TECHNICAL APPENDIX:
BASELINE CONDITIONS

SimTraffic Post-Processor **Parcel 49 - Blue Oaks**
Average Results from 10 Runs **Baseline**
Volume and Delay by Movement **Weekday AM**

Intersection 1 **Foothills Blvd/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	128	129	101.0%	43.8	6.5	D
	Through	82	76	92.6%	43.0	8.5	D
	Right Turn	217	225	103.5%	2.2	0.3	A
	Subtotal	427	430	100.7%	22.1	4.0	C
SB	Left Turn	130	137	105.5%	44.2	4.4	D
	Through	55	57	102.8%	40.5	8.2	D
	Right Turn	25	32	126.7%	8.7	3.3	A
	Subtotal	210	225	107.3%	38.3	2.6	D
EB	Left Turn	31	25	80.1%	119.6	32.7	F
	Through	1,493	1,173	78.6%	141.4	27.6	F
	Right Turn	256	203	79.2%	134.5	28.2	F
	Subtotal	1,780	1,401	78.7%	140.1	27.5	F
WB	Left Turn	557	506	90.8%	75.6	26.9	E
	Through	734	729	99.3%	15.0	2.4	B
	Right Turn	256	264	102.9%	6.3	1.0	A
	Subtotal	1,547	1,498	96.8%	34.1	10.1	C
Total		3,964	3,554	89.7%	74.8	10.9	E

Intersection 2 **SR 65 SB Ramps-Washington Blvd/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	163	147	89.9%	42.6	6.7	D
	Through						
	Right Turn	351	323	92.1%	37.9	8.3	D
	Subtotal	514	470	91.4%	39.4	6.1	D
SB	Left Turn	75	72	95.5%	44.8	10.5	D
	Through	247	249	100.7%	44.3	3.4	D
	Right Turn	258	264	102.4%	3.1	0.3	A
	Subtotal	580	585	100.8%	25.8	2.9	C
EB	Left Turn						
	Through	1,724	1,473	85.4%	34.2	5.4	C
	Right Turn	238	199	83.5%	13.0	2.8	B
	Subtotal	1,962	1,671	85.2%	31.6	4.7	C
WB	Left Turn	266	244	91.9%	46.6	4.4	D
	Through	622	623	100.2%	19.1	1.4	B
	Right Turn	414	406	98.1%	7.6	0.7	A
	Subtotal	1,302	1,274	97.8%	20.6	1.1	C
Total		4,358	4,000	91.8%	28.2	2.1	C

Intersection 3 **SR 65 NB Ramps/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	134	126	94.3%	12.0	1.3	B
	Through						
	Right Turn	324	307	94.7%	10.1	1.0	B
	Subtotal	458	433	94.6%	10.7	0.8	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	856	744	86.9%	20.2	2.4	C
	Right Turn	500	439	87.8%	6.3	1.1	A
	Subtotal	1,356	1,183	87.2%	15.1	1.4	B
WB	Left Turn	96	103	107.6%	21.2	2.6	C
	Through	1,168	1,172	100.4%	14.1	1.5	B
	Right Turn						
	Subtotal	1,264	1,275	100.9%	14.7	1.4	B
Total		3,078	2,892	93.9%	14.3	0.7	B

Intersection 10 **Washington Blvd/Road A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	66	67	102.0%	49.2	6.4	D
	Through	502	496	98.7%	3.5	1.3	A
	Right Turn						
	Subtotal	568	563	99.1%	9.0	1.2	A
SB	Left Turn						
	Through	673	617	91.6%	7.5	2.1	A
	Right Turn	78	78	100.2%	4.9	1.4	A
	Subtotal	751	695	92.5%	7.2	1.9	A
EB	Left Turn	12	10	84.0%	48.8	26.4	D
	Through						
	Right Turn	12	9	75.0%	4.6	1.4	A
	Subtotal	24	19	79.5%	30.5	16.6	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,343	1,277	95.1%	8.3	1.4	A

Intersection 9 **Pleasant Grove Blvd/Roseville Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	506	524	103.6%	51.4	7.1	D
	Through	279	271	97.0%	40.3	3.9	D
	Right Turn	348	363	104.3%	4.6	0.7	A
	Subtotal	1,133	1,158	102.2%	34.1	4.3	C
SB	Left Turn	149	144	96.5%	39.0	5.2	D
	Through	338	336	99.3%	40.5	3.0	D
	Right Turn	26	24	91.7%	3.0	0.7	A
	Subtotal	513	503	98.1%	38.3	2.8	D
EB	Left Turn	42	42	100.0%	54.0	9.9	D
	Through	941	817	86.8%	54.6	5.9	D
	Right Turn	704	671	95.3%	12.5	1.5	B
	Subtotal	1,687	1,530	90.7%	36.1	4.3	D
WB	Left Turn	540	548	101.5%	48.3	6.6	D
	Through	722	723	100.2%	26.3	2.7	C
	Right Turn	98	91	93.0%	6.1	1.3	A
	Subtotal	1,360	1,363	100.2%	33.8	3.2	C
Total		4,693	4,554	97.0%	35.3	2.3	D

Intersection 5 **Washington Blvd/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	156	149	95.4%	40.3	4.2	D
	Through	370	367	99.1%	30.9	5.9	C
	Right Turn	261	262	100.5%	3.3	0.2	A
	Subtotal	787	778	98.8%	23.4	3.2	C
SB	Left Turn	84	78	93.2%	44.0	5.0	D
	Through	324	326	100.8%	36.2	3.8	D
	Right Turn	189	173	91.4%	9.6	1.6	A
	Subtotal	597	577	96.7%	29.3	2.4	C
EB	Left Turn	201	192	95.6%	44.8	4.9	D
	Through	1,419	1,384	97.6%	25.4	2.1	C
	Right Turn						
	Subtotal	1,620	1,577	97.3%	27.8	2.2	C
WB	Left Turn	73	74	101.9%	52.3	7.2	D
	Through	781	759	97.2%	30.6	4.8	C
	Right Turn	102	96	93.9%	7.3	1.2	A
	Subtotal	956	930	97.2%	29.9	4.4	C
Total		3,960	3,862	97.5%	27.7	1.2	C

Intersection 7 **Hwy 65 NB Ramps/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	366	354	96.6%	38.1	3.4	D
	Through						
	Right Turn	299	274	91.8%	13.3	1.8	B
	Subtotal	665	628	94.4%	27.3	2.3	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	1,018	964	94.7%	15.9	4.6	B
	Right Turn	174	163	93.5%	5.1	1.0	A
	Subtotal	1,192	1,127	94.5%	14.3	4.3	B
WB	Left Turn	102	100	98.1%	52.0	4.7	D
	Through	1,151	1,171	101.7%	8.9	1.0	A
	Right Turn						
	Subtotal	1,253	1,271	101.4%	12.3	1.5	B
Total		3,110	3,025	97.3%	16.2	2.1	B

Intersection 6 **Hwy 65 SB Ramps/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	82	81	98.6%	36.8	4.4	D
	Through						
	Right Turn	257	251	97.7%	22.4	3.1	C
	Subtotal	339	332	97.9%	26.0	2.9	C
EB	Left Turn						
	Through	1,110	1,053	94.9%	8.4	2.0	A
	Right Turn						
	Subtotal	1,110	1,053	94.9%	8.4	2.0	A
WB	Left Turn						
	Through	1,162	1,155	99.4%	9.0	1.9	A
	Right Turn	355	363	102.4%	6.3	0.5	A
	Subtotal	1,517	1,519	100.1%	8.3	1.5	A
Total		2,966	2,904	97.9%	10.4	1.1	B

Intersection 4 **Washington Blvd/Roseville Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	8	3	40.5%	16.3	14.4	B
	Through	338	352	104.2%	13.0	1.5	B
	Right Turn	20	16	81.0%	3.3	0.3	A
	Subtotal	366	372	101.5%	12.7	1.4	B
SB	Left Turn	245	237	96.5%	19.3	2.2	B
	Through	652	658	100.9%	8.4	2.3	A
	Right Turn	7	9	123.4%	4.7	2.6	A
	Subtotal	904	903	99.9%	11.2	2.1	B
EB	Left Turn	4	3	81.0%	17.3	16.7	B
	Through						
	Right Turn	3	4	132.0%	3.4	1.8	A
	Subtotal	7	7	102.9%	12.4	11.7	B
WB	Left Turn	53	55	104.6%	22.3	4.5	C
	Through						
	Right Turn	194	194	100.2%	3.4	0.2	A
	Subtotal	247	250	101.1%	7.6	1.0	A
Total		1,524	1,532	100.5%	11.0	1.5	B

Intersection 8 **Washington Blvd/Hallissy Drive** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	339	331	97.6%	5.9	1.1	A
	Right Turn	130	126	97.2%	2.1	0.4	A
	Subtotal	469	457	97.5%	4.9	0.9	A
SB	Left Turn	14	17	118.3%	14.2	7.1	B
	Through	386	391	101.3%	5.3	1.2	A
	Right Turn						
	Subtotal	400	408	101.9%	5.7	1.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	80	75	93.6%	10.1	2.7	B
	Through						
	Right Turn	26	22	85.8%	3.4	0.6	A
	Subtotal	106	97	91.7%	8.6	2.4	A
Total		975	962	98.7%	5.6	0.7	A

SimTraffic Post-Processor **Parcel 49 - Blue Oaks**
Average Results from 10 Runs **Baseline**
Volume and Delay by Movement **Weekday PM**

Intersection 1 **Foothills Blvd/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	267	263	98.6%	46.0	6.1	D
	Through	52	44	85.2%	46.8	5.1	D
	Right Turn	570	532	93.3%	7.8	4.7	A
	Subtotal	889	839	94.4%	21.8	4.7	C
SB	Left Turn	380	348	91.7%	49.2	13.3	D
	Through	174	174	100.1%	37.1	6.7	D
	Right Turn	82	82	100.1%	26.7	2.9	C
	Subtotal	636	605	95.1%	42.8	8.5	D
EB	Left Turn	31	31	101.0%	55.3	10.8	E
	Through	1,040	920	88.4%	41.1	10.1	D
	Right Turn	135	124	92.0%	18.7	9.1	B
	Subtotal	1,206	1,075	89.2%	39.0	9.5	D
WB	Left Turn	239	226	94.7%	72.6	18.1	E
	Through	1,626	1,459	89.7%	80.5	31.5	F
	Right Turn	81	78	96.0%	34.2	19.8	C
	Subtotal	1,946	1,763	90.6%	77.4	29.1	E
Total		4,677	4,283	91.6%	51.8	11.2	D

Intersection 2 **SR 65 SB Ramps-Washington Blvd/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	375	392	104.4%	56.6	14.3	E
	Through						
	Right Turn	533	471	88.3%	113.0	28.6	F
	Subtotal	908	862	95.0%	87.1	19.1	F
SB	Left Turn	153	162	105.8%	45.4	9.6	D
	Through	243	250	102.8%	42.4	4.4	D
	Right Turn	249	241	96.8%	2.9	0.4	A
	Subtotal	645	653	101.2%	28.7	3.2	C
EB	Left Turn						
	Through	2,004	1,511	75.4%	69.1	10.3	E
	Right Turn	224	154	68.8%	27.9	8.7	C
	Subtotal	2,228	1,666	74.8%	65.3	10.0	E
WB	Left Turn	222	211	95.1%	47.1	7.8	D
	Through	629	611	97.2%	19.9	2.6	B
	Right Turn	378	371	98.2%	7.3	0.7	A
	Subtotal	1,229	1,194	97.1%	20.8	2.5	C
Total		5,010	4,374	87.3%	52.0	4.3	D

Intersection 3 **SR 65 NB Ramps/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	39	42	106.6%	15.2	6.0	B
	Through						
	Right Turn	463	438	94.6%	14.7	2.9	B
	Subtotal	502	480	95.5%	14.7	2.9	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	1,107	993	89.7%	27.8	4.3	C
	Right Turn	578	464	80.2%	6.2	0.5	A
	Subtotal	1,685	1,457	86.4%	21.0	3.2	C
WB	Left Turn	109	107	97.9%	24.5	2.9	C
	Through	1,190	1,179	99.1%	14.7	1.8	B
	Right Turn						
	Subtotal	1,299	1,285	99.0%	15.5	1.7	B
Total		3,486	3,221	92.4%	17.9	2.1	B

Intersection 10 **Washington Blvd/Road A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	26	21	80.7%	53.8	13.1	D
	Through	809	801	99.0%	15.6	12.3	B
	Right Turn						
	Subtotal	835	822	98.5%	16.5	12.1	B
SB	Left Turn						
	Through	669	597	89.2%	5.3	2.2	A
	Right Turn	20	16	79.1%	3.0	2.0	A
	Subtotal	689	613	88.9%	5.2	2.2	A
EB	Left Turn	99	81	81.8%	59.1	18.2	E
	Through						
	Right Turn	73	73	99.8%	7.1	0.9	A
	Subtotal	172	154	89.4%	33.9	8.5	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,696	1,589	93.7%	13.8	7.4	B

Intersection 9 **Pleasant Grove Blvd/Roseville Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	1,117	1,067	95.5%	92.8	22.8	F
	Through	565	574	101.5%	58.6	13.0	E
	Right Turn	893	884	98.9%	24.2	12.1	C
	Subtotal	2,575	2,524	98.0%	61.0	16.6	E
SB	Left Turn	199	192	96.3%	52.9	8.9	D
	Through	413	435	105.4%	52.9	3.4	D
	Right Turn	32	28	88.8%	2.6	0.5	A
	Subtotal	644	655	101.8%	50.8	3.4	D
EB	Left Turn	56	51	90.5%	100.2	34.8	F
	Through	1,138	948	83.3%	143.4	42.7	F
	Right Turn	833	645	77.4%	52.1	24.6	D
	Subtotal	2,027	1,644	81.1%	106.7	36.5	F
WB	Left Turn	753	661	87.8%	66.4	14.0	E
	Through	1,317	1,239	94.1%	42.0	10.1	D
	Right Turn	167	170	101.6%	9.8	1.2	A
	Subtotal	2,237	2,070	92.5%	47.1	7.8	D
Total		7,483	6,894	92.1%	66.3	9.7	E

Intersection 5 **Washington Blvd/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	235	240	102.3%	46.8	3.9	D
	Through	379	390	102.9%	38.0	4.0	D
	Right Turn	343	353	102.8%	3.8	0.3	A
	Subtotal	957	983	102.7%	27.9	2.0	C
SB	Left Turn	177	184	104.1%	50.4	6.1	D
	Through	441	411	93.3%	44.2	6.1	D
	Right Turn	217	200	92.2%	18.4	1.7	B
	Subtotal	835	796	95.3%	39.1	3.6	D
EB	Left Turn	147	154	105.0%	58.7	19.2	E
	Through	1,735	1,778	102.5%	46.4	18.2	D
	Right Turn						
	Subtotal	1,882	1,932	102.7%	47.3	18.1	D
WB	Left Turn	145	121	83.4%	49.0	5.3	D
	Through	1,700	1,606	94.5%	36.0	7.4	D
	Right Turn	65	64	98.1%	15.3	3.2	B
	Subtotal	1,910	1,791	93.8%	36.2	6.9	D
Total		5,584	5,502	98.5%	39.2	6.0	D

Intersection 7 **Hwy 65 NB Ramps/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	398	430	108.1%	43.5	3.6	D
	Through						
	Right Turn	481	469	97.5%	25.0	2.4	C
	Subtotal	879	899	102.3%	34.0	2.4	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	1,988	1,843	92.7%	24.3	5.7	C
	Right Turn	473	428	90.4%	9.7	1.2	A
	Subtotal	2,461	2,271	92.3%	21.5	4.8	C
WB	Left Turn	212	196	92.6%	54.7	9.9	D
	Through	1,637	1,580	96.5%	11.3	2.7	B
	Right Turn						
	Subtotal	1,849	1,776	96.1%	16.1	2.7	B
Total		5,189	4,946	95.3%	21.9	2.5	C

Intersection 6 **Hwy 65 SB Ramps/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	130	129	99.2%	34.8	4.1	C
	Through						
	Right Turn	355	365	102.9%	26.4	2.7	C
	Subtotal	485	494	101.9%	28.5	2.8	C
EB	Left Turn						
	Through	2,331	2,087	89.5%	15.7	2.8	B
	Right Turn						
	Subtotal	2,331	2,087	89.5%	15.7	2.8	B
WB	Left Turn						
	Through	1,699	1,667	98.1%	12.7	2.5	B
	Right Turn	336	342	101.7%	7.2	0.9	A
	Subtotal	2,035	2,008	98.7%	11.8	2.2	B
Total		4,851	4,590	94.6%	15.4	2.1	B

Intersection 4 **Washington Blvd/Roseville Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	3	1	49.1%	15.1	19.7	B
	Through	379	371	97.9%	16.9	1.9	B
	Right Turn	49	48	97.6%	3.3	0.2	A
	Subtotal	431	420	97.5%	15.4	1.6	B
SB	Left Turn	296	298	100.8%	27.1	1.4	C
	Through	873	877	100.5%	16.3	2.8	B
	Right Turn	8	8	101.2%	7.8	3.7	A
	Subtotal	1,177	1,183	100.6%	19.0	2.1	B
EB	Left Turn	27	24	88.6%	25.0	6.7	C
	Through	7	7	105.1%	20.1	11.3	C
	Right Turn	20	21	104.9%	4.3	0.5	A
	Subtotal	54	52	96.8%	16.6	4.1	B
WB	Left Turn	46	48	104.8%	26.1	5.9	C
	Through						
	Right Turn	365	369	101.0%	4.3	0.4	A
	Subtotal	411	417	101.4%	6.7	0.5	A
Total		2,073	2,073	100.0%	15.7	1.4	B

Intersection 8 **Washington Blvd/Hallissy Drive** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	411	399	97.0%	6.1	1.4	A
	Right Turn	68	70	102.8%	2.2	0.8	A
	Subtotal	479	468	97.8%	5.5	1.3	A
SB	Left Turn	27	27	99.5%	16.8	6.9	B
	Through	505	502	99.5%	5.6	1.4	A
	Right Turn						
	Subtotal	532	529	99.5%	6.2	1.5	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	60	61	102.4%	12.7	2.8	B
	Through						
	Right Turn	22	20	90.3%	3.2	1.2	A
	Subtotal	82	81	99.2%	10.6	2.7	B
Total		1,093	1,079	98.7%	6.2	1.4	A

Intersection 2 **SR 65 SB Ramps-Washington Blvd/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	193	198	102.7%	37.6	5.6	D
	Through						
	Right Turn	234	231	98.5%	24.7	4.9	C
	Subtotal	427	429	100.4%	30.9	4.1	C
SB	Left Turn	143	134	93.8%	33.4	5.0	C
	Through	112	115	102.6%	32.0	5.5	C
	Right Turn	108	106	98.0%	2.3	0.2	A
	Subtotal	363	355	97.8%	23.7	2.3	C
EB	Left Turn						
	Through	1,188	1,185	99.7%	26.4	4.7	C
	Right Turn	122	127	104.2%	6.0	1.2	A
	Subtotal	1,310	1,312	100.2%	24.5	4.2	C
WB	Left Turn	120	120	100.2%	42.5	7.9	D
	Through	501	491	98.0%	18.1	3.6	B
	Right Turn	399	408	102.2%	6.9	0.4	A
	Subtotal	1,020	1,019	99.9%	16.5	2.5	B
Total		3,120	3,114	99.8%	22.7	2.4	C

Intersection 3 **SR 65 NB Ramps/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	48	51	105.8%	10.1	1.9	B
	Through						
	Right Turn	411	409	99.6%	6.7	0.7	A
	Subtotal	459	460	100.2%	7.0	0.6	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	708	686	96.9%	16.6	2.6	B
	Right Turn	223	227	101.6%	4.5	0.9	A
	Subtotal	931	913	98.0%	13.6	2.1	B
WB	Left Turn	99	96	96.8%	16.8	2.5	B
	Through	972	970	99.8%	11.0	1.2	B
	Right Turn						
	Subtotal	1,071	1,066	99.5%	11.5	1.3	B
Total		2,461	2,439	99.1%	11.5	1.1	B

SimTraffic Post-Processor **Parcel 49 - Blue Oaks**
Average Results from 10 Runs **Baseline Conditions**
Volume and Delay by Movement **Saturday PM**

Intersection 10 **Washington Blvd/Road A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	5	5	108.0%	7.3	5.9	A
	Through	422	424	100.5%	2.7	1.2	A
	Right Turn						
	Subtotal	427	430	100.6%	2.8	1.1	A
SB	Left Turn						
	Through	349	358	102.5%	3.3	1.2	A
	Right Turn	5	5	106.0%	1.1	1.3	A
	Subtotal	354	363	102.5%	3.3	1.2	A
EB	Left Turn	5	6	122.0%	4.6	3.8	A
	Through						
	Right Turn	10	12	124.0%	3.3	0.9	A
	Subtotal	15	19	123.3%	4.2	1.4	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		796	811	101.9%	3.1	1.1	A

Intersection 2 **SR 65 SB Ramps-Washington Blvd/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	148	148	100.0%	35.3	7.9	D
	Through						
	Right Turn	193	189	97.9%	24.9	6.4	C
	Subtotal	341	337	98.8%	30.0	6.0	C
SB	Left Turn	125	121	96.6%	31.8	7.5	C
	Through	136	138	101.8%	28.6	3.2	C
	Right Turn	107	108	101.2%	2.4	0.3	A
	Subtotal	368	368	99.9%	21.8	3.2	C
EB	Left Turn						
	Through	1,159	1,153	99.5%	24.4	3.0	C
	Right Turn	101	100	98.6%	5.9	1.1	A
	Subtotal	1,260	1,253	99.4%	22.9	2.9	C
WB	Left Turn	99	100	100.9%	40.1	6.4	D
	Through	442	434	98.1%	16.7	1.7	B
	Right Turn	277	284	102.5%	4.5	0.6	A
	Subtotal	818	817	99.9%	15.4	1.7	B
Total		2,787	2,774	99.5%	21.5	2.6	C

Intersection 3 **SR 65 NB Ramps/Blue Oaks Blvd** **Signal**

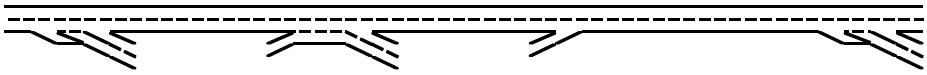
Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	64	58	90.5%	10.8	1.6	B
	Through						
	Right Turn	309	317	102.7%	6.0	0.6	A
	Subtotal	373	375	100.6%	6.7	0.5	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	655	638	97.5%	13.7	2.1	B
	Right Turn	224	229	102.1%	4.5	0.7	A
	Subtotal	879	867	98.6%	11.3	1.6	B
WB	Left Turn	94	96	102.2%	12.6	2.3	B
	Through	754	759	100.7%	6.7	0.7	A
	Right Turn						
	Subtotal	848	855	100.9%	7.4	0.7	A
Total		2,100	2,097	99.9%	8.9	0.8	A

SimTraffic Post-Processor **Parcel 49 - Blue Oaks**
Average Results from 10 Runs **Baseline Conditions**
Volume and Delay by Movement **Sunday Midday**

Intersection 10 **Washington Blvd/Road A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	5	5	104.0%	7.2	5.5	A
	Through	336	333	99.2%	3.0	1.0	A
	Right Turn						
	Subtotal	341	339	99.3%	3.1	1.0	A
SB	Left Turn						
	Through	331	332	100.3%	4.6	1.3	A
	Right Turn	5	7	146.0%	2.1	1.8	A
	Subtotal	336	339	101.0%	4.6	1.3	A
EB	Left Turn	5	4	78.0%	4.4	5.8	A
	Through						
	Right Turn	10	8	75.0%	2.7	1.6	A
	Subtotal	15	11	76.0%	3.7	2.0	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		692	689	99.6%	3.8	1.1	A

Location	5	6	7	8	9	10	11



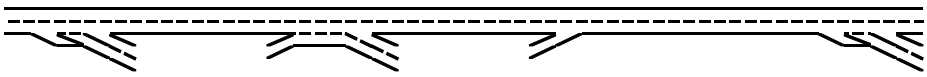
Key

<> Express Lane (HOV)

No Trucks

Name	Pleasant Grove Blvd Off-Ramp	Pleasant Grove Off to On-Ramp	Pleasant Grove On to Blue Oaks Off Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks On to Sunset Off-Ramp	Sunset Blvd Off-Ramp
Define Freeway Segment							
Type	Diverge	Basic	Weave	Basic	Merge	Basic	Diverge
Length (ft)	1,500	1,250	3,370	1,920	1,500	3,300	1,500
Accel Length					375		
Decel Length	1,500						1,500
Mainline Volume	3,983	3,318	3,318	2,629	2,629	3,225	3,225
On Ramp Volume			276		596		
Off Ramp Volume	665		965				1,311
Express Lane Volume							
EL On Ramp Volume							
EL Off Ramp Volume							
Calculate Flow Rate in General Purpose Lanes (GP)							
GP Volume (vph)	3,983	3,318	3,594	2,629	3,225	3,225	3,225
PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85
GP Lanes	2	2	3	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	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	0.00
Truck & Bus %	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%
E_T	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
f_{HV}	0.980	0.980	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
GP Flow (pcph)	4,780	3,982	4,313	3,155	3,870	3,870	3,870
GP Flow (pcphpl)	2,390	1,991	1,438	1,577	1,935	1,935	1,935
Calculate Speed in General Purpose Lanes							
FFS Curve	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes							
v/c ratio	1.02	0.85	0.61	0.67	0.82	0.82	0.82
Speed (mph)	-	60.1	65.0	64.6	60.9	60.9	60.9
Density (pcphpl)	-	33.2	22.1	24.4	31.8	31.8	31.8
LOS	F	D	C	C	D	D	D
Calculate Operations for Entering GP Lanes							
GP_{IN} Vol (pcph)	4,780		4,018		3,226		3,870
GP_{IN} Cap (pcph)	4,700		4,700		4,700		4,700
GP_{IN} v/c ratio	1.02		0.85		0.69		0.82
Calculate Operations for Exiting GP Lanes							
GP_{OUT} Vol (pcph)	4,069		3,282		3,870		2,305
GP_{OUT} Cap (pcph)	4,700		4,700		4,700		4,700
GP_{OUT} v/c ratio	0.87		0.70		0.82		0.49
Calculate On Ramp Flow Rate							
On Volume (vph)			276		596		
PHF			0.95		0.94		
Total Lanes			1		1		
Terrain			Level		Level		
Grade %			0.0%		0.0%		
Grade Length (mi)			0.00		0.00		
Truck & Bus %			3.0%		3.0%		
RV %			0.0%		0.0%		
E_T			1.5		1.5		
E_R			1.2		1.2		
f_{HV}			0.985		0.985		
f_P			1.00		1.00		
On Flow (pcph)			295		644		
On Flow (pcphpl)			295		644		

Location	5	6	7	8	9	10	11



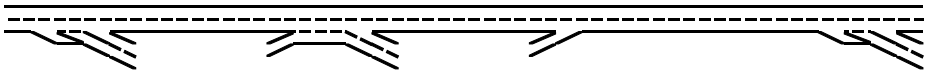
Key

<> Express Lane (HOV)

No Trucks

Name	Pleasant Grove Blvd Off-Ramp	Pleasant Grove Off to On-Ramp	Pleasant Grove On to Blue Oaks Off Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks On to Sunset Off-Ramp	Sunset Blvd Off-Ramp
Calculate On Ramp Roadway Operations							
On Ramp Type					Right		
On Ramp Speed (mph)					45		
On Ramp Cap (pcph)					2,100		
On Ramp v/c ratio					0.31		
Calculate Off Ramp Flow Rate							
Off Volume (vph)	665		965				1,311
PHF	0.95		0.95				0.85
Total Lanes	2		2				2
Terrain	Level		Level				Level
Grade %	0.0%		0.0%				0.0%
Grade Length (mi)	0.00		0.00				0.00
Truck & Bus %	3.0%		3.0%				3.0%
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		0.985				0.985
f_P	1.00		1.00				1.00
Off Flow (pcph)	711		1,031				1,565
Off Flow (pcphpl)	355		516				783
Calculate Off Ramp Roadway Operations							
Off Ramp Type	Right						Right
Off Ramp Speed	45						45
Off Ramp Cap (pcph)	4,200						4,200
Off Ramp v/c ratio	0.17						0.37
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps							
Up Type							
Up Distance							
Up Flow (pcph)							
Down Type							
Down Distance							
Down Flow (pcph)							
Calculate Merge Influence Area Operations							
Effective v_P (pcph)					3,226		
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FM} (Eqn 13-3)					0.588		
P_{FM} (Eqn 13-4)							
P_{FM} (Eqn 13-5)							
P_{FM}					1.000		
v_{12} (pcph)					3,226		
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)					3,226		
v_{R12a} (pcph)					3,870		
Merge Speed Index					0.47		
Merge Area Speed					54.1		
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed					54.1		
Merge v/c ratio					0.84		
Merge Density					33.0		
Merge LOS					D		

Location	5	6	7	8	9	10	11



Key

<> Express Lane (HOV)

No Trucks

Name	Pleasant Grove Blvd Off-Ramp	Pleasant Grove Off to On-Ramp	Pleasant Grove On to Blue Oaks Off Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks On to Sunset Off-Ramp	Sunset Blvd Off-Ramp
Calculate Diverge Influence Area Operations							
Effective v_P (pcph)	4,780						3,870
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FD} (Eqn 13-9)	0.608						0.591
P_{FD} (Eqn 13-10)							
P_{FD} (Eqn 13-11)							
P_{FD}	1.000						1.000
v_{12} (pcph)	4,780						3,870
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)	4,780						3,870
Diverge Speed Index	-						0.44
Diverge Area Speed	-						54.9
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed							54.9
Diverge v/c ratio	1.09						0.88
Diverge Density	-						24.0
Diverge LOS	F						C
Summarize Segment Operations							
Segment v/c ratio	1.09	0.85	0.59	0.67	0.84	0.82	0.88
Segment Density	-	33.2	22.1	24.4	33.0	31.8	24.0
Segment LOS	F	D	C	C	D	D	C
Over Capacity	Segment GP Lanes In GP Lanes Diverge						

Leisch Method for Weaving Analysis

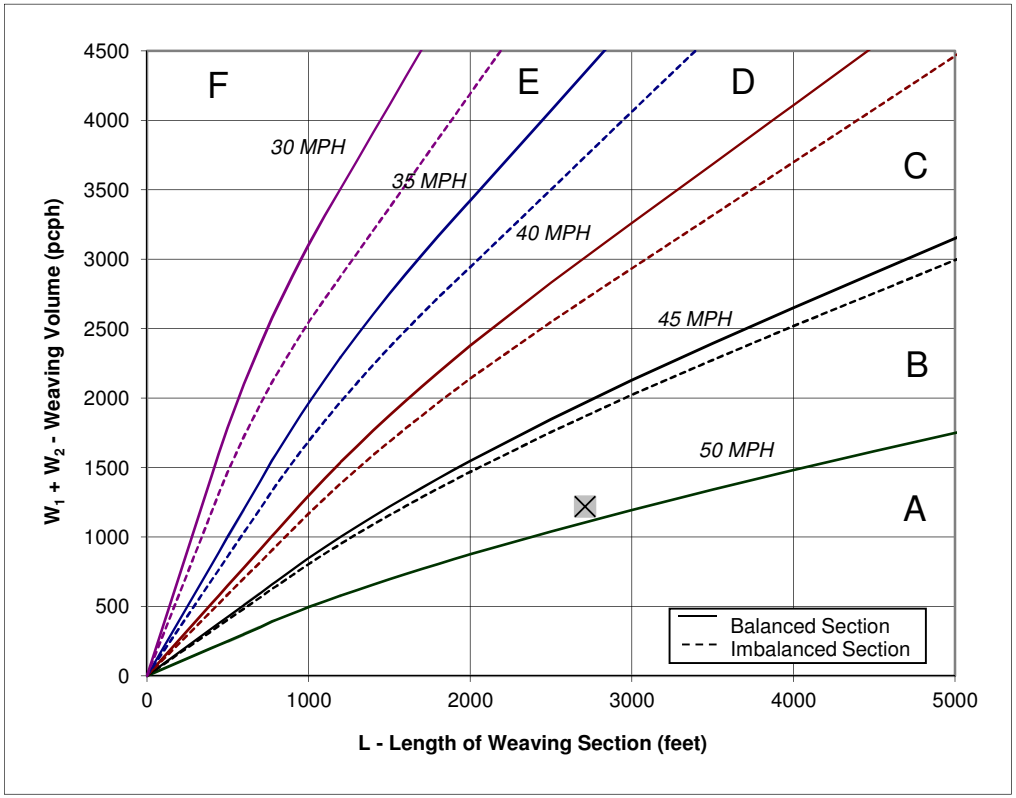
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	2,710

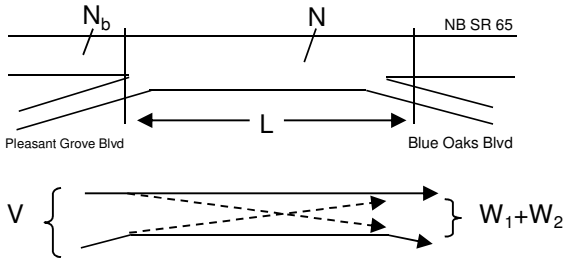
Project Information

Project	Parcel 49
Scenario	Baseline AM
Freeway	NB SR 65
On-ramp	Pleasant Grove Blvd
Off-ramp	Blue Oaks Blvd

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	3,594	Volume (vph)*	254	Volume (vph)*	943
Truck Percentage	4%	Truck Percentage	4%	Truck Percentage	4%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	3,666	Volume (pcph)	259	Volume (pcph)	962



Figure



Capacity Analysis

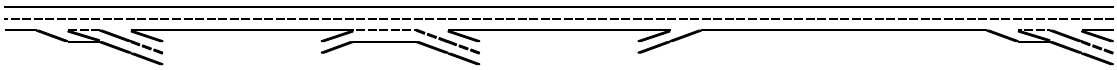
1. Is the weaving section balanced (Y / N)? **Y**
   [If optional exit lane, then "Y". Otherwise "N".]
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?
   45 MPH and **50 MPH**
   If below the 50 MPH curve, out of the realm of weaving.
   If left of the 30 MPH curve, LOS is F.
3. Interpolated Weaving Speed (S_w, mph) **49.3**
4. Weaving Intensity Factor (k) **1.23**
5. Service Volume (SV, pcph)
   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,242**
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.

Source: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983.

