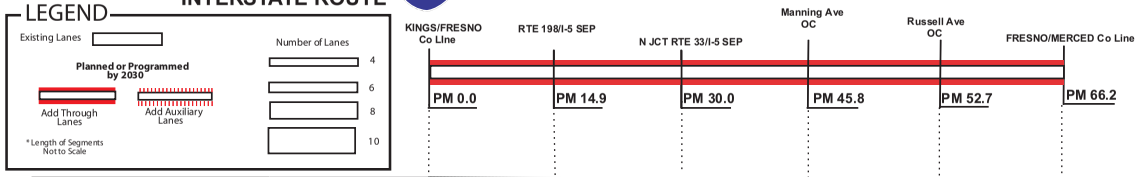
TRAFFIC COUNTS

INTERSTATE ROUTE 5



Segment: Is self-explanatory except for several data sets:

Rural/Urban: Indicates whether the segment is in a rural area or city limits.

Terrain: Shows the general highway grade: minimal grade = level; moderate grade = rolling; and severe grade = mountainous.

ROW: Portrays Right-of-Way (ROW) and geometric data in feet and meters.

Shoulder Range: Is a range of treated surface (8' standard), both inside and outside shoulders.

Ultimate (UTC): Is the typical ROW needed for the ultimate facility, i.e., 8 lane freeway (8F) 218' is the standard typical UTC ROW - will be updated upon corridor plan lining by specific sections of highway.

Facility: Shows the Existing Facility, the desired facility type (2030 Concept) by 2030-RTPA's and Caltrans, and the Ultimate Facility to preserve ROW and plan line beyond 2030. It also shows whether a passing lane exists. 2C(I) indicates that the highway has been improved in select locations with operational or safety improvements. Examples are: passing lanes, channelization and traffic signals.

LOS: The current (2005) LOS (level of service), along with the expected calculated LOS in 2015 and 2030. The 2030 Concept is the target LOS desired, i.e., LOS C, for attainment by 2030 Caltrans.

Deficiency: Occurs when the target LOS is degraded, i.e., LOS D worse than LOS C, with the year of occurrence shown. It also shows whether a capacity improving project is in the STIP, and what the LOS would be with the 2030 Concept improvement.

Directional Split: Denotes the split in peak hour traffic flow on a directional basis (NB/SB or WB/EB) either in the morning (AM) or evening (PM).

AADT: signifies Annual Average Daily Traffic.

Peak Hour: indicates a representation of the maximum hour of traffic flow during the day.

% Trucks: shows the percent of trucks for AADT and Peak Hour.

*Concept Facility meets Concept LOS.

** Deficient-Concept Facility does not meet Concept LOS .

+The ultimate ROW is generally the same as the existing ROW.

++ (AUX) Auxiliary lanes are truck climbing lanes.

^ 99P Median is variable width - greater than 100' - split alignment.

SEGMENT	12	13	14	15	16
County / Route	FRESNO / 5	FRESNO / 5	FRESNO / 5	FRESNO / 5	FRESNO / 5
Description Begin	KINGS/FRESNO CO LINE	RTE 198/I-5 SEPARATION	N JCT RTE 33/I-5 SEPARATION	MANNING AVE OC	RUSSELL AVE OC
Description End	RTE 198/I-5 SEPARATION	N JCT RTE 33/I-5 SEPARATION	MANNING AVE OC	RUSSELL AVE OC	FRESNO/MERCED CO LINE
Postmile Limits Begin/End	0.0 / 14.9	14.9 / 30.0	30.0 / 45.8	45.8 / 52.7	52.7 / 66.2
Length (MI)	14.9 MI	15.1 MI	15.8 MI	6.9 MI	13.5 MI
Rural or Urban	RURAL	RURAL	RURAL	RURAL	RURAL
Terrain	FLAT	FLAT	FLAT	FLAT	FLAT
ROW: Range Existing (FT)	208.0 / 208.0 FT	208.0 / 208.0 FT	208.0 / 208.0 FT	208.0 / 208.0 FT	208.0 / 208.0 FT
Median Range (FT)	82.0 / 84.0 FT	84.0 / 99P^ FT	84.0 / 99P^ FT	84.0 / 84.0 FT	84.0 / 84.0 FT
Shoulder Range (FT)	10.0 / 10.0 FT	2.0 / 10.0 FT	5.0 / 10.0 FT	5.0 / 10.0 FT	5.0 / 10.0 FT
Lane Width (FT)	12.0 FT	12.0 FT	12.0 FT	12.0 FT	12.0 FT
Ultimate ROW (FT)	+ FT	+ FT	+ FT	+ FT	+ FT
Facility: Existing	4F	4F	4F	4F	4F
2030 Concept	6F	6F	6F	6F	6F
UTC	8F	8F	8F	8F	8F
LOS: 2005	B	B	B	B	B
LOS: 2015	C	C	C	C	C
LOS: 2030	D	D	D	D	D
LOS: 2030 Concept	C	C	C	C	C
Deficiency/Year Deficient	2030	2030	2030	2030	2030
Project in STIP/RTP (Y/N)	Yes	Yes	Yes	Yes	Yes
LOS W/ Concept Improvement	C*	C*	C*	C*	B*
Directional Split (Peak Hour)	52/48	52/48	52/48	52/48	55/45
AADT: 2005	52,300	52,300	52,300	51,500	49,800
AADT: 2015	69,600	71,100	71,100	69,500	67,200
AADT: 2030	92,600	97,300	96,800	94,200	91,100
Peak Hour: 2005	3,660	3,660	3,660	3,610	3,480
Peak Hour: 2015	4,870	4,980	4,980	4,870	4,700
Peak Hour: 2030	6,480	6,810	6,770	6,610	6,370
% Trucks: AADT	30 %	30 %	30 %	30 %	30 %
% Trucks: Peak Hour	8 %	8 %	8 %	8 %	8 %

B . A . Y . M . E . T . R . I . C . S

DAILY TUBE COUNT SUMMARY

PROJECT:	FIREBAUGH TS	RECORDER SET:	05 / 30 / 2006
LOCATION:	PANOCHE EAST OF I-5 NB RAMPS	RECORDER START:	06 / 01 / 2006
DIRECTION:	EASTBOUND & WESTBOUND	RECORDER END:	06 / 01 / 2006
CITY:	FIREBAUGH	MACHINE ID:	M-3455

	NORTHBOUND					SOUTHBOUND					NB + SB				
TIME	00:00	00:15	00:30	00:45	*TOT*	00:00	00:15	00:30	00:45	*TOT*	00:00	00:15	00:30	00:45	*TOT*
June 1, 2006 (Wednesday)															
12:00 AM	1	0	0	1	*2*	0	0	1	2	*3*	*1*	*0*	*1*	*3*	*5*
01:00 AM	2	1	0	4	*7*	0	0	1	0	*1*	*2*	*1*	*1*	*4*	*8*
02:00 AM	2	0	1	1	*4*	0	0	1	0	*1*	*2*	*0*	*2*	*1*	*5*
03:00 AM	0	0	2	1	*3*	0	1	0	0	*1*	*0*	*1*	*2*	*1*	*4*
04:00 AM	0	0	1	3	*4*	0	3	1	0	*4*	*0*	*3*	*2*	*3*	*8*
05:00 AM	3	2	0	1	*6*	0	2	2	0	*4*	*3*	*4*	*2*	*1*	*10*
06:00 AM	4	18	17	9	*48*	1	4	10	9	*24*	*5*	*22*	*27*	*18*	*72*
07:00 AM	5	4	7	6	*22*	5	4	5	5	*19*	*10*	*8*	*12*	*11*	*41*
08:00 AM	7	8	8	8	*31*	7	7	8	8	*30*	*14*	*15*	*16*	*16*	*61*
09:00 AM	4	10	12	9	*35*	10	5	8	11	*34*	*14*	*15*	*20*	*20*	*69*
10:00 AM	6	11	5	8	*30*	5	4	6	13	*28*	*11*	*15*	*11*	*21*	*58*
11:00 AM	10	7	16	12	*45*	5	8	14	9	*36*	*15*	*15*	*30*	*21*	*81*
12:00 NN	8	9	14	7	*38*	15	7	10	16	*48*	*23*	*16*	*24*	*23*	*86*
01:00 PM	11	5	4	9	*29*	11	5	8	13	*37*	*22*	*10*	*12*	*22*	*66*
02:00 PM	13	8	10	6	*37*	8	7	9	11	*35*	*21*	*15*	*19*	*17*	*72*
03:00 PM	9	15	7	8	*39*	7	18	22	16	*63*	*16*	*33*	*29*	*24*	*102*
04:00 PM	6	11	14	10	*41*	13	13	15	13	*54*	*19*	*24*	*29*	*23*	*95*
05:00 PM	8	7	10	9	*34*	10	11	10	8	*39*	*18*	*18*	*20*	*17*	*73*
06:00 PM	7	10	5	4	*26*	7	7	5	11	*30*	*14*	*17*	*10*	*15*	*56*
07:00 PM	6	8	4	3	*21*	5	6	3	4	*18*	*11*	*14*	*7*	*7*	*39*
08:00 PM	0	2	4	2	*8*	1	2	4	0	*7*	*1*	*4*	*8*	*2*	*15*
09:00 PM	0	1	5	2	*8*	1	2	0	1	*4*	*1*	*3*	*5*	*3*	*12*
10:00 PM	0	1	3	3	*7*	0	2	2	1	*5*	*0*	*3*	*5*	*4*	*12*
11:00 PM	1	2	0	0	*3*	0	3	1	0	*4*	*1*	*5*	*1*	*0*	*7*
TOTAL:					***528***					***529***					***1,057***
AM PEAK HR. (6 AM - 11 AM):					***48***					***36***					***81***
NOON PEAK HR. (11 AM - 4 PM):					***39***					***63***					***102***
PM PEAK HR. (4 PM - 7 PM):					***41***					***54***					***95***

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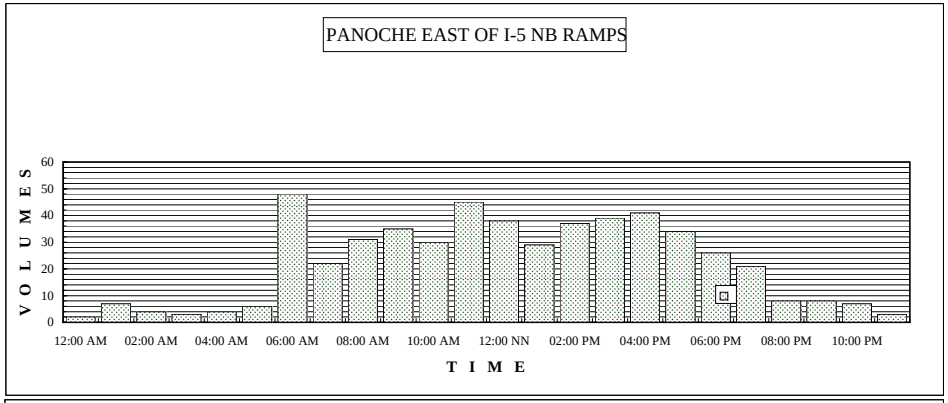

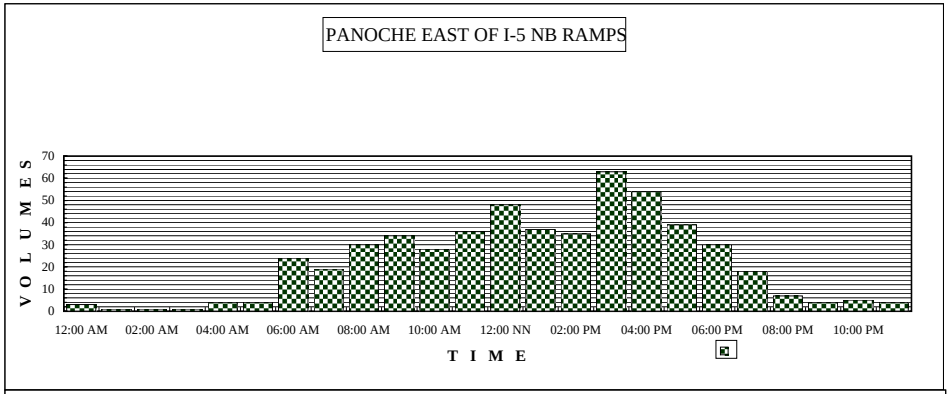

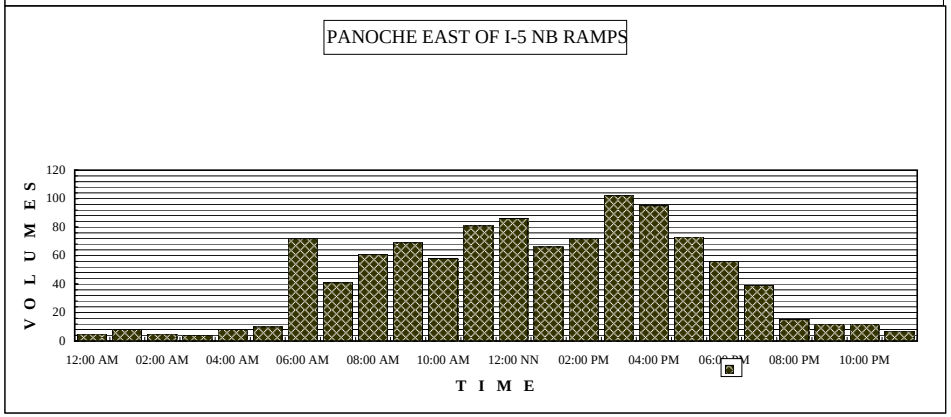

B . A . Y . M . E . T . R . I . C . S

DAILY TUBE COUNT SUMMARY

PROJECT:	FIREBAUGH TS	RECORDER SET:	05 / 30 / 2006
LOCATION:	PANOCHE EAST OF PROJECT SITE	RECORDER START:	06 / 01 / 2006
DIRECTION:	EASTBOUND & WESTBOUND	RECORDER END:	06 / 01 / 2006
CITY:	FIREBAUGH	MACHINE ID:	M-2926

