11	0.11	0.21	0.11	0.11
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5		4.0	4.5	4.5	4.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	56	1691	786	118	1701	1386	377	204	174	704	204	167
v/s Ratio Prot	0.03	c0.91		c0.10	0.59		0.22	0.09		c0.39	0.05	
v/s Ratio Perm			0.03			0.59				c0.20		0.08
v/c Ratio	0.91	1.84	0.05	1.53	1.12	0.59	1.04	0.81	1.80	1.81	0.45	0.72
Uniform Delay, d1	72.3	37.8	19.5	70.0	35.2	0.0	59.0	65.2	66.8	59.0	62.5	64.5
Progression Factor	1.00	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	88.0	379.4	0.1	278.1	63.3	1.9	56.3	21.4	380.9	369.3	1.6	13.7
Delay (s)	160.3	417.2	19.7	348.1	98.5	1.9	115.3	86.6	447.6	428.3	64.1	78.2
Level of Service	F	F	B	F	F	A	F	F	F	F	E	E
Approach Delay (s)	402.6			86.8			249.2			360.9		
Approach LOS	F			F			F			F		

Intersection Summary			
HCM 2000 Control Delay	272.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.80		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	150.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1: 3rd St & Coombs St

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Volume (vph)	4	258	2	109	426	18	29	30	104	11	34	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Flt		1.00			1.00			0.91			0.98	
Flt Protected		1.00			0.99			0.99			0.99	
Satd. Flow (prot)		3533			3487			1688			1805	
Flt Permitted		0.95			0.81			0.95			0.94	
Satd. Flow (perm)		3355			2865			1614			1715	
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)	4	280	2	118	463	20	32	33	113	12	37	9
RTOR Reduction (vph)	0	0	0	0	3	0	0	74	0	0	6	0
Lane Group Flow (vph)	0	286	0	0	598	0	0	104	0	0	52	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		37.0			37.0			25.0			25.0	
Effective Green, g (s)		37.0			37.0			25.0			25.0	
Actuated g/C Ratio		0.51			0.51			0.35			0.35	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1724			1472			560			595	
v/s Ratio Prot												
v/s Ratio Perm		0.09			c0.21			c0.06			0.03	
v/c Ratio		0.17			0.41			0.19			0.09	
Uniform Delay, d1		9.3			10.7			16.4			15.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.0			0.2			0.2			0.1	
Delay (s)		9.3			10.9			16.6			15.9	
Level of Service		A			B			B			B	
Approach Delay (s)		9.3			10.9			16.6			15.9	
Approach LOS		A			B			B			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		11.7										B
HCM 2000 Volume to Capacity ratio		0.32										
Actuated Cycle Length (s)		72.0						10.0				
Intersection Capacity Utilization		95.0%										F
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

1: 3rd St & Coombs St

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Volume (vph)	4	247	1	128	470	9	98	50	134	29	48	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Flt		1.00			1.00			0.94			0.97	
Flt Protected		1.00			0.99			0.98			0.99	
Satd. Flow (prot)		3535			3495			1714			1777	
Flt Permitted		0.95			0.81			0.85			0.87	
Satd. Flow (perm)		3354			2848			1483			1559	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	4	260	1	135	495	9	103	53	141	31	51	26
RTOR Reduction (vph)	0	0	0	0	1	0	0	45	0	0	16	0
Lane Group Flow (vph)	0	265	0	0	638	0	0	252	0	0	92	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		37.0			37.0			25.0			25.0	
Effective Green, g (s)		37.0			37.0			25.0			25.0	
Actuated g/C Ratio		0.51			0.51			0.35			0.35	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1723			1463			514			541	
v/s Ratio Prot												
v/s Ratio Perm		0.08			c0.22			c0.17			0.06	
v/c Ratio		0.15			0.44			0.49			0.17	
Uniform Delay, d1		9.2			11.0			18.5			16.3	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.0			0.2			0.7			0.2	
Delay (s)		9.3			11.2			19.2			16.5	
Level of Service		A			B			B			B	
Approach Delay (s)		9.3			11.2			19.2			16.5	
Approach LOS		A			B			B			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		13.1										B
HCM 2000 Volume to Capacity ratio		0.46										
Actuated Cycle Length (s)		72.0						10.0				
Intersection Capacity Utilization		97.1%										F
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
2: 3rd St & Main St

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖ ↗	↖ ↗		↖ ↗	↖ ↗			↖ ↗	↖ ↗		↖ ↗	↖ ↗	
Volume (vph)	33	284	7	32	362	64	0	26	48	117	37	47	
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	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.98			1.00	0.85		0.97	0.97	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00		0.97	0.97	
Satd. Flow (prot)	1770	3526		1770	3459			1863	1583		1753	1753	
Flt Permitted	0.95	1.00		0.95	1.00			1.00	1.00		0.80	0.80	
Satd. Flow (perm)	1770	3526		1770	3459			1863	1583		1451	1451	
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)	36	309	8	35	393	70	0	28	52	127	40	51	
RTOR Reduction (vph)	0	4	0	0	25	0	0	0	35	0	25	0	
Lane Group Flow (vph)	36	313	0	35	438	0	0	28	17	0	193	0	
Turn Type	Prot	NA		Prot	NA		Perm	NA	pm+ov	Perm	NA	NA	
Protected Phases	7	4		3	8			2	3		6	6	
Permitted Phases							2		2		6		
Actuated Green, G (s)	0.6	8.4		2.3	10.1			7.8	10.1		7.8		
Effective Green, g (s)	0.6	8.4		2.3	10.1			7.8	10.1		7.8		
Actuated g/C Ratio	0.02	0.28		0.08	0.33			0.26	0.33		0.26		
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0		
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0		
Lane Grp Cap (vph)	34	971		133	1145			476	731		371		
v/s Ratio Prot	c0.02	0.09		0.02	c0.13			0.02	0.00		c0.13		
v/s Ratio Perm									0.01			c0.13	
v/c Ratio	1.06	0.32		0.26	0.38			0.06	0.02		0.52		
Uniform Delay, d1	14.9	8.8		13.3	7.8			8.6	6.9		9.7		
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00		
Incremental Delay, d2	172.6	0.2		1.1	0.2			0.1	0.0		1.3		
Delay (s)	187.6	9.0		14.4	8.0			8.6	6.9		11.1		
Level of Service	F	A		B	A			A	A		B		
Approach Delay (s)		27.2			8.5				7.5		11.1		
Approach LOS		C			A				A		B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay	14.6			HCM 2000 Level of Service				B					
HCM 2000 Volume to Capacity ratio	0.46												
Actuated Cycle Length (s)	30.5			Sum of lost time (s)				12.0					
Intersection Capacity Utilization	43.3%			ICU Level of Service				A					
Analysis Period (min)	15												
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
2: 3rd St & Main St

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖ ↗	↖ ↗		↖ ↗	↖ ↗			↖ ↗	↖ ↗		↖ ↗	↖ ↗	
Volume (vph)	59	383	4	107	551	96	12	60	119	222	95	75	
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	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.98			1.00	0.85		0.97	0.97	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00		0.97	0.97	
Satd. Flow (prot)	1770	3534		1770	3460			1847	1583		1765	1765	
Flt Permitted	0.95	1.00		0.95	1.00			0.92	1.00		0.78	0.78	
Satd. Flow (perm)	1770	3534		1770	3460			1720	1583		1419	1419	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	62	403	4	113	580	101	13	63	125	234	100	79	
RTOR Reduction (vph)	0	1	0	0	25	0	0	0	68	0	16	0	
Lane Group Flow (vph)	62	406	0	113	656	0	0	76	57	0	397	0	
Turn Type	Prot	NA		Prot	NA		Perm	NA	pm+ov	Perm	NA	NA	
Protected Phases	7	4		3	8			2	3		6	6	
Permitted Phases							2		2		6		
Actuated Green, G (s)	2.5	13.9		4.4	15.8			17.1	21.5		17.1		
Effective Green, g (s)	2.5	13.9		4.4	15.8			17.1	21.5		17.1		
Actuated g/C Ratio	0.05	0.29		0.09	0.33			0.36	0.45		0.36		
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0		
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0		
Lane Grp Cap (vph)	93	1036		164	1153			620	851		511		
v/s Ratio Prot	0.04	0.11		c0.06	c0.19				0.01			c0.28	
v/s Ratio Perm									0.04		0.03	c0.28	
v/c Ratio	0.67	0.39		0.69	0.57			0.12	0.07		0.78		
Uniform Delay, d1	22.0	13.4		20.8	13.0			10.1	7.3		13.5		
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00		
Incremental Delay, d2	16.6	0.2		11.4	0.6			0.1	0.0		7.3		
Delay (s)	38.6	13.6		32.3	13.6			10.2	7.3		20.8		
Level of Service	D	B		C	B			B	A		C		
Approach Delay (s)		16.9			16.3				8.4		20.8		
Approach LOS		B			B				A		C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay	16.6			HCM 2000 Level of Service				B					
HCM 2000 Volume to Capacity ratio	0.71												
Actuated Cycle Length (s)	47.4			Sum of lost time (s)				12.0					
Intersection Capacity Utilization	60.2%			ICU Level of Service				B					
Analysis Period (min)	15												
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
3: Soscol Ave (SR 121) & 3rd St

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗	↖	↑	↗	↖	↑	↗
Volume (vph)	114	225	255	21	187	53	250	837	7	67	768	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	3421		3433	3535		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	3421		3433	3535		1770	3539	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)	124	245	277	23	203	58	272	910	8	73	835	89
RTOR Reduction (vph)	0	0	170	0	34	0	0	1	0	0	0	54
Lane Group Flow (vph)	124	245	107	23	227	0	272	917	0	73	835	35
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	5.0	21.1	21.1	1.8	17.9		14.0	41.3		8.4	35.7	35.7
Effective Green, g (s)	5.0	21.1	21.1	1.8	17.9		14.0	41.3		8.4	35.7	35.7
Actuated g/C Ratio	0.06	0.23	0.23	0.02	0.20		0.16	0.46		0.09	0.40	0.40
Clearance Time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	98	436	371	35	680		534	1622		165	1403	627
v/s Ratio Prot	c0.07	c0.13		0.01	0.07		c0.08	c0.26		0.04	0.24	
v/s Ratio Perm			0.07									0.02
v/c Ratio	1.27	0.56	0.29	0.66	0.33		0.51	0.57		0.44	0.60	0.06
Uniform Delay, d1	42.5	30.4	28.3	43.8	30.9		34.9	17.8		38.6	21.4	16.8
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	178.1	1.7	0.4	36.6	0.3		0.8	1.4		1.9	1.9	0.2
Delay (s)	220.6	32.0	28.7	80.4	31.2		35.6	19.2		40.5	23.3	16.9
Level of Service	F	C	C	F	C		D	B		D	C	B
Approach Delay (s)		66.8			35.2			23.0			24.0	
Approach LOS		E			D			C			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	33.5			HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio	0.62											
Actuated Cycle Length (s)	90.0			Sum of lost time (s)				17.4				
Intersection Capacity Utilization	58.0%			ICU Level of Service				B				
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
3: Soscol Ave (SR 121) & 3rd St

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑	↗	↖	↑	↗	↖	↑	↗
Volume (vph)	146	276	268	23	195	56	270	950	16	75	933	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	3421		3433	3530		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	3421		3433	3530		1770	3539	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	154	291	282	24	205	59	284	1000	17	79	982	177
RTOR Reduction (vph)	0	0	153	0	34	0	0	1	0	0	0	108
Lane Group Flow (vph)	154	291	129	24	230	0	284	1016	0	79	982	69
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	5.0	21.6	21.6	1.8	18.4		14.2	40.8		8.4	35.0	35.0
Effective Green, g (s)	5.0	21.6	21.6	1.8	18.4		14.2	40.8		8.4	35.0	35.0
Actuated g/C Ratio	0.06	0.24	0.24	0.02	0.20		0.16	0.45		0.09	0.39	0.39
Clearance Time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	98	447	379	35	699		541	1600		165	1376	615
v/s Ratio Prot	c0.09	c0.16		0.01	0.07		c0.08	0.29		0.04	c0.28	
v/s Ratio Perm			0.08									0.04
v/c Ratio	1.57	0.65	0.34	0.69	0.33		0.52	0.63		0.48	0.71	0.11
Uniform Delay, d1	42.5	30.8	28.3	43.8	30.5		34.8	18.9		38.7	23.3	17.6
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	300.4	3.4	0.5	43.6	0.3		0.9	1.9		2.2	3.2	0.4
Delay (s)	342.9	34.2	28.8	87.4	30.8		35.7	20.8		40.9	26.4	17.9
Level of Service	F	C	C	F	C		D	C		D	C	B
Approach Delay (s)		97.5			35.5			24.1			26.2	
Approach LOS		F			D			C			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	40.7			HCM 2000 Level of Service				D				
HCM 2000 Volume to Capacity ratio	0.71											
Actuated Cycle Length (s)	90.0			Sum of lost time (s)				17.4				
Intersection Capacity Utilization	65.9%			ICU Level of Service				C				
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
4: Soscol Ave (SR 121) & Silverado Trail (SR 121)

4/8/2013

	↑	↖	↗	↓	↙	↘
Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↑↑	↖		↗	↙	↘
Volume (vph)	1185	404	10	879	600	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12
Total Lost time (s)	5.0	5.0		5.0	5.0	
Lane Util. Factor	0.95	1.00		0.95	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	1.00	1.00		1.00	0.95	
Satd. Flow (prot)	3505	1777		3537	1753	
Flt Permitted	1.00	1.00		0.74	0.95	
Satd. Flow (perm)	3505	1777		2622	1753	
Peak-hour factor, PHF	0.73	0.73	0.73	0.73	0.73	0.73
Adj. Flow (vph)	1623	553	14	1204	822	21
RTOR Reduction (vph)	0	0	0	0	1	0
Lane Group Flow (vph)	1623	553	0	1218	842	0
Heavy Vehicles (%)	3%	3%	2%	2%	3%	2%
Turn Type	NA	custom	Perm	NA	NA	
Protected Phases	2	2 3		6	8	
Permitted Phases			6			
Actuated Green, G (s)	61.8	130.0		61.8	58.2	
Effective Green, g (s)	61.8	126.0		61.8	58.2	
Actuated g/C Ratio	0.48	0.97		0.48	0.45	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	5.0			5.0	4.0	
Lane Grp Cap (vph)	1666	1722		1246	784	
v/s Ratio Prot	0.46	0.31			c0.48	
v/s Ratio Perm				c0.46		
v/c Ratio	0.97	0.32		0.98	1.07	
Uniform Delay, d1	33.3	0.1		33.4	35.9	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	16.7	0.1		20.7	54.1	
Delay (s)	50.0	0.2		54.1	90.0	
Level of Service	D	A		D	F	
Approach Delay (s)	37.4			54.1	90.0	
Approach LOS	D			D	F	

Intersection Summary			
HCM 2000 Control Delay	52.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
4: Soscol Ave (SR 121) & Silverado Trail (SR 121)

4/8/2013

	↑	↖	↗	↓	↙	↘
Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↑↑	↖		↗	↙	↘
Volume (vph)	1341	637	10	1420	625	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12
Total Lost time (s)	5.0	5.0		5.0	5.0	
Lane Util. Factor	0.95	1.00		0.95	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	1.00	1.00		1.00	0.95	
Satd. Flow (prot)	3505	1777		3537	1753	
Flt Permitted	1.00	1.00		0.88	0.95	
Satd. Flow (perm)	3505	1777		3102	1753	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	1559	741	12	1651	727	21
RTOR Reduction (vph)	0	0	0	0	1	0
Lane Group Flow (vph)	1559	741	0	1663	747	0
Heavy Vehicles (%)	3%	3%	2%	2%	3%	2%
Turn Type	NA	custom	Perm	NA	NA	
Protected Phases	2	2 3		6	8	
Permitted Phases			6			
Actuated Green, G (s)	57.0	110.0		57.0	43.0	
Effective Green, g (s)	57.0	106.0		57.0	43.0	
Actuated g/C Ratio	0.52	0.96		0.52	0.39	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	5.0			5.0	4.0	
Lane Grp Cap (vph)	1816	1712		1607	685	
v/s Ratio Prot	0.44	0.42			c0.43	
v/s Ratio Perm				c0.54		
v/c Ratio	0.86	0.43		1.03	1.09	
Uniform Delay, d1	23.0	0.1		26.5	33.5	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.5	0.2		32.0	61.5	
Delay (s)	28.5	0.3		58.5	95.0	
Level of Service	C	A		E	F	
Approach Delay (s)	19.4			58.5	95.0	
Approach LOS	B			E	F	

Intersection Summary			
HCM 2000 Control Delay	45.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	90.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
5: Soscol Ave (SR 121) & Imola Ave (SR 121)/Imola Ave

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↗	↘	↔	↗	↘	↔	↗	↘	↔	↗	↘
Volume (vph)	155	306	768	160	283	45	449	1065	113	80	1330	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.1	4.0	3.0	4.1		3.5	4.9		3.5	4.6	4.6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.99		1.00	1.00	0.85
Fit Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1863	1568	1770	1824		3400	3458		1770	3505	1568
Fit Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1752	1863	1568	1770	1824		3400	3458		1770	3505	1568
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	174	344	863	180	318	51	504	1197	127	90	1494	149
RTOR Reduction (vph)	0	0	0	0	4	0	0	5	0	0	0	85
Lane Group Flow (vph)	174	344	863	180	365	0	504	1319	0	90	1494	64
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	3%	3%	2%	2%	3%	3%
Turn Type	Prot	NA	Free	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free									6
Actuated Green, G (s)	14.0	29.4	145.0	16.3	31.7		21.5	73.8		10.0	62.6	62.6
Effective Green, g (s)	14.0	29.4	145.0	16.3	31.7		21.5	73.8		10.0	62.6	62.6
Actuated g/C Ratio	0.10	0.20	1.00	0.11	0.22		0.15	0.51		0.07	0.43	0.43
Clearance Time (s)	3.0	4.1		3.0	4.1		3.5	4.9		3.5	4.6	4.6
Vehicle Extension (s)	3.5	3.0		3.8	3.0		4.0	3.5		3.0	3.5	3.5
Lane Grp Cap (vph)	169	377	1568	198	398		504	1760		122	1513	676
v/s Ratio Prot	c0.10	c0.18		0.10	c0.20		c0.15	0.38		0.05	c0.43	
v/s Ratio Perm			0.55									0.04
v/c Ratio	1.03	0.91	0.55	0.91	0.92		1.00	0.75		0.74	0.99	0.10
Uniform Delay, d1	65.5	56.5	0.0	63.6	55.4		61.8	28.3		66.2	40.8	24.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.83	0.60		1.00	1.00	1.00
Incremental Delay, d2	77.2	25.8	1.4	39.7	25.5		30.5	1.7		20.6	20.3	0.3
Delay (s)	142.7	82.3	1.4	103.3	80.9		81.8	18.7		86.8	61.2	24.7
Level of Service	F	F	A	F	F		F	B		F	E	C
Approach Delay (s)		39.4			88.2			36.1			59.3	
Approach LOS		D			F			D			E	

Intersection Summary			
HCM 2000 Control Delay	49.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	89.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
5: Soscol Ave (SR 121) & Imola Ave (SR 121)/Imola Ave

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↗	↘	↔	↗	↘	↔	↗	↘	↔	↗	↘
Volume (vph)	193	281	421	85	283	35	739	1346	128	81	1073	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.1	4.0	3.0	4.1		3.5	4.9		3.5	4.6	4.6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.99		1.00	1.00	0.85
Fit Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1863	1568	1770	1832		3400	3462		1770	3505	1568
Fit Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1752	1863	1568	1770	1832		3400	3462		1770	3505	1568
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	230	335	501	101	337	42	880	1602	152	96	1277	223
RTOR Reduction (vph)	0	0	0	0	3	0	0	5	0	0	0	146
Lane Group Flow (vph)	230	335	501	101	376	0	880	1749	0	96	1277	77
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	3%	3%	2%	2%	3%	3%
Turn Type	Prot	NA	Free	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free									6
Actuated Green, G (s)	16.0	30.6	145.0	16.7	31.3		32.5	74.0		8.2	50.0	50.0
Effective Green, g (s)	16.0	30.6	145.0	16.7	31.3		32.5	74.0		8.2	50.0	50.0
Actuated g/C Ratio	0.11	0.21	1.00	0.12	0.22		0.22	0.51		0.06	0.34	0.34
Clearance Time (s)	3.0	4.1		3.0	4.1		3.5	4.9		3.5	4.6	4.6
Vehicle Extension (s)	3.5	3.0		3.8	3.0		4.0	3.5		3.0	3.5	3.5
Lane Grp Cap (vph)	193	393	1568	203	395		762	1766		100	1208	540
v/s Ratio Prot	c0.13	0.18		0.06	c0.21		c0.26	0.51		0.05	c0.36	
v/s Ratio Perm			0.32									0.05
v/c Ratio	1.19	0.85	0.32	0.50	0.95		1.15	0.99		0.96	1.06	0.14
Uniform Delay, d1	64.5	55.0	0.0	60.2	56.1		56.2	35.1		68.2	47.5	32.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.82	0.71		1.00	1.00	1.00
Incremental Delay, d2	126.0	16.2	0.5	2.5	32.8		78.8	14.3		76.1	42.4	0.6
Delay (s)	190.5	71.2	0.5	62.7	89.0		125.1	39.1		144.3	89.9	33.3
Level of Service	F	E	A	E	F		F	D		F	F	C
Approach Delay (s)		63.7			83.4			67.8			85.3	
Approach LOS		E			F			E			F	

Intersection Summary			
HCM 2000 Control Delay	73.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	92.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
6: Soscol Ave (SR 121) & College Wy/Magnolia Dr

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Volume (vph)	71	3	0	34	0	31	8	1514	205	115	1742	352
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	4.5		4.0	4.5	4.5
Lane Util. Factor	0.95	0.95		1.00	1.00	1.00	0.95			1.00	0.95	1.00
Frt	1.00	1.00		1.00	0.85	1.00	0.98			1.00	1.00	0.85
Fit Protected	0.95	0.96		0.95	1.00	0.95	1.00			0.95	1.00	1.00
Satd. Flow (prot)	1681	1691		1770	1583	1770	3360			1770	3406	1583
Fit Permitted	0.95	0.96		0.95	1.00	0.95	1.00			0.95	1.00	1.00
Satd. Flow (perm)	1681	1691		1770	1583	1770	3360			1770	3406	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)	77	3	0	37	0	34	9	1646	223	125	1893	383
RTOR Reduction (vph)	0	0	0	0	0	30	0	6	0	0	0	72
Lane Group Flow (vph)	40	40	0	0	37	4	9	1863	0	125	1893	311
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	6%	2%	2%	6%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	5.2	5.2		15.9	15.9		0.8	93.7		13.7	106.6	106.6
Effective Green, g (s)	5.2	5.2		15.9	15.9		0.8	93.7		13.7	106.6	106.6
Actuated g/C Ratio	0.04	0.04		0.11	0.11		0.01	0.65		0.09	0.74	0.74
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.5		4.0	4.5	4.5
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)	60	60		194	173		9	2171		167	2503	1163
v/s Ratio Prot	c0.02	0.02		c0.02			0.01	c0.55		c0.07	0.56	
v/s Ratio Perm					0.00							0.20
v/c Ratio	0.67	0.67		0.19	0.02		1.00	0.86		0.75	0.76	0.27
Uniform Delay, d1	69.0	69.0		58.7	57.6		72.1	20.4		64.0	11.5	6.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.13	0.25	0.02
Incremental Delay, d2	24.5	24.5		0.5	0.1		300.0	4.7		9.3	1.2	0.3
Delay (s)	93.6	93.6		59.2	57.7		372.1	25.0		81.9	4.0	0.4
Level of Service	F	F		E	E		F	C		F	A	A
Approach Delay (s)		93.6			58.5			26.7			7.5	
Approach LOS		F			E			C			A	

Intersection Summary			
HCM 2000 Control Delay	18.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
6: Soscol Ave (SR 121) & College Wy/Magnolia Dr

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Volume (vph)	216	1	1	199	3	108	13	1893	7	18	1380	152
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	4.5		4.0	4.5	4.5
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	0.95			1.00	0.95	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Fit Protected	0.95	0.95	1.00		0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1686	1583		1775	1583	1770	3404		1770	3406	1583
Fit Permitted	0.95	0.95	1.00		0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1686	1583		1775	1583	1770	3404		1770	3406	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	227	1	1	209	3	114	14	1993	7	19	1453	160
RTOR Reduction (vph)	0	0	1	0	0	59	0	0	0	0	0	47
Lane Group Flow (vph)	113	115	0	0	212	55	14	2000	0	19	1453	113
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	6%	2%	2%	6%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	10.0	10.0	10.0		24.2	24.2	2.0	91.3		3.0	92.3	92.3
Effective Green, g (s)	10.0	10.0	10.0		24.2	24.2	2.0	91.3		3.0	92.3	92.3
Actuated g/C Ratio	0.07	0.07	0.07		0.17	0.17	0.01	0.63		0.02	0.64	0.64
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0	4.0	4.5		4.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	115	116	109		296	264	24	2143		36	2168	1007
v/s Ratio Prot	0.07	c0.07			c0.12		0.01	c0.59		c0.01	0.43	
v/s Ratio Perm			0.00			0.03						0.07
v/c Ratio	0.98	0.99	0.00		0.72	0.21	0.58	0.93		0.53	0.67	0.11
Uniform Delay, d1	67.4	67.5	62.8		57.2	52.1	71.1	24.1		70.3	16.7	10.3
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.39	0.32	0.01
Incremental Delay, d2	78.0	80.6	0.0		8.0	0.4	31.3	9.0		7.2	0.9	0.1
Delay (s)	145.4	148.1	62.8		65.2	52.5	102.4	33.1		105.0	6.1	0.2
Level of Service	F	F	E		E	D	F	C		F	A	A
Approach Delay (s)		146.4			60.7			33.6			6.7	
Approach LOS		F			E			C			A	

Intersection Summary			
HCM 2000 Control Delay	31.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
7: Soscol Ave (SR 121) & Streblow Dr

4/8/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	39	85	325	1667	1597	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	42	92	353	1812	1736	174
RTOR Reduction (vph)	0	87	0	0	0	35
Lane Group Flow (vph)	42	5	353	1812	1736	139
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	7.3	7.3	29.0	109.5	76.5	76.5
Effective Green, g (s)	7.3	7.3	29.0	109.5	76.5	76.5
Actuated g/C Ratio	0.06	0.06	0.23	0.87	0.61	0.61
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	200	92	409	2976	2079	966
v/s Ratio Prot	c0.01		c0.20	0.53	c0.51	
v/s Ratio Perm		0.00				0.09
v/c Ratio	0.21	0.06	0.86	0.61	0.84	0.14
Uniform Delay, d1	56.3	55.8	46.2	2.1	19.4	10.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.3	16.9	0.9	4.2	0.3
Delay (s)	56.8	56.0	63.1	3.1	23.5	10.7
Level of Service	E	E	E	A	C	B
Approach Delay (s)	56.3			12.9	22.4	
Approach LOS	E			B	C	

Intersection Summary			
HCM 2000 Control Delay	18.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	125.3	Sum of lost time (s)	12.5
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
7: Soscol Ave (SR 121) & Streblow Dr

4/8/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	147	168	180	1801	1469	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	155	177	189	1896	1546	123
RTOR Reduction (vph)	0	157	0	0	0	40
Lane Group Flow (vph)	155	20	189	1896	1546	83
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	8.8	8.8	11.0	59.5	44.5	44.5
Effective Green, g (s)	8.8	8.8	11.0	59.5	44.5	44.5
Actuated g/C Ratio	0.11	0.11	0.14	0.77	0.58	0.58
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	393	181	253	2638	1973	917
v/s Ratio Prot	c0.05		0.11	c0.56	c0.45	
v/s Ratio Perm		0.01				0.05
v/c Ratio	0.39	0.11	0.75	0.72	0.78	0.09
Uniform Delay, d1	31.5	30.5	31.6	4.4	12.4	7.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.3	11.4	1.7	3.2	0.2
Delay (s)	32.2	30.8	42.9	6.1	15.6	7.4
Level of Service	C	C	D	A	B	A
Approach Delay (s)	31.4			9.5	15.0	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	76.8	Sum of lost time (s)	12.5
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
8: Soscol Ave (SR 121) & Project Access

4/8/2013

	↙	↖	↑	↗	↘	↓	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	↙	↖	↗	↘	↙	↘	
Volume (veh/h)	99	49	1898	133	62	1628	
Sign Control	Stop		Free		Free		
Grade	0%		0%		0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	108	53	2063	145	67	1770	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)		5					
Median type		TWLT			None		
Median storage (veh)			2				
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume	3083	1032			2063		
vC1, stage 1 conf vol	2063						
vC2, stage 2 conf vol	1020						
vCu, unblocked vol	3083	1032			2063		
tC, single (s)	7.0	7.1			4.3		
tC, 2 stage (s)	6.0						
tF (s)	3.6	3.4			2.3		
p0 queue free %	0	75			72		
cM capacity (veh/h)	69	217			240		
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>
Volume Total	161	1032	1032	145	67	885	885
Volume Left	108	0	0	0	67	0	0
Volume Right	53	0	0	145	0	0	0
cSH	94	1700	1700	1700	240	1700	1700
Volume to Capacity	1.71	0.61	0.61	0.09	0.28	0.52	0.52
Queue Length 95th (ft)	325	0	0	0	28	0	0
Control Delay (s)	438.5	0.0	0.0	0.0	25.8	0.0	0.0
Lane LOS	F				D		
Approach Delay (s)	438.5	0.0			0.9		
Approach LOS	F						
<b>Intersection Summary</b>							
Average Delay			17.2				
Intersection Capacity Utilization			64.6%		ICU Level of Service		C
Analysis Period (min)			15				

HCM Unsignalized Intersection Capacity Analysis  
8: Soscol Ave (SR 121) & Project Access

