APPENDIX K

EXISTING TRAFFIC CONDITIONS FREEWAY RAMP
LEVEL OF SERVICE CALCULATION WORKSHEETS —
CALTRANS FACILITIES ANALYSIS (HCM
METHODOLOGY)

APPENDIX K-I

EXISTING TRAFFIC CONDITIONS – CALTRANS FREEWAY RAMP ANALYSIS (HCM METHODOLOGY)

MERGE/DIVERGE ANALYSIS

		RAMP	S AND	RAMI	P JUN	CTIONS	S W	ORKS	HE	ET		
General	Informati					Site In:				····		· · · · · · · · · · · · · · · · · · ·
Analyst2 Agency or Co Date Perform Analysis Time	ompany ned	ZS LLG Engi 07/14/10 AM Peak	Hour	√B On-Ra	Ju Ju Ai	reeway/Dir of inction irisdiction nalysis Yea	of Tra		I- C	5 NB n-Ramp altrans D xisting 20		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Inputs		, , , , , , , , , , , , , , , , , , ,		10 011 110	amp acrea	tona					· · · · · · · · · · · · · · · · · · ·	
Upstream Ad	j Ramp	Terrain Leve									Downstrea	m Adj Ramp
₹ Yes	™ On										₩ Yes	□ On
∏ No	l™ Off										Mo L _{down} =	I⊞ Off ft
L _{up} =	1400 ft		2 70	0h				05.0				
*******	230 veh/h			Sketch (es, L _A , L _D ,V	111	35.0 mj	on		VD =	veh/h
Convers	ion to pc	/h Under	Base	Condi	tions							
(pc/h)	V (Veh/hr)	PHF	Ten		Truck	%Rv		f _{HV}	,	f _p	v=V/PHF f	_{⊣V} f _p
Freeway	4710	0.90	Lev		9	0	+	957		1.00	5469	
Ramp UpStream	200 230	0.90	Lev	_	9	0		957		1.00	232	
DownStream		0.80	Lev	eı	9	0	U.	957	<u>-</u>	1.00	267	
	<u> </u>	Merge Areas					<u> </u>		Dive	rge Area	S	· · · · · · · · · · · · · · · · · · ·
Estimation	on of v ₁₂					Estima	tion	of v.	12			
	ation 25-2 or 2 using Equatio	•)			L _{EQ} = (Ed P _{FD} = us V ₁₂ = pc/	ing Ed	n 25-8 o		V _R + (V _F	- V _R)P _{FD}	
Capacity	Checks					Capaci	ity C	heck	s			
	Actua	l Max	imum	LOS	S F?			Actu	al	Ma	ximum	LOS F?
V_{FO}	5701	See Evi	nibit 25-7	No	•	V _{F1} =V ₁	F			See Ex	hibit 25-14	
*F0	3701	Jee LA	11UIC 20-1	IN	0	V ₁₂				44	00:All	
V _{R12}	2136	460	0:All	No	0	V _{FO} = V _F V _R	-				hibit 25-14	
			_		****	V _R					chibit 25-3	
	Service L		······································		<u>5) </u>	Level c					nation (if	not F)
• • • • • • • • • • • • • • • • • • • •	5.475 + 0.0073	34 v _R + 0.007	8 V ₁₂ - 0.6)0627 L _A				••	52+().0086 V.	₁₂ - 0.009 L _D	
••	9 (pc/ m/ln)					''	(pc/ m	•				
`	Exhibit 25-4)		<u> </u>				•	it 25-4)				
	stimation			<u> </u>		Speed						
•	19 (Exibit 25-	•				D _s =	•	bit 25-19	•			
• • • • • • • • • • • • • • • • • • • •	1 mph (Exhibi	•				• `		Exhibit 2				
•	4 mph (Exhibi	•				ľ	•	(Exhibit		-		
S= 63.7	7 mph (Exhibi	t 25-14)				S = 1	mph (Exhibit 2	(5-15)	1		

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		RAMP	S AND	RAMI	JUN	CTIONS	WOF	RKSHE	ET		
General l	Informati	on				Site In	forma	tion			
Analyst2 Agency or Co Date Performe Analysis Time Proiect Descri	ed	ZS LLG Engi 07/14/10 PM Peak disting (Year)	Hour	B On-Ra	Ju Ju Ar	eeway/Dir onction risdiction nalysis Year tella		0	5 NB n-Ramp altrans D xisting 2		
Inputs									<u>"</u>		
Upstream Adj	Ramp	Terrain Leve								Downstrear	n Adj Ramp
☑ Yes	I On									Yes No	On Off
™ No	I™ Off							•		L _{down} =	ft
L _{up} ==	1400 ft										
	320 veh/h			Sketch (:		s, L _A , L _D ,V	S _{FR} = 35 ' _R ,V _t)	5.0 mph		VD =	veh/h
Convers	ion to pc	h Under	Base (Condi	tions						
(pc/h)	V (Veh/hr)	PHF	Terra		Truck	%Rv	f _{HV}		f _p	v=V/PHF f _H	IV ^f p
Freeway	7230 280	0.90 0.90	Leve Leve		9	0	0.95 0.95		1.00 1.00	8395 325	
Ramp UpStream	320	0.90	Leve		9	0	0.95		1.00	372	
DownStream		0.00	2010		<u></u>	<u> </u>	0.00		1.00	1	
		Merge Areas	3						rge Area	as	
Estimatio	on of v ₁₂					Estima	ition c	of v ₁₂			
	ation 25-2 or 2 using Equatio					L _{EQ} = (Eo P _{FD} = us V ₁₂ = pc/	sing Equa	5-8 or 25-9		·-V _R)P _{FD}	
Capacity	Checks		·			Capaci	ity Ch	ecks			
	Actua	l Max	imum	LOS	SF?			Actual	Ma	aximum	LOS F?
V_{FO}	8720	See Ex	hibit 25-7	N	0	V _{Fi} =V	F		┡——	xhibit 25-14 400:All	
V _{R12}	3150	460	0:Ail	N	0	V_{12} $V_{FO} = V_{F}$ V_{R}	-			xhibit 25-14	
KIZ						V _R			See E	xhibit 25-3	
Level of	Service L)etermin	ation (i	f not i	F)	Level o	of Ser	vice De	term	ination (il	not F)
$D_{R} = 6$	5.475 + 0.0073	34 v _R + $\overline{0.00}$	78 V ₁₂ - 0.0	0627 L _A]	D_R	= 4.252 +	0.0086 \	/ ₁₂ - 0.009 L _D	•
O _R = 26.	8 (pc/ m/ln)					D _R =	(pc/ m/ln)			
LOS = C (Exhibit 25-4)					LOS=	(Exhibit 2	25-4)			
Speed F	stimation					Speed	Estin	nation			
opecu C						D _s =	(Exhibit	25-19)			
	77 (Exibit 25	-19)				ļ ~					
M _S = 0.3	77 (Exibit 25 4 mph (Exhib	•	•			i -	mph (Ex	chibit 25-19)		
$M_S = 0.3$ $S_R = 59.$	•	it 25-19)				S _R =		chibit 25-19 xhibit 25-19	_		