	NORTHBOUND					SOUTHBOUND					NB + SB				
TIME	00:00	00:15	00:30	00:45	*TOT*	00:00	00:15	00:30	00:45	*TOT*	00:00	00:15	00:30	00:45	*TOT*
June 1, 2006 (Wednesday)															
12:00 AM	1	2	0	0	*3*	0	1	1	1	*3*	*1*	*3*	*1*	*1*	*6*
01:00 AM	1	0	0	1	*2*	0	1	0	0	*1*	*1*	*1*	*0*	*1*	*3*
02:00 AM	1	0	0	1	*2*	0	0	1	0	*1*	*1*	*0*	*1*	*1*	*3*
03:00 AM	0	1	0	2	*3*	0	1	1	0	*2*	*0*	*2*	*1*	*2*	*5*
04:00 AM	0	0	0	2	*2*	1	2	0	1	*4*	*1*	*2*	*0*	*3*	*6*
05:00 AM	2	0	3	5	*10*	1	1	0	2	*4*	*3*	*1*	*3*	*7*	*14*
06:00 AM	4	4	1	0	*9*	3	3	4	4	*14*	*7*	*7*	*5*	*4*	*23*
07:00 AM	3	5	5	7	*20*	2	4	9	5	*20*	*5*	*9*	*14*	*12*	*40*
08:00 AM	4	6	6	5	*21*	6	8	7	10	*31*	*10*	*14*	*13*	*15*	*52*
09:00 AM	5	2	0	11	*18*	8	3	7	7	*25*	*13*	*5*	*7*	*18*	*43*
10:00 AM	3	6	10	5	*24*	2	6	9	3	*20*	*5*	*12*	*19*	*8*	*44*
11:00 AM	4	10	8	7	*29*	2	5	11	4	*22*	*6*	*15*	*19*	*11*	*51*
12:00 NN	9	6	10	5	*30*	12	9	6	11	*38*	*21*	*15*	*16*	*16*	*68*
01:00 PM	9	13	8	7	*37*	8	10	3	8	*29*	*17*	*23*	*11*	*15*	*66*
02:00 PM	7	7	10	7	*31*	7	10	5	9	*31*	*14*	*17*	*15*	*16*	*62*
03:00 PM	4	2	8	10	*24*	3	6	10	5	*24*	*7*	*8*	*18*	*15*	*48*
04:00 PM	9	10	8	12	*39*	4	2	10	7	*23*	*13*	*12*	*18*	*19*	*62*
05:00 PM	8	12	5	8	*33*	9	9	9	9	*36*	*17*	*21*	*14*	*17*	*69*
06:00 PM	11	6	3	2	*22*	4	4	5	2	*15*	*15*	*10*	*8*	*4*	*37*
07:00 PM	0	2	4	2	*8*	3	3	5	4	*15*	*3*	*5*	*9*	*6*	*23*
08:00 PM	1	3	2	1	*7*	2	1	2	2	*7*	*3*	*4*	*4*	*3*	*14*
09:00 PM	1	2	0	2	*5*	1	0	1	2	*4*	*2*	*2*	*1*	*4*	*9*
10:00 PM	1	1	1	2	*5*	1	1	1	2	*5*	*2*	*2*	*2*	*4*	*10*
11:00 PM	0	1	0	1	*2*	0	1	1	0	*2*	*0*	*2*	*1*	*1*	*4*
TOTAL:					***386***					***376***					***762***
AM PEAK HR. (6 AM - 11 AM):					***29***					***31***					***52***
NOON PEAK HR. (11 AM - 4 PM):					***37***					***38***					***68***
PM PEAK HR. (4 PM - 7 PM):					***39***					***36***					***69***

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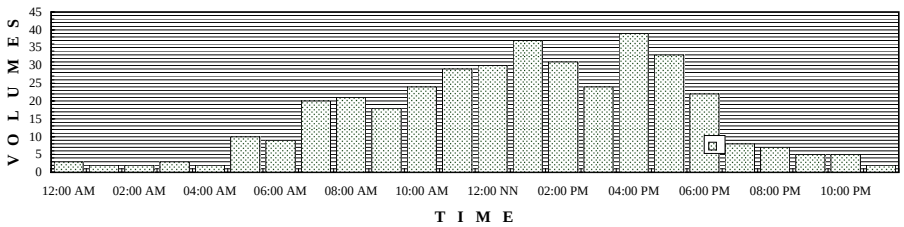
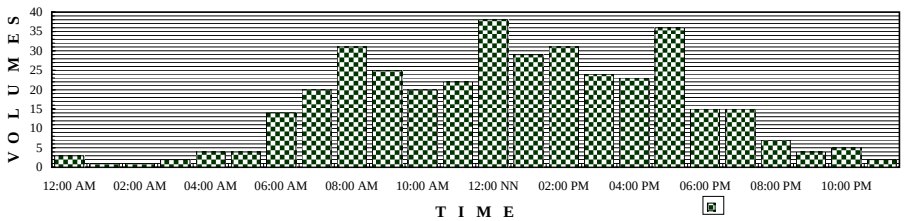
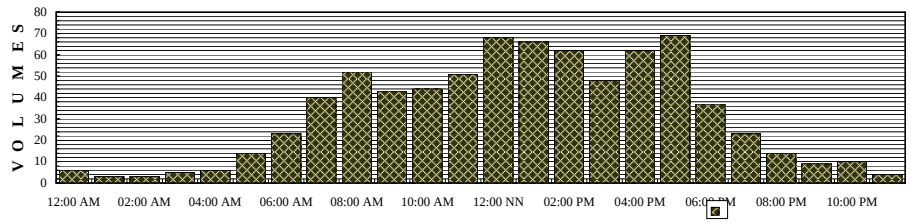
PANOCHE EAST OF PROJECT SITE



PANOCHE EAST OF PROJECT SITE



PANOCHE EAST OF PROJECT SITE



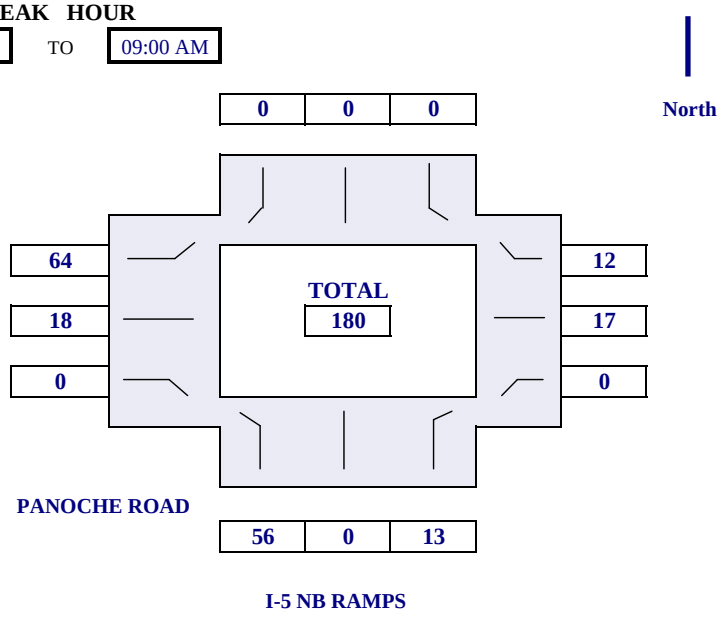
BAYMETRICS TRAFFIC RESOURCES

INTERSECTION TURNING MOVEMENT SUMMARY

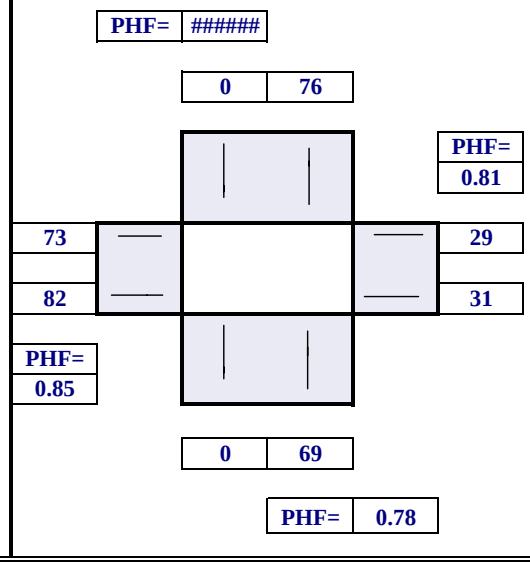
PROJECT:	**PANOCHE ROAD TS**	**SURVEY DATE: 6 / 1 / 2006**	**DAY: THURSDAY**
N-S Approach:	**I-5 NB RAMPS**	**SURVEY TIME: 7:00 AM TO 9:00 AM**	
E-W Approach:	**PANOCHE ROAD**	**CITY: FIREBAUGH**	**FILE: PN5NFBAM**

PEAK HOUR

08:00 AM TO 09:00 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															
07:00 AM	---	07:15 AM	7	0	2	0	0	0	13	4	0	0	4	1	***31***
07:15 AM	---	07:30 AM	21	0	3	0	0	0	27	6	0	0	6	3	***66***
07:30 AM	---	07:45 AM	36	0	4	0	0	0	39	12	0	0	12	3	***106***
07:45 AM	---	08:00 AM	51	0	7	0	0	0	57	15	0	0	15	4	***149***
08:00 AM	---	08:15 AM	64	0	10	0	0	0	73	20	0	0	19	7	***193***
08:15 AM	---	08:30 AM	81	0	15	0	0	0	85	22	0	0	22	10	***235***
08:30 AM	---	08:45 AM	95	0	18	0	0	0	103	28	0	0	28	13	***285***
08:45 AM	---	09:00 AM	107	0	20	0	0	0	121	33	0	0	32	16	***329***
TOTAL BY PERIOD															
07:00 AM	---	07:15 AM	7	0	2	0	0	0	13	4	0	0	4	1	***31***
07:15 AM	---	07:30 AM	14	0	1	0	0	0	14	2	0	0	2	2	***35***
07:30 AM	---	07:45 AM	15	0	1	0	0	0	12	6	0	0	6	0	***40***
07:45 AM	---	08:00 AM	15	0	3	0	0	0	18	3	0	0	3	1	***43***
08:00 AM	---	08:15 AM	13	0	3	0	0	0	16	5	0	0	4	3	***44***
08:15 AM	---	08:30 AM	17	0	5	0	0	0	12	2	0	0	3	3	***42***
08:30 AM	---	08:45 AM	14	0	3	0	0	0	18	6	0	0	6	3	***50***
08:45 AM	---	09:00 AM	12	0	2	0	0	0	18	5	0	0	4	3	***44***
HOURLY TOTALS															
07:00 AM	---	08:00 AM	51	0	7	0	0	0	57	15	0	0	15	4	***149***
07:15 AM	---	08:15 AM	57	0	8	0	0	0	60	16	0	0	15	6	***162***
07:30 AM	---	08:30 AM	60	0	12	0	0	0	58	16	0	0	16	7	***169***
07:45 AM	---	08:45 AM	59	0	14	0	0	0	64	16	0	0	16	10	***179***
08:00 AM	---	09:00 AM	56	0	13	0	0	0	64	18	0	0	17	12	***180***

East Bay : (510) 232-1271 ***SF/Peninsula: (415) 750-1317***

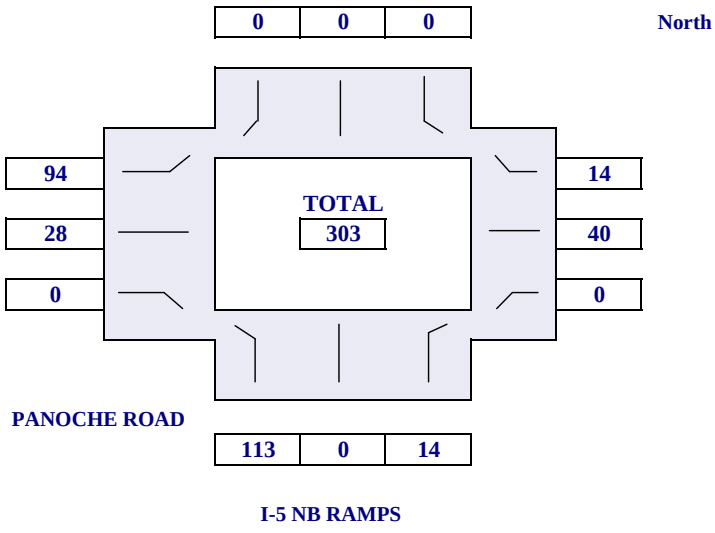
BAYMETRICS TRAFFIC RESOURCES

INTERSECTION TURNING MOVEMENT SUMMARY

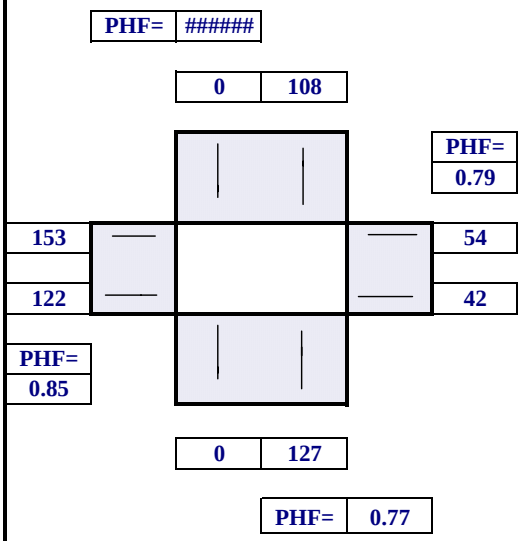
PROJECT:	**PANOCHE ROAD TS**	**SURVEY DATE: 6 / 1 / 2006**	**DAY: THURSDAY**
N-S Approach:	**I-5 NB RAMPS**	**SURVEY TIME: 4:00 PM**	**TO 6:00 PM**
E-W Approach:	**PANOCHE ROAD**	**CITY: FIREBAUGH**	**FILE: PN5NFBPM**

PEAK HOUR

04:00 PM TO 05:00 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															
04:00 PM	---	04:15 PM	29	0	2	0	0	0	25	4	0	0	10	2	***72***
04:15 PM	---	04:30 PM	66	0	6	0	0	0	47	12	0	0	19	7	***157***
04:30 PM	---	04:45 PM	89	0	9	0	0	0	73	22	0	0	32	11	***236***
04:45 PM	---	05:00 PM	113	0	14	0	0	0	94	28	0	0	40	14	***303***
05:00 PM	---	05:15 PM	127	0	16	0	0	0	118	33	0	0	47	16	***357***
05:15 PM	---	05:30 PM	144	0	20	0	0	0	143	37	0	0	53	20	***417***
05:30 PM	---	05:45 PM	164	0	22	0	0	0	167	44	0	0	61	22	***480***
05:45 PM	---	06:00 PM	183	0	24	0	0	0	184	50	0	0	68	24	***533***
TOTAL BY PERIOD															
04:00 PM	---	04:15 PM	29	0	2	0	0	0	25	4	0	0	10	2	***72***
04:15 PM	---	04:30 PM	37	0	4	0	0	0	22	8	0	0	9	5	***85***
04:30 PM	---	04:45 PM	23	0	3	0	0	0	26	10	0	0	13	4	***79***
04:45 PM	---	05:00 PM	24	0	5	0	0	0	21	6	0	0	8	3	***67***
05:00 PM	---	05:15 PM	14	0	2	0	0	0	24	5	0	0	7	2	***54***
05:15 PM	---	05:30 PM	17	0	4	0	0	0	25	4	0	0	6	4	***60***
05:30 PM	---	05:45 PM	20	0	2	0	0	0	24	7	0	0	8	2	***63***
05:45 PM	---	06:00 PM	19	0	2	0	0	0	17	6	0	0	7	2	***53***
HOURLY TOTALS															
04:00 PM	---	05:00 PM	113	0	14	0	0	0	94	28	0	0	40	14	***303***
04:15 PM	---	05:15 PM	98	0	14	0	0	0	93	29	0	0	37	14	***285***
04:30 PM	---	05:30 PM	78	0	14	0	0	0	96	25	0	0	34	13	***260***
04:45 PM	---	05:45 PM	75	0	13	0	0	0	94	22	0	0	29	11	***244***
05:00 PM	---	06:00 PM	70	0	10	0	0	0	90	22	0	0	28	10	***230***