4/8/2013

	↙	↖	↑	↗	↘	↓	
Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	↙	↖	↗	↘	↙	↘	
Volume (veh/h)	61	70	1877	49	40	1626	
Sign Control	Stop		Free		Free		
Grade	0%		0%		0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly flow rate (vph)	64	74	1976	52	42	1712	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)		5					
Median type		TWLT			None		
Median storage (veh)			2				
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume	2916	988			1976		
vC1, stage 1 conf vol	1976						
vC2, stage 2 conf vol	940						
vCu, unblocked vol	2916	988			1976		
tC, single (s)	7.0	7.1			4.3		
tC, 2 stage (s)	6.0						
tF (s)	3.6	3.4			2.3		
p0 queue free %	18	68			84		
cM capacity (veh/h)	79	232			260		
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>
Volume Total	138	988	988	52	42	856	856
Volume Left	64	0	0	0	42	0	0
Volume Right	74	0	0	52	0	0	0
cSH	169	1700	1700	1700	260	1700	1700
Volume to Capacity	0.82	0.58	0.58	0.03	0.16	0.50	0.50
Queue Length 95th (ft)	138	0	0	0	14	0	0
Control Delay (s)	82.7	0.0	0.0	0.0	21.5	0.0	0.0
Lane LOS	F				C		
Approach Delay (s)	82.7	0.0			0.5		
Approach LOS	F						
<b>Intersection Summary</b>							
Average Delay			3.1				
Intersection Capacity Utilization			62.9%		ICU Level of Service		B
Analysis Period (min)			15				

HCM Signalized Intersection Capacity Analysis  
 9: Soscol Ave (SR 121) & Kaiser Rd

4/8/2013

Movement	EBL	EBR	NBL	NBT	SBR	SBL
Lane Configurations						
Volume (vph)	381	147	197	1727	1096	546
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Fit Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Fit Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	414	160	214	1877	1191	593
RTOR Reduction (vph)	0	134	0	0	0	316
Lane Group Flow (vph)	414	26	214	1877	1191	277
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	9.8	9.8	9.6	41.5	27.9	27.9
Effective Green, g (s)	9.8	9.8	9.6	41.5	27.9	27.9
Actuated g/C Ratio	0.16	0.16	0.16	0.69	0.47	0.47
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	562	259	284	2363	1589	738
v/s Ratio Prot	c0.12		0.12	c0.55	0.35	
v/s Ratio Perm		0.02				0.17
v/c Ratio	0.74	0.10	0.75	0.79	0.75	0.37
Uniform Delay, d1	23.8	21.3	24.0	6.2	13.1	10.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.0	0.2	10.8	2.9	3.3	1.5
Delay (s)	28.8	21.4	34.7	9.1	16.4	11.8
Level of Service	C	C	C	A	B	B
Approach Delay (s)	26.7			11.7	14.8	
Approach LOS	C			B	B	

Intersection Summary			
HCM 2000 Control Delay	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	59.8	Sum of lost time (s)	12.5
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 9: Soscol Ave (SR 121) & Kaiser Rd

4/8/2013

Movement	EBL	EBR	NBL	NBT	SBR	SBL
Lane Configurations						
Volume (vph)	764	154	237	1180	1388	342
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Fit Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Fit Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	804	162	249	1242	1461	360
RTOR Reduction (vph)	0	63	0	0	0	190
Lane Group Flow (vph)	804	99	249	1242	1461	170
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	22.0	22.0	13.0	59.5	42.5	42.5
Effective Green, g (s)	22.0	22.0	13.0	59.5	42.5	42.5
Actuated g/C Ratio	0.24	0.24	0.14	0.66	0.47	0.47
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	839	386	255	2251	1608	747
v/s Ratio Prot	c0.23		c0.14	0.36	c0.43	
v/s Ratio Perm		0.06				0.11
v/c Ratio	0.96	0.26	0.98	0.55	0.91	0.23
Uniform Delay, d1	33.5	27.4	38.3	8.1	22.0	14.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	21.3	0.4	49.3	1.0	9.1	0.7
Delay (s)	54.8	27.8	87.7	9.1	31.1	14.8
Level of Service	D	C	F	A	C	B
Approach Delay (s)	50.3			22.2	27.8	
Approach LOS	D			C	C	

Intersection Summary			
HCM 2000 Control Delay	31.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
10: Soscol Ave (SR 121) & Napa Valley Corporate Wy

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	75	0	30	2	0	2	218	1882	4	0	1100	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	0.97	0.95	1.00	0.95	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.85	1.00	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1618	1618	1524	1770	1583	3303	3406	1583	3406	1524	3406	1524
Flt Permitted	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1618	1618	1524	1770	1583	3303	3406	1583	3406	1524	3406	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)	82	0	33	2	0	2	237	2046	4	0	1196	195
RTOR Reduction (vph)	0	0	27	0	0	2	0	0	1	0	0	73
Lane Group Flow (vph)	41	41	6	0	2	0	237	2046	3	0	1196	122
Heavy Vehicles (%)	6%	2%	6%	2%	2%	2%	6%	6%	2%	2%	6%	6%
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4	5	8	8	5	2			1	6	
Permitted Phases			4			8		2				6
Actuated Green, G (s)	6.8	6.8	18.2	1.0	1.0	11.4	73.2	73.2	58.3	58.3		
Effective Green, g (s)	6.8	6.8	18.2	1.0	1.0	11.4	73.2	73.2	58.3	58.3		
Actuated g/C Ratio	0.07	0.07	0.19	0.01	0.01	0.12	0.78	0.78	0.62	0.62		
Clearance Time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.5	4.5	4.5	4.5		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	117	117	296	18	16	402	2666	1239	2123	950		
v/s Ratio Prot	c0.03	0.03	0.00	c0.00		0.07	c0.60		0.35			
v/s Ratio Perm			0.00			0.00		0.00			0.08	
v/c Ratio	0.35	0.35	0.02	0.11	0.00	0.59	0.77	0.00	0.56	0.13		
Uniform Delay, d1	41.2	41.2	30.4	45.8	45.8	38.8	5.5	2.2	10.2	7.2		
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	1.8	1.8	0.0	2.7	0.0	2.2	2.2	0.0	1.1	0.3		
Delay (s)	43.1	43.1	30.5	48.5	45.8	41.0	7.7	2.2	11.3	7.5		
Level of Service	D	D	C	D	D	A	A		B	A		
Approach Delay (s)		39.5			47.2		11.1			10.8		
Approach LOS		D			D		B			B		

Intersection Summary			
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	93.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
10: Soscol Ave (SR 121) & Napa Valley Corporate Wy

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	224	1	130	5	0	8	51	1194	0	5	1328	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	0.97	0.95	1.00	0.95	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.85	1.00	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1618	1623	1524	1770	1583	3303	3406	1770	3406	1524	3406	1524
Flt Permitted	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1618	1623	1524	1770	1583	3303	3406	1770	3406	1524	3406	1524
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	236	1	137	5	0	8	54	1257	0	5	1398	251
RTOR Reduction (vph)	0	0	110	0	0	8	0	0	0	0	0	109
Lane Group Flow (vph)	118	119	27	0	5	0	54	1257	0	5	1398	142
Heavy Vehicles (%)	6%	2%	6%	2%	2%	2%	6%	6%	2%	2%	6%	6%
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4	5	8	8	5	2			1	6	
Permitted Phases			4			8		2				6
Actuated Green, G (s)	10.5	10.5	14.0	1.1	1.1	3.5	43.0	0.7	40.2	40.2		
Effective Green, g (s)	10.5	10.5	14.0	1.1	1.1	3.5	43.0	0.7	40.2	40.2		
Actuated g/C Ratio	0.15	0.15	0.20	0.02	0.02	0.05	0.60	0.01	0.56	0.56		
Clearance Time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.5	3.5	4.5	4.5		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	238	239	299	27	24	162	2054	17	1920	859		
v/s Ratio Prot	0.07	c0.07	0.00	c0.00		c0.02	c0.37		0.00	c0.41		
v/s Ratio Perm			0.01			0.00					0.09	
v/c Ratio	0.50	0.50	0.09	0.19	0.01	0.33	0.61	0.29	0.73	0.16		
Uniform Delay, d1	28.0	28.0	23.4	34.7	34.6	32.8	8.9	35.1	11.5	7.5		
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	1.6	1.6	0.1	3.3	0.1	1.2	1.4	9.4	2.5	0.4		
Delay (s)	29.6	29.6	23.6	38.0	34.6	34.0	10.3	44.5	14.0	7.9		
Level of Service	C	C	C	D	C	C	B	D	B	A		
Approach Delay (s)		27.4			35.9		11.2		13.1			
Approach LOS		C			D		B		B			

Intersection Summary			
HCM 2000 Control Delay	14.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	71.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	58.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
11: Soscol Ave (SR 121) & SR 29/SR 12

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖ ↗	↖ ↗	↖	↖ ↗	↖ ↗	↖ ↗	↖	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗	
Volume (vph)	103	2148	550	76	1525	1965	46	25	94	975	114	63	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.0	4.0	4.5	4.5	4.0	4.5	4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	1.00	1.00	1.00	0.97	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.94	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Fit Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1703	3406	1583	1770	3083	1386	1770	1863	1583	3303	1863	1524	
Fit Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1703	3406	1583	1770	3083	1386	1770	1863	1583	3303	1863	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)	112	2335	598	83	1658	2136	50	27	102	1060	124	68	
RTOR Reduction (vph)	0	0	241	0	48	0	0	0	93	0	0	53	
Lane Group Flow (vph)	112	2335	357	83	2571	1175	50	27	9	1060	124	15	
Heavy Vehicles (%)	6%	6%	2%	2%	6%	6%	2%	2%	2%	6%	2%	6%	
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm	
Protected Phases	7	4		3	8		5	2		1	6		
Permitted Phases			4			Free			2			6	
Actuated Green, G (s)	8.0	87.5	87.5	5.0	84.5	149.6	7.0	8.1	8.1	32.0	33.1	33.1	
Effective Green, g (s)	8.0	87.5	87.5	5.0	84.5	149.6	7.0	8.1	8.1	32.0	33.1	33.1	
Actuated g/C Ratio	0.05	0.58	0.58	0.03	0.56	1.00	0.05	0.05	0.05	0.21	0.22	0.22	
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5		4.0	4.5	4.5	4.0	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	91	1992	925	59	1741	1386	82	100	85	706	412	337	
v/s Ratio Prot	c0.07	0.69		0.05	c0.83		0.03	0.01		c0.32	0.07		
v/s Ratio Perm			0.23		c0.85			0.01				0.01	
v/c Ratio	1.23	1.17	0.39	1.41	1.48	0.85	0.61	0.27	0.11	1.50	0.30	0.04	
Uniform Delay, d1	70.8	31.0	16.7	72.3	32.5	0.0	70.0	67.9	67.3	58.8	48.6	45.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	168.8	83.2	1.2	257.9	217.7	6.6	12.2	1.5	0.6	233.0	0.4	0.1	
Delay (s)	239.6	114.3	17.9	330.2	250.3	6.6	82.1	69.4	67.9	291.8	49.0	45.9	
Level of Service	F	F	B	F	F	A	F	E	E	F	D	D	
Approach Delay (s)		99.9			178.1			72.1			254.4		
Approach LOS		F			F			E			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay	158.8			HCM 2000 Level of Service				F					
HCM 2000 Volume to Capacity ratio	1.46												
Actuated Cycle Length (s)	149.6			Sum of lost time (s)				17.0					
Intersection Capacity Utilization	114.1%			ICU Level of Service				H					
Analysis Period (min)	15												
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
11: Soscol Ave (SR 121) & SR 29/SR 12

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖ ↗	↖ ↗	↖	↖ ↗	↖ ↗	↖ ↗	↖	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗	
Volume (vph)	49	2953	82	172	1623	984	371	158	380	1217	87	197	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.0	4.0	4.5	4.5	4.0	4.5	4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	1.00	1.00	1.00	0.97	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Fit Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1703	3406	1583	1770	3209	1386	1770	1863	1583	3303	1863	1524	
Fit Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1703	3406	1583	1770	3209	1386	1770	1863	1583	3303	1863	1524	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	52	3108	86	181	1708	1036	391	166	400	1281	92	207	
RTOR Reduction (vph)	0	0	43	0	6	0	0	0	87	0	0	87	
Lane Group Flow (vph)	52	3108	43	181	1909	829	391	166	313	1281	92	120	
Heavy Vehicles (%)	6%	6%	2%	2%	6%	6%	2%	2%	2%	6%	2%	6%	
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm	
Protected Phases	7	4		3	8		5	2		1	6		
Permitted Phases			4			Free			2			6	
Actuated Green, G (s)	5.0	74.5	74.5	10.0	79.5	150.0	32.0	16.5	16.5	32.0	16.5	16.5	
Effective Green, g (s)	5.0	74.5	74.5	10.0	79.5	150.0	32.0	16.5	16.5	32.0	16.5	16.5	
Actuated g/C Ratio	0.03	0.50	0.50	0.07	0.53	1.00	0.21	0.11	0.11	0.21	0.11	0.11	
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5		4.0	4.5	4.5	4.0	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	56	1691	786	118	1700	1386	377	204	174	704	204	167	
v/s Ratio Prot	0.03	c0.91		c0.10	0.59		0.22	0.09		c0.39	0.05		
v/s Ratio Perm			0.03		0.60		c0.20					0.08	
v/c Ratio	0.93	1.84	0.05	1.53	1.12	0.60	1.04	0.81	1.80	1.82	0.45	0.72	
Uniform Delay, d1	72.3	37.8	19.5	70.0	35.2	0.0	59.0	65.2	66.8	59.0	62.5	64.5	
Progression Factor	1.00	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	93.3	379.4	0.1	278.1	63.7	1.9	56.3	21.4	380.9	374.4	1.6	13.7	
Delay (s)	165.7	417.2	19.7	348.1	98.9	1.9	115.3	86.6	447.6	433.4	64.1	78.2	
Level of Service	F	F	B	F	F	A	F	F	F	F	E	E	
Approach Delay (s)		402.6			86.9		249.2			365.4			
Approach LOS		F			F		F			F			
<b>Intersection Summary</b>													
HCM 2000 Control Delay	272.9			HCM 2000 Level of Service				F					
HCM 2000 Volume to Capacity ratio	1.80												
Actuated Cycle Length (s)	150.0			Sum of lost time (s)				17.0					
Intersection Capacity Utilization	150.7%			ICU Level of Service				H					
Analysis Period (min)	15												
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
1: 3rd St & Coombs St

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔		↔	↔			↔			↔		
Volume (vph)	4	219	2	152	354	20	29	30	104	12	48	8	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		5.0			5.0			5.0			5.0		
Lane Util. Factor		0.95			0.95			1.00			1.00		
Frt		1.00			0.99			0.91			0.98		
Flt Protected		1.00			0.99			0.99			0.99		
Satd. Flow (prot)		3532			3469			1688			1816		
Flt Permitted		0.95			0.77			0.95			0.95		
Satd. Flow (perm)		3352			2718			1610			1735		
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)	4	238	2	165	385	22	32	33	113	13	52	9	
RTOR Reduction (vph)	0	1	0	0	4	0	0	74	0	0	6	0	
Lane Group Flow (vph)	0	243	0	0	568	0	0	104	0	0	68	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		4			8			2			6		
Permitted Phases	4			8			2		6				
Actuated Green, G (s)		37.0			37.0			25.0			25.0		
Effective Green, g (s)		37.0			37.0			25.0			25.0		
Actuated g/C Ratio		0.51			0.51			0.35			0.35		
Clearance Time (s)		5.0			5.0			5.0			5.0		
Vehicle Extension (s)		3.0			3.0			3.0			3.0		
Lane Grp Cap (vph)		1722			1396			559			602		
v/s Ratio Prot													
v/s Ratio Perm		0.07			c0.21			c0.06			0.04		
v/c Ratio		0.14			0.41			0.19			0.11		
Uniform Delay, d1		9.2			10.8			16.4			16.0		
Progression Factor		1.00			1.00			1.00			1.00		
Incremental Delay, d2		0.0			0.2			0.2			0.1		
Delay (s)		9.2			11.0			16.6			16.1		
Level of Service		A			B			B			B		
Approach Delay (s)		9.2			11.0			16.6			16.1		
Approach LOS		A			B			B			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay		11.8			HCM 2000 Level of Service				B				
HCM 2000 Volume to Capacity ratio		0.32											
Actuated Cycle Length (s)		72.0			Sum of lost time (s)				10.0				
Intersection Capacity Utilization		95.0%			ICU Level of Service				F				
Analysis Period (min)		15											
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
1: 3rd St & Coombs St

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔			↔			↔	
Volume (vph)	5	168	1	128	377	106	96	76	167	86	48	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frt		1.00			0.97			0.93			0.98	
Flt Protected		1.00			0.99			0.99			0.97	
Satd. Flow (prot)		3531			3411			1715			1776	
Flt Permitted		0.94			0.83			0.87			0.66	
Satd. Flow (perm)		3331			2864			1509			1204	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	177	1	135	397	112	101	80	176	91	51	26
RTOR Reduction (vph)	0	0	0	0	23	0	0	48	0	0	9	0
Lane Group Flow (vph)	0	183	0	0	621	0	0	309	0	0	159	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		6			
Actuated Green, G (s)		37.0			37.0			25.6			25.6	
Effective Green, g (s)		37.0			37.0			25.6			25.6	
Actuated g/C Ratio		0.51			0.51			0.35			0.35	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1697			1459			532			424	
v/s Ratio Prot												
v/s Ratio Perm		0.05			c0.22			c0.20			0.13	
v/c Ratio		0.11			0.43			0.58			0.37	
Uniform Delay, d1		9.2			11.1			19.1			17.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.0			0.2			1.6			0.6	
Delay (s)		9.3			11.3			20.8			18.1	
Level of Service		A			B			C			B	
Approach Delay (s)		9.3			11.3			20.8			18.1	
Approach LOS		A			B			C			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		14.4			HCM 2000 Level of Service				B			
HCM 2000 Volume to Capacity ratio		0.49										
Actuated Cycle Length (s)		72.6			Sum of lost time (s)				10.0			
Intersection Capacity Utilization		95.0%			ICU Level of Service				F			
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
2: 3rd St & Main St

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔		↕	↕	↔	↕	↔
Volume (vph)	35	200	7	29	290	49	0	28	41	142	61	142
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
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00			1.00
Frt	1.00	0.99		1.00	0.98			1.00	0.85			0.94
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00			0.98
Satd. Flow (prot)	1770	3520		1770	3463			1863	1583			1724
Flt Permitted	0.95	1.00		0.95	1.00			1.00	1.00			0.85
Satd. Flow (perm)	1770	3520		1770	3463			1863	1583			1502
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)	38	217	8	32	315	53	0	30	45	154	66	154
RTOR Reduction (vph)	0	5	0	0	25	0	0	0	27	0	50	0
Lane Group Flow (vph)	38	220	0	32	343	0	0	30	18	0	324	0
Turn Type	Prot	NA		Prot	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	7	4		3	8			2	3		6	
Permitted Phases							2		2		6	
Actuated Green, G (s)	1.5	10.7		2.0	11.2			13.2	15.2		13.2	
Effective Green, g (s)	1.5	10.7		2.0	11.2			13.2	15.2		13.2	
Actuated g/C Ratio	0.04	0.28		0.05	0.30			0.35	0.40		0.35	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	70	993		93	1023			648	801		523	
v/s Ratio Prot	c0.02	0.06		0.02	c0.10			0.02	0.00			
v/s Ratio Perm									0.01		c0.22	
v/c Ratio	0.54	0.22		0.34	0.34			0.05	0.02		0.62	
Uniform Delay, d1	17.9	10.4		17.3	10.4			8.2	6.9		10.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	8.3	0.1		2.2	0.2			0.0	0.0		2.3	
Delay (s)	26.2	10.5		19.5	10.6			8.2	6.9		12.6	
Level of Service	C	B		B	B			A	A		B	
Approach Delay (s)		12.8			11.3			7.4			12.6	
Approach LOS		B			B			A			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		11.8									B	
HCM 2000 Volume to Capacity ratio		0.49										
Actuated Cycle Length (s)		37.9			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		50.2%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
2: 3rd St & Main St

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔		↕	↕	↔	↕	↔
Volume (vph)	165	345	4	101	522	200	12	94	113	210	99	85
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
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00			1.00
Frt	1.00	1.00		1.00	0.96			1.00	0.85			0.97
Flt Protected	0.95	1.00		0.95	1.00			1.00	0.99			0.97
Satd. Flow (prot)	1770	3533		1770	3392			1852	1583			1762
Flt Permitted	0.95	1.00		0.95	1.00			0.94	1.00			0.77
Satd. Flow (perm)	1770	3533		1770	3392			1759	1583			1399
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	174	363	4	106	549	211	13	99	119	221	104	89
RTOR Reduction (vph)	0	1	0	0	72	0	0	69	0	19	0	0
Lane Group Flow (vph)	174	366	0	106	688	0	0	112	50	0	395	0
Turn Type	Prot	NA		Prot	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	7	4		3	8			2	3		6	
Permitted Phases							2		2		6	
Actuated Green, G (s)	7.1	18.2		4.6	15.7			17.5	22.1		17.5	
Effective Green, g (s)	7.1	18.2		4.6	15.7			17.5	22.1		17.5	
Actuated g/C Ratio	0.14	0.35		0.09	0.30			0.33	0.42		0.33	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	240	1229		155	1018			588	789		468	
v/s Ratio Prot	c0.10	0.10		0.06	c0.20				0.01			
v/s Ratio Perm								0.06	0.03		c0.28	
v/c Ratio	0.72	0.30		0.68	0.68			0.19	0.06		0.84	
Uniform Delay, d1	21.7	12.4		23.1	16.1			12.4	9.0		16.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	10.4	0.1		11.8	1.8			0.2	0.0		13.1	
Delay (s)	32.0	12.5		34.9	17.9			12.5	9.0		29.3	
Level of Service	C	B		C	B			B	A		C	
Approach Delay (s)		18.8			19.9			10.7			29.3	
Approach LOS		B			B			B			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		20.5									C	
HCM 2000 Volume to Capacity ratio		0.74										
Actuated Cycle Length (s)		52.3			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		68.6%			ICU Level of Service			C				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
3: Soscol Ave & 3rd St

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	114	231	150	65	187	160	156	748	117	221	620	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	3294		3433	3467		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	3294		3433	3467		1770	3539	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)	124	251	163	71	203	174	170	813	127	240	674	89
RTOR Reduction (vph)	0	0	128	0	141	0	0	12	0	0	0	48
Lane Group Flow (vph)	124	251	35	71	236	0	170	928	0	240	674	41
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	7.7	21.2	21.2	5.4	18.9		9.6	37.3		18.7	46.4	46.4
Effective Green, g (s)	7.7	21.2	21.2	5.4	18.9		9.6	37.3		18.7	46.4	46.4
Actuated g/C Ratio	0.08	0.21	0.21	0.05	0.19		0.10	0.37		0.19	0.46	0.46
Clearance Time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	136	394	335	95	622		329	1293		330	1642	734
v/s Ratio Prot	c0.07	c0.13		0.04	0.07		0.05	c0.27		c0.14	0.19	
v/s Ratio Perm			0.02									0.03
v/c Ratio	0.91	0.64	0.10	0.75	0.38		0.52	0.72		0.73	0.41	0.06
Uniform Delay, d1	45.8	35.9	31.7	46.6	35.4		43.0	26.8		38.3	17.7	14.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.46	0.21		1.00	1.00	1.00
Incremental Delay, d2	51.2	3.4	0.1	27.0	0.4		0.1	0.3		7.8	0.8	0.1
Delay (s)	97.0	39.3	31.9	73.6	35.8		62.8	6.0		46.0	18.5	14.9
Level of Service	F	D	C	E	D		E	A		D	B	B
Approach Delay (s)	50.3			41.8			14.7			24.8		
Approach LOS	D			D			B			C		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	28.1			HCM 2000 Level of Service			C					
HCM 2000 Volume to Capacity ratio	0.73											
Actuated Cycle Length (s)	100.0			Sum of lost time (s)			17.4					
Intersection Capacity Utilization	67.8%			ICU Level of Service			C					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
3: Soscol Ave & 3rd St

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	146	282	214	61	338	77	194	796	39	125	1132	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	3441		3433	3514		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	3441		3433	3514		1770	3539	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	154	297	225	64	356	81	204	838	41	132	1192	178
RTOR Reduction (vph)	0	0	132	0	25	0	4	0	0	0	0	105
Lane Group Flow (vph)	154	297	93	64	412	0	204	875	0	132	1192	73
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	6.0	22.1	22.1	4.8	20.9		10.2	33.3		12.4	35.5	35.5
Effective Green, g (s)	6.0	22.1	22.1	4.8	20.9		10.2	33.3		12.4	35.5	35.5
Actuated g/C Ratio	0.07	0.25	0.25	0.05	0.23		0.11	0.37		0.14	0.39	0.39
Clearance Time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	118	457	388	94	799		389	1300		243	1395	624
v/s Ratio Prot	c0.09	c0.16		0.04	0.12		0.06	0.25		c0.07	c0.34	
v/s Ratio Perm			0.06									0.05
v/c Ratio	1.31	0.65	0.24	0.68	0.52		0.52	0.67		0.54	0.85	0.12
Uniform Delay, d1	42.0	30.5	27.2	41.8	30.1		37.6	23.8		36.2	24.9	17.3
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	185.6	3.2	0.3	18.4	0.6		1.3	2.8		2.5	6.9	0.4
Delay (s)	227.6	33.7	27.5	60.2	30.7		38.9	26.6		38.6	31.7	17.7
Level of Service	F	C	C	E	C		D	C		D	C	B
Approach Delay (s)	75.8			34.5			28.9			30.7		
Approach LOS	E			C			C			C		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	38.8			HCM 2000 Level of Service			D					
HCM 2000 Volume to Capacity ratio	0.81											
Actuated Cycle Length (s)	90.0			Sum of lost time (s)			17.4					
Intersection Capacity Utilization	71.2%			ICU Level of Service			C					
Analysis Period (min)	15											
c Critical Lane Group												



HCM Signalized Intersection Capacity Analysis

4: Soscol Ave (SR 121)/Soscol Ave & Silverado Trail (SR 121)

8/5/2013

	↑	↖	↗	↓	↙	↘
Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↑↑	↖		↗	↙	↘
Volume (vph)	994	748	0	626	580	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12
Total Lost time (s)	5.0	5.0		5.0	5.0	
Lane Util. Factor	0.95	1.00		0.95	1.00	
Fr <sub>t</sub>	1.00	0.85		1.00	0.98	
Fit Protected	1.00	1.00		1.00	0.96	
Satd. Flow (prot)	3505	1777		3539	1736	
Fit Permitted	1.00	1.00		1.00	0.96	
Satd. Flow (perm)	3505	1777		3539	1736	
Peak-hour factor, PHF	0.73	0.73	0.73	0.73	0.73	0.73
Adj. Flow (vph)	1362	1025	0	858	795	138
RTOR Reduction (vph)	0	0	0	0	4	0
Lane Group Flow (vph)	1362	1025	0	858	929	0
Heavy Vehicles (%)	3%	3%	2%	2%	3%	2%
Turn Type	NA	custom	Perm	NA	NA	
Protected Phases	2	2 3		6	8	
Permitted Phases			6			
Actuated Green, G (s)	39.0	100.0		39.0	51.0	
Effective Green, g (s)	39.0	96.0		39.0	51.0	
Actuated g/C Ratio	0.39	0.96		0.39	0.51	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	5.0			5.0	4.0	
Lane Grp Cap (vph)	1366	1705		1380	885	
v/s Ratio Prot	c0.39	0.58		0.24	c0.53	
v/s Ratio Perm						
v/c Ratio	1.00	0.60		0.62	1.05	
Uniform Delay, d1	30.4	0.2		24.6	24.5	
Progression Factor	1.00	1.00		0.75	1.00	
Incremental Delay, d2	23.7	0.6		2.0	44.0	
Delay (s)	54.1	0.8		20.3	68.5	
Level of Service	D	A		C	E	
Approach Delay (s)	31.2			20.3	68.5	
Approach LOS	C			C	E	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		37.3		HCM 2000 Level of Service		D
HCM 2000 Volume to Capacity ratio		1.03				
Actuated Cycle Length (s)		100.0		Sum of lost time (s)	10.0	
Intersection Capacity Utilization		74.1%		ICU Level of Service	D	
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

4: Soscol Ave (SR 121)/Soscol Ave & Silverado Trail (SR 121)

8/5/2013

	↑	↖	↗	↓	↙	↘
Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↑↑	↖		↗	↙	↘
Volume (vph)	1113	627	0	1526	934	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12
Total Lost time (s)	5.0	5.0		5.0	5.0	
Lane Util. Factor	0.95	1.00		0.95	1.00	
Fr <sub>t</sub>	1.00	0.85		1.00	0.99	
Fit Protected	1.00	1.00		1.00	0.96	
Satd. Flow (prot)	3505	1777		3539	1747	
Fit Permitted	1.00	1.00		1.00	0.96	
Satd. Flow (perm)	3505	1777		3539	1747	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	1294	729	0	1774	1086	86
RTOR Reduction (vph)	0	0	0	0	2	0
Lane Group Flow (vph)	1294	729	0	1774	1170	0
Heavy Vehicles (%)	3%	3%	2%	2%	3%	2%
Turn Type	NA	custom	Perm	NA	NA	
Protected Phases	2	2 3		6	8	
Permitted Phases			6			
Actuated Green, G (s)	58.0	140.0		58.0	72.0	
Effective Green, g (s)	58.0	136.0		58.0	72.0	
Actuated g/C Ratio	0.41	0.97		0.41	0.51	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	5.0			5.0	4.0	
Lane Grp Cap (vph)	1452	1726		1466	898	
v/s Ratio Prot	0.37	0.41		c0.50	c0.67	
v/s Ratio Perm						
v/c Ratio	0.89	0.42		1.21	1.30	
Uniform Delay, d1	38.1	0.1		41.0	34.0	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.6	0.2		101.2	144.5	
Delay (s)	46.7	0.3		142.2	178.5	
Level of Service	D	A		F	F	
Approach Delay (s)	30.0			142.2	178.5	
Approach LOS	C			F	F	
<b>Intersection Summary</b>						
HCM 2000 Control Delay			105.0	HCM 2000 Level of Service		F
HCM 2000 Volume to Capacity ratio			1.26			
Actuated Cycle Length (s)			140.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization			106.8%	ICU Level of Service	G	
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
5: Soscol Ave (SR 121) & Imola Ave (SR 121)/Imola Ave

