APPENDIX P
TRAFFIC ANALYSES

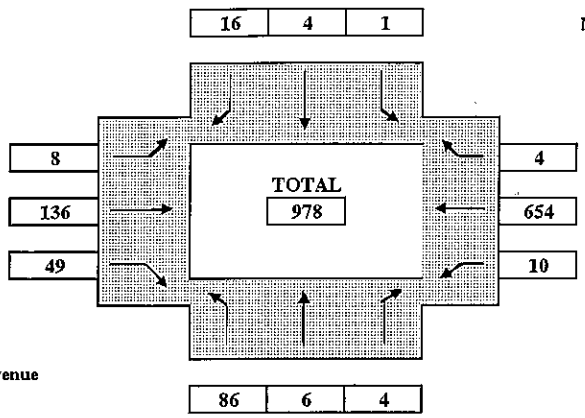
Appendix P1
Existing Traffic Volumes

BAYMETRICS TRAFFIC RESOURCES

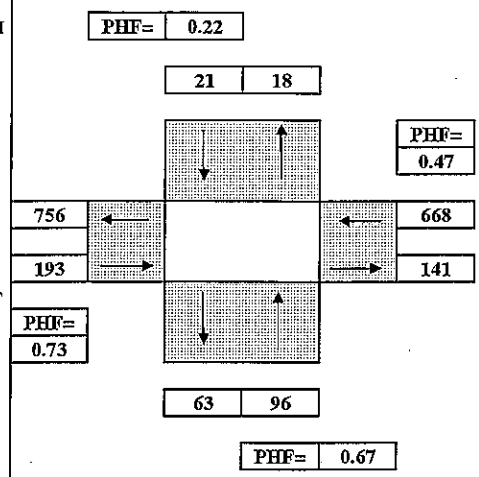
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	Mirant Power Plant	SURVEY DATE:	11/13/2007	DAY:	Tuesday
N-S Approach:	Minaker Drive	SURVEY TIME:	7:00 AM	TO	9:00 AM
E-W Approach:	Wilbur Avenue	CITY:	Contra Costa Site	FILE:	MKDWBA-AM

PEAK HOUR
07:15 AM TO 08:15 AM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
From		To	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	TOTAL
SURVEY DATA															
7:00 AM	---	7:15 AM	28	3	1	0	1	7	2	42	7	2	153	1	*247*
7:15 AM	---	7:30 AM	56	6	2	0	2	14	4	84	14	4	306	2	*494*
7:30 AM	---	7:45 AM	80	9	3	0	3	19	6	120	18	6	459	3	*726*
7:45 AM	---	8:00 AM	97	9	4	1	4	22	8	149	37	9	633	4	*977*
8:00 AM	---	8:15 AM	114	9	5	1	5	23	10	178	56	12	807	5	*1,225*
8:15 AM	---	8:30 AM	143	10	6	3	5	25	13	209	68	14	920	6	*1,422*
8:30 AM	---	8:45 AM	168	11	7	5	5	27	16	240	80	16	1,033	7	*1,615*
8:45 AM	---	9:00 AM	201	12	9	8	6	31	17	273	112	19	1,086	9	*1,783*
TOTAL BY PERIOD															
7:00 AM	---	7:15 AM	28	3	1	0	1	7	2	42	7	2	153	1	*247*
7:15 AM	---	7:30 AM	28	3	1	0	1	7	2	42	7	2	153	1	*247*
7:30 AM	---	7:45 AM	24	3	1	0	1	5	2	36	4	2	153	1	*232*
7:45 AM	---	8:00 AM	17	0	1	1	1	3	2	29	19	3	174	1	*251*
8:00 AM	---	8:15 AM	17	0	1	0	1	1	2	29	19	3	174	1	*248*
8:15 AM	---	8:30 AM	29	1	1	2	0	2	3	31	12	2	113	1	*197*
8:30 AM	---	8:45 AM	25	1	1	2	0	2	3	31	12	2	113	1	*193*
8:45 AM	---	9:00 AM	33	1	2	3	1	4	1	33	32	3	53	2	*168*
HOURLY TOTALS															
7:00 AM	---	8:00 AM	97	9	4	1	4	22	8	149	37	9	633	4	*977*
7:15 AM	---	8:15 AM	86	6	4	1	4	16	8	136	49	10	654	4	*978*
7:30 AM	---	8:30 AM	87	4	4	3	3	11	9	125	54	10	614	4	*928*
7:45 AM	---	8:45 AM	88	2	4	5	2	8	10	120	62	10	574	4	*889*
8:00 AM	---	9:00 AM	104	3	5	7	2	9	9	124	75	10	453	5	*806*

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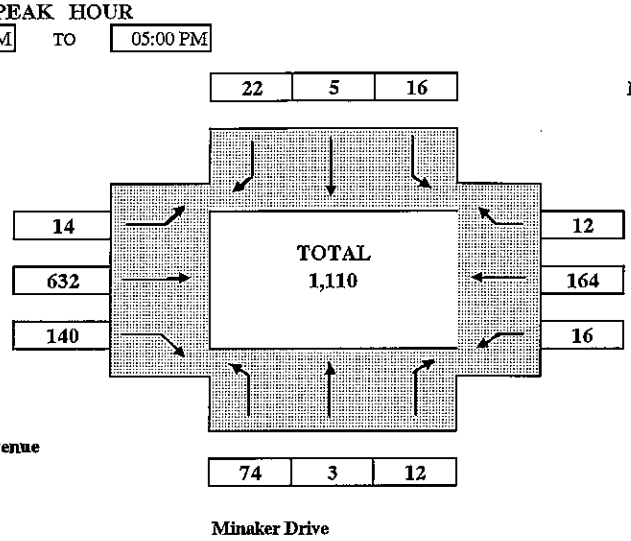
BAYMETRICS TRAFFIC RESOURCES

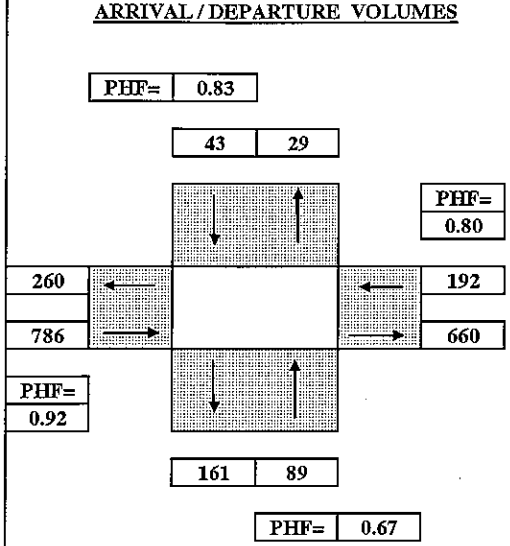
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	Mirant Power Plant	SURVEY DATE:	11/13/2007	DAY:	Tuesday
N-S Approach:	Minaker Drive	SURVEY TIME:	4:00 PM	TO	6:00 PM
E-W Approach:	Wilbur Avenue	CITY:	Contra Costa Site	FILE:	MKDWBA-PM

PEAK HOUR
04:00 PM TO 05:00 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
From		To	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	TOTAL
SURVEY DATA															
4:00 PM	---	4:15 PM	16	1	6	6	1	4	5	156	30	4	36	6	*271*
4:15 PM	---	4:30 PM	34	2	10	10	2	7	10	304	60	8	78	12	*537*
4:30 PM	---	4:45 PM	53	3	11	13	4	15	11	476	100	12	119	12	*829*
4:45 PM	---	5:00 PM	74	3	12	16	5	22	14	632	140	16	164	12	*1,110*
5:00 PM	---	5:15 PM	85	3	13	17	7	27	16	743	173	19	193	12	*1,308*
5:15 PM	---	5:30 PM	98	3	14	19	8	32	16	842	206	22	223	12	*1,495*
5:30 PM	---	5:45 PM	124	3	17	20	8	35	19	980	246	26	276	15	*1,769*
5:45 PM	---	6:00 PM	152	3	22	22	8	38	22	1,122	289	30	327	18	*2,053*
TOTAL BY PERIOD															
4:00 PM	---	4:15 PM	16	1	6	6	1	4	5	156	30	4	36	6	*271*
4:15 PM	---	4:30 PM	18	1	4	4	1	3	5	148	30	4	42	6	*266*
4:30 PM	---	4:45 PM	19	1	1	3	2	8	1	172	40	4	41	0	*292*
4:45 PM	---	5:00 PM	21	0	1	3	1	7	3	156	40	4	45	0	*281*
5:00 PM	---	5:15 PM	11	0	1	1	2	5	2	111	33	3	29	0	*198*
5:15 PM	---	5:30 PM	13	0	1	2	1	5	0	99	33	3	30	0	*187*
5:30 PM	---	5:45 PM	26	0	3	1	0	3	3	138	40	4	53	3	*274*
5:45 PM	---	6:00 PM	28	0	5	2	0	3	3	142	43	4	51	3	*284*
HOURLY TOTALS															
4:00 PM	---	5:00 PM	74	3	12	16	5	22	14	632	140	16	164	12	*1,110*
4:15 PM	---	5:15 PM	69	2	7	11	6	23	11	587	143	15	157	6	*1,037*
4:30 PM	---	5:30 PM	64	1	4	9	6	25	6	538	146	14	145	0	*958*
4:45 PM	---	5:45 PM	71	0	6	7	4	20	8	504	146	14	157	3	*940*
5:00 PM	---	6:00 PM	78	0	10	6	3	16	8	490	149	14	163	6	*943*

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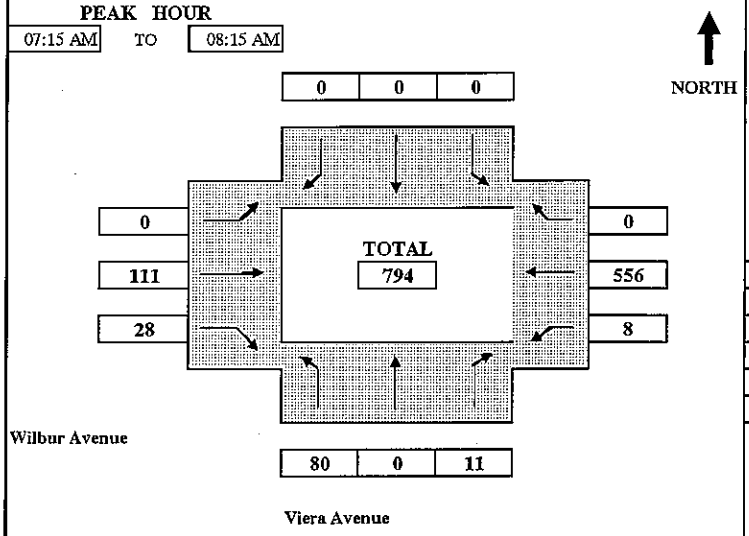
BAYMETRICS TRAFFIC RESOURCES

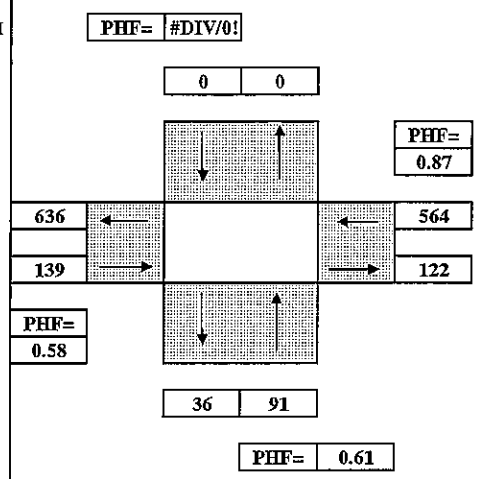
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	Mirant Power Plant	SURVEY DATE:	11/13/2007	DAY:	Tuesday
N-S Approach:	Viera Avenue	SURVEY TIME:	7:00 AM	TO	9:00 AM
E-W Approach:	Wilbur Avenue	CITY:	Contra Costa Site	FILE:	VAAWBA-AM

PEAK HOUR
07:15 AM TO 08:15 AM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
From		To	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	TOTAL
SURVEY DATA															
7:00 AM	---	7:15 AM	14	0	2	0	0	0	0	29	3	2	128	0	*178*
7:15 AM	---	7:30 AM	28	0	4	0	0	0	0	58	6	4	256	0	*356*
7:30 AM	---	7:45 AM	61	0	8	0	0	0	0	87	10	6	416	0	*588*
7:45 AM	---	8:00 AM	77	0	10	0	0	0	0	109	24	8	542	0	*770*
8:00 AM	---	8:15 AM	94	0	13	0	0	0	0	140	31	10	684	0	*972*
8:15 AM	---	8:30 AM	103	0	15	0	0	0	0	177	34	11	763	0	*1,103*
8:30 AM	---	8:45 AM	112	0	17	0	0	0	0	214	37	12	842	0	*1,234*
8:45 AM	---	9:00 AM	121	0	19	0	0	0	0	271	40	13	921	0	*1,385*
TOTAL BY PERIOD															
7:00 AM	---	7:15 AM	14	0	2	0	0	0	0	29	3	2	128	0	*178*
7:15 AM	---	7:30 AM	14	0	2	0	0	0	0	29	3	2	128	0	*178*
7:30 AM	---	7:45 AM	33	0	4	0	0	0	0	29	4	2	160	0	*232*
7:45 AM	---	8:00 AM	16	0	2	0	0	0	0	22	14	2	126	0	*182*
8:00 AM	---	8:15 AM	17	0	3	0	0	0	0	31	7	2	142	0	*202*
8:15 AM	---	8:30 AM	9	0	2	0	0	0	0	37	3	1	79	0	*131*
8:30 AM	---	8:45 AM	9	0	2	0	0	0	0	37	3	1	79	0	*131*
8:45 AM	---	9:00 AM	9	0	2	0	0	0	0	57	3	1	79	0	*151*
HOURLY TOTALS															
7:00 AM	---	8:00 AM	77	0	10	0	0	0	0	109	24	8	542	0	*770*
7:15 AM	---	8:15 AM	80	0	11	0	0	0	0	111	28	8	556	0	*794*
7:30 AM	---	8:30 AM	75	0	11	0	0	0	0	119	28	7	507	0	*747*
7:45 AM	---	8:45 AM	51	0	9	0	0	0	0	127	27	6	426	0	*646*
8:00 AM	---	9:00 AM	44	0	9	0	0	0	0	162	16	5	379	0	*615*

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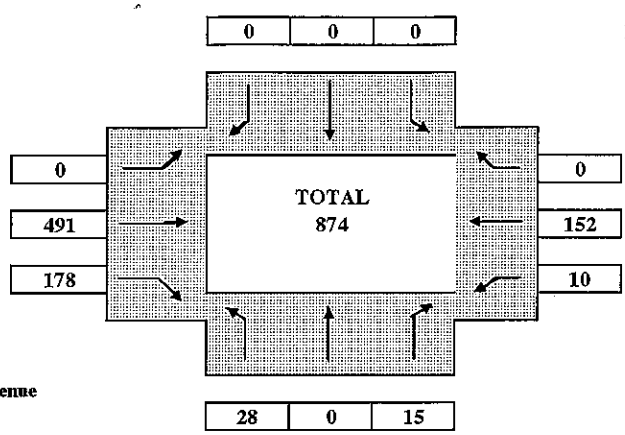
BAYMETRICS TRAFFIC RESOURCES

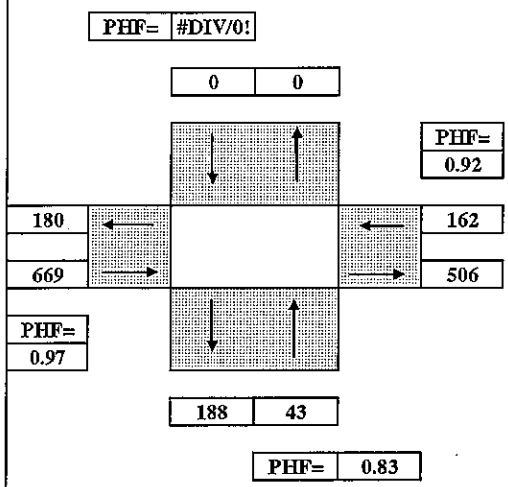
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	Mirant Power Plant	SURVEY DATE:	11/13/2007	DAY:	Tuesday
N-S Approach:	Viera Avenue	SURVEY TIME:	4:00 PM	TO	6:00 PM
E-W Approach:	Wilbur Avenue	CITY:	Contra Costa Site	FILE:	VAAWBA-PM

PEAK HOUR
04:15 PM TO 05:15 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
From		To	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	TOTAL
SURVEY DATA															
4:00 PM	---	4:15 PM	4	0	6	0	0	0	0	124	36	1	31	0	*202*
4:15 PM	---	4:30 PM	7	0	11	0	0	0	0	251	71	2	67	0	*409*
4:30 PM	---	4:45 PM	16	0	15	0	0	0	0	370	119	5	107	0	*632*
4:45 PM	---	5:00 PM	24	0	18	0	0	0	0	491	166	8	148	0	*855*
5:00 PM	---	5:15 PM	32	0	21	0	0	0	0	615	214	11	183	0	*1,076*
5:15 PM	---	5:30 PM	36	0	25	0	0	0	0	724	259	17	205	0	*1,266*
5:30 PM	---	5:45 PM	42	0	29	0	0	0	0	832	305	23	229	0	*1,460*
5:45 PM	---	6:00 PM	46	0	36	0	0	0	0	929	340	25	256	0	*1,632*
TOTAL BY PERIOD															
4:00 PM	---	4:15 PM	4	0	6	0	0	0	0	124	36	1	31	0	*202*
4:15 PM	---	4:30 PM	3	0	5	0	0	0	0	127	35	1	36	0	*207*
4:30 PM	---	4:45 PM	9	0	4	0	0	0	0	119	48	3	40	0	*223*
4:45 PM	---	5:00 PM	8	0	3	0	0	0	0	121	47	3	41	0	*223*
5:00 PM	---	5:15 PM	8	0	3	0	0	0	0	124	48	3	35	0	*221*
5:15 PM	---	5:30 PM	4	0	4	0	0	0	0	109	45	6	22	0	*190*
5:30 PM	---	5:45 PM	6	0	4	0	0	0	0	108	46	6	24	0	*194*
5:45 PM	---	6:00 PM	4	0	7	0	0	0	0	97	35	2	27	0	*172*
HOURLY TOTALS															
4:00 PM	---	5:00 PM	24	0	18	0	0	0	0	491	166	8	148	0	*855*
4:15 PM	---	5:15 PM	28	0	15	0	0	0	0	491	178	10	152	0	*874*
4:30 PM	---	5:30 PM	29	0	14	0	0	0	0	473	188	15	138	0	*857*
4:45 PM	---	5:45 PM	26	0	14	0	0	0	0	462	186	18	122	0	*828*
5:00 PM	---	6:00 PM	22	0	18	0	0	0	0	438	174	17	108	0	*777*

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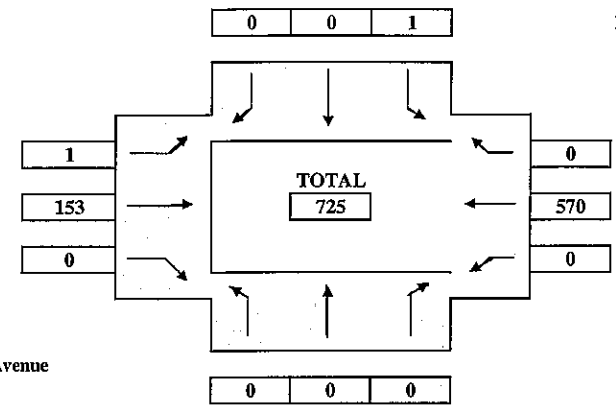
BAYMETRICS TRAFFIC RESOURCES

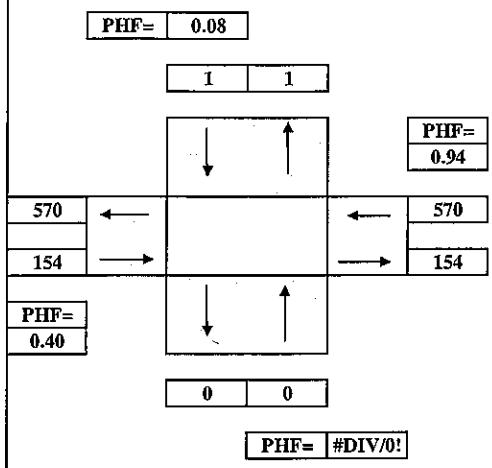
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	Mirant Power Plant	SURVEY DATE:	11/13/2007	DAY:	Tuesday
N-S Approach:	Fleming Avenue	SURVEY TIME:	7:00 AM	TO	9:00 AM
E-W Approach:	Wilbur Avenue	CITY:	Contra Costa Site	FILE:	FMAWBA-AM

PEAK HOUR
07:00 AM TO 08:00 AM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
From		To	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	TOTAL
SURVEY DATA															
7:00 AM	---	7:15 AM	0	0	0	0	0	0	0	27	0	0	147	0	*174*
7:15 AM	---	7:30 AM	0	0	0	1	0	0	0	62	0	0	299	0	*362*
7:30 AM	---	7:45 AM	0	0	0	1	0	0	0	110	0	0	437	0	*548*
7:45 AM	---	8:00 AM	0	0	0	1	0	0	1	153	0	0	570	0	*725*
8:00 AM	---	8:15 AM	0	0	0	3	0	1	1	191	0	0	675	1	*872*
8:15 AM	---	8:30 AM	0	0	0	3	0	1	1	237	0	0	784	1	*1,027*
8:30 AM	---	8:45 AM	0	0	0	3	0	1	1	285	0	0	890	1	*1,181*
8:45 AM	---	9:00 AM	0	0	0	3	0	1	1	322	0	0	986	1	*1,314*
TOTAL BY PERIOD															
7:00 AM	---	7:15 AM	0	0	0	0	0	0	0	27	0	0	147	0	*174*
7:15 AM	---	7:30 AM	0	0	0	1	0	0	0	35	0	0	152	0	*188*
7:30 AM	---	7:45 AM	0	0	0	0	0	0	0	48	0	0	138	0	*186*
7:45 AM	---	8:00 AM	0	0	0	0	0	0	1	43	0	0	133	0	*177*
8:00 AM	---	8:15 AM	0	0	0	2	0	1	0	38	0	0	105	1	*147*
8:15 AM	---	8:30 AM	0	0	0	0	0	0	0	46	0	0	109	0	*155*
8:30 AM	---	8:45 AM	0	0	0	0	0	0	0	48	0	0	106	0	*154*
8:45 AM	---	9:00 AM	0	0	0	0	0	0	0	37	0	0	96	0	*133*
HOURLY TOTALS															
7:00 AM	---	8:00 AM	0	0	0	1	0	0	1	153	0	0	570	0	*725*
7:15 AM	---	8:15 AM	0	0	0	3	0	1	1	164	0	0	528	1	*698*
7:30 AM	---	8:30 AM	0	0	0	2	0	1	1	175	0	0	485	1	*665*
7:45 AM	---	8:45 AM	0	0	0	2	0	1	1	175	0	0	453	1	*633*
8:00 AM	---	9:00 AM	0	0	0	2	0	1	0	169	0	0	416	1	*589*

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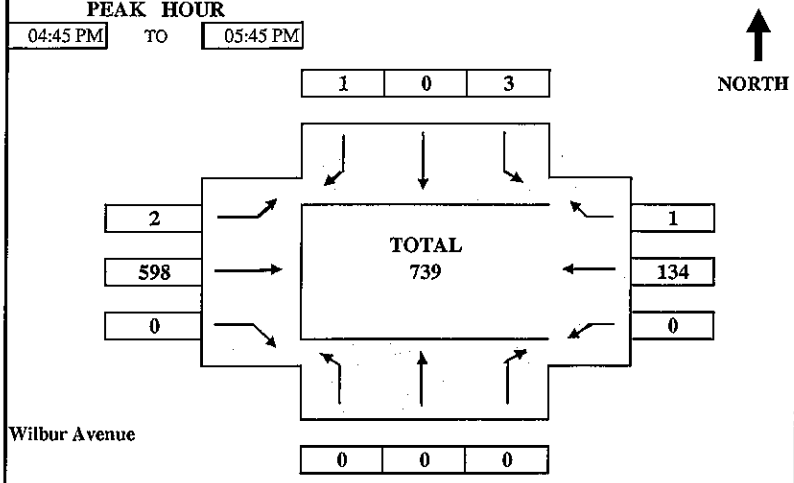
BAYMETRICS TRAFFIC RESOURCES

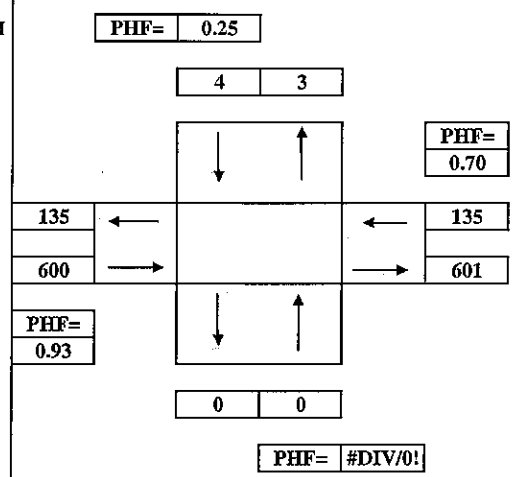
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	Mirant Power Plant	SURVEY DATE:	11/13/2007	DAY:	Tuesday
N-S Approach:	Fleming Avenue	SURVEY TIME:	4:00 PM	TO	6:00 PM
E-W Approach:	Wilbur Avenue	CITY:	Contra Costa Site	FILE:	FMAWBA-PM

PEAK HOUR
04:45 PM TO 05:45 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
From		To	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	TOTAL
SURVEY DATA															
4:00 PM	---	4:15 PM	0	0	0	1	0	0	0	114	0	0	32	0	*147*
4:15 PM	---	4:30 PM	0	0	0	1	0	0	1	229	0	0	71	0	*302*
4:30 PM	---	4:45 PM	0	0	0	2	0	0	1	327	0	0	109	0	*439*
4:45 PM	---	5:00 PM	0	0	0	2	0	0	3	470	0	0	142	0	*617*
5:00 PM	---	5:15 PM	0	0	0	3	0	1	3	628	0	0	189	1	*825*
5:15 PM	---	5:30 PM	0	0	0	5	0	1	3	790	0	0	217	1	*1,017*
5:30 PM	---	5:45 PM	0	0	0	5	0	1	3	925	0	0	243	1	*1,178*
5:45 PM	---	6:00 PM	0	0	0	5	0	1	4	1,046	0	0	272	3	*1,331*
TOTAL BY PERIOD															
4:00 PM	---	4:15 PM	0	0	0	1	0	0	0	114	0	0	32	0	*147*
4:15 PM	---	4:30 PM	0	0	0	0	0	0	1	115	0	0	39	0	*155*
4:30 PM	---	4:45 PM	0	0	0	1	0	0	0	98	0	0	38	0	*137*
4:45 PM	---	5:00 PM	0	0	0	0	0	0	2	143	0	0	33	0	*178*
5:00 PM	---	5:15 PM	0	0	0	1	0	1	0	158	0	0	47	1	*208*
5:15 PM	---	5:30 PM	0	0	0	2	0	0	0	162	0	0	28	0	*192*
5:30 PM	---	5:45 PM	0	0	0	0	0	0	0	135	0	0	26	0	*161*
5:45 PM	---	6:00 PM	0	0	0	0	0	0	1	121	0	0	29	2	*153*
HOURLY TOTALS															
4:00 PM	---	5:00 PM	0	0	0	2	0	0	3	470	0	0	142	0	*617*
4:15 PM	---	5:15 PM	0	0	0	2	0	1	3	514	0	0	157	1	*678*
4:30 PM	---	5:30 PM	0	0	0	4	0	1	2	561	0	0	146	1	*715*
4:45 PM	---	5:45 PM	0	0	0	3	0	1	2	598	0	0	134	1	*739*
5:00 PM	---	6:00 PM	0	0	0	3	0	1	1	576	0	0	130	3	*714*

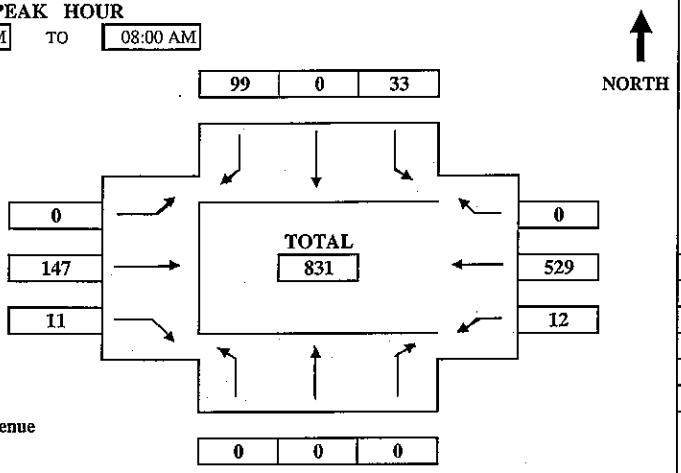
Telephone: (510)232-1271 Fax: (510)232-1272

BAYMETRICS TRAFFIC RESOURCES

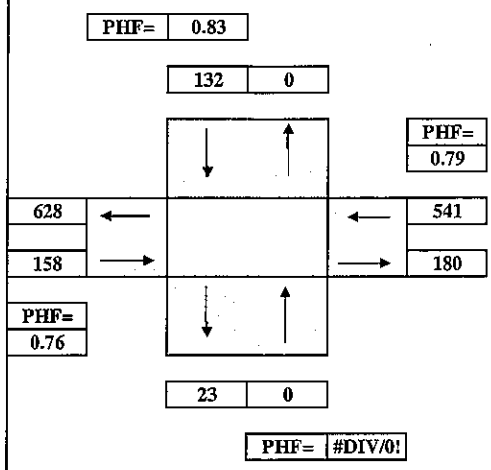
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	Mirant Power Plant	SURVEY DATE:	11/13/2007	DAY:	Tuesday
N-S Approach:	SR 160 SB Ramps	SURVEY TIME:	7:00 AM	TO	9:00 AM
E-W Approach:	Wilbur Avenue	CITY:	Contra Costa Site	FILE:	R160SRWA-AM

PEAK HOUR
07:00 AM TO 08:00 AM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
From		To	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	TOTAL
SURVEY DATA															
7:00 AM	---	7:15 AM	0	0	0	10	0	30	0	32	0	3	123	0	*198*
7:15 AM	---	7:30 AM	0	0	0	24	0	55	0	65	2	5	254	0	*405*
7:30 AM	---	7:45 AM	0	0	0	28	0	79	0	109	8	9	422	0	*655*
7:45 AM	---	8:00 AM	0	0	0	33	0	99	0	147	11	12	529	0	*831*
8:00 AM	---	8:15 AM	0	0	0	40	0	114	0	183	14	14	627	0	*992*
8:15 AM	---	8:30 AM	0	0	0	50	0	132	0	223	19	17	717	0	*1,158*
8:30 AM	---	8:45 AM	0	0	0	51	0	145	0	269	25	18	824	0	*1,332*
8:45 AM	---	9:00 AM	0	0	0	63	0	159	0	311	27	23	906	0	*1,489*
TOTAL BY PERIOD															
7:00 AM	---	7:15 AM	0	0	0	10	0	30	0	32	0	3	123	0	*198*
7:15 AM	---	7:30 AM	0	0	0	14	0	25	0	33	2	2	131	0	*207*
7:30 AM	---	7:45 AM	0	0	0	4	0	24	0	44	6	4	168	0	*250*
7:45 AM	---	8:00 AM	0	0	0	5	0	20	0	38	3	3	107	0	*176*
8:00 AM	---	8:15 AM	0	0	0	7	0	15	0	36	3	2	98	0	*161*
8:15 AM	---	8:30 AM	0	0	0	10	0	18	0	40	5	3	90	0	*166*
8:30 AM	---	8:45 AM	0	0	0	1	0	13	0	46	6	1	107	0	*174*
8:45 AM	---	9:00 AM	0	0	0	12	0	14	0	42	2	5	82	0	*157*
HOURLY TOTALS															
7:00 AM	---	8:00 AM	0	0	0	33	0	99	0	147	11	12	529	0	*831*
7:15 AM	---	8:15 AM	0	0	0	30	0	84	0	151	14	11	504	0	*794*
7:30 AM	---	8:30 AM	0	0	0	26	0	77	0	158	17	12	463	0	*753*
7:45 AM	---	8:45 AM	0	0	0	23	0	66	0	160	17	9	402	0	*677*
8:00 AM	---	9:00 AM	0	0	0	30	0	60	0	164	16	11	377	0	*658*

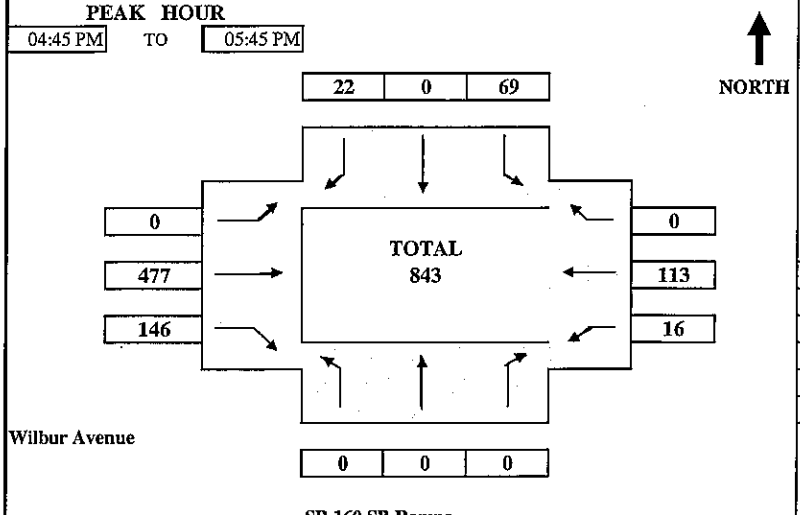
Telephone: (510)232-1271 Fax: (510)232-1272

BAYMETRICS TRAFFIC RESOURCES

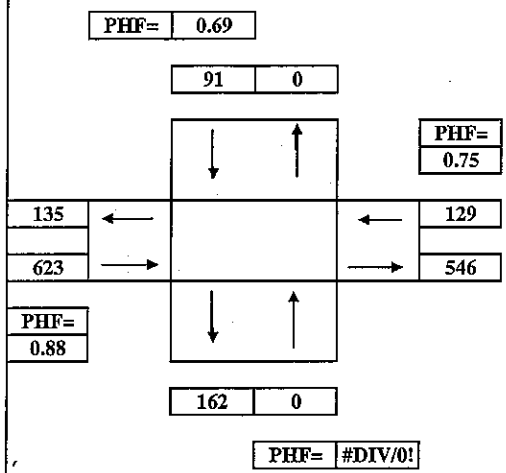
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	Mirant Power Plant	SURVEY DATE:	11/13/2007	DAY:	Tuesday
N-S Approach:	SR 160 SB Ramps	SURVEY TIME:	4:00 PM	TO	6:00 PM
E-W Approach:	Wilbur Avenue	CITY:	Contra Costa Site	FILE:	R160SRWA-PM

PEAK HOUR
04:45 PM TO 05:45 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From		To	NORTHBOUND Left	Thru	Right	SOUTHBOUND Left	Thru	Right	EASTBOUND Left	Thru	Right	WESTBOUND Left	Thru	Right	TOTAL
SURVEY DATA															
4:00 PM	---	4:15 PM	0	0	0	13	0	5	0	101	14	4	34	0	*171*
4:15 PM	---	4:30 PM	0	0	0	35	0	14	0	212	26	11	67	0	*365*
4:30 PM	---	4:45 PM	0	0	0	53	0	19	0	326	36	17	104	0	*555*
4:45 PM	---	5:00 PM	0	0	0	65	0	23	0	450	52	22	126	0	*738*
5:00 PM	---	5:15 PM	0	0	0	88	0	33	0	579	100	28	161	0	*989*
5:15 PM	---	5:30 PM	0	0	0	107	0	36	0	691	141	31	188	0	*1,194*
5:30 PM	---	5:45 PM	0	0	0	122	0	41	0	803	182	33	217	0	*1,398*
5:45 PM	---	6:00 PM	0	0	0	132	0	43	0	919	186	35	243	0	*1,558*
TOTAL BY PERIOD															
4:00 PM	---	4:15 PM	0	0	0	13	0	5	0	101	14	4	34	0	*171*
4:15 PM	---	4:30 PM	0	0	0	22	0	9	0	111	12	7	33	0	*194*
4:30 PM	---	4:45 PM	0	0	0	18	0	5	0	114	10	6	37	0	*190*
4:45 PM	---	5:00 PM	0	0	0	12	0	4	0	124	16	5	22	0	*183*
5:00 PM	---	5:15 PM	0	0	0	23	0	10	0	129	48	6	35	0	*251*
5:15 PM	---	5:30 PM	0	0	0	19	0	3	0	112	41	3	27	0	*205*
5:30 PM	---	5:45 PM	0	0	0	15	0	5	0	112	41	2	29	0	*204*
5:45 PM	---	6:00 PM	0	0	0	10	0	2	0	116	4	2	26	0	*160*
HOURLY TOTALS															
4:00 PM	---	5:00 PM	0	0	0	65	0	23	0	450	52	22	126	0	*738*
4:15 PM	---	5:15 PM	0	0	0	75	0	28	0	478	86	24	127	0	*818*
4:30 PM	---	5:30 PM	0	0	0	72	0	22	0	479	115	20	121	0	*829*
4:45 PM	---	5:45 PM	0	0	0	69	0	22	0	477	146	16	113	0	*843*
5:00 PM	---	6:00 PM	0	0	0	67	0	20	0	469	134	13	117	0	*820*

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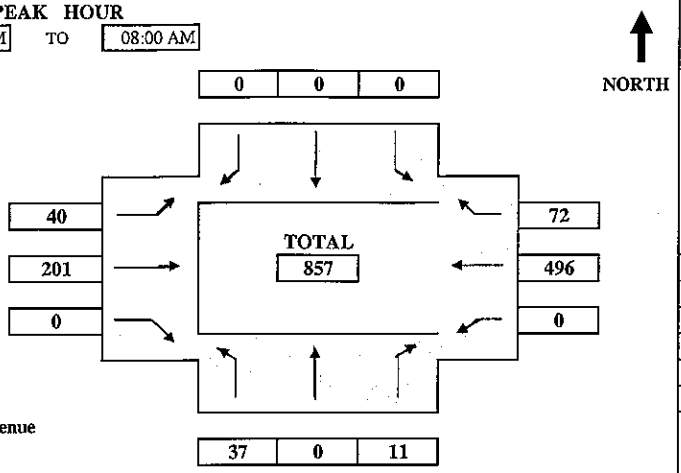
BAYMETRICS TRAFFIC RESOURCES

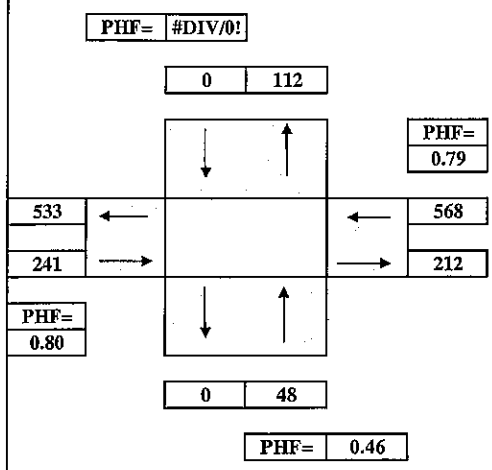
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	Mirant Power Plant	SURVEY DATE:	11/13/2007	DAY:	Tuesday
N-S Approach:	SR 160 NB Ramps	SURVEY TIME:	7:00 AM	TO	9:00 AM
E-W Approach:	Wilbur Avenue	CITY:	Contra Costa Site	FILE:	R160NRWA-AM

PEAK HOUR
07:00 AM TO 08:00 AM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From		To	NORTHBOUND Left	Thru	Right	SOUTHBOUND Left	Thru	Right	EASTBOUND Left	Thru	Right	WESTBOUND Left	Thru	Right	TOTAL
SURVEY DATA															
7:00 AM	---	7:15 AM	5	0	1	0	0	0	10	56	0	0	121	11	*204*
7:15 AM	---	7:30 AM	14	0	4	0	0	0	24	117	0	0	229	27	*415*
7:30 AM	---	7:45 AM	27	0	9	0	0	0	30	173	0	0	388	47	*674*
7:45 AM	---	8:00 AM	37	0	11	0	0	0	40	201	0	0	496	72	*857*
8:00 AM	---	8:15 AM	49	0	16	0	0	0	46	240	0	0	585	88	*1,024*
8:15 AM	---	8:30 AM	57	0	18	0	0	0	51	285	0	0	670	100	*1,181*
8:30 AM	---	8:45 AM	79	0	22	0	0	0	61	326	0	0	746	115	*1,349*
8:45 AM	---	9:00 AM	94	0	25	0	0	0	66	350	0	0	819	141	*1,495*
TOTAL BY PERIOD															
7:00 AM	---	7:15 AM	5	0	1	0	0	0	10	56	0	0	121	11	*204*
7:15 AM	---	7:30 AM	9	0	3	0	0	0	14	61	0	0	108	16	*211*
7:30 AM	---	7:45 AM	13	0	5	0	0	0	6	56	0	0	159	20	*259*
7:45 AM	---	8:00 AM	10	0	2	0	0	0	10	28	0	0	108	25	*183*
8:00 AM	---	8:15 AM	12	0	5	0	0	0	6	39	0	0	89	16	*167*
8:15 AM	---	8:30 AM	8	0	2	0	0	0	5	45	0	0	85	12	*157*
8:30 AM	---	8:45 AM	22	0	4	0	0	0	10	41	0	0	76	15	*168*
8:45 AM	---	9:00 AM	15	0	3	0	0	0	5	24	0	0	73	26	*146*
HOURLY TOTALS															
7:00 AM	---	8:00 AM	37	0	11	0	0	0	40	201	0	0	496	72	*857*
7:15 AM	---	8:15 AM	44	0	15	0	0	0	36	184	0	0	464	77	*820*
7:30 AM	---	8:30 AM	43	0	14	0	0	0	27	168	0	0	441	73	*766*
7:45 AM	---	8:45 AM	52	0	13	0	0	0	31	153	0	0	358	68	*675*
8:00 AM	---	9:00 AM	57	0	14	0	0	0	26	149	0	0	323	69	*638*

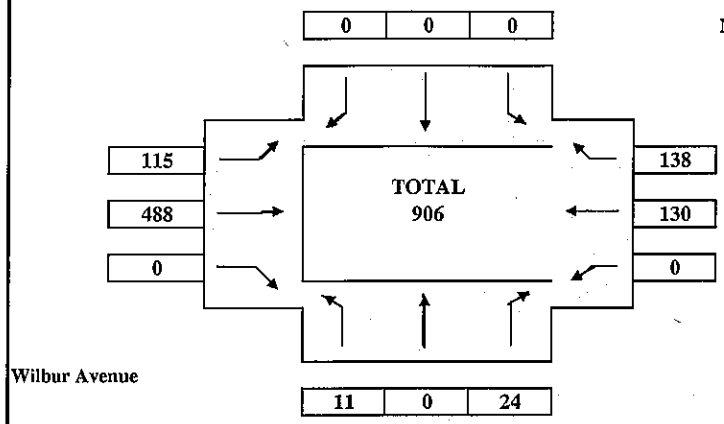
Telephone: (510)232-1271 Fax: (510)232-1272

BAYMETRICS TRAFFIC RESOURCES

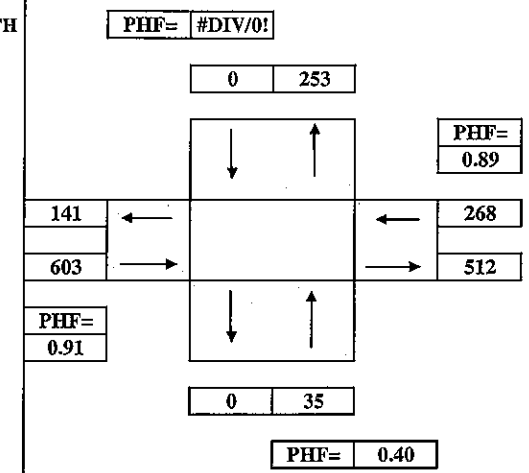
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	Mirant Power Plant	SURVEY DATE:	11/13/2007	DAY:	Tuesday
N-S Approach:	SR 160 NB Ramps	SURVEY TIME:	4:00 PM	TO	6:00 PM
E-W Approach:	Wilbur Avenue	CITY:	Contra Costa Site	FILE:	R160NRWA-PM

PEAK HOUR
04:30 PM TO 05:30 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
From		To	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	TOTAL
SURVEY DATA															
4:00 PM	---	4:15 PM	6	0	6	0	0	0	20	93	0	0	25	24	*174*
4:15 PM	---	4:30 PM	13	0	16	0	0	0	44	204	0	0	54	61	*392*
4:30 PM	---	4:45 PM	18	0	24	0	0	0	65	317	0	0	93	97	*614*
4:45 PM	---	5:00 PM	21	0	29	0	0	0	97	437	0	0	120	141	*845*
5:00 PM	---	5:15 PM	23	0	32	0	0	0	123	562	0	0	159	164	*1,063*
5:15 PM	---	5:30 PM	24	0	40	0	0	0	159	692	0	0	184	199	*1,298*
5:30 PM	---	5:45 PM	27	0	50	0	0	0	195	812	0	0	212	217	*1,513*
5:45 PM	---	6:00 PM	44	0	55	0	0	0	220	912	0	0	240	232	*1,703*
TOTAL BY PERIOD															
4:00 PM	---	4:15 PM	6	0	6	0	0	0	20	93	0	0	25	24	*174*
4:15 PM	---	4:30 PM	7	0	10	0	0	0	24	111	0	0	29	37	*218*
4:30 PM	---	4:45 PM	5	0	8	0	0	0	21	113	0	0	39	36	*222*
4:45 PM	---	5:00 PM	3	0	5	0	0	0	32	120	0	0	27	44	*231*
5:00 PM	---	5:15 PM	2	0	3	0	0	0	26	125	0	0	39	23	*218*
5:15 PM	---	5:30 PM	1	0	8	0	0	0	36	130	0	0	25	35	*235*
5:30 PM	---	5:45 PM	3	0	10	0	0	0	36	120	0	0	28	18	*215*
5:45 PM	---	6:00 PM	17	0	5	0	0	0	25	100	0	0	28	15	*190*
HOURLY TOTALS															
4:00 PM	---	5:00 PM	21	0	29	0	0	0	97	437	0	0	120	141	*845*
4:15 PM	---	5:15 PM	17	0	26	0	0	0	103	469	0	0	134	140	*889*
4:30 PM	---	5:30 PM	11	0	24	0	0	0	115	488	0	0	130	138	*906*
4:45 PM	---	5:45 PM	9	0	26	0	0	0	130	495	0	0	119	120	*899*
5:00 PM	---	6:00 PM	23	0	26	0	0	0	123	475	0	0	120	91	*858*

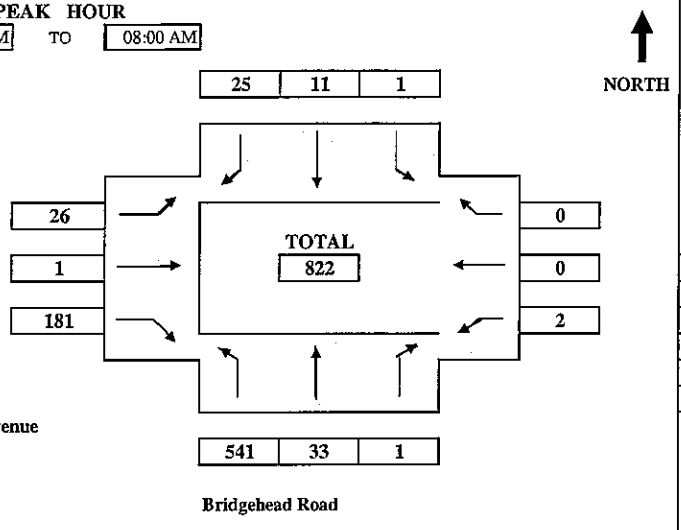
Telephone: (510)232-1271 Fax: (510)232-1272

BAYMETRICS TRAFFIC RESOURCES

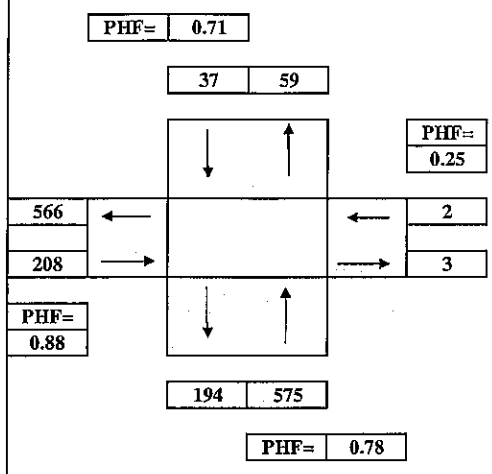
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	Mirant Power Plant	SURVEY DATE:	11/13/2007	DAY:	Tuesday
N-S Approach:	Bridgehead Road	SURVEY TIME:	7:00 AM	TO	9:00 AM
E-W Approach:	Wilbur Avenue	CITY:	Contra Costa Site	FILE:	BHRWBA-AM

PEAK HOUR
07:00 AM TO 08:00 AM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
From		To	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	TOTAL
SURVEY DATA															
7:00 AM	---	7:15 AM	128	1	0	0	3	3	4	1	43	0	0	0	*183*
7:15 AM	---	7:30 AM	249	8	0	0	6	8	10	1	88	0	0	0	*370*
7:30 AM	---	7:45 AM	421	20	1	0	9	15	21	1	136	1	0	0	*625*
7:45 AM	---	8:00 AM	541	33	1	1	11	25	26	1	181	2	0	0	*822*
8:00 AM	---	8:15 AM	640	43	1	1	12	31	32	1	216	2	1	1	*981*
8:15 AM	---	8:30 AM	734	52	1	1	13	34	35	1	261	2	2	1	*1,137*
8:30 AM	---	8:45 AM	824	59	1	1	13	35	40	1	301	2	2	1	*1,280*
8:45 AM	---	9:00 AM	920	64	2	1	15	37	42	1	335	3	2	1	*1,423*
TOTAL BY PERIOD															
7:00 AM	---	7:15 AM	128	1	0	0	3	3	4	1	43	0	0	0	*183*
7:15 AM	---	7:30 AM	121	7	0	0	3	5	6	0	45	0	0	0	*187*
7:30 AM	---	7:45 AM	172	12	1	0	3	7	11	0	48	1	0	0	*255*
7:45 AM	---	8:00 AM	120	13	0	1	2	10	5	0	45	1	0	0	*197*
8:00 AM	---	8:15 AM	99	10	0	0	1	6	6	0	35	0	1	1	*159*
8:15 AM	---	8:30 AM	94	9	0	0	1	3	3	0	45	0	1	0	*156*
8:30 AM	---	8:45 AM	90	7	0	0	0	1	5	0	40	0	0	0	*143*
8:45 AM	---	9:00 AM	96	5	1	0	2	2	2	0	34	1	0	0	*143*
HOURLY TOTALS															
7:00 AM	---	8:00 AM	541	33	1	1	11	25	26	1	181	2	0	0	*822*
7:15 AM	---	8:15 AM	512	42	1	1	9	28	28	0	173	2	1	1	*798*
7:30 AM	---	8:30 AM	485	44	1	1	7	26	25	0	173	2	2	1	*767*
7:45 AM	---	8:45 AM	403	39	0	1	4	20	19	0	165	1	2	1	*655*
8:00 AM	---	9:00 AM	379	31	1	0	4	12	16	0	154	1	2	1	*601*

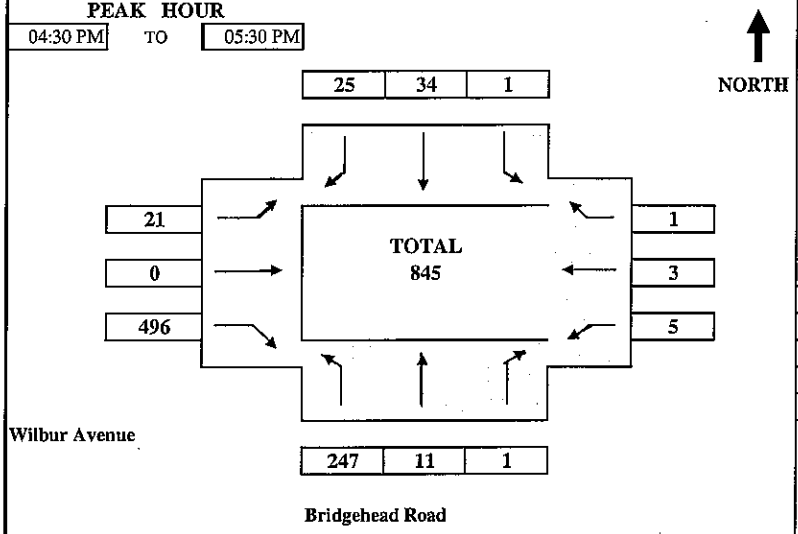
Telephone: (510)232-1271 Fax: (510)232-1272

BAYMETRICS TRAFFIC RESOURCES

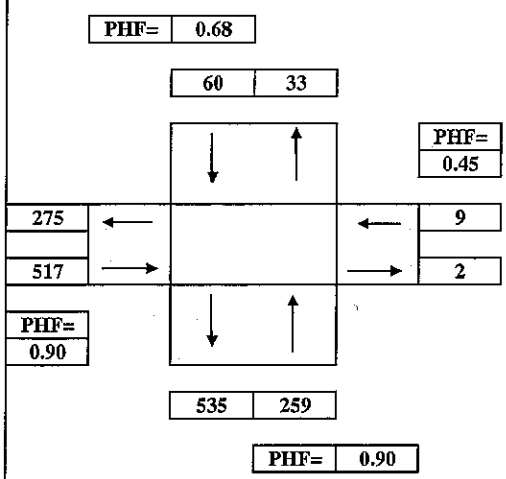
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	Mirant Power Plant	SURVEY DATE:	11/13/2007	DAY:	Tuesday
N-S Approach:	Bridgehead Road	SURVEY TIME:	4:00 PM	TO	6:00 PM
E-W Approach:	Wilbur Avenue	CITY:	Contra Costa Site	FILE:	BHRWBA-PM