Location	5	6	7	8	9	10	11



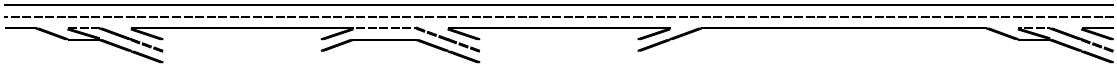
Key

<> Express Lane (HOV)

No Trucks

Name	Pleasant Grove Blvd Off-Ramp	Pleasant Grove Off to On-Ramp	Pleasant Grove On to Blue Oaks Off Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks On to Sunset Off-Ramp	Sunset Blvd Off-Ramp
Define Freeway Segment							
Type	Diverge	Basic	Weave	Basic	Merge	Basic	Diverge
Length (ft)	1,500	1,250	3,370	1,920	1,500	3,300	1,500
Accel Length					375		
Decel Length	1,500						1,500
Mainline Volume	4,283	3,404	3,404	2,889	2,889	3,576	3,576
On Ramp Volume			685		687		
Off Ramp Volume	879		1,200				649
Express Lane Volume							
EL On Ramp Volume							
EL Off Ramp Volume							
Calculate Flow Rate in General Purpose Lanes (GP)							
GP Volume (vph)	4,283	3,404	4,089	2,889	3,576	3,576	3,576
PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
GP Lanes	2	2	3	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	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	0.00
Truck & Bus %	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%
E_T	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
f_{HV}	0.980	0.980	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
GP Flow (pcph)	4,599	3,655	4,390	3,102	3,839	3,839	3,839
GP Flow (pcphpl)	2,299	1,827	1,463	1,551	1,920	1,920	1,920
Calculate Speed in General Purpose Lanes							
FFS Curve	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes							
v/c ratio	0.98	0.78	0.62	0.66	0.82	0.82	0.82
Speed (mph)	53.5	62.4	64.9	64.7	61.2	61.2	61.2
Density (pcphpl)	43.0	29.3	22.5	24.0	31.4	31.4	31.4
LOS	E	D	C	C	D	D	D
Calculate Operations for Entering GP Lanes							
GP_{IN} Vol (pcph)	4,599		3,658		3,098		3,839
GP_{IN} Cap (pcph)	4,700		4,700		4,700		4,700
GP_{IN} v/c ratio	0.98		0.78		0.66		0.82
Calculate Operations for Exiting GP Lanes							
GP_{OUT} Vol (pcph)	3,659		3,108		3,839		3,065
GP_{OUT} Cap (pcph)	4,700		4,700		4,700		4,700
GP_{OUT} v/c ratio	0.78		0.66		0.82		0.65
Calculate On Ramp Flow Rate							
On Volume (vph)			685		687		
PHF			0.95		0.94		
Total Lanes			1		1		
Terrain			Level		Level		
Grade %			0.0%		0.0%		
Grade Length (mi)			0.00		0.00		
Truck & Bus %			3.0%		3.0%		
RV %			0.0%		0.0%		
E_T			1.5		1.5		
E_R			1.2		1.2		
f_{HV}			0.985		0.985		
f_P			1.00		1.00		
On Flow (pcph)			732		742		
On Flow (pcphpl)			732		742		

Location	5	6	7	8	9	10	11



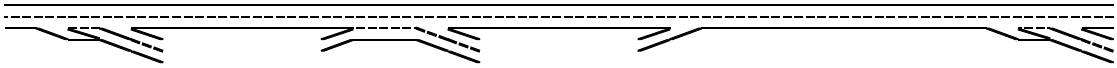
Key

<> Express Lane (HOV)

No Trucks

Name	Pleasant Grove Blvd Off-Ramp	Pleasant Grove Off to On-Ramp	Pleasant Grove On to Blue Oaks Off Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks On to Sunset Off-Ramp	Sunset Blvd Off-Ramp
Calculate On Ramp Roadway Operations							
On Ramp Type					Right		
On Ramp Speed (mph)					45		
On Ramp Cap (pcph)					2,100		
On Ramp v/c ratio					0.35		
Calculate Off Ramp Flow Rate							
Off Volume (vph)	879		1,200				649
PHF	0.95		0.95				0.85
Total Lanes	2		2				2
Terrain	Level		Level				Level
Grade %	0.0%		0.0%				0.0%
Grade Length (mi)	0.00		0.00				0.00
Truck & Bus %	3.0%		3.0%				3.0%
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		0.985				0.985
f_P	1.00		1.00				1.00
Off Flow (pcph)	939		1,282				775
Off Flow (pcphpl)	470		641				387
Calculate Off Ramp Roadway Operations							
Off Ramp Type	Right						Right
Off Ramp Speed	45						45
Off Ramp Cap (pcph)	4,200						4,200
Off Ramp v/c ratio	0.22						0.18
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps							
Up Type							
Up Distance							
Up Flow (pcph)							
Down Type							
Down Distance							
Down Flow (pcph)							
Calculate Merge Influence Area Operations							
Effective v_P (pcph)					3,098		
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FM} (Eqn 13-3)					0.588		
P_{FM} (Eqn 13-4)							
P_{FM} (Eqn 13-5)							
P_{FM}					1.000		
v_{12} (pcph)					3,098		
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)					3,098		
v_{R12a} (pcph)					3,839		
Merge Speed Index					0.47		
Merge Area Speed					54.2		
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed					54.2		
Merge v/c ratio					0.83		
Merge Density					32.7		
Merge LOS					D		

Location	5	6	7	8	9	10	11



Key

<> Express Lane (HOV)

No Trucks

Name	Pleasant Grove Blvd Off-Ramp	Pleasant Grove Off to On-Ramp	Pleasant Grove On to Blue Oaks Off Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks On to Sunset Off-Ramp	Sunset Blvd Off-Ramp
Calculate Diverge Influence Area Operations							
Effective v_P (pcph)	4,599						3,839
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FD} (Eqn 13-9)	0.602						0.628
P_{FD} (Eqn 13-10)							
P_{FD} (Eqn 13-11)							
P_{FD}	1.000						1.000
v_{12} (pcph)	4,599						3,839
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)	4,599						3,839
Diverge Speed Index	0.38						0.37
Diverge Area Speed	56.2						56.5
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed	56.2						56.5
Diverge v/c ratio	1.05						0.87
Diverge Density	30.3						23.8
Diverge LOS	F						C
Summarize Segment Operations							
Segment v/c ratio	1.05	0.78	0.70	0.66	0.83	0.82	0.87
Segment Density	-	29.3	22.5	24.0	32.7	31.4	23.8
Segment LOS	F	D	C	C	D	D	C
Over Capacity	Diverge						

Leisch Method for Weaving Analysis

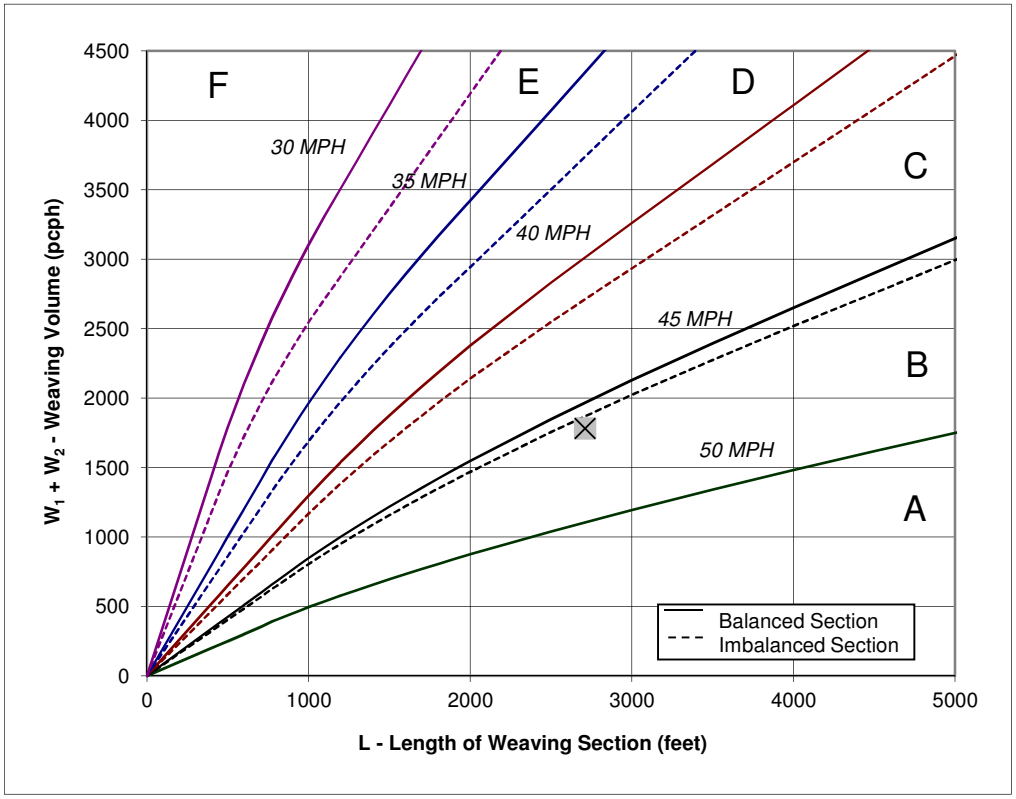
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	2,710

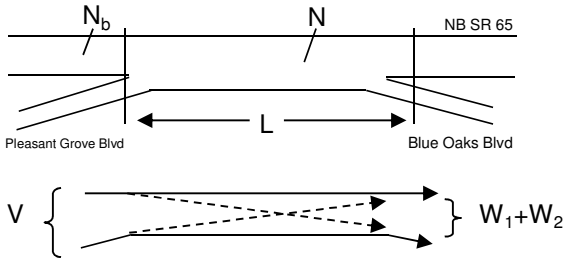
Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	4,089	Volume (vph)*	617	Volume (vph)*	1,132
Truck Percentage	4%	Truck Percentage	4%	Truck Percentage	4%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	4,171	Volume (pcph)	629	Volume (pcph)	1,154

Project Information

Project	Parcel 49
Scenario	Baseline PM
Freeway	NB SR 65
On-ramp	Pleasant Grove Blvd
Off-ramp	Blue Oaks Blvd



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 50 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) **46.1**
4. Weaving Intensity Factor (k) **1.81**
5. Service Volume (SV, pcph)
   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,560**
6. Level of Service (LOS) **E**

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.

Source: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983.

Location	13	14	15	16	17	18	19	20	21	22

Key

<> Express Lane (HOV)

No Trucks

Name	Sunset Loop On Ramp	Sunset Direct On-Ramp	Sunset Direct Off-Ramp to Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks Blvd On to Pleasant Grove Off	Pleasant Grove Off to On-Ramp	Pleasant Grove Blvd Loop On-Ramp	Pleasant Grove Blvd Direct On-Ramp
Define Freeway Segment										
Type	Merge	Merge	Basic	Diverge	Basic	Merge	Weave	Basic	Merge	Merge
Length (ft)	1,500	1,500	770	1,500	1,680	1,000	3,140	1,610	1,180	1,500
Accel Length	500	1,450				380			550	580
Decel Length				200						
Mainline Volume	2,508	2,986	3,208	3,208	2,628	2,628	3,042	3,497	3,497	3,852
On Ramp Volume	478	222				414	794		355	374
Off Ramp Volume				580			339			
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	2,986	3,208	3,208	3,208	2,628	3,042	3,836	3,497	3,852	4,226
PHF	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
GP Lanes	2	2	2	2	2	2	3	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	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	0.00	0.00	0.00	0.00
Truck & Bus %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	4.2%	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	0.979	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
GP Flow (pcph)	3,351	3,600	3,600	3,600	2,949	3,414	4,352	3,924	4,323	4,743
GP Flow (pcphpl)	1,675	1,800	1,800	1,800	1,475	1,707	1,451	1,962	2,161	2,371
Calculate Speed in General Purpose Lanes										
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.71	0.77	0.77	0.77	0.63	0.73	0.62	0.83	0.92	1.01
Speed (mph)	63.9	62.7	62.7	62.7	64.9	63.7	65.0	60.5	56.8	-
Density (pcphpl)	26.2	28.7	28.7	28.7	22.7	26.8	22.3	32.4	38.1	-
LOS	D	D	D	D	C	D	C	D	E	F
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)	2,805	3,338		3,600		2,947	3,488		3,945	4,345
GP_{IN} Cap (pcph)	4,700	4,700		4,700		4,700	4,700		4,700	4,700
GP_{IN} v/c ratio	0.60	0.71		0.77		0.63	0.74		0.84	0.92
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)	3,351	3,600		2,961		3,414	3,961		4,323	4,743
GP_{OUT} Cap (pcph)	4,700	4,700		4,700		4,700	4,700		4,700	4,700
GP_{OUT} v/c ratio	0.71	0.77		0.63		0.73	0.84		0.92	1.01
Calculate On Ramp Flow Rate										
On Volume (vph)	478	222				414	794		355	374
PHF	0.885	0.854				0.895	0.94		0.95	0.95
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%				2.0%	4.6%		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				0.990	0.978		0.990	0.990
f_P	1.00	1.00				1.00	1.00		1.00	1.00
On Flow (pcph)	546	263				467	864		377	398
On Flow (pcphpl)	546	263				467	864		377	398

Location	13	14	15	16	17	18	19	20	21	22

Key

<> Express Lane (HOV)

No Trucks

Name	Sunset Loop On Ramp	Sunset Direct On-Ramp	Sunset Direct Off-Ramp to Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks Blvd On to Pleasant Grove Off	Pleasant Grove Off to On-Ramp	Pleasant Grove Blvd Loop On-Ramp	Pleasant Grove Blvd Direct On-Ramp
Calculate On Ramp Roadway Operations										
On Ramp Type	Right	Right				Right	Right		Right	Right
On Ramp Speed (mph)	25	45				25	45		25	45
On Ramp Cap (pcph)	1,900	2,100				1,900	2,100		1,900	2,100
On Ramp v/c ratio	0.29	0.13				0.25	0.41		0.20	0.19
Calculate Off Ramp Flow Rate										
Off Volume (vph)				580			339			
PHF				0.927			0.877			
Total Lanes				1			1			
Terrain				Level			Level			
Grade %				0.0%			0.0%			
Grade Length (mi)				0.00			0.00			
Truck & Bus %				4.2%			2.0%			
RV %				0.0%			0.0%			
E_T				1.5			1.5			
E_R				1.2			1.2			
f_{HV}				0.979			0.990			
f_P				1.00			1.00			
Off Flow (pcph)				639			390			
Off Flow (pcphpl)				639			390			
Calculate Off Ramp Roadway Operations										
Off Ramp Type				Right			Right			
Off Ramp Speed				45			45			
Off Ramp Cap (pcph)				2,100			2,100			
Off Ramp v/c ratio				0.30			0.19			
Determine Adjacent Ramp for Three-Lane Mainline Segments with C										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_P (pcph)	2,805	3,338				2,947			3,945	4,345
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)	0.592	0.618				0.588			0.593	0.594
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}	1.000	1.000				1.000			1.000	1.000
v_{12} (pcph)	2,805	3,338				2,947			3,945	4,345
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)	2,805	3,338				2,947			3,945	4,345
v_{R12a} (pcph)	3,351	3,600				3,414			4,323	4,743
Merge Speed Index	0.41	0.33				0.42			0.59	-
Merge Area Speed	55.6	57.3				55.3			51.5	-
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed	55.6	57.3				55.3			51.5	
Merge v/c ratio	0.73	0.78				0.74			0.94	1.03
Merge Density	28.2	24.3				29.5			35.6	-
Merge LOS	D	C				D			E	F

Location	13	14	15	16	17	18	19	20	21	22

Key

<> Express Lane (HOV)

No Trucks

Name	Sunset Loop On Ramp	Sunset Direct On-Ramp	Sunset Direct Off-Ramp to Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks Blvd On to Pleasant Grove Off	Pleasant Grove Off to On-Ramp	Pleasant Grove Blvd Loop On-Ramp	Pleasant Grove Blvd Direct On-Ramp
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)				3,600						
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)				0.641						
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}				1.000						
v_{12} (pcph)				3,600						
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				3,600						
Diverge Speed Index				0.36						
Diverge Area Speed				56.8						
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				56.8						
Diverge v/c ratio				0.82						
Diverge Density				33.4						
Diverge LOS				D						
Summarize Segment Operations										
Segment v/c ratio	0.73	0.78	0.77	0.82	0.63	0.74	0.65	0.83	0.94	1.03
Segment Density	28.2	24.3	28.7	33.4	22.7	29.5	22.3	32.4	35.6	-
Segment LOS	D	C	D	D	C	D	C	D	E	F
Over Capacity										Segment GP Lanes Out GP Lanes Merge

Leisch Method for Weaving Analysis

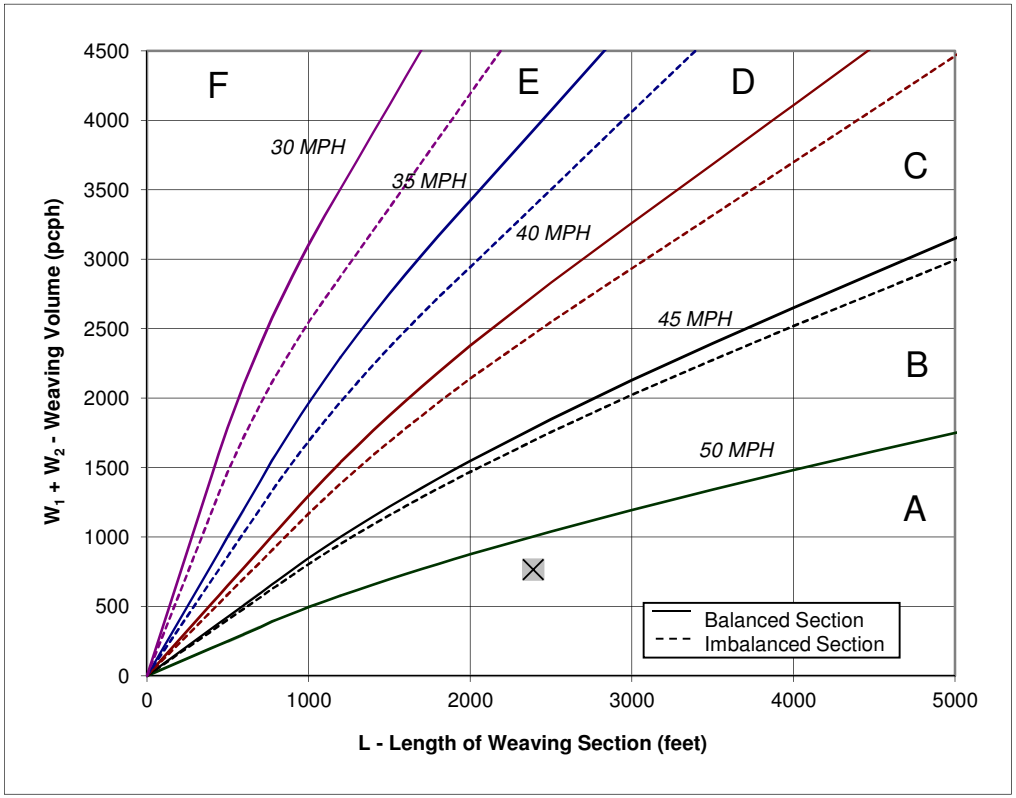
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	2,390

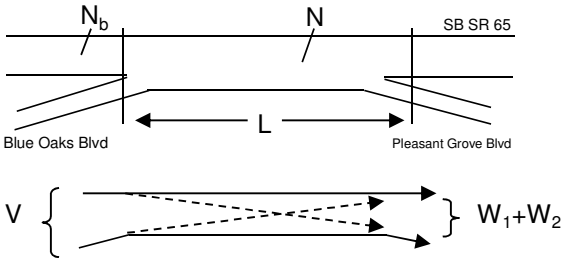
Project Information

Project	Parcel 49
Scenario	Baseline AM
Freeway	SB SR 65
On-ramp	Blue Oaks Blvd
Off-ramp	Pleasant Grove Blvd

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	3,836	Volume (vph)*	603	Volume (vph)*	148
Truck Percentage	4%	Truck Percentage	4%	Truck Percentage	4%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	3,913	Volume (pcph)	616	Volume (pcph)	151



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 50 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) **51.5**
4. Weaving Intensity Factor (k) **1.00**
5. Service Volume (SV, pcph)
   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,304**
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.

Source: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983.

Location	13	14	15	16	17	18	19	20	21	22

Key

<> Express Lane (HOV)

No Trucks

Name	Sunset Loop On Ramp	Sunset Direct On-Ramp	Sunset Direct Off-Ramp to Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks Blvd On to Pleasant Grove Off	Pleasant Grove Off to On-Ramp	Pleasant Grove Blvd Loop On-Ramp	Pleasant Grove Blvd Direct On-Ramp
Define Freeway Segment										
Type	Merge	Merge	Basic	Diverge	Basic	Merge	Weave	Basic	Merge	Merge
Length (ft)	1,500	1,500	770	1,500	1,680	1,000	3,140	1,610	1,180	1,500
Accel Length	500	1,450				380			550	580
Decel Length				200						
Mainline Volume	1,708	2,385	2,928	2,928	2,283	2,283	2,661	3,181	3,181	3,517
On Ramp Volume	677	543				378	1,005		336	485
Off Ramp Volume				645			485			
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	2,385	2,928	2,928	2,928	2,283	2,661	3,666	3,181	3,517	4,002
PHF	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
GP Lanes	2	2	2	2	2	2	3	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	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	0.00	0.00	0.00	0.00
Truck & Bus %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	4.2%	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	0.979	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
GP Flow (pcph)	2,677	3,286	3,286	3,286	2,562	2,986	4,159	3,570	3,947	4,491
GP Flow (pcphpl)	1,338	1,643	1,643	1,643	1,281	1,493	1,386	1,785	1,973	2,246
Calculate Speed in General Purpose Lanes										
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.57	0.70	0.70	0.70	0.55	0.64	0.59	0.76	0.84	0.96
Speed (mph)	65.0	64.2	64.2	64.2	65.0	64.9	65.0	62.9	60.3	54.9
Density (pcphpl)	20.6	25.6	25.6	25.6	19.7	23.0	21.3	28.4	32.7	40.9
LOS	C	C	C	C	C	C	C	D	D	E
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)	1,735	2,604		3,286		2,502	2,994		3,588	3,973
GP_{IN} Cap (pcph)	4,700	4,700		4,700		4,700	4,700		4,700	4,700
GP_{IN} v/c ratio	0.37	0.55		0.70		0.53	0.64		0.76	0.85
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)	2,677	3,286		2,574		2,986	3,554		3,947	4,491
GP_{OUT} Cap (pcph)	4,700	4,700		4,700		4,700	4,700		4,700	4,700
GP_{OUT} v/c ratio	0.57	0.70		0.55		0.64	0.76		0.84	0.96
Calculate On Ramp Flow Rate										
On Volume (vph)	677	543				378	1,005		336	485
PHF	0.73	0.808				0.792	0.876		0.95	0.95
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 %	3.0%	3.0%				3.0%	3.0%		3.0%	3.0%
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}	0.985	0.985				0.985	0.985		0.985	0.985
f_P	1.00	1.00				1.00	1.00		1.00	1.00
On Flow (pcph)	941	682				484	1,164		359	518
On Flow (pcphpl)	941	682				484	1,164		359	518

Location	13	14	15	16	17	18	19	20	21	22

Key

<> Express Lane (HOV)

No Trucks

Name	Sunset Loop On Ramp	Sunset Direct On-Ramp	Sunset Direct Off-Ramp to Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks Blvd On to Pleasant Grove Off	Pleasant Grove Off to On-Ramp	Pleasant Grove Blvd Loop On-Ramp	Pleasant Grove Blvd Direct On-Ramp
Calculate On Ramp Roadway Operations										
On Ramp Type	Right	Right				Right	Right		Right	Right
On Ramp Speed (mph)	25	45				25	45		25	45
On Ramp Cap (pcph)	1,900	2,100				1,900	2,100		1,900	2,100
On Ramp v/c ratio	0.50	0.32				0.25	0.55		0.19	0.25
Calculate Off Ramp Flow Rate										
Off Volume (vph)				645			485			
PHF				0.92			0.814			
Total Lanes				1			1			
Terrain				Level			Level			
Grade %				0.0%			0.0%			
Grade Length (mi)				0.00			0.00			
Truck & Bus %				3.0%			3.0%			
RV %				0.0%			0.0%			
E_T				1.5			1.5			
E_R				1.2			1.2			
f_{HV}				0.985			0.985			
f_P				1.00			1.00			
Off Flow (pcph)				712			605			
Off Flow (pcphpl)				712			605			
Calculate Off Ramp Roadway Operations										
Off Ramp Type				Right			Right			
Off Ramp Speed				45			45			
Off Ramp Cap (pcph)				2,100			2,100			
Off Ramp v/c ratio				0.34			0.29			
Determine Adjacent Ramp for Three-Lane Mainline Segments with C										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_P (pcph)	1,735	2,604				2,502			3,588	3,973
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)	0.592	0.618				0.588			0.593	0.594
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}	1.000	1.000				1.000			1.000	1.000
v_{12} (pcph)	1,735	2,604				2,502			3,588	3,973
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)	1,735	2,604				2,502			3,588	3,973
v_{R12a} (pcph)	2,677	3,286				2,986			3,947	4,491
Merge Speed Index	0.35	0.29				0.38			0.50	0.62
Merge Area Speed	56.9	58.2				56.3			53.6	50.8
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed	56.9	58.2				56.3			53.6	50.8
Merge v/c ratio	0.58	0.71				0.65			0.86	0.98
Merge Density	22.8	21.7				26.2			32.6	36.6
Merge LOS	C	C				C			D	E

Location	13	14	15	16	17	18	19	20	21	22

Key

<> Express Lane (HOV)

No Trucks

Name	Sunset Loop On Ramp	Sunset Direct On-Ramp	Sunset Direct Off-Ramp to Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks Blvd On to Pleasant Grove Off	Pleasant Grove Off to On-Ramp	Pleasant Grove Blvd Loop On-Ramp	Pleasant Grove Blvd Direct On-Ramp
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)				3,286						
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)				0.645						
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}				1.000						
v_{12} (pcph)				3,286						
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				3,286						
Diverge Speed Index				0.36						
Diverge Area Speed				56.7						
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				56.7						
Diverge v/c ratio				0.75						
Diverge Density				30.7						
Diverge LOS				D						
Summarize Segment Operations										
Segment v/c ratio	0.58	0.71	0.70	0.75	0.55	0.65	0.65	0.76	0.86	0.98
Segment Density	22.8	21.7	25.6	30.7	19.7	26.2	21.3	28.4	32.6	36.6
Segment LOS	C	C	C	D	C	C	C	D	D	E
Over Capacity										

Leisch Method for Weaving Analysis

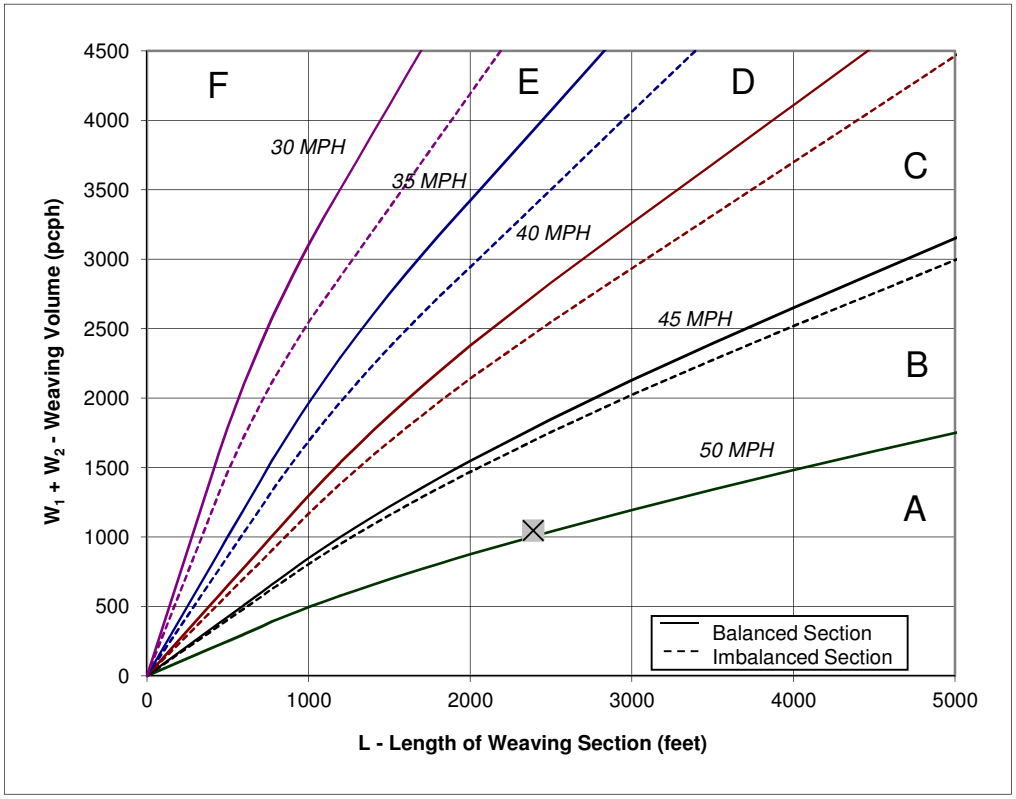
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	2,390

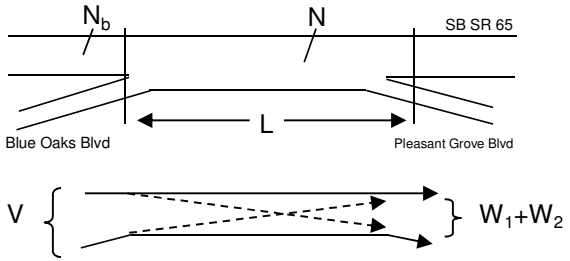
Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	3,666	Volume (vph)*	774	Volume (vph)*	254
Truck Percentage	4%	Truck Percentage	4%	Truck Percentage	4%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	3,739	Volume (pcph)	789	Volume (pcph)	259

Project Information

Project	Parcel 49
Scenario	Baseline PM
Freeway	SB SR 65
On-ramp	Blue Oaks Blvd
Off-ramp	Pleasant Grove Blvd



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 50 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) **49.7**
4. Weaving Intensity Factor (k) **1.01**
5. Service Volume (SV, pcph)
   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,248**
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.

Source: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983.

TECHNICAL APPENDIX:
PHASE 1 CONDITIONS

SimTraffic Post-Processor **Parcel 49 - Blue Oaks**
Average Results from 10 Runs **Baseline + Phase 1 - Mitigation**
Volume and Delay by Movement **Weekday AM**

Intersection 1 **Foothills Blvd/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	128	111	86.9%	54.2	5.8	D
	Through	82	87	106.7%	54.7	4.6	D
	Right Turn	218	202	92.8%	2.3	0.2	A
	Subtotal	428	401	93.7%	28.2	3.4	C
SB	Left Turn	130	127	97.8%	52.0	6.3	D
	Through	55	54	97.5%	47.1	5.1	D
	Right Turn	25	19	77.8%	42.0	13.0	D
	Subtotal	210	200	95.3%	50.0	5.5	D
EB	Left Turn	31	26	84.8%	89.0	35.1	F
	Through	1,497	1,360	90.8%	85.5	30.7	F
	Right Turn	256	245	95.8%	76.2	34.9	E
	Subtotal	1,784	1,631	91.4%	84.3	31.2	F
WB	Left Turn	557	505	90.7%	90.4	27.9	F
	Through	735	751	102.1%	14.2	3.0	B
	Right Turn	256	261	102.0%	7.5	1.2	A
	Subtotal	1,548	1,517	98.0%	38.5	10.3	D
Total		3,970	3,749	94.4%	58.0	13.9	E

Intersection 2 **SR 65 SB Ramps-Washington Blvd/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	164	165	100.5%	49.2	7.6	D
	Through						
	Right Turn	354	332	93.8%	36.4	7.4	D
	Subtotal	518	497	95.9%	40.7	6.1	D
SB	Left Turn	75	77	102.2%	42.6	6.5	D
	Through	251	258	102.8%	44.1	4.4	D
	Right Turn	258	267	103.7%	3.0	0.4	A
	Subtotal	584	602	103.1%	25.5	2.8	C
EB	Left Turn						
	Through	1,724	1,540	89.3%	41.0	10.8	D
	Right Turn	243	209	86.1%	14.9	4.6	B
	Subtotal	1,967	1,749	88.9%	37.9	10.0	D
WB	Left Turn	276	261	94.7%	46.0	4.3	D
	Through	622	623	100.2%	18.6	1.4	B
	Right Turn	414	417	100.6%	7.8	1.0	A
	Subtotal	1,312	1,301	99.2%	20.7	1.5	C
Total		4,381	4,149	94.7%	31.0	4.4	C

Intersection 3 **SR 65 NB Ramps/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	138	136	98.3%	13.1	1.6	B
	Through						
	Right Turn	324	321	99.2%	9.6	1.0	A
	Subtotal	462	457	99.0%	10.6	1.1	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	857	778	90.8%	20.1	2.2	C
	Right Turn	501	484	96.6%	6.9	1.4	A
	Subtotal	1,358	1,262	92.9%	15.1	1.5	B
WB	Left Turn	96	93	96.4%	22.6	3.1	C
	Through	1,174	1,195	101.8%	15.0	2.5	B
	Right Turn						
	Subtotal	1,270	1,287	101.4%	15.6	2.4	B
Total		3,090	3,007	97.3%	14.6	1.1	B

Intersection 10 **Washington Blvd/Road A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	66	65	98.7%	51.9	7.6	D
	Through	502	505	100.7%	3.8	1.2	A
	Right Turn	9	9	96.0%	1.7	1.6	A
	Subtotal	577	579	100.4%	9.1	1.4	A
SB	Left Turn	19	19	98.5%	12.9	4.7	B
	Through	673	624	92.8%	7.7	2.4	A
	Right Turn	78	72	91.8%	4.2	1.0	A
	Subtotal	770	715	92.8%	7.4	2.2	A
EB	Left Turn	12	14	114.0%	56.3	27.9	E
	Through	3	4	120.0%	40.6	40.0	D
	Right Turn	12	8	69.0%	4.8	2.8	A
	Subtotal	27	26	94.7%	34.7	12.6	C
WB	Left Turn	1	0	0.0%	0.0	0.0	A
	Through	3	4	144.0%	44.5	34.3	D
	Right Turn	4	2	45.0%	1.4	2.4	A
	Subtotal	8	6	76.5%	36.9	30.5	D
Total		1,382	1,326	95.9%	8.8	1.6	A

SimTraffic Post-Processor **Parcel 49 - Pleasant Grove**
Average Results from 10 Runs **Baseline + Phase 1**
Volume and Delay by Movement **Weekday AM**

Intersection 9 **Pleasant Grove Blvd/Roseville Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	506	541	106.9%	51.3	4.5	D
	Through	279	281	100.5%	43.1	4.4	D
	Right Turn	348	354	101.6%	4.7	0.3	A
	Subtotal	1,133	1,175	103.7%	35.3	3.0	D
SB	Left Turn	149	131	87.9%	39.6	4.6	D
	Through	338	336	99.4%	41.6	4.2	D
	Right Turn	26	28	106.8%	2.6	0.6	A
	Subtotal	513	495	96.5%	38.9	3.5	D
EB	Left Turn	42	41	97.5%	57.4	14.0	E
	Through	941	838	89.1%	58.1	11.1	E
	Right Turn	704	667	94.8%	13.2	3.3	B
	Subtotal	1,687	1,546	91.7%	38.9	8.6	D
WB	Left Turn	540	550	101.9%	47.3	6.0	D
	Through	722	708	98.0%	27.8	4.5	C
	Right Turn	98	89	90.5%	6.3	1.3	A
	Subtotal	1,360	1,346	99.0%	34.4	4.0	C
Total		4,693	4,562	97.2%	36.7	2.1	D

Intersection 5 **Washington Blvd/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	156	140	89.5%	39.6	4.1	D
	Through	370	335	90.5%	31.5	3.7	C
	Right Turn	261	268	102.8%	3.2	0.2	A
	Subtotal	787	743	94.4%	22.8	2.1	C
SB	Left Turn	84	83	98.7%	43.8	3.4	D
	Through	324	321	99.1%	34.5	3.5	C
	Right Turn	189	182	96.1%	9.8	1.3	A
	Subtotal	597	586	98.1%	28.2	2.0	C
EB	Left Turn	201	180	89.8%	43.1	4.0	D
	Through	1,419	1,439	101.4%	25.9	1.6	C
	Right Turn						
	Subtotal	1,620	1,620	100.0%	27.8	1.7	C
WB	Left Turn	73	83	113.1%	47.4	7.6	D
	Through	781	792	101.4%	27.0	5.6	C
	Right Turn	102	98	96.0%	7.0	1.8	A
	Subtotal	956	972	101.7%	26.7	4.9	C
Total		3,960	3,921	99.0%	26.7	1.3	C