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Volume (vph)	155	306	1558	388	326	49	703	1286	163	80	1221	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.1	4.0	3.0	4.1		3.5	4.9		3.5	4.6	4.6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1863	1568	1770	1826		3400	3450		1770	3505	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1752	1863	1568	1770	1826		3400	3450		1770	3505	1568
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	174	344	1751	436	366	55	790	1445	183	90	1372	149
RTOR Reduction (vph)	0	0	0	0	4	0	0	7	0	0	0	99
Lane Group Flow (vph)	174	344	1751	436	417	0	790	1621	0	90	1372	50
Heavy Vehicles (%)	3%	2%	3%	2%	2%		3%	3%		2%	3%	3%
Turn Type	Prot	NA	Free	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free									6
Actuated Green, G (s)	14.0	21.9	135.0	27.0	34.9		25.5	62.1		8.5	45.4	45.4
Effective Green, g (s)	14.0	21.9	135.0	27.0	34.9		25.5	62.1		8.5	45.4	45.4
Actuated g/C Ratio	0.10	0.16	1.00	0.20	0.26		0.19	0.46		0.06	0.34	0.34
Clearance Time (s)	3.0	4.1		3.0	4.1		3.5	4.9		3.5	4.6	4.6
Vehicle Extension (s)	3.5	3.0		3.8	3.0		4.0	3.5		3.0	3.5	3.5
Lane Grp Cap (vph)	181	302	1568	354	472		642	1587		111	1178	527
v/s Ratio Prot	0.10	0.18		0.25	0.23		0.23	0.47		0.05	0.39	
v/s Ratio Perm			c1.12									0.03
v/c Ratio	0.96	1.14	1.12	1.23	0.88		1.23	1.02		0.81	1.16	0.10
Uniform Delay, d1	60.2	56.5	67.5	54.0	48.1		54.8	36.5		62.5	44.8	30.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.63	0.39		1.00	1.00	1.00
Incremental Delay, d2	55.6	94.8	61.8	126.5	17.6		105.1	13.2		34.4	83.7	0.4
Delay (s)	115.8	151.4	129.3	180.5	65.7		139.8	27.5		96.9	128.5	31.1
Level of Service	F	F	F	F	E		F	C		F	F	C
Approach Delay (s)		131.6			124.1			64.2			117.7	
Approach LOS		F			F			E			F	

Intersection Summary			
HCM 2000 Control Delay	104.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.26		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	105.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
5: Soscol Ave (SR 121) & Imola Ave (SR 121)/Imola Ave

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Volume (vph)	193	446	854	198	433	35	1344	1119	278	99	1529	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.1	4.0	3.0	4.1		3.5	4.9		3.5	4.6	4.6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1863	1568	1770	1842		3400	3407		1770	3505	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1752	1863	1568	1770	1842		3400	3407		1770	3505	1568
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	230	531	1017	236	515	42	1600	1332	331	118	1820	238
RTOR Reduction (vph)	0	0	0	0	2	0	0	15	0	0	0	135
Lane Group Flow (vph)	230	531	1017	236	555	0	1600	1648	0	118	1820	103
Heavy Vehicles (%)	3%	2%	3%	2%	2%		3%	3%		2%	3%	3%
Turn Type	Prot	NA	Free	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free									6
Actuated Green, G (s)	12.0	36.9	145.0	12.0	36.9		36.5	69.2		11.4	44.4	44.4
Effective Green, g (s)	12.0	36.9	145.0	12.0	36.9		36.5	69.2		11.4	44.4	44.4
Actuated g/C Ratio	0.08	0.25	1.00	0.08	0.25		0.25	0.48		0.08	0.31	0.31
Clearance Time (s)	3.0	4.1		3.0	4.1		3.5	4.9		3.5	4.6	4.6
Vehicle Extension (s)	3.5	3.0		3.8	3.0		4.0	3.5		3.0	3.5	3.5
Lane Grp Cap (vph)	144	474	1568	146	468		855	1625		139	1073	480
v/s Ratio Prot	c0.13	0.29		c0.13	c0.30		c0.47	0.48		0.07	c0.52	
v/s Ratio Perm			0.65									0.07
v/c Ratio	1.60	1.12	0.65	1.62	1.19		1.87	1.01		0.85	1.70	0.22
Uniform Delay, d1	66.5	54.0	0.0	66.5	54.0		54.2	37.9		65.9	50.3	37.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.75	0.60		1.00	1.00	1.00
Incremental Delay, d2	298.8	78.5	2.1	306.6	103.3		392.5	10.6		35.5	317.3	1.0
Delay (s)	365.3	132.6	2.1	373.1	157.3		433.0	33.4		101.5	367.6	38.4
Level of Service	F	F	A	F	F		F	C		F	F	D
Approach Delay (s)		88.0			221.6			229.3			317.2	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	221.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.62		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	130.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 6: Napa Vallejo Hwy (SR 221) & College Wy/Magnolia Dr

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	92	4	0	44	0	40	10	1995	267	150	2286	458
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	4.5		4.0	4.5	4.5	
Lane Util. Factor	0.95	0.95		1.00	1.00	1.00	0.95		1.00	0.95	1.00	
Frt	1.00	1.00		1.00	0.85	1.00	0.98		1.00	1.00	0.85	
Fit Protected	0.95	0.96		0.95	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1681	1692		1770	1583	1770	3360		1770	3406	1583	
Fit Permitted	0.95	0.96		0.95	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	1681	1692		1770	1583	1770	3360		1770	3406	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)	100	4	0	48	0	43	11	2168	290	163	2485	498
RTOR Reduction (vph)	0	0	0	0	0	40	0	8	0	0	0	88
Lane Group Flow (vph)	52	52	0	0	48	3	11	2450	0	163	2485	410
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	6%	2%	2%	6%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Prot	NA	Perm	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	4.0	4.0		8.4	8.4	2.2	89.0		17.1	103.9	103.9	
Effective Green, g (s)	4.0	4.0		8.4	8.4	2.2	89.0		17.1	103.9	103.9	
Actuated g/C Ratio	0.03	0.03		0.06	0.06	0.02	0.66		0.13	0.77	0.77	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.5		4.0	4.5	4.5	
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)	49	50		110	98	28	2215		224	2621	1218	
v/s Ratio Prot	c0.03	0.03		c0.03	0.01	c0.73			c0.09	c0.73		
v/s Ratio Perm					0.00						0.26	
v/c Ratio	1.06	1.04		0.44	0.03	0.39	1.11		0.73	0.95	0.34	
Uniform Delay, d1	65.5	65.5		61.0	59.5	65.7	23.0		56.7	13.3	4.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00		1.11	0.56	0.00	
Incremental Delay, d2	146.9	139.1		2.8	0.1	8.9	55.1		1.1	1.1	0.1	
Delay (s)	212.4	204.6		63.8	59.6	74.6	78.1		63.9	8.6	0.1	
Level of Service	F	F		E	E	E	E		E	A	A	
Approach Delay (s)		208.5			61.8		78.1			10.1		
Approach LOS		F			E		E			B		

Intersection Summary			
HCM 2000 Control Delay	43.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	91.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 6: Napa Vallejo Hwy (SR 221) & College Wy/Magnolia Dr

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	281	1	1	259	4	140	17	2483	9	23	1955	198
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	4.5		4.0	4.5	4.5	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95		1.00	0.95	1.00	
Frt	1.00	1.00	0.85	1.00	0.85	1.00	1.00		1.00	1.00	0.85	
Fit Protected	0.95	0.95	1.00	0.95	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1681	1686	1583	1775	1583	1770	3404		1770	3406	1583	
Fit Permitted	0.95	0.95	1.00	0.95	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	1681	1686	1583	1775	1583	1770	3404		1770	3406	1583	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	296	1	1	273	4	147	18	2614	9	24	2058	208
RTOR Reduction (vph)	0	0	1	0	0	62	0	0	0	0	0	51
Lane Group Flow (vph)	148	149	0	0	277	85	18	2623	0	24	2058	157
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	6%	2%	2%	6%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Prot	NA	Perm	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	10.0	10.0	10.0	19.0	19.0	2.4	97.1		2.4	97.1	97.1	
Effective Green, g (s)	10.0	10.0	10.0	19.0	19.0	2.4	97.1		2.4	97.1	97.1	
Actuated g/C Ratio	0.07	0.07	0.07	0.13	0.13	0.02	0.67		0.02	0.67	0.67	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.5		4.0	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	115	116	109	232	207	29	2279		29	2280	1060	
v/s Ratio Prot	0.09	c0.09		c0.16	0.01	c0.77			c0.01	0.60		
v/s Ratio Perm			0.00		0.05						0.10	
v/c Ratio	1.29	1.28	0.00	1.19	0.41	0.62	1.15		0.83	0.90	0.15	
Uniform Delay, d1	67.5	67.5	62.8	63.0	57.9	70.8	24.0		71.1	20.0	8.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.06	0.87	0.00	
Incremental Delay, d2	179.6	178.3	0.0	121.6	1.3	34.8	73.5		15.9	0.6	0.0	
Delay (s)	247.1	245.8	62.8	184.6	59.2	105.6	97.4		91.4	18.1	0.0	
Level of Service	F	F	E	F	E	F	F		F	B	A	
Approach Delay (s)		245.8			141.1		97.5			17.2		
Approach LOS		F			F		B			B		

Intersection Summary			
HCM 2000 Control Delay	76.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	97.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
7: Napa Vallejo Hwy (SR 221) & Streblov Dr

8/5/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	47	38	322	2310	2119	192
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	41	350	2511	2303	209
RTOR Reduction (vph)	0	39	0	0	0	37
Lane Group Flow (vph)	51	2	350	2511	2303	172
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	5.6	5.6	16.0	79.7	59.7	59.7
Effective Green, g (s)	5.6	5.6	16.0	79.7	59.7	59.7
Actuated g/C Ratio	0.06	0.06	0.17	0.85	0.64	0.64
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	204	94	301	2894	2167	1007
v/s Ratio Prot	c0.01		c0.20	0.74	c0.68	
v/s Ratio Perm		0.00				0.11
v/c Ratio	0.25	0.03	1.16	0.87	1.06	0.17
Uniform Delay, d1	42.1	41.5	38.9	4.0	17.0	7.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	0.1	103.5	3.8	38.5	0.4
Delay (s)	42.7	41.6	142.4	7.9	55.6	7.3
Level of Service	D	D	F	A	E	A
Approach Delay (s)	42.3			24.3	51.6	
Approach LOS	D			C	D	

Intersection Summary			
HCM 2000 Control Delay	37.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	93.8	Sum of lost time (s)	12.5
Intersection Capacity Utilization	90.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
7: Napa Vallejo Hwy (SR 221) & Streblov Dr

8/5/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	176	161	142	2409	2166	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	185	169	149	2536	2280	147
RTOR Reduction (vph)	0	88	0	0	0	22
Lane Group Flow (vph)	185	81	149	2536	2280	125
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	13.2	13.2	12.0	109.6	93.6	93.6
Effective Green, g (s)	13.2	13.2	12.0	109.6	93.6	93.6
Actuated g/C Ratio	0.10	0.10	0.09	0.83	0.71	0.71
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	345	159	161	2843	2428	1128
v/s Ratio Prot	c0.05		0.08	c0.74	c0.67	
v/s Ratio Perm		0.05				0.08
v/c Ratio	0.54	0.51	0.93	0.89	0.94	0.11
Uniform Delay, d1	56.1	56.0	59.2	7.0	16.4	5.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.6	2.5	49.1	4.8	8.7	0.2
Delay (s)	57.7	58.5	108.3	11.8	25.0	6.1
Level of Service	E	E	F	B	C	A
Approach Delay (s)	58.1			17.1	23.9	
Approach LOS	E			B	C	

Intersection Summary			
HCM 2000 Control Delay	22.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	131.3	Sum of lost time (s)	12.5
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
8: Napa Vallejo Hwy (SR 221) & Project Access

8/5/2013

Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	↔	↔	↕	↕	↔	↕	
Volume (veh/h)	53	28	2712	62	18	2220	
Sign Control	Stop		Free			Free	
Grade	0%		0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	58	30	2948	67	20	2413	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)		5					
Median type		TWLTL			None		
Median storage (veh)		2					
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume	4193	1474			2948		
vC1, stage 1 conf vol	2948						
vC2, stage 2 conf vol	1246						
vCu, unblocked vol	4193	1474			2948		
IC, single (s)	7.0	7.1			4.3		
IC, 2 stage (s)	6.0						
IF (s)	3.6	3.4			2.3		
p0 queue free %	0	72			81		
cM capacity (veh/h)	22	107			103		
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	88	1474	1474	67	20	1207	1207
Volume Left	58	0	0	0	20	0	0
Volume Right	30	0	0	67	0	0	0
cSH	31	1700	1700	1700	103	1700	1700
Volume to Capacity	2.82	0.87	0.87	0.04	0.19	0.71	0.71
Queue Length 95th (ft)	258	0	0	0	17	0	0
Control Delay (s)	1089.0	0.0	0.0	0.0	48.1	0.0	0.0
Lane LOS	F				E		
Approach Delay (s)	1089.0	0.0			0.4		
Approach LOS	F						
<b>Intersection Summary</b>							
Average Delay	17.5						
Intersection Capacity Utilization	85.0%		ICU Level of Service		E		
Analysis Period (min)	15						

HCM Unsignalized Intersection Capacity Analysis  
8: Napa Vallejo Hwy (SR 221) & Project Access

8/5/2013

Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	↔	↔	↕	↕	↔	↕	
Volume (veh/h)	12	31	2572	5	6	2499	
Sign Control	Stop		Free			Free	
Grade	0%		0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly flow rate (vph)	13	33	2707	5	6	2631	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)		5					
Median type		TWLTL			None		
Median storage (veh)		2					
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume	4035	1354			2707		
vC1, stage 1 conf vol	2707						
vC2, stage 2 conf vol	1328						
vCu, unblocked vol	4035	1354			2707		
IC, single (s)	7.0	7.1			4.3		
IC, 2 stage (s)	6.0						
IF (s)	3.6	3.4			2.3		
p0 queue free %	58	75			95		
cM capacity (veh/h)	30	130			130		
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	45	1354	1354	5	6	1315	1315
Volume Left	13	0	0	0	6	0	0
Volume Right	33	0	0	5	0	0	0
cSH	109	1700	1700	1700	130	1700	1700
Volume to Capacity	0.42	0.80	0.80	0.00	0.05	0.77	0.77
Queue Length 95th (ft)	44	0	0	0	4	0	0
Control Delay (s)	83.2	0.0	0.0	0.0	34.2	0.0	0.0
Lane LOS	F				D		
Approach Delay (s)	83.2	0.0			0.1		
Approach LOS	F						
<b>Intersection Summary</b>							
Average Delay	0.7						
Intersection Capacity Utilization	81.1%		ICU Level of Service		D		
Analysis Period (min)	15						

HCM Signalized Intersection Capacity Analysis  
 9: Napa Vallejo Hwy (SR 221) & Kaiser Rd

8/5/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	100	87	218	2499	2433	435
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	95	237	2716	2645	473
RTOR Reduction (vph)	0	90	0	0	0	102
Lane Group Flow (vph)	109	5	237	2716	2645	371
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	8.0	8.0	19.0	133.5	110.5	110.5
Effective Green, g (s)	8.0	8.0	19.0	133.5	110.5	110.5
Actuated g/C Ratio	0.05	0.05	0.13	0.89	0.74	0.74
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	183	84	224	3031	2509	1166
v/s Ratio Prot	c0.03		c0.13	0.80	c0.78	
v/s Ratio Perm		0.00				0.23
v/c Ratio	0.60	0.06	1.06	0.90	1.05	0.32
Uniform Delay, d1	69.4	67.4	65.5	4.5	19.8	6.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.1	0.3	76.3	4.7	34.3	0.7
Delay (s)	74.5	67.7	141.8	9.1	54.1	7.5
Level of Service	E	E	F	A	D	A
Approach Delay (s)	71.4			19.8	47.0	
Approach LOS	E			B	D	

Intersection Summary			
HCM 2000 Control Delay	35.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	96.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 9: Napa Vallejo Hwy (SR 221) & Kaiser Rd

8/5/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	521	84	43	2451	2710	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	548	88	45	2580	2853	187
RTOR Reduction (vph)	0	30	0	0	0	47
Lane Group Flow (vph)	548	58	45	2580	2853	140
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	21.0	21.0	4.0	120.5	112.5	112.5
Effective Green, g (s)	21.0	21.0	4.0	120.5	112.5	112.5
Actuated g/C Ratio	0.14	0.14	0.03	0.80	0.75	0.75
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	480	221	47	2736	2554	1187
v/s Ratio Prot	c0.16		0.03	c0.76	c0.84	
v/s Ratio Perm		0.04				0.09
v/c Ratio	1.14	0.26	0.96	0.94	1.12	0.12
Uniform Delay, d1	64.5	57.6	72.9	12.0	18.8	5.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	86.1	0.6	114.0	8.2	58.7	0.2
Delay (s)	150.6	58.2	186.9	20.2	77.5	5.3
Level of Service	F	E	F	C	E	A
Approach Delay (s)	137.8			23.1	73.0	
Approach LOS	F			C	E	

Intersection Summary			
HCM 2000 Control Delay	58.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	96.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

10: Napa Vallejo Hwy (SR 221) & Napa Valley Corporate Wy/Anderson Rd

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	42	0	34	2	0	2	243	2738	4	0	2141	216
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	0.97	0.95	1.00	0.95	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.85	1.00	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1618	1618	1524	1770	1583	3303	3406	1583	3406	1524	1618	1524
Flt Permitted	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1618	1618	1524	1770	1583	3303	3406	1583	3406	1524	1618	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)	46	0	37	2	0	2	264	2976	4	0	2327	235
RTOR Reduction (vph)	0	0	32	0	0	2	0	0	1	0	0	51
Lane Group Flow (vph)	23	23	5	0	2	0	264	2976	3	0	2327	184
Heavy Vehicles (%)	6%	2%	6%	2%	2%	2%	6%	6%	2%	2%	6%	6%
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4			8		2				6
Actuated Green, G (s)	6.6	6.6	16.1		1.1	1.1	9.5	105.9	105.9		92.9	92.9
Effective Green, g (s)	6.6	6.6	16.1		1.1	1.1	9.5	105.9	105.9		92.9	92.9
Actuated g/C Ratio	0.05	0.05	0.13		0.01	0.01	0.08	0.84	0.84		0.74	0.74
Clearance Time (s)	4.0	4.0	3.5		4.0	4.0	3.5	4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	84	84	194		15	13	248	2860	1329		2509	1122
v/s Ratio Prot	c0.01	0.01	0.00		c0.00		0.08	c0.87			0.68	
v/s Ratio Perm			0.00			0.00		0.00				0.12
v/c Ratio	0.27	0.27	0.02		0.13	0.00	1.06	1.04	0.00		0.93	0.16
Uniform Delay, d1	57.4	57.4	48.1		62.0	62.0	58.3	10.1	1.6		13.8	5.0
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	1.8	1.8	0.1		4.0	0.0	75.2	28.6	0.0		7.5	0.3
Delay (s)	59.2	59.2	48.2		66.0	62.0	133.5	38.7	1.6		21.3	5.3
Level of Service	E	E	D		E	E	F	D	A		C	A
Approach Delay (s)		54.3			64.0			46.3			19.8	
Approach LOS		D			E			D			B	

Intersection Summary

HCM 2000 Control Delay	34.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	126.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	97.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

10: Napa Vallejo Hwy (SR 221) & Napa Valley Corporate Wy/Anderson Rd

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	207	1	211	5	0	8	58	2299	0	5	2404	377
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	0.97	0.95	1.00	0.95	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.85	1.00	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1618	1623	1524	1770	1583	3303	3406	1770	1583	3303	3406	1524
Flt Permitted	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1618	1623	1524	1770	1583	3303	3406	1770	1583	3303	3406	1524
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	218	1	222	5	0	8	61	2420	0	5	2531	397
RTOR Reduction (vph)	0	0	130	0	0	8	0	0	0	0	0	86
Lane Group Flow (vph)	109	110	92	0	5	0	61	2420	0	5	2531	311
Heavy Vehicles (%)	6%	2%	6%	2%	2%	2%	6%	6%	2%	2%	6%	6%
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4			8		2				6
Actuated Green, G (s)	13.2	13.2	17.7		2.5	2.5	4.5	104.4		0.8	100.7	100.7
Effective Green, g (s)	13.2	13.2	17.7		2.5	2.5	4.5	104.4		0.8	100.7	100.7
Actuated g/C Ratio	0.10	0.10	0.13		0.02	0.02	0.03	0.76		0.01	0.74	0.74
Clearance Time (s)	4.0	4.0	3.5		4.0	4.0	3.5	4.5		3.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	156	156	197		32	28	108	2597		10	2505	1121
v/s Ratio Prot	0.07	c0.07	0.02		c0.00		c0.02	0.71		0.00	c0.74	
v/s Ratio Perm			0.05			0.00						0.20
v/c Ratio	0.70	0.71	0.47		0.16	0.01	0.56	0.93		0.50	1.01	0.28
Uniform Delay, d1	59.9	60.0	55.2		66.2	66.0	65.2	13.3		67.9	18.1	6.0
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	12.8	13.5	1.8		2.3	0.1	6.6	7.6		34.4	20.6	0.6
Delay (s)	72.7	73.5	57.0		68.4	66.1	71.8	20.9		102.2	38.7	6.6
Level of Service	E	E	E		E	E	E	C		F	D	A
Approach Delay (s)		65.0			67.0			22.2			34.4	
Approach LOS		E			E			C			C	

Intersection Summary

HCM 2000 Control Delay	31.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	136.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	93.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

11: Soscol Ferry Rd/Napa Vallejo Hwy (SR 221) & SR 29/SR 12

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	85	3827	520	582	1943	2741	32	24	8	2069	109	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.0	4.0	4.5	4.0	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	1.00	1.00	1.00	0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.94	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fit Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1703	3406	1583	1770	3067	1386	1770	1863	1583	3303	1863	1524
Fit Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1703	3406	1583	1770	3067	1386	1770	1863	1583	3303	1863	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)	92	4160	565	633	2112	2979	35	26	9	2249	118	28
RTOR Reduction (vph)	0	0	221	0	61	0	0	0	9	0	0	22
Lane Group Flow (vph)	92	4160	344	633	3451	1579	35	26	0	2249	118	6
Heavy Vehicles (%)	6%	6%	2%	2%	6%	6%	2%	2%	2%	6%	2%	6%
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			Free			2			6
Actuated Green, G (s)	6.0	89.6	89.6	4.0	87.6	147.1	5.5	4.4	4.4	32.1	31.0	31.0
Effective Green, g (s)	6.0	89.6	89.6	4.0	87.6	147.1	5.5	4.4	4.4	32.1	31.0	31.0
Actuated g/C Ratio	0.04	0.61	0.61	0.03	0.60	1.00	0.04	0.03	0.03	0.22	0.21	0.21
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5		4.0	4.5	4.5	4.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	69	2074	964	48	1826	1386	66	55	47	720	392	321
v/s Ratio Prot	0.05	c1.22		c0.36	1.12		0.02	0.01		c0.68	0.06	
v/s Ratio Perm			0.22			c1.14			0.00			0.00
v/c Ratio	1.33	2.01	0.36	13.19	1.89	1.14	0.53	0.47	0.01	3.12	0.30	0.02
Uniform Delay, d1	70.5	28.8	14.4	71.5	29.8	73.5	69.5	70.2	69.2	57.5	48.9	46.0
Progression Factor	1.00	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	220.9	454.3	1.0	5524.7	402.4	71.9	8.0	6.3	0.0	959.3	0.4	0.0
Delay (s)	291.4	483.1	15.4	5596.2	432.2	145.5	77.5	76.5	69.3	1016.8	49.4	46.0
Level of Service	F	F	B	F	F	F	E	E	E	F	D	D
Approach Delay (s)		424.6			924.2			76.1		957.8		
Approach LOS		F			F			E		F		

Intersection Summary

HCM 2000 Control Delay	740.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.65		
Actuated Cycle Length (s)	147.1	Sum of lost time (s)	17.0
Intersection Capacity Utilization	214.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

11: Soscol Ferry Rd/Napa Vallejo Hwy (SR 221) & SR 29/SR 12

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	36	4161	43	126	3102	2094	331	153	349	2404	137	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.0	4.0	4.5	4.0	4.5	4.0	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	1.00	1.00	1.00	0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fit Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1703	3406	1583	1770	3192	1386	1770	1863	1583	3303	1863	1524
Fit Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1703	3406	1583	1770	3192	1386	1770	1863	1583	3303	1863	1524
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	38	4380	45	133	3265	2204	348	161	367	2531	144	169
RTOR Reduction (vph)	0	0	25	0	8	0	0	0	90	0	0	61
Lane Group Flow (vph)	38	4380	20	133	3808	1653	348	161	277	2531	144	108
Heavy Vehicles (%)	6%	6%	2%	2%	6%	6%	2%	2%	2%	6%	2%	6%
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			Free			2			6
Actuated Green, G (s)	4.0	68.3	68.3	7.0	71.3	150.8	32.9	12.5	12.5	46.0	25.6	25.6
Effective Green, g (s)	4.0	68.3	68.3	7.0	71.3	150.8	32.9	12.5	12.5	46.0	25.6	25.6
Actuated g/C Ratio	0.03	0.45	0.45	0.05	0.47	1.00	0.22	0.08	0.08	0.31	0.17	0.17
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5		4.0	4.5	4.5	4.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	45	1542	716	82	1509	1386	386	154	131	1007	316	258
v/s Ratio Prot	0.02	c1.29		0.08	1.19		0.20	0.09		c0.77	0.08	
v/s Ratio Perm			0.01			c1.19				c0.18		0.07
v/c Ratio	0.84	2.84	0.03	1.62	2.52	1.19	0.90	1.05	2.12	2.51	0.46	0.42
Uniform Delay, d1	73.1	41.3	22.9	71.9	39.8	75.4	57.4	69.2	69.2	52.4	56.3	56.0
Progression Factor	1.00	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	77.0	830.0	0.1	328.6	687.4	94.1	23.5	85.1	526.8	684.0	1.0	1.1
Delay (s)	150.0	871.3	22.9	400.5	727.2	169.5	80.8	154.2	595.9	736.4	57.4	57.1
Level of Service	F	F	C	F	F	F	F	F	F	F	E	E
Approach Delay (s)		856.6			554.9			310.1		661.6		
Approach LOS		F			F			F		F		

Intersection Summary

HCM 2000 Control Delay	659.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.61		
Actuated Cycle Length (s)	150.8	Sum of lost time (s)	17.0
Intersection Capacity Utilization	216.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis

1: 3rd St & Coombs St

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔		↔	↔			↔			↔		
Volume (vph)	4	222	2	152	355	20	29	30	104	12	48	8	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		5.0			5.0			5.0			5.0		
Lane Util. Factor		0.95			0.95			1.00			1.00		
Frt		1.00			0.99			0.91			0.98		
Flt Protected		1.00			0.99			0.99			0.99		
Satd. Flow (prot)		3532			3469			1688			1816		
Flt Permitted		0.95			0.77			0.95			0.95		
Satd. Flow (perm)		3353			2715			1610			1735		
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)	4	241	2	165	386	22	32	33	113	13	52	9	
RTOR Reduction (vph)	0	1	0	0	4	0	0	74	0	0	6	0	
Lane Group Flow (vph)	0	246	0	0	569	0	0	104	0	0	68	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		4			8			2			6		
Permitted Phases	4			8			2			6			
Actuated Green, G (s)		37.0			37.0			25.0			25.0		
Effective Green, g (s)		37.0			37.0			25.0			25.0		
Actuated g/C Ratio		0.51			0.51			0.35			0.35		
Clearance Time (s)		5.0			5.0			5.0			5.0		
Vehicle Extension (s)		3.0			3.0			3.0			3.0		
Lane Grp Cap (vph)		1723			1395			559			602		
v/s Ratio Prot													
v/s Ratio Perm		0.07			c0.21			c0.06			0.04		
v/c Ratio		0.14			0.41			0.19			0.11		
Uniform Delay, d1		9.2			10.8			16.4			16.0		
Progression Factor		1.00			1.00			1.00			1.00		
Incremental Delay, d2		0.0			0.2			0.2			0.1		
Delay (s)		9.2			11.0			16.6			16.1		
Level of Service		A			B			B			B		
Approach Delay (s)		9.2			11.0			16.6			16.1		
Approach LOS		A			B			B			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay		11.8			HCM 2000 Level of Service				B				
HCM 2000 Volume to Capacity ratio		0.32											
Actuated Cycle Length (s)		72.0			Sum of lost time (s)				10.0				
Intersection Capacity Utilization		95.0%			ICU Level of Service				F				
Analysis Period (min)		15											
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis

1: 3rd St & Coombs St

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔			↔			↔	
Volume (vph)	5	170	1	128	380	106	96	76	167	86	48	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frt		1.00			0.97			0.93			0.98	
Flt Protected		1.00			0.99			0.99			0.97	
Satd. Flow (prot)		3532			3412			1715			1776	
Flt Permitted		0.94			0.83			0.87			0.66	
Satd. Flow (perm)		3331			2864			1509			1204	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	179	1	135	400	112	101	80	176	91	51	26
RTOR Reduction (vph)	0	0	0	0	23	0	0	48	0	0	9	0
Lane Group Flow (vph)	0	185	0	0	624	0	0	309	0	0	159	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		37.0			37.0			25.6			25.6	
Effective Green, g (s)		37.0			37.0			25.6			25.6	
Actuated g/C Ratio		0.51			0.51			0.35			0.35	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1697			1459			532			424	
v/s Ratio Prot												
v/s Ratio Perm		0.06			c0.22			c0.20			0.13	
v/c Ratio		0.11			0.43			0.58			0.37	
Uniform Delay, d1		9.2			11.2			19.1			17.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.0			0.2			1.6			0.6	
Delay (s)		9.3			11.4			20.8			18.1	
Level of Service		A			B			C			B	
Approach Delay (s)		9.3			11.4			20.8			18.1	
Approach LOS		A			B			C			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		14.4			HCM 2000 Level of Service				B			
HCM 2000 Volume to Capacity ratio		0.49										
Actuated Cycle Length (s)		72.6			Sum of lost time (s)				10.0			
Intersection Capacity Utilization		95.0%			ICU Level of Service				F			
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
2: 3rd St & Main St