East Bay : (510) 232-1271 ***SF/Peninsula: (415) 750-1317***

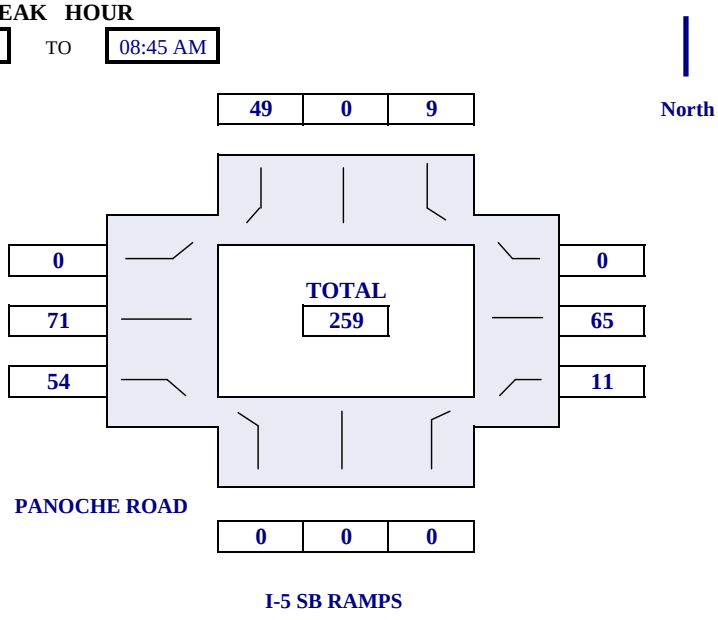
BAYMETRICS TRAFFIC RESOURCES

INTERSECTION TURNING MOVEMENT SUMMARY

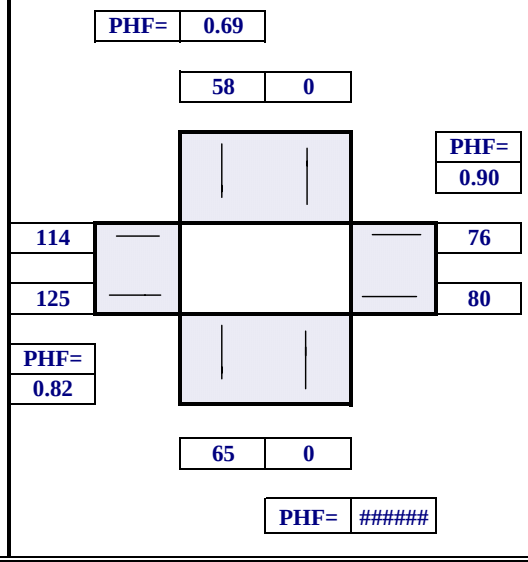
PROJECT:	**PANOCHE ROAD TS**	**SURVEY DATE: 6 / 1 / 2006**	**DAY: THURSDAY**
N-S Approach:	**I-5 SB RAMPS**	**SURVEY TIME: 7:00 AM TO 9:00 AM**	
E-W Approach:	**PANOCHE ROAD**	**CITY: FIREBAUGH**	**FILE: PN5SFBAM**

PEAK HOUR

07:45 AM TO 08:45 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															
07:00 AM	---	07:15 AM	0	0	0	2	0	12	0	15	7	1	10	0	***47***
07:15 AM	---	07:30 AM	0	0	0	6	0	29	0	27	17	2	25	0	***106***
07:30 AM	---	07:45 AM	0	0	0	9	0	42	0	42	30	2	45	0	***170***
07:45 AM	---	08:00 AM	0	0	0	11	0	51	0	62	48	4	62	0	***238***
08:00 AM	---	08:15 AM	0	0	0	15	0	66	0	78	60	7	76	0	***302***
08:15 AM	---	08:30 AM	0	0	0	16	0	77	0	91	75	10	94	0	***363***
08:30 AM	---	08:45 AM	0	0	0	18	0	91	0	113	84	13	110	0	***429***
08:45 AM	---	09:00 AM	0	0	0	22	0	103	0	131	96	14	125	0	***491***
TOTAL BY PERIOD															
07:00 AM	---	07:15 AM	0	0	0	2	0	12	0	15	7	1	10	0	***47***
07:15 AM	---	07:30 AM	0	0	0	4	0	17	0	12	10	1	15	0	***59***
07:30 AM	---	07:45 AM	0	0	0	3	0	13	0	15	13	0	20	0	***64***
07:45 AM	---	08:00 AM	0	0	0	2	0	9	0	20	18	2	17	0	***68***
08:00 AM	---	08:15 AM	0	0	0	4	0	15	0	16	12	3	14	0	***64***
08:15 AM	---	08:30 AM	0	0	0	1	0	11	0	13	15	3	18	0	***61***
08:30 AM	---	08:45 AM	0	0	0	2	0	14	0	22	9	3	16	0	***66***
08:45 AM	---	09:00 AM	0	0	0	4	0	12	0	18	12	1	15	0	***62***
HOURLY TOTALS															
07:00 AM	---	08:00 AM	0	0	0	11	0	51	0	62	48	4	62	0	***238***
07:15 AM	---	08:15 AM	0	0	0	13	0	54	0	63	53	6	66	0	***255***
07:30 AM	---	08:30 AM	0	0	0	10	0	48	0	64	58	8	69	0	***257***
07:45 AM	---	08:45 AM	0	0	0	9	0	49	0	71	54	11	65	0	***259***
08:00 AM	---	09:00 AM	0	0	0	11	0	52	0	69	48	10	63	0	***253***

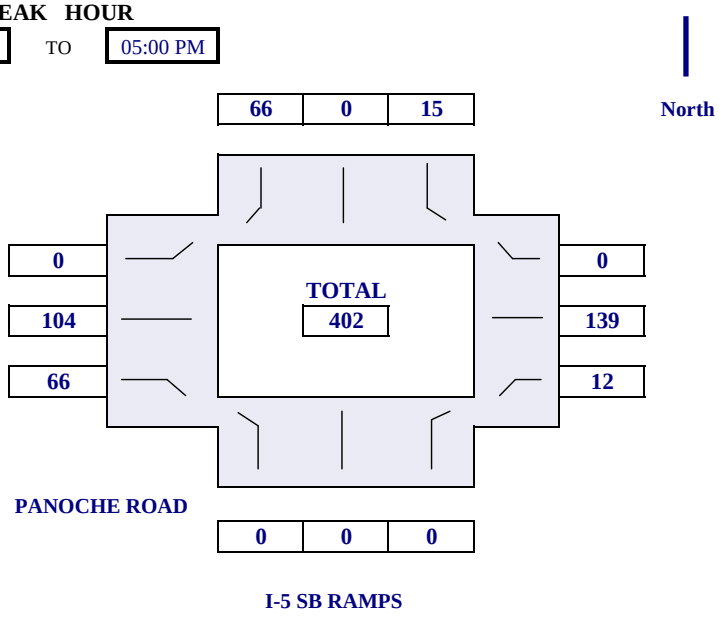
BAYMETRICS TRAFFIC RESOURCES

INTERSECTION TURNING MOVEMENT SUMMARY

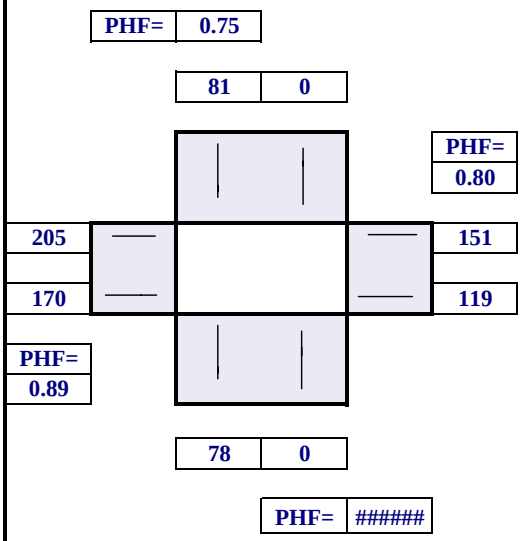
PROJECT:	**PANOCHE ROAD TS**	**SURVEY DATE: 6 / 1 / 2006**	**DAY: THURSDAY**
N-S Approach:	**I-5 SB RAMPS**	**SURVEY TIME: 4:00 PM**	**TO 6:00 PM**
E-W Approach:	**PANOCHE ROAD**	**CITY: FIREBAUGH**	**FILE: PN5SFBPM**

PEAK HOUR

04:00 PM TO 05:00 PM



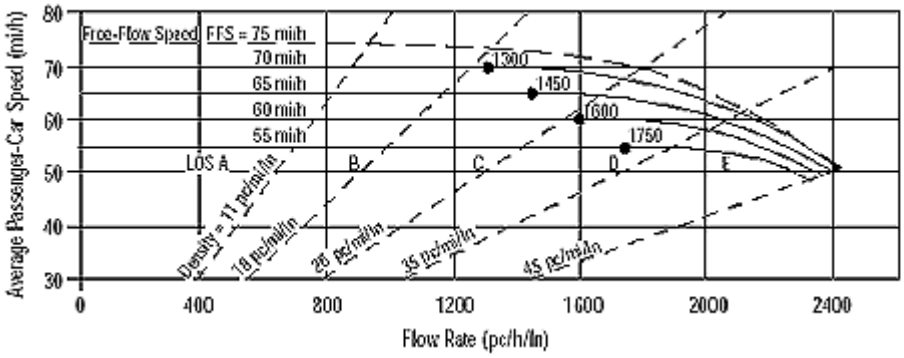
ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From		To	NORTHBOUND Left	Thru	Right	SOUTHBOUND Left	Thru	Right	EASTBOUND Left	Thru	Right	WESTBOUND Left	Thru	Right	TOTAL
SURVEY DATA															
04:00 PM	---	04:15 PM	0	0	0	4	0	10	0	25	15	2	35	0	***91***
04:15 PM	---	04:30 PM	0	0	0	6	0	35	0	55	33	7	77	0	***213***
04:30 PM	---	04:45 PM	0	0	0	9	0	54	0	82	53	10	114	0	***322***
04:45 PM	---	05:00 PM	0	0	0	15	0	66	0	104	66	12	139	0	***402***
05:00 PM	---	05:15 PM	0	0	0	16	0	82	0	135	82	15	159	0	***489***
05:15 PM	---	05:30 PM	0	0	0	20	0	89	0	159	91	16	185	0	***560***
05:30 PM	---	05:45 PM	0	0	0	22	0	99	0	187	105	16	207	0	***636***
05:45 PM	---	06:00 PM	0	0	0	25	0	106	0	210	117	18	230	0	***706***
TOTAL BY PERIOD															
04:00 PM	---	04:15 PM	0	0	0	4	0	10	0	25	15	2	35	0	***91***
04:15 PM	---	04:30 PM	0	0	0	2	0	25	0	30	18	5	42	0	***122***
04:30 PM	---	04:45 PM	0	0	0	3	0	19	0	27	20	3	37	0	***109***
04:45 PM	---	05:00 PM	0	0	0	6	0	12	0	22	13	2	25	0	***80***
05:00 PM	---	05:15 PM	0	0	0	1	0	16	0	31	16	3	20	0	***87***
05:15 PM	---	05:30 PM	0	0	0	4	0	7	0	24	9	1	26	0	***71***
05:30 PM	---	05:45 PM	0	0	0	2	0	10	0	28	14	0	22	0	***76***
05:45 PM	---	06:00 PM	0	0	0	3	0	7	0	23	12	2	23	0	***70***
HOURLY TOTALS															
04:00 PM	---	05:00 PM	0	0	0	15	0	66	0	104	66	12	139	0	***402***
04:15 PM	---	05:15 PM	0	0	0	12	0	72	0	110	67	13	124	0	***398***
04:30 PM	---	05:30 PM	0	0	0	14	0	54	0	104	58	9	108	0	***347***
04:45 PM	---	05:45 PM	0	0	0	13	0	45	0	105	52	6	93	0	***314***
05:00 PM	---	06:00 PM	0	0	0	10	0	40	0	106	51	6	91	0	***304***

East Bay : (510) 232-1271 ***SF/Peninsula: (415) 750-1317***

BASIC FREEWAY SEGMENTS WORKSHEET



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 / Site Information

Analyst	S. QUICK	Highway/Direction of Travel	I-5
Agency or Company	URS	From/To	Manning Ave to Russell Ave
Date Performed	6/23/2006	Jurisdiction	Fresno County
Analysis Time Period	Existing	Analysis Year	2006

Project Description Panoche Power Plant

☑ Oper.(LOS) ☐ Des.(N) ☑ Planning Data

Flow Inputs

Volume, V	1875 veh/h	Peak-Hour Factor, PHF	0.90
AADT	51500 veh/day	%Trucks and Buses, P_T	25
Peak-Hr Prop. of AADT, K	0.07	%RVs, P_R	0
Peak-Hr Direction Prop, D	52	General Terrain:	Level
DDHV = AADT x K x D	1875 veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.889

Speed Inputs / Calc Speed Adj and FFS

Lane Width	12.0	ft	f_{LW}		mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}		mi/h
Interchange Density	0.50	I/mi	f_{ID}		mi/h
Number of Lanes, N	2		f_N		mi/h
FFS (measured)	70.0	mi/h	FFS	70.0	mi/h
Base free-flow Speed, BFFS		mi/h			

LOS and Performance Measures / Design (N)

Operational (LOS)			Design (N)		
			Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1172	pc/h/ln	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	70.0	mi/h	S		mi/h
D = v_p / S	16.7	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary / Factor Location

N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

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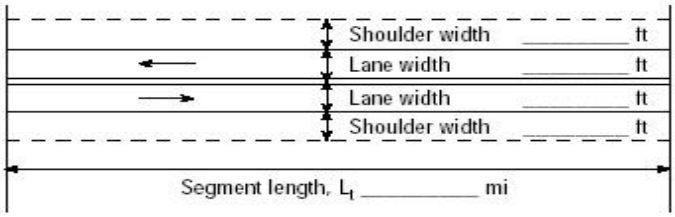
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	S. QUICK	Highway	Panoche Rd
Agency or Company	URS	From/To	Panoche East of I-5 NB Ramps
Date Performed	6/15/2006	Jurisdiction	Fresno County
Analysis Time Period	Existing AM	Analysis Year	2006

Input Data



☐ Class I highway ☑ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	41 veh/h
Directional split	60 / 40
Peak-hour factor, PHF	0.92
No-passing zone	0
% Trucks and Buses , P_T	15 %
% Recreational vehicles, P_R	4%
Access points/ mi	8

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f_{HV} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.905
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	49
v_p * highest directional split proportion[2] (pc/h)	29

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	55.0 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 $FFS=S_{FM}+0.00776(V_f/f_{HV})$	53.0 mi/h	Adj. for access points, f_A (Exhibit 20-6)	2.0 mi/h
		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	53.0 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) $ATS=FFS-0.00776v_p-f_{np}$	52.6

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} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.985
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	45
v_p * highest directional split proportion[2] (pc/h)	27
Base percent time-spent-following, BPTSF(%) $BPTSF=100(1-e^{-0.000879v_p})$	3.9
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	2.5
Percent time-spent-following, PTSF(%) $PTSF=BPTSF+f_{d/np}$	6.3

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	A
Volume to capacity ratio v/c $v/c=V_p/3{,}200$	0.02
Peak 15-min veh-miles of travel, VMT_{15} (veh- mi) $VMT_{15}=0.25L_t(V/PHF)$	22
Peak-hour vehicle-miles of travel, VMT_{60} (veh- mi) $VMT_{60}=V*L_t$	82
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}=VMT_{15}/ATS$	0.4

Notes

1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F. 2. If highest directional split v_p>= 1,700 pc/h, terminated anlysis-the LOS is F.

