APPENDIX A:

Cumulative Technical Calculations
(Updated October 2015)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	440	30	150	1040	100	10	40	50	190	260	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	6.0		3.5	6.0		5.5	5.5			5.5	5.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.92			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	1.00
Satd. Flow (prot)	1770	3505		1770	3486		1770	1693			1824	1559
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00			0.98	1.00
Satd. Flow (perm)	1770	3505		1770	3486		1770	1693			1824	1559
Peak-hour factor, PHF	0.84	0.84	0.84	0.89	0.89	0.89	0.66	0.66	0.66	0.80	0.80	0.80
Adj. Flow (vph)	12	524	36	169	1169	112	15	61	76	238	325	138
RTOR Reduction (vph)	0	4	0	0	6	0	0	38	0	0	0	92
Lane Group Flow (vph)	12	556	0	169	1275	0	15	99	0	0	563	46
Confl. Peds. (#/hr)						2			2			2
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases												3
Actuated Green, G (s)	1.8	25.6		20.7	44.5		10.8	10.8			38.7	38.7
Effective Green, g (s)	1.8	25.6		20.7	44.5		10.8	10.8			38.7	38.7
Actuated g/C Ratio	0.02	0.22		0.18	0.38		0.09	0.09			0.33	0.33
Clearance Time (s)	3.5	6.0		3.5	6.0		5.5	5.5			5.5	5.5
Vehicle Extension (s)	2.5	5.0		2.5	5.0		2.0	2.0			2.0	2.0
Lane Grp Cap (vph)	27	771		315	1333		164	157			606	518
v/s Ratio Prot	0.01	0.16		c0.10	c0.37		0.01	c0.06			c0.31	
v/s Ratio Perm												0.03
v/c Ratio	0.44	0.72		0.54	0.96		0.09	0.63			0.93	0.09
Uniform Delay, d1	56.8	42.0		43.4	35.0		48.3	50.8			37.5	26.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	8.3	4.1		1.4	15.7		0.1	5.6			20.3	0.0
Delay (s)	65.0	46.1		44.8	50.7		48.3	56.4			57.8	26.7
Level of Service	E	D		D	D		D	E			E	C
Approach Delay (s)		46.5			50.0			55.6			51.7	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	50.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	116.3	Sum of lost time (s)	20.5
Intersection Capacity Utilization	79.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	430	230	130	840	30	390	60	70	20	60	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.7	5.7	4.0	5.7		4.6	4.6			4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.99			0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.92			0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1770	3539	1544	1770	3518		1770	1700			1732	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	
Satd. Flow (perm)	1770	3539	1544	1770	3518		1770	1700			1732	
Peak-hour factor, PHF	0.93	0.93	0.93	0.91	0.91	0.91	0.71	0.71	0.71	0.77	0.77	0.77
Adj. Flow (vph)	22	462	247	143	923	33	549	85	99	26	78	78
RTOR Reduction (vph)	0	0	195	0	2	0	0	36	0	0	27	0
Lane Group Flow (vph)	22	462	52	143	954	0	549	148	0	0	155	0
Confl. Peds. (#/hr)			2			2			2			2
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA		Split	NA	
Protected Phases	1	6		5	2		8	8		4	4	
Permitted Phases			6									
Actuated Green, G (s)	2.2	21.1	21.1	12.2	31.1		34.2	34.2			13.7	
Effective Green, g (s)	2.2	21.1	21.1	12.2	31.1		34.2	34.2			13.7	
Actuated g/C Ratio	0.02	0.21	0.21	0.12	0.31		0.34	0.34			0.14	
Clearance Time (s)	4.0	5.7	5.7	4.0	5.7		4.6	4.6			4.0	
Vehicle Extension (s)	2.5	3.0	3.0	2.5	3.0		2.5	2.5			2.5	
Lane Grp Cap (vph)	39	750	327	217	1099		608	584			238	
v/s Ratio Prot	0.01	0.13		c0.08	c0.27		c0.31	0.09			c0.09	
v/s Ratio Perm			0.03									
v/c Ratio	0.56	0.62	0.16	0.66	0.87		0.90	0.25			0.65	
Uniform Delay, d1	48.2	35.5	32.0	41.7	32.3		31.1	23.5			40.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	14.3	1.5	0.2	6.3	7.4		16.7	0.2			5.6	
Delay (s)	62.4	37.0	32.2	48.0	39.7		47.8	23.6			46.3	
Level of Service	E	D	C	D	D		D	C			D	
Approach Delay (s)		36.2			40.8			41.7			46.3	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	40.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	99.5	Sum of lost time (s)	18.3
Intersection Capacity Utilization	67.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	80	120	610	250	460	240	520	190	300	690	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.3		4.0	5.3		4.0	5.3	5.3	4.0	5.3	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.91		1.00	0.90		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3191		1770	3164		1770	3539	1559	1770	3429	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3191		1770	3164		1770	3539	1559	1770	3429	
Peak-hour factor, PHF	0.78	0.78	0.78	0.86	0.86	0.86	0.62	0.62	0.62	0.83	0.83	0.83
Adj. Flow (vph)	115	103	154	709	291	535	387	839	306	361	831	193
RTOR Reduction (vph)	0	140	0	0	230	0	0	0	146	0	13	0
Lane Group Flow (vph)	115	117	0	709	596	0	387	839	160	361	1011	0
Confl. Peds. (#/hr)			2			2			2			2
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			
Actuated Green, G (s)	13.2	12.9		44.1	43.8		27.0	33.5	33.5	30.0	36.5	
Effective Green, g (s)	13.2	12.9		44.1	43.8		27.0	33.5	33.5	30.0	36.5	
Actuated g/C Ratio	0.09	0.09		0.32	0.31		0.19	0.24	0.24	0.22	0.26	
Clearance Time (s)	4.0	5.3		4.0	5.3		4.0	5.3	5.3	4.0	5.3	
Vehicle Extension (s)	2.5	2.5		2.5	2.5		2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	167	295		561	996		343	852	375	381	899	
v/s Ratio Prot	0.06	0.04		c0.40	c0.19		c0.22	0.24		0.20	c0.29	
v/s Ratio Perm									0.10			
v/c Ratio	0.69	0.40		1.26	0.60		1.13	0.98	0.43	0.95	1.12	
Uniform Delay, d1	61.0	59.4		47.5	40.2		56.0	52.5	44.7	53.8	51.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	10.3	0.6		132.5	0.8		88.0	26.9	0.6	32.5	70.3	
Delay (s)	71.3	60.1		180.0	41.0		144.1	79.4	45.3	86.2	121.6	
Level of Service	E	E		F	D		F	E	D	F	F	
Approach Delay (s)		63.5			105.2			88.9			112.4	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	98.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	139.1	Sum of lost time (s)	18.6
Intersection Capacity Utilization	95.9%	ICU Level of Service	F
Analysis Period (min)	15		

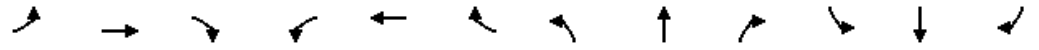
c Critical Lane Group

Intersection 25 **Silva Valley Pkwy/US-50 WB Ramps** **Signalized**

		Volume (veh/hr)			Total Delay (sec/veh)		
Direction	**Movement**	**Demand**	**Served**	**% Served**	**Average**	**Std. Dev.**	**LOS**
NB	Left Turn						
	Through	570	551	96.6%	7.5	0.4	A
	Right Turn	30	29	95.7%	2.5	0.2	A
	Subtotal	**600**	**580**	**96.6%**	**7.2**	**0.4**	**A**
SB	Left Turn						
	Through	440	428	97.4%	21.0	2.1	C
	Right Turn	1010	1007	99.7%	28.3	5.7	C
	Subtotal	**1450**	**1435**	**99.0%**	**26.1**	**4.6**	**C**
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	960	978	101.8%	20.7	2.2	C
	Through	10	10	100.0%	25.1	5.0	C
	Right Turn	270	263	97.5%	13.3	0.7	B
	Subtotal	**1240**	**1251**	**100.9%**	**19.2**	**1.8**	**B**
Total		**3290**	**3266**	**99.3%**	**20.1**	**2.2**	**C**

Intersection 26 **Silva Valley Pkwy/US-50 EB Ramps** **Signalized**

		Volume (veh/hr)			Total Delay (sec/veh)		
Direction	**Movement**	**Demand**	**Served**	**% Served**	**Average**	**Std. Dev.**	**LOS**
NB	Left Turn						
	Through	350	338	96.4%	3.9	0.4	A
	Right Turn	210	206	97.9%	7.9	0.3	A
	Subtotal	**560**	**543**	**97.0%**	**5.4**	**0.3**	**A**
SB	Left Turn						
	Through	1120	1145	102.2%	2.7	0.2	A
	Right Turn	280	261	93.3%	5.4	0.2	A
	Subtotal	**1400**	**1406**	**100.4%**	**3.2**	**0.2**	**A**
EB	Left Turn	250	242	96.7%	14.6	0.7	B
	Through						
	Right Turn	40	44	110.5%	13.7	1.6	B
	Subtotal	**290**	**286**	**98.6%**	**14.4**	**0.5**	**B**
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		**2250**	**2235**	**99.3%**	**5.2**	**0.2**	**A**



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	1110	10	100	720	140	60	190	150	130	50	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	6.0		3.5	6.0		5.5	5.5			5.5	5.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99			1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.98		1.00	0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	1.00
Satd. Flow (prot)	1770	3534		1770	3440		1770	1727			1798	1560
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00			0.97	1.00
Satd. Flow (perm)	1770	3534		1770	3440		1770	1727			1798	1560
Peak-hour factor, PHF	0.93	0.93	0.93	0.84	0.84	0.84	0.84	0.84	0.84	0.89	0.89	0.89
Adj. Flow (vph)	75	1194	11	119	857	167	71	226	179	146	56	67
RTOR Reduction (vph)	0	1	0	0	13	0	0	25	0	0	0	57
Lane Group Flow (vph)	75	1204	0	119	1011	0	71	380	0	0	202	10
Confl. Peds. (#/hr)						2			2			2
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases												3
Actuated Green, G (s)	10.6	37.1		10.7	37.2		25.0	25.0			16.2	16.2
Effective Green, g (s)	10.6	37.1		10.7	37.2		25.0	25.0			16.2	16.2
Actuated g/C Ratio	0.10	0.34		0.10	0.34		0.23	0.23			0.15	0.15
Clearance Time (s)	3.5	6.0		3.5	6.0		5.5	5.5			5.5	5.5
Vehicle Extension (s)	2.5	5.0		2.5	5.0		2.0	2.0			2.0	2.0
Lane Grp Cap (vph)	171	1197		172	1168		404	394			266	230
v/s Ratio Prot	0.04	c0.34		c0.07	0.29		0.04	c0.22			c0.11	
v/s Ratio Perm												0.01
v/c Ratio	0.44	1.01		0.69	0.87		0.18	0.97			0.76	0.04
Uniform Delay, d1	46.6	36.2		47.8	33.8		34.0	41.8			44.8	40.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	1.3	27.5		10.5	7.5		0.1	35.8			10.5	0.0
Delay (s)	48.0	63.7		58.3	41.3		34.0	77.6			55.3	40.0
Level of Service	D	E		E	D		C	E			E	D
Approach Delay (s)		62.8			43.1			71.1			51.5	
Approach LOS		E			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	56.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	109.5	Sum of lost time (s)	20.5
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	920	400	70	600	20	300	40	120	10	20	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.7	5.7	4.0	5.7		4.6	4.6			4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99			0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.89			0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1770	3539	1546	1770	3519		1770	1635			1670	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	
Satd. Flow (perm)	1770	3539	1546	1770	3519		1770	1635			1670	
Peak-hour factor, PHF	0.96	0.96	0.96	0.92	0.92	0.92	0.90	0.90	0.90	0.69	0.69	0.69
Adj. Flow (vph)	73	958	417	76	652	22	333	44	133	14	29	87
RTOR Reduction (vph)	0	0	269	0	2	0	0	101	0	0	78	0
Lane Group Flow (vph)	73	958	148	76	672	0	333	76	0	0	52	0
Confl. Peds. (#/hr)			2			2			2			2
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA		Split	NA	
Protected Phases	1	6		5	2		8	8		4	4	
Permitted Phases			6									
Actuated Green, G (s)	6.5	24.4	24.4	5.7	23.6		17.9	17.9			7.6	
Effective Green, g (s)	6.5	24.4	24.4	5.7	23.6		17.9	17.9			7.6	
Actuated g/C Ratio	0.09	0.33	0.33	0.08	0.32		0.24	0.24			0.10	
Clearance Time (s)	4.0	5.7	5.7	4.0	5.7		4.6	4.6			4.0	
Vehicle Extension (s)	2.5	3.0	3.0	2.5	3.0		2.5	2.5			2.5	
Lane Grp Cap (vph)	155	1168	510	136	1123		428	396			171	
v/s Ratio Prot	0.04	c0.27		c0.04	0.19		c0.19	0.05			c0.03	
v/s Ratio Perm			0.10									
v/c Ratio	0.47	0.82	0.29	0.56	0.60		0.78	0.19			0.30	
Uniform Delay, d1	32.1	22.7	18.3	32.9	21.2		26.1	22.3			30.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	1.6	4.7	0.3	3.9	0.9		8.3	0.2			0.7	
Delay (s)	33.7	27.5	18.6	36.8	22.0		34.5	22.4			31.4	
Level of Service	C	C	B	D	C		C	C			C	
Approach Delay (s)		25.2			23.5			30.3			31.4	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	73.9	Sum of lost time (s)	18.3
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	130	300	90	210	90	340	90	700	590	230	510	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.3		4.0	5.3		4.0	5.3	5.3	4.0	5.3	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.88		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3405		1770	3083		1770	3539	1559	1770	3478	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3405		1770	3083		1770	3539	1559	1770	3478	
Peak-hour factor, PHF	0.77	0.77	0.77	0.86	0.86	0.86	0.61	0.61	0.61	0.84	0.84	0.84
Adj. Flow (vph)	169	390	117	244	105	395	148	1148	967	274	607	71
RTOR Reduction (vph)	0	20	0	0	312	0	0	0	231	0	6	0
Lane Group Flow (vph)	169	487	0	244	188	0	148	1148	736	274	672	0
Confl. Peds. (#/hr)			2			2			2			2
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			
Actuated Green, G (s)	14.6	21.8		17.1	24.3		15.6	46.6	46.6	24.5	55.5	
Effective Green, g (s)	14.6	21.8		17.1	24.3		15.6	46.6	46.6	24.5	55.5	
Actuated g/C Ratio	0.11	0.17		0.13	0.19		0.12	0.36	0.36	0.19	0.43	
Clearance Time (s)	4.0	5.3		4.0	5.3		4.0	5.3	5.3	4.0	5.3	
Vehicle Extension (s)	2.5	2.5		2.5	2.5		2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	200	577		235	582		214	1282	564	337	1501	
v/s Ratio Prot	0.10	c0.14		c0.14	0.06		0.08	0.32		c0.15	0.19	
v/s Ratio Perm									c0.47			
v/c Ratio	0.84	0.84		1.04	0.32		0.69	0.90	1.30	0.81	0.45	
Uniform Delay, d1	55.9	51.8		55.8	45.0		54.2	38.7	41.0	49.9	25.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	26.1	10.7		69.1	0.2		8.6	8.4	149.4	13.6	0.2	
Delay (s)	82.0	62.5		124.8	45.3		62.8	47.1	190.4	63.4	25.9	
Level of Service	F	E		F	D		E	D	F	E	C	
Approach Delay (s)		67.4			71.4			109.4			36.7	
Approach LOS		E			E			F			D	

Intersection Summary			
HCM 2000 Control Delay	82.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	128.6	Sum of lost time (s)	18.6
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection 25 **Silva Valley Pkwy/US-50 WB Ramps** **Signalized**

		Volume (veh/hr)			Total Delay (sec/veh)		
Direction	**Movement**	**Demand**	**Served**	**% Served**	**Average**	**Std. Dev.**	**LOS**
NB	Left Turn						
	Through	1220	1214	99.5%	9.0	1.1	A
	Right Turn	40	37	93.0%	2.8	0.2	A
	Subtotal	**1260**	**1251**	**99.3%**	**8.8**	**1.0**	**A**
SB	Left Turn						
	Through	770	744	96.6%	13.2	0.6	B
	Right Turn	390	399	102.3%	11.9	0.7	B
	Subtotal	**1160**	**1143**	**98.5%**	**12.7**	**0.6**	**B**
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	540	538	99.7%	18.3	0.6	B
	Through	10	10	101.0%	24.3	4.2	C
	Right Turn	430	437	101.6%	24.2	1.5	C
	Subtotal	**980**	**986**	**100.6%**	**21.0**	**0.9**	**C**
Total		**3400**	**3380**	**99.4%**	**13.7**	**0.4**	**B**

Intersection 26 **Silva Valley Pkwy/US-50 EB Ramps** **Signalized**

		Volume (veh/hr)			Total Delay (sec/veh)		
Direction	**Movement**	**Demand**	**Served**	**% Served**	**Average**	**Std. Dev.**	**LOS**
NB	Left Turn						
	Through	600	603	100.5%	6.9	0.4	A
	Right Turn	770	777	100.9%	8.3	0.7	A
	Subtotal	**1370**	**1381**	**100.8%**	**7.7**	**0.5**	**A**
SB	Left Turn						
	Through	950	932	98.1%	6.5	0.4	A
	Right Turn	360	352	97.7%	5.7	0.2	A
	Subtotal	**1310**	**1284**	**98.0%**	**6.3**	**0.3**	**A**
EB	Left Turn	660	648	98.1%	15.6	1.0	B
	Through						
	Right Turn	40	38	94.5%	14.0	0.9	B
	Subtotal	**700**	**686**	**97.9%**	**15.5**	**0.9**	**B**
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		**3380**	**3350**	**99.1%**	**8.8**	**0.2**	**A**

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	440	30	160	1000	100	10	40	60	190	270	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	6.0		3.5	6.0		5.5	5.5			5.5	5.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99			1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.91			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	1.00
Satd. Flow (prot)	1770	3505		1770	3484		1770	1679			1825	1559
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00			0.98	1.00
Satd. Flow (perm)	1770	3505		1770	3484		1770	1679			1825	1559
Peak-hour factor, PHF	0.84	0.84	0.84	0.89	0.89	0.89	0.66	0.66	0.66	0.80	0.80	0.80
Adj. Flow (vph)	12	524	36	180	1124	112	15	61	91	238	338	125
RTOR Reduction (vph)	0	4	0	0	6	0	0	45	0	0	0	83
Lane Group Flow (vph)	12	556	0	180	1230	0	15	107	0	0	576	42
Confl. Peds. (#/hr)						2			2			2
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases												3
Actuated Green, G (s)	2.2	23.9		20.6	42.3		11.2	11.2			39.1	39.1
Effective Green, g (s)	2.2	23.9		20.6	42.3		11.2	11.2			39.1	39.1
Actuated g/C Ratio	0.02	0.21		0.18	0.37		0.10	0.10			0.34	0.34
Clearance Time (s)	3.5	6.0		3.5	6.0		5.5	5.5			5.5	5.5
Vehicle Extension (s)	2.5	5.0		2.5	5.0		2.0	2.0			2.0	2.0
Lane Grp Cap (vph)	33	726		316	1278		171	163			618	528
v/s Ratio Prot	0.01	0.16		c0.10	c0.35		0.01	c0.06			c0.32	
v/s Ratio Perm												0.03
v/c Ratio	0.36	0.77		0.57	0.96		0.09	0.66			0.93	0.08
Uniform Delay, d1	55.9	43.1		43.3	35.7		47.4	50.2			36.8	25.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	4.9	5.7		1.9	17.2		0.1	7.0			20.8	0.0
Delay (s)	60.8	48.8		45.2	52.9		47.5	57.2			57.6	25.9
Level of Service	E	D		D	D		D	E			E	C
Approach Delay (s)		49.0			52.0			56.4			51.9	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	51.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	115.3	Sum of lost time (s)	20.5
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	420	250	120	810	30	390	60	80	20	60	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.7	5.7	4.0	5.7		4.6	4.6			4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99			0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.91			0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1770	3539	1544	1770	3517		1770	1690			1732	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	
Satd. Flow (perm)	1770	3539	1544	1770	3517		1770	1690			1732	
Peak-hour factor, PHF	0.93	0.93	0.93	0.91	0.91	0.91	0.71	0.71	0.71	0.77	0.77	0.77
Adj. Flow (vph)	22	452	269	132	890	33	549	85	113	26	78	78
RTOR Reduction (vph)	0	0	211	0	2	0	0	46	0	0	30	0
Lane Group Flow (vph)	22	452	58	132	921	0	549	152	0	0	152	0
Confl. Peds. (#/hr)			2			2			2			2
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA		Split	NA	
Protected Phases	1	6		5	2		8	8		4	4	
Permitted Phases			6									
Actuated Green, G (s)	2.2	19.4	19.4	9.9	27.1		29.7	29.7			12.9	
Effective Green, g (s)	2.2	19.4	19.4	9.9	27.1		29.7	29.7			12.9	
Actuated g/C Ratio	0.02	0.22	0.22	0.11	0.30		0.33	0.33			0.14	
Clearance Time (s)	4.0	5.7	5.7	4.0	5.7		4.6	4.6			4.0	
Vehicle Extension (s)	2.5	3.0	3.0	2.5	3.0		2.5	2.5			2.5	
Lane Grp Cap (vph)	43	761	332	194	1056		582	556			247	
v/s Ratio Prot	0.01	0.13		c0.07	c0.26		c0.31	0.09			c0.09	
v/s Ratio Perm			0.04									
v/c Ratio	0.51	0.59	0.17	0.68	0.87		0.94	0.27			0.62	
Uniform Delay, d1	43.5	31.9	28.9	38.6	29.9		29.4	22.3			36.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	7.5	1.3	0.3	8.6	8.1		24.0	0.2			3.9	
Delay (s)	50.9	33.1	29.1	47.3	38.0		53.4	22.5			40.2	
Level of Service	D	C	C	D	D		D	C			D	
Approach Delay (s)		32.2			39.1			45.2			40.2	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	39.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	90.2	Sum of lost time (s)	18.3
Intersection Capacity Utilization	66.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	90	120	580	250	460	240	520	190	300	730	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.3		4.0	5.3		4.0	5.3	5.3	4.0	5.3	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.91		1.00	0.90		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3207		1770	3164		1770	3539	1559	1770	3434	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3207		1770	3164		1770	3539	1559	1770	3434	
Peak-hour factor, PHF	0.78	0.78	0.78	0.86	0.86	0.86	0.62	0.62	0.62	0.83	0.83	0.83
Adj. Flow (vph)	128	115	154	674	291	535	387	839	306	361	880	193
RTOR Reduction (vph)	0	140	0	0	222	0	0	0	145	0	12	0
Lane Group Flow (vph)	128	129	0	674	604	0	387	839	161	361	1061	0
Confl. Peds. (#/hr)			2			2			2			2
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			
Actuated Green, G (s)	14.8	13.0		42.1	40.3		28.0	34.3	34.3	31.2	37.5	
Effective Green, g (s)	14.8	13.0		42.1	40.3		28.0	34.3	34.3	31.2	37.5	
Actuated g/C Ratio	0.11	0.09		0.30	0.29		0.20	0.25	0.25	0.22	0.27	
Clearance Time (s)	4.0	5.3		4.0	5.3		4.0	5.3	5.3	4.0	5.3	
Vehicle Extension (s)	2.5	2.5		2.5	2.5		2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	188	299		535	916		356	872	384	396	925	
v/s Ratio Prot	0.07	0.04		c0.38	c0.19		c0.22	0.24		0.20	c0.31	
v/s Ratio Perm									0.10			
v/c Ratio	0.68	0.43		1.26	0.66		1.09	0.96	0.42	0.91	1.15	
Uniform Delay, d1	59.9	59.6		48.5	43.4		55.6	51.8	44.1	52.7	50.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	8.9	0.7		131.4	1.5		73.0	21.6	0.5	24.7	78.7	
Delay (s)	68.8	60.3		180.0	45.0		128.6	73.4	44.6	77.4	129.6	
Level of Service	E	E		F	D		F	E	D	E	F	
Approach Delay (s)		63.1			105.6			81.6			116.4	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	97.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	139.2	Sum of lost time (s)	18.6
Intersection Capacity Utilization	95.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Intersection 25 **El Dorado Hills Blvd/Saratoga Way-Park Dr** **Signalized**

		Volume (veh/hr)			Total Delay (sec/veh)		
Direction	**Movement**	**Demand**	**Served**	**% Served**	**Average**	**Std. Dev.**	**LOS**
NB	Left Turn						
	Through	570	557	97.7%	8.4	0.4	A
	Right Turn	30	30	100.3%	2.3	0.4	A
	Subtotal	**600**	**587**	**97.8%**	**8.1**	**0.4**	**A**
SB	Left Turn						
	Through	450	442	98.2%	22.5	2.9	C
	Right Turn	1040	1049	100.9%	31.0	5.8	C
	Subtotal	**1490**	**1491**	**100.1%**	**28.5**	**4.9**	**C**
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	1000	1011	101.1%	30.7	6.8	C
	Through	10	10	99.0%	37.9	8.6	D
	Right Turn	270	267	98.8%	14.6	1.4	B
	Subtotal	**1280**	**1288**	**100.6%**	**27.5**	**5.9**	**C**
Total		**3370**	**3366**	**99.9%**	**24.6**	**1.9**	**C**

Intersection 26 **El Dorado Hills Blvd/US-50 WB Ramps** **Signalized**

		Volume (veh/hr)			Total Delay (sec/veh)		
Direction	**Movement**	**Demand**	**Served**	**% Served**	**Average**	**Std. Dev.**	**LOS**
NB	Left Turn						
	Through	350	348	99.5%	3.6	0.2	A
	Right Turn	210	203	96.6%	7.9	0.2	A
	Subtotal	**560**	**551**	**98.4%**	**5.2**	**0.2**	**A**
SB	Left Turn						
	Through	1170	1182	101.0%	2.6	0.2	A
	Right Turn	280	271	96.8%	5.4	0.2	A
	Subtotal	**1450**	**1452**	**100.2%**	**3.1**	**0.1**	**A**
EB	Left Turn	250	238	95.3%	16.7	1.1	B
	Through						
	Right Turn	40	45	111.8%	14.6	1.0	B
	Subtotal	**290**	**283**	**97.6%**	**16.4**	**0.9**	**B**
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		**2300**	**2286**	**99.4%**	**5.3**	**0.1**	**A**

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	1100	10	100	710	140	60	180	140	130	50	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	6.0		3.5	6.0		5.5	5.5			5.5	5.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99			1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.98		1.00	0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	1.00
Satd. Flow (prot)	1770	3534		1770	3439		1770	1728			1798	1560
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00			0.97	1.00
Satd. Flow (perm)	1770	3534		1770	3439		1770	1728			1798	1560
Peak-hour factor, PHF	0.93	0.93	0.93	0.84	0.84	0.84	0.84	0.84	0.84	0.89	0.89	0.89
Adj. Flow (vph)	75	1183	11	119	845	167	71	214	167	146	56	67
RTOR Reduction (vph)	0	1	0	0	13	0	0	24	0	0	0	57
Lane Group Flow (vph)	75	1193	0	119	999	0	71	357	0	0	202	10
Confl. Peds. (#/hr)						2			2			2
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases												3
Actuated Green, G (s)	10.8	37.1		10.9	37.2		24.2	24.2			16.2	16.2
Effective Green, g (s)	10.8	37.1		10.9	37.2		24.2	24.2			16.2	16.2
Actuated g/C Ratio	0.10	0.34		0.10	0.34		0.22	0.22			0.15	0.15
Clearance Time (s)	3.5	6.0		3.5	6.0		5.5	5.5			5.5	5.5
Vehicle Extension (s)	2.5	5.0		2.5	5.0		2.0	2.0			2.0	2.0
Lane Grp Cap (vph)	175	1203		177	1174		393	384			267	232
v/s Ratio Prot	0.04	c0.34		c0.07	0.29		0.04	c0.21			c0.11	
v/s Ratio Perm												0.01
v/c Ratio	0.43	0.99		0.67	0.85		0.18	0.93			0.76	0.04
Uniform Delay, d1	46.1	35.8		47.3	33.3		34.3	41.5			44.5	39.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	1.2	24.0		8.8	6.7		0.1	28.1			10.3	0.0
Delay (s)	47.4	59.7		56.1	40.0		34.4	69.6			54.8	39.7
Level of Service	D	E		E	D		C	E			D	D
Approach Delay (s)		59.0			41.6			64.0			51.0	
Approach LOS		E			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	52.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	108.9	Sum of lost time (s)	20.5
Intersection Capacity Utilization	82.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	920	380	70	590	20	300	40	140	10	20	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.7	5.7	4.0	5.7		4.6	4.6			4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99			0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.88			0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1770	3539	1546	1770	3519		1770	1626			1670	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.99	
Satd. Flow (perm)	1770	3539	1546	1770	3519		1770	1626			1670	
Peak-hour factor, PHF	0.96	0.96	0.96	0.92	0.92	0.92	0.90	0.90	0.90	0.69	0.69	0.69
Adj. Flow (vph)	73	958	396	76	641	22	333	44	156	14	29	87
RTOR Reduction (vph)	0	0	256	0	2	0	0	118	0	0	78	0
Lane Group Flow (vph)	73	958	140	76	661	0	333	82	0	0	52	0
Confl. Peds. (#/hr)			2			2			2			2
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA		Split	NA	
Protected Phases	1	6		5	2		8	8		4	4	
Permitted Phases			6									
Actuated Green, G (s)	6.5	24.4	24.4	5.7	23.6		17.9	17.9			7.6	
Effective Green, g (s)	6.5	24.4	24.4	5.7	23.6		17.9	17.9			7.6	
Actuated g/C Ratio	0.09	0.33	0.33	0.08	0.32		0.24	0.24			0.10	
Clearance Time (s)	4.0	5.7	5.7	4.0	5.7		4.6	4.6			4.0	
Vehicle Extension (s)	2.5	3.0	3.0	2.5	3.0		2.5	2.5			2.5	
Lane Grp Cap (vph)	155	1168	510	136	1123		428	393			171	
v/s Ratio Prot	0.04	c0.27		c0.04	0.19		c0.19	0.05			c0.03	
v/s Ratio Perm			0.09									
v/c Ratio	0.47	0.82	0.27	0.56	0.59		0.78	0.21			0.30	
Uniform Delay, d1	32.1	22.7	18.2	32.9	21.1		26.1	22.3			30.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	1.6	4.7	0.3	3.9	0.8		8.3	0.2			0.7	
Delay (s)	33.7	27.5	18.5	36.8	21.9		34.5	22.5			31.4	
Level of Service	C	C	B	D	C		C	C			C	
Approach Delay (s)		25.3			23.4			30.0			31.4	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	73.9	Sum of lost time (s)	18.3
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	130	320	90	220	90	350	90	710	610	230	520	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.3		4.0	5.3		4.0	5.3	5.3	4.0	5.3	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.88		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3411		1770	3080		1770	3539	1559	1770	3479	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3411		1770	3080		1770	3539	1559	1770	3479	
Peak-hour factor, PHF	0.77	0.77	0.77	0.86	0.86	0.86	0.61	0.61	0.61	0.84	0.84	0.84
Adj. Flow (vph)	169	416	117	256	105	407	148	1164	1000	274	619	71
RTOR Reduction (vph)	0	17	0	0	312	0	0	0	236	0	6	0
Lane Group Flow (vph)	169	516	0	256	200	0	148	1164	764	274	684	0
Confl. Peds. (#/hr)			2			2			2			2
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			
Actuated Green, G (s)	16.0	23.4		19.1	26.5		16.4	51.6	51.6	26.1	61.3	
Effective Green, g (s)	16.0	23.4		19.1	26.5		16.4	51.6	51.6	26.1	61.3	
Actuated g/C Ratio	0.12	0.17		0.14	0.19		0.12	0.37	0.37	0.19	0.44	
Clearance Time (s)	4.0	5.3		4.0	5.3		4.0	5.3	5.3	4.0	5.3	
Vehicle Extension (s)	2.5	2.5		2.5	2.5		2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	204	575		243	588		209	1315	579	332	1536	
v/s Ratio Prot	0.10	c0.15		c0.14	c0.06		0.08	0.33		c0.15	0.20	
v/s Ratio Perm									c0.49			
v/c Ratio	0.83	0.90		1.05	0.34		0.71	0.89	1.32	0.83	0.45	
Uniform Delay, d1	60.1	56.5		59.9	48.6		58.9	40.8	43.6	54.2	26.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	22.9	16.6		72.5	0.3		9.7	7.4	155.9	15.0	0.2	
Delay (s)	82.9	73.2		132.4	48.8		68.6	48.2	199.5	69.1	27.1	
Level of Service	F	E		F	D		E	D	F	E	C	
Approach Delay (s)		75.5			76.7			115.0			39.0	
Approach LOS		E			E			F			D	

Intersection Summary			
HCM 2000 Control Delay	87.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	138.8	Sum of lost time (s)	18.6
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection 25 **Silva Valley Pkwy/US-50 WB Ramps** **Signalized**

		Volume (veh/hr)			Total Delay (sec/veh)		
Direction	**Movement**	**Demand**	**Served**	**% Served**	**Average**	**Std. Dev.**	**LOS**
NB	Left Turn						
	Through	1200	1516	126.3%	15.2	1.0	B
	Right Turn	40	35	88.5%	2.0	0.2	A
	Subtotal	**1240**	**1551**	**125.1%**	**14.9**	**1.0**	**B**
SB	Left Turn						
	Through	700	642	91.7%	9.3	0.7	A
	Right Turn	380	500	131.6%	4.2	0.2	A
	Subtotal	**1080**	**1142**	**105.7%**	**7.1**	**0.5**	**A**
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	580	523	90.1%	46.4	2.2	D
	Through	10	0	0.0%	0.0	0.0	A
	Right Turn	420	365	86.9%	48.6	6.5	D
	Subtotal	**1010**	**888**	**87.9%**	**47.4**	**2.9**	**D**
Total		**3330**	**3581**	**107.5%**	**20.5**	**1.0**	**C**

Intersection 26 **Silva Valley Pkwy/US-50 EB Ramps** **Signalized**

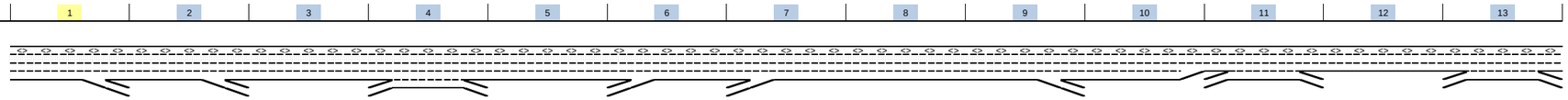
		Volume (veh/hr)			Total Delay (sec/veh)		
Direction	**Movement**	**Demand**	**Served**	**% Served**	**Average**	**Std. Dev.**	**LOS**
NB	Left Turn						
	Through	700	905	129.3%	9.2	0.5	A
	Right Turn	730	588	80.5%	4.3	0.2	A
	Subtotal	**1430**	**1492**	**104.4%**	**7.3**	**0.3**	**A**
SB	Left Turn						
	Through	960	962	100.2%	8.4	0.7	A
	Right Turn	320	193	60.4%	2.9	0.2	A
	Subtotal	**1280**	**1155**	**90.2%**	**7.5**	**0.6**	**A**
EB	Left Turn	540	660	122.2%	20.3	0.5	C
	Through						
	Right Turn	40	42	105.8%	10.2	1.3	B
	Subtotal	**580**	**702**	**121.0%**	**19.7**	**0.5**	**B**
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		**3290**	**3349**	**101.8%**	**10.0**	**0.4**	**A**