		RAM	PS AN	D RAMP	JUNC	TIONS W	/OR	KSHEE	Т			
General Inf	ormation			Sit	te Infor							
Analyst		ZS			Fre	eway/Dir	of	Travel	I-5 S	В		
Agency or C	• •	LLG Eng		1	Jui	nction				Ramp at		a
Date Perforr		07/14/10			Ju	isdiction			Caltr	ans D12	2	
Analysis Tin						alysis Ye			Exist	ing 200	8	
Project Des	ription AM	l Existing (ear 20	008) I-5 S	SB Off-F	Ramp at I	Cate	lla				
Inputs		I									•••	
Upstream A		Terrain Le	evel								wnstrea mp	am Adj
▼ Yes	On										Yes	∭ On
I≣ No I	☑ Off									K	No	™ Off
L _{up} = 1	130 ft			70.0	_			05.0	1.	L _d	own =	ft
l lVu≂ 4	50 veh/h	. 5		70.0 mph				= 35.0 (npn	V) =	veh/h
					now iar	nes, L _A , L	D, V	₹, V _f)				_
Conversion		der Base (Conditi	ons		T .						
(pc/h)	(Veh/hr)	PHF	Те	rrain	Truck	%Rv		f _{HV}	f _p	4.	V/PHF / ^f p	
Freeway	5590	0.90	Le	vel	9	0	0.	.957	1.00)	6491	
Ramp	540	0.90	Le	vel	9	0	0.	957	1.00)	627	
UpStream	450	0.90	Le	vel	9	0	0.	957	1.00)	523	
DownStream	n											
	Me	erge Areas				·			Diverge	Areas		······································
Estimation	of v ₁₂					Estimati	ion	of v ₁₂			•	
		= V _E (P _{EM})				1			= V _D 4	· (V _F - V	S)Pes	
L _{EQ} = (Equ						L _{EO} = (E	aus	•		•	K/ FD	
F		20-0)										
P _{FM} = using	Equation					$P_{FD} = 0.2$			=quatio	กับ		
V ₁₂ = pc/h						V ₁₂ = 1899 pc/h						
Capacity C			······			Capacit	y Cl					
	Actual	Maxin	num	LOS	F?	·		Actua		Maximu	m	LOS F?
\/		See Exh	ibit 25-			V _{FI} =V _F	:	5518		9600		No
V _{FO}		7				V ₁₂		1899		4400:Al	l l	No
V _{R12}		4600	:All			$V_{FO} = V_{FO}$	- -	4891		9600		No
R12				÷	ľ	V _R		627		3800		No
Level of Se	vice Detern	nination (i	f not F	<u> </u>	1	Level of	Se		termin		not F)	
	+ 0.00734 \	L					86 V ₁₂ -		-n			
1 ``	mi /ln)	K	12		^	D _R =		(pc/ mi /		12		D
LOS = (Ex	nibit 25-4)					LOS=	A (I	Exhibit 2	5-4)			
Speed Estir	nation					Speed E	stir	nation			*	
	bit 25-19)					 		84 (Exhi	bit 25-1	9)		
1	n (Exhibit 25	-19)				S _R = 56.4 mph (Exhibit 25-19)						
	ı (Exhibit 25 ı (Exhibit 25	-				S ₀ = 73.6 mph (Exhibit 25-19)						
	n (Exhibit 25 n (Exhibit 25	•				_ ·						
[- mp	ı. (⊏XIIIDIL 20	-14)			niversity of	S = 66.6 mph (Exhibit 25-15)						Versi

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	· · · · · · · · · · · · · · · · · · ·	RAM	PS AN	D RAMP	JUNC	TIONS W	ORKSHI	EET				
General Infor	mation			Sit	e Inform	nation						
Analyst		ZS			Fre	eway/Dir	of Trave	I I-	5 SB			
Agency or Co	mpany	LLG Eng	ineers		Jun	ction				p at Kate	lla	
Date Performe	ed	07/14/10			Jur	isdiction		C	altrans	D12		
Analysis Time		PM Peak				alysis Yea		E	xisting	2008		
Project Descri	iption PM	Existing (ear 20	008) I-5 S	SB Off-F	Ramp at k	Catella		<u></u>			
Inputs												
Upstream Adj	·	Terrain Le	vel							Downstr Ramp	eam Adj	
Yes 🗔	On									I≣ Yes	I≣ On	
I≣ No 🗵	Off									I No	I≣ Off	
L _{up} = 11	30 ft	S	= -	70.0 mph		S	_{FR} = 35	0 mpl		L _{down} =	ft	
Vu = 44	0 veh/h		• •					.op.	•	VD =	veh/h	
		D <i>(</i>			IIUW Iaii	lanes, L _A , L _D ,V _R ,V _f)						
Conversion t		ier Base (onaiti	ons	,				<u></u>	v=V/PHI	-	
(pc/h)	V (Veh/hr)	PHF	Те	rrain	Truck	%Rv	f _{HV}		f _p			
Freeway	6930	0.90	Le	vel	9	0	0.957		1.00	8047		
Ramp	200	0.90	Le	vel	9	0	0.957		1.00	232		
UpStream	440	0.90	Le	vel	9	0	0.957		1.00	511		
DownStream		·									·	
	M∈	erge Areas							erge Are	as		
Estimation o	f v ₁₂					Estimati	ion of v ₁₂	2				
	V ₁₂ :	= V _F (P _{FM})				$V_{12} = V_R + (V_F - V_R)P_{FD}$						
L _{EQ} = (Equat						L = (E	quation 2		'`			
		20 0)					260 usir			1		
P _{FM} = using E	quation					1 ' -		ig Equ		,		
V ₁₂ = pc/h						1	46 pc/h	_				
Capacity Ch		1		100	F0 [Capacit	y Checks		May	dinas (ma	LOS E2	
	Actual	Maxin		LOS	Γ!	11 -11		tual		cimum	LOS F?	
V _{FO}		See Exh	ibit 25-		Į.	V _{FI} =V _F				500	No	
- 1-0		7				V ₁₂	18	46	440	00:All	No	
V _{R12}		4600	:Ali			$V_{FO} = V_{I}$ V_{R}	62	06	96	600	No	
- K12					ŀ	V _R	23	32	38	00	No	
Level of Serv	ice Deterr	nination (i	f not F)	`	Level of	Service	Detei	rminatio	n (if not l	5)	
D _R = 5.475					L _A		$D_R = 4$.	252 +	0.0086	V ₁₂ - 0.00	9 L _D	
.,	ni /ln)	r,	14		~	$D_R = 1.2 \text{ (pc/ mi /ln)}$						
LOS = (Exhi	bit 25-4)					LOS= A (Exhibit 25-4)						
Speed Estim	ation					Speed Estimation						
	it 25-19)					D _s = 0.449 (Exhibit 25-19)						
	(Exhibit 25	i-19)				S _R = 57.4 mph (Exhibit 25-19)						
B	(Exhibit 25	-				S ₀ = 71.7 mph (Exhibit 25-19)						
	(Exhibit 25	•										
inpi	(EXHIBIT ZO	1 1)				S = 67.0 mph (Exhibit 25-15)						