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Volume (vph)	35	203	7	31	291	49	0	28	47	142	61	142
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
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00			1.00
Frt	1.00	0.99		1.00	0.98			1.00	0.85			0.94
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00			0.98
Satd. Flow (prot)	1770	3521		1770	3463			1863	1583			1724
Flt Permitted	0.95	1.00		0.95	1.00			1.00	1.00			0.85
Satd. Flow (perm)	1770	3521		1770	3463			1863	1583			1502
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)	38	221	8	34	316	53	0	30	51	154	66	154
RTOR Reduction (vph)	0	5	0	0	25	0	0	0	30	0	50	0
Lane Group Flow (vph)	38	224	0	34	344	0	0	30	21	0	324	0
Turn Type	Prot	NA		Prot	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	7	4		3	8			2	3			6
Permitted Phases							2		2		6	
Actuated Green, G (s)	1.5	10.5		2.4	11.4			13.3	15.7			13.3
Effective Green, g (s)	1.5	10.5		2.4	11.4			13.3	15.7			13.3
Actuated g/C Ratio	0.04	0.27		0.06	0.30			0.35	0.41			0.35
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0			4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0			3.0
Lane Grp Cap (vph)	69	967		111	1033			648	816			522
v/s Ratio Prot	c0.02	0.06		0.02	c0.10			0.02	0.00			
v/s Ratio Perm									0.01			c0.22
v/c Ratio	0.55	0.23		0.31	0.33			0.05	0.03			0.62
Uniform Delay, d1	18.0	10.7		17.1	10.4			8.2	6.7			10.4
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00			1.00
Incremental Delay, d2	9.2	0.1		1.6	0.2			0.0	0.0			2.3
Delay (s)	27.2	10.8		18.7	10.6			8.3	6.7			12.7
Level of Service	C	B		B	B			A	A			B
Approach Delay (s)		13.2			11.3			7.3				12.7
Approach LOS		B			B			A				B
<b>Intersection Summary</b>												
HCM 2000 Control Delay		11.9										B
HCM 2000 Volume to Capacity ratio		0.49										
Actuated Cycle Length (s)		38.2			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		50.2%			ICU Level of Service			A				
Analysis Period (min)		15										
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis  
2: 3rd St & Main St

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Volume (vph)	165	347	4	107	525	200	12	94	118	210	99	85
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
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00			1.00
Frt	1.00	1.00		1.00	0.96			1.00	0.85			0.97
Flt Protected	0.95	1.00		0.95	1.00			1.00	0.99			0.97
Satd. Flow (prot)	1770	3533		1770	3393			1852	1583			1762
Flt Permitted	0.95	1.00		0.95	1.00			0.94	1.00			0.77
Satd. Flow (perm)	1770	3533		1770	3393			1759	1583			1399
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	174	365	4	113	553	211	13	99	124	221	104	89
RTOR Reduction (vph)	0	1	0	0	71	0	0	71	0	19	0	0
Lane Group Flow (vph)	174	368	0	113	693	0	0	112	53	0	395	0
Turn Type	Prot	NA		Prot	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	7	4		3	8			2	3			6
Permitted Phases							2		2		6	
Actuated Green, G (s)	7.1	18.2		4.6	15.7			17.6	22.2			17.6
Effective Green, g (s)	7.1	18.2		4.6	15.7			17.6	22.2			17.6
Actuated g/C Ratio	0.14	0.35		0.09	0.30			0.34	0.42			0.34
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0			4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0			3.0
Lane Grp Cap (vph)	239	1227		155	1016			590	791			469
v/s Ratio Prot	c0.10	0.10		0.06	c0.20				0.01			
v/s Ratio Perm								0.06	0.03			c0.28
v/c Ratio	0.73	0.30		0.73	0.68			0.19	0.07			0.84
Uniform Delay, d1	21.7	12.5		23.3	16.2			12.3	9.0			16.1
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00			1.00
Incremental Delay, d2	10.5	0.1		15.7	1.9			0.2	0.0			13.0
Delay (s)	32.3	12.6		39.0	18.1			12.5	9.0			29.1
Level of Service	C	B		D	B			B	A			C
Approach Delay (s)		18.9			20.8			10.7				29.1
Approach LOS		B			C			B				C
<b>Intersection Summary</b>												
HCM 2000 Control Delay		20.8										C
HCM 2000 Volume to Capacity ratio		0.74										
Actuated Cycle Length (s)		52.4			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		68.7%			ICU Level of Service			C				
Analysis Period (min)		15										
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis  
3: Soscol Ave & 3rd St

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	114	231	159	65	187	160	160	754	117	221	635	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9	4.9	4.0	4.9	4.0	4.5	4.5	4.0	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.97	0.95	1.00	0.95	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.93	1.00	0.98	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	0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	3294	3433	3468	1770	3539	1583	1770	3539
Flt Permitted	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	3294	3433	3468	1770	3539	1583	1770	3539
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)	124	251	173	71	203	174	174	820	127	240	690	89
RTOR Reduction (vph)	0	0	136	0	141	0	11	0	0	0	0	48
Lane Group Flow (vph)	124	251	37	71	236	0	174	936	0	240	690	41
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	7.7	21.2	21.2	5.4	18.9		9.7	37.3		18.7	46.3	46.3
Effective Green, g (s)	7.7	21.2	21.2	5.4	18.9		9.7	37.3		18.7	46.3	46.3
Actuated g/C Ratio	0.08	0.21	0.21	0.05	0.19		0.10	0.37		0.19	0.46	0.46
Clearance Time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	136	394	335	95	622		333	1293		330	1638	732
v/s Ratio Prot	c0.07	c0.13		0.04	0.07		0.05	c0.27		c0.14	0.19	
v/s Ratio Perm			0.02									0.03
v/c Ratio	0.91	0.64	0.11	0.75	0.38		0.52	0.72		0.73	0.42	0.06
Uniform Delay, d1	45.8	35.9	31.8	46.6	35.4		42.9	26.9		38.3	17.9	14.8
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	51.2	3.4	0.1	27.0	0.4		1.5	3.5		7.8	0.8	0.1
Delay (s)	97.0	39.3	31.9	73.6	35.8		44.4	30.5		46.0	18.7	15.0
Level of Service	F	D	C	E	D		D	C		D	B	B
Approach Delay (s)	50.0			41.8			32.6			24.8		
Approach LOS	D			D			C			C		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	34.4			HCM 2000 Level of Service			C					
HCM 2000 Volume to Capacity ratio	0.73											
Actuated Cycle Length (s)	100.0			Sum of lost time (s)			17.4					
Intersection Capacity Utilization	67.9%			ICU Level of Service			C					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
3: Soscol Ave & 3rd St

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	146	282	221	61	338	77	203	810	39	125	1144	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9	4.9	4.0	4.9	4.0	4.5	4.5	4.0	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.97	0.95	1.00	0.95	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97	1.00	0.99	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	0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	3441	3433	3515	1770	3539	1583	1770	3539
Flt Permitted	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	3441	3433	3515	1770	3539	1583	1770	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	154	297	233	64	356	81	214	853	41	132	1204	178
RTOR Reduction (vph)	0	0	131	0	25	0	4	0	0	0	0	105
Lane Group Flow (vph)	154	297	102	64	412	0	214	890	0	132	1204	73
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	6.0	22.1	22.1	4.8	20.9		10.6	33.3		12.4	35.1	35.1
Effective Green, g (s)	6.0	22.1	22.1	4.8	20.9		10.6	33.3		12.4	35.1	35.1
Actuated g/C Ratio	0.07	0.25	0.25	0.05	0.23		0.12	0.37		0.14	0.39	0.39
Clearance Time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	118	457	388	94	799		404	1300		243	1380	617
v/s Ratio Prot	c0.09	c0.16		0.04	0.12		0.06	0.25		c0.07	c0.34	
v/s Ratio Perm			0.06									0.05
v/c Ratio	1.31	0.65	0.26	0.68	0.52		0.53	0.68		0.54	0.87	0.12
Uniform Delay, d1	42.0	30.5	27.4	41.8	30.1		37.4	23.9		36.2	25.4	17.6
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	185.6	3.2	0.4	18.4	0.6		1.3	2.9		2.5	7.8	0.4
Delay (s)	227.6	33.7	27.7	60.2	30.7		38.6	26.9		38.6	33.2	17.9
Level of Service	F	C	C	E	C		D	C		D	C	B
Approach Delay (s)	75.3			34.5			29.1			31.9		
Approach LOS	E			C			C			C		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	39.2			HCM 2000 Level of Service			D					
HCM 2000 Volume to Capacity ratio	0.82											
Actuated Cycle Length (s)	90.0			Sum of lost time (s)			17.4					
Intersection Capacity Utilization	71.8%			ICU Level of Service			C					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Soscol Ave (SR 121)/Soscol Ave & Silverado Trail (SR 121)

8/5/2013

	↑	↖	↗	↓	↙	↘
Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↑↑	↖		↗	↙	↘
Volume (vph)	1004	749	0	651	582	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12
Total Lost time (s)	5.0	5.0		5.0	5.0	
Lane Util. Factor	0.95	1.00		0.95	1.00	
Fr <sub>t</sub>	1.00	0.85		1.00	0.98	
Fit Protected	1.00	1.00		1.00	0.96	
Satd. Flow (prot)	3505	1777		3539	1736	
Fit Permitted	1.00	1.00		1.00	0.96	
Satd. Flow (perm)	3505	1777		3539	1736	
Peak-hour factor, PHF	0.73	0.73	0.73	0.73	0.73	0.73
Adj. Flow (vph)	1375	1026	0	892	797	138
RTOR Reduction (vph)	0	0	0	0	4	0
Lane Group Flow (vph)	1375	1026	0	892	931	0
Heavy Vehicles (%)	3%	3%	2%	2%	3%	2%
Turn Type	NA	custom	Perm	NA	NA	
Protected Phases	2	2 3		6	8	
Permitted Phases			6			
Actuated Green, G (s)	43.8	110.0		43.8	56.2	
Effective Green, g (s)	43.8	106.0		43.8	56.2	
Actuated g/C Ratio	0.40	0.96		0.40	0.51	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	5.0			5.0	4.0	
Lane Grp Cap (vph)	1395	1712		1409	886	
v/s Ratio Prot	c0.39	0.58		0.25	c0.54	
v/s Ratio Perm						
v/c Ratio	0.99	0.60		0.63	1.05	
Uniform Delay, d1	32.8	0.2		26.6	26.9	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	20.9	0.6		2.2	44.3	
Delay (s)	53.7	0.7		28.8	71.2	
Level of Service	D	A		C	E	
Approach Delay (s)	31.1			28.8	71.2	
Approach LOS	C			C	E	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		39.5		HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio		1.02				
Actuated Cycle Length (s)		110.0		Sum of lost time (s)	10.0	
Intersection Capacity Utilization		74.5%		ICU Level of Service	D	
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

4: Soscol Ave (SR 121)/Soscol Ave & Silverado Trail (SR 121)

8/5/2013

	↑	↖	↗	↓	↙	↘
Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↑↑	↖		↗	↙	↘
Volume (vph)	1136	629	0	1546	936	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12
Total Lost time (s)	5.0	5.0		5.0	5.0	
Lane Util. Factor	0.95	1.00		0.95	1.00	
Fr <sub>t</sub>	1.00	0.85		1.00	0.99	
Fit Protected	1.00	1.00		1.00	0.96	
Satd. Flow (prot)	3505	1777		3539	1747	
Fit Permitted	1.00	1.00		1.00	0.96	
Satd. Flow (perm)	3505	1777		3539	1747	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	1321	731	0	1798	1088	86
RTOR Reduction (vph)	0	0	0	0	3	0
Lane Group Flow (vph)	1321	731	0	1798	1172	0
Heavy Vehicles (%)	3%	3%	2%	2%	3%	2%
Turn Type	NA	custom	Perm	NA	NA	
Protected Phases	2	2 3		6	8	
Permitted Phases			6			
Actuated Green, G (s)	50.0	120.0		50.0	60.0	
Effective Green, g (s)	50.0	116.0		50.0	60.0	
Actuated g/C Ratio	0.42	0.97		0.42	0.50	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	5.0			5.0	4.0	
Lane Grp Cap (vph)	1460	1717		1474	873	
v/s Ratio Prot	0.38	0.41		c0.51	c0.67	
v/s Ratio Perm						
v/c Ratio	0.90	0.43		1.22	1.34	
Uniform Delay, d1	32.8	0.1		35.0	30.0	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.6	0.2		105.3	161.6	
Delay (s)	42.3	0.3		140.3	191.6	
Level of Service	D	A		F	F	
Approach Delay (s)	27.4			140.3	191.6	
Approach LOS	C			F	F	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		106.1		HCM 2000 Level of Service	F	
HCM 2000 Volume to Capacity ratio		1.29				
Actuated Cycle Length (s)		120.0		Sum of lost time (s)	10.0	
Intersection Capacity Utilization		107.4%		ICU Level of Service	G	
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

5: Soscol Ave (SR 121) & Imola Ave (SR 121)/Imola Ave

4/8/2013

Table with 13 columns for movements (EBL, EBT, EBR, WBL, WBT, WBR, NBL, NBT, NBR, SBL, SBT, SBR) and 35 rows of performance metrics including Lane Configurations, Volume, Ideal Flow, Total Lost time, Lane Util. Factor, etc.

Intersection Summary table with 4 columns and 6 rows, containing HCM 2000 Control Delay, Volume to Capacity ratio, Actuated Cycle Length, and Capacity Utilization.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

5: Soscol Ave (SR 121) & Imola Ave (SR 121)/Imola Ave

4/8/2013

Table with 13 columns for movements (EBL, EBT, EBR, WBL, WBT, WBR, NBL, NBT, NBR, SBL, SBT, SBR) and 35 rows of performance metrics including Lane Configurations, Volume, Ideal Flow, Total Lost time, Lane Util. Factor, etc.

Intersection Summary table with 4 columns and 6 rows, containing HCM 2000 Control Delay, Volume to Capacity ratio, Actuated Cycle Length, and Capacity Utilization.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
6: Napa Vallejo Hwy (SR 221) & College Wy/Magnolia Dr

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↔	↗	↘	↔	↗	↘	↔	↗	↘	↔	↗	↘	
Volume (vph)	92	4	0	44	0	40	10	2009	267	150	2321	458	
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	4.5		4.0	4.5	4.5		
Lane Util. Factor	0.95	0.95		1.00	1.00	1.00	0.95		1.00	0.95	1.00		
Frt	1.00	1.00		1.00	0.85	1.00	0.98		1.00	1.00	0.85		
Flt Protected	0.95	0.96		0.95	1.00	0.95	1.00		0.95	1.00	1.00		
Satd. Flow (prot)	1681	1692		1770	1583	1770	3361		1770	3406	1583		
Flt Permitted	0.95	0.96		0.95	1.00	0.95	1.00		0.95	1.00	1.00		
Satd. Flow (perm)	1681	1692		1770	1583	1770	3361		1770	3406	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)	100	4	0	48	0	43	11	2184	290	163	2523	498	
RTOR Reduction (vph)	0	0	0	0	0	40	0	8	0	0	0	87	
Lane Group Flow (vph)	52	52	0	0	48	3	11	2466	0	163	2523	411	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	6%	2%	2%	6%	2%	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Prot	NA	Perm		
Protected Phases	4	4		8	8		5	2		1	6		
Permitted Phases			4			8						6	
Actuated Green, G (s)	4.0	4.0		8.4	8.4	2.2	89.0		17.1	103.9	103.9		
Effective Green, g (s)	4.0	4.0		8.4	8.4	2.2	89.0		17.1	103.9	103.9		
Actuated g/C Ratio	0.03	0.03		0.06	0.06	0.02	0.66		0.13	0.77	0.77		
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.5		4.0	4.5	4.5		
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)	49	50		110	98	28	2215		224	2621	1218		
v/s Ratio Prot	c0.03	0.03		c0.03	0.01	c0.73			c0.09	c0.74			
v/s Ratio Perm					0.00						0.26		
v/c Ratio	1.06	1.04		0.44	0.03	0.39	1.11		0.73	0.96	0.34		
Uniform Delay, d1	65.5	65.5		61.0	59.5	65.7	23.0		56.7	13.8	4.8		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00		1.07	0.68	0.00		
Incremental Delay, d2	146.9	139.1		2.8	0.1	8.9	58.0		1.1	1.5	0.1		
Delay (s)	212.4	204.6		63.8	59.6	74.6	81.0		61.6	10.8	0.1		
Level of Service	F	F		E	E	E	F		E	B	A		
Approach Delay (s)		208.5			61.8		81.0			11.8			
Approach LOS		F			E		F			B			
<b>Intersection Summary</b>													
HCM 2000 Control Delay		45.4		HCM 2000 Level of Service				D					
HCM 2000 Volume to Capacity ratio		1.03											
Actuated Cycle Length (s)		135.0		Sum of lost time (s)				16.5					
Intersection Capacity Utilization		92.1%		ICU Level of Service				F					
Analysis Period (min)		15											
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
6: Napa Vallejo Hwy (SR 221) & College Wy/Magnolia Dr

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↔	↗	↘	↔	↗	↘	↔	↗	↘	↔	↗	↘	
Volume (vph)	281	1	1	259	4	140	17	2515	9	23	1982	198	
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	4.5		4.0	4.5	4.5		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95		1.00	0.95	1.00		
Frt	1.00	1.00	0.85	1.00	0.85	1.00	1.00		1.00	1.00	0.85		
Flt Protected	0.95	0.95	1.00	0.95	1.00	0.95	1.00		0.95	1.00	1.00		
Satd. Flow (prot)	1681	1686	1583	1775	1583	1770	3404		1770	3406	1583		
Flt Permitted	0.95	0.95	1.00	0.95	1.00	0.95	1.00		0.95	1.00	1.00		
Satd. Flow (perm)	1681	1686	1583	1775	1583	1770	3404		1770	3406	1583		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	296	1	1	273	4	147	18	2647	9	24	2086	208	
RTOR Reduction (vph)	0	0	1	0	0	62	0	0	0	0	0	50	
Lane Group Flow (vph)	148	149	0	0	277	85	18	2656	0	24	2086	158	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	6%	2%	2%	6%	2%	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Prot	NA	Perm		
Protected Phases	4	4		8	8		5	2		1	6		
Permitted Phases			4			8						6	
Actuated Green, G (s)	10.0	10.0	10.0	19.0	19.0	2.4	97.1		2.4	97.1	97.1		
Effective Green, g (s)	10.0	10.0	10.0	19.0	19.0	2.4	97.1		2.4	97.1	97.1		
Actuated g/C Ratio	0.07	0.07	0.07	0.13	0.13	0.02	0.67		0.02	0.67	0.67		
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.5		4.0	4.5	4.5		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0		
Lane Grp Cap (vph)	115	116	109	232	207	29	2279		29	2280	1060		
v/s Ratio Prot	0.09	c0.09		c0.16	0.01	c0.78			c0.01	0.61			
v/s Ratio Perm			0.00		0.05						0.10		
v/c Ratio	1.29	1.28	0.00	1.19	0.41	0.62	1.17		0.83	0.91	0.15		
Uniform Delay, d1	67.5	67.5	62.8	63.0	57.9	70.8	24.0		71.1	20.4	8.8		
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.06	0.90	0.00		
Incremental Delay, d2	179.6	178.3	0.0	121.6	1.3	34.8	79.6		15.9	0.7	0.0		
Delay (s)	247.1	245.8	62.8	184.6	59.2	105.6	103.6		91.2	19.1	0.0		
Level of Service	F	F	E	F	E	F	F		F	B	A		
Approach Delay (s)		245.8			141.1		103.6			18.1			
Approach LOS		F			F		F			B			
<b>Intersection Summary</b>													
HCM 2000 Control Delay		79.1		HCM 2000 Level of Service				E					
HCM 2000 Volume to Capacity ratio		1.17											
Actuated Cycle Length (s)		145.0		Sum of lost time (s)				16.5					
Intersection Capacity Utilization		98.1%		ICU Level of Service				F					
Analysis Period (min)		15											
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
7: Napa Vallejo Hwy (SR 221) & Streblov Dr

8/5/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	47	38	322	2324	2154	192
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	41	350	2526	2341	209
RTOR Reduction (vph)	0	39	0	0	0	30
Lane Group Flow (vph)	51	2	350	2526	2341	179
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	6.0	6.0	23.0	109.7	82.7	82.7
Effective Green, g (s)	6.0	6.0	23.0	109.7	82.7	82.7
Actuated g/C Ratio	0.05	0.05	0.19	0.88	0.67	0.67
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	165	76	327	3008	2267	1054
v/s Ratio Prot	c0.01		c0.20	0.74	c0.69	
v/s Ratio Perm		0.00				0.11
v/c Ratio	0.31	0.03	1.07	0.84	1.03	0.17
Uniform Delay, d1	57.1	56.3	50.6	3.3	20.8	7.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	0.1	69.7	3.0	27.9	0.3
Delay (s)	58.2	56.5	120.3	6.3	48.7	8.2
Level of Service	E	E	F	A	D	A
Approach Delay (s)	57.4			20.2	45.3	
Approach LOS	E			C	D	

Intersection Summary			
HCM 2000 Control Delay	32.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	124.2	Sum of lost time (s)	12.5
Intersection Capacity Utilization	91.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
7: Napa Vallejo Hwy (SR 221) & Streblov Dr

8/5/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	176	161	142	2441	2193	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	185	169	149	2569	2308	147
RTOR Reduction (vph)	0	88	0	0	0	22
Lane Group Flow (vph)	185	81	149	2569	2308	125
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	13.2	13.2	12.0	109.6	93.6	93.6
Effective Green, g (s)	13.2	13.2	12.0	109.6	93.6	93.6
Actuated g/C Ratio	0.10	0.10	0.09	0.83	0.71	0.71
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	345	159	161	2843	2428	1128
v/s Ratio Prot	c0.05		0.08	c0.75	c0.68	
v/s Ratio Perm		0.05				0.08
v/c Ratio	0.54	0.51	0.93	0.90	0.95	0.11
Uniform Delay, d1	56.1	56.0	59.2	7.3	16.8	5.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.6	2.5	49.1	5.3	9.9	0.2
Delay (s)	57.7	58.5	108.3	12.6	26.7	6.1
Level of Service	E	E	F	B	C	A
Approach Delay (s)	58.1			17.8	25.4	
Approach LOS	E			B	C	

Intersection Summary			
HCM 2000 Control Delay	23.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	131.3	Sum of lost time (s)	12.5
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
8: Napa Vallejo Hwy (SR 221) & Project Access

8/5/2013

Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	↔	↔	↕	↕	↔	↕	
Volume (veh/h)	70	42	2712	104	53	2220	
Sign Control	Stop		Free			Free	
Grade	0%		0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	76	46	2948	113	58	2413	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)		5					
Median type		TWLTL			None		
Median storage (veh)		2					
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume	4270	1474			2948		
vC1, stage 1 conf vol	2948						
vC2, stage 2 conf vol	1322						
vCu, unblocked vol	4270	1474			2948		
IC, single (s)	7.0	7.1			4.3		
IC, 2 stage (s)	6.0						
IF (s)	3.6	3.4			2.3		
p0 queue free %	0	57			44		
cM capacity (veh/h)	21	107			103		
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>
Volume Total	122	1474	1474	113	58	1207	1207
Volume Left	76	0	0	0	58	0	0
Volume Right	46	0	0	113	0	0	0
cSH	31	1700	1700	1700	103	1700	1700
Volume to Capacity	3.94	0.87	0.87	0.07	0.56	0.71	0.71
Queue Length 95th (ft)	Err	0	0	0	65	0	0
Control Delay (s)	Err	0.0	0.0	0.0	77.5	0.0	0.0
Lane LOS	F				F		
Approach Delay (s)	Err	0.0			1.8		
Approach LOS	F						
<b>Intersection Summary</b>							
Average Delay	216.1						
Intersection Capacity Utilization	85.5%		ICU Level of Service		E		
Analysis Period (min)	15						

HCM Unsignalized Intersection Capacity Analysis  
8: Napa Vallejo Hwy (SR 221) & Project Access

8/5/2013

Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	↔	↔	↕	↕	↔	↕	
Volume (veh/h)	51	63	2572	39	33	2499	
Sign Control	Stop		Free			Free	
Grade	0%		0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly flow rate (vph)	54	66	2707	41	35	2631	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)		5					
Median type		TWLTL			None		
Median storage (veh)		2					
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume	4092	1354			2707		
vC1, stage 1 conf vol	2707						
vC2, stage 2 conf vol	1385						
vCu, unblocked vol	4092	1354			2707		
IC, single (s)	7.0	7.1			4.3		
IC, 2 stage (s)	6.0						
IF (s)	3.6	3.4			2.3		
p0 queue free %	0	49			73		
cM capacity (veh/h)	30	130			130		
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>
Volume Total	120	1354	1354	41	35	1315	1315
Volume Left	54	0	0	0	35	0	0
Volume Right	66	0	0	41	0	0	0
cSH	59	1700	1700	1700	130	1700	1700
Volume to Capacity	2.05	0.80	0.80	0.02	0.27	0.77	0.77
Queue Length 95th (ft)	289	0	0	0	25	0	0
Control Delay (s)	636.3	0.0	0.0	0.0	42.6	0.0	0.0
Lane LOS	F				E		
Approach Delay (s)	636.3	0.0			0.6		
Approach LOS	F						
<b>Intersection Summary</b>							
Average Delay	14.1						
Intersection Capacity Utilization	81.7%		ICU Level of Service		D		
Analysis Period (min)	15						



HCM Signalized Intersection Capacity Analysis  
 9: Napa Vallejo Hwy (SR 221) & Kaiser Rd

8/5/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	100	87	218	2541	2450	435
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	95	237	2762	2663	473
RTOR Reduction (vph)	0	90	0	0	0	102
Lane Group Flow (vph)	109	5	237	2762	2663	371
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	8.0	8.0	19.0	133.5	110.5	110.5
Effective Green, g (s)	8.0	8.0	19.0	133.5	110.5	110.5
Actuated g/C Ratio	0.05	0.05	0.13	0.89	0.74	0.74
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	183	84	224	3031	2509	1166
v/s Ratio Prot	c0.03		c0.13	0.81	c0.78	
v/s Ratio Perm		0.00				0.23
v/c Ratio	0.60	0.06	1.06	0.91	1.06	0.32
Uniform Delay, d1	69.4	67.4	65.5	4.8	19.8	6.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.1	0.3	76.3	5.4	36.9	0.7
Delay (s)	74.5	67.7	141.8	10.2	56.7	7.5
Level of Service	E	E	F	B	E	A
Approach Delay (s)	71.4			20.6	49.2	
Approach LOS	E			C	D	

Intersection Summary			
HCM 2000 Control Delay	36.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	96.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 9: Napa Vallejo Hwy (SR 221) & Kaiser Rd

8/5/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	521	84	43	2485	2749	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	548	88	45	2616	2894	187
RTOR Reduction (vph)	0	30	0	0	0	46
Lane Group Flow (vph)	548	58	45	2616	2894	141
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	20.0	20.0	4.0	121.5	113.5	113.5
Effective Green, g (s)	20.0	20.0	4.0	121.5	113.5	113.5
Actuated g/C Ratio	0.13	0.13	0.03	0.81	0.76	0.76
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	457	211	47	2758	2577	1197
v/s Ratio Prot	c0.16		0.03	c0.77	c0.85	
v/s Ratio Perm		0.04				0.09
v/c Ratio	1.20	0.27	0.96	0.95	1.12	0.12
Uniform Delay, d1	65.0	58.5	72.9	11.7	18.2	4.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	109.1	0.7	114.0	8.7	61.1	0.2
Delay (s)	174.1	59.2	186.9	20.4	79.4	5.1
Level of Service	F	E	F	C	E	A
Approach Delay (s)	158.2			23.2	74.9	
Approach LOS	F			C	E	

Intersection Summary			
HCM 2000 Control Delay	61.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	97.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

10: Napa Vallejo Hwy (SR 221) & Napa Valley Corporate Wy/Anderson Rd

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	42	0	34	2	0	2	243	2780	4	0	2158	216
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	0.97	0.95	1.00	0.95	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.85	1.00	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1618	1618	1524	1770	1583	3303	3406	1583	3406	1524	1618	1524
Flt Permitted	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1618	1618	1524	1770	1583	3303	3406	1583	3406	1524	1618	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)	46	0	37	2	0	2	264	3022	4	0	2346	235
RTOR Reduction (vph)	0	0	32	0	0	2	0	0	1	0	0	50
Lane Group Flow (vph)	23	23	5	0	2	0	264	3022	3	0	2346	185
Heavy Vehicles (%)	6%	2%	6%	2%	2%	2%	6%	6%	2%	2%	6%	6%
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4			8		2				6
Actuated Green, G (s)	6.6	6.6	16.1		1.1	1.1	9.5	105.9	105.9		92.9	92.9
Effective Green, g (s)	6.6	6.6	16.1		1.1	1.1	9.5	105.9	105.9		92.9	92.9
Actuated g/C Ratio	0.05	0.05	0.13		0.01	0.01	0.08	0.84	0.84		0.74	0.74
Clearance Time (s)	4.0	4.0	3.5		4.0	4.0	3.5	4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	84	84	194		15	13	248	2860	1329		2509	1122
v/s Ratio Prot	c0.01	0.01	0.00		c0.00		0.08	c0.89			0.69	
v/s Ratio Perm			0.00			0.00		0.00				0.12
v/c Ratio	0.27	0.27	0.02		0.13	0.00	1.06	1.06	0.00		0.94	0.16
Uniform Delay, d1	57.4	57.4	48.1		62.0	62.0	58.3	10.1	1.6		14.0	5.0
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	1.8	1.8	0.1		4.0	0.0	75.2	34.2	0.0		8.1	0.3
Delay (s)	59.2	59.2	48.2		66.0	62.0	133.5	44.3	1.6		22.1	5.3
Level of Service	E	E	D		E	E	F	D	A		C	A
Approach Delay (s)	54.3				64.0			51.4			20.6	
Approach LOS	D				E			D			C	

Intersection Summary

HCM 2000 Control Delay	38.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	126.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	98.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