Cumulative No Project Roadway Segments Analysis	Note: County Website Counts are the average of the Tu		Peak Hour Volume		LOS Thresholds			V/ C Ratio		LOS	
Central El Dorado	**Count Source**	**Number of Lanes**	**AM**	**PM**	**LOS C**	**LOS D**	**LOS E**	**AM**	**PM**	**AM**	**PM**
El Dorado Hills Blvd - Green Valley to US 50 (5 segments)											
Green Valley to Francisco	Intersection Counts	2A	450	460	850	1540	1650	0.27	0.28	C or better	C or better
Francisco to Governor	Intersection Counts	2A	1450	1680	850	1540	1650	0.88	1.02	D	F
Governor to Wilson	Intersection Counts	4AD	2260	2290	1850	3220	3290	0.69	0.70	D	D
Wilson to Serrano	Intersection Counts	4AD	2640	2790	1850	3220	3290	0.80	0.85	D	D
Serrano to Saratoga	Intersection Counts	**5AD**	3170	3400	2350	4060	4110	0.77	0.83	D	D
Saratoga to US 50	Intersection Counts	**7AD**	2700	2900	3215	5410	5420	0.50	0.54	C or better	C or better
Latrobe Road - US 50 to S. Shingle Rd (5 Segemtns)											
US 50 to Town Center	Intersection Counts	**7AD**	4360	5080	3215	5410	5420	0.80	0.94	D	D
Town Center to White Rock Rd	Intersection Counts	6AD	3090	3340	2760	4680	4710	0.66	0.71	D	D
White Rock to Golden Foothill Pkwy	Intersection Counts	**6AD**	2270	2660	2760	4680	4710	0.48	0.56	C or better	C or better
Golden Foothill Pkwy to Sun Ridge Meadow Rd	Roadway Counts	**4AU**	1600	1590	1760	3070	3130	0.51	0.51	C or better	C or better
Sun Ridge Meadow Rd to S. Shingle Rd	County Website	2A	590	610	850	1540	1650	0.36	0.37	C or better	C or better
White Rock Road - Scott Road to US 50 (5 Segments)											
Scott Rd to Four Seasons Dr.	County Website	**4AD**	1570	2010	1850	3220	3290	0.48	0.61	C or better	D
Four Seasons Dr to Latrobe Rd	Intersection Counts	4AD	1650	1980	1850	3220	3290	0.50	0.60	C or better	D
Latrobe Rd to Vine St	Intersection Counts	**6AD**	1480	1730	2760	4680	4710	0.31	0.37	C or better	C or better
Vine St to US 50	Intersection Counts	**6AD**	1740	2240	2760	4680	4710	0.37	0.48	C or better	C or better
Silva Valley Pkwy - Green Valley Rd to US 50 (4 Segments)											
Green Valley to Glenwood Way	Intersection Counts	2A	930	900	850	1540	1650	0.56	0.55	D	D
Glenwood Way to Appian Way	Intersection Counts	2A	780	900	850	1540	1650	0.47	0.55	C or better	D
Appian Way to Harvard Way	Intersection Counts	2A	1090	1030	850	1540	1650	0.66	0.62	D	D
Harvard Way to Serrano Pkwy	Intersection Counts	4AD	2130	1880	1850	3220	3290	0.65	0.57	D	D
Serrano Pkwy to US 50	Intersection Counts	**4AD**	2650	2590	1850	3220	3290	0.81	0.79	D	D
Serrano Pkwy - EDH Blvd to Bass Lake Rd - 3 segments											
EDH Blvd to Silva Valley Pkwy	Intersection Counts	2A	1010	920	850	1540	1650	0.61	0.56	D	D
Silva Valley to Villagio Dr	Intersection Counts	4AD	1830	1720	1850	3220	3290	0.56	0.52	C or better	C or better
Villagio Dr to Bass Lake Rd	Intersection Counts	2A	1010	1100	850	1540	1650	0.61	0.67	D	D
Saratoga Way - west of EDH Blvd (2 segments)											
EDH to Arrowhead	Intersection Counts	2A	1050	1550	850	1540	1650	0.64	0.94	D	E
Wilson Way - west of EDH Blvd (2 segments)											
EDH Blvd to Ridgeview Dr	Intersection Counts	4AU	550	510	1760	3070	3130	0.18	0.16	C or better	C or better
Olson Ln/Gillette Dr - west of EDH Blvd (2 segemtns)											
EDH Blvd to Gillete	Intersection Counts	2A	310	300	850	1540	1650	0.19	0.18	C or better	C or better
Harvard Way - EDH Blvd to Silva Valley Pkwy (1 segments)											
EDH Blvd to Silva Valley Pkwy	Intersection Counts	4AU	1370	830	1760	3070	3130	0.44	0.27	C or better	C or better

Cumulative Plus Project Roadway Segments Analysis	Note: County Website Counts are the average of the Tu		Peak Hour Volume		LOS Thresholds			V/ C Ratio		LOS	
Central El Dorado	**Count Source**	**Number of Lanes**	**AM**	**PM**	**LOS C**	**LOS D**	**LOS E**	**AM**	**PM**	**AM**	**PM**
El Dorado Hills Blvd - Green Valley to US 50 (5 segments)											
Green Valley to Francisco	Intersection Counts	2A	460	440	850	1540	1650	0.28	0.27	C or better	C or better
Francisco to Governor	Intersection Counts	2A	1470	1670	850	1540	1650	0.89	1.01	D	**F**
Governor to Wilson	Intersection Counts	4AD	2300	2290	1850	3220	3290	0.70	0.70	D	D
Wilson to Serrano	Intersection Counts	4AD	2740	2840	1850	3220	3290	0.83	0.86	D	D
Serrano to Saratoga	Intersection Counts	**5AD**	3310	3520	2350	4060	4110	0.81	0.86	D	D
Saratoga to US 50	Intersection Counts	**7AD**	2700	3050	3215	5410	5420	0.50	0.56	C or better	C or better
Latrobe Road - US 50 to S. Shingle Rd (5 Segemtns)											
US 50 to Town Center	Intersection Counts	**7AD**	4380	5110	3215	5410	5420	0.81	0.94	D	D
Town Center to White Rock Rd	Intersection Counts	6AD	3110	3340	2760	4680	4710	0.66	0.71	D	D
White Rock to Golden Foothill Pkwy	Intersection Counts	**6AD**	2300	2670	2760	4680	4710	0.49	0.57	C or better	C or better
Golden Foothill Pkwy to Sun Ridge Meadow Rd	Roadway Counts	**4AU**	1600	1590	1760	3070	3130	0.51	0.51	C or better	C or better
Sun Ridge Meadow Rd to S. Shingle Rd	County Website	2A	590	600	850	1540	1650	0.36	0.36	C or better	C or better
White Rock Road - Scott Road to US 50 (5 Segments)											
Scott Rd to Four Seasons Dr.	County Website	**4AD**	1560	2040	1850	3220	3290	0.47	0.62	C or better	D
Four Seasons Dr to Latrobe Rd	Intersection Counts	4AD	1640	2000	1850	3220	3290	0.50	0.61	C or better	D
Latrobe Rd to Vine St	Intersection Counts	**6AD**	1490	1780	2760	4680	4710	0.32	0.38	C or better	C or better
Vine St to US 50	Intersection Counts	**6AD**	1730	2260	2760	4680	4710	0.37	0.48	C or better	C or better
Silva Valley Pkwy - Green Valley Rd to US 50 (4 Segments)											
Green Valley to Glenwood Way	Intersection Counts	2A	920	910	850	1540	1650	0.56	0.55	D	D
Glenwood Way to Appian Way	Intersection Counts	2A	770	900	850	1540	1650	0.47	0.55	C or better	D
Appian Way to Harvard Way	Intersection Counts	2A	1110	1010	850	1540	1650	0.67	0.61	D	D
Harvard Way to Serrano Pkwy	Intersection Counts	4AD	2160	1900	1850	3220	3290	0.66	0.58	D	D
Serrano Pkwy to US 50	Intersection Counts	**4AD**	2660	2610	1850	3220	3290	0.81	0.79	D	D
Serrano Pkwy - EDH Blvd to Bass Lake Rd - 3 segments											
EDH Blvd to Silva Valley Pkwy	Intersection Counts	2A	1000	920	850	1540	1650	0.61	0.56	D	D
Silva Valley to Villagio Dr	Intersection Counts	4AD	1800	1750	1850	3220	3290	0.55	0.53	C or better	C or better
Villagio Dr to Bass Lake Rd	Intersection Counts	2A	1010	1100	850	1540	1650	0.61	0.67	D	D
Saratoga Way - west of EDH Blvd (2 segments)											
EDH to Arrowhead	Intersection Counts	2A	1110	1560	850	1540	1650	0.67	0.95	D	E
Wilson Way - west of EDH Blvd (2 segments)											
EDH Blvd to Ridgeview Dr	Intersection Counts	4AU	550	510	1760	3070	3130	0.18	0.16	C or better	C or better
Olson Ln/Gillette Dr - west of EDH Blvd (2 segemtns)											
EDH Blvd to Gillete	Intersection Counts	2A	310	300	850	1540	1650	0.19	0.18	C or better	C or better
Harvard Way - EDH Blvd to Silva Valley Pkwy (1 segments)											
EDH Blvd to Silva Valley Pkwy	Intersection Counts	4AU	1380	840	1760	3070	3130	0.44	0.27	C or better	C or better

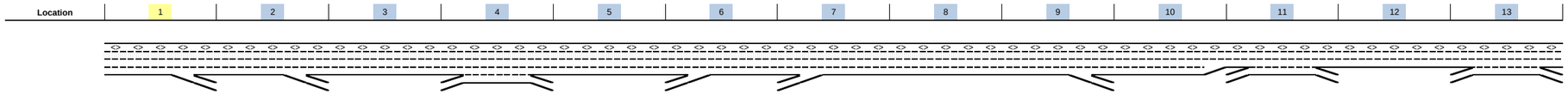
Project: Serrano/Pedregal
Freeway Corridor: Eastbound US 50
Alternative: Cumulative No Project
Time Period: AM Peak Hour

Data Entry Value
Calculated Value

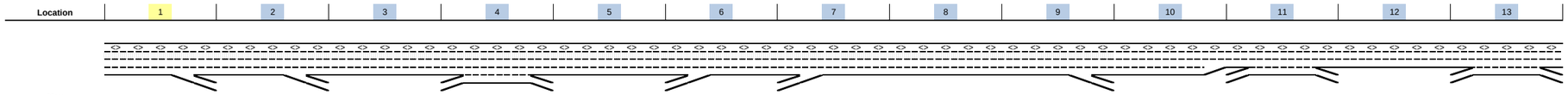


Key
<> Express Lane (HOV)
No Trucks

Location	1	2	3	4	5	6	7	8	9	10	11	12	13
Name	Latrobe Rd off-ramp	El Dorado Hills Blvd off-ramp	El Dorado Hills Blvd off to on-ramp	El Dorado Hills Blvd to Silva Valley Pkwy	Silva Valley Pkwy off to on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy to Bass Lake Rd	Bass Lake Rd off-ramp	Bass Lake Rd off to on-ramp	Bass Lake Rd to Cambridge Rd	Cambridge Rd off to on-ramp	Cambridge Rd to Cameron Park
Define Freeway Segment													
Type	Diverge	Diverge	Basic	Weave	Basic	Merge	Merge	Basic	Diverge	Basic	Weave	Basic	Weave
Length (ft)	1,500	850	1,975	3,000	1,575	800	3,400	3,400	1,500	2,100	5,725	1,350	8,250
Accel Length						550	500						
Decel Length	150	150							150				
Mainline Volume	4,020	2,930	2,740	2,740	3,220	3,220	3,500	3,710	3,710	2,800	2,800	2,910	2,910
On Ramp Volume				770		280	210				430		1,160
Off Ramp Volume	1,090	190		290					910		320		1,130
Express Lane Volume	442	322	301	301	451	451	490	519	519	392	364	378	378
EL On Ramp Volume													
EL Off Ramp Volume													
Calculate Flow Rate in General Purpose Lanes (GP)													
GP Volume (vph)	3,578	2,608	2,439	3,209	2,769	3,049	3,220	3,191	3,191	2,408	2,866	2,532	3,692
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	0.92
GP Lanes	3	3	3	4	3	3	3	3	3	3	3	2	3
Terrain	Level	Level	Level	Level	Level	Level	Level	Grade	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	5.0	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	6.0	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.862	0.980	0.980	0.980	0.980	0.980
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,967	2,891	2,704	3,557	3,070	3,381	3,570	4,023	3,537	2,670	3,178	2,807	4,093
GP Flow (pcphpl)	1,322	964	901	889	1,023	1,127	1,190	1,341	1,179	890	1,059	1,403	1,364
Calculate Speed in General Purpose Lanes													
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	67.3	67.3	67.3	67.3	67.3	67.3	67.3	67.3	69.6	69.6	69.6	69.6	69.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	65	65	65	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes													
v/c ratio	0.56	0.41	0.38	0.38	0.44	0.48	0.51	0.57	0.50	0.38	0.45	0.60	0.58
Speed (mph)	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
Density (pcphpl)	20.3	14.8	13.9	13.7	15.7	17.3	18.3	20.6	18.1	13.7	16.3	21.6	21.0
LOS	C	B	B	B	B	B	C	C	C	B	B	C	C
Calculate Operations for Entering GP Lanes													
GP_{IN} Vol (pcph)				2,712		3,073	3,339				2,566		2,813
GP_{IN} Cap (pcph)				7,050		7,050	7,050				4,700		4,700
GP_{IN} v/c ratio				0.38		0.44	0.47				0.55		0.60
Calculate Operations for Exiting GP Lanes													
GP_{OUT} Vol (pcph)	2,770	2,683		3,248					2,295	2,670	2,836		2,839
GP_{OUT} Cap (pcph)	7,050	7,050		7,050					7,050	4,700	4,700		4,700
GP_{OUT} v/c ratio	0.39	0.38		0.46					0.33	0.57	0.60		0.60



Name	Latrobe Rd off-ramp	El Dorado Hills Blvd off-ramp	El Dorado Hills Blvd off to on-ramp	El Dorado Hills Blvd to Silva Valley Pkwy	Silva Valley Pkwy off to on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy to Bass Lake Rd	Bass Lake Rd off-ramp	Bass Lake Rd off to on-ramp	Bass Lake Rd to Cambridge Rd	Cambridge Rd off to on-ramp	Cambridge Rd to Cameron Park
Calculate Flow Rate in Express Lanes (EL)													
EL Volume (vph)	442	322	301	301	451	451	490	519	519	392	364	378	378
PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Express Lanes	1	1	1	1	1	1	1	1	1	1	1	1	1
Terrain	Level	Level	Level	Level	Level	Level	Level	Grade	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	5.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	6.0	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.917	0.990	0.990	0.990	0.990	0.990
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EL Flow (pcph)	525	383	358	358	536	536	582	666	617	466	433	450	450
EL Flow (pcphpl)	525	383	358	358	536	536	582	666	617	466	433	450	450
Calculate Speed in Express Lanes													
Lane Width (ft)													
Shoulder Width													
TRD													
f_{LW}													
f_{LC}													
Calc'd FFS													
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	65	65	65	65	65	65	65	65	65	65	65	65	65
Calculate Operations in Express Lanes													
EL_{IN} v/c ratio	0.30	0.22	0.20	0.20	0.31	0.31	0.33	0.38	0.35	0.27	0.25	0.26	0.26
Calculate On Ramp Flow Rate													
On Volume (vph)				770		280	210				430		1,160
PHF				0.92		0.92	0.92				0.71		0.92
Total Lanes				1		1	1				1		1
Terrain				Level		Level	Level				Level		Level
Grade %				0.0%		0.0%	0.0%				0.0%		0.0%
Grade Length (mi)				0.00		0.00	0.00				0.00		0.00
Truck & Bus %				2.0%		2.0%	2.0%				2.0%		3.0%
RV %				0.0%		0.0%	0.0%				0.0%		0.0%
E_T				1.5		1.5	1.5				1.5		1.5
E_R				1.2		1.2	1.2				1.2		1.2
f_{HV}				0.990		0.990	0.990				0.990		0.985
f_p				1.00		1.00	1.00				1.00		1.00
On Flow (pcph)				845		307	231				612		1,280
On Flow (pcphpl)				845		307	231				612		1,280
Calculate On Ramp Roadway Operations													
On Ramp Type				Right		Right	Right				Right		Right
On Ramp Speed (mph)				45		25	45				45		45
On Ramp Cap (pcph)				2,100		1,900	2,100				2,100		2,100
On Ramp v/c ratio				0.40		0.16	0.11				0.29		0.61



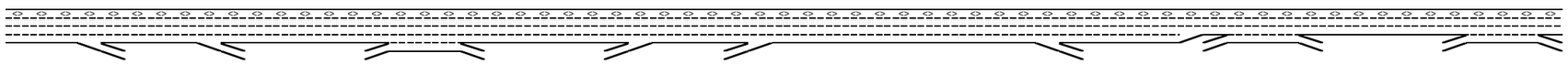
Key

<> Express Lane (HOV)

No Trucks

Name	Latrobe Rd off-ramp	El Dorado Hills Blvd off-ramp	El Dorado Hills Blvd off to on-ramp	El Dorado Hills Blvd to Silva Valley Pkwy	Silva Valley Pkwy off to on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy to Bass Lake Rd	Bass Lake Rd off-ramp	Bass Lake Rd off to on-ramp	Bass Lake Rd to Cambridge Rd	Cambridge Rd off to on-ramp	Cambridge Rd to Cameron Park
Calculate Off Ramp Flow Rate													
Off Volume (vph)	1,090	190		290					910		320		1,130
PHF	0.92	0.92		0.95					0.74		0.95		0.91
Total Lanes	1	1		1					1		1		1
Terrain	Level	Level		Level					Level		Level		Level
Grade %	0.0%	0.0%		0.0%					0.0%		0.0%		0.0%
Grade Length (mi)	0.00	0.00		0.00					0.00		0.00		0.00
Truck & Bus %	2.0%	2.0%		3.0%					2.0%		3.0%		2.0%
RV %	0.0%	0.0%		0.0%					0.0%		0.0%		0.0%
E_T	1.5	1.5		1.5					1.5		1.5		1.5
E_R	1.2	1.2		1.2					1.2		1.2		1.2
f_{HV}	0.990	0.990		0.985					0.990		0.985		0.990
f_p	1.00	1.00		1.00					1.00		1.00		1.00
Off Flow (pcph)	1,197	209		310					1,242		342		1,254
Off Flow (pcphpl)	1,197	209		310					1,242		342		1,254
Calculate Off Ramp Roadway Operations													
Off Ramp Type	Right	Right		Right					Right		Right		Right
Off Ramp Speed	45	25		45					45		45		45
Off Ramp Cap (pcph)	2,100	1,900		2,100					2,100		2,100		2,100
Off Ramp v/c ratio	0.57	0.11		0.15					0.59		0.16		0.60
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps													
Up Type		Off				Off	On		Off		Off		Off
Up Distance		2,350				1,575	800		4,900		2,100		1,350
Up Flow (pcph)		1,197				310	307		310		1,242		342
Down Type	Off	On				On	On		On		On		No
Down Distance	850	1,975				2,900	3,400		2,100		1,350		
Down Flow (pcph)	209	845				612	612		612		1,280		
Calculate Merge Influence Area Operations													
Effective v_p (pcph)						3,073	3,339						
Up Ramp L_{EQ}						-127	937						
Down Ramp L_{EQ}						3,631	3,750						
P_{FM} (Eqn 13-3)						0.593	0.592						
P_{FM} (Eqn 13-4)		#VALUE!				0.700			#VALUE!		#VALUE!		#VALUE!
P_{FM} (Eqn 13-5)	0.613												
P_{FM}						0.593	0.592						
v_{12} (pcph)						1,822	1,975						
v_3 (pcph)						1,251	1,364						
v_{34} (pcph)													
v_{12a} (pcph)						1,822	1,975						
v_{R12a} (pcph)						2,130	2,206						
Merge Speed Index						0.33	0.31						
Merge Area Speed						57.5	57.8						
Outer Lanes Volume						1,251	1,364						
Outer Lanes Speed						62.3	61.9						
Segment Speed						59.2	59.3						
Merge v/c ratio						0.46	0.48						
Merge Density						18.5	19.4						
Merge LOS						B	B						

Location	1	2	3	4	5	6	7	8	9	10	11	12	13

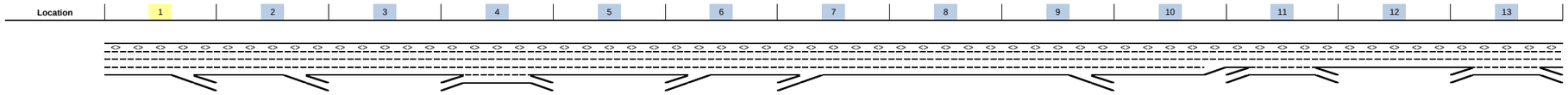


Key

<> Express Lane (HOV)

No Trucks

Name	Latrobe Rd off-ramp	El Dorado Hills Blvd off-ramp	El Dorado Hills Blvd off to on-ramp	El Dorado Hills Blvd to Silva Valley Pkwy	Silva Valley Pkwy off to on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy to Bass Lake Rd	Bass Lake Rd off-ramp	Bass Lake Rd off to on-ramp	Bass Lake Rd to Cambridge Rd	Cambridge Rd off to on-ramp	Cambridge Rd to Cameron Park
Calculate Diverge Influence Area Operations													
Effective v_P (pcph)	3,967	2,891							3,537				
Up Ramp L_{EQ}		9,837							5,345				
Down Ramp L_{EQ}	359	862							1,057				
P_{FD} (Eqn 13-9)	0.606	0.678							0.614				
P_{FD} (Eqn 13-10)													
P_{FD} (Eqn 13-11)	0.563												
P_{FD}	0.606	0.678							0.614				
v_{12} (pcph)	2,875	2,028							2,652				
v_3 (pcph)	1,092	863							885				
v_{34} (pcph)													
v_{12a} (pcph)	2,875	2,028							2,652				
Diverge Speed Index	0.41	0.58							0.41				
Diverge Area Speed	55.7	51.7							55.6				
Outer Lanes Volume	1,092	863							885				
Outer Lanes Speed	70.9	71.3							71.3				
Segment Speed	59.2	56.4							58.8				
Diverge v/c ratio	0.65	0.46							0.60				
Diverge Density	27.6	20.3							25.7				
Diverge LOS	C	C							C				
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments													
On to Off Volume (vph)				50							10		460
PHF				0.92							0.92		0.92
Terrain				Level							Level		Level
Grade %				0.0%							0.0%		0.0%
Grade Length (mi)				0.00							0.00		0.00
Truck & Bus %				3.0%							2.0%		2.0%
RV %				0.0%							0.0%		0.0%
E_T				1.5							1.5		1.5
E_R				1.2							1.2		1.2
f_{HV}				0.985							0.990		0.990
f_p				1.00							1.00		1.00
On to Off Flow (pcph)				55							11		505
Calculate On Ramp to Mainline Flow Rate for Weave Segments													
On to ML Volume (vph)				720							420		700
PHF				0.92							0.92		0.92
Terrain				Level							Level		Level
Grade %				0.0%							0.0%		0.0%
Grade Length (mi)				0.00							0.00		0.00
Truck & Bus %				3.0%							2.0%		2.0%
RV %				0.0%							0.0%		0.0%
E_T				1.5							1.5		1.5
E_R				1.2							1.2		1.2
f_{HV}				0.985							0.990		0.990
f_p				1.00							1.00		1.00
On to ML Flow (pcph)				794							461		768
Calculate Mainline to Off Ramp Flow Rate for Weave Segments													
ML to Off Volume (vph)				240							310		670
PHF				0.95							0.92		0.92
Terrain				Level							Level		Level
Grade %				0.0%							0.0%		0.0%
Grade Length (mi)				0.00							0.00		0.00
Truck & Bus %				6.0%							4.0%		4.0%
RV %				0.0%							0.0%		0.0%
E_T				1.5							1.5		1.5
E_R				1.2							1.2		1.2
f_{HV}				0.971							0.980		0.980
f_p				1.00							1.00		1.00
ML to Off Flow (pcph)				260							344		743



Key

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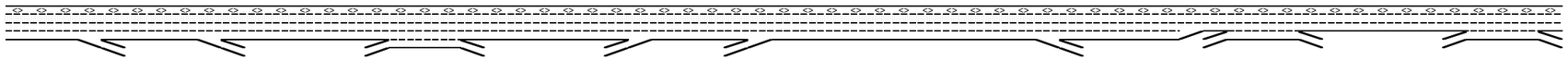
No Trucks

Name	Latrobe Rd off-ramp	El Dorado Hills Blvd off-ramp	El Dorado Hills Blvd off to on-ramp	El Dorado Hills Blvd to Silva Valley Pkwy	Silva Valley Pkwy off to on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy to Bass Lake Rd	Bass Lake Rd off-ramp	Bass Lake Rd off to on-ramp	Bass Lake Rd to Cambridge Rd	Cambridge Rd off to on-ramp	Cambridge Rd to Cameron Park
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments													
GP to GP Volume (vph)				2,199							2,126		1,862
PHF				0.95							0.92		0.92
Terrain				Level							Level		Level
Grade %				0.0%							0.0%		0.0%
Grade Length (mi)				0.00							0.00		0.00
Truck & Bus %				6.0%							4.0%		4.0%
RV %				0.0%							0.0%		0.0%
E_T				1.5							1.5		1.5
E_R				1.2							1.2		1.2
f_{HV}				0.971							0.980		0.980
f_p				1.00							1.00		1.00
GP to GP Flow (pcph)				2,384							2,357		2,064
Calculate Weave Segment Operations													
Weave Type				One-sided							One-sided		One-sided
Weave Length				2,000							4,725		7,250
Segment Lanes				3							2		2
Weave Lanes				3					3		2		2
Weave Flow (pcph)				1,055							805		1,511
Non-Weave Flow				2,439							2,368		2,569
Segment Flow				3,493							3,173		4,080
Max Weave Length				4,038							5,092		6,351
Length Check				OK							OK		Not a Weave
Ideal Weave Capacity				2,194							2,322		2,419
f_{HV}				0.974							0.982		0.983
f_p				0.997							0.999		0.998
Capacity Condition 1				6,392							4,553		4,748
Capacity Condition 2				11,259							9,277		6,360
Weave v/c ratio				0.53							0.68		0.84
Interchange Density				3							5		2
Lane Changes On to ML				1							1		1
Lane Changes ML to Off				1							1		1
Lane Changes On to Off				0							0		0
Min Lane Change Rate				1,055							805		1,511
Weave LC Rate				1,650							2,534		4,274
Non-Weave LC Rate 1				1,009							2,664		4,074
Non-Weave LC Rate 2				2,233							2,217		2,262
Non-Weave LC Rate 3				1,316							-286		-2,686
Segment LC Rate				2,967							4,751		6,536
Weave Intensity Factor				0.308							0.227		0.208
Weave Speed				53.2							55.8		56.4
Non-Weave Speed				51.8							51.6		44.3
Segment Speed				52.2							52.6		48.1
Weave Density				22.3							30.2		-
Weave LOS				C							D		Basic
Summarize Segment Operations													
Segment v/c ratio	0.65	0.46	0.38	0.53	0.44	0.46	0.48	0.57	0.60	0.38	0.68	0.60	0.58
Segment Density	27.6	20.3	13.9	22.3	15.7	18.5	19.4	20.6	25.7	13.7	30.2	21.6	21.0
Segment LOS	C	C	B	C	B	B	B	C	C	B	D	C	C
Over Capacity													

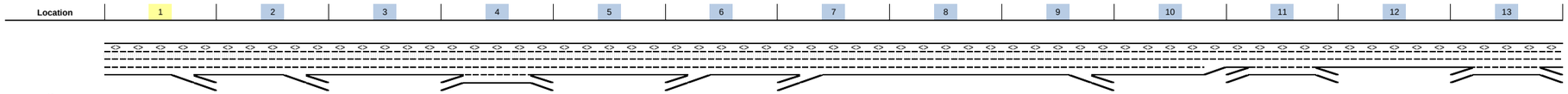
Project: Serrano/Pedregal
Freeway Corridor: Eastbound US 50
Alternative: Cumulative No Project
Time Period: PM Peak Hour

Data Entry Value
Calculated Value



Key
<> Express Lane (HOV)
No Trucks

Location	1	2	3	4	5	6	7	8	9	10	11	12	13
Name	Latrobe Rd off-ramp	El Dorado Hills Blvd off-ramp	El Dorado Hills Blvd off to on-ramp	El Dorado Hills Blvd to Silva Valley Pkwy	Silva Valley Pkwy off to on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy to Bass Lake Rd	Bass Lake Rd off-ramp	Bass Lake Rd off to on-ramp	Bass Lake Rd to Cambridge Rd	Cambridge Rd off to on-ramp	Cambridge Rd to Cameron Park
Define Freeway Segment													
Type	Diverge	Diverge	Basic	Weave	Basic	Merge	Merge	Basic	Diverge	Basic	Weave	Basic	Weave
Length (ft)	1,500	850	1,975	3,000	1,575	800	3,400	3,400	1,500	2,100	6,625	1,350	8,250
Accel Length						550	500						
Decel Length	150	150							150				
Mainline Volume	6,510	5,750	5,220	5,220	5,220	5,220	5,580	6,350	6,350	4,650	4,650	4,200	4,200
On Ramp Volume				700		360	770				260		1,130
Off Ramp Volume	760	530		700					1,700		710		1,660
Express Lane Volume	977	863	783	679	679	679	725	953	953	698	698	630	588
EL On Ramp Volume													
EL Off Ramp Volume													
Calculate Flow Rate in General Purpose Lanes (GP)													
GP Volume (vph)	5,534	4,888	4,437	5,241	4,541	4,901	5,625	5,398	5,398	3,953	4,213	3,570	4,742
PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
GP Lanes	3	3	3	4	3	3	3	3	3	3	3	2	3
Terrain	Level	Level	Level	Level	Level	Level	Level	Grade	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	6.0	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	6.0	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.952	0.995	0.995	0.995	0.995	0.995
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	5,733	5,064	4,597	5,431	4,705	5,078	5,828	5,843	5,592	4,095	4,364	3,699	4,913
GP Flow (pcphpl)	1,911	1,688	1,532	1,358	1,568	1,693	1,943	1,948	1,864	1,365	1,455	1,849	1,638
Calculate Speed in General Purpose Lanes													
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	67.3	67.3	67.3	67.3	67.3	67.3	67.3	67.3	69.6	69.6	69.6	69.6	69.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	65	65	65	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes													
v/c ratio	0.81	0.72	0.65	0.58	0.67	0.72	0.83	0.83	0.79	0.58	0.62	0.79	0.70
Speed (mph)	61.3	63.8	64.8	65.0	64.6	63.8	60.8	60.7	61.9	65.0	65.0	62.1	64.2
Density (pcphpl)	31.2	26.4	23.7	20.9	24.3	26.5	31.9	32.1	30.1	21.0	22.4	29.8	25.5
LOS	D	D	C	C	C	D	D	D	D	C	C	D	C
Calculate Operations for Entering GP Lanes													
GP_{IN} Vol (pcph)				4,662		4,683	4,982				3,995		3,706
GP_{IN} Cap (pcph)				7,050		7,050	7,050				4,700		4,700
GP_{IN} v/c ratio				0.66		0.66	0.71				0.85		0.79
Calculate Operations for Exiting GP Lanes													
GP_{OUT} Vol (pcph)	4,899	4,482		4,658					3,822	4,095	3,606		3,071
GP_{OUT} Cap (pcph)	7,050	7,050		7,050					7,050	4,700	4,700		4,700
GP_{OUT} v/c ratio	0.69	0.64		0.66					0.54	0.87	0.77		0.65

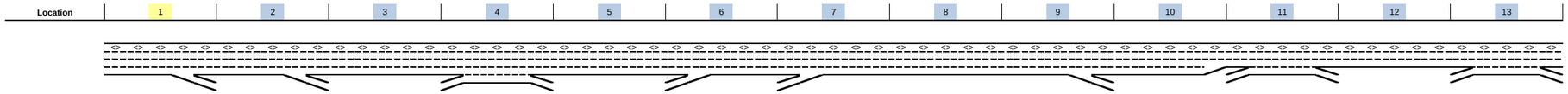


Key

<> Express Lane (HOV)

No Trucks

Name	Latrobe Rd off-ramp	El Dorado Hills Blvd off-ramp	El Dorado Hills Blvd off to on-ramp	El Dorado Hills Blvd to Silva Valley Pkwy	Silva Valley Pkwy off to on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy to Bass Lake Rd	Bass Lake Rd off-ramp	Bass Lake Rd off to on-ramp	Bass Lake Rd to Cambridge Rd	Cambridge Rd off to on-ramp	Cambridge Rd to Cameron Park
Calculate Flow Rate in Express Lanes (EL)													
EL Volume (vph)	977	863	783	679	679	679	725	953	953	698	698	630	588
PHF	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Express Lanes	1	1	1	1	1	1	1	1	1	1	1	1	1
Terrain	Level	Level	Level	Level	Level	Level	Level	Grade	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	5.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	6.0	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.917	0.990	0.990	0.990	0.990	0.990
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EL Flow (pcph)	1,096	968	879	762	762	762	814	1,154	1,069	783	783	707	660
EL Flow (pcphpl)	1,096	968	879	762	762	762	814	1,154	1,069	783	783	707	660
Calculate Speed in Express Lanes													
Lane Width (ft)													
Shoulder Width													
TRD													
f_{LW}													
f_{LC}													
Calc'd FFS													
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	65	65	65	65	65	65	65	65	65	65	65	65	65
Calculate Operations in Express Lanes													
EL_{IN} v/c ratio	0.63	0.55	0.50	0.44	0.44	0.44	0.47	0.66	0.61	0.45	0.45	0.40	0.38
Calculate On Ramp Flow Rate													
On Volume (vph)				700		360	770				260		1,130
PHF				0.92		0.92	0.92				0.71		0.95
Total Lanes				1		1	1				1		1
Terrain				Level		Level	Level				Level		Level
Grade %				0.0%		0.0%	0.0%				0.0%		0.0%
Grade Length (mi)				0.00		0.00	0.00				0.00		0.00
Truck & Bus %				2.0%		2.0%	2.0%				2.0%		3.0%
RV %				0.0%		0.0%	0.0%				0.0%		0.0%
E_T				1.5		1.5	1.5				1.5		1.5
E_R				1.2		1.2	1.2				1.2		1.2
f_{HV}				0.990		0.990	0.990				0.990		0.985
f_p				1.00		1.00	1.00				1.00		1.00
On Flow (pcph)				768		395	845				370		1,207
On Flow (pcphpl)				768		395	845				370		1,207
Calculate On Ramp Roadway Operations													
On Ramp Type				Right		Right	Right				Right		
On Ramp Speed (mph)				45		25	45				45		
On Ramp Cap (pcph)				2,100		1,900	2,100				2,100		
On Ramp v/c ratio				0.37		0.21	0.40				0.18		