PEAK HOUR
04:30 PM TO 05:30 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
From		To	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	TOTAL
SURVEY DATA															
4:00 PM	---	4:15 PM	45	7	0	0	13	9	7	1	92	0	1	0	*175*
4:15 PM	---	4:30 PM	104	15	0	0	23	16	13	1	205	0	1	0	*378*
4:30 PM	---	4:45 PM	171	19	1	0	35	24	18	1	320	2	3	0	*594*
4:45 PM	---	5:00 PM	239	22	1	1	45	29	24	1	441	2	3	0	*808*
5:00 PM	---	5:15 PM	294	26	1	1	52	36	31	1	560	5	4	1	*1,012*
5:15 PM	---	5:30 PM	351	26	1	1	57	41	34	1	701	5	4	1	*1,223*
5:30 PM	---	5:45 PM	392	27	3	1	63	46	36	2	828	5	4	1	*1,408*
5:45 PM	---	6:00 PM	431	28	3	1	70	54	44	2	926	5	4	1	*1,569*
TOTAL BY PERIOD															
4:00 PM	---	4:15 PM	45	7	0	0	13	9	7	1	92	0	1	0	*175*
4:15 PM	---	4:30 PM	59	8	0	0	10	7	6	0	113	0	0	0	*203*
4:30 PM	---	4:45 PM	67	4	1	0	12	8	5	0	115	2	2	0	*216*
4:45 PM	---	5:00 PM	68	3	0	1	10	5	6	0	121	0	0	0	*214*
5:00 PM	---	5:15 PM	55	4	0	0	7	7	7	0	119	3	1	1	*204*
5:15 PM	---	5:30 PM	57	0	0	0	5	5	3	0	141	0	0	0	*211*
5:30 PM	---	5:45 PM	41	1	2	0	6	5	2	1	127	0	0	0	*185*
5:45 PM	---	6:00 PM	39	1	0	0	7	8	8	0	98	0	0	0	*161*
HOURLY TOTALS															
4:00 PM	---	5:00 PM	239	22	1	1	45	29	24	1	441	2	3	0	*808*
4:15 PM	---	5:15 PM	249	19	1	1	39	27	24	0	468	5	3	1	*837*
4:30 PM	---	5:30 PM	247	11	1	1	34	25	21	0	496	5	3	1	*845*
4:45 PM	---	5:45 PM	221	8	2	1	28	22	18	1	508	3	1	1	*814*
5:00 PM	---	6:00 PM	192	6	2	0	25	25	20	1	485	3	1	1	*761*

Telephone: (510)232-1271 Fax: (510)232-1272

BAYMETRICS TRAFFIC RESOURCES

A. Wilbur Avenue - between Minaker Drive and Viera Avenue

Date	11-Nov-07		Sunday		12-Nov-07		Monday		13-Nov-07		Tuesday		14-Nov-07		Wednesday		15-Nov-07		Thursday		16-Nov-07		Friday		17-Nov-07		Saturday	
	EB		WB		EB		WB		EB		WB		EB		WB		EB		WB		EB		WB		EB		WB	
TIME	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN
1200	9	0	3	0	3	0	5	0	1	0	1	0	7	0	6	0	5	0	6	0	2	0	6	0	3	0	5	0
1215	11	0	8	0	7	0	2	0	8	0	4	0	9	0	1	0	9	0	2	0	9	0	4	0	7	0	13	0
1230	4	0	2	0	3	0	4	0	4	0	3	0	4	0	1	0	3	0	3	0	4	0	3	0	5	0	1	0
1245	4	28	5	18	1	14	3	14	1	14	3	11	4	24	4	12	3	20	4	15	3	18	2	15	4	19	3	22
100	7	26	4	19	2	13	2	11	3	16	2	12	4	21	5	11	2	17	4	13	2	18	3	12	0	16	2	19
115	8	23	3	14	2	8	1	10	4	12	2	10	3	15	2	12	3	11	0	11	4	13	1	9	3	12	1	7
130	3	22	6	18	2	7	1	7	1	9	2	9	2	13	2	13	3	11	3	11	4	13	2	8	8	15	2	8
145	3	21	2	15	4	10	3	7	1	9	0	6	2	11	3	12	2	10	2	9	2	12	3	9	8	19	2	7
200	5	19	2	13	2	10	1	6	2	8	0	4	2	9	0	7	2	10	0	5	0	10	5	11	8	27	3	8
215	3	14	2	12	2	10	1	6	2	6	2	4	0	6	3	8	2	9	0	5	3	9	1	11	9	33	5	12
230	4	15	5	11	1	9	0	5	5	10	0	2	1	5	3	9	1	7	1	3	6	11	0	9	4	29	3	13
245	2	14	3	12	2	7	2	4	1	10	0	2	2	5	3	9	3	8	1	2	3	12	0	6	6	27	2	13
300	0	9	3	13	1	6	3	6	4	12	1	3	0	3	1	10	0	6	3	5	2	14	1	2	4	23	1	11
315	2	8	2	13	8	12	1	6	4	14	3	4	7	10	0	7	1	5	1	6	3	14	1	2	3	17	3	9
330	1	5	0	8	1	12	0	6	3	12	2	6	1	10	0	4	5	9	0	5	1	9	0	2	7	20	1	7
345	1	4	3	8	4	14	2	6	3	14	2	8	2	10	1	2	8	14	4	8	3	9	6	8	6	20	2	7
400	3	7	3	8	3	16	7	10	4	14	8	15	4	14	12	13	0	14	8	13	5	12	6	13	3	19	3	9
415	7	12	3	9	5	13	5	14	4	14	9	21	7	14	7	20	9	22	11	23	4	13	5	17	5	21	2	8
430	4	15	4	13	3	15	8	22	7	18	11	30	7	20	8	28	4	21	10	33	6	18	11	28	1	15	3	10
445	4	18	1	11	4	15	18	38	3	18	14	42	4	22	25	52	7	20	21	50	8	23	14	36	5	14	9	17
500	5	20	8	16	11	23	21	52	13	27	24	58	10	28	20	60	7	27	21	63	14	32	25	55	2	13	12	26
515	8	21	6	19	7	25	45	92	13	36	52	101	19	40	66	119	20	38	54	106	10	38	45	95	5	13	10	34
530	5	22	6	21	12	34	78	162	21	50	115	205	28	61	119	230	33	67	130	226	17	49	98	182	9	21	8	39
545	2	20	7	27	17	47	134	278	25	72	149	340	25	82	140	345	29	89	152	357	19	60	127	295	14	30	12	42
600	5	20	9	28	16	52	120	377	15	74	157	473	17	89	167	492	19	101	173	509	39	85	159	429	11	39	13	43
615	4	16	5	27	32	77	107	439	41	102	189	610	39	109	184	610	37	118	172	627	34	109	141	525	21	55	15	48
630	9	20	11	32	25	90	133	494	30	111	178	673	32	113	191	682	38	123	178	675	31	123	151	578	13	59	13	53
645	9	27	10	35	19	92	117	477	34	120	186	710	49	137	164	706	56	150	195	718	47	151	167	618	14	59	22	63
700	9	31	9	35	22	98	102	459	44	149	155	708	40	160	198	737	37	168	141	686	29	141	146	605	11	59	11	61
715	9	36	5	35	27	93	88	440	43	151	156	675	33	154	162	715	31	162	161	675	35	142	147	611	16	54	19	65
730	15	42	9	33	24	92	73	380	37	158	156	653	23	145	152	676	41	165	161	658	28	139	146	606	20	61	17	69
745	15	48	13	36	30	103	96	359	31	155	176	643	46	142	205	717	50	159	196	659	41	133	177	616	27	74	24	71
800	12	51	17	44	43	124	97	354	31	142	177	665	61	163	176	695	45	167	189	707	49	153	150	620	14	77	30	90
815	16	58	19	58	20	117	58	324	33	132	114	623	52	182	131	664	66	202	118	664	56	174	108	581	24	85	16	87
830	14	57	13	62	29	122	75	326	34	129	114	581	57	216	105	617	37	198	126	629	40	186	112	547	27	92	18	88
845	16	58	15	64	30	122	44	274	35	133	58	463	39	209	108	520	35	183	98	531	42	187	81	451	15	80	39	103
900	26	72	26	73	35	114	56	233	34	136	76	362	36	184	93	437	36	174	78	420	36	174	100	401	20	86	46	119
915	25	81	17	71	33	127	43	218	34	137	59	307	33	165	60	366	45	153	61	363	27	145	52	345	29	91	25	128
930	23	90	16	74	43	141	42	185	33	136	55	248	40	148	47	308	58	174	51	288	46	151	53	286	30	94	33	143
945	26	100	28	87	24	135	53	194	39	140	63	253	46	155	53	253	37	176	61	251	30	139	53	258	40	119	39	143
1000	16	90	27	88	38	138	49	187	35	141	57	234	35	154	46	206	35	175	68	241	56	159	57	215	39	138	38	135
1015	21	86	18	89	40	145	48	192	34	141	41	216	47	168	53	199	34	164	36	216	29	161	43	206	39	148	37	147
1030	32	95	30	103	46	148	44	194	59	167	41	202	41	169	29	181	43	149	45	210	35	150	38	191	32	150	38	152
1045	40	109	16	91	46	170	28	169	61	189	40	179	42	165	36	164	43	155	57	206	40	160	50	188	29	139	31	144
1100	29	122	30	94	45	177	36	156	43	197	46	168	55	185	48	166	58	178	56	194	44	148	63	194	36	136	54	160
1115	31	132	39	115	41	178	31	139	46	209	48	175	56	194	60	173	56	200	36	194	51	170	48	199	43	140	39	162
1130	27	127	29	114	50	182	47	142	65	215	38	172	51	204	31	175	44	201	53	202	45	180	53	214	50	158	44	168

BAYMETRICS TRAFFIC RESOURCES

A. Wilbur Avenue - between Minaker Drive and Viera Avenue

Date	11-Nov-07		Sunday		12-Nov-07		Monday		13-Nov-07		Tuesday		14-Nov-07		Wednesday		15-Nov-07		Thursday		16-Nov-07		Friday		17-Nov-07		Saturday	
	EB		WB		EB		WB		EB		WB		EB		WB		EB		WB		EB		WB		EB		WB	
TIME	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN
1145	46	133	40	138	40	176	37	151	65	219	48	180	53	215	47	186	61	219	35	180	67	207	58	222	53	182	41	178
1200	32	136	30	138	44	175	33	148	55	231	47	181	41	201	46	184	43	204	46	170	71	234	49	208	44	190	40	164
1215	33	138	26	125	48	182	40	157	46	231	52	185	44	189	45	169	68	216	44	178	66	249	43	203	51	198	38	163
1230	34	145	25	121	43	175	28	138	67	233	37	184	53	191	35	173	48	220	35	160	54	258	40	190	41	189	53	172
1245	39	138	38	119	55	190	50	151	63	231	40	176	59	197	41	167	65	224	42	167	62	253	55	187	52	188	35	166
1300	29	135	30	119	56	202	36	154	56	232	46	175	48	204	37	158	67	248	43	164	60	242	37	175	50	194	55	181
1315	45	147	25	118	55	209	39	153	70	256	42	165	71	231	43	156	64	244	34	154	62	238	50	182	53	196	40	183
1330	35	148	35	128	44	210	41	166	56	245	42	170	60	238	58	179	59	255	43	162	55	239	52	194	47	202	36	166
1345	43	152	34	124	62	217	46	162	44	226	46	176	80	259	38	176	41	231	43	163	72	249	41	180	44	194	37	168
1400	27	150	44	138	46	207	39	165	64	234	49	179	45	256	36	175	68	232	42	162	75	264	53	196	48	192	35	148
1415	52	157	32	145	63	215	37	163	57	221	47	184	76	261	51	183	86	254	39	167	64	266	37	183	61	200	32	140
1430	50	172	42	152	45	216	39	161	63	228	43	185	63	264	43	168	52	247	40	164	85	296	36	167	65	218	43	147
1445	24	153	27	145	69	223	43	158	101	285	42	181	76	260	44	174	80	286	28	149	89	313	51	177	66	240	37	147
1500	32	158	34	135	81	258	39	158	88	309	45	177	97	312	42	180	78	296	61	168	105	343	47	171	55	247	29	141
1515	30	136	33	136	81	276	44	165	93	345	35	165	103	339	45	174	79	289	66	195	119	398	59	193	52	238	41	150
1530	43	129	35	129	106	337	41	167	108	390	52	174	111	387	52	183	141	378	46	201	144	457	69	226	67	240	38	145
1545	61	166	28	130	107	375	33	157	130	419	65	197	124	435	48	187	154	452	63	236	165	533	59	234	54	228	28	136
1600	37	171	25	121	88	382	41	159	166	497	43	195	136	474	52	197	120	494	46	221	158	586	49	236	65	238	31	138
1615	40	181	32	120	110	411	41	156	154	558	50	210	140	511	40	192	174	589	61	216	150	617	45	222	64	250	41	138
1630	47	185	26	111	105	410	33	148	177	627	45	203	134	534	49	189	145	593	57	227	162	635	50	203	52	235	40	140
1645	49	173	24	107	125	428	34	149	160	657	51	189	155	565	50	191	177	616	51	215	137	607	54	198	59	240	39	151
1700	46	182	33	115	113	453	33	141	116	607	34	180	111	540	46	185	136	632	47	216	125	574	48	197	62	237	34	154
1715	43	185	31	114	107	450	31	131	105	558	34	164	155	555	49	194	186	644	48	203	172	596	43	195	76	249	34	147
1730	34	172	30	118	111	456	27	125	143	524	58	177	141	562	60	205	147	646	38	184	136	570	49	194	78	275	38	145
1745	48	171	27	121	92	423	18	109	148	512	55	181	123	530	35	190	138	607	29	162	113	546	33	173	45	261	35	141
1800	40	165	16	104	99	409	21	97	112	508	32	179	106	525	42	186	102	573	34	149	112	533	41	166	69	268	26	133
1815	26	148	22	95	77	379	31	97	138	541	24	169	106	476	33	170	112	499	28	129	113	474	30	153	47	239	16	115
1830	27	141	18	83	65	333	37	107	108	506	38	149	101	436	43	153	107	459	24	115	80	418	40	144	38	199	21	98
1845	28	121	26	82	47	288	26	115	86	444	25	119	88	401	28	146	109	430	25	111	82	387	30	141	46	200	21	84
1900	31	112	20	86	34	223	21	115	73	405	25	112	79	374	36	140	88	416	29	106	76	351	30	130	52	183	19	77
1915	23	109	18	82	37	183	20	104	67	334	32	120	62	330	18	125	82	386	21	99	75	313	29	129	24	160	20	81
1930	26	108	11	75	29	147	25	92	49	275	14	96	60	289	25	107	54	333	14	89	52	285	15	104	24	146	27	87
1945	16	96	15	64	32	132	10	76	43	232	11	82	31	232	13	92	44	268	16	80	50	253	23	97	18	118	8	74
2000	17	82	14	58	19	117	15	70	39	198	13	70	42	195	9	65	44	224	24	75	51	228	28	95	19	85	17	72
2015	8	67	16	56	20	100	8	58	34	165	17	55	25	158	18	65	33	175	22	76	41	194	15	81	12	73	11	63
2030	19	60	14	59	20	91	6	39	15	131	16	57	22	120	12	52	20	141	11	73	31	173	22	88	12	61	13	49
2045	5	49	14	58	17	76	16	45	19	107	21	67	33	122	11	50	31	128	11	68	29	152	15	80	12	55	6	47
2100	18	50	12	56	20	77	16	46	16	84	14	68	21	101	13	54	35	119	11	55	15	116	9	61	20	56	10	40
2115	17	59	16	56	24	81	9	47	21	71	8	59	21	97	6	42	39	125	10	43	16	91	11	57	22	66	14	43
2130	15	55	16	58	8	69	15	56	21	77	20	63	19	94	14	44	31	136	10	42	18	78	13	48	23	77	10	40
2145	11	61	5	49	10	62	18	58	12	70	12	54	22	83	12	45	39	144	13	44	22	71	20	53	12	77	8	42
2200	17	60	8	45	15	57	16	58	12	66	18	58	9	71	10	42	31	140	15	48	25	81	16	60	14	71	13	45
2215	3	46	12	41	11	44	6	55	19	64	4	54	19	69	12	48	27	128	13	51	12	77	6	55	22	71	5	36
2230	13	44	12	37	8	44	15	55	16	59	9	43	5	55	9	43	9	106	7	48	23	82	13	55	23	71	16	42
2245	7	40	8	40	12	46	8	45	9	56	6	37	12	45	7	38	6	73	8	43	12	72	11	46	11	70	23	57
2300	5	28	7	39	8	39	10	39	12	56	8	27	16	52	5	33	9	51	10	38	12	59	11	41	11	67	6	50
2315	7	32	5	32	9	37	5	38	13	50	6	29	23	56	3	24	12	36	4	29	25	72	12	47	8	53	11	56

BAYMETRICS TRAFFIC RESOURCES

A. Wilbur Avenue - between Minaker Drive and Viera Avenue

Date	11-Nov-07		Sunday		12-Nov-07		Monday		13-Nov-07		Tuesday		14-Nov-07		Wednesday		15-Nov-07		Thursday		16-Nov-07		Friday		17-Nov-07		Saturday	
	EB		WB		EB		WB		EB		WB		EB		WB		EB		WB		EB		WB		EB		WB	
TIME	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN
2330	4	23	7	27	5	34	6	29	5	39	6	26	6	57	6	21	5	32	6	28	16	65	8	42	11	41	6	46
2345	7	23	1	20	5	27	6	27	6	36	4	24	6	51	1	15	9	35	5	25	14	67	10	41	4	34	9	32
TOTAL	1,923	N/A	1,601	N/A	3,392	N/A	3,223	N/A	4,368	N/A	4,320	N/A	4,357	N/A	4,449	N/A	4,697	N/A	4,449	N/A	4,614	N/A	4,329	N/A	2,687	N/A	2,055	N/A
AM		100		87		141		494		158		710		216		737		202		718		187		620		119		143
NOON		172		152		223		194		285		234		264		206		286		241		313		222		240		183
PM		185		136		456		167		657		210		565		205		646		236		635		236		275		154
EVEN		82		59		117		70		198		70		195		65		224		76		228		95		85		72

Telephone: (510) 232-1271 *Fax: (510) 232-1272*

BAYMETRICS TRAFFIC RESOURCES

B. Wilbur Avenue - between Viera Avenue and Fleming Avenue

Date	11-Nov-07		Sunday		12-Nov-07		Monday		13-Nov-07		Tuesday		14-Nov-07		Wednesday		15-Nov-07		Thursday		16-Nov-07		Friday		17-Nov-07		Saturday	
	EB		WB		EB		WB		EB		WB		EB		WB		EB		WB		EB		WB		EB		WB	
TIME	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN
1200	10	0	6	0	7	0	11	0	7	0	9	0	3	0	6	0	7	0	2	0	7	0	3	0	9	0	6	0
1215	5	0	2	0	7	0	6	0	7	0	8	0	2	0	7	0	6	0	3	0	5	0	4	0	3	0	4	0
1230	4	0	4	0	5	0	3	0	4	0	5	0	3	0	5	0	2	0	6	0	5	0	3	0	2	0	12	0
1245	2	21	3	15	2	21	4	24	3	21	6	28	3	11	8	26	7	22	2	13	2	19	2	12	2	16	2	24
100	6	17	3	12	1	15	4	17	4	18	4	23	10	18	1	21	6	21	2	13	3	15	0	9	2	9	8	26
115	5	17	5	15	1	9	2	13	3	14	5	20	2	18	3	17	4	19	3	13	5	15	2	7	4	10	5	27
130	4	17	2	13	3	7	6	16	5	15	2	17	1	16	3	15	6	23	3	10	0	10	2	6	3	11	5	20
145	5	20	2	12	6	11	1	13	2	14	1	12	2	15	1	8	2	18	0	8	1	9	4	8	7	16	9	27
200	4	18	2	11	3	13	1	10	3	13	3	11	0	5	2	9	4	16	0	6	2	8	0	8	6	20	6	25
215	3	16	5	11	2	14	0	8	5	15	5	11	0	3	3	9	5	17	2	5	7	10	4	10	6	22	5	25
230	2	14	4	13	2	13	5	7	1	11	1	10	3	5	3	9	3	14	2	4	2	12	0	8	1	20	3	23
245	1	10	1	12	1	8	4	10	9	18	4	13	1	4	1	9	7	19	1	5	6	17	1	5	2	15	4	18
300	1	7	2	12	1	6	7	16	8	23	7	17	4	8	1	8	3	18	1	6	1	16	1	6	1	10	5	17
315	9	13	0	7	11	15	1	17	7	25	4	16	4	12	0	5	4	17	0	4	5	14	0	2	3	7	3	15
330	3	14	3	6	0	13	6	18	6	30	4	19	3	12	1	3	5	19	4	6	1	13	5	7	2	8	4	16
345	4	17	3	8	6	18	8	22	4	25	8	23	5	16	14	16	8	20	8	13	4	11	7	13	7	13	3	15
400	4	20	2	8	5	22	11	26	5	22	10	26	5	17	8	23	5	22	11	23	7	17	6	18	2	14	3	13
415	3	14	4	12	7	18	13	38	9	24	13	35	15	28	7	30	11	29	13	36	7	19	11	29	4	15	4	14
430	6	17	5	14	3	21	21	53	13	31	12	43	8	33	25	54	10	34	23	55	14	32	18	42	9	22	3	13
445	5	18	10	21	4	19	33	78	24	51	29	64	16	44	26	66	16	42	22	69	18	46	27	62	11	26	8	18
500	9	23	12	31	9	23	54	121	17	63	56	110	13	52	59	117	21	58	52	110	10	49	44	100	9	33	9	24
515	2	22	12	39	9	25	89	197	25	79	88	185	34	71	119	229	38	85	60	157	15	57	94	183	12	41	16	36
530	5	21	8	42	15	37	78	254	18	84	121	294	20	83	145	349	25	100	86	220	25	68	98	263	16	48	18	51
545	7	23	12	44	14	47	122	343	25	85	153	418	25	92	178	501	25	109	90	288	32	82	98	334	19	56	12	55
600	4	18	12	44	18	56	136	425	26	94	159	521	29	108	214	656	37	125	114	350	31	103	112	402	21	68	14	60
615	7	23	16	48	36	83	102	438	32	101	191	624	31	105	211	748	28	115	154	444	22	110	124	432	18	74	14	58
630	7	25	10	50	24	92	129	489	29	112	194	697	31	116	195	798	29	119	180	538	29	114	133	467	18	76	16	56
645	4	22	10	48	23	101	114	481	31	118	153	697	18	109	169	789	38	132	186	634	23	105	156	525	17	74	16	60
700	7	25	15	51	23	106	105	450	31	123	130	668	25	105	171	746	36	131	174	694	29	103	158	571	13	66	19	65
715	5	23	23	58	29	99	102	450	31	122	131	608	44	118	150	685	38	141	162	702	33	114	149	596	15	63	18	69
730	18	34	19	67	25	100	113	434	32	125	164	578	35	122	170	660	32	144	153	675	38	123	156	619	18	63	15	68
745	16	46	17	74	31	108	78	398	23	117	130	555	47	151	173	664	43	149	148	637	46	146	145	608	22	68	21	73
800	15	54	17	76	44	129	77	370	33	119	146	571	55	181	117	610	39	152	154	617	52	169	160	610	27	82	27	81
815	18	67	9	62	18	118	98	366	39	127	81	521	44	181	93	553	37	151	132	587	56	192	115	576	22	89	23	86
830	14	63	13	56	27	120	67	320	39	134	81	438	44	190	111	494	32	151	121	555	43	197	114	534	25	96	24	95
845	21	68	25	64	36	125	56	298	60	171	82	390	45	188	81	402	39	147	103	510	41	192	101	490	23	97	20	94
900	24	77	16	63	35	116	56	277	48	186	88	332	35	168	61	346	36	144	98	454	39	179	87	417	21	91	32	99
915	25	84	13	67	34	132	37	216	42	189	78	329	39	163	48	301	34	141	86	408	48	171	65	367	29	98	34	110
930	24	94	25	79	44	149	38	187	39	189	54	302	41	160	60	250	48	157	95	382	48	176	63	316	29	102	32	118
945	24	97	25	79	27	140	23	154	40	169	63	283	41	156	57	226	40	158	81	360	54	189	59	274	41	120	31	129
1000	18	91	16	79	41	146	41	139	52	173	85	280	55	176	42	207	43	165	76	338	40	190	51	238	39	138	29	126
1015	12	78	27	93	39	151	36	138	53	184	49	251	46	183	31	190	43	174	82	334	38	180	47	220	39	148	32	124
1030	19	73	25	93	51	158	35	135	43	188	44	241	46	188	37	167	46	172	80	319	33	165	56	213	39	158	31	123
1045	42	91	18	86	51	182	40	152	39	187	76	254	50	197	53	163	43	175	67	305	53	164	52	206	29	146	28	120
1100	38	111	14	84	43	184	41	152	39	174	61	230	76	218	54	175	49	181	67	296	39	163	53	208	36	143	32	123
1115	40	139	19	76	36	181	44	160	44	165	57	238	72	244	43	187	44	182	79	293	46	171	63	224	43	147	38	129
1130	38	158	21	72	53	183	39	164	47	169	73	267	61	259	46	196	68	204	50	263	58	196	60	228	52	160	37	135
1145	42	158	32	86	51	183	48	172	58	188	77	268	66	275	51	194	64	225	49	245	71	214	51	227	46	177	40	147

BAYMETRICS TRAFFIC RESOURCES

B. Wilbur Avenue - between Viera Avenue and Fleming Avenue

Date	11-Nov-07		Sunday		12-Nov-07		Monday		13-Nov-07		Tuesday		14-Nov-07		Wednesday		15-Nov-07		Thursday		16-Nov-07		Friday		17-Nov-07		Saturday	
	EB		WB		EB		WB		EB		WB		EB		WB		EB		WB		EB		WB		EB		WB	
TIME	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN
1200	40	160	32	104	44	184	51	182	64	213	80	287	75	274	47	187	87	263	64	242	72	247	54	228	53	194	42	157
1215	38	158	35	120	44	192	50	188	49	218	75	305	52	254	80	224	59	278	71	234	47	248	51	216	55	206	41	160
1230	40	160	35	134	43	182	49	198	59	230	62	294	59	252	67	245	57	267	52	236	69	259	50	206	64	218	43	166
1245	39	157	44	146	52	183	52	202	61	233	43	260	60	246	35	229	58	261	69	256	58	246	47	202	52	224	44	170
1300	44	161	28	142	59	198	45	196	72	241	42	222	73	244	39	221	73	247	50	242	57	231	40	188	55	226	38	166
1315	53	176	30	137	55	209	39	185	62	254	44	191	61	253	52	193	56	244	62	233	52	236	49	186	54	225	32	157
1330	38	174	38	140	51	217	49	185	49	244	41	170	70	264	47	173	49	236	60	241	51	218	59	195	58	219	34	148
1345	40	175	32	128	66	231	48	181	48	231	37	164	52	256	48	186	69	247	42	214	63	223	45	193	48	215	36	140
1400	44	175	35	135	39	211	56	192	55	214	39	161	78	261	61	208	79	253	53	217	54	220	39	192	55	215	35	137
1415	53	175	35	140	58	214	51	204	52	204	42	159	60	260	40	196	45	242	68	223	74	242	41	184	64	225	40	145
1430	51	188	26	128	47	210	48	203	88	243	41	159	95	285	40	189	77	270	50	213	98	289	46	171	61	228	41	152
1445	24	172	30	126	72	216	51	206	101	296	38	160	96	329	35	176	67	268	65	236	101	327	52	178	62	242	43	159
1500	36	164	27	118	76	253	52	202	112	353	36	157	93	344	47	162	88	277	67	250	98	371	56	195	56	243	30	154
1515	38	149	28	111	78	273	53	204	125	426	51	166	136	420	40	162	144	376	40	222	124	421	52	206	64	243	36	150
1530	44	142	38	123	98	324	54	210	123	461	46	171	109	434	45	167	139	438	83	255	145	468	56	216	61	243	41	150
1545	51	169	29	122	110	362	51	210	124	484	39	172	120	458	38	170	123	494	64	254	156	523	56	220	60	241	45	152
1600	43	176	25	120	101	387	50	208	129	501	32	168	137	502	42	165	149	555	67	254	156	581	59	223	61	246	46	168
1615	42	180	32	124	109	418	42	197	131	507	37	154	129	495	51	176	125	536	45	259	154	611	56	227	55	237	45	177
1630	43	179	35	121	102	422	44	187	123	507	43	151	138	524	36	167	154	551	42	218	148	614	64	235	52	228	44	180
1645	46	174	36	128	118	430	43	179	124	507	43	155	116	520	38	167	132	560	45	199	151	609	54	233	52	220	46	181
1700	46	177	38	141	116	445	34	163	125	503	37	160	131	514	46	171	147	558	40	172	139	592	44	218	52	211	39	174
1715	41	176	30	139	110	446	36	157	112	484	26	149	228	613	40	160	228	661	22	149	165	603	43	205	59	215	34	163
1730	28	161	30	134	108	452	31	144	111	472	30	136	162	637	31	155	170	677	22	129	119	574	42	183	31	194	41	160
1745	36	151	25	123	99	433	28	129	103	451	30	123	97	618	35	152	134	679	30	114	119	542	41	170	45	187	32	146
1800	46	151	28	113	95	412	26	121	118	444	44	130	102	589	36	142	101	633	19	93	132	535	36	162	66	201	36	143
1815	8	118	23	106	68	370	21	106	101	433	60	164	74	435	52	154	107	512	32	103	118	488	38	157	28	170	26	135
1830	26	116	23	99	64	326	23	98	112	434	51	185	85	358	27	150	99	441	27	108	96	465	46	161	34	173	25	119
1845	29	109	24	98	43	270	19	89	104	435	45	200	70	331	35	150	91	398	25	103	91	437	44	164	40	168	23	110
1900	35	98	21	91	35	210	18	81	77	394	43	199	50	279	22	136	88	385	18	102	89	394	50	178	47	149	21	95
1915	26	116	20	88	34	176	22	82	71	364	26	165	60	265	20	104	76	354	17	87	91	367	29	169	21	142	15	84
1930	26	116	18	83	34	146	16	75	61	313	23	137	32	212	14	91	54	309	15	75	78	349	34	157	25	133	20	79
1945	25	112	18	77	34	137	15	71	67	276	17	109	30	172	10	66	38	256	25	75	65	323	21	134	19	112	12	68
2000	27	104	12	68	28	130	13	66	68	267	22	88	30	152	9	53	33	201	18	75	66	300	24	108	19	84	11	58
2015	38	116	11	59	21	117	17	61	42	238	15	77	20	112	11	44	33	158	12	70	54	263	19	98	12	75	14	57
2030	25	115	15	56	21	104	8	53	18	195	23	77	23	103	11	41	25	129	12	67	45	230	22	86	14	64	8	45
2045	2	92	13	51	16	86	11	49	14	142	16	76	25	98	10	41	29	120	11	53	44	209	14	79	12	57	18	51
2100	5	70	15	54	22	80	12	48	19	93	10	64	17	85	6	38	36	123	7	42	24	167	9	64	21	59	13	53
2115	7	39	15	58	22	81	13	44	12	63	19	68	18	83	11	38	31	121	11	41	18	131	15	60	19	66	20	59
2130	4	18	16	59	14	74	13	49	24	69	15	60	19	79	13	40	29	125	11	40	19	105	12	50	18	70	10	61
2145	3	19	16	62	13	71	14	52	13	68	28	72	12	66	6	36	38	134	18	47	16	77	21	57	16	74	9	52
2200	3	17	8	55	16	65	19	59	14	63	13	75	20	69	10	40	32	130	9	49	12	65	11	59	17	70	20	59
2215	4	14	4	44	13	56	17	63	16	67	17	73	7	58	8	37	18	117	6	44	21	68	15	59	15	66	14	53
2230	7	17	4	32	10	52	18	68	5	48	10	68	8	47	8	32	16	104	10	43	19	68	16	63	18	66	15	58
2245	3	17	9	25	11	50	15	69	11	46	10	50	15	50	4	30	10	76	7	32	17	69	13	55	16	66	9	58
2300	8	22	5	22	5	39	7	57	11	43	11	48	19	49	6	26	9	53	8	31	15	72	10	54	16	65	9	47
2315	6	24	7	25	4	30	9	49	9	36	6	37	8	50	1	19	5	40	4	29	22	73	11	50	14	64	11	44
2330	6	23	4	25	6	26	4	35	4	35	8	35	5	47	1	12	9	33	5	24	17	71	10	44	8	54	3	32
2345	12	32	2	18	7	22	3	23	7	31	6	31	4	36	4	12	4	27	5	22	3	57	6	37	11	49	7	30

BAYMETRICS TRAFFIC RESOURCES

B. Wilbur Avenue - between Viera Avenue and Fleming Avenue

Date	11-Nov-07 Sunday				12-Nov-07 Monday				13-Nov-07 Tuesday				14-Nov-07 Wednesday				15-Nov-07 Thursday				16-Nov-07 Friday				17-Nov-07 Saturday			
	EB		WB		EB		WB		EB		WB		EB		WB		EB		WB		EB		WB		EB		WB	
TIME	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN
TOTAL	1,970	N/A	1,653	N/A	3,454	N/A	3,605	N/A	4,364	N/A	4,577	N/A	4,438	N/A	4,479	N/A	4,736	N/A	4,692	N/A	4,836	N/A	4,486	N/A	2,679	N/A	2,097	N/A
AM		97		79		149		489		189		697		190		798		158		702		197		619		120		129
NOON		188		146		231		206		296		305		329		245		278		338		327		238		242		170
PM		180		141		452		210		507		200		637		176		679		259		614		235		246		181
EVEN		116		68		130		69		267		88		152		53		201		75		300		108		84		61

Telephone: (510) 232-1271 *Fax: (510) 232-1272*

BAYMETRICS TRAFFIC RESOURCES

C. Wilbur Avenue - between Fleming Avenue and SR 160 SB Ramps

Date	11-Nov-07		Sunday		12-Nov-07		Monday		13-Nov-07		Tuesday		14-Nov-07		Wednesday		15-Nov-07		Thursday		16-Nov-07		Friday		17-Nov-07		Saturday	
	EB		WB		EB		WB		EB		WB		EB		WB		EB		WB		EB		WB		EB		WB	
TIME	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN
1200	8	0	4	0	8	0	8	0	2	0	9	0	3	0	4	0	4	0	5	0	3	0	4	0	4	0	4	0
1215	11	0	5	0	8	0	3	0	6	0	7	0	8	0	2	0	8	0	2	0	7	0	3	0	7	0	8	0
1230	4	0	2	0	1	0	4	0	5	0	3	0	3	0	6	0	5	0	5	0	6	0	5	0	4	0	5	0
1245	5	28	4	15	1	18	2	17	2	15	3	22	5	19	2	14	3	20	5	17	4	20	3	15	3	18	1	18
100	3	23	4	15	2	12	3	12	4	17	2	15	5	21	7	17	4	20	2	14	2	19	0	11	2	16	3	17
115	7	19	3	13	2	6	1	10	4	15	8	16	4	17	4	19	6	18	2	14	4	16	0	8	2	11	1	10
130	3	18	5	16	1	6	1	7	1	11	3	16	2	16	3	16	4	17	4	13	4	14	2	5	7	14	2	7
145	2	15	2	14	3	8	3	8	3	12	0	13	2	13	2	16	2	16	3	11	0	10	2	4	7	18	4	10
200	5	17	2	12	0	6	1	6	1	9	1	12	1	9	1	10	2	14	0	9	1	9	4	8	10	26	3	10
215	1	11	1	10	1	5	0	5	2	7	0	4	0	5	2	8	3	11	0	7	3	8	1	9	8	32	6	15
230	3	11	5	10	0	4	0	4	4	10	4	5	0	3	5	10	2	9	2	5	7	11	4	11	2	27	2	15
245	4	13	2	10	3	4	2	3	0	7	1	6	5	6	2	10	4	11	4	6	3	14	3	12	4	24	1	12
300	3	11	1	9	2	6	5	7	7	13	5	10	2	7	1	10	9	18	1	7	7	20	2	10	7	21	1	10
315	2	12	2	10	3	8	2	9	9	20	5	15	4	11	1	9	3	18	2	9	3	20	1	10	3	16	1	5
330	6	15	0	5	2	10	7	16	2	18	2	13	4	15	0	4	5	21	1	8	5	18	1	7	6	20	0	3
345	1	12	4	7	3	10	8	22	4	22	8	20	3	13	3	5	5	22	7	11	2	17	5	9	4	20	3	5
400	2	11	2	8	3	11	12	29	3	18	10	25	6	17	14	18	0	13	7	17	4	14	9	16	2	15	3	7
415	4	13	1	7	8	16	8	35	3	12	19	39	7	20	11	28	8	18	15	30	6	17	9	24	3	15	2	8
430	4	11	2	9	7	21	9	37	15	25	16	53	20	36	8	36	11	24	18	47	10	22	17	40	4	13	11	19
445	4	14	3	8	3	21	23	52	18	39	23	68	9	42	26	59	13	32	26	66	16	36	24	59	4	13	7	23
500	3	15	8	14	20	38	48	88	26	62	46	104	17	53	34	79	13	45	30	89	16	48	32	82	6	17	11	31
515	7	18	6	19	14	44	67	147	22	81	76	161	21	67	72	140	19	56	69	143	11	53	58	131	9	23	12	41
530	7	21	5	22	17	54	91	229	26	92	127	272	31	78	143	275	42	87	87	212	21	64	100	214	8	27	17	47
545	6	23	8	27	26	77	130	336	25	99	163	412	34	103	150	399	32	106	88	274	27	75	112	302	11	34	25	65
600	4	24	13	32	12	69	118	406	19	92	167	533	19	105	195	560	22	115	122	366	42	101	134	404	10	38	18	72
615	4	21	7	33	31	86	121	460	38	108	188	645	28	112	229	717	24	120	124	421	37	127	132	478	21	50	22	82
630	10	24	13	41	29	98	138	507	30	112	188	706	26	107	174	748	31	109	178	512	26	132	133	511	15	57	16	81
645	12	30	10	43	24	96	122	499	29	116	154	697	32	105	159	757	39	116	189	613	25	130	165	564	17	63	23	79
700	9	35	12	42	18	102	107	488	28	125	147	677	32	118	180	742	38	132	180	671	34	122	156	586	21	74	21	82
715	11	42	5	40	27	98	112	479	37	124	153	642	49	139	148	661	41	149	177	724	33	118	145	599	19	72	22	82
730	13	45	9	36	37	106	99	440	49	143	139	593	33	146	175	662	32	150	148	694	37	129	128	594	23	80	21	87
745	17	50	14	40	34	116	95	413	45	159	134	573	52	166	171	674	40	151	156	661	46	150	142	571	25	88	18	82
800	18	59	19	47	47	145	78	384	41	172	108	534	53	187	123	617	41	154	156	637	41	157	147	562	24	91	19	80
815	15	63	14	56	31	149	71	343	47	182	110	491	43	181	115	584	41	154	130	590	65	189	127	544	23	95	27	85
830	15	65	13	60	33	145	78	322	49	182	108	460	49	197	108	517	34	156	118	560	43	195	105	521	19	91	23	87
845	17	65	14	60	30	141	54	281	38	175	99	425	45	190	92	438	41	157	110	514	45	194	123	502	17	83	21	90
900	26	73	30	71	50	144	59	262	66	200	99	416	46	183	86	401	48	164	100	458	40	193	101	456	15	74	44	115
915	25	83	18	75	43	156	47	238	46	199	74	380	42	182	51	337	41	164	76	404	49	177	107	436	35	86	31	119
930	19	87	13	75	40	163	48	208	33	183	72	344	40	173	54	283	42	172	73	359	55	189	80	411	32	99	43	139
945	27	97	22	83	38	171	23	177	38	183	91	336	39	167	47	238	53	184	86	335	48	192	84	372	38	120	53	171
1000	19	90	33	86	42	163	37	155	52	169	70	307	57	178	43	195	41	177	91	326	42	194	45	316	44	149	40	167
1015	17	82	14	82	42	162	41	149	51	174	63	296	40	176	35	179	52	188	89	339	52	197	47	256	36	150	43	179
1030	25	88	28	97	61	183	45	146	49	190	50	274	41	177	55	180	54	200	80	346	31	173	59	235	39	157	36	172
1045	33	94	21	96	40	185	41	164	32	184	50	233	54	192	51	184	47	194	81	341	37	162	56	207	26	145	34	153
1100	38	113	34	97	59	202	53	180	42	174	69	232	80	215	56	197	47	200	60	310	62	182	55	217	38	139	38	151
1115	35	131	30	113	59	219	51	190	48	171	47	216	68	243	43	205	45	193	69	290	49	179	61	231	46	149	36	144
1130	34	140	32	117	50	208	32	177	48	170	65	231	72	274	48	198	62	201	46	256	68	216	64	236	56	166	35	143
1145	41	148	36	132	55	223	45	181	58	196	58	239	59	279	53	200	65	219	46	221	71	250	56	236	50	190	40	149

BAYMETRICS TRAFFIC RESOURCES

C. Wilbur Avenue - between Fleming Avenue and SR 160 SB Ramps

Date	11-Nov-07		Sunday		12-Nov-07		Monday		13-Nov-07		Tuesday		14-Nov-07		Wednesday		15-Nov-07		Thursday		16-Nov-07		Friday		17-Nov-07		Saturday	
	EB		WB		EB		WB		EB		WB		EB		WB		EB		WB		EB		WB		EB		WB	
TIME	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN
1200	39	149	27	125	57	221	41	169	70	224	72	242	84	283	59	203	82	254	42	203	68	256	50	231	55	207	38	149
1215	37	151	20	115	59	221	39	157	32	208	85	280	40	255	86	246	50	259	74	208	53	260	44	214	52	213	44	157
1230	42	159	33	116	58	229	46	171	64	224	68	283	62	245	56	254	70	267	48	210	64	256	41	191	48	205	46	168
1245	38	156	40	120	61	235	49	175	63	229	87	312	61	247	44	245	76	278	73	237	54	239	56	191	56	211	42	170
1300	37	154	29	122	60	238	43	177	63	222	56	296	79	242	38	224	56	252	56	251	51	222	54	195	56	212	43	175
1315	49	166	34	136	54	233	50	188	79	269	61	272	68	270	52	190	71	273	62	239	65	234	49	200	55	215	41	172
1330	36	160	34	137	57	232	59	201	53	258	48	252	62	270	45	179	72	275	58	249	66	236	56	215	59	226	44	170
1345	41	163	33	130	73	244	47	199	57	252	61	226	51	260	46	181	49	248	66	242	62	244	66	225	44	214	41	169
1400	47	173	35	136	61	245	44	200	60	249	55	225	55	236	54	197	68	260	60	246	81	274	45	216	43	201	40	166
1415	41	165	38	140	49	240	54	204	76	246	45	209	85	253	47	192	55	244	48	232	71	280	40	207	55	201	45	170
1430	46	175	32	138	48	231	33	178	79	272	46	207	87	278	35	182	81	253	58	232	99	313	40	191	65	207	40	166
1445	38	172	31	136	72	230	55	186	111	326	51	197	111	338	41	177	69	273	57	223	97	348	64	189	55	218	32	157
1500	34	159	35	136	95	264	44	186	107	373	45	187	100	383	46	169	89	294	72	235	101	368	65	209	67	242	45	162
1515	37	155	27	125	86	301	47	179	116	413	32	174	113	411	41	163	94	333	66	253	124	421	53	222	55	242	34	151
1530	36	145	30	123	89	342	47	193	127	461	34	162	137	461	50	178	148	400	50	245	201	523	65	247	66	243	38	149
1545	54	161	32	124	104	374	47	185	109	459	38	149	135	485	36	173	137	468	76	264	154	580	59	242	60	248	30	147
1600	38	165	29	118	96	375	49	190	114	466	32	136	123	508	43	170	104	483	64	256	164	643	49	226	63	244	36	138
1615	44	172	27	118	96	385	41	184	115	465	40	144	128	523	42	171	159	548	58	248	142	661	54	227	50	239	41	145
1630	37	173	38	126	93	389	44	181	99	437	39	149	131	517	38	159	133	533	60	258	149	609	62	224	46	219	34	141
1645	45	164	36	130	122	407	42	176	144	472	35	146	134	516	44	167	165	561	47	229	151	606	54	219	63	222	36	147
1700	45	171	34	135	113	424	30	157	160	518	49	163	118	511	43	167	135	592	46	211	123	565	40	210	56	215	34	145
1715	45	172	28	136	79	407	32	148	166	569	29	152	145	528	40	165	162	595	38	191	172	595	35	191	56	221	33	137
1730	35	170	31	129	97	411	39	143	137	607	26	139	226	623	42	169	238	700	28	159	136	582	43	172	48	223	31	134
1745	35	160	22	115	93	382	28	129	123	586	30	134	150	639	32	157	166	701	22	134	131	562	44	162	45	205	25	123
1800	38	153	27	108	81	350	26	125	118	544	29	114	109	630	34	148	98	664	33	121	118	557	42	164	54	203	28	117
1815	31	139	28	108	65	336	23	116	109	487	38	123	75	560	38	146	107	609	27	110	103	488	29	158	44	191	17	101
1830	19	123	21	98	58	297	38	115	101	451	39	136	81	415	31	135	109	480	29	111	71	423	36	151	36	179	25	95
1845	27	115	24	100	42	246	24	111	78	406	42	148	79	344	33	136	99	413	28	117	76	368	42	149	43	177	20	90
1900	29	106	22	95	27	192	17	102	65	353	46	165	56	291	21	123	82	397	36	120	81	331	41	148	42	165	17	79
1915	22	97	17	84	36	163	23	102	54	298	31	158	49	265	24	109	70	360	12	105	88	316	39	158	23	144	20	82
1930	25	103	16	79	30	135	16	80	66	263	21	140	60	244	22	100	48	299	19	95	68	313	31	153	24	132	19	76
1945	31	107	15	70	25	118	13	69	71	256	14	112	27	192	16	83	47	247	13	80	64	301	24	135	17	106	12	68
2000	26	104	12	60	23	114	11	63	67	258	19	85	33	169	11	73	35	200	26	70	68	288	22	116	15	79	17	68
2015	27	109	16	59	16	94	17	57	38	242	16	70	29	149	9	58	33	163	19	77	66	266	22	99	10	66	4	52
2030	12	96	11	54	13	77	7	48	19	195	19	68	18	107	12	48	13	128	9	67	45	243	22	90	13	55	11	44
2045	5	70	12	51	13	65	14	49	15	139	20	74	27	107	11	43	28	109	15	69	48	227	12	78	18	56	6	38
2100	14	58	16	55	14	56	13	51	16	88	9	64	24	98	9	41	28	102	9	52	23	182	8	64	19	60	10	31
2115	15	46	14	53	17	57	16	50	22	72	14	62	17	86	6	38	38	107	8	41	15	131	9	51	21	71	13	40
2130	13	47	17	59	12	56	14	57	21	74	15	58	17	85	14	40	26	120	9	41	20	106	9	38	22	80	10	39
2145	12	54	11	58	8	51	14	57	10	69	22	60	19	77	9	38	28	120	13	39	15	73	21	47	10	72	10	43
2200	13	53	12	54	12	49	15	59	11	64	14	65	11	64	9	38	36	128	17	47	21	71	14	53	11	64	12	45
2215	3	41	8	48	11	43	9	52	18	60	7	58	20	67	10	42	23	113	9	48	13	69	6	50	21	64	8	40
2230	9	37	10	41	7	38	11	49	14	53	18	61	6	56	7	35	8	95	5	44	17	66	11	52	19	61	14	44
2245	4	29	10	40	10	40	18	53	12	55	17	56	8	45	7	33	7	74	11	42	11	62	11	42	11	62	18	52
2300	4	20	3	31	10	38	6	44	10	54	7	49	15	49	4	28	11	49	7	32	11	52	8	36	10	61	5	45
2315	6	23	5	28	7	34	6	41	9	45	5	47	19	48	6	24	11	37	9	32	23	62	11	41	9	49	9	46
2330	2	16	3	21	9	36	7	37	5	36	7	36	7	49	1	18	4	33	2	29	16	61	7	37	11	41	6	38
2345	7	19	3	14	6	32	5	24	6	30	4	23	5	46	2	13	10	36	5	23	9	59	8	34	2	32	8	28

BAYMETRICS TRAFFIC RESOURCES

C. Wilbur Avenue - between Fleming Avenue and SR 160 SB Ramps

Date	11-Nov-07 Sunday				12-Nov-07 Monday				13-Nov-07 Tuesday				14-Nov-07 Wednesday				15-Nov-07 Thursday				16-Nov-07 Friday				17-Nov-07 Saturday			
	EB		WB		EB		WB		EB		WB		EB		WB		EB		WB		EB		WB		EB		WB	
TIME	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN
TOTAL	1,959	N/A	1,623	N/A	3,494	N/A	3,566	N/A	4,486	N/A	4,681	N/A	4,591	N/A	4,440	N/A	4,756	N/A	4,769	N/A	4,919	N/A	4,566	N/A	2,639	N/A	2,089	N/A
AM		97		83		171		507		200		706		197		757		184		724		195		599		120		171
NOON		175		140		245		204		326		312		338		254		278		346		348		316		226		179
PM		173		136		424		193		607		187		639		178		701		264		661		247		248		162
EVEN		109		60		114		63		258		85		169		73		200		77		288		116		80		68

Telephone: (510) 232-1271 *Fax: (510) 232-1272*

BAYMETRICS TRAFFIC RESOURCES

D. Wilbur Avenue - between SR 160 NB and SB Ramps

Date	11-Nov-07		Sunday		12-Nov-07		Monday		13-Nov-07		Tuesday		14-Nov-07		Wednesday		15-Nov-07		Thursday		16-Nov-07		Friday		17-Nov-07		Saturday	
	EB		WB		EB		WB		EB		WB		EB		WB		EB		WB		EB		WB		EB		WB	
TIME	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN
1200	9	0	3	0	5	0	8	0	2	0	5	0	3	0	4	0	3	0	5	0	3	0	5	0	4	0	6	0
1215	13	0	4	0	7	0	4	0	8	0	2	0	10	0	4	0	9	0	2	0	10	0	3	0	8	0	7	0
1230	6	0	2	0	2	0	4	0	5	0	3	0	5	0	5	0	4	0	4	0	5	0	5	0	6	0	7	0
1245	10	38	4	13	4	18	3	19	3	18	3	13	6	24	2	15	5	21	5	16	6	24	3	16	5	23	1	21
100	4	33	4	14	3	16	3	14	7	23	3	11	4	25	4	15	3	21	2	13	4	25	1	12	5	24	4	19
115	6	26	4	14	2	11	0	10	4	19	1	10	4	19	3	14	4	16	3	14	4	19	0	9	4	20	1	13
130	4	24	3	15	5	14	1	7	5	19	1	8	5	19	4	13	4	16	5	15	5	19	4	8	6	20	5	11
145	4	18	6	17	2	12	3	7	2	18	0	5	2	15	2	13	2	13	2	12	2	15	4	9	3	18	2	12
200	6	20	1	14	0	9	1	5	2	13	2	4	6	17	2	11	5	15	0	10	6	17	4	12	4	17	5	13
215	4	18	4	14	1	8	0	5	2	11	0	3	1	14	2	10	1	12	0	7	1	14	0	12	3	16	5	17
230	5	19	3	14	2	5	1	5	2	8	5	7	5	14	3	9	4	12	2	4	5	14	3	11	5	15	4	16
245	2	17	2	10	3	6	1	3	0	6	1	8	3	15	4	11	2	12	7	9	3	15	4	11	3	15	1	15
300	1	12	2	11	1	7	6	8	4	8	3	9	1	10	1	10	1	8	3	12	1	10	2	9	3	14	1	11
315	3	11	3	10	3	9	2	10	8	14	3	12	7	16	2	10	7	14	1	13	7	16	1	10	4	15	0	6
330	2	8	3	10	4	11	0	9	8	20	2	9	1	12	1	8	1	11	0	11	1	12	0	7	3	13	0	2
345	2	8	4	12	6	14	11	19	7	27	5	13	4	13	5	9	4	13	9	13	4	13	3	6	4	14	4	5
400	3	10	3	13	6	19	3	16	6	29	16	26	7	19	16	24	6	18	6	16	7	19	5	9	7	18	3	7
415	4	11	0	10	10	26	12	26	3	24	16	39	6	18	10	32	5	16	13	28	6	18	9	17	6	20	1	8
430	4	13	3	10	8	30	18	44	18	34	24	61	20	37	11	42	19	34	19	47	20	37	14	31	15	32	10	18
445	7	18	4	10	7	31	29	62	16	43	41	97	8	41	27	64	7	37	22	60	8	41	22	50	11	39	6	20
500	4	19	7	14	21	46	39	98	20	57	57	138	21	55	27	75	20	51	24	78	21	55	21	66	17	49	8	25
515	9	24	6	20	20	56	64	150	21	75	89	211	25	74	56	121	24	70	60	125	25	74	42	99	16	59	9	33
530	7	27	5	22	19	67	87	219	33	90	118	305	49	103	96	206	47	98	83	189	49	103	79	164	8	52	16	39
545	3	23	9	27	32	92	108	298	35	109	128	392	38	133	128	307	36	127	123	290	38	133	112	254	12	53	24	57
600	5	24	13	33	22	93	111	370	22	111	164	499	28	140	159	439	27	134	134	400	28	140	151	384	14	50	17	66
615	7	22	6	33	34	107	117	423	57	147	186	596	45	160	185	568	43	153	177	517	45	160	167	509	12	46	31	88
630	13	28	12	40	30	118	105	441	35	149	233	711	40	151	187	659	34	140	178	612	40	151	201	631	21	59	22	94
645	12	37	13	44	29	115	98	431	44	158	161	744	45	158	192	723	46	150	185	674	45	158	235	754	20	67	44	114
700	13	45	13	44	22	115	97	417	43	179	127	707	36	166	183	747	41	164	186	726	36	166	172	775	16	69	34	131
715	15	53	4	42	21	102	80	380	48	170	134	655	58	179	146	708	46	167	158	707	58	179	124	732	32	89	21	121
730	15	55	9	39	38	110	87	362	48	183	173	595	45	184	125	646	41	174	152	681	84	223	111	642	19	87	23	122
745	20	63	14	40	31	112	77	341	42	181	111	545	42	181	148	602	39	167	139	635	72	250	156	563	23	90	29	107
800	13	63	18	45	45	135	99	343	41	179	99	517	37	182	153	572	49	175	137	586	67	281	127	518	28	102	30	103
815	17	65	12	53	33	147	68	331	48	179	92	475	54	178	108	534	51	180	120	548	65	288	101	495	22	92	20	102
830	19	69	14	58	41	150	79	323	46	177	107	409	48	181	112	521	42	181	104	500	68	272	100	484	34	107	29	108
845	23	72	20	64	46	165	57	303	53	188	87	385	51	190	127	500	48	190	105	466	61	261	112	440	21	105	27	106
900	25	84	31	77	42	162	62	266	45	192	94	380	54	207	90	437	51	192	92	421	62	256	102	415	28	105	40	116
915	27	94	19	84	40	169	59	257	46	190	78	366	43	196	60	389	41	182	65	366	43	234	96	410	33	116	23	119
930	19	94	15	85	39	167	46	224	39	183	58	317	45	193	55	332	57	197	70	332	70	236	64	374	33	115	36	126
945	19	90	22	87	40	161	51	218	49	179	86	316	37	179	47	252	45	194	72	299	57	232	92	354	41	135	45	144
1000	20	85	34	90	51	170	73	229	49	183	74	296	41	166	35	197	45	188	88	295	61	231	74	326	39	146	35	139
1015	18	76	23	94	48	178	61	231	38	175	58	276	48	171	46	183	51	198	61	291	68	256	64	294	48	161	41	157
1030	25	82	29	108	46	185	53	238	43	179	63	281	32	158	47	175	56	197	63	284	62	248	51	281	36	164	37	158
1045	28	91	25	111	48	193	45	232	62	192	41	236	52	173	57	185	50	202	67	279	52	243	55	244	51	174	33	146
1100	26	97	40	117	45	187	66	225	50	193	65	227	69	201	61	211	66	223	71	262	69	251	62	232	48	183	34	145
1115	26	105	32	126	58	197	58	222	53	208	52	221	78	231	49	214	67	239	63	264	99	282	83	251	36	171	40	144
1130	24	104	35	132	44	195	44	213	58	223	53	211	67	266	52	219	56	239	72	273	70	290	87	287	38	173	43	150
1145	47	123	30	137	56	203	60	228	57	218	59	229	63	277	54	216	67	256	69	275	70	308	67	299	24	146	37	154