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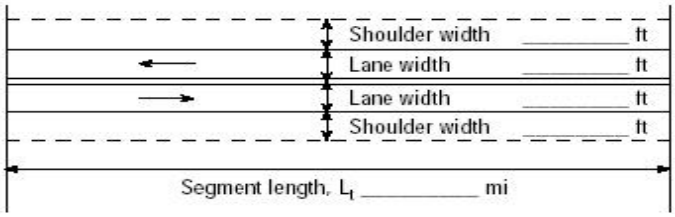
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		***Site Information***	
Analyst	S. QUICK	Highway	Panoche Rd
Agency or Company	URS	From/To	Panoche East of I-5 NB Ramps
Date Performed	6/15/2006	Jurisdiction	Fresno County
Analysis Time Period	Existing PM	Analysis Year	2006

Input Data



☐ Class I highway ☑ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	73 veh/h
Directional split	60 / 40
Peak-hour factor, PHF	0.92
No-passing zone	0
% Trucks and Buses , P_T	15 %
% Recreational vehicles, P_R	4%
Access points/ mi	8

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f_{HV} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.905
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	88
v_p * highest directional split proportion[2] (pc/h)	53

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	55.0 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 $FFS=S_{FM}+0.00776(V_f/f_{HV})$	53.0 mi/h	Adj. for access points, f_A (Exhibit 20-6)	2.0 mi/h
		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	53.0 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) $ATS=FFS-0.00776v_p-f_{np}$	52.3

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} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.985
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	81
v_p * highest directional split proportion[2] (pc/h)	49
Base percent time-spent-following, BPTSF(%) $BPTSF=100(1-e^{-0.000879v_p})$	6.9
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	2.3
Percent time-spent-following, PTSF(%) $PTSF=BPTSF+f_{d/np}$	9.1

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	A
Volume to capacity ratio v/c $v/c=V_p/3{,}200$	0.03
Peak 15-min veh-miles of travel, VMT_{15} (veh- mi) $VMT_{15}=0.25L_t(V/PHF)$	40
Peak-hour vehicle-miles of travel, VMT_{60} (veh- mi) $VMT_{60}=V*L_t$	146
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}=VMT_{15}/ATS$	0.8

Notes

1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F. 2. If highest directional split v_p>= 1,700 pc/h, terminated anlysis-the LOS is F.

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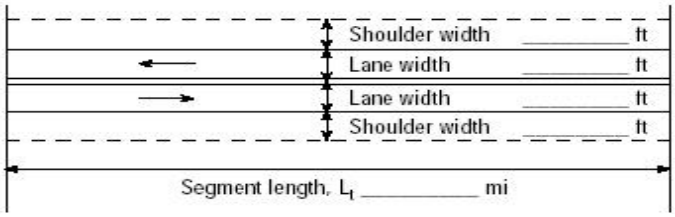
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	S. QUICK	Highway	Panoche Rd
Agency or Company	URS	From/To	Panoche East of Project Site
Date Performed	6/15/2006	Jurisdiction	Fresno County
Analysis Time Period	Existing AM	Analysis Year	2006

Input Data



☐ Class I highway ☑ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	52 veh/h
Directional split	60 / 40
Peak-hour factor, PHF	0.92
No-passing zone	0
% Trucks and Buses , P_T	15 %
% Recreational vehicles, P_R	4%
Access points/ mi	8

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f_{HV} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.905
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	62
v_p * highest directional split proportion[2] (pc/h)	37

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	55.0 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 $FFS=S_{FM}+0.00776(V_f/f_{HV})$	53.0 mi/h	Adj. for access points, f_A (Exhibit 20-6)	2.0 mi/h
		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	53.0 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) $ATS=FFS-0.00776v_p-f_{np}$	52.5

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} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.985
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	57
v_p * highest directional split proportion[2] (pc/h)	34
Base percent time-spent-following, BPTSF(%) $BPTSF=100(1-e^{-0.000879v_p})$	4.9
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	2.4
Percent time-spent-following, PTSF(%) $PTSF=BPTSF+f_{d/np}$	7.3

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	A
Volume to capacity ratio v/c $v/c=V_p/3{,}200$	0.02
Peak 15-min veh-miles of travel, VMT_{15} (veh- mi) $VMT_{15}=0.25L_t(V/PHF)$	28
Peak-hour vehicle-miles of travel, VMT_{60} (veh- mi) $VMT_{60}=V*L_t$	104
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}=VMT_{15}/ATS$	0.5

Notes

1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F. 2. If highest directional split v_p>= 1,700 pc/h, terminated anlysis-the LOS is F.

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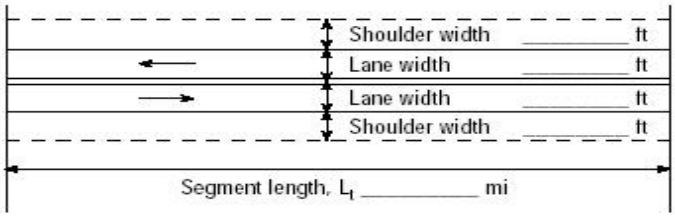
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	S. QUICK	Highway	Panoche Rd
Agency or Company	URS	From/To	Panoche East of Project Site
Date Performed	6/15/2006	Jurisdiction	Fresno County
Analysis Time Period	Existing PM	Analysis Year	2006

Input Data



☐ Class I highway ☑ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	69 veh/h
Directional split	60 / 40
Peak-hour factor, PHF	0.92
No-passing zone	0
% Trucks and Buses , P_T	15 %
% Recreational vehicles, P_R	4%
Access points/ mi	8

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f_{HV} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.905
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	83
v_p * highest directional split proportion[2] (pc/h)	50

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	55.0 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 $FFS=S_{FM}+0.00776(V_f/f_{HV})$	53.0 mi/h	Adj. for access points, f_A (Exhibit 20-6)	2.0 mi/h
		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	53.0 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) $ATS=FFS-0.00776v_p-f_{np}$	52.4

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} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.985
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	76
v_p * highest directional split proportion[2] (pc/h)	46
Base percent time-spent-following, BPTSF(%) $BPTSF=100(1-e^{-0.000879v_p})$	6.5
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	2.3
Percent time-spent-following, PTSF(%) $PTSF=BPTSF+f_{d/np}$	8.7

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	A
Volume to capacity ratio v/c $v/c=V_p/3{,}200$	0.03
Peak 15-min veh-miles of travel, VMT_{15} (veh- mi) $VMT_{15}=0.25L_t(V/PHF)$	37
Peak-hour vehicle-miles of travel, VMT_{60} (veh- mi) $VMT_{60}=V*L_t$	138
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}=VMT_{15}/ATS$	0.7

Notes

1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F. 2. If highest directional split v_p>= 1,700 pc/h, terminated anlysis-the LOS is F.

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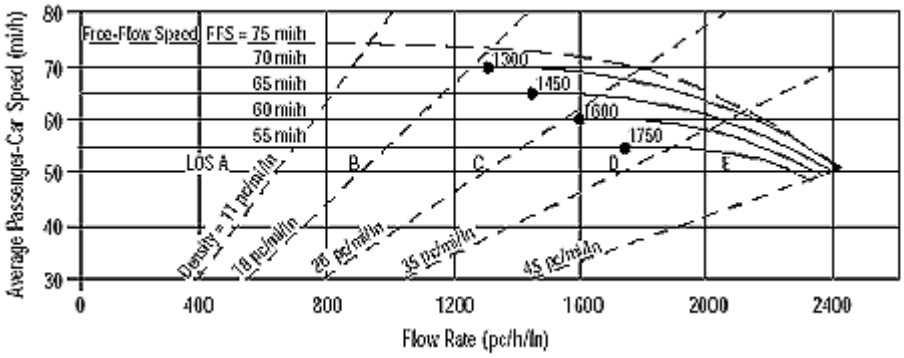
BASIC FREEWAY SEGMENTS WORKSHEET



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		***Site Information***	
Analyst	S. QUICK	Highway/Direction of Travel	I-5
Agency or Company	URS	From/To	Manning Ave to Russell Ave
Date Performed	6/23/2006	Jurisdiction	Fresno County
Analysis Time Period	No Build	Analysis Year	2008

Project Description Panoche Power Plant

☑ Oper.(LOS) ☐ Des.(N) ☑ Planning Data

Flow Inputs			
Volume, V	1987 veh/h	Peak-Hour Factor, PHF	0.90
AADT	54590 veh/day	%Trucks and Buses, P_T	25
Peak-Hr Prop. of AADT, K	0.07	%RVs, P_R	0
Peak-Hr Direction Prop, D	52	General Terrain:	Level
DDHV = AADT x K x D	1987 veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.889

Speed Inputs			**Calc Speed Adj and FFS**		
Lane Width	12.0	ft	f_{LW}		mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}		mi/h
Interchange Density	0.50	I/mi	f_{ID}		mi/h
Number of Lanes, N	2		f_N		mi/h
FFS (measured)	70.0	mi/h	FFS	70.0	mi/h
Base free-flow Speed, BFFS		mi/h			

LOS and Performance Measures			**Design (N)**		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1242	pc/h/ln	Design LOS		
			v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	70.0	mi/h	S		mi/h
D = v_p / S	17.7	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	B		Required Number of Lanes, N		

Glossary	**Factor Location**

N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

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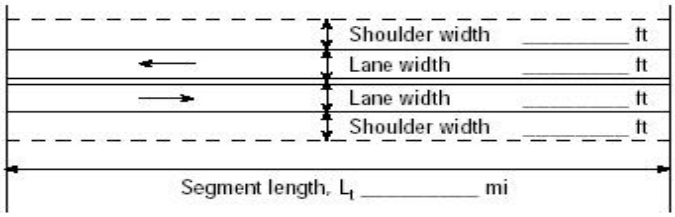
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	S. QUICK	Highway	Panoche Rd
Agency or Company	URS	From/To	Panoche East of I-5 NB Ramps
Date Performed	6/28/2006	Jurisdiction	Fresno County
Analysis Time Period	No Build AM	Analysis Year	2008

Input Data



☐ Class I highway ☑ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	43 veh/h
Directional split	60 / 40
Peak-hour factor, PHF	0.92
No-passing zone	0
% Trucks and Buses , P_T	15 %
% Recreational vehicles, P_R	4%
Access points/ mi	8

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f_{HV} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.905
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	52
v_p * highest directional split proportion[2] (pc/h)	31

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	55.0 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 $FFS=S_{FM}+0.00776(V_f/f_{HV})$	53.0 mi/h	Adj. for access points, f_A (Exhibit 20-6)	2.0 mi/h
		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	53.0 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) $ATS=FFS-0.00776v_p-f_{np}$	52.6

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} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.985
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	47
v_p * highest directional split proportion[2] (pc/h)	28
Base percent time-spent-following, BPTSF(%) $BPTSF=100(1-e^{-0.000879v_p})$	4.0
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	2.4
Percent time-spent-following, PTSF(%) $PTSF=BPTSF+f_{d/np}$	6.5

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	A
Volume to capacity ratio v/c $v/c=V_p/3{,}200$	0.02
Peak 15-min veh-miles of travel, VMT_{15} (veh- mi) $VMT_{15}=0.25L_t(V/PHF)$	23
Peak-hour vehicle-miles of travel, VMT_{60} (veh- mi) $VMT_{60}=V*L_t$	86
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}=VMT_{15}/ATS$	0.4

Notes

1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F. 2. If highest directional split v_p>= 1,700 pc/h, terminated anlysis-the LOS is F.

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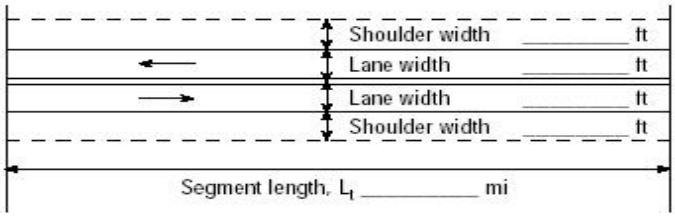
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	S. QUICK	Highway	Panoche Rd
Agency or Company	URS	From/To	Panoche East of I-5 NB Ramps
Date Performed	6/28/2006	Jurisdiction	Fresno County
Analysis Time Period	No Build PM	Analysis Year	2008

Input Data



☐ Class I highway ☑ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	77 veh/h
Directional split	60 / 40
Peak-hour factor, PHF	0.92
No-passing zone	0
% Trucks and Buses , P_T	15 %
% Recreational vehicles, P_R	4%
Access points/ mi	8

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f_{HV} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.905
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	92
v_p * highest directional split proportion[2] (pc/h)	55

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	55.0 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 $FFS=S_{FM}+0.00776(V_f/f_{HV})$	53.0 mi/h	Adj. for access points, f_A (Exhibit 20-6)	2.0 mi/h
		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	53.0 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) $ATS=FFS-0.00776v_p-f_{np}$	52.3

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} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.985
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	85
v_p * highest directional split proportion[2] (pc/h)	51
Base percent time-spent-following, BPTSF(%) $BPTSF=100(1-e^{-0.000879v_p})$	7.2
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	2.2
Percent time-spent-following, PTSF(%) $PTSF=BPTSF+f_{d/np}$	9.4

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	A
Volume to capacity ratio v/c $v/c=V_p/3{,}200$	0.03
Peak 15-min veh-miles of travel, VMT_{15} (veh- mi) $VMT_{15}=0.25L_t(V/PHF)$	42
Peak-hour vehicle-miles of travel, VMT_{60} (veh- mi) $VMT_{60}=V*L_t$	154
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}=VMT_{15}/ATS$	0.8

Notes

1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F. 2. If highest directional split v_p>= 1,700 pc/h, terminated anlysis-the LOS is F.

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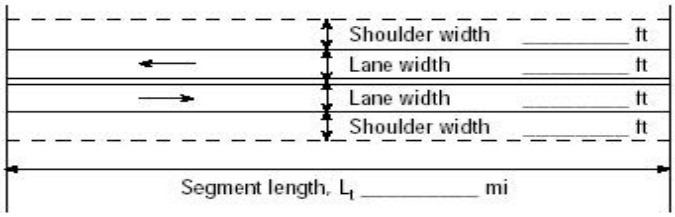
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	S. QUICK	Highway	Panoche Rd
Agency or Company	URS	From/To	Panoche East of Project Site
Date Performed	6/28/2006	Jurisdiction	Fresno County
Analysis Time Period	No Build AM	Analysis Year	2008

Input Data



☐ Class I highway ☑ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	55 veh/h
Directional split	60 / 40
Peak-hour factor, PHF	0.92
No-passing zone	0
% Trucks and Buses , P_T	15 %
% Recreational vehicles, P_R	4%
Access points/ mi	8

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f_{HV} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.905
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	66
v_p * highest directional split proportion[2] (pc/h)	40

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	55.0 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 $FFS=S_{FM}+0.00776(V_f/f_{HV})$	53.0 mi/h	Adj. for access points, f_A (Exhibit 20-6)	2.0 mi/h
		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	53.0 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) $ATS=FFS-0.00776v_p-f_{np}$	52.5

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} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.985
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	61
v_p * highest directional split proportion[2] (pc/h)	37
Base percent time-spent-following, BPTSF(%) $BPTSF=100(1-e^{-0.000879v_p})$	5.2
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	2.4
Percent time-spent-following, PTSF(%) $PTSF=BPTSF+f_{d/np}$	7.6

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	A
Volume to capacity ratio v/c $v/c=V_p/3{,}200$	0.02
Peak 15-min veh-miles of travel, VMT_{15} (veh- mi) $VMT_{15}=0.25L_t(V/PHF)$	30
Peak-hour vehicle-miles of travel, VMT_{60} (veh- mi) $VMT_{60}=V*L_t$	110
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}=VMT_{15}/ATS$	0.6

Notes

1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F. 2. If highest directional split v_p>= 1,700 pc/h, terminated anlysis-the LOS is F.