Key

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No Trucks

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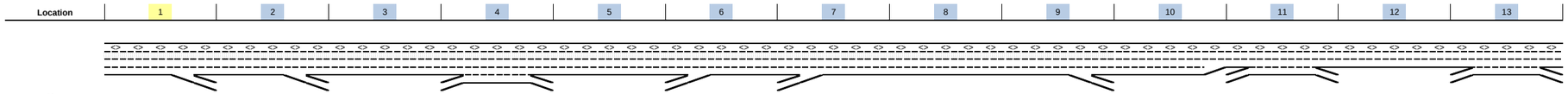
Calculate Off Ramp Flow Rate													
Off Volume (vph)	760	530		700					1,700		710		1,660
PHF	0.92	0.92		0.92					0.97		0.95		0.91
Total Lanes	1	1		1					1		1		1
Terrain	Level	Level		Level					Level		Level		Level
Grade %	0.0%	0.0%		0.0%					0.0%		0.0%		0.0%
Grade Length (mi)	0.00	0.00		0.00					0.00		0.00		0.00
Truck & Bus %	2.0%	2.0%		3.0%					2.0%		3.0%		2.0%
RV %	0.0%	0.0%		0.0%					0.0%		0.0%		0.0%
E_T	1.5	1.5		1.5					1.5		1.5		1.5
E_R	1.2	1.2		1.2					1.2		1.2		1.2
f_{HV}	0.990	0.990		0.985					0.990		0.985		0.990
f_P	1.00	1.00		1.00					1.00		1.00		1.00
Off Flow (pcph)	834	582		772					1,770		759		1,842
Off Flow (pcphpl)	834	582		772					1,770		759		1,842
Calculate Off Ramp Roadway Operations													
Off Ramp Type	Right	Right		Right					Right				Right
Off Ramp Speed	45	25		45					45				45
Off Ramp Cap (pcph)	2,100	1,900		2,100					2,100				2,100
Off Ramp v/c ratio	0.40	0.31		0.37					0.84				0.88
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps													
Up Type		Off				Off	On		Off		Off		No
Up Distance		2,350				1,575	800		4,900		2,100		
Up Flow (pcph)		834				772	395		772		1,770		
Down Type	Off	On				On	On		On		No		#REF!
Down Distance	850	1,975				2,900	3,400		2,100				#REF!
Down Flow (pcph)	582	768				370	370		370				#REF!
Calculate Merge Influence Area Operations													
Effective v_P (pcph)						4,683	4,982						
Up Ramp L_{EQ}						236	1,420						
Down Ramp L_{EQ}						2,196	2,268						
P_{FM} (Eqn 13-3)						0.593	0.592						
P_{FM} (Eqn 13-4)		#VALUE!				0.677			#VALUE!		#VALUE!		
P_{FM} (Eqn 13-5)	0.729												#REF!
P_{FM}						0.593	0.592						
v_{12} (pcph)						2,777	2,947						
v_3 (pcph)						1,906	2,035						
v_{34} (pcph)													
v_{12a} (pcph)						2,777	2,947						
v_{R12a} (pcph)						3,172	3,792						
Merge Speed Index						0.39	0.45						
Merge Area Speed						56.1	54.7						
Outer Lanes Volume						1,906	2,035						
Outer Lanes Speed						59.9	59.5						
Segment Speed						57.5	56.3						
Merge v/c ratio						0.69	0.82						
Merge Density						26.6	31.5						
Merge LOS						C	D						



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No Trucks

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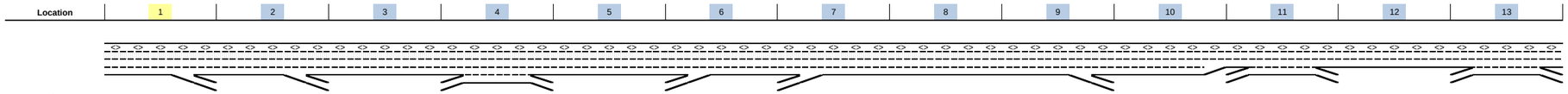
Calculate Diverge Influence Area Operations													
Effective v_P (pcph)	5,733	5,064							5,592				
Up Ramp L_{EQ}		5,824							11,864				
Down Ramp L_{EQ}	883	994							1,164				
P_{FD} (Eqn 13-9)	0.578	0.607							0.539				
P_{FD} (Eqn 13-10)													
P_{FD} (Eqn 13-11)	0.581												#REF!
P_{FD}	0.581	0.607							0.539				
v_{12} (pcph)	3,681	3,301							3,829				
v_3 (pcph)	2,052	1,763							1,763				
v_{34} (pcph)													
v_{12a} (pcph)	3,681	3,301							3,829				
Diverge Speed Index	0.37	0.61							0.46				
Diverge Area Speed	56.4	51.0							54.5				
Outer Lanes Volume	2,052	1,763							1,763				
Outer Lanes Speed	67.2	68.3							68.3				
Segment Speed	59.9	55.9							58.2				
Diverge v/c ratio	0.84	0.75							0.87				
Diverge Density	34.6	31.3							35.8				
Diverge LOS	D	D							E				
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments													
On to Off Volume (vph)				419							162		551
PHF				0.92							0.92		0.92
Terrain				Level							Level		Level
Grade %				0.0%							0.0%		0.0%
Grade Length (mi)				0.00							0.00		0.00
Truck & Bus %				2.0%							2.0%		2.0%
RV %				0.0%							0.0%		0.0%
E_T				1.5							1.5		1.5
E_R				1.2							1.2		1.2
f_{HV}				0.990							0.990		0.990
f_p				1.00							1.00		1.00
On to Off Flow (pcph)				460							178		605
Calculate On Ramp to Mainline Flow Rate for Weave Segments													
On to ML Volume (vph)				281							98		579
PHF				0.92							0.92		0.92
Terrain				Level							Level		Level
Grade %				0.0%							0.0%		0.0%
Grade Length (mi)				0.00							0.00		0.00
Truck & Bus %				2.0%							2.0%		2.0%
RV %				0.0%							0.0%		0.0%
E_T				1.5							1.5		1.5
E_R				1.2							1.2		1.2
f_{HV}				0.990							0.990		0.990
f_p				1.00							1.00		1.00
On to ML Flow (pcph)				308							108		636
Calculate Mainline to Off Ramp Flow Rate for Weave Segments													
ML to Off Volume (vph)				281							548		1,109
PHF				0.97							0.97		0.97
Terrain				Level							Level		Level
Grade %				0.0%							0.0%		0.0%
Grade Length (mi)				0.00							0.00		0.00
Truck & Bus %				1.0%							1.0%		1.0%
RV %				0.0%							0.0%		0.0%
E_T				1.5							1.5		1.5
E_R				1.2							1.2		1.2
f_{HV}				0.995							0.995		0.995
f_p				1.00							1.00		1.00
ML to Off Flow (pcph)				291							568		1,149



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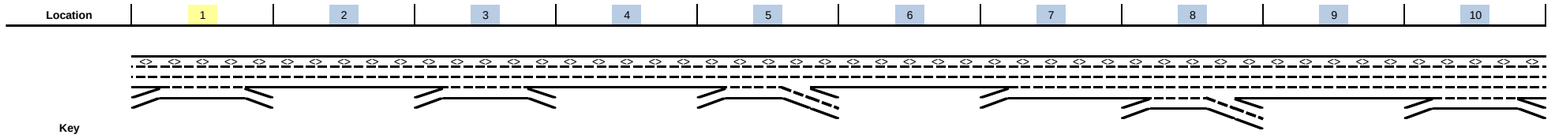
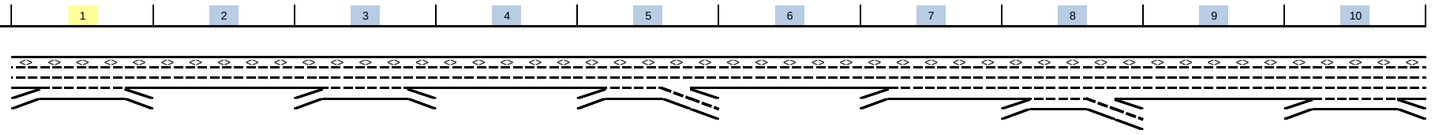
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments													
GP to GP Volume (vph)				4,260							3,405		2,503
PHF				0.92							0.97		0.97
Terrain				Level							Level		Level
Grade %				0.0%							0.0%		0.0%
Grade Length (mi)				0.00							0.00		0.00
Truck & Bus %				1.0%							1.0%		1.0%
RV %				0.0%							0.0%		0.0%
E_T				1.5							1.5		1.5
E_R				1.2							1.2		1.2
f_{HV}				0.995							0.995		0.995
f_p				1.00							1.00		1.00
GP to GP Flow (pcph)				4,654							3,527		2,593
Calculate Weave Segment Operations													
Weave Type				One-sided							One-sided		One-sided
Weave Length				2,000							5,625		7,250
Segment Lanes				3							2		2
Weave Lanes				3					3		2		2
Weave Flow (pcph)				600							675		1,785
Non-Weave Flow				5,114							3,705		3,198
Segment Flow				5,714							4,381		4,983
Max Weave Length				2,022							4,073		6,216
Length Check				OK							Not a Weave		Not a Weave
Ideal Weave Capacity				2,348							2,469		2,429
f_{HV}				0.994							0.995		0.994
f_p				0.999							1.000		0.999
Capacity Condition 1				7,002							4,910		4,822
Capacity Condition 2				33,144							15,481		6,651
Weave v/c ratio				0.81							0.89		1.03
Interchange Density				3							5		2
Lane Changes On to ML				1							1		1
Lane Changes ML to Off				1							1		1
Lane Changes On to Off				0							0		0
Min Lane Change Rate				600							675		1,785
Weave LC Rate				1,195							2,756		4,547
Non-Weave LC Rate 1				1,560							3,427		4,203
Non-Weave LC Rate 2				2,829							2,515		2,402
Non-Weave LC Rate 3				5,014							-9,364		-5,044
Segment LC Rate				4,025							5,271		6,949
Weave Intensity Factor				0.392							0.215		0.219
Weave Speed				50.9							56.2		56.0
Non-Weave Speed				51.5							49.6		40.2
Segment Speed				51.5							50.5		44.7
Weave Density				37.0							-		-
Weave LOS				E							Basic		Basic
Summarize Segment Operations													
Segment v/c ratio	0.84	0.75	0.65	0.81	0.67	0.69	0.82	0.83	0.87	0.58	0.62	0.79	0.70
Segment Density	34.6	31.3	23.7	37.0	24.3	26.6	31.5	32.1	35.8	21.0	22.4	29.8	25.5
Segment LOS	D	D	C	E	C	C	D	D	E	C	C	D	C
Over Capacity													

Project: Serrano/Pedregal **Alternative: Cumulative No Project**
Freeway Corridor: Westbound US 50 **Time Period: AM Peak Hour**

Data Entry Value
Calculated Value



Name	Cameron Park to Cambridge	Cambridge Rd off to on-ramp	Cambridge Rd to Bass Lake Rd	Bass Lake Rd off to on-ramp	Bass Lake Rd to Silva Valley Pkwy	Silva Valley Pwky off to on-ramp	Silva Valley on-ramp	Silva Valley to El Dorado Hills	El Dorado Hills off to on-ramp	El Dorado Hills to Empire Ranch
Define Freeway Segment										
Type	Weave	Basic	Weave	Basic	Weave	Basic	Basic	Weave	Basic	Weave
Length (ft)	7,325	1,250	8,250	2,350	6,500	2,350	800	4,425	2,300	4,775
Accel Length										
Decel Length										
Mainline Volume	3,300	3,340	3,340	3,810	3,810	4,450	4,450	4,480	4,600	4,600
On Ramp Volume	950		640		1,880		30	1,010		1,620
Off Ramp Volume	910		170		1,240			890		1,950
Express Lane Volume	495	501	534	610	610	712	712	672	828	828
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	3,755	2,839	3,446	3,200	5,080	3,738	3,768	4,818	3,772	5,392
PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
GP Lanes	3	2	3	2	3	2	4	4	3	4
Terrain	Level	Level	Level	Level	Grade	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	-7.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995
f_P	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	4,015	3,035	3,684	3,422	5,432	3,996	4,029	5,151	4,033	5,765
GP Flow (pcphpl)	1,338	1,518	1,228	1,711	1,811	1,998	1,007	1,288	1,344	1,441
Calculate Speed in General Purpose Lanes										
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	69.6	69.6	69.6	69.6	69.6	69.6	69.6	69.6	69.6	69.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.57	0.65	0.52	0.73	0.77	0.85	0.43	0.55	0.57	0.61
Speed (mph)	65.0	64.8	65.0	63.6	62.6	59.9	65.0	65.0	65.0	65.0
Density (pcphpl)	20.6	23.4	18.9	26.9	28.9	33.3	15.5	19.8	20.7	22.2
LOS	C	C	C	D	D	D	B	C	C	C
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)	2,972		3,011		3,423		3,995	4,005		3,926
GP_{IN} Cap (pcph)	4,700		4,700		4,700		4,700	7,050		7,050
GP_{IN} v/c ratio	0.63		0.64		0.73		0.85	0.57		0.56
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)	2,622		3,502		3,379			4,200		3,681
GP_{OUT} Cap (pcph)	4,700		4,700		4,700			7,050		7,050
GP_{OUT} v/c ratio	0.56		0.75		0.72			0.60		0.52



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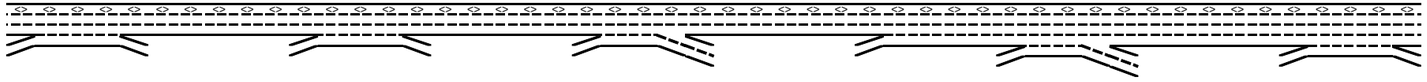
Calculate Flow Rate in Express Lanes (EL)										
EL Volume (vph)	495	501	534	610	610	712	712	672	828	828
PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Express Lanes	1	1	1	1	1	1	1	1	1	1
Terrain	Level	Level	Level	Level	Grade	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	-7.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990
f_P	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EL Flow (pcph)	562	569	606	692	692	808	808	763	940	940
EL Flow (pcphpl)	562	569	606	692	692	808	808	763	940	940
Calculate Speed in Express Lanes										
Lane Width (ft)										
Shoulder Width										
TRD										
f_{LW}										
f_{LC}										
Calc'd FFS										
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	65	65	65	65	65	65	65	65	65	65
Calculate Operations in Express Lanes										
EL_{IN} v/c ratio	0.32	0.32	0.35	0.40	0.40	0.46	0.46	0.44	0.54	0.54
Calculate On Ramp Flow Rate										
On Volume (vph)	950		640		1,880		30	1,010		1,620
PHF	0.92		0.96		0.95		0.89	0.89		0.89
Total Lanes	1		1		1		1	1		1
Terrain	Level		Level		Level		Level	Level		Level
Grade %	0.0%		0.0%		0.0%		0.0%	0.0%		0.0%
Grade Length (mi)	0.00		0.00		0.00		0.00	0.00		0.00
Truck & Bus %	2.0%		2.0%		3.0%		2.0%	2.0%		2.0%
RV %	0.0%		0.0%		0.0%		0.0%	0.0%		0.0%
E_T	1.5		1.5		1.5		1.5	1.5		1.5
E_R	1.2		1.2		1.2		1.2	1.2		1.2
f_{HV}	0.990		0.990		0.985		0.990	0.990		0.990
f_P	1.00		1.00		1.00		1.00	1.00		1.00
On Flow (pcph)	1,043		673		2,009		34	1,146		1,838
On Flow (pcphpl)	1,043		673		2,009		34	1,146		1,838
Calculate On Ramp Roadway Operations										
On Ramp Type	Right		Right				Right	Right		Right
On Ramp Speed (mph)	45		25				45	45		45
On Ramp Cap (pcph)	2,100		1,900				2,100	2,100		2,100
On Ramp v/c ratio	0.50		0.35				0.02	0.55		0.88

Location	1	2	3	4	5	6	7	8	9	10



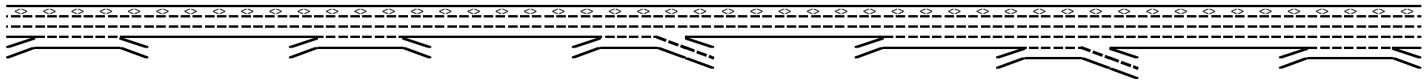
Key

<> Express Lane (HOV)

No Trucks

Name	Cameron Park to Cambridge	Cambridge Rd off to on-ramp	Cambridge Rd to Bass Lake Rd	Bass Lake Rd off to on-ramp	Bass Lake Rd to Silva Valley Pkwy	Silva Valley Pwky off to on-ramp	Silva Valley on-ramp	Silva Valley to El Dorado Hills	El Dorado Hills off to on-ramp	El Dorado Hills to Empire Ranch
Calculate Off Ramp Flow Rate										
Off Volume (vph)	910		170		1,240			890		1,950
PHF	0.66		0.95		0.61			0.95		0.95
Total Lanes	1		1		2			2		1
Terrain	Level		Level		Level			Level		Level
Grade %	0.0%		0.0%		0.0%			0.0%		0.0%
Grade Length (mi)	0.00		0.00		0.00			0.00		0.00
Truck & Bus %	2.0%		3.0%		2.0%			3.0%		3.0%
RV %	0.0%		0.0%		0.0%			0.0%		0.0%
E_T	1.5		1.5		1.5			1.5		1.5
E_R	1.2		1.2		1.2			1.2		1.2
f_{HV}	0.990		0.985		0.990			0.985		0.985
f_P	1.00		1.00		1.00			1.00		1.00
Off Flow (pcph)	1,393		182		2,053			951		2,083
Off Flow (pcphpl)	1,393		182		1,027			475		2,083
Calculate Off Ramp Roadway Operations										
Off Ramp Type	Right		Right		Right			Right		Right
Off Ramp Speed	45		45		45			25		45
Off Ramp Cap (pcph)	2,100		2,100		4,200			3,800		2,100
Off Ramp v/c ratio	0.66		0.09		0.49			0.25		0.99
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps										
Up Type			Off		Off					
Up Distance			1,250		2,350					
Up Flow (pcph)			1,393		182					
Down Type	On		No		On					
Down Distance	1,250				8,850					
Down Flow (pcph)	673				34					
Calculate Merge Influence Area Operations										
Effective v_P (pcph)										
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)										
P_{FM} (Eqn 13-4)			#VALUE!		#VALUE!					
P_{FM} (Eqn 13-5)										
P_{FM}										
v_{12} (pcph)										
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)										
v_{R12a} (pcph)										
Merge Speed Index										
Merge Area Speed										
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed										
Merge v/c ratio										
Merge Density										
Merge LOS										

Location	1	2	3	4	5	6	7	8	9	10



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No Trucks

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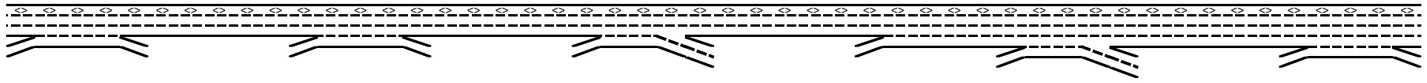
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)										
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)										
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}										
v_{12} (pcph)										
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)										
Diverge Speed Index										
Diverge Area Speed										
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed										
Diverge v/c ratio										
Diverge Density										
Diverge LOS										
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments										
On to Off Volume (vph)	228		112		785			164		830
PHF	0.92		0.92		0.92			0.92		0.92
Terrain	Level		Level		Level			Level		Level
Grade %	0.0%		0.0%		0.0%			0.0%		0.0%
Grade Length (mi)	0.00		0.00		0.00			0.00		0.00
Truck & Bus %	2.0%		2.0%		2.0%			2.0%		2.0%
RV %	0.0%		0.0%		0.0%			0.0%		0.0%
E_T	1.5		1.5		1.5			1.5		1.5
E_R	1.2		1.2		1.2			1.2		1.2
f_{HV}	0.990		0.990		0.990			0.990		0.990
f_P	1.00		1.00		1.00			1.00		1.00
On to Off Flow (pcph)	250		123		862			180		911
Calculate On Ramp to Mainline Flow Rate for Weave Segments										
On to ML Volume (vph)	722		528		1,095			846		790
PHF	0.92		0.92		0.92			0.92		0.92
Terrain	Level		Level		Level			Level		Level
Grade %	0.0%		0.0%		-7.0%			0.0%		0.0%
Grade Length (mi)	0.00		0.00		0.00			0.00		0.00
Truck & Bus %	1.0%		2.0%		2.0%			2.0%		2.0%
RV %	0.0%		0.0%		0.0%			0.0%		0.0%
E_T	1.5		1.5		1.5			1.5		1.5
E_R	1.2		1.2		1.2			1.2		1.2
f_{HV}	0.995		0.990		0.990			0.990		0.990
f_P	1.00		1.00		1.00			1.00		1.00
On to ML Flow (pcph)	789		579		1,202			928		867

Location	1	2	3	4	5	6	7	8	9	10



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No Trucks

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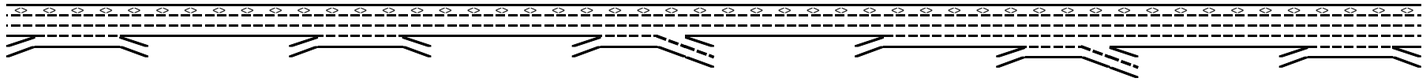
Calculate Mainline to Off Ramp Flow Rate for Weave Segments										
ML to Off Volume (vph)	682		58		455			726		1,120
PHF	0.94		0.94		0.94			0.94		0.94
Terrain	Level		Level		Level			Level		Level
Grade %	0.0%		0.0%		-7.0%			0.0%		0.0%
Grade Length (mi)	0.00		0.00		0.00			0.00		0.00
Truck & Bus %	1.0%		1.0%		1.0%			1.0%		1.0%
RV %	0.0%		0.0%		0.0%			0.0%		0.0%
E_T	1.5		1.5		1.5			1.5		1.5
E_R	1.2		1.2		1.2			1.2		1.2
f_{HV}	0.995		0.995		0.995			0.995		0.995
f_P	1.00		1.00		1.00			1.00		1.00
ML to Off Flow (pcph)	729		62		486			776		1,197
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments										
GP to GP Volume (vph)	2,123		2,748		2,745			3,082		2,652
PHF	0.94		0.94		0.94			0.94		0.94
Terrain	Level		Level		Level			Level		Level
Grade %	0.0%		0.0%		0.0%			0.0%		0.0%
Grade Length (mi)	0.00		0.00		0.00			0.00		0.00
Truck & Bus %	1.0%		1.0%		1.0%			1.0%		1.0%
RV %	0.0%		0.0%		0.0%			0.0%		0.0%
E_T	1.5		1.5		1.5			1.5		1.5
E_R	1.2		1.2		1.2			1.2		1.2
f_{HV}	0.995		0.995		0.995			0.995		0.995
f_P	1.00		1.00		1.00			1.00		1.00
GP to GP Flow (pcph)	2,270		2,938		2,935			3,296		2,835

Location	1	2	3	4	5	6	7	8	9	10



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No Trucks

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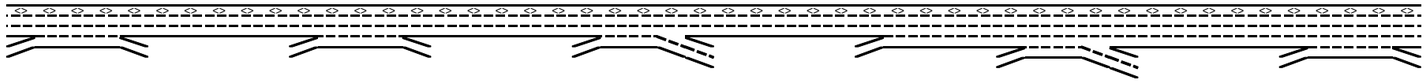
Calculate Weave Segment Operations										
Weave Type	One-sided		One-sided		One-sided			One-sided		One-sided
Weave Length	6,325		7,250		5,500			3,425		3,775
Segment Lanes	2		2		2			3		3
Weave Lanes	2		2		3			3		3
Weave Flow (pcph)	1,518		641		1,689			1,704		2,065
Non-Weave Flow	2,520		3,061		3,797			3,476		3,747
Segment Flow	4,038		3,702		5,486			5,180		5,811
Max Weave Length	6,412		4,264		4,102			4,331		4,619
Length Check	OK		Not a Weave		Not a Weave			OK		OK
Ideal Weave Capacity	2,343		2,578		2,457			2,281		2,285
f_{HV}	0.995		0.994		0.993			0.994		0.994
f_p	0.999		0.998		0.998			0.998		0.999
Capacity Condition 1	4,657		5,118		4,870			6,789		6,802
Capacity Condition 2	6,345		13,753		11,268			10,556		9,773
Weave v/c ratio	0.86		0.72		1.12			0.76		0.85
Interchange Density	3		5		5			4		3
Lane Changes On to ML	1		1		1			1		1
Lane Changes ML to Off	1		1		1			1		1
Lane Changes On to Off	0		0		0			0		0
Min Lane Change Rate	1,518		641		1,689			1,704		2,065
Weave LC Rate	3,903		3,355		3,720			2,820		3,353
Non-Weave LC Rate 1	3,562		4,175		3,378			1,995		2,240
Non-Weave LC Rate 2	2,251		2,372		2,536			2,464		2,524
Non-Weave LC Rate 3	-3,461		-23,002		-8,468			4,496		3,528
Segment LC Rate	6,154		5,727		6,256			5,284		5,877
Weave Intensity Factor	0.221		0.188		0.250			0.318		0.320
Weave Speed	55.9		57.1		55.0			52.9		52.9
Non-Weave Speed	44.4		51.5		39.7			44.4		40.8
Segment Speed	48.1		52.4		43.4			46.9		44.4
Weave Density	42.0		-		-			36.8		43.6
Weave LOS	E		Basic		Basic			E		E
Summarize Segment Operations										
Segment v/c ratio	0.86	0.65	0.52	0.73	0.77	0.85	0.43	0.76	0.57	0.85
Segment Density	42.0	23.4	18.9	26.9	28.9	33.3	15.5	36.8	20.7	43.6
Segment LOS	E	C	C	D	D	D	B	E	C	E
Over Capacity										

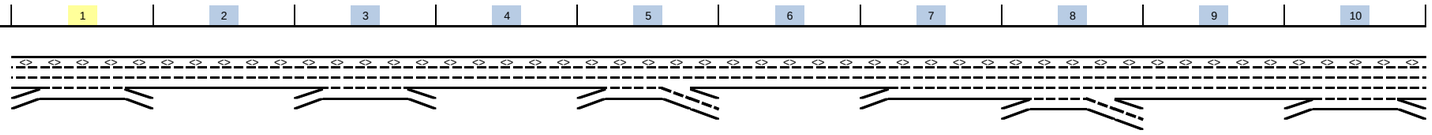
Project: Serrano/Pedregal **Alternative:** Cumulative No Project
Freeway Corridor: Westbound US 50 **Time Period:** PM Peak Hour

Data Entry Value
Calculated Value



Key
<> Express Lane (HOV)
No Trucks

Name	Cameron Park to Cambridge	Cambridge Rd off to on-ramp	Cambridge Rd to Bass Lake Rd	Bass Lake Rd off to on-ramp	Bass Lake Rd to Silva Valley Pkwy	Silva Valley Pwky off to on-ramp	Silva Valley on-ramp	Silva Valley to El Dorado Hills	El Dorado Hills off to on-ramp	El Dorado Hills to Empire Ranch
Define Freeway Segment										
Type	Weave	Basic	Weave	Basic	Weave	Basic	Basic	Weave	Basic	Weave
Length (ft)	7,325	1,250	8,250	2,350	6,500	2,350	800	4,425	2,300	4,775
Accel Length										
Decel Length										
Mainline Volume	3,880	3,810	3,810	3,690	3,690	3,940	3,940	3,980	3,550	3,550
On Ramp Volume	1,010		470		1,230		40	390		1,480
Off Ramp Volume	1,080		590		980			820		1,750
Express Lane Volume	582	572	648	627	554	591	552	557	497	497
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	4,308	3,239	3,632	3,063	4,367	3,349	3,428	3,813	3,053	4,533
PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
GP Lanes	3	2	3	2	3	2	4	4	3	4
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	-7.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995
f_P	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	4,510	3,390	3,803	3,206	4,571	3,506	3,589	3,992	3,196	4,745
GP Flow (pcphpl)	1,503	1,695	1,268	1,603	1,524	1,753	897	998	1,065	1,186
Calculate Speed in General Purpose Lanes										
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	69.6	69.6	69.6	69.6	69.6	69.6	69.6	69.6	69.6	69.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.64	0.72	0.54	0.68	0.65	0.75	0.38	0.42	0.45	0.50
Speed (mph)	64.8	63.8	65.0	64.4	64.8	63.2	65.0	65.0	65.0	65.0
Density (pcphpl)	23.2	26.6	19.5	24.9	23.5	27.7	13.8	15.4	16.4	18.3
LOS	C	D	C	C	C	D	B	B	B	C
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)	3,364		3,308		3,257		3,545	3,549		3,066
GP_{IN} Cap (pcph)	4,700		4,700		4,700		4,700	7,050		7,050
GP_{IN} v/c ratio	0.72		0.70		0.69		0.75	0.50		0.43
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)	2,857		3,172		2,949			3,115		2,876
GP_{OUT} Cap (pcph)	4,700		4,700		4,700			7,050		7,050
GP_{OUT} v/c ratio	0.61		0.67		0.63			0.44		0.41



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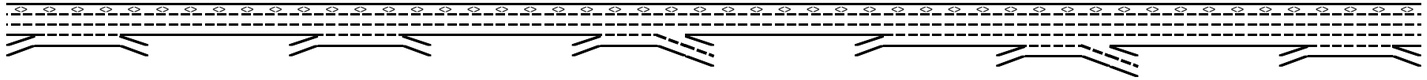
Calculate Flow Rate in Express Lanes (EL)										
EL Volume (vph)	582	572	648	627	554	591	552	557	497	497
PHF	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Express Lanes	1	1	1	1	1	1	1	1	1	1
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	-7.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990
f_P	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EL Flow (pcph)	653	641	727	704	621	663	619	625	558	558
EL Flow (pcphpl)	653	641	727	704	621	663	619	625	558	558
Calculate Speed in Express Lanes										
Lane Width (ft)										
Shoulder Width										
TRD										
f_{LW}										
f_{LC}										
Calc'd FFS										
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	65	65	65	65	65	65	65	65	65	65
Calculate Operations in Express Lanes										
EL_{IN} v/c ratio	0.37	0.37	0.42	0.40	0.35	0.38	0.35	0.36	0.32	0.32
Calculate On Ramp Flow Rate										
On Volume (vph)	1,010		470		1,230		40	390		1,480
PHF	0.89		0.96		0.95		0.92	0.89		0.89
Total Lanes	1		1		1		1	1		1
Terrain	Level		Level		Level		Level	Level		Level
Grade %	0.0%		0.0%		0.0%		0.0%	0.0%		0.0%
Grade Length (mi)	0.00		0.00		0.00		0.00	0.00		0.00
Truck & Bus %	2.0%		2.0%		3.0%		2.0%	2.0%		2.0%
RV %	0.0%		0.0%		0.0%		0.0%	0.0%		0.0%
E_T	1.5		1.5		1.5		1.5	1.5		1.5
E_R	1.2		1.2		1.2		1.2	1.2		1.2
f_{HV}	0.990		0.990		0.985		0.990	0.990		0.990
f_P	1.00		1.00		1.00		1.00	1.00		1.00
On Flow (pcph)	1,146		494		1,314		44	443		1,680
On Flow (pcphpl)	1,146		494		1,314		44	443		1,680
Calculate On Ramp Roadway Operations										
On Ramp Type			Right				Right	Right		Right
On Ramp Speed (mph)	45		25				45	45		45
On Ramp Cap (pcph)			1,900				2,100	2,100		2,100
On Ramp v/c ratio			0.26				0.02	0.21		0.80

Location	1	2	3	4	5	6	7	8	9	10



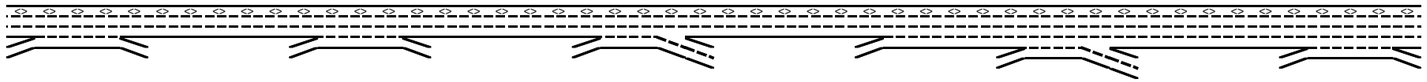
Key

<> Express Lane (HOV)

No Trucks

Name	Cameron Park to Cambridge	Cambridge Rd off to on-ramp	Cambridge Rd to Bass Lake Rd	Bass Lake Rd off to on-ramp	Bass Lake Rd to Silva Valley Pkwy	Silva Valley Pwky off to on-ramp	Silva Valley on-ramp	Silva Valley to El Dorado Hills	El Dorado Hills off to on-ramp	El Dorado Hills to Empire Ranch
Calculate Off Ramp Flow Rate										
Off Volume (vph)	1,080		590		980			820		1,750
PHF	0.66		0.95		0.61			0.95		0.95
Total Lanes	1		1		2			2		1
Terrain	Level		Level		Level			Level		Level
Grade %	0.0%		0.0%		0.0%			0.0%		0.0%
Grade Length (mi)	0.00		0.00		0.00			0.00		0.00
Truck & Bus %	2.0%		3.0%		2.0%			3.0%		3.0%
RV %	0.0%		0.0%		0.0%			0.0%		0.0%
E_T	1.5		1.5		1.5			1.5		1.5
E_R	1.2		1.2		1.2			1.2		1.2
f_{HV}	0.990		0.985		0.990			0.985		0.985
f_P	1.00		1.00		1.00			1.00		1.00
Off Flow (pcph)	1,653		630		1,623			876		1,870
Off Flow (pcphpl)	1,653		630		811			438		1,870
Calculate Off Ramp Roadway Operations										
Off Ramp Type	Right		Right		Right			Right		Right
Off Ramp Speed	45		45		45			25		45
Off Ramp Cap (pcph)	2,100		2,100		4,200			3,800		2,100
Off Ramp v/c ratio	0.79		0.30		0.39			0.23		0.89
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps										
Up Type			Off		Off					
Up Distance			1,250		2,350					
Up Flow (pcph)			1,653		630					
Down Type	On		No		On					
Down Distance	1,250				8,850					
Down Flow (pcph)	494				44					
Calculate Merge Influence Area Operations										
Effective v_P (pcph)										
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)										
P_{FM} (Eqn 13-4)			#VALUE!		#VALUE!					
P_{FM} (Eqn 13-5)										
P_{FM}										
v_{12} (pcph)										
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)										
v_{R12a} (pcph)										
Merge Speed Index										
Merge Area Speed										
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed										
Merge v/c ratio										
Merge Density										
Merge LOS										

Location	1	2	3	4	5	6	7	8	9	10



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No Trucks

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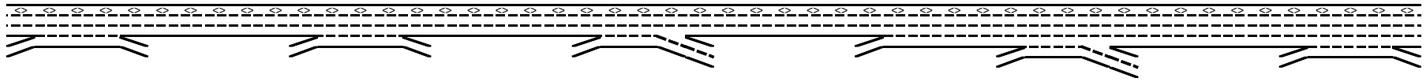
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)										
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)										
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}										
v_{12} (pcph)										
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)										
Diverge Speed Index										
Diverge Area Speed										
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed										
Diverge v/c ratio										
Diverge Density										
Diverge LOS										
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments										
On to Off Volume (vph)	434		150		400			83		686
PHF	0.92		0.92		0.92			0.92		0.92
Terrain	Level		Level		Level			Level		Level
Grade %	0.0%		0.0%		0.0%			0.0%		0.0%
Grade Length (mi)	0.00		0.00		0.00			0.00		0.00
Truck & Bus %	2.0%		2.0%		2.0%			2.0%		2.0%
RV %	0.0%		0.0%		0.0%			0.0%		0.0%
E_T	1.5		1.5		1.5			1.5		1.5
E_R	1.2		1.2		1.2			1.2		1.2
f_{HV}	0.990		0.990		0.990			0.990		0.990
f_P	1.00		1.00		1.00			1.00		1.00
On to Off Flow (pcph)	477		165		439			91		753
Calculate On Ramp to Mainline Flow Rate for Weave Segments										
On to ML Volume (vph)	576		320		830			307		794
PHF	0.96		0.96		0.96			0.96		0.96
Terrain	Level		Level		Grade			Level		Level
Grade %	0.0%		0.0%		-7.0%			0.0%		0.0%
Grade Length (mi)	0.00		0.00		0.00			0.00		0.00
Truck & Bus %	1.0%		1.0%		1.0%			1.0%		1.0%
RV %	0.0%		0.0%		0.0%			0.0%		0.0%
E_T	1.5		1.5		1.5			1.5		1.5
E_R	1.2		1.2		1.2			1.2		1.2
f_{HV}	0.995		0.995		0.995			0.995		0.995
f_P	1.00		1.00		1.00			1.00		1.00
On to ML Flow (pcph)	603		335		869			321		831