BAYMETRICS TRAFFIC RESOURCES

D. Wilbur Avenue - between SR 160 NB and SB Ramps

Date	11-Nov-07		Sunday						12-Nov-07		Monday						13-Nov-07		Tuesday					
	EB				WB				EB				WB				EB				WB			
TIME	15 MIN		60 MIN		15 MIN		60 MIN		15 MIN		60 MIN		15 MIN		60 MIN		15 MIN		60 MIN		15 MIN		60 MIN	
1200	37		134		26		123		56		214		51		213		67		235		65		229	
1215	36		144		18		109		58		214		65		220		81		263		71		248	
1230	35		155		36		110		56		226		40		216		54		259		68		263	
1245	36		144		32		112		55		225		68		224		54		256		84		288	
1300	28		135		26		112		60		229		64		237		64		253		54		277	
1315	48		147		29		123		56		227		53		225		65		237		57		263	
1330	46		158		35		122		54		225		50		235		69		252		53		248	
1345	42		164		30		120		64		234		49		216		61		259		60		224	
1400	48		184		33		127		59		233		50		202		52		247		56		226	
1415	45		181		23		121		50		227		47		196		71		253		65		234	
1430	46		181		31		117		57		230		36		182		69		253		62		243	
1445	37		176		27		114		85		251		40		173		122		314		44		227	
1500	42		170		25		106		97		289		40		163		101		363		46		217	
1515	37		162		28		111		91		330		42		158		121		413		59		211	
1530	40		156		33		113		104		377		53		175		121		465		44		193	
1545	59		178		34		120		91		383		55		190		144		487		36		185	
1600	56		192		35		130		109		395		51		201		113		499		36		175	
1615	39		194		29		131		97		401		36		195		132		510		38		154	
1630	53		207		39		137		98		395		39		181		132		521		42		152	
1645	39		187		39		142		111		415		35		161		136		513		26		142	
1700	46		177		35		142		102		408		34		144		153		553		41		147	
1715	48		186		27		140		102		413		41		149		132		553		30		139	
1730	44		177		26		127		99		414		29		139		129		550		30		127	
1745	47		185		18		106		101		404		13		117		128		542		28		129	
1800	44		183		16		87		95		397		23		106		126		515		26		114	
1815	37		172		24		84		63		358		33		98		122		505		32		116	
1830	34		162		24		82		67		326		36		105		115		491		29		115	
1845	36		151		26		90		44		269		19		111		84		447		36		123	
1900	38		145		14		88		38		212		17		105		82		403		37		134	
1915	40		148		19		83		34		183		17		89		60		341		28		130	
1930	23		137		17		76		31		147		16		69		41		267		29		130	
1945	26		127		16		66		27		130		17		67		44		227		19		113	
2000	22		111		14		66		25		117		12		62		41		186		10		86	
2015	21		92		14		61		18		101		9		54		34		160		22		80	
2030	25		94		16		60		16		86		6		44		19		138		13		64	
2045	15		83		14		58		14		73		15		42		18		112		18		63	
2100	22		83		12		56		12		60		16		46		23		94		10		63	
2115	24		86		17		59		19		61		10		47		18		78		21		62	
2130	21		82		15		58		12		57		8		49		17		76		11		60	
2145	16		83		11		55		14		57		14		48		11		69		15		57	
2200	16		77		9		52		13		58		11		43		10		56		13		60	
2215	10		63		11		46		12		51		10		43		16		54		8		47	
2230	12		54		14		45		10		49		11		46		15		52		10		46	
2245	13		51		8		42		5		40		9		41		15		56		8		39	
2300	6		41		3		36		13		40		5		35		11		57		10		36	
2315	5		36		6		31		8		36		6		31		13		54		7		35	
2330	4		28		5		22		11		37		9		29		7		46		6		31	
2345	10		25		3		17		6		38		8		28		6		37		5		28	

Date	14-Nov-07		Wednesday						15-Nov-07		Thursday						16-Nov-07		Friday					
	EB				WB				EB				WB				EB				WB			
TIME	15 MIN		60 MIN		15 MIN		60 MIN		15 MIN		60 MIN		15 MIN		60 MIN		15 MIN		60 MIN		15 MIN		60 MIN	
1200	72		280		59		214		49		239		64		268		72		311		70		307	
1215	67		269		82		247		59		231		80		285		92		304		72		296	
1230	63		265		67		262		62		237		58		271		65		299		67		276	
1245	65		267		49		257		62		232		62		264		65		294		70		279	
1300	73		268		56		254		61		244		46		246		73		295		61		270	
1315	71		272		43		215		68		253		76		242		71		274		49		247	
1330	72		281		59		207		56		247		57		241		72		281		62		242	
1345	89		305		46		204		62		247		67		246		99		315		74		246	
1400	58		290		57		205		56		242		53		253		58		300		58		243	
1415	83		302		38		200		76		250		75		252		96		325		54		248	
1430	94		324		41		182		90		284		76		271		94		347		50		236	
1445	113		348		46		182		69		291		62		266		113		361		69		231	
1500	108		398		41		166		84		319		61		274		108		411		52		225	
1515	116		431		44		172		104		347		62		261		127		442		58		229	
1530	126		463		48		179		123		380		57		242		138		486		59		238	
1545	113		463		54		187		118		429		67		247		131		504		51		220	
1600	118		473		39		185		123		468		61		247		128		524		43		211	
1615	125		482		41		182		127		491		54		239		145		542		58		211	
1630	128		484		50		184		153		521		60		242		137		541		61		213	
1645	137		508		43		173		162		565		40		215		145		555		62		224	
1700	118		508		40		174		133		575		42		196		119		546		58		239	
1715	129		512		50		183		160		608		46		188		144		545		46		227	
1730	167		551		59		192		199		654		25		153		209		617		44		210	
1745	129		543		47		196		135		627		24		137		121		593		45		193	
1800	121		546		37		193		126		620		26		121		113		587		38		173	
1815	109		526		34		177		122		582		22		97		109		552		29		156	
1830	101		460		43		161		115		498		28		100		103		446		30		142	
1845	81		412		29		143		84		447		29		105		75		400		26		123	
1900	79		370		27		133		82		403		30		109		73		360		26		111	
1915	58		319		24		123		60		341		8		95		54		305		22		104	
1930	39		257		23		103		41		267		18		85		36		238		14		88	
1945	42		218		15		89		44		227		13		69		37		200		23		85	
2000	39		178		10		72		41		186		27		66		30		157		19		78	
2015	32		152		5		53		34		160		21		79		17		120		11		67	
2030	18		131		12		42		19		138		10		71		16		100		21		74	
2045	17		106		9		36		18		112		14		72		21		84		12		63	
2100	22		89		9		35		23		94		9		54		16		70		14		58	
2115	17		74		6		36		18		78		8		41		15		68		8		55	
2130	16		72		13		37		17		76		10		41		10		62		12		46	
2145	11		66		11		39		11		69		13		40		14		55		18		52	
2200	9		53		11		41		10		56		15		46		13		52		17		55	
2215	15		51		9		44		16		54		10		48		13		50		7		54	
2230	14		49		11		42		15		52		7		45		13		53		12		54	
2245	14		52		7		38		15		56		12		44		9		48		10		46	
2300	10		53		5		32		11		57		7		36		11		46		9		38	
2315	12		50		7		30		13		54		8		34		6		39		12		43	
2330	6		42		1		20		7		46		3		30		5		31		7		38	
2345	5		33		3		16		6		37		5		23		4		26		7		35	

Date	17-Nov-07		Saturday					
	EB				WB			
TIME	15 MIN		60 MIN		15 MIN		60 MIN	
1200	36		134		48		168	
1215	56		154		38		166	
1230	62		178		49		172	
1245	48		202		48		183	
1300	38		204		45		180	
1315	26		174		54		196	
1330	51		163		39		186	
1345	54		169		40		178	
1400	56		187		46		179	
1415	65		226		47		172	
1430	67		242		43		176	
1445	47		235		30		166	
1500	61		240		42		162	
1515	54		229		20		135	
1530	53		215		35		127	
1545	61		229		35		132	
1600	65		233		38		128	
1615	57		236		43		151	
1630	58		241		33		149	
1645	60		240		30		144	
1700	56		231		30		136	
1715	45		219		31		124	
1730	49		210		32		123	
1745	45		195		30		123	
1800	51		190		25		118	
1815	49		194		13		100	
1830	45		190		20		88	
1845	38		183		15		73	
1900	34		166		13		61	
1915	40		157		18		66	
1930	22		134		17		63	
1945	18		114		13		61	
2000	17		97		15		63	
2015	11		68		6		51	
2030	18		64		12		46	
2045	14		60		6		39	
2100	19		62		8		32	
2115	23		74		11		37	
2130	13		69		10		35	
2145	19		74		9		38	
2200	14		69		13		43	
2215	18		64		9		41	
2230	19		70		16		47	
2245	21		72		17		55	
2300	10		68		7		49	
2315	13		63		9		49	
2330	17		61		6		39	
2345	5		45		7		29	

BAYMETRICS TRAFFIC RESOURCES

D. Wilbur Avenue - between SR 160 NB and SB Ramps

Date	11-Nov-07 Sunday				12-Nov-07 Monday				13-Nov-07 Tuesday				14-Nov-07 Wednesday				15-Nov-07 Thursday				16-Nov-07 Friday				17-Nov-07 Saturday			
	EB		WB		EB		WB		EB		WB		EB		WB		EB		WB		EB		WB		EB		WB	
TIME	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN
TOTAL	2,152	N/A	1,614	N/A	3,641	N/A	3,579	N/A	4,656	N/A	4,601	N/A	4,720	N/A	4,457	N/A	4,721	N/A	4,756	N/A	5,128	N/A	4,797	N/A	2,697	N/A	2,122	N/A
AM		94		87		169		441		192		744		207		747		197		726		288		775		135		144
NOON		184		137		251		238		314		296		348		262		291		295		361		326		242		196
PM		207		142		415		201		553		217		551		196		654		274		617		239		241		162
EVEN		111		66		117		62		186		86		178		72		186		79		157		78		97		63

Telephone: (510) 232-1271 *Fax: (510) 232-1272*

BAYMETRICS TRAFFIC RESOURCES

E. Bridge Road - South of Wilbur Avenue

Date	11-Nov-07	Sunday			12-Nov-07	Monday			13-Nov-07	Tuesday			14-Nov-07	Wednesday			15-Nov-07	Thursday			16-Nov-07	Friday			17-Nov-07	Saturday		
	NB		SB		NB		SB		NB		SB		NB		SB		NB		SB		NB		SB		NB		SB	
TIME	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN
1200	7	0	9	0	3	0	4	0	7	0	3	0	3	0	4	0	6	0	9	0	4	0	2	0	5	0	4	0
1215	5	0	11	0	5	0	8	0	2	0	10	0	4	0	10	0	1	0	9	0	5	0	8	0	12	0	9	0
1230	2	0	6	0	6	0	3	0	4	0	5	0	6	0	5	0	3	0	5	0	3	0	4	0	3	0	6	0
1245	3	17	9	35	2	16	5	20	2	15	3	21	1	14	6	25	5	15	3	26	2	14	8	22	3	23	5	24
100	4	14	4	30	2	15	1	17	1	9	5	23	4	15	3	24	2	11	0	17	2	12	2	22	4	22	2	22
115	8	17	9	28	1	11	3	12	3	10	5	18	1	12	3	17	2	12	3	11	1	8	3	17	2	12	6	19
130	5	20	5	27	3	8	7	16	1	7	5	18	3	9	5	17	6	15	6	12	2	7	6	19	3	12	6	19
145	2	19	3	21	3	9	2	13	2	7	2	17	3	11	2	13	1	11	5	14	2	7	0	11	4	13	9	23
200	3	18	5	22	1	8	0	12	1	7	1	13	3	10	4	14	0	9	2	16	2	7	1	10	6	15	12	33
215	1	11	3	16	1	8	1	10	0	4	2	10	3	12	1	12	0	7	5	18	2	8	1	8	5	18	11	38
230	4	10	5	16	1	6	1	4	1	4	2	7	3	12	0	7	2	3	1	13	1	7	8	10	5	20	4	36
245	2	10	2	15	0	3	4	6	1	3	0	5	2	11	5	10	3	5	0	8	0	5	3	13	2	18	3	30
300	1	8	1	11	7	9	3	9	2	4	1	5	1	9	0	6	2	7	1	7	1	4	2	14	2	14	7	25
315	2	9	2	10	2	10	3	11	2	6	5	8	2	8	7	12	2	9	1	3	1	3	1	14	0	9	7	21
330	0	5	2	7	1	10	5	15	3	8	6	12	0	5	1	13	3	10	3	5	0	2	2	8	5	9	6	23
345	3	6	3	8	3	13	6	17	4	11	4	16	3	6	4	12	3	10	6	11	3	5	3	8	3	10	5	25
400	4	9	3	10	10	16	5	19	6	15	5	20	10	15	7	19	9	17	0	10	4	8	1	7	2	10	0	18
415	1	8	7	15	10	24	7	23	8	21	3	18	14	27	7	19	7	22	6	15	5	12	8	14	5	15	4	15
430	6	14	3	16	10	33	10	28	18	36	10	22	17	44	8	26	20	39	5	17	13	25	8	20	8	18	7	16
445	5	16	5	18	27	57	6	28	27	59	11	29	30	71	7	29	24	60	11	22	26	48	4	21	7	22	4	15
500	10	22	3	18	33	80	11	34	34	87	6	30	43	104	16	38	32	83	8	30	33	77	10	30	19	39	5	20
515	5	26	7	18	52	122	10	37	70	149	14	41	69	159	18	49	78	154	18	42	63	135	14	36	17	51	6	22
530	13	33	7	22	96	208	15	42	109	240	14	45	109	251	24	65	102	236	22	59	109	231	17	45	31	74	8	23
545	11	39	5	22	135	316	24	60	177	390	19	53	165	386	14	72	161	373	27	75	137	342	21	62	41	108	10	29
600	11	40	6	25	119	402	17	66	187	543	3	50	165	508	24	80	180	521	24	91	141	450	33	85	24	113	4	28
615	14	49	5	23	106	456	24	80	169	642	38	74	185	624	24	86	201	644	16	89	189	576	29	100	36	132	13	35
630	22	58	8	24	113	473	37	102	194	727	30	90	240	755	17	79	228	770	17	84	188	655	32	115	38	139	10	37
645	18	65	12	31	112	450	37	115	187	737	56	127	234	824	49	114	253	862	19	76	193	711	51	145	56	154	13	40
700	20	74	12	37	102	433	18	116	129	679	47	171	192	851	29	119	200	882	18	70	142	712	36	148	41	171	10	46
715	11	71	15	47	91	418	27	119	127	637	48	181	181	847	46	141	175	856	42	96	137	660	26	145	42	177	18	51
730	29	78	16	55	97	402	45	127	184	627	52	203	140	747	72	196	150	778	57	136	135	607	33	146	49	188	21	62
745	31	91	17	60	103	393	37	127	133	573	47	194	175	688	61	208	171	696	52	169	164	578	41	136	49	181	30	79
800	25	96	16	64	119	410	50	159	110	554	35	182	197	693	51	230	157	653	52	203	151	587	34	134	46	186	20	89
815	25	110	16	65	57	376	27	159	104	531	44	178	111	623	74	258	136	614	54	215	113	563	52	160	41	185	26	97
830	36	117	17	66	64	343	33	147	98	445	38	164	163	646	49	235	129	593	37	195	102	530	45	172	48	184	24	100
845	34	120	24	73	69	309	37	147	104	416	36	153	161	632	61	235	124	546	51	194	96	462	43	174	56	191	21	91
900	45	140	21	78	49	239	41	138	74	380	39	157	86	521	55	239	110	499	61	203	98	409	38	178	66	211	20	91
915	44	159	29	91	55	237	40	151	65	341	36	149	56	466	37	202	54	417	49	198	71	367	44	170	47	217	25	90
930	32	155	19	93	45	218	29	147	67	310	35	146	66	369	45	198	62	350	57	218	59	324	47	172	64	233	33	99
945	36	157	36	105	49	198	53	163	56	262	33	143	99	307	55	192	75	301	42	209	58	286	39	168	66	243	33	111
1000	52	164	28	112	59	208	45	167	67	255	41	145	81	302	74	211	76	267	40	188	69	257	49	179	46	223	38	129
1015	35	155	28	111	65	218	48	175	56	246	34	143	57	303	65	239	56	269	67	206	59	245	36	171	78	254	30	134
1030	62	185	32	124	60	233	42	188	38	217	43	151	69	306	43	237	60	267	46	195	51	237	41	165	67	257	38	139
1045	35	184	37	125	47	231	37	172	47	208	59	177	64	271	59	241	60	252	58	211	61	240	36	162	61	252	34	140
1100	43	175	28	125	44	216	44	171	51	192	46	182	61	251	65	232	49	225	63	234	64	235	56	169	72	278	42	144
1115	34	174	44	141	68	219	54	177	49	185	52	200	83	277	83	250	59	228	53	220	71	247	52	185	64	264	47	161
1130	44	156	27	136	57	216	48	183	57	204	48	205	64	272	70	277	65	233	58	232	57	253	57	201	57	254	46	169
1145	45	166	48	147	62	231	55	201	43	200	56	202	53	261	70	288	67	240	67	241	62	254	67	232	63	256	53	188

BAYMETRICS TRAFFIC RESOURCES

E. Bridge Road - South of Wilbur Avenue

Date	11-Nov-07		Sunday		12-Nov-07		Monday		13-Nov-07		Tuesday		14-Nov-07		Wednesday		15-Nov-07		Thursday		16-Nov-07		Friday		17-Nov-07		Saturday	
	NB		SB		NB		SB		NB		SB		NB		SB		NB		SB		NB		SB		NB		SB	
TIME	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN
1200	55	178	40	159	44	231	66	223	51	200	63	219	65	265	73	296	75	266	66	244	62	252	75	251	56	240	57	203
1215	32	176	32	147	72	235	60	229	65	216	74	241	77	259	83	296	67	274	95	286	59	240	65	264	70	246	55	211
1230	41	173	33	153	51	229	53	234	68	227	45	238	78	273	64	290	83	292	53	281	68	251	54	261	66	255	48	213
1245	45	173	49	154	73	240	52	231	70	254	49	231	81	301	63	283	69	294	61	275	63	252	57	251	83	275	69	229
1300	39	157	25	139	56	252	54	219	47	250	55	223	54	290	52	262	69	288	79	288	50	240	68	244	61	280	54	226
1315	54	179	48	155	62	242	59	218	53	238	54	203	51	264	68	247	61	282	83	276	64	245	58	237	59	269	62	233
1330	64	202	50	172	67	258	45	210	49	219	52	210	60	246	69	252	51	250	70	293	50	227	68	251	62	265	54	239
1345	50	207	42	165	34	219	49	207	45	194	46	207	66	231	86	275	60	241	60	292	72	236	73	267	54	236	51	221
1400	39	207	50	190	52	215	56	209	49	196	52	204	76	253	42	265	54	226	64	277	67	253	66	265	56	231	60	227
1415	44	197	68	210	52	205	48	198	80	223	64	214	85	287	89	286	70	235	100	294	55	244	86	293	58	230	60	225
1430	46	179	55	215	55	193	47	200	54	228	56	218	65	292	59	276	90	274	74	298	70	264	93	318	66	234	87	258
1445	36	165	42	215	56	215	78	229	56	239	100	272	61	287	95	285	68	282	111	349	70	262	110	355	58	238	68	275
1500	30	156	40	205	43	206	86	259	58	248	83	303	56	267	85	328	79	307	93	378	70	265	93	382	68	250	71	286
1515	40	152	36	173	55	209	87	298	82	250	105	344	57	239	108	347	102	339	86	364	89	299	120	416	44	236	71	297
1530	43	149	65	183	70	224	89	340	67	263	99	387	79	253	128	416	76	325	129	419	83	312	145	468	57	227	72	282
1545	34	147	55	196	73	241	99	361	86	293	117	404	85	277	101	422	94	351	146	454	78	320	148	506	44	213	66	280
1600	34	151	56	212	56	254	95	370	53	288	105	426	62	283	110	447	75	347	95	456	74	324	144	557	42	187	78	287
1615	34	145	39	215	61	260	108	391	67	273	124	445	56	282	114	453	67	312	143	513	78	313	142	579	46	189	74	290
1630	36	138	56	206	64	254	107	409	72	278	130	476	73	276	114	439	68	304	111	495	82	312	168	602	43	175	65	283
1645	37	141	60	211	55	236	119	429	70	262	133	492	68	259	142	480	65	275	147	496	79	313	173	627	46	177	83	300
1700	35	142	60	215	62	242	126	460	57	266	131	518	66	263	124	494	62	262	138	539	70	309	165	648	42	177	87	309
1715	27	135	65	241	57	238	113	465	55	254	147	541	62	269	181	561	48	243	136	532	62	293	172	678	49	180	76	311
1730	38	137	56	241	39	213	122	480	43	225	134	545	40	236	209	656	41	216	176	597	59	270	174	684	43	180	86	332
1745	34	134	45	226	28	186	103	464	39	194	105	517	42	210	157	671	48	199	129	579	57	248	147	658	49	183	59	308
1800	17	116	45	211	36	160	98	436	39	176	107	493	44	188	107	654	31	168	102	543	63	241	157	650	43	184	64	285
1815	26	115	36	182	49	152	69	392	55	176	101	447	43	169	91	564	30	150	85	492	49	228	106	584	25	160	42	251
1830	31	108	32	158	50	163	60	330	41	174	110	423	56	185	87	442	33	142	92	408	48	217	76	486	23	140	44	209
1845	32	106	36	149	26	161	53	280	26	161	74	392	40	183	77	362	31	125	86	365	42	202	70	409	27	118	51	201
1900	26	115	36	140	24	149	43	225	32	154	70	355	42	181	67	322	39	133	67	330	42	181	76	328	26	101	46	183
1915	24	113	40	144	31	131	40	196	34	133	56	310	35	173	52	283	16	119	66	311	39	171	67	289	28	104	43	184
1930	19	101	26	138	17	98	34	170	21	113	44	244	25	142	54	250	29	115	57	276	25	148	53	266	27	108	21	161
1945	13	82	22	124	22	94	22	139	18	105	31	201	20	122	33	206	14	98	44	234	29	135	45	241	13	94	27	137
2000	21	77	21	109	11	81	36	132	14	87	39	170	16	96	38	177	25	84	30	197	26	119	54	219	22	90	27	118
2015	21	74	23	92	14	64	24	116	20	73	33	147	10	71	30	155	24	92	43	174	26	106	38	190	13	75	20	95
2030	15	70	23	89	16	63	17	99	14	66	19	122	15	61	18	119	18	81	18	135	28	109	29	166	22	70	17	91
2045	16	73	13	80	20	61	14	91	20	68	13	104	13	54	26	112	20	87	27	118	17	97	25	146	14	71	13	77
2100	12	64	21	80	12	62	25	80	10	64	25	90	9	47	38	112	14	76	31	119	14	85	21	113	12	61	19	69
2115	19	62	25	82	10	58	21	77	4	48	22	79	16	53	20	102	11	63	37	113	23	82	23	98	13	61	32	81
2130	18	65	21	80	14	56	15	75	12	46	17	77	17	55	18	102	10	55	31	126	13	67	20	89	19	58	22	86
2145	7	56	17	84	18	54	16	77	15	41	10	74	13	55	18	94	17	52	28	127	25	75	22	86	14	58	20	93
2200	9	53	16	79	14	56	14	66	9	40	9	58	10	56	13	69	18	56	39	135	23	84	27	92	16	62	14	88
2215	8	42	10	64	10	56	15	60	8	44	18	54	12	52	18	67	11	56	26	124	13	74	18	87	14	63	25	81
2230	11	35	13	56	11	53	10	55	9	41	16	53	11	46	10	59	9	55	11	104	10	71	19	86	14	58	18	77
2245	11	39	11	50	9	44	14	53	2	28	16	59	6	39	13	54	11	49	7	83	14	60	14	78	17	61	22	79
2300	5	35	5	39	8	38	13	52	14	33	12	62	5	34	15	56	8	39	13	57	11	48	14	65	7	52	8	73
2315	3	30	5	34	6	34	8	45	4	29	12	56	12	34	15	53	11	39	10	41	13	48	25	72	12	50	16	64
2330	2	21	4	25	8	31	14	49	6	26	6	46	2	25	7	50	1	31	3	33	8	46	19	72	6	42	19	65
2345	9	19	10	24	6	28	5	40	7	31	5	35	3	22	6	43	9	29	9	35	10	42	16	74	9	34	3	46

BAYMETRICS TRAFFIC RESOURCES

E. Bridge Road - South of Wilbur Avenue

Date	11-Nov-07 Sunday				12-Nov-07 Monday				13-Nov-07 Tuesday				14-Nov-07 Wednesday				15-Nov-07 Thursday				16-Nov-07 Friday				17-Nov-07 Saturday			
	NB		SB		NB		SB		NB		SB		NB		SB		NB		SB		NB		SB		NB		SB	
TIME	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN
TOTAL	2,232	N/A	2,338	N/A	4,005	N/A	3,670	N/A	4,751	N/A	4,125	N/A	5,522	N/A	4,726	N/A	5,453	N/A	4,663	N/A	5,194	N/A	4,852	N/A	3,229	N/A	3,041	N/A
AM		159		105		473		163		737		203		851		258		882		218		712		178		243		111
NOON		207		215		258		234		255		272		306		296		294		349		264		355		280		275
PM		156		241		260		480		293		545		283		671		351		597		324		684		250		332
EVEN		77		109		81		132		87		170		96		177		92		197		119		219		90		118

Telephone: (510) 232-1271 *Fax: (510) 232-1272*

Appendix P2
Existing Conditions – Level of Service Analysis

CCTALOS Software ver. 2.35 by TJKM Transportation Consultants

Condition: AM_EX_1 04/24/08

INTERSECTION 1 Minaker Dr./Wilbur Ave. CCTA
Count Date 7/13/07 Time 7:00-9:00 AM Peak Hour 7:15-8:15 AN

CCTA METHOD RIGHT THRU LEFT 5-PHASE SIGNAL

16 4 1

Split? N

LEFT	8	1.0	1.0	1.1	1.1	1.1	4	RIGHT	
THRU	136	2.1	(NO. OF LANES)			2.1	654	THRU	STREET NAME: Wilbur Ave.
RIGHT	49	1.1	1.0	1.1	1.1	1.0	10	LEFT	

N
W + E
S

86 6 4
LEFT THRU RIGHT Split? Y

SIG WARRANTS: Urb=N, Rur=N

STREET NAME: Minaker Dr.

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	4	4	1650	0.0024	
	THRU (T)	6	6	1650	0.0036	
	LEFT (L)	86	86	1650	0.0521	0.0521
	T + R		10	1650	0.0061	
SB	RIGHT (R)	16	8 *	1650	0.0048	0.0048
	THRU (T)	4	4	1650	0.0024	
	LEFT (L)	1	1	1650	0.0006	
	T + L		5	1650	0.0030	
EB	RIGHT (R)	49	49	1650	0.0297	
	THRU (T)	136	136	3300	0.0412	
	LEFT (L)	8	8	1650	0.0048	0.0048
	T + R		185	3300	0.0561	
WB	RIGHT (R)	4	4	1650	0.0024	
	THRU (T)	654	654	3300	0.1982	
	LEFT (L)	10	10	1650	0.0061	
	T + R		658	3300	0.1994	0.1994

TOTAL VOLUME-TO-CAPACITY RATIO: 0.26
INTERSECTION LEVEL OF SERVICE: A

* ADJUSTED FOR RIGHT TURN ON RED
INT=EX.INT,VOL=EX_AM.AMV,CAP=

CCTALOS Software ver. 2.35 by TJKM Transportation Consultants

Condition: PM_EX_1 04/24/08

INTERSECTION 1 Minaker Dr./Wilbur Ave. CCTA
Count Date 11/13/07 Time 4:00-6:00 PM Peak Hour 4:00-5:00 PM

CCTA METHOD RIGHT THRU LEFT 5-PHASE SIGNAL

22 5 16

LEFT 14 ---> 1.0 1.0 1.1 1.1 1.1 <--- 12 RIGHT
Split? N

STREET NAME:
THRU 632 ---> 2.1 (NO. OF LANES) 2.1 <--- 164 THRU Wilbur Ave.

RIGHT 140 ---> 1.1 1.0 1.1 1.1 1.0 <--- 16 LEFT

N
W + E
S

74 3 12
LEFT THRU RIGHT Split? Y

SIG WARRANTS:
Urb=N, Rur=N

STREET NAME: Minaker Dr.

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB RIGHT (R)	12	12	1650	0.0073	
THRU (T)	3	3	1650	0.0018	
LEFT (L)	74	74	1650	0.0448	0.0448
T + R		15	1650	0.0091	
SB RIGHT (R)	22	8 *	1650	0.0048	
THRU (T)	5	5	1650	0.0030	
LEFT (L)	16	16	1650	0.0097	
T + L		21	1650	0.0127	0.0127
EB RIGHT (R)	140	140	1650	0.0848	
THRU (T)	632	632	3300	0.1915	
LEFT (L)	14	14	1650	0.0085	
T + R		772	3300	0.2339	0.2339
WB RIGHT (R)	12	12	1650	0.0073	
THRU (T)	164	164	3300	0.0497	
LEFT (L)	16	16	1650	0.0097	0.0097
T + R		176	3300	0.0533	

TOTAL VOLUME-TO-CAPACITY RATIO: 0.30
INTERSECTION LEVEL OF SERVICE: A

* ADJUSTED FOR RIGHT TURN ON RED
INT=EX.INT,VOL=EX_PM.AMV,CAP=

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 Viera Avenue/Wilbur Avenue

Average Delay (sec/veh): 3.3 Worst Case Level Of Service: C[20.3]

Street Name:	Viera Avenue						Wilbur Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1!	0 0		0 0	0	0	0 0	0	1 0	1	0 0	
Volume Module:												
Base Vol:	80	0	11	0	0	0	0	111	28	8	556	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	80	0	11	0	0	0	0	111	28	8	556	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.61	0.61	0.61	1.00	1.00	1.00	0.91	0.91	0.91	0.87	0.87	0.87
PHF Volume:	131	0	18	0	0	0	0	122	31	9	639	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	131	0	18	0	0	0	0	122	31	9	639	0
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	795	795	137	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	153	xxxx	xxxxx
Potent Cap.:	357	320	911	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1428	xxxx	xxxxx
Move Cap.:	355	318	911	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1428	xxxx	xxxxx
Volume/Cap:	0.37	0.00	0.02	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.5	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	383	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	1.8	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	20.3	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	C	*	*	*	*	*	*	*	*	*	*
ApproachDel:		20.3		xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:		C		*			*			*		

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 Viera Avenue/Wilbur Avenue

Average Delay (sec/veh): 1.0 Worst Case Level Of Service: C[15.4]

Street Name:	Viera Avenue						Wilbur Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1!	0	0	0 0	0	0	0 0	0 1	0	1 0	1	0 0
Volume Module:												
Base Vol:	28	0	15	0	0	0	0	491	178	10	152	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	28	0	15	0	0	0	0	491	178	10	152	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.83	0.83	0.83	1.00	1.00	1.00	0.97	0.97	0.97	0.92	0.92	0.92
PHF Volume:	34	0	18	0	0	0	0	506	184	11	165	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	34	0	18	0	0	0	0	506	184	11	165	0
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	785	785	598	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	690	xxxx	xxxxx
Potent Cap.:	361	325	502	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	905	xxxx	xxxxx
Move Cap.:	358	321	502	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	905	xxxx	xxxxx
Volume/Cap:	0.09	0.00	0.04	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	9.0	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	398	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.4	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	15.4	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	C	*	*	*	*	*	*	*	*	*	*
ApproachDel:		15.4		xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:		C		*			*			*		

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #3 Fleming Avenue/Wilbur Avenue

Average Delay (sec/veh): 0.1 Worst Case Level Of Service: C[15.3]

Street Name:	Fleming Avenue						Wilbur Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Yield Sign			Yield Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1! 0	0	1 0	0 0	0	0 1	0 0	0	0 0	1 0	0
Volume Module:												
Base Vol:	0	0	0	1	0	0	1	153	0	0	570	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	1	0	0	1	153	0	0	570	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	0.25	0.25	0.25	0.80	0.80	0.80	0.94	0.94	0.94
PHF Volume:	0	0	0	4	0	0	1	191	0	0	606	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	4	0	0	1	191	0	0	606	0
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	6.4	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	800	800	191	800	xxxx	xxxxx	606	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	303	318	850	354	xxxx	xxxxx	972	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	303	318	850	354	xxxx	xxxxx	972	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.00	0.00	0.00	0.01	xxxx	xxxx	0.00	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	15.3	xxxx	xxxxx	8.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	C	*	*	A	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	0	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	A	*	*	*	*	*
ApproachDel:	xxxxxx			15.3			xxxxxx			xxxxxx		
ApproachLOS:	*			C			*			*		

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #3 Fleming Avenue/Wilbur Avenue

Average Delay (sec/veh): 0.2 Worst Case Level Of Service: B[14.3]

Street Name:	Fleming Avenue						Wilbur Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Yield Sign			Yield Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	0 1	0 0	0	0 0	0 1	0
Volume Module:												
Base Vol:	0	0	0	3	0	1	2	598	0	0	134	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	3	0	1	2	598	0	0	134	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	0.50	0.50	0.50	0.93	0.93	0.93	0.70	0.70	0.70
PHF Volume:	0	0	0	6	0	2	2	643	0	0	191	1
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	6	0	2	2	643	0	0	191	1
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	6.4	6.5	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	840	840	643	839	839	192	193	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	285	301	473	336	302	849	1380	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	284	301	473	335	301	849	1380	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.00	0.00	0.00	0.02	0.00	0.00	0.00	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	0	xxxxx	xxxx	395	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	0.1	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	14.3	xxxxx	7.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	B	*	A	*	*	*	*	*
ApproachDel:	xxxxxx			14.3			xxxxxx			xxxxxx		
ApproachLOS:	*			B			*			*		

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #4 SR 160 SB On Ramp/Wilbur Avenue

Average Delay (sec/veh): 2.1 Worst Case Level Of Service: B[13.2]

Street Name:	SR 160 SB On Ramp						Wilbur Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Channel			Include			Include		
Lanes:	0 0	0	0 0	1	0 0	0 1	0 0	1	1 0	1	0 2	0 0
Volume Module:												
Base Vol:	0	0	0	33	0	99	0	147	11	12	529	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	33	0	99	0	147	11	12	529	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	0.83	0.83	0.83	0.79	0.79	0.79	0.79	0.79	0.79
PHF Volume:	0	0	0	40	0	119	0	186	14	15	670	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	40	0	119	0	186	14	15	670	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	xxxx	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	793	xxxx	335	xxxx	xxxx	xxxxx	200	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	326	xxxx	661	xxxx	xxxx	xxxxx	1370	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	323	xxxx	661	xxxx	xxxx	xxxxx	1370	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.12	xxxx	0.18	xxxx	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.4	xxxx	0.7	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	17.7	xxxx	11.6	xxxxx	xxxx	xxxxx	7.7	xxxx	xxxxx
LOS by Move:	*	*	*	C	*	B	*	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			13.2			xxxxxx			xxxxxx		
ApproachLOS:	*			B			*			*		

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #4 SR 160 SB On Ramp/Wilbur Avenue

Average Delay (sec/veh): 1.8 Worst Case Level Of Service: B[12.3]

Street Name:	SR 160 SB On Ramp						Wilbur Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Channel			Include			Include		
Lanes:	0 0	0	0 0	1 0	0	0 1	0 0	1	1 0	1 0	2	0 0
Volume Module:												
Base Vol:	0	0	0	69	0	22	0	477	146	16	113	0
Growth Adj:	1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00	
Initial Bse:	0	0	0	69	0	22	0	477	146	16	113	0
User Adj:	1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00	
PHF Adj:	1.00 1.00	1.00		0.69 0.69	0.69		0.88 0.88	0.88		0.79 0.79	0.79	
PHF Volume:	0	0	0	100	0	32	0	542	166	20	143	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	100	0	32	0	542	166	20	143	0
Critical Gap Module:												
Critical Gp:	xxxxx xxxx	xxxxx		6.8 xxxx	6.9		xxxxx xxxx	xxxxx		4.1 xxxx	xxxxx	
FollowUpTim:	xxxxx xxxx	xxxxx		3.5 xxxx	3.3		xxxxx xxxx	xxxxx		2.2 xxxx	xxxxx	
Capacity Module:												
Cnflict Vol:	xxxx xxxx	xxxxx		455 xxxx	72		xxxx xxxx	xxxxx		708 xxxx	xxxxx	
Potent Cap.:	xxxx xxxx	xxxxx		534 xxxx	976		xxxx xxxx	xxxxx		887 xxxx	xxxxx	
Move Cap.:	xxxx xxxx	xxxxx		525 xxxx	976		xxxx xxxx	xxxxx		887 xxxx	xxxxx	
Volume/Cap:	xxxx xxxx	xxxx		0.19 xxxx	0.03		xxxx xxxx	xxxx		0.02 xxxx	xxxx	
Level Of Service Module:												
2Way95thQ:	xxxx xxxx	xxxxx		0.7 xxxx	0.1		xxxx xxxx	xxxxx		0.1 xxxx	xxxxx	
Control Del:	xxxxx xxxx	xxxxx		13.5 xxxx	8.8		xxxxx xxxx	xxxxx		9.2 xxxx	xxxxx	
LOS by Move:	*	*	*	B	*	A	*	*	*	A	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx xxxx	xxxxx		xxxx xxxx	xxxxx		xxxx xxxx	xxxxx		xxxx xxxx	xxxxx	
SharedQueue:	xxxxx xxxx	xxxxx		xxxxx xxxx	xxxxx		xxxxx xxxx	xxxxx		xxxxx xxxx	xxxxx	
Shrd ConDel:	xxxxx xxxx	xxxxx		xxxxx xxxx	xxxxx		xxxxx xxxx	xxxxx		xxxxx xxxx	xxxxx	
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			12.3			xxxxxx			xxxxxx		
ApproachLOS:	*			B			*			*		

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #5 SR 160 NB On Ramp/Wilbur Avenue

Average Delay (sec/veh): 1.4 Worst Case Level Of Service: B[14.6]

Street Name:	SR 160 NB On Ramp						Wilbur Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Channel			Include			Include			Include		
Lanes:	1 0	0	0 1	0	0 0	0 0	1 0	2	0 0	0 0	2	0 1
Volume Module:												
Base Vol:	37	0	11	0	0	0	40	201	0	0	496	72
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	37	0	11	0	0	0	40	201	0	0	496	72
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.67	0.67	0.67	1.00	1.00	1.00	0.80	0.80	0.80	0.79	0.79	0.79
PHF Volume:	55	0	16	0	0	0	50	251	0	0	628	91
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	55	0	16	0	0	0	50	251	0	0	628	91
Critical Gap Module:												
Critical Gp:	6.8	xxxx	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	665	xxxx	126	xxxx	xxxx	xxxxx	719	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	393	xxxx	901	xxxx	xxxx	xxxxx	878	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	376	xxxx	901	xxxx	xxxx	xxxxx	878	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.15	xxxx	0.02	xxxx	xxxx	xxxx	0.06	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.5	xxxx	0.1	xxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	16.2	xxxx	9.1	xxxxx	xxxx	xxxxx	9.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	C	*	A	*	*	*	A	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	14.6			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	B			*			*			*		

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #5 SR 160 NB On Ramp/Wilbur Avenue

Average Delay (sec/veh): 1.7 Worst Case Level Of Service: B[13.0]

Street Name:	SR 160 NB On Ramp						Wilbur Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Channel			Include			Include			Include		
Lanes:	1 0 0	0	1	0 0	0	0	1 0	2	0 0	0 0	2	0 1
Volume Module:												
Base Vol:	11	0	24	0	0	0	115	488	0	0	130	138
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	11	0	24	0	0	0	115	488	0	0	130	138
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.67	0.67	0.67	1.00	1.00	1.00	0.91	0.91	0.91	0.89	0.89	0.89
PHF Volume:	16	0	36	0	0	0	126	536	0	0	146	155
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	16	0	36	0	0	0	126	536	0	0	146	155
Critical Gap Module:												
Critical Gp:	6.8	xxxx	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	862	xxxx	268	xxxx	xxxx	xxxxx	301	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	294	xxxx	730	xxxx	xxxx	xxxxx	1257	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	272	xxxx	730	xxxx	xxxx	xxxxx	1257	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.06	xxxx	0.05	xxxx	xxxx	xxxx	0.10	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.2	xxxx	0.2	xxxx	xxxx	xxxxx	0.3	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	19.1	xxxx	10.2	xxxxx	xxxx	xxxxx	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	C	*	B	*	*	*	A	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	13.0			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	B			*			*			*		

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #6 Bridgehead Road/Wilbur Avenue

Cycle (sec):	100	Critical Vol./Cap.(X):	1.000
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	42.3
Optimal Cycle:	0	Level Of Service:	E

Street Name:	Bridgehead Road						Wilbur Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1! 0	0	0 0	1! 0	0	1 0	0 1	0	1 0	0 0	0
Volume Module:												
Base Vol:	541	33	1	1	11	25	26	1	181	2	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	541	33	1	1	11	25	26	1	181	2	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.78	0.78	0.78	0.71	0.71	0.71	0.88	0.88	0.88	0.50	0.50	0.50
PHF Volume:	694	42	1	1	15	35	30	1	206	4	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	694	42	1	1	15	35	30	1	206	4	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	694	42	1	1	15	35	30	1	206	4	0	0
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.94	0.05	0.01	0.03	0.30	0.67	1.00	0.01	0.99	1.00	0.00	0.00
Final Sat.:	694	42	1	18	203	461	515	3	618	534	0	0
Capacity Analysis Module:												
Vol/Sat:	1.00	1.00	1.00	0.08	0.08	0.08	0.06	0.33	0.33	0.01	xxxx	xxxx
Crit Moves:		****			****			****		****		
Delay/Veh:	54.8	54.8	54.8	8.6	8.6	8.6	10.1	11.3	11.3	9.7	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	54.8	54.8	54.8	8.6	8.6	8.6	10.1	11.3	11.3	9.7	0.0	0.0
LOS by Move:	F	F	F	A	A	A	B	B	B	A	*	*
ApproachDel:		54.8			8.6			11.2			9.7	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		54.8			8.6			11.2			9.7	
LOS by Appr:		F			A			B			A	
AllWayAvgQ:	9.6	9.6	9.6	0.1	0.1	0.1	0.1	0.5	0.5	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #6 Bridgehead Road/Wilbur Avenue

Cycle (sec):	100	Critical Vol./Cap.(X):	0.762
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	17.0
Optimal Cycle:	0	Level Of Service:	C

Street Name:	Bridgehead Road						Wilbur Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1!	0 0	0 0	1!	0 0	1 0	0 1	0	0 0	1!	0 0
Volume Module:												
Base Vol:	247	11	1	1	34	25	21	0	496	5	3	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	247	11	1	1	34	25	21	0	496	5	3	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.75	0.75	0.75	0.90	0.90	0.90	0.45	0.45	0.45
PHF Volume:	274	12	1	1	45	33	23	0	551	11	7	2
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	274	12	1	1	45	33	23	0	551	11	7	2
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	274	12	1	1	45	33	23	0	551	11	7	2
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.95	0.04	0.01	0.01	0.57	0.42	1.00	0.00	1.00	0.56	0.33	0.11
Final Sat.:	572	25	2	10	329	242	582	0	723	309	186	62
Capacity Analysis Module:												
Vol/Sat:	0.48	0.48	0.48	0.14	0.14	0.14	0.04	xxxx	0.76	0.04	0.04	0.04
Crit Moves:	****					****			****	****		
Delay/Veh:	13.4	13.4	13.4	9.4	9.4	9.4	9.0	0.0	20.6	9.1	9.1	9.1
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	13.4	13.4	13.4	9.4	9.4	9.4	9.0	0.0	20.6	9.1	9.1	9.1
LOS by Move:	B	B	B	A	A	A	A	*	C	A	A	A
ApproachDel:		13.4			9.4			20.2			9.1	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		13.4			9.4			20.2			9.1	
LOS by Appr:		B			A			C			A	
AllWayAvgQ:	0.8	0.8	0.8	0.1	0.1	0.1	0.0	2.6	2.6	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

Traffix 7.9.0415 (c) 2007 Dowling Assoc. Licensed to URS SAN JOSE, CA

CCTALOS Software ver. 2.35 by TJKM Transportation Consultants

Condition: AM_EX_6_MITI 04/24/08

INTERSECTION 6 Bridgehead Road/Wilbur Avenue Contra Costa
Count Date Time Peak Hour

CCTA METHOD 8-PHASE SIGNAL

RIGHT THRU LEFT
25 11 1

LEFT 26 --- 1.0 1.1 1.1 1.0 1.1 --- 0 RIGHT
Split? N

THRU 1 ---> 1.1 (NO. OF LANES) 1.1<--- 0 THRU

RIGHT 181 --- 1.1 1.0 1.1 1.1 1.0 --- 2 LEFT

N
W + E
S

541 33 1
LEFT THRU RIGHT Split? N

STREET NAME: Wilbur Avenue

SIG WARRANTS:
Urb=N, Rur=N

STREET NAME: Bridgehead Road

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	1	1	1650	0.0006	
	THRU (T)	33	33	1650	0.0200	
	LEFT (L)	541	541	1650	0.3279	0.3279
	T + R		34	1650	0.0206	
SB	RIGHT (R)	25	25	1650	0.0152	
	THRU (T)	11	11	1650	0.0067	
	LEFT (L)	1	1	1650	0.0006	
	T + R		36	1650	0.0218	0.0218
EB	RIGHT (R)	181	181	1650	0.1097	
	THRU (T)	1	1	1650	0.0006	
	LEFT (L)	26	26	1650	0.0158	
	T + R		182	1650	0.1103	0.1103
WB	RIGHT (R)	0	0	1650	0.0000	
	THRU (T)	0	0	1650	0.0000	
	LEFT (L)	2	2	1650	0.0012	0.0012
	T + R		0	1650	0.0000	

TOTAL VOLUME-TO-CAPACITY RATIO: 0.46
INTERSECTION LEVEL OF SERVICE: A

* ADJUSTED FOR RIGHT TURN ON RED
INT=EX_MITI.INT,VOL=EX_AM.AMV,CAP=

CCTALOS Software ver. 2.35 by TJKM Transportation Consultants

Condition: PM_EX_6_MITI 04/24/08

INTERSECTION 6 Bridgehead Road/Wilbur Avenue Contra Costa
Count Date 11/13/07 Time 4:00-6:00PM Peak Hour 4:30-5:30PM

CCTA METHOD 8-PHASE SIGNAL

RIGHT THRU LEFT
25 34 1

LEFT 21 --- 1.0 1.1 1.1 1.0 1.1 --- 1 RIGHT
Split? N

THRU 0 ---> 1.1 (NO. OF LANES) 1.1<--- 3 THRU

RIGHT 496 --- 1.1 1.0 1.1 1.1 1.0 --- 5 LEFT

N
W + E
S

247 11 1
LEFT THRU RIGHT Split? N

STREET NAME: Wilbur Avenue

SIG WARRANTS: Urb=N, Rur=N

STREET NAME: Bridgehead Road

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	1	1	1650	0.0006	
	THRU (T)	11	11	1650	0.0067	
	LEFT (L)	247	247	1650	0.1497	0.1497
	T + R		12	1650	0.0073	
SB	RIGHT (R)	25	25	1650	0.0152	
	THRU (T)	34	34	1650	0.0206	
	LEFT (L)	1	1	1650	0.0006	
	T + R		59	1650	0.0358	0.0358
EB	RIGHT (R)	496	496	1650	0.3006	0.3006
	THRU (T)	0	0	1650	0.0000	
	LEFT (L)	21	21	1650	0.0127	
	T + R		496	1650	0.3006	
WB	RIGHT (R)	1	1	1650	0.0006	
	THRU (T)	3	3	1650	0.0018	
	LEFT (L)	5	5	1650	0.0030	0.0030
	T + R		4	1650	0.0024	
	TOTAL VOLUME-TO-CAPACITY RATIO:					0.49
	INTERSECTION LEVEL OF SERVICE:					A

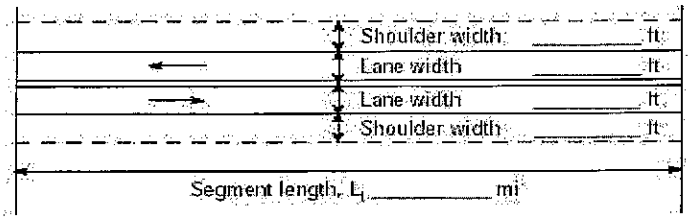
* ADJUSTED FOR RIGHT TURN ON RED
INT=EX_MITI.INT,VOL=EX_PM.AMV,CAP=

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	AC	Highway	Wilbur Avenue
Agency or Company	URS Corporation	From/To	Minaker Drive/Viera Avenue
Date Performed	2/14/2008	Jurisdiction	Contra Costa
Analysis Time Period	AM Peak Period	Analysis Year	Existing Conditions

Project Description: *Contra Costa - New Generation Project*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	914 veh/h
Directional split	79 / 21
Peak-hour factor, PHF	0.93
No-passing zone	100
% Trucks and Buses , P_T	2 %
% Recreational vehicles, P_R	2%
Access points/ *mi*	7

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.996
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	987
v_p * highest directional split proportion[2] (pc/h)	780

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*mi/h*	Base free-flow speed, $BFFS_{FM}$	50.0 *mi/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	0.0 *mi/h*
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points, f_A (Exhibit 20-6)	1.8 *mi/h*
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	48.3 *mi/h*

Adj. for no-passing zones, f_{np} (*mi/h*) (Exhibit 20-11)	2.6
Average travel speed, ATS (*mi/h*) ATS=FFS-0.00776v_p-f_{np}	38.0

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.998
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	985
v_p * highest directional split proportion[2] (pc/h)	778
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	57.9
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	14.5
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	72.4

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	E
Volume to capacity ratio, v/c=V_p/ 3,200	0.31
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)= 0.25L_t(V/PHF)	246
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	914
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	6.5

Notes

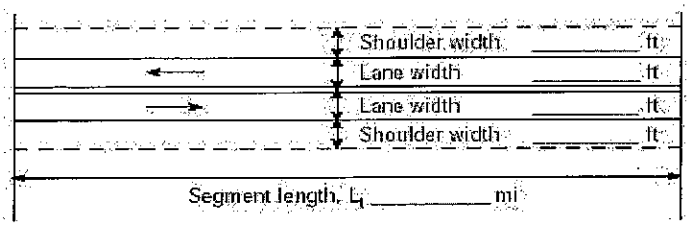
1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	AC	Highway	Wilbur Avenue
Agency or Company	URS Corporation	From/To	Minaker Drive/Viera Avenue
Date Performed	2/14/2008	Jurisdiction	Contra Costa
Analysis Time Period	PM Peak Period	Analysis Year	Existing Conditions

Project Description: *Contra Costa - New Generation Project*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	840 veh/h
Directional split	74 / 26
Peak-hour factor, PHF	0.98
No-passing zone	100
% Trucks and Buses , P_T	2 %
% Recreational vehicles, P_R	2%
Access points/ *mi*	7

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.996
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	861
v_p * highest directional split proportion[2] (pc/h)	637

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*mi/h*	Base free-flow speed, $BFFS_{FM}$	50.0 *mi/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	0.0 *mi/h*
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points, f_A (Exhibit 20-6)	1.8 *mi/h*
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	48.3 *mi/h*

Adj. for no-passing zones, f_{np} (*mi/h*) (Exhibit 20-11)	2.9
Average travel speed, ATS (*mi/h*) ATS=FFS-0.00776v_p-f_{np}	38.7

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.998
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	859
v_p * highest directional split proportion[2] (pc/h)	636
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	53.0
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	14.9
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	67.9

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	E
Volume to capacity ratio, v/c=V_p/ 3,200	0.27
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)= 0.25L_t(V/PHF)	214
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	840
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	5.5