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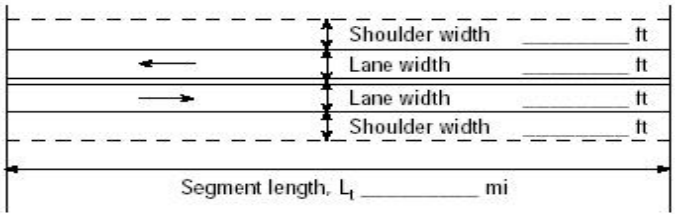
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	S. QUICK	Highway	Panoche Rd
Agency or Company	URS	From/To	Panoche East of Project Site
Date Performed	6/28/2006	Jurisdiction	Fresno County
Analysis Time Period	No Build PM	Analysis Year	2008

Input Data



☐ Class I highway ☑ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	73 veh/h
Directional split	60 / 40
Peak-hour factor, PHF	0.92
No-passing zone	0
% Trucks and Buses , P_T	15 %
% Recreational vehicles, P_R	4%
Access points/ mi	8

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f_{HV} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.905
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	88
v_p * highest directional split proportion[2] (pc/h)	53

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	55.0 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 $FFS=S_{FM}+0.00776(V_f/f_{HV})$	53.0 mi/h	Adj. for access points, f_A (Exhibit 20-6)	2.0 mi/h
		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	53.0 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) $ATS=FFS-0.00776v_p-f_{np}$	52.3

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} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.985
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	81
v_p * highest directional split proportion[2] (pc/h)	49
Base percent time-spent-following, BPTSF(%) $BPTSF=100(1-e^{-0.000879v_p})$	6.9
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	2.3
Percent time-spent-following, PTSF(%) $PTSF=BPTSF+f_{d/np}$	9.1

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	A
Volume to capacity ratio v/c $v/c=V_p/3{,}200$	0.03
Peak 15-min veh-miles of travel, VMT_{15} (veh- mi) $VMT_{15}=0.25L_t(V/PHF)$	40
Peak-hour vehicle-miles of travel, VMT_{60} (veh- mi) $VMT_{60}=V*L_t$	146
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}=VMT_{15}/ATS$	0.8

Notes

1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F. 2. If highest directional split v_p>= 1,700 pc/h, terminated anlysis-the LOS is F.

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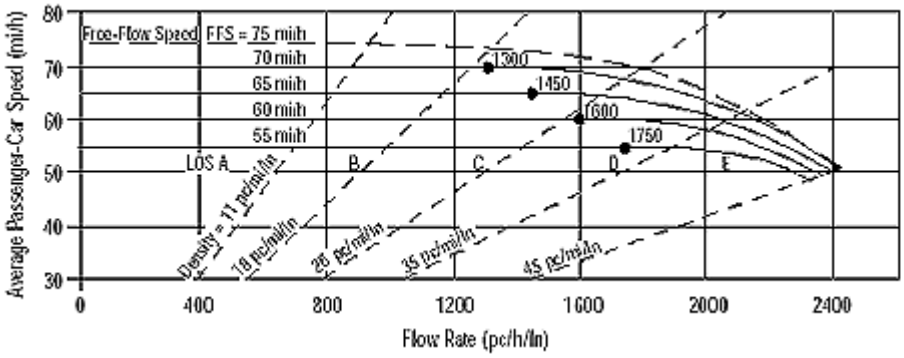
BASIC FREEWAY SEGMENTS WORKSHEET



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 / Site Information

Analyst	S. QUICK	Highway/Direction of Travel	I-5
Agency or Company	URS	From/To	Manning Ave to Russell Ave
Date Performed	6/29/2006	Jurisdiction	Fresno County
Analysis Time Period	Constuction with Sub Station	Analysis Year	2008

Project Description Panoche Power Plant

☑ Oper.(LOS) ☐ Des.(N) ☑ Planning Data

Flow Inputs

Volume, V	2044 veh/h	Peak-Hour Factor, PHF	0.90
AADT	56144 veh/day	%Trucks and Buses, P_T	25
Peak-Hr Prop. of AADT, K	0.07	%RVs, P_R	0
Peak-Hr Direction Prop, D	52	General Terrain:	Level
DDHV = AADT x K x D	2044 veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.889

Speed Inputs / Calc Speed Adj and FFS

Lane Width	12.0	ft	f_{LW}		mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}		mi/h
Interchange Density	0.50	I/mi	f_{ID}		mi/h
Number of Lanes, N	2		f_N		mi/h
FFS (measured)	70.0	mi/h	FFS	70.0	mi/h
Base free-flow Speed, BFFS		mi/h			

LOS and Performance Measures / Design (N)

Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1278	pc/h/ln	Design LOS		
S	70.0	mi/h	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
D = v_p / S	18.3	pc/mi/ln	S		mi/h
LOS	C		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary / Factor Location

N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

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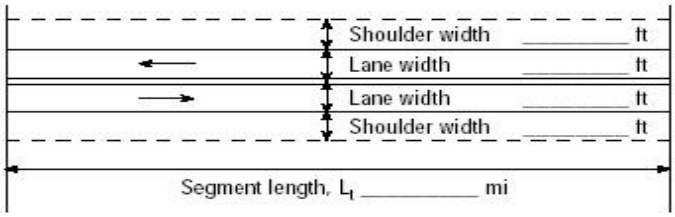
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		***Site Information***	
Analyst	S. QUICK	Highway	Panoche Rd
Agency or Company	URS	From/To	Panoche East of I-5 NB Ramps
Date Performed	6/28/2006	Jurisdiction	Fresno County
Analysis Time Period	Construction with SubSta AM	Analysis Year	2008

Input Data



☐ Class I highway ☑ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	259 veh/h
Directional split	60 / 40
Peak-hour factor, PHF	0.92
No-passing zone	0
% Trucks and Buses , P_T	15 %
% Recreational vehicles, P_R	4%
Access points/ mi	8

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f_{HV} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.905
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	311
v_p * highest directional split proportion[2] (pc/h)	187

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	55.0 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 $FFS=S_{FM}+0.00776(V_f/f_{HV})$	53.0 mi/h	Adj. for access points, f_A (Exhibit 20-6)	2.0 mi/h
		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	53.0 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) $ATS=FFS-0.00776v_p-f_{np}$	50.6

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} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.985
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	286
v_p * highest directional split proportion[2] (pc/h)	172
Base percent time-spent-following, BPTSF(%) $BPTSF=100(1-e^{-0.000879v_p})$	22.2
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	1.1
Percent time-spent-following, PTSF(%) $PTSF=BPTSF+f_{d/np}$	23.4

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	A
Volume to capacity ratio v/c $v/c=V_p/3{,}200$	0.10
Peak 15-min veh-miles of travel, VMT_{15} (veh- mi) $VMT_{15}=0.25L_t(V/PHF)$	141
Peak-hour vehicle-miles of travel, VMT_{60} (veh- mi) $VMT_{60}=V*L_t$	518
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}=VMT_{15}/ATS$	2.8

Notes

1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F. 2. If highest directional split v_p>= 1,700 pc/h, terminated anlysis-the LOS is F.

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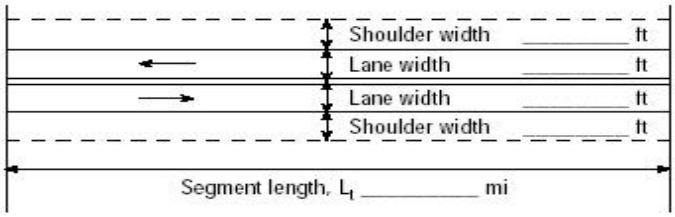
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		***Site Information***	
Analyst	S. QUICK	Highway	Panoche Rd
Agency or Company	URS	From/To	Panoche East of I-5 NB Ramps
Date Performed	6/28/2006	Jurisdiction	Fresno County
Analysis Time Period	Construction with SubSta PM	Analysis Year	2008

Input Data



☐ Class I highway ☑ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	290 veh/h
Directional split	60 / 40
Peak-hour factor, PHF	0.92
No-passing zone	0
% Trucks and Buses , P_T	15 %
% Recreational vehicles, P_R	4%
Access points/ mi	8

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f_{HV} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.905
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	348
v_p * highest directional split proportion[2] (pc/h)	209

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	55.0 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 $FFS=S_{FM}+0.00776(V_f/f_{HV})$	53.0 mi/h	Adj. for access points, f_A (Exhibit 20-6)	2.0 mi/h
		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	53.0 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) $ATS=FFS-0.00776v_p-f_{np}$	50.3

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} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.985
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	320
v_p * highest directional split proportion[2] (pc/h)	192
Base percent time-spent-following, BPTSF(%) $BPTSF=100(1-e^{-0.000879v_p})$	24.5
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	0.9
Percent time-spent-following, PTSF(%) $PTSF=BPTSF+f_{d/np}$	25.5

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	A
Volume to capacity ratio v/c $v/c=V_p/3{,}200$	0.11
Peak 15-min veh-miles of travel, VMT_{15} (veh- mi) $VMT_{15}=0.25L_t(V/PHF)$	158
Peak-hour vehicle-miles of travel, VMT_{60} (veh- mi) $VMT_{60}=V*L_t$	580
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}=VMT_{15}/ATS$	3.1

Notes

1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F. 2. If highest directional split v_p>= 1,700 pc/h, terminated anlysis-the LOS is F.

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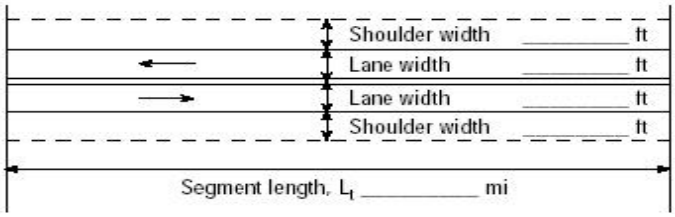
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	S. QUICK	Highway	Panoche Rd
Agency or Company	URS	From/To	Panoche East of Project Site
Date Performed	6/28/2006	Jurisdiction	Fresno County
Analysis Time Period	Construction with SubSta AM	Analysis Year	2008

Input Data



☐ Class I highway ☑ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	273 veh/h
Directional split	60 / 40
Peak-hour factor, PHF	0.92
No-passing zone	0
% Trucks and Buses , P_T	15 %
% Recreational vehicles, P_R	4%
Access points/ mi	8

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f_{HV} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.905
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	328
v_p * highest directional split proportion[2] (pc/h)	197

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	55.0 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 $FFS=S_{FM}+0.00776(V_f/f_{HV})$	53.0 mi/h	Adj. for access points, f_A (Exhibit 20-6)	2.0 mi/h
		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	53.0 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) $ATS=FFS-0.00776v_p-f_{np}$	50.5

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} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.985
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	301
v_p * highest directional split proportion[2] (pc/h)	181
Base percent time-spent-following, BPTSF(%) $BPTSF=100(1-e^{-0.000879v_p})$	23.2
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	1.0
Percent time-spent-following, PTSF(%) $PTSF=BPTSF+f_{d/np}$	24.3

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	A
Volume to capacity ratio v/c $v/c=V_p/3{,}200$	0.10
Peak 15-min veh-miles of travel, VMT_{15} (veh- mi) $VMT_{15}=0.25L_t(V/PHF)$	148
Peak-hour vehicle-miles of travel, VMT_{60} (veh- mi) $VMT_{60}=V*L_t$	546
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}=VMT_{15}/ATS$	2.9

Notes

1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F. 2. If highest directional split v_p>= 1,700 pc/h, terminated anlysis-the LOS is F.

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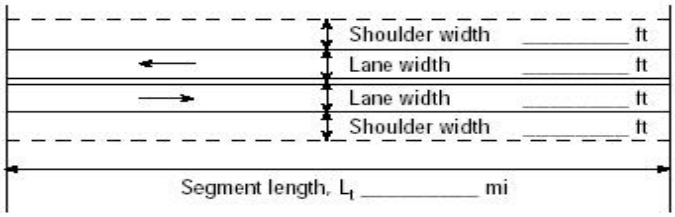
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	S. QUICK	Highway	Panoche Rd
Agency or Company	URS	From/To	Panoche East of Project Site
Date Performed	6/28/2006	Jurisdiction	Fresno County
Analysis Time Period	Construction with SubSta PM	Analysis Year	2008

Input Data



☐ Class I highway ☑ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	287 veh/h
Directional split	60 / 40
Peak-hour factor, PHF	0.92
No-passing zone	0
% Trucks and Buses , P_T	15 %
% Recreational vehicles, P_R	4%
Access points/ mi	8

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f_{HV} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.905
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	345
v_p * highest directional split proportion[2] (pc/h)	207

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	55.0 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 $FFS=S_{FM}+0.00776(V_f/f_{HV})$	53.0 mi/h	Adj. for access points, f_A (Exhibit 20-6)	2.0 mi/h
		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	53.0 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) $ATS=FFS-0.00776v_p-f_{np}$	50.3

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} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.985
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	317
v_p * highest directional split proportion[2] (pc/h)	190
Base percent time-spent-following, BPTSF(%) $BPTSF=100(1-e^{-0.000879v_p})$	24.3
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	1.0
Percent time-spent-following, PTSF(%) $PTSF=BPTSF+f_{d/np}$	25.3

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	A
Volume to capacity ratio v/c $v/c=V_p/3{,}200$	0.11
Peak 15-min veh-miles of travel, VMT_{15} (veh- mi) $VMT_{15}=0.25L_t(V/PHF)$	156
Peak-hour vehicle-miles of travel, VMT_{60} (veh- mi) $VMT_{60}=V*L_t$	574
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}=VMT_{15}/ATS$	3.1

Notes

1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F. 2. If highest directional split v_p>= 1,700 pc/h, terminated anlysis-the LOS is F.