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		RAMP	S AND	RAMI	P JUN	CTIONS	WO!	RKSHE	ET	-		
General	Informati	ion				Site Int	forma	ition				
Analyst2 Agency or Co Date Perform Analysis Tim	ed e Period	ZS LLG Engi 07/14/10 AM Peak	Hour		Ju Ju Ar	eeway/Dir onction risdiction ralysis Year	r	E C	R-57 NB B On-Ra altrans D xisting 2	imp at Katella)12		
	ription AME	xisting (Year :	2008) SR-	57 NB EE	On-Ram	p at Katella	1					
Inputs												
Upstream Ad	j Ramp	Terrain Leve	el							Downstrea	m Adj Ramp	
□ Yes	□ On			a.						✓ Yes	☑ On	
⊠ No	I≣ Off									■ No	₩ Off 1090 ft	
L _{up} =	ft		2 - 70	0 mnh			` 21	F 0	•	L _{down} =		
Vu =	veh/h			Sketch (es, L _A , L _D ,V	, , ,	5.0 mph		Vp =	150 veh/h	
Convers	ion to pc.	/h Under	Base	Condi	tions	s						
(pc/h)	V (Veh/hr)	PHF	Ter		Truck	%Rv	f _H		fp	v=V/PHF f	_{tV} f _p	
Freeway	4010	0.87	Lev		6	0	0.97		1.00			
Ramp UpStream	300	0.87	Lev	el	6	0	0.97	1	1.00			
DownStream	150	0.87	Lev	rel .	6	0	0.97	1	1.00	178		
	1	Merge Areas		O.			0.01		rge Area			
Estimati	on of v ₁₂					Estima	tion o					
L _{EQ} = (Equ P _{FM} = 0.333 V ₁₂ = 1579	ation 25-2 or 2 using Equatio	•					quation 2	V ₁₂ = \ 25-8 or 25-9		- V _R)P _{FD}		
Capacity	Checks					Capaci		ecks				
	Actua	ıl Max	imum	LOS	6 F?		1	Actual	Ma	ximum	LOS F?	
						V _{FI} =V _F			See Ex	hibit 25-14		
V _{FO}	5102	See Ex	nibit 25-7	No	0	V ₁₂				IOO:AII		
V _{R12}	1934	460	0:All	No)	$V_{FO} = V_{F}$ V_{R} V_{R}	-			chibit 25-14		
l evel of	Level of Service Determination (if not F)							vice De	<u> </u>	xhibit 25-3 nation (it	rot El	
	/	Level O				₁₂ - 0.009 L _D	not r)					
• • • • • • • • • • • • • • • • • • • •	5.475 + 0.0073 3 (pc/ m/ln)	7+ • R · 0.001	0 V ₁₂ - 0.	30021 L _A		D = 1	• • • • • • • • • • • • • • • • • • • •		J.0000 ¥	12 - 0.003 L _D		
1	Exhibit 25-4)					l "'	pc/ m/ln Exhibit 2	=				
Speed E.	stimation					Speed Estimation					<u> </u>	
M _S = 0.3	13 (Exibit 25-		D _s = (Exhibit 25-19)									
S _R = 61.	2 mph (Exhibi		S _R = mph (Exhibit 25-19)									
	1 mph (Exhibi	•				S ₀ = mph (Exhibit 25-19)						
S= 64.:	2 mph (Exhibi	t 25-14)				S = mph (Exhibit 25-15)						

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		RAMP	S AND	RAM	P JUN	CTIONS	S W	ORKS	SHE	ET		
General	Informati					Site In						
Analyst2 Agency or Co Date Perform Analysis Tim	ompany ned e Period	ZS LLG Engi 07/14/10 PM Peak	Hour	57 AID E	Ji Ji Ai	reeway/Dir Inction Irisdiction nalysis Yea	of Tra		S	R-57 NB B On-Ra altrans D xisting 2	ımp at Katella)12	
nputs	ription PM E	xisitiy (Tea:	2000) SK-	O/ IND EE	o On-Ran	ip at Natelia	1					
Upstream Ad	j Ramp	Terrain Leve	el								Downstrea	m Adj Ramp
☐ Yes	□ On										☑ Yes	⊠ On
▼ No	ि Off										l No L _{down} =	™ Off 1090 ft
_ _{up} =	ft										GOWIL	
Vu =	veh/h		S: _{FF} = 70		show lane	es, L _A , L _D ,V		35.0 m	ph		VD =	240 veh/h
Convers	ion to pc	/h Under	Base	Condi	tions							
(pc/h)	(Veh/hr)	PHF 0.87	Ten Lev		Truck	%Rv		f _{HV}		f _p	v=V/PHF f _t	_{IV} f _p
Freeway Ramp	7230 450	6	0		971		1.00	8560				
UpStream	400	0.87	Lev	C I	0	0	U.	971	<u> </u>	1.00	533	······································
DownStream	240	0.87	Lev	el	6	0	0.	971		1.00	284	
		Merge Areas			•				Dive	rge Area		
Estimati	on of v ₁₂					Estima	tior	of v	12			
	ation 25-2 or 2 using Equatio	•)			L _{EQ} = (Ed P _{FD} = us V ₁₂ = pc/	ing E				- V _R)P _{FD}	
Capacity	Checks					Capaci	ty (heck	S			
	Actua	ıl Max	imum	LOS	SF?			Actu	al	Ма	aximum	LOS F?
V_{FO}	9093	See Ex	hibit 25-7	N	0	V _{FI} =V _I	F				chibit 25-14 100:All	
V _{R12}	3191	460	00:All	N	0	$V_{FO} = V_F$ V_R	-				khibit 25-14	
						V _R			•	See E	xhibit 25-3	
_evel of	Service L	Determin	ation (i	f not l	<u>F)</u>	Level c	of S	ervice	De	termi	nation (if	not F)
$D_R = 6$	5.475 + 0.0073	34 v _R + 0.007	78 V ₁₂ - 0.0	00627 L _A			1	$D_{R} = 4.2$	52 + (0.0086 V	₁₂ - 0.009 L _D	
) _R = 27.	0 (pc/ m/ln)					D _R = ((pc/ m	/ln)				
.OS = C (Exhibit 25-4)				_	LOS=	(Exhib	it 25-4)				
Speed E	stimation]				Speed	Est	imatic	on			
M _S = 0.3	81 (Exibit 25	-19)				D _s =	(Exh	ibit 25-1	9)		:	
=	3 mph (Exhib	-				S _R = ı	nph ((Exhibit :	25-19)		
	6 mph (Exhib	•			S ₀ = mph (Exhibit 25-19)							
	5 mph (Exhibi	•				S= ı	nph ((Exhibit 2	25-15)		
noTM			Convriet	rt © 2000 I	Iniversity o	Florida All						Ve