Intersection 7 **Hwy 65 NB Ramps/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	366	373	101.9%	36.4	3.6	D
	Through						
	Right Turn	299	304	101.6%	13.2	1.3	B
	Subtotal	665	677	101.8%	26.0	2.2	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	1,018	964	94.7%	16.6	4.3	B
	Right Turn	174	162	92.9%	5.3	1.0	A
	Subtotal	1,192	1,126	94.5%	15.0	3.9	B
WB	Left Turn	102	99	97.4%	52.1	7.9	D
	Through	1,151	1,129	98.1%	9.9	1.4	A
	Right Turn						
	Subtotal	1,253	1,228	98.0%	13.4	1.6	B
Total		3,110	3,031	97.5%	16.8	1.3	B

Intersection 6 **Hwy 65 SB Ramps/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	82	80	98.1%	38.9	5.9	D
	Through						
	Right Turn	257	262	101.8%	22.0	2.5	C
	Subtotal	339	342	100.9%	25.9	2.8	C
EB	Left Turn						
	Through	1,110	1,056	95.1%	9.8	2.4	A
	Right Turn						
	Subtotal	1,110	1,056	95.1%	9.8	2.4	A
WB	Left Turn						
	Through	1,162	1,136	97.8%	9.1	1.2	A
	Right Turn	355	357	100.6%	6.7	0.6	A
	Subtotal	1,517	1,493	98.4%	8.5	1.0	A
Total		2,966	2,891	97.5%	11.0	1.1	B

Intersection 4 **Washington Blvd/Roseville Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	8	7	90.0%	25.1	16.1	C
	Through	344	344	100.0%	13.4	2.3	B
	Right Turn	20	19	95.4%	3.1	0.2	A
	Subtotal	372	370	99.6%	13.2	2.2	B
SB	Left Turn	245	240	98.0%	21.1	2.4	C
	Through	653	661	101.2%	10.0	1.7	A
	Right Turn	7	5	72.0%	3.4	1.7	A
	Subtotal	905	906	100.1%	12.9	1.4	B
EB	Left Turn	4	2	45.0%	12.8	17.4	B
	Through						
	Right Turn	3	5	156.0%	2.9	2.0	A
	Subtotal	7	6	92.6%	8.2	8.4	A
WB	Left Turn	53	54	102.6%	24.1	4.2	C
	Through						
	Right Turn	197	210	106.7%	3.5	0.2	A
	Subtotal	250	265	105.8%	7.8	1.3	A
Total		1,534	1,548	100.9%	12.1	1.2	B

Intersection 8 **Washington Blvd/Hallissy Drive** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	345	354	102.7%	6.2	1.0	A
	Right Turn	130	129	99.1%	2.1	0.4	A
	Subtotal	475	483	101.7%	5.1	0.7	A
SB	Left Turn	14	12	87.4%	16.5	11.9	B
	Through	387	403	104.2%	6.0	1.5	A
	Right Turn						
	Subtotal	401	415	103.6%	6.3	1.5	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	80	74	92.7%	11.7	2.7	B
	Through						
	Right Turn	26	26	98.3%	3.4	1.3	A
	Subtotal	106	100	94.1%	9.7	2.2	A
Total		982	998	101.7%	6.1	0.9	A

SimTraffic Post-Processor **Parcel 49 - Blue Oaks**
Average Results from 10 Runs **Baseline + Phase 1**
Volume and Delay by Movement **Weekday PM**

Intersection 1 **Foothills Blvd/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	267	276	103.4%	47.1	3.5	D
	Through	52	53	101.9%	44.7	4.6	D
	Right Turn	574	541	94.2%	12.0	12.0	B
	Subtotal	893	870	97.4%	25.1	8.0	C
SB	Left Turn	382	370	96.9%	54.8	10.1	D
	Through	174	199	114.2%	38.2	3.8	D
	Right Turn	82	76	92.4%	26.2	7.0	C
	Subtotal	638	645	101.1%	46.4	6.3	D
EB	Left Turn	31	25	81.9%	55.7	14.6	E
	Through	1,051	913	86.9%	50.6	22.0	D
	Right Turn	135	118	87.8%	28.5	20.0	C
	Subtotal	1,217	1,057	86.8%	48.3	21.3	D
WB	Left Turn	241	250	103.5%	56.8	7.4	E
	Through	1,638	1,474	90.0%	56.7	18.4	E
	Right Turn	82	81	99.2%	16.5	7.7	B
	Subtotal	1,961	1,805	92.0%	54.8	16.4	D
Total		4,709	4,377	92.9%	45.9	8.2	D

Intersection 2 **SR 65 SB Ramps-Washington Blvd/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	390	403	103.2%	64.0	10.9	E
	Through						
	Right Turn	577	495	85.7%	118.5	14.6	F
	Subtotal	967	897	92.8%	94.2	10.1	F
SB	Left Turn	153	154	100.8%	43.3	6.1	D
	Through	258	273	106.0%	41.9	4.3	D
	Right Turn	249	238	95.6%	3.0	0.3	A
	Subtotal	660	666	100.9%	28.5	3.0	C
EB	Left Turn						
	Through	2,004	1,450	72.4%	63.5	11.8	E
	Right Turn	241	171	71.2%	25.1	8.4	C
	Subtotal	2,245	1,621	72.2%	59.5	11.4	E
WB	Left Turn	250	236	94.5%	44.2	4.6	D
	Through	629	588	93.6%	19.5	3.0	B
	Right Turn	378	362	95.7%	7.9	0.9	A
	Subtotal	1,257	1,186	94.4%	20.9	2.4	C
Total		5,129	4,371	85.2%	51.4	4.5	D

SimTraffic Post-Processor **Parcel 49 - Blue Oaks**
Average Results from 10 Runs **Baseline + Phase 1**
Volume and Delay by Movement **Weekday PM**

Intersection 3 **SR 65 NB Ramps/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	44	41	92.8%	16.5	5.1	B
	Through						
	Right Turn	463	483	104.4%	16.3	3.2	B
	Subtotal	507	524	103.4%	16.3	3.3	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	1,122	962	85.7%	29.0	3.6	C
	Right Turn	592	471	79.5%	6.3	0.9	A
	Subtotal	1,714	1,432	83.6%	21.6	2.7	C
WB	Left Turn	109	98	89.5%	24.8	3.4	C
	Through	1,213	1,161	95.7%	16.0	2.4	B
	Right Turn						
	Subtotal	1,322	1,259	95.2%	16.7	2.2	B
Total		3,543	3,215	90.7%	18.8	2.0	B

Intersection 10 **Washington Blvd/Road A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	26	28	106.2%	64.2	11.3	E
	Through	809	762	94.2%	23.6	7.8	C
	Right Turn	31	29	95.0%	10.2	8.8	B
	Subtotal	866	819	94.5%	24.4	7.6	C
SB	Left Turn	60	50	84.0%	53.2	10.8	D
	Through	669	610	91.1%	11.6	2.9	B
	Right Turn	20	17	86.5%	4.9	1.8	A
	Subtotal	749	677	90.5%	14.5	2.7	B
EB	Left Turn	99	87	88.1%	56.7	34.8	E
	Through	3	3	110.4%	21.8	23.1	C
	Right Turn	73	77	105.9%	7.0	1.6	A
	Subtotal	175	168	95.9%	32.5	13.8	C
WB	Left Turn	33	33	101.5%	56.9	8.6	E
	Through	3	7	233.1%	26.5	23.1	C
	Right Turn	59	55	93.6%	20.7	18.3	C
	Subtotal	95	96	100.7%	34.6	10.5	C
Total		1,885	1,760	93.4%	22.0	4.9	C

Intersection 9 **Pleasant Grove Blvd/Roseville Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	1,117	1,057	94.6%	87.5	9.7	F
	Through	582	579	99.6%	50.1	5.9	D
	Right Turn	893	853	95.5%	14.6	5.0	B
	Subtotal	2,592	2,489	96.0%	53.8	7.1	D
SB	Left Turn	201	196	97.6%	49.2	5.4	D
	Through	428	457	106.9%	53.1	5.4	D
	Right Turn	32	32	100.8%	3.0	0.6	A
	Subtotal	661	686	103.8%	49.7	3.9	D
EB	Left Turn	56	49	87.1%	101.3	34.7	F
	Through	1,138	972	85.4%	144.7	37.8	F
	Right Turn	833	660	79.2%	53.0	28.1	D
	Subtotal	2,027	1,681	82.9%	107.9	36.4	F
WB	Left Turn	753	662	87.9%	73.8	20.3	E
	Through	1,317	1,213	92.1%	38.7	9.5	D
	Right Turn	170	156	91.7%	9.5	1.1	A
	Subtotal	2,240	2,031	90.7%	48.1	7.5	D
Total		7,520	6,887	91.6%	64.6	6.7	E

Intersection 5 **Washington Blvd/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	235	230	97.9%	46.0	4.6	D
	Through	387	394	101.7%	36.6	2.8	D
	Right Turn	343	339	99.0%	3.7	0.2	A
	Subtotal	965	963	99.8%	27.2	1.7	C
SB	Left Turn	177	165	93.1%	51.7	5.7	D
	Through	448	453	101.1%	43.6	3.7	D
	Right Turn	233	230	98.7%	19.2	5.6	B
	Subtotal	858	847	98.8%	38.6	2.5	D
EB	Left Turn	162	164	101.5%	56.7	6.3	E
	Through	1,735	1,729	99.7%	39.8	6.1	D
	Right Turn						
	Subtotal	1,897	1,894	99.8%	41.2	5.8	D
WB	Left Turn	145	129	89.0%	51.4	7.3	D
	Through	1,700	1,587	93.4%	37.7	6.3	D
	Right Turn	65	58	89.8%	16.5	4.7	B
	Subtotal	1,910	1,774	92.9%	38.0	6.2	D
Total		5,630	5,479	97.3%	37.3	2.7	D

Intersection 7 **Hwy 65 NB Ramps/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	398	401	100.8%	42.0	3.3	D
	Through						
	Right Turn	481	476	99.0%	26.6	2.5	C
	Subtotal	879	877	99.8%	33.7	2.3	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	1,994	1,865	93.6%	24.8	3.1	C
	Right Turn	473	414	87.6%	9.6	1.6	A
	Subtotal	2,467	2,280	92.4%	22.1	2.8	C
WB	Left Turn	212	183	86.2%	49.2	9.2	D
	Through	1,640	1,569	95.7%	11.2	1.5	B
	Right Turn						
	Subtotal	1,852	1,752	94.6%	15.2	1.8	B
Total		5,198	4,909	94.4%	21.7	1.7	C

Intersection 6 **Hwy 65 SB Ramps/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	134	127	95.1%	37.6	4.7	D
	Through						
	Right Turn	355	355	99.9%	28.0	3.0	C
	Subtotal	489	482	98.6%	30.5	2.3	C
EB	Left Turn						
	Through	2,333	2,072	88.8%	14.4	3.2	B
	Right Turn						
	Subtotal	2,333	2,072	88.8%	14.4	3.2	B
WB	Left Turn						
	Through	1,702	1,658	97.4%	12.1	2.2	B
	Right Turn	336	319	95.1%	7.4	0.9	A
	Subtotal	2,038	1,978	97.1%	11.4	1.9	B
Total		4,860	4,533	93.3%	14.8	1.6	B

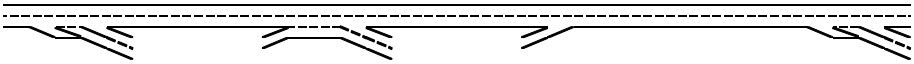
Intersection 4 **Washington Blvd/Roseville Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	3	1	48.0%	9.5	11.2	A
	Through	402	405	100.7%	16.2	2.3	B
	Right Turn	49	46	93.3%	3.2	0.2	A
	Subtotal	454	452	99.6%	14.9	2.1	B
SB	Left Turn	313	312	99.6%	26.1	3.2	C
	Through	898	869	96.7%	15.2	2.6	B
	Right Turn	8	8	103.5%	6.2	2.8	A
	Subtotal	1,219	1,189	97.5%	18.0	2.4	B
EB	Left Turn	27	24	90.7%	26.1	6.8	C
	Through	7	5	66.9%	21.9	10.6	C
	Right Turn	20	21	104.4%	4.7	0.7	A
	Subtotal	54	50	92.7%	17.0	3.8	B
WB	Left Turn	46	41	89.2%	27.5	4.2	C
	Through						
	Right Turn	385	380	98.6%	4.3	0.3	A
	Subtotal	431	421	97.6%	6.6	0.8	A
Total		2,158	2,112	97.9%	15.0	1.7	B

Intersection 8 **Washington Blvd/Hallissy Drive** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	434	427	98.4%	6.0	1.2	A
	Right Turn	68	62	90.5%	1.8	0.2	A
	Subtotal	502	489	97.3%	5.5	1.1	A
SB	Left Turn	27	24	88.0%	14.5	5.1	B
	Through	528	496	93.9%	5.5	1.5	A
	Right Turn						
	Subtotal	555	519	93.6%	5.9	1.3	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	60	65	108.0%	14.8	3.5	B
	Through						
	Right Turn	22	20	90.0%	4.3	0.5	A
	Subtotal	82	85	103.2%	12.2	2.5	B
Total		1,139	1,093	95.9%	6.2	1.1	A

Location	5	6	7	8	9	10	11



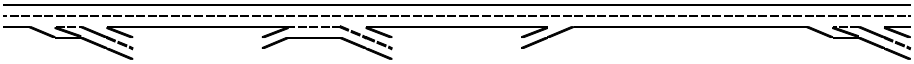
Key

<> Express Lane (HOV)

No Trucks

Name	Pleasant Grove Blvd Off-Ramp	Pleasant Grove Off to On-Ramp	Pleasant Grove On to Blue Oaks Off Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks On to Sunset Off-Ramp	Sunset Blvd Off-Ramp
Define Freeway Segment							
Type	Diverge	Basic	Weave	Basic	Merge	Basic	Diverge
Length (ft)	1,500	1,250	3,370	1,920	1,500	3,300	1,500
Accel Length					375		
Decel Length	1,500						1,500
Mainline Volume	3,987	3,322	3,322	2,629	2,629	3,130	3,130
On Ramp Volume			276		501		
Off Ramp Volume	665		969				1,311
Express Lane Volume							
EL On Ramp Volume							
EL Off Ramp Volume							
Calculate Flow Rate in General Purpose Lanes (GP)							
GP Volume (vph)	3,987	3,322	3,598	2,629	3,130	3,130	3,130
PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85
GP Lanes	2	2	3	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	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	0.00
Truck & Bus %	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%
E_T	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
f_{HV}	0.980	0.980	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
GP Flow (pcph)	4,784	3,986	4,318	3,155	3,756	3,756	3,756
GP Flow (pcphpl)	2,392	1,993	1,439	1,577	1,878	1,878	1,878
Calculate Speed in General Purpose Lanes							
Lane Width (ft)							
Shoulder Width							
TRD							
f_{LW}							
f_{LC}							
Calculated FFS							
Measured FFS							
FFS Curve	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes							
v/c ratio	1.02	0.85	0.61	0.67	0.80	0.80	0.80
Speed (mph)	-	60.0	65.0	64.6	61.8	61.8	61.8
Density (pcphpl)	-	33.2	22.1	24.4	30.4	30.4	30.4
LOS	F	D	C	C	D	D	D
Calculate Operations for Entering GP Lanes							
GP_{IN} Vol (pcph)	4,784		4,023		3,215		3,756
GP_{IN} Cap (pcph)	4,700		4,700		4,700		4,700
GP_{IN} v/c ratio	1.02		0.86		0.68		0.80
Calculate Operations for Exiting GP Lanes							
GP_{OUT} Vol (pcph)	4,074		3,282		3,756		2,191
GP_{OUT} Cap (pcph)	4,700		4,700		4,700		4,700
GP_{OUT} v/c ratio	0.87		0.70		0.80		0.47
Calculate On Ramp Flow Rate							
On Volume (vph)			276		501		
PHF			0.95		0.94		
Total Lanes			1		1		
Terrain			Level		Level		
Grade %			0.0%		0.0%		
Grade Length (mi)			0.00		0.00		
Truck & Bus %			3.0%		3.0%		
RV %			0.0%		0.0%		
E_T			1.5		1.5		
E_R			1.2		1.2		
f_{HV}			0.985		0.985		
f_P			1.00		1.00		
On Flow (pcph)			295		541		
On Flow (pcphpl)			295		541		

Location	5	6	7	8	9	10	11



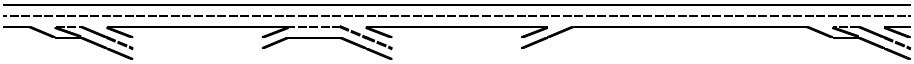
Key

<> Express Lane (HOV)

No Trucks

Name	Pleasant Grove Blvd Off-Ramp	Pleasant Grove Off to On-Ramp	Pleasant Grove On to Blue Oaks Off Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks On to Sunset Off-Ramp	Sunset Blvd Off-Ramp
Calculate On Ramp Roadway Operations							
On Ramp Type					Right		
On Ramp Speed (mph)					45		
On Ramp Cap (pcph)					2,100		
On Ramp v/c ratio					0.26		
Calculate Off Ramp Flow Rate							
Off Volume (vph)	665		969				1,311
PHF	0.95		0.95				0.85
Total Lanes	2		2				2
Terrain	Level		Level				Level
Grade %	0.0%		0.0%				0.0%
Grade Length (mi)	0.00		0.00				0.00
Truck & Bus %	3.0%		3.0%				3.0%
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		0.985				0.985
f_P	1.00		1.00				1.00
Off Flow (pcph)	711		1,035				1,565
Off Flow (pcphpl)	355		518				783
Calculate Off Ramp Roadway Operations							
Off Ramp Type	Right						Right
Off Ramp Speed	45						45
Off Ramp Cap (pcph)	4,200						4,200
Off Ramp v/c ratio	0.17						0.37
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps							
Up Type							
Up Distance							
Up Flow (pcph)							
Down Type							
Down Distance							
Down Flow (pcph)							
Calculate Merge Influence Area Operations							
Effective v_P (pcph)					3,215		
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FM} (Eqn 13-3)					0.588		
P_{FM} (Eqn 13-4)							
P_{FM} (Eqn 13-5)							
P_{FM}					1.000		
v_{12} (pcph)					3,215		
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)					3,215		
v_{R12a} (pcph)					3,756		
Merge Speed Index					0.45		
Merge Area Speed					54.6		
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed					54.6		
Merge v/c ratio					0.82		
Merge Density					32.2		
Merge LOS					D		

Location	5	6	7	8	9	10	11



Key

<> Express Lane (HOV)

No Trucks

Name	Pleasant Grove Blvd Off-Ramp	Pleasant Grove Off to On-Ramp	Pleasant Grove On to Blue Oaks Off Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks On to Sunset Off-Ramp	Sunset Blvd Off-Ramp
Calculate Diverge Influence Area Operations							
Effective v_P (pcph)	4,784						3,756
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FD} (Eqn 13-9)	0.608						0.594
P_{FD} (Eqn 13-10)							
P_{FD} (Eqn 13-11)							
P_{FD}	1.000						1.000
v_{12} (pcph)	4,784						3,756
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)	4,784						3,756
Diverge Speed Index	-						0.44
Diverge Area Speed	-						54.9
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed							54.9
Diverge v/c ratio	1.09						0.85
Diverge Density	-						23.1
Diverge LOS	F						C
Summarize Segment Operations							
Segment v/c ratio	1.09	0.85	0.59	0.67	0.82	0.80	0.85
Segment Density	-	33.2	22.1	24.4	32.2	30.4	23.1
Segment LOS	F	D	C	C	D	D	C
Over Capacity	Segment GP Lanes In GP Lanes Diverge						

Leisch Method for Weaving Analysis

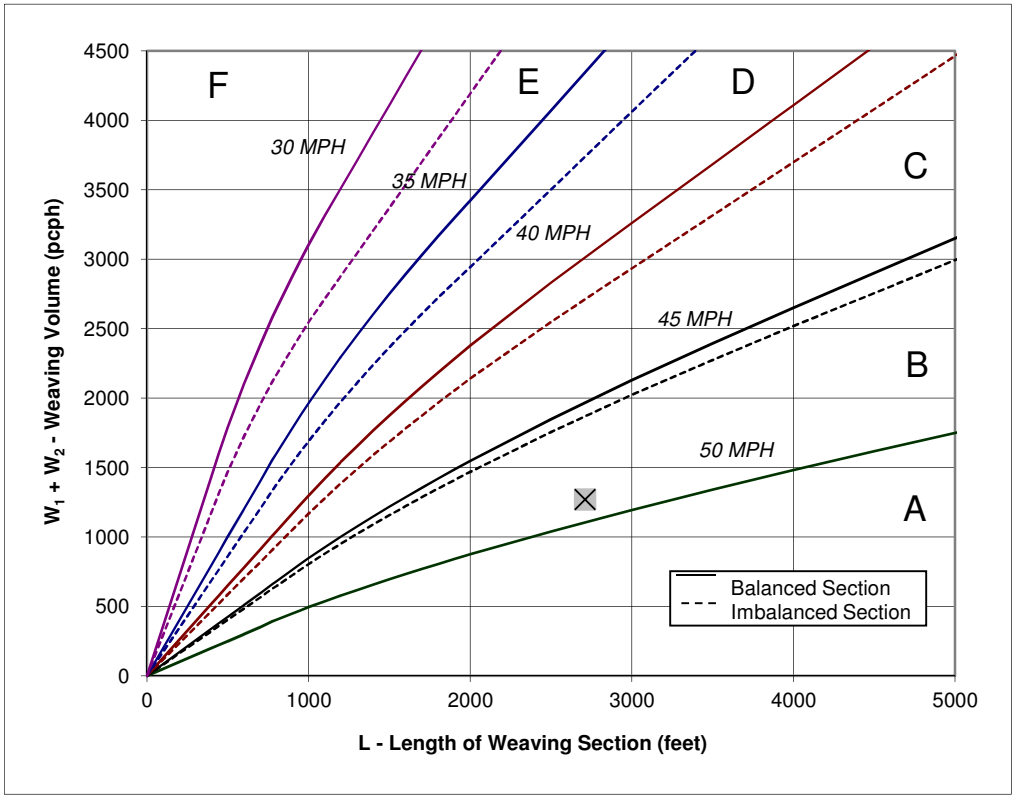
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	2,710

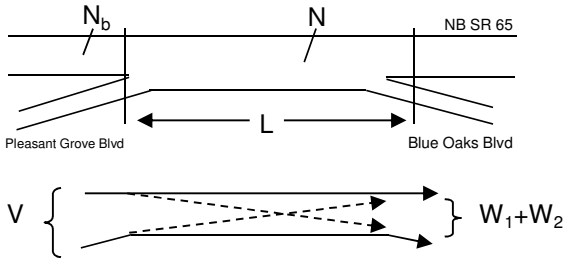
Project Information

Project	Parcel 49
Scenario	Phase 1 AM
Freeway	NB SR 65
On-ramp	Pleasant Grove Blvd
Off-ramp	Blue Oaks Blvd

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	3,598	Volume (vph)*	276	Volume (vph)*	969
Truck Percentage	4%	Truck Percentage	4%	Truck Percentage	4%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	3,670	Volume (pcph)	282	Volume (pcph)	988



Figure



Capacity Analysis

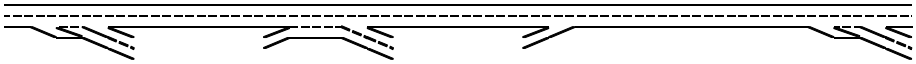
1. Is the weaving section balanced (Y / N)? **Y**
   [If optional exit lane, then "Y". Otherwise "N".]
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?
   45 MPH and **50 MPH**
   If below the 50 MPH curve, out of the realm of weaving.
   If left of the 30 MPH curve, LOS is F.
3. Interpolated Weaving Speed (S_w, mph) **49.0**
4. Weaving Intensity Factor (k) **1.20**
5. Service Volume (SV, pcph)
   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,242**
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.

Source: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983.

Location	5	6	7	8	9	10	11



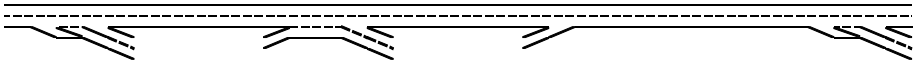
Key

<> Express Lane (HOV)

No Trucks

Name	Pleasant Grove Blvd Off-Ramp	Pleasant Grove Off to On-Ramp	Pleasant Grove On to Blue Oaks Off Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks On to Sunset Off-Ramp	Sunset Blvd Off-Ramp
Define Freeway Segment							
Type	Diverge	Basic	Weave	Basic	Merge	Basic	Diverge
Length (ft)	1,500	1,250	3,370	1,920	1,500	3,300	1,500
Accel Length					375		
Decel Length	1,500						1,500
Mainline Volume	4,288	3,409	3,409	2,889	2,889	3,590	3,590
On Ramp Volume			685		701		
Off Ramp Volume	879		1,205				649
Express Lane Volume							
EL On Ramp Volume							
EL Off Ramp Volume							
Calculate Flow Rate in General Purpose Lanes (GP)							
GP Volume (vph)	4,288	3,409	4,094	2,889	3,590	3,590	3,590
PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
GP Lanes	2	2	3	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	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	0.00
Truck & Bus %	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%
E_T	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
f_{HV}	0.980	0.980	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
GP Flow (pcph)	4,604	3,660	4,396	3,102	3,855	3,855	3,855
GP Flow (pcphpl)	2,302	1,830	1,465	1,551	1,927	1,927	1,927
Calculate Speed in General Purpose Lanes							
FFS Curve	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes							
v/c ratio	0.98	0.78	0.62	0.66	0.82	0.82	0.82
Speed (mph)	53.5	62.4	64.9	64.7	61.1	61.1	61.1
Density (pcphpl)	43.1	29.3	22.6	24.0	31.6	31.6	31.6
LOS	E	D	C	C	D	D	D
Calculate Operations for Entering GP Lanes							
GP_{IN} Vol (pcph)	4,604		3,664		3,098		3,855
GP_{IN} Cap (pcph)	4,700		4,700		4,700		4,700
GP_{IN} v/c ratio	0.98		0.78		0.66		0.82
Calculate Operations for Exiting GP Lanes							
GP_{OUT} Vol (pcph)	3,665		3,108		3,855		3,080
GP_{OUT} Cap (pcph)	4,700		4,700		4,700		4,700
GP_{OUT} v/c ratio	0.78		0.66		0.82		0.66
Calculate On Ramp Flow Rate							
On Volume (vph)			685		701		
PHF			0.95		0.94		
Total Lanes			1		1		
Terrain			Level		Level		
Grade %			0.0%		0.0%		
Grade Length (mi)			0.00		0.00		
Truck & Bus %			3.0%		3.0%		
RV %			0.0%		0.0%		
E_T			1.5		1.5		
E_R			1.2		1.2		
f_{HV}			0.985		0.985		
f_P			1.00		1.00		
On Flow (pcph)			732		757		
On Flow (pcphpl)			732		757		

Location	5	6	7	8	9	10	11



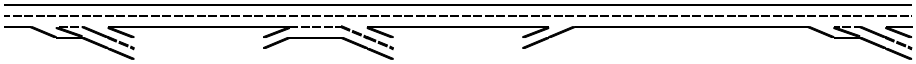
Key

<> Express Lane (HOV)

No Trucks

Name	Pleasant Grove Blvd Off-Ramp	Pleasant Grove Off to On-Ramp	Pleasant Grove On to Blue Oaks Off Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks On to Sunset Off-Ramp	Sunset Blvd Off-Ramp
Calculate On Ramp Roadway Operations							
On Ramp Type					Right		
On Ramp Speed (mph)					45		
On Ramp Cap (pcph)					2,100		
On Ramp v/c ratio					0.36		
Calculate Off Ramp Flow Rate							
Off Volume (vph)	879		1,205				649
PHF	0.95		0.95				0.85
Total Lanes	2		2				2
Terrain	Level		Level				Level
Grade %	0.0%		0.0%				0.0%
Grade Length (mi)	0.00		0.00				0.00
Truck & Bus %	3.0%		3.0%				3.0%
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		0.985				0.985
f_P	1.00		1.00				1.00
Off Flow (pcph)	939		1,287				775
Off Flow (pcphpl)	470		644				387
Calculate Off Ramp Roadway Operations							
Off Ramp Type	Right						Right
Off Ramp Speed	45						45
Off Ramp Cap (pcph)	4,200						4,200
Off Ramp v/c ratio	0.22						0.18
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps							
Up Type							
Up Distance							
Up Flow (pcph)							
Down Type							
Down Distance							
Down Flow (pcph)							
Calculate Merge Influence Area Operations							
Effective v_P (pcph)					3,098		
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FM} (Eqn 13-3)					0.588		
P_{FM} (Eqn 13-4)							
P_{FM} (Eqn 13-5)							
P_{FM}					1.000		
v_{12} (pcph)					3,098		
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)					3,098		
v_{R12a} (pcph)					3,855		
Merge Speed Index					0.47		
Merge Area Speed					54.2		
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed					54.2		
Merge v/c ratio					0.84		
Merge Density					32.8		
Merge LOS					D		

Location	5	6	7	8	9	10	11



Key

<> Express Lane (HOV)

No Trucks

Name	Pleasant Grove Blvd Off-Ramp	Pleasant Grove Off to On-Ramp	Pleasant Grove On to Blue Oaks Off Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks On to Sunset Off-Ramp	Sunset Blvd Off-Ramp
Calculate Diverge Influence Area Operations							
Effective v_P (pcph)	4,604						3,855
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FD} (Eqn 13-9)	0.602						0.628
P_{FD} (Eqn 13-10)							
P_{FD} (Eqn 13-11)							
P_{FD}	1.000						1.000
v_{12} (pcph)	4,604						3,855
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)	4,604						3,855
Diverge Speed Index	0.38						0.37
Diverge Area Speed	56.2						56.5
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed	56.2						56.5
Diverge v/c ratio	1.05						0.88
Diverge Density	30.3						23.9
Diverge LOS	F						C
Summarize Segment Operations							
Segment v/c ratio	1.05	0.78	0.70	0.66	0.84	0.82	0.88
Segment Density	-	29.3	22.6	24.0	32.8	31.6	23.9
Segment LOS	F	D	C	C	D	D	C
Over Capacity	Diverge						

Leisch Method for Weaving Analysis

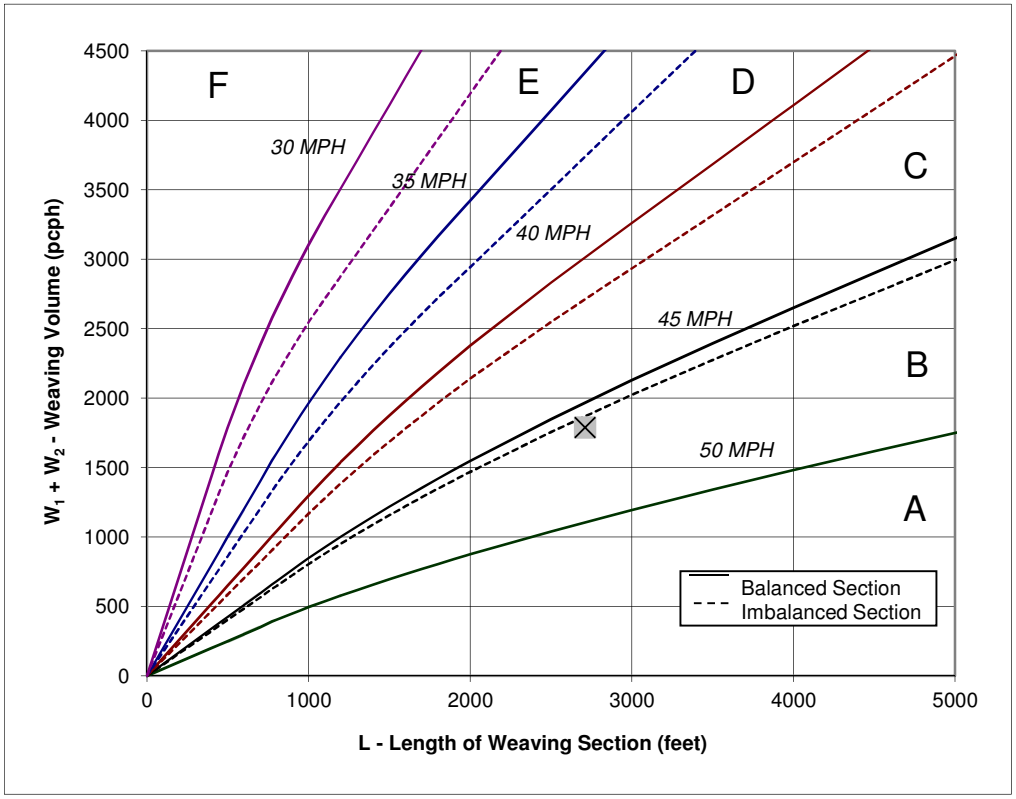
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	2,710

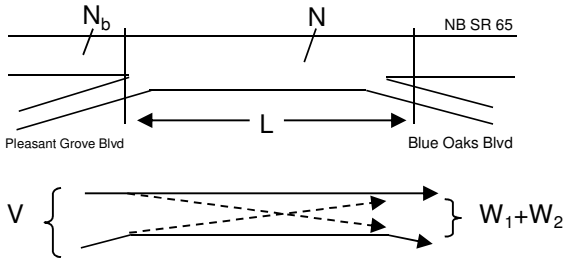
Project Information

Project	Parcel 49
Scenario	Phase 1 PM
Freeway	NB SR 65
On-ramp	Pleasant Grove Blvd
Off-ramp	Blue Oaks Blvd

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	4,094	Volume (vph)*	617	Volume (vph)*	1,137
Truck Percentage	4%	Truck Percentage	4%	Truck Percentage	4%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	4,176	Volume (pcph)	629	Volume (pcph)	1,159



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 50 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) **46.0**
4. Weaving Intensity Factor (k) **1.83**
5. Service Volume (SV, pcph)
   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,565**
6. Level of Service (LOS) **E**

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.

Source: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983.