Location	1	2	3	4	5	6	7	8	9	10



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No Trucks

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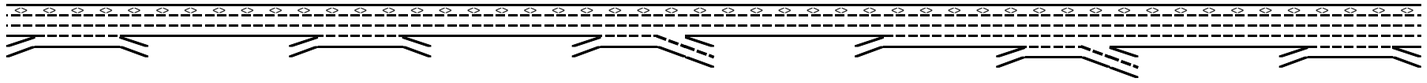
Calculate Mainline to Off Ramp Flow Rate for Weave Segments										
ML to Off Volume (vph)	646		440		580			737		1,064
PHF	0.96		0.96		0.95			0.96		0.96
Terrain	Level		Level		Grade			Level		Level
Grade %	0.0%		0.0%		-7.0%			0.0%		0.0%
Grade Length (mi)	0.00		0.00		0.00			0.00		0.00
Truck & Bus %	1.0%		1.0%		1.0%			1.0%		1.0%
RV %	0.0%		0.0%		0.0%			0.0%		0.0%
E_T	1.5		1.5		1.5			1.5		1.5
E_R	1.2		1.2		1.2			1.2		1.2
f_{HV}	0.995		0.995		0.995			0.995		0.995
f_P	1.00		1.00		1.00			1.00		1.00
ML to Off Flow (pcph)	676		461		614			771		1,114
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments										
GP to GP Volume (vph)	2,652		2,722		2,556			2,686		1,989
PHF	0.96		0.96		0.96			0.96		0.96
Terrain	Level		Level		Grade			Level		Level
Grade %	0.0%		0.0%		-7.0%			0.0%		0.0%
Grade Length (mi)	0.00		0.00		0.00			0.00		0.00
Truck & Bus %	1.0%		1.0%		1.0%			1.0%		1.0%
RV %	0.0%		0.0%		0.0%			0.0%		0.0%
E_T	1.5		1.5		1.5			1.5		1.5
E_R	1.2		1.2		1.2			1.2		1.2
f_{HV}	0.995		0.995		0.995			0.995		0.995
f_P	1.00		1.00		1.00			1.00		1.00
GP to GP Flow (pcph)	2,777		2,850		2,676			2,812		2,082

Location	1	2	3	4	5	6	7	8	9	10



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Calculate Weave Segment Operations										
Weave Type	One-sided		One-sided		One-sided			One-sided		One-sided
Weave Length	6,325		7,250		5,500			3,425		3,775
Segment Lanes	2		2		2			3		3
Weave Lanes	2		2		3			3		3
Weave Flow (pcph)	1,279		796		1,483			1,092		1,945
Non-Weave Flow	3,253		3,015		3,115			2,903		2,836
Segment Flow	4,532		3,810		4,598			3,996		4,780
Max Weave Length	5,393		4,627		4,262			3,734		5,191
Length Check	Not a Weave		Not a Weave		Not a Weave			OK		OK
Ideal Weave Capacity	2,421		2,551		2,445			2,326		2,242
f_{HV}	0.995		0.995		0.995			0.995		0.994
f_p	0.999		1.000		0.999			1.000		0.999
Capacity Condition 1	4,813		5,073		4,858			6,941		6,680
Capacity Condition 2	8,454		11,429		10,780			12,733		8,547
Weave v/c ratio	0.94		0.75		0.94			0.57		0.71
Interchange Density	3		5		5			4		3
Lane Changes On to ML	1		1		1			1		1
Lane Changes ML to Off	1		1		1			1		1
Lane Changes On to Off	0		0		0			0		0
Min Lane Change Rate	1,279		796		1,483			1,092		1,945
Weave LC Rate	3,663		3,510		3,515			2,208		3,233
Non-Weave LC Rate 1	3,713		4,165		3,237			1,877		2,052
Non-Weave LC Rate 2	2,415		2,361		2,384			2,336		2,321
Non-Weave LC Rate 3	-6,023		-22,556		-6,306			3,771		2,843
Segment LC Rate	6,078		5,871		5,899			4,544		5,554
Weave Intensity Factor	0.219		0.191		0.239			0.282		0.306
Weave Speed	56.0		57.0		55.4			54.0		53.3
Non-Weave Speed	44.9		50.1		43.3			50.7		43.3
Segment Speed	47.6		51.4		46.6			51.6		46.9
Weave Density	-		-		-			25.8		34.0
Weave LOS	Basic		Basic		Basic			C		D
Summarize Segment Operations										
Segment v/c ratio	0.64	0.72	0.54	0.68	0.65	0.75	0.38	0.57	0.45	0.71
Segment Density	23.2	26.6	19.5	24.9	23.5	27.7	13.8	25.8	16.4	34.0
Segment LOS	C	D	C	C	C	D	B	C	B	D
Over Capacity										

Leisch Method for Weaving Analysis

Data Input

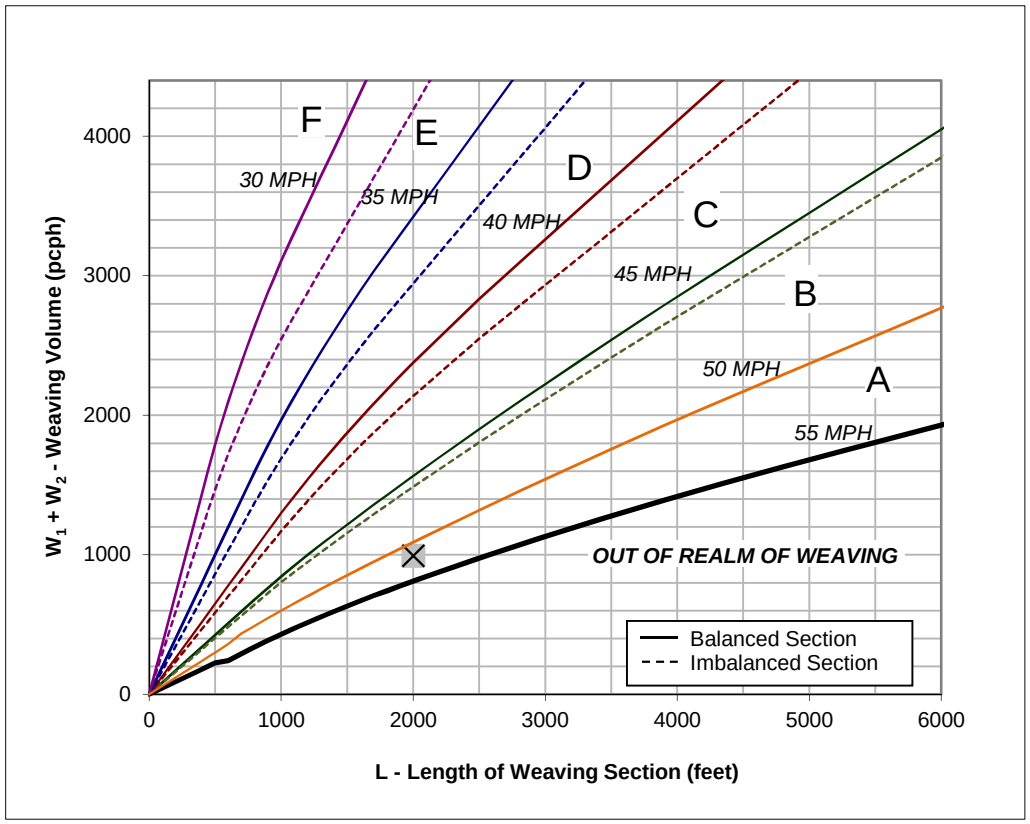
Number of Entering Mainline Lanes	N_b	3
Number of Lanes in Weaving Section	N	4
Length of Weaving Section (feet)	L	2,000

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	3,209	Volume (vph)*	732	Volume (vph)*	252
Truck Percentage	4%	Truck Percentage	2%	Truck Percentage	2%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	3,273	Volume (pcph)	739	Volume (pcph)	255

Project Information

Project	Serrano Westside/Pedregal
Scenario	Cumulative No Project - AM Pk Hr
Freeway	EB US 50
On-ramp	Latrobe Rd
Off-ramp	Silva Valley Parkway

*Some vehicles were assumed to continue from the on-ramp to the off-ramp without weaving



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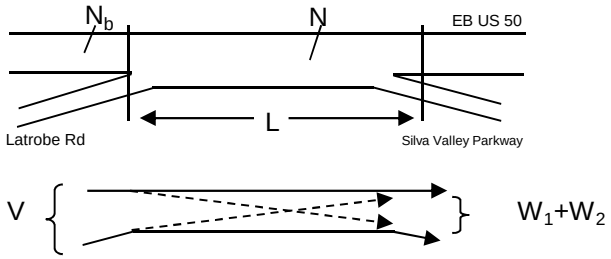


Capacity Analysis

1. Is the weaving section balanced (Y / N)? **Y**
   [If optional exit lane, then "Y". Otherwise "N".]
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?
   50 MPH and **55 MPH**
   If below the 55 MPH curve, out of the realm of weaving.
   If left of the 30 MPH curve, LOS is F.
3. Interpolated Weaving Speed (S_w, mph): **51.8**
4. Weaving Intensity Factor (k): **1.00**
5. Service Volume (SV, pcph)
   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$: **818**
6. Level of Service (LOS): **B**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

Leisch Method for Weaving Analysis

Data Input

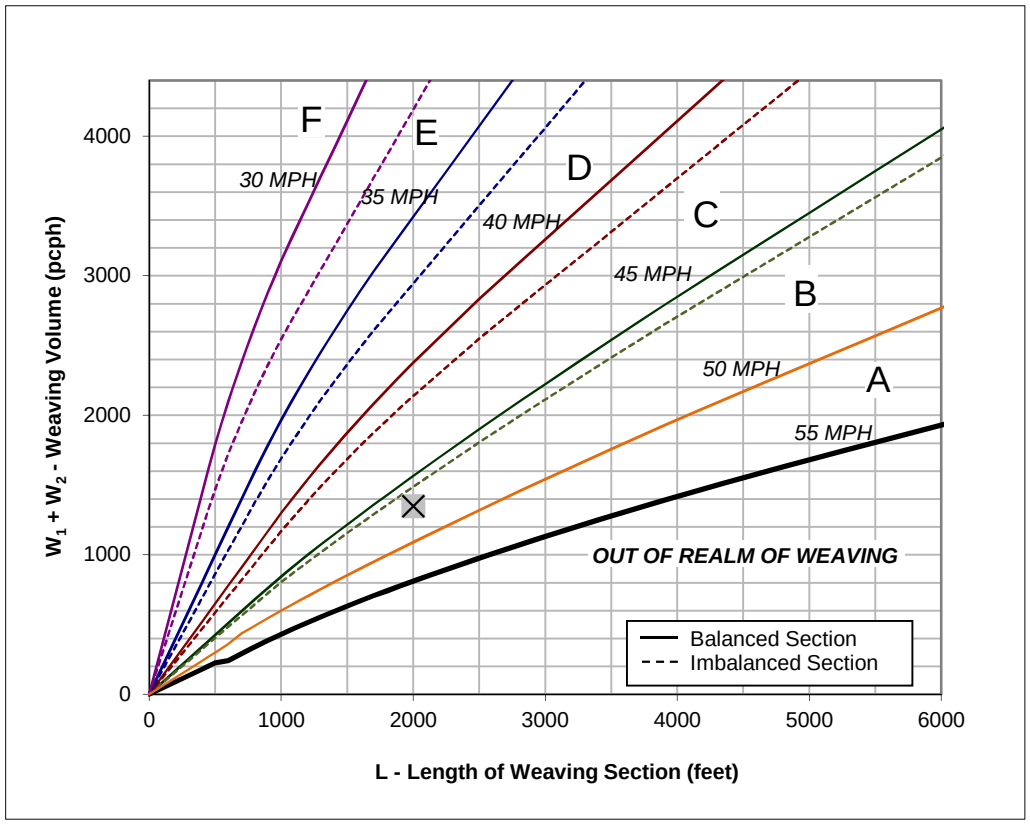
Number of Entering Mainline Lanes	N_b	3
Number of Lanes in Weaving Section	N	4
Length of Weaving Section (feet)	L	2,000

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	5,241	Volume (vph)*	623	Volume (vph)*	713
Truck Percentage	1%	Truck Percentage	2%	Truck Percentage	2%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	5,267	Volume (pcph)	629	Volume (pcph)	720

Project Information

Project	Serrano Westside Pedregal
Scenario	Cumulative No Project - PM Pk Hr
Freeway	EB US 50
On-ramp	Latrobe Rd
Off-ramp	Silva Valley Parkway

*Some vehicles were assumed to continue from the on-ramp to the off-ramp without weaving



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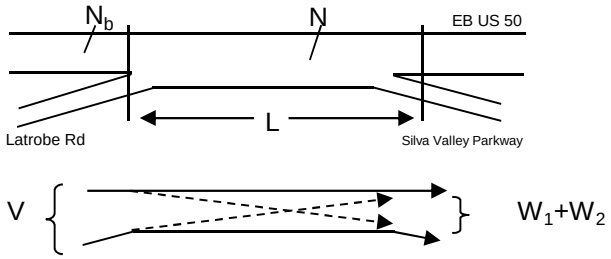


Capacity Analysis

1. Is the weaving section balanced (Y / N)? **Y**
   [If optional exit lane, then "Y". Otherwise "N".]
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?
   45 MPH and **50 MPH**
   If below the 55 MPH curve, out of the realm of weaving.
   If left of the 30 MPH curve, LOS is F.
3. Interpolated Weaving Speed (S_w, mph) **47.3**
4. Weaving Intensity Factor (k) **1.63**
5. Service Volume (SV, pcph)
   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,416**
6. Level of Service (LOS) **D**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

Leisch Method for Weaving Analysis

Data Input

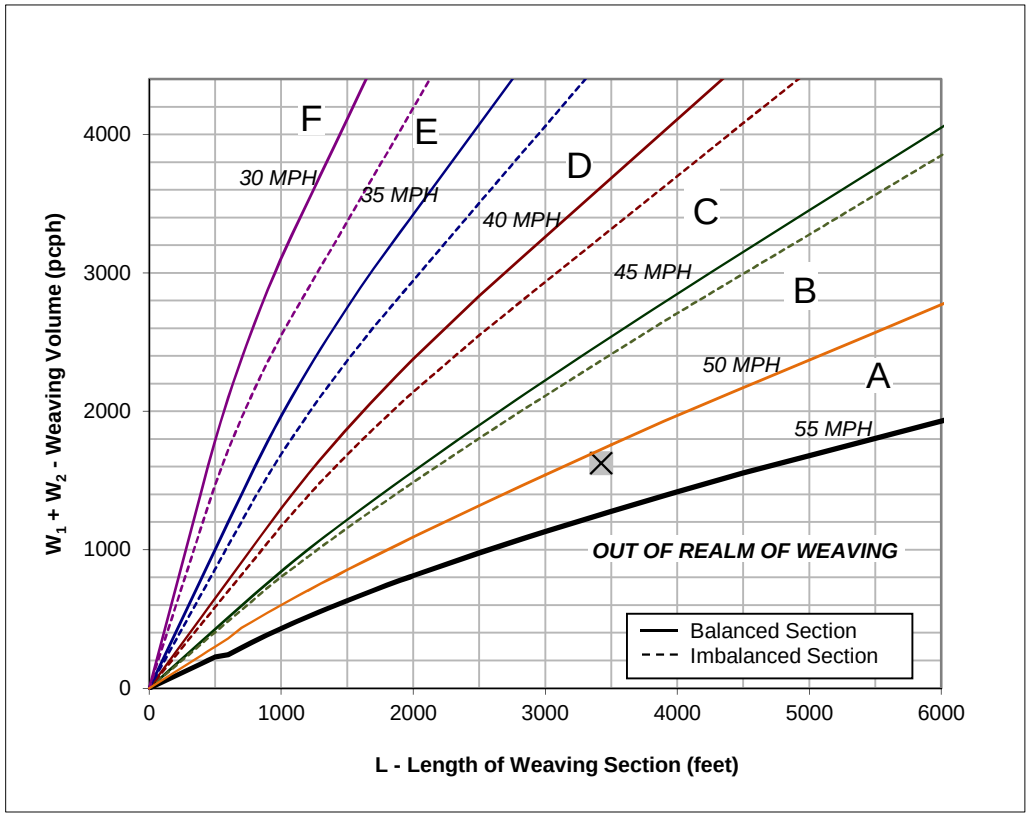
Number of Entering Mainline Lanes	N_b	3
Number of Lanes in Weaving Section	N	4
Length of Weaving Section (feet)	L	3,425

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	4,818	Volume (vph)*	889	Volume (vph)*	721
Truck Percentage	1%	Truck Percentage	2%	Truck Percentage	2%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	4,842	Volume (pcph)	898	Volume (pcph)	728

Project Information

Project	Serrano Westside/Pedregal
Scenario	Cumulative No Project - AM Pk Hr
Freeway	WB US 50
On-ramp	Silva Valley Rd
Off-ramp	El Dorado Hills Blvd

*Some vehicles were assumed to continue from the on-ramp to the off-ramp without weaving



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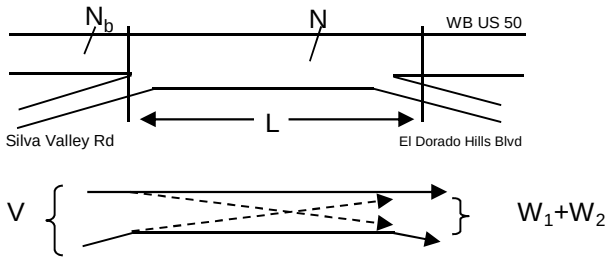


Capacity Analysis

1. Is the weaving section balanced (Y / N)? **Y**
   [If optional exit lane, then "Y". Otherwise "N".]
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?
   50 MPH and **55 MPH**
   If below the 55 MPH curve, out of the realm of weaving.
   If left of the 30 MPH curve, LOS is F.
3. Interpolated Weaving Speed (S_w, mph) **51.1**
4. Weaving Intensity Factor (k) **1.00**
5. Service Volume (SV, pcph)
   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,211**
6. Level of Service (LOS) **C**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

Leisch Method for Weaving Analysis

Data Input

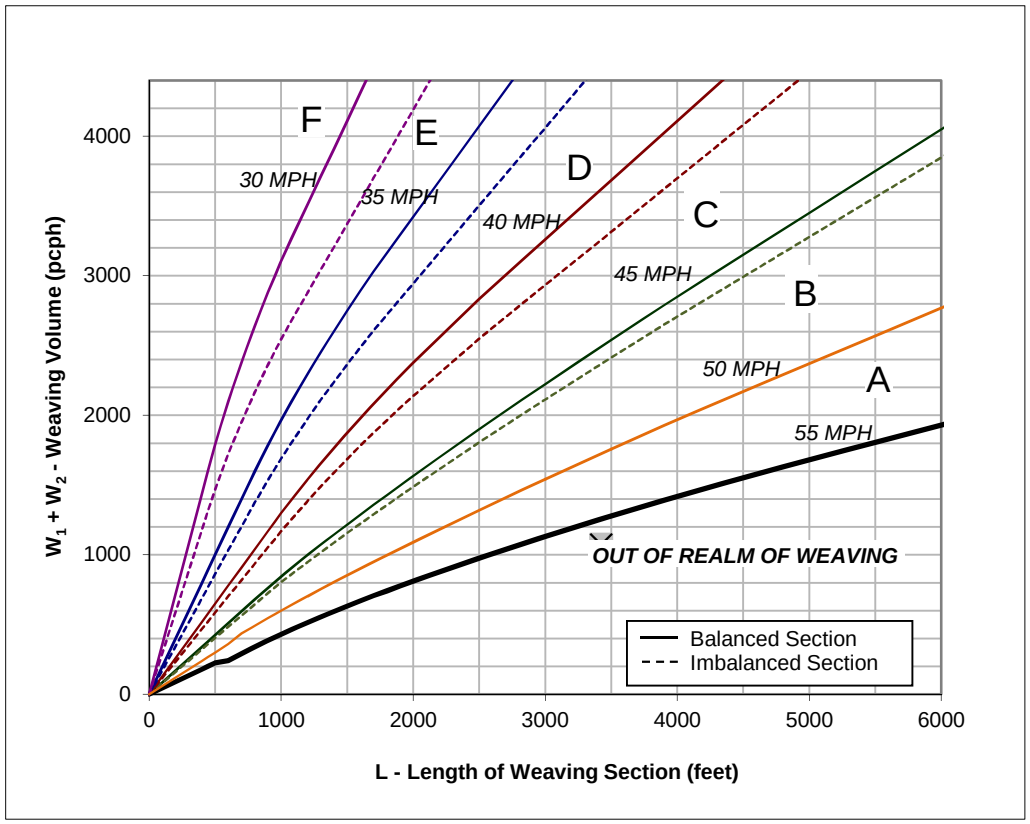
Number of Entering Mainline Lanes	N_b	3
Number of Lanes in Weaving Section	N	4
Length of Weaving Section (feet)	L	3,425

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	3,813	Volume (vph)*	324	Volume (vph)*	738
Truck Percentage	1%	Truck Percentage	2%	Truck Percentage	2%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	3,832	Volume (pcph)	327	Volume (pcph)	746

Project Information

Project	Serrano Westside/Pedregal
Scenario	Cumulative No Project - PM Pk Hr
Freeway	WB US 50
On-ramp	Silva Valley Rd
Off-ramp	El Dorado Hills Blvd

*Some vehicles were assumed to continue from the on-ramp to the off-ramp without weaving



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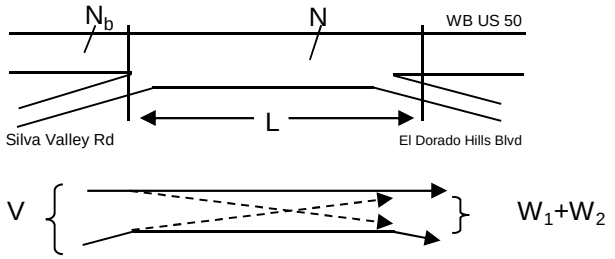


Capacity Analysis

1. Is the weaving section balanced (Y / N)? **Y**
   [If optional exit lane, then "Y". Otherwise "N".]
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?
   MPH and **MPH**
   If below the 55 MPH curve, out of the realm of weaving.
   If left of the 30 MPH curve, LOS is F.
3. Interpolated Weaving Speed (S_w, mph) #N/A
4. Weaving Intensity Factor (k) #N/A
5. Service Volume (SV, pcph)
   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ #N/A
6. Level of Service (LOS) #N/A

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

Leisch Method for Weaving Analysis

Data Input

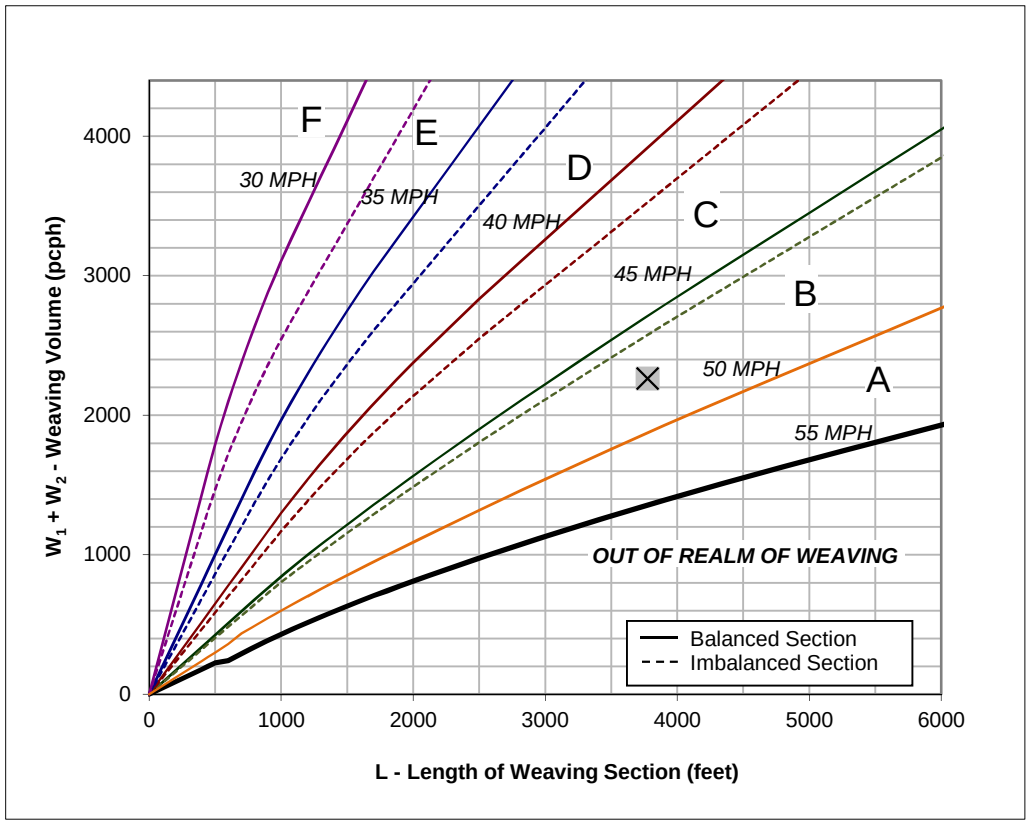
Number of Entering Mainline Lanes	N_b	3
Number of Lanes in Weaving Section	N	4
Length of Weaving Section (feet)	L	3,775

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	5,392	Volume (vph)*	956	Volume (vph)*	1,286
Truck Percentage	1%	Truck Percentage	2%	Truck Percentage	2%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	5,419	Volume (pcph)	965	Volume (pcph)	1,299

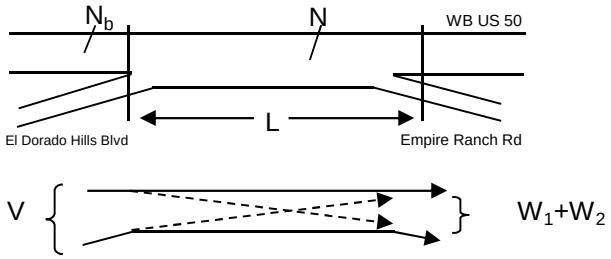
Project Information

Project	Serrano Westside/Pedregal
Scenario	Cumulative No Project - AM Pk Hr
Freeway	WB US 50
On-ramp	El Dorado Hills Blvd
Off-ramp	Empire Ranch Rd

*Some vehicles were assumed to continue from the on-ramp to the off-ramp without weaving



Figure



Capacity Analysis

1. Is the weaving section balanced (Y / N)? [If optional exit lane, then "Y". Otherwise "N".]	Y
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?	**45 MPH** and **50 MPH**
If below the 55 MPH curve, out of the realm of weaving. If left of the 30 MPH curve, LOS is F.	
3. Interpolated Weaving Speed (S_w, mph)	47.7
4. Weaving Intensity Factor (k)	1.57
5. Service Volume (SV, pcph) $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$	1,492
6. Level of Service (LOS)	D

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

Leisch Method for Weaving Analysis

Data Input

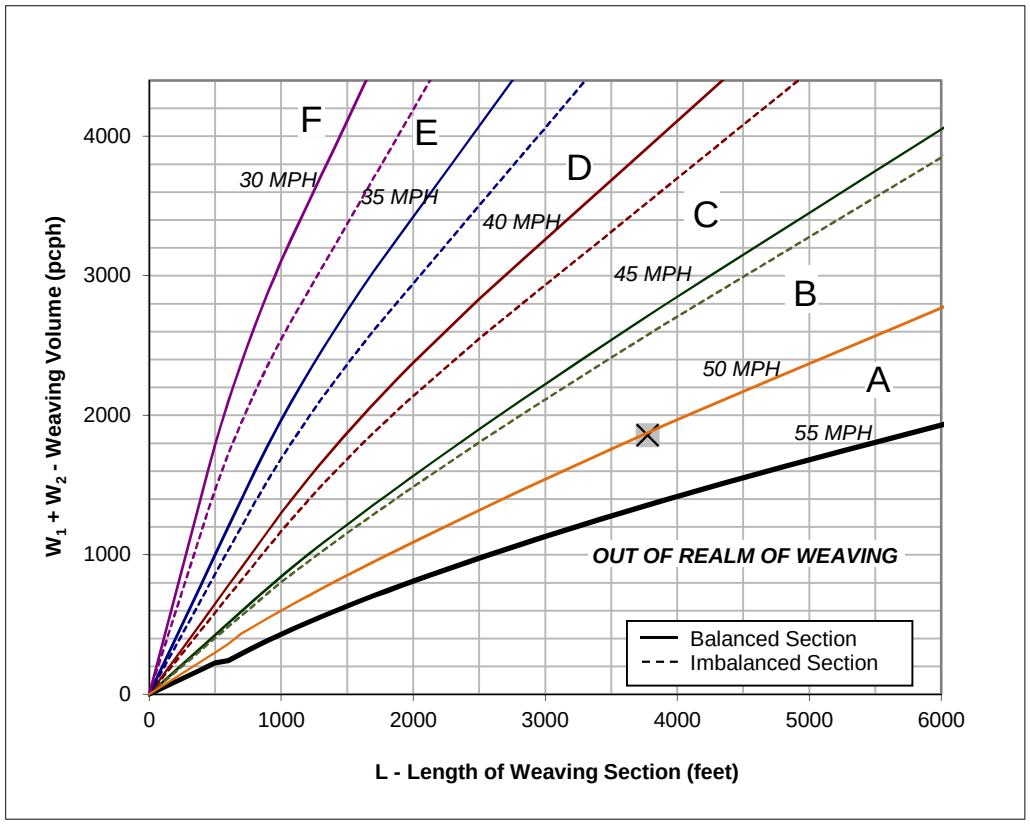
Number of Entering Mainline Lanes	N_b	3
Number of Lanes in Weaving Section	N	4
Length of Weaving Section (feet)	L	3,775

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	4,533	Volume (vph)*	784	Volume (vph)*	1,054
Truck Percentage	1%	Truck Percentage	2%	Truck Percentage	2%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	4,556	Volume (pcph)	792	Volume (pcph)	1,065

Project Information

Project	Serrano Westside/Pedregal
Scenario	Cumulative No Project - PM Pk Hr
Freeway	WB US 50
On-ramp	El Dorado Hills Blvd
Off-ramp	Empire Ranch Rd

*Some vehicles were assumed to continue from the on-ramp to the off-ramp without weaving



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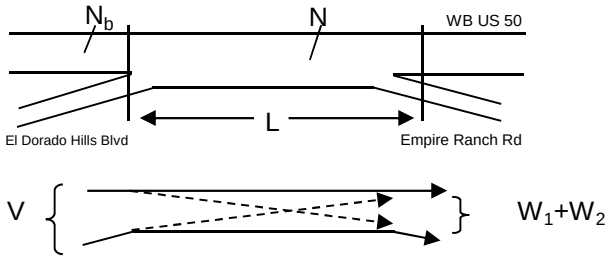


Capacity Analysis

1. Is the weaving section balanced (Y / N)? [If optional exit lane, then "Y". Otherwise "N".]	Y
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?	**50 MPH** and **55 MPH**
	If below the 55 MPH curve, out of the realm of weaving. If left of the 30 MPH curve, LOS is F.
3. Interpolated Weaving Speed (S_w, mph)	50.2
4. Weaving Intensity Factor (k)	1.00
5. Service Volume (SV, pcph) $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$	1,139
6. Level of Service (LOS)	C

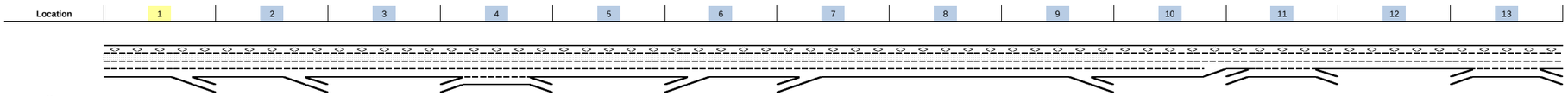
The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

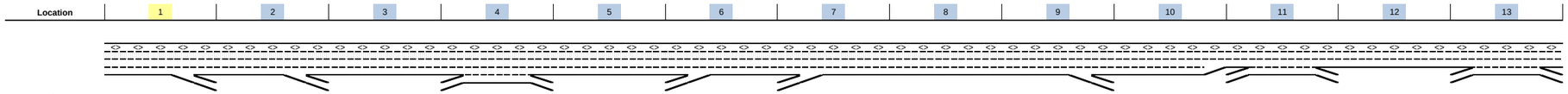
Project: Serrano/Pedregal/Marble Valley/Lime Rock **Alternative:** Cumulative Plus Project
Freeway Corridor: Eastbound US 50 **Time Period:** AM Peak Hour

Data Entry Value
Calculated Value

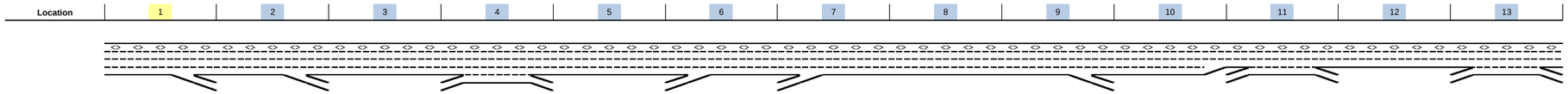


Key
<> Express Lane (HOV)
No Trucks

Name	Latrobe Rd off-ramp	El Dorado Hills Blvd off-ramp	El Dorado Hills Blvd off to on-ramp	El Dorado Hills Blvd to Silva Valley Pkwy	Silva Valley Pkwy off to on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy to Bass Lake Rd	Bass Lake Rd off-ramp	Bass Lake Rd off to on-ramp	Bass Lake Rd to Cambridge Rd	Cambridge Rd off to on-ramp	Cambridge Rd to Cameron Park
Define Freeway Segment													
Type	Diverge	Diverge	Basic	Weave	Basic	Merge	Merge	Basic	Diverge	Basic	Weave	Basic	Weave
Length (ft)	1,500	850	1,975	3,000	1,575	800	3,400	3,400	1,500	2,100	5,725	1,350	8,250
Accel Length						550	500						
Decel Length	150	150							150				
Mainline Volume	4,030	2,950	2,740	2,740	3,260	3,260	3,540	3,750	3,750	2,810	2,810	2,900	2,900
On Ramp Volume				810		280	210				450		1,220
Off Ramp Volume	1,080	210		290					940		360		1,140
Express Lane Volume	443	325	301	301	456	456	496	525	525	393	365	377	377
EL On Ramp Volume													
EL Off Ramp Volume													
Calculate Flow Rate in General Purpose Lanes (GP)													
GP Volume (vph)	3,587	2,626	2,439	3,249	2,804	3,084	3,254	3,225	3,225	2,417	2,895	2,523	3,743
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	0.92
GP Lanes	3	3	3	4	3	3	3	3	3	3	3	2	3
Terrain	Level	Level	Level	Level	Level	Level	Level	Grade	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	5.0	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	6.0	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.862	0.980	0.980	0.980	0.980	0.980
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,977	2,911	2,704	3,602	3,108	3,419	3,608	4,066	3,576	2,679	3,209	2,797	4,150
GP Flow (pcphpl)	1,326	970	901	900	1,036	1,140	1,203	1,355	1,192	893	1,070	1,399	1,383
Calculate Speed in General Purpose Lanes													
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	67.3	67.3	67.3	67.3	67.3	67.3	67.3	67.3	69.6	69.6	69.6	69.6	69.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	65	65	65	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes													
v/c ratio	0.56	0.41	0.38	0.38	0.44	0.48	0.51	0.58	0.51	0.38	0.46	0.60	0.59
Speed (mph)	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
Density (pcphpl)	20.4	14.9	13.9	13.9	15.9	17.5	18.5	20.9	18.3	13.7	16.5	21.5	21.3
LOS	C	B	B	B	B	B	C	C	C	B	B	C	C
Calculate Operations for Entering GP Lanes													
GP_{IN} Vol (pcph)				2,712		3,111	3,378				2,569		2,804
GP_{IN} Cap (pcph)				7,050		7,050	7,050				4,700		4,700
GP_{IN} v/c ratio				0.38		0.44	0.48				0.55		0.60
Calculate Operations for Exiting GP Lanes													
GP_{OUT} Vol (pcph)	2,791	2,680		3,292					2,293	2,679	2,825		2,885
GP_{OUT} Cap (pcph)	7,050	7,050		7,050					7,050	4,700	4,700		4,700
GP_{OUT} v/c ratio	0.40	0.38		0.47					0.33	0.57	0.60		0.61