10: Napa Vallejo Hwy (SR 221) & Napa Valley Corporate Wy/Anderson Rd

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	207	1	211	5	0	8	58	2333	0	5	2443	377
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.5	4.5	4.5	3.5	4.5	4.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	0.97	0.95	1.00	0.95	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.85	1.00	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1618	1623	1524	1770	1583	3303	3406	1583	3406	1524	1618	1524
Flt Permitted	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1618	1623	1524	1770	1583	3303	3406	1583	3406	1524	1618	1524
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	218	1	222	5	0	8	61	2456	0	5	2572	397
RTOR Reduction (vph)	0	0	130	0	0	8	0	0	0	0	0	85
Lane Group Flow (vph)	109	110	92	0	5	0	61	2456	0	5	2572	312
Heavy Vehicles (%)	6%	2%	6%	2%	2%	2%	6%	6%	2%	2%	6%	6%
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4			8		2				6
Actuated Green, G (s)	13.2	13.2	17.7		2.5	2.5	4.5	104.4		0.8	100.7	100.7
Effective Green, g (s)	13.2	13.2	17.7		2.5	2.5	4.5	104.4		0.8	100.7	100.7
Actuated g/C Ratio	0.10	0.10	0.13		0.02	0.02	0.03	0.76		0.01	0.74	0.74
Clearance Time (s)	4.0	4.0	3.5		4.0	4.0	3.5	4.5		3.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	156	156	197		32	28	108	2597		10	2505	1121
v/s Ratio Prot	0.07	c0.07	0.02		c0.00		c0.02	0.72		0.00	c0.76	
v/s Ratio Perm			0.05			0.00						0.20
v/c Ratio	0.70	0.71	0.47		0.16	0.01	0.56	0.95		0.50	1.03	0.28
Uniform Delay, d1	59.9	60.0	55.2		66.2	66.0	65.2	13.8		67.9	18.1	6.0
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	12.8	13.5	1.8		2.3	0.1	6.6	8.9		34.4	25.2	0.6
Delay (s)	72.7	73.5	57.0		68.4	66.1	71.8	22.7		102.2	43.3	6.6
Level of Service	E	E	E		E	E	E	C		F	D	A
Approach Delay (s)	65.0				67.0			23.9			38.5	
Approach LOS	E				E			C			D	

Intersection Summary

HCM 2000 Control Delay	34.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	136.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	94.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

11: Soscol Ferry Rd/Napa Vallejo Hwy (SR 221) & SR 29/SR 12

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	89	3827	520	582	1943	2780	32	24	8	2084	109	28
Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.0	4.0	4.5	4.5	4.0	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	1.00	1.00	1.00	0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.94	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fit Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1703	3406	1583	1770	3066	1386	1770	1863	1583	3303	1863	1524
Fit Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1703	3406	1583	1770	3066	1386	1770	1863	1583	3303	1863	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)	97	4160	565	633	2112	3022	35	26	9	2265	118	30
RTOR Reduction (vph)	0	0	251	0	64	0	0	0	9	0	0	22
Lane Group Flow (vph)	97	4160	314	633	3468	1602	35	26	0	2265	118	8
Heavy Vehicles (%)	6%	6%	2%	2%	6%	6%	2%	2%	2%	6%	2%	6%
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			Free			2			6
Actuated Green, G (s)	6.0	64.6	64.6	22.0	80.6	147.5	6.1	3.8	3.8	40.1	37.8	37.8
Effective Green, g (s)	6.0	64.6	64.6	22.0	80.6	147.5	6.1	3.8	3.8	40.1	37.8	37.8
Actuated g/C Ratio	0.04	0.44	0.44	0.15	0.55	1.00	0.04	0.03	0.03	0.27	0.26	0.26
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5		4.0	4.5	4.5	4.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	69	1491	693	264	1675	1386	73	47	40	897	477	390
v/s Ratio Prot	0.06	c1.22		c0.36	1.13		0.02	0.01		c0.69	0.06	
v/s Ratio Perm			0.20			c1.16			0.00			0.01
v/c Ratio	1.41	2.79	0.45	2.40	2.07	1.16	0.48	0.55	0.01	2.53	0.25	0.02
Uniform Delay, d1	70.8	41.5	29.1	62.8	33.5	73.8	69.1	71.0	70.0	53.7	43.6	41.0
Progression Factor	1.00	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	248.9	807.4	2.1	640.5	483.8	78.7	4.9	13.3	0.1	689.6	0.3	0.0
Delay (s)	319.7	848.9	31.2	703.2	517.2	152.5	74.0	84.4	70.1	743.3	43.8	41.0
Level of Service	F	F	C	F	F	F	E	F	E	F	D	D
Approach Delay (s)		742.4			436.3			77.4		700.4		
Approach LOS		F			F			E		F		

Intersection Summary

HCM 2000 Control Delay	596.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.63		
Actuated Cycle Length (s)	147.5	Sum of lost time (s)	17.0
Intersection Capacity Utilization	215.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

11: Soscol Ferry Rd/Napa Vallejo Hwy (SR 221) & SR 29/SR 12

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	39	4161	43	126	3102	2125	331	153	349	2440	137	165
Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.0	4.0	4.5	4.5	4.0	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	1.00	1.00	1.00	0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fit Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1703	3406	1583	1770	3191	1386	1770	1863	1583	3303	1863	1524
Fit Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1703	3406	1583	1770	3191	1386	1770	1863	1583	3303	1863	1524
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	41	4380	45	133	3265	2237	348	161	367	2568	144	174
RTOR Reduction (vph)	0	0	25	0	8	0	0	0	91	0	0	62
Lane Group Flow (vph)	41	4380	20	133	3816	1678	348	161	276	2568	144	112
Heavy Vehicles (%)	6%	6%	2%	2%	6%	6%	2%	2%	2%	6%	2%	6%
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			Free			2			6
Actuated Green, G (s)	4.0	68.3	68.3	7.0	71.3	150.8	32.9	11.5	11.5	47.0	25.6	25.6
Effective Green, g (s)	4.0	68.3	68.3	7.0	71.3	150.8	32.9	11.5	11.5	47.0	25.6	25.6
Actuated g/C Ratio	0.03	0.45	0.45	0.05	0.47	1.00	0.22	0.08	0.08	0.31	0.17	0.17
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5		4.0	4.5	4.5	4.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	45	1542	716	82	1508	1386	386	142	120	1029	316	258
v/s Ratio Prot	0.02	c1.29		0.08	1.20		0.20	0.09		c0.78	0.08	
v/s Ratio Perm			0.01			c1.21				c0.17		0.07
v/c Ratio	0.91	2.84	0.03	1.62	2.53	1.21	0.90	1.13	2.30	2.50	0.46	0.43
Uniform Delay, d1	73.2	41.3	22.9	71.9	39.8	75.4	57.4	69.7	69.7	51.9	56.3	56.1
Progression Factor	1.00	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	100.2	830.0	0.1	328.6	690.6	101.8	23.5	116.0	612.2	675.9	1.0	1.2
Delay (s)	173.4	871.3	22.9	400.5	730.3	177.2	80.8	185.6	681.8	727.8	57.4	57.3
Level of Service	F	F	C	F	F	F	F	F	F	F	E	E
Approach Delay (s)		856.3			557.8			351.9		654.0		
Approach LOS		F			F			F		F		

Intersection Summary

HCM 2000 Control Delay	661.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.62		
Actuated Cycle Length (s)	150.8	Sum of lost time (s)	17.0
Intersection Capacity Utilization	217.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
1: 3rd St & Coombs St

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔		↔	↔			↔			↔		
Volume (vph)	4	223	2	152	356	20	29	30	104	12	48	8	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		5.0			5.0			5.0			5.0		
Lane Util. Factor		0.95			0.95			1.00			1.00		
Frt		1.00			0.99			0.91			0.98		
Flt Protected		1.00			0.99			0.99			0.99		
Satd. Flow (prot)		3532			3469			1688			1816		
Flt Permitted		0.95			0.77			0.95			0.95		
Satd. Flow (perm)		3353			2714			1610			1735		
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)	4	242	2	165	387	22	32	33	113	13	52	9	
RTOR Reduction (vph)	0	1	0	0	4	0	0	74	0	0	6	0	
Lane Group Flow (vph)	0	247	0	0	570	0	0	104	0	0	68	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		4			8			2			6		
Permitted Phases	4			8			2			6			
Actuated Green, G (s)		37.0			37.0			25.0			25.0		
Effective Green, g (s)		37.0			37.0			25.0			25.0		
Actuated g/C Ratio		0.51			0.51			0.35			0.35		
Clearance Time (s)		5.0			5.0			5.0			5.0		
Vehicle Extension (s)		3.0			3.0			3.0			3.0		
Lane Grp Cap (vph)		1723			1394			559			602		
v/s Ratio Prot													
v/s Ratio Perm		0.07			c0.21			c0.06			0.04		
v/c Ratio		0.14			0.41			0.19			0.11		
Uniform Delay, d1		9.2			10.8			16.4			16.0		
Progression Factor		1.00			1.00			1.00			1.00		
Incremental Delay, d2		0.0			0.2			0.2			0.1		
Delay (s)		9.2			11.0			16.6			16.1		
Level of Service		A			B			B			B		
Approach Delay (s)		9.2			11.0			16.6			16.1		
Approach LOS		A			B			B			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay		11.8			HCM 2000 Level of Service				B				
HCM 2000 Volume to Capacity ratio		0.32											
Actuated Cycle Length (s)		72.0			Sum of lost time (s)				10.0				
Intersection Capacity Utilization		95.0%			ICU Level of Service				F				
Analysis Period (min)		15											
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
1: 3rd St & Coombs St

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔			↔			↔	
Volume (vph)	5	171	1	128	380	106	96	76	167	86	48	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frt		1.00			0.97			0.93			0.98	
Flt Protected		1.00			0.99			0.99			0.97	
Satd. Flow (prot)		3532			3412			1715			1776	
Flt Permitted		0.94			0.83			0.87			0.66	
Satd. Flow (perm)		3331			2863			1509			1204	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	180	1	135	400	112	101	80	176	91	51	26
RTOR Reduction (vph)	0	0	0	0	23	0	0	48	0	0	9	0
Lane Group Flow (vph)	0	186	0	0	624	0	0	309	0	0	159	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		37.0			37.0			25.6			25.6	
Effective Green, g (s)		37.0			37.0			25.6			25.6	
Actuated g/C Ratio		0.51			0.51			0.35			0.35	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1697			1459			532			424	
v/s Ratio Prot												
v/s Ratio Perm		0.06			c0.22			c0.20			0.13	
v/c Ratio		0.11			0.43			0.58			0.37	
Uniform Delay, d1		9.2			11.2			19.1			17.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.0			0.2			1.6			0.6	
Delay (s)		9.3			11.4			20.8			18.1	
Level of Service		A			B			C			B	
Approach Delay (s)		9.3			11.4			20.8			18.1	
Approach LOS		A			B			C			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		14.4			HCM 2000 Level of Service				B			
HCM 2000 Volume to Capacity ratio		0.49										
Actuated Cycle Length (s)		72.6			Sum of lost time (s)				10.0			
Intersection Capacity Utilization		95.0%			ICU Level of Service				F			
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
2: 3rd St & Main St

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔		↕	↕	↔	↕	↔
Volume (vph)	35	204	7	32	292	49	0	28	48	142	61	142
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
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00			1.00
Frt	1.00	0.99		1.00	0.98			1.00	0.85			0.94
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00			0.98
Satd. Flow (prot)	1770	3521		1770	3463			1863	1583			1724
Flt Permitted	0.95	1.00		0.95	1.00			1.00	1.00			0.85
Satd. Flow (perm)	1770	3521		1770	3463			1863	1583			1502
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)	38	222	8	35	317	53	0	30	52	154	66	154
RTOR Reduction (vph)	0	5	0	0	24	0	0	0	31	0	50	0
Lane Group Flow (vph)	38	225	0	35	346	0	0	30	21	0	324	0
Turn Type	Prot	NA		Prot	NA		Perm	NA	pm+ov	Perm	NA	NA
Protected Phases	7	4		3	8			2	3			6
Permitted Phases							2		2		6	
Actuated Green, G (s)	1.5	10.5		2.4	11.4			13.3	15.7			13.3
Effective Green, g (s)	1.5	10.5		2.4	11.4			13.3	15.7			13.3
Actuated g/C Ratio	0.04	0.27		0.06	0.30			0.35	0.41			0.35
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0			4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0			3.0
Lane Grp Cap (vph)	69	967		111	1033			648	816			522
v/s Ratio Prot	c0.02	0.06		0.02	c0.10			0.02	0.00			
v/s Ratio Perm									0.01			c0.22
v/c Ratio	0.55	0.23		0.32	0.34			0.05	0.03			0.62
Uniform Delay, d1	18.0	10.7		17.1	10.4			8.2	6.7			10.4
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00			1.00
Incremental Delay, d2	9.2	0.1		1.6	0.2			0.0	0.0			2.3
Delay (s)	27.2	10.9		18.7	10.6			8.3	6.7			12.7
Level of Service	C	B		B	B			A	A			B
Approach Delay (s)		13.2			11.3			7.3				12.7
Approach LOS		B			B			A				B
<b>Intersection Summary</b>												
HCM 2000 Control Delay		11.9										B
HCM 2000 Volume to Capacity ratio		0.49										
Actuated Cycle Length (s)		38.2			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		50.2%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
2: 3rd St & Main St

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔		↕	↕	↔	↕	↔
Volume (vph)	165	348	4	108	525	200	12	94	119	210	99	85
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
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00			1.00
Frt	1.00	1.00		1.00	0.96			1.00	0.85			0.97
Flt Protected	0.95	1.00		0.95	1.00			1.00	0.99			0.97
Satd. Flow (prot)	1770	3533		1770	3393			1852	1583			1762
Flt Permitted	0.95	1.00		0.95	1.00			0.94	1.00			0.77
Satd. Flow (perm)	1770	3533		1770	3393			1759	1583			1399
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	174	366	4	114	553	211	13	99	125	221	104	89
RTOR Reduction (vph)	0	1	0	0	71	0	0	0	72	0	19	0
Lane Group Flow (vph)	174	369	0	114	693	0	0	112	53	0	395	0
Turn Type	Prot	NA		Prot	NA		Perm	NA	pm+ov	Perm	NA	NA
Protected Phases	7	4		3	8			2	3			6
Permitted Phases							2		2		6	
Actuated Green, G (s)	7.1	18.2		4.6	15.7			17.6	22.2			17.6
Effective Green, g (s)	7.1	18.2		4.6	15.7			17.6	22.2			17.6
Actuated g/C Ratio	0.14	0.35		0.09	0.30			0.34	0.42			0.34
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0	4.0			4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0			3.0
Lane Grp Cap (vph)	239	1227		155	1016			590	791			469
v/s Ratio Prot	c0.10	0.10		0.06	c0.20				0.01			
v/s Ratio Perm									0.06	0.03		c0.28
v/c Ratio	0.73	0.30		0.74	0.68			0.19	0.07			0.84
Uniform Delay, d1	21.7	12.5		23.3	16.2			12.3	9.0			16.1
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00			1.00
Incremental Delay, d2	10.5	0.1		16.5	1.9			0.2	0.0			13.0
Delay (s)	32.3	12.6		39.8	18.1			12.5	9.0			29.1
Level of Service	C	B		D	B			B	A			C
Approach Delay (s)		18.9			20.9			10.7				29.1
Approach LOS		B			C			B				C
<b>Intersection Summary</b>												
HCM 2000 Control Delay		20.8										C
HCM 2000 Volume to Capacity ratio		0.74										
Actuated Cycle Length (s)		52.4			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		68.7%			ICU Level of Service			C				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
3: Soscol Ave & 3rd St

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↗	↘	↔	↗	↘	↔	↗	↘	↔	↗	↘
Volume (vph)	114	231	161	65	187	160	161	756	117	221	639	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	3294		3433	3468		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	3294		3433	3468		1770	3539	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)	124	251	175	71	203	174	175	822	127	240	695	89
RTOR Reduction (vph)	0	0	138	0	141	0	0	11	0	0	0	48
Lane Group Flow (vph)	124	251	37	71	236	0	175	938	0	240	695	41
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	7.7	21.2	21.2	5.4	18.9		9.7	37.3		18.7	46.3	46.3
Effective Green, g (s)	7.7	21.2	21.2	5.4	18.9		9.7	37.3		18.7	46.3	46.3
Actuated g/C Ratio	0.08	0.21	0.21	0.05	0.19		0.10	0.37		0.19	0.46	0.46
Clearance Time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	136	394	335	95	622		333	1293		330	1638	732
v/s Ratio Prot	c0.07	c0.13		0.04	0.07		0.05	c0.27		c0.14	0.20	
v/s Ratio Perm			0.02									0.03
v/c Ratio	0.91	0.64	0.11	0.75	0.38		0.53	0.73		0.73	0.42	0.06
Uniform Delay, d1	45.8	35.9	31.8	46.6	35.4		43.0	26.9		38.3	17.9	14.8
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	51.2	3.4	0.1	27.0	0.4		1.5	3.6		7.8	0.8	0.1
Delay (s)	97.0	39.3	31.9	73.6	35.8		44.5	30.5		46.0	18.8	15.0
Level of Service	F	D	C	E	D		D	C		D	B	B
Approach Delay (s)	49.9			41.8			32.7			24.8		
Approach LOS	D			D			C			C		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	34.4			HCM 2000 Level of Service			C					
HCM 2000 Volume to Capacity ratio	0.73											
Actuated Cycle Length (s)	100.0			Sum of lost time (s)			17.4					
Intersection Capacity Utilization	68.0%			ICU Level of Service			C					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
3: Soscol Ave & 3rd St

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↗	↘	↔	↗	↘	↔	↗	↘	↔	↗	↘
Volume (vph)	146	282	223	61	338	77	204	813	39	125	1147	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	3441		3433	3515		1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	3441		3433	3515		1770	3539	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	154	297	235	64	356	81	215	856	41	132	1207	178
RTOR Reduction (vph)	0	0	131	0	25	0	4	0	0	0	0	105
Lane Group Flow (vph)	154	297	104	64	412	0	215	893	0	132	1207	73
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	6.0	22.1	22.1	4.8	20.9		10.6	33.3		12.4	35.1	35.1
Effective Green, g (s)	6.0	22.1	22.1	4.8	20.9		10.6	33.3		12.4	35.1	35.1
Actuated g/C Ratio	0.07	0.25	0.25	0.05	0.23		0.12	0.37		0.14	0.39	0.39
Clearance Time (s)	4.0	4.9	4.9	4.0	4.9		4.0	4.5		4.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	118	457	388	94	799		404	1300		243	1380	617
v/s Ratio Prot	c0.09	c0.16		0.04	0.12		0.06	0.25		c0.07	c0.34	
v/s Ratio Perm			0.07									0.05
v/c Ratio	1.31	0.65	0.27	0.68	0.52		0.53	0.69		0.54	0.87	0.12
Uniform Delay, d1	42.0	30.5	27.4	41.8	30.1		37.4	23.9		36.2	25.4	17.6
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	185.6	3.2	0.4	18.4	0.6		1.3	3.0		2.5	8.0	0.4
Delay (s)	227.6	33.7	27.8	60.2	30.7		38.7	26.9		38.6	33.4	17.9
Level of Service	F	C	C	E	C		D	C		D	C	B
Approach Delay (s)	75.2			34.5			29.2			32.0		
Approach LOS	E			C			C			C		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	39.3			HCM 2000 Level of Service			D					
HCM 2000 Volume to Capacity ratio	0.82											
Actuated Cycle Length (s)	90.0			Sum of lost time (s)			17.4					
Intersection Capacity Utilization	71.9%			ICU Level of Service			C					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Soscol Ave (SR 121)/Soscol Ave & Silverado Trail (SR 121)

8/5/2013

	↑	↖	↗	↓	↙	↘
Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↑↑	↖		↗	↙	↘
Volume (vph)	1006	749	0	656	583	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12
Total Lost time (s)	5.0	5.0		5.0	5.0	
Lane Util. Factor	0.95	1.00		0.95	1.00	
Fr <sub>t</sub>	1.00	0.85		1.00	0.98	
Fit Protected	1.00	1.00		1.00	0.96	
Satd. Flow (prot)	3505	1777		3539	1737	
Fit Permitted	1.00	1.00		1.00	0.96	
Satd. Flow (perm)	3505	1777		3539	1737	
Peak-hour factor, PHF	0.73	0.73	0.73	0.73	0.73	0.73
Adj. Flow (vph)	1378	1026	0	899	799	138
RTOR Reduction (vph)	0	0	0	0	4	0
Lane Group Flow (vph)	1378	1026	0	899	933	0
Heavy Vehicles (%)	3%	3%	2%	2%	3%	2%
Turn Type	NA	custom	Perm	NA	NA	
Protected Phases	2	2 3		6	8	
Permitted Phases			6			
Actuated Green, G (s)	43.8	110.0		43.8	56.2	
Effective Green, g (s)	43.8	106.0		43.8	56.2	
Actuated g/C Ratio	0.40	0.96		0.40	0.51	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	5.0			5.0	4.0	
Lane Grp Cap (vph)	1395	1712		1409	887	
v/s Ratio Prot	c0.39	0.58		0.25	c0.54	
v/s Ratio Perm						
v/c Ratio	0.99	0.60		0.64	1.05	
Uniform Delay, d1	32.8	0.2		26.7	26.9	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	21.4	0.6		2.2	44.6	
Delay (s)	54.2	0.7		28.9	71.5	
Level of Service	D	A		C	E	
Approach Delay (s)	31.4			28.9	71.5	
Approach LOS	C			C	E	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		39.7		HCM 2000 Level of Service		D
HCM 2000 Volume to Capacity ratio		1.02				
Actuated Cycle Length (s)		110.0		Sum of lost time (s)	10.0	
Intersection Capacity Utilization		74.6%		ICU Level of Service	D	
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

4: Soscol Ave (SR 121)/Soscol Ave & Silverado Trail (SR 121)

8/5/2013

	↑	↖	↗	↓	↙	↘
Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↑↑	↖		↗	↙	↘
Volume (vph)	1141	630	0	1550	936	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12
Total Lost time (s)	5.0	5.0		5.0	5.0	
Lane Util. Factor	0.95	1.00		0.95	1.00	
Fr <sub>t</sub>	1.00	0.85		1.00	0.99	
Fit Protected	1.00	1.00		1.00	0.96	
Satd. Flow (prot)	3505	1777		3539	1747	
Fit Permitted	1.00	1.00		1.00	0.96	
Satd. Flow (perm)	3505	1777		3539	1747	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	1327	733	0	1802	1088	86
RTOR Reduction (vph)	0	0	0	0	3	0
Lane Group Flow (vph)	1327	733	0	1802	1172	0
Heavy Vehicles (%)	3%	3%	2%	2%	3%	2%
Turn Type	NA	custom	Perm	NA	NA	
Protected Phases	2	2 3		6	8	
Permitted Phases			6			
Actuated Green, G (s)	50.0	120.0		50.0	60.0	
Effective Green, g (s)	50.0	116.0		50.0	60.0	
Actuated g/C Ratio	0.42	0.97		0.42	0.50	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	5.0			5.0	4.0	
Lane Grp Cap (vph)	1460	1717		1474	873	
v/s Ratio Prot	0.38	0.41		c0.51	c0.67	
v/s Ratio Perm						
v/c Ratio	0.91	0.43		1.22	1.34	
Uniform Delay, d1	32.9	0.1		35.0	30.0	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.9	0.2		106.4	161.6	
Delay (s)	42.8	0.3		141.4	191.6	
Level of Service	D	A		F	F	
Approach Delay (s)	27.7			141.4	191.6	
Approach LOS	C			F	F	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		106.6		HCM 2000 Level of Service		F
HCM 2000 Volume to Capacity ratio		1.29				
Actuated Cycle Length (s)		120.0		Sum of lost time (s)	10.0	
Intersection Capacity Utilization		107.5%		ICU Level of Service	G	
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
 5: Soscol Ave (SR 121) & Imola Ave (SR 121)/Imola Ave

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗
Volume (vph)	155	306	1567	388	326	49	707	1299	163	80	1254	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.1	4.0	3.0	4.1		3.5	4.9		3.5	4.6	4.6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	1.00	0.85
Fit Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1863	1568	1770	1826		3400	3450		1770	3505	1568
Fit Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1752	1863	1568	1770	1826		3400	3450		1770	3505	1568
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	174	344	1761	436	366	55	794	1460	183	90	1409	149
RTOR Reduction (vph)	0	0	0	0	4	0	0	7	0	0	0	99
Lane Group Flow (vph)	174	344	1761	436	417	0	794	1636	0	90	1409	50
Heavy Vehicles (%)	3%	2%	3%	2%	2%		3%	3%		2%	3%	3%
Turn Type	Prot	NA	Free	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free									6
Actuated Green, G (s)	14.0	21.9	135.0	27.0	34.9		25.5	63.1		7.5	45.4	45.4
Effective Green, g (s)	14.0	21.9	135.0	27.0	34.9		25.5	63.1		7.5	45.4	45.4
Actuated g/C Ratio	0.10	0.16	1.00	0.20	0.26		0.19	0.47		0.06	0.34	0.34
Clearance Time (s)	3.0	4.1		3.0	4.1		3.5	4.9		3.5	4.6	4.6
Vehicle Extension (s)	3.5	3.0		3.8	3.0		4.0	3.5		3.0	3.5	3.5
Lane Grp Cap (vph)	181	302	1568	354	472		642	1612		98	1178	527
v/s Ratio Prot	0.10	0.18		0.25	0.23		0.23	0.47		0.05	0.40	
v/s Ratio Perm			c1.12									0.03
v/c Ratio	0.96	1.14	1.12	1.23	0.88		1.24	1.01		0.92	1.20	0.10
Uniform Delay, d1	60.2	56.5	67.5	54.0	48.1		54.8	36.0		63.4	44.8	30.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.65	0.41		1.00	1.00	1.00
Incremental Delay, d2	55.6	94.8	64.4	126.5	17.6		107.8	10.9		64.3	96.7	0.4
Delay (s)	115.8	151.4	131.9	180.5	65.7		143.4	25.5		127.8	141.5	31.1
Level of Service	F	F	F	F	E		F	C		F	F	C
Approach Delay (s)		133.6			124.1			63.9			130.8	
Approach LOS		F			F			E			F	

Intersection Summary			
HCM 2000 Control Delay	108.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	106.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 5: Soscol Ave (SR 121) & Imola Ave (SR 121)/Imola Ave

4/8/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗
Volume (vph)	193	446	862	198	433	35	1353	1149	278	99	1556	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.1	4.0	3.0	4.1		3.5	4.9		3.5	4.6	4.6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97		1.00	1.00	0.85
Fit Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1863	1568	1770	1842		3400	3409		1770	3505	1568
Fit Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1752	1863	1568	1770	1842		3400	3409		1770	3505	1568
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	230	531	1026	236	515	42	1611	1368	331	118	1852	238
RTOR Reduction (vph)	0	0	0	0	2	0	0	14	0	0	0	135
Lane Group Flow (vph)	230	531	1026	236	555	0	1611	1685	0	118	1852	103
Heavy Vehicles (%)	3%	2%	3%	2%	2%		3%	3%		2%	3%	3%
Turn Type	Prot	NA	Free	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free									6
Actuated Green, G (s)	12.0	36.9	145.0	12.0	36.9		35.5	70.1		10.5	45.4	45.4
Effective Green, g (s)	12.0	36.9	145.0	12.0	36.9		35.5	70.1		10.5	45.4	45.4
Actuated g/C Ratio	0.08	0.25	1.00	0.08	0.25		0.24	0.48		0.07	0.31	0.31
Clearance Time (s)	3.0	4.1		3.0	4.1		3.5	4.9		3.5	4.6	4.6
Vehicle Extension (s)	3.5	3.0		3.8	3.0		4.0	3.5		3.0	3.5	3.5
Lane Grp Cap (vph)	144	474	1568	146	468		832	1648		128	1097	490
v/s Ratio Prot	c0.13	0.29		c0.13	c0.30		c0.47	0.49		0.07	c0.53	
v/s Ratio Perm			0.65									0.07
v/c Ratio	1.60	1.12	0.65	1.62	1.19		1.94	1.02		0.92	1.69	0.21
Uniform Delay, d1	66.5	54.0	0.0	66.5	54.0		54.8	37.5		66.8	49.8	36.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.74	0.59		1.00	1.00	1.00
Incremental Delay, d2	298.8	78.5	2.1	306.6	103.3		421.7	13.4		55.9	313.7	1.0
Delay (s)	365.3	132.6	2.1	373.1	157.3		462.5	35.5		122.7	363.5	37.6
Level of Service	F	F	A	F	F		F	D		F	F	D
Approach Delay (s)		87.6			221.6			243.3			315.5	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	226.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.63		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	131.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis

6: Napa Vallejo Hwy (SR 221) & College Wy/Magnolia Dr

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	92	4	0	44	0	40	10	2012	267	150	2328	458
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	4.5		4.0	4.5	4.5	
Lane Util. Factor	0.95	0.95		1.00	1.00	1.00	0.95		1.00	0.95	1.00	
Frt	1.00	1.00		1.00	0.85	1.00	0.98		1.00	1.00	0.85	
Fit Protected	0.95	0.96		0.95	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1681	1692		1770	1583	1770	3361		1770	3406	1583	
Fit Permitted	0.95	0.96		0.95	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	1681	1692		1770	1583	1770	3361		1770	3406	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)	100	4	0	48	0	43	11	2187	290	163	2530	498
RTOR Reduction (vph)	0	0	0	0	0	40	0	8	0	0	0	86
Lane Group Flow (vph)	52	52	0	0	48	3	11	2469	0	163	2530	412
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	6%	2%	2%	6%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	4.0	4.0		8.4	8.4	2.2	89.0		17.1	103.9	103.9	
Effective Green, g (s)	4.0	4.0		8.4	8.4	2.2	89.0		17.1	103.9	103.9	
Actuated g/C Ratio	0.03	0.03		0.06	0.06	0.02	0.66		0.13	0.77	0.77	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.5		4.0	4.5	4.5	
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)	49	50		110	98	28	2215		224	2621	1218	
v/s Ratio Prot	c0.03	0.03		c0.03	0.01	c0.73			c0.09	c0.74		
v/s Ratio Perm					0.00						0.26	
v/c Ratio	1.06	1.04		0.44	0.03	0.39	1.11		0.73	0.97	0.34	
Uniform Delay, d1	65.5	65.5		61.0	59.5	65.7	23.0		56.7	13.9	4.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00		1.06	0.73	0.00	
Incremental Delay, d2	146.9	139.1		2.8	0.1	8.9	58.6		1.1	1.6	0.1	
Delay (s)	212.4	204.6		63.8	59.6	74.6	81.6		61.3	11.7	0.1	
Level of Service	F	F		E	E	E	F		E	B	A	
Approach Delay (s)		208.5			61.8		81.6			12.4		
Approach LOS		F			E		F			B		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	45.9			HCM 2000 Level of Service				D				
HCM 2000 Volume to Capacity ratio	1.03											
Actuated Cycle Length (s)	135.0			Sum of lost time (s)				16.5				
Intersection Capacity Utilization	92.2%			ICU Level of Service				F				
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