Location	13	14	15	16	17	18	19	20	21	22

Key

<> Express Lane (HOV)

No Trucks

Name	Sunset Loop On Ramp	Sunset Direct On-Ramp	Sunset Direct Off-Ramp to Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks Blvd On to Pleasant Grove Off	Pleasant Grove Off to On-Ramp	Pleasant Grove Blvd Loop On-Ramp	Pleasant Grove Blvd Direct On-Ramp
Define Freeway Segment										
Type	Merge	Merge	Basic	Diverge	Basic	Merge	Weave	Basic	Merge	Merge
Length (ft)	1,500	1,500	770	1,500	1,680	1,000	3,140	1,610	1,180	1,500
Accel Length	500	1,450				380			550	580
Decel Length				200						
Mainline Volume	2,512	2,990	3,212	3,212	2,628	2,628	3,042	3,498	3,498	3,853
On Ramp Volume	478	222				414	795		355	374
Off Ramp Volume				584			339			
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	2,990	3,212	3,212	3,212	2,628	3,042	3,837	3,498	3,853	4,227
PHF	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
GP Lanes	2	2	2	2	2	2	3	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	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	0.00	0.00	0.00	0.00
Truck & Bus %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	4.2%	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	0.979	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
GP Flow (pcph)	3,355	3,605	3,605	3,605	2,949	3,414	4,353	3,926	4,324	4,744
GP Flow (pcphpl)	1,678	1,802	1,802	1,802	1,475	1,707	1,451	1,963	2,162	2,372
Calculate Speed in General Purpose Lanes										
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.71	0.77	0.77	0.77	0.63	0.73	0.62	0.84	0.92	1.01
Speed (mph)	63.9	62.7	62.7	62.7	64.9	63.7	65.0	60.5	56.8	-
Density (pcphpl)	26.3	28.7	28.7	28.7	22.7	26.8	22.3	32.4	38.1	-
LOS	D	D	D	D	C	D	C	D	E	F
Calculate Operations fo										
GP_{IN} Vol (pcph)	2,810	3,342		3,605		2,947	3,488		3,947	4,346
GP_{IN} Cap (pcph)	4,700	4,700		4,700		4,700	4,700		4,700	4,700
GP_{IN} v/c ratio	0.60	0.71		0.77		0.63	0.74		0.84	0.92
Calculate Operations fo										
GP_{OUT} Vol (pcph)	3,355	3,605		2,961		3,414	3,962		4,324	4,744
GP_{OUT} Cap (pcph)	4,700	4,700		4,700		4,700	4,700		4,700	4,700
GP_{OUT} v/c ratio	0.71	0.77		0.63		0.73	0.84		0.92	1.01
Calculate On Ramp Flow Rate										
On Volume (vph)	478	222				414	795		355	374
PHF	0.885	0.854				0.895	0.94		0.95	0.95
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%				2.0%	4.6%		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				0.990	0.978		0.990	0.990
f_P	1.00	1.00				1.00	1.00		1.00	1.00
On Flow (pcph)	546	263				467	865		377	398
On Flow (pcphpl)	546	263				467	865		377	398

Location	13	14	15	16	17	18	19	20	21	22

Key

<> Express Lane (HOV)

No Trucks

Name	Sunset Loop On Ramp	Sunset Direct On-Ramp	Sunset Direct Off-Ramp to Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks Blvd On to Pleasant Grove Off	Pleasant Grove Off to On-Ramp	Pleasant Grove Blvd Loop On-Ramp	Pleasant Grove Blvd Direct On-Ramp
Calculate On Ramp Roadway Operations										
On Ramp Type	Right	Right				Right	Right		Right	Right
On Ramp Speed (mph)	25	45				25	45		25	45
On Ramp Cap (pcph)	1,900	2,100				1,900	2,100		1,900	2,100
On Ramp v/c ratio	0.29	0.13				0.25	0.41		0.20	0.19
Calculate Off Ramp Flow Rate										
Off Volume (vph)				584			339			
PHF				0.927			0.877			
Total Lanes				1			1			
Terrain				Level			Level			
Grade %				0.0%			0.0%			
Grade Length (mi)				0.00			0.00			
Truck & Bus %				4.2%			2.0%			
RV %				0.0%			0.0%			
E_T				1.5			1.5			
E_R				1.2			1.2			
f_{HV}				0.979			0.990			
f_P				1.00			1.00			
Off Flow (pcph)				643			390			
Off Flow (pcphpl)				643			390			
Calculate Off Ramp Roadway Operations										
Off Ramp Type				Right			Right			
Off Ramp Speed				45			45			
Off Ramp Cap (pcph)				2,100			2,100			
Off Ramp v/c ratio				0.31			0.19			
Determine Adjacent Ramp for Three-Lane Mainline Segments with C										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_P (pcph)	2,810	3,342				2,947			3,947	4,346
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)	0.592	0.618				0.588			0.593	0.594
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}	1.000	1.000				1.000			1.000	1.000
v_{12} (pcph)	2,810	3,342				2,947			3,947	4,346
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)	2,810	3,342				2,947			3,947	4,346
v_{R12a} (pcph)	3,355	3,605				3,414			4,324	4,744
Merge Speed Index	0.41	0.33				0.42			0.59	-
Merge Area Speed	55.6	57.3				55.3			51.5	-
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed	55.6	57.3				55.3			51.5	
Merge v/c ratio	0.73	0.78				0.74			0.94	1.03
Merge Density	28.3	24.4				29.5			35.6	-
Merge LOS	D	C				D			E	F

Location	13	14	15	16	17	18	19	20	21	22

Key

<> Express Lane (HOV)

No Trucks

Name	Sunset Loop On Ramp	Sunset Direct On-Ramp	Sunset Direct Off-Ramp to Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks Blvd On to Pleasant Grove Off	Pleasant Grove Off to On-Ramp	Pleasant Grove Blvd Loop On-Ramp	Pleasant Grove Blvd Direct On-Ramp
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)				3,605						
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)				0.640						
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}				1.000						
v_{12} (pcph)				3,605						
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				3,605						
Diverge Speed Index				0.36						
Diverge Area Speed				56.8						
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				56.8						
Diverge v/c ratio				0.82						
Diverge Density				33.5						
Diverge LOS				D						
Calculate On Ramp to Off Ramp Flow Rate for Weave Segments										
On to Off Volume (vph)							80			
PHF							0.95			
Terrain							Level			
Grade %							0.0%			
Grade Length (mi)							0.00			
Truck & Bus %							3.0%			
RV %							0.0%			
E_T							1.5			
E_R							1.2			
f_{HV}							0.985			
f_p							1.00			
On to Off Flow (pcph)							85			
Calculate On Ramp to Mainline Flow Rate for Weave Segments										
On to ML Volume (vph)							716			
PHF							0.95			
Terrain							Level			
Grade %							0.0%			
Grade Length (mi)							0.00			
Truck & Bus %							3.0%			
RV %							0.0%			
E_T							1.5			
E_R							1.2			
f_{HV}							0.985			
f_p							1.00			
On to ML Flow (pcph)							764			
Summarize Segment Operations										
Segment v/c ratio	0.73	0.78	0.77	0.82	0.63	0.74	0.65	0.84	0.94	1.03
Segment Density	28.3	24.4	28.7	33.5	22.7	29.5	22.3	32.4	35.6	-
Segment LOS	D	C	D	D	C	D	C	D	E	F
Over Capacity										Segment GP Lanes Out GP Lanes Merge

Leisch Method for Weaving Analysis

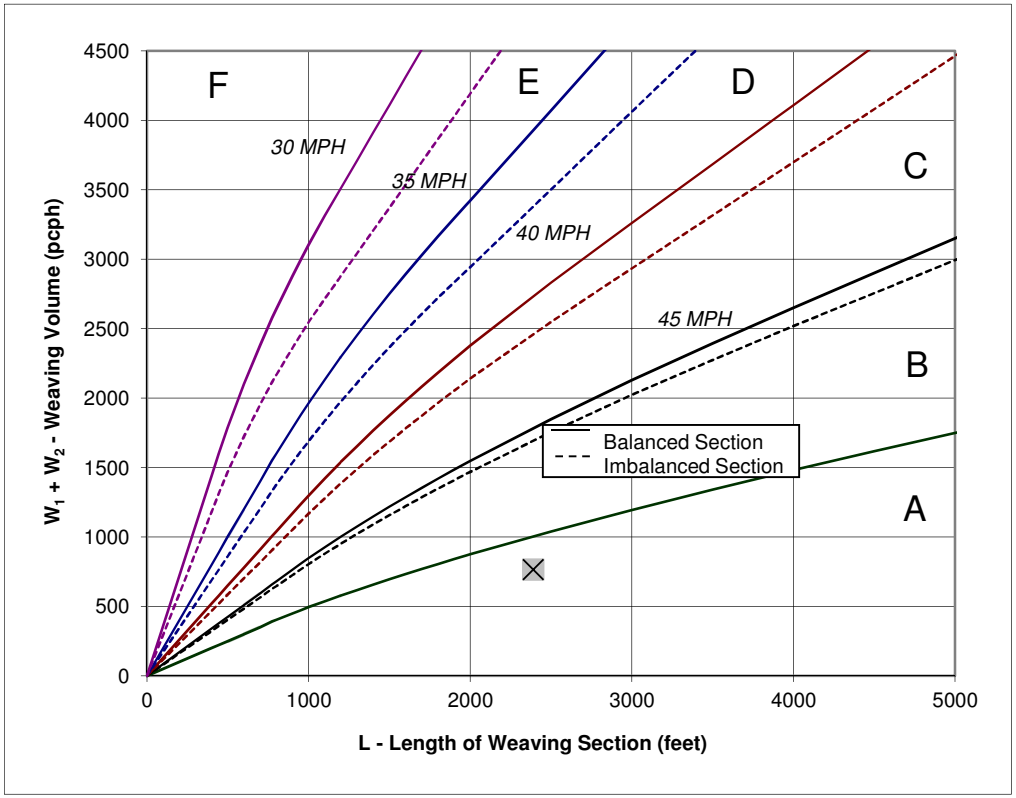
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	2,390

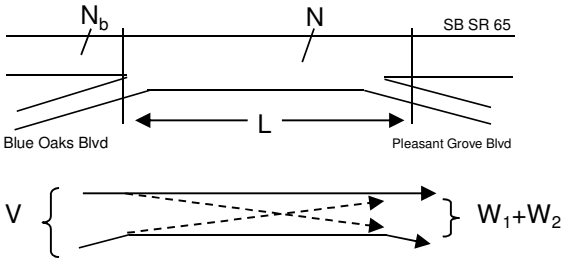
Project Information

Project	Parcel 49
Scenario	Phase 1 AM
Freeway	SB SR 65
On-ramp	Blue Oaks Blvd
Off-ramp	Pleasant Grove Blvd

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	3,837	Volume (vph)*	604	Volume (vph)*	148
Truck Percentage	4%	Truck Percentage	4%	Truck Percentage	4%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	3,914	Volume (pcph)	616	Volume (pcph)	151



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 50 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) **51.5**
4. Weaving Intensity Factor (k) **1.00**
5. Service Volume (SV, pcph)
   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,305**
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.

Source: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983.

Location	13	14	15	16	17	18	19	20	21	22

Key

<> Express Lane (HOV)

No Trucks

Name	Sunset Loop On Ramp	Sunset Direct On-Ramp	Sunset Direct Off-Ramp to Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks Blvd On to Pleasant Grove Off	Pleasant Grove Off to On-Ramp	Pleasant Grove Blvd Loop On-Ramp	Pleasant Grove Blvd Direct On-Ramp
Define Freeway Segment										
Type	Merge	Merge	Basic	Diverge	Basic	Merge	Weave	Basic	Merge	Merge
Length (ft)	1,500	1,500	770	1,500	1,680	1,000	3,140	1,610	1,180	1,500
Accel Length	500	1,450				380			550	580
Decel Length				200						
Mainline Volume	1,723	2,400	2,943	2,943	2,283	2,283	2,661	3,192	3,192	3,528
On Ramp Volume	677	543				378	1,020		336	485
Off Ramp Volume				660			489			
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	2,400	2,943	2,943	2,943	2,283	2,661	3,681	3,192	3,528	4,013
PHF	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
GP Lanes	2	2	2	2	2	2	3	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	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	0.00	0.00	0.00	0.00
Truck & Bus %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	4.2%	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	0.979	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
GP Flow (pcph)	2,693	3,303	3,303	3,303	2,562	2,986	4,176	3,582	3,959	4,503
GP Flow (pcphpl)	1,347	1,651	1,651	1,651	1,281	1,493	1,392	1,791	1,980	2,252
Calculate Speed in General Purpose Lanes										
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.57	0.70	0.70	0.70	0.55	0.64	0.59	0.76	0.84	0.96
Speed (mph)	65.0	64.1	64.1	64.1	65.0	64.9	65.0	62.8	60.2	54.7
Density (pcphpl)	20.7	25.8	25.8	25.8	19.7	23.0	21.4	28.5	32.9	41.2
LOS	C	C	C	C	C	C	C	D	D	E
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)	1,752	2,621		3,303		2,502	2,994		3,600	3,985
GP_{IN} Cap (pcph)	4,700	4,700		4,700		4,700	4,700		4,700	4,700
GP_{IN} v/c ratio	0.37	0.56		0.70		0.53	0.64		0.77	0.85
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)	2,693	3,303		2,575		2,986	3,566		3,959	4,503
GP_{OUT} Cap (pcph)	4,700	4,700		4,700		4,700	4,700		4,700	4,700
GP_{OUT} v/c ratio	0.57	0.70		0.55		0.64	0.76		0.84	0.96
Calculate On Ramp Flow Rate										
On Volume (vph)	677	543				378	1,020		336	485
PHF	0.73	0.808				0.792	0.876		0.95	0.95
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 %	3.0%	3.0%				3.0%	3.0%		3.0%	3.0%
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}	0.985	0.985				0.985	0.985		0.985	0.985
f_P	1.00	1.00				1.00	1.00		1.00	1.00
On Flow (pcph)	941	682				484	1,182		359	518
On Flow (pcphpl)	941	682				484	1,182		359	518

Location	13	14	15	16	17	18	19	20	21	22

Key

<> Express Lane (HOV)

No Trucks

Name	Sunset Loop On Ramp	Sunset Direct On-Ramp	Sunset Direct Off-Ramp to Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks Blvd On to Pleasant Grove Off	Pleasant Grove Off to On-Ramp	Pleasant Grove Blvd Loop On-Ramp	Pleasant Grove Blvd Direct On-Ramp
Calculate On Ramp Roadway Operations										
On Ramp Type	Right	Right				Right	Right		Right	Right
On Ramp Speed (mph)	25	45				25	45		25	45
On Ramp Cap (pcph)	1,900	2,100				1,900	2,100		1,900	2,100
On Ramp v/c ratio	0.50	0.32				0.25	0.56		0.19	0.25
Calculate Off Ramp Flow Rate										
Off Volume (vph)				660			489			
PHF				0.92			0.814			
Total Lanes				1			1			
Terrain				Level			Level			
Grade %				0.0%			0.0%			
Grade Length (mi)				0.00			0.00			
Truck & Bus %				3.0%			3.0%			
RV %				0.0%			0.0%			
E_T				1.5			1.5			
E_R				1.2			1.2			
f_{HV}				0.985			0.985			
f_P				1.00			1.00			
Off Flow (pcph)				728			610			
Off Flow (pcphpl)				728			610			
Calculate Off Ramp Roadway Operations										
Off Ramp Type				Right			Right			
Off Ramp Speed				45			45			
Off Ramp Cap (pcph)				2,100			2,100			
Off Ramp v/c ratio				0.35			0.29			
Determine Adjacent Ramp for Three-Lane Mainline Segments with C										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_P (pcph)	1,752	2,621				2,502			3,600	3,985
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)	0.592	0.618				0.588			0.593	0.594
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}	1.000	1.000				1.000			1.000	1.000
v_{12} (pcph)	1,752	2,621				2,502			3,600	3,985
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)	1,752	2,621				2,502			3,600	3,985
v_{R12a} (pcph)	2,693	3,303				2,986			3,959	4,503
Merge Speed Index	0.35	0.30				0.38			0.50	0.62
Merge Area Speed	56.9	58.2				56.3			53.5	50.7
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed	56.9	58.2				56.3			53.5	50.7
Merge v/c ratio	0.59	0.72				0.65			0.86	0.98
Merge Density	22.9	21.8				26.2			32.7	36.7
Merge LOS	C	C				C			D	E

Location	13	14	15	16	17	18	19	20	21	22

Key

<> Express Lane (HOV)

No Trucks

Name	Sunset Loop On Ramp	Sunset Direct On-Ramp	Sunset Direct Off-Ramp to Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks Blvd On to Pleasant Grove Off	Pleasant Grove Off to On-Ramp	Pleasant Grove Blvd Loop On-Ramp	Pleasant Grove Blvd Direct On-Ramp
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)				3,303						
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)				0.644						
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}				1.000						
v_{12} (pcph)				3,303						
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				3,303						
Diverge Speed Index				0.36						
Diverge Area Speed				56.6						
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				56.6						
Diverge v/c ratio				0.75						
Diverge Density				30.9						
Diverge LOS				D						
Summarize Segment Op										
Segment v/c ratio	0.59	0.72	0.70	0.75	0.55	0.65	0.65	0.76	0.86	0.98
Segment Density	22.9	21.8	25.8	30.9	19.7	26.2	21.4	28.5	32.7	36.7
Segment LOS	C	C	C	D	C	C	C	D	D	E
Over Capacity										

Leisch Method for Weaving Analysis

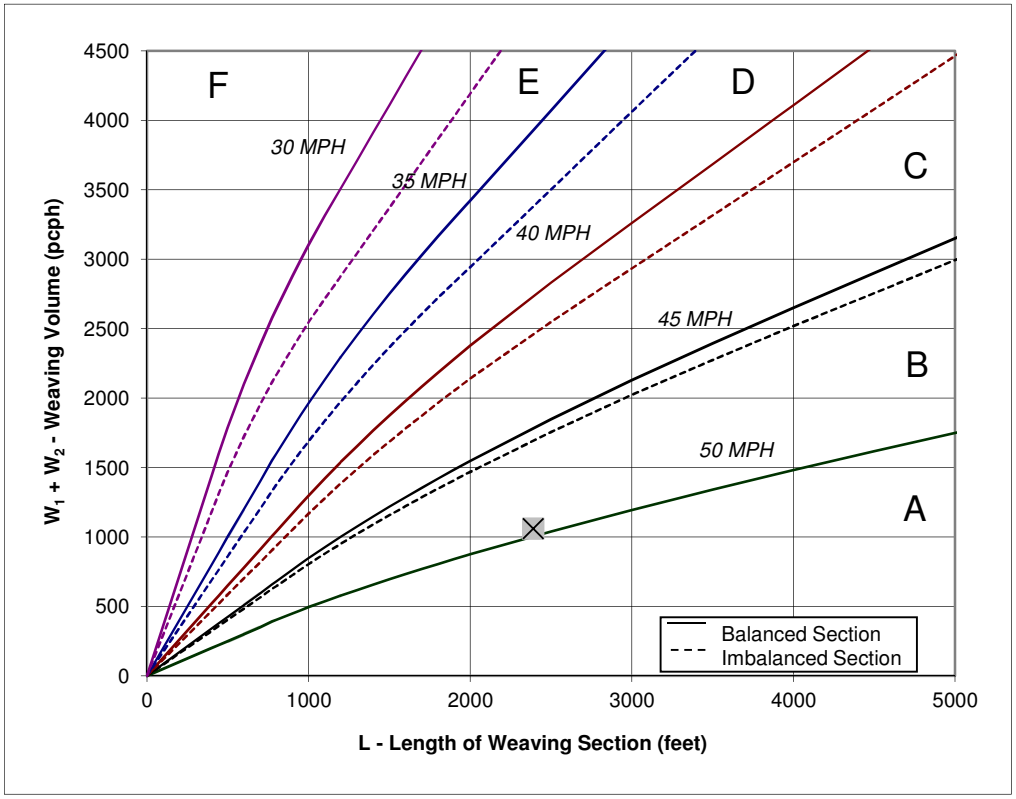
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	2,390

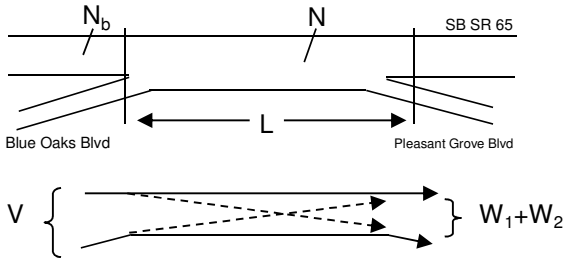
Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	3,681	Volume (vph)*	785	Volume (vph)*	254
Truck Percentage	4%	Truck Percentage	4%	Truck Percentage	4%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	3,755	Volume (pcph)	801	Volume (pcph)	259

Project Information

Project	Parcel 49
Scenario	Phase 1 PM
Freeway	SB SR 65
On-ramp	Blue Oaks Blvd
Off-ramp	Pleasant Grove Blvd



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 50 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) **49.6**
4. Weaving Intensity Factor (k) **1.03**
5. Service Volume (SV, pcph)
   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,254**
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.

Source: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983.

Intersection: 2: Washington Blvd & Blue Oaks Blvd

Movement	EB	EB	EB	EB	EB	B202	WB	WB	WB	WB	NB	NB
Directions Served	T	T	TR	R	>	T	L	L	T	T	L	L
Maximum Queue (ft)	260	323	423	411	276	138	139	157	148	151	108	124
Average Queue (ft)	172	253	343	339	130	48	77	95	85	89	56	68
95th Queue (ft)	267	376	461	468	345	217	150	166	158	161	123	134
Link Distance (ft)	389	389	389	389		464			1276	1276		768
Upstream Blk Time (%)		0	6	4	0	0						
Queuing Penalty (veh)		0	31	23	0	0						
Storage Bay Dist (ft)					230		175	175			250	
Storage Blk Time (%)				32			0	0	0	0	0	0
Queuing Penalty (veh)				87			1	1	1	0	0	0

Intersection: 2: Washington Blvd & Blue Oaks Blvd

Movement	NB	SB	SB	SB	SB
Directions Served	R>	<L	T	T	R
Maximum Queue (ft)	303	109	148	147	37
Average Queue (ft)	195	64	109	93	8
95th Queue (ft)	332	115	160	159	69
Link Distance (ft)	768		633	633	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		205			165
Storage Blk Time (%)				0	0
Queuing Penalty (veh)				1	0

Intersection: 3: Hwy 65 NB Ramps & Blue Oaks Blvd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	T	L	T	T	L	R
Maximum Queue (ft)	214	228	84	195	234	82	133
Average Queue (ft)	131	142	55	115	152	43	84
95th Queue (ft)	217	230	92	210	257	86	139
Link Distance (ft)	1276	1276		3850	3850		1826
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			260			129	
Storage Blk Time (%)				0		0	1
Queuing Penalty (veh)				0		0	1

Intersection: 6: Pleasant Grove Blvd & Hwy-65 SB Ramps

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	TR	T	T	T	L	LTR	R
Maximum Queue (ft)	144	149	254	244	170	160	113	236	141
Average Queue (ft)	46	43	94	113	58	75	36	146	51
95th Queue (ft)	144	143	258	256	166	163	110	241	138
Link Distance (ft)	308	308	308	877	877	877		840	
Upstream Blk Time (%)			1						
Queuing Penalty (veh)			3						
Storage Bay Dist (ft)							250		350
Storage Blk Time (%)								1	
Queuing Penalty (veh)								1	

Intersection: 7: Hwy-65 NB Ramps & Pleasant Grove Blvd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	T	T	T	R	L	T	T	T	L	L	L	R
Maximum Queue (ft)	219	220	283	38	144	172	159	241	167	150	154	136
Average Queue (ft)	115	116	160	5	93	76	65	113	111	82	101	78
95th Queue (ft)	243	248	303	79	162	176	166	242	181	162	172	134
Link Distance (ft)	877	877	877			695	695	695			1617	1617
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)				300	250				420	420		
Storage Blk Time (%)			0									
Queuing Penalty (veh)			1									

Intersection: 7: Hwy-65 NB Ramps & Pleasant Grove Blvd

Movement	NB
Directions Served	R
Maximum Queue (ft)	89
Average Queue (ft)	47
95th Queue (ft)	91
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	420
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: Washington Blvd & Blue Oaks Blvd

Movement	EB	EB	EB	EB	EB	B202	B202	WB	WB	WB	WB	NB
Directions Served	T	T	TR	R	>	T	T	L	L	T	T	L
Maximum Queue (ft)	299	378	451	458	389	302	397	113	128	142	148	228
Average Queue (ft)	200	311	398	411	205	88	205	60	68	67	72	168
95th Queue (ft)	320	438	491	511	476	361	525	124	132	147	151	259
Link Distance (ft)	389	389	389	389		464	464			1272	1272	
Upstream Blk Time (%)	0	0	18	20	1	0	2					
Queuing Penalty (veh)	0	2	109	120	0	0	19					
Storage Bay Dist (ft)					230			175	175			250
Storage Blk Time (%)				59				0	0	0		1
Queuing Penalty (veh)				153				0	1	1		2

Intersection: 2: Washington Blvd & Blue Oaks Blvd

Movement	NB	NB	SB	SB	SB	SB
Directions Served	L	R>	<L	T	T	R
Maximum Queue (ft)	388	756	193	169	167	55
Average Queue (ft)	213	660	125	112	97	8
95th Queue (ft)	427	863	210	165	165	70
Link Distance (ft)	768	768		633	633	
Upstream Blk Time (%)	0	12				
Queuing Penalty (veh)	0	63				
Storage Bay Dist (ft)			205			165
Storage Blk Time (%)	4		1	0	1	0
Queuing Penalty (veh)	8		1	0	2	0

Intersection: 3: Hwy 65 NB Ramps & Blue Oaks Blvd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	T	L	T	T	L	R
Maximum Queue (ft)	293	307	98	203	220	128	259
Average Queue (ft)	198	209	60	126	155	30	148
95th Queue (ft)	305	326	103	219	234	107	265
Link Distance (ft)	1272	1272		3850	3850		1826
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			260			129	
Storage Blk Time (%)				0			10
Queuing Penalty (veh)				0			5

Intersection: 7: Hwy-65 NB Ramps & Pleasant Grove Blvd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	T	T	T	R	L	T	T	T	L	L	L	R
Maximum Queue (ft)	411	406	521	308	253	235	195	255	141	148	184	218
Average Queue (ft)	290	253	322	82	156	132	120	178	86	87	125	144
95th Queue (ft)	476	437	522	341	269	243	215	291	150	168	191	222
Link Distance (ft)	877	877	877			695	695	695			1617	1617
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)				300	250				420	420		
Storage Blk Time (%)			7		2							
Queuing Penalty (veh)			36		13							

Intersection: 7: Hwy-65 NB Ramps & Pleasant Grove Blvd

Movement	NB
Directions Served	R
Maximum Queue (ft)	174
Average Queue (ft)	108
95th Queue (ft)	191
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	420
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Pleasant Grove Blvd & Hwy-65 SB Ramps

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	TR	T	T	T	L	LTR	R
Maximum Queue (ft)	266	246	380	225	194	225	202	273	206
Average Queue (ft)	111	110	230	144	112	146	68	176	94
95th Queue (ft)	256	270	437	263	218	238	189	276	211
Link Distance (ft)	308	308	308	877	877	877		840	
Upstream Blk Time (%)	0	0	5						
Queuing Penalty (veh)	3	3	43						
Storage Bay Dist (ft)							250		350
Storage Blk Time (%)						0	0	2	0
Queuing Penalty (veh)						1	0	5	0

TECHNICAL APPENDIX:
PHASE 1 & 2 CONDITIONS

Intersection 1 **Foothills Blvd/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	128	124	96.8%	60.0	9.0	E
	Through	82	84	102.3%	48.6	8.6	D
	Right Turn	226	240	106.1%	2.9	0.4	A
	Subtotal	436	447	102.6%	26.9	2.5	C
SB	Left Turn	135	134	99.5%	45.4	7.0	D
	Through	55	60	108.7%	42.3	8.0	D
	Right Turn	25	26	103.7%	9.0	3.3	A
	Subtotal	215	220	102.3%	40.0	5.2	D
EB	Left Turn	31	29	94.1%	118.1	28.5	F
	Through	1,528	1,271	83.2%	121.0	22.0	F
	Right Turn	256	222	86.9%	109.7	21.7	F
	Subtotal	1,815	1,522	83.9%	119.4	21.7	F
WB	Left Turn	562	473	84.2%	115.6	33.2	F
	Through	749	739	98.7%	15.5	4.2	B
	Right Turn	259	258	99.5%	7.8	4.0	A
	Subtotal	1,570	1,470	93.6%	46.3	12.3	D
Total		4,036	3,660	90.7%	73.9	11.2	E

Intersection 2 **SR 65 SB Ramps-Washington Blvd/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	186	169	90.8%	46.1	8.4	D
	Through						
	Right Turn	417	380	91.1%	44.6	13.1	D
	Subtotal	603	549	91.0%	45.2	11.4	D
SB	Left Turn	75	76	101.3%	46.7	7.3	D
	Through	296	293	99.0%	46.7	2.6	D
	Right Turn	258	255	98.7%	3.2	0.3	A
	Subtotal	629	624	99.1%	29.0	2.7	C
EB	Left Turn						
	Through	1,724	1,522	88.3%	41.8	4.7	D
	Right Turn	287	257	89.6%	17.2	1.9	B
	Subtotal	2,011	1,779	88.5%	38.3	4.3	D
WB	Left Turn	394	383	97.1%	52.1	7.9	D
	Through	622	637	102.4%	19.5	2.2	B
	Right Turn	414	436	105.3%	8.7	0.9	A
	Subtotal	1,430	1,456	101.8%	24.9	3.2	C
Total		4,673	4,407	94.3%	33.5	2.7	C

Intersection 3 **SR 65 NB Ramps/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	183	184	100.5%	13.0	2.2	B
	Through						
	Right Turn	324	318	98.0%	10.7	1.8	B
	Subtotal	507	501	98.9%	11.5	1.6	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	878	775	88.2%	21.9	3.0	C
	Right Turn	518	442	85.3%	6.5	0.7	A
	Subtotal	1,396	1,217	87.2%	16.4	2.2	B
WB	Left Turn	96	92	96.0%	25.6	4.4	C
	Through	1,247	1,270	101.9%	17.9	2.7	B
	Right Turn						
	Subtotal	1,343	1,363	101.5%	18.4	2.6	B
Total		3,246	3,081	94.9%	16.5	1.1	B

Intersection 10 **Washington Blvd/Road A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	66	61	92.7%	50.5	10.3	D
	Through	530	508	95.8%	6.5	2.3	A
	Right Turn	89	93	104.8%	3.4	1.2	A
	Subtotal	685	662	96.7%	10.2	1.5	B
SB	Left Turn	242	255	105.5%	23.4	12.3	C
	Through	657	603	91.8%	8.8	2.8	A
	Right Turn	78	68	87.2%	4.2	1.0	A
	Subtotal	977	926	94.8%	12.5	4.7	B
EB	Left Turn	12	11	90.0%	45.9	22.6	D
	Through	8	11	139.5%	37.1	22.2	D
	Right Turn	12	16	135.0%	6.1	1.9	A
	Subtotal	32	38	119.3%	29.3	11.0	C
WB	Left Turn	53	50	94.4%	49.7	7.2	D
	Through	6	5	90.0%	33.6	23.6	C
	Right Turn	10	9	90.0%	4.5	3.5	A
	Subtotal	69	64	93.4%	43.3	8.2	D
Total		1,763	1,691	95.9%	13.1	2.8	B

Intersection 9 **Pleasant Grove Blvd/Roseville Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	506	517	102.1%	52.4	7.6	D
	Through	322	320	99.4%	40.4	5.4	D
	Right Turn	348	341	98.1%	4.6	0.6	A
	Subtotal	1,176	1,178	100.2%	35.3	4.5	D
SB	Left Turn	153	152	99.1%	41.4	4.2	D
	Through	353	340	96.3%	44.4	2.7	D
	Right Turn	26	31	117.8%	3.3	1.6	A
	Subtotal	532	522	98.2%	41.1	2.4	D
EB	Left Turn	42	41	97.5%	57.0	13.1	E
	Through	941	867	92.2%	55.9	10.9	E
	Right Turn	704	666	94.7%	12.8	2.2	B
	Subtotal	1,687	1,575	93.3%	37.7	7.2	D
WB	Left Turn	540	530	98.1%	47.4	2.3	D
	Through	722	700	96.9%	27.8	3.4	C
	Right Turn	102	106	103.7%	6.4	1.1	A
	Subtotal	1,364	1,335	97.9%	33.8	1.8	C
Total		4,759	4,610	96.9%	36.4	2.5	D

Intersection 5 **Washington Blvd/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	156	146	93.3%	44.4	5.6	D
	Through	386	367	95.0%	32.0	2.4	C
	Right Turn	261	257	98.6%	3.3	0.3	A
	Subtotal	803	770	95.8%	24.8	1.9	C
SB	Left Turn	84	78	92.4%	48.9	7.0	D
	Through	329	336	102.1%	37.0	4.5	D
	Right Turn	204	205	100.7%	12.0	2.2	B
	Subtotal	617	619	100.3%	30.4	2.7	C
EB	Left Turn	242	248	102.5%	48.0	5.2	D
	Through	1,419	1,433	101.0%	26.2	3.4	C
	Right Turn						
	Subtotal	1,661	1,681	101.2%	29.4	3.5	C
WB	Left Turn	73	65	89.2%	46.6	5.7	D
	Through	781	779	99.7%	27.4	5.4	C
	Right Turn	102	101	98.8%	6.4	0.7	A
	Subtotal	956	944	98.8%	26.5	4.6	C
Total		4,037	4,014	99.4%	28.0	1.6	C

Intersection 7 **Hwy 65 NB Ramps/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	366	349	95.3%	38.4	3.6	D
	Through						
	Right Turn	299	308	103.1%	14.1	3.0	B
	Subtotal	665	657	98.8%	27.0	2.5	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	1,028	994	96.7%	13.2	4.9	B
	Right Turn	174	155	89.0%	5.1	1.5	A
	Subtotal	1,202	1,149	95.6%	12.1	4.2	B
WB	Left Turn	102	80	78.5%	48.9	6.6	D
	Through	1,155	1,126	97.5%	8.7	1.3	A
	Right Turn						
	Subtotal	1,257	1,206	96.0%	11.3	1.4	B
Total		3,124	3,012	96.4%	15.0	2.1	B

Intersection 6 **Hwy 65 SB Ramps/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	88	85	96.3%	38.0	7.5	D
	Through						
	Right Turn	257	252	98.1%	22.1	3.3	C
	Subtotal	345	337	97.6%	26.0	3.3	C
EB	Left Turn						
	Through	1,114	1,058	95.0%	8.7	1.9	A
	Right Turn						
	Subtotal	1,114	1,058	95.0%	8.7	1.9	A
WB	Left Turn						
	Through	1,166	1,131	97.0%	7.5	1.6	A
	Right Turn	355	344	96.8%	6.2	0.5	A
	Subtotal	1,521	1,474	96.9%	7.2	1.2	A
Total		2,980	2,869	96.3%	10.0	1.1	B

Intersection 4 **Washington Blvd/Roseville Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	8	9	112.5%	25.1	17.9	C
	Through	403	389	96.6%	14.6	1.2	B
	Right Turn	20	18	91.8%	3.1	0.1	A
	Subtotal	431	417	96.6%	14.5	1.5	B
SB	Left Turn	264	265	100.4%	21.6	2.5	C
	Through	677	698	103.2%	10.5	2.4	B
	Right Turn	7	6	87.4%	3.9	1.8	A
	Subtotal	948	969	102.3%	13.5	1.8	B
EB	Left Turn	4	3	63.0%	13.8	13.8	B
	Through						
	Right Turn	3	3	108.0%	2.0	2.1	A
	Subtotal	7	6	82.3%	9.9	11.6	A
WB	Left Turn	53	55	103.2%	21.1	4.9	C
	Through						
	Right Turn	244	235	96.3%	3.4	0.2	A
	Subtotal	297	290	97.6%	6.9	1.3	A
Total		1,683	1,682	99.9%	12.6	1.3	B