Name	Latrobe Rd off-ramp	El Dorado Hills Blvd off-ramp	El Dorado Hills Blvd off to on-ramp	El Dorado Hills Blvd to Silva Valley Pkwy	Silva Valley Pkwy off to on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy to Bass Lake Rd	Bass Lake Rd off-ramp	Bass Lake Rd off to on-ramp	Bass Lake Rd to Cambridge Rd	Cambridge Rd off to on-ramp	Cambridge Rd to Cameron Park
Calculate Flow Rate in Express Lanes (EL)													
EL Volume (vph)	443	325	301	301	456	456	496	525	525	393	365	377	377
PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Express Lanes	1	1	1	1	1	1	1	1	1	1	1	1	1
Terrain	Level	Level	Level	Level	Level	Level	Level	Grade	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	5.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	6.0	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.917	0.990	0.990	0.990	0.990	0.990
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EL Flow (pcph)	527	386	358	358	542	542	589	673	624	467	434	448	448
EL Flow (pcphpl)	527	386	358	358	542	542	589	673	624	467	434	448	448
Calculate Speed in Express Lanes													
Lane Width (ft)													
Shoulder Width													
TRD													
f_{LW}													
f_{LC}													
Calc'd FFS													
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	65	65	65	65	65	65	65	65	65	65	65	65	65
Calculate Operations in Express Lanes													
EL_{IN} v/c ratio	0.30	0.22	0.20	0.20	0.31	0.31	0.34	0.38	0.36	0.27	0.25	0.26	0.26
Calculate On Ramp Flow Rate													
On Volume (vph)				810		280	210				450		1,220
PHF				0.92		0.92	0.92				0.71		0.92
Total Lanes				1		1	1				1		1
Terrain				Level		Level	Level				Level		Level
Grade %				0.0%		0.0%	0.0%				0.0%		0.0%
Grade Length (mi)				0.00		0.00	0.00				0.00		0.00
Truck & Bus %				2.0%		2.0%	2.0%				2.0%		3.0%
RV %				0.0%		0.0%	0.0%				0.0%		0.0%
E_T				1.5		1.5	1.5				1.5		1.5
E_R				1.2		1.2	1.2				1.2		1.2
f_{HV}				0.990		0.990	0.990				0.990		0.985
f_p				1.00		1.00	1.00				1.00		1.00
On Flow (pcph)				889		307	231				640		1,346
On Flow (pcphpl)				889		307	231				640		1,346
Calculate On Ramp Roadway Operations													
On Ramp Type				Right		Right	Right				Right		Right
On Ramp Speed (mph)				45		25	45				45		45
On Ramp Cap (pcph)				2,100		1,900	2,100				2,100		2,100
On Ramp v/c ratio				0.42		0.16	0.11				0.30		0.64



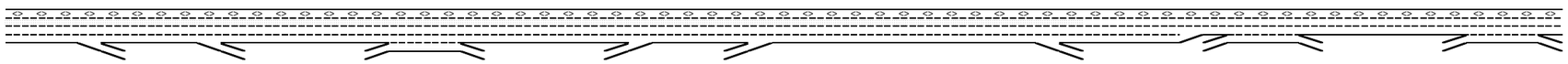
Key

<> Express Lane (HOV)

No Trucks

Name	Latrobe Rd off-ramp	El Dorado Hills Blvd off-ramp	El Dorado Hills Blvd off to on-ramp	El Dorado Hills Blvd to Silva Valley Pkwy	Silva Valley Pkwy off to on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy to Bass Lake Rd	Bass Lake Rd off-ramp	Bass Lake Rd off to on-ramp	Bass Lake Rd to Cambridge Rd	Cambridge Rd off to on-ramp	Cambridge Rd to Cameron Park
Calculate Off Ramp Flow Rate													
Off Volume (vph)	1,080	210		290					940		360		1,140
PHF	0.92	0.92		0.95					0.74		0.95		0.91
Total Lanes	1	1		1					1		1		1
Terrain	Level	Level		Level					Level		Level		Level
Grade %	0.0%	0.0%		0.0%					0.0%		0.0%		0.0%
Grade Length (mi)	0.00	0.00		0.00					0.00		0.00		0.00
Truck & Bus %	2.0%	2.0%		3.0%					2.0%		3.0%		2.0%
RV %	0.0%	0.0%		0.0%					0.0%		0.0%		0.0%
E_T	1.5	1.5		1.5					1.5		1.5		1.5
E_R	1.2	1.2		1.2					1.2		1.2		1.2
f_{HV}	0.990	0.990		0.985					0.990		0.985		0.990
f_P	1.00	1.00		1.00					1.00		1.00		1.00
Off Flow (pcph)	1,186	231		310					1,283		385		1,265
Off Flow (pcphpl)	1,186	231		310					1,283		385		1,265
Calculate Off Ramp Roadway Operations													
Off Ramp Type	Right	Right		Right					Right		Right		Right
Off Ramp Speed	45	25		45					45		45		45
Off Ramp Cap (pcph)	2,100	1,900		2,100					2,100		2,100		2,100
Off Ramp v/c ratio	0.56	0.12		0.15					0.61		0.18		0.60
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps													
Up Type		Off				Off	On		Off		Off		Off
Up Distance		2,350				1,575	800		4,900		2,100		1,350
Up Flow (pcph)		1,186				310	307		310		1,283		385
Down Type	Off	On				On	On		On		On		No
Down Distance	850	1,975				2,900	3,400		2,100		1,350		
Down Flow (pcph)	231	889				640	640		640		1,346		
Calculate Merge Influence Area Operations													
Effective v_P (pcph)						3,111	3,378						
Up Ramp L_{EQ}						-119	946						
Down Ramp L_{EQ}						3,800	3,925						
P_{FM} (Eqn 13-3)						0.593	0.592						
P_{FM} (Eqn 13-4)		#VALUE!				0.700			#VALUE!		#VALUE!		#VALUE!
P_{FM} (Eqn 13-5)	0.620												
P_{FM}						0.593	0.592						
v_{12} (pcph)						1,845	1,998						
v_3 (pcph)						1,267	1,380						
v_{34} (pcph)													
v_{12a} (pcph)						1,845	1,998						
v_{R12a} (pcph)						2,152	2,228						
Merge Speed Index						0.33	0.31						
Merge Area Speed						57.5	57.8						
Outer Lanes Volume						1,267	1,380						
Outer Lanes Speed						62.2	61.8						
Segment Speed						59.2	59.3						
Merge v/c ratio						0.47	0.48						
Merge Density						18.7	19.6						
Merge LOS						B	B						

Location	1	2	3	4	5	6	7	8	9	10	11	12	13



Key

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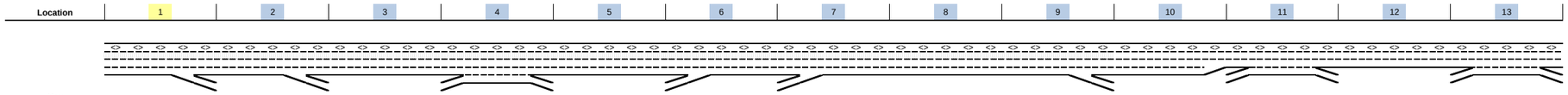
No Trucks

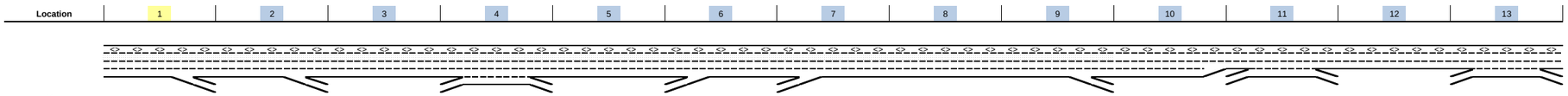
Name	Latrobe Rd off-ramp	El Dorado Hills Blvd off-ramp	El Dorado Hills Blvd off to on-ramp	El Dorado Hills Blvd to Silva Valley Pkwy	Silva Valley Pkwy off to on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy to Bass Lake Rd	Bass Lake Rd off-ramp	Bass Lake Rd off to on-ramp	Bass Lake Rd to Cambridge Rd	Cambridge Rd off to on-ramp	Cambridge Rd to Cameron Park
Calculate Diverge Influence Area Operations													
Effective v_P (pcph)	3,977	2,911							3,576				
Up Ramp L_{EQ}		9,845							5,560				
Down Ramp L_{EQ}	394	915							1,139				
P_{FD} (Eqn 13-9)	0.606	0.677							0.612				
P_{FD} (Eqn 13-10)													
P_{FD} (Eqn 13-11)	0.566												
P_{FD}	0.606	0.677							0.612				
v_{12} (pcph)	2,877	2,044							2,685				
v_3 (pcph)	1,099	867							890				
v_{34} (pcph)													
v_{12a} (pcph)	2,877	2,044							2,685				
Diverge Speed Index	0.40	0.58							0.41				
Diverge Area Speed	55.7	51.7							55.5				
Outer Lanes Volume	1,099	867							890				
Outer Lanes Speed	70.9	71.3							71.3				
Segment Speed	59.2	56.3							58.7				
Diverge v/c ratio	0.65	0.46							0.61				
Diverge Density	27.6	20.5							26.0				
Diverge LOS	C	C							C				
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments													
On to Off Volume (vph)				50							10		460
PHF				0.92							0.92		0.92
Terrain				Level							Level		Level
Grade %				0.0%							0.0%		0.0%
Grade Length (mi)				0.00							0.00		0.00
Truck & Bus %				3.0%							2.0%		2.0%
RV %				0.0%							0.0%		0.0%
E_T				1.5							1.5		1.5
E_R				1.2							1.2		1.2
f_{HV}				0.985							0.990		0.990
f_p				1.00							1.00		1.00
On to Off Flow (pcph)				55							11		505
Calculate On Ramp to Mainline Flow Rate for Weave Segments													
On to ML Volume (vph)				760							440		760
PHF				0.92							0.92		0.92
Terrain				Level							Level		Level
Grade %				0.0%							0.0%		0.0%
Grade Length (mi)				0.00							0.00		0.00
Truck & Bus %				3.0%							2.0%		2.0%
RV %				0.0%							0.0%		0.0%
E_T				1.5							1.5		1.5
E_R				1.2							1.2		1.2
f_{HV}				0.985							0.990		0.990
f_p				1.00							1.00		1.00
On to ML Flow (pcph)				838							483		834
Calculate Mainline to Off Ramp Flow Rate for Weave Segments													
ML to Off Volume (vph)				240							350		680
PHF				0.95							0.92		0.92
Terrain				Level							Level		Level
Grade %				0.0%							0.0%		0.0%
Grade Length (mi)				0.00							0.00		0.00
Truck & Bus %				6.0%							4.0%		4.0%
RV %				0.0%							0.0%		0.0%
E_T				1.5							1.5		1.5
E_R				1.2							1.2		1.2
f_{HV}				0.971							0.980		0.980
f_p				1.00							1.00		1.00
ML to Off Flow (pcph)				260							388		754



Name	Latrobe Rd off-ramp	El Dorado Hills Blvd off-ramp	El Dorado Hills Blvd off to on-ramp	El Dorado Hills Blvd to Silva Valley Pkwy	Silva Valley Pkwy off to on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy to Bass Lake Rd	Bass Lake Rd off-ramp	Bass Lake Rd off to on-ramp	Bass Lake Rd to Cambridge Rd	Cambridge Rd off to on-ramp	Cambridge Rd to Cameron Park
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments													
GP to GP Volume (vph)				2,199							2,095		1,843
PHF				0.95							0.92		0.92
Terrain				Level							Level		Level
Grade %				0.0%							0.0%		0.0%
Grade Length (mi)				0.00							0.00		0.00
Truck & Bus %				6.0%							4.0%		4.0%
RV %				0.0%							0.0%		0.0%
E_T				1.5							1.5		1.5
E_R				1.2							1.2		1.2
f_{HV}				0.971							0.980		0.980
f_p				1.00							1.00		1.00
GP to GP Flow (pcph)				2,384							2,322		2,043
Calculate Weave Segment Operations													
Weave Type				One-sided							One-sided		One-sided
Weave Length				2,000							4,725		7,250
Segment Lanes				3							2		2
Weave Lanes				3					3		2		2
Weave Flow (pcph)				1,099							871		1,588
Non-Weave Flow				2,439							2,333		2,548
Segment Flow				3,538							3,204		4,137
Max Weave Length				4,132							5,284		6,502
Length Check				OK							OK		Not a Weave
Ideal Weave Capacity				2,187							2,307		2,407
f_{HV}				0.974							0.982		0.984
f_p				0.996							0.999		0.998
Capacity Condition 1				6,371							4,524		4,726
Capacity Condition 2				10,944							8,656		6,136
Weave v/c ratio				0.54							0.69		0.86
Interchange Density				3							5		2
Lane Changes On to ML				1							1		1
Lane Changes ML to Off				1							1		1
Lane Changes On to Off				0							0		0
Min Lane Change Rate				1,099							871		1,588
Weave LC Rate				1,694							2,601		4,351
Non-Weave LC Rate 1				1,009							2,656		4,069
Non-Weave LC Rate 2				2,233							2,209		2,257
Non-Weave LC Rate 3				1,316							-241		-2,607
Segment LC Rate				3,011							4,810		6,608
Weave Intensity Factor				0.312							0.229		0.210
Weave Speed				53.1							55.7		56.3
Non-Weave Speed				51.4							51.0		43.6
Segment Speed				51.9							52.2		47.8
Weave Density				22.7							30.7		-
Weave LOS				C							D		Basic
Summarize Segment Operations													
Segment v/c ratio	0.65	0.46	0.38	0.54	0.44	0.47	0.48	0.58	0.61	0.38	0.69	0.60	0.59
Segment Density	27.6	20.5	13.9	22.7	15.9	18.7	19.6	20.9	26.0	13.7	30.7	21.5	21.3
Segment LOS	C	C	B	C	B	B	B	C	C	B	D	C	C
Over Capacity													

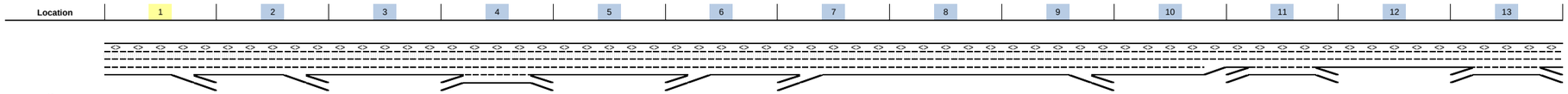
Project: Serrano/Pedregal/Marble Valley/Lime Rock **Alternative:** Cumulative Plus Project
Freeway Corridor: Eastbound US 50 **Time Period:** PM Peak Hour

Data Entry Value
Calculated Value



Key
<> Express Lane (HOV)
No Trucks

Location	1	2	3	4	5	6	7	8	9	10	11	12	13
Name	Latrobe Rd off-ramp	El Dorado Hills Blvd off-ramp	El Dorado Hills Blvd off to on-ramp	El Dorado Hills Blvd to Silva Valley Pkwy	Silva Valley Pkwy off to on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy to Bass Lake Rd	Bass Lake Rd off-ramp	Bass Lake Rd off to on-ramp	Bass Lake Rd to Cambridge Rd	Cambridge Rd off to on-ramp	Cambridge Rd to Cameron Park
Define Freeway Segment													
Type	Diverge	Diverge	Basic	Weave	Basic	Merge	Merge	Basic	Diverge	Basic	Weave	Basic	Weave
Length (ft)	1,500	850	1,975	3,000	1,575	800	3,400	3,400	1,500	2,100	6,625	1,350	8,250
Accel Length						550	500						
Decel Length	150	150							150				
Mainline Volume	6,570	5,800	5,270	5,270	5,490	5,490	5,810	6,540	6,540	4,810	4,810	4,370	4,370
On Ramp Volume				800		320	730				280		1,120
Off Ramp Volume	770	530		580					1,730		720		1,690
Express Lane Volume	986	870	791	685	714	714	755	981	981	722	722	656	612
EL On Ramp Volume													
EL Off Ramp Volume													
Calculate Flow Rate in General Purpose Lanes (GP)													
GP Volume (vph)	5,585	4,930	4,480	5,385	4,776	5,096	5,785	5,559	5,559	4,089	4,369	3,715	4,878
PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
GP Lanes	3	3	3	4	3	3	3	3	3	3	3	2	3
Terrain	Level	Level	Level	Level	Level	Level	Level	Grade	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	6.0	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	6.0	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.952	0.995	0.995	0.995	0.995	0.995
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	5,786	5,108	4,641	5,579	4,949	5,280	5,993	6,017	5,760	4,236	4,526	3,849	5,054
GP Flow (pcphpl)	1,929	1,703	1,547	1,395	1,650	1,760	1,998	2,006	1,920	1,412	1,509	1,924	1,685
Calculate Speed in General Purpose Lanes													
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	67.3	67.3	67.3	67.3	67.3	67.3	67.3	67.3	69.6	69.6	69.6	69.6	69.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	65	65	65	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes													
v/c ratio	0.82	0.72	0.66	0.59	0.70	0.75	0.85	0.85	0.82	0.60	0.64	0.82	0.72
Speed (mph)	61.0	63.7	64.7	65.0	64.1	63.2	59.9	59.8	61.2	65.0	64.8	61.1	63.9
Density (pcphpl)	31.6	26.7	23.9	21.5	25.7	27.9	33.3	33.5	31.4	21.7	23.3	31.5	26.4
LOS	D	D	C	C	C	D	D	D	D	C	C	D	D
Calculate Operations for Entering GP Lanes													
GP_{IN} Vol (pcph)				4,701		4,929	5,192				4,128		3,858
GP_{IN} Cap (pcph)				7,050		7,050	7,050				4,700		4,700
GP_{IN} v/c ratio				0.67		0.70	0.74				0.88		0.82
Calculate Operations for Exiting GP Lanes													
GP_{OUT} Vol (pcph)	4,941	4,526		4,939					3,958	4,236	3,757		3,179
GP_{OUT} Cap (pcph)	7,050	7,050		7,050					7,050	4,700	4,700		4,700
GP_{OUT} v/c ratio	0.70	0.64		0.70					0.56	0.90	0.80		0.68



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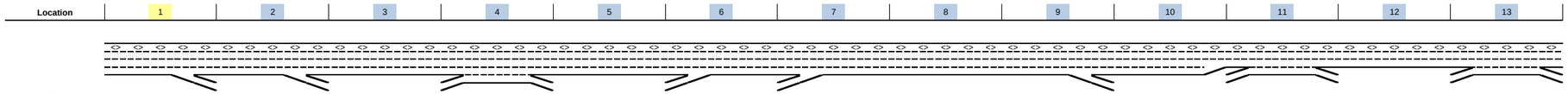
Calculate Flow Rate in Express Lanes (EL)													
EL Volume (vph)	986	870	791	685	714	714	755	981	981	722	722	656	612
PHF	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Express Lanes	1	1	1	1	1	1	1	1	1	1	1	1	1
Terrain	Level	Level	Level	Level	Level	Level	Level	Grade	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	5.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	6.0	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.917	0.990	0.990	0.990	0.990	0.990
f_P	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EL Flow (pcph)	1,106	976	887	769	801	801	848	1,188	1,101	810	810	736	687
EL Flow (pcphpl)	1,106	976	887	769	801	801	848	1,188	1,101	810	810	736	687
Calculate Speed in Express Lanes													
Lane Width (ft)													
Shoulder Width													
TRD													
f_{LW}													
f_{LC}													
Calc'd FFS													
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	65	65	65	65	65	65	65	65	65	65	65	65	65
Calculate Operations in Express Lanes													
EL_{IN} v/c ratio	0.63	0.56	0.51	0.44	0.46	0.46	0.48	0.68	0.63	0.46	0.46	0.42	0.39
Calculate On Ramp Flow Rate													
On Volume (vph)				800		320	730				280		1,120
PHF				0.92		0.92	0.92				0.71		0.95
Total Lanes				1		1	1				1		1
Terrain				Level		Level	Level				Level		Level
Grade %				0.0%		0.0%	0.0%				0.0%		0.0%
Grade Length (mi)				0.00		0.00	0.00				0.00		0.00
Truck & Bus %				2.0%		2.0%	2.0%				2.0%		3.0%
RV %				0.0%		0.0%	0.0%				0.0%		0.0%
E_T				1.5		1.5	1.5				1.5		1.5
E_R				1.2		1.2	1.2				1.2		1.2
f_{HV}				0.990		0.990	0.990				0.990		0.985
f_p				1.00		1.00	1.00				1.00		1.00
On Flow (pcph)				878		351	801				398		1,197
On Flow (pcphpl)				878		351	801				398		1,197
Calculate On Ramp Roadway Operations													
On Ramp Type				Right		Right	Right				Right		
On Ramp Speed (mph)				45		25	45				45		
On Ramp Cap (pcph)				2,100		1,900	2,100				2,100		
On Ramp v/c ratio				0.42		0.18	0.38				0.19		

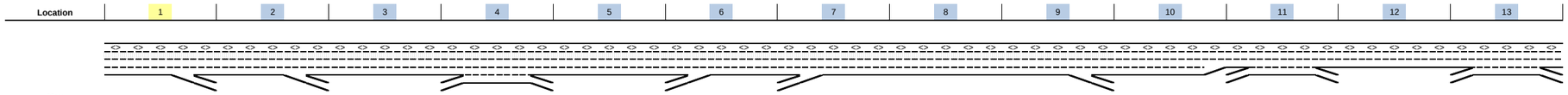


Key

<> Express Lane (HOV)

No Trucks

Name	Latrobe Rd off-ramp	El Dorado Hills Blvd off-ramp	El Dorado Hills Blvd off to on-ramp	El Dorado Hills Blvd to Silva Valley Pkwy	Silva Valley Pkwy off to on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy to Bass Lake Rd	Bass Lake Rd off-ramp	Bass Lake Rd off to on-ramp	Bass Lake Rd to Cambridge Rd	Cambridge Rd off to on-ramp	Cambridge Rd to Cameron Park
Calculate Off Ramp Flow Rate													
Off Volume (vph)	770	530		580					1,730		720		1,690
PHF	0.92	0.92		0.92					0.97		0.95		0.91
Total Lanes	1	1		1					1		1		1
Terrain	Level	Level		Level					Level		Level		Level
Grade %	0.0%	0.0%		0.0%					0.0%		0.0%		0.0%
Grade Length (mi)	0.00	0.00		0.00					0.00		0.00		0.00
Truck & Bus %	2.0%	2.0%		3.0%					2.0%		3.0%		2.0%
RV %	0.0%	0.0%		0.0%					0.0%		0.0%		0.0%
E_T	1.5	1.5		1.5					1.5		1.5		1.5
E_R	1.2	1.2		1.2					1.2		1.2		1.2
f_{HV}	0.990	0.990		0.985					0.990		0.985		0.990
f_P	1.00	1.00		1.00					1.00		1.00		1.00
Off Flow (pcph)	845	582		640					1,801		769		1,876
Off Flow (pcphpl)	845	582		640					1,801		769		1,876
Calculate Off Ramp Roadway Operations													
Off Ramp Type	Right	Right		Right					Right				Right
Off Ramp Speed	45	25		45					45				45
Off Ramp Cap (pcph)	2,100	1,900		2,100					2,100				2,100
Off Ramp v/c ratio	0.40	0.31		0.30					0.86				0.89
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps													
Up Type		Off				Off	On		Off		Off		No
Up Distance		2,350				1,575	800		4,900		2,100		
Up Flow (pcph)		845				640	351		640		1,801		
Down Type	Off	On				On	On		On		No		#REF!
Down Distance	850	1,975				2,900	3,400		2,100				#REF!
Down Flow (pcph)	582	878				398	398		398				#REF!
Calculate Merge Influence Area Operations													
Effective v_p (pcph)						4,929	5,192						
Up Ramp L_{EQ}						279	1,456						
Down Ramp L_{EQ}						2,365	2,442						
P_{FM} (Eqn 13-3)						0.593	0.592						
P_{FM} (Eqn 13-4)		#VALUE!				0.674			#VALUE!		#VALUE!		
P_{FM} (Eqn 13-5)	0.729												#REF!
P_{FM}						0.593	0.592						
v_{12} (pcph)						2,922	3,071						
v_3 (pcph)						2,007	2,121						
v_{34} (pcph)													
v_{12a} (pcph)						2,922	3,071						
v_{R12a} (pcph)						3,274	3,872						
Merge Speed Index						0.40	0.46						
Merge Area Speed						55.9	54.3						
Outer Lanes Volume						2,007	2,121						
Outer Lanes Speed						59.6	59.2						
Segment Speed						57.2	56.0						
Merge v/c ratio						0.71	0.84						
Merge Density						27.4	32.2						
Merge LOS						C	D						

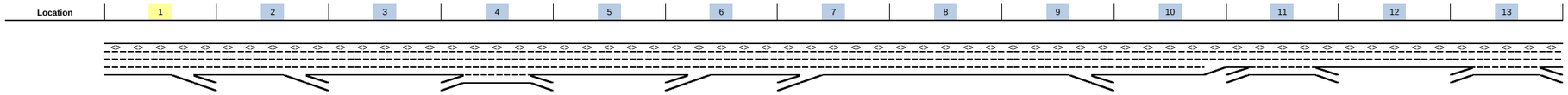


Key

<> Express Lane (HOV)

No Trucks

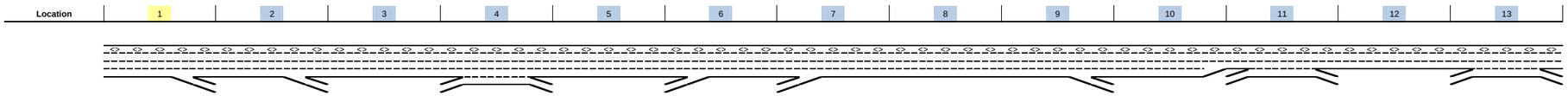
Name	Latrobe Rd off-ramp	El Dorado Hills Blvd off-ramp	El Dorado Hills Blvd off to on-ramp	El Dorado Hills Blvd to Silva Valley Pkwy	Silva Valley Pkwy off to on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy to Bass Lake Rd	Bass Lake Rd off-ramp	Bass Lake Rd off to on-ramp	Bass Lake Rd to Cambridge Rd	Cambridge Rd off to on-ramp	Cambridge Rd to Cameron Park
Calculate Diverge Influence Area Operations													
Effective v_P (pcph)	5,786	5,108							5,760				
Up Ramp L_{EQ}		5,860							9,613				
Down Ramp L_{EQ}	891	1,138							1,323				
P_{FD} (Eqn 13-9)	0.576	0.606							0.533				
P_{FD} (Eqn 13-10)													
P_{FD} (Eqn 13-11)	0.580												#REF!
P_{FD}	0.580	0.606							0.533				
v_{12} (pcph)	3,711	3,323							3,912				
v_3 (pcph)	2,075	1,785							1,848				
v_{34} (pcph)													
v_{12a} (pcph)	3,711	3,323							3,912				
Diverge Speed Index	0.37	0.61							0.46				
Diverge Area Speed	56.4	51.0							54.4				
Outer Lanes Volume	2,075	1,785							1,848				
Outer Lanes Speed	67.1	68.2							68.0				
Segment Speed	59.8	55.9							58.1				
Diverge v/c ratio	0.84	0.76							0.89				
Diverge Density	34.8	31.5							36.5				
Diverge LOS	D	D							E				
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments													
On to Off Volume (vph)				419							162		551
PHF				0.92							0.92		0.92
Terrain				Level							Level		Level
Grade %				0.0%							0.0%		0.0%
Grade Length (mi)				0.00							0.00		0.00
Truck & Bus %				2.0%							2.0%		2.0%
RV %				0.0%							0.0%		0.0%
E_T				1.5							1.5		1.5
E_R				1.2							1.2		1.2
f_{HV}				0.990							0.990		0.990
f_p				1.00							1.00		1.00
On to Off Flow (pcph)				460							178		605
Calculate On Ramp to Mainline Flow Rate for Weave Segments													
On to ML Volume (vph)				381							118		569
PHF				0.92							0.92		0.92
Terrain				Level							Level		Level
Grade %				0.0%							0.0%		0.0%
Grade Length (mi)				0.00							0.00		0.00
Truck & Bus %				2.0%							2.0%		2.0%
RV %				0.0%							0.0%		0.0%
E_T				1.5							1.5		1.5
E_R				1.2							1.2		1.2
f_{HV}				0.990							0.990		0.990
f_p				1.00							1.00		1.00
On to ML Flow (pcph)				418							130		625
Calculate Mainline to Off Ramp Flow Rate for Weave Segments													
ML to Off Volume (vph)				161							558		1,139
PHF				0.97							0.97		0.97
Terrain				Level							Level		Level
Grade %				0.0%							0.0%		0.0%
Grade Length (mi)				0.00							0.00		0.00
Truck & Bus %				1.0%							1.0%		1.0%
RV %				0.0%							0.0%		0.0%
E_T				1.5							1.5		1.5
E_R				1.2							1.2		1.2
f_{HV}				0.995							0.995		0.995
f_p				1.00							1.00		1.00
ML to Off Flow (pcph)				167							578		1,180



Name	Latrobe Rd off-ramp	El Dorado Hills Blvd off-ramp	El Dorado Hills Blvd off to on-ramp	El Dorado Hills Blvd to Silva Valley Pkwy	Silva Valley Pkwy off to on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy to Bass Lake Rd	Bass Lake Rd off-ramp	Bass Lake Rd off to on-ramp	Bass Lake Rd to Cambridge Rd	Cambridge Rd off to on-ramp	Cambridge Rd to Cameron Park
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments													
GP to GP Volume (vph)				4,424							3,531		2,619
PHF				0.92							0.97		0.97
Terrain				Level							Level		Level
Grade %				0.0%							0.0%		0.0%
Grade Length (mi)				0.00							0.00		0.00
Truck & Bus %				1.0%							1.0%		1.0%
RV %				0.0%							0.0%		0.0%
E_T				1.5							1.5		1.5
E_R				1.2							1.2		1.2
f_{HV}				0.995							0.995		0.995
f_p				1.00							1.00		1.00
GP to GP Flow (pcph)				4,833							3,658		2,714
Calculate Weave Segment Operations													
Weave Type				One-sided							One-sided		One-sided
Weave Length				2,000							5,625		7,250
Segment Lanes				3							2		2
Weave Lanes				3					3		2		2
Weave Flow (pcph)				585							708		1,805
Non-Weave Flow				5,293							3,836		3,319
Segment Flow				5,878							4,543		5,123
Max Weave Length				1,969							4,089		6,151
Length Check				Not a Weave							Not a Weave		Not a Weave
Ideal Weave Capacity				2,352							2,468		2,434
f_{HV}				0.994							0.995		0.994
f_p				0.999							1.000		0.999
Capacity Condition 1				7,012							4,907		4,832
Capacity Condition 2				34,935							15,322		6,763
Weave v/c ratio				0.83							0.92		1.05
Interchange Density				3							5		2
Lane Changes On to ML				1							1		1
Lane Changes ML to Off				1							1		1
Lane Changes On to Off				0							0		0
Min Lane Change Rate				585							708		1,805
Weave LC Rate				1,181							2,788		4,567
Non-Weave LC Rate 1				1,596							3,454		4,228
Non-Weave LC Rate 2				2,869							2,544		2,429
Non-Weave LC Rate 3				5,269							-9,820		-5,492
Segment LC Rate				4,050							5,333		6,996
Weave Intensity Factor				0.394							0.217		0.220
Weave Speed				50.9							56.1		56.0
Non-Weave Speed				51.4							49.0		39.7
Segment Speed				51.3							50.0		44.2
Weave Density				-							-		-
Weave LOS				Basic							Basic		Basic
Summarize Segment Operations													
Segment v/c ratio	0.84	0.76	0.66	0.59	0.70	0.71	0.84	0.85	0.89	0.60	0.64	0.82	0.72
Segment Density	34.8	31.5	23.9	21.5	25.7	27.4	32.2	33.5	36.5	21.7	23.3	31.5	26.4
Segment LOS	D	D	C	C	C	C	D	D	E	C	C	D	D
Over Capacity													Weave

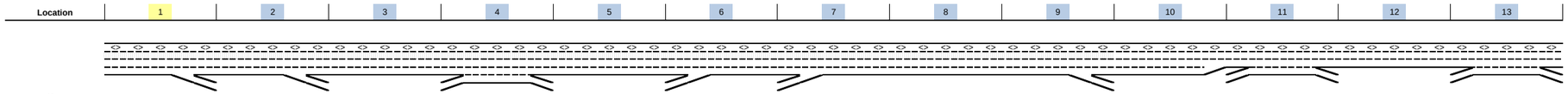
Project: Serrano/Pedregal/Marble Valley/Lime Rock **Alternative:** Cumulative Plus Project - MITIGATION
Freeway Corridor: Eastbound US 50 **Time Period:** AM Peak Hour