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		RAM	S AND	RAMF	JUNG	CTIONS	WC	ORKS	HE	ΞT		
General l	nformati	on				Site Inf	orm	ation)			
Analyst2 Agency or Co Date Performe Analysis Time Project Descri	ed Period	ZS LLG Eng 07/14/10 AM Pea disting (Yea) k Hour	57 SB WE	Ju Ju An	eeway/Dir o nction risdiction alysis Year np at Katella	-	rel	W Ca	R-57 SB B On-Rai altrans D' cisting 20		
Inputs												
Upstream Adj	Ramp	Terrain Lev	/el								Downstrear	n Adj Ramp
∭ Yes	∭ On										✓ Yes	☑ On
☑ No	™ Off										™ No L _{down} =	™ Off 1015 ft
L _{up} =	ft										_down	.010 1
Vu =	veh/h			Sketch (s		s, L _A , L _D ,V	111	35.0 m	ph		V _D =	160 veh/h
Conversi	ion to pc	/h Unde	r Base	Condi	tions							
(pc/h)	V (Veh/hr)	PHF	Terr	ain	Truck	%Rv	<u> </u>	f _{HV}		f _p	v=V/PHF f _H	ıv ^f p
Freeway	5490	0.87	Lev		6	0	-	971		1.00	6500	
Ramp	240	0.87	Lev	el	6	0	0.9	971		1.00	284	
UpStream DownStream	160	0.87	Lev	el	6	0	0	971		1.00	189	
DOMINOUSCAIN	100	Merge Are		-		<u>`</u>				ge Areas		
Estimation	on of v ₁₂	Ť				Estima	tion	of v	12			
L _{EQ} = (Equa P _{FM} = 0.342 V ₁₂ = 2220	ation 25-2 or 2 using Equatio		w)			L _{EQ} = (Ec P _{FD} = us V ₁₂ = pc/	ing Ed Ih	n 25-8 o quation	r 25-9	/ _R + (V _F -)	- V _R)P _{FD}	
Capacity	Checks					Capaci	ity C	heck	S			
	Actua	d Ma	aximum	LOS	SF?			Actu	al	Ma	ximum	LOS F?
V_{FO}	6784	See F	xhibit 25-7	N	0	V _{FI} =V,	F			See Ex	hibit 25-14	
*F0	0104		EXHIBIT 20 7			V ₁₂ _				44	00:All	
V _{R12}	2504	4	600:All	N	0	$V_{FO} = V_F$ V_R V_R	-		-1		hibit 25-14 xhibit 25-3	
	0	<u> </u>	4: /		_		.50		. Da		nation (if	Fnot E)
	Service L					Level C						not r)
	5.475 + 0.007; 7. (** * (** * !!*)	34 V _R + 0.0	0/6 V ₁₂ - 0.0	JUOZI LA		_		••	.)Z τ (J.0000 V.	₁₂ - 0.009 L _D	
1 '`	7 (pc/ m/ln)					1 '`	(pc/ m	•				
	Exhibit 25-4)			<u> </u>			<u> </u>	oit 25-4)				
Speed E	stimation	<u> </u>				Speed						
ĭ	34 (Exibit 25	-				D _s =	•	ibit 25-1		,		
l ''	7 mph (Exhib	•				I ''	•	(Exhibit				
•	1 mph (Exhib	-				I °	•	(Exhibit		-		-
S= 62.	8 mph (Exhib	rue.	S = mph (Exhibit 25-15)									