6: Napa Vallejo Hwy (SR 221) & College Wy/Magnolia Dr

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	281	1	1	259	4	140	17	2522	9	23	1989	198
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	4.5		4.0	4.5	4.5	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95		1.00	0.95	1.00	
Frt	1.00	1.00	0.85	1.00	0.85	1.00	1.00		1.00	1.00	0.85	
Fit Protected	0.95	0.95	1.00	0.95	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1681	1686	1583	1775	1583	1770	3404		1770	3406	1583	
Fit Permitted	0.95	0.95	1.00	0.95	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	1681	1686	1583	1775	1583	1770	3404		1770	3406	1583	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	296	1	1	273	4	147	18	2655	9	24	2094	208
RTOR Reduction (vph)	0	0	1	0	0	62	0	0	0	0	0	50
Lane Group Flow (vph)	148	149	0	0	277	85	18	2664	0	24	2094	158
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	6%	2%	2%	6%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	10.0	10.0	10.0	19.0	19.0	2.4	97.1		2.4	97.1	97.1	
Effective Green, g (s)	10.0	10.0	10.0	19.0	19.0	2.4	97.1		2.4	97.1	97.1	
Actuated g/C Ratio	0.07	0.07	0.07	0.13	0.13	0.02	0.67		0.02	0.67	0.67	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.5		4.0	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	115	116	109	232	207	29	2279		29	2280	1060	
v/s Ratio Prot	0.09	c0.09		c0.16	0.01	c0.78			c0.01	0.61		
v/s Ratio Perm			0.00		0.05						0.10	
v/c Ratio	1.29	1.28	0.00	1.19	0.41	0.62	1.17		0.83	0.92	0.15	
Uniform Delay, d1	67.5	67.5	62.8	63.0	57.9	70.8	24.0		71.1	20.6	8.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.05	0.89	0.00	
Incremental Delay, d2	179.6	178.3	0.0	121.6	1.3	34.8	81.1		15.9	0.8	0.0	
Delay (s)	247.1	245.8	62.8	184.6	59.2	105.6	105.1		90.5	19.1	0.0	
Level of Service	F	F	E	F	E	F	F		F	B	A	
Approach Delay (s)		245.8			141.1		105.1			18.1		
Approach LOS		F			F		F			B		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	79.8			HCM 2000 Level of Service				E				
HCM 2000 Volume to Capacity ratio	1.17											
Actuated Cycle Length (s)	145.0			Sum of lost time (s)				16.5				
Intersection Capacity Utilization	98.3%			ICU Level of Service				F				
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
7: Napa Vallejo Hwy (SR 221) & Streblov Dr

8/5/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	47	38	322	2327	2161	192
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	41	350	2529	2349	209
RTOR Reduction (vph)	0	39	0	0	0	29
Lane Group Flow (vph)	51	2	350	2529	2349	180
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	6.0	6.0	23.0	109.7	82.7	82.7
Effective Green, g (s)	6.0	6.0	23.0	109.7	82.7	82.7
Actuated g/C Ratio	0.05	0.05	0.19	0.88	0.67	0.67
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	165	76	327	3008	2267	1054
v/s Ratio Prot	c0.01		c0.20	0.74	c0.69	
v/s Ratio Perm		0.00				0.11
v/c Ratio	0.31	0.03	1.07	0.84	1.04	0.17
Uniform Delay, d1	57.1	56.3	50.6	3.3	20.8	7.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	0.1	69.7	3.0	29.0	0.4
Delay (s)	58.2	56.5	120.3	6.3	49.8	8.2
Level of Service	E	E	F	A	D	A
Approach Delay (s)	57.4			20.2	46.4	
Approach LOS	E			C	D	

Intersection Summary			
HCM 2000 Control Delay	32.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	124.2	Sum of lost time (s)	12.5
Intersection Capacity Utilization	91.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
7: Napa Vallejo Hwy (SR 221) & Streblov Dr

8/5/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	176	161	142	2448	2200	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	185	169	149	2577	2316	147
RTOR Reduction (vph)	0	88	0	0	0	22
Lane Group Flow (vph)	185	81	149	2577	2316	125
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	13.2	13.2	12.0	109.6	93.6	93.6
Effective Green, g (s)	13.2	13.2	12.0	109.6	93.6	93.6
Actuated g/C Ratio	0.10	0.10	0.09	0.83	0.71	0.71
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	345	159	161	2843	2428	1128
v/s Ratio Prot	c0.05		0.08	c0.76	c0.68	
v/s Ratio Perm		0.05				0.08
v/c Ratio	0.54	0.51	0.93	0.91	0.95	0.11
Uniform Delay, d1	56.1	56.0	59.2	7.4	16.9	5.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.6	2.5	49.1	5.4	10.3	0.2
Delay (s)	57.7	58.5	108.3	12.8	27.2	6.1
Level of Service	E	E	F	B	C	A
Approach Delay (s)	58.1			18.0	25.9	
Approach LOS	E			B	C	

Intersection Summary			
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	131.3	Sum of lost time (s)	12.5
Intersection Capacity Utilization	84.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
8: Napa Vallejo Hwy (SR 221) & Project Access

8/5/2013

Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	↔	↔	↕	↕	↔	↕	
Volume (veh/h)	74	45	2712	113	60	2220	
Sign Control	Stop		Free			Free	
Grade	0%		0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	80	49	2948	123	65	2413	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)		5					
Median type		TWLTL			None		
Median storage (veh)		2					
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume	4285	1474			2948		
vC1, stage 1 conf vol	2948						
vC2, stage 2 conf vol	1337						
vCu, unblocked vol	4285	1474			2948		
IC, single (s)	7.0	7.1			4.3		
IC, 2 stage (s)	6.0						
IF (s)	3.6	3.4			2.3		
p0 queue free %	0	54			37		
cM capacity (veh/h)	21	107			103		
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>
Volume Total	129	1474	1474	123	65	1207	1207
Volume Left	80	0	0	0	65	0	0
Volume Right	49	0	0	123	0	0	0
cSH	30	1700	1700	1700	103	1700	1700
Volume to Capacity	4.26	0.87	0.87	0.07	0.63	0.71	0.71
Queue Length 95th (ft)	Err	0	0	0	78	0	0
Control Delay (s)	Err	0.0	0.0	0.0	87.2	0.0	0.0
Lane LOS	F				F		
Approach Delay (s)	Err	0.0			2.3		
Approach LOS	F						
<b>Intersection Summary</b>							
Average Delay	228.8						
Intersection Capacity Utilization	85.7%		ICU Level of Service		E		
Analysis Period (min)	15						

HCM Unsignalized Intersection Capacity Analysis  
8: Napa Vallejo Hwy (SR 221) & Project Access

8/5/2013

Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations	↔	↔	↕	↕	↔	↕	
Volume (veh/h)	60	70	2572	47	40	2499	
Sign Control	Stop		Free			Free	
Grade	0%		0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly flow rate (vph)	63	74	2707	49	42	2631	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)		5					
Median type		TWLTL			None		
Median storage (veh)		2					
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume	4107	1354			2707		
vC1, stage 1 conf vol	2707						
vC2, stage 2 conf vol	1399						
vCu, unblocked vol	4107	1354			2707		
IC, single (s)	7.0	7.1			4.3		
IC, 2 stage (s)	6.0						
IF (s)	3.6	3.4			2.3		
p0 queue free %	0	43			68		
cM capacity (veh/h)	30	130			130		
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>
Volume Total	137	1354	1354	49	42	1315	1315
Volume Left	63	0	0	0	42	0	0
Volume Right	74	0	0	49	0	0	0
cSH	55	1700	1700	1700	130	1700	1700
Volume to Capacity	2.48	0.80	0.80	0.03	0.32	0.77	0.77
Queue Length 95th (ft)	348	0	0	0	32	0	0
Control Delay (s)	832.8	0.0	0.0	0.0	45.6	0.0	0.0
Lane LOS	F				E		
Approach Delay (s)	832.8	0.0			0.7		
Approach LOS	F						
<b>Intersection Summary</b>							
Average Delay	20.8						
Intersection Capacity Utilization	82.1%		ICU Level of Service		E		
Analysis Period (min)	15						

HCM Signalized Intersection Capacity Analysis  
 9: Napa Vallejo Hwy (SR 221) & Kaiser Rd

8/5/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	100	87	218	2550	2454	435
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	95	237	2772	2667	473
RTOR Reduction (vph)	0	90	0	0	0	102
Lane Group Flow (vph)	109	5	237	2772	2667	371
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	8.0	8.0	19.0	133.5	110.5	110.5
Effective Green, g (s)	8.0	8.0	19.0	133.5	110.5	110.5
Actuated g/C Ratio	0.05	0.05	0.13	0.89	0.74	0.74
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	183	84	224	3031	2509	1166
v/s Ratio Prot	c0.03		c0.13	0.81	c0.78	
v/s Ratio Perm		0.00				0.23
v/c Ratio	0.60	0.06	1.06	0.91	1.06	0.32
Uniform Delay, d1	69.4	67.4	65.5	4.9	19.8	6.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.1	0.3	76.3	5.6	37.5	0.7
Delay (s)	74.5	67.7	141.8	10.4	57.2	7.5
Level of Service	E	E	F	B	E	A
Approach Delay (s)	71.4			20.8	49.8	
Approach LOS	E			C	D	

Intersection Summary			
HCM 2000 Control Delay	36.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	97.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 9: Napa Vallejo Hwy (SR 221) & Kaiser Rd

8/5/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	521	84	43	2493	2758	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	3406	3406	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	3406	3406	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	548	88	45	2624	2903	187
RTOR Reduction (vph)	0	30	0	0	0	46
Lane Group Flow (vph)	548	58	45	2624	2903	141
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	20.0	20.0	4.0	121.5	113.5	113.5
Effective Green, g (s)	20.0	20.0	4.0	121.5	113.5	113.5
Actuated g/C Ratio	0.13	0.13	0.03	0.81	0.76	0.76
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	457	211	47	2758	2577	1197
v/s Ratio Prot	c0.16		0.03	c0.77	c0.85	
v/s Ratio Perm		0.04				0.09
v/c Ratio	1.20	0.27	0.96	0.95	1.13	0.12
Uniform Delay, d1	65.0	58.5	72.9	11.8	18.2	4.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	109.1	0.7	114.0	9.0	62.6	0.2
Delay (s)	174.1	59.2	186.9	20.8	80.8	5.1
Level of Service	F	E	F	C	F	A
Approach Delay (s)	158.2			23.6	76.2	
Approach LOS	F			C	E	

Intersection Summary			
HCM 2000 Control Delay	62.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	98.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

10: Napa Vallejo Hwy (SR 221) & Napa Valley Corporate Wy/Anderson Rd

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	42	0	34	2	0	2	243	2789	4	0	2162	216
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	0.97	0.95	1.00	0.95	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.85	1.00	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1618	1618	1524	1770	1583	3303	3406	1583	3406	1524	1618	1618
Flt Permitted	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1618	1618	1524	1770	1583	3303	3406	1583	3406	1524	1618	1618
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)	46	0	37	2	0	2	264	3032	4	0	2350	235
RTOR Reduction (vph)	0	0	32	0	0	2	0	0	1	0	0	50
Lane Group Flow (vph)	23	23	5	0	2	0	264	3032	3	0	2350	185
Heavy Vehicles (%)	6%	2%	6%	2%	2%	2%	6%	6%	2%	2%	6%	6%
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4			8		2				6
Actuated Green, G (s)	6.6	6.6	16.1		1.1	1.1	9.5	105.9	105.9		92.9	92.9
Effective Green, g (s)	6.6	6.6	16.1		1.1	1.1	9.5	105.9	105.9		92.9	92.9
Actuated g/C Ratio	0.05	0.05	0.13		0.01	0.01	0.08	0.84	0.84		0.74	0.74
Clearance Time (s)	4.0	4.0	3.5		4.0	4.0	3.5	4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	84	84	194		15	13	248	2860	1329		2509	1122
v/s Ratio Prot	c0.01	0.01	0.00		c0.00		0.08	c0.89			0.69	
v/s Ratio Perm			0.00			0.00		0.00				0.12
v/c Ratio	0.27	0.27	0.02		0.13	0.00	1.06	1.06	0.00		0.94	0.16
Uniform Delay, d1	57.4	57.4	48.1		62.0	62.0	58.3	10.1	1.6		14.1	5.0
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	1.8	1.8	0.1		4.0	0.0	75.2	35.5	0.0		8.2	0.3
Delay (s)	59.2	59.2	48.2		66.0	62.0	133.5	45.6	1.6		22.3	5.3
Level of Service	E	E	D		E	E	F	D	A		C	A
Approach Delay (s)		54.3			64.0			52.6			20.8	
Approach LOS		D			E			D			C	

Intersection Summary

HCM 2000 Control Delay	38.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	126.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	98.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

10: Napa Vallejo Hwy (SR 221) & Napa Valley Corporate Wy/Anderson Rd

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	207	1	211	5	0	8	58	2341	0	5	2452	377
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	3.5	4.0	4.0	3.5	4.5	4.5	4.5	3.5	4.5	4.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	0.97	0.95	1.00	0.95	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.85	1.00	1.00	0.85	1.00	0.85	1.00	0.85
Flt Protected	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1618	1623	1524	1770	1583	3303	3406	1770	1583	3303	3406	1524
Flt Permitted	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1618	1623	1524	1770	1583	3303	3406	1770	1583	3303	3406	1524
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	218	1	222	5	0	8	61	2464	0	5	2581	397
RTOR Reduction (vph)	0	0	130	0	0	8	0	0	0	0	0	85
Lane Group Flow (vph)	109	110	92	0	5	0	61	2464	0	5	2581	312
Heavy Vehicles (%)	6%	2%	6%	2%	2%	2%	6%	6%	2%	2%	6%	6%
Turn Type	Split	NA	pm+ov	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4			8		2				6
Actuated Green, G (s)	13.2	13.2	17.7		2.5	2.5	4.5	104.4		0.8	100.7	100.7
Effective Green, g (s)	13.2	13.2	17.7		2.5	2.5	4.5	104.4		0.8	100.7	100.7
Actuated g/C Ratio	0.10	0.10	0.13		0.02	0.02	0.03	0.76		0.01	0.74	0.74
Clearance Time (s)	4.0	4.0	3.5		4.0	4.0	3.5	4.5		3.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	156	156	197		32	28	108	2597		10	2505	1121
v/s Ratio Prot	0.07	c0.07	0.02		c0.00		c0.02	0.72		0.00	c0.76	
v/s Ratio Perm			0.05			0.00						0.20
v/c Ratio	0.70	0.71	0.47		0.16	0.01	0.56	0.95		0.50	1.03	0.28
Uniform Delay, d1	59.9	60.0	55.2		66.2	66.0	65.2	14.0		67.9	18.1	6.0
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	12.8	13.5	1.8		2.3	0.1	6.6	9.2		34.4	26.3	0.6
Delay (s)	72.7	73.5	57.0		68.4	66.1	71.8	23.1		102.2	44.4	6.6
Level of Service	E	E	E		E	E	E	C		F	D	A
Approach Delay (s)		65.0			67.0			24.3			39.5	
Approach LOS		E			E			C			D	

Intersection Summary

HCM 2000 Control Delay	35.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	136.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	94.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

11: Soscol Ferry Rd/Napa Vallejo Hwy (SR 221) & SR 29/SR 12

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	90	3827	520	582	1943	2788	32	24	8	2088	109	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.0	4.0	4.5	4.0	4.5	4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	1.00	1.00	1.00	0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.94	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fit Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1703	3406	1583	1770	3065	1386	1770	1863	1583	3303	1863	1524
Fit Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1703	3406	1583	1770	3065	1386	1770	1863	1583	3303	1863	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)	98	4160	565	633	2112	3030	35	26	9	2270	118	30
RTOR Reduction (vph)	0	0	251	0	64	0	0	0	9	0	0	22
Lane Group Flow (vph)	98	4160	314	633	3472	1606	35	26	0	2270	118	8
Heavy Vehicles (%)	6%	6%	2%	2%	6%	6%	2%	2%	2%	6%	2%	6%
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			Free			2			6
Actuated Green, G (s)	6.0	64.6	64.6	22.0	80.6	147.5	6.1	3.8	3.8	40.1	37.8	37.8
Effective Green, g (s)	6.0	64.6	64.6	22.0	80.6	147.5	6.1	3.8	3.8	40.1	37.8	37.8
Actuated g/C Ratio	0.04	0.44	0.44	0.15	0.55	1.00	0.04	0.03	0.03	0.27	0.26	0.26
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5		4.0	4.5	4.5	4.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	69	1491	693	264	1674	1386	73	47	40	897	477	390
v/s Ratio Prot	0.06	c1.22		c0.36	1.13		0.02	0.01		c0.69	0.06	
v/s Ratio Perm			0.20			c1.16			0.00			0.01
v/c Ratio	1.42	2.79	0.45	2.40	2.07	1.16	0.48	0.55	0.01	2.53	0.25	0.02
Uniform Delay, d1	70.8	41.5	29.1	62.8	33.5	73.8	69.1	71.0	70.0	53.7	43.6	41.0
Progression Factor	1.00	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	254.6	807.4	2.1	640.5	485.3	79.9	4.9	13.3	0.1	692.1	0.3	0.0
Delay (s)	325.4	848.9	31.2	703.2	518.7	153.7	74.0	84.4	70.1	745.8	43.8	41.0
Level of Service	F	F	C	F	F	F	E	F	E	F	D	D
Approach Delay (s)		742.4			437.4			77.4		702.8		
Approach LOS		F			F			E		F		

Intersection Summary

HCM 2000 Control Delay	597.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.64		
Actuated Cycle Length (s)	147.5	Sum of lost time (s)	17.0
Intersection Capacity Utilization	215.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

11: Soscol Ferry Rd/Napa Vallejo Hwy (SR 221) & SR 29/SR 12

8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	40	4161	43	126	3102	2132	331	153	349	2448	137	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5	4.0	4.0	4.5	4.0	4.5	4.0	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	0.91	1.00	1.00	1.00	0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fit Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1703	3406	1583	1770	3191	1386	1770	1863	1583	3303	1863	1524
Fit Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1703	3406	1583	1770	3191	1386	1770	1863	1583	3303	1863	1524
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	4380	45	133	3265	2244	348	161	367	2577	144	174
RTOR Reduction (vph)	0	0	25	0	8	0	0	0	91	0	0	62
Lane Group Flow (vph)	42	4380	20	133	3818	1683	348	161	276	2577	144	112
Heavy Vehicles (%)	6%	6%	2%	2%	6%	6%	2%	2%	2%	6%	2%	6%
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			Free			2			6
Actuated Green, G (s)	4.0	68.3	68.3	7.0	71.3	150.8	32.9	11.5	11.5	47.0	25.6	25.6
Effective Green, g (s)	4.0	68.3	68.3	7.0	71.3	150.8	32.9	11.5	11.5	47.0	25.6	25.6
Actuated g/C Ratio	0.03	0.45	0.45	0.05	0.47	1.00	0.22	0.08	0.08	0.31	0.17	0.17
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5		4.0	4.5	4.5	4.0	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	45	1542	716	82	1508	1386	386	142	120	1029	316	258
v/s Ratio Prot	0.02	c1.29		0.08	1.20		0.20	0.09		c0.78	0.08	
v/s Ratio Perm			0.01			c1.21			c0.17			0.07
v/c Ratio	0.93	2.84	0.03	1.62	2.53	1.21	0.90	1.13	2.30	2.50	0.46	0.43
Uniform Delay, d1	73.3	41.3	22.9	71.9	39.8	75.4	57.4	69.7	69.7	51.9	56.3	56.1
Progression Factor	1.00	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	108.1	830.0	0.1	328.6	691.2	103.3	23.5	116.0	612.2	679.9	1.0	1.2
Delay (s)	181.3	871.3	22.9	400.5	730.9	178.7	80.8	185.6	681.8	731.8	57.4	57.3
Level of Service	F	F	C	F	F	F	F	F	F	F	E	E
Approach Delay (s)		856.2			558.4			351.9		657.7		
Approach LOS		F			F			F		F		

Intersection Summary

HCM 2000 Control Delay	661.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.63		
Actuated Cycle Length (s)	150.8	Sum of lost time (s)	17.0
Intersection Capacity Utilization	217.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

5: Napa Vallejo Hwy (SR 221)/Soscol Ave (SR 121) & Imola Ave (SR 121)/Imola Ave 8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑	↘	↔	↑	↘	↔	↑	↘	↔	↑	↘
Volume (vph)	155	306	742	160	283	45	428	834	113	80	1078	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.1	4.0	3.0	4.1	4.1	3.5	4.9		3.5	4.6	4.6
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		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)	3400	1863	1568	1770	1863	1583	3400	3446		1770	3505	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)	3400	1863	1568	1770	1863	1583	3400	3446		1770	3505	1568
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	174	344	834	180	318	51	481	937	127	90	1211	149
RTOR Reduction (vph)	0	0	0	0	0	38	0	9	0	0	0	92
Lane Group Flow (vph)	174	344	834	180	318	13	481	1055	0	90	1211	57
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	3%	3%	2%	2%	3%	3%
Turn Type	Prot	NA	Free	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8						6
Actuated Green, G (s)	7.1	23.8	115.0	13.3	30.0	30.0	18.5	53.7		8.7	44.2	44.2
Effective Green, g (s)	7.1	23.8	115.0	13.3	30.0	30.0	18.5	53.7		8.7	44.2	44.2
Actuated g/C Ratio	0.06	0.21	1.00	0.12	0.26	0.26	0.16	0.47		0.08	0.38	0.38
Clearance Time (s)	3.0	4.1		3.0	4.1	4.1	3.5	4.9		3.5	4.6	4.6
Vehicle Extension (s)	3.5	3.0		3.8	3.0	3.0	4.0	3.5		3.0	3.5	3.5
Lane Grp Cap (vph)	209	385	1568	204	486	412	546	1609		133	1347	602
v/s Ratio Prot	0.05	c0.18		c0.10	0.17		c0.14	0.31		0.05	c0.35	
v/s Ratio Perm			0.53			0.01						0.04
v/c Ratio	0.83	0.89	0.53	0.88	0.65	0.03	0.88	0.66		0.68	0.90	0.10
Uniform Delay, d1	53.4	44.4	0.0	50.1	37.9	31.7	47.2	23.6		51.8	33.3	22.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.79	0.52		1.00	1.00	1.00
Incremental Delay, d2	24.2	22.1	1.3	33.6	3.2	0.0	11.6	1.5		12.8	9.8	0.3
Delay (s)	77.6	66.5	1.3	83.7	41.0	31.7	49.0	13.7		64.6	43.1	22.9
Level of Service	E	E	A	F	D	C	D	B		E	D	C
Approach Delay (s)	27.7			54.2				24.7		42.4		
Approach LOS	C			D				C		D		

Intersection Summary

HCM 2000 Control Delay	34.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	115.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	80.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

5: Napa Vallejo Hwy (SR 221)/Soscol Ave (SR 121) & Imola Ave (SR 121)/Imola Ave 8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑	↘	↔	↑	↘	↔	↑	↘	↔	↑	↘
Volume (vph)	193	281	408	85	283	35	711	1066	128	81	954	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.1	4.0	3.0	4.1	4.1	3.5	4.9		3.5	4.6	4.6
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		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)	3400	1863	1568	1770	1863	1583	3400	3452		1770	3505	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)	3400	1863	1568	1770	1863	1583	3400	3452		1770	3505	1568
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	230	335	486	101	337	42	846	1269	152	96	1136	223
RTOR Reduction (vph)	0	0	0	0	0	33	0	6	0	0	0	135
Lane Group Flow (vph)	230	335	486	101	337	9	846	1415	0	96	1136	88
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	3%	3%	2%	2%	3%	3%
Turn Type	Prot	NA	Free	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8						6
Actuated Green, G (s)	10.4	29.7	145.0	10.9	30.2	30.2	37.4	78.7		10.2	51.8	51.8
Effective Green, g (s)	10.4	29.7	145.0	10.9	30.2	30.2	37.4	78.7		10.2	51.8	51.8
Actuated g/C Ratio	0.07	0.20	1.00	0.08	0.21	0.21	0.26	0.54		0.07	0.36	0.36
Clearance Time (s)	3.0	4.1		3.0	4.1	4.1	3.5	4.9		3.5	4.6	4.6
Vehicle Extension (s)	3.5	3.0		3.8	3.0	3.0	4.0	3.5		3.0	3.5	3.5
Lane Grp Cap (vph)	243	381	1568	133	388	329	876	1873		124	1252	560
v/s Ratio Prot	c0.07	c0.18		0.06	c0.18		c0.25	0.41		0.05	c0.32	
v/s Ratio Perm			0.31			0.01						0.06
v/c Ratio	0.95	0.88	0.31	0.76	0.87	0.03	0.97	0.76		0.77	0.91	0.16
Uniform Delay, d1	67.0	55.9	0.0	65.8	55.5	45.7	53.2	25.7		66.3	44.3	31.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.93	0.81		1.00	1.00	1.00
Incremental Delay, d2	43.1	19.9	0.5	22.7	18.2	0.0	18.3	2.1		25.4	11.1	0.6
Delay (s)	110.1	75.8	0.5	88.4	73.7	45.7	68.0	23.0		91.7	55.4	32.3
Level of Service	F	E	A	F	E	D	E	C		F	E	C
Approach Delay (s)	48.5			74.3				39.8		54.3		
Approach LOS	D			E				D		D		

Intersection Summary

HCM 2000 Control Delay	48.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

5: Napa Vallejo Hwy (SR 221)/Soscol Ave (SR 121) & Imola Ave (SR 121)/Imola Ave 8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	155	306	743	160	283	45	429	836	113	80	1084	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.1	4.0	3.0	4.1	4.1	3.5	4.9		3.5	4.6	4.6
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Fit 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)	3400	1863	1568	1770	1863	1583	3400	3446		1770	3505	1568
Fit 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)	3400	1863	1568	1770	1863	1583	3400	3446		1770	3505	1568
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	174	344	835	180	318	51	482	939	127	90	1218	149
RTOR Reduction (vph)	0	0	0	0	0	37	0	9	0	0	0	92
Lane Group Flow (vph)	174	344	835	180	318	14	482	1057	0	90	1218	57
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	3%	3%	2%	2%	3%	3%
Turn Type	Prot	NA	Free	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8						6
Actuated Green, G (s)	6.1	24.2	115.0	13.4	31.5	31.5	18.2	53.2		8.7	44.0	44.0
Effective Green, g (s)	6.1	24.2	115.0	13.4	31.5	31.5	18.2	53.2		8.7	44.0	44.0
Actuated g/C Ratio	0.05	0.21	1.00	0.12	0.27	0.27	0.16	0.46		0.08	0.38	0.38
Clearance Time (s)	3.0	4.1		3.0	4.1	4.1	3.5	4.9		3.5	4.6	4.6
Vehicle Extension (s)	3.5	3.0		3.8	3.0	3.0	4.0	3.5		3.0	3.5	3.5
Lane Grp Cap (vph)	180	392	1568	206	510	433	538	1594		133	1341	599
v/s Ratio Prot	c0.05	c0.18		c0.10	0.17		c0.14	0.31		0.05	c0.35	
v/s Ratio Perm			0.53			0.01						0.04
v/c Ratio	0.97	0.88	0.53	0.87	0.62	0.03	0.90	0.66		0.68	0.91	0.10
Uniform Delay, d1	54.3	44.0	0.0	50.0	36.6	30.6	47.5	24.0		51.8	33.6	22.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.81	0.54		1.00	1.00	1.00
Incremental Delay, d2	57.0	19.3	1.3	31.7	2.4	0.0	13.2	1.5		12.8	10.6	0.3
Delay (s)	111.4	63.3	1.3	81.6	38.9	30.6	51.5	14.4		64.6	44.2	23.1
Level of Service	F	E	A	F	D	C	D	B		E	D	C
Approach Delay (s)		31.2			52.2			25.9			43.3	
Approach LOS		C			D			C			D	

Intersection Summary

HCM 2000 Control Delay	35.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	115.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	81.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

5: Napa Vallejo Hwy (SR 221)/Soscol Ave (SR 121) & Imola Ave (SR 121)/Imola Ave 8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	193	281	410	85	283	35	713	1071	128	81	960	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.1	4.0	3.0	4.1	4.1	3.5	4.9		3.5	4.6	4.6
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Fit 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)	3400	1863	1568	1770	1863	1583	3400	3452		1770	3505	1568
Fit 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)	3400	1863	1568	1770	1863	1583	3400	3452		1770	3505	1568
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	230	335	488	101	337	42	849	1275	152	96	1143	223
RTOR Reduction (vph)	0	0	0	0	0	33	0	6	0	0	0	135
Lane Group Flow (vph)	230	335	488	101	337	9	849	1421	0	96	1143	88
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	3%	3%	2%	2%	3%	3%
Turn Type	Prot	NA	Free	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8						6
Actuated Green, G (s)	10.2	29.7	145.0	10.9	30.4	30.4	37.6	78.7		10.2	51.6	51.6
Effective Green, g (s)	10.2	29.7	145.0	10.9	30.4	30.4	37.6	78.7		10.2	51.6	51.6
Actuated g/C Ratio	0.07	0.20	1.00	0.08	0.21	0.21	0.26	0.54		0.07	0.36	0.36
Clearance Time (s)	3.0	4.1		3.0	4.1	4.1	3.5	4.9		3.5	4.6	4.6
Vehicle Extension (s)	3.5	3.0		3.8	3.0	3.0	4.0	3.5		3.0	3.5	3.5
Lane Grp Cap (vph)	239	381	1568	133	390	331	881	1873		124	1247	557
v/s Ratio Prot	c0.07	c0.18		0.06	c0.18		c0.25	0.41		0.05	c0.33	
v/s Ratio Perm			0.31			0.01						0.06
v/c Ratio	0.96	0.88	0.31	0.76	0.86	0.03	0.96	0.76		0.77	0.92	0.16
Uniform Delay, d1	67.2	55.9	0.0	65.8	55.3	45.5	53.0	25.8		66.3	44.6	31.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.94	0.82		1.00	1.00	1.00
Incremental Delay, d2	47.7	19.9	0.5	22.7	17.7	0.0	17.9	2.2		25.4	12.0	0.6
Delay (s)	114.9	75.8	0.5	88.4	73.0	45.6	67.6	23.3		91.7	56.7	32.5
Level of Service	F	E	A	F	E	D	E	C		F	E	C
Approach Delay (s)		49.5			73.8			39.8			55.3	
Approach LOS		D			E			D			E	