Data Entry Value
Calculated Value

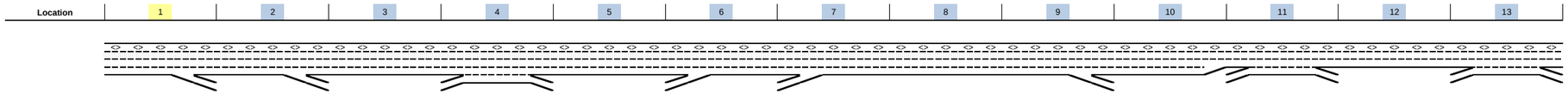


Key
<> Express Lane (HOV)
No Trucks

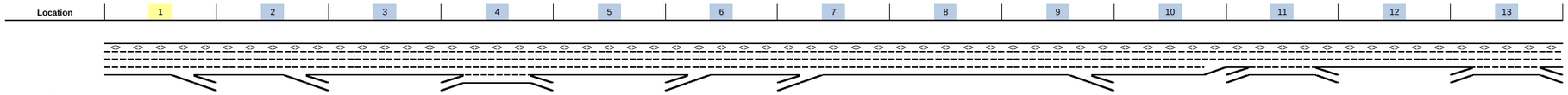
Location	1	2	3	4	5	6	7	8	9	10	11	12	13
Name	Latrobe Rd off-ramp	El Dorado Hills Blvd off-ramp	El Dorado Hills Blvd off to on-ramp	El Dorado Hills Blvd to Silva Valley Pkwy	Silva Valley Pkwy off to on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy to Bass Lake Rd	Bass Lake Rd off-ramp	Bass Lake Rd off to on-ramp	Bass Lake Rd to Cambridge Rd	Cambridge Rd off to on-ramp	Cambridge Rd to Cameron Park
Define Freeway Segment													
Type	Diverge	Diverge	Basic	Weave	Basic	Merge	Merge	Basic	Diverge	Basic	Weave	Basic	Weave
Length (ft)	1,500	850	1,975	3,000	1,575	800	3,400	3,400	1,500	2,100	5,725	1,350	8,250
Accel Length						550	500						
Decel Length	150	150							1,300				
Mainline Volume	4,030	2,950	2,740	2,740	3,260	3,260	3,540	3,750	3,750	2,810	2,810	2,900	2,900
On Ramp Volume				810		280	210				450		1,220
Off Ramp Volume	1,080	210		290					940		360		1,140
Express Lane Volume	443	325	301	301	456	456	496	525	525	393	365	377	377
EL On Ramp Volume													
EL Off Ramp Volume													
Calculate Flow Rate in General Purpose Lanes (GP)													
GP Volume (vph)	3,587	2,626	2,439	3,249	2,804	3,084	3,254	3,225	3,225	2,417	2,895	2,523	3,743
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	0.92
GP Lanes	3	3	3	4	3	3	3	3	3	3	3	2	3
Terrain	Level	Level	Level	Level	Level	Level	Level	Grade	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	5.0	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	6.0	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.862	0.980	0.980	0.980	0.980	0.980
f_P	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	3,977	2,911	2,704	3,602	3,108	3,419	3,608	4,066	3,576	2,679	3,209	2,797	4,150
GP Flow (pcphpl)	1,326	970	901	900	1,036	1,140	1,203	1,355	1,192	893	1,070	1,399	1,383
Calculate Speed in General Purpose Lanes													
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	67.3	67.3	67.3	67.3	67.3	67.3	67.3	67.3	69.6	69.6	69.6	69.6	69.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	65	65	65	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes													
v/c ratio	0.56	0.41	0.38	0.38	0.44	0.48	0.51	0.58	0.51	0.38	0.46	0.60	0.59
Speed (mph)	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
Density (pcphpl)	20.4	14.9	13.9	13.9	15.9	17.5	18.5	20.9	18.3	13.7	16.5	21.5	21.3
LOS	C	B	B	B	B	B	C	C	C	B	B	C	C
Calculate Operations for Entering GP Lanes													
GP_{IN} Vol (pcph)				2,712		3,111	3,378				2,569		2,804
GP_{IN} Cap (pcph)				7,050		7,050	7,050				4,700		4,700
GP_{IN} v/c ratio				0.38		0.44	0.48				0.55		0.60
Calculate Operations for Exiting GP Lanes													
GP_{OUT} Vol (pcph)	2,791	2,680		3,292					2,293	2,679	2,825		2,885
GP_{OUT} Cap (pcph)	7,050	7,050		7,050					7,050	4,700	4,700		4,700
GP_{OUT} v/c ratio	0.40	0.38		0.47					0.33	0.57	0.60		0.61



Name	Latrobe Rd off-ramp	El Dorado Hills Blvd off-ramp	El Dorado Hills Blvd off to on-ramp	El Dorado Hills Blvd to Silva Valley Pkwy	Silva Valley Pkwy off to on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy to Bass Lake Rd	Bass Lake Rd off-ramp	Bass Lake Rd off to on-ramp	Bass Lake Rd to Cambridge Rd	Cambridge Rd off to on-ramp	Cambridge Rd to Cameron Park
Calculate Flow Rate in Express Lanes (EL)													
EL Volume (vph)	443	325	301	301	456	456	496	525	525	393	365	377	377
PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Express Lanes	1	1	1	1	1	1	1	1	1	1	1	1	1
Terrain	Level	Level	Level	Level	Level	Level	Level	Grade	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	5.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	6.0	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.917	0.990	0.990	0.990	0.990	0.990
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EL Flow (pcph)	527	386	358	358	542	542	589	673	624	467	434	448	448
EL Flow (pcphpl)	527	386	358	358	542	542	589	673	624	467	434	448	448
Calculate Speed in Express Lanes													
Lane Width (ft)													
Shoulder Width													
TRD													
f_{LW}													
f_{LC}													
Calc'd FFS													
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	65	65	65	65	65	65	65	65	65	65	65	65	65
Calculate Operations in Express Lanes													
EL_{IN} v/c ratio	0.30	0.22	0.20	0.20	0.31	0.31	0.34	0.38	0.36	0.27	0.25	0.26	0.26
Calculate On Ramp Flow Rate													
On Volume (vph)				810		280	210				450		1,220
PHF				0.92		0.92	0.92				0.71		0.92
Total Lanes				1		1	1				1		1
Terrain				Level		Level	Level				Level		Level
Grade %				0.0%		0.0%	0.0%				0.0%		0.0%
Grade Length (mi)				0.00		0.00	0.00				0.00		0.00
Truck & Bus %				2.0%		2.0%	2.0%				2.0%		3.0%
RV %				0.0%		0.0%	0.0%				0.0%		0.0%
E_T				1.5		1.5	1.5				1.5		1.5
E_R				1.2		1.2	1.2				1.2		1.2
f_{HV}				0.990		0.990	0.990				0.990		0.985
f_p				1.00		1.00	1.00				1.00		1.00
On Flow (pcph)				889		307	231				640		1,346
On Flow (pcphpl)				889		307	231				640		1,346
Calculate On Ramp Roadway Operations													
On Ramp Type				Right		Right	Right				Right		Right
On Ramp Speed (mph)				45		25	45				45		45
On Ramp Cap (pcph)				2,100		1,900	2,100				2,100		2,100
On Ramp v/c ratio				0.42		0.16	0.11				0.30		0.64



Name	Latrobe Rd off-ramp	El Dorado Hills Blvd off-ramp	El Dorado Hills Blvd off to on-ramp	El Dorado Hills Blvd to Silva Valley Pkwy	Silva Valley Pkwy off to on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy to Bass Lake Rd	Bass Lake Rd off-ramp	Bass Lake Rd off to on-ramp	Bass Lake Rd to Cambridge Rd	Cambridge Rd off to on-ramp	Cambridge Rd to Cameron Park
Calculate Off Ramp Flow Rate													
Off Volume (vph)	1,080	210		290					940		360		1,140
PHF	0.92	0.92		0.95					0.74		0.95		0.91
Total Lanes	1	1		1					1		1		1
Terrain	Level	Level		Level					Level		Level		Level
Grade %	0.0%	0.0%		0.0%					0.0%		0.0%		0.0%
Grade Length (mi)	0.00	0.00		0.00					0.00		0.00		0.00
Truck & Bus %	2.0%	2.0%		3.0%					2.0%		3.0%		2.0%
RV %	0.0%	0.0%		0.0%					0.0%		0.0%		0.0%
E_T	1.5	1.5		1.5					1.5		1.5		1.5
E_R	1.2	1.2		1.2					1.2		1.2		1.2
f_{HV}	0.990	0.990		0.985					0.990		0.985		0.990
f_P	1.00	1.00		1.00					1.00		1.00		1.00
Off Flow (pcph)	1,186	231		310					1,283		385		1,265
Off Flow (pcphpl)	1,186	231		310					1,283		385		1,265
Calculate Off Ramp Roadway Operations													
Off Ramp Type	Right	Right		Right					Right		Right		Right
Off Ramp Speed	45	25		45					45		45		45
Off Ramp Cap (pcph)	2,100	1,900		2,100					2,100		2,100		2,100
Off Ramp v/c ratio	0.56	0.12		0.15					0.61		0.18		0.60
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps													
Up Type		Off				Off	On		Off		Off		Off
Up Distance		2,350				1,575	800		4,900		2,100		1,350
Up Flow (pcph)		1,186				310	307		310		1,283		385
Down Type	Off	On				On	On		On		On		No
Down Distance	850	1,975				2,900	3,400		2,100		1,350		
Down Flow (pcph)	231	889				640	640		640		1,346		
Calculate Merge Influence Area Operations													
Effective v_p (pcph)						3,111	3,378						
Up Ramp L_{EQ}						-119	946						
Down Ramp L_{EQ}						3,800	3,925						
P_{FM} (Eqn 13-3)						0.593	0.592						
P_{FM} (Eqn 13-4)		#VALUE!				0.700			#VALUE!		#VALUE!		#VALUE!
P_{FM} (Eqn 13-5)	0.620												
P_{FM}						0.593	0.592						
v_{12} (pcph)						1,845	1,998						
v_3 (pcph)						1,267	1,380						
v_{34} (pcph)													
v_{12a} (pcph)						1,845	1,998						
v_{R12a} (pcph)						2,152	2,228						
Merge Speed Index						0.33	0.31						
Merge Area Speed						57.5	57.8						
Outer Lanes Volume						1,267	1,380						
Outer Lanes Speed						62.2	61.8						
Segment Speed						59.2	59.3						
Merge v/c ratio						0.47	0.48						
Merge Density						18.7	19.6						
Merge LOS						B	B						



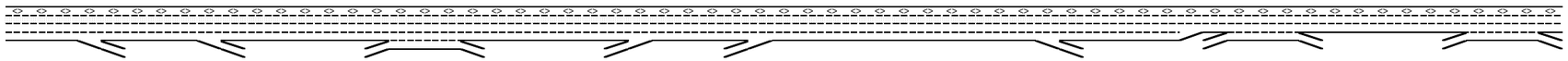
Key

<> Express Lane (HOV)

No Trucks

Name	Latrobe Rd off-ramp	El Dorado Hills Blvd off-ramp	El Dorado Hills Blvd off to on-ramp	El Dorado Hills Blvd to Silva Valley Pkwy	Silva Valley Pkwy off to on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy to Bass Lake Rd	Bass Lake Rd off-ramp	Bass Lake Rd off to on-ramp	Bass Lake Rd to Cambridge Rd	Cambridge Rd off to on-ramp	Cambridge Rd to Cameron Park
Calculate Diverge Influence Area Operations													
Effective v_P (pcph)	3,977	2,911							3,576				
Up Ramp L_{EQ}		9,845							5,560				
Down Ramp L_{EQ}	394	915							1,139				
P_{FD} (Eqn 13-9)	0.606	0.677							0.612				
P_{FD} (Eqn 13-10)													
P_{FD} (Eqn 13-11)	0.566												
P_{FD}	0.606	0.677							0.612				
v_{12} (pcph)	2,877	2,044							2,685				
v_3 (pcph)	1,099	867							890				
v_{34} (pcph)													
v_{12a} (pcph)	2,877	2,044							2,685				
Diverge Speed Index	0.40	0.58							0.41				
Diverge Area Speed	55.7	51.7							55.5				
Outer Lanes Volume	1,099	867							890				
Outer Lanes Speed	70.9	71.3							71.3				
Segment Speed	59.2	56.3							58.7				
Diverge v/c ratio	0.65	0.46							0.61				
Diverge Density	27.6	20.5							15.6				
Diverge LOS	C	C							B				
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments													
On to Off Volume (vph)				50							10		460
PHF				0.92							0.92		0.92
Terrain				Level							Level		Level
Grade %				0.0%							0.0%		0.0%
Grade Length (mi)				0.00							0.00		0.00
Truck & Bus %				3.0%							2.0%		2.0%
RV %				0.0%							0.0%		0.0%
E_T				1.5							1.5		1.5
E_R				1.2							1.2		1.2
f_{HV}				0.985							0.990		0.990
f_p				1.00							1.00		1.00
On to Off Flow (pcph)				55							11		505
Calculate On Ramp to Mainline Flow Rate for Weave Segments													
On to ML Volume (vph)				760							440		760
PHF				0.92							0.92		0.92
Terrain				Level							Level		Level
Grade %				0.0%							0.0%		0.0%
Grade Length (mi)				0.00							0.00		0.00
Truck & Bus %				3.0%							2.0%		2.0%
RV %				0.0%							0.0%		0.0%
E_T				1.5							1.5		1.5
E_R				1.2							1.2		1.2
f_{HV}				0.985							0.990		0.990
f_p				1.00							1.00		1.00
On to ML Flow (pcph)				838							483		834
Calculate Mainline to Off Ramp Flow Rate for Weave Segments													
ML to Off Volume (vph)				240							350		680
PHF				0.95							0.92		0.92
Terrain				Level							Level		Level
Grade %				0.0%							0.0%		0.0%
Grade Length (mi)				0.00							0.00		0.00
Truck & Bus %				6.0%							4.0%		4.0%
RV %				0.0%							0.0%		0.0%
E_T				1.5							1.5		1.5
E_R				1.2							1.2		1.2
f_{HV}				0.971							0.980		0.980
f_p				1.00							1.00		1.00
ML to Off Flow (pcph)				260							388		754

Location	1	2	3	4	5	6	7	8	9	10	11	12	13



Key

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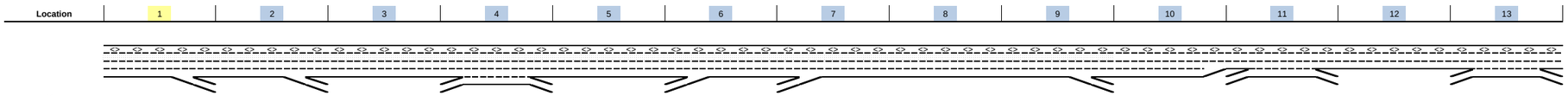
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments													
GP to GP Volume (vph)				2,199							2,095		1,843
PHF				0.95							0.92		0.92
Terrain				Level							Level		Level
Grade %				0.0%							0.0%		0.0%
Grade Length (mi)				0.00							0.00		0.00
Truck & Bus %				6.0%							4.0%		4.0%
RV %				0.0%							0.0%		0.0%
E_T				1.5							1.5		1.5
E_R				1.2							1.2		1.2
f_{HV}				0.971							0.980		0.980
f_p				1.00							1.00		1.00
GP to GP Flow (pcph)				2,384							2,322		2,043
Calculate Weave Segment Operations													
Weave Type				One-sided							One-sided		One-sided
Weave Length				2,000							4,725		7,250
Segment Lanes				3							2		2
Weave Lanes				3					3		2		2
Weave Flow (pcph)				1,099							871		1,588
Non-Weave Flow				2,439							2,333		2,548
Segment Flow				3,538							3,204		4,137
Max Weave Length				4,132							5,284		6,502
Length Check				OK							OK		Not a Weave
Ideal Weave Capacity				2,187							2,307		2,407
f_{HV}				0.974							0.982		0.984
f_p				0.996							0.999		0.998
Capacity Condition 1				6,371							4,524		4,726
Capacity Condition 2				10,944							8,656		6,136
Weave v/c ratio				0.54							0.69		0.86
Interchange Density				3							5		2
Lane Changes On to ML				1							1		1
Lane Changes ML to Off				1							1		1
Lane Changes On to Off				0							0		0
Min Lane Change Rate				1,099							871		1,588
Weave LC Rate				1,694							2,601		4,351
Non-Weave LC Rate 1				1,009							2,656		4,069
Non-Weave LC Rate 2				2,233							2,209		2,257
Non-Weave LC Rate 3				1,316							-241		-2,607
Segment LC Rate				3,011							4,810		6,608
Weave Intensity Factor				0.312							0.229		0.210
Weave Speed				53.1							55.7		56.3
Non-Weave Speed				51.4							51.0		43.6
Segment Speed				51.9							52.2		47.8
Weave Density				22.7							30.7		-
Weave LOS				C							D		Basic
Summarize Segment Operations													
Segment v/c ratio	0.65	0.46	0.38	0.54	0.44	0.47	0.48	0.58	0.61	0.38	0.69	0.60	0.59
Segment Density	27.6	20.5	13.9	22.7	15.9	18.7	19.6	20.9	15.6	13.7	30.7	21.5	21.3
Segment LOS	C	C	B	C	B	B	B	C	B	B	D	C	C
Over Capacity													

Project: Serrano/Pedregal/Marble Valley/Lime Rock **Alternative:** Cumulative Plus Project - MITIGATION
Freeway Corridor: Eastbound US 50 **Time Period:** PM Peak Hour

Data Entry Value
Calculated Value



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No Trucks

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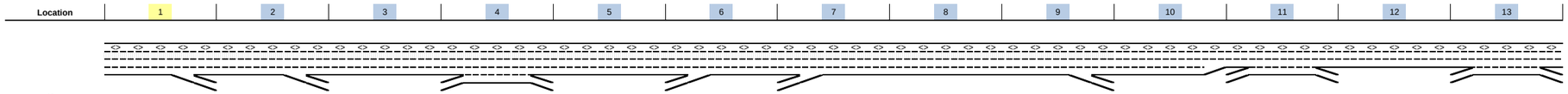
Define Freeway Segment													
Type	Diverge	Diverge	Basic	Weave	Basic	Merge	Merge	Basic	Diverge	Basic	Weave	Basic	Weave
Length (ft)	1,500	850	1,975	3,000	1,575	800	3,400	3,400	1,500	2,100	6,625	1,350	8,250
Accel Length						550	500						
Decel Length	150	150							1,300				
Mainline Volume	6,570	5,800	5,270	5,270	5,490	5,490	5,810	6,540	6,540	4,810	4,810	4,370	4,370
On Ramp Volume				800		320	730				280		1,120
Off Ramp Volume	770	530		580					1,730		720		1,690
Express Lane Volume	986	870	791	685	714	714	755	981	981	722	722	656	612
EL On Ramp Volume													
EL Off Ramp Volume													
Calculate Flow Rate in General Purpose Lanes (GP)													
GP Volume (vph)	5,585	4,930	4,480	5,385	4,776	5,096	5,785	5,559	5,559	4,089	4,369	3,715	4,878
PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
GP Lanes	3	3	3	4	3	3	3	3	3	3	3	2	3
Terrain	Level	Level	Level	Level	Level	Level	Level	Grade	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	6.0	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	6.0	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.952	0.995	0.995	0.995	0.995	0.995
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	5,786	5,108	4,641	5,579	4,949	5,280	5,993	6,017	5,760	4,236	4,526	3,849	5,054
GP Flow (pcphpl)	1,929	1,703	1,547	1,395	1,650	1,760	1,998	2,006	1,920	1,412	1,509	1,924	1,685
Calculate Speed in General Purpose Lanes													
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	67.3	67.3	67.3	67.3	67.3	67.3	67.3	67.3	69.6	69.6	69.6	69.6	69.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	65	65	65	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes													
v/c ratio	0.82	0.72	0.66	0.59	0.70	0.75	0.85	0.85	0.82	0.60	0.64	0.82	0.72
Speed (mph)	61.0	63.7	64.7	65.0	64.1	63.2	59.9	59.8	61.2	65.0	64.8	61.1	63.9
Density (pcphpl)	31.6	26.7	23.9	21.5	25.7	27.9	33.3	33.5	31.4	21.7	23.3	31.5	26.4
LOS	D	D	C	C	C	D	D	D	D	C	C	D	D
Calculate Operations for Entering GP Lanes													
GP_{IN} Vol (pcph)				4,701		4,929	5,192				4,128		3,858
GP_{IN} Cap (pcph)				7,050		7,050	7,050				4,700		4,700
GP_{IN} v/c ratio				0.67		0.70	0.74				0.88		0.82
Calculate Operations for Exiting GP Lanes													
GP_{OUT} Vol (pcph)	4,941	4,526		4,939					3,958	4,236	3,757		3,179
GP_{OUT} Cap (pcph)	7,050	7,050		7,050					7,050	4,700	4,700		4,700
GP_{OUT} v/c ratio	0.70	0.64		0.70					0.56	0.90	0.80		0.68

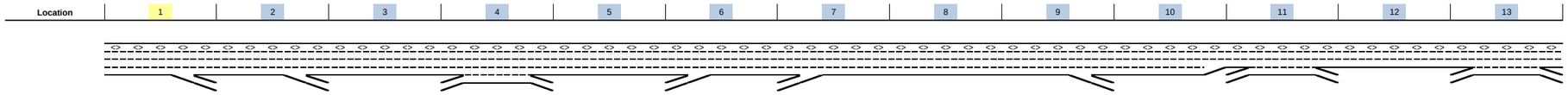


Key

<> Express Lane (HOV)

No Trucks

Name	Latrobe Rd off-ramp	El Dorado Hills Blvd off-ramp	El Dorado Hills Blvd off to on-ramp	El Dorado Hills Blvd to Silva Valley Pkwy	Silva Valley Pkwy off to on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy to Bass Lake Rd	Bass Lake Rd off-ramp	Bass Lake Rd off to on-ramp	Bass Lake Rd to Cambridge Rd	Cambridge Rd off to on-ramp	Cambridge Rd to Cameron Park
Calculate Flow Rate in Express Lanes (EL)													
EL Volume (vph)	986	870	791	685	714	714	755	981	981	722	722	656	612
PHF	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Express Lanes	1	1	1	1	1	1	1	1	1	1	1	1	1
Terrain	Level	Level	Level	Level	Level	Level	Level	Grade	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	5.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	6.0	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.917	0.990	0.990	0.990	0.990	0.990
f_p	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EL Flow (pcph)	1,106	976	887	769	801	801	848	1,188	1,101	810	810	736	687
EL Flow (pcphpl)	1,106	976	887	769	801	801	848	1,188	1,101	810	810	736	687
Calculate Speed in Express Lanes													
Lane Width (ft)													
Shoulder Width													
TRD													
f_{LW}													
f_{LC}													
Calc'd FFS													
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	65	65	65	65	65	65	65	65	65	65	65	65	65
Calculate Operations in Express Lanes													
EL_{IN} v/c ratio	0.63	0.56	0.51	0.44	0.46	0.46	0.48	0.68	0.63	0.46	0.46	0.42	0.39
Calculate On Ramp Flow Rate													
On Volume (vph)				800		320	730				280		1,120
PHF				0.92		0.92	0.92				0.71		0.95
Total Lanes				1		1	1				1		1
Terrain				Level		Level	Level				Level		Level
Grade %				0.0%		0.0%	0.0%				0.0%		0.0%
Grade Length (mi)				0.00		0.00	0.00				0.00		0.00
Truck & Bus %				2.0%		2.0%	2.0%				2.0%		3.0%
RV %				0.0%		0.0%	0.0%				0.0%		0.0%
E_T				1.5		1.5	1.5				1.5		1.5
E_R				1.2		1.2	1.2				1.2		1.2
f_{HV}				0.990		0.990	0.990				0.990		0.985
f_p				1.00		1.00	1.00				1.00		1.00
On Flow (pcph)				878		351	801				398		1,197
On Flow (pcphpl)				878		351	801				398		1,197
Calculate On Ramp Roadway Operations													
On Ramp Type				Right		Right	Right				Right		
On Ramp Speed (mph)				45		25	45				45		
On Ramp Cap (pcph)				2,100		1,900	2,100				2,100		
On Ramp v/c ratio				0.42		0.18	0.38				0.19		

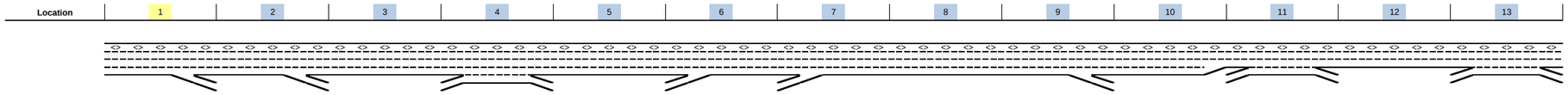


Key

<> Express Lane (HOV)

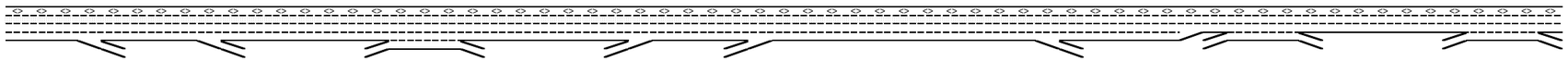
No Trucks

Name	Latrobe Rd off-ramp	El Dorado Hills Blvd off-ramp	El Dorado Hills Blvd off to on-ramp	El Dorado Hills Blvd to Silva Valley Pkwy	Silva Valley Pkwy off to on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy to Bass Lake Rd	Bass Lake Rd off-ramp	Bass Lake Rd off to on-ramp	Bass Lake Rd to Cambridge Rd	Cambridge Rd off to on-ramp	Cambridge Rd to Cameron Park
Calculate Off Ramp Flow Rate													
Off Volume (vph)	770	530		580					1,730		720		1,690
PHF	0.92	0.92		0.92					0.97		0.95		0.91
Total Lanes	1	1		1					1		1		1
Terrain	Level	Level		Level					Level		Level		Level
Grade %	0.0%	0.0%		0.0%					0.0%		0.0%		0.0%
Grade Length (mi)	0.00	0.00		0.00					0.00		0.00		0.00
Truck & Bus %	2.0%	2.0%		3.0%					2.0%		3.0%		2.0%
RV %	0.0%	0.0%		0.0%					0.0%		0.0%		0.0%
E_T	1.5	1.5		1.5					1.5		1.5		1.5
E_R	1.2	1.2		1.2					1.2		1.2		1.2
f_{HV}	0.990	0.990		0.985					0.990		0.985		0.990
f_P	1.00	1.00		1.00					1.00		1.00		1.00
Off Flow (pcph)	845	582		640					1,801		769		1,876
Off Flow (pcphpl)	845	582		640					1,801		769		1,876
Calculate Off Ramp Roadway Operations													
Off Ramp Type	Right	Right		Right					Right				Right
Off Ramp Speed	45	25		45					45				45
Off Ramp Cap (pcph)	2,100	1,900		2,100					2,100				2,100
Off Ramp v/c ratio	0.40	0.31		0.30					0.86				0.89
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps													
Up Type		Off				Off	On		Off		Off		No
Up Distance		2,350				1,575	800		4,900		2,100		
Up Flow (pcph)		845				640	351		640		1,801		
Down Type	Off	On				On	On		On		No		#REF!
Down Distance	850	1,975				2,900	3,400		2,100				#REF!
Down Flow (pcph)	582	878				398	398		398				#REF!
Calculate Merge Influence Area Operations													
Effective v_p (pcph)						4,929	5,192						
Up Ramp L_{EQ}						279	1,456						
Down Ramp L_{EQ}						2,365	2,442						
P_{FM} (Eqn 13-3)						0.593	0.592						
P_{FM} (Eqn 13-4)		#VALUE!				0.674			#VALUE!		#VALUE!		
P_{FM} (Eqn 13-5)	0.729												#REF!
P_{FM}						0.593	0.592						
v_{12} (pcph)						2,922	3,071						
v_3 (pcph)						2,007	2,121						
v_{34} (pcph)													
v_{12a} (pcph)						2,922	3,071						
v_{R12a} (pcph)						3,274	3,872						
Merge Speed Index						0.40	0.46						
Merge Area Speed						55.9	54.3						
Outer Lanes Volume						2,007	2,121						
Outer Lanes Speed						59.6	59.2						
Segment Speed						57.2	56.0						
Merge v/c ratio						0.71	0.84						
Merge Density						27.4	32.2						
Merge LOS						C	D						



Name	Latrobe Rd off-ramp	El Dorado Hills Blvd off-ramp	El Dorado Hills Blvd off to on-ramp	El Dorado Hills Blvd to Silva Valley Pkwy	Silva Valley Pkwy off to on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy to Bass Lake Rd	Bass Lake Rd off-ramp	Bass Lake Rd off to on-ramp	Bass Lake Rd to Cambridge Rd	Cambridge Rd off to on-ramp	Cambridge Rd to Cameron Park
Calculate Diverge Influence Area Operations													
Effective v_P (pcph)	5,786	5,108							5,760				
Up Ramp L_{EQ}		5,860							9,613				
Down Ramp L_{EQ}	891	1,138							1,323				
P_{FD} (Eqn 13-9)	0.576	0.606							0.533				
P_{FD} (Eqn 13-10)													
P_{FD} (Eqn 13-11)	0.580												#REF!
P_{FD}	0.580	0.606							0.533				
v_{12} (pcph)	3,711	3,323							3,912				
v_3 (pcph)	2,075	1,785							1,848				
v_{34} (pcph)													
v_{12a} (pcph)	3,711	3,323							3,912				
Diverge Speed Index	0.37	0.61							0.46				
Diverge Area Speed	56.4	51.0							54.4				
Outer Lanes Volume	2,075	1,785							1,848				
Outer Lanes Speed	67.1	68.2							68.0				
Segment Speed	59.8	55.9							58.1				
Diverge v/c ratio	0.84	0.76							0.89				
Diverge Density	34.8	31.5							26.2				
Diverge LOS	D	D							C				
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments													
On to Off Volume (vph)				419							162		551
PHF				0.92							0.92		0.92
Terrain				Level							Level		Level
Grade %				0.0%							0.0%		0.0%
Grade Length (mi)				0.00							0.00		0.00
Truck & Bus %				2.0%							2.0%		2.0%
RV %				0.0%							0.0%		0.0%
E_T				1.5							1.5		1.5
E_R				1.2							1.2		1.2
f_{HV}				0.990							0.990		0.990
f_p				1.00							1.00		1.00
On to Off Flow (pcph)				460							178		605
Calculate On Ramp to Mainline Flow Rate for Weave Segments													
On to ML Volume (vph)				381							118		569
PHF				0.92							0.92		0.92
Terrain				Level							Level		Level
Grade %				0.0%							0.0%		0.0%
Grade Length (mi)				0.00							0.00		0.00
Truck & Bus %				2.0%							2.0%		2.0%
RV %				0.0%							0.0%		0.0%
E_T				1.5							1.5		1.5
E_R				1.2							1.2		1.2
f_{HV}				0.990							0.990		0.990
f_p				1.00							1.00		1.00
On to ML Flow (pcph)				418							130		625
Calculate Mainline to Off Ramp Flow Rate for Weave Segments													
ML to Off Volume (vph)				161							558		1,139
PHF				0.97							0.97		0.97
Terrain				Level							Level		Level
Grade %				0.0%							0.0%		0.0%
Grade Length (mi)				0.00							0.00		0.00
Truck & Bus %				1.0%							1.0%		1.0%
RV %				0.0%							0.0%		0.0%
E_T				1.5							1.5		1.5
E_R				1.2							1.2		1.2
f_{HV}				0.995							0.995		0.995
f_p				1.00							1.00		1.00
ML to Off Flow (pcph)				167							578		1,180

Location	1	2	3	4	5	6	7	8	9	10	11	12	13



Key

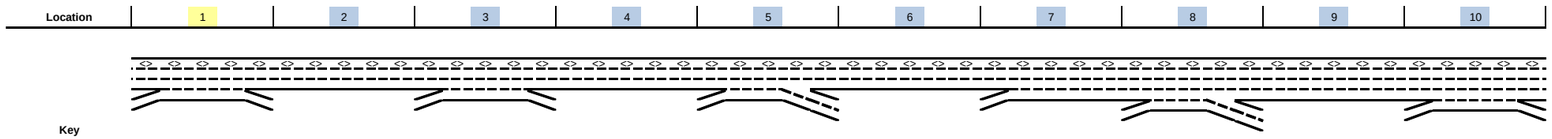
<> Express Lane (HOV)

No Trucks

Name	Latrobe Rd off-ramp	El Dorado Hills Blvd off-ramp	El Dorado Hills Blvd off to on-ramp	El Dorado Hills Blvd to Silva Valley Pkwy	Silva Valley Pkwy off to on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy on-ramp	Silva Valley Pkwy to Bass Lake Rd	Bass Lake Rd off-ramp	Bass Lake Rd off to on-ramp	Bass Lake Rd to Cambridge Rd	Cambridge Rd off to on-ramp	Cambridge Rd to Cameron Park
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments													
GP to GP Volume (vph)				4,424							3,531		2,619
PHF				0.92							0.97		0.97
Terrain				Level							Level		Level
Grade %				0.0%							0.0%		0.0%
Grade Length (mi)				0.00							0.00		0.00
Truck & Bus %				1.0%							1.0%		1.0%
RV %				0.0%							0.0%		0.0%
E_T				1.5							1.5		1.5
E_R				1.2							1.2		1.2
f_{HV}				0.995							0.995		0.995
f_p				1.00							1.00		1.00
GP to GP Flow (pcph)				4,833							3,658		2,714
Calculate Weave Segment Operations													
Weave Type				One-sided							One-sided		One-sided
Weave Length				2,000							5,625		7,250
Segment Lanes				3							2		2
Weave Lanes				3					3		2		2
Weave Flow (pcph)				585							708		1,805
Non-Weave Flow				5,293							3,836		3,319
Segment Flow				5,878							4,543		5,123
Max Weave Length				1,969							4,089		6,151
Length Check				Not a Weave							Not a Weave		Not a Weave
Ideal Weave Capacity				2,352							2,468		2,434
f_{HV}				0.994							0.995		0.994
f_p				0.999							1.000		0.999
Capacity Condition 1				7,012							4,907		4,832
Capacity Condition 2				34,935							15,322		6,763
Weave v/c ratio				0.83							0.92		1.05
Interchange Density				3							5		2
Lane Changes On to ML				1							1		1
Lane Changes ML to Off				1							1		1
Lane Changes On to Off				0							0		0
Min Lane Change Rate				585							708		1,805
Weave LC Rate				1,181							2,788		4,567
Non-Weave LC Rate 1				1,596							3,454		4,228
Non-Weave LC Rate 2				2,869							2,544		2,429
Non-Weave LC Rate 3				5,269							-9,820		-5,492
Segment LC Rate				4,050							5,333		6,996
Weave Intensity Factor				0.394							0.217		0.220
Weave Speed				50.9							56.1		56.0
Non-Weave Speed				51.4							49.0		39.7
Segment Speed				51.3							50.0		44.2
Weave Density				-							-		-
Weave LOS				Basic							Basic		Basic
Summarize Segment Operations													
Segment v/c ratio	0.84	0.76	0.66	0.59	0.70	0.71	0.84	0.85	0.89	0.60	0.64	0.82	0.72
Segment Density	34.8	31.5	23.9	21.5	25.7	27.4	32.2	33.5	26.2	21.7	23.3	31.5	26.4
Segment LOS	D	D	C	C	C	C	D	D	C	C	C	D	D
Over Capacity													Weave

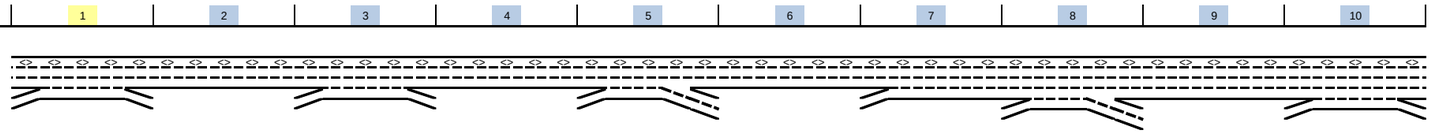
Project: Serrano Pedregal/Marble Valley/Lime Rock/SW/Ped **Alternative:** Cumulative Plus Project
Freeway Corridor: Westbound US 50 **Time Period:** AM Peak Hour