Notes

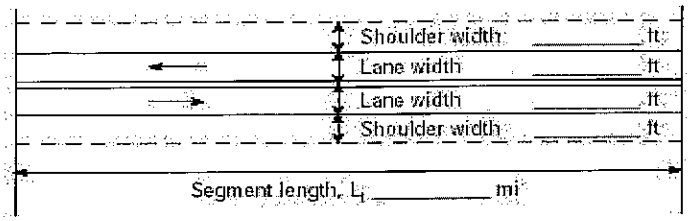
1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AC*	Highway	*Wilbur Avenue*
Agency or Company	*URS Corporation*	From/To	*Viera Avenue/Fleming Avenue*
Date Performed	*2/14/2008*	Jurisdiction	*Contra Costa*
Analysis Time Period	*AM Peak Period*	Analysis Year	*Existing Conditions*

Project Description: *Contra Costa - New Generation Project*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*911* veh/h
Directional split	*80 / 20*
Peak-hour factor, PHF	*0.95*
No-passing zone	*100*
% Trucks and Buses , P_T	*2 %*
% Recreational vehicles, P_R	*2%*
Access points/ *mi*	*6*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.996*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*963*
v_p * highest directional split proportion[2] (pc/h)	*770*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*mi/h*	Base free-flow speed, $BFFS_{FM}$	*50.0 mi/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*0.0 mi/h*
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points, f_A (Exhibit 20-6)	*1.5 mi/h*
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	*48.5 mi/h*

Adj. for no-passing zones, f_{np} (*mi/h*) (Exhibit 20-11)	*2.7*
Average travel speed, ATS (*mi/h*) ATS=FFS-0.00776v_p-f_{np}	*38.4*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.998*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*961*
v_p * highest directional split proportion[2] (pc/h)	*769*
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	*57.0*
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	*15.0*
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	*72.0*

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*E*
Volume to capacity ratio, v/c=V_p/ 3,200	*0.30*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)= 0.25L_t(V/PHF)	*240*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*911*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*6.3*

Notes

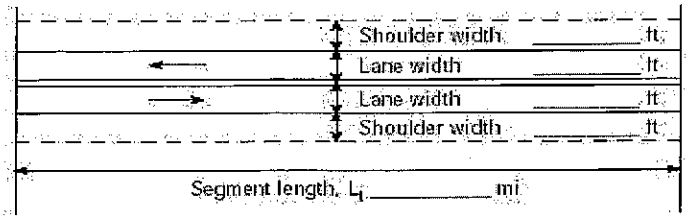
1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	AC	Highway	Wilbur Avenue
Agency or Company	URS Corporation	From/To	Viera Avenue/Fleming Avenue
Date Performed	2/14/2008	Jurisdiction	Contra Costa
Analysis Time Period	PM Peak Period	Analysis Year	Existing Conditions

Project Description: *Contra Costa - New Generation Project*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	819 veh/h
Directional split	74 / 26
Peak-hour factor, PHF	0.90
No-passing zone	100
% Trucks and Buses , P_T	2 %
% Recreational vehicles, P_R	2%
Access points/ *mi*	6

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.996
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	914
v_p * highest directional split proportion[2] (pc/h)	676

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*mi/h*	Base free-flow speed, $BFFS_{FM}$	50.0 *mi/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	0.0 *mi/h*
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points, f_A (Exhibit 20-6)	1.5 *mi/h*
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	48.5 *mi/h*

Adj. for no-passing zones, f_{np} (*mi/h*) (Exhibit 20-11)	2.8
Average travel speed, ATS (*mi/h*) ATS=FFS-0.00776v_p-f_{np}	38.6

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.998
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	912
v_p * highest directional split proportion[2] (pc/h)	675
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	55.1
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	14.3
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	69.4

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	E
Volume to capacity ratio, v/c=V_p/ 3,200	0.29
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)= 0.25L_t(V/PHF)	228
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	819
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	5.9

Notes

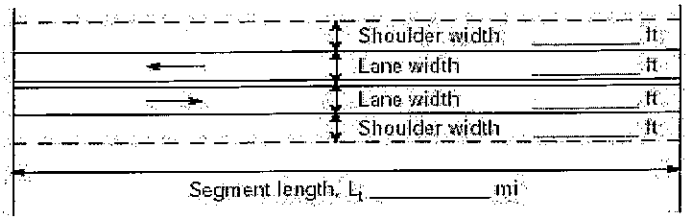
1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	AC	Highway	Wilbur Avenue
Agency or Company	URS Corporation	From/To	Fleming Avenue/SR 160 SB Ramps
Date Performed	2/14/2008	Jurisdiction	Contra Costa
Analysis Time Period	AM Peak Period	Analysis Year	Existing Conditions

Project Description: Contra Costa - New Generation Project

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	923 veh/h
Directional split	79 / 21
Peak-hour factor, PHF	0.95
No-passing zone	100
% Trucks and Buses , P_T	2 %
% Recreational vehicles, P_R	2%
Access points/ mi	2

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.996
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	975
v_p * highest directional split proportion[2] (pc/h)	770

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	50.0 mi/h
Observed volume, V_f	veh/h	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	0.0 mi/h
Free-flow speed, FFS $FFS=S_{FM}+0.00776(V_f/f_{HV})$	mi/h	Adj. for access points, f_A (Exhibit 20-6)	0.5 mi/h
		Free-flow speed, FFS ($FSS=BFFS-f_{LS}-f_A$)	49.5 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	2.6
Average travel speed, ATS (mi/h) $ATS=FFS-0.00776v_p-f_{np}$	39.3

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.998
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	974
v_p * highest directional split proportion[2] (pc/h)	769
Base percent time-spent-following, $BPTSF(\%)=100(1-e^{-0.000879v_p})$	57.5
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	14.6
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{d/np}$	72.1

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	E
Volume to capacity ratio, v/c=V_p/ 3,200	0.30
Peak 15-min veh-miles of travel, VMT_{15} (veh- mi)= $0.25L_t(V/PHF)$	24
Peak-hour vehicle-miles of travel, VMT_{60}(veh- mi)=V^*L_t	92
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	0.6

Notes

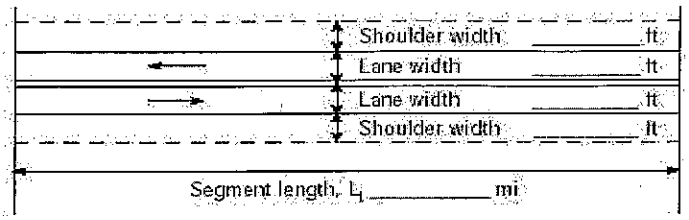
1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	AC	Highway	Wilbur Avenue
Agency or Company	URS Corporation	From/To	Fleming Avenue/SR 160 SB Ramps
Date Performed	2/14/2008	Jurisdiction	Contra Costa
Analysis Time Period	PM Peak Period	Analysis Year	Existing Conditions

Project Description: Contra Costa - New Generation Project

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	859 veh/h
Directional split	76 / 24
Peak-hour factor, PHF	0.83
No-passing zone	100
% Trucks and Buses , P_T	2 %
% Recreational vehicles, P_R	2%
Access points/ *mi*	2

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.996
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	1039
v_p * highest directional split proportion[2] (pc/h)	790

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*mi/h*	Base free-flow speed, $BFFS_{FM}$	50.0 *mi/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	0.0 *mi/h*
Free-flow speed, FFS $FFS=S_{FM}+0.00776(V_f/f_{HV})$	*mi/h*	Adj. for access points, f_A (Exhibit 20-6)	0.5 *mi/h*
		Free-flow speed, FFS ($FSS=BFFS-f_{LS}-f_A$)	49.5 *mi/h*

Adj. for no-passing zones, f_{np} (*mi/h*) (Exhibit 20-11)	2.5
Average travel speed, ATS (*mi/h*) $ATS=FFS-0.00776v_p-f_{np}$	38.9

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.998
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	1037
v_p * highest directional split proportion[2] (pc/h)	788
Base percent time-spent-following, $BPTSF(\%)=100(1-e^{-0.000879v_p})$	59.8
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	13.3
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{d/np}$	73.1

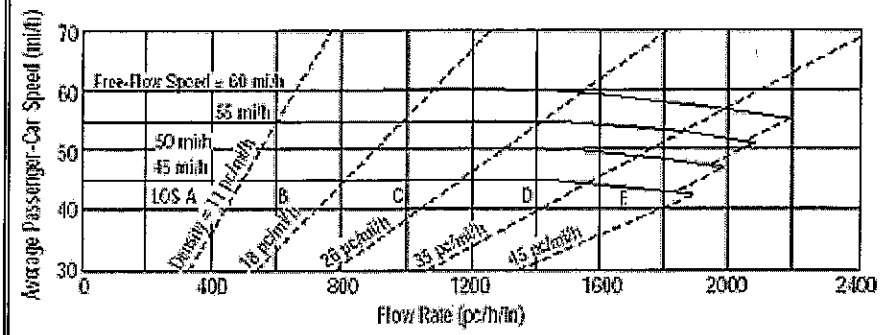
Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	E
Volume to capacity ratio, $v/c=V_p/3{,}200$	0.32
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)= $0.25L_t(V/PHF)$	26
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V^*L_t	86
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	0.7

Notes

1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	2/14/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	SR 160 NB Ramp/SR 160 SB Ramp
Jurisdiction	Contra Costa
Analysis Year	Existing Conditions

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	199	Peak-Hour Factor, PHF	0.86
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	116
Speed, S (mi/h)	52.0
D (pc/mi/ln)	2.2
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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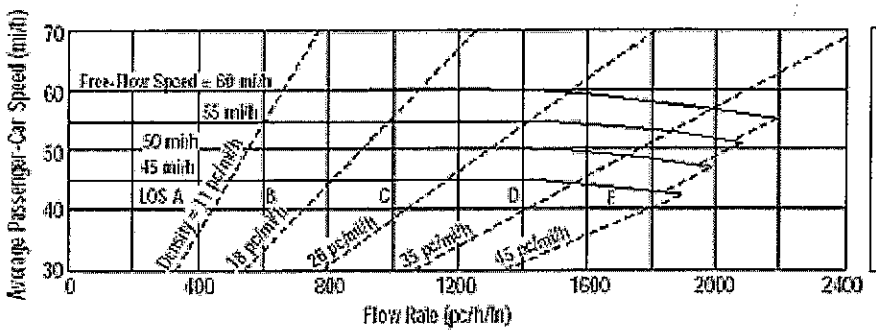
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	2/14/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	SR 160 NB Ramp/SR 160 SB Ramp
Jurisdiction	Contra Costa
Analysis Year	Existing Conditions

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	739	Peak-Hour Factor, PHF	0.91
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	410
Speed, S (mi/h)	52.0
D (pc/mi/ln)	7.9
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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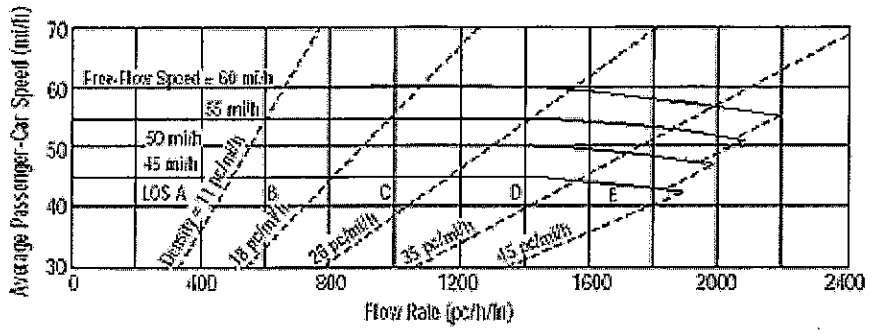
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	2/14/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	SR 160 NB Ramp/SR 160 SB Ramp
Jurisdiction	Contra Costa
Analysis Year	Existing Conditions

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	586	Peak-Hour Factor, PHF	0.88
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	336
Speed, S (mi/h)	52.0
D (pc/mi/ln)	6.5
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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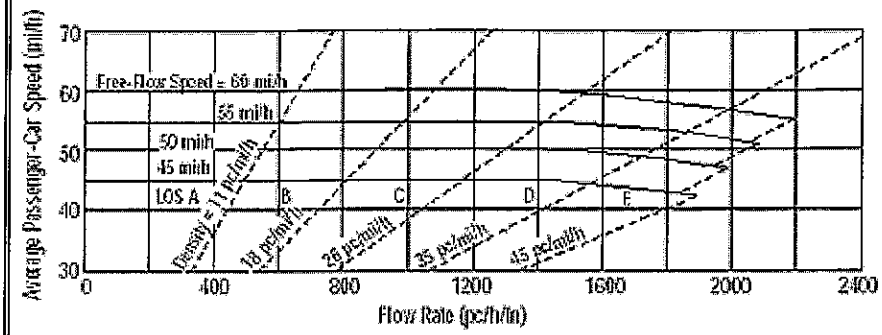
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	2/14/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	SR 160 NB Ramp/SR 160 SB Ramp
Jurisdiction	Contra Costa
Analysis Year	Existing Conditions

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	229	Peak-Hour Factor, PHF	0.91
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	127
Speed, S (mi/h)	52.0
D (pc/mi/ln)	2.4
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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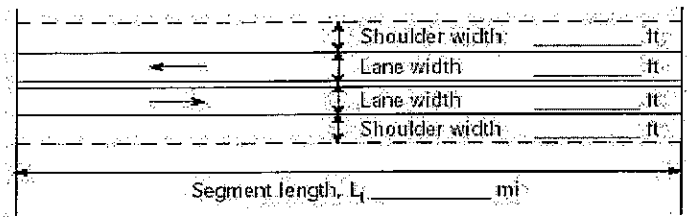
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	AC	Highway	Bridgehead Road
Agency or Company	URS Corporation	From/To	Shady Haven/Wilbur Avenue
Date Performed	2/14/2008	Jurisdiction	Contra Costa
Analysis Time Period	AM Peak Period	Analysis Year	Existing Conditions

Project Description: *Contra Costa - New Generation Project*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*1050* veh/h
Directional split	*78 / 22*
Peak-hour factor, PHF	*0.95*
No-passing zone	*100*
% Trucks and Buses , P_T	*2 %*
% Recreational vehicles, P_R	*2%*
Access points/ *mi*	*3*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.996*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1110*
v_p * highest directional split proportion[2] (pc/h)	*866*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*mi/h*	Base free-flow speed, $BFFS_{FM}$	*50.0 mi/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*0.0 mi/h*
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points, f_A (Exhibit 20-6)	*0.8 mi/h*
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	*49.3 mi/h*

Adj. for no-passing zones, f_{np} (*mi/h*) (Exhibit 20-11)	*2.3*
Average travel speed, ATS (*mi/h*) ATS=FFS-0.00776v_p-f_{np}	*38.3*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.998*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1107*
v_p * highest directional split proportion[2] (pc/h)	*863*
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	*62.2*
Adj. for directional distribution and no-passing zone, $f_{d/hp}$(%)(Exh. 20-12)	*12.8*
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	*75.0*

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*E*
Volume to capacity ratio, v/c=V_p/ 3,200	*0.35*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)= 0.25L_t(V/PHF)	*83*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*315*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*2.2*

Notes

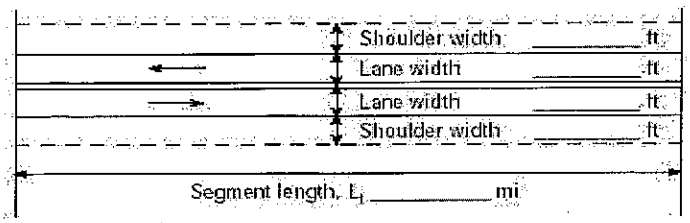
1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	AC	Highway	Bridgehead Road
Agency or Company	URS Corporation	From/To	Shady Haven/Wilbur Avenue
Date Performed	2/14/2008	Jurisdiction	Contra Costa
Analysis Time Period	PM Peak Period	Analysis Year	Existing Conditions

Project Description: Contra Costa - New Generation Project

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	913 veh/h
Directional split	66 / 34
Peak-hour factor, PHF	0.95
No-passing zone	100
% Trucks and Buses , P_T	2 %
% Recreational vehicles, P_R	2%
Access points/ mi	3

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.996
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	965
v_p * highest directional split proportion[2] (pc/h)	637

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	50.0 mi/h
Observed volume, V_f	veh/h	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	0.0 mi/h
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f / f_{HV})	mi/h	Adj. for access points, f_A (Exhibit 20-6)	0.8 mi/h
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	49.3 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	2.7
Average travel speed, ATS (mi/h) ATS=FFS-0.00776v_p-f_{np}	39.1

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.998
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	963
v_p * highest directional split proportion[2] (pc/h)	636
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	57.1
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	12.8
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	69.9

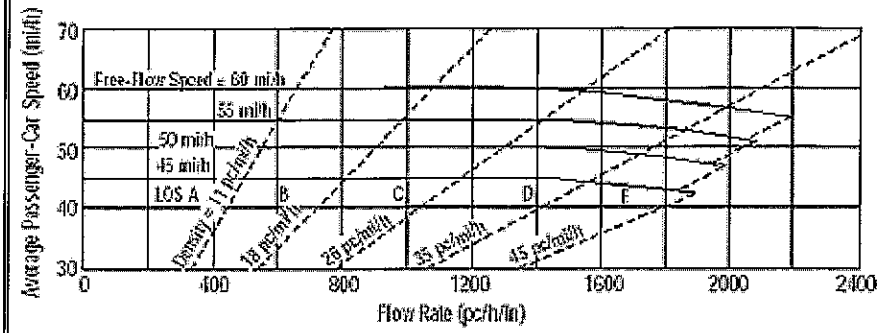
Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	E
Volume to capacity ratio, v/c=V_p/ 3,200	0.30
Peak 15-min veh-miles of travel, VMT_{15} (veh- mi)= 0.25L_t(V/PHF)	72
Peak-hour vehicle-miles of travel, VMT_{60}(veh- mi)=V*L_t	274
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	1.8

Notes

1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Minaker Drive & Viera Avenue
Jurisdiction	Contra Costa
Analysis Year	Existing_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	192	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	107
Speed, S (mi/h)	52.0
D (pc/mi/ln)	2.1
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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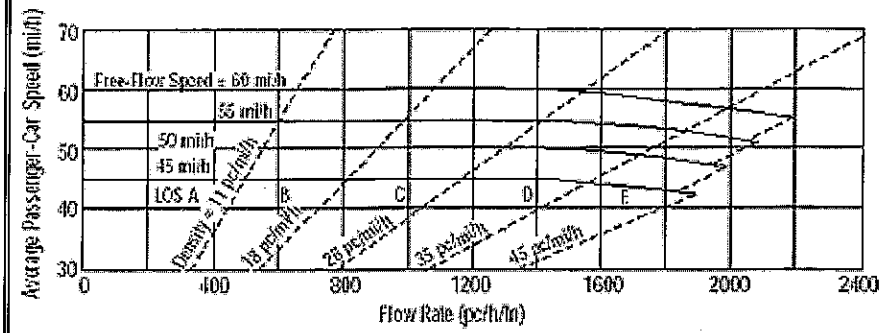
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Minaker Drive & Viera Avenue
Jurisdiction	Contra Costa
Analysis Year	Existing_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	722	Peak-Hour Factor, PHF	0.93
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	392
Speed, S (mi/h)	52.0
D (pc/mi/ln)	7.5
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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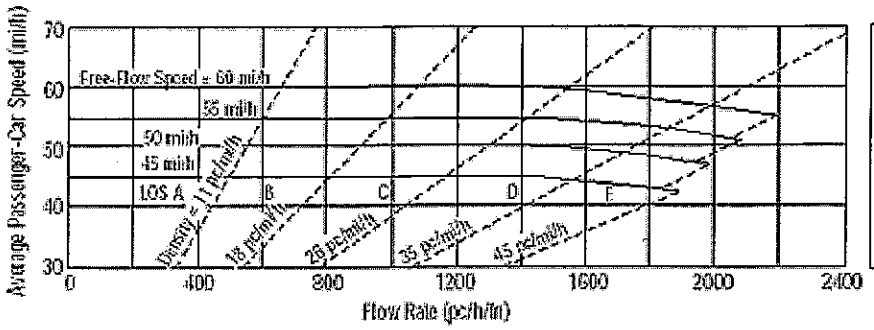
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Minaker Drive & Viera Avenue
Jurisdiction	Contra Costa
Analysis Year	Existing_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	623	Peak-Hour Factor, PHF	0.94
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	334
Speed, S (mi/h)	52.0
D (pc/mi/ln)	6.4
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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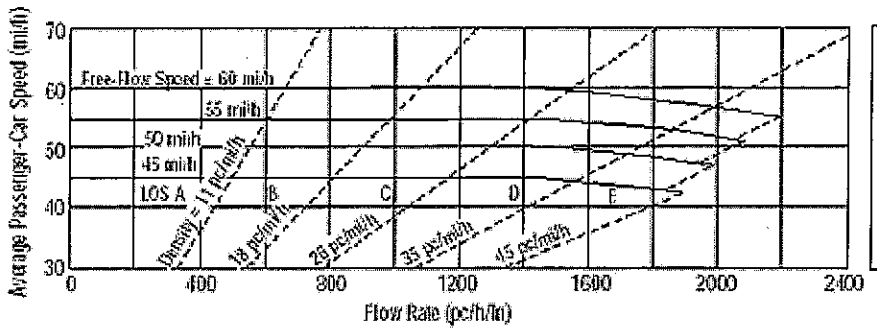
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Minaker Drive & Viera Avenue
Jurisdiction	Contra Costa
Analysis Year	Existing_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	217	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	119
Speed, S (mi/h)	52.0
D (pc/mi/ln)	2.3
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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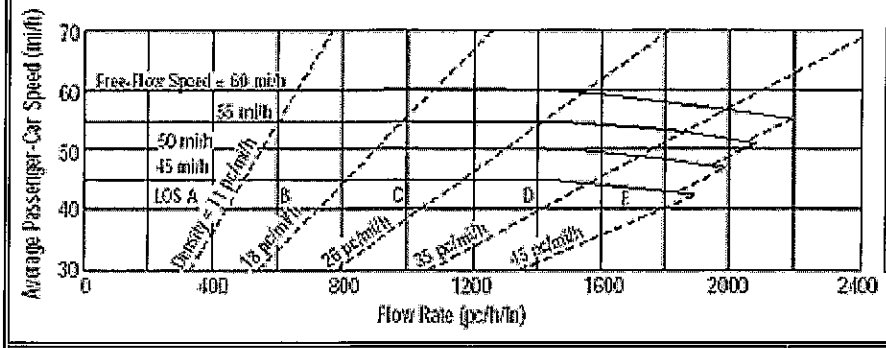
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Viera Avenue & Fleming Avenue
Jurisdiction	Contra Costa
Analysis Year	Existing_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	179	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	100
Speed, S (mi/h)	52.0
D (pc/mi/ln)	1.9
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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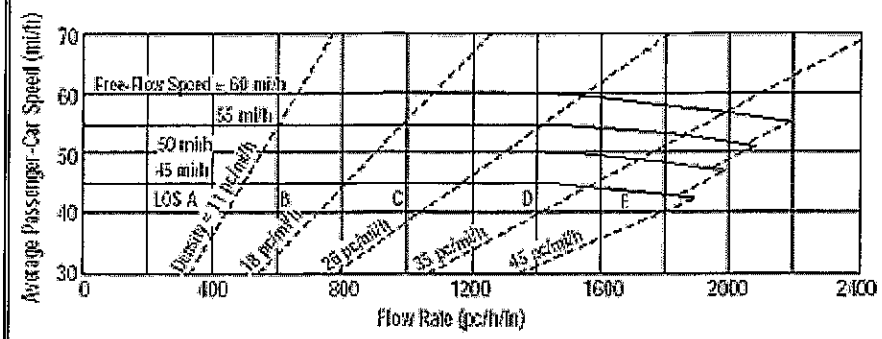
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Viera Avenue & Fleming Avenue
Jurisdiction	Contra Costa
Analysis Year	Existing_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	732	Peak-Hour Factor, PHF	0.95
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	389
Speed, S (mi/h)	52.0
D (pc/mi/ln)	7.5
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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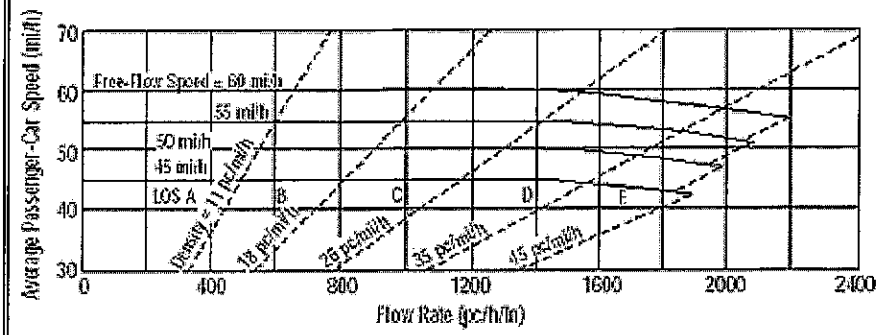
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Viera Avenue & Fleming Avenue
Jurisdiction	Contra Costa
Analysis Year	Existing_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	608	Peak-Hour Factor, PHF	0.87
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)	
Flow Rate, v_p (pc/h/ln)	352
Speed, S (mi/h)	52.0
D (pc/mi/ln)	6.8
LOS	A

Design

Design (N)	
Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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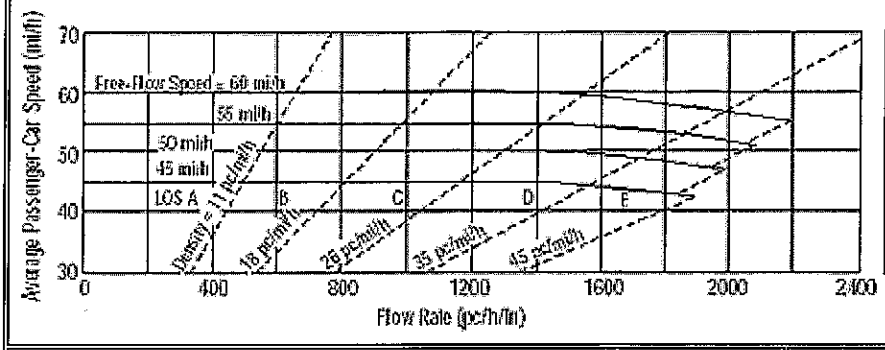
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Viera Avenue & Fleming Avenue
Jurisdiction	Contra Costa
Analysis Year	Existing_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	212	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	116
Speed, S (mi/h)	52.0
D (pc/mi/ln)	2.2
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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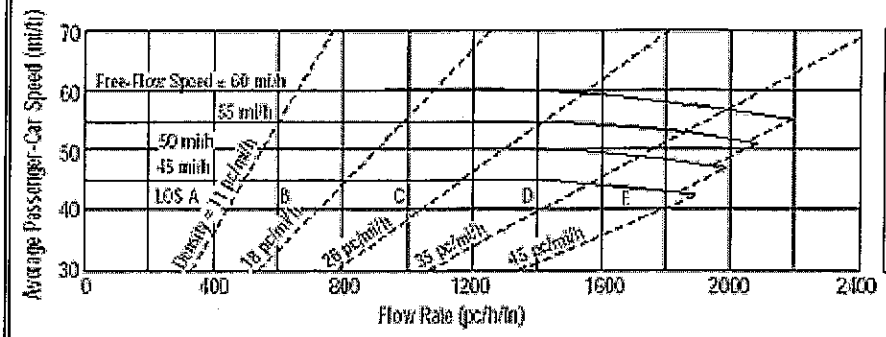
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Fleming Ave & SR 160 SB Ramps
Jurisdiction	Contra Costa
Analysis Year	Existing_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	194	Peak-Hour Factor, PHF	0.86
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	113
Speed, S (mi/h)	52.0
D (pc/mi/ln)	2.2
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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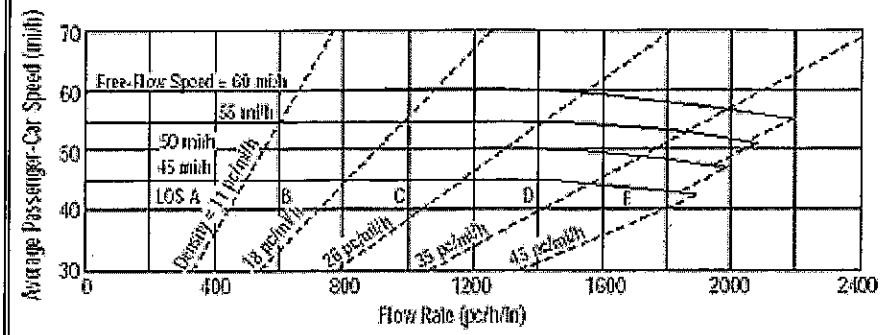
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Fleming Ave & SR 160 SB Ramps
Jurisdiction	Contra Costa
Analysis Year	Existing_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	729	Peak-Hour Factor, PHF	0.93
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	395
Speed, S (mi/h)	52.0
D (pc/mi/ln)	7.6
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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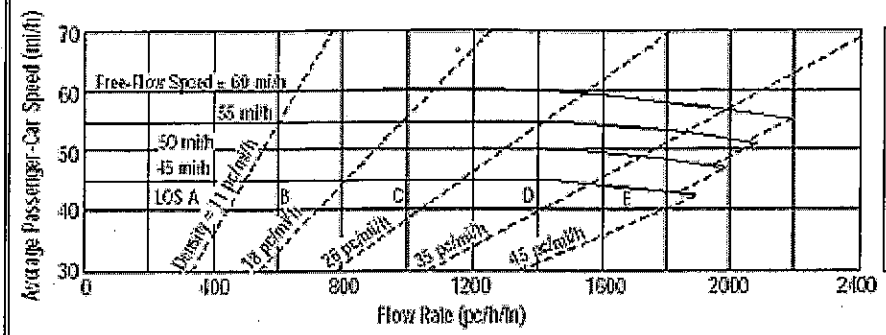
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Fleming Ave & SR 160 SB Ramps
Jurisdiction	Contra Costa
Analysis Year	Existing_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	649	Peak-Hour Factor, PHF	0.77
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)	
Flow Rate, v_p (pc/h/ln)	425
Speed, S (mi/h)	52.0
D (pc/mi/ln)	8.2
LOS	A

Design

Design (N)
Required Number of Lanes, N
Flow Rate, v_p (pc/h)
Max Service Flow Rate (pc/h/ln)
Design LOS

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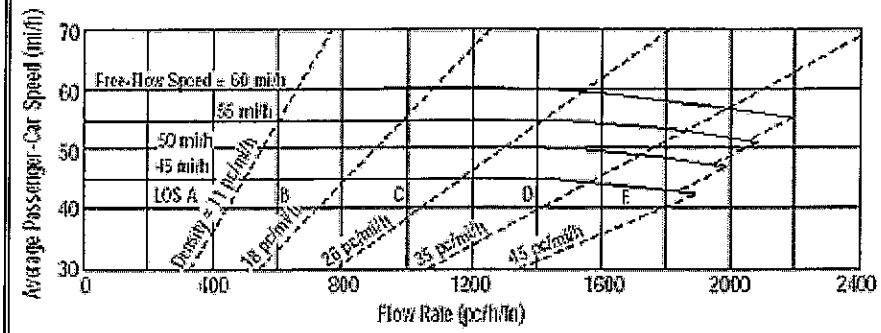
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Fleming Ave & SR 160 SB Ramps
Jurisdiction	Contra Costa
Analysis Year	Existing_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	210	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	115
Speed, S (mi/h)	52.0
D (pc/mi/ln)	2.2
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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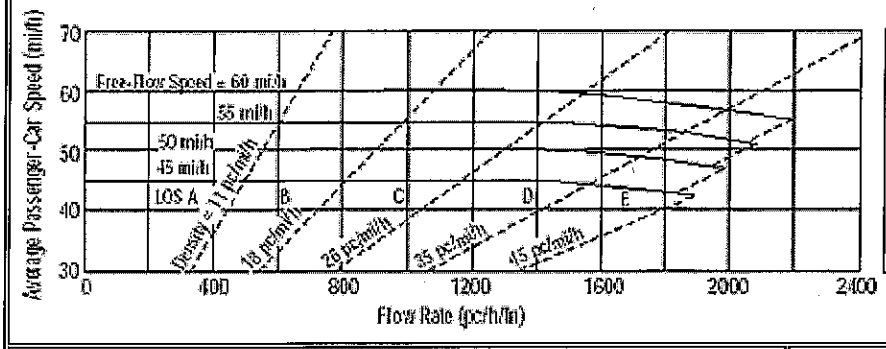
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Bridgehead Road
From/To	Shady Haven/Wilbur Avenue
Jurisdiction	Contra Costa
Analysis Year	Existing_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	823	Peak-Hour Factor, PHF	0.91
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	456
Speed, S (mi/h)	52.0
D (pc/mi/ln)	8.8
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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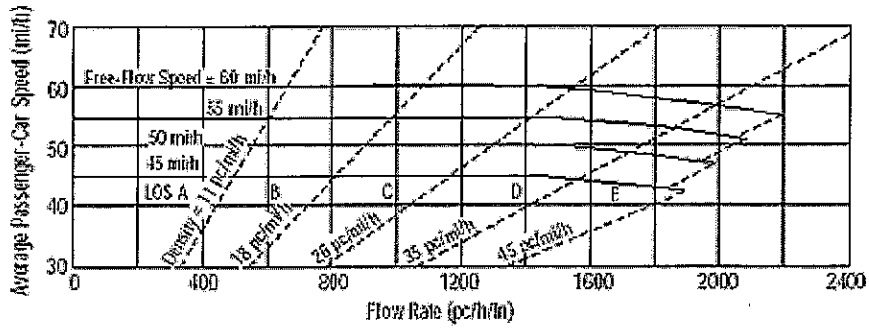
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Bridgehead Road
From/To	Shady Haven/Wilbur Avenue
Jurisdiction	Contra Costa
Analysis Year	Existing_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	226	Peak-Hour Factor, PHF	0.93
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	122
Speed, S (mi/h)	52.0
D (pc/mi/ln)	2.3
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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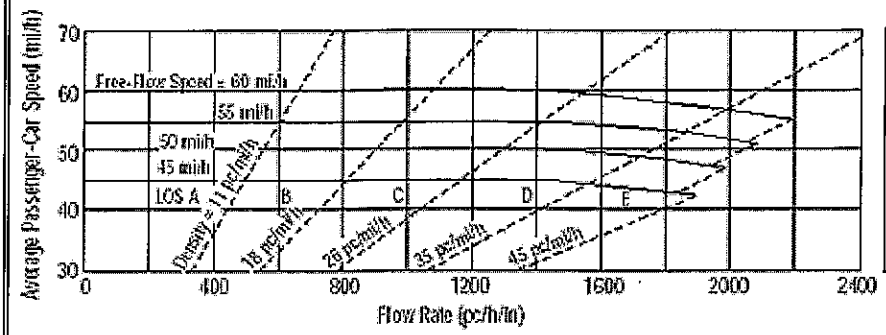
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Bridgehead Road
From/To	Shady Haven/Wilbur Avenue
Jurisdiction	Contra Costa
Analysis Year	Existing_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	309	Peak-Hour Factor, PHF	0.88
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	177
Speed, S (mi/h)	52.0
D (pc/mi/ln)	3.4
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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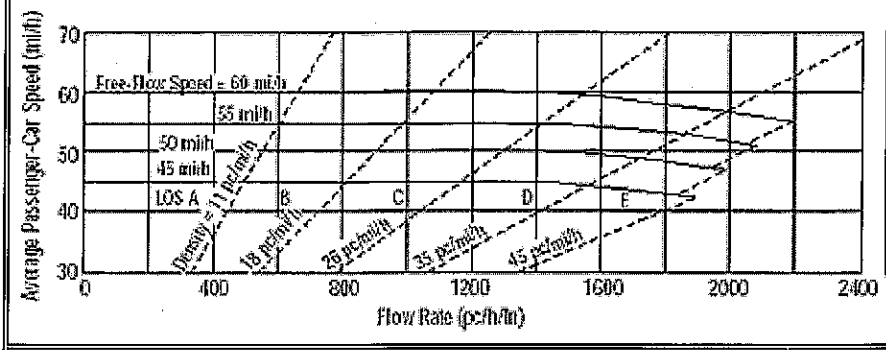
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Bridgehead Road
From/To	Shady Haven/Wilbur Avenue
Jurisdiction	Contra Costa
Analysis Year	Existing_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	604	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	331
Speed, S (mi/h)	52.0
D (pc/mi/ln)	6.4
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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Appendix P3
Accident Data

COLLISIONS
WILBUR AV - CONTRA COSTA NEW GENERATION PROJECT
(Query from Dispatch Closing Class)

01/01/1998 - 02/29/2008

Print Date:3/3/2008

TOTALS BY CLOSING DISPO CLASS

	Total	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total	32	4	3	3	2	2	3	7	1	6	1
ACCI	6	1	1	0	1	0	1	1	0	1	0
ACCN	26	3	2	3	1	2	2	6	1	5	1

TOTALS BY INTERSECTION

	Total	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total	32	4	3	3	2	2	3	7	1	6	1
WILBUR AV & BRIDGEHEAD RD	1	0	0	0	0	1	0	0	0	0	0
WILBUR AV & HWY 160	1	0	0	0	0	0	0	1	0	0	0
WILBUR AV & HWY 160 HY	1	0	0	0	0	1	0	0	0	0	0
WILBUR AV & HWY 4 HY	5	1	1	2	0	0	0	1	0	0	0
WILBUR AV & MINAKER DR	20	2	2	1	2	0	3	4	1	5	0
WILBUR AV & VIERA	1	0	0	0	0	0	0	0	0	1	0
WILBUR AV & VIERA AV	3	1	0	0	0	0	0	1	0	0	1

Appendix P4
Near-Term Conditions – Level of Service Analysis

CCTALOS Software ver. 2.35 by TJKM Transportation Consultants

Condition: AM_NT_1 04/28/08

INTERSECTION 1 Minaker Dr./Wilbur Ave. CCTA
Count Date Time Peak Hour

CCTA METHOD 5-PHASE SIGNAL

```
                    RIGHT THRU LEFT
                      17    4    1
                      |     |    |
                      |     |    |
                <---  v     ---> |
LEFT     9 ---  1.0   1.0   1.1  1.1   1.1 ---    4  RIGHT
                                                    STREET NAME:
THRU   147 ---> 2.1  (NO. OF LANES)   2.1<---  707  THRU  Wilbur Ave.

RIGHT   53 ---  1.1   1.0   1.1  1.1   1.0 ---   11  LEFT
           |          <---   ^    --->  |
           v                 |     |    v
  N                          |     |                    SIG WARRANTS:
W + E                       93     6    4                 Urb=N, Rur=N
  S                       LEFT THRU RIGHT Split? Y
```

STREET NAME: Minaker Dr.

MOVEMENT		ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	4	4	1650	0.0024	
	THRU (T)	6	6	1650	0.0036	
	LEFT (L)	93	93	1650	0.0564	0.0564
	T + R		10	1650	0.0061	
SB	RIGHT (R)	17	8 *	1650	0.0048	0.0048
	THRU (T)	4	4	1650	0.0024	
	LEFT (L)	1	1	1650	0.0006	
	T + L		5	1650	0.0030	
EB	RIGHT (R)	53	53	1650	0.0321	
	THRU (T)	147	147	3300	0.0445	
	LEFT (L)	9	9	1650	0.0055	0.0055
	T + R		200	3300	0.0606	
WB	RIGHT (R)	4	4	1650	0.0024	
	THRU (T)	707	707	3300	0.2142	
	LEFT (L)	11	11	1650	0.0067	
	T + R		711	3300	0.2155	0.2155

TOTAL VOLUME-TO-CAPACITY RATIO: 0.28
INTERSECTION LEVEL OF SERVICE: A

* ADJUSTED FOR RIGHT TURN ON RED
INT=EX.INT,VOL=NT_AM.AMV,CAP=

CCTALOS Software ver. 2.35 by TJKM Transportation Consultants

Condition: PM_NT_1 04/28/08

INTERSECTION 1 Minaker Dr./Wilbur Ave. CCTA
Count Date Time Peak Hour

CCTA METHOD RIGHT THRU LEFT 5-PHASE SIGNAL

24 5 17

LEFT 15 ---> 1.0 1.0 1.1 1.1 1.1 <--- 13 RIGHT Split? N

STREET NAME:
THRU 684 ---> 2.1 (NO. OF LANES) 2.1<--- 177 THRU Wilbur Ave.

RIGHT 151 ---> 1.1 1.0 1.1 1.1 1.0 <--- 17 LEFT

N
W + E 80 3 13 SIG WARRANTS:
S LEFT THRU RIGHT Split? Y Urb=N, Rur=N

STREET NAME: Minaker Dr.

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB RIGHT (R)	13	13	1650	0.0079	
THRU (T)	3	3	1650	0.0018	
LEFT (L)	80	80	1650	0.0485	0.0485
T + R		16	1650	0.0097	
SB RIGHT (R)	24	9 *	1650	0.0055	
THRU (T)	5	5	1650	0.0030	
LEFT (L)	17	17	1650	0.0103	
T + L		22	1650	0.0133	0.0133
EB RIGHT (R)	151	151	1650	0.0915	
THRU (T)	684	684	3300	0.2073	
LEFT (L)	15	15	1650	0.0091	
T + R		835	3300	0.2530	0.2530
WB RIGHT (R)	13	13	1650	0.0079	
THRU (T)	177	177	3300	0.0536	
LEFT (L)	17	17	1650	0.0103	0.0103
T + R		190	3300	0.0576	

TOTAL VOLUME-TO-CAPACITY RATIO: 0.33
INTERSECTION LEVEL OF SERVICE: A

* ADJUSTED FOR RIGHT TURN ON RED
INT=EX.INT,VOL=NT_PM.AMV,CAP=

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 Viera Avenue/Wilbur Avenue

Average Delay (sec/veh): 2.2 Worst Case Level Of Service: C[18.6]

Street Name:	Viera Avenue						Wilbur Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1!	0 0		0 0 0	0 0		0 0 0	1 0		1 0	1 0	
Volume Module:												
Base Vol:	87	0	12	0	0	0	0	120	30	9	601	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	87	0	12	0	0	0	0	120	30	9	601	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	95	0	13	0	0	0	0	130	33	10	653	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	95	0	13	0	0	0	0	130	33	10	653	0
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	820	820	147	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	163	xxxx	xxxxx
Potent Cap.:	345	310	900	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1416	xxxx	xxxxx
Move Cap.:	343	308	900	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1416	xxxx	xxxxx
Volume/Cap:	0.28	0.00	0.01	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.6	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	371	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	1.2	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	18.6	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	C	*	*	*	*	*	*	*	*	*	*
ApproachDel:		18.6			xxxxxx			xxxxxx			xxxxxx	
ApproachLOS:		C			*			*			*	

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 Viera Avenue/Wilbur Avenue

Average Delay (sec/veh): 0.9 Worst Case Level Of Service: C[17.0]

Street Name:	Viera Avenue						Wilbur Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 0 0 0			0 0 0 1 0			1 0 1 0 0		
Volume Module:												
Base Vol:	30	0	16	0	0	0	0	531	193	11	164	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	30	0	16	0	0	0	0	531	193	11	164	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	33	0	17	0	0	0	0	577	210	12	178	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	33	0	17	0	0	0	0	577	210	12	178	0
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	884	884	682	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	787	xxxx	xxxxx
Potent Cap.:	316	284	450	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	832	xxxx	xxxxx
Move Cap.:	312	280	450	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	832	xxxx	xxxxx
Volume/Cap:	0.10	0.00	0.04	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	9.4	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	349	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.5	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	17.0	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	C	*	*	*	*	*	*	*	*	*	*
ApproachDel:		17.0		xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:		C		*			*			*		

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #3 Fleming Avenue/Wilbur Avenue

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: C[16.0]

Street Name:	Fleming Avenue						Wilbur Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Yield Sign			Yield Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			1 0 0 0 0			0 1 0 0 0			0 0 1 0 0		
Volume Module:												
Base Vol:	0	0	0	1	0	0	1	165	0	0	617	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	1	0	0	1	165	0	0	617	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	0	0	0	1	0	0	1	179	0	0	671	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	1	0	0	1	179	0	0	671	0
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	6.4	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	852	852	179	852	xxxx	xxxxx	671	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	280	297	863	330	xxxx	xxxxx	920	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	279	296	863	330	xxxx	xxxxx	920	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.00	0.00	0.00	0.00	xxxx	xxxx	0.00	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	16.0	xxxx	xxxxx	8.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	C	*	*	A	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	0	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	A	*	*	*	*	*
ApproachDel:	xxxxxx			16.0			xxxxxx			xxxxxx		
ApproachLOS:	*			C			*			*		

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #3 Fleming Avenue/Wilbur Avenue

Average Delay (sec/veh): 0.1 Worst Case Level Of Service: B[14.5]

Street Name:	Fleming Avenue						Wilbur Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Yield Sign			Yield Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1!	0	0	0 0 1!	0	0	0 1 0	0	0	0 0 0	1	0
Volume Module:												
Base Vol:	0	0	0	3	0	1	2	647	0	0	145	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	3	0	1	2	647	0	0	145	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	0	0	0	3	0	1	2	703	0	0	158	1
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	3	0	1	2	703	0	0	158	1
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	6.4	6.5	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	866	866	703	866	866	158	159	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	273	291	437	324	291	887	1421	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	273	291	437	323	291	887	1421	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.00	0.00	0.00	0.01	0.00	0.00	0.00	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	0	xxxxx	xxxx	385	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	0.0	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	14.5	xxxxx	7.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	B	*	A	*	*	*	*	*
ApproachDel:	xxxxxx			14.5			xxxxxx			xxxxxx		
ApproachLOS:	*			B			*			*		

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #4 SR 160 SB On Ramp/Wilbur Avenue

Average Delay (sec/veh): 2.1 Worst Case Level Of Service: B[12.6]

Street Name:	SR 160 SB On Ramp						Wilbur Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Channel			Include			Include		
Lanes:	0 0 0	0 0		1 0 0	0 1		0 0 1	1 0		1 0 2	0 0	
Volume Module:												
Base Vol:	0	0	0	36	0	107	0	159	12	13	572	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	36	0	107	0	159	12	13	572	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	0	0	0	39	0	116	0	173	13	14	622	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	39	0	116	0	173	13	14	622	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	xxxx	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	736	xxxx	311	xxxx	xxxx	xxxxx	186	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	354	xxxx	685	xxxx	xxxx	xxxxx	1386	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	351	xxxx	685	xxxx	xxxx	xxxxx	1386	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.11	xxxx	0.17	xxxx	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.4	xxxx	0.6	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	16.5	xxxx	11.3	xxxxx	xxxx	xxxxx	7.6	xxxx	xxxxx
LOS by Move:	*	*	*	C	*	B	*	*	*	A	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			12.6			xxxxxx			xxxxxx		
ApproachLOS:	*			B			*			*		

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #4 SR 160 SB On Ramp/Wilbur Avenue

Average Delay (sec/veh): 1.5 Worst Case Level Of Service: B[12.0]

Street Name:	SR 160 SB On Ramp						Wilbur Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Channel			Include			Include		
Lanes:	0 0 0	0 0		1 0 0	0 1		0 0 1	1 0		1 0 2	0 0	
Volume Module:												
Base Vol:	0	0	0	75	0	24	0	516	158	17	122	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	75	0	24	0	516	158	17	122	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	0	0	0	82	0	26	0	561	172	18	133	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	82	0	26	0	561	172	18	133	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	xxxx	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	450	xxxx	66	xxxx	xxxx	xxxxx	733	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	538	xxxx	984	xxxx	xxxx	xxxxx	868	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	529	xxxx	984	xxxx	xxxx	xxxxx	868	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.15	xxxx	0.03	xxxx	xxxx	xxxx	0.02	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.5	xxxx	0.1	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	13.0	xxxx	8.8	xxxxx	xxxx	xxxxx	9.2	xxxx	xxxxx
LOS by Move:	*	*	*	B	*	A	*	*	*	A	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			12.0			xxxxxx			xxxxxx		
ApproachLOS:	*			B			*			*		

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #5 SR 160 NB On Ramp/Wilbur Avenue

Average Delay (sec/veh): 1.2 Worst Case Level Of Service: B[13.6]

Street Name:	SR 160 NB On Ramp						Wilbur Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Channel			Include			Include			Include		
Lanes:	1 0 0 0 1			0 0 0 0 0			1 0 2 0 0			0 0 2 0 1		
Volume Module:												
Base Vol:	40	0	12	0	0	0	43	217	0	0	536	78
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	40	0	12	0	0	0	43	217	0	0	536	78
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	43	0	13	0	0	0	47	236	0	0	583	85
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	43	0	13	0	0	0	47	236	0	0	583	85
Critical Gap Module:												
Critical Gp:	6.8	xxxx	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	621	xxxx	118	xxxx	xxxx	xxxxx	667	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	420	xxxx	912	xxxx	xxxx	xxxxx	918	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	403	xxxx	912	xxxx	xxxx	xxxxx	918	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.11	xxxx	0.01	xxxx	xxxx	xxxx	0.05	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.4	xxxx	0.0	xxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	15.0	xxxx	9.0	xxxxx	xxxx	xxxxx	9.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	C	*	A	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:		13.6			xxxxxx			xxxxxx			xxxxxx	
ApproachLOS:		B			*			*			*	

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #5 SR 160 NB On Ramp/Wilbur Avenue

Average Delay (sec/veh): 1.6 Worst Case Level Of Service: B[13.5]

Street Name:	SR 160 NB On Ramp						Wilbur Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Channel			Include			Include			Include		
Lanes:	1 0 0	0	1	0 0 0	0	0	1 0 2	0	0	0 0 2	0	1
Volume Module:												
Base Vol:	12	0	26	0	0	0	124	528	0	0	141	149
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	12	0	26	0	0	0	124	528	0	0	141	149
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	13	0	28	0	0	0	135	574	0	0	153	162
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	13	0	28	0	0	0	135	574	0	0	153	162
Critical Gap Module:												
Critical Gp:	6.8	xxxx	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	920	xxxx	287	xxxx	xxxx	xxxxx	315	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	270	xxxx	710	xxxx	xxxx	xxxxx	1242	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	248	xxxx	710	xxxx	xxxx	xxxxx	1242	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.05	xxxx	0.04	xxxx	xxxx	xxxx	0.11	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.2	xxxx	0.1	xxxx	xxxx	xxxxx	0.4	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	20.4	xxxx	10.3	xxxxx	xxxx	xxxxx	8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	C	*	B	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:		13.5			xxxxxx			xxxxxx			xxxxxx	
ApproachLOS:		B			*			*			*	

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #6 Bridgehead Road/Wilbur Avenue

Cycle (sec):	100	Critical Vol./Cap.(X):	1.096
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	62.8
Optimal Cycle:	0	Level Of Service:	F

Street Name:	Bridgehead Road						Wilbur Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1!	0 0	0 0	1!	0 0	1 0	0 1	0	1 0	0 0	0
Volume Module:												
Base Vol:	585	36	1	1	12	27	28	1	196	2	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	585	36	1	1	12	27	28	1	196	2	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.78	0.78	0.78	0.71	0.71	0.71	0.88	0.88	0.88	0.50	0.50	0.50
PHF Volume:	750	46	1	1	17	38	32	1	223	4	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	750	46	1	1	17	38	32	1	223	4	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	750	46	1	1	17	38	32	1	223	4	0	0
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.94	0.05	0.01	0.02	0.30	0.68	1.00	0.01	0.99	1.00	0.00	0.00
Final Sat.:	685	42	1	17	202	454	514	3	616	529	0	0
Capacity Analysis Module:												
Vol/Sat:	1.10	1.10	1.10	0.08	0.08	0.08	0.06	0.36	0.36	0.01	xxxx	xxxx
Crit Moves:			****	****					****	****		
Delay/Veh:	83.3	83.3	83.3	8.7	8.7	8.7	10.1	11.7	11.7	9.7	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	83.3	83.3	83.3	8.7	8.7	8.7	10.1	11.7	11.7	9.7	0.0	0.0
LOS by Move:	F	F	F	A	A	A	B	B	B	A	*	*
ApproachDel:		83.3			8.7			11.5			9.7	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		83.3			8.7			11.5			9.7	
LOS by Appr:		F			A			B			A	
AllWayAvgQ:	15.2	15.2	15.2	0.1	0.1	0.1	0.1	0.6	0.6	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #6 Bridgehead Road/Wilbur Avenue

Cycle (sec):	100	Critical Vol./Cap.(X):	0.838
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	21.1
Optimal Cycle:	0	Level Of Service:	C

Street Name:	Bridgehead Road						Wilbur Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1! 0	0	0 0	1! 0	0	1 0	0 1	0	0 0	1! 0	0
Volume Module:												
Base Vol:	267	12	1	1	37	27	23	0	536	5	3	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	267	12	1	1	37	27	23	0	536	5	3	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.75	0.75	0.75	0.90	0.90	0.90	0.45	0.45	0.45
PHF Volume:	297	13	1	1	49	36	26	0	596	11	7	2
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	297	13	1	1	49	36	26	0	596	11	7	2
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	297	13	1	1	49	36	26	0	596	11	7	2
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.95	0.04	0.01	0.01	0.57	0.42	1.00	0.00	1.00	0.56	0.33	0.11
Final Sat.:	557	25	2	9	325	237	575	0	711	298	179	60
Capacity Analysis Module:												
Vol/Sat:	0.53	0.53	0.53	0.15	0.15	0.15	0.04	xxxx	0.84	0.04	0.04	0.04
Crit Moves:		****			****				****	****		
Delay/Veh:	14.7	14.7	14.7	9.8	9.8	9.8	9.2	0.0	27.0	9.3	9.3	9.3
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	14.7	14.7	14.7	9.8	9.8	9.8	9.2	0.0	27.0	9.3	9.3	9.3
LOS by Move:	B	B	B	A	A	A	A	*	D	A	A	A
ApproachDel:		14.7			9.8			26.3			9.3	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		14.7			9.8			26.3			9.3	
LOS by Appr:		B			A			D			A	
AllWayAvgQ:	1.0	1.0	1.0	0.2	0.2	0.2	0.0	3.8	3.8	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