Intersection 8 **Washington Blvd/Hallissy Drive** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	348	348	100.0%	5.8	1.0	A
	Right Turn	130	129	99.4%	2.2	0.6	A
	Subtotal	478	477	99.9%	4.8	0.8	A
SB	Left Turn	14	13	95.1%	15.0	9.5	B
	Through	409	402	98.4%	5.9	1.0	A
	Right Turn						
	Subtotal	423	416	98.3%	6.3	0.7	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	80	77	96.3%	12.3	2.6	B
	Through						
	Right Turn	28	26	92.6%	3.7	0.6	A
	Subtotal	108	103	95.3%	10.1	2.3	B
Total		1,009	996	98.7%	6.0	0.7	A

SimTraffic Post-Processor **Parcel 49 - Blue Oaks**
Average Results from 10 Runs **Baseline + Phase 1+2**
Volume and Delay by Movement **Weekday PM**

Intersection 1 **Foothills Blvd/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	267	260	97.4%	47.6	6.3	D
	Through	52	52	99.1%	46.6	9.1	D
	Right Turn	580	568	97.9%	11.1	6.2	B
	Subtotal	899	880	97.8%	23.9	3.7	C
SB	Left Turn	384	364	94.9%	60.2	12.9	E
	Through	174	167	95.8%	38.6	4.5	D
	Right Turn	82	92	112.6%	25.7	5.0	C
	Subtotal	640	623	97.4%	49.4	7.7	D
EB	Left Turn	31	31	99.7%	59.5	16.9	E
	Through	1,075	880	81.8%	59.9	25.0	E
	Right Turn	135	113	83.7%	34.2	22.4	C
	Subtotal	1,241	1,023	82.5%	57.2	24.6	E
WB	Left Turn	253	233	92.1%	67.0	18.4	E
	Through	1,675	1,485	88.6%	74.3	27.1	E
	Right Turn	87	68	78.3%	26.0	20.6	C
	Subtotal	2,015	1,786	88.6%	71.5	25.6	E
Total		4,795	4,312	89.9%	54.7	11.6	D

Intersection 2 **SR 65 SB Ramps-Washington Blvd/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	444	361	81.2%	104.8	17.9	F
	Through						
	Right Turn	746	496	66.5%	135.4	9.0	F
	Subtotal	1,190	857	72.0%	122.6	12.0	F
SB	Left Turn	153	148	96.7%	46.7	11.1	D
	Through	289	284	98.2%	43.2	5.8	D
	Right Turn	249	263	105.5%	3.1	0.4	A
	Subtotal	691	694	100.5%	28.9	3.5	C
EB	Left Turn						
	Through	2,004	1,464	73.0%	70.6	14.4	E
	Right Turn	273	185	67.8%	27.5	10.1	C
	Subtotal	2,277	1,649	72.4%	65.8	13.9	E
WB	Left Turn	325	327	100.5%	51.1	8.1	D
	Through	629	611	97.2%	21.3	2.9	C
	Right Turn	378	365	96.5%	8.3	0.7	A
	Subtotal	1,332	1,303	97.8%	25.2	3.0	C
Total		5,490	4,503	82.0%	59.1	6.1	E

Intersection 3 **SR 65 NB Ramps/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	69	73	106.1%	15.8	1.7	B
	Through						
	Right Turn	463	461	99.7%	14.6	1.0	B
	Subtotal	532	535	100.5%	14.8	0.9	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	1,173	925	78.8%	28.9	3.9	C
	Right Turn	638	473	74.2%	6.5	0.9	A
	Subtotal	1,811	1,398	77.2%	21.4	3.0	C
WB	Left Turn	109	100	92.2%	26.0	3.2	C
	Through	1,263	1,241	98.2%	17.2	2.0	B
	Right Turn						
	Subtotal	1,372	1,341	97.8%	17.9	2.0	B
Total		3,715	3,274	88.1%	18.9	1.5	B

Intersection 10 **Washington Blvd/Road A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	26	22	84.9%	132.9	39.0	F
	Through	817	568	69.5%	160.4	49.3	F
	Right Turn	78	59	75.0%	143.0	56.6	F
	Subtotal	921	649	70.4%	157.8	49.5	F
SB	Left Turn	247	234	94.9%	63.4	14.2	E
	Through	620	534	86.1%	19.0	4.8	B
	Right Turn	20	15	77.3%	5.1	2.3	A
	Subtotal	887	784	88.4%	31.9	4.7	C
EB	Left Turn	99	38	37.9%	269.5	166.4	F
	Through	10	9	92.0%	29.2	27.3	C
	Right Turn	73	66	90.2%	7.4	2.2	A
	Subtotal	182	113	61.9%	62.3	24.6	E
WB	Left Turn	179	185	103.6%	46.3	7.2	D
	Through	10	7	73.6%	40.6	23.1	D
	Right Turn	80	71	89.2%	96.5	75.7	F
	Subtotal	269	264	98.2%	57.4	18.7	E
Total		2,259	1,809	80.1%	82.2	19.9	F

SimTraffic Post-Processor **Parcel 49 - Pleasant Grove**
Average Results from 10 Runs **Baseline + Phase 1+2**
Volume and Delay by Movement **Weekday PM**

Intersection 9 **Pleasant Grove Blvd/Roseville Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	1,117	1,001	89.6%	81.9	13.0	F
	Through	608	598	98.4%	52.1	8.6	D
	Right Turn	893	873	97.7%	13.0	6.4	B
	Subtotal	2,618	2,472	94.4%	50.5	9.7	D
SB	Left Turn	206	219	106.3%	49.7	2.4	D
	Through	471	478	101.6%	56.2	3.9	E
	Right Turn	32	33	104.4%	3.3	0.5	A
	Subtotal	709	731	103.1%	51.9	2.1	D
EB	Left Turn	56	56	99.4%	104.1	29.6	F
	Through	1,138	1,019	89.6%	141.5	29.6	F
	Right Turn	833	685	82.2%	50.8	21.6	D
	Subtotal	2,027	1,760	86.8%	105.2	28.1	F
WB	Left Turn	753	662	87.9%	63.7	6.5	E
	Through	1,317	1,256	95.4%	34.6	7.6	C
	Right Turn	174	164	94.5%	8.9	1.3	A
	Subtotal	2,244	2,082	92.8%	42.0	4.7	D
Total		7,598	7,044	92.7%	61.6	6.2	E

Intersection 5 **Washington Blvd/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	235	234	99.5%	46.3	5.7	D
	Through	398	420	105.6%	37.6	3.4	D
	Right Turn	343	336	97.8%	3.7	0.3	A
	Subtotal	976	990	101.4%	28.1	2.3	C
SB	Left Turn	179	191	106.6%	48.6	5.7	D
	Through	463	460	99.4%	41.7	3.4	D
	Right Turn	271	266	98.2%	19.1	1.9	B
	Subtotal	913	917	100.4%	36.6	2.4	D
EB	Left Turn	186	177	95.0%	54.8	6.0	D
	Through	1,735	1,724	99.4%	44.3	11.6	D
	Right Turn						
	Subtotal	1,921	1,901	98.9%	45.3	11.0	D
WB	Left Turn	145	126	87.1%	55.0	9.9	E
	Through	1,700	1,560	91.8%	38.7	7.8	D
	Right Turn	66	62	94.3%	16.8	5.1	B
	Subtotal	1,911	1,749	91.5%	39.1	7.7	D
Total		5,721	5,556	97.1%	38.9	3.9	D

Intersection 7 **Hwy 65 NB Ramps/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	398	404	101.5%	44.1	4.5	D
	Through						
	Right Turn	481	477	99.2%	25.1	3.0	C
	Subtotal	879	881	100.3%	33.8	2.9	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	2,018	1,873	92.8%	28.2	2.6	C
	Right Turn	473	444	93.9%	12.2	1.8	B
	Subtotal	2,491	2,317	93.0%	25.1	2.5	C
WB	Left Turn	212	189	89.3%	48.3	7.1	D
	Through	1,644	1,590	96.7%	10.3	1.5	B
	Right Turn						
	Subtotal	1,856	1,779	95.9%	14.4	1.6	B
Total		5,226	4,978	95.3%	22.8	1.4	C

Intersection 6 **Hwy 65 SB Ramps/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	153	141	91.9%	37.4	3.4	D
	Through						
	Right Turn	355	376	106.0%	28.7	2.4	C
	Subtotal	508	517	101.7%	31.0	2.0	C
EB	Left Turn						
	Through	2,338	2,134	91.3%	10.7	3.4	B
	Right Turn						
	Subtotal	2,338	2,134	91.3%	10.7	3.4	B
WB	Left Turn						
	Through	1,706	1,651	96.8%	12.8	2.7	B
	Right Turn	336	339	101.0%	7.5	1.4	A
	Subtotal	2,042	1,991	97.5%	11.9	2.4	B
Total		4,888	4,641	95.0%	13.5	2.0	B

Intersection 4 **Washington Blvd/Roseville Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	3	1	49.1%	7.8	13.6	A
	Through	443	436	98.5%	18.9	1.8	B
	Right Turn	49	50	102.1%	3.3	0.1	A
	Subtotal	495	488	98.6%	17.3	1.6	B
SB	Left Turn	363	361	99.6%	32.9	4.2	C
	Through	961	957	99.6%	18.5	2.3	B
	Right Turn	8	8	101.2%	8.5	1.7	A
	Subtotal	1,332	1,326	99.6%	22.4	2.2	C
EB	Left Turn	27	26	95.4%	27.9	5.7	C
	Through	7	6	89.4%	33.7	17.7	C
	Right Turn	20	20	99.4%	5.1	1.7	A
	Subtotal	54	52	96.1%	20.4	3.9	C
WB	Left Turn	46	39	84.0%	30.6	7.0	C
	Through						
	Right Turn	414	411	99.3%	4.5	0.2	A
	Subtotal	460	450	97.8%	6.8	1.0	A
Total		2,341	2,316	98.9%	18.2	1.4	B

Intersection 8 **Washington Blvd/Hallissy Drive** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	469	459	97.8%	5.7	1.3	A
	Right Turn	68	79	116.4%	2.1	0.7	A
	Subtotal	537	538	100.2%	5.2	1.2	A
SB	Left Turn	30	30	100.6%	18.1	3.2	B
	Through	584	587	100.5%	6.2	1.3	A
	Right Turn						
	Subtotal	614	617	100.5%	6.8	1.3	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	60	63	104.3%	16.1	3.5	B
	Through						
	Right Turn	25	26	106.0%	4.0	0.8	A
	Subtotal	85	89	104.8%	12.5	2.6	B
Total		1,236	1,244	100.7%	6.5	0.9	A

SimTraffic Post-Processor **Parcel 49 - Blue Oaks**
Average Results from 10 Runs **Baseline + Phase 2 - Mitigation**
Volume and Delay by Movement **Weekday PM**

Intersection 1 **Foothills Blvd/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	267	267	99.9%	49.1	7.5	D
	Through	52	59	113.9%	48.6	10.4	D
	Right Turn	580	546	94.2%	4.4	0.8	A
	Subtotal	899	873	97.1%	21.1	3.4	C
SB	Left Turn	384	371	96.6%	46.9	5.5	D
	Through	174	163	93.7%	37.9	4.7	D
	Right Turn	82	82	100.1%	31.0	10.0	C
	Subtotal	640	616	96.3%	42.5	4.1	D
EB	Left Turn	31	34	110.4%	58.5	14.0	E
	Through	1,075	1,005	93.5%	44.4	15.5	D
	Right Turn	135	128	95.1%	24.3	12.8	C
	Subtotal	1,241	1,168	94.1%	42.5	14.9	D
WB	Left Turn	253	237	93.8%	66.7	11.2	E
	Through	1,675	1,474	88.0%	71.7	18.3	E
	Right Turn	87	84	96.0%	24.0	11.3	C
	Subtotal	2,015	1,795	89.1%	68.8	16.7	E
Total		4,795	4,451	92.8%	48.8	7.0	D

Intersection 2 **SR 65 SB Ramps-Washington Blvd/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	444	437	98.4%	99.5	33.4	F
	Through						
	Right Turn	746	720	96.5%	81.6	20.3	F
	Subtotal	1,190	1,157	97.2%	88.7	16.8	F
SB	Left Turn	153	167	109.4%	43.9	7.3	D
	Through	289	304	105.3%	41.0	4.5	D
	Right Turn	249	250	100.5%	3.2	0.6	A
	Subtotal	691	722	104.5%	28.6	2.8	C
EB	Left Turn						
	Through	2,004	1,561	77.9%	34.4	3.2	C
	Right Turn	273	200	73.2%	11.9	1.1	B
	Subtotal	2,277	1,761	77.3%	31.9	3.0	C
WB	Left Turn	325	277	85.3%	152.9	55.6	F
	Through	629	592	94.1%	22.9	3.2	C
	Right Turn	378	363	96.0%	9.3	1.5	A
	Subtotal	1,332	1,232	92.5%	48.4	14.5	D
Total		5,490	4,871	88.7%	49.1	4.1	D

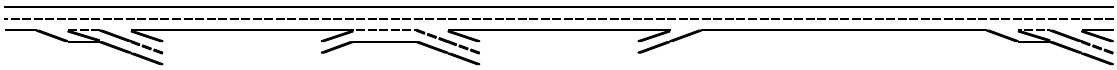
Intersection 3 **SR 65 NB Ramps/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	69	62	90.1%	20.0	6.5	C
	Through						
	Right Turn	463	442	95.5%	18.5	7.2	B
	Subtotal	532	504	94.8%	18.7	6.9	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	1,173	1,071	91.3%	30.0	5.3	C
	Right Turn	638	563	88.3%	5.9	0.7	A
	Subtotal	1,811	1,634	90.2%	21.7	3.8	C
WB	Left Turn	109	105	95.9%	30.4	3.1	C
	Through	1,263	1,204	95.3%	14.8	1.6	B
	Right Turn						
	Subtotal	1,372	1,309	95.4%	16.0	1.6	B
Total		3,715	3,447	92.8%	19.2	2.8	B

Intersection 10 **Washington Blvd/Road A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	26	26	101.9%	54.7	15.6	D
	Through	817	777	95.1%	33.2	13.5	C
	Right Turn	78	76	97.7%	15.0	10.4	B
	Subtotal	921	880	95.5%	32.2	13.2	C
SB	Left Turn	247	209	84.8%	46.6	7.2	D
	Through	620	530	85.5%	16.5	3.5	B
	Right Turn	20	15	75.4%	5.2	1.7	A
	Subtotal	887	755	85.1%	24.6	3.5	C
EB	Left Turn	99	98	98.5%	37.3	5.0	D
	Through	10	10	103.0%	33.9	21.7	C
	Right Turn	73	78	107.4%	8.9	3.0	A
	Subtotal	182	186	102.3%	25.9	4.1	C
WB	Left Turn	179	186	104.0%	36.8	5.4	D
	Through	10	12	117.8%	27.5	15.3	C
	Right Turn	80	79	98.4%	15.0	4.2	B
	Subtotal	269	277	102.9%	30.6	4.7	C
Total		2,259	2,098	92.9%	28.6	6.2	C

Location	5	6	7	8	9	10	11



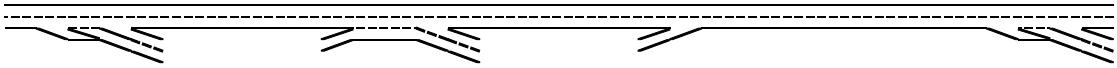
Key

<> Express Lane (HOV)

No Trucks

Name	Pleasant Grove Blvd Off-Ramp	Pleasant Grove Off to On-Ramp	Pleasant Grove On to Blue Oaks Off Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks On to Sunset Off-Ramp	Sunset Blvd Off-Ramp
Define Freeway Segment							
Type	Diverge	Basic	Weave	Basic	Merge	Basic	Diverge
Length (ft)	1,500	1,250	3,370	1,920	1,500	3,300	1,500
Accel Length					375		
Decel Length	1,500						1,500
Mainline Volume	4,032	3,367	3,367	2,629	2,629	3,243	3,243
On Ramp Volume			276		614		
Off Ramp Volume	665		1,014				1,311
Express Lane Volume							
EL On Ramp Volume							
EL Off Ramp Volume							
Calculate Flow Rate in General Purpose Lanes (GP)							
GP Volume (vph)	4,032	3,367	3,643	2,629	3,243	3,243	3,243
PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85
GP Lanes	2	2	3	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	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	0.00
Truck & Bus %	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%
E_T	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
f_{HV}	0.980	0.980	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
GP Flow (pcph)	4,838	4,040	4,372	3,155	3,892	3,892	3,892
GP Flow (pcphpl)	2,419	2,020	1,457	1,577	1,946	1,946	1,946
Calculate Speed in General Purpose Lanes							
FFS Curve	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes							
v/c ratio	1.03	0.86	0.62	0.67	0.83	0.83	0.83
Speed (mph)	-	59.5	65.0	64.6	60.8	60.8	60.8
Density (pcphpl)	-	33.9	22.4	24.4	32.0	32.0	32.0
LOS	F	D	C	C	D	D	D
Calculate Operations for Entering GP Lanes							
GP_{IN} Vol (pcph)	4,838		4,077		3,229		3,892
GP_{IN} Cap (pcph)	4,700		4,700		4,700		4,700
GP_{IN} v/c ratio	1.03		0.87		0.69		0.83
Calculate Operations for Exiting GP Lanes							
GP_{OUT} Vol (pcph)	4,128		3,288		3,892		2,326
GP_{OUT} Cap (pcph)	4,700		4,700		4,700		4,700
GP_{OUT} v/c ratio	0.88		0.70		0.83		0.49
Calculate On Ramp Flow Rate							
On Volume (vph)			276		614		
PHF			0.95		0.94		
Total Lanes			1		1		
Terrain			Level		Level		
Grade %			0.0%		0.0%		
Grade Length (mi)			0.00		0.00		
Truck & Bus %			3.0%		3.0%		
RV %			0.0%		0.0%		
E_T			1.5		1.5		
E_R			1.2		1.2		
f_{HV}			0.985		0.985		
f_P			1.00		1.00		
On Flow (pcph)			295		663		
On Flow (pcphpl)			295		663		

Location	5	6	7	8	9	10	11



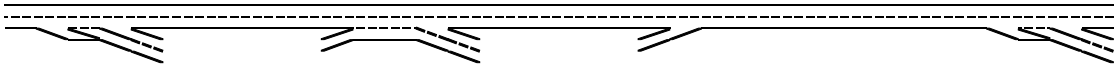
Key

<> Express Lane (HOV)

No Trucks

Name	Pleasant Grove Blvd Off-Ramp	Pleasant Grove Off to On-Ramp	Pleasant Grove On to Blue Oaks Off Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks On to Sunset Off-Ramp	Sunset Blvd Off-Ramp
Calculate On Ramp Roadway Operations							
On Ramp Type					Right		
On Ramp Speed (mph)					45		
On Ramp Cap (pcph)					2,100		
On Ramp v/c ratio					0.32		
Calculate Off Ramp Flow Rate							
Off Volume (vph)	665		1,014				1,311
PHF	0.95		0.95				0.85
Total Lanes	2		2				2
Terrain	Level		Level				Level
Grade %	0.0%		0.0%				0.0%
Grade Length (mi)	0.00		0.00				0.00
Truck & Bus %	3.0%		3.0%				3.0%
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		0.985				0.985
f_P	1.00		1.00				1.00
Off Flow (pcph)	711		1,083				1,565
Off Flow (pcphpl)	355		542				783
Calculate Off Ramp Roadway Operations							
Off Ramp Type	Right						Right
Off Ramp Speed	45						45
Off Ramp Cap (pcph)	4,200						4,200
Off Ramp v/c ratio	0.17						0.37
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps							
Up Type							
Up Distance							
Up Flow (pcph)							
Down Type							
Down Distance							
Down Flow (pcph)							
Calculate Merge Influence Area Operations							
Effective v_P (pcph)					3,229		
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FM} (Eqn 13-3)					0.588		
P_{FM} (Eqn 13-4)							
P_{FM} (Eqn 13-5)							
P_{FM}					1.000		
v_{12} (pcph)					3,229		
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)					3,229		
v_{R12a} (pcph)					3,892		
Merge Speed Index					0.48		
Merge Area Speed					54.0		
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed					54.0		
Merge v/c ratio					0.85		
Merge Density					33.2		
Merge LOS					D		

Location	5	6	7	8	9	10	11



Key

<> Express Lane (HOV)

No Trucks

Name	Pleasant Grove Blvd Off-Ramp	Pleasant Grove Off to On-Ramp	Pleasant Grove On to Blue Oaks Off Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks On to Sunset Off-Ramp	Sunset Blvd Off-Ramp
Calculate Diverge Influence Area Operations							
Effective v_P (pcph)	4,838						3,892
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FD} (Eqn 13-9)	0.606						0.591
P_{FD} (Eqn 13-10)							
P_{FD} (Eqn 13-11)							
P_{FD}	1.000						1.000
v_{12} (pcph)	4,838						3,892
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)	4,838						3,892
Diverge Speed Index	-						0.44
Diverge Area Speed	-						54.9
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed							54.9
Diverge v/c ratio	1.10						0.88
Diverge Density	-						24.2
Diverge LOS	F						C
Summarize Segment Operations							
Segment v/c ratio	1.10	0.86	0.60	0.67	0.85	0.83	0.88
Segment Density	-	33.9	22.4	24.4	33.2	32.0	24.2
Segment LOS	F	D	C	C	D	D	C
Over Capacity	Segment GP Lanes In GP Lanes Diverge						

Leisch Method for Weaving Analysis

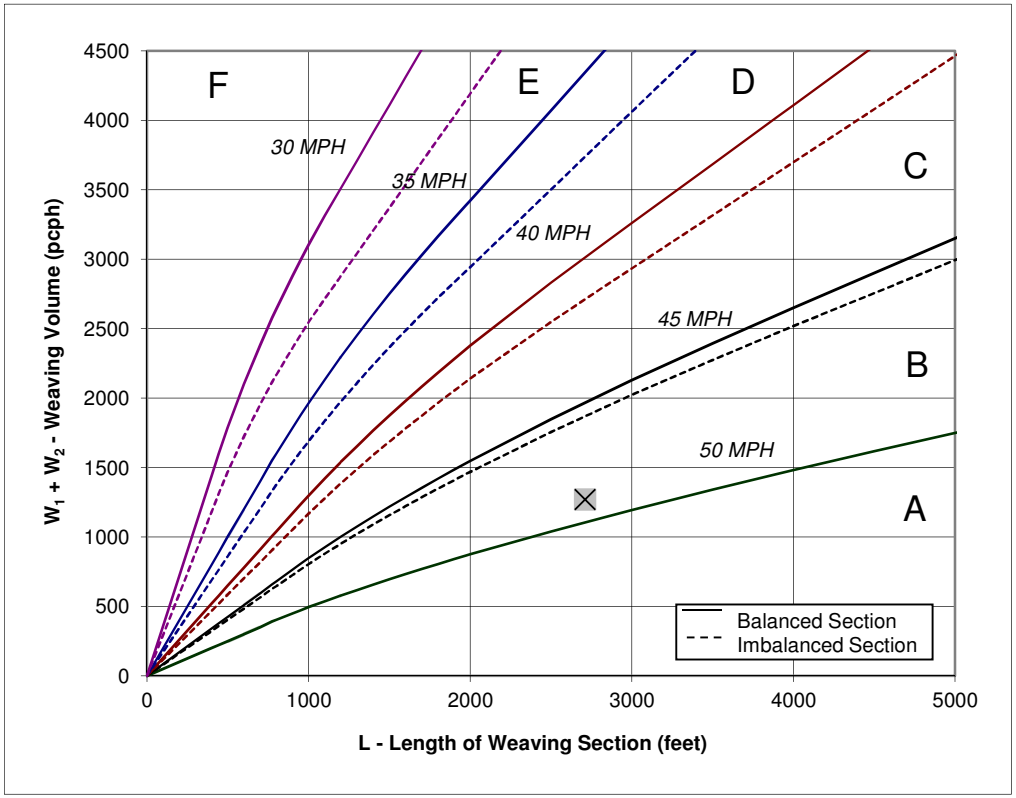
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	2,710

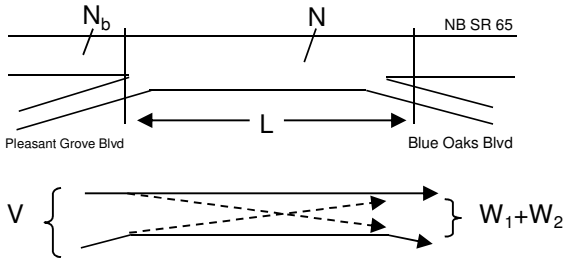
Project Information

Project	Parcel 49
Scenario	Phase 2 AM
Freeway	NB SR 65
On-ramp	Pleasant Grove Blvd
Off-ramp	Blue Oaks Blvd

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	3,643	Volume (vph)*	254	Volume (vph)*	992
Truck Percentage	4%	Truck Percentage	4%	Truck Percentage	4%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	3,716	Volume (pcph)	259	Volume (pcph)	1,012



Figure



Capacity Analysis

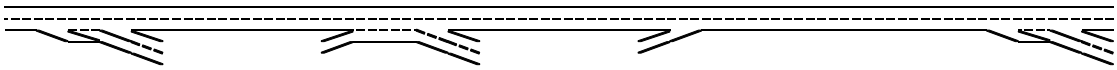
1. Is the weaving section balanced (Y / N)? **Y**
   [If optional exit lane, then "Y". Otherwise "N".]
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?
   45 MPH and **50 MPH**
   If below the 50 MPH curve, out of the realm of weaving.
   If left of the 30 MPH curve, LOS is F.
3. Interpolated Weaving Speed (S_w, mph) **49.0**
4. Weaving Intensity Factor (k) **1.33**
5. Service Volume (SV, pcph)
   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,267**
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.

Source: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983.

Location	5	6	7	8	9	10	11



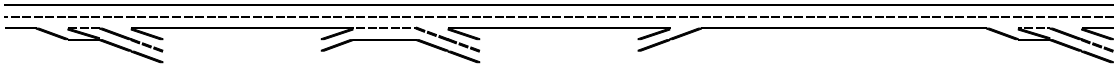
Key

<> Express Lane (HOV)

No Trucks

Name	Pleasant Grove Blvd Off-Ramp	Pleasant Grove Off to On-Ramp	Pleasant Grove On to Blue Oaks Off Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks On to Sunset Off-Ramp	Sunset Blvd Off-Ramp
Define Freeway Segment							
Type	Diverge	Basic	Weave	Basic	Merge	Basic	Diverge
Length (ft)	1,500	1,250	3,370	1,920	1,500	3,300	1,500
Accel Length					375		
Decel Length	1,500						1,500
Mainline Volume	4,313	3,434	3,434	2,889	2,889	3,636	3,636
On Ramp Volume			685		747		
Off Ramp Volume	879		1,230				649
Express Lane Volume							
EL On Ramp Volume							
EL Off Ramp Volume							
Calculate Flow Rate in General Purpose Lanes (GP)							
GP Volume (vph)	4,313	3,434	4,119	2,889	3,636	3,636	3,636
PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
GP Lanes	2	2	3	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	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	0.00
Truck & Bus %	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%
E_T	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
f_{HV}	0.980	0.980	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
GP Flow (pcph)	4,631	3,687	4,423	3,102	3,904	3,904	3,904
GP Flow (pcphpl)	2,315	1,844	1,474	1,551	1,952	1,952	1,952
Calculate Speed in General Purpose Lanes							
FFS Curve	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes							
v/c ratio	0.99	0.78	0.63	0.66	0.83	0.83	0.83
Speed (mph)	53.1	62.2	64.9	64.7	60.7	60.7	60.7
Density (pcphpl)	43.6	29.6	22.7	24.0	32.2	32.2	32.2
LOS	E	D	C	C	D	D	D
Calculate Operations for Entering GP Lanes							
GP_{IN} Vol (pcph)	4,631		3,691		3,097		3,904
GP_{IN} Cap (pcph)	4,700		4,700		4,700		4,700
GP_{IN} v/c ratio	0.99		0.79		0.66		0.83
Calculate Operations for Exiting GP Lanes							
GP_{OUT} Vol (pcph)	3,692		3,108		3,904		3,129
GP_{OUT} Cap (pcph)	4,700		4,700		4,700		4,700
GP_{OUT} v/c ratio	0.79		0.66		0.83		0.67
Calculate On Ramp Flow Rate							
On Volume (vph)			685		747		
PHF			0.95		0.94		
Total Lanes			1		1		
Terrain			Level		Level		
Grade %			0.0%		0.0%		
Grade Length (mi)			0.00		0.00		
Truck & Bus %			3.0%		3.0%		
RV %			0.0%		0.0%		
E_T			1.5		1.5		
E_R			1.2		1.2		
f_{HV}			0.985		0.985		
f_P			1.00		1.00		
On Flow (pcph)			732		807		
On Flow (pcphpl)			732		807		

Location	5	6	7	8	9	10	11



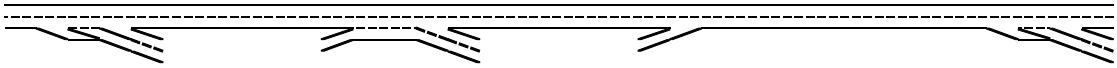
Key

<> Express Lane (HOV)

No Trucks

Name	Pleasant Grove Blvd Off-Ramp	Pleasant Grove Off to On-Ramp	Pleasant Grove On to Blue Oaks Off Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks On to Sunset Off-Ramp	Sunset Blvd Off-Ramp
Calculate On Ramp Roadway Operations							
On Ramp Type					Right		
On Ramp Speed (mph)					45		
On Ramp Cap (pcph)					2,100		
On Ramp v/c ratio					0.38		
Calculate Off Ramp Flow Rate							
Off Volume (vph)	879		1,230				649
PHF	0.95		0.95				0.85
Total Lanes	2		2				2
Terrain	Level		Level				Level
Grade %	0.0%		0.0%				0.0%
Grade Length (mi)	0.00		0.00				0.00
Truck & Bus %	3.0%		3.0%				3.0%
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		0.985				0.985
f_P	1.00		1.00				1.00
Off Flow (pcph)	939		1,314				775
Off Flow (pcphpl)	470		657				387
Calculate Off Ramp Roadway Operations							
Off Ramp Type	Right						Right
Off Ramp Speed	45						45
Off Ramp Cap (pcph)	4,200						4,200
Off Ramp v/c ratio	0.22						0.18
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps							
Up Type							
Up Distance							
Up Flow (pcph)							
Down Type							
Down Distance							
Down Flow (pcph)							
Calculate Merge Influence Area Operations							
Effective v_P (pcph)					3,097		
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FM} (Eqn 13-3)					0.588		
P_{FM} (Eqn 13-4)							
P_{FM} (Eqn 13-5)							
P_{FM}					1.000		
v_{12} (pcph)					3,097		
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)					3,097		
v_{R12a} (pcph)					3,904		
Merge Speed Index					0.48		
Merge Area Speed					53.9		
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed					53.9		
Merge v/c ratio					0.85		
Merge Density					33.2		
Merge LOS					D		

Location	5	6	7	8	9	10	11



Key

<> Express Lane (HOV)

No Trucks

Name	Pleasant Grove Blvd Off-Ramp	Pleasant Grove Off to On-Ramp	Pleasant Grove On to Blue Oaks Off Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks On to Sunset Off-Ramp	Sunset Blvd Off-Ramp
Calculate Diverge Influence Area Operations							
Effective v_P (pcph)	4,631						3,904
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FD} (Eqn 13-9)	0.601						0.627
P_{FD} (Eqn 13-10)							
P_{FD} (Eqn 13-11)							
P_{FD}	1.000						1.000
v_{12} (pcph)	4,631						3,904
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)	4,631						3,904
Diverge Speed Index	0.38						0.37
Diverge Area Speed	56.2						56.5
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed	56.2						56.5
Diverge v/c ratio	1.05						0.89
Diverge Density	30.6						24.3
Diverge LOS	F						C
Summarize Segment Operations							
Segment v/c ratio	1.05	0.78	0.70	0.66	0.85	0.83	0.89
Segment Density	-	29.6	22.7	24.0	33.2	32.2	24.3
Segment LOS	F	D	C	C	D	D	C
Over Capacity	Diverge						

Leisch Method for Weaving Analysis

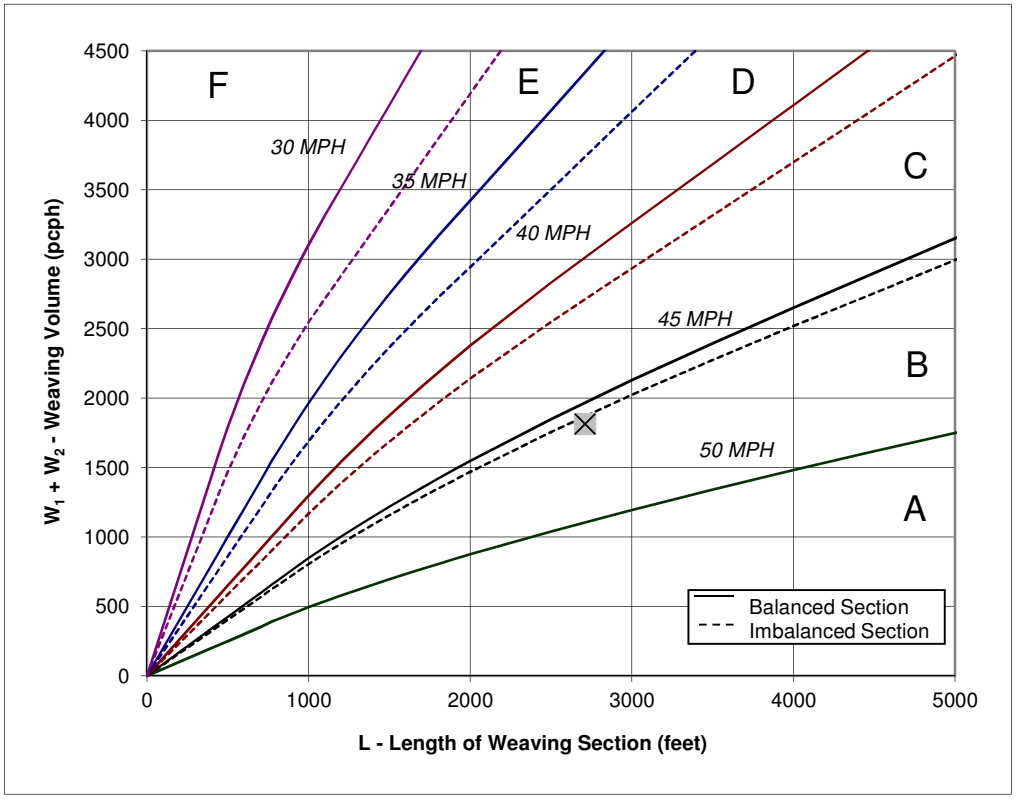
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	2,710

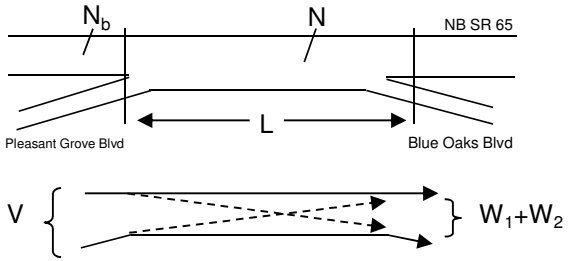
Project Information

Project	Parcel 49
Scenario	Phase 2 PM
Freeway	NB SR 65
On-ramp	Pleasant Grove Blvd
Off-ramp	Blue Oaks Blvd

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	4,119	Volume (vph)*	617	Volume (vph)*	1,162
Truck Percentage	4%	Truck Percentage	4%	Truck Percentage	4%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	4,201	Volume (pcph)	629	Volume (pcph)	1,185



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 50 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) **45.9**
4. Weaving Intensity Factor (k) **1.84**
5. Service Volume (SV, pcph)
   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,577**
6. Level of Service (LOS) **E**

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.