Data Entry Value
Calculated Value

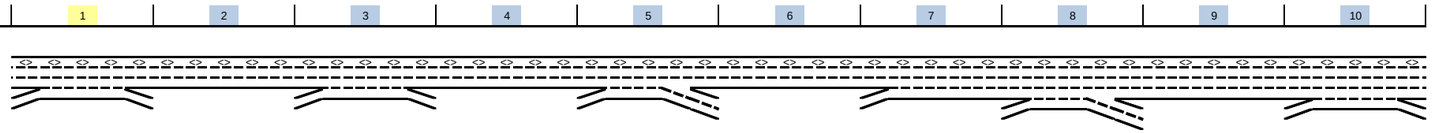


Key
<> Express Lane (HOV)
No Trucks

Location	1	2	3	4	5	6	7	8	9	10
Name	Cameron Park to Cambridge	Cambridge Rd off to on-ramp	Cambridge Rd to Bass Lake Rd	Bass Lake Rd off to on-ramp	Bass Lake Rd to Silva Valley Pkwy	Silva Valley Pwky off to on-ramp	Silva Valley on-ramp	Silva Valley to El Dorado Hills	El Dorado Hills off to on-ramp	El Dorado Hills to Empire Ranch
Define Freeway Segment										
Type	Weave	Basic	Weave	Basic	Weave	Basic	Basic	Weave	Basic	Weave
Length (ft)	7,325	1,250	8,250	2,350	6,500	2,350	800	4,425	2,300	4,775
Accel Length										
Decel Length										
Mainline Volume	3,350	3,360	3,360	3,820	3,820	4,440	4,440	4,470	4,650	4,650
On Ramp Volume	950		660		1,900		30	1,040		1,660
Off Ramp Volume	940		200		1,280			860		2,020
Express Lane Volume	503	504	538	611	611	710	710	671	837	837
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	3,798	2,856	3,482	3,209	5,109	3,730	3,760	4,840	3,813	5,473
PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
GP Lanes	3	2	3	2	3	2	4	4	3	4
Terrain	Level	Level	Level	Level	Grade	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	-7.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995
f_P	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	4,060	3,053	3,723	3,431	5,462	3,987	4,020	5,174	4,077	5,851
GP Flow (pcphpl)	1,353	1,527	1,241	1,715	1,821	1,994	1,005	1,294	1,359	1,463
Calculate Speed in General Purpose Lanes										
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	69.6	69.6	69.6	69.6	69.6	69.6	69.6	69.6	69.6	69.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.58	0.65	0.53	0.73	0.77	0.85	0.43	0.55	0.58	0.62
Speed (mph)	65.0	64.8	65.0	63.6	62.5	60.0	65.0	65.0	65.0	64.9
Density (pcphpl)	20.8	23.6	19.1	27.0	29.1	33.2	15.5	19.9	20.9	22.5
LOS	C	C	C	D	D	D	B	C	C	C
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)	3,017		3,029		3,432		3,986	3,994		3,968
GP_{IN} Cap (pcph)	4,700		4,700		4,700		4,700	7,050		7,050
GP_{IN} v/c ratio	0.64		0.64		0.73		0.85	0.57		0.56
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)	2,622		3,510		3,343			4,255		3,693
GP_{OUT} Cap (pcph)	4,700		4,700		4,700			7,050		7,050
GP_{OUT} v/c ratio	0.56		0.75		0.71			0.60		0.52

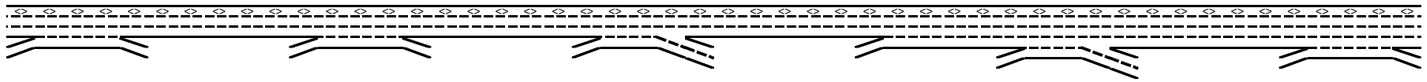


Name	Cameron Park to Cambridge	Cambridge Rd off to on-ramp	Cambridge Rd to Bass Lake Rd	Bass Lake Rd off to on-ramp	Bass Lake Rd to Silva Valley Pkwy	Silva Valley Pwky off to on-ramp	Silva Valley on-ramp	Silva Valley to El Dorado Hills	El Dorado Hills off to on-ramp	El Dorado Hills to Empire Ranch
Calculate Flow Rate in Express Lanes (EL)										
EL Volume (vph)	503	504	538	611	611	710	710	671	837	837
PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Express Lanes	1	1	1	1	1	1	1	1	1	1
Terrain	Level	Level	Level	Level	Grade	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	-7.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990
f_P	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EL Flow (pcph)	570	572	610	694	694	806	806	761	950	950
EL Flow (pcphpl)	570	572	610	694	694	806	806	761	950	950
Calculate Speed in Express Lanes										
Lane Width (ft)										
Shoulder Width										
TRD										
f_{LW}										
f_{LC}										
Calc'd FFS										
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	65	65	65	65	65	65	65	65	65	65
Calculate Operations in Express Lanes										
EL_{IN} v/c ratio	0.33	0.33	0.35	0.40	0.40	0.46	0.46	0.43	0.54	0.54
Calculate On Ramp Flow Rate										
On Volume (vph)	950		660		1,900		30	1,040		1,660
PHF	0.92		0.96		0.95		0.89	0.89		0.89
Total Lanes	1		1		1		1	1		1
Terrain	Level		Level		Level		Level	Level		Level
Grade %	0.0%		0.0%		0.0%		0.0%	0.0%		0.0%
Grade Length (mi)	0.00		0.00		0.00		0.00	0.00		0.00
Truck & Bus %	2.0%		2.0%		3.0%		2.0%	2.0%		2.0%
RV %	0.0%		0.0%		0.0%		0.0%	0.0%		0.0%
E_T	1.5		1.5		1.5		1.5	1.5		1.5
E_R	1.2		1.2		1.2		1.2	1.2		1.2
f_{HV}	0.990		0.990		0.985		0.990	0.990		0.990
f_P	1.00		1.00		1.00		1.00	1.00		1.00
On Flow (pcph)	1,043		694		2,030		34	1,180		1,884
On Flow (pcphpl)	1,043		694		2,030		34	1,180		1,884
Calculate On Ramp Roadway Operations										
On Ramp Type	Right		Right				Right	Right		Right
On Ramp Speed (mph)	45		25				45	45		45
On Ramp Cap (pcph)	2,100		1,900				2,100	2,100		2,100
On Ramp v/c ratio	0.50		0.37				0.02	0.56		0.90



Name	Cameron Park to Cambridge	Cambridge Rd off to on-ramp	Cambridge Rd to Bass Lake Rd	Bass Lake Rd off to on-ramp	Bass Lake Rd to Silva Valley Pkwy	Silva Valley Pwky off to on-ramp	Silva Valley on-ramp	Silva Valley to El Dorado Hills	El Dorado Hills off to on-ramp	El Dorado Hills to Empire Ranch
Calculate Off Ramp Flow Rate										
Off Volume (vph)	940		200		1,280			860		2,020
PHF	0.66		0.95		0.61			0.95		0.95
Total Lanes	1		1		2			2		1
Terrain	Level		Level		Level			Level		Level
Grade %	0.0%		0.0%		0.0%			0.0%		0.0%
Grade Length (mi)	0.00		0.00		0.00			0.00		0.00
Truck & Bus %	2.0%		3.0%		2.0%			3.0%		3.0%
RV %	0.0%		0.0%		0.0%			0.0%		0.0%
E_T	1.5		1.5		1.5			1.5		1.5
E_R	1.2		1.2		1.2			1.2		1.2
f_{HV}	0.990		0.985		0.990			0.985		0.985
f_P	1.00		1.00		1.00			1.00		1.00
Off Flow (pcph)	1,438		214		2,119			919		2,158
Off Flow (pcphpl)	1,438		214		1,060			459		2,158
Calculate Off Ramp Roadway Operations										
Off Ramp Type	Right		Right		Right			Right		Right
Off Ramp Speed	45		45		45			25		45
Off Ramp Cap (pcph)	2,100		2,100		4,200			3,800		2,100
Off Ramp v/c ratio	0.68		0.10		0.50			0.24		1.03
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps										
Up Type			Off		Off					
Up Distance			1,250		2,350					
Up Flow (pcph)			1,438		214					
Down Type	On		No		On					
Down Distance	1,250				8,850					
Down Flow (pcph)	694				34					
Calculate Merge Influence Area Operations										
Effective v_P (pcph)										
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)										
P_{FM} (Eqn 13-4)			#VALUE!		#VALUE!					
P_{FM} (Eqn 13-5)										
P_{FM}										
v_{12} (pcph)										
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)										
v_{R12a} (pcph)										
Merge Speed Index										
Merge Area Speed										
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed										
Merge v/c ratio										
Merge Density										
Merge LOS										

Location	1	2	3	4	5	6	7	8	9	10



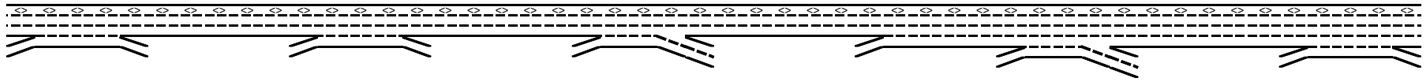
Key

<> Express Lane (HOV)

No Trucks

Name	Cameron Park to Cambridge	Cambridge Rd off to on-ramp	Cambridge Rd to Bass Lake Rd	Bass Lake Rd off to on-ramp	Bass Lake Rd to Silva Valley Pkwy	Silva Valley Pwky off to on-ramp	Silva Valley on-ramp	Silva Valley to El Dorado Hills	El Dorado Hills off to on-ramp	El Dorado Hills to Empire Ranch
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)										
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)										
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}										
v_{12} (pcph)										
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)										
Diverge Speed Index										
Diverge Area Speed										
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed										
Diverge v/c ratio										
Diverge Density										
Diverge LOS										
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments										
On to Off Volume (vph)	228		112		785			164		830
PHF	0.92		0.92		0.92			0.92		0.92
Terrain	Level		Level		Level			Level		Level
Grade %	0.0%		0.0%		0.0%			0.0%		0.0%
Grade Length (mi)	0.00		0.00		0.00			0.00		0.00
Truck & Bus %	2.0%		2.0%		2.0%			2.0%		2.0%
RV %	0.0%		0.0%		0.0%			0.0%		0.0%
E_T	1.5		1.5		1.5			1.5		1.5
E_R	1.2		1.2		1.2			1.2		1.2
f_{HV}	0.990		0.990		0.990			0.990		0.990
f_P	1.00		1.00		1.00			1.00		1.00
On to Off Flow (pcph)	250		123		862			180		911
Calculate On Ramp to Mainline Flow Rate for Weave Segments										
On to ML Volume (vph)	722		548		1,115			876		830
PHF	0.92		0.92		0.92			0.92		0.92
Terrain	Level		Level		Level			Level		Level
Grade %	0.0%		0.0%		-7.0%			0.0%		0.0%
Grade Length (mi)	0.00		0.00		0.00			0.00		0.00
Truck & Bus %	1.0%		2.0%		2.0%			2.0%		2.0%
RV %	0.0%		0.0%		0.0%			0.0%		0.0%
E_T	1.5		1.5		1.5			1.5		1.5
E_R	1.2		1.2		1.2			1.2		1.2
f_{HV}	0.995		0.990		0.990			0.990		0.990
f_P	1.00		1.00		1.00			1.00		1.00
On to ML Flow (pcph)	789		601		1,224			961		911

Location	1	2	3	4	5	6	7	8	9	10

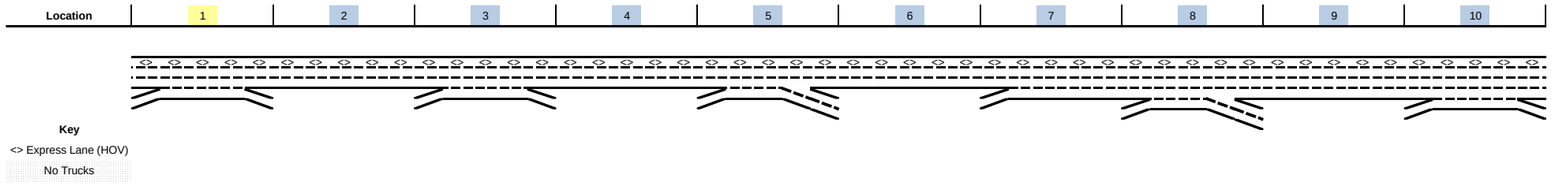


Key

<> Express Lane (HOV)

No Trucks

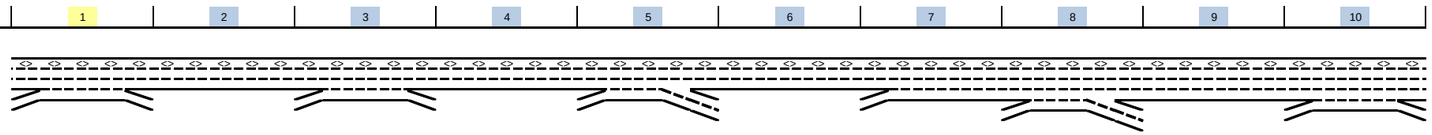
Name	Cameron Park to Cambridge	Cambridge Rd off to on-ramp	Cambridge Rd to Bass Lake Rd	Bass Lake Rd off to on-ramp	Bass Lake Rd to Silva Valley Pkwy	Silva Valley Pwky off to on-ramp	Silva Valley on-ramp	Silva Valley to El Dorado Hills	El Dorado Hills off to on-ramp	El Dorado Hills to Empire Ranch
Calculate Mainline to Off Ramp Flow Rate for Weave Segments										
ML to Off Volume (vph)	712		88		495			696		1,190
PHF	0.94		0.94		0.94			0.94		0.94
Terrain	Level		Level		Level			Level		Level
Grade %	0.0%		0.0%		-7.0%			0.0%		0.0%
Grade Length (mi)	0.00		0.00		0.00			0.00		0.00
Truck & Bus %	1.0%		1.0%		1.0%			1.0%		1.0%
RV %	0.0%		0.0%		0.0%			0.0%		0.0%
E_T	1.5		1.5		1.5			1.5		1.5
E_R	1.2		1.2		1.2			1.2		1.2
f_{HV}	0.995		0.995		0.995			0.995		0.995
f_P	1.00		1.00		1.00			1.00		1.00
ML to Off Flow (pcph)	761		94		529			744		1,272
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments										
GP to GP Volume (vph)	2,136		2,735		2,714			3,104		2,623
PHF	0.94		0.94		0.94			0.94		0.94
Terrain	Level		Level		Level			Level		Level
Grade %	0.0%		0.0%		0.0%			0.0%		0.0%
Grade Length (mi)	0.00		0.00		0.00			0.00		0.00
Truck & Bus %	1.0%		1.0%		1.0%			1.0%		1.0%
RV %	0.0%		0.0%		0.0%			0.0%		0.0%
E_T	1.5		1.5		1.5			1.5		1.5
E_R	1.2		1.2		1.2			1.2		1.2
f_{HV}	0.995		0.995		0.995			0.995		0.995
f_P	1.00		1.00		1.00			1.00		1.00
GP to GP Flow (pcph)	2,283		2,924		2,901			3,319		2,804



Name	Cameron Park to Cambridge	Cambridge Rd off to on-ramp	Cambridge Rd to Bass Lake Rd	Bass Lake Rd off to on-ramp	Bass Lake Rd to Silva Valley Pkwy	Silva Valley Pwky off to on-ramp	Silva Valley on-ramp	Silva Valley to El Dorado Hills	El Dorado Hills off to on-ramp	El Dorado Hills to Empire Ranch
Calculate Weave Segment Operations										
Weave Type	One-sided		One-sided		One-sided			One-sided		One-sided
Weave Length	6,325		7,250		5,500			3,425		3,775
Segment Lanes	2		2		2			3		3
Weave Lanes	2		2		3			3		3
Weave Flow (pcph)	1,550		695		1,753			1,705		2,183
Non-Weave Flow	2,533		3,047		3,763			3,499		3,716
Segment Flow	4,083		3,742		5,517			5,204		5,899
Max Weave Length	6,453		4,391		4,210			4,316		4,782
Length Check	OK		Not a Weave		Not a Weave			OK		OK
Ideal Weave Capacity	2,340		2,569		2,449			2,282		2,273
f_{HV}	0.995		0.994		0.993			0.994		0.994
f_p	0.999		0.998		0.998			0.998		0.998
Capacity Condition 1	4,651		5,099		4,853			6,792		6,764
Capacity Condition 2	6,284		12,821		10,913			10,599		9,380
Weave v/c ratio	0.87		0.73		1.13			0.76		0.87
Interchange Density	3		5		5			4		3
Lane Changes On to ML	1		1		1			1		1
Lane Changes ML to Off	1		1		1			1		1
Lane Changes On to Off	0		0		0			0		0
Min Lane Change Rate	1,550		695		1,753			1,705		2,183
Weave LC Rate	3,935		3,409		3,785			2,820		3,471
Non-Weave LC Rate 1	3,565		4,172		3,371			1,999		2,234
Non-Weave LC Rate 2	2,254		2,368		2,528			2,469		2,518
Non-Weave LC Rate 3	-3,508		-22,866		-8,362			4,525		3,504
Segment LC Rate	6,189		5,778		6,313			5,290		5,989
Weave Intensity Factor	0.222		0.189		0.252			0.318		0.325
Weave Speed	55.9		57.1		54.9			52.9		52.7
Non-Weave Speed	44.0		51.0		39.1			44.4		39.8
Segment Speed	47.9		52.0		43.1			46.9		43.8
Weave Density	42.6		-		-			37.0		-
Weave LOS	E		Basic		Basic			E		F
Summarize Segment Operations										
Segment v/c ratio	0.87	0.65	0.53	0.73	0.77	0.85	0.43	0.76	0.58	0.87
Segment Density	42.6	23.6	19.1	27.0	29.1	33.2	15.5	37.0	20.9	-
Segment LOS	E	C	C	D	D	D	B	E	C	F
Over Capacity										Off Ramp Roadway

Project: Serrano Pedregal/Marble Valley/Lime Rock/SW/Ped **Alternative:** Cumulative Plus Project
Freeway Corridor: Westbound US 50 **Time Period:** PM Peak Hour

Data Entry Value
Calculated Value



Key
<> Express Lane (HOV)
No Trucks

Location	1	2	3	4	5	6	7	8	9	10
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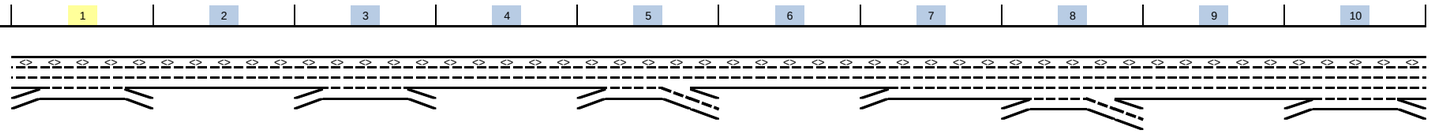
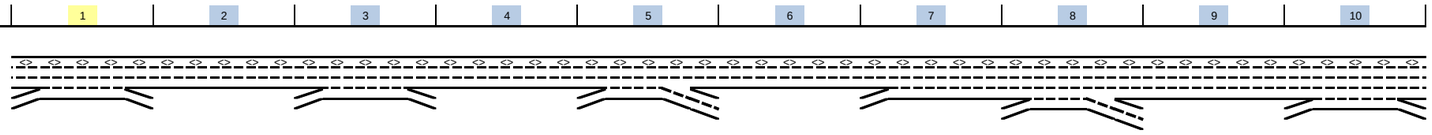
Define Freeway Segment										
Type	Weave	Basic	Weave	Basic	Weave	Basic	Basic	Weave	Basic	Weave
Length (ft)	7,325	1,250	8,250	2,350	6,500	2,350	800	4,425	2,300	4,775
Accel Length										
Decel Length										
Mainline Volume	4,200	3,780	3,780	3,770	3,770	4,020	4,020	4,060	3,570	3,570
On Ramp Volume	1,010		600		1,260		40	380		1,460
Off Ramp Volume	1,430		610		1,010			870		1,790
Express Lane Volume	630	567	643	641	566	603	563	568	500	500
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	4,580	3,213	3,737	3,129	4,465	3,417	3,497	3,872	3,070	4,530
PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
GP Lanes	3	2	3	2	3	2	4	4	3	4
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	-7.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995
f_P	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
GP Flow (pcph)	4,795	3,364	3,913	3,276	4,674	3,577	3,661	4,053	3,214	4,743
GP Flow (pcphpl)	1,598	1,682	1,304	1,638	1,558	1,789	915	1,013	1,071	1,186
Calculate Speed in General Purpose Lanes										
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Shoulder Width	>6	>6	>6	>6	>6	>6	>6	>6	>6	>6
TRD	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
f_{LW}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
f_{LC}	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calc'd FFS	69.6	69.6	69.6	69.6	69.6	69.6	69.6	69.6	69.6	69.6
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.68	0.72	0.55	0.70	0.66	0.76	0.39	0.43	0.46	0.50
Speed (mph)	64.4	63.9	65.0	64.2	64.6	62.9	65.0	65.0	65.0	65.0
Density (pcphpl)	24.8	26.3	20.1	25.5	24.1	28.5	14.1	15.6	16.5	18.2
LOS	C	D	C	C	C	D	B	B	B	C
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)	3,649		3,281		3,328		3,617	3,622		3,086
GP_{IN} Cap (pcph)	4,700		4,700		4,700		4,700	7,050		7,050
GP_{IN} v/c ratio	0.78		0.70		0.71		0.77	0.51		0.44
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)	2,606		3,261		3,001			3,124		2,830
GP_{OUT} Cap (pcph)	4,700		4,700		4,700			7,050		7,050
GP_{OUT} v/c ratio	0.55		0.69		0.64			0.44		0.40



Name	Cameron Park to Cambridge	Cambridge Rd off to on-ramp	Cambridge Rd to Bass Lake Rd	Bass Lake Rd off to on-ramp	Bass Lake Rd to Silva Valley Pkwy	Silva Valley Pwky off to on-ramp	Silva Valley on-ramp	Silva Valley to El Dorado Hills	El Dorado Hills off to on-ramp	El Dorado Hills to Empire Ranch
Calculate Flow Rate in Express Lanes (EL)										
EL Volume (vph)	630	567	643	641	566	603	563	568	500	500
PHF	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Express Lanes	1	1	1	1	1	1	1	1	1	1
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	-7.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Grade Length (mi)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck & Bus %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
RV %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
E_T	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
E_R	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
f_{HV}	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990	0.990
f_P	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EL Flow (pcph)	707	636	721	719	635	677	632	638	561	561
EL Flow (pcphpl)	707	636	721	719	635	677	632	638	561	561
Calculate Speed in Express Lanes										
Lane Width (ft)										
Shoulder Width										
TRD										
f_{LW}										
f_{LC}										
Calc'd FFS										
Measured FFS	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0	65.0
FFS	65	65	65	65	65	65	65	65	65	65
Calculate Operations in Express Lanes										
EL_{IN} v/c ratio	0.40	0.36	0.41	0.41	0.36	0.39	0.36	0.36	0.32	0.32
Calculate On Ramp Flow Rate										
On Volume (vph)	1,010		600		1,260		40	380		1,460
PHF	0.89		0.96		0.95		0.92	0.89		0.89
Total Lanes	1		1		1		1	1		1
Terrain	Level		Level		Level		Level	Level		Level
Grade %	0.0%		0.0%		0.0%		0.0%	0.0%		0.0%
Grade Length (mi)	0.00		0.00		0.00		0.00	0.00		0.00
Truck & Bus %	2.0%		2.0%		3.0%		2.0%	2.0%		2.0%
RV %	0.0%		0.0%		0.0%		0.0%	0.0%		0.0%
E_T	1.5		1.5		1.5		1.5	1.5		1.5
E_R	1.2		1.2		1.2		1.2	1.2		1.2
f_{HV}	0.990		0.990		0.985		0.990	0.990		0.990
f_P	1.00		1.00		1.00		1.00	1.00		1.00
On Flow (pcph)	1,146		631		1,346		44	431		1,657
On Flow (pcphpl)	1,146		631		1,346		44	431		1,657
Calculate On Ramp Roadway Operations										
On Ramp Type			Right				Right	Right		Right
On Ramp Speed (mph)	45		25				45	45		45
On Ramp Cap (pcph)			1,900				2,100	2,100		2,100
On Ramp v/c ratio			0.33				0.02	0.21		0.79



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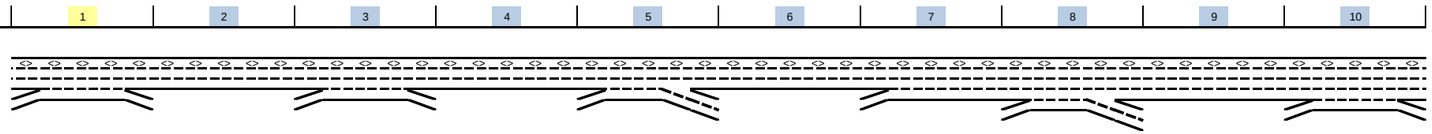
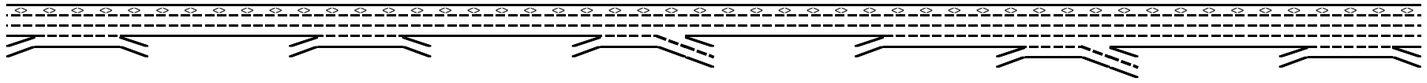
Calculate Off Ramp Flow Rate										
Off Volume (vph)	1,430		610		1,010			870		1,790
PHF	0.66		0.95		0.61			0.95		0.95
Total Lanes	1		1		2			2		1
Terrain	Level		Level		Level			Level		Level
Grade %	0.0%		0.0%		0.0%			0.0%		0.0%
Grade Length (mi)	0.00		0.00		0.00			0.00		0.00
Truck & Bus %	2.0%		3.0%		2.0%			3.0%		3.0%
RV %	0.0%		0.0%		0.0%			0.0%		0.0%
E_T	1.5		1.5		1.5			1.5		1.5
E_R	1.2		1.2		1.2			1.2		1.2
f_{HV}	0.990		0.985		0.990			0.985		0.985
f_P	1.00		1.00		1.00			1.00		1.00
Off Flow (pcph)	2,188		652		1,672			930		1,912
Off Flow (pcphpl)	2,188		652		836			465		1,912
Calculate Off Ramp Roadway Operations										
Off Ramp Type	Right		Right		Right			Right		Right
Off Ramp Speed	45		45		45			25		45
Off Ramp Cap (pcph)	2,100		2,100		4,200			3,800		2,100
Off Ramp v/c ratio	1.04		0.31		0.40			0.24		0.91
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps										
Up Type			Off		Off					
Up Distance			1,250		2,350					
Up Flow (pcph)			2,188		652					
Down Type	On		No		On					
Down Distance	1,250				8,850					
Down Flow (pcph)	631				44					
Calculate Merge Influence Area Operations										
Effective v_P (pcph)										
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)										
P_{FM} (Eqn 13-4)			#VALUE!		#VALUE!					
P_{FM} (Eqn 13-5)										
P_{FM}										
v_{12} (pcph)										
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)										
v_{R12a} (pcph)										
Merge Speed Index										
Merge Area Speed										
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed										
Merge v/c ratio										
Merge Density										
Merge LOS										



Name	Cameron Park to Cambridge	Cambridge Rd off to on-ramp	Cambridge Rd to Bass Lake Rd	Bass Lake Rd off to on-ramp	Bass Lake Rd to Silva Valley Pkwy	Silva Valley Pwky off to on-ramp	Silva Valley on-ramp	Silva Valley to El Dorado Hills	El Dorado Hills off to on-ramp	El Dorado Hills to Empire Ranch
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)										
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)										
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}										
v_{12} (pcph)										
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)										
Diverge Speed Index										
Diverge Area Speed										
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed										
Diverge v/c ratio										
Diverge Density										
Diverge LOS										
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments										
On to Off Volume (vph)	434		150		400			83		686
PHF	0.92		0.92		0.92			0.92		0.92
Terrain	Level		Level		Level			Level		Level
Grade %	0.0%		0.0%		0.0%			0.0%		0.0%
Grade Length (mi)	0.00		0.00		0.00			0.00		0.00
Truck & Bus %	2.0%		2.0%		2.0%			2.0%		2.0%
RV %	0.0%		0.0%		0.0%			0.0%		0.0%
E_T	1.5		1.5		1.5			1.5		1.5
E_R	1.2		1.2		1.2			1.2		1.2
f_{HV}	0.990		0.990		0.990			0.990		0.990
f_P	1.00		1.00		1.00			1.00		1.00
On to Off Flow (pcph)	477		165		439			91		753
Calculate On Ramp to Mainline Flow Rate for Weave Segments										
On to ML Volume (vph)	576		450		860			297		774
PHF	0.96		0.96		0.96			0.96		0.96
Terrain	Level		Level		Grade			Level		Level
Grade %	0.0%		0.0%		-7.0%			0.0%		0.0%
Grade Length (mi)	0.00		0.00		0.00			0.00		0.00
Truck & Bus %	1.0%		1.0%		1.0%			1.0%		1.0%
RV %	0.0%		0.0%		0.0%			0.0%		0.0%
E_T	1.5		1.5		1.5			1.5		1.5
E_R	1.2		1.2		1.2			1.2		1.2
f_{HV}	0.995		0.995		0.995			0.995		0.995
f_P	1.00		1.00		1.00			1.00		1.00
On to ML Flow (pcph)	603		471		901			311		810

Location	1	2	3	4	5	6	7	8	9	10



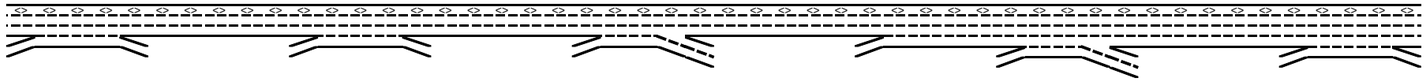
Key

<> Express Lane (HOV)

No Trucks

Name	Cameron Park to Cambridge	Cambridge Rd off to on-ramp	Cambridge Rd to Bass Lake Rd	Bass Lake Rd off to on-ramp	Bass Lake Rd to Silva Valley Pkwy	Silva Valley Pwky off to on-ramp	Silva Valley on-ramp	Silva Valley to El Dorado Hills	El Dorado Hills off to on-ramp	El Dorado Hills to Empire Ranch
Calculate Mainline to Off Ramp Flow Rate for Weave Segments										
ML to Off Volume (vph)	996		460		610			787		1,104
PHF	0.96		0.96		0.95			0.96		0.96
Terrain	Level		Level		Grade			Level		Level
Grade %	0.0%		0.0%		-7.0%			0.0%		0.0%
Grade Length (mi)	0.00		0.00		0.00			0.00		0.00
Truck & Bus %	1.0%		1.0%		1.0%			1.0%		1.0%
RV %	0.0%		0.0%		0.0%			0.0%		0.0%
E_T	1.5		1.5		1.5			1.5		1.5
E_R	1.2		1.2		1.2			1.2		1.2
f_{HV}	0.995		0.995		0.995			0.995		0.995
f_P	1.00		1.00		1.00			1.00		1.00
ML to Off Flow (pcph)	1,042		482		646			824		1,156
Calculate General Purpose Lanes to General Purpose Lanes Flow Rate for Weave Segments										
GP to GP Volume (vph)	2,574		2,677		2,594			2,705		1,966
PHF	0.96		0.96		0.96			0.96		0.96
Terrain	Level		Level		Grade			Level		Level
Grade %	0.0%		0.0%		-7.0%			0.0%		0.0%
Grade Length (mi)	0.00		0.00		0.00			0.00		0.00
Truck & Bus %	1.0%		1.0%		1.0%			1.0%		1.0%
RV %	0.0%		0.0%		0.0%			0.0%		0.0%
E_T	1.5		1.5		1.5			1.5		1.5
E_R	1.2		1.2		1.2			1.2		1.2
f_{HV}	0.995		0.995		0.995			0.995		0.995
f_P	1.00		1.00		1.00			1.00		1.00
GP to GP Flow (pcph)	2,695		2,803		2,716			2,832		2,059

Location	1	2	3	4	5	6	7	8	9	10



Key

<> Express Lane (HOV)

No Trucks

Name	Cameron Park to Cambridge	Cambridge Rd off to on-ramp	Cambridge Rd to Bass Lake Rd	Bass Lake Rd off to on-ramp	Bass Lake Rd to Silva Valley Pkwy	Silva Valley Pwky off to on-ramp	Silva Valley on-ramp	Silva Valley to El Dorado Hills	El Dorado Hills off to on-ramp	El Dorado Hills to Empire Ranch
Calculate Weave Segment Operations										
Weave Type	One-sided		One-sided		One-sided			One-sided		One-sided
Weave Length	6,325		7,250		5,500			3,425		3,775
Segment Lanes	2		2		2			3		3
Weave Lanes	2		2		3			3		3
Weave Flow (pcph)	1,645		953		1,546			1,134		1,966
Non-Weave Flow	3,172		2,968		3,154			2,923		2,812
Segment Flow	4,817		3,920		4,701			4,057		4,778
Max Weave Length	6,034		4,981		4,331			3,799		5,244
Length Check	Not a Weave		Not a Weave		Not a Weave			OK		OK
Ideal Weave Capacity	2,372		2,524		2,439			2,321		2,238
f_{HV}	0.995		0.995		0.995			0.995		0.994
f_p	0.999		0.999		0.999			1.000		0.999
Capacity Condition 1	4,716		5,018		4,848			6,926		6,669
Capacity Condition 2	6,985		9,819		10,571			12,452		8,451
Weave v/c ratio	1.02		0.78		0.96			0.58		0.71
Interchange Density	3		5		5			4		3
Lane Changes On to ML	1		1		1			1		1
Lane Changes ML to Off	1		1		1			1		1
Lane Changes On to Off	0		0		0			0		0
Min Lane Change Rate	1,645		953		1,546			1,134		1,966
Weave LC Rate	4,030		3,667		3,578			2,250		3,254
Non-Weave LC Rate 1	3,696		4,156		3,246			1,881		2,048
Non-Weave LC Rate 2	2,396		2,351		2,392			2,341		2,316
Non-Weave LC Rate 3	-5,741		-22,105		-6,434			3,795		2,826
Segment LC Rate	6,426		6,018		5,971			4,590		5,570
Weave Intensity Factor	0.229		0.195		0.241			0.285		0.307
Weave Speed	55.7		56.8		55.3			53.9		53.3
Non-Weave Speed	41.6		48.7		42.6			50.3		43.2
Segment Speed	45.5		50.5		46.1			51.3		46.8
Weave Density	-		-		-			26.4		34.0
Weave LOS	Basic		Basic		Basic			C		D
Summarize Segment Operations										
Segment v/c ratio	0.68	0.72	0.55	0.70	0.66	0.76	0.39	0.58	0.46	0.71
Segment Density	24.8	26.3	20.1	25.5	24.1	28.5	14.1	26.4	16.5	34.0
Segment LOS	C	D	C	C	C	D	B	C	B	D
Over Capacity	Off Ramp Roadway Weave									