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```
CCTALOS Software ver. 2.35 by TJKM Transportation Consultants
=========================================================================
Condition: AM_NT_6_MITI                                          04/30/08
=========================================================================
INTERSECTION     6 Bridehead Drive/Wilbur Avenue     Contra Costa
Count Date                    Time                 Peak Hour
-------------------------------------------------------------------------
CCTA METHOD          RIGHT THRU LEFT                          8-PHASE SIGNAL
-----------             27   12    1
                         |    |    |
             ^           |    |    |          ^
             |         <---   v   --->        | Split? N
LEFT    28 ---  1.0   1.1  1.1  1.1   1.1 ---     0  RIGHT
                                                          STREET NAME:
THRU     1 ---> 1.1  (NO. OF LANES)   1.1<---     0  THRU  Wilbur Avenue

RIGHT  196 ---  1.1   1.0  1.1  1.1   1.0 ---     2  LEFT
             |         <---   ^   --->        |
             v           |    |    |          v
  N                      |    |    |                       SIG WARRANTS:
W + E                  585   36    1                         Urb=N, Rur=Y
  S                   LEFT THRU RIGHT Split? N

                STREET NAME: Bridehead Drive
=========================================================================
                ORIGINAL   ADJUSTED                V/C     CRITICAL
   MOVEMENT      VOLUME     VOLUME*   CAPACITY     RATIO       V/C
-------------------------------------------------------------------------
NB  RIGHT (R)       1          1       1650      0.0006
    THRU (T)       36         36       1650      0.0218
    LEFT (L)      585        585       1650      0.3545     0.3545
    T + R                     37       1650      0.0224
-------------------------------------------------------------------------
SB  RIGHT (R)      27         27       1650      0.0164
    THRU (T)       12         12       1650      0.0073
    LEFT (L)        1          1       1650      0.0006
    T + R                     39       1650      0.0236
    T + L                     13       1650      0.0079
    T + R + L                 40       1650      0.0242     0.0242
-------------------------------------------------------------------------
EB  RIGHT (R)     196        196       1650      0.1188
    THRU (T)        1          1       1650      0.0006
    LEFT (L)       28         28       1650      0.0170
    T + R                    197       1650      0.1194     0.1194
-------------------------------------------------------------------------
WB  RIGHT (R)       0          0       1650      0.0000
    THRU (T)        0          0       1650      0.0000
    LEFT (L)        2          2       1650      0.0012     0.0012
    T + R                      0       1650      0.0000
=========================================================================
     TOTAL VOLUME-TO-CAPACITY RATIO:                          0.50
     INTERSECTION LEVEL OF SERVICE:                              A
=========================================================================
* ADJUSTED FOR RIGHT TURN ON RED
INT=EX_MITI.INT,VOL=NT_AM.AMV,CAP=
```

CCTALOS Software ver. 2.35 by TJKM Transportation Consultants

Condition: PM_NT_6_MITI 04/30/08

```
INTERSECTION      6 Bridehead Drive/Wilbur Avenue     Contra Costa
Count Date                       Time                Peak Hour
-------------------------------------------------------------------------
CCTA METHOD              RIGHT THRU LEFT                     8-PHASE SIGNAL
-----------                 27   37    1
                             |    |    |
             ^               |    |    |            ^
             |             <---   v   --->          | Split? N
LEFT     23 ---  1.0    1.1  1.1  1.1    1.1 ---     1  RIGHT
                                                             STREET NAME:
THRU      0 ---> 1.1   (NO. OF LANES)    1.1<---     3  THRU  Wilbur Avenue

RIGHT   536 ---  1.1    1.0  1.1  1.1    1.0 ---     5  LEFT
             |         <---   ^   --->          |
             v               |    |    |            v
  N                          |    |    |                     SIG WARRANTS:
W + E                       267   12    1                       Urb=N, Rur=N
  S                        LEFT THRU RIGHT Split? N

                STREET NAME: Bridehead Drive
```

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	1	1	1650	0.0006	
	THRU (T)	12	12	1650	0.0073	
	LEFT (L)	267	267	1650	0.1618	0.1618
	T + R		13	1650	0.0079	
SB	RIGHT (R)	27	27	1650	0.0164	
	THRU (T)	37	37	1650	0.0224	
	LEFT (L)	1	1	1650	0.0006	
	T + R		64	1650	0.0388	
	T + L		38	1650	0.0230	
	T + R + L		65	1650	0.0394	0.0394
EB	RIGHT (R)	536	536	1650	0.3248	0.3248
	THRU (T)	0	0	1650	0.0000	
	LEFT (L)	23	23	1650	0.0139	
	T + R		536	1650	0.3248	
WB	RIGHT (R)	1	1	1650	0.0006	
	THRU (T)	3	3	1650	0.0018	
	LEFT (L)	5	5	1650	0.0030	0.0030
	T + R		4	1650	0.0024	

TOTAL VOLUME-TO-CAPACITY RATIO: 0.53
INTERSECTION LEVEL OF SERVICE: A

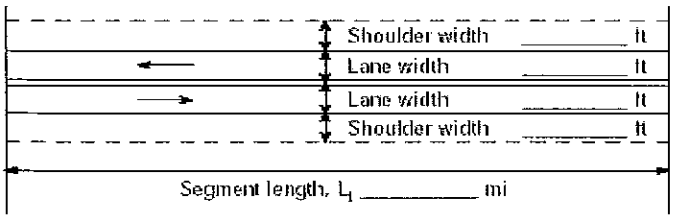
* ADJUSTED FOR RIGHT TURN ON RED
INT=EX_MITI.INT,VOL=NT_PM.AMV,CAP=

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	AC	Highway	Wilbur Avenue
Agency or Company	URS Corporation	From/To	Minaker Drive/Viera Avenue
Date Performed	2/14/2008	Jurisdiction	Contra Costa
Analysis Time Period	AM Peak Period	Analysis Year	Near-Term Conditions

Project Description: Contra Costa - New Generation Project

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	988 veh/h
Directional split	79 / 21
Peak-hour factor, PHF	0.92
No-passing zone	100
% Trucks and Buses , P_T	2 %
% Recreational vehicles, P_R	2%
Access points/ mi	7

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.996
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	1078
v_p * highest directional split proportion[2] (pc/h)	852

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	50.0 mi/h
Observed volume, V_f	veh/h	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	0.0 mi/h
Free-flow speed, FFS $FFS=S_{FM}+0.00776(V_f/f_{HV})$	mi/h	Adj. for access points, f_A (Exhibit 20-6)	1.8 mi/h
		Free-flow speed, FFS ($FSS=BFFS-f_{LS}-f_A$)	48.3 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	2.4
Average travel speed, ATS (mi/h) $ATS=FFS-0.00776v_p-f_{np}$	37.5

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.998
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	1076
v_p * highest directional split proportion[2] (pc/h)	850
Base percent time-spent-following, $BPTSF(\%)=100(1-e^{-0.000879v_p})$	61.2
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	13.4
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{d/np}$	74.5

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	E
Volume to capacity ratio, $v/c=V_p/3,200$	0.34
Peak 15-min veh-miles of travel, VMT_{15} (veh- mi)= $0.25L_t(V/PHF)$	268
Peak-hour vehicle-miles of travel, VMT_{60}(veh- mi)=$V*L_t$	988
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	7.2

Notes

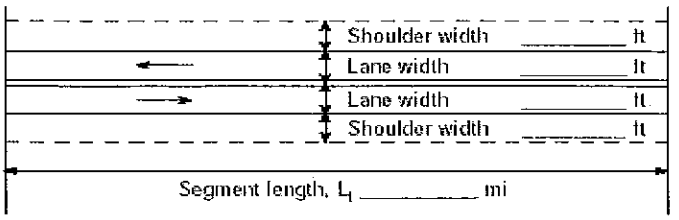
1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AC*	Highway	*Wilbur Avenue*
Agency or Company	*URS Corporation*	From/To	*Minaker Drive/Viera Avenue*
Date Performed	*2/14/2008*	Jurisdiction	*Contra Costa*
Analysis Time Period	*PM Peak Period*	Analysis Year	*Near-Term Conditions*

Project Description: *Contra Costa - New Generation Project*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*908* veh/h
Directional split	*74 / 26*
Peak-hour factor, PHF	*0.92*
No-passing zone	*100*
% Trucks and Buses , P_T	*2* %
% Recreational vehicles, P_R	*2%*
Access points/ *mi*	*7*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.996*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*991*
v_p * highest directional split proportion[2] (pc/h)	*733*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*mi/h*	Base free-flow speed, $BFFS_{FM}$	*50.0 mi/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*0.0 mi/h*
Free-flow speed, FFS $FFS=S_{FM}+0.00776(V_f/f_{HV})$	*mi/h*	Adj. for access points, f_A (Exhibit 20-6)	*1.8 mi/h*
		Free-flow speed, FFS ($FSS=BFFS-f_{LS}-f_A$)	*48.3 mi/h*

Adj. for no-passing zones, f_{np} (*mi/h*) (Exhibit 20-11)	*2.6*
Average travel speed, ATS (*mi/h*) $ATS=FFS-0.00776v_p-f_{np}$	*37.9*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.998*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*989*
v_p * highest directional split proportion[2] (pc/h)	*732*
Base percent time-spent-following, $BPTSF(\%)=100(1-e^{-0.000879v_p})$	*58.1*
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	*13.4*
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{d/np}$	*71.5*

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*E*
Volume to capacity ratio, $v/c=V_p/3{,}200$	*0.31*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)= $0.25L_t(V/PHF)$	*247*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=$V*L_t$	*908*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*6.5*

Notes

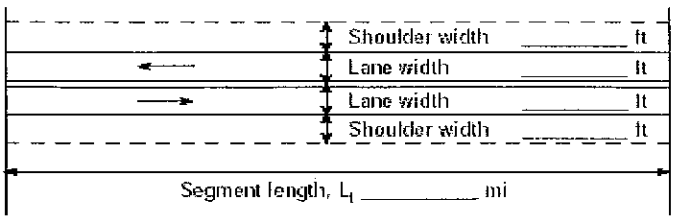
1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	AC	Highway	Wilbur Avenue
Agency or Company	URS Corporation	From/To	Viera Avenue/Fleming Avenue
Date Performed	2/14/2008	Jurisdiction	Contra Costa
Analysis Time Period	AM Peak Period	Analysis Year	Near-Term Conditions

Project Description: *Contra Costa - New Generation Project*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	986 veh/h
Directional split	80 / 20
Peak-hour factor, PHF	0.92
No-passing zone	100
% Trucks and Buses , P_T	2 %
% Recreational vehicles, P_R	2%
Access points/ *mi*	6

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.996
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	1076
v_p * highest directional split proportion[2] (pc/h)	861

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*mi/h*	Base free-flow speed, $BFFS_{FM}$	50.0 *mi/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	0.0 *mi/h*
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points, f_A (Exhibit 20-6)	1.5 *mi/h*
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	48.5 *mi/h*

Adj. for no-passing zones, f_{np} (*mi/h*) (Exhibit 20-11)	2.4
Average travel speed, ATS (*mi/h*) ATS=FFS-0.00776v_p-f_{np}	37.7

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.998
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	1074
v_p * highest directional split proportion[2] (pc/h)	859
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	61.1
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	13.6
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	74.7

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	E
Volume to capacity ratio, v/c=V_p/ 3,200	0.34
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)= 0.25L_t(V/PHF)	268
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	986
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	7.1

Notes

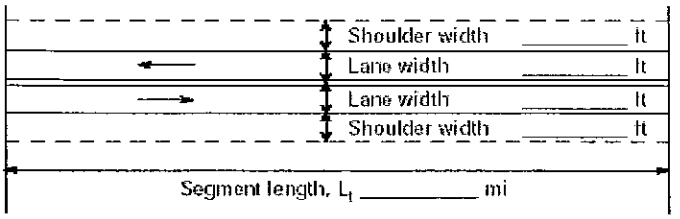
1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AC*	Highway	*Wilbur Avenue*
Agency or Company	*URS Corporation*	From/To	*Viera Avenue/Fleming Avenue*
Date Performed	*2/14/2008*	Jurisdiction	*Contra Costa*
Analysis Time Period	*PM Peak Period*	Analysis Year	*Near-Term Conditions*

Project Description: *Contra Costa - New Generation Project*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*886* veh/h
Directional split	*74 / 26*
Peak-hour factor, PHF	*0.92*
No-passing zone	*100*
% Trucks and Buses , P_T	*2* %
% Recreational vehicles, P_R	*2%*
Access points/ *mi*	*6*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.996*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*967*
v_p * highest directional split proportion[2] (pc/h)	*716*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*mi/h*	Base free-flow speed, $BFFS_{FM}$	*50.0 mi/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*0.0 mi/h*
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points, f_A (Exhibit 20-6)	*1.5 mi/h*
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	*48.5 mi/h*

Adj. for no-passing zones, f_{np} (*mi/h*) (Exhibit 20-11)	*2.7*
Average travel speed, ATS (*mi/h*) ATS=FFS-0.00776v_p-f_{np}	*38.3*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.998*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*965*
v_p * highest directional split proportion[2] (pc/h)	*714*
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	*57.2*
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	*13.7*
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	*70.9*

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*E*
Volume to capacity ratio, v/c=V_p/ 3,200	*0.30*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)= 0.25L_t(V/PHF)	*241*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*886*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*6.3*

Notes

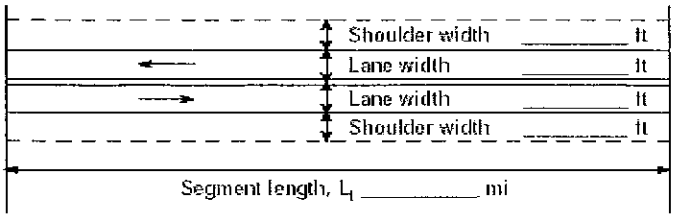
1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	AC	Highway	Wilbur Avenue
Agency or Company	URS Corporation	From/To	Fleming Avenue/SR 160 SB Ramps
Date Performed	2/14/2008	Jurisdiction	Contra Costa
Analysis Time Period	AM Peak Period	Analysis Year	Near-Term Conditions

Project Description: *Contra Costa - New Generation Project*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*998* veh/h
Directional split	*79 / 21*
Peak-hour factor, PHF	*0.92*
No-passing zone	*100*
% Trucks and Buses , P_T	*2* %
% Recreational vehicles, P_R	*2*%
Access points/ *mi*	*2*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.996*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1089*
v_p * highest directional split proportion[2] (pc/h)	*860*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*mi/h*	Base free-flow speed, $BFFS_{FM}$	*50.0 mi/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*0.0 mi/h*
Free-flow speed, FFS $FFS=S_{FM}+0.00776(V_f/f_{HV})$	*mi/h*	Adj. for access points, f_A (Exhibit 20-6)	*0.5 mi/h*
		Free-flow speed, FFS ($FSS=BFFS-f_{LS}-f_A$)	*49.5 mi/h*

Adj. for no-passing zones, f_{np} (*mi/h*) (Exhibit 20-11)	*2.4*
Average travel speed, ATS (*mi/h*) $ATS=FFS-0.00776v_p-f_{np}$	*38.7*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.998*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1087*
v_p * highest directional split proportion[2] (pc/h)	*859*
Base percent time-spent-following, $BPTSF(\%)=100(1-e^{-0.000879v_p})$	*61.5*
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	*13.2*
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{d/np}$	*74.8*

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*E*
Volume to capacity ratio, $v/c=V_p/3,200$	*0.34*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)= $0.25L_t(V/PHF)$	*27*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V^*L_t	*100*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*0.7*

Notes

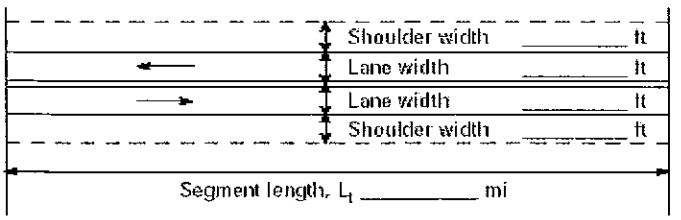
1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AC*	Highway	*Wilbur Avenue*
Agency or Company	*URS Corporation*	From/To	*Fleming Avenue/SR 160 SB Ramps*
Date Performed	*2/14/2008*	Jurisdiction	*Contra Costa*
Analysis Time Period	*PM Peak Period*	Analysis Year	*Near-Term Conditions*

Project Description: *Contra Costa - New Generation Project*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*929* veh/h
Directional split	*76 / 24*
Peak-hour factor, PHF	*0.92*
No-passing zone	*100*
% Trucks and Buses , P_T	*2* %
% Recreational vehicles, P_R	*2%*
Access points/ *mi*	*2*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.996*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1014*
v_p * highest directional split proportion[2] (pc/h)	*771*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*mi/h*	Base free-flow speed, $BFFS_{FM}$	*50.0 mi/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*0.0 mi/h*
Free-flow speed, FFS $FFS=S_{FM}+0.00776(V_f/f_{HV})$	*mi/h*	Adj. for access points, f_A (Exhibit 20-6)	*0.5 mi/h*
		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	*49.5 mi/h*

Adj. for no-passing zones, f_{np} (*mi/h*) (Exhibit 20-11)	*2.6*
Average travel speed, ATS (*mi/h*) $ATS=FFS-0.00776v_p-f_{np}$	*39.1*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.998*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1012*
v_p * highest directional split proportion[2] (pc/h)	*769*
Base percent time-spent-following, $BPTSF(\%)=100(1-e^{-0.000879v_p})$	*58.9*
Adj. for directional distribution and no-passing zone, $f_{d/hp}$(%)(Exh. 20-12)	*13.6*
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{d/np}$	*72.5*

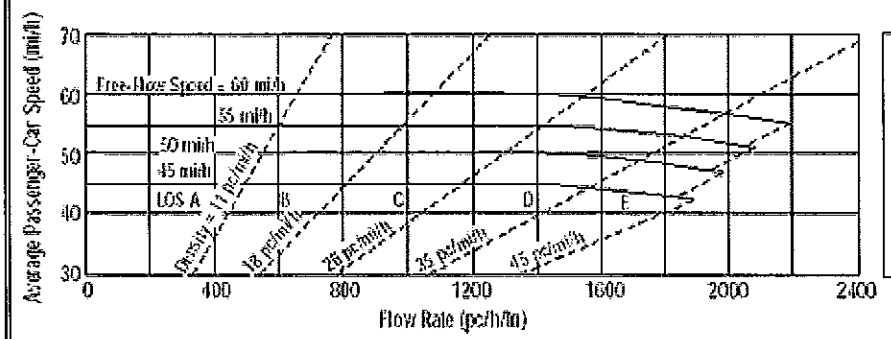
Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*E*
Volume to capacity ratio, $v/c=V_p/3{,}200$	*0.32*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)= $0.25L_t(V/PHF)$	*25*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V^*L_t	*93*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*0.6*

Notes

1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	2/14/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	SR 160 NB Ramp/SR 160 SB Ramp
Jurisdiction	Contra Costa
Analysis Year	Near-Term Conditions

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	215	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	118
Speed, S (mi/h)	52.0
D (pc/mi/ln)	2.3
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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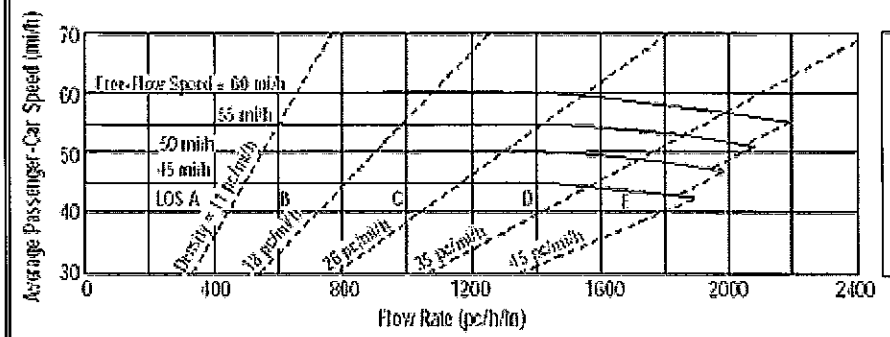
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	2/14/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	SR 160 NB Ramp/SR 160 SB Ramp
Jurisdiction	Contra Costa
Analysis Year	Near-Term Conditions

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	799	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	438
Speed, S (mi/h)	52.0
D (pc/mi/ln)	8.4
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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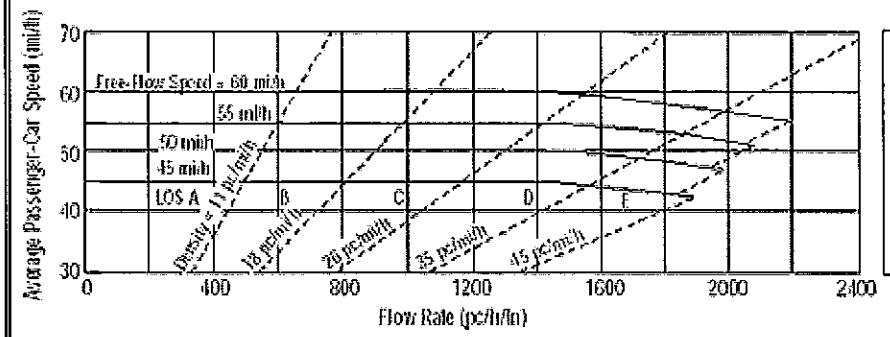
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	2/14/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	SR 160 NB Ramp/SR 160 SB Ramp
Jurisdiction	Contra Costa
Analysis Year	Near-Term Conditions

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	634	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	348
Speed, S (mi/h)	52.0
D (pc/mi/ln)	6.7
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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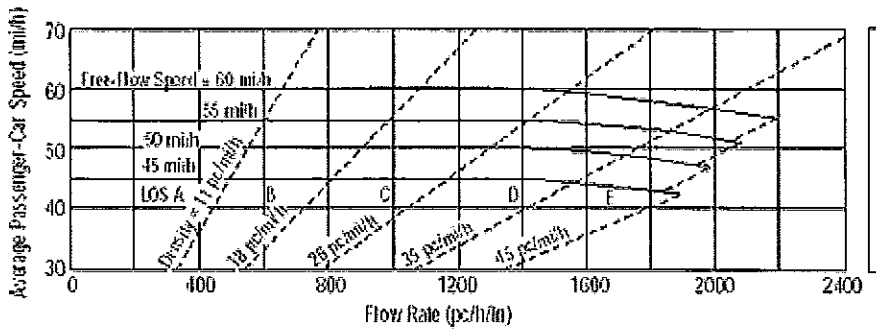
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	2/14/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	SR 160 NB Ramp/SR 160 SB Ramp
Jurisdiction	Contra Costa
Analysis Year	Near-Term Conditions

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	248	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	136
Speed, S (mi/h)	52.0
D (pc/mi/ln)	2.6
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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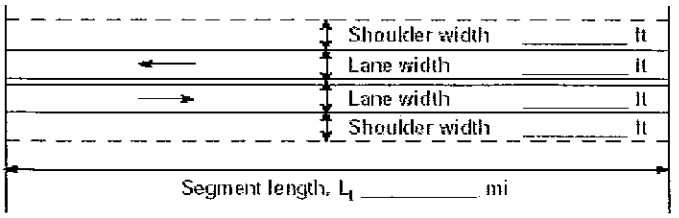
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	AC	Highway	Bridgehead Road
Agency or Company	URS Corporation	From/To	Shady Haven/Wilbur Avenue
Date Performed	2/14/2008	Jurisdiction	Contra Costa
Analysis Time Period	AM Peak Period	Analysis Year	Near-Term Conditions

Project Description: *Contra Costa - New Generation Project*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*1135* veh/h
Directional split	*78 / 22*
Peak-hour factor, PHF	*0.92*
No-passing zone	*100*
% Trucks and Buses , P_T	*2 %*
% Recreational vehicles, P_R	*2%*
Access points/ *mi*	*3*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.998*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1236*
v_p * highest directional split proportion[2] (pc/h)	*964*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*mi/h*	Base free-flow speed, $BFFS_{FM}$	*50.0 mi/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*0.0 mi/h*
Free-flow speed, FFS $FFS=S_{FM}+0.00776(V_f/f_{HV})$	*mi/h*	Adj. for access points, f_A (Exhibit 20-6)	*0.8 mi/h*
		Free-flow speed, FFS ($FSS=BFFS-f_{LS}-f_A$)	*49.3 mi/h*

Adj. for no-passing zones, f_{np} (*mi/h*) (Exhibit 20-11)	*2.0*
Average travel speed, ATS (*mi/h*) $ATS=FFS-0.00776v_p-f_{np}$	*37.6*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*1.000*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1234*
v_p * highest directional split proportion[2] (pc/h)	*963*
Base percent time-spent-following, $BPTSF(\%)=100(1-e^{-0.000879v_p})$	*66.2*
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	*11.3*
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{d/np}$	*77.5*

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*E*
Volume to capacity ratio, v/c=V_p/ 3,200	*0.39*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)= $0.25L_t(V/PHF)$	*93*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=$V*L_t$	*341*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*2.5*

Notes

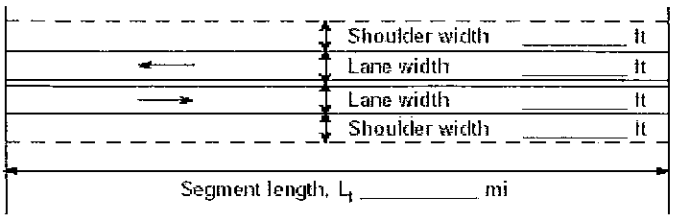
1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	AC	Highway	Bridgehead Road
Agency or Company	URS Corporation	From/To	Shady Haven/Wilbur Avenue
Date Performed	2/14/2008	Jurisdiction	Contra Costa
Analysis Time Period	PM Peak Period	Analysis Year	Near-Term Conditions

Project Description: Contra Costa - New Generation Project

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	988 veh/h
Directional split	66 / 34
Peak-hour factor, PHF	0.92
No-passing zone	100
% Trucks and Buses , P_T	2 %
% Recreational vehicles, P_R	2%
Access points/ mi	3

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.996
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	1078
v_p * highest directional split proportion[2] (pc/h)	711

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	50.0 mi/h
Observed volume, V_f	veh/h	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	0.0 mi/h
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	mi/h	Adj. for access points, f_A (Exhibit 20-6)	0.8 mi/h
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	49.3 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	2.4
Average travel speed, ATS (mi/h) ATS=FFS-0.00776v_p-f_{np}	38.5

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.998
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	1076
v_p * highest directional split proportion[2] (pc/h)	710
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	61.2
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	11.6
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	72.8

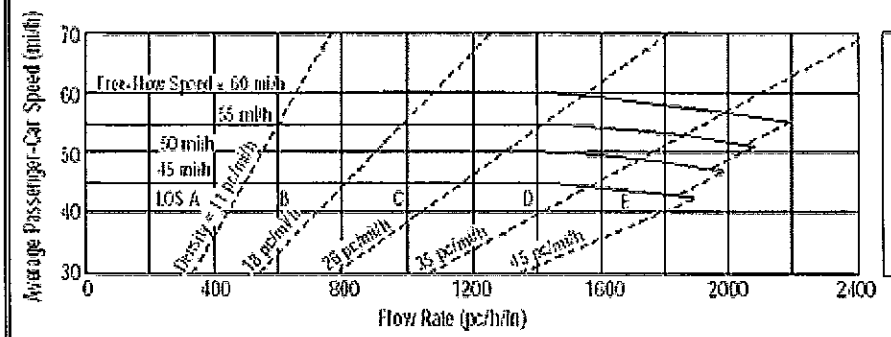
Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	E
Volume to capacity ratio, v/c=V_p/ 3,200	0.34
Peak 15-min veh-miles of travel, VMT_{15} (veh- mi)= 0.25L_t(V/PHF)	81
Peak-hour vehicle-miles of travel, VMT_{60}(veh- mi)=V*L_t	296
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	2.1

Notes

1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Minaker Drive & Viera Avenue
Jurisdiction	Contra Costa
Analysis Year	Near-term_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	208	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	114
Speed, S (mi/h)	52.0
D (pc/mi/ln)	2.2
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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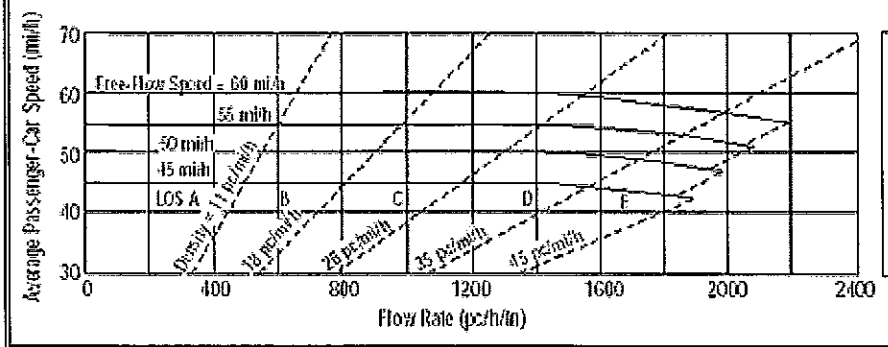
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Minaker Drive & Viera Avenue
Jurisdiction	Contra Costa
Analysis Year	Near-term_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	781	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)	
Flow Rate, v_p (pc/h/ln)	428
Speed, S (mi/h)	52.0
D (pc/mi/ln)	8.2
LOS	A

Design

Design (N)	
Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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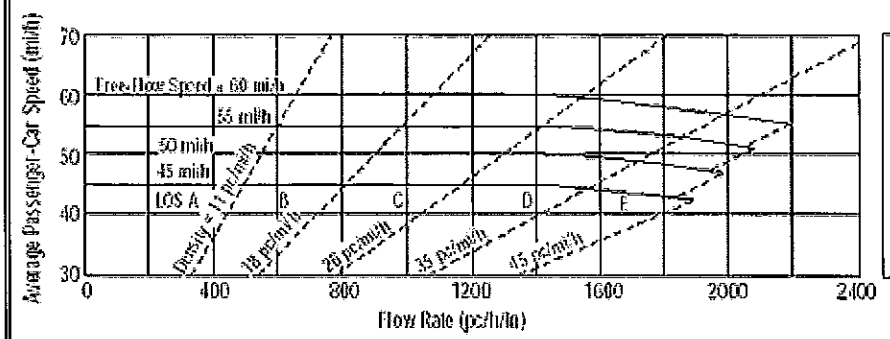
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Minaker Drive & Viera Avenue
Jurisdiction	Contra Costa
Analysis Year	Near-term_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	673	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	369
Speed, S (mi/h)	52.0
D (pc/mi/ln)	7.1
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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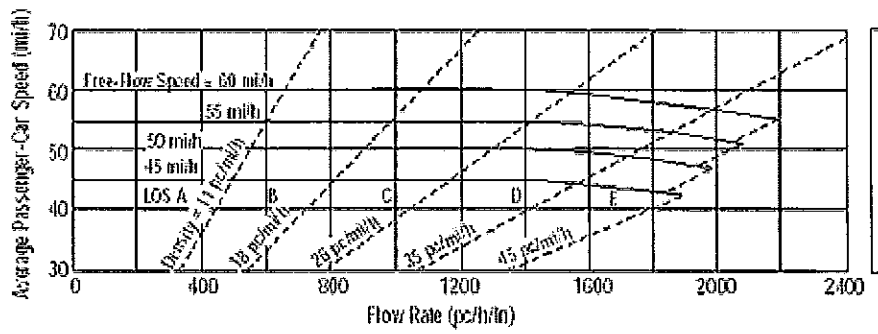
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Minaker Drive & Viera Avenue
Jurisdiction	Contra Costa
Analysis Year	Near-term_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	235	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	128
Speed, S (mi/h)	52.0
D (pc/mi/ln)	2.5
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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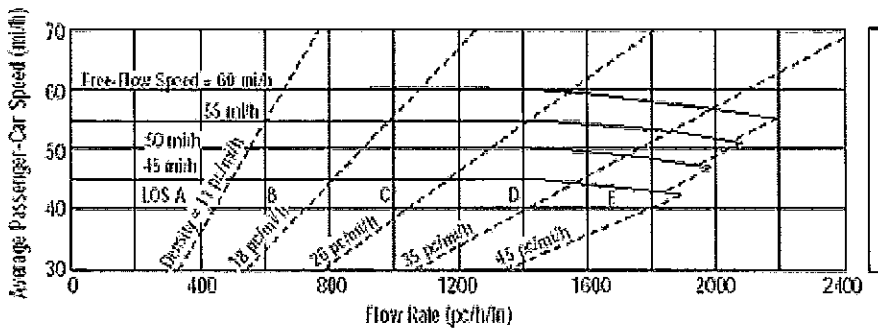
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Viera Avenue & Fleming Avenue
Jurisdiction	Contra Costa
Analysis Year	Near-term_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	194	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	106
Speed, S (mi/h)	52.0
D (pc/mi/ln)	2.0
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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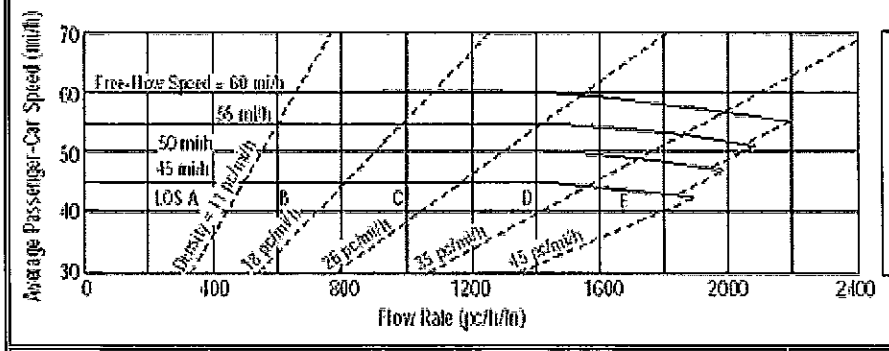
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Viera Avenue & Fleming Avenue
Jurisdiction	Contra Costa
Analysis Year	Near-term_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	792	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	434
Speed, S (mi/h)	52.0
D (pc/mi/ln)	8.3
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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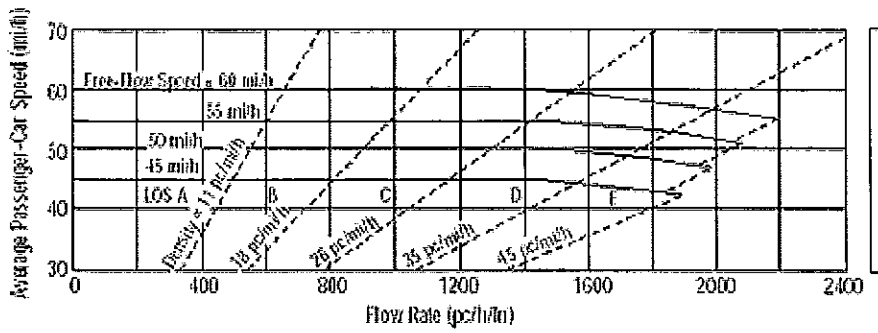
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Viera Avenue & Fleming Avenue
Jurisdiction	Contra Costa
Analysis Year	Near-term_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	657	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	360
Speed, S (mi/h)	52.0
D (pc/mi/ln)	6.9
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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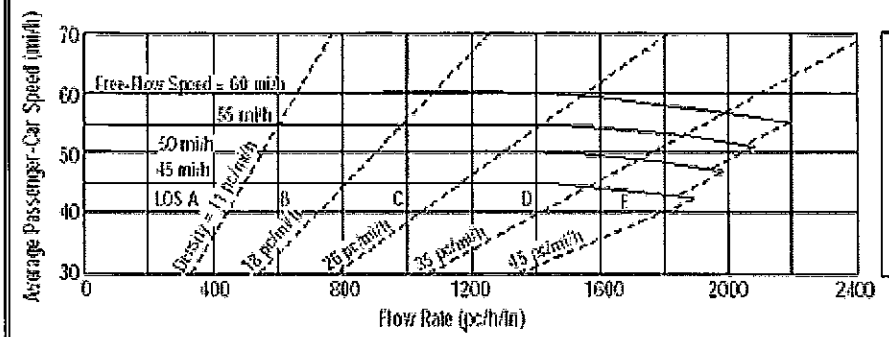
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Viera Avenue & Fleming Avenue
Jurisdiction	Contra Costa
Analysis Year	Near-term_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	229	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	125
Speed, S (mi/h)	52.0
D (pc/mi/ln)	2.4
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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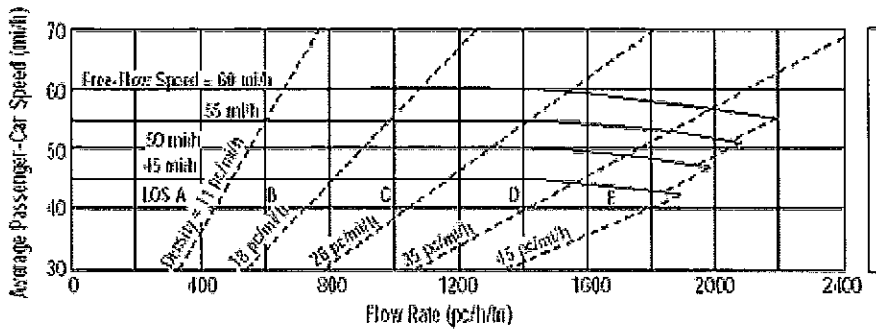
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Fleming Ave & SR 160 SB Ramps
Jurisdiction	Contra Costa
Analysis Year	Near-term_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	209	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	114
Speed, S (mi/h)	52.0
D (pc/mi/ln)	2.2
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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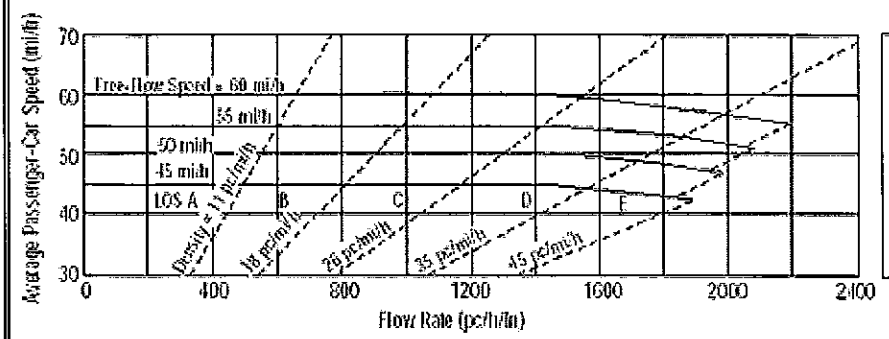
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Fleming Ave & SR 160 SB Ramps
Jurisdiction	Contra Costa
Analysis Year	Near-term_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	788	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	432
Speed, S (mi/h)	52.0
D (pc/mi/ln)	8.3
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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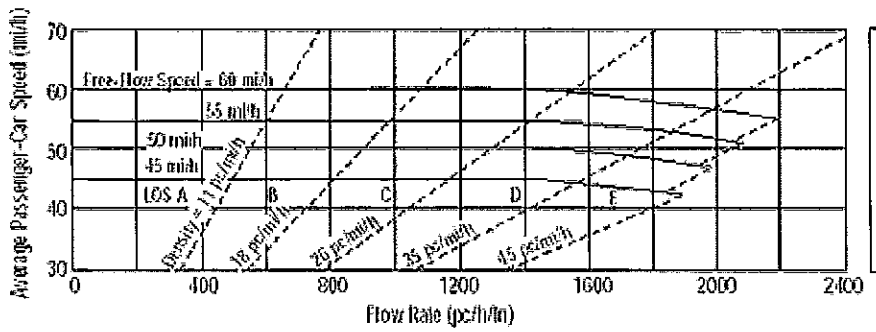
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Fleming Ave & SR 160 SB Ramps
Jurisdiction	Contra Costa
Analysis Year	Near-term_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	702	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)	
Flow Rate, v_p (pc/h/ln)	385
Speed, S (mi/h)	52.0
D (pc/mi/ln)	7.4
LOS	A

Design

Design (N)	
Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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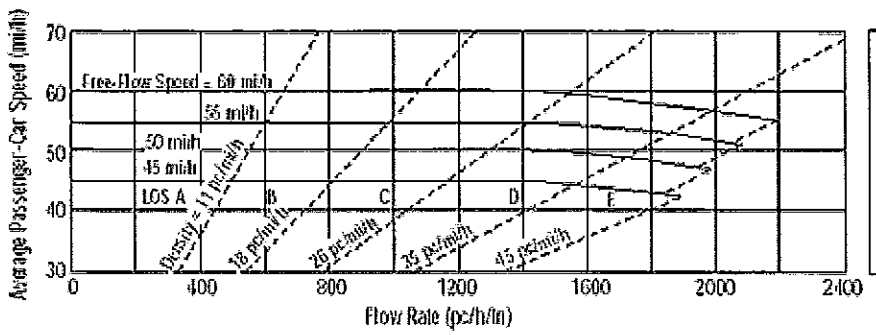
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Fleming Ave & SR 160 SB Ramps
Jurisdiction	Contra Costa
Analysis Year	Near-term_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	227	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	124
Speed, S (mi/h)	52.0
D (pc/mi/ln)	2.4
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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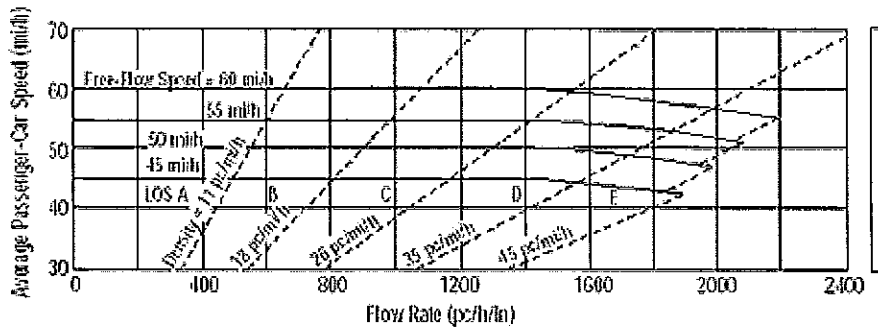
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Bridgehead Road
From/To	Shady Haven/Wilbur Avenue
Jurisdiction	Contra Costa
Analysis Year	Near-term_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	891	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	489
Speed, S (mi/h)	52.0
D (pc/mi/ln)	9.4
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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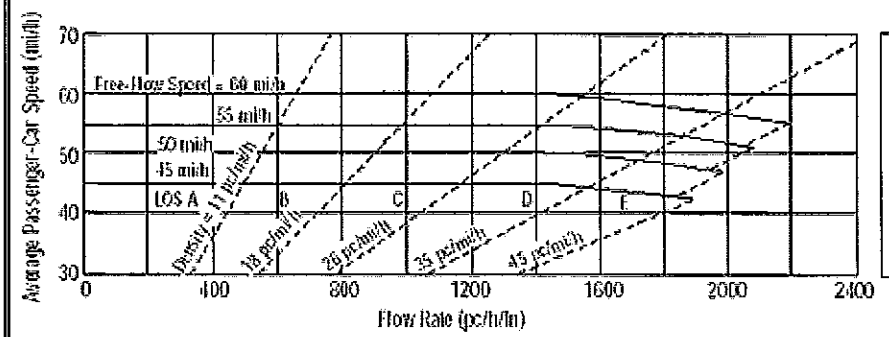
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Bridgehead Road
From/To	Shady Haven/Wilbur Avenue
Jurisdiction	Contra Costa
Analysis Year	Near-term_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	245	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)	
Flow Rate, v_p (pc/h/ln)	134
Speed, S (mi/h)	52.0
D (pc/mi/ln)	2.6
LOS	A

Design

Design (N)	
Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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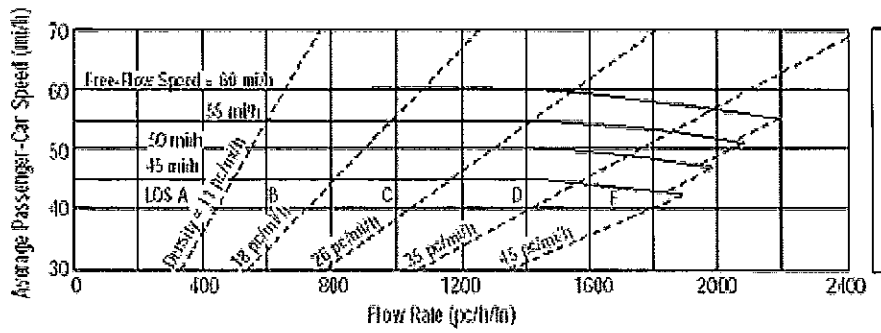
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Bridgehead Road
From/To	Shady Haven/Wilbur Avenue
Jurisdiction	Contra Costa
Analysis Year	Near-term_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	334	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	183
Speed, S (mi/h)	52.0
D (pc/mi/ln)	3.5
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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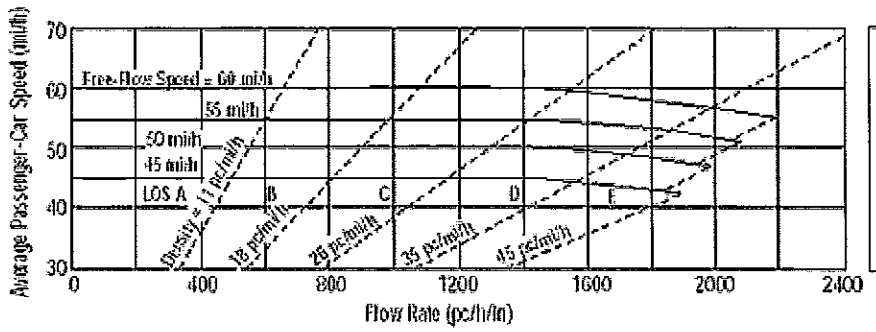
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Bridgehead Road
From/To	Shady Haven/Wilbur Avenue
Jurisdiction	Contra Costa
Analysis Year	Near-term_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	654	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)	
Flow Rate, v_p (pc/h/ln)	358
Speed, S (mi/h)	52.0
D (pc/mi/ln)	6.9
LOS	A

Design

Design (N)	
Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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Appendix P5
Near-Term Plus Project Conditions – Level of Service Analysis

```
CCTALOS Software ver. 2.35 by TJKM Transportation Consultants
=====================================================================
Condition: AM_NTP_1                                          05/09/08
=====================================================================
INTERSECTION     1 Minaker Dr./Wilbur Ave.          CCTA
Count Date                   Time                 Peak Hour
---------------------------------------------------------------------
CCTA METHOD          RIGHT THRU LEFT                      5-PHASE SIGNAL
-----------             17    4    1
                         |    |    |
             ^           |    |    |          ^
             |         <---   v   --->        | Split? N
LEFT     9 ---  1.0   1.0  1.1  1.1   1.1 ---     4  RIGHT
                                                        STREET NAME:
THRU   160 ---> 2.1  (NO. OF LANES)   2.1<---   708  THRU  Wilbur Ave.

RIGHT   53 ---  1.1   1.0  1.1  1.1   1.0 ---    12  LEFT
             |         <---   ^   --->        |
             v           |    |    |          v
  N                      |    |    |                      SIG WARRANTS:
W + E                   93    6   18                        Urb=N, Rur=N
  S                   LEFT THRU RIGHT Split? Y

               STREET NAME: Minaker Dr.
=====================================================================
                ORIGINAL   ADJUSTED                V/C     CRITICAL
   MOVEMENT      VOLUME     VOLUME*   CAPACITY     RATIO       V/C
---------------------------------------------------------------------
NB  RIGHT (R)      18         18        1650      0.0109
    THRU (T)        6          6        1650      0.0036
    LEFT (L)       93         93        1650      0.0564     0.0564
    T + R                     24        1650      0.0145
---------------------------------------------------------------------
SB  RIGHT (R)      17          8 *      1650      0.0048     0.0048
    THRU (T)        4          4        1650      0.0024
    LEFT (L)        1          1        1650      0.0006
    T + L                      5        1650      0.0030
---------------------------------------------------------------------
EB  RIGHT (R)      53         53        1650      0.0321
    THRU (T)      160        160        3300      0.0485
    LEFT (L)        9          9        1650      0.0055     0.0055
    T + R                    213        3300      0.0645
---------------------------------------------------------------------
WB  RIGHT (R)       4          4        1650      0.0024
    THRU (T)      708        708        3300      0.2145
    LEFT (L)       12         12        1650      0.0073
    T + R                    712        3300      0.2158     0.2158
=====================================================================
     TOTAL VOLUME-TO-CAPACITY RATIO:                          0.28
     INTERSECTION LEVEL OF SERVICE:                              A
=====================================================================
* ADJUSTED FOR RIGHT TURN ON RED
INT=EX.INT,VOL=NTP_AM.AMV,CAP=
```

CCTALOS Software ver. 2.35 by TJKM Transportation Consultants

Condition: PM_NTP_1 05/09/08

```
INTERSECTION      1 Minaker Dr./Wilbur Ave.          CCTA
Count Date                    Time                 Peak Hour
-----------------------------------------------------------------------
CCTA METHOD          RIGHT THRU LEFT                          5-PHASE SIGNAL
-----------             24    5   17
                         |    |    |
              ^          |    |    |          ^
              |        <---   v   --->        | Split? N
LEFT     15 ---  1.0   1.0  1.1  1.1   1.1 ---    13  RIGHT
                                                          STREET NAME:
THRU    684 ---> 2.1  (NO. OF LANES)   2.1<---   191  THRU  Wilbur Ave.