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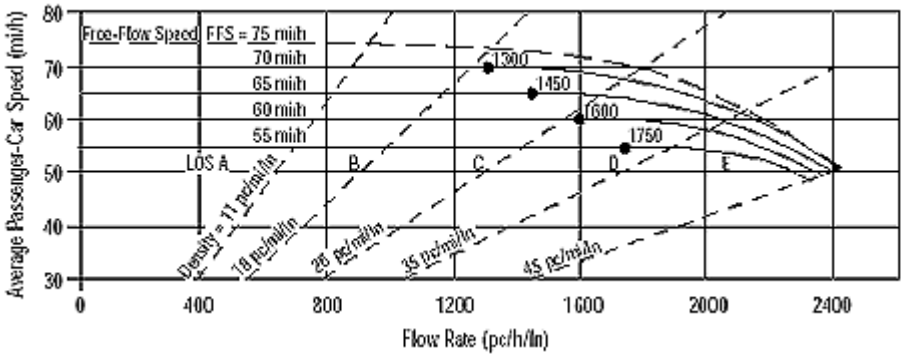
BASIC FREEWAY SEGMENTS WORKSHEET



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 / Site Information

Analyst	S. QUICK	Highway/Direction of Travel	I-5
Agency or Company	URS	From/To	Manning Ave to Russell Ave
Date Performed	6/28/2006	Jurisdiction	Fresno County
Analysis Time Period	No Build	Analysis Year	2009

Project Description Panoche Power Plant

☑ Oper.(LOS) ☐ Des.(N) ☑ Planning Data

Flow Inputs

Volume, V	2043 veh/h	Peak-Hour Factor, PHF	0.90
AADT	56135 veh/day	%Trucks and Buses, P_T	25
Peak-Hr Prop. of AADT, K	0.07	%RVs, P_R	0
Peak-Hr Direction Prop, D	52	General Terrain:	Level
DDHV = AADT x K x D	2043 veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.889

Speed Inputs / Calc Speed Adj and FFS

Lane Width	12.0	ft	f_{LW}		mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}		mi/h
Interchange Density	0.50	I/mi	f_{ID}		mi/h
Number of Lanes, N	2		f_N		mi/h
FFS (measured)	70.0	mi/h	FFS	70.0	mi/h
Base free-flow Speed, BFFS		mi/h			

LOS and Performance Measures / Design (N)

Operational (LOS)			Design (N)		
			Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1277	pc/h/ln	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	70.0	mi/h	S		mi/h
D = v_p / S	18.2	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	C		Required Number of Lanes, N		

Glossary / Factor Location

N - Number of lanes	S - Speed	E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
V - Hourly volume	D - Density	E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 23-12	f_N - Exhibit 23-6
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7
DDHV - Directional design hour volume			

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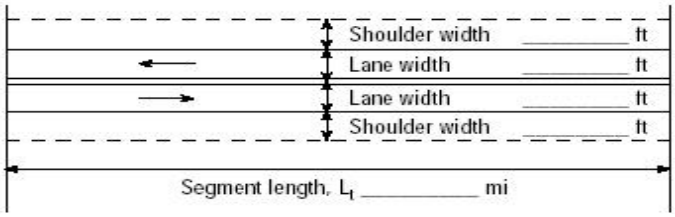
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	S. QUICK	Highway	Panoche Rd
Agency or Company	URS	From/To	Panoche East of I-5 NB Ramps
Date Performed	6/28/2006	Jurisdiction	Fresno County
Analysis Time Period	No Build AM	Analysis Year	2009

Input Data



☐ Class I highway ☑ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	45 veh/h
Directional split	60 / 40
Peak-hour factor, PHF	0.92
No-passing zone	0
% Trucks and Buses , P_T	15 %
% Recreational vehicles, P_R	4%
Access points/ mi	8

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f_{HV} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.905
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	54
v_p * highest directional split proportion[2] (pc/h)	32

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	55.0 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 $FFS=S_{FM}+0.00776(V_f/f_{HV})$	53.0 mi/h	Adj. for access points, f_A (Exhibit 20-6)	2.0 mi/h
		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	53.0 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) $ATS=FFS-0.00776v_p-f_{np}$	52.6

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} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.985
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	50
v_p * highest directional split proportion[2] (pc/h)	30
Base percent time-spent-following, BPTSF(%) $BPTSF=100(1-e^{-0.000879v_p})$	4.3
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	2.4
Percent time-spent-following, PTSF(%) $PTSF=BPTSF+f_{d/np}$	6.7

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	A
Volume to capacity ratio v/c $v/c=V_p/3{,}200$	0.02
Peak 15-min veh-miles of travel, VMT_{15} (veh- mi) $VMT_{15}=0.25L_t(V/PHF)$	24
Peak-hour vehicle-miles of travel, VMT_{60} (veh- mi) $VMT_{60}=V*L_t$	90
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}=VMT_{15}/ATS$	0.5

Notes

1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F. 2. If highest directional split v_p>= 1,700 pc/h, terminated anlysis-the LOS is F.

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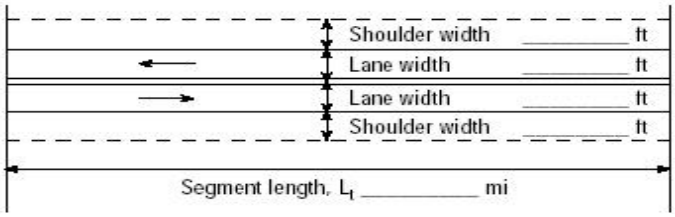
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	S. QUICK	Highway	Panoche Rd
Agency or Company	URS	From/To	Panoche East of I-5 NB Ramps
Date Performed	6/28/2006	Jurisdiction	Fresno County
Analysis Time Period	No Build PM	Analysis Year	2009

Input Data



☐ Class I highway ☑ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	80 veh/h
Directional split	60 / 40
Peak-hour factor, PHF	0.92
No-passing zone	0
% Trucks and Buses , P_T	15 %
% Recreational vehicles, P_R	4%
Access points/ mi	8

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f_{HV} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.905
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	96
v_p * highest directional split proportion[2] (pc/h)	58

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	55.0 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 $FFS=S_{FM}+0.00776(V_f/f_{HV})$	53.0 mi/h	Adj. for access points, f_A (Exhibit 20-6)	2.0 mi/h
		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	53.0 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) $ATS=FFS-0.00776v_p-f_{np}$	52.3

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} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.985
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	88
v_p * highest directional split proportion[2] (pc/h)	53
Base percent time-spent-following, BPTSF(%) $BPTSF=100(1-e^{-0.000879v_p})$	7.4
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	2.2
Percent time-spent-following, PTSF(%) $PTSF=BPTSF+f_{d/np}$	9.7

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	A
Volume to capacity ratio v/c $v/c=V_p/3{,}200$	0.03
Peak 15-min veh-miles of travel, VMT_{15} (veh- mi) $VMT_{15}=0.25L_t(V/PHF)$	43
Peak-hour vehicle-miles of travel, VMT_{60} (veh- mi) $VMT_{60}=V*L_t$	160
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}=VMT_{15}/ATS$	0.8

Notes

1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F. 2. If highest directional split v_p>= 1,700 pc/h, terminated anlysis-the LOS is F.

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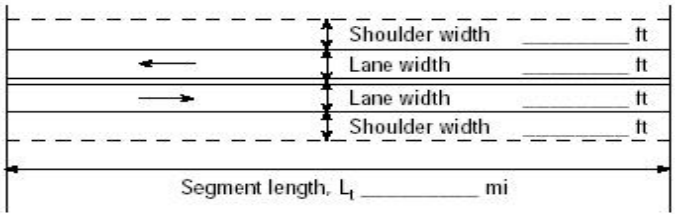
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	S. QUICK	Highway	Panoche Rd
Agency or Company	URS	From/To	Panoche East of Project Site
Date Performed	6/28/2006	Jurisdiction	Fresno County
Analysis Time Period	No Build AM	Analysis Year	2009

Input Data



☐ Class I highway ☑ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	57 veh/h
Directional split	60 / 40
Peak-hour factor, PHF	0.92
No-passing zone	0
% Trucks and Buses , P_T	15 %
% Recreational vehicles, P_R	4%
Access points/ mi	8

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f_{HV} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.905
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	68
v_p * highest directional split proportion[2] (pc/h)	41

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	55.0 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 $FFS=S_{FM}+0.00776(V_f/f_{HV})$	53.0 mi/h	Adj. for access points, f_A (Exhibit 20-6)	2.0 mi/h
		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	53.0 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) $ATS=FFS-0.00776v_p-f_{np}$	52.5

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} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.985
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	63
v_p * highest directional split proportion[2] (pc/h)	38
Base percent time-spent-following, BPTSF(%) $BPTSF=100(1-e^{-0.000879v_p})$	5.4
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	2.4
Percent time-spent-following, PTSF(%) $PTSF=BPTSF+f_{d/np}$	7.7

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	A
Volume to capacity ratio v/c $v/c=V_p/3{,}200$	0.02
Peak 15-min veh-miles of travel, VMT_{15} (veh- mi) $VMT_{15}=0.25L_t(V/PHF)$	31
Peak-hour vehicle-miles of travel, VMT_{60} (veh- mi) $VMT_{60}=V*L_t$	114
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}=VMT_{15}/ATS$	0.6

Notes

1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F. 2. If highest directional split v_p>= 1,700 pc/h, terminated anlysis-the LOS is F.

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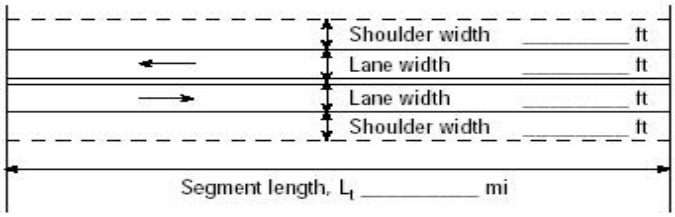
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	S. QUICK	Highway	Panoche Rd
Agency or Company	URS	From/To	Panoche East of Project Site
Date Performed	6/28/2006	Jurisdiction	Fresno County
Analysis Time Period	No Build PM	Analysis Year	2009

Input Data



☐ Class I highway ☑ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	75 veh/h
Directional split	60 / 40
Peak-hour factor, PHF	0.92
No-passing zone	0
% Trucks and Buses , P_T	15 %
% Recreational vehicles, P_R	4%
Access points/ mi	8

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f_{HV} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.905
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	90
v_p * highest directional split proportion[2] (pc/h)	54

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	55.0 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 $FFS=S_{FM}+0.00776(V_f/f_{HV})$	53.0 mi/h	Adj. for access points, f_A (Exhibit 20-6)	2.0 mi/h
		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	53.0 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) $ATS=FFS-0.00776v_p-f_{np}$	52.3

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} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.985
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	83
v_p * highest directional split proportion[2] (pc/h)	50
Base percent time-spent-following, BPTSF(%) $BPTSF=100(1-e^{-0.000879v_p})$	7.0
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	2.2
Percent time-spent-following, PTSF(%) $PTSF=BPTSF+f_{d/np}$	9.3

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	A
Volume to capacity ratio v/c $v/c=V_p/3{,}200$	0.03
Peak 15-min veh-miles of travel, VMT_{15} (veh- mi) $VMT_{15}=0.25L_t(V/PHF)$	41
Peak-hour vehicle-miles of travel, VMT_{60} (veh- mi) $VMT_{60}=V*L_t$	150
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}=VMT_{15}/ATS$	0.8

Notes

1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F. 2. If highest directional split v_p>= 1,700 pc/h, terminated anlysis-the LOS is F.

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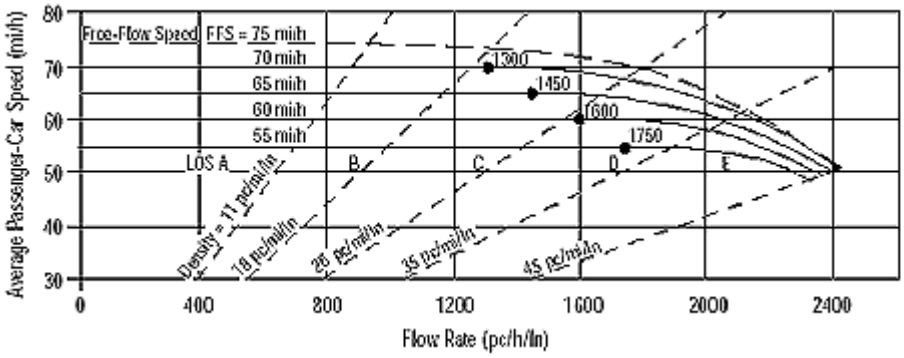
BASIC FREEWAY SEGMENTS WORKSHEET



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 / Site Information

Analyst	S. QUICK	Highway/Direction of Travel	I-5
Agency or Company	URS	From/To	Manning Ave to Russell Ave
Date Performed	6/28/2006	Jurisdiction	Fresno County
Analysis Time Period	Project Operations	Analysis Year	2009

Project Description Panoche Power Plant

☑ Oper.(LOS) ☐ Des.(N) ☑ Planning Data

Flow Inputs

Volume, V	2043 veh/h	Peak-Hour Factor, PHF	0.90
AADT	56135 veh/day	%Trucks and Buses, P_T	25
Peak-Hr Prop. of AADT, K	0.07	%RVs, P_R	0
Peak-Hr Direction Prop, D	52	General Terrain:	Level
DDHV = AADT x K x D	2043 veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.889

Speed Inputs / Calc Speed Adj and FFS

Lane Width	12.0	ft	f_{LW}		mi/h
Rt-Shoulder Lat. Clearance	6.0	ft	f_{LC}		mi/h
Interchange Density	0.50	I/mi	f_{ID}		mi/h
Number of Lanes, N	2		f_N		mi/h
FFS (measured)	70.0	mi/h	FFS	70.0	mi/h
Base free-flow Speed, BFFS		mi/h			

LOS and Performance Measures / Design (N)

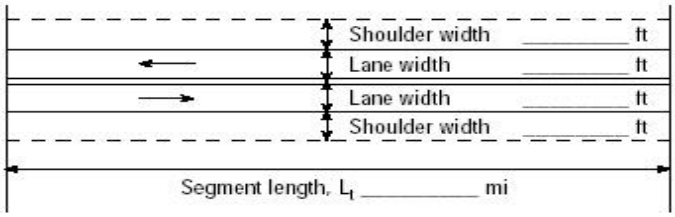
Operational (LOS)			Design (N)		
			Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1277	pc/h/ln	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S	70.0	mi/h	S		mi/h
D = v_p / S	18.2	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	C		Required Number of Lanes, N		

Glossary / Factor Location

TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	S. QUICK	Highway	Panoche Rd
Agency or Company	URS	From/To	Panoche East of I-5 NB Ramps
Date Performed	6/28/2006	Jurisdiction	Fresno County
Analysis Time Period	Operations AM	Analysis Year	2009

Input Data



☐ Class I highway ☑ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	46 veh/h
Directional split	60 / 40
Peak-hour factor, PHF	0.92
No-passing zone	0
% Trucks and Buses , P_T	15 %
% Recreational vehicles, P_R	4%
Access points/ mi	8

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f_{HV} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.905
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	55
v_p * highest directional split proportion[2] (pc/h)	33

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	55.0 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 $FFS=S_{FM}+0.00776(V_f/f_{HV})$	53.0 mi/h	Adj. for access points, f_A (Exhibit 20-6)	2.0 mi/h
		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	53.0 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) $ATS=FFS-0.00776v_p-f_{np}$	52.6

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} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.985
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	51
v_p * highest directional split proportion[2] (pc/h)	31
Base percent time-spent-following, BPTSF(%) $BPTSF=100(1-e^{-0.000879v_p})$	4.4
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	2.4
Percent time-spent-following, PTSF(%) $PTSF=BPTSF+f_{d/np}$	6.8

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	A
Volume to capacity ratio v/c $v/c=V_p/3{,}200$	0.02
Peak 15-min veh-miles of travel, VMT_{15} (veh- mi) $VMT_{15}=0.25L_t(V/PHF)$	25
Peak-hour vehicle-miles of travel, VMT_{60} (veh- mi) $VMT_{60}=V*L_t$	92
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}=VMT_{15}/ATS$	0.5

Notes

1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F. 2. If highest directional split v_p>= 1,700 pc/h, terminated anlysis-the LOS is F.