		RAMP	SÄND	RAMI	PJUN	CTIONS	S WC	DRKSH	EET		
General I	Informati	on				Site In	form	ation			
Analyst2 Agency or Co Date Performe Analysis Time	ed Period	ZS LLG Engi 07/14/10 PM Peak	Hour		Ju Ju A:	eeway/Dir on Inction Irisdiction Inalysis Year	r	rel	SR-57 SI WB On-F Caltrans Existing	Ramp at Katella D12	1
Project Descr	iption PM Ex	kisting (Year :	2008) SR-	57 SB W	3 On-Ran	np at Katella	a				
Inputs		T!									
Upstream Adj	Ramp	Terrain Leve	1								m Adj Ramp
™ Yes	On On									✓ Yes	☑ On
☑ No	I Off									III No ■	₩ Off 1015 ft
L _{up} =	ft		- 70	O mah			····	25 0 mmh		L _{down} =	
Vu =	veh/h	Š	S _{FF} = 70		show lane	es, L _A , L _D ,V		35.0 mph		V _D =	360 veh/h
Conversi	ion to pc	h Under	Base	Condi	tions		•				'
(pc/h)	V (Veh/hr)	PHF	Ten	rain	Truck	%Rv		HV	fp	v=V/PHF f	_{tV} ^f p
Freeway	6690	0.87	Lev		6	0	0.9		1.00	7920	
Ramp UpStream	460	0.87	Lev	'el	6	0	0.9	071	1.00	545	
DownStream	360	0.87	Lev	el	6	0	0.9	71	1.00	426	
		Merge Areas		<u> </u>			0.0		verge Are		·
Estimatio				·		Estima	tion	of v ₁₂	Ĭ		
L _{EQ} = (Equa P _{FM} = 0.309 V ₁₂ = 2447	ation 25-2 or 2 using Equatio					L _{EQ} = (Eq P _{FD} = usi V ₁₂ = pc/l	ing Eq	25-8 or 25		_F - V _R)P _{FD}	
Capacity	Checks					Capaci	ty C	hecks			
	Actua	Max Max	imum	LOS	§ F?			Actual	М	laximum	LOS F?
V _{FO}	8465	See Ext	nibit 25-7	No	,	V _{F1} =V _F			See E	xhibit 25-14	
10	0,00	000 2/4		,,,	•	V ₁₂			4	400:All	-
V _{R12}	2992	460	0:All	No)	$V_{FO} = V_{F}$ V_{R}	-			xhibit 25-14	
						V _R			See	Exhibit 25-3	
Level of	Service D	etermin	ation (i	if not l	5)	Level o	f Se	rvice D	eterm	ination (it	not F)
$D_R = 5$.475 + 0.0073	4 v _R + 0.007	8 V ₁₂ - 0.0	00627 L _A			D	_R = 4.252 -	F 0.0086 Y	V ₁₂ - 0.009 L _D	
D _R = 25.4	f (pc/ m/ln)	,				D _R = (pc/ m/	ln)			
LOS = C (E	Exhibit 25-4)					LOS= (Exhibi	t 25-4)			
Speed Es	stimation					Speed	Estil	mation			
•	64 (Exibit 25-	•		•	,	•		oit 25-19)		•	
S _R = 59.8	3 mph (Exhibi	t 25-19)				••		Exhibit 25-1	-		
•	mph (Exhibi	· ·				S ₀ = mph (Exhibit 25-19)					
S= 60.5	mph (Exhibi	t 25-14)				S= n	nph (E	Exhibit 25-1	5)		

WEAVING ANALYSIS

Genera	l Informat	tion			/ING WOR				
Analyst Agency/Co Date Perfor Analysis Ti	med	07/14	Engineers /10 eak Hour		Freeway/Dir Weaving Sec Jurisdiction Analysis Yea	of Travel J Location	Caltra	7 NB gewood On to ins D12 ng 2008	Katella Off
Inputs Freeway fre	ee-flow speed,	See (mi/h)	65		1				
Weaving nu	imber of lanes, eg length, L (ft)	, N	5 136 Lev		Weaving type Volume ratio Weaving ratio	VR		B 0. 0.	19 ⁻ 17
Conver	sions to p	oc/h Unde	er Base C	ondition	ıs		####		
(pc/h)	٧	PHF	Truck %	RV %	E _T	E _R	fHV	fp	٧
Vo1	3860	0.87	6	0	1.5	1.2	0.971	1.00	4569
Vo2	10	0.87	6	0	1.5	1.2	0.971	1.00	11
Vw1	730	0.87	6	0	1.5	1.2	0.971	1.00	864
Vw2	150	0.87	6	0	1.5	1.2	0.971	1.00	177
√w				1041	Vnw			<u> </u>	4580
V									5621
Weavin	g and No	n-Weavin	g Speeds	 S					0021
	Y		Unconstr				Cons	trained	
		Weaving	ı (i = w)	Non-Wea	ving (i = nw)	Weavir	g (i = w)	Non-Wea	ving (= nw)
a (Exhibit 2		0.0			.00				
b (Exhibit 2		2.2	****		00	*		ļ	
c (Exhibit 2 d (Exhibit 2		0.70			00 50		····		
Weaving intens		0.3			17				
Weaving and n	on-weaving	53.4			.05				
Maximum ก	anes required umber of lanes	for unconstrai , Nw (max)	ned operation,	Nw	1.16 3.50	if Nw > Nw	(max) constr	ained operati	on
Weavin	g Segmer	nt Speed,	Density,	Level of	Service,	and Cap	acity		
Weaving se	gment speed,	S (mi/h)		60.25					
	gment density,	D (pc/mi/ln)		18.66					
evel of ser		, "		В	· <u></u>				
	base condition			11477					
	a 15-minute flo			11143		<u>.</u>			
	a full-hour voit	ıme, c _h (veh/h)	9694					
 Capacity con Capacity occ Three-lane Ty Four-lane Ty Capacity cons 	strained by basic frours under constrained ype A segments do pe A segments do no drained by maximur pe A segments do no drained by maximur pe A segments do no drained by basic frour drained by basic frour frour trained trained by basic frour frou frou	eeway capacity. ed operating condi not operate well a tot operate well at allowable weavii ot operate well at	tions. t volume ratios great volume ratios great ng flow rate: 2,800 volume ratios great	ater than 0.45. Po ter than 0.35. Po pc/h (Type A), 4, ter than 0.20. Poc	as using the procedu oor operations and so or operations and so 000 (Type B), 3,500 or operations and so	some local queuin ome local queuin (Type C). me local queuino me local queuino	ng are expected in s	such cases. such cases.	

HCS2000[™]