Leisch Method for Weaving Analysis

Data Input

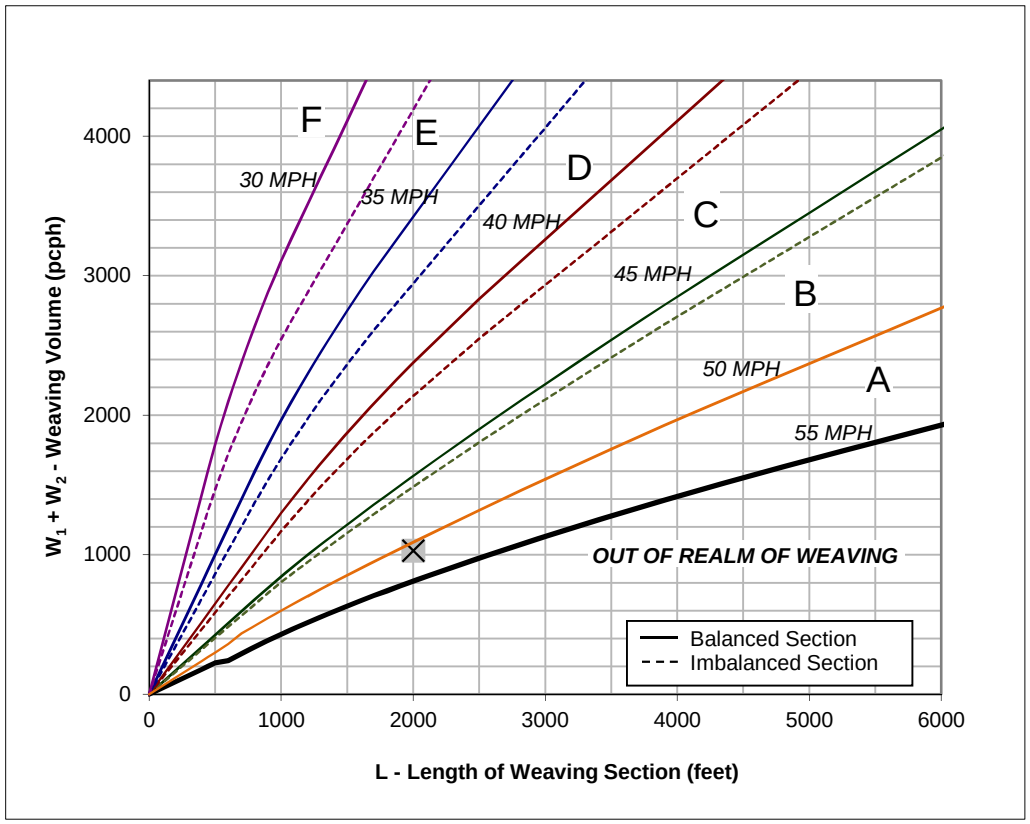
Number of Entering Mainline Lanes	N_b	3
Number of Lanes in Weaving Section	N	4
Length of Weaving Section (feet)	L	2,000

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	3,249	Volume (vph)*	770	Volume (vph)*	250
Truck Percentage	4%	Truck Percentage	2%	Truck Percentage	2%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	3,314	Volume (pcph)	777	Volume (pcph)	253

Project Information

Project	Marble Valley/Lime Rock/Pedregal
Scenario	Cumulative Plus Project - AM Pk Hr
Freeway	EB US 50
On-ramp	Latrobe Rd
Off-ramp	Silva Valley Parkway

*Some vehicles were assumed to continue from the on-ramp to the off-ramp without weaving



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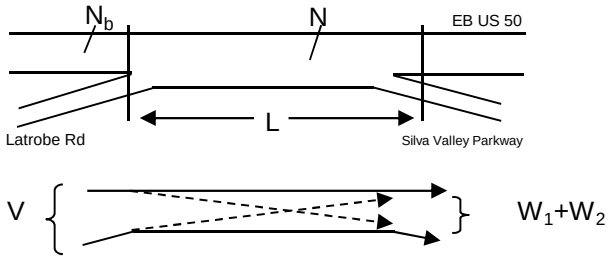


Capacity Analysis

1. Is the weaving section balanced (Y / N)? **Y**
   [If optional exit lane, then "Y". Otherwise "N".]
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?
   50 MPH and **55 MPH**
   If below the 55 MPH curve, out of the realm of weaving.
   If left of the 30 MPH curve, LOS is F.
3. Interpolated Weaving Speed (S_w, mph): **51.1**
4. Weaving Intensity Factor (k): **1.00**
5. Service Volume (SV, pcph)
   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$: **828**
6. Level of Service (LOS): **B**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

Leisch Method for Weaving Analysis

Data Input

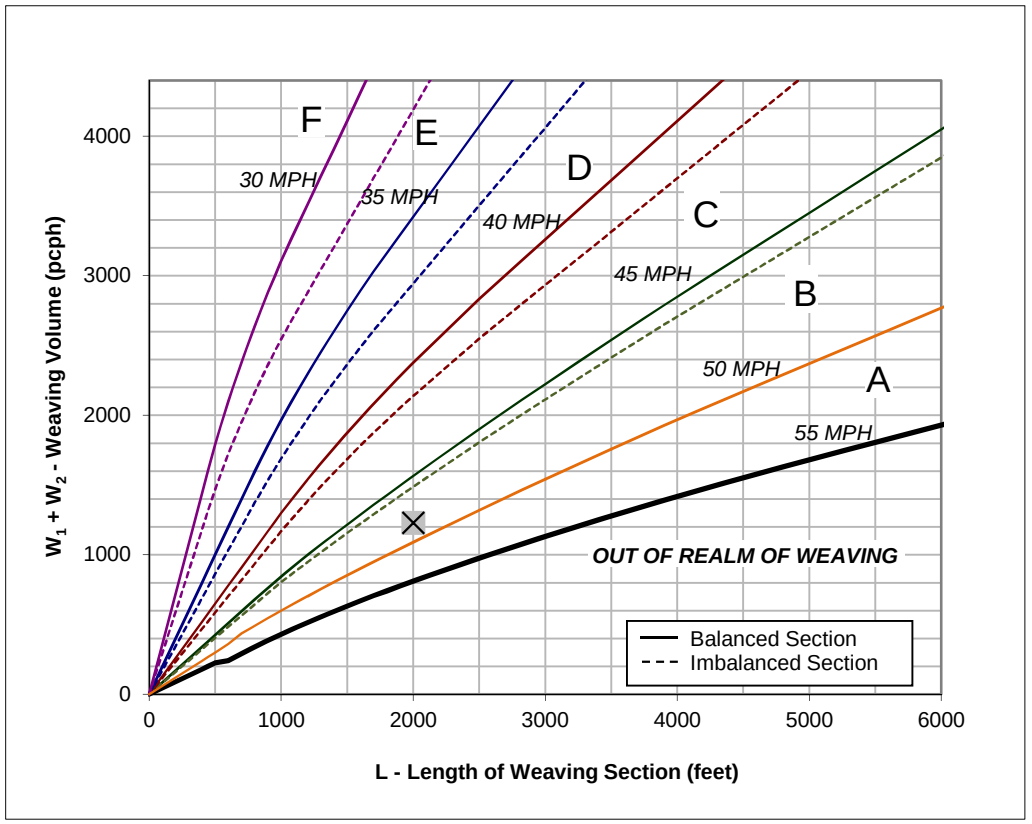
Number of Entering Mainline Lanes	N_b	3
Number of Lanes in Weaving Section	N	4
Length of Weaving Section (feet)	L	2,000

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	5,385	Volume (vph)*	712	Volume (vph)*	506
Truck Percentage	1%	Truck Percentage	2%	Truck Percentage	2%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	5,412	Volume (pcph)	719	Volume (pcph)	511

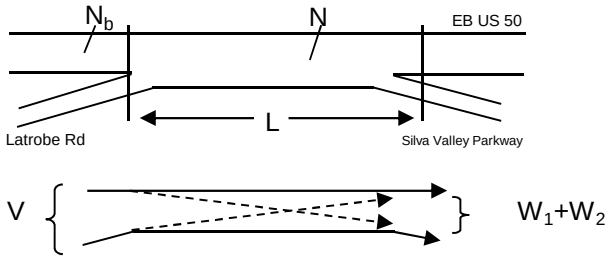
Project Information

Project	Marble Valley/Lime Rock/Pedregal
Scenario	Cumulative Plus Project - PM Pk Hr
Freeway	EB US 50
On-ramp	Latrobe Rd
Off-ramp	Silva Valley Parkway

*Some vehicles were assumed to continue from the on-ramp to the off-ramp without weaving



Figure



Capacity Analysis

1. Is the weaving section balanced (Y / N)? **Y**
   [If optional exit lane, then "Y". Otherwise "N".]
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?
   45 MPH and **50 MPH**
   If below the 55 MPH curve, out of the realm of weaving.
   If left of the 30 MPH curve, LOS is F.
3. Interpolated Weaving Speed (S_w, mph) **48.5**
4. Weaving Intensity Factor (k) **1.44**
5. Service Volume (SV, pcph)
   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,409**
6. Level of Service (LOS) **D**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

Leisch Method for Weaving Analysis

Data Input

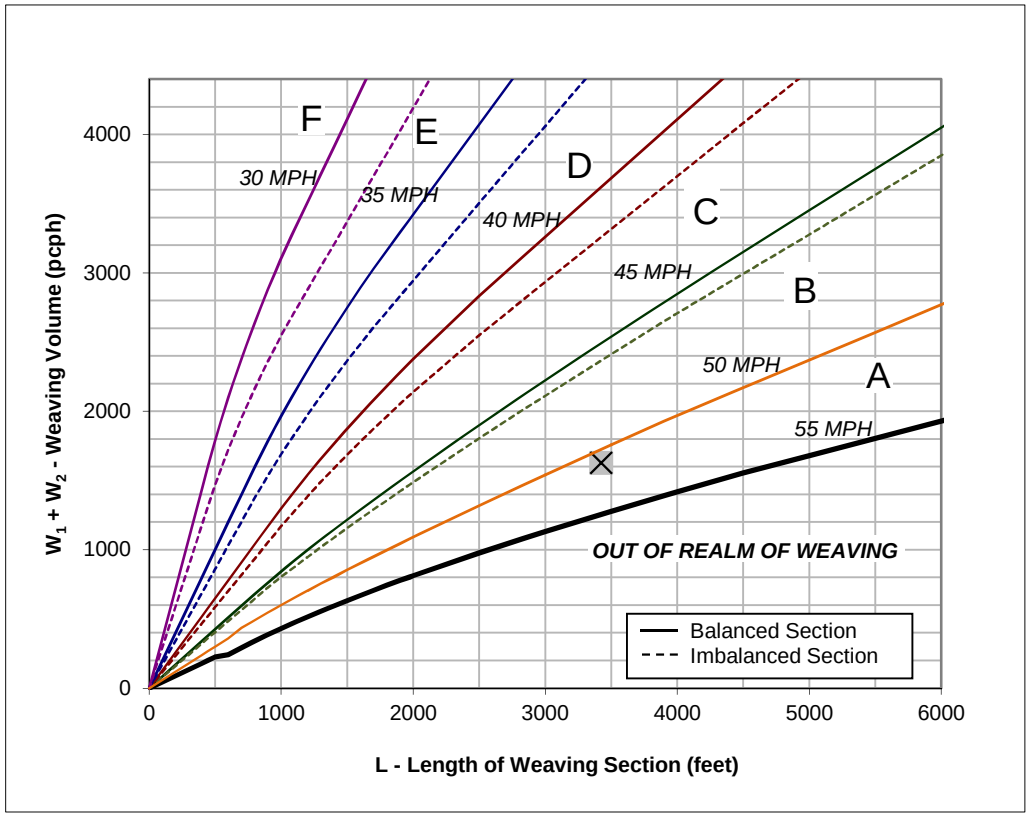
Number of Entering Mainline Lanes	N_b	3
Number of Lanes in Weaving Section	N	4
Length of Weaving Section (feet)	L	3,425

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	4,839	Volume (vph)*	916	Volume (vph)*	696
Truck Percentage	1%	Truck Percentage	2%	Truck Percentage	2%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	4,863	Volume (pcph)	925	Volume (pcph)	703

Project Information

Project	Marble Valley/Lime Rock/Pedregal
Scenario	Cumulative Plus Project - AM Pk Hr
Freeway	WB US 50
On-ramp	Silva Valley Rd
Off-ramp	El Dorado Hills Blvd

*Some vehicles were assumed to continue from the on-ramp to the off-ramp without weaving



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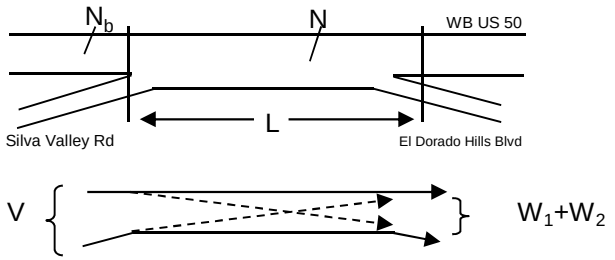


Capacity Analysis

1. Is the weaving section balanced (Y / N)? [If optional exit lane, then "Y". Otherwise "N".]	Y
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?	**50 MPH** and **55 MPH**
	If below the 55 MPH curve, out of the realm of weaving. If left of the 30 MPH curve, LOS is F.
3. Interpolated Weaving Speed (S_w, mph)	51.1
4. Weaving Intensity Factor (k)	1.00
5. Service Volume (SV, pcph) $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$	1,216
6. Level of Service (LOS)	C

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

Leisch Method for Weaving Analysis

Data Input

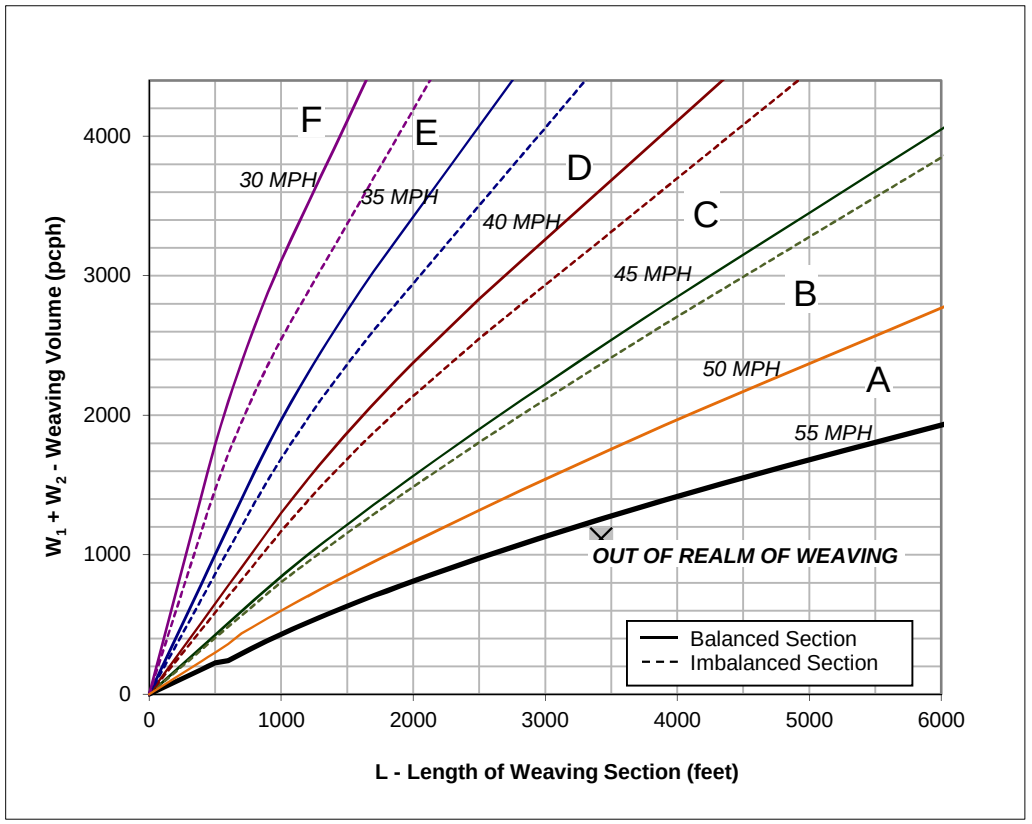
Number of Entering Mainline Lanes	N_b	3
Number of Lanes in Weaving Section	N	4
Length of Weaving Section (feet)	L	3,425

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	3,872	Volume (vph)*	320	Volume (vph)*	787
Truck Percentage	1%	Truck Percentage	2%	Truck Percentage	2%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	3,891	Volume (pcph)	323	Volume (pcph)	795

Project Information

Project	Marble Valley/Lime Rock/Pedregal
Scenario	Cumulative Plus Project - PM Pk Hr
Freeway	WB US 50
On-ramp	Silva Valley Rd
Off-ramp	El Dorado Hills Blvd

*Some vehicles were assumed to continue from the on-ramp to the off-ramp without weaving



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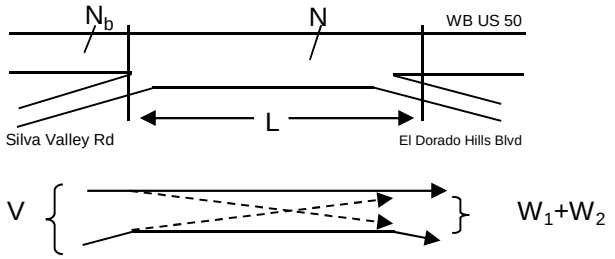


Capacity Analysis

1. Is the weaving section balanced (Y / N)? [If optional exit lane, then "Y". Otherwise "N".]	Y
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?	MPH and MPH
If below the 55 MPH curve, out of the realm of weaving. If left of the 30 MPH curve, LOS is F.	
3. Interpolated Weaving Speed (S_w, mph)	#N/A
4. Weaving Intensity Factor (k)	#N/A
5. Service Volume (SV, pcph) $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$	#N/A
6. Level of Service (LOS)	#N/A

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

Leisch Method for Weaving Analysis

Data Input

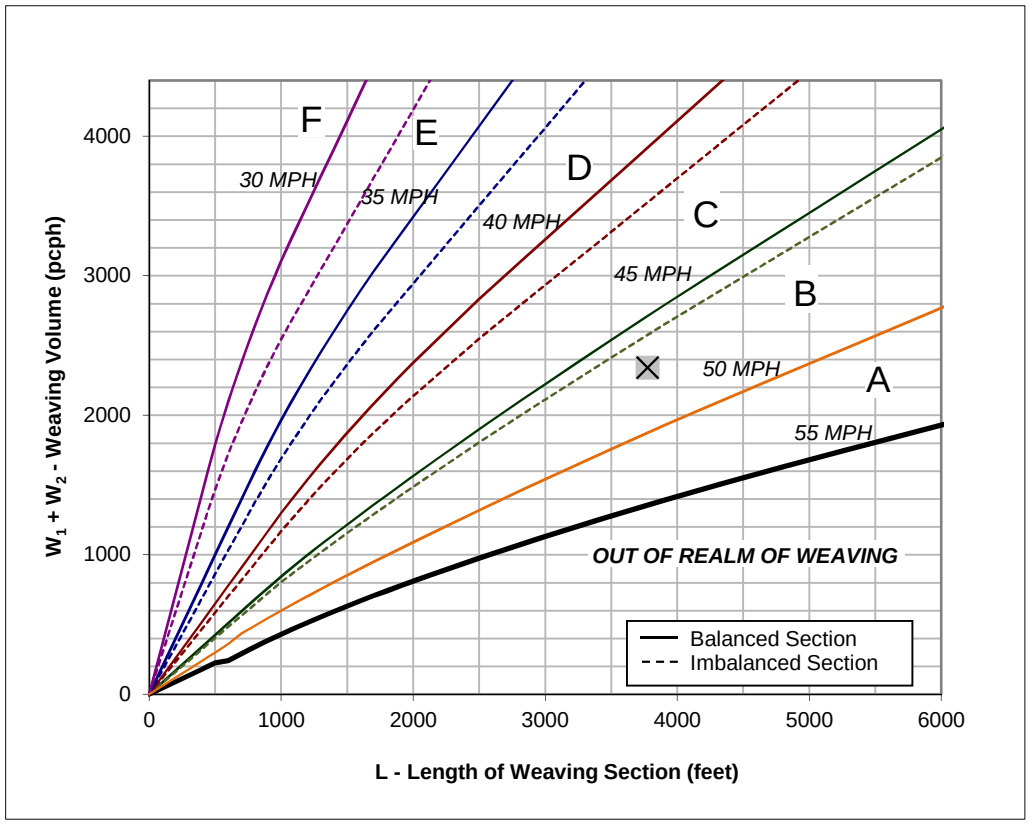
Number of Entering Mainline Lanes	N_b	3
Number of Lanes in Weaving Section	N	4
Length of Weaving Section (feet)	L	3,775

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	5,473	Volume (vph)*	979	Volume (vph)*	1,339
Truck Percentage	1%	Truck Percentage	2%	Truck Percentage	2%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	5,500	Volume (pcph)	989	Volume (pcph)	1,353

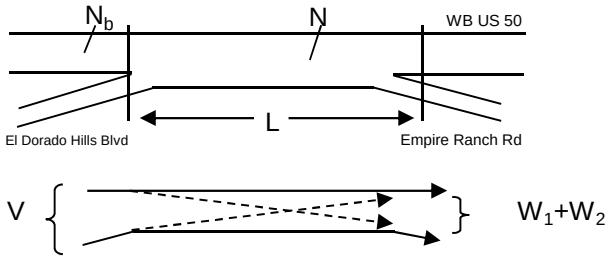
Project Information

Project	Marble Valley/Lime Rock/Pedregal
Scenario	Cumulative Plus Project - AM Pk Hr
Freeway	WB US 50
On-ramp	El Dorado Hills Blvd
Off-ramp	Empire Ranch Rd

*Some vehicles were assumed to continue from the on-ramp to the off-ramp without weaving



Figure



Capacity Analysis

1. Is the weaving section balanced (Y / N)? [If optional exit lane, then "Y". Otherwise "N".]	Y
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?	**45 MPH** and **50 MPH**
If below the 55 MPH curve, out of the realm of weaving. If left of the 30 MPH curve, LOS is F.	
3. Interpolated Weaving Speed (S_w, mph)	47.2
4. Weaving Intensity Factor (k)	1.65
5. Service Volume (SV, pcph) $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$	1,535
6. Level of Service (LOS)	D

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

Leisch Method for Weaving Analysis

Data Input

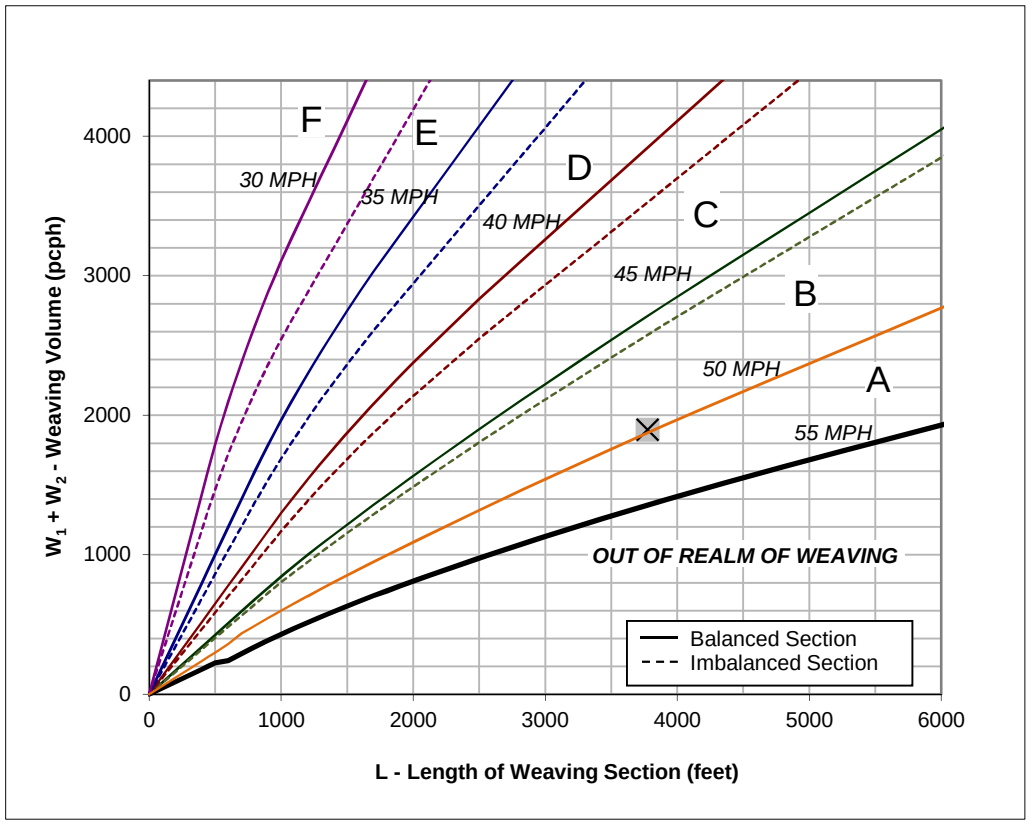
Number of Entering Mainline Lanes	N_b	3
Number of Lanes in Weaving Section	N	4
Length of Weaving Section (feet)	L	3,775

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	4,530	Volume (vph)*	774	Volume (vph)*	1,104
Truck Percentage	1%	Truck Percentage	2%	Truck Percentage	2%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	4,553	Volume (pcph)	782	Volume (pcph)	1,115

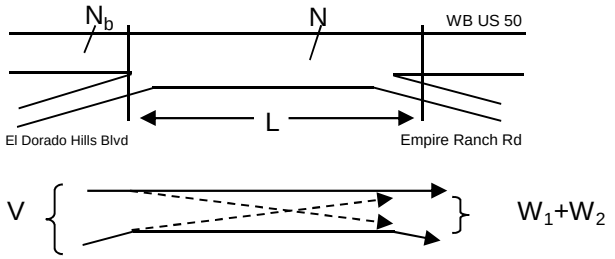
Project Information

Project	Marble Valley/Lime Rock/Pedregal
Scenario	Cumulative Plus Project - PM Pk Hr
Freeway	WB US 50
On-ramp	El Dorado Hills Blvd
Off-ramp	Empire Ranch Rd

*Some vehicles were assumed to continue from the on-ramp to the off-ramp without weaving



Figure



Capacity Analysis

1. Is the weaving section balanced (Y / N)? **Y**
   [If optional exit lane, then "Y". Otherwise "N".]
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?
   45 MPH and **50 MPH**
   If below the 55 MPH curve, out of the realm of weaving.
   If left of the 30 MPH curve, LOS is F.
3. Interpolated Weaving Speed (S_w, mph) **49.9**
4. Weaving Intensity Factor (k) **1.20**
5. Service Volume (SV, pcph)
   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,177**
6. Level of Service (LOS) **C**

The LOS in the chart above refers to the capacity of weaving traffic only; through and ramp to ramp traffic is not included.

* Note: **Do not adjust by a Peak Hour Factor (PHF).** The methodology incorporates the PHF in the Service Volume tables.

Sources: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983 and *Highway Design Manual*, California Department of Transportation, July 24, 2009

APPENDIX A:

Existing and Cumulative Mitigations

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	90	120	580	250	460	240	520	190	300	730	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.3	5.3		5.3	5.3	5.3	4.0	5.3	5.3	4.0	5.3	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.91		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3207		3433	1863	1559	1770	3539	1559	1770	3428	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3207		3433	1863	1559	1770	3539	1559	1770	3428	
Peak-hour factor, PHF	0.78	0.78	0.78	0.86	0.86	0.86	0.62	0.62	0.62	0.83	0.83	0.83
Adj. Flow (vph)	128	115	154	674	291	535	387	839	306	361	880	193
RTOR Reduction (vph)	0	137	0	0	0	384	0	0	138	0	12	0
Lane Group Flow (vph)	128	132	0	674	291	151	387	839	168	361	1061	0
Confl. Peds. (#/hr)			2			2			2			2
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	15.7	15.7		29.1	29.1	29.1	33.0	44.6	44.6	32.5	44.1	
Effective Green, g (s)	15.7	15.7		29.1	29.1	29.1	33.0	44.6	44.6	32.5	44.1	
Actuated g/C Ratio	0.11	0.11		0.21	0.21	0.21	0.23	0.31	0.31	0.23	0.31	
Clearance Time (s)	5.3	5.3		5.3	5.3	5.3	4.0	5.3	5.3	4.0	5.3	
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	195	355		704	382	319	411	1113	490	405	1066	
v/s Ratio Prot	c0.07	0.04		c0.20	0.16		c0.22	0.24		0.20	c0.31	
v/s Ratio Perm						0.10			0.11			
v/c Ratio	0.66	0.37		0.96	0.76	0.47	0.94	0.75	0.34	0.89	0.99	
Uniform Delay, d1	60.5	58.5		55.7	53.1	49.6	53.5	43.7	37.3	52.9	48.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	6.9	0.5		23.7	8.3	0.8	29.9	2.8	0.3	21.0	26.2	
Delay (s)	67.4	59.0		79.4	61.4	50.4	83.3	46.5	37.6	73.9	74.9	
Level of Service	E	E		E	E	D	F	D	D	E	E	
Approach Delay (s)		61.7			65.6			54.0			74.6	
Approach LOS		E			E			D			E	

Intersection Summary			
HCM 2000 Control Delay	64.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	141.8	Sum of lost time (s)	19.9
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	130	320	90	220	90	350	90	710	610	230	520	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.3		4.0	5.3	5.3	4.0	5.3	5.3	4.0	5.3	
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3411		3433	1863	1559	1770	3539	1559	1770	3476	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3411		3433	1863	1559	1770	3539	1559	1770	3476	
Peak-hour factor, PHF	0.77	0.77	0.77	0.86	0.86	0.86	0.61	0.61	0.61	0.84	0.84	0.84
Adj. Flow (vph)	169	416	117	256	105	407	148	1164	1000	274	619	71
RTOR Reduction (vph)	0	17	0	0	0	277	0	0	184	0	6	0
Lane Group Flow (vph)	169	516	0	256	105	130	148	1164	816	274	684	0
Confl. Peds. (#/hr)			2			2			2			2
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	13.0	23.9		13.4	24.3	24.3	16.6	59.6	59.6	25.9	68.9	
Effective Green, g (s)	13.0	23.9		13.4	24.3	24.3	16.6	59.6	59.6	25.9	68.9	
Actuated g/C Ratio	0.09	0.17		0.09	0.17	0.17	0.12	0.42	0.42	0.18	0.49	
Clearance Time (s)	4.0	5.3		4.0	5.3	5.3	4.0	5.3	5.3	4.0	5.3	
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	162	576		325	320	267	207	1491	657	324	1693	
v/s Ratio Prot	c0.10	c0.15		0.07	0.06		0.08	0.33		c0.15	0.20	
v/s Ratio Perm						0.08			c0.52			
v/c Ratio	1.04	0.90		0.79	0.33	0.49	0.71	0.78	1.24	0.85	0.40	
Uniform Delay, d1	64.2	57.5		62.6	51.4	52.9	60.1	35.3	40.9	55.8	23.1	
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	82.6	16.3		11.5	0.4	1.0	10.4	2.6	121.5	17.7	0.1	
Delay (s)	146.8	73.8		74.1	51.8	54.0	70.5	37.9	162.4	73.6	23.3	
Level of Service	F	E		E	D	D	E	D	F	E	C	
Approach Delay (s)		91.4			60.4			93.8			37.6	
Approach LOS		F			E			F			D	

Intersection Summary			
HCM 2000 Control Delay	76.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	141.4	Sum of lost time (s)	18.6
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX A:

Intersection Vehicle Queuing

Intersection: 25: US-50 WB Ramps & Silva Valley Pkwy

Movement	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	T	T	T	T	R
Maximum Queue (ft)	258	287	98	85	91	317	869	337
Average Queue (ft)	146	159	53	36	47	33	102	141
95th Queue (ft)	229	246	89	67	77	275	507	290
Link Distance (ft)	1335	1335		587	587	2466	2466	
Upstream Blk Time (%)						0	0	
Queuing Penalty (veh)						0	0	
Storage Bay Dist (ft)			400					400
Storage Blk Time (%)								0
Queuing Penalty (veh)								1

Intersection: 26: US-50 EB Ramps & Silva Valley Pkwy

Movement	EB	EB	EB	NB	NB	SB	SB
Directions Served	L	L	R	T	T	T	T
Maximum Queue (ft)	79	92	62	47	60	55	85
Average Queue (ft)	35	53	22	12	21	12	27
95th Queue (ft)	65	85	49	38	48	39	65
Link Distance (ft)	1620	1620		1401	1401	587	587
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			300				
Storage Blk Time (%)							
Queuing Penalty (veh)							

Network Summary

Network wide Queuing Penalty: 1

Intersection: 25: US-50 WB Ramps & Silva Valley Pkwy

Movement	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	T	T			R
Maximum Queue (ft)	158	171	277	188	198	113	172	59
Average Queue (ft)	86	94	138	66	73	46	81	27
95th Queue (ft)	137	144	234	137	149	90	138	45
Link Distance (ft)	1335	1335		587	587	1281	1281	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			400					400
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 26: US-50 EB Ramps & Silva Valley Pkwy

Movement	EB	EB	EB	NB	NB	B28	B28	SB	SB
Directions Served	L	L	R	T	T	T	T	T	T
Maximum Queue (ft)	171	196	71	91	98	4	36	105	128
Average Queue (ft)	91	116	21	40	48	0	2	40	57
95th Queue (ft)	147	173	54	77	88	4	24	79	100
Link Distance (ft)	1620	1620		1373	1373	154	154	587	587
Upstream Blk Time (%)							0		
Queuing Penalty (veh)							0		
Storage Bay Dist (ft)			300						
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 25: US-50 WB Ramps & Silva Valley Pkwy

Movement	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	T	T	T	T	R
Maximum Queue (ft)	390	400	256	100	103	73	408	328
Average Queue (ft)	206	220	75	48	59	25	82	154
95th Queue (ft)	362	373	212	79	89	60	250	297
Link Distance (ft)	1335	1335		587	587	2452	2452	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			400					400
Storage Blk Time (%)		1	0					0
Queuing Penalty (veh)		4	0					1

Intersection: 26: US-50 EB Ramps & Silva Valley Pkwy

Movement	EB	EB	EB	NB	NB	SB	SB
Directions Served	L	L	R	T	T	T	T
Maximum Queue (ft)	88	101	75	55	56	56	68
Average Queue (ft)	37	56	24	14	20	10	24
95th Queue (ft)	70	89	57	39	47	36	56
Link Distance (ft)	1620	1620		1401	1401	587	587
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			300				
Storage Blk Time (%)							
Queuing Penalty (veh)							

Network Summary

Network wide Queuing Penalty: 5

Intersection: 25: US-50 WB Ramps & Silva Valley Pkwy

Movement	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	T	T	T	T	R
Maximum Queue (ft)	167	178	252	184	190	102	166	73
Average Queue (ft)	93	104	129	77	82	39	76	34
95th Queue (ft)	143	158	213	144	157	80	129	60
Link Distance (ft)	1335	1335		587	587	2467	2467	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			400					400
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 26: US-50 EB Ramps & Silva Valley Pkwy

Movement	EB	EB	EB	NB	NB	SB	SB
Directions Served	L	L	R	T	T	T	T
Maximum Queue (ft)	144	162	57	98	114	106	124
Average Queue (ft)	74	96	19	44	55	29	47
95th Queue (ft)	119	141	49	86	96	72	94
Link Distance (ft)	1620	1620		1401	1401	587	587
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			300				
Storage Blk Time (%)							
Queuing Penalty (veh)							

Network Summary

Network wide Queuing Penalty: 0