RIGHT   151 ---  1.1   1.0  1.1  1.1   1.0 ---    31  LEFT
              |        <---   ^   --->        |
              v          |    |    |          v
  N                      |    |    |                        SIG WARRANTS:
W + E                   80    3   14                          Urb=N, Rur=N
  S                   LEFT THRU RIGHT Split? Y

                STREET NAME: Minaker Dr.
```

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	14	14	1650	0.0085	
	THRU (T)	3	3	1650	0.0018	
	LEFT (L)	80	80	1650	0.0485	0.0485
	T + R		17	1650	0.0103	
SB	RIGHT (R)	24	9 *	1650	0.0055	
	THRU (T)	5	5	1650	0.0030	
	LEFT (L)	17	17	1650	0.0103	
	T + L		22	1650	0.0133	0.0133
EB	RIGHT (R)	151	151	1650	0.0915	
	THRU (T)	684	684	3300	0.2073	
	LEFT (L)	15	15	1650	0.0091	
	T + R		835	3300	0.2530	0.2530
WB	RIGHT (R)	13	13	1650	0.0079	
	THRU (T)	191	191	3300	0.0579	
	LEFT (L)	31	31	1650	0.0188	0.0188
	T + R		204	3300	0.0618	

TOTAL VOLUME-TO-CAPACITY RATIO: 0.33
INTERSECTION LEVEL OF SERVICE: A

* ADJUSTED FOR RIGHT TURN ON RED
INT=EX.INT,VOL=NTP_PM.AMV,CAP=

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 Viera Avenue/Wilbur Avenue

Average Delay (sec/veh): 2.2 Worst Case Level Of Service: C[19.5]

Street Name:	Viera Avenue						Wilbur Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 0 0 0			0 0 0 1 0			1 0 1 0 0		
Volume Module:												
Base Vol:	87	0	12	0	0	0	0	147	30	9	603	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	87	0	12	0	0	0	0	147	30	9	603	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	95	0	13	0	0	0	0	160	33	10	655	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	95	0	13	0	0	0	0	160	33	10	655	0
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	851	851	176	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	192	xxxx	xxxxx
Potent Cap.:	330	297	867	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1381	xxxx	xxxxx
Move Cap.:	329	295	867	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1381	xxxx	xxxxx
Volume/Cap:	0.29	0.00	0.02	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.6	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	355	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	1.3	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	19.5	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	C	*	*	*	*	*	*	*	*	*	*
ApproachDel:		19.5		xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:		C		*			*			*		

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 Viera Avenue/Wilbur Avenue

Average Delay (sec/veh): 0.9 Worst Case Level Of Service: C[17.5]

Street Name:	Viera Avenue						Wilbur Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1!	0	0	0 0 0	0	0	0 0 0	1	0	1 0 1	0	0
Volume Module:												
Base Vol:	30	0	16	0	0	0	0	532	193	11	191	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	30	0	16	0	0	0	0	532	193	11	191	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	33	0	17	0	0	0	0	578	210	12	208	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	33	0	17	0	0	0	0	578	210	12	208	0
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	915	915	683	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	788	xxxx	xxxxx
Potent Cap.:	303	273	449	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	831	xxxx	xxxxx
Move Cap.:	300	269	449	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	831	xxxx	xxxxx
Volume/Cap:	0.11	0.00	0.04	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	9.4	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	339	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.5	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	17.5	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	C	*	*	*	*	*	*	*	*	*	*
ApproachDel:		17.5			xxxxxx			xxxxxx			xxxxxx	
ApproachLOS:		C			*			*			*	

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #3 Fleming Avenue/Wilbur Avenue

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: C[21.0]

Street Name:	Fleming Avenue						Wilbur Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Yield Sign			Yield Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			1 0 0 0 0			0 1 0 0 0			0 0 1 0 0		
Volume Module:												
Base Vol:	0	0	0	1	0	0	1	178	0	0	858	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	1	0	0	1	178	0	0	858	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	0	0	0	1	0	0	1	193	0	0	933	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	1	0	0	1	193	0	0	933	0
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	6.4	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1128	1128	193	1128	xxxx	xxxxx	933	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	181	204	848	226	xxxx	xxxxx	734	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	181	204	848	226	xxxx	xxxxx	734	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.00	0.00	0.00	0.00	xxxx	xxxx	0.00	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	21.0	xxxx	xxxxx	9.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	C	*	*	A	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	0	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	9.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	A	*	*	*	*	*
ApproachDel:	xxxxxx			21.0			xxxxxx			xxxxxx		
ApproachLOS:	*			C			*			*		

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #3 Fleming Avenue/Wilbur Avenue

Average Delay (sec/veh): 0.1 Worst Case Level Of Service: C[18.4]

Street Name:	Fleming Avenue						Wilbur Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Yield Sign			Yield Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			0 1 0 0 0			0 0 0 1 0		
Volume Module:												
Base Vol:	0	0	0	3	0	1	2	888	0	0	158	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	3	0	1	2	888	0	0	158	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	0	0	0	3	0	1	2	965	0	0	172	1
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	3	0	1	2	965	0	0	172	1
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	6.4	6.5	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1142	1142	965	1142	1142	172	173	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	177	200	309	222	200	871	1404	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	177	200	309	221	200	871	1404	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.00	0.00	0.00	0.01	0.00	0.00	0.00	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	0	xxxxx	xxxx	272	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	0.0	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	18.4	xxxxx	7.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	C	*	A	*	*	*	*	*
ApproachDel:	xxxxxx			18.4			xxxxxx			xxxxxx		
ApproachLOS:	*			C			*			*		

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #4 SR 160 SB On Ramp/Wilbur Avenue

Average Delay (sec/veh): 2.8 Worst Case Level Of Service: C[15.1]

Street Name:	SR 160 SB On Ramp						Wilbur Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Channel			Include			Include		
Lanes:	0 0 0	0 0		1 0 0	0 1		0 0 1	1 0		1 0 2	0 0	
Volume Module:												
Base Vol:	0	0	0	36	0	174	0	163	20	13	746	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	36	0	174	0	163	20	13	746	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	0	0	0	39	0	189	0	177	22	14	811	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	39	0	189	0	177	22	14	811	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	xxxx	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	928	xxxx	405	xxxx	xxxx	xxxxx	199	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	267	xxxx	595	xxxx	xxxx	xxxxx	1371	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	265	xxxx	595	xxxx	xxxx	xxxxx	1371	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.15	xxxx	0.32	xxxx	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.5	xxxx	1.4	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	20.9	xxxx	13.8	xxxxx	xxxx	xxxxx	7.7	xxxx	xxxxx
LOS by Move:	*	*	*	C	*	B	*	*	*	A	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			15.1			xxxxxx			xxxxxx		
ApproachLOS:	*			C			*			*		

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #4 SR 160 SB On Ramp/Wilbur Avenue

Average Delay (sec/veh): 1.2 Worst Case Level Of Service: B[12.5]

Street Name:	SR 160 SB On Ramp						Wilbur Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Channel			Include			Include		
Lanes:	0 0 0	0 0	0	1 0 0	0	1	0 0 1	1	0	1 0 2	0	0
Volume Module:												
Base Vol:	0	0	0	75	0	27	0	596	319	17	131	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	75	0	27	0	596	319	17	131	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	0	0	0	82	0	29	0	648	347	18	142	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	82	0	29	0	648	347	18	142	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.8	xxxx	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	503	xxxx	71	xxxx	xxxx	xxxxx	995	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	498	xxxx	977	xxxx	xxxx	xxxxx	691	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	488	xxxx	977	xxxx	xxxx	xxxxx	691	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.17	xxxx	0.03	xxxx	xxxx	xxxx	0.03	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.6	xxxx	0.1	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	13.9	xxxx	8.8	xxxxx	xxxx	xxxxx	10.4	xxxx	xxxxx
LOS by Move:	*	*	*	B	*	A	*	*	*	B	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			12.5			xxxxxx			xxxxxx		
ApproachLOS:	*			B			*			*		

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #5 SR 160 NB On Ramp/Wilbur Avenue

Average Delay (sec/veh): 5.1 Worst Case Level Of Service: C[24.3]

Street Name:	SR 160 NB On Ramp									Wilbur Avenue								
Approach:	North Bound					South Bound					East Bound					West Bound				
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign					Stop Sign					Uncontrolled					Uncontrolled				
Rights:	Channel					Include					Include					Include				
Lanes:	1	0	0	0	1	0	0	0	0	0	1	0	2	0	0	0	0	2	0	1
Volume Module:																				
Base Vol:	201	0	12			0	0	0			47	218	0			0	550	78		
Growth Adj:	1.00	1.00	1.00			1.00	1.00	1.00			1.00	1.00	1.00			1.00	1.00	1.00		
Initial Bse:	201	0	12			0	0	0			47	218	0			0	550	78		
User Adj:	1.00	1.00	1.00			1.00	1.00	1.00			1.00	1.00	1.00			1.00	1.00	1.00		
PHF Adj:	0.92	0.92	0.92			0.92	0.92	0.92			0.92	0.92	0.92			0.92	0.92	0.92		
PHF Volume:	218	0	13			0	0	0			51	237	0			0	598	85		
Reduct Vol:	0	0	0			0	0	0			0	0	0			0	0	0		
FinalVolume:	218	0	13			0	0	0			51	237	0			0	598	85		
Critical Gap Module:																				
Critical Gp:	6.8	xxxx	6.9			xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
FollowUpTim:	3.5	xxxx	3.3			xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Capacity Module:																				
Cnflict Vol:	638	xxxx	118			xxxx	xxxx	xxxxx			683	xxxx	xxxxx			xxxx	xxxx	xxxxx		
Potent Cap.:	409	xxxx	911			xxxx	xxxx	xxxxx			906	xxxx	xxxxx			xxxx	xxxx	xxxxx		
Move Cap.:	391	xxxx	911			xxxx	xxxx	xxxxx			906	xxxx	xxxxx			xxxx	xxxx	xxxxx		
Volume/Cap:	0.56	xxxx	0.01			xxxx	xxxx	xxxx			0.06	xxxx	xxxx			xxxx	xxxx	xxxx		
Level Of Service Module:																				
2Way95thQ:	3.3	xxxx	0.0			xxxx	xxxx	xxxxx			0.2	xxxx	xxxxx			xxxx	xxxx	xxxxx		
Control Del:	25.2	xxxx	9.0			xxxxx	xxxx	xxxxx			9.2	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
LOS by Move:	D	*	A			*	*	*			A	*	*			*	*	*		
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
SharedQueue:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shrd ConDel:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
Shared LOS:	*	*	*			*	*	*			*	*	*			*	*	*		
ApproachDel:	24.3					xxxxxx					xxxxxx					xxxxxx				
ApproachLOS:	C					*					*					*				

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #5 SR 160 NB On Ramp/Wilbur Avenue

Average Delay (sec/veh): 2.3 Worst Case Level Of Service: C[17.6]

Street Name:	SR 160 NB On Ramp						Wilbur Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Channel			Include			Include			Include		
Lanes:	1 0 0 0 1			0 0 0 0 0			1 0 2 0 0			0 0 2 0 1		
Volume Module:												
Base Vol:	20	0	26	0	0	0	191	541	0	0	141	149
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	20	0	26	0	0	0	191	541	0	0	141	149
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	22	0	28	0	0	0	208	588	0	0	153	162
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	22	0	28	0	0	0	208	588	0	0	153	162
Critical Gap Module:												
Critical Gp:	6.8	xxxx	6.9	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1080	xxxx	294	xxxx	xxxx	xxxxx	315	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	213	xxxx	702	xxxx	xxxx	xxxxx	1242	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	185	xxxx	702	xxxx	xxxx	xxxxx	1242	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.12	xxxx	0.04	xxxx	xxxx	xxxx	0.17	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.4	xxxx	0.1	xxxx	xxxx	xxxxx	0.6	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	27.0	xxxx	10.3	xxxxx	xxxx	xxxxx	8.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	D	*	B	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:		17.6			xxxxxx			xxxxxx			xxxxxx	
ApproachLOS:		C			*			*			*	

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #6 Bridgehead Road/Wilbur Avenue

Cycle (sec):	100	Critical Vol./Cap.(X):	1.120
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	69.2
Optimal Cycle:	0	Level Of Service:	F

Street Name:	Bridgehead Road						Wilbur Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1!	0 0	0 0	1!	0 0	1 0	0 1	0	1 0	0 0	0
Volume Module:												
Base Vol:	599	36	1	1	12	27	28	1	196	2	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	599	36	1	1	12	27	28	1	196	2	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.78	0.78	0.78	0.71	0.71	0.71	0.88	0.88	0.88	0.50	0.50	0.50
PHF Volume:	768	46	1	1	17	38	32	1	223	4	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	768	46	1	1	17	38	32	1	223	4	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	768	46	1	1	17	38	32	1	223	4	0	0
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.94	0.05	0.01	0.02	0.30	0.68	1.00	0.01	0.99	1.00	0.00	0.00
Final Sat.:	685	41	1	17	202	454	514	3	616	529	0	0
Capacity Analysis Module:												
Vol/Sat:	1.12	1.12	1.12	0.08	0.08	0.08	0.06	0.36	0.36	0.01	xxxx	xxxx
Crit Moves:	****				****				****	****		
Delay/Veh:	91.8	91.8	91.8	8.7	8.7	8.7	10.1	11.7	11.7	9.7	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	91.8	91.8	91.8	8.7	8.7	8.7	10.1	11.7	11.7	9.7	0.0	0.0
LOS by Move:	F	F	F	A	A	A	B	B	B	A	*	*
ApproachDel:		91.8			8.7			11.5			9.7	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		91.8			8.7			11.5			9.7	
LOS by Appr:		F			A			B			A	
AllWayAvgQ:	17.0	17.0	17.0	0.1	0.1	0.1	0.1	0.6	0.6	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #6 Bridgehead Road/Wilbur Avenue

Cycle (sec):	100	Critical Vol./Cap.(X):	0.861
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	22.7
Optimal Cycle:	0	Level Of Service:	C

Street Name:	Bridgehead Road						Wilbur Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1!	0 0	0 0	1!	0 0	1 0	0 1	0	0 0	1!	0 0
Volume Module:												
Base Vol:	268	12	1	1	37	27	23	0	550	5	3	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	268	12	1	1	37	27	23	0	550	5	3	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.75	0.75	0.75	0.90	0.90	0.90	0.45	0.45	0.45
PHF Volume:	298	13	1	1	49	36	26	0	611	11	7	2
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	298	13	1	1	49	36	26	0	611	11	7	2
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	298	13	1	1	49	36	26	0	611	11	7	2
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.95	0.04	0.01	0.01	0.57	0.42	1.00	0.00	1.00	0.56	0.33	0.11
Final Sat.:	554	25	2	9	325	237	574	0	710	298	179	60
Capacity Analysis Module:												
Vol/Sat:	0.54	0.54	0.54	0.15	0.15	0.15	0.04	xxxx	0.86	0.04	0.04	0.04
Crit Moves:		****			****				****	****		
Delay/Veh:	14.9	14.9	14.9	9.8	9.8	9.8	9.2	0.0	29.5	9.4	9.4	9.4
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	14.9	14.9	14.9	9.8	9.8	9.8	9.2	0.0	29.5	9.4	9.4	9.4
LOS by Move:	B	B	B	A	A	A	A	*	D	A	A	A
ApproachDel:		14.9			9.8			28.6			9.4	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		14.9			9.8			28.6			9.4	
LOS by Appr:		B			A			D			A	
AllWayAvgQ:	1.0	1.0	1.0	0.2	0.2	0.2	0.0	4.3	4.3	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

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CCTALOS Software ver. 2.35 by TJKM Transportation Consultants

Condition: AM_NTP_6_MITI 05/09/08

INTERSECTION 6 Bridehead Drive/Wilbur Avenue Contra Costa
Count Date Time Peak Hour

CCTA METHOD 8-PHASE SIGNAL

RIGHT THRU LEFT
27 12 1

LEFT 28 --- 1.0 1.1 1.1 1.1 1.1 --- 0 RIGHT
Split? N

THRU 1 ---> 1.1 (NO. OF LANES) 1.1<--- 0 THRU

STREET NAME:
Wilbur Avenue

RIGHT 196 --- 1.1 1.0 1.1 1.1 1.0 --- 2 LEFT

N
W + E
S

599 36 1
LEFT THRU RIGHT Split? N

SIG WARRANTS:
Urb=N, Rur=Y

STREET NAME: Bridehead Drive

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	1	1	1650	0.0006	
	THRU (T)	36	36	1650	0.0218	
	LEFT (L)	599	599	1650	0.3630	0.3630
	T + R		37	1650	0.0224	
SB	RIGHT (R)	27	27	1650	0.0164	
	THRU (T)	12	12	1650	0.0073	
	LEFT (L)	1	1	1650	0.0006	
	T + R		39	1650	0.0236	
	T + L		13	1650	0.0079	
	T + R + L		40	1650	0.0242	0.0242
EB	RIGHT (R)	196	196	1650	0.1188	
	THRU (T)	1	1	1650	0.0006	
	LEFT (L)	28	28	1650	0.0170	
	T + R		197	1650	0.1194	0.1194
WB	RIGHT (R)	0	0	1650	0.0000	
	THRU (T)	0	0	1650	0.0000	
	LEFT (L)	2	2	1650	0.0012	0.0012
	T + R		0	1650	0.0000	

TOTAL VOLUME-TO-CAPACITY RATIO: 0.51
INTERSECTION LEVEL OF SERVICE: A

* ADJUSTED FOR RIGHT TURN ON RED
INT=EX_MITI.INT,VOL=NTP_AM.AMV,CAP=

CCTALOS Software ver. 2.35 by TJKM Transportation Consultants

Condition: PM_NTP_6_MITI 05/09/08

INTERSECTION 6 Bridehead Drive/Wilbur Avenue Contra Costa
Count Date Time Peak Hour

CCTA METHOD 8-PHASE SIGNAL

RIGHT THRU LEFT
27 37 1

Split? N

LEFT	23	---	1.0	1.1	1.1	1.1	1.1	---	1	RIGHT
THRU	0	--->	1.1	(NO. OF LANES)			1.1	<---	3	THRU
RIGHT	550	---	1.1	1.0	1.1	1.1	1.0	---	5	LEFT

STREET NAME: Wilbur Avenue

N
W + E
S

268 12 1
LEFT THRU RIGHT Split? N

SIG WARRANTS: Urb=N, Rur=N

STREET NAME: Bridehead Drive

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	1	1	1650	0.0006	
	THRU (T)	12	12	1650	0.0073	
	LEFT (L)	268	268	1650	0.1624	0.1624
	T + R		13	1650	0.0079	
SB	RIGHT (R)	27	27	1650	0.0164	
	THRU (T)	37	37	1650	0.0224	
	LEFT (L)	1	1	1650	0.0006	
	T + R		64	1650	0.0388	
	T + L		38	1650	0.0230	
	T + R + L		65	1650	0.0394	0.0394
EB	RIGHT (R)	550	550	1650	0.3333	0.3333
	THRU (T)	0	0	1650	0.0000	
	LEFT (L)	23	23	1650	0.0139	
	T + R		550	1650	0.3333	
WB	RIGHT (R)	1	1	1650	0.0006	
	THRU (T)	3	3	1650	0.0018	
	LEFT (L)	5	5	1650	0.0030	0.0030
	T + R		4	1650	0.0024	

TOTAL VOLUME-TO-CAPACITY RATIO: 0.54
INTERSECTION LEVEL OF SERVICE: A

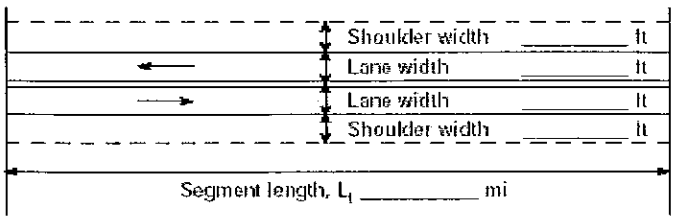
* ADJUSTED FOR RIGHT TURN ON RED
INT=EX_MITI.INT,VOL=NTP_PM.AMV,CAP=

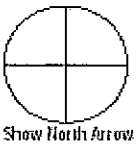
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AC*	Highway	*Wilbur Avenue*
Agency or Company	*URS Corporation*	From/To	*Minaker Drive/Viera Avenue*
Date Performed	*2/14/2008*	Jurisdiction	*Contra Costa*
Analysis Time Period	*AM Peak Period*	Analysis Year	*Near-Term plus Project*

Project Description: *Contra Costa - New Generation Project*

Input Data





☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*1016* veh/h
Directional split	*77 / 23*
Peak-hour factor, PHF	*0.92*
No-passing zone	*100*
% Trucks and Buses , P_T	*2 %*
% Recreational vehicles, P_R	*2%*
Access points/ *mi*	*7*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.996*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1109*
v_p * highest directional split proportion[2] (pc/h)	*854*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*mi/h*	Base free-flow speed, $BFFS_{FM}$	*50.0 mi/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*0.0 mi/h*
Free-flow speed, FFS $FFS=S_{FM}+0.00776(V_f/f_{HV})$	*mi/h*	Adj. for access points, f_A (Exhibit 20-6)	*1.8 mi/h*
		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	*48.3 mi/h*

Adj. for no-passing zones, f_{np} (*mi/h*) (Exhibit 20-11)	*2.3*
Average travel speed, ATS (*mi/h*) $ATS=FFS-0.00776v_p-f_{np}$	*37.3*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.998*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1107*
v_p * highest directional split proportion[2] (pc/h)	*852*
Base percent time-spent-following, $BPTSF(\%)=100(1-e^{-0.000879v_p})$	*62.2*
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	*12.6*
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{d/np}$	*74.8*

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*E*
Volume to capacity ratio, $v/c=V_p/3{,}200$	*0.35*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)= $0.25L_t(V/PHF)$	*276*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=$V*L_t$	*1016*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*7.4*

Notes

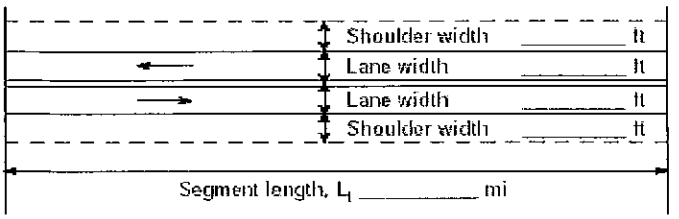
1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AC*	Highway	*Wilbur Avenue*
Agency or Company	*URS Corporation*	From/To	*Minaker Drive/Viera Avenue*
Date Performed	*2/14/2008*	Jurisdiction	*Contra Costa*
Analysis Time Period	*PM Peak Period*	Analysis Year	*Near-Term plus Project*

Project Description: *Contra Costa - New Generation Project*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*936* veh/h
Directional split	*72 / 28*
Peak-hour factor, PHF	*0.92*
No-passing zone	*100*
% Trucks and Buses , P_T	*2* %
% Recreational vehicles, P_R	*2%*
Access points/ *mi*	*7*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.996*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1021*
v_p * highest directional split proportion[2] (pc/h)	*735*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*mi/h*	Base free-flow speed, $BFFS_{FM}$	*50.0 mi/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*0.0 mi/h*
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points, f_A (Exhibit 20-6)	*1.8 mi/h*
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	*48.3 mi/h*

Adj. for no-passing zones, f_{np} (*mi/h*) (Exhibit 20-11)	*2.5*
Average travel speed, ATS (*mi/h*) ATS=FFS-0.00776v_p-f_{np}	*37.8*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.998*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1019*
v_p * highest directional split proportion[2] (pc/h)	*734*
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	*59.2*
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	*12.7*
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	*71.9*

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*E*
Volume to capacity ratio, v/c=V_p/ 3,200	*0.32*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)= 0.25L_t(V/PHF)	*254*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*936*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*6.7*

Notes

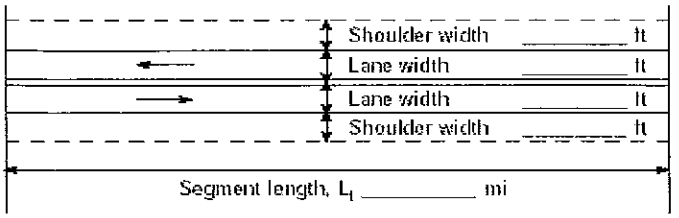
1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	AC	Highway	Wilbur Avenue
Agency or Company	URS Corporation	From/To	Viera Avenue/Fleming Avenue
Date Performed	2/14/2008	Jurisdiction	Contra Costa
Analysis Time Period	AM Peak Period	Analysis Year	Near-Term plus Project

Project Description: *Contra Costa - New Generation Project*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	1014 veh/h
Directional split	78 / 22
Peak-hour factor, PHF	0.92
No-passing zone	100
% Trucks and Buses , P_T	2 %
% Recreational vehicles, P_R	2%
Access points/ *mi*	6

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.996
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	1107
v_p * highest directional split proportion[2] (pc/h)	863

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*mi/h*	Base free-flow speed, $BFFS_{FM}$	50.0 *mi/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	0.0 *mi/h*
Free-flow speed, FFS $FFS=S_{FM}+0.00776(V_f/f_{HV})$	*mi/h*	Adj. for access points, f_A (Exhibit 20-6)	1.5 *mi/h*
		Free-flow speed, FFS ($FSS=BFFS-f_{LS}-f_A$)	48.5 *mi/h*

Adj. for no-passing zones, f_{np} (*mi/h*) (Exhibit 20-11)	2.3
Average travel speed, ATS (*mi/h*) $ATS=FFS-0.00776v_p-f_{np}$	37.6

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.998
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	1104
v_p * highest directional split proportion[2] (pc/h)	861
Base percent time-spent-following, $BPTSF(\%)=100(1-e^{-0.000879v_p})$	62.1
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	12.8
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{d/np}$	74.9

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	E
Volume to capacity ratio, $v/c=V_p/3{,}200$	0.35
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)= $0.25L_t(V/PHF)$	276
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=$V*L_t$	1014
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	7.3

Notes

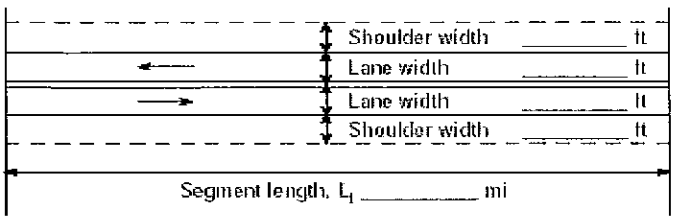
1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	AC	Highway	Wilbur Avenue
Agency or Company	URS Corporation	From/To	Viera Avenue/Fleming Avenue
Date Performed	2/14/2008	Jurisdiction	Contra Costa
Analysis Time Period	PM Peak Period	Analysis Year	Near-Term plus Project

Project Description: *Contra Costa - New Generation Project*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	914 veh/h
Directional split	72 / 28
Peak-hour factor, PHF	0.92
No-passing zone	100
% Trucks and Buses , P_T	2%
% Recreational vehicles, P_R	2%
Access points/ *mi*	6

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.2
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.996
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	997
v_p * highest directional split proportion[2] (pc/h)	718

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*mi/h*	Base free-flow speed, $BFFS_{FM}$	50.0 *mi/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	0.0 *mi/h*
Free-flow speed, FFS $FFS=S_{FM}+0.00776(V_f/f_{HV})$	*mi/h*	Adj. for access points, f_A (Exhibit 20-6)	1.5 *mi/h*
		Free-flow speed, FFS ($FSS=BFFS-f_{LS}-f_A$)	48.5 *mi/h*

Adj. for no-passing zones, f_{np} (*mi/h*) (Exhibit 20-11)	2.6
Average travel speed, ATS (*mi/h*) $ATS=FFS-0.00776v_p-f_{np}$	38.2

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.998
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	995
v_p * highest directional split proportion[2] (pc/h)	716
Base percent time-spent-following, $BPTSF(\%)=100(1-e^{-0.000879v_p})$	58.3
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	13.0
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{d/np}$	71.3

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	E
Volume to capacity ratio, v/c=V_p/ 3,200	0.31
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)= $0.25L_t(V/PHF)$	248
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=$V*L_t$	914
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	6.5

Notes

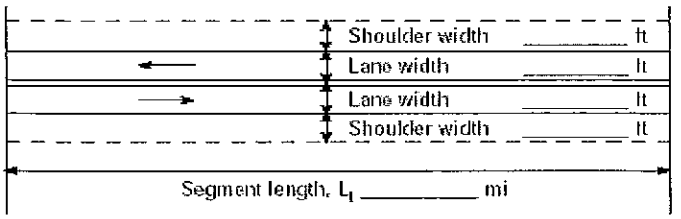
1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AC*	Highway	*Wilbur Avenue*
Agency or Company	*URS Corporation*	From/To	*Fleming Avenue/SR 160 SB Ramps*
Date Performed	*2/14/2008*	Jurisdiction	*Contra Costa*
Analysis Time Period	*AM Peak Period*	Analysis Year	*Near-Term plus Project*

Project Description: *Contra Costa - New Generation Project*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*1252* veh/h
Directional split	*82 / 18*
Peak-hour factor, PHF	*0.92*
No-passing zone	*100*
% Trucks and Buses , P_T	*2* %
% Recreational vehicles, P_R	*2*%
Access points/ *mi*	*2*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.998*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1364*
v_p * highest directional split proportion[2] (pc/h)	*1118*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*mi/h*	Base free-flow speed, $BFFS_{FM}$	*50.0 mi/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*0.0 mi/h*
Free-flow speed, FFS $FFS=S_{FM}+0.00776(V_f/f_{HV})$	*mi/h*	Adj. for access points, f_A (Exhibit 20-6)	*0.5 mi/h*
		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	*49.5 mi/h*

Adj. for no-passing zones, f_{np} (*mi/h*) (Exhibit 20-11)	*1.8*
Average travel speed, ATS (*mi/h*) $ATS=FFS-0.00776v_p-f_{np}$	*37.1*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*1.000*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1361*
v_p * highest directional split proportion[2] (pc/h)	*1116*
Base percent time-spent-following, $BPTSF(\%)=100(1-e^{-0.000879v_p})$	*69.8*
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	*10.2*
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{d/np}$	*80.0*

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*E*
Volume to capacity ratio, $v/c=V_p/3{,}200$	*0.43*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)= $0.25L_t(V/PHF)$	*34*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=$V*L_t$	*125*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*0.9*

Notes

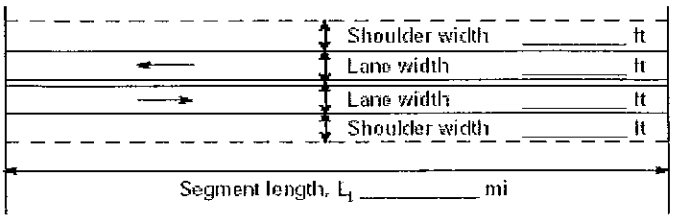
1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	AC	Highway	Wilbur Avenue
Agency or Company	URS Corporation	From/To	Fleming Avenue/SR 160 SB Ramps
Date Performed	2/14/2008	Jurisdiction	Contra Costa
Analysis Time Period	PM Peak Period	Analysis Year	Near-Term plus Project

Project Description: *Contra Costa - New Generation Project*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*1183* veh/h
Directional split	*80 / 20*
Peak-hour factor, PHF	*0.92*
No-passing zone	*100*
% Trucks and Buses , P_T	*2* %
% Recreational vehicles, P_R	*2%*
Access points/ *mi*	*2*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.998*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1288*
v_p * highest directional split proportion[2] (pc/h)	*1030*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*mi/h*	Base free-flow speed, $BFFS_{FM}$	*50.0 mi/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*0.0 mi/h*
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points, f_A (Exhibit 20-6)	*0.5 mi/h*
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	*49.5 mi/h*

Adj. for no-passing zones, f_{np} (*mi/h*) (Exhibit 20-11)	*1.9*
Average travel speed, ATS (*mi/h*) ATS=FFS-0.00776v_p-f_{np}	*37.6*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*1.000*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1286*
v_p * highest directional split proportion[2] (pc/h)	*1029*
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	*67.7*
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	*10.9*
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	*78.6*

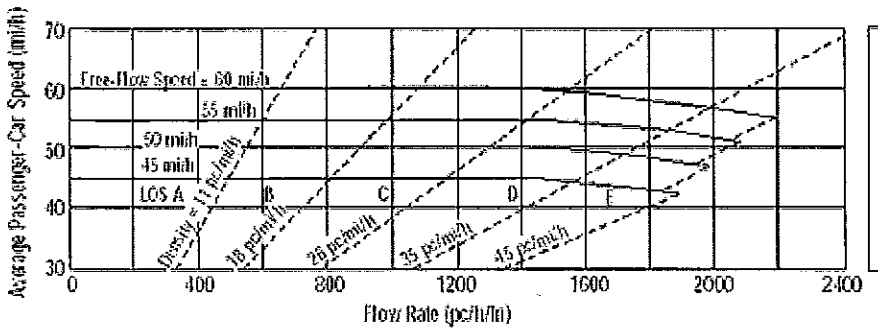
Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*E*
Volume to capacity ratio, v/c=V_p/ 3,200	*0.40*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)= 0.25L_t(V/PHF)	*32*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*118*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*0.9*

Notes

1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	2/14/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	SR 160 NB Ramp/SR 160 SB Ramp
Jurisdiction	Contra Costa
Analysis Year	Near-Term plus Project

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	219	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	120
Speed, S (mi/h)	52.0
D (pc/mi/ln)	2.3
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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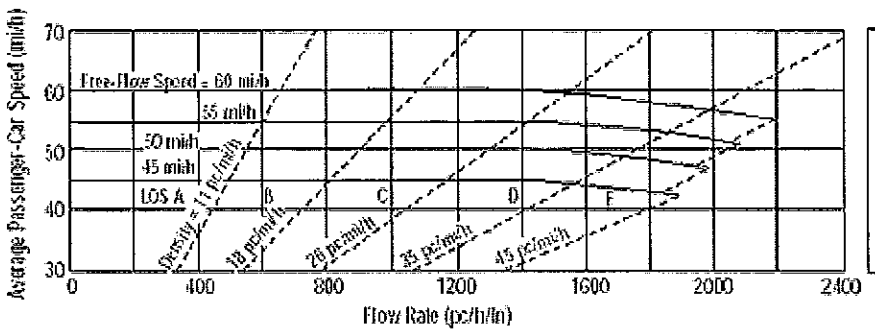
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	2/14/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	SR 160 NB Ramp/SR 160 SB Ramp
Jurisdiction	Contra Costa
Analysis Year	Near-Term plus Project

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	974	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	534
Speed, S (mi/h)	52.0
D (pc/mi/ln)	10.3
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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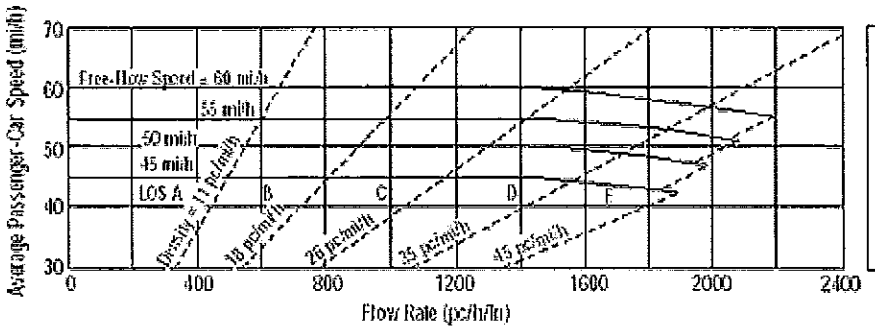
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	2/14/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	SR 160 NB Ramp/SR 160 SB Ramp
Jurisdiction	Contra Costa
Analysis Year	Near-Term plus Project

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	714	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	391
Speed, S (mi/h)	52.0
D (pc/mi/ln)	7.5
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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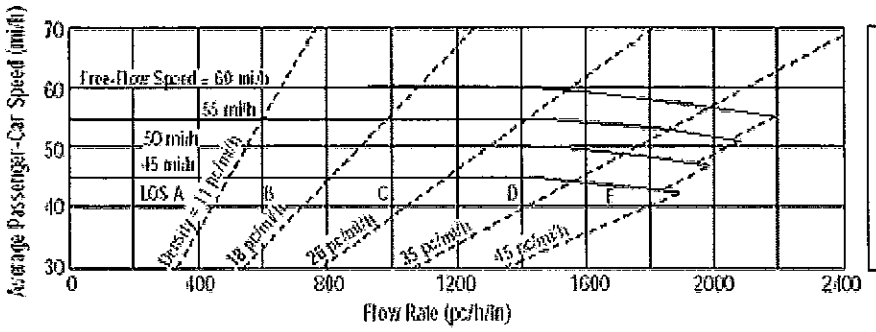
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	2/14/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	SR 160 NB Ramp/SR 160 SB Ramp
Jurisdiction	Contra Costa
Analysis Year	Near-Term plus Project

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	257	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	141
Speed, S (mi/h)	52.0
D (pc/mi/ln)	2.7
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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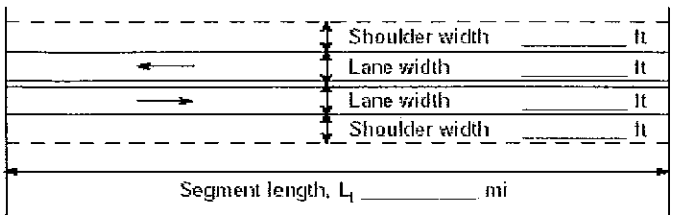
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AC*	Highway	*Bridgehead Road*
Agency or Company	*URS Corporation*	From/To	*Shady Haven/Wilbur Avenue*
Date Performed	*2/14/2008*	Jurisdiction	*Contra Costa*
Analysis Time Period	*AM Peak Period*	Analysis Year	*Near-Term plus Project*

Project Description: *Contra Costa - New Generation Project*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*1149* veh/h
Directional split	*79 / 21*
Peak-hour factor, PHF	*0.92*
No-passing zone	*100*
% Trucks and Buses , P_T	*2%*
% Recreational vehicles, P_R	*2%*
Access points/ *mi*	*3*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.998*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1251*
v_p * highest directional split proportion[2] (pc/h)	*988*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*mi/h*	Base free-flow speed, $BFFS_{FM}$	*50.0 mi/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*0.0 mi/h*
Free-flow speed, FFS $FFS=S_{FM}+0.00776(V_f/f_{HV})$	*mi/h*	Adj. for access points, f_A (Exhibit 20-6)	*0.8 mi/h*
		Free-flow speed, FFS ($FSS=BFFS-f_{LS}-f_A$)	*49.3 mi/h*

Adj. for no-passing zones, f_{np} (*mi/h*) (Exhibit 20-11)	*2.0*
Average travel speed, ATS (*mi/h*) $ATS=FFS-0.00776v_p-f_{np}$	*37.5*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*1.000*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1249*
v_p * highest directional split proportion[2] (pc/h)	*987*
Base percent time-spent-following, $BPTSF(\%)=100(1-e^{-0.000879v_p})$	*66.6*
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	*11.2*
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{d/np}$	*77.9*

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*E*
Volume to capacity ratio, $v/c=V_p/3{,}200$	*0.39*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)= $0.25L_t(V/PHF)$	*94*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V^*L_t	*345*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*2.5*

Notes

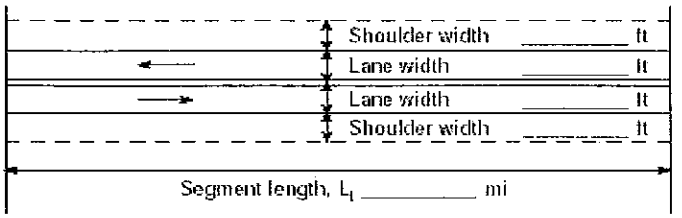
1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AC*	Highway	*Bridgehead Road*
Agency or Company	*URS Corporation*	From/To	*Shady Haven/Wilbur Avenue*
Date Performed	*2/14/2008*	Jurisdiction	*Contra Costa*
Analysis Time Period	*PM Peak Period*	Analysis Year	*Near-Term plus Project*

Project Description: *Contra Costa - New Generation Project*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*1002* veh/h
Directional split	*67 / 33*
Peak-hour factor, PHF	*0.92*
No-passing zone	*100*
% Trucks and Buses , P_T	*2 %*
% Recreational vehicles, P_R	*2%*
Access points/ *mi*	*3*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.996*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1093*
v_p * highest directional split proportion[2] (pc/h)	*732*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*mi/h*	Base free-flow speed, $BFFS_{FM}$	*50.0 mi/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*0.0 mi/h*
Free-flow speed, FFS $FFS=S_{FM}+0.00776(V_f/f_{HV})$	*mi/h*	Adj. for access points, f_A (Exhibit 20-6)	*0.8 mi/h*
		Free-flow speed, FFS ($FSS=BFFS-f_{LS}-f_A$)	*49.3 mi/h*

Adj. for no-passing zones, f_{np} (*mi/h*) (Exhibit 20-11)	*2.4*
Average travel speed, ATS (*mi/h*) $ATS=FFS-0.00776v_p-f_{np}$	*38.4*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.998*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*1091*
v_p * highest directional split proportion[2] (pc/h)	*731*
Base percent time-spent-following, $BPTSF(\%)=100(1-e^{-0.000879v_p})$	*61.7*
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	*11.5*
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{d/np}$	*73.2*

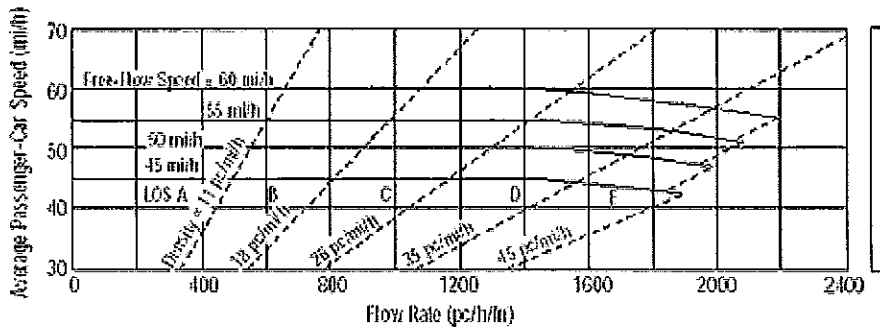
Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*E*
Volume to capacity ratio, v/c=V_p/ 3,200	*0.34*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)= $0.25L_t(V/PHF)$	*82*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=$V*L_t$	*301*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*2.1*

Notes

1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Minaker Drive & Viera Avenue
Jurisdiction	Contra Costa
Analysis Year	Near-term plus proj_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	234	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	128
Speed, S (mi/h)	52.0
D (pc/mi/ln)	2.5
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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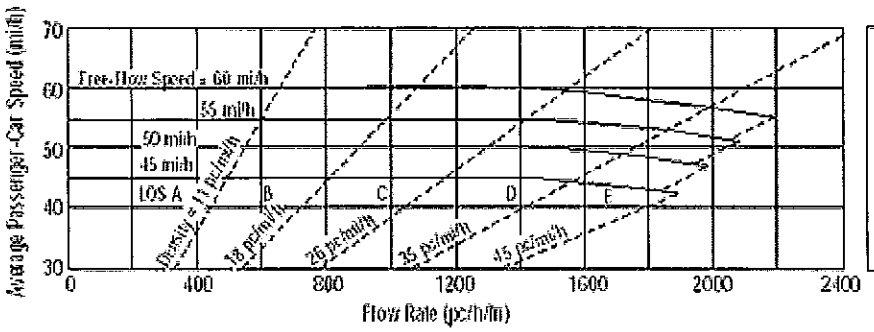
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Minaker Drive & Viera Avenue
Jurisdiction	Contra Costa
Analysis Year	Near-term plus proj_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	782	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	429
Speed, S (mi/h)	52.0
D (pc/mi/ln)	8.3
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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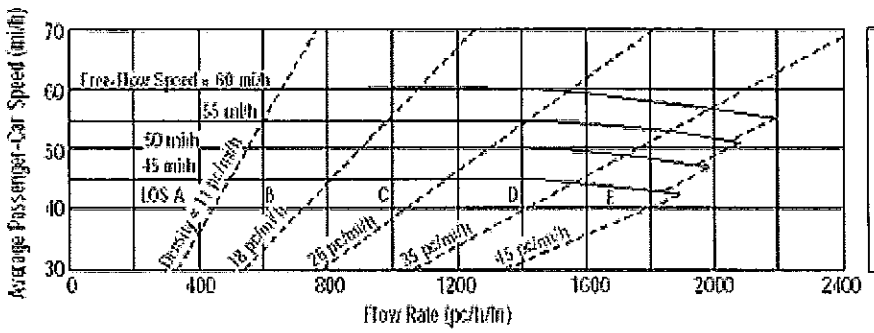
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Minaker Drive & Viera Avenue
Jurisdiction	Contra Costa
Analysis Year	Near-term plus proj_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	675	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	370
Speed, S (mi/h)	52.0
D (pc/mi/ln)	7.1
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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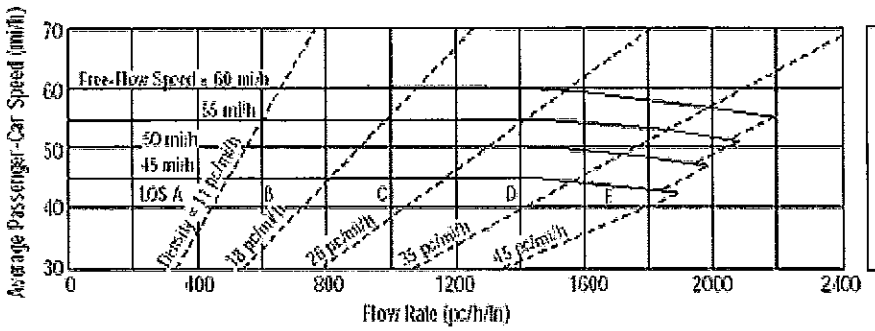
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Minaker Drive & Viera Avenue
Jurisdiction	Contra Costa
Analysis Year	Near-term plus proj_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	262	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	143
Speed, S (mi/h)	52.0
D (pc/mi/ln)	2.8
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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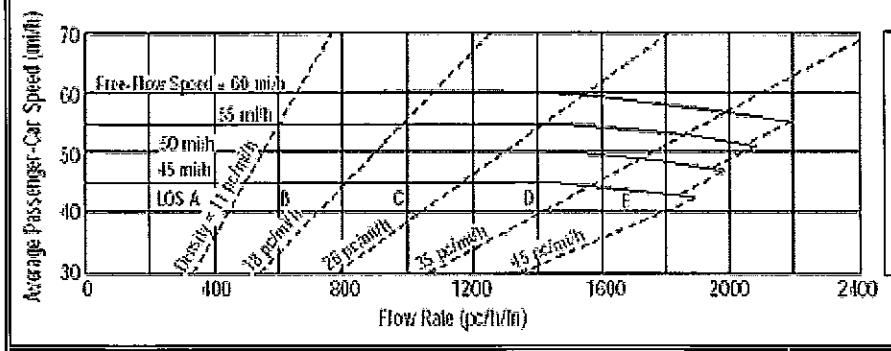
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Viera Avenue & Fleming Avenue
Jurisdiction	Contra Costa
Analysis Year	Near-term plus proj_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	220	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	120
Speed, S (mi/h)	52.0
D (pc/mi/ln)	2.3
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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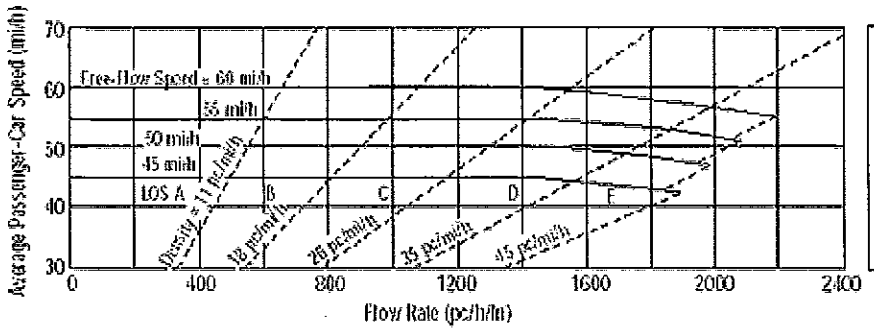
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Viera Avenue & Fleming Avenue
Jurisdiction	Contra Costa
Analysis Year	Near-term plus proj_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	793	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	435
Speed, S (mi/h)	52.0
D (pc/mi/ln)	8.4
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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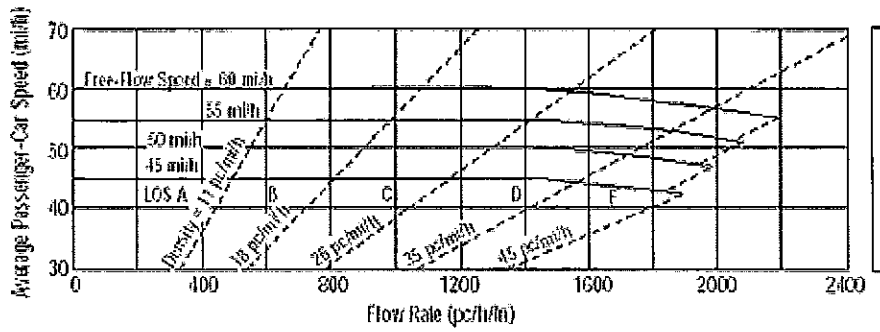
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Viera Avenue & Fleming Avenue
Jurisdiction	Contra Costa
Analysis Year	Near-term plus proj_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	659	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	361
Speed, S (mi/h)	52.0
D (pc/mi/ln)	6.9
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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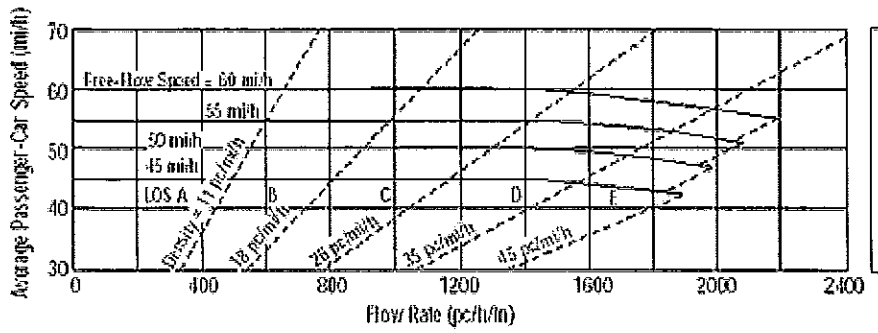
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Viera Avenue & Fleming Avenue
Jurisdiction	Contra Costa
Analysis Year	Near-term plus proj_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	256	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	140
Speed, S (mi/h)	52.0
D (pc/mi/ln)	2.7
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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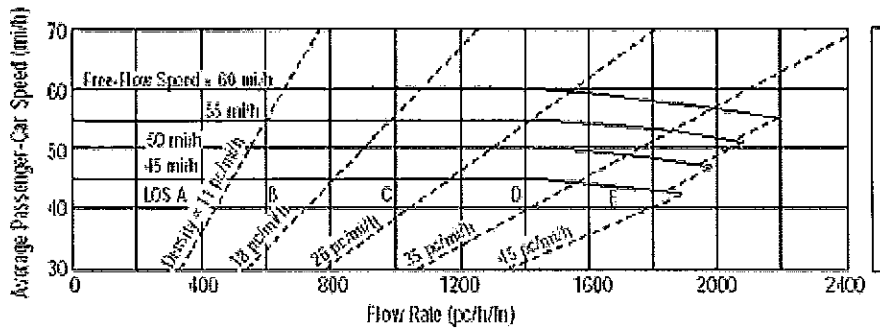
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Fleming Ave & SR 160 SB Ramps
Jurisdiction	Contra Costa
Analysis Year	Near-term plus proj_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	222	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	121
Speed, S (mi/h)	52.0
D (pc/mi/ln)	2.3
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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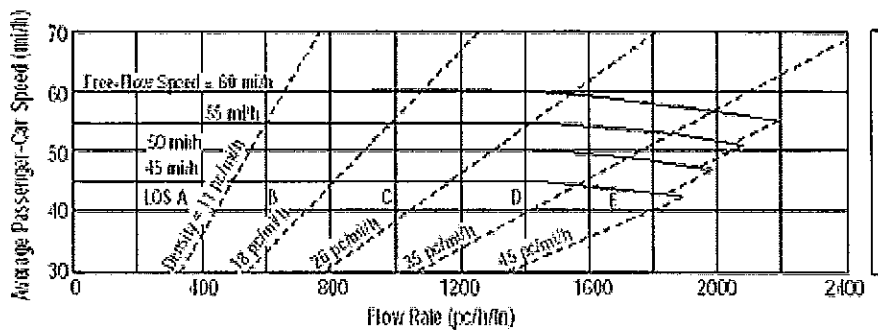
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Fleming Ave & SR 160 SB Ramps
Jurisdiction	Contra Costa
Analysis Year	Near-term plus proj_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	1030	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	565
Speed, S (mi/h)	52.0
D (pc/mi/ln)	10.9
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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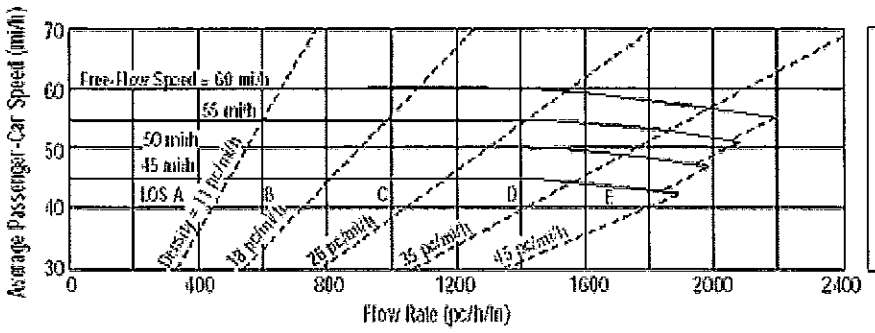
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Fleming Ave & SR 160 SB Ramps
Jurisdiction	Contra Costa
Analysis Year	Near-term plus proj_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	943	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	517
Speed, S (mi/h)	52.0
D (pc/mi/ln)	9.9
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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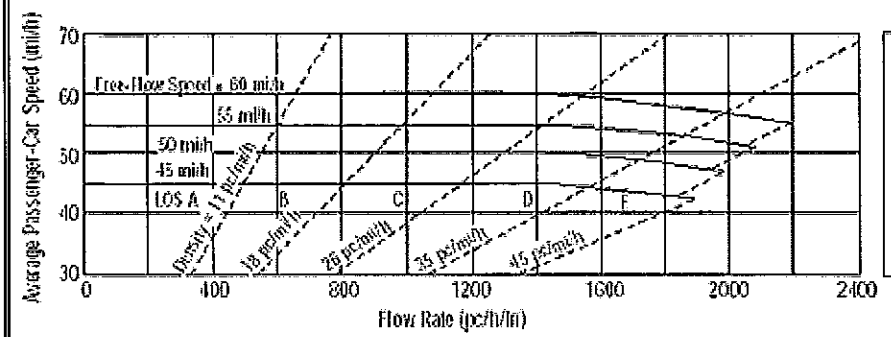
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Fleming Ave & SR 160 SB Ramps
Jurisdiction	Contra Costa
Analysis Year	Near-term plus proj_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	239	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	131
Speed, S (mi/h)	52.0
D (pc/mi/ln)	2.5
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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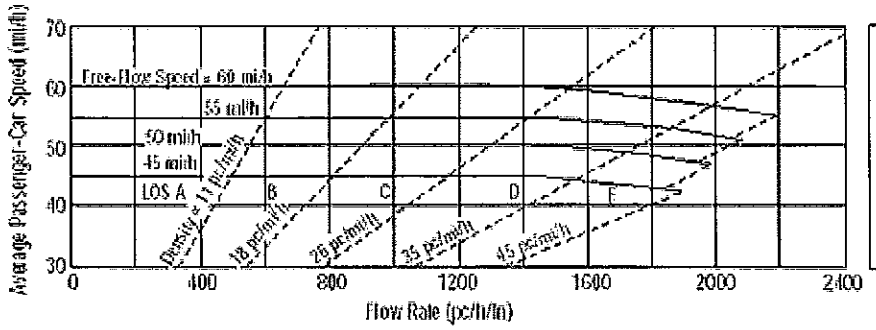
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Bridgehead Road
From/To	Shady Haven/Wilbur Avenue
Jurisdiction	Contra Costa
Analysis Year	Near-term plus proj_Mitigation

Project Description Contra Costa - New Generation Project1

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	904	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	496
Speed, S (mi/h)	52.0
D (pc/mi/ln)	9.5
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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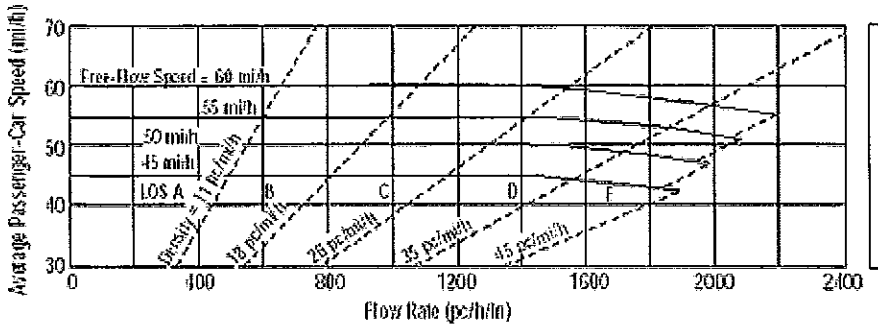
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Bridgehead Road
From/To	Shady Haven/Wilbur Avenue
Jurisdiction	Contra Costa
Analysis Year	Near-term plus proj_Mitigation

Project Description Contra Costa - New Generation Project1

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	246	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	135
Speed, S (mi/h)	52.0
D (pc/mi/ln)	2.6
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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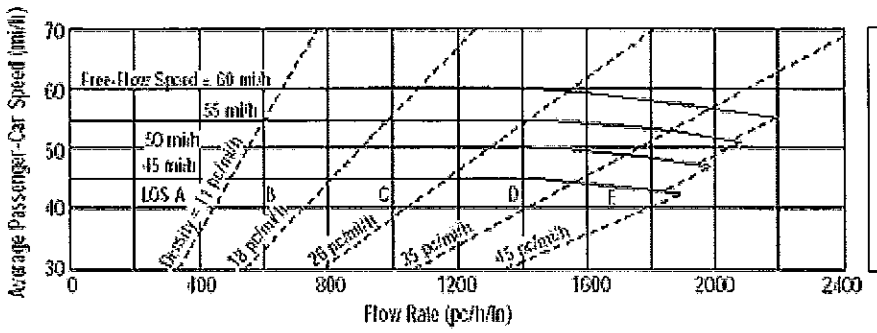
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Bridgehead Road
From/To	Shady Haven/Wilbur Avenue
Jurisdiction	Contra Costa
Analysis Year	Near-term plus proj_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	335	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	183
Speed, S (mi/h)	52.0
D (pc/mi/ln)	3.5
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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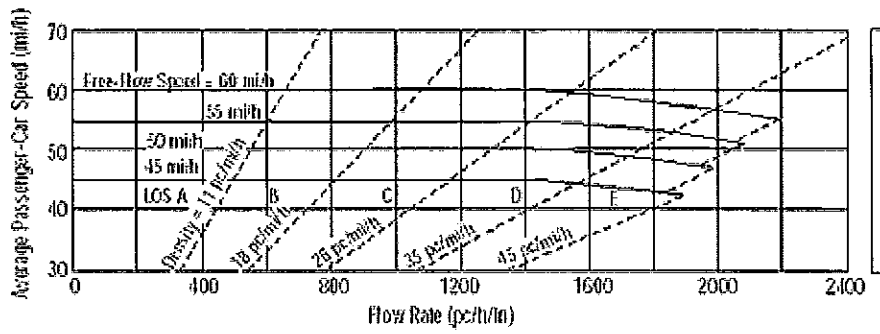
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Bridgehead Road
From/To	Shady Haven/Wilbur Avenue
Jurisdiction	Contra Costa
Analysis Year	Near-term plus proj_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	667	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)	
Flow Rate, v_p (pc/h/ln)	366
Speed, S (mi/h)	52.0
D (pc/mi/ln)	7.0
LOS	A

Design

Design (N)	
Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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Appendix P6
Projected Future Conditions – Level of Service Analysis

CCTALOS Software ver. 2.35 by TJKM Transportation Consultants

Condition: AM_FT_1 04/25/08

INTERSECTION 1 Minaker Drive/Wilbur Avenue Contra Costa
Count Date Time Peak Hour

CCTA METHOD 5-PHASE SIGNAL

RIGHT THRU LEFT
48 12 3

LEFT 24 --- 1.0 1.0 1.1 1.1 1.1 --- 12 RIGHT
Split? N

THRU 408 ---> 2.1 (NO. OF LANES) 2.1<--- 1961 THRU

RIGHT 147 --- 1.1 1.0 1.1 1.1 1.0 --- 30 LEFT

N
W + E
S

258 18 12
LEFT THRU RIGHT Split? Y

STREET NAME: Wilbur Avenue

SIG WARRANTS: Urb=Y, Rur=Y

STREET NAME: Minaker Drive

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	12	12	1650	0.0073	
	THRU (T)	18	18	1650	0.0109	
	LEFT (L)	258	258	1650	0.1564	0.1564
	T + R		30	1650	0.0182	
SB	RIGHT (R)	48	24 *	1650	0.0145	0.0145
	THRU (T)	12	12	1650	0.0073	
	LEFT (L)	3	3	1650	0.0018	
	T + L		15	1650	0.0091	
EB	RIGHT (R)	147	147	1650	0.0891	
	THRU (T)	408	408	3300	0.1236	
	LEFT (L)	24	24	1650	0.0145	0.0145
	T + R		555	3300	0.1682	
WB	RIGHT (R)	12	12	1650	0.0073	
	THRU (T)	1961	1961	3300	0.5942	
	LEFT (L)	30	30	1650	0.0182	
	T + R		1973	3300	0.5979	0.5979

TOTAL VOLUME-TO-CAPACITY RATIO: 0.78
INTERSECTION LEVEL OF SERVICE: C

CCTALOS Software ver. 2.35 by TJKM Transportation Consultants

Condition: PM_FT_1 04/25/08

INTERSECTION 1 Minaker Drive/Wilbur Avenue Contra Costa
Count Date Time Peak Hour

CCTA METHOD RIGHT THRU LEFT 5-PHASE SIGNAL

66 15 48

LEFT 42 --- 1.0 1.0 1.1 1.1 1.1 --- 36 RIGHT
Split? N

THRU 1895 ---> 2.1 (NO. OF LANES) 2.1<--- 492 THRU
STREET NAME: Wilbur Avenue

RIGHT 420 --- 1.1 1.0 1.1 1.1 1.0 --- 48 LEFT

N
W + E 222 9 36
S LEFT THRU RIGHT Split? Y

SIG WARRANTS: Urb=Y, Rur=Y

STREET NAME: Minaker Drive

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	36	36	1650	0.0218	
	THRU (T)	9	9	1650	0.0055	
	LEFT (L)	222	222	1650	0.1345	0.1345
	T + R		45	1650	0.0273	
SB	RIGHT (R)	66	24 *	1650	0.0145	
	THRU (T)	15	15	1650	0.0091	
	LEFT (L)	48	48	1650	0.0291	
	T + L		63	1650	0.0382	0.0382
EB	RIGHT (R)	420	420	1650	0.2545	
	THRU (T)	1895	1895	3300	0.5742	
	LEFT (L)	42	42	1650	0.0255	
	T + R		2315	3300	0.7015	0.7015
WB	RIGHT (R)	36	36	1650	0.0218	
	THRU (T)	492	492	3300	0.1491	
	LEFT (L)	48	48	1650	0.0291	0.0291
	T + R		528	3300	0.1600	

TOTAL VOLUME-TO-CAPACITY RATIO: 0.90
INTERSECTION LEVEL OF SERVICE: D

* ADJUSTED FOR RIGHT TURN ON RED
INT=FT.INT,VOL=FT_PM.AMV,CAP=

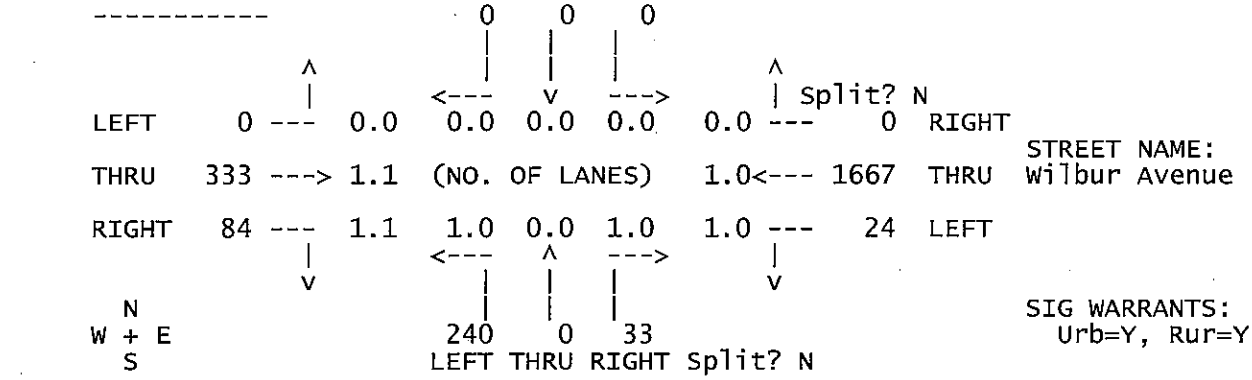
CCTALOS Software ver. 2.35 by TJKM Transportation Consultants

Condition: AM_FT_2 04/25/08

INTERSECTION 2 Viera Avenue/Wilbur Avenue Contra Costa
Count Date Time Peak Hour

CCTA METHOD 8-PHASE SIGNAL

RIGHT THRU LEFT
0 0 0



STREET NAME: Wilbur Avenue

SIG WARRANTS: Urb=Y, Rur=Y

STREET NAME: Viera Avenue

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	33	9 *	1650	0.0055	
	LEFT (L)	240	240	1650	0.1455	0.1455
EB	RIGHT (R)	84	84	1650	0.0509	
	THRU (T)	333	333	1650	0.2018	
	T + R		417	1650	0.2527	
WB	THRU (T)	1667	1667	1650	1.0103 **	1.0103
	LEFT (L)	24	24	1650	0.0145	

TOTAL VOLUME-TO-CAPACITY RATIO: 1.16
INTERSECTION LEVEL OF SERVICE: F

* ADJUSTED FOR RIGHT TURN ON RED ** APPROACHING OR EXCEEDING CAPACITY

INT=FT.INT,VOL=FT_AM.AMV,CAP=

CCTALOS Software ver. 2.35 by TJKM Transportation Consultants

Condition: PM_FT_2 04/25/08

INTERSECTION 2 Viera Avenue/Wilbur Avenue Contra Costa
Count Date Time Peak Hour

CCTA METHOD 8-PHASE SIGNAL

RIGHT THRU LEFT
0 0 0

| | |
<--- v ---> | Split? N

LEFT 0 --- 0.0 0.0 0.0 0.0 0.0 --- 0 RIGHT

STREET NAME:

THRU 1472 ---> 1.1 (NO. OF LANES) 1.0<--- 456 THRU Wilbur Avenue

RIGHT 534 --- 1.1 1.0 0.0 1.0 1.0 --- 30 LEFT
| <--- ^ ---> |
v | | | v

N | | | SIG WARRANTS:
W + E 84 0 45 Urb=Y, Rur=Y
S LEFT THRU RIGHT Split? N

STREET NAME: Viera Avenue

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB RIGHT (R)	45	15 *	1650	0.0091	
LEFT (L)	84	84	1650	0.0509	0.0509
EB RIGHT (R)	534	534	1650	0.3236	
THRU (T)	1472	1472	1650	0.8921	
T + R		2006	1650	1.2158 **	1.2158
WB THRU (T)	456	456	1650	0.2764	
LEFT (L)	30	30	1650	0.0182	0.0182

TOTAL VOLUME-TO-CAPACITY RATIO: 1.28
INTERSECTION LEVEL OF SERVICE: F

* ADJUSTED FOR RIGHT TURN ON RED ** APPROACHING OR EXCEEDING CAPACITY
INT=FT.INT,VOL=FT_PM.AMV,CAP=