Source: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983.

Location	13	14	15	16	17	18	19	20	21	22

Key

<> Express Lane (HOV)

No Trucks

Name	Sunset Loop On Ramp	Sunset Direct On-Ramp	Sunset Direct Off-Ramp to Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks Blvd On to Pleasant Grove Off	Pleasant Grove Off to On-Ramp	Pleasant Grove Blvd Loop On-Ramp	Pleasant Grove Blvd Direct On-Ramp
Define Freeway Segmen										
Type	Merge	Merge	Basic	Diverge	Basic	Merge	Weave	Basic	Merge	Merge
Length (ft)	1,500	1,500	770	1,500	1,680	1,000	3,140	1,610	1,180	1,500
Accel Length	500	1,450				380			550	580
Decel Length				200						
Mainline Volume	2,557	3,035	3,257	3,257	2,628	2,628	3,042	3,517	3,517	3,872
On Ramp Volume	478	222				414	820		355	374
Off Ramp Volume				629			345			
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in G										
GP Volume (vph)	3,035	3,257	3,257	3,257	2,628	3,042	3,862	3,517	3,872	4,246
PHF	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
GP Lanes	2	2	2	2	2	2	3	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	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	0.00	0.00	0.00	0.00
Truck & Bus %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	4.2%	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	0.979	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
GP Flow (pcph)	3,406	3,655	3,655	3,655	2,949	3,414	4,381	3,947	4,345	4,765
GP Flow (pcphpl)	1,703	1,828	1,828	1,828	1,475	1,707	1,460	1,973	2,173	2,382
Calculate Speed in General Purpose Lanes										
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.72	0.78	0.78	0.78	0.63	0.73	0.62	0.84	0.92	1.01
Speed (mph)	63.7	62.4	62.4	62.4	64.9	63.7	64.9	60.3	56.5	-
Density (pcphpl)	26.7	29.3	29.3	29.3	22.7	26.8	22.5	32.7	38.4	-
LOS	D	D	D	D	C	D	C	D	E	F
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)	2,860	3,393		3,655		2,947	3,489		3,968	4,367
GP_{IN} Cap (pcph)	4,700	4,700		4,700		4,700	4,700		4,700	4,700
GP_{IN} v/c ratio	0.61	0.72		0.78		0.63	0.74		0.84	0.93
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)	3,406	3,655		2,962		3,414	3,984		4,345	4,765
GP_{OUT} Cap (pcph)	4,700	4,700		4,700		4,700	4,700		4,700	4,700
GP_{OUT} v/c ratio	0.72	0.78		0.63		0.73	0.85		0.92	1.01
Calculate On Ramp Flow Rate										
On Volume (vph)	478	222				414	820		355	374
PHF	0.885	0.854				0.895	0.94		0.95	0.95
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%				2.0%	4.6%		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				0.990	0.978		0.990	0.990
f_P	1.00	1.00				1.00	1.00		1.00	1.00
On Flow (pcph)	546	263				467	892		377	398
On Flow (pcphpl)	546	263				467	892		377	398

Location	13	14	15	16	17	18	19	20	21	22

Key

<> Express Lane (HOV)

No Trucks

Name	Sunset Loop On Ramp	Sunset Direct On-Ramp	Sunset Direct Off-Ramp to Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks Blvd On to Pleasant Grove Off	Pleasant Grove Off to On-Ramp	Pleasant Grove Blvd Loop On-Ramp	Pleasant Grove Blvd Direct On-Ramp
Calculate On Ramp Roadway Operations										
On Ramp Type	Right	Right				Right	Right		Right	Right
On Ramp Speed (mph)	25	45				25	45		25	45
On Ramp Cap (pcph)	1,900	2,100				1,900	2,100		1,900	2,100
On Ramp v/c ratio	0.29	0.13				0.25	0.42		0.20	0.19
Calculate Off Ramp Flow Rate										
Off Volume (vph)				629			345			
PHF				0.927			0.877			
Total Lanes				1			1			
Terrain				Level			Level			
Grade %				0.0%			0.0%			
Grade Length (mi)				0.00			0.00			
Truck & Bus %				4.2%			2.0%			
RV %				0.0%			0.0%			
E_T				1.5			1.5			
E_R				1.2			1.2			
f_{HV}				0.979			0.990			
f_P				1.00			1.00			
Off Flow (pcph)				693			397			
Off Flow (pcphpl)				693			397			
Calculate Off Ramp Roadway Operations										
Off Ramp Type				Right			Right			
Off Ramp Speed				45			45			
Off Ramp Cap (pcph)				2,100			2,100			
Off Ramp v/c ratio				0.33			0.19			
Determine Adjacent Ramp for Three-Lane Mainline Segments with C										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_P (pcph)	2,860	3,393				2,947			3,968	4,367
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)	0.592	0.618				0.588			0.593	0.594
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}	1.000	1.000				1.000			1.000	1.000
v_{12} (pcph)	2,860	3,393				2,947			3,968	4,367
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)	2,860	3,393				2,947			3,968	4,367
v_{R12a} (pcph)	3,406	3,655				3,414			4,345	4,765
Merge Speed Index	0.41	0.34				0.42			0.59	-
Merge Area Speed	55.5	57.1				55.3			51.3	-
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed	55.5	57.1				55.3			51.3	
Merge v/c ratio	0.74	0.79				0.74			0.94	1.04
Merge Density	28.7	24.8				29.5			35.7	-
Merge LOS	D	C				D			E	F

Location	13	14	15	16	17	18	19	20	21	22

Key

<> Express Lane (HOV)

No Trucks

Name	Sunset Loop On Ramp	Sunset Direct On-Ramp	Sunset Direct Off-Ramp to Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks Blvd On to Pleasant Grove Off	Pleasant Grove Off to On-Ramp	Pleasant Grove Blvd Loop On-Ramp	Pleasant Grove Blvd Direct On-Ramp
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)				3,655						
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)				0.637						
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}				1.000						
v_{12} (pcph)				3,655						
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				3,655						
Diverge Speed Index				0.36						
Diverge Area Speed				56.7						
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				56.7						
Diverge v/c ratio				0.83						
Diverge Density				33.9						
Diverge LOS				D						
Summarize Segment Operations										
Segment v/c ratio	0.74	0.79	0.78	0.83	0.63	0.74	0.66	0.84	0.94	1.04
Segment Density	28.7	24.8	29.3	33.9	22.7	29.5	22.5	32.7	35.7	-
Segment LOS	D	C	D	D	C	D	C	D	E	F
Over Capacity										Segment GP Lanes Out GP Lanes Merge

Leisch Method for Weaving Analysis

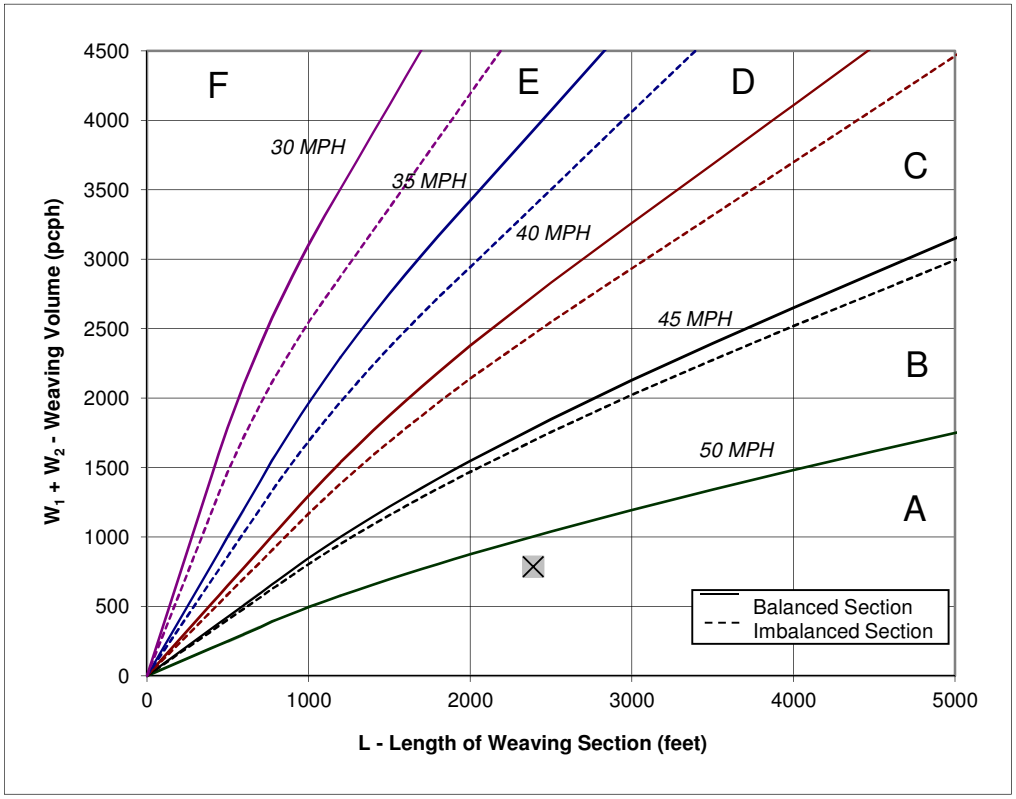
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	2,390

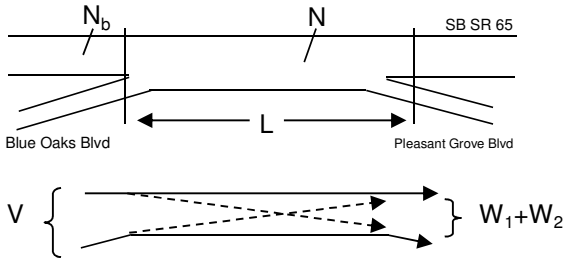
Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	3,862	Volume (vph)*	623	Volume (vph)*	148
Truck Percentage	4%	Truck Percentage	4%	Truck Percentage	4%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	3,939	Volume (pcph)	636	Volume (pcph)	151

Project Information

Project	Parcel 49
Scenario	Phase 2 AM
Freeway	SB SR 65
On-ramp	Blue Oaks Blvd
Off-ramp	Pleasant Grove Blvd



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 50 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) 51.4
4. Weaving Intensity Factor (k) 1.00
5. Service Volume (SV, pcph)
   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ 1,313
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.

Source: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983.

Location	13	14	15	16	17	18	19	20	21	22

Key

<> Express Lane (HOV)

No Trucks

Name	Sunset Loop On Ramp	Sunset Direct On-Ramp	Sunset Direct Off-Ramp to Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks Blvd On to Pleasant Grove Off	Pleasant Grove Off to On-Ramp	Pleasant Grove Blvd Loop On-Ramp	Pleasant Grove Blvd Direct On-Ramp
Define Freeway Segment										
Type	Merge	Merge	Basic	Diverge	Basic	Merge	Weave	Basic	Merge	Merge
Length (ft)	1,500	1,500	770	1,500	1,680	1,000	3,140	1,610	1,180	1,500
Accel Length	500	1,450				380			550	580
Decel Length				200						
Mainline Volume	1,754	2,431	2,974	2,974	2,283	2,283	2,661	3,245	3,245	3,581
On Ramp Volume	677	543				378	1,092		336	485
Off Ramp Volume				691			508			
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	2,431	2,974	2,974	2,974	2,283	2,661	3,753	3,245	3,581	4,066
PHF	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
GP Lanes	2	2	2	2	2	2	3	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	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	0.00	0.00	0.00	0.00
Truck & Bus %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	4.2%	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	0.979	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
GP Flow (pcph)	2,728	3,337	3,337	3,337	2,562	2,986	4,258	3,642	4,019	4,563
GP Flow (pcphpl)	1,364	1,669	1,669	1,669	1,281	1,493	1,419	1,821	2,009	2,281
Calculate Speed in General Purpose Lanes										
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.58	0.71	0.71	0.71	0.55	0.64	0.60	0.77	0.86	0.97
Speed (mph)	65.0	64.0	64.0	64.0	65.0	64.9	65.0	62.5	59.7	54.0
Density (pcphpl)	21.0	26.1	26.1	26.1	19.7	23.0	21.8	29.1	33.6	42.3
LOS	C	D	D	D	C	C	C	D	D	E
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)	1,787	2,655		3,337		2,502	2,992		3,660	4,045
GP_{IN} Cap (pcph)	4,700	4,700		4,700		4,700	4,700		4,700	4,700
GP_{IN} v/c ratio	0.38	0.56		0.71		0.53	0.64		0.78	0.86
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)	2,728	3,337		2,575		2,986	3,624		4,019	4,563
GP_{OUT} Cap (pcph)	4,700	4,700		4,700		4,700	4,700		4,700	4,700
GP_{OUT} v/c ratio	0.58	0.71		0.55		0.64	0.77		0.86	0.97
Calculate On Ramp Flow Rate										
On Volume (vph)	677	543				378	1,092		336	485
PHF	0.73	0.808				0.792	0.876		0.95	0.95
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 %	3.0%	3.0%				3.0%	3.0%		3.0%	3.0%
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}	0.985	0.985				0.985	0.985		0.985	0.985
f_P	1.00	1.00				1.00	1.00		1.00	1.00
On Flow (pcph)	941	682				484	1,265		359	518
On Flow (pcphpl)	941	682				484	1,265		359	518

Location	13	14	15	16	17	18	19	20	21	22

Key

<> Express Lane (HOV)

No Trucks

Name	Sunset Loop On Ramp	Sunset Direct On-Ramp	Sunset Direct Off-Ramp to Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks Blvd On to Pleasant Grove Off	Pleasant Grove Off to On-Ramp	Pleasant Grove Blvd Loop On-Ramp	Pleasant Grove Blvd Direct On-Ramp
Calculate On Ramp Roadway Operations										
On Ramp Type	Right	Right				Right	Right		Right	Right
On Ramp Speed (mph)	25	45				25	45		25	45
On Ramp Cap (pcph)	1,900	2,100				1,900	2,100		1,900	2,100
On Ramp v/c ratio	0.50	0.32				0.25	0.60		0.19	0.25
Calculate Off Ramp Flow Rate										
Off Volume (vph)				691			508			
PHF				0.92			0.814			
Total Lanes				1			1			
Terrain				Level			Level			
Grade %				0.0%			0.0%			
Grade Length (mi)				0.00			0.00			
Truck & Bus %				3.0%			3.0%			
RV %				0.0%			0.0%			
E_T				1.5			1.5			
E_R				1.2			1.2			
f_{HV}				0.985			0.985			
f_P				1.00			1.00			
Off Flow (pcph)				762			633			
Off Flow (pcphpl)				762			633			
Calculate Off Ramp Roadway Operations										
Off Ramp Type				Right			Right			
Off Ramp Speed				45			45			
Off Ramp Cap (pcph)				2,100			2,100			
Off Ramp v/c ratio				0.36			0.30			
Determine Adjacent Ramp for Three-Lane Mainline Segments with C										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_P (pcph)	1,787	2,655				2,502			3,660	4,045
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)	0.592	0.618				0.588			0.593	0.594
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}	1.000	1.000				1.000			1.000	1.000
v_{12} (pcph)	1,787	2,655				2,502			3,660	4,045
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)	1,787	2,655				2,502			3,660	4,045
v_{R12a} (pcph)	2,728	3,337				2,986			4,019	4,563
Merge Speed Index	0.36	0.30				0.38			0.51	0.64
Merge Area Speed	56.8	58.1				56.3			53.3	50.2
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed	56.8	58.1				56.3			53.3	50.2
Merge v/c ratio	0.59	0.73				0.65			0.87	0.99
Merge Density	23.2	22.1				26.2			33.2	37.2
Merge LOS	C	C				C			D	E

Location	13	14	15	16	17	18	19	20	21	22

Key

<> Express Lane (HOV)

No Trucks

Name	Sunset Loop On Ramp	Sunset Direct On-Ramp	Sunset Direct Off-Ramp to Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks Blvd On to Pleasant Grove Off	Pleasant Grove Off to On-Ramp	Pleasant Grove Blvd Loop On-Ramp	Pleasant Grove Blvd Direct On-Ramp
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)				3,337						
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)				0.641						
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}				1.000						
v_{12} (pcph)				3,337						
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				3,337						
Diverge Speed Index				0.37						
Diverge Area Speed				56.6						
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				56.6						
Diverge v/c ratio				0.76						
Diverge Density				31.2						
Diverge LOS				D						
Summarize Segment Operations										
Segment v/c ratio	0.59	0.73	0.71	0.76	0.55	0.65	0.66	0.77	0.87	0.99
Segment Density	23.2	22.1	26.1	31.2	19.7	26.2	21.8	29.1	33.2	37.2
Segment LOS	C	C	D	D	C	C	C	D	D	E
Over Capacity										

Leisch Method for Weaving Analysis

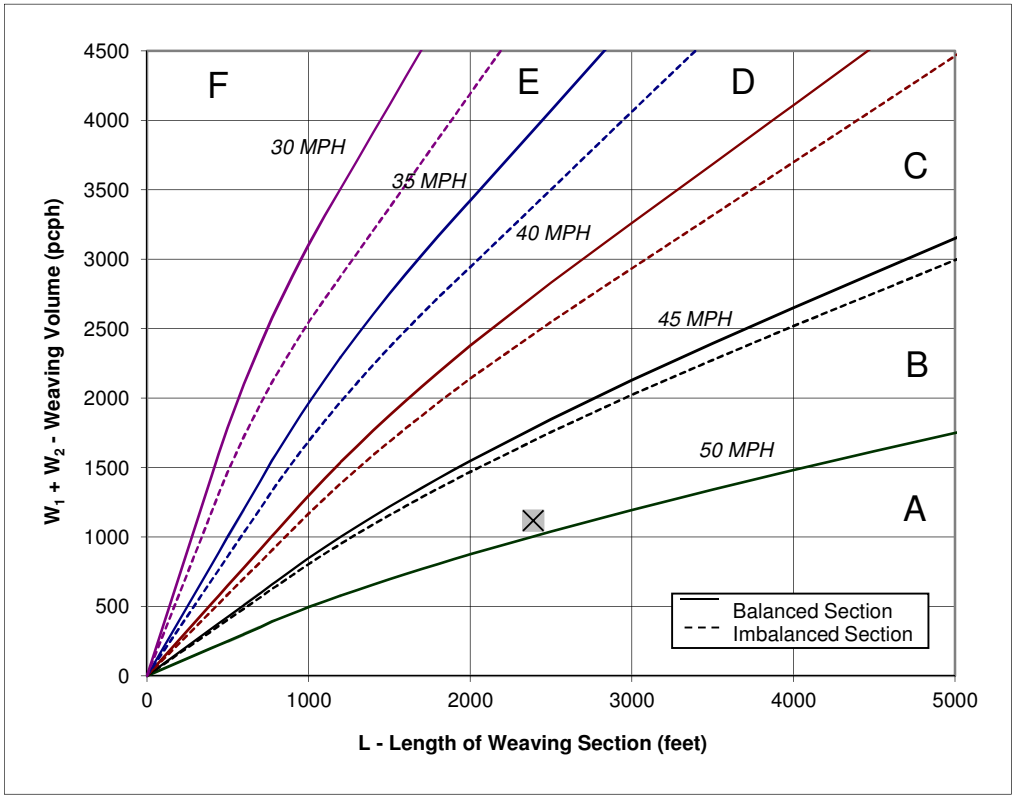
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	2,390

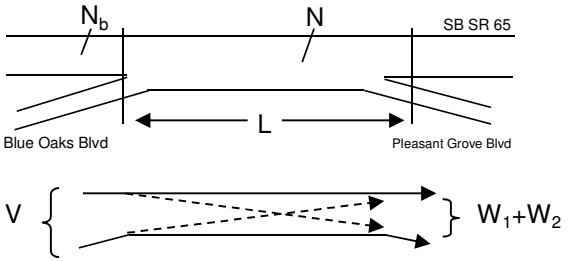
Project Information

Project	Parcel 49
Scenario	Phase 2 PM
Freeway	SB SR 65
On-ramp	Blue Oaks Blvd
Off-ramp	Pleasant Grove Blvd

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	3,753	Volume (vph)*	841	Volume (vph)*	257
Truck Percentage	4%	Truck Percentage	4%	Truck Percentage	4%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	3,828	Volume (pcph)	858	Volume (pcph)	262



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 50 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)	49.3
4. Weaving Intensity Factor (k)	1.10
5. Service Volume (SV, pcph) $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$	1,284
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.

Source: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983.

Intersection: 2: Washington Blvd & Blue Oaks Blvd

Movement	EB	EB	EB	EB	EB	B202	B202	WB	WB	WB	WB	NB
Directions Served	T	T	TR	R	>	T	T	L	L	T	T	L
Maximum Queue (ft)	257	360	404	408	285	12	45	196	210	194	183	106
Average Queue (ft)	186	258	325	327	150	2	21	126	136	99	93	63
95th Queue (ft)	284	377	433	451	362	26	147	202	219	253	223	111
Link Distance (ft)	394	394	394	394		464	464			1276	1276	
Upstream Blk Time (%)		0	3	3	0							
Queuing Penalty (veh)		3	17	18	0							
Storage Bay Dist (ft)					230			175	175			250
Storage Blk Time (%)				29				2	5	0	0	
Queuing Penalty (veh)				93				8	18	0	0	

Intersection: 2: Washington Blvd & Blue Oaks Blvd

Movement	NB	NB	SB	SB	SB	SB
Directions Served	L	R>	<L	T	T	R
Maximum Queue (ft)	153	392	157	234	194	38
Average Queue (ft)	80	285	78	141	113	5
95th Queue (ft)	164	460	161	274	252	57
Link Distance (ft)	413	413		633	633	
Upstream Blk Time (%)		4				
Queuing Penalty (veh)		13				
Storage Bay Dist (ft)			205			165
Storage Blk Time (%)				3	2	0
Queuing Penalty (veh)				3	6	0

Intersection: 3: Hwy 65 NB Ramps & Blue Oaks Blvd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	T	L	T	T	L	R
Maximum Queue (ft)	345	347	109	192	242	93	276
Average Queue (ft)	233	242	66	118	156	33	163
95th Queue (ft)	359	369	113	199	241	102	307
Link Distance (ft)	1271	1271		3850	3850		1826
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			260			129	
Storage Blk Time (%)							14
Queuing Penalty (veh)							11

Intersection: 6: Pleasant Grove Blvd & Hwy-65 SB Ramps

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	TR	T	T	T	L	LTR	R
Maximum Queue (ft)	131	133	210	188	123	123	122	222	159
Average Queue (ft)	41	39	79	87	44	65	39	149	60
95th Queue (ft)	137	130	234	195	115	130	120	235	148
Link Distance (ft)	308	308	308	877	877	877		840	
Upstream Blk Time (%)			0						
Queuing Penalty (veh)			1						
Storage Bay Dist (ft)							250		350
Storage Blk Time (%)								0	
Queuing Penalty (veh)								1	

Intersection: 7: Hwy-65 NB Ramps & Pleasant Grove Blvd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	T	T	T	R	L	T	T	T	L	L	L	R
Maximum Queue (ft)	203	200	283	38	128	143	138	223	156	134	149	128
Average Queue (ft)	95	87	135	6	76	66	53	103	103	75	98	85
95th Queue (ft)	225	217	314	81	141	146	132	224	168	155	160	145
Link Distance (ft)	877	877	877			695	695	695			1617	1617
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)				300	250				420	420		
Storage Blk Time (%)			1									
Queuing Penalty (veh)			2									

Intersection: 7: Hwy-65 NB Ramps & Pleasant Grove Blvd

Movement	NB
Directions Served	R
Maximum Queue (ft)	95
Average Queue (ft)	50
95th Queue (ft)	96
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	420
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: Washington Blvd & Blue Oaks Blvd

Movement	EB	EB	EB	EB	EB	B202	WB	WB	WB	WB	WB	NB
Directions Served	T	T	TR	R	>	T	L	L	T	T	R	L
Maximum Queue (ft)	234	320	374	368	198	6	193	216	493	448	25	304
Average Queue (ft)	159	229	299	289	79	1	172	191	300	227	7	231
95th Queue (ft)	257	354	401	399	215	10	240	273	636	550	83	356
Link Distance (ft)	394	394	394	394		464			1271	1271		
Upstream Blk Time (%)		0	0	0	0							0
Queuing Penalty (veh)		1	3	2	0							0
Storage Bay Dist (ft)					230		175	175			275	250
Storage Blk Time (%)				19			37	45	0	0		13
Queuing Penalty (veh)				56			127	153	1	0		31

Intersection: 2: Washington Blvd & Blue Oaks Blvd

Movement	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	R	R>	<L	T	T	R
Maximum Queue (ft)	357	430	401	190	210	152	31
Average Queue (ft)	253	339	331	135	141	105	9
95th Queue (ft)	382	492	461	201	224	166	74
Link Distance (ft)	411	411			633	633	
Upstream Blk Time (%)	2	10	4				
Queuing Penalty (veh)	14	64	0				
Storage Bay Dist (ft)			300	205			165
Storage Blk Time (%)	19	24	30	1	1	1	0
Queuing Penalty (veh)	47	125	87	2	1	2	0

Intersection: 3: Hwy 65 NB Ramps & Blue Oaks Blvd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	T	L	T	T	L	R
Maximum Queue (ft)	336	342	114	197	243	103	283
Average Queue (ft)	230	240	67	123	159	37	164
95th Queue (ft)	352	363	115	207	244	111	308
Link Distance (ft)	1271	1271		3850	3850		1826
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			260			129	
Storage Blk Time (%)							15
Queuing Penalty (veh)							11

Intersection: 6: Pleasant Grove Blvd & Hwy-65 SB Ramps

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	TR	T	T	T	L	LTR	R
Maximum Queue (ft)	237	232	338	272	212	257	191	280	200
Average Queue (ft)	112	110	219	138	109	145	67	196	104
95th Queue (ft)	263	244	408	271	212	252	172	285	216
Link Distance (ft)	308	308	308	877	877	877		840	
Upstream Blk Time (%)	1	0	4						
Queuing Penalty (veh)	4	1	36						
Storage Bay Dist (ft)							250		350
Storage Blk Time (%)						0		2	
Queuing Penalty (veh)						2		5	

Intersection: 7: Hwy-65 NB Ramps & Pleasant Grove Blvd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	T	T	T	R	L	T	T	T	L	L	L	R
Maximum Queue (ft)	474	411	607	385	266	170	153	217	135	164	186	199
Average Queue (ft)	322	277	377	159	152	99	95	147	83	93	128	140
95th Queue (ft)	534	459	667	470	265	188	174	239	136	173	194	209
Link Distance (ft)	877	877	877			695	695	695			1617	1617
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)				300	250				420	420		
Storage Blk Time (%)			13		2	0						
Queuing Penalty (veh)			63		10	0						

Intersection: 7: Hwy-65 NB Ramps & Pleasant Grove Blvd

Movement	NB
Directions Served	R
Maximum Queue (ft)	183
Average Queue (ft)	112
95th Queue (ft)	189
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	420
Storage Blk Time (%)	
Queuing Penalty (veh)	

TECHNICAL APPENDIX:
PHASE 1, 2, & 3 CONDITIONS

SimTraffic Post-Processor **Parcel 49 - Blue Oaks**
Average Results from 10 Runs **Baseline + Phase 1+2+3 - Mitigation**
Volume and Delay by Movement **Weekday AM**

Intersection 1 **Foothills Blvd/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	128	126	98.4%	49.0	5.1	D
	Through	82	86	104.9%	47.1	6.7	D
	Right Turn	227	237	104.2%	2.7	0.3	A
	Subtotal	437	449	102.6%	24.2	2.8	C
SB	Left Turn	136	143	104.8%	46.0	6.5	D
	Through	55	56	102.1%	45.9	8.7	D
	Right Turn	25	24	96.5%	10.3	3.7	B
	Subtotal	216	223	103.2%	42.1	4.9	D
EB	Left Turn	31	22	72.0%	128.0	22.0	F
	Through	1,535	1,231	80.2%	119.9	23.2	F
	Right Turn	256	221	86.5%	110.9	19.3	F
	Subtotal	1,822	1,475	80.9%	118.8	22.3	F
WB	Left Turn	564	487	86.4%	120.0	21.3	F
	Through	755	719	95.3%	15.2	3.0	B
	Right Turn	260	248	95.3%	7.0	0.9	A
	Subtotal	1,579	1,454	92.1%	49.0	7.3	D
Total		4,054	3,600	88.8%	74.0	10.0	E

Intersection 2 **SR 65 SB Ramps-Washington Blvd/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	195	180	92.5%	53.4	11.5	D
	Through						
	Right Turn	442	418	94.6%	33.5	5.8	C
	Subtotal	637	599	94.0%	39.5	7.3	D
SB	Left Turn	75	75	99.4%	44.2	6.0	D
	Through	304	312	102.7%	48.6	11.2	D
	Right Turn	258	274	106.0%	4.5	3.3	A
	Subtotal	637	660	103.6%	29.8	6.9	C
EB	Left Turn						
	Through	1,724	1,497	86.8%	40.8	5.1	D
	Right Turn	296	255	86.1%	17.2	2.5	B
	Subtotal	2,020	1,752	86.7%	37.4	5.0	D
WB	Left Turn	417	373	89.4%	63.9	10.6	E
	Through	622	578	93.0%	18.4	1.4	B
	Right Turn	414	423	102.1%	8.0	0.6	A
	Subtotal	1,453	1,374	94.5%	27.7	3.7	C
Total		4,747	4,385	92.4%	33.5	4.4	C

Intersection 3 **SR 65 NB Ramps/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	191	175	91.4%	12.9	3.1	B
	Through						
	Right Turn	324	317	97.8%	10.1	1.4	B
	Subtotal	515	491	95.4%	11.1	1.8	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	887	803	90.5%	21.2	3.3	C
	Right Turn	524	482	92.1%	6.4	0.4	A
	Subtotal	1,411	1,285	91.1%	15.6	2.2	B
WB	Left Turn	96	89	92.6%	23.2	3.1	C
	Through	1,262	1,246	98.8%	16.3	1.3	B
	Right Turn						
	Subtotal	1,358	1,335	98.3%	16.7	1.3	B
Total		3,284	3,112	94.8%	15.4	1.5	B

Intersection 10 **Washington Blvd/Road A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	66	64	96.5%	57.6	7.8	E
	Through	530	502	94.7%	8.1	1.6	A
	Right Turn	111	105	94.7%	3.4	0.9	A
	Subtotal	707	671	94.9%	12.0	1.7	B
SB	Left Turn	282	263	93.3%	36.7	28.6	D
	Through	657	600	91.3%	10.6	4.5	B
	Right Turn	78	79	101.1%	5.6	3.6	A
	Subtotal	1,017	942	92.6%	17.5	10.5	B
EB	Left Turn	12	11	90.0%	46.6	20.5	D
	Through	10	10	104.4%	46.1	17.4	D
	Right Turn	12	14	114.0%	7.2	4.0	A
	Subtotal	34	35	102.7%	30.8	5.2	C
WB	Left Turn	71	72	101.9%	53.7	8.2	D
	Through	8	7	90.0%	41.0	30.0	D
	Right Turn	44	49	112.1%	10.1	1.5	B
	Subtotal	123	129	104.8%	37.3	9.8	D
Total		1,881	1,776	94.4%	17.2	6.3	B

Intersection 9 **Pleasant Grove Blvd/Roseville Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	506	527	104.1%	51.4	3.6	D
	Through	333	334	100.2%	42.4	3.3	D
	Right Turn	348	361	103.6%	4.6	0.4	A
	Subtotal	1,187	1,221	102.9%	35.2	2.9	D
SB	Left Turn	154	153	99.6%	38.6	5.0	D
	Through	362	371	102.5%	41.8	5.1	D
	Right Turn	26	25	94.5%	2.5	0.6	A
	Subtotal	542	549	101.3%	39.2	3.4	D
EB	Left Turn	42	32	76.3%	55.2	13.2	E
	Through	941	834	88.7%	58.8	6.7	E
	Right Turn	704	646	91.8%	12.6	2.2	B
	Subtotal	1,687	1,513	89.7%	39.0	4.9	D
WB	Left Turn	540	548	101.5%	47.0	2.6	D
	Through	722	721	99.8%	29.4	2.7	C
	Right Turn	104	95	91.7%	6.4	1.5	A
	Subtotal	1,366	1,364	99.9%	34.9	1.7	C
Total		4,782	4,647	97.2%	36.8	1.3	D

Intersection 5 **Washington Blvd/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	156	156	99.7%	40.5	4.2	D
	Through	391	365	93.4%	31.5	3.4	C
	Right Turn	261	271	103.9%	3.2	0.3	A
	Subtotal	808	792	98.0%	23.6	1.9	C
SB	Left Turn	84	80	95.8%	41.8	5.7	D
	Through	333	319	95.7%	35.2	4.2	D
	Right Turn	212	206	97.4%	10.7	1.0	B
	Subtotal	629	606	96.3%	27.7	2.9	C
EB	Left Turn	253	252	99.8%	50.9	4.5	D
	Through	1,419	1,417	99.9%	26.3	3.0	C
	Right Turn						
	Subtotal	1,672	1,669	99.8%	30.1	2.4	C
WB	Left Turn	73	72	98.0%	48.8	11.9	D
	Through	781	772	98.8%	33.3	4.5	C
	Right Turn	102	107	104.7%	8.4	2.1	A
	Subtotal	956	950	99.4%	31.7	5.2	C
Total		4,065	4,017	98.8%	28.8	1.4	C

Intersection 7 **Hwy 65 NB Ramps/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	366	361	98.7%	37.2	2.5	D
	Through						
	Right Turn	299	293	98.1%	13.4	3.3	B
	Subtotal	665	655	98.4%	26.7	2.4	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	1,033	1,009	97.6%	15.8	1.4	B
	Right Turn	174	172	98.6%	5.2	0.5	A
	Subtotal	1,207	1,180	97.8%	14.3	1.2	B
WB	Left Turn	102	99	97.4%	49.2	7.0	D
	Through	1,157	1,123	97.1%	10.3	1.6	B
	Right Turn						
	Subtotal	1,259	1,223	97.1%	13.5	2.1	B
Total		3,131	3,057	97.6%	16.6	0.8	B

Intersection 6 **Hwy 65 SB Ramps/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	92	96	104.5%	35.2	5.0	D
	Through						
	Right Turn	257	270	105.0%	21.4	3.4	C
	Subtotal	349	366	104.9%	25.0	3.7	C
EB	Left Turn						
	Through	1,115	1,096	98.3%	10.5	2.0	B
	Right Turn						
	Subtotal	1,115	1,096	98.3%	10.5	2.0	B
WB	Left Turn						
	Through	1,168	1,117	95.7%	10.4	2.5	B
	Right Turn	355	330	92.9%	6.8	1.1	A
	Subtotal	1,523	1,447	95.0%	9.5	2.0	A
Total		2,987	2,909	97.4%	11.8	1.7	B

Intersection 4 **Washington Blvd/Roseville Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	8	3	40.5%	16.3	14.4	B
	Through	338	352	104.2%	13.0	1.5	B
	Right Turn	20	16	81.0%	3.3	0.3	A
	Subtotal	366	372	101.5%	12.7	1.4	B
SB	Left Turn	245	237	96.5%	19.3	2.2	B
	Through	652	658	100.9%	8.4	2.3	A
	Right Turn	7	9	123.4%	4.7	2.6	A
	Subtotal	904	903	99.9%	11.2	2.1	B
EB	Left Turn	4	3	81.0%	17.3	16.7	B
	Through						
	Right Turn	3	4	132.0%	3.4	1.8	A
	Subtotal	7	7	102.9%	12.4	11.7	B
WB	Left Turn	53	55	104.6%	22.3	4.5	C
	Through						
	Right Turn	194	194	100.2%	3.4	0.2	A
	Subtotal	247	250	101.1%	7.6	1.0	A
Total		1,524	1,532	100.5%	11.0	1.5	B