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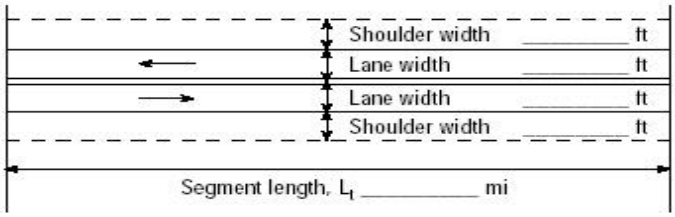
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	S. QUICK	Highway	Panoche Rd
Agency or Company	URS	From/To	Panoche East of I-5 NB Ramps
Date Performed	6/28/2006	Jurisdiction	Fresno County
Analysis Time Period	Operations PM	Analysis Year	2009

Input Data



☐ Class I highway ☑ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	82 veh/h
Directional split	60 / 40
Peak-hour factor, PHF	0.92
No-passing zone	0
% Trucks and Buses , P_T	15 %
% Recreational vehicles, P_R	4%
Access points/ mi	8

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f_{HV} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.905
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	98
v_p * highest directional split proportion[2] (pc/h)	59

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	55.0 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 $FFS=S_{FM}+0.00776(V_f/f_{HV})$	53.0 mi/h	Adj. for access points, f_A (Exhibit 20-6)	2.0 mi/h
		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	53.0 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) $ATS=FFS-0.00776v_p-f_{np}$	52.2

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} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.985
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	90
v_p * highest directional split proportion[2] (pc/h)	54
Base percent time-spent-following, BPTSF(%) $BPTSF=100(1-e^{-0.000879v_p})$	7.6
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	2.2
Percent time-spent-following, PTSF(%) $PTSF=BPTSF+f_{d/np}$	9.8

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	A
Volume to capacity ratio v/c $v/c=V_p/3{,}200$	0.03
Peak 15-min veh-miles of travel, VMT_{15} (veh- mi) $VMT_{15}=0.25L_t(V/PHF)$	45
Peak-hour vehicle-miles of travel, VMT_{60} (veh- mi) $VMT_{60}=V*L_t$	164
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}=VMT_{15}/ATS$	0.9

Notes

1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F. 2. If highest directional split v_p>= 1,700 pc/h, terminated anlysis-the LOS is F.

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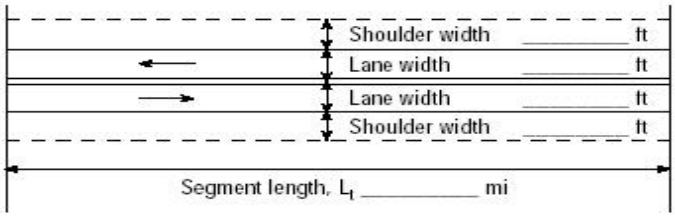
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	S. QUICK	Highway	Panoche Rd
Agency or Company	URS	From/To	Panoche East of Project Site
Date Performed	6/28/2006	Jurisdiction	Fresno County
Analysis Time Period	Operations AM	Analysis Year	2009

Input Data



☐ Class I highway ☑ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	72 veh/h
Directional split	60 / 40
Peak-hour factor, PHF	0.92
No-passing zone	0
% Trucks and Buses , P_T	15 %
% Recreational vehicles, P_R	4%
Access points/ mi	8

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f_{HV} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.905
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	86
v_p * highest directional split proportion[2] (pc/h)	52

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	55.0 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 $FFS=S_{FM}+0.00776(V_f/f_{HV})$	53.0 mi/h	Adj. for access points, f_A (Exhibit 20-6)	2.0 mi/h
		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	53.0 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) $ATS=FFS-0.00776v_p-f_{np}$	52.3

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} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.985
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	79
v_p * highest directional split proportion[2] (pc/h)	47
Base percent time-spent-following, BPTSF(%) $BPTSF=100(1-e^{-0.000879v_p})$	6.7
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	2.3
Percent time-spent-following, PTSF(%) $PTSF=BPTSF+f_{d/np}$	9.0

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	A
Volume to capacity ratio v/c $v/c=V_p/3{,}200$	0.03
Peak 15-min veh-miles of travel, VMT_{15} (veh- mi) $VMT_{15}=0.25L_t(V/PHF)$	39
Peak-hour vehicle-miles of travel, VMT_{60} (veh- mi) $VMT_{60}=V*L_t$	144
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}=VMT_{15}/ATS$	0.7

Notes

1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F. 2. If highest directional split v_p>= 1,700 pc/h, terminated anlysis-the LOS is F.

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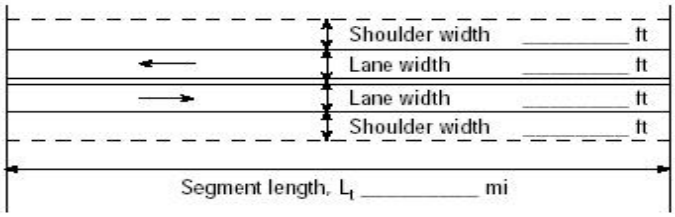
TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	S. QUICK	Highway	Panoche Rd
Agency or Company	URS	From/To	Panoche East of Project Site
Date Performed	6/28/2006	Jurisdiction	Fresno County
Analysis Time Period	Operations PM	Analysis Year	2009

Input Data



☐ Class I highway ☑ Class II highway

Terrain ☑ Level ☐ Rolling

Two-way hourly volume	91 veh/h
Directional split	60 / 40
Peak-hour factor, PHF	0.92
No-passing zone	0
% Trucks and Buses , P_T	15 %
% Recreational vehicles, P_R	4%
Access points/ mi	8

Average Travel Speed

Grade adjustment factor, f_G (Exhibit 20-7)	1.00
Passenger-car equivalents for trucks, E_T (Exhibit 20-9)	1.7
Passenger-car equivalents for RVs, E_R (Exhibit 20-9)	1.0
Heavy-vehicle adjustment factor, f_{HV} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.905
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	109
v_p * highest directional split proportion[2] (pc/h)	65

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field Measured speed, S_{FM}	mi/h	Base free-flow speed, $BFFS_{FM}$	55.0 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 $FFS=S_{FM}+0.00776(V_f/f_{HV})$	53.0 mi/h	Adj. for access points, f_A (Exhibit 20-6)	2.0 mi/h
		Free-flow speed, FFS $(FSS=BFFS-f_{LS}-f_A)$	53.0 mi/h

Adj. for no-passing zones, f_{np} (mi/h) (Exhibit 20-11)	0.0
Average travel speed, ATS (mi/h) $ATS=FFS-0.00776v_p-f_{np}$	52.2

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} $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.985
Two-way flow rate[1], v_p (pc/h) $v_p=V/(PHF * f_G * f_{HV})$	100
v_p * highest directional split proportion[2] (pc/h)	60
Base percent time-spent-following, BPTSF(%) $BPTSF=100(1-e^{-0.000879v_p})$	8.4
Adj. for directional distribution and no-passing zone, $f_{d/np}$(%)(Exh. 20-12)	2.2
Percent time-spent-following, PTSF(%) $PTSF=BPTSF+f_{d/np}$	10.6

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	A
Volume to capacity ratio v/c $v/c=V_p/3{,}200$	0.03
Peak 15-min veh-miles of travel, VMT_{15} (veh- mi) $VMT_{15}=0.25L_t(V/PHF)$	49
Peak-hour vehicle-miles of travel, VMT_{60} (veh- mi) $VMT_{60}=V*L_t$	182
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}=VMT_{15}/ATS$	0.9

Notes

1. If v_p >= 3,200 pc/h, terminate analysis-the LOS is F. 2. If highest directional split v_p>= 1,700 pc/h, terminated anlysis-the LOS is F.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Volume (veh/h)	64	18	0	0	17	12	56	0	13	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	70	20	0	0	18	13	61	0	14	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type								None		None	
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	32			20			184	190	20	198	184
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	32			20			184	190	20	198	184
tC, single (s)	4.2			4.2			7.2	6.6	6.4	7.2	6.6
tC, 2 stage (s)											
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1
p0 queue free %	95			100			92	100	99	100	100
cM capacity (veh/h)	1501			1516			723	650	1022	698	656

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	70	20	32	75
Volume Left	70	0	0	61
Volume Right	0	0	13	14
cSH	1501	1700	1700	765
Volume to Capacity	0.05	0.01	0.02	0.10
Queue Length 95th (ft)	4	0	0	8
Control Delay (s)	7.5	0.0	0.0	10.2
Lane LOS	A			B
Approach Delay (s)	5.9		0.0	10.2
Approach LOS				B

Intersection Summary			
Average Delay	6.6		
Intersection Capacity Utilization	23.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations											
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Volume (veh/h)	0	71	54	11	65	0	9	0	49	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	77	59	12	71	0	10	0	53	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type								None		None	
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	71			136			201	230	71	254	201
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	71			136			201	230	71	254	201
tC, single (s)	4.2			4.2			7.2	6.6	6.4	7.2	6.6
tC, 2 stage (s)											
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1
p0 queue free %	100			99			99	100	94	100	100
cM capacity (veh/h)	1451			1372			725	642	957	631	667

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	136	12	71	63
Volume Left	0	12	0	10
Volume Right	59	0	0	53
cSH	1700	1372	1700	912
Volume to Capacity	0.08	0.01	0.04	0.07
Queue Length 95th (ft)	0	1	0	6
Control Delay (s)	0.0	7.6	0.0	9.2
Lane LOS		A		A
Approach Delay (s)	0.0	1.1		9.2
Approach LOS				A

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	23.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Volume (veh/h)	94	28	0	0	40	14	113	0	14	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	102	30	0	0	43	15	123	0	15	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type								None		None	
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	59			30			286	293	30	301	286
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	59			30			286	293	30	301	286
tC, single (s)	4.2			4.2			7.2	6.6	6.4	7.2	6.6
tC, 2 stage (s)											
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1
p0 queue free %	93			100			80	100	98	100	100
cM capacity (veh/h)	1466			1502			607	555	1008	584	560

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	102	30	59	138
Volume Left	102	0	0	123
Volume Right	0	0	15	15
cSH	1466	1700	1700	635
Volume to Capacity	0.07	0.02	0.03	0.22
Queue Length 95th (ft)	6	0	0	21
Control Delay (s)	7.6	0.0	0.0	12.2
Lane LOS	A			B
Approach Delay (s)	5.9		0.0	12.2
Approach LOS				B

Intersection Summary			
Average Delay	7.5		
Intersection Capacity Utilization	27.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations											
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Volume (veh/h)	0	104	66	12	139	0	15	0	66	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	113	72	13	151	0	16	0	72	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type								None		None	
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	151			185			326	362	151	398	326
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	151			185			326	362	151	398	326
tC, single (s)	4.2			4.2			7.2	6.6	6.4	7.2	6.6
tC, 2 stage (s)											
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1
p0 queue free %	100			99			97	100	92	100	100
cM capacity (veh/h)	1354			1315			598	540	862	491	566

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	185	13	151	88
Volume Left	0	13	0	16
Volume Right	72	0	0	72
cSH	1700	1315	1700	797
Volume to Capacity	0.11	0.01	0.09	0.11
Queue Length 95th (ft)	0	1	0	9
Control Delay (s)	0.0	7.8	0.0	10.1
Lane LOS		A		B
Approach Delay (s)	0.0	0.6		10.1
Approach LOS				B

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	27.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Volume (veh/h)	68	19	0	0	18	13	59	0	14	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	74	21	0	0	20	14	64	0	15	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type								None		None	
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	34			21			195	202	21	210	195
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	34			21			195	202	21	210	195
tC, single (s)	4.2			4.2			7.2	6.6	6.4	7.2	6.6
tC, 2 stage (s)											
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1
p0 queue free %	95			100			91	100	99	100	100
cM capacity (veh/h)	1498			1515			709	638	1021	682	644

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	74	21	34	79
Volume Left	74	0	0	64
Volume Right	0	0	14	15
cSH	1498	1700	1700	753
Volume to Capacity	0.05	0.01	0.02	0.11
Queue Length 95th (ft)	4	0	0	9
Control Delay (s)	7.5	0.0	0.0	10.3
Lane LOS	A			B
Approach Delay (s)	5.9		0.0	10.3
Approach LOS				B

Intersection Summary			
Average Delay	6.6		
Intersection Capacity Utilization	24.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations											
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Volume (veh/h)	0	75	57	12	69	0	10	0	52	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	82	62	13	75	0	11	0	57	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type								None		None	
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	75			143			214	245	75	270	214
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	75			143			214	245	75	270	214
tC, single (s)	4.2			4.2			7.2	6.6	6.4	7.2	6.6
tC, 2 stage (s)											
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1
p0 queue free %	100			99			98	100	94	100	100
cM capacity (veh/h)	1446			1363			711	630	951	613	655

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	143	13	75	67
Volume Left	0	13	0	11
Volume Right	62	0	0	57
cSH	1700	1363	1700	902
Volume to Capacity	0.08	0.01	0.04	0.07
Queue Length 95th (ft)	0	1	0	6
Control Delay (s)	0.0	7.7	0.0	9.3
Lane LOS		A		A
Approach Delay (s)	0.0	1.1		9.3
Approach LOS				A

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	24.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Volume (veh/h)	100	30	0	0	42	15	120	0	15	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	109	33	0	0	46	16	130	0	16	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type								None		None	
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	62			33			304	312	33	320	304
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	62			33			304	312	33	320	304
tC, single (s)	4.2			4.2			7.2	6.6	6.4	7.2	6.6
tC, 2 stage (s)											
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1
p0 queue free %	93			100			78	100	98	100	100
cM capacity (veh/h)	1462			1499			588	539	1005	564	545

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	109	33	62	147
Volume Left	109	0	0	130
Volume Right	0	0	16	16
cSH	1462	1700	1700	617
Volume to Capacity	0.07	0.02	0.04	0.24
Queue Length 95th (ft)	6	0	0	23
Control Delay (s)	7.7	0.0	0.0	12.7
Lane LOS	A			B
Approach Delay (s)	5.9		0.0	12.7
Approach LOS				B

Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	28.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations											
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Volume (veh/h)	0	110	70	13	147	0	16	0	70	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	120	76	14	160	0	17	0	76	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type								None		None	
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	160			196			346	384	160	422	346
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	160			196			346	384	160	422	346
tC, single (s)	4.2			4.2			7.2	6.6	6.4	7.2	6.6
tC, 2 stage (s)											
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1
p0 queue free %	100			99			97	100	91	100	100
cM capacity (veh/h)	1344			1303			580	524	852	470	551

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	196	14	160	93
Volume Left	0	14	0	17
Volume Right	76	0	0	76
cSH	1700	1303	1700	784
Volume to Capacity	0.12	0.01	0.09	0.12
Queue Length 95th (ft)	0	1	0	10
Control Delay (s)	0.0	7.8	0.0	10.2
Lane LOS		A		B
Approach Delay (s)	0.0	0.6		10.2
Approach LOS				B