Intersection Summary

HCM 2000 Control Delay	49.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis

5: Napa Vallejo Hwy (SR 221)/Soscol Ave (SR 121) & Imola Ave (SR 121)/Imola Ave 8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↗	↘	↔	↗	↘	↔	↗	↘	↔	↗	↘
Volume (vph)	155	306	1566	388	326	49	706	1297	163	80	1248	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.1	4.0	3.0	4.1	4.1	3.5	4.9		3.5	4.6	4.6
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		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)	3400	1863	1568	1770	1863	1583	3400	3450		1770	3505	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)	3400	1863	1568	1770	1863	1583	3400	3450		1770	3505	1568
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	174	344	1760	436	366	55	793	1457	183	90	1402	149
RTOR Reduction (vph)	0	0	0	0	0	0	0	7	0	0	0	98
Lane Group Flow (vph)	174	344	1760	436	366	15	793	1633	0	90	1402	51
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	3%	3%	2%	2%	3%	3%
Turn Type	Prot	NA	Free	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8						6
Actuated Green, G (s)	9.9	21.9	135.0	26.0	38.0	38.0	25.5	63.1		8.5	46.4	46.4
Effective Green, g (s)	9.9	21.9	135.0	26.0	38.0	38.0	25.5	63.1		8.5	46.4	46.4
Actuated g/C Ratio	0.07	0.16	1.00	0.19	0.28	0.28	0.19	0.47		0.06	0.34	0.34
Clearance Time (s)	3.0	4.1		3.0	4.1	4.1	3.5	4.9		3.5	4.6	4.6
Vehicle Extension (s)	3.5	3.0		3.8	3.0	3.0	4.0	3.5		3.0	3.5	3.5
Lane Grp Cap (vph)	249	302	1568	340	524	445	642	1612		111	1204	538
v/s Ratio Prot	0.05	0.18		c0.25	0.20		0.23	0.47		0.05	0.40	
v/s Ratio Perm			c1.12			0.01						0.03
v/c Ratio	0.70	1.14	1.12	1.28	0.70	0.03	1.24	1.01		0.81	1.16	0.10
Uniform Delay, d1	61.1	56.5	67.5	54.5	43.4	35.2	54.8	36.0		62.5	44.3	30.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.73	0.57		1.00	1.00	1.00
Incremental Delay, d2	8.6	94.8	64.1	147.7	4.0	0.0	107.2	10.3		34.4	83.4	0.4
Delay (s)	69.7	151.4	131.6	202.2	47.4	35.2	147.2	30.8		96.9	127.7	30.4
Level of Service	E	F	F	F	D	D	F	C		F	F	C
Approach Delay (s)	129.9				125.4			68.7			117.2	
Approach LOS	F				F			E			F	

Intersection Summary

HCM 2000 Control Delay	105.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	106.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

5: Napa Vallejo Hwy (SR 221)/Soscol Ave (SR 121) & Imola Ave (SR 121)/Imola Ave 8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↗	↘	↔	↗	↘	↔	↗	↘	↔	↗	↘
Volume (vph)	193	446	860	198	433	35	1351	1144	278	99	1550	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.1	4.0	3.0	4.1	4.1	3.5	4.9		3.5	4.6	4.6
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		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)	3400	1863	1568	1770	1863	1583	3400	3409		1770	3505	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)	3400	1863	1568	1770	1863	1583	3400	3409		1770	3505	1568
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	230	531	1024	236	515	42	1608	1362	331	118	1845	238
RTOR Reduction (vph)	0	0	0	0	0	31	0	14	0	0	0	106
Lane Group Flow (vph)	230	531	1024	236	515	11	1608	1679	0	118	1845	132
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	3%	3%	2%	2%	3%	3%
Turn Type	Prot	NA	Free	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8						6
Actuated Green, G (s)	9.0	31.9	145.0	14.0	36.9	36.9	38.5	70.9		12.7	45.4	45.4
Effective Green, g (s)	9.0	31.9	145.0	14.0	36.9	36.9	38.5	70.9		12.7	45.4	45.4
Actuated g/C Ratio	0.06	0.22	1.00	0.10	0.25	0.25	0.27	0.49		0.09	0.31	0.31
Clearance Time (s)	3.0	4.1		3.0	4.1	4.1	3.5	4.9		3.5	4.6	4.6
Vehicle Extension (s)	3.5	3.0		3.8	3.0	3.0	4.0	3.5		3.0	3.5	3.5
Lane Grp Cap (vph)	211	409	1568	170	474	402	902	1666		155	1097	490
v/s Ratio Prot	0.07	c0.29		c0.13	0.28		c0.47	0.49		0.07	c0.53	
v/s Ratio Perm			0.65			0.01						0.08
v/c Ratio	1.09	1.30	0.65	1.39	1.09	0.03	1.78	1.01		0.76	1.68	0.27
Uniform Delay, d1	68.0	56.5	0.0	65.5	54.0	40.6	53.2	37.0		64.7	49.8	37.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.83	0.75		1.00	1.00	1.00
Incremental Delay, d2	88.0	151.2	2.1	206.7	66.7	0.0	352.6	8.6		19.6	310.8	1.3
Delay (s)	156.0	207.8	2.1	272.2	120.8	40.6	396.8	36.2		84.2	360.6	38.7
Level of Service	F	F	A	F	F	D	F	D		F	F	D
Approach Delay (s)	83.1				161.6			211.9			311.0	
Approach LOS	F				F			F			F	

Intersection Summary

HCM 2000 Control Delay	205.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.59		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	129.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

5: Napa Vallejo Hwy (SR 221)/Soscol Ave (SR 121) & Imola Ave (SR 121)/Imola Ave 8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑	↘	↔	↑	↘	↔	↑	↘	↔	↑	↘
Volume (vph)	155	306	1567	388	326	49	707	1299	163	80	1254	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.1	4.0	3.0	4.1	4.1	3.5	4.9		3.5	4.6	4.6
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		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)	3400	1863	1568	1770	1863	1583	3400	3450		1770	3505	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)	3400	1863	1568	1770	1863	1583	3400	3450		1770	3505	1568
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	174	344	1761	436	366	55	794	1460	183	90	1409	149
RTOR Reduction (vph)	0	0	0	0	0	39	0	7	0	0	0	99
Lane Group Flow (vph)	174	344	1761	436	366	16	794	1636	0	90	1409	50
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	3%	3%	2%	2%	3%	3%
Turn Type	Prot	NA	Free	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8						6
Actuated Green, G (s)	10.7	21.9	135.0	27.0	38.2	38.2	25.5	63.1		7.5	45.4	45.4
Effective Green, g (s)	10.7	21.9	135.0	27.0	38.2	38.2	25.5	63.1		7.5	45.4	45.4
Actuated g/C Ratio	0.08	0.16	1.00	0.20	0.28	0.28	0.19	0.47		0.06	0.34	0.34
Clearance Time (s)	3.0	4.1		3.0	4.1	4.1	3.5	4.9		3.5	4.6	4.6
Vehicle Extension (s)	3.5	3.0		3.8	3.0	3.0	4.0	3.5		3.0	3.5	3.5
Lane Grp Cap (vph)	269	302	1568	354	527	447	642	1612		98	1178	527
v/s Ratio Prot	0.05	0.18		0.25	0.20		0.23	0.47		0.05	c0.40	
v/s Ratio Perm			c1.12			0.01						0.03
v/c Ratio	0.65	1.14	1.12	1.23	0.69	0.03	1.24	1.01		0.92	1.20	0.10
Uniform Delay, d1	60.3	56.5	67.5	54.0	43.2	35.0	54.8	36.0		63.4	44.8	30.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.73	0.57		1.00	1.00	1.00
Incremental Delay, d2	5.5	94.8	64.4	126.5	4.0	0.0	107.8	10.9		64.3	96.7	0.4
Delay (s)	65.8	151.4	131.9	180.5	47.1	35.1	147.9	31.4		127.8	141.5	31.1
Level of Service	E	F	F	F	D	D	F	C		F	F	C
Approach Delay (s)		129.8			114.2			69.3			130.8	
Approach LOS		F			F			E			F	

Intersection Summary

HCM 2000 Control Delay	107.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	106.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

5: Napa Vallejo Hwy (SR 221)/Soscol Ave (SR 121) & Imola Ave (SR 121)/Imola Ave 8/5/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑	↘	↔	↑	↘	↔	↑	↘	↔	↑	↘
Volume (vph)	193	446	862	198	433	35	1353	1149	278	99	1556	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.1	4.0	3.0	4.1	4.1	3.5	4.9		3.5	4.6	4.6
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		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)	3400	1863	1568	1770	1863	1583	3400	3409		1770	3505	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)	3400	1863	1568	1770	1863	1583	3400	3409		1770	3505	1568
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	230	531	1026	236	515	42	1611	1368	331	118	1852	238
RTOR Reduction (vph)	0	0	0	0	0	31	0	14	0	0	0	107
Lane Group Flow (vph)	230	531	1026	236	515	11	1611	1685	0	118	1852	131
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	3%	3%	2%	2%	3%	3%
Turn Type	Prot	NA	Free	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8						6
Actuated Green, G (s)	9.0	31.9	145.0	14.0	36.9	36.9	37.5	70.9		12.7	46.4	46.4
Effective Green, g (s)	9.0	31.9	145.0	14.0	36.9	36.9	37.5	70.9		12.7	46.4	46.4
Actuated g/C Ratio	0.06	0.22	1.00	0.10	0.25	0.25	0.26	0.49		0.09	0.32	0.32
Clearance Time (s)	3.0	4.1		3.0	4.1	4.1	3.5	4.9		3.5	4.6	4.6
Vehicle Extension (s)	3.5	3.0		3.8	3.0	3.0	4.0	3.5		3.0	3.5	3.5
Lane Grp Cap (vph)	211	409	1568	170	474	402	879	1666		155	1121	501
v/s Ratio Prot	0.07	c0.29		c0.13	0.28		c0.47	0.49		0.07	c0.53	
v/s Ratio Perm			0.65			0.01						0.08
v/c Ratio	1.09	1.30	0.65	1.39	1.09	0.03	1.83	1.01		0.76	1.65	0.26
Uniform Delay, d1	68.0	56.5	0.0	65.5	54.0	40.6	53.8	37.0		64.7	49.3	36.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.83	0.75		1.00	1.00	1.00
Incremental Delay, d2	88.0	151.2	2.1	206.7	66.7	0.0	375.1	9.6		19.6	297.5	1.3
Delay (s)	156.0	207.8	2.1	272.2	120.8	40.6	419.8	37.3		84.2	346.8	37.9
Level of Service	F	F	A	F	F	D	F	D		F	F	D
Approach Delay (s)		83.1			161.6			223.5			299.4	
Approach LOS		F			F			F			F	

Intersection Summary

HCM 2000 Control Delay	207.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.59		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	130.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
6: Soscol Ave (SR 121) & College Wy/Magnolia Dr

4/24/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Volume (vph)	92	4	0	44	0	40	10	2009	267	150	2321	458
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	4.5		4.0	4.5	4.0
Lane Util. Factor	0.95	0.95		0.95	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Fit Protected	0.95	0.96		0.95	0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1692		1681	1681	1583	1770	3361		1770	3406	1583
Fit Permitted	0.95	0.96		0.95	0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1692		1681	1681	1583	1770	3361		1770	3406	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)	100	4	0	48	0	43	11	2184	290	163	2523	498
RTOR Reduction (vph)	0	0	0	0	0	40	0	8	0	0	0	95
Lane Group Flow (vph)	52	52	0	24	24	3	11	2466	0	163	2523	403
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	6%	2%	2%	6%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Prot	NA	pm+ov	
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases			4			8						6
Actuated Green, G (s)	4.0	4.0		8.7	8.7	8.7	1.6	89.0		16.8	104.2	108.2
Effective Green, g (s)	4.0	4.0		8.7	8.7	8.7	1.6	89.0		16.8	104.2	108.2
Actuated g/C Ratio	0.03	0.03		0.06	0.06	0.06	0.01	0.66		0.12	0.77	0.80
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.5		4.0	4.5	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	49	50		108	108	102	20	2215		220	2628	1268
v/s Ratio Prot	c0.03	0.03		c0.01	0.01		0.01	c0.73		c0.09	c0.74	0.01
v/s Ratio Perm						0.00						0.25
v/c Ratio	1.06	1.04		0.22	0.22	0.03	0.55	1.11		0.74	0.96	0.32
Uniform Delay, d1	65.5	65.5		59.9	59.9	59.2	66.3	23.0		57.0	13.6	3.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.07	0.67	0.00
Incremental Delay, d2	146.9	139.1		1.0	1.0	0.1	28.9	58.0		1.2	1.4	0.0
Delay (s)	212.4	204.6		61.0	61.0	59.3	95.2	81.0		62.0	10.5	0.0
Level of Service	F	F		E	E	E	F	F		E	B	A
Approach Delay (s)		208.5			60.2			81.1			11.5	
Approach LOS		F			E			F			B	

Intersection Summary			
HCM 2000 Control Delay	45.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	92.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
6: Soscol Ave (SR 121) & College Wy/Magnolia Dr

4/24/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Volume (vph)	281	1	1	259	4	140	17	2515	9	23	1982	198
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	4.5		4.0	4.5	4.0
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Fit Protected	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1686	1583	1681	1688	1583	1770	3404		1770	3406	1583
Fit Permitted	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1686	1583	1681	1688	1583	1770	3404		1770	3406	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	296	1	1	273	4	147	18	2647	9	24	2086	208
RTOR Reduction (vph)	0	0	1	0	0	64	0	0	0	0	0	48
Lane Group Flow (vph)	148	149	0	139	138	83	18	2656	0	24	2086	160
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	6%	2%	2%	6%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Prot	NA	pm+ov	
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases			4			8						6
Actuated Green, G (s)	10.0	10.0	10.0	14.4	14.4	14.4	2.4	101.7		2.4	101.7	111.7
Effective Green, g (s)	10.0	10.0	10.0	14.4	14.4	14.4	2.4	101.7		2.4	101.7	111.7
Actuated g/C Ratio	0.07	0.07	0.07	0.10	0.10	0.10	0.02	0.70		0.02	0.70	0.77
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.5		4.0	4.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	115	116	109	166	167	157	29	2387		29	2388	1219
v/s Ratio Prot	0.09	c0.09		c0.08	0.08		0.01	c0.78		c0.01	0.61	0.12
v/s Ratio Perm			0.00			0.05						0.09
v/c Ratio	1.29	1.28	0.00	0.84	0.83	0.53	0.62	1.11		0.83	0.87	0.13
Uniform Delay, d1	67.5	67.5	62.8	64.1	64.1	62.1	70.8	21.6		71.1	16.7	4.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.04	0.96	0.00
Incremental Delay, d2	179.6	178.3	0.0	29.1	27.1	3.2	34.8	57.3		15.9	0.5	0.0
Delay (s)	247.1	245.8	62.8	93.2	91.2	65.3	105.6	78.9		89.9	16.5	0.0
Level of Service	F	F	E	F	F	E	F	E		F	B	A
Approach Delay (s)		245.8			82.9		79.1				15.8	
Approach LOS		F			F		E				B	

Intersection Summary			
HCM 2000 Control Delay	62.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	96.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
6: Soscol Ave (SR 121) & College Wy/Magnolia Dr

4/24/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Volume (vph)	92	4	0	44	0	40	10	2012	267	150	2328	458
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	4.5		4.0	4.5	4.0
Lane Util. Factor	0.95	0.95		0.95	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Fit Protected	0.95	0.96		0.95	0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1692		1681	1681	1583	1770	3361		1770	3406	1583
Fit Permitted	0.95	0.96		0.95	0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1692		1681	1681	1583	1770	3361		1770	3406	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)	100	4	0	48	0	43	11	2187	290	163	2530	498
RTOR Reduction (vph)	0	0	0	0	0	40	0	8	0	0	0	95
Lane Group Flow (vph)	52	52	0	24	24	3	11	2469	0	163	2530	403
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	6%	2%	2%	6%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Prot	NA	pm+ov	
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases			4			8						6
Actuated Green, G (s)	4.0	4.0		8.7	8.7	8.7	1.6	89.0		16.8	104.2	108.2
Effective Green, g (s)	4.0	4.0		8.7	8.7	8.7	1.6	89.0		16.8	104.2	108.2
Actuated g/C Ratio	0.03	0.03		0.06	0.06	0.06	0.01	0.66		0.12	0.77	0.80
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.5		4.0	4.5	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	49	50		108	108	102	20	2215		220	2628	1268
v/s Ratio Prot	c0.03	0.03		c0.01	0.01		0.01	c0.73		c0.09	c0.74	0.01
v/s Ratio Perm						0.00						0.25
v/c Ratio	1.06	1.04		0.22	0.22	0.03	0.55	1.11		0.74	0.96	0.32
Uniform Delay, d1	65.5	65.5		59.9	59.9	59.2	66.3	23.0		57.0	13.7	3.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.06	0.72	0.00
Incremental Delay, d2	146.9	139.1		1.0	1.0	0.1	28.9	58.6		1.2	1.5	0.0
Delay (s)	212.4	204.6		61.0	61.0	59.3	95.2	81.6		61.8	11.4	0.0
Level of Service	F	F		E	E	E	F	F		E	B	A
Approach Delay (s)		208.5			60.2			81.7			12.2	
Approach LOS		F			E			F			B	

Intersection Summary			
HCM 2000 Control Delay	45.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	92.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
6: Soscol Ave (SR 121) & College Wy/Magnolia Dr

4/24/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Volume (vph)	281	1	1	259	4	140	17	2522	9	23	1989	198
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	4.5		4.0	4.5	4.0
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Fit Protected	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1686	1583	1681	1688	1583	1770	3404		1770	3406	1583
Fit Permitted	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1686	1583	1681	1688	1583	1770	3404		1770	3406	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	296	1	1	273	4	147	18	2655	9	24	2094	208
RTOR Reduction (vph)	0	0	1	0	0	64	0	0	0	0	0	48
Lane Group Flow (vph)	148	149	0	139	138	83	18	2664	0	24	2094	160
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	6%	2%	2%	6%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Prot	NA	pm+ov	
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases			4			8						6
Actuated Green, G (s)	10.0	10.0	10.0	14.4	14.4	14.4	2.4	101.7		2.4	101.7	111.7
Effective Green, g (s)	10.0	10.0	10.0	14.4	14.4	14.4	2.4	101.7		2.4	101.7	111.7
Actuated g/C Ratio	0.07	0.07	0.07	0.10	0.10	0.10	0.02	0.70		0.02	0.70	0.77
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.5		4.0	4.5	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	115	116	109	166	167	157	29	2387		29	2388	1219
v/s Ratio Prot	0.09	c0.09		c0.08	0.08		0.01	c0.78		c0.01	0.61	0.19
v/s Ratio Perm			0.00			0.05						0.09
v/c Ratio	1.29	1.28	0.00	0.84	0.83	0.53	0.62	1.12		0.83	0.88	0.13
Uniform Delay, d1	67.5	67.5	62.8	64.1	64.1	62.1	70.8	21.6		71.1	16.8	4.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.02	0.98	0.00
Incremental Delay, d2	179.6	178.3	0.0	29.1	27.1	3.2	34.8	58.6		15.9	0.5	0.0
Delay (s)	247.1	245.8	62.8	93.2	91.2	65.3	105.6	80.3		88.5	16.9	0.0
Level of Service	F	F	E	F	F	E	F	F		F	B	A
Approach Delay (s)		245.8			82.9			80.4			16.2	
Approach LOS		F			F			F			B	

Intersection Summary			
HCM 2000 Control Delay	63.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	96.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
8: Napa Vallejo Hwy (SR 221) & Project Access

8/5/2013

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↑↑	↔	↔	↑↑
Volume (vph)	70	42	1595	104	53	1306
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	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1641	1468	3406	1468	1641	3406
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1641	1468	3406	1468	1641	3406
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	46	1734	113	58	1420
RTOR Reduction (vph)	0	12	0	40	0	0
Lane Group Flow (vph)	76	34	1734	73	58	1420
Heavy Vehicles (%)	10%	10%	6%	10%	10%	6%
Turn Type	NA	pm+ov	NA	Perm	Prot	NA
Protected Phases	8	1	2		1	6
Permitted Phases		8		2		
Actuated Green, G (s)	6.7	9.6	40.1	40.1	2.9	47.0
Effective Green, g (s)	6.7	9.6	40.1	40.1	2.9	47.0
Actuated g/C Ratio	0.11	0.16	0.65	0.65	0.05	0.76
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	178	323	2213	954	77	2594
v/s Ratio Prot	c0.05	0.00	c0.51		0.04	c0.42
v/s Ratio Perm		0.02		0.05		
v/c Ratio	0.43	0.11	0.78	0.08	0.75	0.55
Uniform Delay, d1	25.7	22.4	7.7	4.0	29.0	3.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.6	0.1	1.9	0.0	33.5	0.2
Delay (s)	27.4	22.5	9.6	4.0	62.5	3.2
Level of Service	C	C	A	A	E	A
Approach Delay (s)	25.5		9.2		5.6	
Approach LOS	C		A		A	

Intersection Summary			
HCM 2000 Control Delay	8.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	61.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
8: Napa Vallejo Hwy (SR 221) & Project Access

8/5/2013

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↑↑	↔	↔	↑↑
Volume (vph)	51	63	1513	39	33	1470
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	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1641	1468	3406	1468	1641	3406
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1641	1468	3406	1468	1641	3406
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	54	66	1593	41	35	1547
RTOR Reduction (vph)	0	9	0	14	0	0
Lane Group Flow (vph)	54	57	1593	27	35	1547
Heavy Vehicles (%)	10%	10%	6%	10%	10%	6%
Turn Type	NA	pm+ov	NA	Perm	Prot	NA
Protected Phases	8	1	2		1	6
Permitted Phases		8		2		
Actuated Green, G (s)	3.2	5.5	35.1	35.1	2.3	41.4
Effective Green, g (s)	3.2	5.5	35.1	35.1	2.3	41.4
Actuated g/C Ratio	0.06	0.10	0.67	0.67	0.04	0.79
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	99	265	2272	979	71	2680
v/s Ratio Prot	c0.03	0.01	c0.47		0.02	c0.45
v/s Ratio Perm		0.03		0.02		
v/c Ratio	0.55	0.22	0.70	0.03	0.49	0.58
Uniform Delay, d1	24.0	21.6	5.5	3.0	24.6	2.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.0	0.4	1.0	0.0	5.3	0.3
Delay (s)	30.0	22.0	6.5	3.0	29.9	2.5
Level of Service	C	C	A	A	C	A
Approach Delay (s)	25.6		6.4		3.1	
Approach LOS	C		A		A	

Intersection Summary			
HCM 2000 Control Delay	5.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	52.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
8: Napa Vallejo Hwy (SR 221) & Project Access

8/5/2013

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↑↑	↔	↔	↑↑
Volume (vph)	74	45	1595	113	60	1306
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	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1641	1468	3406	1468	1641	3406
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1641	1468	3406	1468	1641	3406
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	80	49	1734	123	65	1420
RTOR Reduction (vph)	0	12	0	43	0	0
Lane Group Flow (vph)	80	37	1734	80	65	1420
Heavy Vehicles (%)	10%	10%	6%	10%	10%	6%
Turn Type	NA	pm+ov	NA	Perm	Prot	NA
Protected Phases	8	1	2		1	6
Permitted Phases		8		2		
Actuated Green, G (s)	6.8	9.7	40.9	40.9	2.9	47.8
Effective Green, g (s)	6.8	9.7	40.9	40.9	2.9	47.8
Actuated g/C Ratio	0.11	0.15	0.65	0.65	0.05	0.76
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	178	321	2225	959	76	2600
v/s Ratio Prot	c0.05	0.01	c0.51		c0.04	0.42
v/s Ratio Perm		0.02		0.05		
v/c Ratio	0.45	0.12	0.78	0.08	0.86	0.55
Uniform Delay, d1	26.1	22.8	7.7	4.0	29.6	3.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	0.2	1.8	0.0	56.8	0.2
Delay (s)	27.9	22.9	9.5	4.0	86.5	3.2
Level of Service	C	C	A	A	F	A
Approach Delay (s)	26.0		9.1		6.9	
Approach LOS	C		A		A	

Intersection Summary			
HCM 2000 Control Delay	8.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	62.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
8: Napa Vallejo Hwy (SR 221) & Project Access

8/5/2013

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↑↑	↔	↔	↑↑
Volume (vph)	60	70	1513	47	40	1470
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	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1641	1468	3406	1468	1641	3406
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1641	1468	3406	1468	1641	3406
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	63	74	1593	49	42	1547
RTOR Reduction (vph)	0	9	0	18	0	0
Lane Group Flow (vph)	63	65	1593	31	42	1547
Heavy Vehicles (%)	10%	10%	6%	10%	10%	6%
Turn Type	NA	pm+ov	NA	Perm	Prot	NA
Protected Phases	8	1	2		1	6
Permitted Phases		8		2		
Actuated Green, G (s)	5.0	8.1	34.3	34.3	3.1	41.4
Effective Green, g (s)	5.0	8.1	34.3	34.3	3.1	41.4
Actuated g/C Ratio	0.09	0.15	0.63	0.63	0.06	0.76
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	150	326	2147	925	93	2592
v/s Ratio Prot	c0.04	0.01	c0.47		0.03	c0.45
v/s Ratio Perm		0.03		0.02		
v/c Ratio	0.42	0.20	0.74	0.03	0.45	0.60
Uniform Delay, d1	23.3	20.3	7.0	3.8	24.8	2.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9	0.3	1.4	0.0	3.5	0.4
Delay (s)	25.2	20.6	8.4	3.8	28.3	3.2
Level of Service	C	C	A	A	C	A
Approach Delay (s)	22.7		8.3		3.9	
Approach LOS	C		A		A	

Intersection Summary			
HCM 2000 Control Delay	6.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	54.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 8: Napa Vallejo Hwy (SR 221) & Project Access

8/5/2013

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↑↑	↔	↔	↑↑
Volume (vph)	70	42	2712	104	53	2220
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	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1641	1468	3406	1468	1641	3406
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1641	1468	3406	1468	1641	3406
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	46	2948	113	58	2413
RTOR Reduction (vph)	0	5	0	15	0	0
Lane Group Flow (vph)	76	41	2948	98	58	2413
Heavy Vehicles (%)	10%	10%	6%	10%	10%	6%
Turn Type	NA	pm+ov	NA	Perm	Prot	NA
Protected Phases	8	1	2		1	6
Permitted Phases		8		2		
Actuated Green, G (s)	11.8	16.8	117.1	117.1	5.0	126.1
Effective Green, g (s)	11.8	16.8	117.1	117.1	5.0	126.1
Actuated g/C Ratio	0.08	0.12	0.80	0.80	0.03	0.86
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	132	209	2733	1178	56	2943
v/s Ratio Prot	c0.05	0.01	c0.87		0.04	c0.71
v/s Ratio Perm		0.02		0.07		
v/c Ratio	0.58	0.19	1.08	0.08	1.04	0.82
Uniform Delay, d1	64.6	58.4	14.4	3.0	70.5	4.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.0	0.5	42.9	0.0	130.7	1.9
Delay (s)	70.6	58.9	57.3	3.1	201.1	6.5
Level of Service	E	E	E	A	F	A
Approach Delay (s)	66.2		55.3			11.1
Approach LOS	E		E			B

Intersection Summary			
HCM 2000 Control Delay	36.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	145.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 8: Napa Vallejo Hwy (SR 221) & Project Access

8/5/2013

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↑↑	↔	↔	↑↑
Volume (vph)	51	63	2572	39	33	2499
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	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1641	1468	3406	1468	1641	3406
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1641	1468	3406	1468	1641	3406
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	54	66	2707	41	35	2631
RTOR Reduction (vph)	0	9	0	6	0	0
Lane Group Flow (vph)	54	57	2707	35	35	2631
Heavy Vehicles (%)	10%	10%	6%	10%	10%	6%
Turn Type	NA	pm+ov	NA	Perm	Prot	NA
Protected Phases	8	1	2		1	6
Permitted Phases		8		2		
Actuated Green, G (s)	8.7	12.7	118.3	118.3	4.0	126.3
Effective Green, g (s)	8.7	12.7	118.3	118.3	4.0	126.3
Actuated g/C Ratio	0.06	0.09	0.83	0.83	0.03	0.88
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	99	171	2817	1214	45	3008
v/s Ratio Prot	c0.03	0.01	c0.79		0.02	c0.77
v/s Ratio Perm		0.03		0.02		
v/c Ratio	0.55	0.33	0.96	0.03	0.78	0.87
Uniform Delay, d1	65.2	61.2	10.4	2.2	69.1	4.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.0	1.2	9.5	0.0	56.9	3.1
Delay (s)	71.2	62.3	19.9	2.2	126.0	7.4
Level of Service	E	E	B	A	F	A
Approach Delay (s)	66.3		19.7			9.0
Approach LOS	E		B			A

Intersection Summary			
HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	143.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
8: Napa Vallejo Hwy (SR 221) & Project Access