Genera	l Informa	tion	· · · · · · · · · · · · · · · · · · ·		Site Info	rmation			****
Analyst Agency/Co Date Perfo Analysis Ti	mpany rmed	ZS LLG I 07/14	Engineers /10 eak Hour		Freeway/Dir Weaving Seg Jurisdiction Analysis Yea	of Travel Location	SR-57 NB Orangewood On to Katelia Caltrans D12 Existing 2008		
Inputs									
Weaving no Weaving se Terrain	ee-flow speed, umber of lanes, eg length, L (ft) sions to p	N ´	65 5 136 Lev	rel	Weaving type Volume ratio, Weaving ratio	VR		B 0.: 0.:	
pc/h)	V	PHF	Truck %	RV %	Ε _Τ	E _R	fhv	f.	Τ
Vo1	6960	0.87	6	0	1.5	1.2	0.971	fp	V
/o2	10	0.87	6	0	1.5	1.2	0.971	1.00 1.00	8240 11
/w1	550	0.87	6	0	1.5	1.2	0.971	1.00	651
/w2	270	0.87	6	0	1.5	1.2	0.971	1.00	319
/w		1		970	Vnw	1.2	0.971	1.00	
/	=				Aliva				8251
Neavin	g and No	n-Weavin	a Speeds	<u> </u>	···				9221
	<u> </u>		Unconstr				Cons	trained	······
		Weaving	(i = w)	Non-Wea	ving (i = nw)	Weavir	ng (i = w)		/ing (= nw)
(Exhibit 2		0.08			.00				
(Exhibit 2		2.20			.00				
(Exhibit 24)		0.70 0.50			.00		···		
Veaving intens		0.52			.50 .18				
Veaving and n	on-weaving	51.1		· · · · · · · · · · · · · · · · · · ·	.52				
/laximum n	anes required fumber of lanes	or unconstrair , Nw (max) (max) unconsi	ned operation,	Nw	0.72 3.50		/ (max) constr	I ained operation	on
			Density,	Level of	Service,	and Cap	acity		
	gment speed, S			60.23					
	gment density,	D (pc/mi/ln)		30.62			`		
evel of ser	base condition,	o (no/h)	·-·	D 44700		· · ·			
	a 15-minute flo		/b)	11733	·····				
	a full-hour volu			11391 9910					
lotes	Tall Hour Void	THO, OF (VCISII		3310					
Weaving segrical Capacity occurs. Three-lane Type Capacity constructions Type Capacity constructions.	strained by basic tre irs under constraine rpe A segments do ra ie A segments do na trained by maximum	eway capacity. d operating condit not operate well at v i operate well at v i allowable weavin it operate well at v	ons volume ratios great olume ratios great g flow rate: 2,800 p olume ratios greate	ater than 0.45. Pe er than 0.35. Po oc/h (Type A), 4, er than 0.20. Poc	oor operations and so oor operations and so oo (Type B), 3,500 or operations and son	ome local queuir ne local queuing (Type C). ne local queuing	ng are expected in pare expected in s	such cases. uch cases.	

Ganara	Informat				Site Info	KSHEE		·	
<u>Jenera</u>	i iliiOllia	uvii			Site info	mation			
Analyst Agency/Cor Date Perfor Analysis Tir	med	07/14	ngineers /10 eak Hour		Freeway/Dir Weaving Seç Jurisdiction Analysis Yea	Location	Caltra	7 SB la On to Oran ans D12 ng 2008	gewood Of
Inputs	· · · · · · · · · · · · · · · · · · ·			<u> </u>					777444
Weaving nu	e-flow speed, imber of lanes, g length, L (ft)	, N ` ´	65 5 178 Lev		Weaving type Volume ratio Weaving ratio	VR		A 0.: 0.:	
Conver	sions to p	oc/h Unde	er Base C	ondition	S ·				
(pc/h)	V	PHF	Truck %	RV %	E _T	ER	fHV	fp	٧
Vo1	5490	0.87	6	0	1.5	1.2	0.971	1.00	6499
Vo2	10	0.87	6	0	1.5	1.2	0.971	1.00	11
Vw1	700	0.87	6	0	1.5	1.2	0.971	1.00	828
√w2	150	0.87	6	0	1.5	1.2	0.971	1.00	177
√w				1005	Vnw				6510
/	1				<u> </u>				7515
Weavin	g and No	n-Weavin	g Speeds	\$			<u> </u>		
			Unconstr				Cons	trained	
_		Weaving		Non-Weav	/ing (i = nw)	Weavin	g (i = w)	Non-Wea	ving (= nw
a (Exhibit 24		0.15		0.0					
Exhibit 24 (Exhibit 24		2.20		4.1					
f (Exhibit 24		0.97		1.3 0.					
Veaving intensi		0.60		0.1					
Veaving and no	n-weaving	49.4		57.					
Maximum ni	anes required tumber of lanes	1 for unconstrair i, Nw (max) (max) unconst	ned operation, rained operati	Nw on	1.22 1.40			Iained operation	on
Veavin	g Segmer	nt Speed,	Density,	Level of	Service,				
Veaving se	gment speed, 3	S (mi/h)		56.53		-			
	gment density,	D (pc/mi/ln)		26.59					
evel of serv				С					
	base condition			11047					
		ow rate, c (veh		10725					
	a tull-hour volu	ıme, c _h (veh/h)	9331					
. Capacity cons . Capacity occu . Three-lane Typ . Four-lane Typ Capacity const	strained by basic fre rs under constraine rpe A segments do re A segments do n trained by maximun	eway capacity. ed operating condit not operate well at ot operate well at v n allowable weavin	ions. volume ratios great rolume ratios great g flow rate: 2,800 g	ater than 0.45, Po er than 0.35, Poo oc/h (Type A), 4.0	s using the procedu or operations and so or operations and so i00 (Type B), 3,500 r operations and so	ome local queuin me local queuing (Type C).	g are expected in are expected in s	such cases, such cases,	

General	Informat		NECVYA	VI VYEAV	ING WOF		<u> </u>		
Genera	illioilliai	HOIL			Site into	rmation			
Analyst Agency/Cor Date Perfort Analysis Tin	ned	07/14/	ngineers 10 ak Hour		Freeway/Dir Weaving Se Jurisdiction Analysis Yea	g Location	Caltra	7 SB a On to Oran ans D12 ng 2008	gewood Off
Inputs									····
Weaving nu Weaving se Terrain	e-flow speed, mber of lanes, g length, L (ft)	N	65 5 178 Lev	el	Weaving type Volume ratio Weaving ratio	, VR			14 32
Conver	sions to p	c/h Unde	r Base C	ondition	S		7		
(pc/h)	V	PHF	Truck %	RV %	E _T	. E _R	fHV	fp	٧
Vo1	6680	0.87	6	0	1.5	1.2	0.971	1.00	7908
Vo2	20	0.87	6	0	1.5	1.2	0.971	1.00	23
Vw1	710	0.87	6	0	1.5	1.2	0.971	1.00	840
Vw2	340	0.87	6	0	1.5	1.2	0.971	1.00	402
Vw				1242	Vnw				7931
V	1								9173
Weaving	and No	n-Weaving	Speeds	<u> </u>		·. · · · · · ·			00
			Unconstr				Cons	trained	
		Weaving	(i = w)	Non-Weav	ing (i = nw)	Weavin	g (i = w)	Non-Wea	ving (= nw)
a (Exhibit 24		0.15		0.0					
b (Exhibit 24 c (Exhibit 24		2.20		4.0					
d (Exhibit 24		0.97 0.80		1.3 0.7					
Weaving intensit		0.73		0.3					
Weaving and no	n-weaving	46.81		55.		-			
speeds, Si (mi/h Number of la		or unconstrain			1.26		· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·
Maximum nu	mber of lanes	Nw (max)	ou oporación,		1.40				
		max) unconstr			000 000	if Nw > Nw	(max) constr	ained operati	on
Weaving	Segmen	t Speed,	Density,	Level of	Service,	and Cap	acity		
Neaving sec	ment speed, S	S (mi/h)		53.82				****	
-	ment density,	D (pc/mi/ln)		34.09					
evel of serv		. (1)		D					
*****	ase condition,	~		11035					
		w rate, c (veh/		10714					
	a Tuli-nour Volu	me, c _h (veh/h)		9321					
 Capacity cons Capacity occur Three-lane Type Four-lane Type Capacity construction Five-lane Type Type B weavin 	rained by basic fre s under constraine se A segments do no ained by maximum A segments do no g segments do not	d operating condition to operate well at vote operate well at vote allowable weaving to operate well at vote operate	ons. volume ratios great flume ratios great flow rate: 2,800 p lume ratios greate	ater than 0.45. Po er than 0.35. Poo och (Type A), 4,0 er than 0.20. Poor than 0.80. Poor	or operations and s r operations and so 00 (Type B), 3,500 operations and so operations and so	some local queuing ome local queuing (Type C). me local queuing ne local queuing a	g are expected in are expected in sare expected in sare expected in sare	such cases. uch cases. uch cases.	- Paper Salar Paul