```
CCTALOS Software ver. 2.35 by TJKM Transportation Consultants
=====================================================================
Condition: AM_FT_3                                          04/25/08
=====================================================================
INTERSECTION      3 Fleming Avenue/Wilbur Avenue      Contra Costa
Count Date                    Time                  Peak Hour
---------------------------------------------------------------------
CCTA METHOD          RIGHT THRU LEFT                      8-PHASE SIGNAL
-----------              0    0    3
                         |    |    |
             ^           |    |    |          ^
             |         <---   v   --->        | Split? N
LEFT     3 ---  1.0   1.0  0.0  1.0   1.1 ---     0  RIGHT
                                                        STREET NAME:
THRU   459 ---> 1.1  (NO. OF LANES)   1.1<--- 1709  THRU  Wilbur Avenue

RIGHT    0 ---  1.1   1.0  1.1  1.1   0.0 ---     0  LEFT
             |         <---   ^   --->        |
             v           |    |    |          v
  N                      |    |    |                      SIG WARRANTS:
W + E                    0    0    0                        Urb=N, Rur=N
  S                   LEFT THRU RIGHT Split? N

                STREET NAME: Fleming Avenue
=====================================================================
                ORIGINAL   ADJUSTED                V/C     CRITICAL
   MOVEMENT      VOLUME     VOLUME*   CAPACITY     RATIO       V/C
---------------------------------------------------------------------
NB  RIGHT (R)       0          0       1650      0.0000     0.0000
    THRU (T)        0          0       1650      0.0000
    LEFT (L)        0          0       1650      0.0000
    T + R                      0       1650      0.0000
---------------------------------------------------------------------
SB  RIGHT (R)       0          0       1650      0.0000
    LEFT (L)        3          3       1650      0.0018     0.0018
---------------------------------------------------------------------
EB  RIGHT (R)       0          0       1650      0.0000
    THRU (T)      459        459       1650      0.2782
    LEFT (L)        3          3       1650      0.0018     0.0018
    T + R                    459       1650      0.2782
---------------------------------------------------------------------
WB  RIGHT (R)       0          0       1650      0.0000
    THRU (T)     1709       1709       1650      1.0358 **  1.0358
    T + R                   1709       1650      1.0358 **
=====================================================================
     TOTAL VOLUME-TO-CAPACITY RATIO:                          1.04
     INTERSECTION LEVEL OF SERVICE:                              F
=====================================================================
* ADJUSTED FOR RIGHT TURN ON RED      ** APPROACHING OR EXCEEDING CAPACITY
INT=FT.INT,VOL=FT_AM.AMV,CAP=
```

CCTALOS Software ver. 2.35 by TJKM Transportation Consultants

Condition: PM_FT_3 04/25/08

INTERSECTION 3 Fleming Avenue/Wilbur Avenue Contra Costa
Count Date Time Peak Hour

CCTA METHOD 8-PHASE SIGNAL

RIGHT THRU LEFT
3 0 9

LEFT 6 --- 1.0 1.0 0.0 1.0 1.1 --- 3 RIGHT
Split? N

THRU 1793 ---> 1.1 (NO. OF LANES) 1.1<--- 402 THRU

STREET NAME:
Wilbur Avenue

RIGHT 0 --- 1.1 1.0 1.1 1.1 0.0 --- 0 LEFT

N
W + E
S

LEFT THRU RIGHT Split? N

SIG WARRANTS:
Urb=N, Rur=N

STREET NAME: Fleming Avenue

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	0	0	1650	0.0000	0.0000
	THRU (T)	0	0	1650	0.0000	
	LEFT (L)	0	0	1650	0.0000	
	T + R		0	1650	0.0000	
SB	RIGHT (R)	3	0 *	1650	0.0000	
	LEFT (L)	9	9	1650	0.0055	0.0055
EB	RIGHT (R)	0	0	1650	0.0000	
	THRU (T)	1793	1793	1650	1.0867 **	1.0867
	LEFT (L)	6	6	1650	0.0036	
	T + R		1793	1650	1.0867 **	
WB	RIGHT (R)	3	3	1650	0.0018	
	THRU (T)	402	402	1650	0.2436	
	T + R		405	1650	0.2455	

TOTAL VOLUME-TO-CAPACITY RATIO: 1.09
INTERSECTION LEVEL OF SERVICE: F

* ADJUSTED FOR RIGHT TURN ON RED ** APPROACHING OR EXCEEDING CAPACITY
INT=FT.INT,VOL=FT_PM.AMV,CAP=

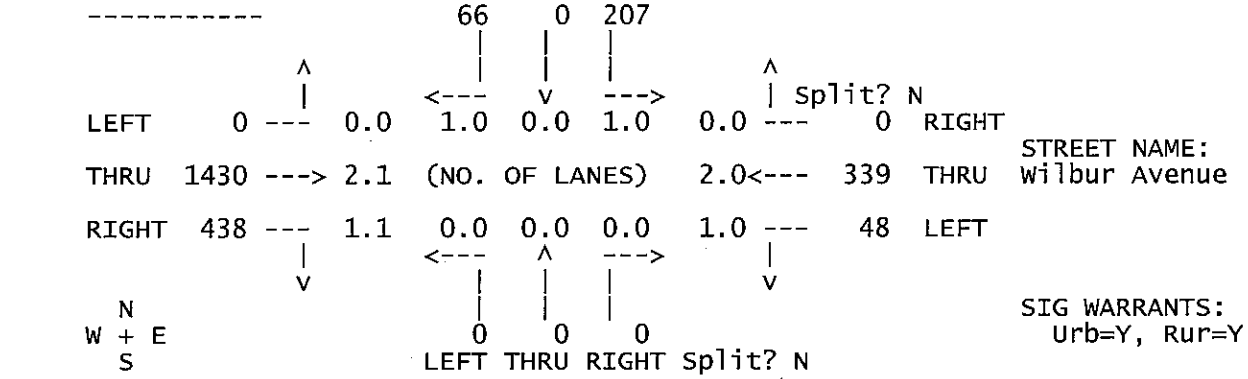
```
CCTALOS Software ver. 2.35 by TJKM Transportation Consultants
=====================================================================
Condition: AM_FT_4                                          04/25/08
=====================================================================
INTERSECTION      4 SR 160 SB Ramps/Wilbur Avenue     Contra Costa
Count Date                    Time                  Peak Hour
---------------------------------------------------------------------
CCTA METHOD          RIGHT THRU LEFT                      8-PHASE SIGNAL
-----------            297    0   99
                         |    |    |
             ^           |    |    |          ^
             |         <---   v   --->        | Split? N
LEFT     0 ---  0.0    1.0  0.0  1.0   0.0 ---     0  RIGHT
                                                        STREET NAME:
THRU   441 ---> 2.1  (NO. OF LANES)   2.0<--- 1586  THRU  Wilbur Avenue

RIGHT   33 ---  1.1    0.0  0.0  0.0   1.0 ---    36  LEFT
             |         <---   ^   --->        |
             v           |    |    |          v
  N                      |    |    |                      SIG WARRANTS:
W + E                    0    0    0                        Urb=Y, Rur=Y
  S                   LEFT THRU RIGHT Split? N

                STREET NAME: SR 160 SB Ramps
=====================================================================
                ORIGINAL   ADJUSTED                V/C     CRITICAL
   MOVEMENT      VOLUME     VOLUME*   CAPACITY     RATIO       V/C
---------------------------------------------------------------------
SB  RIGHT (R)     297        297       1650      0.1800     0.1800
    LEFT (L)       99         99       1650      0.0600
---------------------------------------------------------------------
EB  RIGHT (R)      33         33       1650      0.0200
    THRU (T)      441        441       3300      0.1336
    T + R                    474       3300      0.1436
---------------------------------------------------------------------
WB  THRU (T)     1586       1586       3300      0.4806     0.4806
    LEFT (L)       36         36       1650      0.0218
=====================================================================
     TOTAL VOLUME-TO-CAPACITY RATIO:                          0.66
     INTERSECTION LEVEL OF SERVICE:                              B
=====================================================================
* ADJUSTED FOR RIGHT TURN ON RED
INT=FT.INT,VOL=FT_AM.AMV,CAP=
```

CCTALOS Software ver. 2.35 by TJKM Transportation Consultants

Condition: PM_FT_4 04/25/08

INTERSECTION 4 SR 160 SB Ramps/Wilbur Avenue Contra Costa
Count Date Time Peak Hour

CCTA METHOD 8-PHASE SIGNAL



STREET NAME: Wilbur Avenue

SIG WARRANTS: Urb=Y, Rur=Y

STREET NAME: SR 160 SB Ramps

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
SB	RIGHT (R)	66	66	1650	0.0400	
	LEFT (L)	207	207	1650	0.1255	0.1255
EB	RIGHT (R)	438	438	1650	0.2655	
	THRU (T)	1430	1430	3300	0.4333	
	T + R		1868	3300	0.5661	0.5661
WB	THRU (T)	339	339	3300	0.1027	
	LEFT (L)	48	48	1650	0.0291	0.0291

TOTAL VOLUME-TO-CAPACITY RATIO: 0.72
INTERSECTION LEVEL OF SERVICE: C

* ADJUSTED FOR RIGHT TURN ON RED
INT=FT.INT,VOL=FT_PM.AMV,CAP=

CCTALOS Software ver. 2.35 by TJKM Transportation Consultants

Condition: AM_FT_5 04/25/08

INTERSECTION 5 SR 160 NB Ramps/Wilbur Avenue Contra Costa
Count Date Time Peak Hour

CCTA METHOD 8-PHASE SIGNAL

RIGHT THRU LEFT
0 0 0

Split? N

LEFT	120	---	1.0	0.0	0.0	0.0	1.0	---	216	RIGHT
THRU	603	--->	2.0	(NO. OF LANES)			2.0	<---	1487	THRU
RIGHT	0	---	0.0	1.0	0.0	1.0	0.0	---	0	LEFT

STREET NAME: Wilbur Avenue

N
W + E
S

111 0 33
LEFT THRU RIGHT Split? N

SIG WARRANTS: Urb=N, Rur=Y

STREET NAME: SR 160 NB Ramps

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	33	33	1650	0.0200	
	LEFT (L)	111	111	1650	0.0673	0.0673
EB	THRU (T)	603	603	3300	0.1827	
	LEFT (L)	120	120	1650	0.0727	0.0727
WB	RIGHT (R)	216	216	1650	0.1309	
	THRU (T)	1487	1487	3300	0.4506	0.4506

TOTAL VOLUME-TO-CAPACITY RATIO: 0.59
INTERSECTION LEVEL OF SERVICE: A

* ADJUSTED FOR RIGHT TURN ON RED
INT=FT.I

```
CCTALOS Software ver. 2.35 by TJKM Transportation Consultants
=====================================================================
Condition: PM_FT_5                                          04/25/08
=====================================================================
INTERSECTION     5 SR 160 NB Ramps/Wilbur Avenue     Contra Costa
Count Date                   Time                 Peak Hour
---------------------------------------------------------------------
CCTA METHOD          RIGHT THRU LEFT                      8-PHASE SIGNAL
-----------              0    0    0
                         |    |    |
              ^          |    |    |          ^
              |        <---   v   --->        | Split? N
LEFT   345 ---  1.0   0.0  0.0  0.0   1.0 ---  414  RIGHT
                                                          STREET NAME:
THRU  1463 ---> 2.0  (NO. OF LANES)   2.0<---  390  THRU  Wilbur Avenue

RIGHT    0 ---  0.0   1.0  0.0  1.0   0.0 ---    0  LEFT
              |        <---   ^   --->        |
              v          |    |    |          v
  N                      |    |    |                      SIG WARRANTS:
W + E                   33    0   72                        Urb=N, Rur=B
  S                   LEFT THRU RIGHT Split? N

                STREET NAME: SR 160 NB Ramps
=====================================================================
                ORIGINAL   ADJUSTED                V/C     CRITICAL
   MOVEMENT      VOLUME     VOLUME*   CAPACITY     RATIO       V/C
---------------------------------------------------------------------
NB  RIGHT (R)      72         72        1650      0.0436     0.0436
    LEFT (L)       33         33        1650      0.0200
---------------------------------------------------------------------
EB  THRU (T)     1463       1463        3300      0.4433
    LEFT (L)      345        345        1650      0.2091     0.2091
---------------------------------------------------------------------
WB  RIGHT (R)     414        414        1650      0.2509     0.2509
    THRU (T)      390        390        3300      0.1182
=====================================================================
     TOTAL VOLUME-TO-CAPACITY RATIO:                          0.50
     INTERSECTION LEVEL OF SERVICE:                              A
=====================================================================
* ADJUSTED FOR RIGHT TURN ON RED
INT=FT.INT,VOL=FT_PM.AMV,CAP=
```

CCTALOS Software ver. 2.35 by TJKM Transportation Consultants

Condition: AM_FT_6 04/25/08

INTERSECTION 6 Bridgehead Drive/Wilbur Avenue Contra Costa
Count Date Time Peak Hour

```
CCTA METHOD          RIGHT THRU LEFT                          8-PHASE SIGNAL
-----------             75   33    3
                         |    |    |
             ^           |    |    |          ^
             |         <---   v   --->        | Split? N
LEFT    78 ---  1.0    1.1  1.1  1.0    1.1 ---     0  RIGHT
                                                                STREET NAME:
THRU     3 ---> 1.1   (NO. OF LANES)    1.1<---     0  THRU   Wilbur Avenue

RIGHT  543 ---  1.1    1.0  1.1  1.1    1.0 ---     6  LEFT
             |         <---   ^   --->        |
             v           |    |    |          v
  N                      |    |    |                          SIG WARRANTS:
W + E                 1622   99    3                            Urb=Y, Rur=Y
  S                   LEFT THRU RIGHT Split? N
```

STREET NAME: Bridgehead Drive

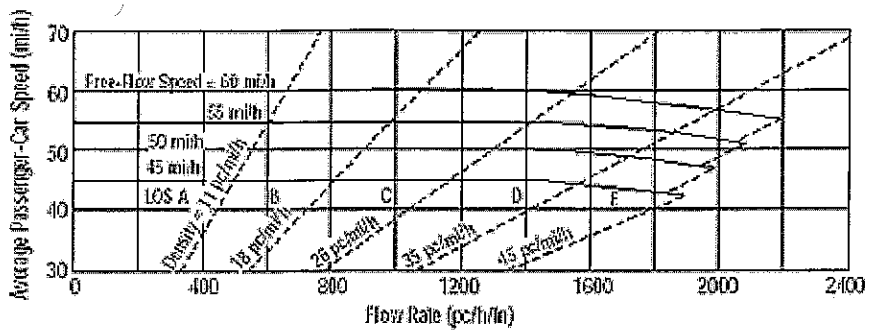
	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	3	3	1650	0.0018	
	THRU (T)	99	99	1650	0.0600	
	LEFT (L)	1622	1622	1650	0.9830 **	0.9830
	T + R		102	1650	0.0618	
SB	RIGHT (R)	75	75	1650	0.0455	
	THRU (T)	33	33	1650	0.0200	
	LEFT (L)	3	3	1650	0.0018	
	T + R		108	1650	0.0655	0.0655
EB	RIGHT (R)	543	543	1650	0.3291	
	THRU (T)	3	3	1650	0.0018	
	LEFT (L)	78	78	1650	0.0473	
	T + R		546	1650	0.3309	0.3309
WB	RIGHT (R)	0	0	1650	0.0000	
	THRU (T)	0	0	1650	0.0000	
	LEFT (L)	6	6	1650	0.0036	0.0036
	T + R		0	1650	0.0000	

TOTAL VOLUME-TO-CAPACITY RATIO: 1.38
INTERSECTION LEVEL OF SERVICE: F

* ADJUSTED FOR RIGHT TURN ON RED ** APPROACHING OR EXCEEDING CAPACITY
INT=FT.INT,VOL=FT_AM.AMV,CAP=

```
CCTALOS Software ver. 2.35 by TJKM Transportation Consultants
=====================================================================
Condition: PM_FT_6                                          04/25/08
=====================================================================
INTERSECTION     6 Bridgehead Drive/Wilbur Avenue    Contra Costa
Count Date                    Time                 Peak Hour
---------------------------------------------------------------------
CCTA METHOD          RIGHT THRU LEFT                      8-PHASE SIGNAL
-----------             75  102    3
                         |   |    |
             ^           |   |    |          ^
             |        <---   v   --->        | Split? N
LEFT     63 ---  1.0   1.1  1.1  1.0   1.1 ---     3  RIGHT
                                                        STREET NAME:
THRU      0 ---> 1.1  (NO. OF LANES)   1.1<---     9  THRU  Wilbur Avenue

RIGHT 1487 ---  1.1   1.0  1.1  1.1   1.0 ---    15  LEFT
             |        <---   ^   --->        |
             v           |   |    |          v
  N                      |   |    |                        SIG WARRANTS:
W + E                  741   33    3                          Urb=Y, Rur=Y
  S                   LEFT THRU RIGHT Split? N

                STREET NAME: Bridgehead Drive
=====================================================================
                ORIGINAL   ADJUSTED                V/C     CRITICAL
   MOVEMENT      VOLUME     VOLUME*   CAPACITY     RATIO       V/C
---------------------------------------------------------------------
NB  RIGHT (R)       3          3        1650      0.0018
    THRU (T)       33         33        1650      0.0200
    LEFT (L)      741        741        1650      0.4491     0.4491
    T + R                     36        1650      0.0218
---------------------------------------------------------------------
SB  RIGHT (R)      75         75        1650      0.0455
    THRU (T)      102        102        1650      0.0618
    LEFT (L)        3          3        1650      0.0018
    T + R                    177        1650      0.1073     0.1073
---------------------------------------------------------------------
EB  RIGHT (R)    1487       1487        1650      0.9012     0.9012
    THRU (T)        0          0        1650      0.0000
    LEFT (L)       63         63        1650      0.0382
    T + R                   1487        1650      0.9012
---------------------------------------------------------------------
WB  RIGHT (R)       3          3        1650      0.0018
    THRU (T)        9          9        1650      0.0055
    LEFT (L)       15         15        1650      0.0091     0.0091
    T + R                     12        1650      0.0073
=====================================================================
     TOTAL VOLUME-TO-CAPACITY RATIO:                          1.47
     INTERSECTION LEVEL OF SERVICE:                              F
=====================================================================
* ADJUSTED FOR RIGHT TURN ON RED
INT=FT.INT,VOL=FT_PM.AMV,CAP=
```

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Minaker Drive & Viera Avenue
Jurisdiction	Contra Costa
Analysis Year	Future Conditions

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	576	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	316
Speed, S (mi/h)	52.0
D (pc/mi/ln)	6.1
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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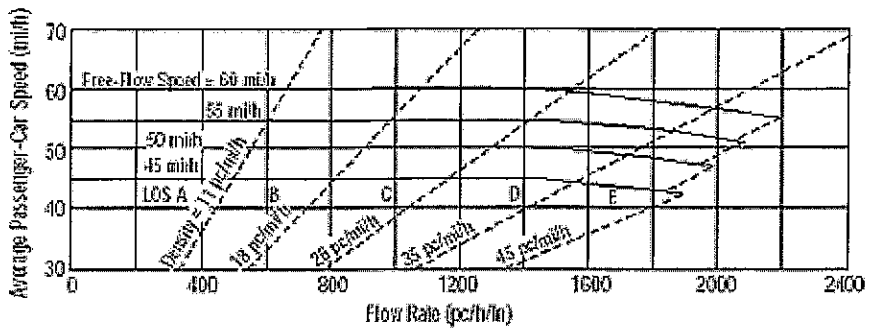
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Minaker Drive & Viera Avenue
Jurisdiction	Contra Costa
Analysis Year	Future Conditions

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	2164	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	1187
Speed, S (mi/h)	52.0
D (pc/mi/ln)	22.8
LOS	C

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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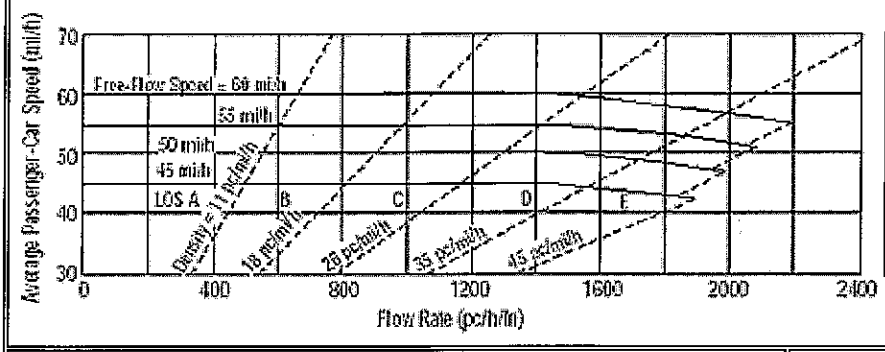
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Minaker Drive & Viera Avenue
Jurisdiction	Contra Costa
Analysis Year	Future Conditions

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	1867	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	1024
Speed, S (mi/h)	52.0
D (pc/mi/ln)	19.7
LOS	C

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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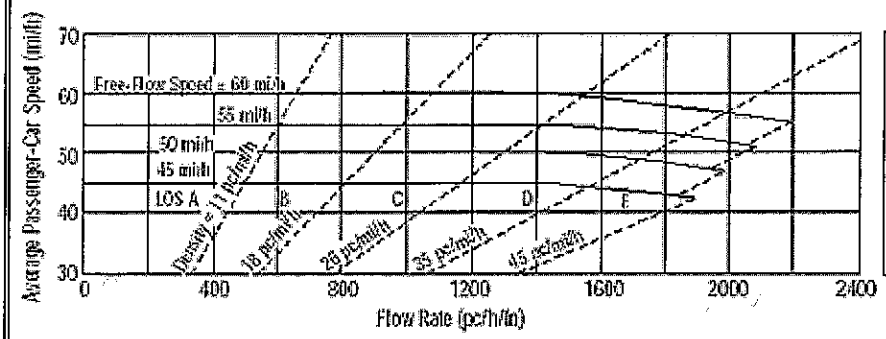
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Minaker Drive & Viera Avenue
Jurisdiction	Contra Costa
Analysis Year	Future Conditions

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	651	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	357
Speed, S (mi/h)	52.0
D (pc/mi/ln)	6.9
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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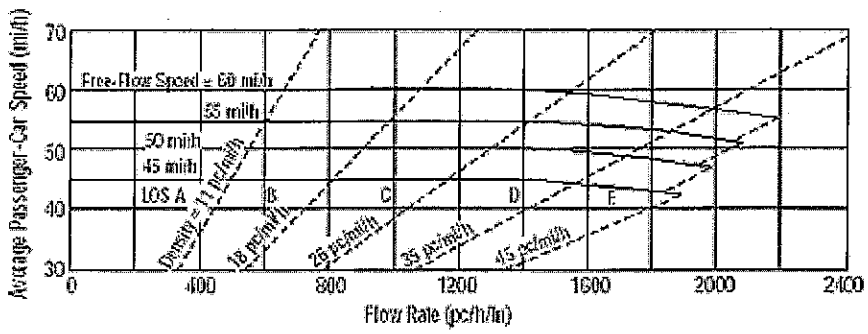
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Viera Avenue & Fleming Avenue
Jurisdiction	Contra Costa
Analysis Year	Future Conditions

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	537	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	294
Speed, S (mi/h)	52.0
D (pc/mi/ln)	5.7
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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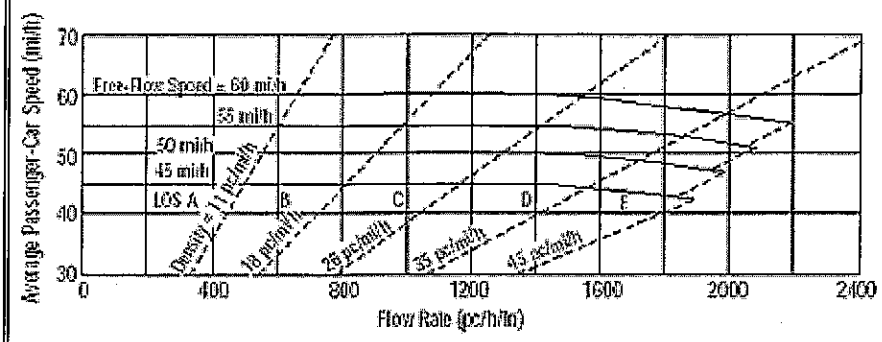
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Viera Avenue & Fleming Avenue
Jurisdiction	Contra Costa
Analysis Year	Future Conditions

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	2196	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	1205
Speed, S (mi/h)	52.0
D (pc/mi/ln)	23.2
LOS	C

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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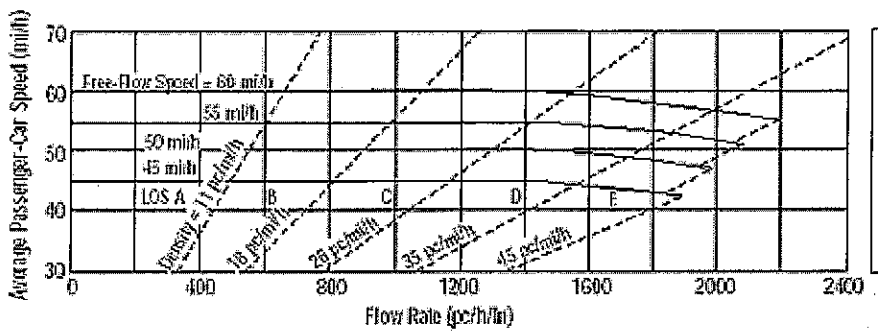
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Viera Avenue & Fleming Avenue
Jurisdiction	Contra Costa
Analysis Year	Future Conditions

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	1822	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	1000
Speed, S (mi/h)	52.0
D (pc/mi/ln)	19.2
LOS	C

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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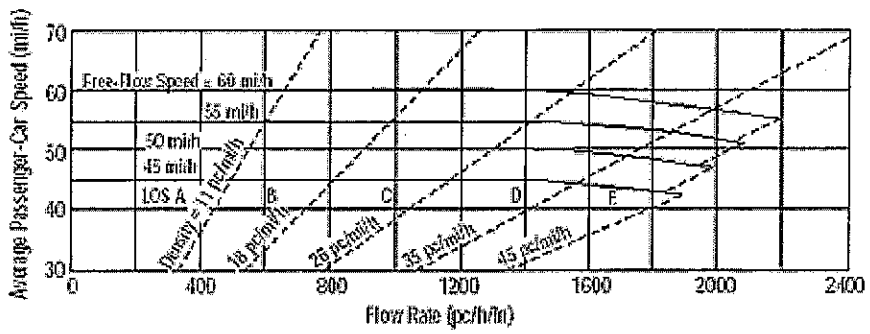
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Viera Avenue & Fleming Avenue
Jurisdiction	Contra Costa
Analysis Year	Future Conditions

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	635	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	348
Speed, S (mi/h)	52.0
D (pc/mi/ln)	6.7
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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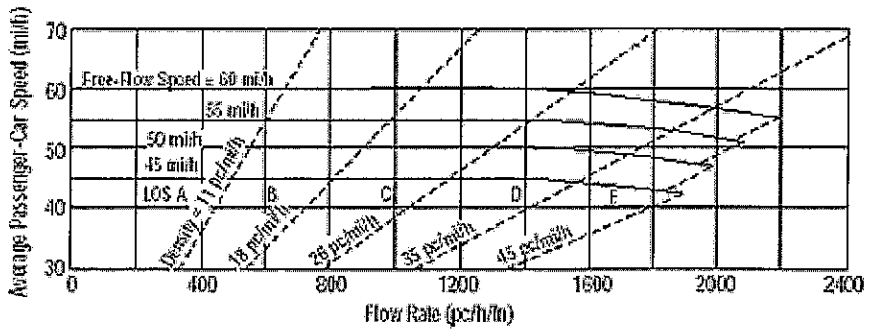
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Fleming Ave & SR 160 SB Ramps
Jurisdiction	Contra Costa
Analysis Year	Future Conditions

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	581	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	318
Speed, S (mi/h)	52.0
D (pc/mi/ln)	6.1
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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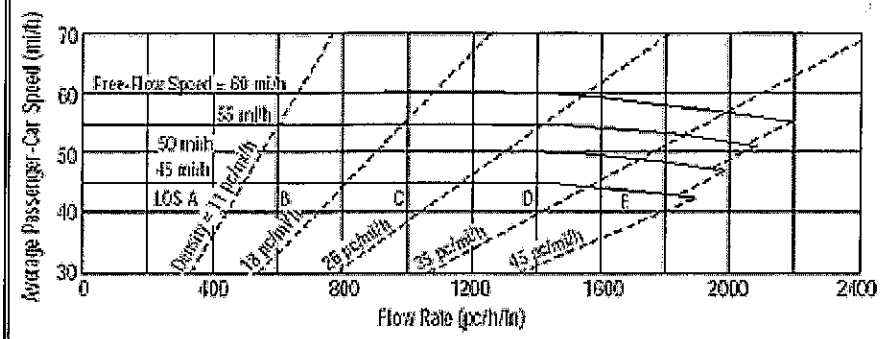
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Fleming Ave & SR 160 SB Ramps
Jurisdiction	Contra Costa
Analysis Year	Future Conditions

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	2186	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	1199
Speed, S (mi/h)	52.0
D (pc/mi/ln)	23.1
LOS	C

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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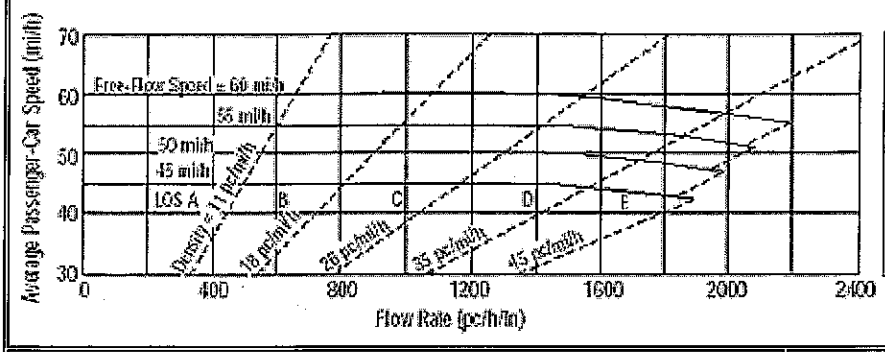
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Fleming Ave & SR 160 SB Ramps
Jurisdiction	Contra Costa
Analysis Year	Future Conditions

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	1946	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	1068
Speed, S (mi/h)	52.0
D (pc/mi/ln)	20.5
LOS	C

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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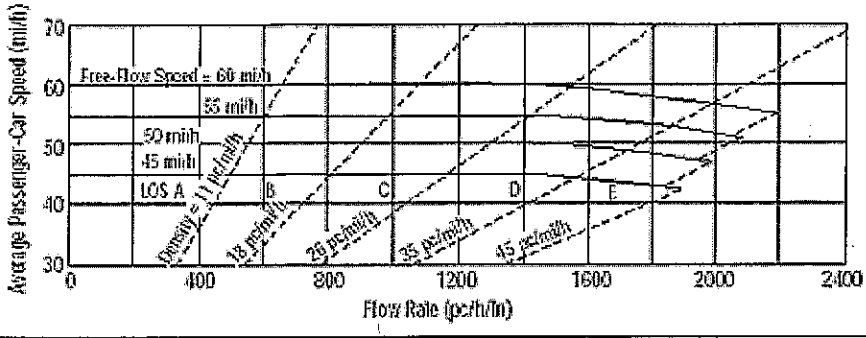
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Fleming Ave & SR 160 SB Ramps
Jurisdiction	Contra Costa
Analysis Year	Future Conditions

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	629	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	345
Speed, S (mi/h)	52.0
D (pc/mi/ln)	6.6
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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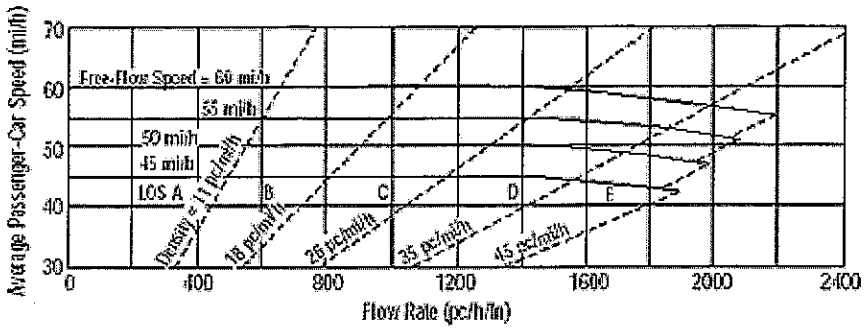
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	2/14/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	SR 160 NB Ramp/SR 160 SB Ramp
Jurisdiction	Contra Costa
Analysis Year	Future Conditions

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	596	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	327
Speed, S (mi/h)	52.0
D (pc/mi/ln)	6.3
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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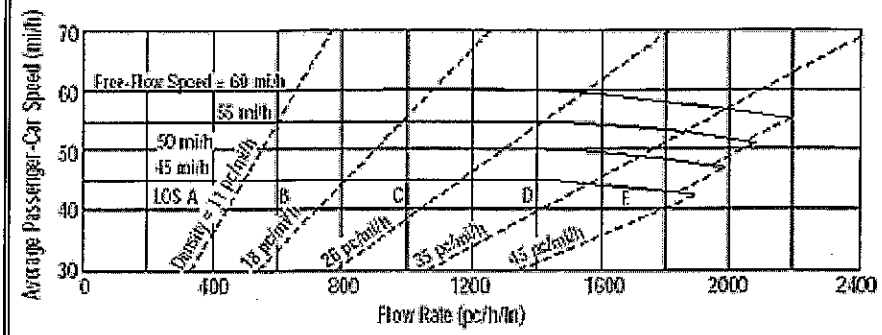
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	2/14/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	SR 160 NB Ramp/SR 160 SB Ramp
Jurisdiction	Contra Costa
Analysis Year	Future Conditions

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	2216	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	1216
Speed, S (mi/h)	52.0
D (pc/mi/ln)	23.4
LOS	C

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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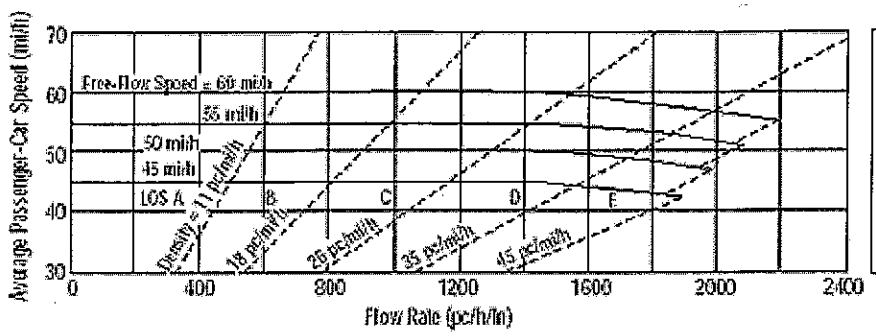
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	2/14/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	SR 160 NB Ramp/SR 160 SB Ramp
Jurisdiction	Contra Costa
Analysis Year	Future Conditions

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	1757	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	964
Speed, S (mi/h)	52.0
D (pc/mi/ln)	18.5
LOS	C

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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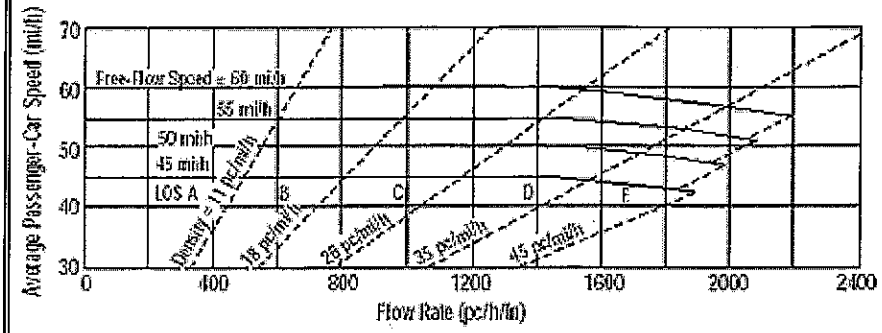
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	2/14/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	SR 160 NB Ramp/SR 160 SB Ramp
Jurisdiction	Contra Costa
Analysis Year	Future Conditions

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	687	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)	
Flow Rate, v_p (pc/h/ln)	377
Speed, S (mi/h)	52.0
D (pc/mi/ln)	7.3
LOS	A

Design

Design (N)
Required Number of Lanes, N
Flow Rate, v_p (pc/h)
Max Service Flow Rate (pc/h/ln)
Design LOS

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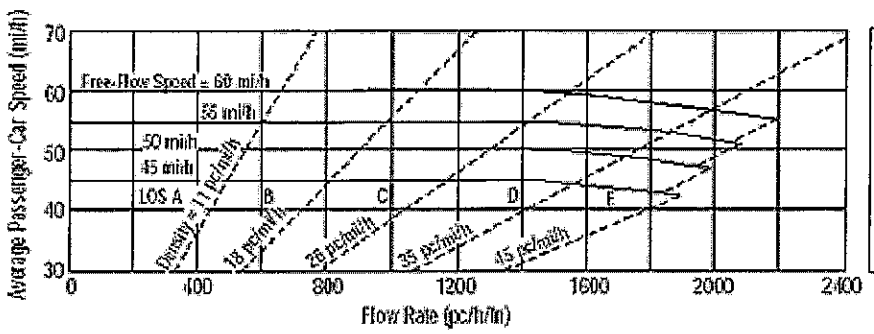
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Bridgehead Road
From/To	Shady Haven/Wilbur Avenue
Jurisdiction	Contra Costa
Analysis Year	Future_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	2469	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	1355
Speed, S (mi/h)	52.0
D (pc/mi/ln)	26.1
LOS	D

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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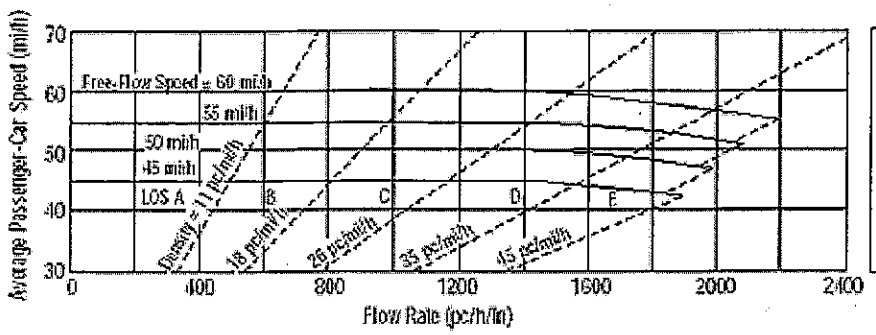
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Bridgehead Road
From/To	Shady Haven/Wilbur Avenue
Jurisdiction	Contra Costa
Analysis Year	Future_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	679	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	372
Speed, S (mi/h)	52.0
D (pc/mi/ln)	7.2
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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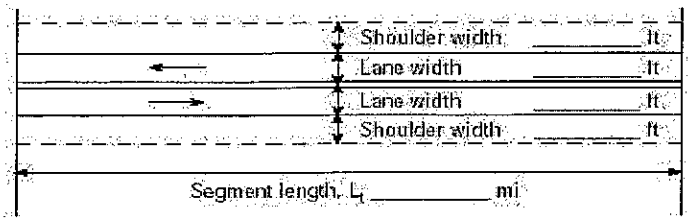
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	AC	Highway	Bridgehead Road
Agency or Company	URS Corporation	From/To	Shady Haven/Wilbur Avenue
Date Performed	2/14/2008	Jurisdiction	Contra Costa
Analysis Time Period	AM Peak Period	Analysis Year	Future Conditions

Project Description: *Contra Costa - New Generation Project*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*3148* veh/h
Directional split	*78 / 22*
Peak-hour factor, PHF	*0.92*
No-passing zone	*100*
% Trucks and Buses , P_T	*2* %
% Recreational vehicles, P_R	*2%*
Access points/ *mi*	*3*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.998*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*3429*
v_p * highest directional split proportion[2] (pc/h)	*2675*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*mi/h*	Base free-flow speed, $BFFS_{FM}$	*50.0 mi/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*0.0 mi/h*
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points, f_A (Exhibit 20-6)	*0.8 mi/h*
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	*49.3 mi/h*

Adj. for no-passing zones, f_{np} (*mi/h*) (Exhibit 20-11)	
Average travel speed, ATS (*mi/h*) ATS=FFS-0.00776v_p-f_{np}	

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*1.000*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*3422*
v_p * highest directional split proportion[2] (pc/h)	*2669*
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	*95.1*
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	*4.8*
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	*99.8*

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	
Volume to capacity ratio, v/c=V_p/ 3,200	*1.07*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)= 0.25L_t(V/PHF)	*257*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*944*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	

Notes

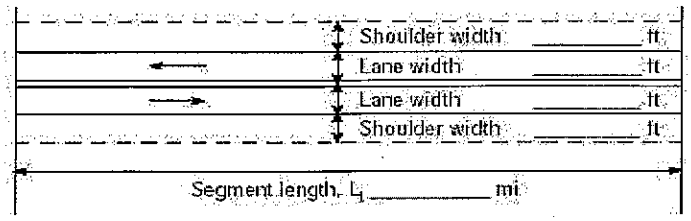
1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	AC	Highway	Bridgehead Road
Agency or Company	URS Corporation	From/To	Shady Haven/Wilbur Avenue
Date Performed	2/14/2008	Jurisdiction	Contra Costa
Analysis Time Period	PM Peak Period	Analysis Year	Future Conditions

Project Description: *Contra Costa - New Generation Project*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*2739* veh/h
Directional split	*66 / 34*
Peak-hour factor, PHF	*0.92*
No-passing zone	*100*
% Trucks and Buses , P_T	*2%*
% Recreational vehicles, P_R	*2%*
Access points/ *mi*	*3*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.998*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*2983*
v_p * highest directional split proportion[2] (pc/h)	*1969*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*mi/h*	Base free-flow speed, $BFFS_{FM}$	*50.0 mi/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*0.0 mi/h*
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points, f_A (Exhibit 20-6)	*0.8 mi/h*
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	*49.3 mi/h*

Adj. for no-passing zones, f_{np} (*mi/h*) (Exhibit 20-11)	*0.8*
Average travel speed, ATS (*mi/h*) ATS=FFS-0.00776v_p-f_{np}	*25.3*

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*1.000*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*2977*
v_p * highest directional split proportion[2] (pc/h)	*1965*
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	*92.7*
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	*3.4*
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	*96.1*

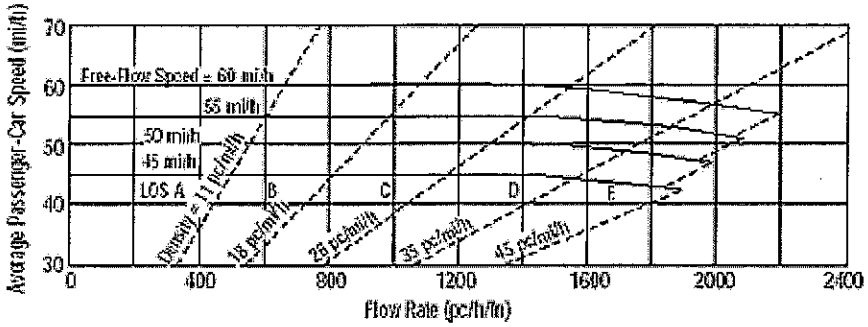
Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	*F*
Volume to capacity ratio, v/c=V_p/ 3,200	*0.93*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)= 0.25L_t(V/PHF)	*223*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*822*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	*8.8*

Notes

1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Bridgehead Road
From/To	Shady Haven/Wilbur Avenue
Jurisdiction	Contra Costa
Analysis Year	Future_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	927	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	508
Speed, S (mi/h)	52.0
D (pc/mi/ln)	9.8
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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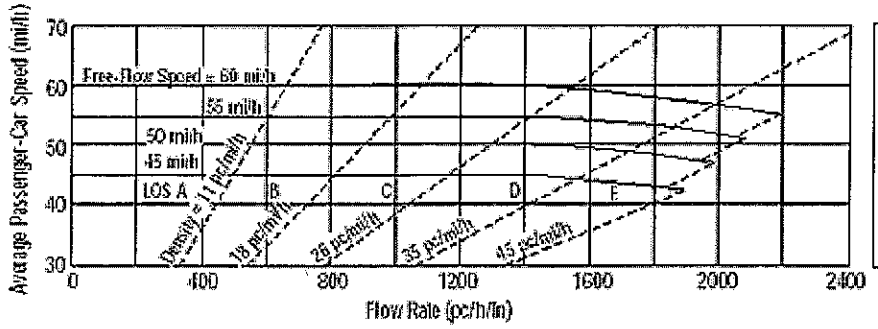
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Bridgehead Road
From/To	Shady Haven/Wilbur Avenue
Jurisdiction	Contra Costa
Analysis Year	Future_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	1812	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	994
Speed, S (mi/h)	52.0
D (pc/mi/ln)	19.1
LOS	C

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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Appendix P7
Projected Future Plus Project Conditions – Level of Service Analysis

CCTALOS Software ver. 2.35 by TJKM Transportation Consultants

Condition: AM_FTP_1 04/25/08

INTERSECTION 1 Minaker Drive/Wilbur Avenue Contra Costa
Count Date Time Peak Hour

CCTA METHOD 5-PHASE SIGNAL

RIGHT THRU LEFT
48 12 3

LEFT 24 --- 1.0 1.0 1.1 1.1 1.1 --- 12 RIGHT
Split? N

THRU 409 ---> 2.1 (NO. OF LANES) 2.1<--- 1961 THRU

RIGHT 147 --- 1.1 1.0 1.1 1.1 1.0 --- 30 LEFT

N
W + E
S

258 18 13
LEFT THRU RIGHT Split? Y

STREET NAME: Wilbur Avenue

SIG WARRANTS: Urb=Y, Rur=Y

STREET NAME: Minaker Drive

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	13	13	1650	0.0079	
	THRU (T)	18	18	1650	0.0109	
	LEFT (L)	258	258	1650	0.1564	0.1564
	T + R		31	1650	0.0188	
SB	RIGHT (R)	48	24 *	1650	0.0145	0.0145
	THRU (T)	12	12	1650	0.0073	
	LEFT (L)	3	3	1650	0.0018	
	T + L		15	1650	0.0091	
EB	RIGHT (R)	147	147	1650	0.0891	
	THRU (T)	409	409	3300	0.1239	
	LEFT (L)	24	24	1650	0.0145	0.0145
	T + R		556	3300	0.1685	
WB	RIGHT (R)	12	12	1650	0.0073	
	THRU (T)	1961	1961	3300	0.5942	
	LEFT (L)	30	30	1650	0.0182	
	T + R		1973	3300	0.5979	0.5979

TOTAL VOLUME-TO-CAPACITY RATIO: 0.78
INTERSECTION LEVEL OF SERVICE: C

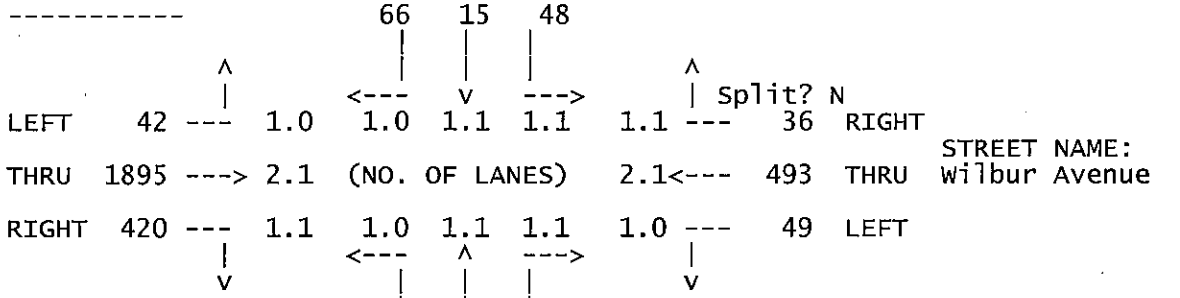
* ADJUSTED FOR RIGHT TURN ON RED
INT=FT.INT,VOL=FTP_AM.AMV,CAP=

CCTALOS Software ver. 2.35 by TJKM Transportation Consultants

Condition: PM_FTP_1 04/25/08

INTERSECTION 1 Minaker Drive/Wilbur Avenue Contra Costa
Count Date Time Peak Hour

CCTA METHOD 5-PHASE SIGNAL



STREET NAME: Wilbur Avenue

SIG WARRANTS: Urb=Y, Rur=Y

STREET NAME: Minaker Drive

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	36	36	1650	0.0218	
	THRU (T)	9	9	1650	0.0055	
	LEFT (L)	222	222	1650	0.1345	0.1345
	T + R		45	1650	0.0273	
SB	RIGHT (R)	66	24 *	1650	0.0145	
	THRU (T)	15	15	1650	0.0091	
	LEFT (L)	48	48	1650	0.0291	
	T + L		63	1650	0.0382	0.0382
EB	RIGHT (R)	420	420	1650	0.2545	
	THRU (T)	1895	1895	3300	0.5742	
	LEFT (L)	42	42	1650	0.0255	
	T + R		2315	3300	0.7015	0.7015
WB	RIGHT (R)	36	36	1650	0.0218	
	THRU (T)	493	493	3300	0.1494	
	LEFT (L)	49	49	1650	0.0297	0.0297
	T + R		529	3300	0.1603	

TOTAL VOLUME-TO-CAPACITY RATIO: 0.90
INTERSECTION LEVEL OF SERVICE: D

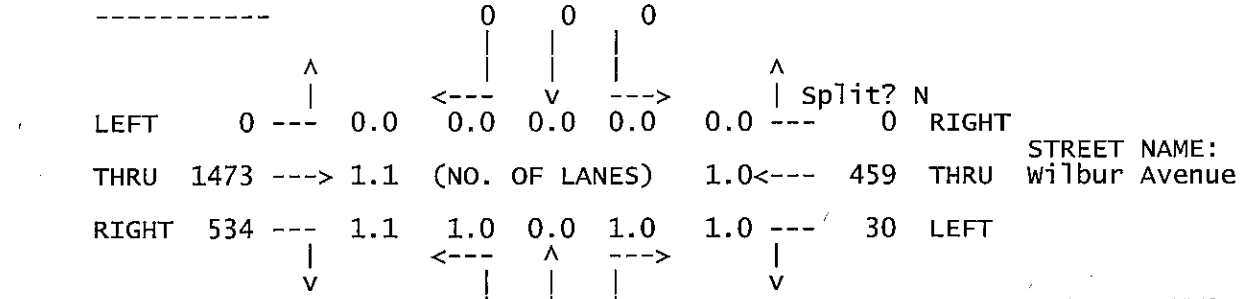
```
CCTALOS Software ver. 2.35 by TJKM Transportation Consultants
=====================================================================
Condition: AM_FTP_2                                          04/25/08
=====================================================================
INTERSECTION     2 Viera Avenue/Wilbur Avenue        Contra Costa
Count Date                    Time                 Peak Hour
---------------------------------------------------------------------
CCTA METHOD          RIGHT THRU LEFT                      8-PHASE SIGNAL
-----------              0    0    0
                         |    |    |
             ^           |    |    |          ^
             |         <---   v   --->        | Split? N
LEFT     0 ---  0.0   0.0  0.0  0.0   0.0 ---     0  RIGHT
                                                        STREET NAME:
THRU   367 ---> 1.1  (NO. OF LANES)   1.0<--- 1667  THRU  Wilbur Avenue