Intersection 8 **Washington Blvd/Hallissy Drive** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	339	331	97.6%	5.9	1.1	A
	Right Turn	130	126	97.2%	2.1	0.4	A
	Subtotal	469	457	97.5%	4.9	0.9	A
SB	Left Turn	14	17	118.3%	14.2	7.1	B
	Through	386	391	101.3%	5.3	1.2	A
	Right Turn						
	Subtotal	400	408	101.9%	5.7	1.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	80	75	93.6%	10.1	2.7	B
	Through						
	Right Turn	26	22	85.8%	3.4	0.6	A
	Subtotal	106	97	91.7%	8.6	2.4	A
Total		975	962	98.7%	5.6	0.7	A

SimTraffic Post-Processor **Parcel 49 - Blue Oaks**
Average Results from 10 Runs **Baseline + Phase 1+2+3 - Mitigation**
Volume and Delay by Movement **Weekday PM**

Intersection 1 **Foothills Blvd/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	267	260	97.3%	48.2	7.3	D
	Through	52	48	92.7%	43.5	7.0	D
	Right Turn	582	549	94.3%	12.3	10.7	B
	Subtotal	901	857	95.1%	24.8	6.9	C
SB	Left Turn	385	355	92.2%	50.7	8.9	D
	Through	174	168	96.7%	39.4	5.4	D
	Right Turn	82	84	102.8%	26.6	5.2	C
	Subtotal	641	608	94.8%	44.4	6.5	D
EB	Left Turn	31	29	95.0%	63.7	15.3	E
	Through	1,082	933	86.2%	57.2	21.4	E
	Right Turn	135	123	91.0%	33.7	17.6	C
	Subtotal	1,248	1,085	86.9%	54.7	21.0	D
WB	Left Turn	255	252	98.7%	74.5	16.1	E
	Through	1,681	1,514	90.1%	78.6	30.2	E
	Right Turn	88	74	84.5%	32.9	21.3	C
	Subtotal	2,024	1,840	90.9%	76.3	28.1	E
Total		4,814	4,390	91.2%	56.3	12.0	E

Intersection 2 **SR 65 SB Ramps-Washington Blvd/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	453	436	96.3%	37.2	7.3	D
	Through						
	Right Turn	773	756	97.8%	33.8	6.6	C
	Subtotal	1,226	1,192	97.2%	35.1	6.3	D
SB	Left Turn	153	154	100.5%	47.1	6.5	D
	Through	298	309	103.9%	46.8	4.0	D
	Right Turn	249	255	102.4%	3.2	0.3	A
	Subtotal	700	718	102.6%	31.5	2.3	C
EB	Left Turn						
	Through	2,004	1,572	78.4%	70.3	5.3	E
	Right Turn	283	186	65.8%	27.1	5.5	C
	Subtotal	2,287	1,758	76.9%	65.7	5.3	E
WB	Left Turn	349	236	67.6%	236.6	29.4	F
	Through	629	639	101.6%	34.3	3.2	C
	Right Turn	378	369	97.7%	13.1	2.3	B
	Subtotal	1,356	1,244	91.8%	66.5	7.0	E
Total		5,569	4,913	88.2%	53.5	2.7	D

SimTraffic Post-Processor **Parcel 49 - Blue Oaks**
Average Results from 10 Runs **Baseline + Phase 1+2+3 - Mitigation**
Volume and Delay by Movement **Weekday PM**

Intersection 3 **SR 65 NB Ramps/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	77	74	96.1%	18.4	3.7	B
	Through						
	Right Turn	463	464	100.3%	18.4	3.1	B
	Subtotal	540	538	99.7%	18.4	2.9	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	1,182	1,071	90.6%	30.8	4.0	C
	Right Turn	645	566	87.7%	6.6	0.6	A
	Subtotal	1,827	1,637	89.6%	22.4	2.6	C
WB	Left Turn	109	98	90.1%	29.5	2.8	C
	Through	1,279	1,262	98.7%	18.2	1.5	B
	Right Turn						
	Subtotal	1,388	1,360	98.0%	19.0	1.4	B
Total		3,755	3,536	94.2%	20.5	1.7	C

Intersection 10 **Washington Blvd/Road A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	26	26	99.1%	50.6	16.1	D
	Through	817	792	97.0%	35.8	8.0	D
	Right Turn	101	107	106.0%	14.8	5.5	B
	Subtotal	944	925	98.0%	33.8	7.4	C
SB	Left Turn	290	247	85.0%	61.4	23.4	E
	Through	620	480	77.3%	14.2	4.8	B
	Right Turn	20	17	82.8%	4.4	1.7	A
	Subtotal	930	743	79.9%	30.0	11.8	C
EB	Left Turn	99	106	107.1%	46.0	5.2	D
	Through	12	10	82.8%	34.5	23.3	C
	Right Turn	73	79	107.9%	6.8	1.3	A
	Subtotal	184	195	105.8%	30.3	4.8	C
WB	Left Turn	198	205	103.7%	47.0	6.2	D
	Through	12	13	104.3%	31.6	16.7	C
	Right Turn	116	115	99.0%	20.7	4.2	C
	Subtotal	326	333	102.0%	37.6	4.3	D
Total		2,384	2,195	92.1%	32.6	5.9	C

Intersection 9 **Pleasant Grove Blvd/Roseville Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	1,117	965	86.4%	110.0	16.1	F
	Through	620	578	93.2%	86.9	12.2	F
	Right Turn	893	920	103.0%	48.1	13.9	D
	Subtotal	2,630	2,463	93.6%	81.5	14.1	F
SB	Left Turn	208	210	100.8%	50.4	6.7	D
	Through	481	505	104.9%	59.0	4.3	E
	Right Turn	32	35	109.2%	3.1	0.6	A
	Subtotal	721	749	103.9%	54.1	2.9	D
EB	Left Turn	56	50	88.5%	106.9	31.0	F
	Through	1,138	960	84.4%	143.1	33.4	F
	Right Turn	833	634	76.1%	51.0	25.2	D
	Subtotal	2,027	1,643	81.1%	106.5	31.3	F
WB	Left Turn	753	665	88.3%	63.4	13.9	E
	Through	1,317	1,203	91.3%	40.1	6.9	D
	Right Turn	175	174	99.6%	9.8	1.4	A
	Subtotal	2,245	2,042	91.0%	45.2	4.5	D
Total		7,623	6,897	90.5%	73.6	8.0	E

Intersection 5 **Washington Blvd/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	235	239	101.6%	46.2	5.5	D
	Through	403	407	100.9%	37.9	3.7	D
	Right Turn	343	324	94.4%	3.5	0.3	A
	Subtotal	981	969	98.8%	28.6	2.0	C
SB	Left Turn	179	172	95.9%	49.9	4.0	D
	Through	467	470	100.6%	42.9	3.4	D
	Right Turn	280	273	97.5%	21.0	4.4	C
	Subtotal	926	914	98.7%	37.5	2.1	D
EB	Left Turn	197	200	101.6%	57.1	5.7	E
	Through	1,735	1,701	98.0%	42.6	6.3	D
	Right Turn						
	Subtotal	1,932	1,901	98.4%	44.1	5.7	D
WB	Left Turn	145	128	88.2%	52.4	7.2	D
	Through	1,700	1,523	89.6%	38.7	2.8	D
	Right Turn	66	65	97.7%	14.8	2.7	B
	Subtotal	1,911	1,715	89.8%	38.8	2.8	D
Total		5,750	5,500	95.7%	38.6	2.5	D

Intersection 7 **Hwy 65 NB Ramps/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	398	381	95.8%	41.8	2.9	D
	Through						
	Right Turn	481	485	100.9%	26.0	1.7	C
	Subtotal	879	867	98.6%	33.0	1.8	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	2,024	1,922	95.0%	29.5	4.6	C
	Right Turn	473	414	87.5%	12.3	2.5	B
	Subtotal	2,497	2,336	93.6%	26.4	4.2	C
WB	Left Turn	212	202	95.1%	48.1	6.3	D
	Through	1,645	1,566	95.2%	10.9	1.9	B
	Right Turn						
	Subtotal	1,857	1,767	95.2%	15.1	1.6	B
Total		5,233	4,970	95.0%	23.5	2.1	C

Intersection 6 **Hwy 65 SB Ramps/Pleasant Grove Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	157	144	91.5%	38.4	3.4	D
	Through						
	Right Turn	355	340	95.8%	28.3	2.3	C
	Subtotal	512	484	94.5%	31.3	2.2	C
EB	Left Turn						
	Through	2,340	2,172	92.8%	16.0	4.0	B
	Right Turn						
	Subtotal	2,340	2,172	92.8%	16.0	4.0	B
WB	Left Turn						
	Through	1,707	1,618	94.8%	12.5	1.5	B
	Right Turn	336	338	100.5%	7.1	0.8	A
	Subtotal	2,043	1,956	95.7%	11.6	1.3	B
Total		4,895	4,611	94.2%	15.7	1.9	B

Intersection 4 **Washington Blvd/Roseville Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	3	1	49.1%	15.1	19.7	B
	Through	462	371	80.3%	16.9	1.9	B
	Right Turn	49	48	97.6%	3.3	0.2	A
	Subtotal	514	420	81.8%	15.4	1.6	B
SB	Left Turn	374	298	79.8%	27.1	1.4	C
	Through	976	877	89.9%	16.3	2.8	B
	Right Turn	8	8	101.2%	7.8	3.7	A
	Subtotal	1,358	1,183	87.1%	19.0	2.1	B
EB	Left Turn	27	24	88.6%	25.0	6.7	C
	Through	7	7	105.1%	20.1	11.3	C
	Right Turn	20	21	104.9%	4.3	0.5	A
	Subtotal	54	52	96.8%	16.6	4.1	B
WB	Left Turn	46	48	104.8%	26.1	5.9	C
	Through						
	Right Turn	427	369	86.4%	4.3	0.4	A
	Subtotal	473	417	88.1%	6.7	0.5	A
Total		2,399	2,073	86.4%	15.7	1.4	B

Intersection 8 **Washington Blvd/Hallissy Drive** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	486	399	82.0%	6.1	1.4	A
	Right Turn	68	70	102.8%	2.2	0.8	A
	Subtotal	554	468	84.6%	5.5	1.3	A
SB	Left Turn	31	27	86.7%	16.8	6.9	B
	Through	598	502	84.0%	5.6	1.4	A
	Right Turn						
	Subtotal	629	529	84.1%	6.2	1.5	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	60	61	102.4%	12.7	2.8	B
	Through						
	Right Turn	26	20	76.4%	3.2	1.2	A
	Subtotal	86	81	94.6%	10.6	2.7	B
Total		1,269	1,079	85.0%	6.2	1.4	A

Intersection 2 **SR 65 SB Ramps-Washington Blvd/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	224	224	99.8%	43.2	11.9	D
	Through						
	Right Turn	328	328	100.0%	24.1	8.8	C
	Subtotal	552	552	99.9%	32.1	7.7	C
SB	Left Turn	143	136	94.9%	49.8	12.5	D
	Through	280	273	97.6%	56.5	14.7	E
	Right Turn	109	107	97.8%	5.8	6.5	A
	Subtotal	532	516	96.9%	44.4	12.3	D
EB	Left Turn						
	Through	1,188	1,183	99.5%	117.8	35.7	F
	Right Turn	293	284	96.8%	43.1	25.4	D
	Subtotal	1,481	1,466	99.0%	103.0	33.4	F
WB	Left Turn	562	545	96.9%	171.2	44.8	F
	Through	501	494	98.6%	17.9	1.5	B
	Right Turn	399	405	101.4%	6.0	0.4	A
	Subtotal	1,462	1,443	98.7%	81.9	19.3	F
Total		4,027	3,977	98.7%	78.0	12.8	E

Intersection 3 **SR 65 NB Ramps/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	199	192	96.2%	18.4	7.6	B
	Through						
	Right Turn	411	405	98.6%	8.3	1.8	A
	Subtotal	610	597	97.9%	11.4	3.6	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	741	729	98.4%	20.6	5.0	C
	Right Turn	252	248	98.3%	4.9	0.8	A
	Subtotal	993	977	98.4%	16.5	3.8	B
WB	Left Turn	98	96	98.2%	57.3	54.1	E
	Through	1,264	1,268	100.3%	34.4	24.8	C
	Right Turn						
	Subtotal	1,362	1,364	100.2%	35.9	26.5	D
Total		2,965	2,938	99.1%	24.5	12.8	C

SimTraffic Post-Processor **Parcel 49 - Blue Oaks**
Average Results from 10 Runs **Baseline Plus Phase 3 Conditions**
Volume and Delay by Movement **Saturday PM**

Intersection 10 **Washington Blvd/Road A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	4	4	90.0%	71.1	38.2	E
	Through	386	383	99.1%	47.5	4.3	D
	Right Turn	65	65	99.5%	30.1	3.5	C
	Subtotal	455	451	99.1%	45.4	3.9	D
SB	Left Turn	843	802	95.2%	42.9	5.0	D
	Through	285	285	100.0%	17.8	4.3	B
	Right Turn	4	4	107.5%	14.0	4.6	B
	Subtotal	1,132	1,092	96.4%	37.7	5.0	D
EB	Left Turn	4	3	72.5%	30.8	36.6	C
	Through	17	15	88.2%	46.9	8.4	D
	Right Turn	9	9	96.7%	4.8	1.6	A
	Subtotal	30	27	88.7%	37.0	10.9	D
WB	Left Turn	109	104	95.6%	44.8	3.8	D
	Through	8	9	110.0%	27.4	16.4	C
	Right Turn	31	33	107.7%	7.3	2.2	A
	Subtotal	148	146	98.9%	33.8	4.9	C
Total		1,765	1,715	97.2%	39.2	3.2	D

Intersection 2 **SR 65 SB Ramps-Washington Blvd/Blue Oaks Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	364	315	86.6%	50.9	8.5	D
	Through						
	Right Turn	894	787	88.0%	31.8	3.5	C
	Subtotal	1,258	1,102	87.6%	37.2	4.6	D
SB	Left Turn	126	123	97.7%	41.5	7.6	D
	Through	166	169	101.7%	40.7	6.0	D
	Right Turn	106	104	98.0%	2.0	0.3	A
	Subtotal	398	396	99.4%	31.3	4.2	C
EB	Left Turn						
	Through	1,160	1,157	99.7%	37.8	5.6	D
	Right Turn	129	131	101.2%	7.2	0.8	A
	Subtotal	1,289	1,287	99.9%	34.6	4.9	C
WB	Left Turn	163	167	102.5%	38.2	4.7	D
	Through	443	451	101.7%	16.8	3.1	B
	Right Turn	277	276	99.7%	4.1	0.5	A
	Subtotal	883	894	101.2%	17.0	2.2	B
Total		3,828	3,679	96.1%	30.7	2.5	C

Intersection 3 **SR 65 NB Ramps/Blue Oaks Blvd** **Signal**

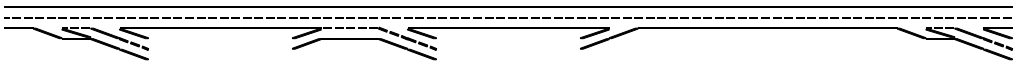
Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	84	86	102.1%	10.4	1.2	B
	Through						
	Right Turn	309	311	100.6%	6.4	0.4	A
	Subtotal	393	397	100.9%	7.2	0.4	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	890	834	93.8%	15.2	1.5	B
	Right Turn	394	377	95.7%	7.6	0.6	A
	Subtotal	1,284	1,212	94.4%	12.9	1.0	B
WB	Left Turn	94	91	96.9%	15.7	2.4	B
	Through	800	806	100.7%	7.8	1.0	A
	Right Turn						
	Subtotal	894	897	100.3%	8.6	0.8	A
Total		2,571	2,505	97.4%	10.5	0.6	B

SimTraffic Post-Processor **Parcel 49 - Blue Oaks**
Average Results from 10 Runs **Baseline Plus Phase 3 Conditions**
Volume and Delay by Movement **Sunday Midday**

Intersection 10 **Washington Blvd/Road A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	4	5	112.5%	39.4	28.5	D
	Through	322	315	97.7%	31.7	5.1	C
	Right Turn	61	62	101.1%	6.2	1.1	A
	Subtotal	387	381	98.4%	27.5	3.8	C
SB	Left Turn	186	189	101.6%	36.4	5.6	D
	Through	269	272	101.3%	21.8	4.4	C
	Right Turn	4	3	85.0%	3.6	1.3	A
	Subtotal	459	465	101.3%	27.6	3.2	C
EB	Left Turn	4	3	77.5%	27.4	23.7	C
	Through	5	4	80.0%	14.3	21.8	B
	Right Turn	9	10	107.8%	8.2	4.5	A
	Subtotal	18	17	93.3%	21.3	10.9	C
WB	Left Turn	540	519	96.2%	30.3	4.6	C
	Through	34	34	100.0%	22.6	7.5	C
	Right Turn	280	277	98.8%	10.0	1.1	B
	Subtotal	854	830	97.2%	23.0	3.2	C
Total		1,718	1,693	98.5%	25.2	3.0	C

Location	5	6	7	8	9	10	11



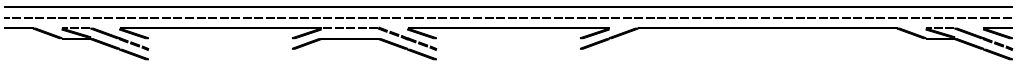
Key

<> Express Lane (HOV)

No Trucks

Name	Pleasant Grove Blvd Off-Ramp	Pleasant Grove Off to On-Ramp	Pleasant Grove On to Blue Oaks Off Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks On to Sunset Off-Ramp	Sunset Blvd Off-Ramp
Define Freeway Segment							
Type	Diverge	Basic	Weave	Basic	Merge	Basic	Diverge
Length (ft)	1,500	1,250	3,370	1,920	1,500	3,300	1,500
Accel Length					375		
Decel Length	1,500						1,500
Mainline Volume	4,040	3,375	3,375	2,629	2,629	3,249	3,249
On Ramp Volume			276		620		
Off Ramp Volume	665		1,022				1,311
Express Lane Volume							
EL On Ramp Volume							
EL Off Ramp Volume							
Calculate Flow Rate in General Purpose Lanes (GP)							
GP Volume (vph)	4,040	3,375	3,651	2,629	3,249	3,249	3,249
PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85
GP Lanes	2	2	3	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	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	0.00
Truck & Bus %	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%
E_T	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
f_{HV}	0.980	0.980	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
GP Flow (pcph)	4,848	4,050	4,381	3,155	3,899	3,899	3,899
GP Flow (pcphpl)	2,424	2,025	1,460	1,577	1,949	1,949	1,949
Calculate Speed in General Purpose Lanes							
FFS Curve	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes							
v/c ratio	1.03	0.86	0.62	0.67	0.83	0.83	0.83
Speed (mph)	-	59.5	64.9	64.6	60.7	60.7	60.7
Density (pcphpl)	-	34.1	22.5	24.4	32.1	32.1	32.1
LOS	F	D	C	C	D	D	D
Calculate Operations for Entering GP Lanes							
GP_{IN} Vol (pcph)	4,848		4,086		3,229		3,899
GP_{IN} Cap (pcph)	4,700		4,700		4,700		4,700
GP_{IN} v/c ratio	1.03		0.87		0.69		0.83
Calculate Operations for Exiting GP Lanes							
GP_{OUT} Vol (pcph)	4,138		3,289		3,899		2,333
GP_{OUT} Cap (pcph)	4,700		4,700		4,700		4,700
GP_{OUT} v/c ratio	0.88		0.70		0.83		0.50
Calculate On Ramp Flow Rate							
On Volume (vph)			276		620		
PHF			0.95		0.94		
Total Lanes			1		1		
Terrain			Level		Level		
Grade %			0.0%		0.0%		
Grade Length (mi)			0.00		0.00		
Truck & Bus %			3.0%		3.0%		
RV %			0.0%		0.0%		
E_T			1.5		1.5		
E_R			1.2		1.2		
f_{HV}			0.985		0.985		
f_P			1.00		1.00		
On Flow (pcph)			295		669		
On Flow (pcphpl)			295		669		

Location	5	6	7	8	9	10	11



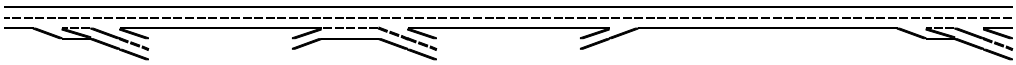
Key

<> Express Lane (HOV)

No Trucks

Name	Pleasant Grove Blvd Off-Ramp	Pleasant Grove Off to On-Ramp	Pleasant Grove On to Blue Oaks Off Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks On to Sunset Off-Ramp	Sunset Blvd Off-Ramp
Calculate On Ramp Roadway Operations							
On Ramp Type					Right		
On Ramp Speed (mph)					45		
On Ramp Cap (pcph)					2,100		
On Ramp v/c ratio					0.32		
Calculate Off Ramp Flow Rate							
Off Volume (vph)	665		1,022				1,311
PHF	0.95		0.95				0.85
Total Lanes	2		2				2
Terrain	Level		Level				Level
Grade %	0.0%		0.0%				0.0%
Grade Length (mi)	0.00		0.00				0.00
Truck & Bus %	3.0%		3.0%				3.0%
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		0.985				0.985
f_P	1.00		1.00				1.00
Off Flow (pcph)	711		1,092				1,565
Off Flow (pcphpl)	355		546				783
Calculate Off Ramp Roadway Operations							
Off Ramp Type	Right						Right
Off Ramp Speed	45						45
Off Ramp Cap (pcph)	4,200						4,200
Off Ramp v/c ratio	0.17						0.37
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps							
Up Type							
Up Distance							
Up Flow (pcph)							
Down Type							
Down Distance							
Down Flow (pcph)							
Calculate Merge Influence Area Operations							
Effective v_P (pcph)					3,229		
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FM} (Eqn 13-3)					0.588		
P_{FM} (Eqn 13-4)							
P_{FM} (Eqn 13-5)							
P_{FM}					1.000		
v_{12} (pcph)					3,229		
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)					3,229		
v_{R12a} (pcph)					3,899		
Merge Speed Index					0.48		
Merge Area Speed					54.0		
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed					54.0		
Merge v/c ratio					0.85		
Merge Density					33.2		
Merge LOS					D		

Location	5	6	7	8	9	10	11



Key

<> Express Lane (HOV)

No Trucks

Name	Pleasant Grove Blvd Off-Ramp	Pleasant Grove Off to On-Ramp	Pleasant Grove On to Blue Oaks Off Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks On to Sunset Off-Ramp	Sunset Blvd Off-Ramp
Calculate Diverge Influence Area Operations							
Effective v_P (pcph)	4,848						3,899
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FD} (Eqn 13-9)	0.606						0.591
P_{FD} (Eqn 13-10)							
P_{FD} (Eqn 13-11)							
P_{FD}	1.000						1.000
v_{12} (pcph)	4,848						3,899
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)	4,848						3,899
Diverge Speed Index	-						0.44
Diverge Area Speed	-						54.9
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed							54.9
Diverge v/c ratio	1.10						0.89
Diverge Density	-						24.3
Diverge LOS	F						C
Summarize Segment Operations							
Segment v/c ratio	1.10	0.86	0.60	0.67	0.85	0.83	0.89
Segment Density	-	34.1	22.5	24.4	33.2	32.1	24.3
Segment LOS	F	D	C	C	D	D	C
Over Capacity	Segment GP Lanes In GP Lanes Diverge						

Leisch Method for Weaving Analysis

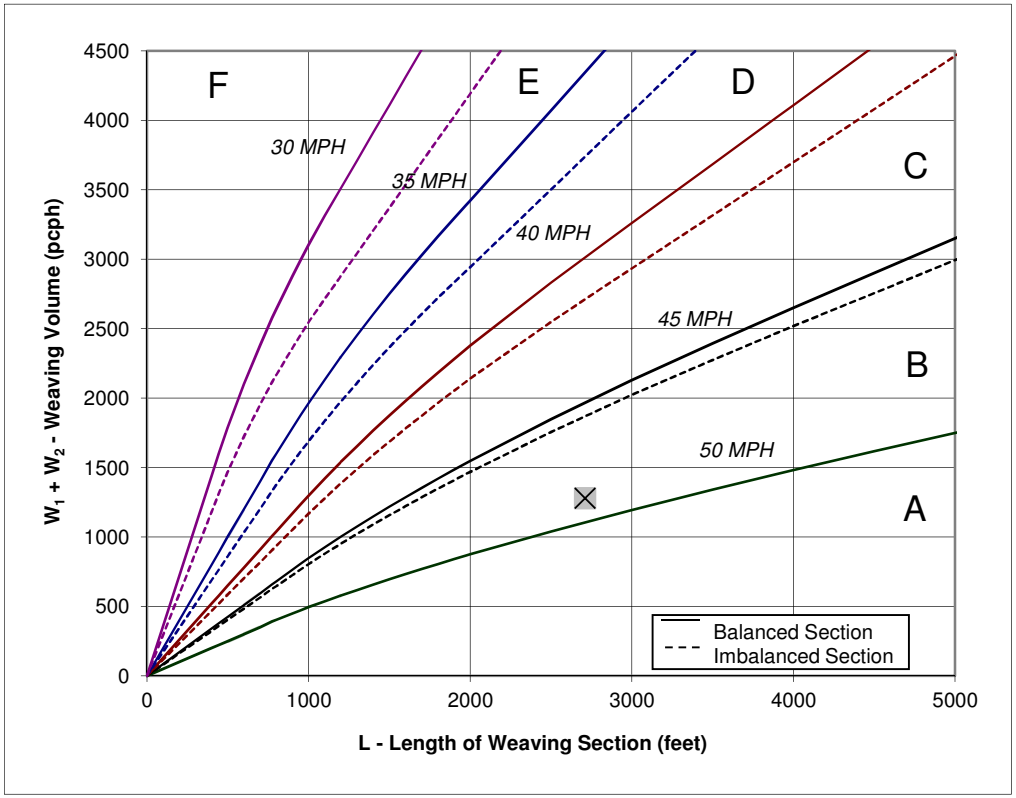
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	2,710

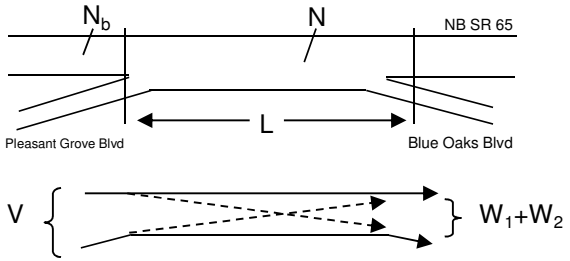
Project Information

Project	Parcel 49
Scenario	Phase 3 AM
Freeway	NB SR 65
On-ramp	Pleasant Grove Blvd
Off-ramp	Blue Oaks Blvd

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	3,651	Volume (vph)*	254	Volume (vph)*	1,000
Truck Percentage	4%	Truck Percentage	4%	Truck Percentage	4%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	3,724	Volume (pcph)	259	Volume (pcph)	1,020



Figure



Capacity Analysis

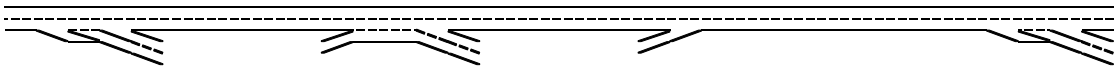
1. Is the weaving section balanced (Y / N)? [If optional exit lane, then "Y". Otherwise "N".]	Y
2. In the Weaving Speed Chart to the left, which two speed curves is the black "x" between?	**45 MPH** and **50 MPH**
If below the 50 MPH curve, out of the realm of weaving. If left of the 30 MPH curve, LOS is F.	
3. Interpolated Weaving Speed (S_w, mph)	49.0
4. Weaving Intensity Factor (k)	1.34
5. Service Volume (SV, pcph) $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$	1,270
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.

Source: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983.

Location	5	6	7	8	9	10	11



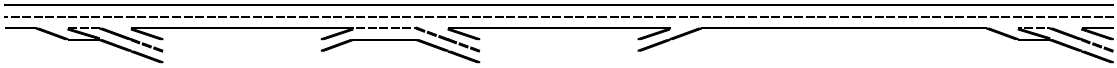
Key

<> Express Lane (HOV)

No Trucks

Name	Pleasant Grove Blvd Off-Ramp	Pleasant Grove Off to On-Ramp	Pleasant Grove On to Blue Oaks Off Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks On to Sunset Off-Ramp	Sunset Blvd Off-Ramp
Define Freeway Segment							
Type	Diverge	Basic	Weave	Basic	Merge	Basic	Diverge
Length (ft)	1,500	1,250	3,370	1,920	1,500	3,300	1,500
Accel Length					375		
Decel Length	1,500						1,500
Mainline Volume	4,321	3,442	3,442	2,889	2,889	3,643	3,643
On Ramp Volume			685		754		
Off Ramp Volume	879		1,238				649
Express Lane Volume							
EL On Ramp Volume							
EL Off Ramp Volume							
Calculate Flow Rate in General Purpose Lanes (GP)							
GP Volume (vph)	4,321	3,442	4,127	2,889	3,643	3,643	3,643
PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
GP Lanes	2	2	3	2	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	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	0.00
Truck & Bus %	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%
E_T	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
f_{HV}	0.980	0.980	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
GP Flow (pcph)	4,639	3,696	4,431	3,102	3,911	3,911	3,911
GP Flow (pcphpl)	2,320	1,848	1,477	1,551	1,956	1,956	1,956
Calculate Speed in General Purpose Lanes							
FFS Curve	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes							
v/c ratio	0.99	0.79	0.63	0.66	0.83	0.83	0.83
Speed (mph)	53.0	62.2	64.9	64.7	60.6	60.6	60.6
Density (pcphpl)	43.8	29.7	22.8	24.0	32.3	32.3	32.3
LOS	E	D	C	C	D	D	D
Calculate Operations for Entering GP Lanes							
GP_{IN} Vol (pcph)	4,639		3,699		3,097		3,911
GP_{IN} Cap (pcph)	4,700		4,700		4,700		4,700
GP_{IN} v/c ratio	0.99		0.79		0.66		0.83
Calculate Operations for Exiting GP Lanes							
GP_{OUT} Vol (pcph)	3,700		3,108		3,911		3,136
GP_{OUT} Cap (pcph)	4,700		4,700		4,700		4,700
GP_{OUT} v/c ratio	0.79		0.66		0.83		0.67
Calculate On Ramp Flow Rate							
On Volume (vph)			685		754		
PHF			0.95		0.94		
Total Lanes			1		1		
Terrain			Level		Level		
Grade %			0.0%		0.0%		
Grade Length (mi)			0.00		0.00		
Truck & Bus %			3.0%		3.0%		
RV %			0.0%		0.0%		
E_T			1.5		1.5		
E_R			1.2		1.2		
f_{HV}			0.985		0.985		
f_P			1.00		1.00		
On Flow (pcph)			732		814		
On Flow (pcphpl)			732		814		

Location	5	6	7	8	9	10	11



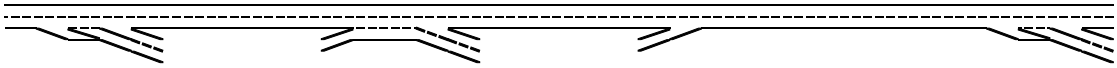
Key

<> Express Lane (HOV)

No Trucks

Name	Pleasant Grove Blvd Off-Ramp	Pleasant Grove Off to On-Ramp	Pleasant Grove On to Blue Oaks Off Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks On to Sunset Off-Ramp	Sunset Blvd Off-Ramp
Calculate On Ramp Roadway Operations							
On Ramp Type					Right		
On Ramp Speed (mph)					45		
On Ramp Cap (pcph)					2,100		
On Ramp v/c ratio					0.39		
Calculate Off Ramp Flow Rate							
Off Volume (vph)	879		1,238				649
PHF	0.95		0.95				0.85
Total Lanes	2		2				2
Terrain	Level		Level				Level
Grade %	0.0%		0.0%				0.0%
Grade Length (mi)	0.00		0.00				0.00
Truck & Bus %	3.0%		3.0%				3.0%
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		0.985				0.985
f_P	1.00		1.00				1.00
Off Flow (pcph)	939		1,323				775
Off Flow (pcphpl)	470		661				387
Calculate Off Ramp Roadway Operations							
Off Ramp Type	Right						Right
Off Ramp Speed	45						45
Off Ramp Cap (pcph)	4,200						4,200
Off Ramp v/c ratio	0.22						0.18
Determine Adjacent Ramp for Three-Lane Mainline Segments with One-Lane Ramps							
Up Type							
Up Distance							
Up Flow (pcph)							
Down Type							
Down Distance							
Down Flow (pcph)							
Calculate Merge Influence Area Operations							
Effective v_P (pcph)					3,097		
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FM} (Eqn 13-3)					0.588		
P_{FM} (Eqn 13-4)							
P_{FM} (Eqn 13-5)							
P_{FM}					1.000		
v_{12} (pcph)					3,097		
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)					3,097		
v_{R12a} (pcph)					3,911		
Merge Speed Index					0.48		
Merge Area Speed					53.9		
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed					53.9		
Merge v/c ratio					0.85		
Merge Density					33.3		
Merge LOS					D		

Location	5	6	7	8	9	10	11



Key

<> Express Lane (HOV)

No Trucks

Name	Pleasant Grove Blvd Off-Ramp	Pleasant Grove Off to On-Ramp	Pleasant Grove On to Blue Oaks Off Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks On to Sunset Off-Ramp	Sunset Blvd Off-Ramp
Calculate Diverge Influence Area Operations							
Effective v_P (pcph)	4,639						3,911
Up Ramp L_{EQ}							
Down Ramp L_{EQ}							
P_{FD} (Eqn 13-9)	0.601						0.627
P_{FD} (Eqn 13-10)							
P_{FD} (Eqn 13-11)							
P_{FD}	1.000						1.000
v_{12} (pcph)	4,639						3,911
v_3 (pcph)							
v_{34} (pcph)							
v_{12a} (pcph)	4,639						3,911
Diverge Speed Index	0.38						0.37
Diverge Area Speed	56.2						56.5
Outer Lanes Volume							
Outer Lanes Speed							
Segment Speed	56.2						56.5
Diverge v/c ratio	1.05						0.89
Diverge Density	30.7						24.4
Diverge LOS	F						C
Summarize Segment Operations							
Segment v/c ratio	1.05	0.79	0.70	0.66	0.85	0.83	0.89
Segment Density	-	29.7	22.8	24.0	33.3	32.3	24.4
Segment LOS	F	D	C	C	D	D	C
Over Capacity	Diverge						

Leisch Method for Weaving Analysis

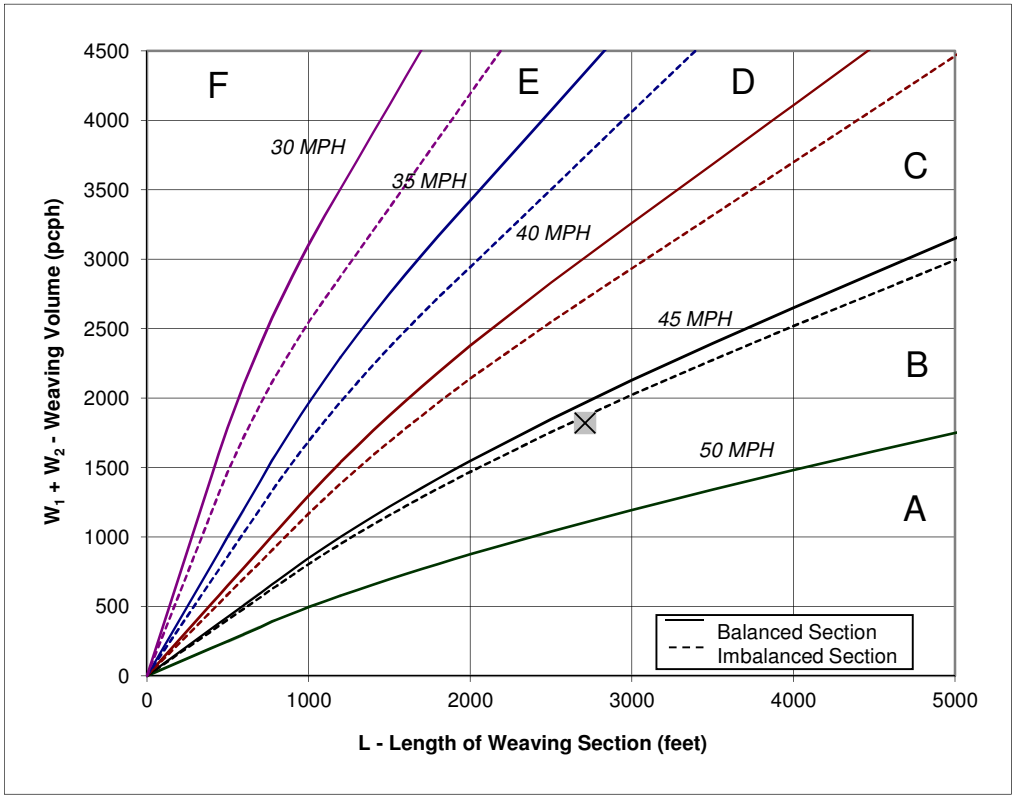
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	2,710

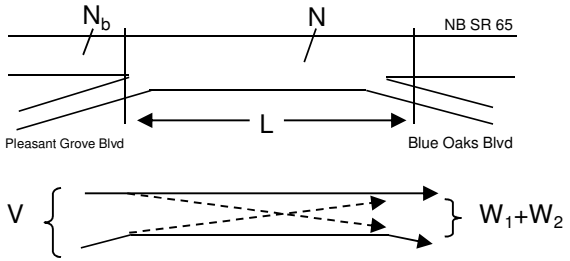
Project Information

Project	Parcel 49
Scenario	Phase 3 PM
Freeway	NB SR 65
On-ramp	Pleasant Grove Blvd
Off-ramp	Blue Oaks Blvd

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	4,127	Volume (vph)*	617	Volume (vph)*	1,170
Truck Percentage	4%	Truck Percentage	4%	Truck Percentage	4%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	4,210	Volume (pcph)	629	Volume (pcph)	1,193



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 50 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) **45.8**
4. Weaving Intensity Factor (k) **1.85**
5. Service Volume (SV, pcph)
   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,582**
6. Level of Service (LOS) **E**

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.