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General Information				AY WEAVING WORKSHEET							
Genera	ı ınıormaı	ion		·	Site Information						
Analyst ZS Agency/Company LLG Engineers Date Performed 07/14/10 Analysis Time Period AM Peak Hour					Weaving Seg Location Katel Jurisdiction Caltri			57 NB Illa On to Ball Off rans D12 ting 2008			
Inputs		2 (0.7								
Freeway free-flow speed, SFF (mi/h) 65 Weaving number of lanes, N 4 Weaving seg length, L (ft) 213 Terrain Leve			Mooving ratio D			B 0.21 0.14					
Conver	sions to p	c/h Unde	r Base C	ondition	IS						
(pc/h)	V	PHF	Truck %	RV %	Ε _τ	ER	fHV	fp	٧		
Vo1	3600	0.87	6	0	1.5	1.2	0.971	1.00	4262		
/o2	10	0.87	6	0	1.5	1.2	0.971	1.00	11		
/w1	840	0.87	6	0	1.5	1.2	0.971	1.00	994		
/w2	140	0.87	6	0	1.5	1.2	0.971	1.00	165		
/w	1		·	1159	Vnw				4273		
V						5432					
Veavin	g and No	n-Weavin	g Speeds						0402		
	· · · · · · · · · · · · · · · · · · ·		Unconstr								
Weaving (i = w)			Non-Weaving (i = nw)		Weavin	Weaving (i = w) No		ving (= nw			
(Exhibit 2		0.08		0.00							
(Exhibit 2		2.20		6.00							
(Exhibit 24 I (Exhibit 24		0.70		1.00							
Veaving intens		0.50 0.41		0.50 0.19							
Veaving and n	on-weaving	53.90		61,30							
speeds, Si (mi/h) 53.90 Number of lanes required for unconstrained operation,											
Maximum n	anes required to umber of lanes If Nw < Nw	, Nw (max)	•		0.85 3.50	ື່if Nw > Nພ	(max) constr	rained operation	on		
								amou oporati	011		
Weaving Segment Speed, Density, Weaving segment speed, S (mi/h)				59.56							
Weaving segment density, D (pc/mi/ln)				22.80							
Level of service, LOS			С								
Capacity of base condition, c _b (pc/h)				9318							
Capacity as a 15-minute flow rate, c (veh/h)				9047							
Capacity as a full-hour volume, c _h (veh/h)				7871							
lotes											
. Capacity con: . Capacity occi . Three-lane Ty, . Four-lane Tyr, Capacity cons . Five-lane Typ . Type B weavi	strained by basic fre urs under constraine upe A segments do no trained by maximum e A segments do no ng segments do no ng segments do not	eway capacity. d operating conditi not operate well at vo n allowable weaving t operate well at vo	ons. volume ratios great plume ratios great glow rate: 2,800 p plume ratios greate ume ratios greate	ater than 0.45. Po er than 0.35. Poo oc/h (Type A), 4,0 er than 0.20. Poor r than 0.80. Poor	s using the procedu or operations and so or operations and so 000 (Type B), 3,500 or operations and so operations and so	ome local queuing me local queuing (Type C). me local queuing te local queuing	g are expected in are expected in sare expected in sare expected in sare expected in sare	such cases. such cases. such cases.			

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			FREEWA	Y WEAV	ING WOF	RKSHEE	Γ			
Genera	Informat				Site Information					
Analyst ZS Agency/Company LLG Engineers Date Performed 07/14/10 Analysis Time Period PM Peak Hour				Freeway/Dir Weaving Se Jurisdiction Analysis Yea	g Location	SR-57 NB Katella On to Ball Off Caltrans D12 Existing 2008				
Inputs			**							
Freeway free-flow speed, SFF (mi/h) 65 Weaving number of lanes, N 4 Weaving seg length, L (ft) 21: Terrain Le		rel	Weaving type Volume ratio, VR Weaving ratio, R		B 0.11 0.26					
Conver	sions to p	c/h Unde	r Base C	ondition	s					
(pc/h)	V	PHF	Truck %	RV %	ET	ER	fHV	fp	٧	
Vo1	7050	0.87	6	0	1.5	1.2	0.971	1.00	8346	
Vo2	10	0.87	6	0	1.5	1.2	0.971	1.00	11	
Vw1	660	0.87	6	0	1.5	1.2	0.971	1.00	781	
Vw2	230	0.87	6	0	1.5	1.2	0.971	1.00	272	
Vw				1053	Vnw				8357	
V								9410		
Weavin	g and Nor	า-Weavin	g Speeds	3	····				<u> </u>	
Unconstr								Constrained		
(m. 1 11 11 a		Weaving		Non-Weaving (i = nw)		Weavin	g (i = w)	Non-Weav	/ing (= nw)	
a (Exhibit 24 b (Exhibit 24		0.08 2.20		0.00 6.00						
c (Exhibit 24		0.70		1.00				'		
d (Exhibit 24		0.50		0.50						
Weaving intensi		0.50		0.19						
Weaving and ποη-weaving speeds, Si (mi/h)		51.6	.63		.12					
Number of la	anes required fumber of lanes		ed operation,		0.41 3.50		<u> </u>			
J	☑ If Nw < Nw((max) unconst	rained operat	ion	95	if Nw > Nw	(max) constra	ained operatio	n	
Weaving	g Segmen	t Speed,	Density,	Level of				<u> </u>		
Weaving segment speed, S (mi/h)				59.88						
Weaving segment density, D (pc/mi/ln)			39.28							
Level of service, LOS			E							
Capacity of base condition, c _b (pc/h)				9400						
Capacity as a 15-minute flow rate, c (veh/h)			9126							
Capacity as a full-hour volume, c _h (veh/h)			7940					<u>.</u>		
Notes										
 b. Capacity cons c. Capacity occu d. Three-lane Ty e. Four-lane Typ 	nents longer than 25 trained by basic fre rs under constraine pe A segments do re e A segments do no	eway capacity. d operating condit not operate well at of operate well at v	ions. volume ratios great olume ratios great	ater than 0.45. Po	or operations and so	some local queuir ome local queuing	o are expected in :	such cases.		