8/5/2013

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↑↑	↔	↔	↑↑
Volume (vph)	74	45	2712	113	60	2220
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	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1641	1468	3406	1468	1641	3406
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1641	1468	3406	1468	1641	3406
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	80	49	2948	123	65	2413
RTOR Reduction (vph)	0	5	0	17	0	0
Lane Group Flow (vph)	80	44	2948	106	65	2413
Heavy Vehicles (%)	10%	10%	6%	10%	10%	6%
Turn Type	NA	pm+ov	NA	Perm	Prot	NA
Protected Phases	8	1	2		1	6
Permitted Phases		8		2		
Actuated Green, G (s)	12.1	17.1	117.1	117.1	5.0	126.1
Effective Green, g (s)	12.1	17.1	117.1	117.1	5.0	126.1
Actuated g/C Ratio	0.08	0.12	0.80	0.80	0.03	0.86
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	135	211	2728	1175	56	2937
v/s Ratio Prot	c0.05	0.01	c0.87		c0.04	0.71
v/s Ratio Perm		0.02		0.07		
v/c Ratio	0.59	0.21	1.08	0.09	1.16	0.82
Uniform Delay, d1	64.7	58.4	14.5	3.1	70.6	4.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.8	0.5	43.6	0.0	170.7	2.0
Delay (s)	71.5	58.9	58.2	3.2	241.3	6.7
Level of Service	E	E	E	A	F	A
Approach Delay (s)	66.7		56.0		12.9	
Approach LOS	E		E		B	

Intersection Summary			
HCM 2000 Control Delay	37.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	146.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
8: Napa Vallejo Hwy (SR 221) & Project Access

8/5/2013

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↑↑	↔	↔	↑↑
Volume (vph)	60	70	2572	47	40	2499
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	0.95	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1641	1468	3406	1468	1641	3406
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1641	1468	3406	1468	1641	3406
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	63	74	2707	49	42	2631
RTOR Reduction (vph)	0	9	0	7	0	0
Lane Group Flow (vph)	63	65	2707	42	42	2631
Heavy Vehicles (%)	10%	10%	6%	10%	10%	6%
Turn Type	NA	pm+ov	NA	Perm	Prot	NA
Protected Phases	8	1	2		1	6
Permitted Phases		8		2		
Actuated Green, G (s)	9.4	13.4	118.3	118.3	4.0	126.3
Effective Green, g (s)	9.4	13.4	118.3	118.3	4.0	126.3
Actuated g/C Ratio	0.07	0.09	0.82	0.82	0.03	0.88
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	107	177	2803	1208	45	2993
v/s Ratio Prot	c0.04	0.01	c0.79		0.03	c0.77
v/s Ratio Perm		0.03		0.03		
v/c Ratio	0.59	0.37	0.97	0.04	0.93	0.88
Uniform Delay, d1	65.3	61.2	11.0	2.3	69.7	4.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.0	1.3	10.2	0.0	108.1	3.3
Delay (s)	73.3	62.5	21.2	2.3	177.8	7.9
Level of Service	E	E	C	A	F	A
Approach Delay (s)	67.4		20.8		10.6	
Approach LOS	E		C		B	

Intersection Summary			
HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	143.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
 9: Napa Vallejo Hwy (SR 221) & Kaiser Rd

8/5/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	100	87	218	2541	2450	435
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.94	1.00	0.97	0.91	0.91	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	4990	1583	3433	4893	4893	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	4990	1583	3433	4893	4893	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	95	237	2762	2663	473
RTOR Reduction (vph)	0	85	0	0	0	191
Lane Group Flow (vph)	109	10	237	2762	2663	282
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	6.1	6.1	5.0	43.8	34.8	34.8
Effective Green, g (s)	6.1	6.1	5.0	43.8	34.8	34.8
Actuated g/C Ratio	0.10	0.10	0.09	0.75	0.60	0.60
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	521	165	293	3669	2915	943
v/s Ratio Prot	c0.02		0.07	c0.56	c0.54	
v/s Ratio Perm		0.01				0.18
v/c Ratio	0.21	0.06	0.81	0.75	0.91	0.30
Uniform Delay, d1	23.9	23.6	26.2	4.2	10.5	5.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.2	15.0	1.5	5.7	0.8
Delay (s)	24.1	23.7	41.3	5.7	16.2	6.6
Level of Service	C	C	D	A	B	A
Approach Delay (s)	23.9			8.5	14.7	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	12.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	58.4	Sum of lost time (s)	12.5
Intersection Capacity Utilization	70.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 9: Napa Vallejo Hwy (SR 221) & Kaiser Rd

8/5/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	521	84	43	2485	2749	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.94	1.00	0.97	0.91	0.91	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	4990	1583	3433	4893	4893	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	4990	1583	3433	4893	4893	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	548	88	45	2616	2894	187
RTOR Reduction (vph)	0	77	0	0	0	64
Lane Group Flow (vph)	548	11	45	2616	2894	123
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	8.0	8.0	2.4	50.1	43.7	43.7
Effective Green, g (s)	8.0	8.0	2.4	50.1	43.7	43.7
Actuated g/C Ratio	0.12	0.12	0.04	0.75	0.66	0.66
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	599	190	123	3680	3210	1038
v/s Ratio Prot	c0.11		0.01	c0.53	c0.59	
v/s Ratio Perm		0.01				0.08
v/c Ratio	0.91	0.06	0.37	0.71	0.90	0.12
Uniform Delay, d1	29.0	26.0	31.4	4.4	9.6	4.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	18.6	0.1	1.8	1.2	4.6	0.2
Delay (s)	47.6	26.1	33.2	5.6	14.3	4.5
Level of Service	D	C	C	A	B	A
Approach Delay (s)	44.6			6.1	13.7	
Approach LOS	D			A	B	

Intersection Summary			
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	66.6	Sum of lost time (s)	12.5
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 9: Napa Vallejo Hwy (SR 221) & Kaiser Rd

8/5/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	100	87	218	2550	2454	435
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.94	1.00	0.97	0.91	0.91	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	4990	1583	3433	4893	4893	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	4990	1583	3433	4893	4893	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	95	237	2772	2667	473
RTOR Reduction (vph)	0	85	0	0	0	191
Lane Group Flow (vph)	109	10	237	2772	2667	282
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	6.1	6.1	5.0	43.8	34.8	34.8
Effective Green, g (s)	6.1	6.1	5.0	43.8	34.8	34.8
Actuated g/C Ratio	0.10	0.10	0.09	0.75	0.60	0.60
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	521	165	293	3669	2915	943
v/s Ratio Prot	c0.02		0.07	c0.57	c0.55	
v/s Ratio Perm		0.01				0.18
v/c Ratio	0.21	0.06	0.81	0.76	0.91	0.30
Uniform Delay, d1	23.9	23.6	26.2	4.2	10.5	5.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.2	15.0	1.5	5.8	0.8
Delay (s)	24.1	23.7	41.3	5.7	16.3	6.6
Level of Service	C	C	D	A	B	A
Approach Delay (s)	23.9			8.5	14.8	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	12.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	58.4	Sum of lost time (s)	12.5
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 9: Napa Vallejo Hwy (SR 221) & Kaiser Rd

8/5/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	521	84	43	2493	2758	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Lane Util. Factor	0.94	1.00	0.97	0.91	0.91	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	4990	1583	3433	4893	4893	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	4990	1583	3433	4893	4893	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	548	88	45	2624	2903	187
RTOR Reduction (vph)	0	77	0	0	0	64
Lane Group Flow (vph)	548	11	45	2624	2903	123
Heavy Vehicles (%)	2%	2%	2%	6%	6%	2%
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	8.0	8.0	2.4	50.1	43.7	43.7
Effective Green, g (s)	8.0	8.0	2.4	50.1	43.7	43.7
Actuated g/C Ratio	0.12	0.12	0.04	0.75	0.66	0.66
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	599	190	123	3680	3210	1038
v/s Ratio Prot	c0.11		0.01	c0.54	c0.59	
v/s Ratio Perm		0.01				0.08
v/c Ratio	0.91	0.06	0.37	0.71	0.90	0.12
Uniform Delay, d1	29.0	26.0	31.4	4.4	9.7	4.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	18.6	0.1	1.8	1.2	4.8	0.2
Delay (s)	47.6	26.1	33.2	5.6	14.5	4.5
Level of Service	D	C	C	A	B	A
Approach Delay (s)	44.6			6.1	13.9	
Approach LOS	D			A	B	

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	66.6	Sum of lost time (s)	12.5
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

**Proportional Share Calculations**  
**Soscol Avenue-SR 221/SR 121-Imola Avenue**

**Total Volume Entering the  
Intersection with**

			Phase 1		
	AM	PM		AM	PM
<b>Project Trips (T)</b>	49	62	Existing	4308	4353
			Future Year	6368	6728

**Calculation of Project Share**

$P = T / (TB - TE)$

where:

P = Equitable Share

T = Project trips during the affected peak hour

TB = Build-out volumes

TE = Existing volumes

T	49	62		
TB	6368	6728		
TE	4308	4353	<b>Average</b>	
P	2.4%	2.6%	<b>2.49%</b>	

**Total Volume Entering the  
Intersection with**

			Phase 2		
	AM	PM		AM	PM
<b>Project Trips (T)</b>	58	75	Existing	4308	4353
			Future Year	6368	6728

T	58	75		
TB	6368	6728		
TE	4308	4353	<b>Average</b>	
P	2.8%	3.2%	<b>2.99%</b>	

**Equitable Share (per Caltrans "Guide for the Preparation of Traffic Impact Studies")**

**Proportional Share Calculations**

**SR 29/SR 221-Soscol Ferry Road**

**Total Volume Entering the Intersection with**

			Phase 1		
	AM	PM	AM	PM	
<b>Project Trips (T)</b>	60	74	Existing	7243	7845
			Future Year	11966	13097

**Destription of Project Improvement:**

Fly-over from SR 221 to southbound SR 29

**Calculation of Project Share**

$P = T / (TB - TE)$

where:

P = Equitable Share

T = Project trips during the affected peak hour

TB = Build-out volumes

TE = Existing volumes

T	60	74		
TB	11966	13097		
TE	7243	7845	<b>Average</b>	
P	1.3%	1.4%	<b>1.34%</b>	

**Total Volume Entering the Intersection with**

			Phase 2		
	AM	PM	AM	PM	
<b>Project Trips (T)</b>	73	90	Existing	7243	7845
			Future Year	11966	13097

T	73	90		
TB	11966	13097		
TE	7243	7845	<b>Average</b>	
P	1.5%	1.7%	<b>1.63%</b>	

**Equitable Share (per Caltrans "Guide for the Preparation of Traffic Impact Studies")**

**Proportional Share Calculations**

**Soscol Avenue/Silverado Trail**

**Total Volume Entering the Intersection with**

			Phase 1	
	AM	PM	AM	PM
<b>Project Trips (T)</b>	38	47	Existing 2570	3603
			Future Year 3049	4274

**Destription of Project Improvement:**

Widening as necessary on southbound Silverado Trail to provide a second left turn lane together with the right-turn lane

**Calculation of Project Share**

$P = T / (TB - TE)$

where:

P = Equitable Share

T = Project trips during the affected peak hour

TB = Build-out volumes

TE = Existing volumes

T	38	47	
TB	3049	4274	
TE	2570	3603	<b>Average</b>
P	7.9%	7.0%	<b>7.5%</b>

**Total Volume Entering the Intersection with**

			Phase 2	
	AM	PM	AM	PM
<b>Project Trips (T)</b>	46	57	Existing 2570	3603
			Future Year 3049	4274

T	46	57	
TB	3049	4274	
TE	2570	3603	<b>Average</b>
P	9.6%	8.5%	<b>9.0%</b>

**Equitable Share (per Caltrans "Guide for the Preparation of Traffic Impact Studies")**

### Proportional Share Calculations

#### Kaiser Road/SR 221

#### *Total Volume Entering the Intersection with*

	AM	PM	Phase 1		
			AM	PM	
<i>Project Trips (T)</i>	59	73	Existing	3177	3063
			Future Year	5772	5987

#### **Calculation of Project Share**

$$P = T / (TB - TE)$$

where:

P = Equitable Share

T = Project trips during the affected peak hour

TB = Build-out volumes

TE = Existing volumes

T	59	73		
TB	5772	5987		
TE	3177	3063	<b>Average</b>	
P	2.3%	2.5%	<b>2.39%</b>	

#### *Total Volume Entering the Intersection with*

	AM	PM	Phase 2		
			AM	PM	
<i>Project Trips (T)</i>	72	90	Existing	3177	3063
			Future Year	5772	5987

T	72	90		
TB	5772	5987		
TE	3177	3063	<b>Average</b>	
P	2.8%	3.1%	<b>2.93%</b>	

**Equitable Share (per Caltrans "Guide for the Preparation of Traffic Impact Studies")**

**Table \_\_\_\_\_**  
**Estimated Project Parking Demand - 526 Beds**

Trip Type	Number of Daily Staff/Visitors/ Deliveries	Parking Demand	
<b>Employee Trips</b>			
Jail Custody Operations Day Shift (6:00 a.m. – 6:00 p.m.)	34	34	
Jail Custody Operations Night Shift (6:00 p.m. – 6:00 a.m.)	23	23	need 1 space per employee to accommodate overlap
Jail Custody Operations Business Shift (8:00 a.m. – 5:00 p.m.)	11	11	
Jail Administrative (8:00 a.m. – 5:00 p.m.)	13	13	
Jail Support (8:00 a.m. – 5:00 p.m.)	25	25	
Jail Administrative Day Shift (Sheriff Lt) (6:00 a.m. – 6:00 p.m.)	1	1	
Jail Administrative Night Shift (Sheriff Lt) (6:00 p.m. – 6:00 a.m.)	1	1	need 1 space per employee to accommodate overlap
Staff Secure Facility Administrative (8:00 a.m. – 5:00 p.m.)	6	6	
Staff Secure Facility Security Team A/C (Days) (6:00 a.m. – 6:00 p.m.)	9	9	
Staff Secure Facility Security Team B/D (Nights) (6:00 p.m. – 6:00 a.m.)	8	8	need 1 space per employee to accommodate overlap
<b>Employee Parking Total</b>	<b>131</b>	<b>131</b>	
Staff Secure Facility Program Providers	2	2	
Staff Secure Facility Inmate Vehicles	5	5	see note below
Jail Visitors	110	55	see note below
Staff Secure Facility Visitors	18	10	see note below
Jail Delivery and Service Vehicles	9	2	see note below
Staff Secure Facility Delivery and Service Vehicles	2	1	see note below
<b>Project Totals</b>	<b>277</b>	<b>206</b>	

Notes:

Staff Secure Facility Inmate Trips are assumed to occur in vans or other multi-passenger vehicles, with three vehicles during a peak hour. Assume 5 vans for parking.

Visitors include business and professional visitors, volunteers/service providers, and inmate family visits. It is assumed one-quarter of all visitor trips occur during a peak hour, and parking is needed for one-quarter arriving and one-quarter departing during a peak time.

Delivery and Service vehicle trips for the Jail are assumed to result in one delivery during each peak hour. All other deliveries would occur throughout the day outside of peak hours.

Delivery and Service vehicle trips for the Staff Secure Facility are assumed to be proportional based on the ratio of residents to the jail residents.

Sources: NAPA COUNTY NEW JAIL OPTIONS: Downtown Jail and Out of Downtown Alternative Site, Table 6, by CGL Companies, October 25, 2012; Memo from Liz Habkirk to Bob Goble, Revised EIR Question Answers, March 8, 2013.

**Table \_\_\_\_\_**  
**Estimated Project Parking Demand - 366 Beds**

Trip Type	Number of Daily Staff/Visitors/ Deliveries	Parking Demand	
<b>Employee Trips</b>			
Jail Custody Operations Day Shift (6:00 a.m. – 6:00 p.m.)	25	25	
Jail Custody Operations Night Shift (6:00 p.m. – 6:00 a.m.)	17	17	need 1 space per employee to accommodate overlap
Jail Custody Operations Business Shift (8:00 a.m. – 5:00 p.m.)	9	9	
Jail Administrative (8:00 a.m. – 5:00 p.m.)	12	12	
Jail Support (8:00 a.m. – 5:00 p.m.)	20	20	
Jail Administrative Day Shift (Sheriff Lt) - <i>not included in 366 bed Jail</i> (6:00 a.m. – 6:00 p.m.)	0	0	
Jail Administrative Night Shift (Sheriff Lt) - <i>not included in 366 bed Jail</i> (6:00 p.m. – 6:00 a.m.)	0	0	
Staff Secure Facility Administrative (8:00 a.m. – 5:00 p.m.)	6	6	
Staff Secure Facility Security Team A/C (Days) (6:00 a.m. – 6:00 p.m.)	9	9	
Staff Secure Facility Security Team B/D (Nights) (6:00 p.m. – 6:00 a.m.)	8	8	need 1 space per employee to accommodate overlap
<b>Employee Trip Total</b>	<b>106</b>	<b>106</b>	
Staff Secure Facility Program Providers	2	2	
Staff Secure Facility Inmate Vehicles	5	5	see note below
Jail Visitors	78	40	see note below
Staff Secure Facility Visitors	18	10	see note below
Jail Delivery and Service Vehicles	7	2	see note below
Staff Secure Facility Delivery and Service Vehicles	1	1	see note below
<b>Project Totals</b>	<b>217</b>	<b>166</b>	

Notes:

Staff Secure Facility Inmate Trips are assumed to occur in vans or other multi-passenger vehicles, with three vehicles during a peak hour. Assume 5 vans for parking.

Visitors include business and professional visitors, volunteers/service providers, and inmate family visits. It is assumed one-quarter of all visitor trips occur during a peak hour, and parking is needed for one-quarter arriving and one-quarter departing during a peak time.

Delivery and Service vehicle trips for the Jail are assumed to result in one delivery during each peak hour. All other deliveries would occur throughout the day outside of peak hours.

Delivery and Service vehicle trips for the Staff Secure Facility are assumed to be proportional based on the ratio of residents to the jail residents.

Sources: NAPA COUNTY NEW JAIL OPTIONS: Downtown Jail and Out of Downtown Alternative Site, Table 6, by CGL Companies, October 25, 2012; Memo from Liz Habkirk to Bob Goble, Revised EIR Question Answers, March 8, 2013.



**INTERSECTION COLLISION RATE CALCULATIONS**

**Napa County Jail EIR**

**Intersection # 1:** Third Street & Coombs Street  
**Date of Count:** Thursday, May 28, 2009

**Number of Collisions:** 8  
**Number of Injuries:** 8  
**Number of Fatalities:** 0  
**ADT:** 10700  
**Start Date:** January 1, 2007  
**End Date:** December 31, 2011  
**Number of Years:** 5

**Intersection Type:** Four-Legged  
**Control Type:** Signals  
**Area:** Urban

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS} \times 1 \text{ MILLION}}{\text{ADT} \times 365 \text{ DAYS PER YEAR} \times \text{NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{8}{10,700} \times \frac{1,000,000}{365 \times 5}$$

	<b>Collision Rate</b>	<b>Fatality Rate</b>	<b>Injury Rate</b>
<b>Study Intersection</b>	<b>0.41 c/mve</b>	<b>0.0%</b>	<b>100.0%</b>
<b>Statewide Average*</b>	<b>0.36 c/mve</b>	<b>0.5%</b>	<b>39.5%</b>

ADT = average daily total vehicles entering intersection  
 c/mve = collisions per million vehicles entering intersection  
 \* 2009 Collision Data on California State Highways, Caltrans

**Intersection # 2:** Third Street & Main Street  
**Date of Count:** Thursday, July 16, 2009

**Number of Collisions:** 7  
**Number of Injuries:** 2  
**Number of Fatalities:** 0  
**ADT:** 16100  
**Start Date:** January 1, 2007  
**End Date:** December 31, 2011  
**Number of Years:** 5

**Intersection Type:** Four-Legged  
**Control Type:** Signals  
**Area:** Urban

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS} \times 1 \text{ MILLION}}{\text{ADT} \times 365 \text{ DAYS PER YEAR} \times \text{NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{7}{16,100} \times \frac{1,000,000}{365 \times 5}$$

	<b>Collision Rate</b>	<b>Fatality Rate</b>	<b>Injury Rate</b>
<b>Study Intersection</b>	<b>0.24 c/mve</b>	<b>0.0%</b>	<b>28.6%</b>
<b>Statewide Average*</b>	<b>0.36 c/mve</b>	<b>0.5%</b>	<b>39.5%</b>

ADT = average daily total vehicles entering intersection  
 c/mve = collisions per million vehicles entering intersection  
 \* 2009 Collision Data on California State Highways, Caltrans

**INTERSECTION COLLISION RATE CALCULATIONS**

**Napa County Jail EIR**

**Intersection # 3:** Soscol Avenue & Third Street  
**Date of Count:** Wednesday, October 19, 2011

**Number of Collisions:** 22  
**Number of Injuries:** 13  
**Number of Fatalities:** 0  
**ADT:** 29700  
**Start Date:** January 1, 2007  
**End Date:** December 31, 2011  
**Number of Years:** 5

**Intersection Type:** Four-Legged  
**Control Type:** Signals  
**Area:** Urban

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS} \times 1 \text{ MILLION}}{\text{ADT} \times 365 \text{ DAYS PER YEAR} \times \text{NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{22}{29,700} \times \frac{1,000,000}{365 \times 5}$$

	<b>Collision Rate</b>	<b>Fatality Rate</b>	<b>Injury Rate</b>
<b>Study Intersection</b>	<b>0.41 c/mve</b>	<b>0.0%</b>	<b>59.1%</b>
<b>Statewide Average*</b>	<b>0.36 c/mve</b>	<b>0.5%</b>	<b>39.5%</b>

ADT = average daily total vehicles entering intersection  
 c/mve = collisions per million vehicles entering intersection  
 \* 2009 Collision Data on California State Highways, Caltrans

**Intersection # 4:** Soscol Avenue & Silverado Trail/SR 121  
**Date of Count:** Wednesday, October 19, 2011

**Number of Collisions:** 10  
**Number of Injuries:** 7  
**Number of Fatalities:** 0  
**ADT:** 36000  
**Start Date:** January 1, 2007  
**End Date:** December 31, 2011  
**Number of Years:** 5

**Intersection Type:** Four-Legged  
**Control Type:** Signals  
**Area:** Urban

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS} \times 1 \text{ MILLION}}{\text{ADT} \times 365 \text{ DAYS PER YEAR} \times \text{NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{10}{36,000} \times \frac{1,000,000}{365 \times 5}$$

	<b>Collision Rate</b>	<b>Fatality Rate</b>	<b>Injury Rate</b>
<b>Study Intersection</b>	<b>0.15 c/mve</b>	<b>0.0%</b>	<b>70.0%</b>
<b>Statewide Average*</b>	<b>0.36 c/mve</b>	<b>0.5%</b>	<b>39.5%</b>

ADT = average daily total vehicles entering intersection  
 c/mve = collisions per million vehicles entering intersection  
 \* 2009 Collision Data on California State Highways, Caltrans

**INTERSECTION COLLISION RATE CALCULATIONS**

**Napa County Jail EIR**

**Intersection # 5:** SR 221 & Imola Avenue/SR 121

**Date of Count:** Tuesday, September 15, 2009

**Number of Collisions:** 38

**Number of Injuries:** 20

**Number of Fatalities:** 0

**ADT:** 43500

**Start Date:** January 1, 2007

**End Date:** December 31, 2011

**Number of Years:** 5

**Intersection Type:** Four-Legged

**Control Type:** Signals

**Area:** Urban

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS} \times 1 \text{ MILLION}}{\text{ADT} \times 365 \text{ DAYS PER YEAR} \times \text{NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{38}{43,500} \times \frac{1,000,000}{365 \times 5}$$

	<b>Collision Rate</b>	<b>Fatality Rate</b>	<b>Injury Rate</b>
<b>Study Intersection</b>	<b>0.48 c/mve</b>	<b>0.0%</b>	<b>52.6%</b>
<b>Statewide Average*</b>	<b>0.36 c/mve</b>	<b>0.5%</b>	<b>39.5%</b>

ADT = average daily total vehicles entering intersection  
 c/mve = collisions per million vehicles entering intersection  
 \* 2009 Collision Data on California State Highways, Caltrans

**Intersection # 6:** SR 221 & College Way/Magnolia Drive

**Date of Count:** Tuesday, September 15, 2009

**Number of Collisions:** 18

**Number of Injuries:** 5

**Number of Fatalities:** 0

**ADT:** 34900

**Start Date:** January 1, 2007

**End Date:** December 31, 2011

**Number of Years:** 5

**Intersection Type:** Four-Legged

**Control Type:** Signals

**Area:** Urban

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS} \times 1 \text{ MILLION}}{\text{ADT} \times 365 \text{ DAYS PER YEAR} \times \text{NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{18}{34,900} \times \frac{1,000,000}{365 \times 5}$$

	<b>Collision Rate</b>	<b>Fatality Rate</b>	<b>Injury Rate</b>
<b>Study Intersection</b>	<b>0.28 c/mve</b>	<b>0.0%</b>	<b>27.8%</b>
<b>Statewide Average*</b>	<b>0.36 c/mve</b>	<b>0.5%</b>	<b>39.5%</b>

ADT = average daily total vehicles entering intersection  
 c/mve = collisions per million vehicles entering intersection  
 \* 2009 Collision Data on California State Highways, Caltrans

**INTERSECTION COLLISION RATE CALCULATIONS**

**Napa County Jail EIR**

**Intersection # 7:** SR 221 & Strelow Drive  
**Date of Count:** Tuesday, September 15, 2009

**Number of Collisions:** 12  
**Number of Injuries:** 7  
**Number of Fatalities:** 0  
**ADT:** 32900  
**Start Date:** January 1, 2007  
**End Date:** December 31, 2011  
**Number of Years:** 5

**Intersection Type:** Tee  
**Control Type:** Signals  
**Area:** Urban

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS} \times 1 \text{ MILLION}}{\text{ADT} \times 365 \text{ DAYS PER YEAR} \times \text{NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{12}{32,900} \times \frac{1,000,000}{365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
<b>Study Intersection</b>	<b>0.20 c/mve</b>	<b>0.0%</b>	<b>58.3%</b>
<b>Statewide Average*</b>	<b>0.25 c/mve</b>	<b>0.5%</b>	<b>40.2%</b>

ADT = average daily total vehicles entering intersection  
 c/mve = collisions per million vehicles entering intersection  
 \* 2009 Collision Data on California State Highways, Caltrans

**Intersection # 8:** SR 221 & Project Access (Basalt Rd)  
**Date of Count:** Tuesday, September 15, 2009

**Number of Collisions:** 1  
**Number of Injuries:** 1  
**Number of Fatalities:** 0  
**ADT:** 30400  
**Start Date:** January 1, 2007  
**End Date:** December 31, 2011  
**Number of Years:** 5

**Intersection Type:** Tee  
**Control Type:** Stop & Yield Controls  
**Area:** Suburban

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS} \times 1 \text{ MILLION}}{\text{ADT} \times 365 \text{ DAYS PER YEAR} \times \text{NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{1}{30,400} \times \frac{1,000,000}{365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
<b>Study Intersection</b>	<b>0.02 c/mve</b>	<b>0.0%</b>	<b>100.0%</b>
<b>Statewide Average*</b>	<b>0.15 c/mve</b>	<b>0.8%</b>	<b>36.2%</b>

ADT = average daily total vehicles entering intersection  
 c/mve = collisions per million vehicles entering intersection  
 \* 2009 Collision Data on California State Highways, Caltrans

**INTERSECTION COLLISION RATE CALCULATIONS**

**Napa County Jail EIR**

**Intersection # 9:** SR 221 & Kaiser Road  
**Date of Count:** Tuesday, September 15, 2009

**Number of Collisions:** 8  
**Number of Injuries:** 4  
**Number of Fatalities:** 0  
**ADT:** 30600  
**Start Date:** January 1, 2007  
**End Date:** December 31, 2011  
**Number of Years:** 5

**Intersection Type:** Tee  
**Control Type:** Signals  
**Area:** Urban

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS} \times 1 \text{ MILLION}}{\text{ADT} \times 365 \text{ DAYS PER YEAR} \times \text{NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{8}{30,600} \times \frac{1,000,000}{365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
<b>Study Intersection</b>	<b>0.14 c/mve</b>	<b>0.0%</b>	<b>50.0%</b>
<b>Statewide Average*</b>	<b>0.25 c/mve</b>	<b>0.5%</b>	<b>40.2%</b>

ADT = average daily total vehicles entering intersection  
 c/mve = collisions per million vehicles entering intersection  
 \* 2009 Collision Data on California State Highways, Caltrans

**Intersection # 10:** SR 221 & Napa Valley Corporate Drive  
**Date of Count:** Tuesday, September 15, 2009

**Number of Collisions:** 10  
**Number of Injuries:** 5  
**Number of Fatalities:** 0  
**ADT:** 28800  
**Start Date:** January 1, 2007  
**End Date:** December 31, 2011  
**Number of Years:** 5

**Intersection Type:** Four-Legged  
**Control Type:** Signals  
**Area:** Urban

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS} \times 1 \text{ MILLION}}{\text{ADT} \times 365 \text{ DAYS PER YEAR} \times \text{NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{10}{28,800} \times \frac{1,000,000}{365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
<b>Study Intersection</b>	<b>0.19 c/mve</b>	<b>0.0%</b>	<b>50.0%</b>
<b>Statewide Average*</b>	<b>0.36 c/mve</b>	<b>0.5%</b>	<b>39.5%</b>

ADT = average daily total vehicles entering intersection  
 c/mve = collisions per million vehicles entering intersection  
 \* 2009 Collision Data on California State Highways, Caltrans

**INTERSECTION COLLISION RATE CALCULATIONS**

**Napa County Jail EIR**

**Intersection # 11:** SR 221/Soscol Ferry Road & SR 29/SR 12

**Date of Count:** Tuesday, September 15, 2009

**Number of Collisions:** 77

**Number of Injuries:** 27

**Number of Fatalities:** 0

**ADT:** 78500

**Start Date:** January 1, 2007

**End Date:** December 31, 2011

**Number of Years:** 5

**Intersection Type:** Four-Legged

**Control Type:** Signals

**Area:** Suburban

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS} \times 1 \text{ MILLION}}{\text{ADT} \times 365 \text{ DAYS PER YEAR} \times \text{NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{77}{78,500} \times \frac{1,000,000}{365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
<b>Study Intersection</b>	<b>0.54 c/mve</b>	<b>0.0%</b>	<b>35.1%</b>
<b>Statewide Average*</b>	<b>0.55 c/mve</b>	<b>0.3%</b>	<b>34.3%</b>

ADT = average daily total vehicles entering intersection  
 c/mve = collisions per million vehicles entering intersection  
 \* 2009 Collision Data on California State Highways, Caltrans