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	28.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Volume (veh/h)	68	120	0	0	18	15	59	0	114	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	74	130	0	0	20	16	64	0	124	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type								None		None	
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	36			130			306	314	130	430	306
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	36			130			306	314	130	430	306
tC, single (s)	4.2			4.2			7.2	6.6	6.4	7.2	6.6
tC, 2 stage (s)											
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1
p0 queue free %	95			100			89	100	86	100	100
cM capacity (veh/h)	1495			1378			598	552	886	425	558

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	74	130	36	188
Volume Left	74	0	0	64
Volume Right	0	0	16	124
cSH	1495	1700	1700	761
Volume to Capacity	0.05	0.08	0.02	0.25
Queue Length 95th (ft)	4	0	0	24
Control Delay (s)	7.5	0.0	0.0	11.3
Lane LOS	A			B
Approach Delay (s)	2.7		0.0	11.3
Approach LOS				B

Intersection Summary			
Average Delay	6.3		
Intersection Capacity Utilization	30.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations											
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Volume (veh/h)	0	75	57	14	69	0	110	0	52	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	82	62	15	75	0	120	0	57	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type								None		None	
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	75			143			218	249	75	274	218
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	75			143			218	249	75	274	218
tC, single (s)	4.2			4.2			7.2	6.6	6.4	7.2	6.6
tC, 2 stage (s)											
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1
p0 queue free %	100			99			83	100	94	100	100
cM capacity (veh/h)	1446			1363			705	625	951	608	651

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	143	15	75	176
Volume Left	0	15	0	120
Volume Right	62	0	0	57
cSH	1700	1363	1700	769
Volume to Capacity	0.08	0.01	0.04	0.23
Queue Length 95th (ft)	0	1	0	22
Control Delay (s)	0.0	7.7	0.0	11.1
Lane LOS		A		B
Approach Delay (s)	0.0	1.3		11.1
Approach LOS				B

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	30.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Volume (veh/h)	100	30	0	0	42	117	120	0	15	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	109	33	0	0	46	127	130	0	16	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type								None		None	
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	173			33			359	423	33	376	359
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	173			33			359	423	33	376	359
tC, single (s)	4.2			4.2			7.2	6.6	6.4	7.2	6.6
tC, 2 stage (s)											
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1
p0 queue free %	92			100			76	100	98	100	100
cM capacity (veh/h)	1329			1499			537	462	1005	515	502

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	109	33	173	147
Volume Left	109	0	0	130
Volume Right	0	0	127	16
cSH	1329	1700	1700	566
Volume to Capacity	0.08	0.02	0.10	0.26
Queue Length 95th (ft)	7	0	0	26
Control Delay (s)	7.9	0.0	0.0	13.6
Lane LOS	A			B
Approach Delay (s)	6.1		0.0	13.6
Approach LOS				B

Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	32.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations											
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Volume (veh/h)	0	110	70	114	147	0	16	0	70	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	120	76	124	160	0	17	0	76	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type								None		None	
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	160			196			565	603	160	641	565
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	160			196			565	603	160	641	565
tC, single (s)	4.2			4.2			7.2	6.6	6.4	7.2	6.6
tC, 2 stage (s)											
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1
p0 queue free %	100			90			95	100	91	100	100
cM capacity (veh/h)	1344			1303			386	358	852	312	377

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	196	124	160	93
Volume Left	0	124	0	17
Volume Right	76	0	0	76
cSH	1700	1303	1700	696
Volume to Capacity	0.12	0.10	0.09	0.13
Queue Length 95th (ft)	0	8	0	12
Control Delay (s)	0.0	8.1	0.0	11.0
Lane LOS		A		B
Approach Delay (s)	0.0	3.5		11.0
Approach LOS				B

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	32.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Volume (veh/h)	70	20	0	0	19	13	61	0	14	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	76	22	0	0	21	14	66	0	15	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type								None		None	
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	35			22			202	209	22	217	202
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	35			22			202	209	22	217	202
tC, single (s)	4.2			4.2			7.2	6.6	6.4	7.2	6.6
tC, 2 stage (s)											
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1
p0 queue free %	95			100			91	100	99	100	100
cM capacity (veh/h)	1496			1513			701	632	1019	675	638

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	76	22	35	82
Volume Left	76	0	0	66
Volume Right	0	0	14	15
cSH	1496	1700	1700	744
Volume to Capacity	0.05	0.01	0.02	0.11
Queue Length 95th (ft)	4	0	0	9
Control Delay (s)	7.5	0.0	0.0	10.4
Lane LOS	A			B
Approach Delay (s)	5.9		0.0	10.4
Approach LOS				B

Intersection Summary			
Average Delay	6.6		
Intersection Capacity Utilization	24.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations											
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Volume (veh/h)	0	77	59	12	71	0	10	0	53	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	84	64	13	77	0	11	0	58	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type								None		None	
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	77			148			219	251	77	277	219
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	77			148			219	251	77	277	219
tC, single (s)	4.2			4.2			7.2	6.6	6.4	7.2	6.6
tC, 2 stage (s)											
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1
p0 queue free %	100			99			98	100	94	100	100
cM capacity (veh/h)	1443			1358			705	624	949	606	651

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	148	13	77	68
Volume Left	0	13	0	11
Volume Right	64	0	0	58
cSH	1700	1358	1700	899
Volume to Capacity	0.09	0.01	0.05	0.08
Queue Length 95th (ft)	0	1	0	6
Control Delay (s)	0.0	7.7	0.0	9.3
Lane LOS		A		A
Approach Delay (s)	0.0	1.1		9.3
Approach LOS				A

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	24.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Volume (veh/h)	102	31	0	0	44	15	123	0	15	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	111	34	0	0	48	16	134	0	16	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type								None		None	
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	64			34			311	320	34	328	311
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	64			34			311	320	34	328	311
tC, single (s)	4.2			4.2			7.2	6.6	6.4	7.2	6.6
tC, 2 stage (s)											
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1
p0 queue free %	92			100			77	100	98	100	100
cM capacity (veh/h)	1459			1498			581	533	1004	557	538

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	111	34	64	150
Volume Left	111	0	0	134
Volume Right	0	0	16	16
cSH	1459	1700	1700	609
Volume to Capacity	0.08	0.02	0.04	0.25
Queue Length 95th (ft)	6	0	0	24
Control Delay (s)	7.7	0.0	0.0	12.8
Lane LOS	A			B
Approach Delay (s)	5.9		0.0	12.8
Approach LOS				B

Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	29.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations											
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Volume (veh/h)	0	113	72	13	152	0	16	0	72	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	123	78	14	165	0	17	0	78	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type								None		None	
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	165			201			355	395	165	434	355
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	165			201			355	395	165	434	355
tC, single (s)	4.2			4.2			7.2	6.6	6.4	7.2	6.6
tC, 2 stage (s)											
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1
p0 queue free %	100			99			97	100	91	100	100
cM capacity (veh/h)	1338			1297			571	517	846	460	544

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	201	14	165	96
Volume Left	0	14	0	17
Volume Right	78	0	0	78
cSH	1700	1297	1700	778
Volume to Capacity	0.12	0.01	0.10	0.12
Queue Length 95th (ft)	0	1	0	10
Control Delay (s)	0.0	7.8	0.0	10.3
Lane LOS		A		B
Approach Delay (s)	0.0	0.6		10.3
Approach LOS				B

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	29.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Volume (veh/h)	70	20	0	0	19	13	61	0	14	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	76	22	0	0	21	14	66	0	15	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type								None		None	
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	35			22			202	209	22	217	202
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	35			22			202	209	22	217	202
tC, single (s)	4.2			4.2			7.2	6.6	6.4	7.2	6.6
tC, 2 stage (s)											
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1
p0 queue free %	95			100			91	100	99	100	100
cM capacity (veh/h)	1496			1513			701	632	1019	675	638

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	76	22	35	82
Volume Left	76	0	0	66
Volume Right	0	0	14	15
cSH	1496	1700	1700	744
Volume to Capacity	0.05	0.01	0.02	0.11
Queue Length 95th (ft)	4	0	0	9
Control Delay (s)	7.5	0.0	0.0	10.4
Lane LOS	A			B
Approach Delay (s)	5.9		0.0	10.4
Approach LOS				B

Intersection Summary			
Average Delay	6.6		
Intersection Capacity Utilization	24.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations											
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Volume (veh/h)	0	77	59	12	71	0	10	0	53	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	84	64	13	77	0	11	0	58	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type								None		None	
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	77			148			219	251	77	277	219
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	77			148			219	251	77	277	219
tC, single (s)	4.2			4.2			7.2	6.6	6.4	7.2	6.6
tC, 2 stage (s)											
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1
p0 queue free %	100			99			98	100	94	100	100
cM capacity (veh/h)	1443			1358			705	624	949	606	651

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	148	13	77	68
Volume Left	0	13	0	11
Volume Right	64	0	0	58
cSH	1700	1358	1700	899
Volume to Capacity	0.09	0.01	0.05	0.08
Queue Length 95th (ft)	0	1	0	6
Control Delay (s)	0.0	7.7	0.0	9.3
Lane LOS		A		A
Approach Delay (s)	0.0	1.1		9.3
Approach LOS				A

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	24.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Volume (veh/h)	102	31	0	0	44	15	123	0	15	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	111	34	0	0	48	16	134	0	16	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type								None		None	
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	64			34			311	320	34	328	311
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	64			34			311	320	34	328	311
tC, single (s)	4.2			4.2			7.2	6.6	6.4	7.2	6.6
tC, 2 stage (s)											
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1
p0 queue free %	92			100			77	100	98	100	100
cM capacity (veh/h)	1459			1498			581	533	1004	557	538

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	111	34	64	150
Volume Left	111	0	0	134
Volume Right	0	0	16	16
cSH	1459	1700	1700	609
Volume to Capacity	0.08	0.02	0.04	0.25
Queue Length 95th (ft)	6	0	0	24
Control Delay (s)	7.7	0.0	0.0	12.8
Lane LOS	A			B
Approach Delay (s)	5.9		0.0	12.8
Approach LOS				B

Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	29.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations											
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Volume (veh/h)	0	113	72	13	152	0	16	0	72	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	123	78	14	165	0	17	0	78	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type								None		None	
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	165			201			355	395	165	434	355
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	165			201			355	395	165	434	355
tC, single (s)	4.2			4.2			7.2	6.6	6.4	7.2	6.6
tC, 2 stage (s)											
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1
p0 queue free %	100			99			97	100	91	100	100
cM capacity (veh/h)	1338			1297			571	517	846	460	544

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	201	14	165	96
Volume Left	0	14	0	17
Volume Right	78	0	0	78
cSH	1700	1297	1700	778
Volume to Capacity	0.12	0.01	0.10	0.12
Queue Length 95th (ft)	0	1	0	10
Control Delay (s)	0.0	7.8	0.0	10.3
Lane LOS		A		B
Approach Delay (s)	0.0	0.6		10.3
Approach LOS				B

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	29.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Volume (veh/h)	68	124	0	0	18	15	59	0	120	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	74	135	0	0	20	16	64	0	130	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type								None		None	
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	36			135			310	318	135	441	310
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	36			135			310	318	135	441	310
tC, single (s)	4.2			4.2			7.2	6.6	6.4	7.2	6.6
tC, 2 stage (s)											
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1
p0 queue free %	95			100			89	100	85	100	100
cM capacity (veh/h)	1495			1373			594	549	881	414	555

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	74	135	36	195
Volume Left	74	0	0	64
Volume Right	0	0	16	130
cSH	1495	1700	1700	760
Volume to Capacity	0.05	0.08	0.02	0.26
Queue Length 95th (ft)	4	0	0	25
Control Delay (s)	7.5	0.0	0.0	11.4
Lane LOS	A			B
Approach Delay (s)	2.7		0.0	11.4
Approach LOS				B

Intersection Summary			
Average Delay	6.3		
Intersection Capacity Utilization	30.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations											
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Volume (veh/h)	0	75	57	14	69	0	114	0	52	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	82	62	15	75	0	124	0	57	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type								None		None	
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	75			143			218	249	75	274	218
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	75			143			218	249	75	274	218
tC, single (s)	4.2			4.2			7.2	6.6	6.4	7.2	6.6
tC, 2 stage (s)											
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1
p0 queue free %	100			99			82	100	94	100	100
cM capacity (veh/h)	1446			1363			705	625	951	608	651

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	143	15	75	180
Volume Left	0	15	0	124
Volume Right	62	0	0	57
cSH	1700	1363	1700	768
Volume to Capacity	0.08	0.01	0.04	0.24
Queue Length 95th (ft)	0	1	0	23
Control Delay (s)	0.0	7.7	0.0	11.1
Lane LOS		A		B
Approach Delay (s)	0.0	1.3		11.1
Approach LOS				B

Intersection Summary			
Average Delay	5.1		
Intersection Capacity Utilization	30.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Volume (veh/h)	100	30	0	0	42	121	120	0	15	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	109	33	0	0	46	132	130	0	16	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type								None		None	
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	177			33			361	427	33	378	361
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	177			33			361	427	33	378	361
tC, single (s)	4.2			4.2			7.2	6.6	6.4	7.2	6.6
tC, 2 stage (s)											
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1
p0 queue free %	92			100			76	100	98	100	100
cM capacity (veh/h)	1324			1499			535	459	1005	513	501

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	109	33	177	147
Volume Left	109	0	0	130
Volume Right	0	0	132	16
cSH	1324	1700	1700	564
Volume to Capacity	0.08	0.02	0.10	0.26
Queue Length 95th (ft)	7	0	0	26
Control Delay (s)	8.0	0.0	0.0	13.6
Lane LOS	A			B
Approach Delay (s)	6.1		0.0	13.6
Approach LOS				B

Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	32.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations											
Sign Control		Free			Free			Stop		Stop	
Grade		0%			0%			0%		0%	
Volume (veh/h)	0	110	70	120	147	0	16	0	70	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	120	76	130	160	0	17	0	76	0	0
Pedestrians											
Lane Width (ft)											
Walking Speed (ft/s)											
Percent Blockage											
Right turn flare (veh)											
Median type								None		None	
Median storage veh)											
Upstream signal (ft)											
pX, platoon unblocked											
vC, conflicting volume	160			196			578	616	160	654	578
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	160			196			578	616	160	654	578
tC, single (s)	4.2			4.2			7.2	6.6	6.4	7.2	6.6
tC, 2 stage (s)											
tF (s)	2.3			2.3			3.6	4.1	3.4	3.6	4.1
p0 queue free %	100			90			95	100	91	100	100
cM capacity (veh/h)	1344			1303			377	350	852	305	368

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	196	130	160	93
Volume Left	0	130	0	17
Volume Right	76	0	0	76
cSH	1700	1303	1700	690
Volume to Capacity	0.12	0.10	0.09	0.14
Queue Length 95th (ft)	0	8	0	12
Control Delay (s)	0.0	8.1	0.0	11.0
Lane LOS		A		B
Approach Delay (s)	0.0	3.6		11.0
Approach LOS				B

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	32.8%	ICU Level of Service	A
Analysis Period (min)	15		