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e. Four-latter type A segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.

h. Type B weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

General Information				AT VVEAV	AVING WORKSHEET					
General information					Site Information					
Date Performed 07/		LLG E 07/14/	Engineers 4/10 Peak Hour		Freeway/Dir of Travel Weaving Seg Location Jurisdiction Analysis Year		SR-57 SB Ball On to Katella Off Caltrans D12 Existing 2008			
Inputs		,								
Freeway free-flow speed, SFF (mi/h) 65 Weaving number of lanes, N 4 Weaving seg length, L (ft) 249 Terrain Leve			rel	Weaving type Volume ratio, VR Weaving ratio, R			B 0.23 0.42			
Conver	sions to p	c/h Unde	r Base C	ondition	S			-		
(pc/h)	٧	PHF	Truck %	RV %	E _T	E _R	fHV	fp	٧	
Vo1	4890	0.87	6	0	1.5	1.2	0.971	1.00	5789	
Vo2	30	0.87	6	0	1.5	1.2	0.971	1.00	35	
Vw1	840	0.87	6	0	1.5	1.2	0.971	1.00	994	
Vw2	600	0.87	6	0	1.5	1.2	0.971	1.00	710	
Vw				1704	Vnw	<u></u>			5824	
V									7528	
Weavin	g and No	n-Weavin	a Speeds			<u> </u>				
	<u> </u>		Unconstr		ed Constrained					
	-	Weaving	(i = w)	Non-Weaving (i = nw) Weav		Weavin	ng (i = w) Non-Weaving (= nw			
a (Exhibit 2		0.08		0.00						
b (Exhibit 2		2.20		6.00				<u> </u>		
c (Exhibit 24 d (Exhibit 24		0.70 0.50		1.00 0.50				ļ	·	
Weaving intens		0.49		0.26						
Weaving and no	n-weaving	51.86		58.77						
speeds, Si (mi/f) anes required (<u> </u>		
Maximum n	umber of lanes	. Nw (max)	eu operation,	IVW	0.86 3.50					
	☑ If Nw < Nw		rained operati	ion		if Nw > Nw	(max) constr	ained operati	on	
				Level of Service, and Capacity						
Weaving segment speed, S (mi/h)				57.05						
Weaving segment density, D (pc/mi/ln)				32.99						
Level of service, LOS			D							
Capacity of base condition, c _b (pc/h)				9275						
Capacity as a 15-minute flow rate, c (veh/h)			9005							
Capacity as a full-hour volume, c _h (veh/h)				7834						
Notes										
 Capacity const Capacity occurity Four-lane Type Capacity const Capacity const Five-lane Type Type B weavity 	nents longer than 2 strained by basic fre rs under constraine pe A segments do e A segments do no rained by maximun e A segments do no ng segments do no	eway capacity. It operating condition operate well at operate well at vortion at operate well at vortion at operate well at votion at operate well at votion operate well at votion at vo	ons. volume ratios great olume ratios great g flow rate: 2,800 olume ratios great ume ratios greate	ater than 0.45. Po ter than 0.35. Poo pc/h (Type A), 4,0 er than 0.20. Poor r than 0.80. Poor	or operations and s r operations and so 00 (Type B), 3,500 operations and so	some local queuing me local queuing (Type C). me local queuing ne local queuing a	g are expected in are expected in s are expected in s tre expected in su	such cases. such cases. uch cases.		

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		FREEVY	T WEA	VING WOF	· · · · · · · · · · · · · · · · · · ·						
General Informa	tion			Site Information							
Analyst ZS Agency/Company LLG Engineers Date Performed 07/14/10 Analysis Time Period PM Peak Hour				Freeway/Dir of Travel Weaving Seg Location Jurisdiction Analysis Year		SR-57 SB Ball On to Katella Off Caltrans D12 Existing 2008					
Inputs											
Freeway free-flow speed, SFF (mi/h) 65 Weaving number of lanes, N 4 Weaving seg length, L (ft) 249 Terrain Lev		Masying ratio P		B 0.16 0.43							
Conversions to	pc/h Unde	r Base C	onditio	าร							
(pc/h) V	PHF	Truck %	RV %	Ε _T	E _R	fHV	fp	٧			
Vo1 6190	0.87	6	0	1.5	1.2	0.971	1.00	7328			
Vo2 30	0.87	6	0	1.5	1.2	0.971	1.00	35			
Vw1 660	0.87	6	0	1.5	1.2	0.971	1.00	781			
Vw2 500	0.87	6	0	1.5	1.2	0.971	1.00	591			
Vw			1372	Vnw		<u> </u>		7363			
V		•				8735					
Weaving and No	n-Weavin	g Speeds	3								
		Unconstr			Constrained						
· (E. L.) (0.4.0)	Weaving (i = w)		Non-Weaving (i = nw)		Weaving (i = w)		Non-Weaving (= nw				
a (Exhibit 24-6) b (Exhibit 24-6)	0.08 2.20		0.00 6.00								
c (Exhibit 24-6)	0.70		1.00					- · · · ·			
d (Exhibit 24-6)		0.50		0.50							
Weaving intensity factor, Wi	0.48		0.21								
Weaving and non-weaving speeds, Si (mi/h)	52.1	15 6		.45	45						
Number of lanes required Maximum number of lane		-		0.56 3.50	if Nhu > Nhu	(max) constr	ainad anarati				
Weaving Segme				Service :	and Can	acity	amed operation	O11			
Weaving segment speed,			58.98		una vap	uvity					
Neaving segment density	37.03										
evel of service, LOS	E										
Capacity of base condition	9400										
Capacity as a 15-minute f	9126										
	Capacity as a full-hour volume, c _h (veh/h)				7940						
	ume, c _h (ven/n		1340								

- c. Capacity occurs under constrained operating conditions.
 d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
 e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
 f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
 g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
 h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
 Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

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