Source: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983.

Location	13	14	15	16	17	18	19	20	21	22

Key

<> Express Lane (HOV)

No Trucks

Name	Sunset Loop On Ramp	Sunset Direct On-Ramp	Sunset Direct Off-Ramp to Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks Blvd On to Pleasant Grove Off	Pleasant Grove Off to On-Ramp	Pleasant Grove Blvd Loop On-Ramp	Pleasant Grove Blvd Direct On-Ramp
Define Freeway Segment										
Type	Merge	Merge	Basic	Diverge	Basic	Merge	Weave	Basic	Merge	Merge
Length (ft)	1,500	1,500	770	1,500	1,680	1,000	3,140	1,610	1,180	1,500
Accel Length	500	1,450				380			550	580
Decel Length				200						
Mainline Volume	2,565	3,043	3,265	3,265	2,628	2,628	3,042	3,523	3,523	3,878
On Ramp Volume	478	222				414	830		355	374
Off Ramp Volume				637			349			
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	3,043	3,265	3,265	3,265	2,628	3,042	3,872	3,523	3,878	4,252
PHF	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
GP Lanes	2	2	2	2	2	2	3	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	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	0.00	0.00	0.00	0.00
Truck & Bus %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	4.2%	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	0.979	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
GP Flow (pcph)	3,415	3,664	3,664	3,664	2,949	3,414	4,393	3,954	4,352	4,772
GP Flow (pcphpl)	1,707	1,832	1,832	1,832	1,475	1,707	1,464	1,977	2,176	2,386
Calculate Speed in General Purpose Lanes										
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.73	0.78	0.78	0.78	0.63	0.73	0.62	0.84	0.93	1.02
Speed (mph)	63.7	62.4	62.4	62.4	64.9	63.7	64.9	60.3	56.5	-
Density (pcphpl)	26.8	29.4	29.4	29.4	22.7	26.8	22.5	32.8	38.5	-
LOS	D	D	D	D	C	D	C	D	E	F
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)	2,869	3,402		3,664		2,947	3,489		3,975	4,374
GP_{IN} Cap (pcph)	4,700	4,700		4,700		4,700	4,700		4,700	4,700
GP_{IN} v/c ratio	0.61	0.72		0.78		0.63	0.74		0.85	0.93
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)	3,415	3,664		2,962		3,414	3,991		4,352	4,772
GP_{OUT} Cap (pcph)	4,700	4,700		4,700		4,700	4,700		4,700	4,700
GP_{OUT} v/c ratio	0.73	0.78		0.63		0.73	0.85		0.93	1.02
Calculate On Ramp Flow Rate										
On Volume (vph)	478	222				414	830		355	374
PHF	0.885	0.854				0.895	0.94		0.95	0.95
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%				2.0%	4.6%		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				0.990	0.978		0.990	0.990
f_P	1.00	1.00				1.00	1.00		1.00	1.00
On Flow (pcph)	546	263				467	903		377	398
On Flow (pcphpl)	546	263				467	903		377	398

Location	13	14	15	16	17	18	19	20	21	22

Key

<> Express Lane (HOV)

No Trucks

Name	Sunset Loop On Ramp	Sunset Direct On-Ramp	Sunset Direct Off-Ramp to Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks Blvd On to Pleasant Grove Off	Pleasant Grove Off to On-Ramp	Pleasant Grove Blvd Loop On-Ramp	Pleasant Grove Blvd Direct On-Ramp
Calculate On Ramp Roadway Operations										
On Ramp Type	Right	Right				Right	Right		Right	Right
On Ramp Speed (mph)	25	45				25	45		25	45
On Ramp Cap (pcph)	1,900	2,100				1,900	2,100		1,900	2,100
On Ramp v/c ratio	0.29	0.13				0.25	0.43		0.20	0.19
Calculate Off Ramp Flow Rate										
Off Volume (vph)				637			349			
PHF				0.927			0.877			
Total Lanes				1			1			
Terrain				Level			Level			
Grade %				0.0%			0.0%			
Grade Length (mi)				0.00			0.00			
Truck & Bus %				4.2%			2.0%			
RV %				0.0%			0.0%			
E_T				1.5			1.5			
E_R				1.2			1.2			
f_{HV}				0.979			0.990			
f_P				1.00			1.00			
Off Flow (pcph)				702			402			
Off Flow (pcphpl)				702			402			
Calculate Off Ramp Roadway Operations										
Off Ramp Type				Right			Right			
Off Ramp Speed				45			45			
Off Ramp Cap (pcph)				2,100			2,100			
Off Ramp v/c ratio				0.33			0.19			
Determine Adjacent Ramp for Three-Lane Mainline Segments with C										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_P (pcph)	2,869	3,402				2,947			3,975	4,374
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)	0.592	0.618				0.588			0.593	0.594
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}	1.000	1.000				1.000			1.000	1.000
v_{12} (pcph)	2,869	3,402				2,947			3,975	4,374
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)	2,869	3,402				2,947			3,975	4,374
v_{R12a} (pcph)	3,415	3,664				3,414			4,352	4,772
Merge Speed Index	0.41	0.34				0.42			0.60	-
Merge Area Speed	55.5	57.1				55.3			51.3	-
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed	55.5	57.1				55.3			51.3	
Merge v/c ratio	0.74	0.80				0.74			0.95	1.04
Merge Density	28.7	24.8				29.5			35.8	-
Merge LOS	D	C				D			E	F

Location	13	14	15	16	17	18	19	20	21	22

Key

<> Express Lane (HOV)

No Trucks

Name	Sunset Loop On Ramp	Sunset Direct On-Ramp	Sunset Direct Off-Ramp to Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks Blvd On to Pleasant Grove Off	Pleasant Grove Off to On-Ramp	Pleasant Grove Blvd Loop On-Ramp	Pleasant Grove Blvd Direct On-Ramp
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)				3,664						
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)				0.636						
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}				1.000						
v_{12} (pcph)				3,664						
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				3,664						
Diverge Speed Index				0.36						
Diverge Area Speed				56.7						
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				56.7						
Diverge v/c ratio				0.83						
Diverge Density				34.0						
Diverge LOS				D						
Summarize Segment Operations										
Segment v/c ratio	0.74	0.80	0.78	0.83	0.63	0.74	0.66	0.84	0.95	1.04
Segment Density	28.7	24.8	29.4	34.0	22.7	29.5	22.5	32.8	35.8	-
Segment LOS	D	C	D	D	C	D	C	D	E	F
Over Capacity										Segment GP Lanes Out GP Lanes Merge

Leisch Method for Weaving Analysis

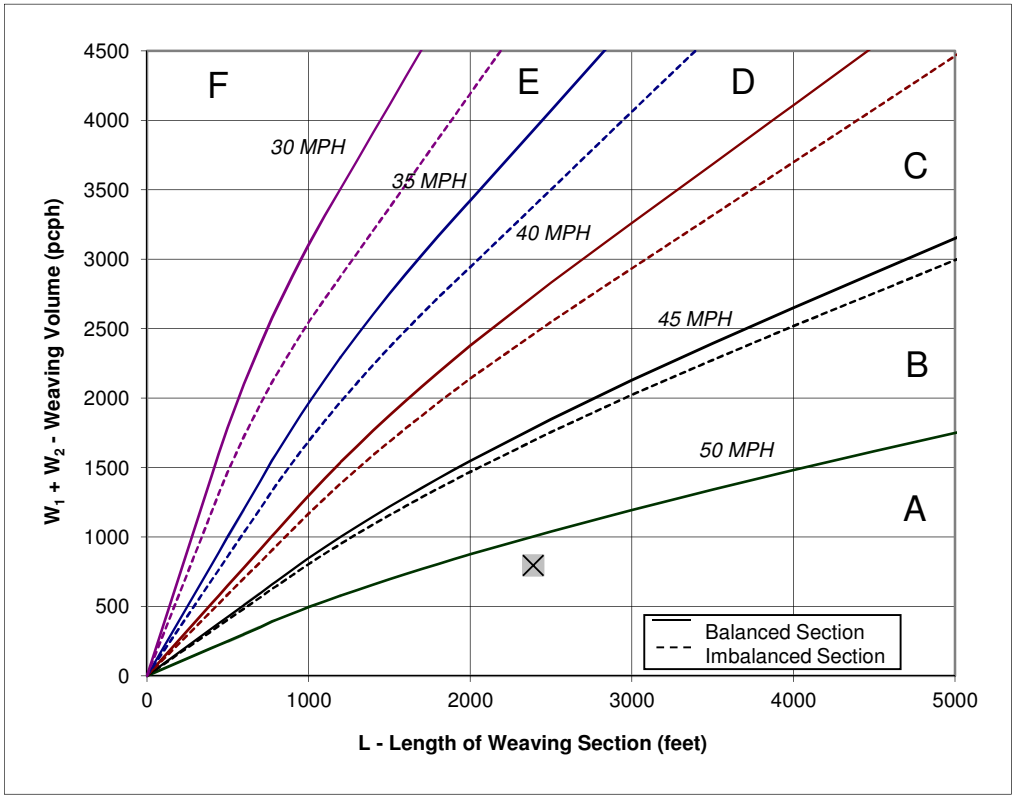
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	2,390

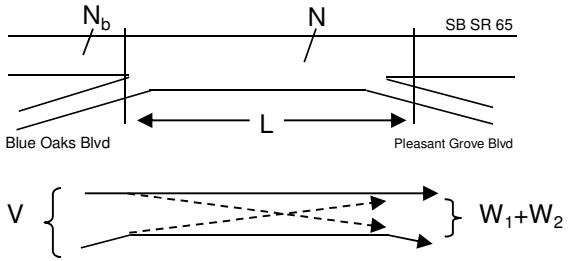
Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	3,872	Volume (vph)*	631	Volume (vph)*	150
Truck Percentage	4%	Truck Percentage	4%	Truck Percentage	4%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	3,949	Volume (pcph)	643	Volume (pcph)	153

Project Information

Project	Parcel 49
Scenario	Phase 3 AM
Freeway	SB SR 65
On-ramp	Blue Oaks Blvd
Off-ramp	Pleasant Grove Blvd



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 50 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)	51.3
4. Weaving Intensity Factor (k)	1.00
5. Service Volume (SV, pcph) $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$	1,316
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.

Source: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983.

Location	13	14	15	16	17	18	19	20	21	22

Key

<> Express Lane (HOV)

No Trucks

Name	Sunset Loop On Ramp	Sunset Direct On-Ramp	Sunset Direct Off-Ramp to Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks Blvd On to Pleasant Grove Off	Pleasant Grove Off to On-Ramp	Pleasant Grove Blvd Loop On-Ramp	Pleasant Grove Blvd Direct On-Ramp
Define Freeway Segment										
Type	Merge	Merge	Basic	Diverge	Basic	Merge	Weave	Basic	Merge	Merge
Length (ft)	1,500	1,500	770	1,500	1,680	1,000	3,140	1,610	1,180	1,500
Accel Length	500	1,450				380			550	580
Decel Length				200						
Mainline Volume	1,763	2,440	2,983	2,983	2,283	2,283	2,661	3,252	3,252	3,588
On Ramp Volume	677	543				378	1,103		336	485
Off Ramp Volume				700			512			
Express Lane Volume										
EL On Ramp Volume										
EL Off Ramp Volume										
Calculate Flow Rate in General Purpose Lanes (GP)										
GP Volume (vph)	2,440	2,983	2,983	2,983	2,283	2,661	3,764	3,252	3,588	4,073
PHF	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
GP Lanes	2	2	2	2	2	2	3	2	2	2
Terrain	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Grade %	0.0%	0.0%	0.0%	0.0%	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	0.00	0.00	0.00	0.00
Truck & Bus %	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	4.2%	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	0.979	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
GP Flow (pcph)	2,738	3,348	3,348	3,348	2,562	2,986	4,270	3,649	4,027	4,571
GP Flow (pcphpl)	1,369	1,674	1,674	1,674	1,281	1,493	1,423	1,825	2,013	2,285
Calculate Speed in General Purpose Lanes										
FFS Curve	65	65	65	65	65	65	65	65	65	65
Calculate Operations in General Purpose Lanes										
v/c ratio	0.58	0.71	0.71	0.71	0.55	0.64	0.61	0.78	0.86	0.97
Speed (mph)	65.0	63.9	63.9	63.9	65.0	64.9	65.0	62.4	59.7	53.9
Density (pcphpl)	21.1	26.2	26.2	26.2	19.7	23.0	21.9	29.2	33.7	42.4
LOS	C	D	D	D	C	C	C	D	D	E
Calculate Operations for Entering GP Lanes										
GP_{IN} Vol (pcph)	1,797	2,665		3,348		2,502	2,992		3,668	4,053
GP_{IN} Cap (pcph)	4,700	4,700		4,700		4,700	4,700		4,700	4,700
GP_{IN} v/c ratio	0.38	0.57		0.71		0.53	0.64		0.78	0.86
Calculate Operations for Exiting GP Lanes										
GP_{OUT} Vol (pcph)	2,738	3,348		2,575		2,986	3,632		4,027	4,571
GP_{OUT} Cap (pcph)	4,700	4,700		4,700		4,700	4,700		4,700	4,700
GP_{OUT} v/c ratio	0.58	0.71		0.55		0.64	0.77		0.86	0.97
Calculate On Ramp Flow Rate										
On Volume (vph)	677	543				378	1,103		336	485
PHF	0.73	0.808				0.792	0.876		0.95	0.95
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 %	3.0%	3.0%				3.0%	3.0%		3.0%	3.0%
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}	0.985	0.985				0.985	0.985		0.985	0.985
f_P	1.00	1.00				1.00	1.00		1.00	1.00
On Flow (pcph)	941	682				484	1,278		359	518
On Flow (pcphpl)	941	682				484	1,278		359	518

Location	13	14	15	16	17	18	19	20	21	22

Key

<> Express Lane (HOV)

No Trucks

Name	Sunset Loop On Ramp	Sunset Direct On-Ramp	Sunset Direct Off-Ramp to Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks Blvd On to Pleasant Grove Off	Pleasant Grove Off to On-Ramp	Pleasant Grove Blvd Loop On-Ramp	Pleasant Grove Blvd Direct On-Ramp
Calculate On Ramp Roadway Operations										
On Ramp Type	Right	Right				Right	Right		Right	Right
On Ramp Speed (mph)	25	45				25	45		25	45
On Ramp Cap (pcph)	1,900	2,100				1,900	2,100		1,900	2,100
On Ramp v/c ratio	0.50	0.32				0.25	0.61		0.19	0.25
Calculate Off Ramp Flow Rate										
Off Volume (vph)				700			512			
PHF				0.92			0.814			
Total Lanes				1			1			
Terrain				Level			Level			
Grade %				0.0%			0.0%			
Grade Length (mi)				0.00			0.00			
Truck & Bus %				3.0%			3.0%			
RV %				0.0%			0.0%			
E_T				1.5			1.5			
E_R				1.2			1.2			
f_{HV}				0.985			0.985			
f_P				1.00			1.00			
Off Flow (pcph)				772			638			
Off Flow (pcphpl)				772			638			
Calculate Off Ramp Roadway Operations										
Off Ramp Type				Right			Right			
Off Ramp Speed				45			45			
Off Ramp Cap (pcph)				2,100			2,100			
Off Ramp v/c ratio				0.37			0.30			
Determine Adjacent Ramp for Three-Lane Mainline Segments with C										
Up Type										
Up Distance										
Up Flow (pcph)										
Down Type										
Down Distance										
Down Flow (pcph)										
Calculate Merge Influence Area Operations										
Effective v_P (pcph)	1,797	2,665				2,502			3,668	4,053
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FM} (Eqn 13-3)	0.592	0.618				0.588			0.593	0.594
P_{FM} (Eqn 13-4)										
P_{FM} (Eqn 13-5)										
P_{FM}	1.000	1.000				1.000			1.000	1.000
v_{12} (pcph)	1,797	2,665				2,502			3,668	4,053
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)	1,797	2,665				2,502			3,668	4,053
v_{R12a} (pcph)	2,738	3,348				2,986			4,027	4,571
Merge Speed Index	0.36	0.30				0.38			0.51	0.65
Merge Area Speed	56.8	58.1				56.3			53.2	50.2
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed	56.8	58.1				56.3			53.2	50.2
Merge v/c ratio	0.60	0.73				0.65			0.88	0.99
Merge Density	23.3	22.2				26.2			33.3	37.3
Merge LOS	C	C				C			D	E

Location	13	14	15	16	17	18	19	20	21	22

Key

<> Express Lane (HOV)

No Trucks

Name	Sunset Loop On Ramp	Sunset Direct On-Ramp	Sunset Direct Off-Ramp to Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off-Ramp	Blue Oaks Blvd Off to On-Ramp	Blue Oaks Blvd Loop On-Ramp	Blue Oaks Blvd On to Pleasant Grove Off	Pleasant Grove Off to On-Ramp	Pleasant Grove Blvd Loop On-Ramp	Pleasant Grove Blvd Direct On-Ramp
Calculate Diverge Influence Area Operations										
Effective v_P (pcph)				3,348						
Up Ramp L_{EQ}										
Down Ramp L_{EQ}										
P_{FD} (Eqn 13-9)				0.641						
P_{FD} (Eqn 13-10)										
P_{FD} (Eqn 13-11)										
P_{FD}				1.000						
v_{12} (pcph)				3,348						
v_3 (pcph)										
v_{34} (pcph)										
v_{12a} (pcph)				3,348						
Diverge Speed Index				0.37						
Diverge Area Speed				56.5						
Outer Lanes Volume										
Outer Lanes Speed										
Segment Speed				56.5						
Diverge v/c ratio				0.76						
Diverge Density				31.2						
Diverge LOS				D						
Summarize Segment Operations										
Segment v/c ratio	0.60	0.73	0.71	0.76	0.55	0.65	0.67	0.78	0.88	0.99
Segment Density	23.3	22.2	26.2	31.2	19.7	26.2	21.9	29.2	33.3	37.3
Segment LOS	C	C	D	D	C	C	C	D	D	E
Over Capacity										

Leisch Method for Weaving Analysis

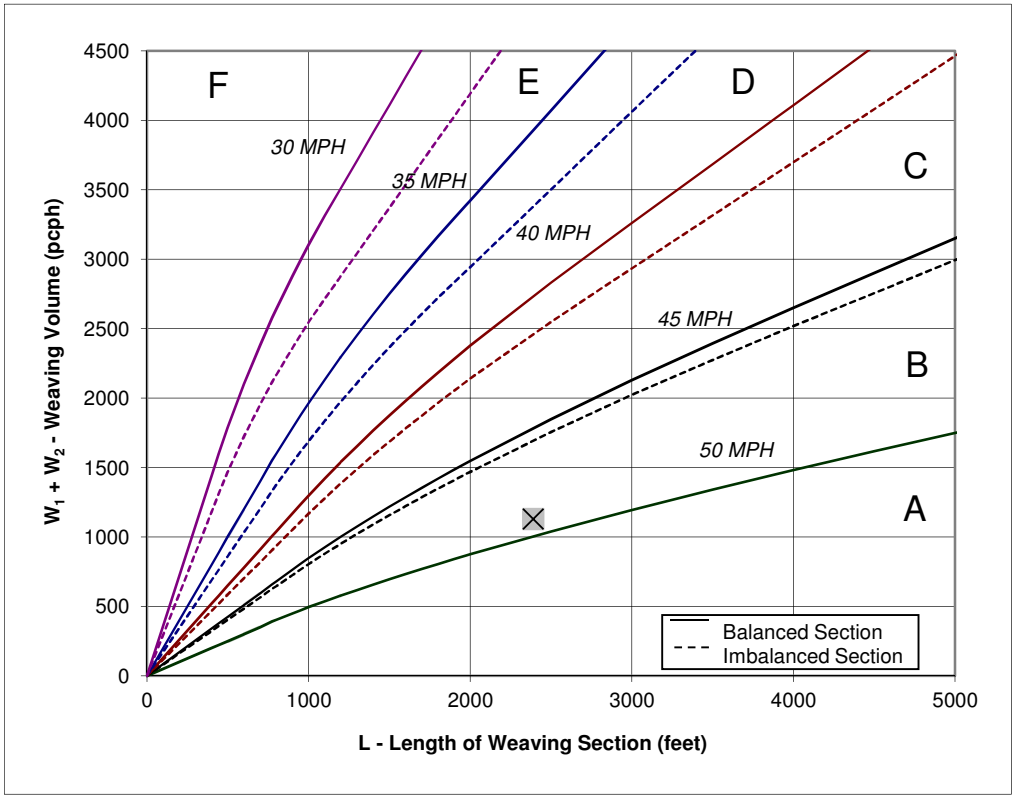
Data Input

Number of Entering Mainline Lanes	N_b	2
Number of Lanes in Weaving Section	N	3
Length of Weaving Section (feet)	L	2,390

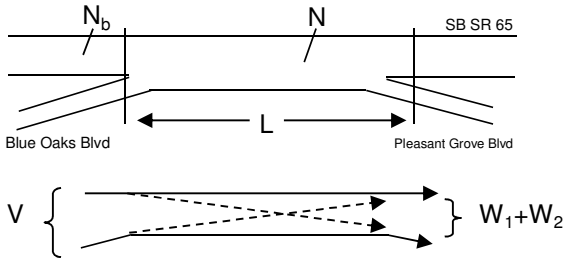
Project Information

Project	Parcel 49
Scenario	Phase 3 PM
Freeway	SB SR 65
On-ramp	Blue Oaks Blvd
Off-ramp	Pleasant Grove Blvd

Total Weaving Section (V)		On-ramp to Mainline (W_1)		Mainline to Off-ramp (W_2)	
Volume (vph)*	3,764	Volume (vph)*	849	Volume (vph)*	258
Truck Percentage	4%	Truck Percentage	4%	Truck Percentage	4%
PCE for Trucks	1.5	PCE for Trucks	1.5	PCE for Trucks	1.5
Volume (pcph)	3,839	Volume (pcph)	866	Volume (pcph)	263



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 50 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) **49.2**
4. Weaving Intensity Factor (k) **1.11**
5. Service Volume (SV, pcph)
   $SV = (1/N)*[V + (k - 1)*\min(W_1, W_2)]$ **1,289**
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.

Source: *Completion of Procedures for Analysis and Design of Traffic Weaving Sections*, Jack E. Leisch & Associates, September 1983.

Intersection: 2: Washington Blvd & Blue Oaks Blvd

Movement	EB	EB	EB	EB	EB	B24	B24	WB	WB	WB	WB	NB
Directions Served	T	T	TR	R	>	T	T	L	L	T	T	L
Maximum Queue (ft)	257	356	436	432	338	162	340	189	201	238	172	104
Average Queue (ft)	189	282	370	381	204	26	132	140	149	105	84	66
95th Queue (ft)	276	400	500	507	463	168	422	217	234	264	188	114
Link Distance (ft)	394	394	394	394		464	464			1276	1276	
Upstream Blk Time (%)		0	13	11	1		0					
Queuing Penalty (veh)		2	74	60	0		3					
Storage Bay Dist (ft)					230			175	175			250
Storage Blk Time (%)				48				3	8	0	0	
Queuing Penalty (veh)				157				11	26	0	0	

Intersection: 2: Washington Blvd & Blue Oaks Blvd

Movement	NB	NB	SB	SB	SB	SB
Directions Served	L	R>	<L	T	T	R
Maximum Queue (ft)	123	379	149	238	215	56
Average Queue (ft)	76	275	75	149	128	11
95th Queue (ft)	129	449	166	242	240	82
Link Distance (ft)	413	413		633	633	
Upstream Blk Time (%)		6				
Queuing Penalty (veh)		22				
Storage Bay Dist (ft)			205			165
Storage Blk Time (%)			0	2	3	0
Queuing Penalty (veh)			1	2	9	0

Intersection: 3: Hwy 65 NB Ramps & Blue Oaks Blvd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	T	L	T	T	L	R
Maximum Queue (ft)	245	246	92	222	244	110	129
Average Queue (ft)	151	155	55	129	161	58	81
95th Queue (ft)	252	259	100	220	249	113	140
Link Distance (ft)	1276	1276		3850	3850		1826
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			260			129	
Storage Blk Time (%)				0		0	1
Queuing Penalty (veh)				0		1	2

Intersection: 6: Pleasant Grove Blvd & Hwy-65 SB Ramps

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	TR	T	T	T	L	LTR	R
Maximum Queue (ft)	159	167	285	238	160	175	116	247	152
Average Queue (ft)	56	50	105	118	70	95	42	153	57
95th Queue (ft)	154	156	277	251	179	202	128	251	158
Link Distance (ft)	308	308	308	877	877	877		840	
Upstream Blk Time (%)			1						
Queuing Penalty (veh)			3						
Storage Bay Dist (ft)							250		350
Storage Blk Time (%)								1	
Queuing Penalty (veh)								2	

Intersection: 7: Hwy-65 NB Ramps & Pleasant Grove Blvd

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	NB
Directions Served	T	T	T	L	T	T	T	L	L	L	R	R
Maximum Queue (ft)	239	222	288	143	155	147	211	150	140	141	115	91
Average Queue (ft)	117	107	157	86	71	60	113	104	74	96	75	50
95th Queue (ft)	246	226	294	148	150	146	220	161	150	159	121	97
Link Distance (ft)	877	877	877		695	695	695			1617	1617	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)				250				420	420			420
Storage Blk Time (%)			1									
Queuing Penalty (veh)			1									

Intersection: 2: Washington Blvd & Blue Oaks Blvd

Movement	EB	EB	EB	EB	EB	B24	B24	WB	WB	WB	WB	WB
Directions Served	T	T	TR	R	>	T	T	L	L	T	T	R
Maximum Queue (ft)	314	409	462	470	394	303	472	200	225	931	873	29
Average Queue (ft)	229	346	419	431	259	63	230	195	220	594	516	4
95th Queue (ft)	330	441	480	511	524	293	548	210	241	1015	957	62
Link Distance (ft)	394	394	394	394		464	464			1271	1271	
Upstream Blk Time (%)	0	1	23	23	1	0	3					
Queuing Penalty (veh)	1	6	144	144	0	0	21					
Storage Bay Dist (ft)					230			175	175			275
Storage Blk Time (%)				66				51	70	1	0	
Queuing Penalty (veh)				205				176	241	3	1	

Intersection: 2: Washington Blvd & Blue Oaks Blvd

Movement	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	R	R>	<L	T	T	R
Maximum Queue (ft)	169	194	263	290	198	221	182	38
Average Queue (ft)	120	137	177	214	125	146	115	8
95th Queue (ft)	192	210	293	330	212	222	194	71
Link Distance (ft)		411	411			633	633	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	250			300	205			165
Storage Blk Time (%)		0	1	2	1	1	1	0
Queuing Penalty (veh)		1	3	5	2	1	3	0

Intersection: 3: Hwy 65 NB Ramps & Blue Oaks Blvd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	T	L	T	T	L	R
Maximum Queue (ft)	327	334	140	240	280	122	279
Average Queue (ft)	236	241	66	148	176	47	165
95th Queue (ft)	350	353	139	241	272	133	289
Link Distance (ft)	1271	1271		3850	3850		1826
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			260			129	
Storage Blk Time (%)				0		0	13
Queuing Penalty (veh)				1		0	11

Intersection: 6: Pleasant Grove Blvd & Hwy-65 SB Ramps

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	TR	T	T	T	L	LTR	R
Maximum Queue (ft)	293	293	379	263	226	231	153	284	209
Average Queue (ft)	155	143	245	148	114	144	63	194	104
95th Queue (ft)	343	328	462	276	235	246	170	284	216
Link Distance (ft)	308	308	308	877	877	877		840	
Upstream Blk Time (%)	2	1	6						
Queuing Penalty (veh)	12	11	52						
Storage Bay Dist (ft)							250		350
Storage Blk Time (%)						0	0	2	
Queuing Penalty (veh)						1	0	5	

Intersection: 7: Hwy-65 NB Ramps & Pleasant Grove Blvd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	T	T	T	R	L	T	T	T	L	L	L	R
Maximum Queue (ft)	478	422	560	384	235	191	165	252	142	158	189	237
Average Queue (ft)	349	297	378	181	160	115	106	170	84	76	123	152
95th Queue (ft)	542	489	635	496	249	213	198	286	152	163	193	244
Link Distance (ft)	877	877	877			695	695	695			1617	1617
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)				300	250				420	420		
Storage Blk Time (%)			13		0	0						
Queuing Penalty (veh)			62		2	0						

Intersection: 7: Hwy-65 NB Ramps & Pleasant Grove Blvd

Movement	NB
Directions Served	R
Maximum Queue (ft)	188
Average Queue (ft)	116
95th Queue (ft)	199
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	420
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: Washington Blvd & Blue Oaks Blvd

Movement	EB	EB	EB	EB	EB	B24	B24	B24	WB	WB	WB	WB
Directions Served	T	T	TR	R	>	T	T	T	L	L	T	T
Maximum Queue (ft)	479	536	539	483	381	179	196	205	300	350	1192	996
Average Queue (ft)	245	336	357	315	141	20	25	28	198	211	386	121
95th Queue (ft)	451	558	542	485	328	142	153	162	361	420	1184	514
Link Distance (ft)	463	463	463	463		424	424	424			1236	1236
Upstream Blk Time (%)	1	9	8	1		0	0	0			3	0
Queuing Penalty (veh)	2	32	28	4		1	1	1			21	0
Storage Bay Dist (ft)					230				250	250		
Storage Blk Time (%)				32	3				27	23	0	
Queuing Penalty (veh)				97	10				69	58	1	

Intersection: 2: Washington Blvd & Blue Oaks Blvd

Movement	NB	NB	NB	NB	SB	SB	SB	SB	B25
Directions Served	L	L	R	R>	<L	T	T	R	T
Maximum Queue (ft)	142	156	190	195	229	353	303	138	5
Average Queue (ft)	72	92	76	79	111	140	110	16	0
95th Queue (ft)	132	151	166	171	210	276	241	99	6
Link Distance (ft)		416	416			465	465		1237
Upstream Blk Time (%)						0	0		
Queuing Penalty (veh)						0	0		
Storage Bay Dist (ft)	250			250	205			165	
Storage Blk Time (%)					1	6	6	0	
Queuing Penalty (veh)					1	9	6	0	

Intersection: 3: Hwy 65 NB Ramps & Blue Oaks Blvd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	T	L	T	T	L	R
Maximum Queue (ft)	249	264	285	737	563	142	201
Average Queue (ft)	116	134	80	214	176	58	75
95th Queue (ft)	212	233	213	608	514	121	141
Link Distance (ft)	1236	1236		3803	3803		1831
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			260			129	
Storage Blk Time (%)			0	9		1	0
Queuing Penalty (veh)			0	9		4	1

Intersection: 2: Washington Blvd/Washington & Blue Oaks Blvd

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	T	T	TR	R	>	L	L	T	T	L	L	R
Maximum Queue (ft)	309	400	414	378	93	122	108	146	153	193	217	408
Average Queue (ft)	133	198	253	216	40	46	40	57	60	106	131	204
95th Queue (ft)	232	346	373	333	74	95	87	120	124	169	194	333
Link Distance (ft)	463	463	463	463				1236	1236		416	416
Upstream Blk Time (%)		0	0	0								0
Queuing Penalty (veh)		0	0	0								2
Storage Bay Dist (ft)					230	175	175			250		
Storage Blk Time (%)				4			0	0		0	0	2
Queuing Penalty (veh)				5			0	0		0	0	11

Intersection: 2: Washington Blvd/Washington & Blue Oaks Blvd

Movement	NB	SB	SB	SB	SB
Directions Served	R>	<L	T	T	R
Maximum Queue (ft)	348	176	162	116	36
Average Queue (ft)	229	86	83	42	1
95th Queue (ft)	327	157	139	95	16
Link Distance (ft)			465	465	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	250	205			165
Storage Blk Time (%)	5	0	0	0	
Queuing Penalty (veh)	18	0	0	0	

Intersection: 3: Hwy 65 NB Ramps & Blue Oaks Blvd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	T	L	T	T	L	R
Maximum Queue (ft)	209	220	97	118	139	84	121
Average Queue (ft)	90	114	45	51	65	26	58
95th Queue (ft)	167	188	78	98	120	59	94
Link Distance (ft)	1236	1236		3803	3803		1831
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			260			129	
Storage Blk Time (%)							0
Queuing Penalty (veh)							0