RIGHT   84 ---  1.1   1.0  0.0  1.0   1.0 ---    24  LEFT
             |         <---   ^   --->        |
             v           |    |    |          v
  N                      |    |    |                      SIG WARRANTS:
W + E                  240    0   33                        Urb=Y, Rur=Y
  S                   LEFT THRU RIGHT Split? N

                STREET NAME: Viera Avenue
=====================================================================
                ORIGINAL   ADJUSTED                V/C     CRITICAL
   MOVEMENT      VOLUME     VOLUME*   CAPACITY     RATIO       V/C
---------------------------------------------------------------------
NB  RIGHT (R)      33          9 *     1650      0.0055
    LEFT (L)      240        240       1650      0.1455     0.1455
---------------------------------------------------------------------
EB  RIGHT (R)      84         84       1650      0.0509
    THRU (T)      367        367       1650      0.2224
    T + R                    451       1650      0.2733
---------------------------------------------------------------------
WB  THRU (T)     1667       1667       1650      1.0103 **  1.0103
    LEFT (L)       24         24       1650      0.0145
=====================================================================
     TOTAL VOLUME-TO-CAPACITY RATIO:                          1.16
     INTERSECTION LEVEL OF SERVICE:                              F
=====================================================================
```

CCTALOS Software ver. 2.35 by TJKM Transportation Consultants

Condition: PM_FTP_2 04/25/08

INTERSECTION 2 Viera Avenue/Wilbur Avenue Contra Costa
Count Date Time Peak Hour

CCTA METHOD RIGHT THRU LEFT 8-PHASE SIGNAL



STREET NAME: Viera Avenue

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB RIGHT (R)	45	15 *	1650	0.0091	
LEFT (L)	84	84	1650	0.0509	0.0509
EB RIGHT (R)	534	534	1650	0.3236	
THRU (T)	1473	1473	1650	0.8927	
T + R		2007	1650	1.2164 **	1.2164
WB THRU (T)	459	459	1650	0.2782	
LEFT (L)	30	30	1650	0.0182	0.0182

TOTAL VOLUME-TO-CAPACITY RATIO: 1.29
INTERSECTION LEVEL OF SERVICE: F

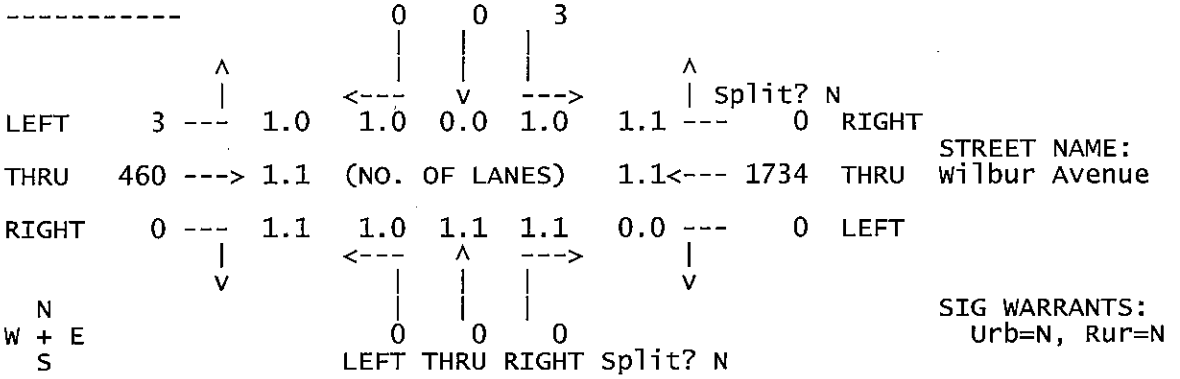
* ADJUSTED FOR RIGHT TURN ON RED ** APPROACHING OR EXCEEDING CAPACITY
INT=FT.INT,VOL=FTP_PM.AMV,CAP=

CCTALOS Software ver. 2.35 by TJKM Transportation Consultants

Condition: AM_FTP_3 04/25/08

INTERSECTION 3 Fleming Avenue/Wilbur Avenue Contra Costa
Count Date Time Peak Hour

CCTA METHOD RIGHT THRU LEFT 8-PHASE SIGNAL



STREET NAME: Wilbur Avenue

SIG WARRANTS: Urb=N, Rur=N

STREET NAME: Fleming Avenue

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	0	0	1650	0.0000	0.0000
	THRU (T)	0	0	1650	0.0000	
	LEFT (L)	0	0	1650	0.0000	
	T + R		0	1650	0.0000	
SB	RIGHT (R)	0	0	1650	0.0000	
	LEFT (L)	3	3	1650	0.0018	0.0018
EB	RIGHT (R)	0	0	1650	0.0000	
	THRU (T)	460	460	1650	0.2788	
	LEFT (L)	3	3	1650	0.0018	0.0018
	T + R		460	1650	0.2788	
WB	RIGHT (R)	0	0	1650	0.0000	
	THRU (T)	1734	1734	1650	1.0509 **	1.0509
	T + R		1734	1650	1.0509 **	

TOTAL VOLUME-TO-CAPACITY RATIO: 1.05
INTERSECTION LEVEL OF SERVICE: F

* ADJUSTED FOR RIGHT TURN ON RED ** APPROACHING OR EXCEEDING CAPACITY
INT=FT.INT,VOL=FTP_AM.AMV,CAP=

CCTALOS Software ver. 2.35 by TJKM Transportation Consultants

Condition: PM_FTP_3 04/25/08

INTERSECTION 3 Fleming Avenue/Wilbur Avenue Contra Costa
Count Date Time Peak Hour

CCTA METHOD RIGHT THRU LEFT 8-PHASE SIGNAL

3 0 9

LEFT 6 --- 1.0 1.0 0.0 1.0 1.1 --- 3 RIGHT Split? N

THRU 1818 ---> 1.1 (NO. OF LANES) 1.1<--- 403 THRU STREET NAME: Wilbur Avenue

RIGHT 0 --- 1.1 1.0 1.1 1.1 0.0 --- 0 LEFT

N
W + E
S

0 0 0
LEFT THRU RIGHT Split? N

SIG WARRANTS: Urb=N, Rur=N

STREET NAME: Fleming Avenue

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB RIGHT (R)	0	0	1650	0.0000	0.0000
THRU (T)	0	0	1650	0.0000	
LEFT (L)	0	0	1650	0.0000	
T + R		0	1650	0.0000	
SB RIGHT (R)	3	0 *	1650	0.0000	
LEFT (L)	9	9	1650	0.0055	0.0055
EB RIGHT (R)	0	0	1650	0.0000	
THRU (T)	1818	1818	1650	1.1018 **	1.1018
LEFT (L)	6	6	1650	0.0036	
T + R		1818	1650	1.1018 **	
WB RIGHT (R)	3	3	1650	0.0018	
THRU (T)	403	403	1650	0.2442	
T + R		406	1650	0.2461	

TOTAL VOLUME-TO-CAPACITY RATIO: 1.11
INTERSECTION LEVEL OF SERVICE: F

* ADJUSTED FOR RIGHT TURN ON RED ** APPROACHING OR EXCEEDING CAPACITY
INT=FT.INT,VOL=FTP_PM.AMV,CAP=

CCTALOS Software ver. 2.35 by TJKM Transportation Consultants

Condition: AM_FTP_4 04/25/08

INTERSECTION 4 SR 160 SB Ramps/Wilbur Avenue Contra Costa
Count Date Time Peak Hour

CCTA METHOD 8-PHASE SIGNAL

RIGHT THRU LEFT
304 0 99

Split? N

LEFT	0	---	0.0	1.0	0.0	1.0	0.0	--- 0	RIGHT
THRU	441	--->	2.1	(NO. OF LANES)			2.0	<--- 1605	THRU
RIGHT	34	---	1.1	0.0	0.0	0.0	1.0	--- 36	LEFT

STREET NAME: Wilbur Avenue

N
W + E
S

LEFT THRU RIGHT Split? N
0 0 0

SIG WARRANTS: Urb=Y, Rur=Y

STREET NAME: SR 160 SB Ramps

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
SB	RIGHT (R)	304	304	1650	0.1842	0.1842
	LEFT (L)	99	99	1650	0.0600	
EB	RIGHT (R)	34	34	1650	0.0206	
	THRU (T)	441	441	3300	0.1336	
	T + R		475	3300	0.1439	
WB	THRU (T)	1605	1605	3300	0.4864	0.4864
	LEFT (L)	36	36	1650	0.0218	

TOTAL VOLUME-TO-CAPACITY RATIO: 0.67
INTERSECTION LEVEL OF SERVICE: B

* ADJUSTED FOR RIGHT TURN ON RED
INT=FT.INT,VOL=FTP_AM.AMV,CAP=

```
CCTALOS Software ver. 2.35 by TJKM Transportation Consultants
=====================================================================
Condition: PM_FTP_4                                          04/25/08
=====================================================================
INTERSECTION      4 SR 160 SB Ramps/Wilbur Avenue     Contra Costa
Count Date                    Time                  Peak Hour
---------------------------------------------------------------------
CCTA METHOD          RIGHT THRU LEFT                      8-PHASE SIGNAL
-----------             66    0  207
                         |    |    |
             ^           |    |    |          ^
             |         <---   v   --->        | Split? N
LEFT     0 ---  0.0    1.0  0.0  1.0   0.0 ---     0  RIGHT
                                                        STREET NAME:
THRU  1439 ---> 2.1  (NO. OF LANES)   2.0<---   340  THRU  Wilbur Avenue

RIGHT  455 ---  1.1    0.0  0.0  0.0   1.0 ---    48  LEFT
             |         <---   ^   --->        |
             v           |    |    |          v
  N                      |    |    |                      SIG WARRANTS:
W + E                    0    0    0                        Urb=Y, Rur=Y
  S                   LEFT THRU RIGHT Split? N

                STREET NAME: SR 160 SB Ramps
=====================================================================
                ORIGINAL   ADJUSTED                V/C     CRITICAL
   MOVEMENT      VOLUME     VOLUME*   CAPACITY     RATIO       V/C
---------------------------------------------------------------------
SB  RIGHT (R)      66         66       1650      0.0400
    LEFT (L)      207        207       1650      0.1255     0.1255
---------------------------------------------------------------------
EB  RIGHT (R)     455        455       1650      0.2758
    THRU (T)     1439       1439       3300      0.4361
    T + R                   1894       3300      0.5739     0.5739
---------------------------------------------------------------------
WB  THRU (T)      340        340       3300      0.1030
    LEFT (L)       48         48       1650      0.0291     0.0291
=====================================================================
     TOTAL VOLUME-TO-CAPACITY RATIO:                          0.73
     INTERSECTION LEVEL OF SERVICE:                              C
=====================================================================
* ADJUSTED FOR RIGHT TURN ON RED
INT=FT.INT,VOL=FTP_PM.AMV,CAP=
```

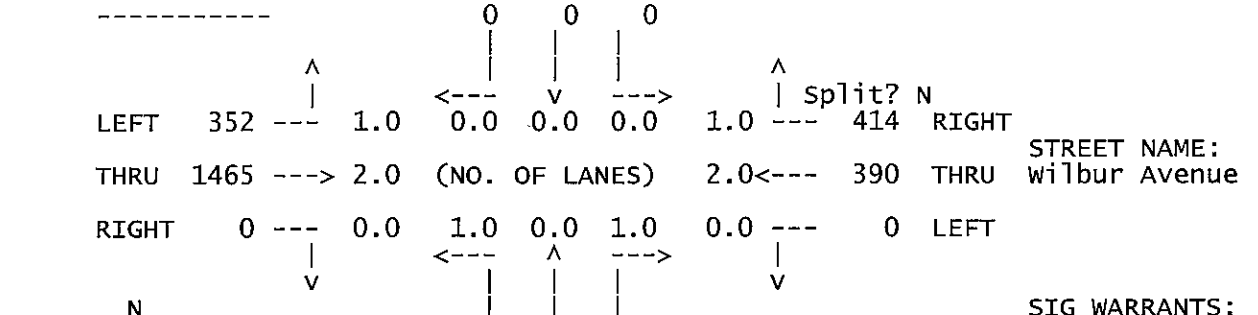
```
CCTALOS Software ver. 2.35 by TJKM Transportation Consultants
=====================================================================
Condition: AM_FTP_5                                          04/25/08
=====================================================================
INTERSECTION     5 SR 160 NB Ramps/Wilbur Avenue     Contra Costa
Count Date                    Time                 Peak Hour
---------------------------------------------------------------------
CCTA METHOD          RIGHT THRU LEFT                      8-PHASE SIGNAL
-----------              0    0    0
                         |    |    |
             ^           |    |    |          ^
             |         <---   v   --->        | Split? N
LEFT   120 ---  1.0   0.0  0.0  0.0   1.0 ---  216  RIGHT
                                                        STREET NAME:
THRU   603 ---> 2.0  (NO. OF LANES)   2.0<--- 1489  THRU  Wilbur Avenue

RIGHT    0 ---  0.0   1.0  0.0  1.0   0.0 ---    0  LEFT
             |         <---   ^   --->        |
             v           |    |    |          v
  N                      |    |    |                      SIG WARRANTS:
W + E                  128    0   33                        Urb=B, Rur=Y
  S                   LEFT THRU RIGHT Split? N

                STREET NAME: SR 160 NB Ramps
=====================================================================
                ORIGINAL   ADJUSTED                V/C     CRITICAL
   MOVEMENT      VOLUME     VOLUME*   CAPACITY     RATIO       V/C
---------------------------------------------------------------------
NB  RIGHT (R)      33         33       1650      0.0200
    LEFT (L)      128        128       1650      0.0776     0.0776
---------------------------------------------------------------------
EB  THRU (T)      603        603       3300      0.1827
    LEFT (L)      120        120       1650      0.0727     0.0727
---------------------------------------------------------------------
WB  RIGHT (R)     216        216       1650      0.1309
    THRU (T)     1489       1489       3300      0.4512     0.4512
=====================================================================
     TOTAL VOLUME-TO-CAPACITY RATIO:                          0.60
     INTERSECTION LEVEL OF SERVICE:                              A
=====================================================================
* ADJUSTED FOR RIGHT TURN ON RED
INT=FT.INT,VOL=FTP_AM.AMV,CAP=
```

CCTALOS Software ver. 2.35 by TJKM Transportation Consultants

Condition: PM_FTP_5 04/25/08

INTERSECTION 5 SR 160 NB Ramps/Wilbur Avenue Contra Costa
Count Date Time Peak Hour

CCTA METHOD RIGHT THRU LEFT 8-PHASE SIGNAL



STREET NAME: Wilbur Avenue

SIG WARRANTS: Urb=N, Rur=B

STREET NAME: SR 160 NB Ramps

MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB RIGHT (R)	72	72	1650	0.0436	0.0436
LEFT (L)	34	34	1650	0.0206	
EB THRU (T)	1465	1465	3300	0.4439	
LEFT (L)	352	352	1650	0.2133	0.2133
WB RIGHT (R)	414	414	1650	0.2509	0.2509
THRU (T)	390	390	3300	0.1182	

TOTAL VOLUME-TO-CAPACITY RATIO: 0.51
INTERSECTION LEVEL OF SERVICE: A

* ADJUSTED FOR RIGHT TURN ON RED
INT=FT.INT,VOL=FTP_PM.AMV,CAP=

CCTALOS Software ver. 2.35 by TJKM Transportation Consultants

Condition: AM_FTP_6 04/25/08

INTERSECTION 6 Bridgehead Drive/Wilbur Avenue Contra Costa
Count Date Time Peak Hour

CCTA METHOD — 8-PHASE SIGNAL

RIGHT THRU LEFT: 75 33 3

LEFT	78	---	1.0	1.1	1.1	1.0	1.1	---	0 RIGHT
THRU	3	--->	1.1	(NO. OF LANES)			1.1	<---	0 THRU
RIGHT	543	---	1.1	1.0	1.1	1.1	1.0	---	6 LEFT

Split? N

STREET NAME: Wilbur Avenue

N
W + E
S

1624 99 3
LEFT THRU RIGHT Split? N

SIG WARRANTS: Urb=Y, Rur=Y

STREET NAME: Bridgehead Drive

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO		CRITICAL V/C
NB	RIGHT (R)	3	3	1650	0.0018		
	THRU (T)	99	99	1650	0.0600		
	LEFT (L)	1624	1624	1650	0.9842	**	0.9842
	T + R		102	1650	0.0618		
SB	RIGHT (R)	75	75	1650	0.0455		
	THRU (T)	33	33	1650	0.0200		
	LEFT (L)	3	3	1650	0.0018		
	T + R		108	1650	0.0655		0.0655
EB	RIGHT (R)	543	543	1650	0.3291		
	THRU (T)	3	3	1650	0.0018		
	LEFT (L)	78	78	1650	0.0473		
	T + R		546	1650	0.3309		0.3309
WB	RIGHT (R)	0	0	1650	0.0000		
	THRU (T)	0	0	1650	0.0000		
	LEFT (L)	6	6	1650	0.0036		0.0036
	T + R		0	1650	0.0000		

TOTAL VOLUME-TO-CAPACITY RATIO: 1.38
INTERSECTION LEVEL OF SERVICE: F

* ADJUSTED FOR RIGHT TURN ON RED ** APPROACHING OR EXCEEDING CAPACITY
INT=FT.INT,VOL=FTP_AM.AMV,CAP=

CCTALOS Software ver. 2.35 by TJKM Transportation Consultants

Condition: PM_FTP_6 04/25/08

INTERSECTION 6 Bridgehead Drive/Wilbur Avenue Contra Costa
Count Date Time Peak Hour

CCTA METHOD 8-PHASE SIGNAL

RIGHT THRU LEFT
75 102 3

LEFT 63 --- 1.0 1.1 1.1 1.0 1.1 --- 3 RIGHT
Split? N

THRU 0 ---> 1.1 (NO. OF LANES) 1.1<--- 9 THRU

RIGHT 1489 --- 1.1 1.0 1.1 1.1 1.0 --- 15 LEFT

N
W + E
S

741 33 3
LEFT THRU RIGHT Split? N

STREET NAME: Wilbur Avenue

SIG WARRANTS: Urb=Y, Rur=Y

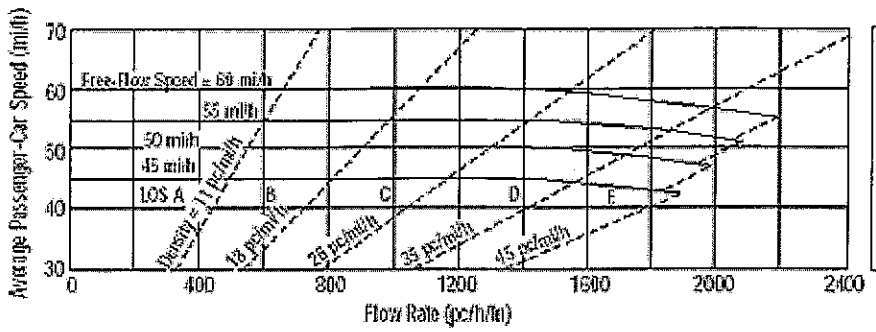
STREET NAME: Bridgehead Drive

	MOVEMENT	ORIGINAL VOLUME	ADJUSTED VOLUME*	CAPACITY	V/C RATIO	CRITICAL V/C
NB	RIGHT (R)	3	3	1650	0.0018	
	THRU (T)	33	33	1650	0.0200	
	LEFT (L)	741	741	1650	0.4491	0.4491
	T + R		36	1650	0.0218	
SB	RIGHT (R)	75	75	1650	0.0455	
	THRU (T)	102	102	1650	0.0618	
	LEFT (L)	3	3	1650	0.0018	
	T + R		177	1650	0.1073	0.1073
EB	RIGHT (R)	1489	1489	1650	0.9024	0.9024
	THRU (T)	0	0	1650	0.0000	
	LEFT (L)	63	63	1650	0.0382	
	T + R		1489	1650	0.9024	
WB	RIGHT (R)	3	3	1650	0.0018	
	THRU (T)	9	9	1650	0.0055	
	LEFT (L)	15	15	1650	0.0091	0.0091
	T + R		12	1650	0.0073	

TOTAL VOLUME-TO-CAPACITY RATIO: 1.47
INTERSECTION LEVEL OF SERVICE: F

* ADJUSTED FOR RIGHT TURN ON RED
INT=FT.INT,VOL=FTP_PM.AMV,CAP=

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Minaker Drive & Viera Avenue
Jurisdiction	Contra Costa
Analysis Year	Future plus project

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	579	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	317
Speed, S (mi/h)	52.0
D (pc/mi/ln)	6.1
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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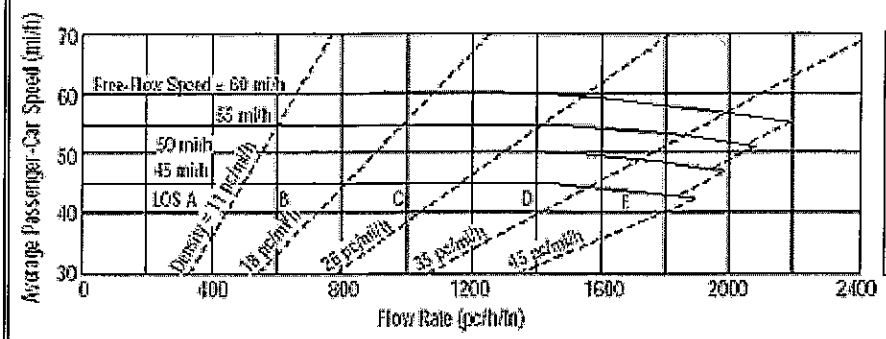
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Minaker Drive & Viera Avenue
Jurisdiction	Contra Costa
Analysis Year	Future plus project

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	2164	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	1187
Speed, S (mi/h)	52.0
D (pc/mi/ln)	22.8
LOS	C

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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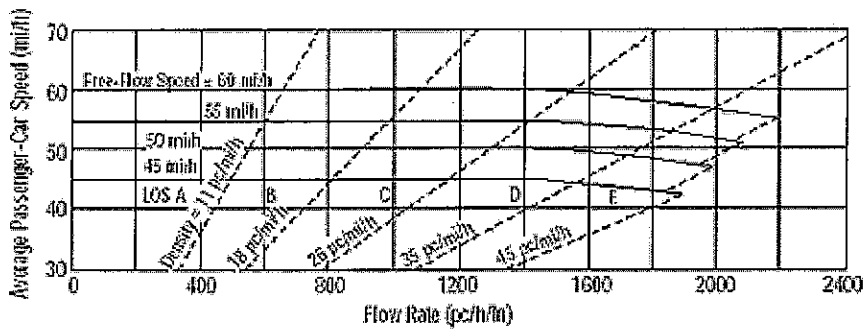
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Minaker Drive & Viera Avenue
Jurisdiction	Contra Costa
Analysis Year	Future plus project

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	1867	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	1024
Speed, S (mi/h)	52.0
D (pc/mi/ln)	19.7
LOS	C

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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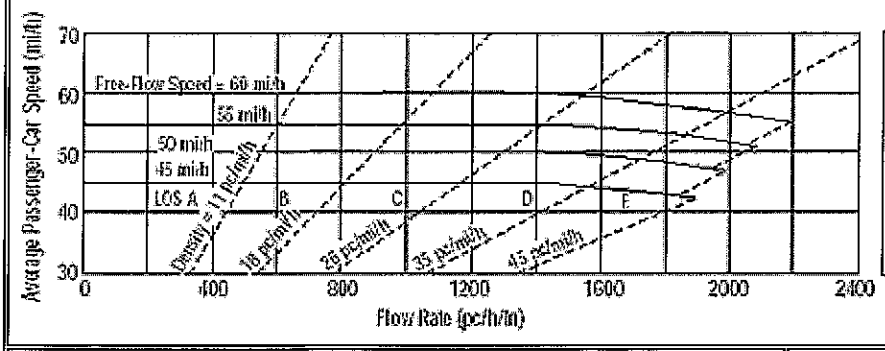
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Minaker Drive & Viera Avenue
Jurisdiction	Contra Costa
Analysis Year	Future plus project

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	654	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	358
Speed, S (mi/h)	52.0
D (pc/mi/ln)	6.9
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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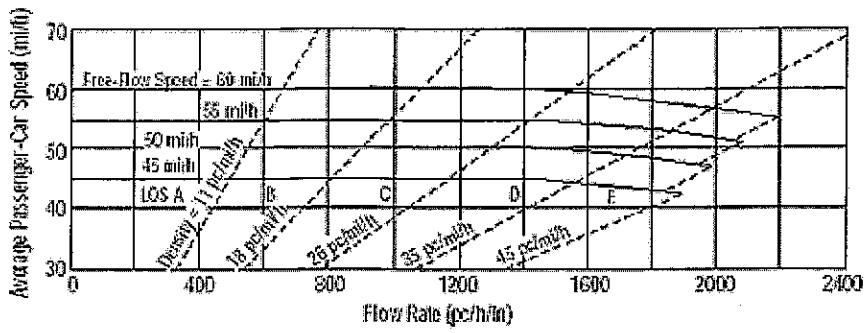
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Viera Avenue & Fleming Avenue
Jurisdiction	Contra Costa
Analysis Year	Future plus project

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	540	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	296
Speed, S (mi/h)	52.0
D (pc/mi/ln)	5.7
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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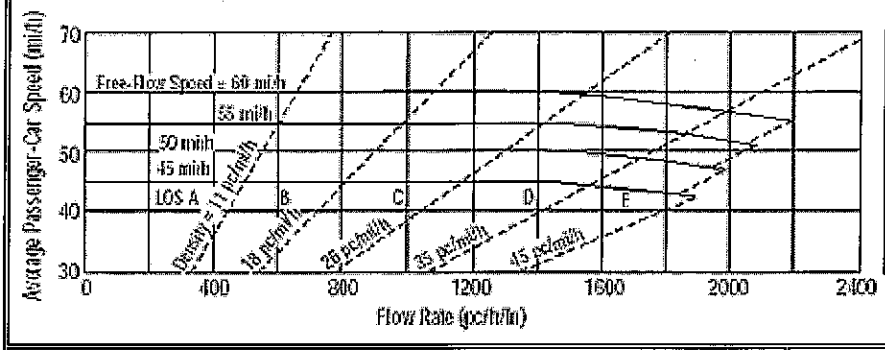
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Viera Avenue & Fleming Avenue
Jurisdiction	Contra Costa
Analysis Year	Future plus project

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	2196	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	1205
Speed, S (mi/h)	52.0
D (pc/mi/ln)	23.2
LOS	C

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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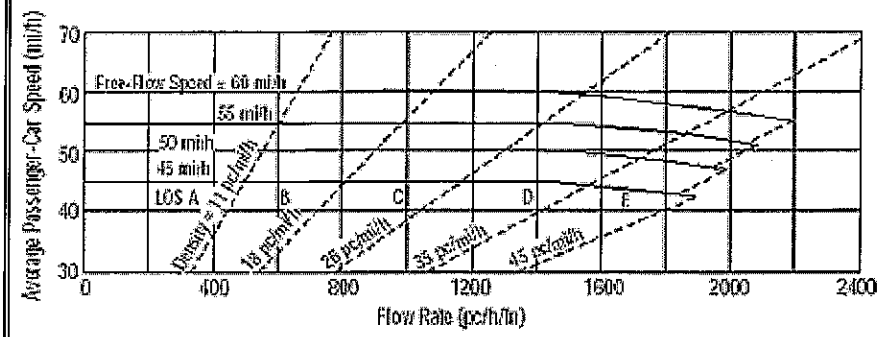
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Viera Avenue & Fleming Avenue
Jurisdiction	Contra Costa
Analysis Year	Future plus project

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	1822	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	1000
Speed, S (mi/h)	52.0
D (pc/mi/ln)	19.2
LOS	C

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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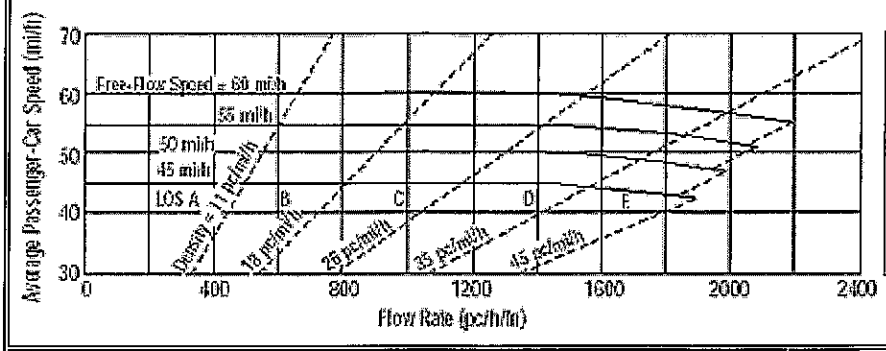
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Viera Avenue & Fleming Avenue
Jurisdiction	Contra Costa
Analysis Year	Future plus project

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	638	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	350
Speed, S (mi/h)	52.0
D (pc/mi/ln)	6.7
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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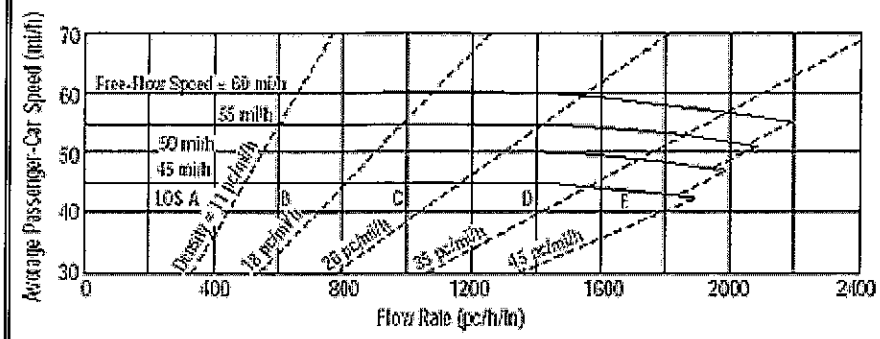
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Fleming Ave & SR 160 SB Ramps
Jurisdiction	Contra Costa
Analysis Year	Future plus project

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	583	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	320
Speed, S (mi/h)	52.0
D (pc/mi/ln)	6.2
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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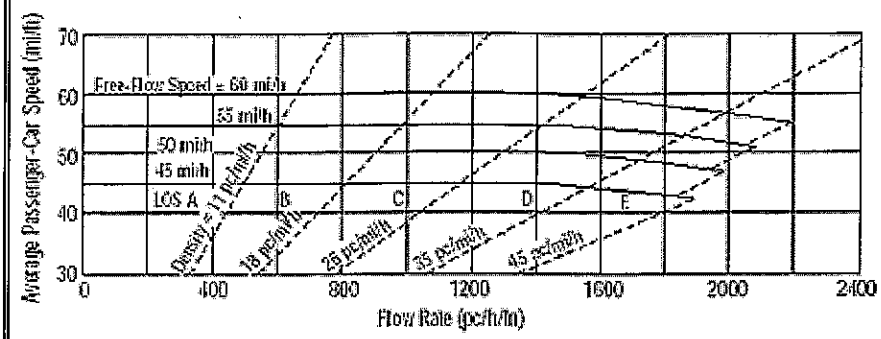
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Fleming Ave & SR 160 SB Ramps
Jurisdiction	Contra Costa
Analysis Year	Future plus project

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	2211	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	1213
Speed, S (mi/h)	52.0
D (pc/mi/ln)	23.3
LOS	C

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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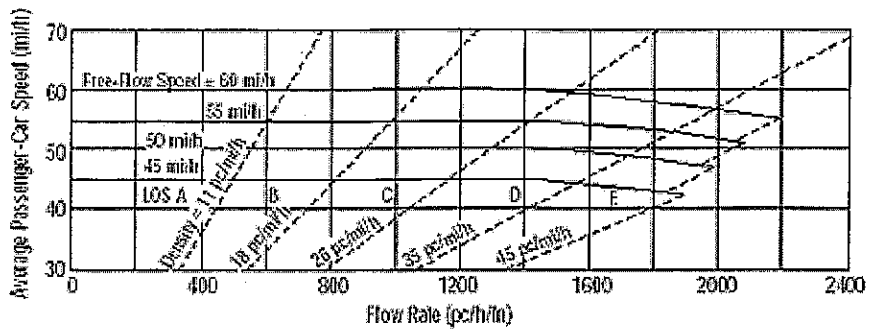
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Fleming Ave & SR 160 SB Ramps
Jurisdiction	Contra Costa
Analysis Year	Future plus project

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	1971	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	1081
Speed, S (mi/h)	52.0
D (pc/mi/ln)	20.8
LOS	C

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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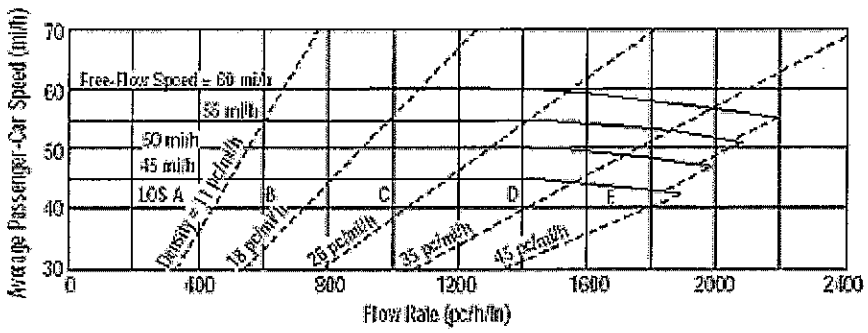
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	Fleming Ave & SR 160 SB Ramps
Jurisdiction	Contra Costa
Analysis Year	Future plus project

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	631	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	346
Speed, S (mi/h)	52.0
D (pc/mi/ln)	6.7
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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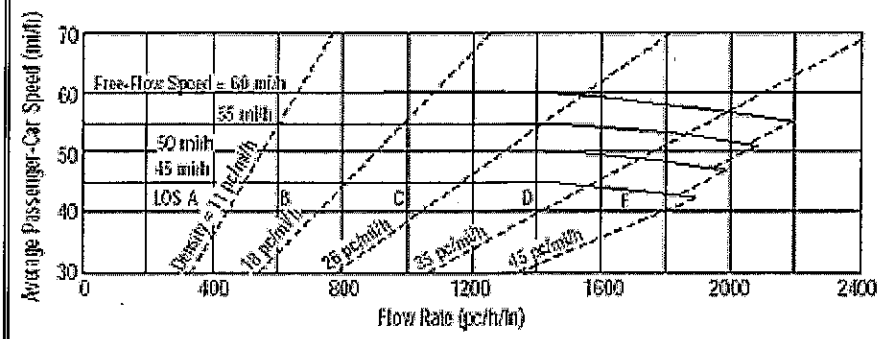
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	2/14/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	SR 160 NB Ramp/SR 160 SB Ramp
Jurisdiction	Contra Costa
Analysis Year	Future plus project

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	598	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	328
Speed, S (mi/h)	52.0
D (pc/mi/ln)	6.3
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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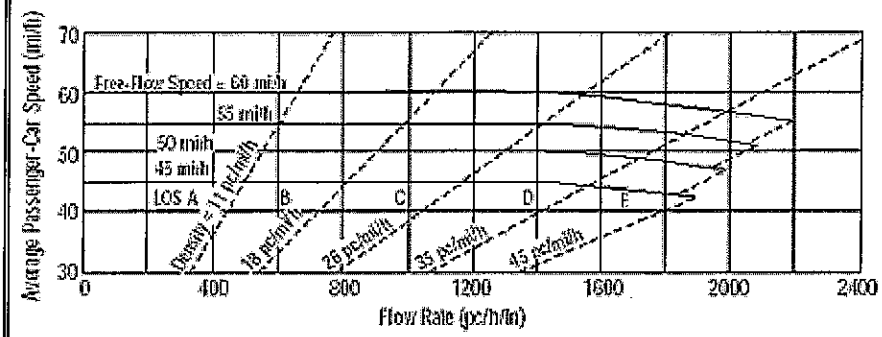
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	2/14/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	SR 160 NB Ramp/SR 160 SB Ramp
Jurisdiction	Contra Costa
Analysis Year	Future plus project

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	2234	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	1226
Speed, S (mi/h)	52.0
D (pc/mi/ln)	23.6
LOS	C

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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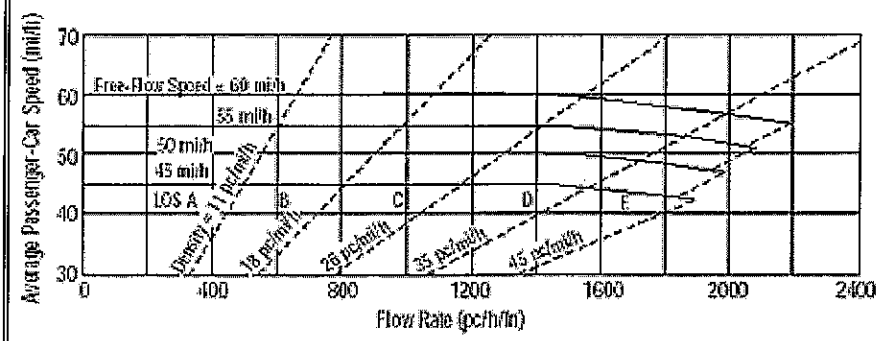
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	2/14/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	SR 160 NB Ramp/SR 160 SB Ramp
Jurisdiction	Contra Costa
Analysis Year	Future plus project

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	1775	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	974
Speed, S (mi/h)	52.0
D (pc/mi/ln)	18.7
LOS	C

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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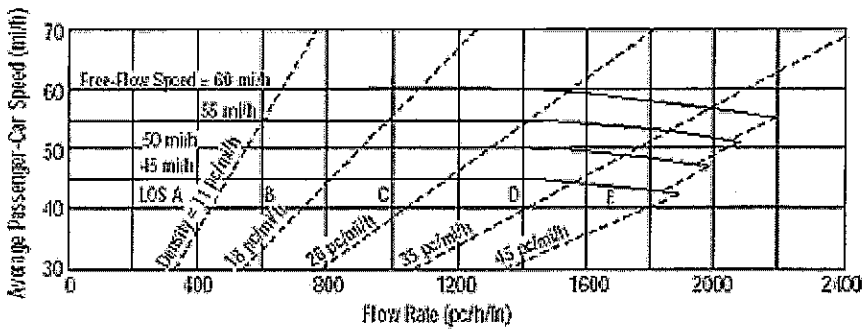
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	2/14/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Wilbur Avenue
From/To	SR 160 NB Ramp/SR 160 SB Ramp
Jurisdiction	Contra Costa
Analysis Year	Future plus project

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	689	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	378
Speed, S (mi/h)	52.0
D (pc/mi/ln)	7.3
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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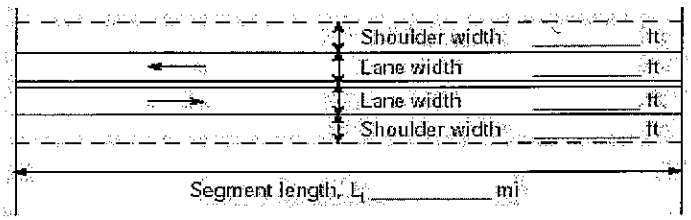
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	AC	Highway	Bridgehead Road
Agency or Company	URS Corporation	From/To	Shady Haven/Wilbur Avenue
Date Performed	2/14/2008	Jurisdiction	Contra Costa
Analysis Time Period	AM Peak Period	Analysis Year	Future plus project

Project Description: *Contra Costa - New Generation Project*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	*3149* veh/h
Directional split	*78 / 22*
Peak-hour factor, PHF	*0.92*
No-passing zone	*100*
% Trucks and Buses , P_T	*2 %*
% Recreational vehicles, P_R	*2%*
Access points/ *mi*	*3*

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.998*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*3430*
v_p * highest directional split proportion[2] (pc/h)	*2675*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*mi/h*	Base free-flow speed, $BFFS_{FM}$	*50.0 mi/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	*0.0 mi/h*
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points, f_A (Exhibit 20-6)	*0.8 mi/h*
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	*49.3 mi/h*

Adj. for no-passing zones, f_{np} (*mi/h*) (Exhibit 20-11)	
Average travel speed, ATS (*mi/h*) ATS=FFS-0.00776v_p-f_{np}	

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	*1.00*
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*1.000*
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	*3423*
v_p * highest directional split proportion[2] (pc/h)	*2670*
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	*95.1*
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	*4.8*
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	*99.8*

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	
Volume to capacity ratio, v/c=V_p/ 3,200	*1.07*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)= 0.25L_t(V/PHF)	*257*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*945*
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	

Notes

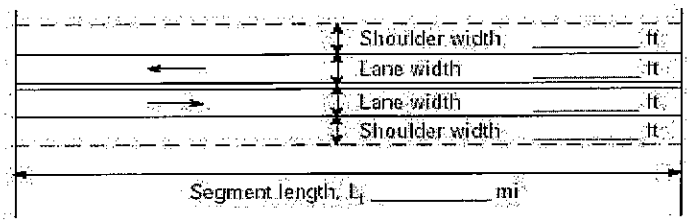
1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	AC	Highway	Bridgehead Road
Agency or Company	URS Corporation	From/To	Shady Haven/Wilbur Avenue
Date Performed	2/14/2008	Jurisdiction	Contra Costa
Analysis Time Period	PM Peak Period	Analysis Year	Future plus project

Project Description: *Contra Costa - New Generation Project*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	2740 veh/h
Directional split	66 / 34
Peak-hour factor, PHF	0.92
No-passing zone	100
% Trucks and Buses , P_T	2 %
% Recreational vehicles, P_R	2%
Access points/ *mi*	3

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.1
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.998
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	2984
v_p * highest directional split proportion[2] (pc/h)	1969

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	*mi/h*	Base free-flow speed, $BFFS_{FM}$	50.0 *mi/h*
Observed volume, V_f	*veh/h*	Adj. for lane width and shoulder width[3], f_{LS} (Exhibit 20-5)	0.0 *mi/h*
Free-flow speed, FFS FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points, f_A (Exhibit 20-6)	0.8 *mi/h*
		Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A)	49.3 *mi/h*

Adj. for no-passing zones, f_{np} (*mi/h*) (Exhibit 20-11)	0.8
Average travel speed, ATS (*mi/h*) ATS=FFS-0.00776v_p-f_{np}	25.3

Percent Time-Spent-Following

Grade Adjustment factor, f_G (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-10)	1.0
Passenger-car equivalents for RVs, E_R (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000
Two-way flow rate[1], v_p (pc/h)=V/ (PHF * f_G * f_{HV})	2978
v_p * highest directional split proportion[2] (pc/h)	1965
Base percent time-spent-following, BPTSF(%)=100(1-$e^{-0.000879v_p}$)	92.7
Adj. for directional distribution and no-passing zone, $f_{d/hp}$(%)(Exh. 20-12)	3.4
Percent time-spent-following, PTSF(%)=BPTSF+$f_{d/np}$	96.1

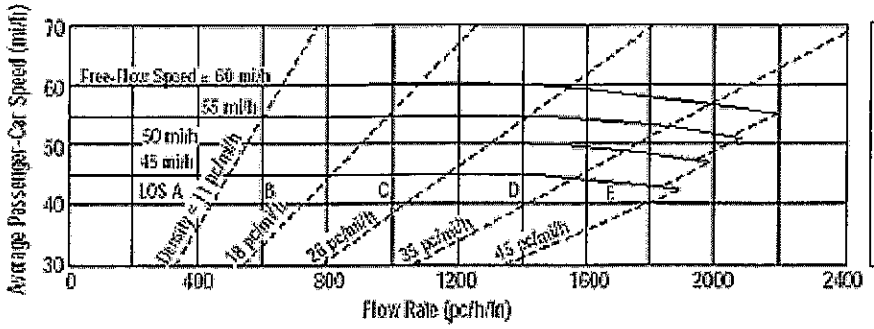
Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	F
Volume to capacity ratio, v/c=V_p/ 3,200	0.93
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)= 0.25L_t(V/PHF)	223
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	822
Peak 15-min total travel time, TT_{15}(veh-h)= VMT_{15}/ATS	8.8

Notes

1. If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Bridgehead Road
From/To	Shady Haven/Wilbur Avenue
Jurisdiction	Contra Costa
Analysis Year	Future plus proj_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	2469	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	1355
Speed, S (mi/h)	52.0
D (pc/mi/ln)	26.1
LOS	D

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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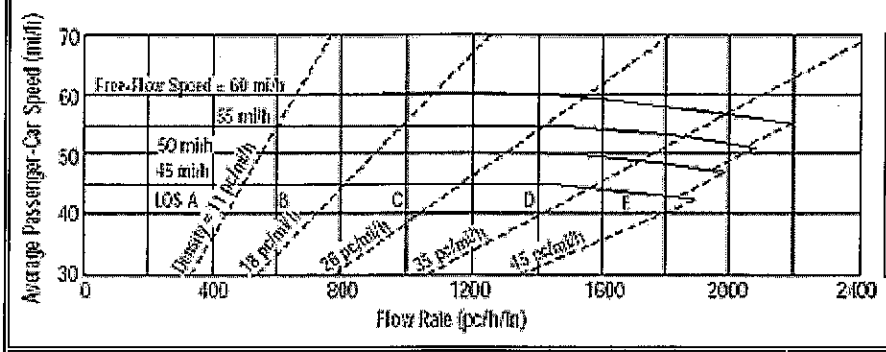
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction to Travel	Bridgehead Road
From/To	Shady Haven/Wilbur Avenue
Jurisdiction	Contra Costa
Analysis Year	Future plus proj_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	680	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	373
Speed, S (mi/h)	52.0
D (pc/mi/ln)	7.2
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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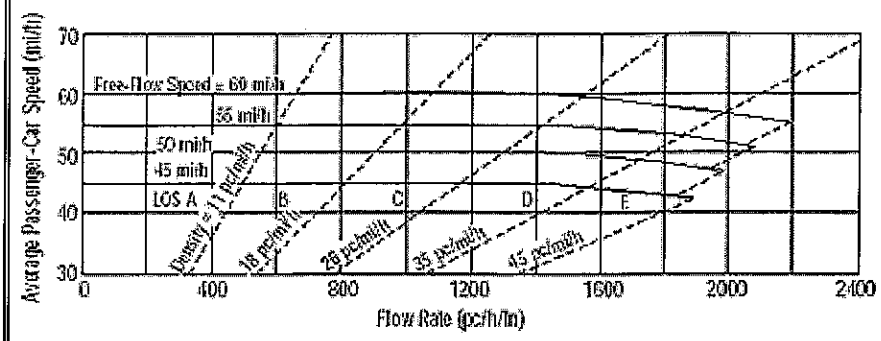
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Bridgehead Road
From/To	Shady Haven/Wilbur Avenue
Jurisdiction	Contra Costa
Analysis Year	Future plus proj_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	927	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	508
Speed, S (mi/h)	52.0
D (pc/mi/ln)	9.8
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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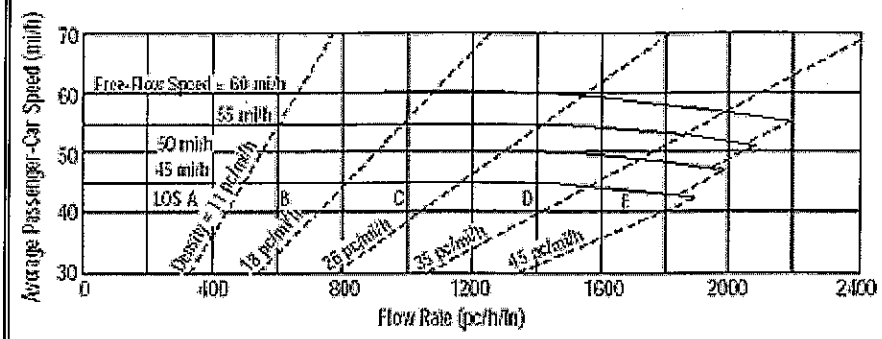
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AC
Agency or Company	URS Corporation
Date Performed	4/8/2008
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction to Travel	Bridgehead Road
From/To	Shady Haven/Wilbur Avenue
Jurisdiction	Contra Costa
Analysis Year	Future plus proj_Mitigation

Project Description Contra Costa - New Generation Project

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	1814	Peak-Hour Factor, PHF	0.92
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.990

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	
FFS (measured)	52.0
Base Free-Flow Speed, BFFS	

Calc Speed Adj and FFS

f_{LW} (mi/h)	
f_{LC} (mi/h)	
f_A (mi/h)	
f_M (mi/h)	
FFS (mi/h)	52.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	995
Speed, S (mi/h)	52.0
D (pc/mi/ln)	19.1
LOS	C

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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